Release Notes for Linux Host Drivers, V5.0.7-LX

These release notes document information about Oracle Virtual Networking (OVN) host drivers for Linux hosts. Both Oracle Linux hosts and Red Hat Enterprise Linux hosts are supported through these OVN host drivers.

There are considerations about which version of IB stack is used with which type of kernel. There are also considerations about using multipath files, and when to install and reboot the server with each version of the multipath file and IB stack.
* For information about the versions of IB stack/kernel used with each host OS and kernel type, see Supported Host Drivers.
* For information about the considerations with multipath files, see 16788076 and 16707669 in Known Problems.

Additional release notes exist for:

- OVN host drivers for Windows hosts
- XgOS and the Fabric Interconnect
- Oracle Fabric Manager
- OVN host drivers for ESXi 5.0 hosts.
- OVN host drivers for Oracle Virtual Machine (OVM) hosts

These notes contain the following sections:

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San Jose, CA 95134
USA
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Tel: +1.408.329.5600

2

Overview

Oracle's Fabric Interconnect is a service-oriented platform that interconnects data-center resources based on application demands.

Customers and partners are requested to report bugs for the Oracle Fabric Interconnect and Oracle Virtual Networking products by filing a customer case through either the Oracle web site or a phone call to Oracle Global Customer Services. If you need support, you can facilitate your interaction with Oracle Customer Support by gathering some troubleshooting information. For more information, see Technical Support Contact Information on page 13.

What's New in this Release

Release 5.0.7-LX host driver contains the following new features and enhancements:

- Support for Oracle Linux 5 Update 9 and 6 Update 4 hosts, which are new. This release also continues to support the existing Linux host OSes—OL/RHEL 6 Update 1, OL/RHEL 6 Update 2, and OL/RHEL 6 Update 3.

  Local boot and PXE SAN Boot are supported for the Red Hat-compatible kernel and UEK2 kernel for all of the host OSes supported by this release of OVN host drivers.
- Support for Red Hat Enterprise Linux 5 Update 9 and 6 Update 4 hosts through a Red Hat compatible kernel. Also, be aware that the Red Hat compatible kernel for OL 5 Update 9 requires IB kernel version 1.5.3.2. For information about the compatibility of Red Hat Enterprise Linux kernels through Oracle Linux, see the FAQ at http://www.oracle.com/us/technologies/027617.pdf.
- These host drivers support Oracle Software Defined Networking (OSDN) functionality through PVIs. However, PVI is supported only for hosts running Oracle Linux 6.0 or later. PVI functionality is not supported on OL 5 Update 9 or Red Hat 5 Update 9 hosts.
- This release supports the UEK 2.300 kernel (UEK2) or a Red Hat compatible kernel for either Oracle Linux or Red Hat Enterprise Linux hosts. There are differences in the IB stack/kernel used among the different kernels and host OSes supported in this release. As a result, the installation procedure differs slightly for the UEK and Red Hat compatible host drivers across the different host OSes. See either of the following sections:
  - Installing the Host Drivers for the Red Hat-Compatible Kernel
  - Installing the Host Drivers for the UEK2 Kernel
- A fix is included for a vHBA problem in which one path remained dead after a Fibre Channel switch was rebooted or a path was reset. See Fixed Problem on page 13.

System Requirements

This section documents the system requirements for this version of host drivers.

Supported Firmware Levels

The following firmware levels of firmware are supported for Oracle and ConnectX HCAs in this release:

- Connect-X Dual Port HCA: 2.7.0 or higher
- ConnectX-2 Single or Dual-Port HCA: 2.7.0 or higher

System Limitations and Restrictions

This section documents system limitations and restrictions for this version of OVN host driver.

Virtual Resources Supported per Server

This release of host drivers has been tested to support the following number of virtual resources:

- Standalone vNICs: 8
- Standalone vHBAs: 4
- Bonded vNICs: 4 pairs
- Multipath vHBAs: 2 pairs

User Guides

User guides are available on CD for shipments to new customers, and by download from the Oracle Support site.

Oracle provides the following Fabric Interconnect product documentation in PDF format:

- *Fabric Interconnect Hardware and Host Drivers Installation Guide*
- *XgOS Software Upgrade Guide*
- *XgOS Command-Line User Guide*
- *XgOS Remote Booting Guide*
- *Oracle Fabric Manager User Guide*
- *XgOS vNIC Switching Configuration Guide*

Getting Documentation

Documentation for currently available OVN products) is available as downloadable PDF files. To get documentation:

Step 1 Point your browser to the following web page:

http://docs.oracle.com/cd/E38500_01/index.html

Step 2 Scroll down the page to find the documentation that you want.

Step 3 Click the Download button to push a copy of the PDF file to your local system.

Documentation Erratum and Addition

The following sections contain corrected and additional text for the Oracle technical documentation.

Documentation Erratum

The following section contains a fix for errors in the Oracle technical documentation.

Corrected Text for Linux Firmware and Option ROM Updates

Note the following correction to the “Firmware and Option ROM Levels” chapter of the *Remote Booting Guide*.

In the “Linux Firmware and Option ROM” section, the procedure is incorrect. The procedure instructs you to run the Option ROM upgrade tool (`xg_config`) first, then load the new HCA firmware by running an RPM. These steps are reversed because the `xg_config` tool is actually in the RPM.

If you are upgrading the HCA firmware and Option ROM for a RHEL 5U8 server, use the following corrected text:

Step 1 Log in into the host server as root.

Step 2 Upgrade the Oracle HCA firmware package on the server. For example:

```
rpm -ivh <xsigo-hca-firmware_number.i386.rpm>
```

Note

Replace `xsigo-hca-firmware_2.6.6.i386.rpm` with the Oracle firmware for your server. Supported host drivers for each operating system are listed in the release notes.

This step unpacks the `xg_config` tool, which you can use to update the HCA firmware and Option ROM.

Step 3 Run `xg_config` to view the firmware and option ROM levels.

```
/opt/xsigo/bin/xg_config
###############################################################################
# Main menu
###############################################################################

Selected card:
   Node GUID          : '0002:c902:0020:4934'
   Board ID           : 'MT_0150000001'
   CA type            : 'MT25208'
   Firmware version   : '5.3.0'
   Hardware version   : 'a0'
```

```
   Option ROM version : 'XgBoot Version 2.2.11'
```

Verify that the firmware version is one of the following:

ConnectX Dual-Port HCA: 2.8.0 or higher

ConnectX-2 Single and Dual-Port HCA: Firmware version 2.8.0 or higher

If your firmware and XgBoot versions are the same as listed above, you can skip Step 4.

Step 4 Run `xg_config` to upgrade the firmware and option ROM.

```
/opt/xsigo/bin/xg_config
################################################################################
# Main menu
################################################################################

Selected card:
   Node GUID          : '0002:c902:0020:4934'
   Board ID           : 'MT_0150000001'
   CA type            : 'MT25208'
   Firmware version   : '5.3.0'
   Hardware version   : 'a0'
   Option ROM version : 'XgBoot Version 2.2.11'

1) Flash HCA Firmware
2) Flash HCA Firmware + Option ROM
3) Flash Option ROM
4) Change selected card
0) Quit
Select option>
```

If you are using SAN Boot or might decide to in the future, select option 2. Otherwise, select option 1.

In the following example, option 2 was selected:

```
################################################################################
# Flash HCA Firmware + Option ROM Menu
################################################################################

Selected card:
   Node GUID          : '0002:c902:0020:4934'
   Board ID           : 'MT_0150000001'
   CA type            : 'MT25208'
   Firmware version   : '5.3.0'
   Hardware version   : 'a0'
   Option ROM version : 'XgBoot Version 2.2.11'

1) 5.3.0 (XgBoot Version 2.2.11)
2) 5.1.400 (XgBoot Version 1.5)
0) Return to previous menu
Select firmware to use>
**********************************************************
```

Step 5 Select the most recent firmware (the one displayed first). The one you select will be loaded into memory when the server reboots.

You will need to reboot for the firmware upgrade to take effect. However, you can wait to reboot until you have upgraded the host drivers.

Supported Host Drivers

This release of host drivers supports Oracle Linux (OL) 5 Update 9 and Oracle Linux (OL) 6 Update 4, and their Red Hat compatible versions.


Note

OL 5 Update 9 host drivers do not have a native IB kernel, but some other kernels for other OSes do. As a result, the installation of host driver files will be slightly different due to the presence or absence of the IB kernel. OSes with a native IB kernel are indicated in text

Also, unless otherwise indicated, the host drivers and IB kernels listed in this section are for the Red Hat-compatible kernel

- OL5u9 hosts are support by the `OL5u9-5.0.7-LX.tar.gz` bundle, which contains:
  - `xsigo-hostdrivers-kmod-2.6.18_348.el5.5.0.7.LX-1.x86_64.rpm`
  - `xsigo-hostdrivers-kmod-2.6.18_348.3.1.0.1.el5.5.0.7.LX-1.x86_64.rpm`
  - `xsigo-hostdrivers-kmod-2.6.39_300.26.1.el5uek.5.0.7.LX-1.x86_64.rpm` (UEK kernel)
  - `kernel-ib-1.5.3.2-2.6.18_348.3.1.0.1.el5.x86_64.rpm`
  - `kernel-ib-1.5.3.2-2.6.18_348.el5.x86_64.rpm`
  - `kernel-ib-1.5.5.151-2.6.39_300.26.1.el5uek.x86_64.rpm` (for UEK kernel)
- OL6u4 hosts are supported by the `OL6u4-5.0.7-LX.tar.gz`.bundle, which contains:
  - `xsigo-hostdrivers-kmod-2.6.32_358.el6.5.0.7.LX-native.x86_64.rpm`
  - `xsigo-hostdrivers-kmod-2.6.32_358.2.1.el6.5.0.7.LX-native.x86_64.rpm`
  - `xsigo-hostdrivers-kmod-2.6.39_400.17.1.el6uek.5.0.7.LX-1.x86_64.rpm` (UEK kernel)
  - `kernel-ib-1.5.5.151-2.6.39_400.17.1.el6uek.x86_64.rpm` (for UEK kernel)


Note

The Red Hat kernel for this OS has a native IB kernel, the host driver RPM for this OS does not contain any `kernel-ib` files. However, the UEK2 kernel does not have a native IB kernel, so you will notice one kernel-ib file, which is for the UEk2 kernel.

- OL6u3 hosts are supported by the `OL6u3-5.0.7-LX.tar.gz` bundle, which contains:
  - `xsigo-hostdrivers-kmod-2.6.32_279.el6.5.0.7.LX-native.x86_64.rpm`
  - `xsigo-hostdrivers-kmod-2.6.39_300.0.6.el6uek.5.0.7.LX-1.x86_64.rpm` (UEK kernel)
  - `kernel-ib-1.5.5.151-2.6.39_300.0.6.el6uek.x86_64.x86_64.rpm` (for UEK kernel)


Note

The Red Hat kernel for this OS has a native IB kernel, the host driver RPM for this OS does not contain any `kernel-ib` files. However, the UEK2 kernel does not have a native IB kernel, so you will notice one kernel-ib file, which is for the UEk2 kernel.

Downloading Software

You can get software for this version of host driver from either of the following locations:

- Oracle's Technical Network (OTN)
- Oracle's Software Delivery Cloud

Oracle's Technical Network (OTN)

You can download this version of host driver through Oracle's Technical Network (OTN), which is available without a user account or password. Software is available through this method, but documentation is not. For information about how to obtain product documentation, see Getting Documentation on page 4.

To get the software:

Step 1 Point your browser to http://www.oracle.com/technetwork/indexes/downloads/index.html

Step 2 Scroll down to the *Drivers* section.

Step 3 Click the Xsigo Drivers link.

Step 4 In the *Fabric Interconnect* section, find this version of host driver, and click the link to download the software to a network-accessible node in your network.

Step 5 Using file copy, SCP, or another file transfer protocol, copy the host driver software from the network node to the host server.

Step 6 When the new host driver is on the host server, run the command to install or upgrade (**`rpm -ivh`** or or **`rpm -uvh`**) it to the appropriate version as documented in either of the following sections:

- Installing the Host Drivers for the Red Hat-Compatible Kernel on page 9
- Installing the Host Drivers for the UEK2 Kernel on page 9

Oracle's Software Delivery Cloud

You can download this version of host driver through Oracle's Software Delivery Cloud (also called "edelivery").

Note

To access the Oracle Software Delivery Cloud, you will first need to get a user account and password. To get a user account and password, please follow the instructions on https://edelivery.oracle.com which is the Oracle Software Delivery Cloud website.

Software is available through this method, but documentation is not. For information about how to obtain product documentation, see Getting Documentation on page 4.

To get the software:

Step 1 Point your browser to https://edelivery.oracle.com.

Step 2 Log in with your account name and password.

Step 3 Accept the terms and conditions of usage (if prompted) and click ***Continue*** to display the Media Pack Search page as shown in Figure 1.

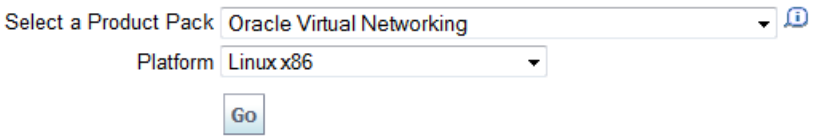

Figure 1 Searching for Oracle Virtual Networking Software

Step 4 From the *Select a Product Pack* dropdown menu, select Oracle Virtual Network.

Step 5 From the *Platform* dropdown menu, select any value. For host driver software the platform does not matter. However, you can use the *Platform* dropdown to search for host drivers by OS or hypervisor type.

Step 6 Click ***Go*** to display the result of your search.

Step 7 On the resulting page, locate `Oracle Virtual Networking Drivers (5.0.7-LX)` and click the ***Download*** button to get the host driver on a network-accessible node in your network.

Step 8 Using file copy, SCP, or another file transfer protocol, copy the host driver software from the network the host server(s).

Step 9 When the new host driver is on the host server, run the command to install or upgrade (**`rpm -ivh`** or or **`rpm -uvh`**) it to the appropriate version as documented in either of the following sections:

- Installing the Host Drivers for the Red Hat-Compatible Kernel on page 9
- Installing the Host Drivers for the UEK2 Kernel on page 9

Installing the Host Drivers for the Red Hat-Compatible Kernel

Installing the Red Hat compatible kernel occurs through the **`rpm -ivh`** command. This kernel has a native IB stack included with the Kernel, so there is no need to install the IB stack separately.


Note

There are considerations about which version of IB stack is used with which type of kernel. There are also considerations about using multipath files, and when to install and reboot the server with each version of the multipath file and IB stack. Before installing or upgrading to the 5.0.7-LX host drivers, make sure that you remove any IB stack that is not version 1.5.3.2.

Be aware that you must install the correct host drivers for your architecture—for example, do not put 64-bit host drivers on a 32-bit server.

To install the host drivers, follow this procedure, which uses the OL6u4 host drivers for illustrative purposes:

Step 1 Remove any existing host drivers completely before installing the new host drivers.

Step 2 After any existing host drivers are completely uninstalled, install the correct host driver for your architecture. For example:

`xsigo-hostdrivers-kmod-2.6.32_358.el6.5.0.7.LX-native.x86_64.rpm`

For example:

`rpm -ivh xsigo-hostdrivers-kmod-2.6.32_358.el6.5.0.7.LX-native.x86_64.rpm`


Note

This command installs the host drivers onto a server that has not already had them If you want to upgrade a server that has existing host drivers already installed, use **`rpm -uvh`** plus the RPM file name.

Step 3 After the host drivers are installed, reboot the server to load the new drivers into memory.

Installing the Host Drivers for the UEK2 Kernel

Installing the host drivers with the UEK2 kernel occurs through the **`rpm -ivh`** command.

Installation Considerations

Be aware of the following considerations before attempting the installation procedure for host drivers with the UEK2 kernel:

- You must install the correct host drivers for your architecture—for example, do not put 64-bit host drivers on a 32-bit server.
- By default, the UEK2 kernel contains an IB stack named open-ib, and this IB stack is installed when the UEK2 kernel is installed on the host. However, for the UEK2 kernel, the host drivers require an InfiniBand stack called kernel-ib, which is contained in the OVN Solaris host drivers package.

- There are considerations about which version of IB stack is used with which type of kernel. There are also considerations about using multipath files, and when to install and reboot the server with each version of the multipath file and IB stack. Before installing or upgrading to the 5.0.7-LX host drivers, read the Known Problems section first.
- There is a dependency that the appropriate `kernel-ib` RPM is installed before the corresponding host drivers.

Installation Procedure

To install the UEK2 kernel host drivers, follow this procedure which uses the OL 5u9 host drivers for illustrative purposes:

Step 1 Remove any existing host drivers and IB stack—including the open-ib stack that was installed as part of the UEK2 kernel—completely before installing the new host drivers.

Caution — By default, the OS installs a different IB stack named `open-ib`. You must remove this IB stack and install the IB stack that is released with the host drivers (`kernel-ib`). The `kernel-ib` stack included with this host driver must be used, and you must install it before installing the actual host OVN host driver.

Step 2 Install the kernel-ib package—not the open-ib package—for your architecture. For example:

```
kernel-ib-1.5.5.151-2.6.39_300.26.1.el5uek.x86_64.rpm
```

For example:

```
rpm -ivh kernel-ib-1.5.5.151-2.6.39_300.26.1.el5uek.x86_64.rpm
```

Note — This command installs the IB stack onto a server that has not already had them If you want to upgrade a server that has an existing IB stack already installed, use **`rpm -uvh`** plus the IB stack file name.

Step 3 After the IB stack is installed, install the correct host driver for your architecture. For example:

```
xsigo-hostdrivers-kmod-2.6.39_300.26.1.el5uek.5.0.7.LX-1.x86_64.rpm
```

For example:

```
rpm -ivh xsigo-hostdrivers-kmod-2.6.39_300.26.1.el5uek.5.0.7.LX-
1.x86_64.rpm
```

Note — This command installs the host drivers onto a server that has not already had them If you want to upgrade a server that has existing host drivers already installed, use **`rpm -uvh`** plus the RPM file name.

Step 4 After the host drivers are installed, reboot the server to load the new drivers into memory.

Known Problems

Table 1 shows the known problems in this version of host driver.

Table 1 Known Problems in Version 5.0.7-LX

Number	Description
16862166	A problem causes the Server Profile on the Fabric Interconnect to stay in `up/down` state during PXE install. This problem occurs only while the boot image is being installed. After the PXE installation of the boot image is complete, and the host server has been rebooted and the host driver is loaded into memory, the Server Profile successfully comes online in `up/up` state. Be aware that during PXE installation the Server Profile state will be up/down. There is currently no work around for this problem except to complete the PXE installation and host driver installation and reboot the server.
16788076	OL 6 Update 3 hosts using the UEK2 kernel can experience a problem that prevents the hosts from correctly using their multipath definitions. This problem occurs if you use a multipath package that is different than the one included in the ISO distributed with the 5.0.7-LX host drivers. You can work around this issue by following this procedure, which requires you to use a specific multipath package: **Step 1** Use the multipath package for OL 6 Update 3 hosts. This specific file is named `device-mapper-multipath-0.4.9-56.el6.x86_64` and it is bundled with the OL 6 Update 3 ISO for 5.0.7-LX host drivers. **Step 2** Install multipath package before installing xsigo host driver. **Step 3** Make sure `multipath.conf` is not copied to `/etc/multipath.conf` before installing the 5.0.7-LX host driver. **Step 4** Install the 5.0.7-LX host driver as documented in either: • Installing the Host Drivers for the Red Hat-Compatible Kernel on page 9 • Installing the Host Drivers for the UEK2 Kernel on page 9

Table 1 (continued) Known Problems in Version 5.0.7-LX

Number	Description
16707669	OL 6 Update 4 hosts experience a problem that causes the hard drive to be omitted when multipath software is installed. As a result, when you install the host drivers and attempt a reboot to load them into memory, the host does not see the hard drive in the boot devices list. When this problem occurs, the host will hang after rebooting since it cannot local the hard drive. This problem has only been seen on OL 6 Update 4 hosts. You can work around this problem by following this procedure which adds the hard drive to the blacklist: **Step 1** Install multipath package device-mapper-multipath-0.4.9-64.0.1.el6.x86_64. This **Step 2** Copy the sample multipath.conf file from `/usr/share/doc/device-mapper-multipath.conf` to `/etc/` **Step 3** Create a blacklist entry for the local hard drive in /etc/multipath.conf file. **Step 4** Reboot the server. **Step 5** Install the 5.0.7-LX host driver as documented in either: • Installing the Host Drivers for the Red Hat-Compatible Kernel on page 9 • Installing the Host Drivers for the UEK2 Kernel on page 9
16616396	By default, the UEK2 kernel contains its own InfiniBand stack, called `open-ib`. A problem will prevent the correct installation of the OVN host drivers *UEK2* package if the `open-ib` file is present when you attempt to install the OVN host drivers. Be aware that for the *UEK2* host drivers, you must remove `open-ib` to install the OVN *UEK2* host driver package, which contains its own supported IB stack called `kernel-ib`. Be aware that you must remove `open-ib` before installing the OVN host driver package with the UEK2 kernel. This problem only exists with the UEK2 kernel. The Red Hat-compatible kernel does not have this problem. For the correct installation procedure, see Installing the Host Drivers for the UEK2 Kernel on page 9.
16335100	If an event causes failover or restart of the OpenSM InfiniBand subnet manager, multicast traffic is delayed for approximately seven seconds while the failover or restart occurs.

Fixed Problem

Table 2 shows the fix in this version of host driver.

Table 2 Fixed Problem in Version 5.0.7-LX

Number	Description
16733434	A problem prevented one or more paths on a Linux host from coming back up if multiple paths to an FC switch were taken down. For example, assume you had a Linux host with 4 paths. If you did any of the following, a Linux **`lsscsi`** or **`powermt`** command would only return 3 of the 4 paths: • rebooted an FC switch • disabled an FC port on either the initiator or target • reset the FC card in the Fabric Interconnect This problem always caused one path to be missed or treated as `dead`, `unknown`, or `down` regardless of the MPxIO software on the host. This problem is fixed in OVN 5.0.7-LX host drivers.

Technical Support Contact Information

Oracle customers can receive support through Oracle's Support website or through Oracle's Support telephone number. Support cases must be opened through either a phone call or the web.

Oracle Support Website

Oracle customers have access to electronic support through My Oracle Support. For information, visit any of the following links:

- https://support.oracle.com. In order to access this site, you will need to follow the instructions to create an account.
- http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info
- If you are hearing impaired, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs

Oracle Support Phone Number

Oracle customers have access to telephone support through the Oracle Global Customers Services phone line. For information, call **+1 800-223-1711** to speak with a Support representative.

Gathering Information for Xsigo Technical Support

If the Xsigo Fabric Interconnect is supporting OL 6U4or OL 5U9 servers and problems are encountered, please gather the information in the following section before contacting Xsigo Technical Support or filing a case through the support website.

On the Xsigo Fabric Interconnect

- Type and number of servers connected (brand, model, number of CPUs, size and type of memory)

- Output from the **`get-log-files -all`** command (for the Xsigo Fabric Interconnect), which will gather the **`show tech-support`** information plus all log files, and place this information into `xsigo-logs.tar.gz`

On the Host Server

- The file output from **`/opt/xsigo/bin/xsigo-support`**