Release Notes for OVN Host Drivers for Oracle Solaris 11 Update 1, 5.1.2

These release notes document information about Oracle Virtual Network (OVN) host drivers for Oracle Solaris 11 update 1 hosts.

Additional release notes exist for:

- Oracle Windows host drivers
- XgOS and the Fabric Interconnect
- Oracle Fabric Manager
- ESX Server Classic 4.1 and ESXi 4.1 host drivers
- ESXi 5.0 host drivers
- OVM release notes

These notes contain the following sections:

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 send comments and report bugs by filing a customer case through the My Oracle Support web portal. Oracle is fully committed to responding to all feedback regarding our product and greatly appreciates customer involvement. If you need to contact Oracle for support assistance, you can facilitate your interaction with Customer Support by gathering some troubleshooting information. For more information, see Accessing Oracle Support on page 13.

What's New in this Release

This release contains fixes for customer-reported issues.

> **Note**
>
> After upgrading to the 5.1.2. OVN host drivers for Solaris 11 Update 1, two fixes for servers running Veritas DMP require that you edit the `/etc/system` file as a workaround. For these fixes to take effect, be aware that you must upgrade to 5.1.2 OVN host drivers, edit `/etc/system`, then successfully reboot the server. If Veritas DMP is not in use, the workarounds are not required. For information about the workarounds, see 16758070 and 17025682 in Fixed Problems on page 12.

System Requirements

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

Required Minimum XgOS Version

Support for Solaris 11 update 1 hosts requires XgOS version 3.9.0 or higher running on the Oracle Fabric Interconnect. If your Fabric Interconnect(s) are not running this version, you must upgrade to this version if you want the VP780 to support Solaris 11 update 1 hosts.

Supported Host Platform

Version 5.1.2-SL has been tested and qualified to run on 64-bit Sun x86 and SPARC-based platforms.

Supported OS Level

The following 64-bit architecture is tested in this release:

- Oracle Solaris 11 update 1

Supported Firmware Version for HCAs

Version 5.1.2-SL supports dual-port Oracle ConnectX2 QDR HCAs. Two version of these cards exist—one with Option ROM and one without. Infinihost HCAs are not supported.

HCAs with Option ROM

For HCAs with Option ROM, the minimum version of firmware supported is 2.9.1000. This version does not ship with the HCA by default, so you will need to download the firmware and flash it onto the HCA. For information about flashing firmware, see the "Installing Solaris Host Software" chapter in the *Remote Boot Guide, Release 3.8.0*.

HCAs without Option ROM

For HCAs without Option ROM, the minimum version of firmware supported is 2.7.8130. This version ships on the HCA by default.

System Limitations and Restrictions

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

A vNIC or vHBA on a Solaris Host Cannot be Deleted if It is Part of an LDOM or Solaris Zone

Currently, a vNIC or vHBA cannot be deleted from a Solaris host if that vNIC or vHBA is part of a Solaris Logical Domain (LDOM) or zone, the vNIC or VHBA cannot just be deleted from the host. 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/LDOM, then delete the vNIC or vHBA.

Names for vNICs and vHBAs Cannot Be the Same on a Solaris Host

Release 5.1.2-SL host drivers do not support creation of a vNIC and vHBA with the same name. Be aware that when you create a vNIC or vHBA, the two names must be different.

Limitation on the Length of Virtual Resource Names Under Solaris

With Solaris operating systems, the names of virtual resources are restricted to the following lengths:

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

Consideration for Naming vNICs and vHBAs under Solaris

With Solaris operating systems, vNICs and vHBAs can be named with the standard Oracle notation of:

- `<vnic-name>.<server-profile>`
- `<vhba-name>.<server-profile>`

However, Oracle strongly recommends that you use 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 documented in Limitation on the Length of Virtual Resource Names Under Solaris on page 3.

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

Virtual Resources Supported per Server

On Solaris servers, 8 vNICs and 4 vHBAs per server have been tested in this release.

- vNICs support:

  — a maximum of 8 standalone vNICs

  — HA vNICs are not yet supported from the Fabric Interconnect. However, server-based HA vNICs are available natively though the IPMP on the Solaris server.

- vHBAs support:

  — a maximum of 4 standalone vHBAs

  — 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 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.

  — HA vHBAs (multipathing) are not yet supported.

User Guides

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*

- *Fabric Manager User's Guide*

- *XgOS vNIC Switching Configuration Guide*

Release notes are also available for the Oracle Fabric Interconnect and XgOS product, the Oracle Fabric Manager product, and the various Oracle Virtual Networking (OVN) host drivers. Release Notes and manuals are available as PDF files on the Oracle Technical Network web portal:

Step 1   Go to http://docs.oracle.com/cd/E38500_01/index.html

Step 2   After locating the documentation you need, click the ***Download*** button to pull a copy of the PDF file to your local machine.

Documentation Addition

The following section contains additional text for the Oracle technical documentation.

Additional Step Required to Install Drivers

The "Installing Solaris Software" chapter of the *Fabric Director Hardware and Host Drivers Installation Guide* has an incomplete procedure for installing host drivers for Solaris 11 update 1. 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, <u>but before rebooting the server</u>, 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, then reboot the server with either **reboot --rv** or **shutdown -y -g0 -ib**

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.

Solaris Command Equivalents Table

Table 1 contains some commonly used Red Hat Linux commands and their equivalent Solaris commands. Online help is available for these commands through the Solaris manual pages (**man** `<command-name>`).

Table 1   Solaris Command Equivalents

Red Hat Command	Solaris Command
rpm -ivh `<package>`	**pkg add**
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**

Table 1   (continued) Solaris Command Equivalents

Red Hat Command	Solaris Command
`ping -c 5 <host>`	`ping <host> 64 5` where 64 is the ping packet size and 5 is the ping delay (5 ms)

`cat /proc/driver/xsvnic/devices/<vnic>`
 	
(There is no equivalent in Red Hat)
	`prtconf -D then kstat -I <instance>`
	
	`top prstat`
	In 5.1.2-SL, this command is supported on vNICs only.

`iostat`	`free vmstat`

Supported Host Drivers

This section describes the OVN host drivers package for Solaris 11 Update 1 hosts and how to obtain it.

Downloading Supported Drivers

OVN host drivers for Solaris hosts are available through My Oracle Support (MOS), which requires a valid user account and password. Software is available through MOS, but not documentation. For release notes for this release, you can go to http://docs.oracle.com/cd/E38500_01/index.html.

To get the software:

Step 1   Point your browser to My Oracle Support—for example:

```
https://support.oracle.com
```

Step 2   Log in with your account name and password.

Step 3   On the MOS home page, click the *Patches & Updates* tab as shown in Figure 1.
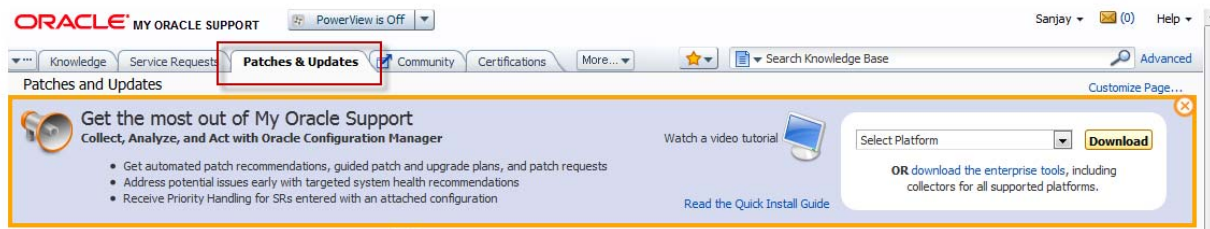

Figure 1 My Oracle Support — Patches and Updates Tab

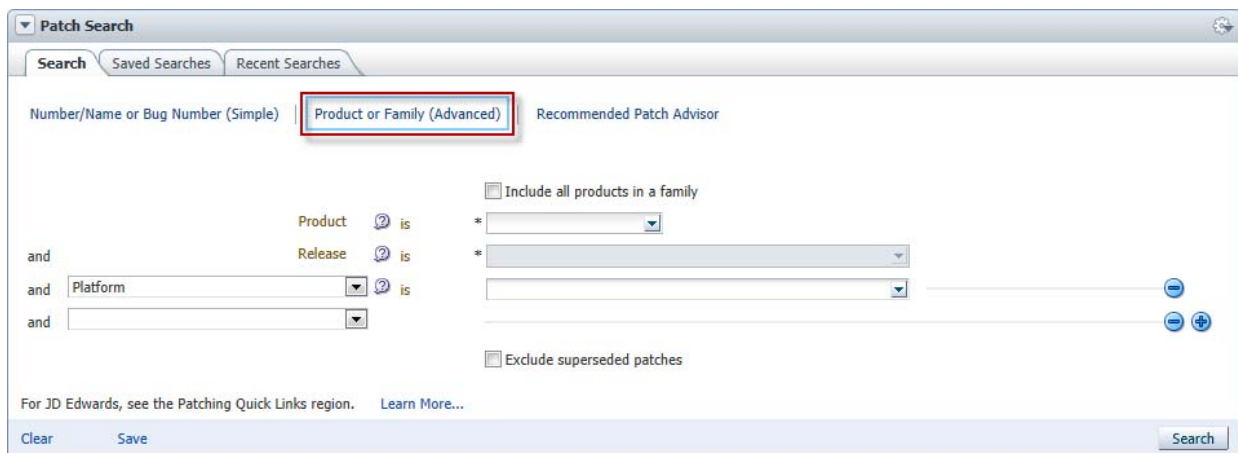Step 4   In the Patch Search panel, click the *Product Or Family (Advanced)* link as shown in Figure 2.

Figure 2 My Oracle Support — Search for Product or Family

Step 5 From the *Product is* dropdown menu, start typing Oracle Virtual Networking Host Drivers. When you enter enough characters for the string to be unique, the dropdown will contain the entry you seek.

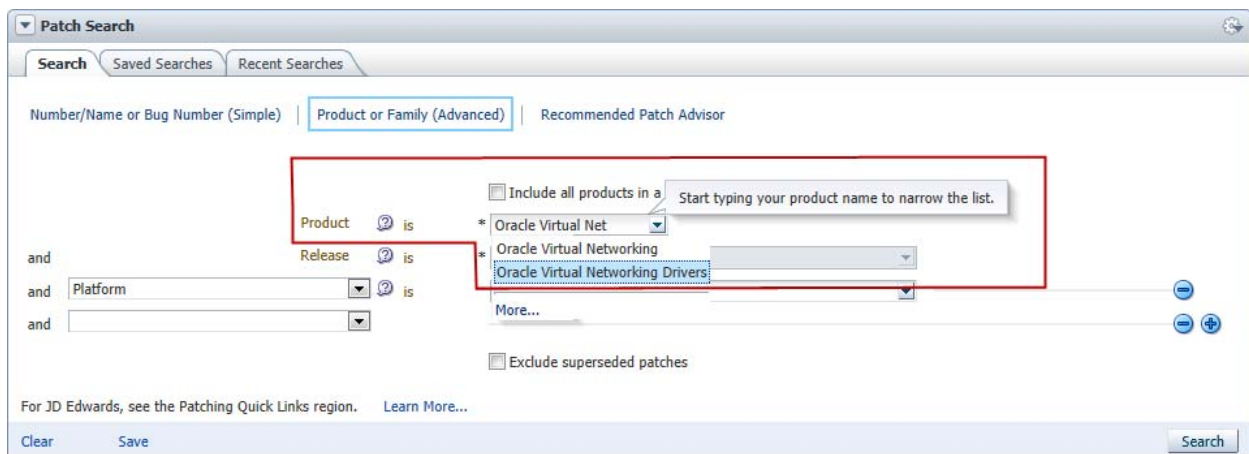**Step 6** Click *Oracle Virtual Networking Drivers* as shown in Figure 3.

Figure 3 My Oracle Support — Searching for OVN Host Drivers

Step 7 From the *Release is* dropdown menu, click the checkbox for this version of OVN host drivers.

Step 8 When the product and release have been selected, click the **Search** button to display the search results as shown in Figure 4. (This figure shows the results for a different release of host drivers but provides an example of the results page.)

Figure 4 My Oracle Support— Download OVN Software for Solaris

Step 9   To download the OVN host drivers you need, select either the SPARC or x86 version of the OVN host driver package, and click the correct item in the table to download the software.

Installing Solaris Host Drivers

This section documents the installation procedure for Oracle Virtual Networking Solaris host drivers.

Pre-Installation Considerations

Before installing the OVN Solaris host drivers, be aware of the following considerations.

- The Solaris hosts must be running 11 update 1, and that OS must already be installed and running before attempting to install the OVN host drivers.

- The 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 the corresponding HCA. For more information, see Supported Firmware Version for HCAs on page 2.

- Packages can be downloaded to any directory in the file system that the package-server user can read, but Oracle recommends that you do not download the file to /opt.

- Root access is required on the Solaris 11 Update 1 server in order to install the host drivers.

- OVN host drivers for Solaris 11 Update 1 can be installed on either a web repository or a server's local device. If you are installing the host drivers from a web repository, you can specify the URL for the location of the file. For example, https://deploy-srv1/oracle/system/io/ORCLovn-drv for a server named "deploy-srv1" to install the host drivers in the "oracle" directory.

Installation Procedure

OVN host drivers for Solaris 11 Update 1 hosts can be installed either locally or from a web repository. For illustrative purposes, this installation procedure assumes a local install.

To install the Solaris host drivers, follow this procedure:

Step 1   Locate the host software as documented in Downloading Supported Drivers on page 6.

Step 2   Log in to the Solaris 11 Update 1 server as root.

Step 3   Copy the drivers onto the server. These packages can go anywhere in the file system (for example, /usr, /tmp, or /oracle). For illustrative purposes, this procedure assumes the drivers will be downloaded to /usr.

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

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

```
tar xvzf ORCLovn-5.1.2-SL-sparcv.tgz
```

When the package is untarred, the host drivers are contained in the ORCLovn directory.

Step 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
```

Step 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, you can specify the URL for the location of the file.

For example:

```
pkg install ORCLovn-drv
```

Step 7   As an option, 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
```

Step 8   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 re-enable it if it is disabled:

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

Step 9   Allow these commands to complete, then reboot the server to load the drivers into memory. For example:

```
reboot --rv
```

or

```
shutdown -y -g0 -i6
```

Step 10   After the reboot, you can verify the host drivers are installed by issuing any of the following options:

- Issue the **pkg list** command while grepping for "ORCLovn-drv" (part of the driver file name).
- Issue the **svcs xsadmd** command. If the xsadmd service is present and online, OVN host drivers are installed.
- Issue the **modinfo** command while grepping for "xs" to see the modules that were installed.

Step 11   After the packages have been successfully added, you can configure vNICs and vHBAs.

Removing the Host Drivers

In the unlikely event that you will need to remove the installed OVN host drivers for Solaris 11 Update 1 (for example, if you need to do a fresh install instead of an upgrade), you can use the following procedure:

Step 1   Halt all network and storage traffic. For example, set the interfaces to down state, and wait for network and storage traffic to quiesce.

Step 2   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
```

Step 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
```

Step 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.

Step 5   Reboot the Solaris server to clear the host drivers from memory. For example:

```
reboot --rv
```

or

```
shutdown -y -g0 -i6
```

Step 6   Allow the server to completely reboot, then log back in as root.

Known Problems

lists known problems in the OVN Solaris host drivers for this version.

Table 2   Known Problems in Version 5.1.2-SL Host Drivers

Bug	Description
16338290	When adding or deleting a vNIC interface, spurious messages are displayed on the Solaris host. Be aware that messages are displayed, but they are not always errors. You will need to scan the messages to determine if an actual error exists. For example, in the following chunk of messages, only the red text (shown here to highlight the message) is an actual error:

```
Jan 25 10:17:27 sparc1-prb xsvnic: [ID 903756 kern.notice]  NOTICE:@
xsvnic5(ipmp0) start_rx_response received
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 xsvnic: [ID 546354 kern.notice]  NOTICE:@
xsvnic5(ipmp0) Executing xsvnic_start
@ Jan 25 10:17:29 sparc1-prb xsvnic: [ID 940960 kern.notice]  NOTICE:@
xsvnic5(ipmp0) Executed xsvnic_start
@ Jan 25 10:17:29 sparc1-prb nwamd[756]: [ID 387169  daemon.error]
1:@ nwamd_unconfigure_interface: disable failed for net25:  Opera-
tion  failed
```

Bug	Description
16338330	After a reboot of the Solaris host, when LUNs come back online, a problem prevents any LUNS that are not restored (repaired) from being available to the ZFS Zpool. Zpool cannot enable the LUNs for I/O internally, and therefore the Zpools do not come back online after the reboot.
	To work around this issue, destroy and re-create the pool from a backup source. Manually marking the device repaired using `zpool clear` or `fmadm repaired` may allow some data to be recovered.
16338332	On Solaris 11 Update 1 hosts, the **cfgadm -al** command does not show vHBA disks.
16493871, 16520219	With multiple vNICs on a Fabric Interconnect's Gigabit Ethernet I/O card, either resetting the IO card or cycling the Fabric Interconnect's I/O Card between `up` and `down` state multiple times can sometimes cause some of the vNICs to get stuck in `up/down` state. Also, when continuously disconnecting and reconnecting a Server Profile that has vNICs associated with it, vNICs can get set to `up/indeterminate` state.

When a vNIC is in `up/down` or `up/indeterminate` state, you can work around this problem by following this procedure:

> **Step 1** Set the vNIC to admin state down:
>
> **set vnic** <vnic-name>.<server-profile-name> **down**
>
> **Step 2** Set the vNIC to admin state up:
>
> **set vnic** <vnic-name>.<server-profile-name> **up**

Table 2   (continued)Known Problems in Version 5.1.2-SL Host Drivers

Bug	Description

16530626	In a LUN Mask assigned to a 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 2 LUNs, then remove those LUNs and add 2 more, the LUN Mask will incorrectly contain 4 LUNS (the two newly added LUNs, plus the 2 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. To work around this issue, when you make any changes to a LUN Mask that is already created:
	
	Step 1 Set the vHBA down:
	
	`set vhba <name>.<server-profile-name> down`
	
	Step 2 Set the vHBA up again:
	
	`set vhba <name>.<server-profile-name> up`

Fixed Problems

Table 3 shows the fixes included in this version of OVN host drivers. This release includes fixes from a previous release. Such fixes are noted in text.

Table 3   Fixed Problems in Version 5.1.2-SL Host Drivers

Bug	Description
17294921	A problem prevented newly assigned LUNs from being seen through Solaris hosts with OVN Solaris host drivers installed. This problem occurred when Solaris hosts attempted to bring online a LUN that was offline and had never been brought online before. This problem is fixed in OVN 5.1.2 drivers for Solaris hosts.
17025682	On Oracle M5 and T5 servers connected to Fabric Interconnects through ConnectX-2 HCAs, a problem caused vHBAs to not reconnect when the servers were rebooted when the servers were running Veritas DMP. When this problem occurred, numerous `ibc_attach failed` and `attach_ibcattach_fail` error messages were displayed. This problem is fixed in the 5.1.2 host drivers by using the following workaround which requires editing a system file on the server: Step 1 Using vi, emacs, any standard document editor, open the `/etc/system` file. Step 2 In `/etc/system` file, locate the Veritas `vxvm` entry. Step 3 Just before the `vxvm` entry, add the following line: `forceload: drv/ib` Step 4 Save and close `/etc/system` Step 5 Reboot the server.

Table 3   (continued) Fixed Problems in Version 5.1.2-SL Host Drivers

Bug	Description
16758070	If a Solaris 11 Update 1 server with OVN Host drivers installed is also running Veritas DMP, the host can experience a problem that crashes the server. The problem is not a bug in OVN, but instead an issue with the Veritas DMP application.
	While waiting on a fix for this problem from the vendor, you can work around this issue by using the following interim fix which requires editing a system file on the server:
	Step 1 Using vi, emacs, any standard document editor, open the /etc/system file.
	Step 2 In /etc/system file, find the ZFS lines, and add the following:
	set zfs:zfs_vdev_enable_mvector=0
	Step 3 Save and close /etc/system.
	Step 4 Reboot the server.
16896738	When one or more newly provisioned LUNs were presented to one or more vHBAs, and during that time the storage array was not responding to simple SCSI commands, a race condition sometimes caused a kernel panic if the SCSI mid-layer still had a reference to the LUN being freed due to the unresponsive array. This problem is fixed in the 5.1.1.-SL host drivers.
16338330	After a reboot of the Solaris host, when LUNs come back online, a problem prevented any LUNS that were not restored (repaired) from being available to connect to the ZFS Zpool. Zpool did not enable the LUNs for I/O internally, and therefore the Zpools did not come back online after the reboot. This problem is fixed for OVN host driver version 5.1.0-SL and later by installing Solaris 11U1 SRU7. Please use this SRU, which is required if you need this fix.

Accessing Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/us/corporate/acquisitions/xsigo/support-1849142.html or visit http://www.oracle.com/us/corporate/accessibility/support/index.html if you are hearing impaired.

Gathering Information for Oracle Technical Support — Solaris

If the Oracle Fabric Interconnect is supporting Solaris servers and you encounter problems, please gather the information in the following section before contacting Oracle Technical Support or filing a case through the support website.

On the Oracle Fabric Interconnect

From the Oracle Fabric Interconnect, gather the following information and have it ready to communicate to Oracle Support Engineers:

- 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 Oracle 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

On the Oracle Solaris 11 update 1 server, gather the following information and have it ready to communicate to Oracle Support Engineers:

- The output of xsigo-support. The **`/opt/orclovn/scripts/xsigo-support`** command automatically creates a `.bz2` file. The output from the commands is put into the `.bz2` file, which can then be sent to Oracle Support.