Oracle[®] Virtual Networking for Oracle Solaris Hosts Installation and Boot Guide



Oracle Virtual Networking for Oracle Solaris Hosts Installation and Boot Guide

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Using This Documentation

- **Overview** Describes how to configure an Oracle Solaris host using Oracle Virtual Networking host drivers.
- **Audience** System administrators and authorized service providers.
- **Required knowledge** Advanced experience managing heterogeneous networks.

Product Documentation Library

Documentation and resources for this product and related products are available at http://www.oracle.com/goto/oracle-virtual-networking/docs.

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Preparing for Host Driver Configuration

This document describes how to configure your Oracle Solaris hosts to load host drivers at boot time after you set up and configure the Oracle Fabric Interconnect. You can use only the local boot method as iSCSI, SAN, and PXE boot protocols are not supported by the Oracle Solaris hosts.

These topics provide information about preparing to configure your Oracle Solaris host drivers:

- "Understanding Oracle Solaris Software Tools" on page 9
- "Supported Oracle Solaris Distributions" on page 11
- "HCA Firmware Upgrades" on page 12

Related Information

■ "Configuring Oracle Solaris Host Drivers" on page 15

Understanding Oracle Solaris Software Tools

Oracle Virtual Networking supports a host software stack to be installed on supported Oracle Solaris servers running on the x86 and SPARC platforms. The software is a collection of custom kernel modules, services and host drivers. The combination of these elements is bundled into a single package executable by the root user on the Oracle Solaris server. The package contains the InfiniBand stack, the host drivers, kernel modules, and so on.

These topics provide an overview of the host software package:

- "IPS Package" on page 10
- "IPS Package Commands" on page 11

When the package is installed, it contains additional tools which are installed automatically. You do not need to manually install these tools. The following table describes these additional tools.

Tools	Description
xsadmd	Processes internal messages, user land inputs, and calls appropriate Oracle Solaris utilities as needed.
xstl	Processes internal messages, user land inputs, and calls appropriate Oracle Solaris utilities as needed.
xstn	The transport-layer driver. Binds to each physical IB port available in the server by being a virtual-port service driver (IB-VPPA) in the Oracle Solaris IB framework.
xsvnic	The vNIC module. Provides virtual NIC services.
xsvhba	The vHBA module. Provides virtual HBA services.

Related Information

"Installing Host Drivers" on page 15

IPS Package

The Oracle Solaris host drivers are distributed in the IPS format. This format provides a single package for each architecture (either SPARC or x86) that contains all the required files. Installing the IPS format is similar to using an RPM, but there are some syntax differences in the commands used with IPS packages. IPS packages have the following naming conventions.



Because the Oracle Solaris host drivers support both SPARC and x86 servers, two packages exist (one for each CPU type):

- ORCLovn-5.0.0-SL-sparc.tgz is for SPARC-based servers
- ORCLovn-5.0.0-SL-i386.tgz is for x86-based servers

You need to get the correct type for your servers. After unzipping the .tgz file, the IPS package is visible. You need to install the IPS package.



Caution - If you attempt to install the wrong host drivers for the server's CPU type, there is no validation checking to warn you of the mismatch between the host driver type and the CPU type. However, when you start to install the host drivers and they are incompatible with the CPU type, the host drivers will not actually install. This error is a silent failure, so there is no way to determine that you've hit this issue. Make sure that you install the correct driver type for your server's architecture.

IPS Package Commands

IPS packages are conceptually similar to packages, but IPS packages use a different command syntax for installation and management. You can get a full list of IPS package commands by issuing the <code>ips --help</code> command. The following list shows some common IPS package commands.

```
pkg set-publisher -p IPS-name
pkgrepo -s IPS-name -list
pkg contents path-to-IPS
pkg install path-to-IPS
pkg update path-to-IPS
pkg remove path-to-IPS
pkg unset-publisher IPS-name
```

For information about installing IPS packages, see "Install Host Drivers for Oracle Solaris 11.1 or Oracle Solaris 11.2" on page 16.

Supported Oracle Solaris Distributions

The Oracle Fabric Interconnect supports generally available host software for the following Oracle Solaris distributions on SPARC and x86 platforms:

- Oracle Solaris 11.1
- Oracle Solaris 11.2
- Oracle Solaris 11.3

Note - The host drivers are integrated into the kernel from Oracle Solaris 11.3 onwards.

Note - Oracle Solaris hosts are supported on servers with single-port or dual-port ConnectX-2 QDR HCAs only. The HCAs must be running the supported minimum firmware revision level. For more information, see the release notes that accompany the release.

Be aware that even though i386 typically indicates support for both a 32-bit and 64-bit build, the host drivers are actually built as a 64-bit package. Only 64-bit Oracle Solaris platforms are supported.

These topics provide an overview of the two methods of installation supported by the Oracle Virtual Networking host drivers for Oracle Solaris.

- "Web Repository" on page 12
- "Local Repository" on page 12

The choice of web or local repository depends on your deployment, department policies, and so on

Related information

"Installing Host Drivers" on page 15

Web Repository

Web repository is the location where the published driver package is available through a URL that points to a central server that contains a single image of the latest host drivers. With this method, multiple servers can point to the URL of the web repository, and install the host drivers over the network.

Local Repository

Local repository is the location where the published driver package is placed directly on the Oracle Solaris server's boot device. The host drivers are installed locally from the boot device.

HCA Firmware Upgrades

There are many types of HCA cards, and each has its own firmware version. In most cases, the firmware version is different for single port and dual port cards. By default, the host HCA's firmware and option ROM are not upgraded during a host driver IPS install.

The Oracle Solaris package does not contain any firmware file. You can get the corresponding version of firmware (if needed) by contacting Oracle Support. After the correct firmware file is

downloaded, you can upgrade the HCA firmware natively through the native HCA upgrade tool on each server.

You can upgrade the HCAs through the fwflash tool on the Oracle Solaris host. In addition to upgrading the HCA firmware, fwflash also enables you to query the HCA for available device information. The fwflash tool is available in the Oracle host drivers package. After the host drivers are installed, fwflash is in the /opt/orclovn/bin directory.

Related Information

- "Understanding Oracle Solaris Software Tools" on page 9
- "Installing Host Drivers" on page 15

Install Considerations

Consider the following issues when installing and programming multiple bootable HCAs:

- Memory for loading the option ROM from multiple PCI devices is limited. In some cases, memory depletion might be an issue.
- Different devices and vendors consume different amounts of option ROM space.
- The following adapters can contribute to memory depletion: VGA adapter, SAS or RAID controller, NIC(s), and HCA(s).
- There is a possibility that the BIOS will report an error on certain server models indicating the inability to load the option ROM of some devices.
- Consider using dual port HCA(s) for high availability configurations instead of two single port HCA(s). If enabling two single port HCA(s) is still preferred, it might be necessary to disable the option ROM on some of the other devices in the server (or the HCA devices themselves).

Configuring Oracle Solaris Host Drivers

This section documents how to install the host drivers package for both Oracle Solaris SPARC and x86 servers. Both architectures can make use of the IPS commands documented in this chapter.

During installation, the Oracle Solaris host drivers post many errors to the management console in real-time. As a result, there are no post-install log files that you need to check, and there are no post-install scripts you need to run to clean up after the installation is complete.

These topics describe the procedure to install the host drivers.

- "Installing Host Drivers" on page 15
- "Upgrading the Host Drivers" on page 21
- "Uninstalling the Host Drivers" on page 26

Related Information

- "Preparing for Host Driver Configuration" on page 9
- "Debug Tool: xsigo-support" on page 28

Installing Host Drivers

Before installing the host drivers, you need to install the supported Oracle Solaris OS on the server and you must have root permissions to install the host drivers. After the host driver installation, booting the server is not required as the drivers are immediately loaded into memory.

Note - Starting with Oracle Solaris 11.3, the host drivers are integrated into the kernel. Therefore, the procedure for installing the host drivers for Oracle Solaris 11.3 host varies from the other Oracle Solaris releases. For information, see "Install Host Drivers for Oracle Solaris 11.3" on page 19.

These topics describe the process of uninstalling the host drivers.

"Upgrading the Host Drivers" on page 21

"Uninstalling the Host Drivers" on page 26

Related Information

"Upgrading the Host Drivers" on page 21

▼ Install Host Drivers for Oracle Solaris 11.1 or Oracle Solaris 11.2

You must first download the host driver package to a server. If you are using a web repository, you need to download to the web repository instead of a local drive on each individual server.

- For SPARC-based servers, ORCLovn-5.0.0-SL-sparcv9.tqz is the IPS package.
- For x86-based servers, ORCLovn-5.0.0-SL.i386.tgz is the IPS package.
- 1. Locate the host software, which is typically on Oracle's eDelivery web site.
- 2. Log in to the Oracle Solaris 11.1 server or the Oracle Solaris 11.2 server as a root user.
- 3. Copy the drivers into the server.

If you are using a web repository, then download to a directory on that server.

Note - Driver packages can be placed anywhere in the file system so that the package server user has read access to packages (for example /usr or /oracle). You must not put the file into /opt.

4. Untar the TAR ball by using the tar xvzf command in the directory where you downloaded the host drivers.

This procedure assumes the file was downloaded to the /usr directory.

tar xvzf ORCLovn-5.0-SL-sparcv.tgz

When the package is untarred, the host drivers are contained in the ORCLovn directory. The actual file name of the host driver package is system/io/ORCLovn-drv. Use system/io/ORCLovn-drv when specifying the driver package to upgrade.

5. Set up the publisher by using the pkg set-publisher command and specifying the path to the directory in which the host driver file resides.

For example:

pkg set-publisher -p /usr/ORCLovn

6. Install the host drivers by using the pkg install command and specifying the host driver file name.

For example:

```
pkg install ORCLovn-drv
```

```
Packages to install: 1
           Create boot environment: No
    Create backup boot environment: Yes
                Services to change: 1
DOWNI OAD
                    PKGS
                             FILES
XFER (MB) SPEED
                    1/1
                            19/19
      Completed
1.1/1.1 0B/s
PHASE
                                  ITEMS
                                  45/45
Installing new actions
Updating package state database
                                  Done
Updating image state
                                  Done
Creating fast lookup database
                                  Done
Reading search index
                                  Done
Updating search index
                                  1/1
```

Note - In the example, it is assumed that you are installing the host drivers from a local repository. If you are installing the host drivers from a web repository, you can specify the URL for the location of the file. For example, for a server named drivers you could use https://drivers/system/io/ORCLovn-drv as the URL.

 (Optional) Unset the publisher by using the pkg unset-publisher command and specifying the directory location where the host driver file is located.

For example:

```
pkg unset-publisher /usr/ORCLovn
```

8. Verify that the host drivers are installed by using the pkg list command while grepping for ORCLovn which is a part of the driver file name.

For example:

9. Verify that all cabling is complete and correct.

If the physical layer connectivity is not functional, the nodes might not come online correctly.

10. Reboot the server by using any of the following commands:

- reboot --rv
- shutdown -y -g0 -i6
- 11. Allow the server to completely reboot, log in again as a root user, and confirm that the service is running.

```
> svcs xsadmd
STATE STIME FMRI
online 11:10:35 svc:/application/xsadmd:default
```

12. Display all the installed software and dependencies by issuing the modinfo command and grepping for xs to find the installed software components.

For example:

```
modinfo | grep xs

170 7b246000 66f0 285 1 xstn (Xsigo Transport nexus driver v1)

171 7b24e000 1e060 - 1 xstl (Xsigo Transport services v0.2)

174 7b2a0000 f510 286 1 xsvnic (Xsvnic GLDv3 Driver)

181 7b2b0000 309b0 287 1 xsvhba (Xsigo Virtual HBA)
```

- Verify that the attachment points and XSTN nodes are up and running on the Oracle Solaris host.
 - The host's HCA is up and connected.
 - The host's IB fabric is running.
 - The InfiniBand port link is connected to the Oracle Fabric Interconnect. Oracle Virtual Networking uses the InfiniBand port as a transport medium to the server.
 - Related IB services are connected.

The bold text in the following example highlights the HCA and IB functionality that should be verified.

```
> cfgadm -a
Ap Id
                                         Receptacle
                                                                     Condition
                             Type
                                                        Occupant 0
                                         connected configured connected configured
c2
                             scsi-sas
                                                       configured
                                                                    unknown
c2::dsk/c2t6d0
                            CD - ROM
                                                                    unknown
                            scsi-sas
                                         connected
c4
                                                       configured
                                                                    unknown
c4::w5000cca03c59d0c9,0
                            disk-path connected
                                                       configured
                                                                    unknown
c5
                            scsi-sas
                                         connected
                                                        unconfigured unknown
с6
                             scsi-sas
                                         connected
                                                        configured
                                                                    unknown
                            disk-path
c6::w5000cca03c59acd9,0
                                         connected
                                                        configured
                                                                    unknown
с7
                             scsi-sas
                                         connected
                                                        unconfigured unknown
hca:21280001CF8382
                            IB-HCA
                                         connected
                                                        configured
                                         connected
                             IB-Fabric
                                                        configured
ib
                                                                    ok
ib::21280001CF8383,0,ipib
                            IB-PORT
                                         connected
                                                        configured
                                                                    ok
ib::21280001CF8383,ffff,xstn IB-VPPA
                                         connected
                                                        configured
                                                                    ok
ib::21280001CF8384,0,ipib
                            IB-PORT
                                         connected
                                                        configured
                                                                     ok
ib::21280001CF8384,ffff,xstn IB-VPPA
                                         connected
                                                        configured
```

ib::daplt,0	IB-PSEUDO	connected	configured	ok
ib::eibnx,0	IB-PSEUDO	connected	configured	ok
ib::iser.0	IB-PSEUDO	connected	configured	ok
· · · · · · · · · · · · · · · · · · ·	IB-PSEUDO	connected	_	ok
ib::rdsib,0			configured	
ib::rdsv3,0	IB-PSEUDO	connected	configured	ok
ib::rpcib,0	IB-PSEUDO	connected	configured	ok
ib::sol_umad,0	IB-PSEUDO	connected	configured	ok
ib::sol_uverbs,0	IB-PSEUDO	connected	configured	ok
usb0/1	unknown	empty	unconfigured	
usb0/2	unknown	empty	unconfigured	ok
usb0/3	unknown	empty	unconfigured	ok
usb1/1	unknown	empty	unconfigured	ok
usb1/2	unknown	empty	unconfigured	ok
usb2/1	unknown	empty	unconfigured	ok
usb2/2	usb-hub	connected	configured	ok
usb2/2.1	unknown	empty	unconfigured	ok
usb2/2.2	unknown	empty	unconfigured	ok
usb2/2.3	usb-hub	connected	configured	ok
usb2/2.3.1	unknown	empty	unconfigured	ok
usb2/2.3.2	usb-storage	connected	configured	ok
usb2/2.3.3	unknown	empty	unconfigured	ok
usb2/2.4	usb-device	connected	configured	ok
usb2/3	unknown	empty	unconfigured	ok
usb2/4	usb-hub	connected	configured	ok
usb2/4.1	unknown	empty	unconfigured	ok
usb2/4.2	unknown	empty	unconfigured	ok
usb2/4.3	unknown	empty	unconfigured	ok
usb2/4.4	unknown	empty	unconfigured	ok
usb2/5	unknown	empty	unconfigured	
			J	

▼ Install Host Drivers for Oracle Solaris 11.3

Before configuring the host drivers, you must determine if the minimum requirements are fulfilled.

- The Oracle Solaris hosts must have at least one dual-port Oracle ConnectX2 QDR HCA.
- The HCA installed in the host must be running the firmware version 2.11.x or more.
- You must have root permissions on the Oracle Solaris host.

1. Set the publisher to the Oracle Solaris repository.

2. Install the ovn-virtual-io package.

```
root@netra:~# pkg install ovn-virtual-io
Packages to install: 1
Services to change: 2
Create boot environment: No
Create backup boot environment: Yes
```

PKGS	FILES	XFER (MB)	SPEED
1/1	12/12	0.3/0.3	0B/s
ITEMS			
45/45			
Done			
0/0			
Done			
Done			
4/4			
	1/1 ITEMS 45/45 Done 0/0 Done Done	1/1 12/12 ITEMS 45/45 Done 0/0 Done Done	1/1 12/12 0.3/0.3 ITEMS 45/45 Done 0/0 Done Done

3. Verify that the service is available.

4. Reboot the server.

The server is visible on the Oracle Virtual Networking chassis.

- 5. (For servers running Veritas DMP) Edit the /etc/system file.
 - For Veritas DMP running on SPARC T5 or SPARC M5 series servers:
 - a. Open the /etc/system file for editing.
 - b. Before the Veritas vxvm entry, add the following line:

forceload:drv/ib

- c. Save and close /etc/system.
- d. Reboot the server.
- **■** For Veritas DMP running on EMC:
 - a. In the /etc/system file, find the ZFS lines, and add the following:

```
set zfs:zfs_vdev_enable_mvector=0
```

- b. Save and close /etc/system.
- c. Reboot the server.

After the packages are added, you can configure vNICs and vHBAs. Refer to the *Oracle Virtual Networking XgOS User's Guide*.

Upgrading the Host Drivers

If you have a previous version of Oracle Virtual Networking host drivers for Oracle Solaris installed on your server, you can upgrade to a newer version by using the pkg update command. You need to have root access on the Oracle Solaris server to upgrade the host drivers.

During the upgrade, the Oracle Solaris host drivers post many errors to the management console in real-time. As a result, you do not need to run any log files or post-install scripts to clean up after the upgrade is complete.

Note - Starting with Oracle Solaris 11.3, the host drivers are integrated into the kernel. So, you cannot upgrade the host drivers from Oracle Solaris 11.2. You will have to uninstall the existing host drivers and install the host drivers for Oracle Solaris 11.3. For information, see "Upgrade Host Drivers for Oracle Solaris 11.3" on page 25.

These topics explain how to upgrade your Oracle Solaris host drivers.

- "Upgrade the Host Drivers" on page 21
- "Upgrade Host Drivers for Oracle Solaris 11.3" on page 25

Related Information

- "Installing Host Drivers" on page 15
- "Uninstalling the Host Drivers" on page 26

Upgrade the Host Drivers

To upgrade the host drivers, follow the procedure which assumes an IPS package.

- 1. Locate the host software, which is typically on Oracle's eDelivery website.
- 2. Log in to the Oracle Solaris server as a root user.
- 3. Copy the drivers into the server.

These packages can go anywhere in the file system (for example, the root, /tmp or /oracle).

Note - If you are using a web repository, download the files to a directory on that server instead of the local hard drive on each individual server.

4. Untar the TAR ball by using the tar xvzf command in whichever directory contains the file. This procedure assumes that the file was downloaded to the /usr directory.

For example:

```
tar xvzf ORCLovn-5.0.0-SL-sparcv9.tgz
```

When the package is untarred, the host drivers are contained in the ORCLovn directory. The actual file name of the host driver package is system/io/ORCLovn-drv. Use system/io/ORCLovn-drv when specifying the driver package to upgrade.

5. Set up the publisher by using the pkg set-publisher command and specifying the path to the directory in which the host driver file resides.

For example:

```
pkg set-publisher -p/usr/ORCLovn
```

6. Upgrade the host drivers by using the pkg update command and specifying the host driver file name.

For example:

pkg update /usr/ORCLovn system/io/ORCLovn-drv

Packages to install: 1

Create boot environment: No

Create backup boot environment: Yes

Services to change: 1

DOWNLOAD	PKGS	FILES
XFER (MB) SPEED		
Completed		
1.1/1.1 0 B/s	1/1	19/19
PHASE	ITEMS	
Installing new actions	45/45	
Updating package state database	Done	
Updating image state	Done	
Creating fast lookup database	Done	
Reading search index	Done	
Updating search index	1/1	

Note - This step assumes you are upgrading the host drivers from a local repository. If you are upgrading the host drivers from a web repository, you can specify the URL for the location of the file. For example, http://drivers/system/io/ORCLovn-drv for a server named drivers.

7. (Optional) Unset the publisher by using the pkg unset-publisher command and specifying the directory location where the host driver file is located.

For example:

pkg unset-publisher /usr/ORCLovn

8. Verify that all cabling is complete and correct.

If the physical layer connectivity is not functional, the nodes might not come online correctly after the server is rebooted.

- 9. You can reboot the server by using any of the following commands:
 - reboot --rv
 - shutdown -y -g0 -ib
- 10. Allow the server to completely reboot, then log back in as root.
- 11. Verify that the upgraded version of host drivers is installed by issuing the pkg list command while grepping for ORCLovn-drv which is a part of the driver file name.

For example:

12. Confirm that the service is running:

```
> svcs xsadmd
STATE STIME FMRI
online 11:10:35 svc:/application/xsadmd:default
```

13. Display all the upgraded software and dependencies are installed by issuing the modinfo command and grepping for xs to find the installed software components.

For example:

```
      modinfo | grep xs

      170 7b246000 66f0 285 1 xstn (Xsigo Transport nexus driver v1)

      171 7b24e000 1e060 - 1 xstl (Xsigo Transport services v0.2)

      174 7b2a0000 f510 286 1 xsvnic (Xsvnic GLDv3 Driver)

      181 7b2b0000 309b0 287 1 xsvhba (Xsigo Virtual HBA)
```

- 14. Verify that the attachment points and XSTN nodes are up and running on the Oracle Solaris host:
 - The host's HCA should be up and connected.
 - The host's IB fabric should be running.
 - The InfiniBand port link should be connected to the Oracle Fabric Interconnect. Oracle's Virtual Networking uses the InfiniBand port as a transport medium to the server.
 - Related IB services should be connected.

The bold text in the following example highlights the HCA and IB functionality that should be verified.

> cfgadm -a				
Ap_Id	Type	Receptacle	Occupant	Condition
c2	scsi-sas	connected	configured	unknown
c2::dsk/c2t6d0	CD - ROM	connected	configured	unknown
c4	scsi-sas	connected	configured	unknown
c4::w5000cca03c59d0c9,0	disk-path	connected	configured	unknown
c5	scsi-sas	connected	unconfigured	unknown
c6	scsi-sas	connected	configured	unknown
c6::w5000cca03c59acd9,0	disk-path	connected	configured	unknown
c7	scsi-sas	connected	unconfigured	unknown
hca:21280001CF8382	IB-HCA	connected	configured	ok
ib	IB-Fabric	connected	configured	ok
ib::21280001CF8383,0,ipib	IB-PORT	connected	configured	ok
ib::21280001CF8383,ffff,xstn	IB-VPPA	connected	configured	ok
ib::21280001CF8384,0,ipib	IB-PORT	connected	configured	ok
ib::21280001CF8384,ffff,xstn	IB-VPPA	connected	configured	ok
ib::daplt,0	IB-PSEUDO	connected	configured	ok
ib::eibnx,0	IB-PSEUDO	connected	configured	ok
ib::iser,0	IB-PSEUDO	connected	configured	ok
ib::rdsib,0	IB-PSEUDO	connected	configured	ok
ib::rdsv3,0	IB-PSEUDO	connected	configured	ok
ib::rpcib,0	IB-PSEUDO	connected	configured	ok
ib::sol_umad,0	IB-PSEUDO	connected	configured	ok
ib::sol_uverbs,0	IB-PSEUDO	connected	configured	ok
usb0/1	unknown	empty	unconfigured	ok
usb0/2	unknown	empty	unconfigured	ok
usb0/3	unknown	empty	unconfigured	ok
usb1/1	unknown	empty	unconfigured	ok
usb1/2	unknown	empty	unconfigured	ok
usb2/1	unknown	empty	unconfigured	ok
usb2/2	usb-hub	connected	configured	ok
usb2/2.1	unknown	empty	unconfigured	ok
usb2/2.2	unknown	empty	unconfigured	ok
usb2/2.3	usb-hub	connected	configured	ok
usb2/2.3.1	unknown	empty	unconfigured	ok
usb2/2.3.2	usb-storage	connected	configured	ok
usb2/2.3.3	unknown	empty	unconfigured	ok
usb2/2.4	usb-device	connected	configured	ok
usb2/3	unknown	empty	unconfigured	ok
usb2/4	usb-hub	connected	configured	ok
usb2/4.1	unknown	empty	unconfigured	ok
usb2/4.2	unknown	empty	unconfigured	ok
usb2/4.3	unknown	empty	unconfigured	ok
usb2/4.4	unknown	empty	unconfigured	ok
usb2/5	unknown	empty	unconfigured	ok

▼ Upgrade Host Drivers for Oracle Solaris 11.3

When you upgrade your host from Oracle Solaris 11.2 to Oracle Solaris 11.3, you must uninstall the existing host drivers and then reinstall them.

Before upgrading the host drivers, you must determine if the minimum requirements are fulfilled.

- The Oracle Solaris hosts must have at least one dual-port Oracle ConnectX2 QDR HCA.
- The HCA installed in the host must be running the firmware version 2.11.x or more.
- You must have root permissions on the Oracle Solaris host.
- 1. Halt all network and storage traffic.

For example, set the interfaces to down state, and wait for network and storage traffic to quiesce.

 Unset the publisher by using the pkg unset-publisher command and specifying the directory where the host driver file exists.

```
root@netra:~# pkg unset-publisher /usr/ORCLovn
```

where *usr* is the user-defined location.

3. Remove the currently installed host drivers by using the pkg uninstall command and specifying the host driver file name.

```
root@netra:~# pkg uninstall ORCLovn-drv
```

- 4. Reboot the Oracle Solaris server to clear the host drivers from memory.
- Set the Oracle Solaris publisher to point to the new Oracle Solaris OS image packaging system (IPS) repository for updating.

```
root@netra:~# pkg set-publisher -g http://pkg.oracle.com/solaris/release
```

6. Update the system to the new version of the Oracle Solaris 11.3 OS.

```
root@netra:~# pkg update --accept
```

- 7. Reboot the Oracle Solaris host.
- 8. Install the host drivers.

See "Install Host Drivers for Oracle Solaris 11.3" on page 19.

Uninstalling the Host Drivers

If Oracle Virtual Networking host drivers for Oracle Solaris are installed, and you need to completely uninstall them, you can do so by using the pkg remove command. When you remove the host drivers, all Oracle Virtual Networking functionality is no longer supported on the Oracle Solaris server.

Note - Starting with Oracle Solaris 11.3, the host drivers are integrated into the kernel. Therefore, the procedure for uninstalling the host drivers for Oracle Solaris 11.3 host varies from the other Oracle Solaris releases. For information, see "Install Host Drivers for Oracle Solaris 11.3" on page 19.

These topics describe the process of uninstalling the host drivers.

- "Uninstall Host Drivers for Oracle Solaris 11.1 or Oracle Solaris 11.2" on page 26
- "Uninstall Host Drivers for Oracle Solaris 11.3" on page 28

Related Information

- "Installing Host Drivers" on page 15
- "Upgrading the Host Drivers" on page 21

▼ Uninstall Host Drivers for Oracle Solaris 11.1 or Oracle Solaris 11.2

When you uninstall the host drivers, Oracle Virtual Networking functionality is no longer supported. The underlying Oracle Solaris OS is not affected. Also, note that unistalling the host drivers requires a reboot to purge the host drivers from memory.

Halt all network and storage traffic.

For example, set the interfaces to down state, and wait for network and storage traffic to quiesce.

 Unset the publisher by using the pkg unset-publisher command and specifying the directory where the host driver file exists.

For example:

pkg unset-publisher /usr/ORCLovn

3. Remove the currently installed host drivers by using the pkg uninstall command and specifying the host driver file name.

For example:

pkg uninstall ORCLovn-drv

4. Verify that all cabling is complete and correct.

If the physical layer connectivity is not functional, the nodes might not come online correctly after the server is rebooted.

- 5. You can reboot the server to clear the host drivers from memory by using any of the following commands:
 - reboot --rv
 - shutdown -y -g0 -ib
- 6. Allow the server to completely reboot, then log in again ads a root user.
- 7. Check that no host drivers are installed by issuing the pkg list command while grepping for ORCLovn-drv which is part of the driver file name.

For example:

pkg list|grep ORCLovn-drv

This command should return nothing. The absence of command output indicates that no host drivers are installed.

8. Check that none of the Oracle Virtual Networking services are running.

For example:

svcs xsadmd
STATE STIME FMRI

This command should return nothing. The absence of command output indicates that no host drivers are installed.

9. Check that no Oracle Virtual Networking software or dependencies are installed by issuing the modinfo command and grepping for xs.

For example:

modinfo | grep xs

This command should return nothing. The absence of command output indicates that no host drivers are installed.

▼ Uninstall Host Drivers for Oracle Solaris 11.3

1. Uninstall the drivers from the server.

	ITEMS
old actions	32/32
package state database	Done
package cache	1/1
image state	Done
fast lookup database	Done
package cache	4/4
	package state database package cache image state fast lookup database

A clone of sol_83_2 exists and has been updated and activated. On the next boot the Boot Environment sol_83_2-1 will be mounted on '/'. Reboot when ready to switch to this updated BE.

Updating package cache

2. A new boot environment is created.

After reboot the server will be booted into the new BE.

3. Ensure that the service is not present after reboot.

```
root@netra6:~# svcs -a | grep ovn-virtual
root@netra6:~#
```

For installing the Oracle Solaris 11.3 host drivers, see "Install Host Drivers for Oracle Solaris 11.3" on page 19.

4/4

Debug Tool: xsigo-support

For Oracle Solaris 11.1 and Oracle Solaris 11.2, Oracle Virtual Networking host drivers have a debug tool called xsigo-support. This script collects and dumps information for monitoring and troubleshooting your host-software installation. Oracle collects this information for debugging, or asks you to run the tool to gather the information and then send it to Oracle Technical Support. The xsigo-support script resides on the host server at this location:

/opt/orclovn/bin/xsigo-support

Note - xsigo-support tool does not support sending output to an output file (the -o < filename > argument).

As a result, if you are requested to send output of the xsigo-support script to Oracle Technical Support, you will need to put the output into a file before forwarding it to Oracle Technical Support.

Because the output of the xsigo-support script is usually large, it can scroll off the console screen. You can pipe the output to "more" to get more manageable amounts of output.

Use the --help suffix to display the keyword options:

```
./xsigo-support --help
```

By default, the xsigo-support script output is sent to a bzip2 file, which is a tarred file with the .bz2 extension.

For example:

/opt/orclovn/bin/xsigo-support

```
Creating Xsigo support package ./xsigo-support-sparc2-2013-03-13--09.55.09.tar.bz2 Done
```

Unzipping the bz2 file shows the individual files that are collected while the xsigo-support script runs.

Note - Unzipping the file is not required, and you should not do it when sending the xsigo-support script output to Oracle Support. The contents of the xsigo-support script are provided here only for illustrative purposes.

```
bzip2 -d xsigo-support-sparc2-2013-03-xsigo-support-sparc2-2013-03-08--
10.59.49.tar.bz2
xsigo-support-sparc2-2013-03-13--09.55.09.tar.bz2
root@sparc2:~# tar xvf
xsigo-support-sparc2-2013-03-13--09.55.09.tar.bz2
x xsigo-support-sparc2-2013-03-13--09.55.09, 0 bytes, 0 tape blocks x xsigosupport-
sparc2-2013-03-13--09.55.09/etc, 0 bytes, 0 tape blocks x xsigo-supportsparc2-
2013-03-13--09.55.09/etc/path_to_inst.txt, 7099 bytes, 14 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/etc/release.txt, 220 bytes, 1 tape
blocks x xsigo-support-sparc2-2013-03-13--09.55.09/etc/name_to_major.txt, 2751
bytes, 6 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/etc/driver aliases.txt, 14717
bytes, 29 tape blocks
x xsiqo-support-sparc2-2013-03-13--09.55.09/etc/system.txt, 1946 bytes, 4 tape
blocks x xsigo-support-sparc2-2013-03-13--09.55.09/var, 0 bytes, 0 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/var/log, 0 bytes, 0 tape blocks x
xsigo-support-sparc2-2013-03-13--09.55.09/var/log/xsadmd.log, 101776 bytes, 199
tape blocks
```

```
x xsigo-support-sparc2-2013-03-13--09.55.09/var/crash, 0 bytes, 0 tape blocks x
xsigo-support-sparc2-2013-03-13--09.55.09/var/crash/mdb-stackregs-0.txt, 3673
bytes, 8 tape blocks
x xsiqo-support-sparc2-2013-03-13--09.55.09/var/crash/mdb-msqbuf-0.txt, 17712
bytes, 35 tape blocks x xsigo-support-sparc2-2013-03-13--
09.55.09/var/crash/mdb-system-0.txt, 128 bytes, 1 tape blocks x xsigo-supportsparc2-
2013-03-13--09.55.09/var/crash/mdb-panicinfo-0.txt, 1033 bytes, 3 tape
blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/var/adm, \emptyset bytes, \emptyset tape blocks x
xsigo-support-sparc2-2013-03-13--09.55.09/var/adm/messages.0, 108822711 bytes,
212545 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/var/adm/messages.1, 1556288980
bytes, 3039627 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/var/adm/messages, 39325 bytes, 77
tape blocks x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds, 0 bytes, 0
tape blocks x xsiqo-support-sparc2-2013-03-13--09.55.09/xsiqo-cmds/svcs.txt,
7318 bytes, 15 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/threadlist-v.txt, 320083
bytes, 626 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/kstat-m-xsvhba.txt,
32 bytes, 1 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/mdb-k.txt, 84 bytes, 1
tape blocks x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/pkglist.
txt, 36418 bytes, 72 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/dladm-show-link.txt, 573
bytes, 2 tape blocks
x xsiqo-support-sparc2-2013-03-13--09.55.09/xsiqo-cmds/ps-e.txt, 94 bytes, 1
tape blocks x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/isainfok.
txt, 35 bytes, 1 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/iostat.txt, 1293 bytes,
3 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/top.txt,
12532 bytes, 25 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/dladm-show-phys.txt, 830
bytes, 2 tape blocks
x xsiqo-support-sparc2-2013-03-13--09.55.09/xsiqo-cmds/scanpci-v.txt,
17247 bytes, 34 tape blocks
x xsiqo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/prtconf-Dv.txt,
185977 bytes, 364 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/kstat-m-sd.txt,
8241 bytes, 17 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/ifconfig-a.txt,
1431 bytes, 3 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/vmstat.txt,
1293 bytes, 3 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/modinfo.txt,
15753 bytes, 31 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/cfgadm-a.txt,
3285 bytes, 7 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/svcs-xv.txt,
25 bytes, 1 tape blocks
```

```
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/kstat-m-xsvnic.txt,
32 bytes, 1 tape blocks
x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/ipadm.txt,
1326 bytes, 3 tape blocks
Sample contents of xsigo-supportand related comments follow.
The output of pkginfo -1 displays a listing of installed packages:
Output of 'pkginfo -l' -->
PKGINST: ORCLovnk
NAME: Xsigo Virtual IO drivers
CATEGORY: system
ARCH: i386
VERSION: 5.0.0-SL
BASEDIR: /
VENDOR: Oracle Corp.
DESC: Xsigo Virtual Adapter Drivers
PSTAMP: solbuild0120090918093550
INSTDATE: Sep 18 2009 10:05
HOTLINE: Please contact Oracle representative
EMAIL: support@oracle.com
STATUS: completely installed
FILES: 12 installed pathnames
        5 shared pathnames
        5 directories
           4 executables
           4080 blocks used (approx)
PKGINST: ORCLovnu
NAME: Oracle Virtual IO Applications
CATEGORY: application
ARCH: i386
VERSION: 5.0.0-SL
BASEDIR: /
VENDOR: Oracle Corp.
DESC: Xsigo Virtual Adapter Applications
PSTAMP: solbuild0120090918093551
INSTDATE: Sep 18 2009 10:05
HOTLINE: Please contact Oracle representative
EMAIL: support@oracle.com
STATUS: completely installed
FILES:
           21 installed pathnames
           1 shared pathnames
            8 directories
            8 executables
            9668 blocks used (approx)
```

x xsigo-support-sparc2-2013-03-13--09.55.09/xsigo-cmds/pkginfo-l.txt,

149335 bytes, 292 tape blocks

See the output of modinfo for IB and Oracle virtual resource information.

The following output is displayed for InfiniBand information modules:

```
...

86 ffffffffefcc8000 ba20 7 1 ib (IB nexus 1.28)

87 ffffffffefcd4000 a6b0 - 1 ibdm (InfiniBand Device Manager 1.26)

88 ffffffffefcdf000 11748 - 1 ibtl (IB Transport Layer v1.14)

89 ffffffffefcf0000 69b68 - 1 ibmf (IB Agent Interfaces 2.0)

90 fffffffffefd3a000 74468 8 1 hermon (ConnectX IB Driver)
```

The following output is displayed for Oracle virtual resource modules:

```
...

162 fffffffff012b000 3a80 227 1 xstn (Xsigo Transport nexus driver v1)

163 ffffffffefc54920 848 22 1 sy (Indirect driver for tty 'sy' 1.)

165 fffffffff08d2000 6c72f0 34 1 nvidia (nvidia Sep 19 2007 16:12:36)

167 ffffffff0598000 f7f0 - 1 xstl (Xsigo Transport services v0.2)

...

226 fffffffff0813000 15858 229 1 xsvhba (Xsigo Virtual HBA)

...

238 ffffffffefed2000 67d8 228 1 xsvnic (Xsvnic GLDv3 Driver)
```

The following additional InfiniBand port information is present:

```
Output of 'cfgadm -a | grep IB-VPPA' -->
ib::24E89097FEE21D,fffff,ipib IB-VPPA connected configured ok
ib::24E89097FEE21D,fffff,xstn IB-VPPA connected configured ok
ib::24E89097FEE21E,fffff,ipib IB-VPPA connected configured ok
ib::24E89097FEE21E,fffff,xstn IB-VPPA connected configured ok
```

Firmware version and additional device information is available for the HCA(s) in the host:

```
Output of 'cxflash -l' -->
List of available devices:
Device[0], /devices/pci@0,0/pci8086,3410@9/pci15b3,673c@0:devctl
    Class [IB]
        GUID: System Image - 0024e89097fee21f
            Node Image - 0024e89097fee21c
            Port 1 - 0024e89097fee21d
            Port 2 - 0024e89097fee21e
        Firmware revision : 2.7.0000
        No HW information available
```

This information shows a dual port HCA is installed, and the HCA is running the supported version of firmware.

The kernel log shows the buffer information being dumped by different drivers.

 ${f Note}$ - The following example displays all the dmesg output, but you can refine the display by grepping for Xsigo components.

> dmesg

```
Thu Sep 24 15:29:51 PDT 2009

Sep 24 13:44:41 snarf xsvhba: [ID 824248 kern.notice] NOTICE: <vhba vh4> xsvhba_delayed_connect: Retrying DATA Connect

Sep 24 13:44:41 snarf xsvhba: [ID 461420 kern.notice] NOTICE: <vhba vh4> xsvhba_delayed_connect: Connect failed. rval: 13, handle : ffffffffa925e980

Sep 24 13:44:41 snarf xsvhba: [ID 744828 kern.notice] NOTICE: <vhba vh4> xsvhba_chan_state_change: DATA:XSTL_CHAN_STATE_DISCONNECTED

Sep 24 13:44:41 snarf xsvhba: [ID 440485 kern.warning] WARNING: <vhba vh4> xsvhba_send_xcm_msg: xstl_chan_write failed: rlen = -8

Sep 24 13:44:42 snarf xsvhba: [ID 824248 kern.notice] NOTICE: <vhba vh6> xsvhba_delayed_connect: Retrying DATA Connect

Sep 24 13:44:42 snarf xsvhba: [ID 461420 kern.notice] NOTICE: <vhba vh6> xsvhba_delayed_connect: Connect failed. rval: 13, handle : ffffffffa92589c0

Sep 24 13:44:42 snarf xsvhba: [ID 744828 kern.notice] NOTICE: <vhba vh6> xsvhba_chan_state_change: DATA:XSTL_CHAN_STATE_DISCONNECTED

...
```

Displaying kernel log information for a specific Oracle component (in this case XSTN):

> dmesq | grep xstn

```
Oct 26 09:15:12 snarf xstn: [ID 835877 kern.notice] NOTICE: xstn1: xcm channel state change to 2 on rec 1
Oct 26 10:34:24 snarf xstn: [ID 835877 kern.notice] NOTICE: xstn0: xcm channel state change to 16 on rec 0
Oct 26 10:37:37 snarf xstn: [ID 835877 kern.notice] NOTICE: xstn0: xcm channel state change to 2 on rec 0
```

All the current Oracle processes are displayed:

```
Output of 'svcs xsadmd' -->
STATE
              STIME FMRI
online
               17:21:30 svc:/application/xsadmd:default
Network device information:
Output of 'ifconfig -a' -->
lo0: flags=2001000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4,VIRTUAL> mtu 8232
index 1
        inet 127.0.0.1 netmask ff000000
bnx0: flags=201004843<UP,BROADCAST,RUNNING,MULTICAST,DHCP,IPv4,CoS> mtu 1500
index 2
        inet 192.168.10.191 netmask fffff800 broadcast 192.168.15.255
        ether 0:23:ae:fd:80:d4
xsvnic2: flags=201000842<BROADCAST,RUNNING,MULTICAST,IPv4,CoS> mtu 1500 index 3
        inet 0.0.0.0 netmask 0
        ether 0:13:97:2:50:8f
```

The bnx0 device is the physical NIC in the host. The xsvnix2 is the Oracle virtual NIC.

Currently loaded Oracle host drivers:

• For general information, use the output of **pkginfo** while grepping for XSIGO.

This is case sensitive.

> pkgrepoinfo | grep XSIGO

system ORCLovnk Xsigo Virtual IO drivers application ORCLovnu Xsigo Virtual IO Applications

• For more detailed information, use the output of **pkginfo** for the currently installed driver. For example, to show a detailed listing of a named package that was completely installed.

> pkginfo -il ORCLovnu

PKGINST: ORCLovnu

NAME: Oracle Virtual Networking Applications

CATEGORY: application

ARCH: i386
VERSION: 5.0.0-SL
BASEDIR: /

VENDOR: Oracle

DESC: Oracle Virtual Network Adapter Applications

PSTAMP: solbuild0120090918093551

INSTDATE: Sep 18 2012 10:05

HOTLINE: Please contact Oracle representative

9668 blocks used (approx)

Oracle service modules are loaded and running:

Output of svcs xsadmd--> STATE STIME FMRI

online 17:21:30 svc:/application/xsadmd:default

You can also check console messages in /var/adm/messages:

```
> vi /var/adm/messages
```

```
"/var/adm/messages" 13847 lines, 1833733 characters
```

Oct 20 03:10:01 snarf syslogd: line 24: WARNING: loghost could not be resolv ed

Oct 20 12:46:17 snarf e1000g: [ID 801725 kern.info] NOTICE: pciex8086,108c -

e1000g[0] : link down

Oct 20 12:46:36 snarf e1000g: [ID 801725 kern.info] NOTICE: pciex8086,108c -

e1000g[0] : link up, 100 Mbps, full duplex

Oct 20 12:46:36 snarf /sbin/dhcpagent[44]: [ID 967406 daemon.warning] refres

hing state on e1000g0

```
Oct 20 12:46:37 snarf /sbin/dhcpagent[44]: [ID 778557 daemon.warning] config ure_v4_lease: no IP broadcast specified for e1000g0, making best guess Oct 21 12:59:34 snarf xstn: [ID 835877 kern.notice] NOTICE: xstn0: xcm chann el state change to 16 on rec 0
```

Related Information

• "Install Host Drivers for Oracle Solaris 11.1 or Oracle Solaris 11.2" on page 16

Glossary

HCA Host channel adapter.

Host Host is the part of the server module that works with the CPU and other hardware to run the OS

and other applications.

IB-VPPA IB virtual physical point of attachment.

IPS Image packaging system.

LUN Logical unit number.

Option ROM Option ROM contains a small footprint of the Oracle Virtual Networking drivers that is needed

to bring up the vNIC's and vHBA's at remote boot time.

Oracle Fabric The Oracle Virtual Networking directors that connect the InfiniBand to the hosts and virtualize

Interconnect their I/O.

VHBA Virtual host bus adapter.

VNIC Virtual network interface controller.

XgOS XgOS is the operating system that works on the Oracle Fabric Interconnect.

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