Oracle® Virtual Networking
Host Drivers for Oracle Solaris 11.2

Product Notes

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Contents

Using This Documentation

This document provides information about Oracle Virtual Networking host drivers release 5.5.0, which is the first release to support the Oracle Solaris 11.2 operating system (OS).

Related Documentation

Documentation	Link
All Oracle products	http://www.oracle.com/documentation
Oracle Virtual Networking documentation	http://www.oracle.com/goto/ORACLE-VIRTUAL-NETWORKING/docs
Oracle Solaris 11 OS	http://www.oracle.com/goto/Solaris11/docs
Oracle VM Server for SPARC	http://www.oracle.com/goto/vm-sparc/docs
Oracle VM Server for x86	http://www.oracle.com/technetwork/documentation/vm-096300.html

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Late-Breaking Information

These topics provide important information and late-breaking news about the Oracle Virtual Networking host drivers release 5.5.0 for the Oracle Solaris 11.2 OS.

What's New in This Release

- Release 5.5.0 is the first release of Oracle Virtual Networking host drivers to support the Oracle Solaris 11.2 OS. Oracle Solaris 11.2 hosts running Oracle Virtual Networking can support only local boot in this release, so SAN Boot, iSCSI Boot, and PXE Boot are not supported.
- Support for Oracle SDN. In this release of host drivers, Private Virtual Interface (PVI) vNICs are supported to take advantage of high-speed server-to-server connections for "east-west" traffic. The PVI functionality is embedded in the host-driver package, so no additional software is required.

- Support for MAC Rings. MAC Rings enable multiple threads to consume traffic from multiple connections, which results in an increase to overall throughput. In addition, with more crossbow vNICs created on an aggregation interface, performance is improved. For information about controlling MAC Rings, see "MAC Ring Support" on page 5.
- Support for HBA LUN commands. See "Documentation Issues" on page 17.

Minimum Requirements

Software	Release 5.5.0
Oracle Virtual Networking Host Drivers	5.5.0–S11.2
Oracle Solaris OS (64-bit SPARC-based and Sun x86 platforms)	Oracle Solaris 11.2 OS
XgOS	3.9.2
Oracle VM Server for SPARC	3.0
Oracle VM Server for X86	3.0

Supported HCAs

This host driver release supports Oracle HCAs as well as third-party manufacturers' HCAs with the requirement that the HCAs use the required version of firmware. Refer to the HCA's product notes for latest firmware versions.

Supported Oracle HCAs include:

- Sun InfiniBand Dual Port 4x QDR PCIe Low Profile Host Channel Adapter M2. Refer to `http://docs.oracle.com/cd/E19241-01/index.html` for documentation.
- Sun InfiniBand Dual Port 4x QDR PCIe ExpressModule Host Channel Adapter M2. Refer to `http://docs.oracle.com/cd/E19157-01/index.html` for documentation.
- Oracle Dual Port QDR InfiniBand Adapter M3. Refer to `http://docs.oracle.com/cd/E40985_01/index.html` for documentation.

For third-party HCAs, consult the manufacturer's documentation for the required firmware version.

System Limitations and Restrictions

These topics document system limitations and restrictions for host driver release 5.5.0.

LACP Is Not Supported

Link Aggregation Control Protocol (LACP) is not supported in this release of host drivers. If your servers require link aggregation, use static LAGs instead.

Virtual Resources Supported per Oracle Solaris Server

vNIC support:

- A maximum of 16 vNICs, which can be 8 vNICs and 8 PVI vNICs (typical configuration), 16 vNICs and 0 PVI vNICs, or 0 vNICs and 16 PVI vNICs.
- HA vNICs are not supported from the Oracle Fabric Interconnect. However, server-based HA vNICs are available natively though the IPMP on the Oracle Solaris server.

vHBA support:

- A maximum of eight standalone vHBAs is allowed.

A vNIC or vHBA Cannot Be Deleted if It Is Part of an LDom or Oracle Solaris Zone

Currently, a vNIC or vHBA cannot be deleted from an Oracle Solaris host if that vNIC or vHBA is part of an Oracle Solaris LDom or zone. Instead, to delete a vNIC or vHBA that is in an online zone or LDom, you must first disassociate the vNIC or vHBA from the zone or LDom, then delete the vNIC or vHBA.

Naming Guidelines for Oracle Solaris vNICs and vHBAs

The host drivers do not support creation of a vNIC and vHBA with the same name. When you create a vNIC or vHBA, the two names must be different.

In the Oracle Solaris OS, the names of virtual resources are restricted to the following lengths:

- vNICs: 10 characters
- vHBAs: 15 characters
- Server profiles: 31 characters

With the Oracle Solaris OS, use the standard Oracle notation to name vNICs and vHBAs:

- *vnic-name*.*server-profilex*
- v*hba-name*.*server-profilex*

Replace (*x*) with a numeral at the end of a vNIC and vHBA name so that the vNIC and vHBA receive correctly enumerated instance numbers. There are no special numerals in the vNIC or vHBA name string (for example, 0 is not reserved). You can use any number of numerals in the vNIC and vHBA strings, as long as the entire name string complies with the name length limitation.

Some examples of acceptable vNIC and vHBA names:

- `vnic0.profile1`, `vnic01.profile1`, `vnic001.profile1`
- `vhba1.profile1`, `vhba123.profile1`, `vhba987.profile1`
- `oracle2.profile1`, `webapps9.profile1`, `backups3.profile1`

Connectivity to Commonly Available Brocade FC Switches in Fabric-Port Mode (f-port)

NPIV login must be enabled on the FC switch.

Dynamic LUN Discovery Support

Dynamic LUN discovery is supported in situations when no LUN masking is present and either an RSCN message is sent from the storage target, or a user-initiated rescan occurs on the vHBA.

MAC Ring Support

MAC Rings enable enhanced usage of multiple connections. By default, the MAC Ring value is set to 1, but valid ring values can be from 1 to 8.

▼ Enable or Disable MAC Ring Support

Although enabled by default, MAC Rings can be disabled (if needed) by setting the ring value to zero:

1. **On the Oracle Solaris 11.2 host, open** `/etc/system` **for editing and find the** `set xsvnic` **line.**
2. **To disable MAC Rings, set the** `xsvnic_rx_mac_rings` **parameter to zero.**

   ```
   set xsvnic:xsvnic_rx_mac_rings=0
   ```

   You can also use this command to enable MAC Rings by setting the integer to a value from 1 to 8. Any integer higher than 8 will set the ring value to 8.

Downloading the Host Drivers

The host driver software is available through My Oracle Support (MOS). Access to MOS requires a valid user account and password. To register as a new user, view related documentation, or download software, go to:

http://support.oracle.com

▼ Download the Host Drivers

The host driver software is available through MOS, but the host driver documentation, including the release notes, are at:

http://www.oracle.com/goto/ORACLE-VIRTUAL-NETWORKING/docs

1. **Go to My Oracle Support:**

   http://support.oracle.com

2. **Log in with your account name and password.**
3. **On the MOS home page, click the Patches & Updates tab.**
4. **In the Patch Search panel, click the Product Or Family (Advanced) link.**

5. **From the Product is drop-down menu, start typing "Oracle Virtual Networking Host Drivers."**

   When you enter enough characters for the string to be unique, the drop-down will contain the entry you seek.

6. **Click Oracle Virtual Networking Drivers.**
7. **From the Release drop-down menu, select the checkbox for the version of the host drivers you want to download (for example, Oracle Virtual Networking Drivers 5.2.1).**
8. **Click the Search button to display the search results.**
9. **Select either the SPARC or x86-64 version of the host driver package by clicking the patch number.**
10. **(Optional) Click the Read Me button to get more patch information.**
11. **Click the Download button to download the package.**

Installing the Host Drivers

These topics describe how to install the host drivers. The host drivers package contains Oracle Solaris host drivers and other related tools.

Install host drivers occurs by using either of the following methods:

- A fresh install of host drivers, which is typically done for new deployments, but is also a valid option for existing Oracle Solaris 11.1 hosts that will be upgraded to the Oracle Solaris 11.2 OS. For this installation method, see "Performing a Fresh Install" on page 7.
- Upgrade from the Oracle Solaris 11.1 OS to the Oracle Solaris 11.2 OS, which is an option for the Oracle Solaris 11.1 hosts that have been upgraded to the Oracle Solaris 11.2 OS. For this installation method, see "Upgrading Host Drivers to Support the Oracle Solaris 11.2 OS" on page 10.

Regardless of the method you use, see "PreInstallation Requirements" on page 6.

PreInstallation Requirements

- See "Minimum Requirements" on page 2 for system requirements.
- 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 correct minimum version of firmware. For more information, see "Supported HCAs" on page 2.
- Root permissions are required on the Oracle Solaris host.
- Packages can be downloaded to any directory in the file system that the package-server user can read *except* for the `/opt` directory.
- The host drivers can be installed on either a web repository or a server's local device.
- One server reboot is required after the host drivers are installed.
- For a fresh install — If your server is running Veritas DMP, note that extra steps are required as part of the installation as detailed in "Install the Host Drivers" on page 8.
- For an upgrade — Open the `/kernel/drv/scsi_vhci.conf` file and note the exact syntax of the storage target in the *scsi-vhci-failover-override*= variable (if any). During the upgrade, this variable can be overridden for various reasons. If so, you will need to reenter the storage-target information.

Performing a Fresh Install

You can install the Oracle Virtual Networking host drivers for the Oracle Solaris 11.2 OS by:

1. Deleting any existing version of host driver (if needed), then
2. Installing the new version of host driver.

This procedure of installing Oracle Virtual Networking onto a host without the host drivers is called a *fresh install*.

▼ Uninstall the Host Drivers

Follow this procedure to remove the host drivers (for example, if you need to do a fresh installation instead of an upgrade).

1. **If you have not already done so, review the information in** "PreInstallation Requirements" on page 6**.**
2. **Halt all network and storage traffic.**

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

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

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

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

```
pkg uninstall ORCLovn-drv
```

5. **Reboot the Oracle Solaris server to clear the host drivers from memory.**
6. **Allow the server to completely reboot, then log back in as `root`.**
7. **Proceed to** "Install the Host Drivers" on page 8**.**

▼ Install the Host Drivers

1. **Locate the Oracle host software.**

   See "Download the Host Drivers" on page 5.

2. **Log in to the Oracle Solaris 11.1 server as `root`.**
3. **Copy the drivers onto the server.**

   These packages can go anywhere in the file system *except* for `/opt` (for example, the `root`, `/tmp` or `/ORCLovn`). In this example procedure, the drivers are downloaded to `/usr`.

Note – If you are using a web repository, you can specify the URL for the location of the file. For example, use `https://deploy-srv1/oracle/system/io/ORCLovn-drv` for a server named `deploy-srv1` to install the host drivers in the `oracle` directory.

---

4. **Untar the TAR ball.**

```
tar xvzf ORCLovn-5.x.x-SL-sparcv.tgz
```

   The host drivers are placed in the `ORCLovn` directory.

5. **Set up the publisher.**

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

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

Note – This step assumes an installation from a local repository. If you are installing the host drivers from a web repository, specify the URL for the location of the file.

```
pkg install ORCLovn-drv
```

7. **(Optional) Unset the publisher.**

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

After installing the host drivers, the `xsadmd` service sometimes is set to disabled state.

8. **After the drivers are installed, *but before rebooting the server*, issue the following commands to check the state of `xsadmd`, and re-enable it if it is disabled.**

```
svccfg -s application/xsadmd:default setprop general/enabled = true
svccfg -s application/xsadmd:default refresh
```

Allow these commands to complete.

9. **Reboot the server to load the drivers into memory.**

```
reboot --rv
or
shutdown -y -g0 -i6
```

10. **After the reboot, you can verify that the host drivers are installed using any of the following options:**

- Issue the `pkg list` command and `grep` for `ORCLovn-drv` (part of the driver file name).
- Issue the `svcs xsadmd` command. If the `xsadmd` service is present and online, the host drivers are installed.
- Issue the `modinfo` command and `grep` for `xs` to see the modules that were installed.
- If your server is running Veritas DMP, you must edit the `/etc/system` file as appropriate:
  - For Veritas DMP running on SPARC T5 or M5 series servers:

1. Open the `/etc/system` file for editing.
2. Just before the Veritas `vxvm` entry, add the following line:

   ```
   forceload:drv/ib
   ```
3. Save and close `/etc/system`.
4. Reboot the server.

- For Veritas DMP running on EMC:

1. In the `/etc/system` file, find the ZFS lines, and add the following:

   ```
   set zfs:zfs_vdev_enable_mvector=0
   ```
2. Save and close `/etc/system`.
3. Reboot the server.

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

Upgrading Host Drivers to Support the Oracle Solaris 11.2 OS

For Oracle Solaris 11.1 hosts that have completed an upgrade of the Oracle Solaris host OS to the Oracle Solaris 11.2 OS, you can upgrade the existing Oracle Virtual Networking host drivers.

Procedure Overview

Upgrading the host drivers from the Oracle Solaris 11.1 OS to the Oracle Solaris 11.2 OS has the following main parts:

1. Gather any information for the `scsi-vhci-failover-override` variable in `/kernel/drv/scsi_vhci.conf` (if any).
2. Set the publisher to point to the new IPS repository that contains the updates.
3. Update to the new version of package (`pkg` file).
4. Reboot the host.
5. After reboot, set the publisher to point to the new version of Oracle Virtual Networking host drivers for the Oracle Solaris 11.2 OS.
6. Edit `/kernel/drv/scsi_vhci.conf` to set the value of the `scsi-vhci-failover-override` parameter (if needed).

7. Update to the latest host driver for Oracle Virtual Networking for the Oracle Solaris 11.2 OS.
8. Reboot the host and verify that the correct host drivers are present and installed.

The full procedure follows.

▼ Update the Publisher and Upgrade to the Oracle Solaris 11.2 OS

1. **If you have not already done so, review the information in** "PreInstallation Requirements" on page 6**.**
2. **Display the current package publisher(s).**

```
pkg publisher
PUBLISHER                     TYPE     STATUS P LOCATION
solaris                       origin   online F
                                   http://ipkg.us.oracle.com/solaris11/support/
ORCLovn                       origin   online F file:///root/ORCLovn/
```

3. **Remove the current package publisher.**

   The publisher currently points to the existing IPS package repository.

```
pkg unset-publisher solaris
```

4. **Disable the Oracle Virtual Networking driver publisher.**

   This step is required to avoid any conflict between publishers during update process.

```
pkg set-publisher -d ORCLovn
```

5. **Ensure that the publisher has been removed and the OVN driver has been disabled.**

   Note that the "Solaris" publisher is no longer present.

```
pkg publisher
PUBLISHER                     TYPE     STATUS P LOCATION
ORCLovn         (disabled)    origin   online F file:///root/ORCLovn/
```

6. **Set the publisher to point to the new Oracle Solaris OS IPS repository for updating.**

```
pkg set-publisher -g F http://ipkg.us.oracle.com/solaris11/dev/
```

7. **Verify that the publisher has been added correctly.**

```
pkg publisher
PUBLISHER                     TYPE     STATUS P LOCATION
solaris                       origin   online F
                                       http://ipkg.us.oracle.com/solaris11/dev/
ORCLovn         (disabled)    origin   online F file:///root/ORCLovn/
```

8. **Update the system to the new version of the Oracle Solaris OS.**

```
pkg update --accept pkg://solaris/entire@0.5.11,5.11-0.175.2.0.0.xx.0
```

9. **Reboot the Oracle Solaris host.**

```
reboot
```

10. **Allow the host to complete its reboot, then verify the update.**

```
pkg info entire
```

11. **Proceed to** "Set the Publisher and Upgrade to Host Drivers for the Oracle Solaris 11.2 OS" on page 12**.**

▼ Set the Publisher and Upgrade to Host Drivers for the Oracle Solaris 11.2 OS

1. **Using vi, emacs, or any common file editor, open the** `/kernel/drv/scsi_vhci.conf` **file.**
2. **Find the** `scsi-vhci-failover-override` **variable.**

   This variable might need to be edited depending on the following:

   - If the value present with the Oracle Solaris 11.1 OS gets overridden during the host upgrade to the Oracle Solaris 11.2 OS
   - If the variable has no storage information, but should

   If either of these conditions is true, proceed to the next step. If not, go to Step 4.

3. **Set the value of the** `scsi-vhci-failover-override` **variable with the appropriate storage entry for the host.**

   The following example shows setting the variable for NetApp storage, but you will use whatever vendor and type of storage (if any) is connected to your Oracle Solaris 11.2 host.

```
vi /kernel/drv/scsi_vhci.conf scsi-vhci-failover-override = "NETAPP  LUN",
"f_sym"
```

4. **Remove the existing host driver publisher for the new driver update.**

```
pkg unset-publisher ORCLovn
```

5. **Download the new host driver and extract it on the Oracle Solaris 11.2 host.**

6. **Point the package publisher to the location of the host driver.**

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

7. **Update the host drivers.**

```
pkg update ORCLovn-drv
```

8. **Reboot the Oracle Solaris 11.2 host.**

```
reboot
```

9. **Verify that the Oracle Virtual Networking host drivers are installed and are at the correct version.**

```
pkg info ORCLovn-drv
```

Known Issues

The following table shows all the known issues in this release of the host driver.

Bug ID	Description
19188761	**TCP Does Not Function in Oracle Solaris 11.2 LDoms if a Virtual Switch and Its vNICs Are Set With a Checksum** When vNICs or PVI vNICs are pushed to an LDom that has connectivity with Oracle Solaris 11.2 hosts, a problem prevents TCP traffic if the vNIC or vSwitch in the LDom has a non-zero checksum value configured. **Workaround:** If your Oracle Solaris 11.2 hosts' vNICs will be pushed to an LDom, disable checksum on all vNICs connected to the LDom.
19054744	**TCP Responses on an Aggregation Interface Can Sometimes Be Prohibited** Some tools and utilities force a vNIC or PVI vNIC into promiscuous mode. On an Oracle Solaris interface that is aggregating (for example, trunking) PVI vNICs that have checksumming enabled, a problem can prevent a response to TCP packets sent over the interface. This problem occurs because the tool forces the vNIC or PVI vNIC into promiscuous mode.
18963387	**Secondary I/O Domain Attached to Multipath Group Disk Does Not Complete Reboot** With two I/O domains attached to two virtual disks as a multipath group (one domain per disk), the secondary I/O domain can get "stuck" during the boot-up sequence when an Oracle Solaris 11.2 host is rebooted. When the secondary I/O domain is "stuck," it does not complete its reboot and never comes back online. **Workaround**: Edit the `/etc/system` file for all I/O domains connected to the Oracle Solaris host to include the following: `forceload: drv/PX`
18877148	**Problem When Setting an Oracle Virtual Networking Server Profile Down** An internal logic-handling error in the Oracle Solaris SCSAv3 code can cause a kernel panic in Oracle Solaris 11.2 hosts when you attempt to set a Server Profile to down state.
18086995	**The `ipadm delete-ip` Operation Pushes vNIC to Up/Down State in Chassis** For vNICs or PVI vNICs that are added from the Oracle Fabric Interconnect, if you issue the `ipadm delete-ip` command on an Oracle Solaris 11.2 host to remove the network address for a vNIC, a problem sets the vNIC to `up/down` state on the Oracle Fabric Interconnect. This problem affects standard vNICs and PVI vNICs. **Workaround:** You can work around this problem by assigning the IP address from the host.
18046241	**vNIC Host Managed IP Address for vNIC Is Not Displayed on Chassis** If you configure a vNIC, then attempt to assign the vNIC's IP address as a host-managed address, the IP address is visible on the host. However, a problem prevents the address from being displayed on the Oracle Fabric Interconnect when you issue the `show vnic` command.

Bug ID	Description
18046181	**Do Not Allow Duplicate PVIs With the Same Net ID** A problem allows duplicate PVIs to be created with the same Net ID. This is incorrect, as each PVI should have its own unique Net ID.
18046171	**No Traffic Between Access vNIC and Host Managed VLAN on Trunk vNIC** An access-mode PVI connected to one Oracle Solaris 11.2 host and a trunk PVI connected to a different Oracle Solaris 11.2 host cannot pass traffic through the same VLAN when both PVIs are connected to the same cloud.
18018632	**PVI Cloud vNICs Remained in `Up/Initializing` After Server Profile Disconnect/Reconnect** When two servers have 16 vNICs and 16 PVIs configured across them (8 vNICs and 8 PVIs on each server), and traffic is occurring on all 16 vNICs, if the Server Profile is disconnected and reconnected, the PVIs might not come back up. Instead, a problem causes them to remain in up/initializing state. This problem is seen only on the PVIs. The standard vNICs come back online correctly after the Server Profile is connected. **Workaround:** If you encounter this problem, you can work around the PVI problem by setting the PVIs down, then up.
17940487	**PVI Loss in ICMP Packets When Host Comes Up After Reboot** When a host is rebooted and the PVI is coming up on the host and the Oracle Fabric Interconnect, ICMP packet loss occurs during pings, but only for a short time. ICMP packet loss goes from 100% on the first ping session to 0% packet loss by the third ping session.
17927174	**Data-Link Management Failed to Add a vNIC Device** On an Oracle Solaris server that has a full 16 vNICs (8 standard vNICs and 8 PVI vNICs), a problem can prevent all vNICs from being displayed by data-link management processes. When the problem occurs, all vNICs are shown by other processes, but data-link management misses one vNIC. For example, `prtconf -D` correctly shows all 16 vNICs, but `dladm show-phys` shows only 15 vNICs**.**
17877733	**PVI vNIC and Clouds Statistics Are Not Incremented** In an HA Oracle Fabric Interconnect deployment (where multiple servers are redundantly connected to two Oracle Fabric Interconnects), statistics for PVI vNICs and PVI Clouds are not incrementing. This problem causes the following commands to show zero: • **`show pvi`** *pvi-name* **`throughput`** • **`show pvi`** *pvi-name* **`throughput`** • **`show vnic`** *pvi-name* **`stats`**
17490439	**Failed to Detect LUN 0 When MPxIO Is Enabled From the Host** Oracle Solaris 11.2 hosts fail to detect LUN 0 when LUN 0 is added to a vHBA after that vHBA is already created. **Workaround:** Do either of the following: • Always map a vHBA to LUN when the vHBA is being created, or • If a vHBA is added that does not map to LUN 0, or if LUN 0 is created on storage after the vHBA is created, then set the vHBA down, then up to have the LUN visible on the Oracle Solaris 11.2 host.

Bug ID	Description
17487287	**System Crashes When vHBAs and vNICs Removed at Once** A problem can cause Oracle Solaris 11.2 hosts to crash in some situations while vHBAs are being deleted. This problem occurs if you delete multiple vHBAs and immediately attempt to delete vNICs while the vHBA deletion process is still ongoing. Also, this problem can occur when you issue the `format` command on the host while the vHBA deletion process is still ongoing. **Workaround:** • Delete vNICs before deleting vHBAs, or if you need to delete vHBAs first, wait until all vHBAs have been completely deleted before starting to delete vNICs. • Don't run the `format` command on the host while vHBAs are being deleted.
17370928	**LUN Masking Is Not Working to Show a Mask of LUNs Behind a Target** In this release, LUN Masking is not supported from the Oracle Fabric Interconnect. Do not use the LUN Mask feature from the Oracle Fabric Interconnect because it will not properly mask, and all LUNs will be visible. **Workaround:** Configure any LUN masking from the storage target.
17337836	**Stale Entries Getting Created in `/dev/` Directory** When LUNs and Targets are dynamically added or deleted, entries are written to the `/dev` directory. However, a problem prevents the proper cleanup of these entries, and as a result, stale entire can accumulate in `/dev`. When enough entries have accumulated, issuing the `format` command hangs. **Workaround:** Periodically, manually clean up the entries in `/dev`. Issue the following command: `devfsadm -Cv`
17254225	**LUN 0 Must Always Be Mapped to the vHBA for SCSAv3** Per SCSAv3, LUN 0 (zero) is required and should be mapped to vHBAs for correct reporting. However, the host drivers do not check or enforce this requirement, so it is possible that LUN 0 is not mapped to the vHBAs. If LUN 0 is not mapped to vHBAs, inconsistencies can occur on those vHBAs. **Workaround:** Make sure that LUN 0 is mapped to vHBAs.
17234437	**LUN Not Visible in `format` Command From NetApp Storage** A problem prevents LUNs on NetApp storage from being visible when issuing the `format` command on an Oracle Solaris 11.2 host. **Workaround:** You can work around this problem by adding lines to the `scsi_vhci.conf` file on the Oracle Solaris host. Follow this procedure: 1. Log in to the Oracle Solaris 11.2 host, and using `vi`, `emacs`, `gedit`, or any standard text editor, open the `/kernel/drv/scs_vhci.conf` file for editing. 2. Find the `scsi-vhci-failover-override =` statement and add the following NetApp line: **`"NETAPP  LUN", "f_sym",`**

Bug ID	Description
16530626	**Change the LUN Mask Not Detaching the Old LUN Mask's LUNs** In a LUN Mask assigned to an Oracle Solaris host, the original LUNs remain masked even if the configuration of the LUN mask has been changed. If you edit the LUN mask, the changes do not take effect. For example, if you create a LUN mask with two LUNs, then remove those LUNs and add two more, the LUN mask will incorrectly contain four LUNs (the two newly added LUNs, plus the two LUNs from the original LUN mask). This problem occurs even after rescanning the vHBA. Because LUN masking is not assigned dynamically, you must set the vHBA down, then up. **Workaround:** Do the following when you make any changes to a LUN mask that is already created: 1. Set the vHBA down: **`set vhba`** *name*`.`*server-profile-name* **`down`** 2. Set the vHBA up again: **`set vhba`** *name*`.`*server-profile-name* **`up`**

16338290	**Error Seen in `dmesg` on vNIC Creation and Deletion**
	When adding or deleting a vNIC interface, spurious messages are displayed on the Oracle Solaris host. Be aware that messages are displayed, but they are not always errors. You need to scan the messages to determine if an actual error exists. For example, the following messages are actual errors:
	`@ Jan 25 10:17:29 sparc1-prb nwamd[756]: [ID 588122 daemon.error] 1:@ nwamd_set_unset_link_properties: dladm_set_linkprop(mtu) failed for net25:@ operation not supported`
	`@ Jan 25 10:17:29 sparc1-prb nwamd[756]: [ID 387169 daemon.error] 1:@ nwamd_unconfigure_interface: disable failed for net25: Operation failed`
	Workaround: No workaround currently exists for this problem.

Documentation Issues

These topics describe known issues related to the product documentation.

Additional Step Required to Install Drivers

The chapter about installing Oracle Solaris host software in the *Fabric Interconnect Hardware and Host Drivers Installation Guide* has an incomplete procedure for installing host drivers for the Oracle Solaris 11.2 OS. The following text supplements the text for the installation procedure:

After installing the host drivers, the `xsadmd` service sometimes is set to disabled state. After the drivers are installed, but *before rebooting the server*, issue the following commands to check the state of `xsadmd`, and reenable it if it is disabled:

```
svccfg -s application/xsadmd:default setprop general/enabled = true
svccfg -s application/xsadmd:default refresh
```

Allow these commands to complete, then reboot the server with either **`reboot --rv`** or **`shutdown -y -g0 -i6`**.

This additional text is applicable only to the installation procedure in the manual. The installation procedure documented in these release notes contains the additional text.

Using Non-MPxIO Multipathing, MPxIO Must Be Disabled

MPxIO multipathing is supported. By default, MPxIO multipathing software is enabled when the host drivers are installed. However, your network might use a different multipathing solution—for example, DMP.

The Oracle Solaris 11.2 OS supports using non-MPxIO multipathing software with the requirement that MPxIO is explicitly disabled before using the other multipathing software.

▼ Disable MPxIO on an Oracle Solaris 11.2 Host

To disable MPxIO on an Oracle Solaris 11.2 host, you must edit the `xsvhba.conf` file.

1. **Open the `/kernel/drv/xsvhba.conf` file for editing.**
2. **Change the `mpxio-disable="no"` entry to `mpxio-disable="yes"`.**
3. **Save and close the file.**
4. **Reboot the server.**

   After the server reboots, MPxIO is disabled, and another multipathing software solution can be installed and used on the Oracle Solaris 11.2 host.

HBA LUN Commands

This release of host drivers supports the following **cfgadmin** and **hbaapi** commands from the HBA API.

HBA API Commands

The following **fcinfo** and **fcadm** commands are supported.

Command	Short Description
fcinfo lu	Displays Fibre Channel information for LUNs.
fcinfo lu -v	Displays Fibre Channel information in verbose mode for LUNs.
fcinfo hba-port *port-wwn [port-wwn ...]*	Displays Fibre Channel information for one or more HBA ports.
fcinfo remote-port -p *port-wwn*	Displays Fibre Channel information for a specified storage port on a peer device.
fcinfo remote-port -p *port-wwn* **-s**	Displays Fibre Channel information for a specified storage port on a peer device.
fcadm lu	Displays Fibre Channel administrative information for LUNs.
fcadm lu -v	Displays Fibre Channel administrative information in verbose mode for LUNs.
fcadm hba-port *vhba wwn*	Displays Fibre Channel administrative information for a specified HBA port.
fcadm remote-port -p *vhba wwn*	Displays Fibre Channel administrative information for a specified HBA port.

CFG ADM Commands

The following **cfgadm** commands are supported.

Command	Short Description
cfgadm -al	Displays the address list for LUNs.
cfgadm -c configure	Configures administrative state for a LUN.
cfgadm -c unconfigure	Unconfigures administrative state for an LUN.
cfgadm -c connect	Connects an HBA port in administrative state.
cfgadm -c disconnect	Disconnects an HBA port and sets the administrative state.

Red Hat Linux-to-Oracle Solaris Command Comparison

This table contains some commonly used Red Hat Linux commands and their equivalent Oracle Solaris commands. Online help is available for these commands through the Oracle Solaris manual pages (**man** *command-name*).

Red Hat Linux Command	Oracle Solaris Command
rpm -ivh *package*	**pkg install**
rpm -qa|grep ORCLovn	**pkg list**
rpm -qi *package*	**pkg uninstall**
yum install *package*	**pkg-get -if** *package*
rpm -e *package*	**pkgrm** *package*
dhclient *vnic*	**ipadm create-addr -T dhcp** *interface*
service sshd status	**svcs -a ssh**
service sshd restart	**svcadm restart ssh**
chkconfig sshd on	**svcadm enable ssh**
cat /var/log/messages	**cat /var/adm/messages**
cat /etc/fstab	**cat /etc/vfstab**
fdisk -l	**format**
ping -c 5 *host*	**ping** *host* **64 5** where 64 is the ping packet size and 5 is the ping delay (5ms)
cat /proc/driver/xsvnic/devices/<vnic>	**prtconf -D then kstat -I** *instance*
(There is no equivalent in Red Hat.)	**top prstat** This command is supported on vNICs only in release 5.1.2.
iostat	**free vmstat**