Oracle® Virtual Networking Host Drivers for Windows Server 2012 and 2012 R2

Release Notes

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Using This Documentation

- **Overview** - Provides last-minute information about the Oracle Virtual Networking Host Drivers for Windows Server 2012 and 2012 R2
- **Audience** - System administrators, authorized service providers, and users who have experience in administering advanced 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.

Feedback

Provide feedback about this documentation at

http://www.oracle.com/goto/docfeedback.

Late-Breaking Information

These topics provide important late-breaking information about version 5.2.2-WIN of the Oracle Virtual Networking host drivers for Windows Server 2012 R2 hosts. This document also provides SAN boot and SAN installation information for Windows Server 2012 R2 hosts.

Note – Most of the information in this document is also valid for the 5.1.0-WIN host drivers for Windows Server 2012. Exceptions are noted.

Note – Host driver version 5.2.2-WIN supports only Windows Server 2012 R2 hosts. If you need host drivers for Windows Server 2012 hosts, use 5.1.0-WIN. If you need host drivers for Windows Server 2003, Windows Server 2008 R2, or Windows Server 2008 SP2 hosts, use 3.0.6-WIN and refer to the Release Notes for Windows Host Drivers, 3.0.6-Windows.

These release notes contain the following sections:

- "What's New in This Release" on page 2
- "Minimum Requirements" on page 2
- "System Limitations and Restrictions" on page 4
- "Known Issues" on page 10
- "Documentation Issues" on page 12

What's New in This Release

The host drivers support Private Virtual Interconnect (PVI) on Oracle Fabric Interconnect. This version of the host driver also supports local boot and SAN boot. This release does not support iSCSI boot, nor has it been WHQL certified.

Minimum Requirements

These topics provide minimum system requirements for the host drivers.

- "Supported OS Levels" on page 2
- "Download and Install Supported Firmware Versions for Oracle HCAs" on page 2
- "Download and Install Supported Host Drivers" on page 3
- "Unblock the .zip File Before Unzipping It" on page 4

Supported OS Levels

The host drivers require Microsoft Windows Server 2012 R2 OS and a minimum memory of 8 GB. The host drivers have been tested for interoperability with Hyper-V. See "Considerations for Windows Server 2012 R2 and Hyper-V" on page 7.

▼ Download and Install Supported Firmware Versions for Oracle HCAs

The host drivers support Oracle HCAs having the firmware listed for a given ConnectX technology.

HCA Technology	Supported Firmware
ConnectX2	• 2.9.1000 • 2.9.1200 • 2.11.2010 • 2.11.2050
ConnectX3	• 2.11.1280 • 2.30.3000 • 2.30.3200

The 5.1.0-WIN release of host drivers support Oracle HCAs with a minimum HCA ConnectX2 firmware version of 2.7.0 and less than 2.8.0, and a minimum XgBoot Option ROM of version 2.7.9, or 2.8.6 and later.

1. **Go to:**

   `http://www.oracle.com/technetwork/indexes/downloads`

2. **Scroll down the page to Drivers.**
3. **Click Xsigo Drivers.**
4. **Under HCA FW Utils, click the link for your operating system and version, and download the file to a network-accessible node in your network.**

   For example, `XGBOOT_4_0_2_Win.zip`.

5. **Copy the software from the network-accessible node to the Windows Server 2012 R2 host.**
6. **If necessary, unblock the `.zip` file.**

   See "Unblock the .zip File Before Unzipping It" on page 4.

7. **Unzip the `.zip` file.**
8. **Install the firmware and option ROM into the Oracle HCA as described in the HCA's documentation.**

▼ Download and Install Supported Host Drivers

Supported host drivers for different operating systems are available from Oracle. Install the latest version of the drivers for optimum performance.

1. **Go to:**

   `http://www.oracle.com/technetwork/indexes/downloads`

2. **Scroll down the page to Drivers.**
3. **Click Xsigo Drivers.**
4. **Click the link for your operating system and version, and download the file to a network-accessible node in your network.**

   For example:

   - Windows Server 2012 R2 – `hostdrivers_windows_5.2.2_FREE.zip`
   - Windows Server 2012 – `hostdrivers_windows_5.1.0_FREE.zip`
5. **Copy the host driver software from the network-accessible node to the Windows host.**
6. **On the Windows host, unblock the `.zip` file if necessary.**

   See "Unblock the .zip File Before Unzipping It" on page 4.
7. **Unzip the `.zip` file.**
8. **Run `setup.exe` to install the host drivers.**

▼ Unblock the `.zip` File Before Unzipping It

The host drivers and firmware are provided in `.zip` files. You must unblock these files to bypass Microsoft Firewall's security setting before you can unzip the files.

1. **In the windowing environment of the Windows host, start the File Manager.**
2. **Navigate to where the `.zip` file resides.**
3. **Right click on the `.zip` file and select Properties.**

   The properties window is displayed.
4. **Click Unblock and then click Apply.**

   The file is successfully unblocked when the Unblock button is greyed out or not present in the window.
5. **Click OK.**

   You can now unzip the `.zip` file.

System Limitations and Restrictions

These topics document system limitations and restrictions for the host drivers.

- "Features Not Supported" on page 5
- "Windows Server 2012 R2 SAN Boot Fibre Channel Card Settings" on page 6
- "Virtual Resources Supported per Server" on page 6
- "Host Driver Upgrade Path Not Supported" on page 6
- "Support for Pillar Data Storage" on page 6
- "Considerations for Windows Server 2012 R2 and Hyper-V" on page 7
- "Unique Names for VNICs and VHBAs" on page 7
- "Disable Automatic Windows Updates" on page 8
- "Driver Verifier Might Degrade Device Performance" on page 8
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- "VHBA Device IDs Do Not Persist" on page 8
- "Enhanced MTU Usage on Host-Side VNIC Devices" on page 9
- "Set Unique UUIDs on Blades in Blade Servers" on page 9

Features Not Supported

Some features are not supported in the 5.2.2-WIN release:

- iSCSI Boot
- Windows PVS functionality
- HA VNICs configured from the Oracle Fabric Interconnect or from Oracle Fabric Manager

---

Note – Do not use the HA VNIC feature in XgOS (which adds a primary and secondary VNIC) or Oracle Fabric Manager (which adds a specific GUI object for HA VNICs). The behavior of the HA Flag for VNICs is inconsistent across the Oracle Fabric Interconnect and the Windows host. On the Windows Server host, you can use the HA functionality by adding two regular VNICs from Oracle Fabric Manager or the Oracle Fabric Interconnect, and team them using native NIC teaming functionality in the Windows OS. Though it is still possible to add a true HA VNIC through the CLI on the Oracle Fabric Interconnect, that addition is not supported. Do not use the `-ha` argument when creating HA VNICs from XgOS that will be pushed to a Windows host.

- Virtual FC (NPIV) and its features and functionality

Windows Server 2012 R2 SAN Boot Fibre Channel Card Settings

Before configuring SAN boot for a Windows Server 2012 R2 host, you must run a script on the Oracle Fabric Interconnect to make the existing Fibre Channel card settings compatible with Window Server 2012 R2. The `xt_init_depth.sh` script is available from your authorized Oracle Service Provider.

Virtual Resources Supported per Server

This table lists the maximum number of virtual I/O resources of type supported on a Windows Server 2012 R2 host with 8 GB of memory.

I/O Resource	Maximum of Type
VNICs	• 8 VNICs • 8 PVI VNICs
VHBAs	• 16 VHBAs • 8 multipath VHBAs

Host Driver Upgrade Path Not Supported

A direct upgrade of host driver host driver 5.1.0-WIN or host driver 5.2.1 to host driver 5.2.2-WIN is not supported for local booted Windows hosts. You can uninstall the older host drivers and install the new host drivers. Be aware that uninstalling and re-installing host drivers requires you to reconfigure any IP configuration, NIC teaming configuration, and also to remove and recreate any Hyper-V switches using VNICs.

However, a direct upgrade of host driver 5.2.1-WIN to host driver 5.2.2-WIN is supported for Windows 2012 R2 SAN booted hosts. See "Upgrade From Host Driver 5.2.1-WIN to Host Driver 5.2.2-WIN" on page 17.

Support for Pillar Data Storage

Oracle VHBAs support connecting to Pillar Data storage functionality.

- Windows Server 2012 R2 – Pillar's FS Path Manager 4.0 is qualified for multipath support.

- Windows Server 2012 – Pillar's AxiomONE Path Manager (APM) 3.2 is required for multipath support.

Considerations for Windows Server 2012 R2 and Hyper-V

Be aware of the following:

- Removing a VNIC from a Hyper-V server that has been assigned to a VM through the Virtual Network Manager causes the VM's network adapter to change to type Internal. Adding the same VNIC back without first removing the configuration for that network adapter prevents the network adapter from passing traffic. This is a Microsoft limitation occurring with physical NICs that have been uninstalled and added back by using a hardware rescan in the Device Manager.

  The proper sequence is to remove the setting from the Virtual Network Manager, add the VNIC back, add the VNIC to the Virtual Network Manager, and then assign the VNIC to the VM.
- Ensure that all Network Adapter setting windows are closed before:
  - Adding any VNICs
  - Modifying the Virtual Network Manager

  You can verify that the system has not opened any network properties in the background by opening a network adapter's properties and observing if Windows alerts you that an adapter properties window is already open. If no alert is displayed, close the properties window, and now you can add VNICs or modify the Virtual Network Manager.
- The Virtual Network Manager can fail with an `adapter already bound to switch` message if too many VNICs are added to the Virtual Network Manager at the same time. Simultaneously adding VNICs in groups of four or less is reliable. Allow each group of VNICs to be successfully added before attempting to add the next group.

  If an `adapter already bound` message is displayed, protocols are bound, and the VNICs do not function properly in that state. Open the network properties of each remaining Oracle Failover Adapter and uncheck the Microsoft Virtual Network Switch Protocol. Do this for each VNIC left on the system.

Unique Names for VNICs and VHBAs

Ensure that VNIC and VHBA names are unique. If a VNIC and VHBA share the same name, for example, `tenchi.profile1`, the first instance of the name is installed. However, all subsequent instances of the name do not install.

Disable Automatic Windows Updates

Microsoft Windows products have the ability to automatically download and install updates without user intervention. These updates might be incompatible with or supersede necessary host drivers already installed.

Disable the automatic updates. Contact your authorized Oracle Service Provider for assistance before applying Windows Server 2012 R2 updates.

Driver Verifier Might Degrade Device Performance

The Window's Driver Verifier is a testing application used by driver developers. By design, the application sacrifices performance for intensity, and it should not be enabled unless you are specifically testing driver stability.

Do not run Windows Driver Verifier on any of the devices.

Error Message From DCOM Source

In the Event Viewer system event log, you might see an error message logged from the DCOM source. The error message manifests from application-specific permissions being incorrectly set. This issue is being investigated, and you can safely ignore it.

VHBA Device IDs Do Not Persist

When a Server Profile disconnects and then reconnects, new device IDs are assigned to the VHBAs and their disks. Windows Server cluster resources expect the original device IDs and might fail for the affected VHBAs.

The `-local-id=` option of the `add vhba` command enables device IDs to persist through a Server Profile disconnect and reconnect. When creating VHBAs in a Windows Server cluster, use the `add vhba` *name*`|*` `-local-id=` command.

Enhanced MTU Usage on Host-Side VNIC Devices

A new feature is the ability to set the VNIC device's MTU. This is achieved through the Device Manager of the Windows Server 2012 or 2012 R2 host. However, there is an already existing MTU, the `IO Port MTU`, configured for the device by XgOS.

The contention of the VNIC or HA VNIC device's MTU and the `IO Port MTU` is handled in the following manner for host drivers starting with version 5.1.0-WIN.

- By default, the MTU field has a zero value on the VNIC device. If left unchanged, XgOS sets the MTU field to the `IO Port MTU` value.
- If the MTU field is set or changed on the VNIC device to a value less than or equal to the `IO Port MTU` size, then the VNIC device MTU takes precedence and remains.
- If the MTU field is set or changed on the VNIC device to a value greater than the `IO Port MTU` size, the VNIC device MTU value is ignored and the `IO Port MTU` is used instead.

Note – The maximum value for the VNIC device's MTU is 9194, which is also the maximum supported by XgOS.

The Oracle Fabric Interconnect event log contains one of the following messages whenever the MTU is set for the VNIC device:

- If the VNIC-device MTU is used:

```
System Event, Type : Information : "VNIC-name Used RegMTU registry-configured-MTU-size,
VNMtu Xgos-IO-port-MTU-size"
```

- If the I/O Port MTU is used and the VNIC-device MTU is ignored:

```
System Event, Type : Warning : "VNIC_name Used VNMtu Xgos_IO_Port_MTU_size, Ignored
RegMTU registry_configured_MTU_size"
```

▼ Set Unique UUIDs on Blades in Blade Servers

Due to a restriction in hardware, some blades within blade servers do not have unique UUIDs. Instead, they inherit the UUID of the blade server's chassis, which causes multiple blades to have the same UUID. Use this procedure to set unique UUIDs based upon port GUIDs for blades that are hosting Windows Server 2012 R2.

1. **Start the `regedit` tool (registry editor) on the blade requiring a unique UUID.**

2. **In the registry editor, display the XSIGOIOV folder by navigating this path.**

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\XSIGOIOV
```

3. **Right-click in the open area of the right pane, and from the New drop-down menu, select DWORD (32-bit) Value to add a new entry.**
4. **Name the new entry** `RegUsePortGUIDasUUID`.

   Verify that you typed this correctly.
5. **Right-click the** `RegUsePortGUIDasUUID` **entry, and select Modify.**

   The Edit DWORD dialog box is displayed.
6. **In the Value data field, type** `1` **to enable using the port GUID as the blade's UUID.**
7. **Click OK, and close all open dialog boxes.**
8. **Start the Server Manager, open Configuration, and click Services.**

   The Services pane is displayed.
9. **Left-click the XsigoIOV Service, right-click, and from the drop-down menu, select Restart.**

   After a moment, the XsigoIOV service is restarted, and the blade hosting the Windows Server 2012 R2 receives an unique UUID.
10. **Repeat from** Step 1 **for each blade requiring a unique UUID.**

Known Issues

Unless indicated otherwise, these are outstanding issues with both the Windows Server 2012 R2 and Windows Server 2012 host drivers.

Bug ID	Description
20406513	**Checksum Flag Issues With the Oracle Solaris/VMware ESX/Oracle Linux Host** By default, PVI VNIC checksum is offloaded in Windows. However, you might see issues with running traffic to an Oracle Linux host, VMware ESX host, or an Oracle Solaris host. **Workaround**: Enable checksum offload for an Oracle Linux host, a VMware ESX host, or an Oracle Solaris host from the Oracle Fabric Interconnect as well.

Bug ID	Description
19610081	**PVI VNIC Stays in `up/indeterminate` State When the SP is Disconnected/Connected** You might notice that PVI VNIC stays in `up/indeterminate` state after the server profile (SP) disconnect or connect. **Workaround**: This is just a display issue and there is no impact on the functionality or performance. PVI VNIC status changes to `up/up` state after a few minutes.
19021008	**PVI Link Speed Display Issue** PVI VNIC might display wrong value in some scenarios. This is just a display issue and there is no impact on the functionality or performance. No workaround for this issue.
18101003	**VHBA Staying in `up/down` State on Windows Server 2012 or 2012 R2 Host** After booting a Windows Server 2012 or 2012 R2 host, either locally or through SAN boot, the VHBAs might stay in an `up/down` state. **Workaround**: For local boot, disable and reenable the Mellanox bus driver from the Device Manager → System Devices on the Windows Server 2012 or 2012 R2 host. For SAN boot, ensure that the Oracle Fabric Interconnect Fibre Channel settings have been modified. See "Windows Server 2012 R2 SAN Boot Fibre Channel Card Settings" on page 6.
19516129	`Unknown completion type:200` **Error During Boot** If you have configured two server profiles for the same server and connected to two Oracle Fabric Interconnects for SAN boot, you might see an `Unknown completion type:200` error message. **Workaround**: Configure only one server profile for SAN boot from one Oracle Fabric Interconnect. The multipath still functions as expected after booting from the LUN.
19505931	**Performance Options Window Is Displayed During Login** On occasion, when the Windows 2012 R2 host boots, the Performance Options window is displayed, implying that the paging file has no space allocated. However, the user is unable to change the size of the paging file. **Workaround**: There is no workaround available at this time.
18885793	**Xsigo VNIC and VHBA Name Display Issue** Though VNICs and VHBAs have unique names when created, the Device Manager displays them as Xsigo Virtual Ethernet Adapter and Xsigo Virtual HBA Adapter, respectively. **Workaround**: Disconnect, then reconnect the Server Profile. Alternatively, reboot the host.
16404591	**Teaming With LACP Fails to Bring Up Network Link** When NIC teaming is used on the Windows host, the LAG expects to receive LACP packets, which the Oracle Fabric Interconnect does not initiate. Presently, for Windows host drivers, VNICs do not support LACP.
16338335	**Second Hard Disk in Clustered Virtual Machine Might Fail on Live Migration if a RAW LUN Is Mapped and Running traffic** **Workaround**: 1. Remove the disk from the VM and then from the cluster. 2. Remove the persistent reservation bindings for the LUN. 3. Add the disk back to the cluster and then to the VM.

Bug ID	Description
16337397	**Driver Upgrade From Previous Versions Fails to Install** A direct upgrade of host driver 5.1.0-WIN or host driver 5.2.1-WIN to host driver 5.2.2-WIN is not supported for local booted Windows hosts. **Workaround**: You can uninstall the older host drivers and install the new host drivers. Be aware that uninstalling and re-installing host drivers requires you to reconfigure any IP configuration, NIC teaming configuration, and also remove and re-create any Hyper-V switches using VNICs. Also, a direct upgrade of host driver 5.2.1-WIN to host driver 5.2.2-WIN is supported for Windows 2012 R2 SAN booted hosts. See "Upgrade From Host Driver 5.2.1-WIN to Host Driver 5.2.2-WIN" on page 17.
20427891	**Disconnecting PVI Paths Can Cause BSOD** You might encounter a crash while disconnecting the PVI paths. You might not be able to reproduce this issue completely. You can encounter this issue when there are more number of PVI VNICs and there is a running load on PVI VNICs. It is recommended that before performing IB disconnect, server profile disconnect, or Oracle Fabric Interconnect reboot, stop all traffic and bring all VNICs down and then execute the path disconnect commands.

Documentation Issues

These topics describe information that was omitted from the host driver or remote booting documentation or is incorrect as originally published.

- "xg_fwupdate.vbs Script Is Still Documented" on page 12
- "SAN Boot Windows Server 2012 R2" on page 12
- "Perform a SAN Install for Windows Server 2012 R2" on page 16

`xg_fwupdate.vbs` Script Is Still Documented

Starting with host driver version 5.1.0-WIN, the `xg_fwupdate.vbs` script is no longer supported. Some Oracle Fabric Interconnect documentation still describes using the script. Do not use the `xg_fwupdate.vbs` script.

SAN Boot Windows Server 2012 R2

These topics describe how to create a SAN-bootable image for the Windows Server 2012 R2 host, using another Windows host to form the image.

- "Create a Backup Image for Booting" on page 13

- "Restore the Backup to the VHBA LUN Volume" on page 14

▼ Create a Backup Image for Booting

This procedure assumes the following:

- There is a Windows host with a local hard drive.
- The HCA installed on the Windows host has firmware and boot ROM appropriate for the Windows Server 2012 R2 host drivers. See "Download and Install Supported Firmware Versions for Oracle HCAs" on page 2.
- You have the Windows Server 2012 R2 DVD.

Note – You must have installed the `xt_init_depth.sh` script on your Oracle Fabric Interconnect before attempting SAN boot. See "Windows Server 2012 R2 SAN Boot Fibre Channel Card Settings" on page 6.

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1. **Install Windows Server 2012 R2 to the local disk of the Windows host.**

   Do not attempt to install the OS to the SAN LUN.

2. **Download and install the 5.2.2-WIN host drivers to the local disk of the Windows host and reboot as required.**

   See "Download and Install Supported Host Drivers" on page 3.

3. **Install the Windows Server Backup utility from the Add/Remove Roles and Features section of the Server manager.**

4. **On the Oracle Fabric Interconnect, create a Server Profile for the physical server you plan to SAN Boot.**

5. **Add a VHBA with one LUN to the Server Profile.**

   The LUN should be large enough to contain the OS and applications you intend to install.

6. **Bind the Server Profile to the server that requires SAN boot.**

```
set server-profile name connect hostname@fabric-interconnect-name:server-port
```

where:

- *name* is the identifier of the Server Profile.
- *hostname* is the host name of the server to SAN boot.
- *fabric-interconnect-name* is the identifier of the Oracle Fabric Interconnect to moderate the SAN boot.

- *server-port* is the port of the Oracle Fabric Interconnect attached to the server to SAN boot.

7. **On the Windows host, start Windows Server Backup from Admin Tools.**
8. **Select Local Backup.**
9. **In the Actions panel, double-click Backup Once.**
10. **Select Different options and click Next.**
11. **Select Custom and click Next.**
12. **Check the following items and click OK.**
    - Bare metal recovery
    - System state
    - System Reserved
    - Local disk (C:)
13. **Select the backup destination and click Next.**

    The backup destination can be a different drive on the local host, or a remote drive.
14. **Confirm the operation and click Backup.**

    The backup progress is displayed.
15. **When the backup is finished, click Close.**

▼ Restore the Backup to the VHBA LUN Volume

Note – You must have installed the `xt_init_depth.sh` script on your Oracle Fabric Interconnect before attempting SAN boot. See "Windows Server 2012 R2 SAN Boot Fibre Channel Card Settings" on page 6.

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1. **Format the newly added VHBA LUN and make it an active partition.**

   It is assumed the drive letter for the LUN will be `h`. If it is not, you will need to modify the `fixbcd.cmd` and `fixregistry.cmd` files used in Step 15 and Step 16.
2. **On the Windows host, start Windows Server Backup from Admin Tools.**
3. **Select Local Backup.**
4. **In the Actions panel, double-click Recover.**

5. **Click the radio button for where the backup is stored, and click Next.**
6. **(Optional) Specify the host and path where the backup is located, and click Next.**
7. **Select Files and folders and click Next.**
8. **Select the System Reserved folder and click Next.**
9. **Select Another location and click Browse.**
10. **Browse to the VHBA LUN volume, select it, and click OK.**
11. **Click Next, confirm the operation, and then click Recover.**
    The recovery progress is displayed.
12. **When the recovery completes, click Close.**
13. **Repeat** Step 4 **through** Step 12 **to recover the** `C:` **folder.**
14. **As the admin user of the Windows host, open a command window.**
15. **Edit the boot configuration data for the SAN boot volume.**

Note – If the VHBA LUN drive letter is not `h`, you must modify the `fixbcd.cmd` file to accommodate the actual VHBA LUN drive letter.

```
hostdrivers_windows_5.2.2-WIN_FREE\xsigos-5.2.2.4\xsigo\fixbcd.cmd
```

16. **Update the registry settings for the SAN boot volume.**

Note – If the VHBA LUN drive letter is not `h`, you must modify the `fixregistry.cmd` file to accommodate the actual VHBA LUN drive letter.

```
hostdrivers_windows_5.2.2-WIN_FREE\xsigos-5.2.2.4\xsigo\fixregistry.cmd
```

17. **Complete the SAN boot process as you would do for Windows Server 2008 R2.**
    Refer to the *XgOS Remote Boot Guide*.

▼ Perform a SAN Install for Windows Server 2012 R2

In this procedure you will inject Windows Server 2012 R2 host drivers into the Windows Server 2012 R2 DVD image. This procedure assumes the following:

- There is either a Windows 8.1 or Windows Server 2012 R2 host with a local hard drive.
- PowerShell is installed on the Windows host.
- The Windows Automated Installation Kit is installed on the Windows host.
- You have the Windows Server 2012 R2 DVD.
- You have downloaded the Windows host drivers version 5.2.2-WIN to the Windows host. See "Download and Install Supported Host Drivers" on page 3.

Note – You must have installed the `xt_init_depth.sh` script on your Oracle Fabric Interconnect before attempting SAN boot. See "Windows Server 2012 R2 SAN Boot Fibre Channel Card Settings" on page 6.

---

1. **Become the admin user of the Windows host.**
2. **Create these temporary folders.**
   - `C:\Temp\win2012r2`
   - `C:\Temp\300`
   - `C:\temp_mount`
3. **Copy the contents of the Windows Server 2012 R2 DVD to** `C:\Temp\win2012r2`**.**
4. **Unzip the** `hostdrivers_windows_5.2.2_FREE.zip` **file and copy the file structure into** `C:\Temp\300`**.**
5. **Navigate to** `C:\Temp\300\hostdrivers_windows_5.2.2-WIN_FREE\xsigos-5.2.2.4\xsigo\PEdrivers\`**.**
6. **Run the** `XsigoPkgAddToW2k8_to_W2k12R2_DVDImage.bat` **file in PowerShell with the appropriate arguments.**

   The batch file has the following syntax.
   `XsigoPkgAddToW2k8_to_W2k12R2_DVDImage.bat` *win2012r2 path-to-DVD-contents path-to-drivers driver-folder-name path-to-WAIK temporary-mount-point*

   where:

   - *win2012r2* is the OS DVD folder location. This folder must have write access for the current user.

- *path-to-DVD-contents* is the file path to the DVD that contains the modified OS image.
- *path-to-drivers* specifies the path to the Xsigo host drivers.
- *driver-folder-name* specifies the path to the folder on the DVD where the Xsigo host drivers are.
- *path-to-WAIK* specifies the full file system path to the location of the Windows Automated Installation Kit.
- *temporary-mount-point* is a temporary mount point for the batch file to use.

For example:

```
XsigoPkgAddToW2k8_to_W2k12R2_DVDImage.bat win2012r2 C:\Temp\win2012r2 C:\Temp\
300\xsigos-5.2.2.2 xsigos-5.2.2.2 "C:\Program Files\WindowsAIK" C:\temp_mount
```

7. **Verify that the command runs without any errors.**

   Press any key if the command seems to be taking a while or not responding.

8. **Perform the steps to upload the DVD image to a WDS server, and complete the OS installation.**

   Refer to the *XgOS Remote Boot Guide*.

▼ Upgrade From Host Driver 5.2.1-WIN to Host Driver 5.2.2-WIN

Upgrade from host driver 5.2.1-WIN to host driver 5.2.2-WIN is supported only for Windows 2012 R2 SAN booted hosts. If you want to upgrade on a locally booted host, then you might have to uninstall and reinstall the host drivers.

1. **Download the host driver 5.2.2-WIN.**
2. **Copy the host driver 5.2.2-WIN to the SAN booted hosts.**
3. **Unzip the** `.zip` **file.**
4. **Navigate to** `hostdrivers_windows_5.2.2-WIN_FREE\xsigos-5.2.2.4\xsigo\`**.**
5. **Run the** `Update_SAN_Drivers.vbs` **script in PowerShell to update the drivers.**
6. **Reboot the SAN booted Windows Server 2012 R2 server twice to complete the installation procedure.**