HP StorageWorks QLogic Adapters
Release Notes

Abstract
This document contains driver, firmware, and other supplemental information for the QLogic Fibre Channel host bus adapters (HBAs) for ProLiant and Integrity servers using Linux, Windows, VMware, or Citrix operating systems.
Product models

This section lists the supported Fibre Channel HBAs on ProLiant and Integrity servers.

Supported HBA and mezzanine product models

Table 1 describes the HBAs and mezzanine cards supported on servers running Linux, Windows, VMware, or Citrix operating systems.

Legend: • = supported; — = not supported

Table 1 Supported HBAs and mezzanine cards

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<td>8-Gb HBAs and mezzanine cards</td>
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<td>HP StorageWorks QMH2562 8-Gb FC mezzanine card HBA</td>
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<td>HP StorageWorks 81Q 8-Gb PCI-e HBA</td>
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<td>HP StorageWorks 82Q 8-Gb PCI-e Dual Channel HBA</td>
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<td>HP PCIe 1-port 8-Gb Fibre Channel HBA (AH400A)</td>
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<td>HP PCIe 2-port 8-Gb Fibre Channel HBA (AH401A)</td>
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| 4-Gb HBAs and mezzanine cards                                         |                      |                      |       |        |        |
| HP StorageWorks QMH2462 4-Gb FC HBA for HP c-Class BladeSystem        | •                    | •                    | •     | •      | •      |
| (product number 403619-B21)                                          |                      |                      |       |        |        |
| HP StorageWorks FC1142SR 4-Gb PCI-e FC HBA                           | •                    | •                    | •     | •      | •      |
| (product number AE311A)                                              |                      |                      |       |        |        |
| HP StorageWorks FC1242SR 4-Gb PCI-e dual-port FC HBA                 | •                    | •                    | •*2   | •      | •      |
| (product number AE312A)                                              |                      |                      |       |        |        |
| HP PCIe 2-port 4-Gb PCI-e (AD300A)                                   | •*3                  | •*3                  | •*3   | —      | —      |
| HP StorageWorks FC1143 4-Gb PCI-X FC HBA (product number AB429A)      | •                    | •                    | •     | •      | •      |
| HP StorageWorks FC1243 4-Gb PCI-X dual port FC HBA                   | •                    | •                    | •*2   | •      | •      |
| (product number AE369A)                                              |                      |                      |       |        |        |
| HP 2-port 4-Gb PCI-X (AB379B)                                        | •*3                  | •*3                  | •*3   | —      | —      |

| 2-Gb HBAs and mezzanine cards                                         |                      |                      |       |        |        |

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<td>HP PCI-x Q2300 1-port 2-Gb PCI-X (AB379B)</td>
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<td>HP PCIe 2-port 2-Gb PCI-X (A6826A)</td>
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<tr>
<td>HP QLogic-based BL20p 2-Gb PCI-X FC mezzanine card (product number 300874-B21)</td>
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<tr>
<td>HP QLogic-based BL30/35p PCI-X FC mezzanine card (product number 354054-B21)</td>
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<tr>
<td>HP QLogic-based BL25/45p PCI-X FC mezzanine card (product number 381881-B21)</td>
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1The QMH2562 is supported with most G6 and later ProLiant blade servers with the exception of BL465G6 and BL495G6
2No IA64 support
3IA64 support only

Devices supported

The QLogic HBAs for Linux, Windows, VMware, and Citrix are supported on HP servers that:


For storage array support, see the SPOCK website at [http://www.hp.com/storage/spock](http://www.hp.com/storage/spock). You must sign up for an HP Passport to enable access.

Operating systems

This section describes how you can obtain the latest information about supported operating systems and software.

Linux support

This section describes Fibre Channel HBA support for Linux, including prerequisites and additional installation instructions.

Prerequisites

Before you perform Fibre Channel HBA updates, you must:

- Ensure that the system is running one of the operating system versions listed in HBA Software Support Matrices, available at the SPOCK website http://www.hp.com/storage/spock. You must sign up for an HP Passport to enable access.
- See the HP server PCI slot specifications to determine if your server is compatible with the Fibre Channel HBAs.
- If you are installing the Linux operating system for the first time, load the operating system and then download and install the supported Linux Fibre Channel HBA driver from the HP website http://welcome.hp.com/country/us/en/support.html.

**NOTE:**
Starting with RHEL 5 U3, SLES 10 SP3, and SLES 11, Fibre Channel HBAs and mezzanine cards are supported by Red Hat and Novell in-box drivers (included in the OS distribution), and multipath failover is handled by Device Mapper.

Installation instructions for Linux

This section describes software installations on Linux.

Installing the Linux device driver using Red Hat in-box driver

For instructions on how to install Linux while using the in-box drivers, see the HP website: http://www.hp.com, and then search for device mapper + boot + san.

After you install the operating system, you must install:

- The HP-supplied Device Mapper Multipath Kit, should a multiple path redundancy need exist. See the HP website: http://www.hp.com/go/devicemapper
- The hp-fc-enablement kit.

Installing the HP Fibre Channel Enablement Kit

The HP Fibre Channel Enablement Kit provides additional libraries and configuration utilities to enable HP StorageWorks Fibre Channel storage arrays to work with Linux. The Fibre Channel Enablement Kit is not required to use the lpfc and qla2xxx kernel modules, but it does provide configuration scripts that ensure that your configuration is set properly to work with HP StorageWorks Fibre Channel arrays. The Fibre Channel Enablement kit also sets the correct lpfc and qla2xxx kernel module settings that are used with Device Mapper Multipathing.
NOTE:
If you are using any HP management applications, you will need the HBAAPI libraries that come with the hp-fc-enablement RPM.

To install the HP Fibre Channel Enablement Kit:

1. Download the `hp-fc-enablement-yyyy-mm-dd.tar.gz` file for your operating system and copy it to the target server.

2. Untar the enablement kit by executing the command to create the directory, `hp-fc-enablement-yyyy-mm-dd`.
   
   ```bash
   # tar zxvf hp-fc-enablement-yyyy-mm-dd.tar.gz
   ```

3. Browse to the directory `hp-fc-enablement-yyyy-mm-dd`.

4. Do one of the following to execute the `install.sh` script.
   - If you are not using Device Mapper Multipathing, execute the following command:
     
     ```bash
     # ./install.sh -s
     ```
   - If you are using Device Mapper Multipathing, execute the following command:
     
     ```bash
     # ./install.sh -m
     ```

   To verify the installation, enter the following commands:
   
   ```bash
   # rpm -q hp-fc-enablement
   # rpm -q fibreutils
   ```

NOTE:

The driver that comes with the kernel requires fibreutils 3.x or later.

Uninstalling the Fibre Channel Enablement Kit

To uninstall the Fibre Channel Enablement Kit, untar the kit as described in the installation steps 1 through 3, and then execute the `install.sh` script with the following flag:

```bash
# ./install.sh -u
```

To uninstall the RPMs in the enablement kit manually, enter the commands:

```bash
# rpm -e hp-fc-enablement
# rpm -e fibreutils
```

Installing HP supported QLogic driver (pre RHEL 5 U3)

HP does not currently support the driver that comes with the Linux kernel. Instead, you must install an appropriate driver from the Fibre Channel HBA website:

```
```

To obtain the HBA driver, download the appropriate driver kit for your operating system.

To install Linux on a BFS LUN with driver versions that are not supported by the initial OS release, the new driver must be integrated as part of the installation process using a DD-kit.
Driver failover mode

If you use the install command without flags, the driver’s failover mode depends on whether a QLogic driver is already loaded in memory, (listed in the output of the `lsmod` command). Possible driver failover mode scenarios include:

- If an `hp qla2x00src` driver RPM is already installed, the new driver RPM will use the failover of the previous driver package.
- If there is no QLogic driver module (`qla2xxx` module) loaded, the driver will default to failover mode. This is also true if an in-box driver is loaded that does not list output in the `/proc/scsi/qla2xxx` directory.
- If there is a driver that is loaded in memory that lists the driver version in `/proc/scsi/qla2xxx` but no driver RPM has been installed, the driver RPM will load the driver in the failover mode that the driver in memory is currently in.

Installation instructions

1. Download the appropriate driver kit for your distribution. The driver kit file will be in the format `hp qla2x00-yyyy-mm-dd.tar.gz`.
2. Copy the driver kit to the target system.
3. Uncompress and untar the driver kit using the following command:
   ```bash
   # tar zxvf hp qla2x00-yyyy-mm-dd.tar.gz
   ```
4. Change directory to the `hp qla2x00-yyyy-mm-dd` directory.
5. Execute the **INSTALL** command.

The **INSTALL** command syntax will vary depending on your configuration. If a previous driver kit is installed, you can invoke the **INSTALL** command without any arguments as the script will use the currently loaded configuration:

```
# ./INSTALL
```

To force the installation to failover mode, use the `-f` flag:

```
# ./INSTALL -f
```

To force the installation to single-path mode, use the `-s` flag:

```
# ./INSTALL -s
```

Use the `-h` option of the **INSTALL** script for a list of all supported arguments. The **INSTALL** script will install the appropriate driver RPM for your configuration, as well as the appropriate fibreutils RPM. Once the **INSTALL** script is finished, you will either have to reload the QLogic driver modules (qla2xxx, qla2300, qla2400, qla2xxx_conf) or reboot your server.

The commands to reload the driver are:

```
# /opt/hp/src/hp_qla2x00src/unload.sh
# modprobe qla2xxx_conf
# modprobe qla2xxx
# modprobe qla2300
# modprobe qla2400
```

The command to reboot the server is:

```
# reboot
```

⚠️ **CAUTION:**

If your boot device is a SAN attached device, you will have to reboot your server.

To verify which RPM versions are installed, use the `rpm` command with the `-q` option.

For example:

```
# rpm -q hp_qla2x00src
# rpm –q fibreutils
```

---

### Installing the operating system using a DD-kit

This section pertains to the 81Q and 82Q PCI-e 8-Gb HBAs. DD-kits for both Novell and Red Hat can be found in a single compressed file. The file will be located in the **Driver - Storage Controllers - FC HBA** section of the Download drivers and software page after selecting the HBA then the operating system to be installed. The files are in a ISO format that require expanding. Use CD burner software to expand the ISO file matching the operating system being installed.

### Installing Novell SLES 9 SP4 with a DD-kit

1. Insert the **Novell product CD #1** into the CD drive, and then boot the system.
2. On the main installation screen, press **F5**.
Three options appear: Yes, No, or File.

3. Select Yes.
4. Select an installation option, and then press Enter.
   A prompt asking you to choose the driver update medium appears.
5. With the DD-kit CD in the CD drive, press Enter to start loading the driver update to the system.
   If the driver update is successful, the message, Driver Update OK appears.
6. Press Enter.
   If the system prompts you to update another driver, click Back, then press Enter.
   A message asking you to make sure that CD #1 is in your drive appears.
7. Insert CD #1 into the CD drive, and then click OK.
8. Follow the on-screen instructions to complete the installation.

Installing Red Hat RHEL 4 U6 with a DD-kit

1. Insert Red Hat product CD #1 in the CD drive, and then boot the system.
   The system boots from the CD and stops at the boot prompt.
2. Enter Linux dd at the boot prompt, and then press Enter.
   The message, Do you have a driver disk? appears.
3. Click Yes, and then press Enter.
4. From the Driver Disk Source window, select the driver source: Select hdx (where x=CD drive letter), and then press Enter.
   The Insert Driver Disk window displays.
5. Insert the DD-kit disk into the CD drive.
6. Click OK, and then press Enter.
   This loads the driver update to the system. The Disk Driver window displays, prompting for more drivers to install.
7. Click No, and then press Enter.
8. Insert CD #1 in the drive, and then click OK.
9. Follow the on-screen instructions to complete the installation.

Windows support

This section describes Fibre Channel HBA support for Windows.

Windows on ProLiant servers

Fibre Channel HBAs are supported on ProLiant servers with Enterprise, Standard, Storage Server, and Datacenter versions of the following:

- Windows Server 2003 x86 – SP1, R2, SP2 (32-bit) (Storport and SCSIport)
- Windows Server 2003 x64 – SP1, R2, SP2 (64-bit) (Storport only)
- Windows Server 2008 W32 – SP2
- Windows Server 2008 x64 – SP2, R2
Windows on Integrity servers

Fibre Channel HBAs are supported on Integrity servers with Enterprise, Standard, Storage Server, and Datacenter versions of the following:

- Windows Server 2003, IA64 — SP1, SP2
- Windows Server 2008, IA64 — SP2, R2

VMware support

HP supports the use of Windows and Linux as a guest operating system on VMware ESX versions 2.5.x, 3.x, and 4.x. When running VMware, Fibre Channel HBAs are supported by the in-box drivers supplied with ESX. Windows and Linux Fibre Channel HBA drivers are not used on the virtual operating system.

**NOTE:**

You do not need to install the QLogic driver because it is shipped in-box with the ESX server.

To ensure that your HBA is supported by HP and VMware, see VMware compatibility guide at: [http://www.vmware.com/resources/compatibility/search.php](http://www.vmware.com/resources/compatibility/search.php).

Boot from SAN on VMware


Installing the driver

You do not need to install the QLogic driver because it ships in-box with the ESX server.

**NOTE:**

VMware ESX is not supported on the IA64 architecture.

Citrix support

Citrix Version 5.0 provides initial support for 8-Gb HBAs. Citrix Version 5.5. and later provide support for 8-Gb mezzanine cards.

Restrictions and issues

This section describes restrictions and issues for QLogic adapters running Linux and Windows.

Linux restrictions and issues

This section describes restrictions and issues for QLogic adapters running Linux.
Filesystem recommendation


For information on the differences between ext2 and ext3, see the operating system documentation.

SLES11 reiserfs issue

HP and Novell are currently evaluating a report that Reiserfs filesystems show unexpected behavior under heavy load. Other filesystems such as xfs and ext3 are not affected by this behavior. HP recommends that you use one of these filesystems to meet your needs. This is a high priority issue that is in the process of being resolved. When a resolution is found, a maintenance update will be available at the Novell website http://support.novell.com/.

Presenting LUNs to a Linux host

When presenting XP LUNs to a Linux host,

- The LUNs must start with a LUN 0.
- The LUNs must be presented across all paths that are connected/configured from the XP storage array.
- If LUN 0 is not present, SANsurfer will show the XP array as offline.

Driver auto-compilation supported

What is auto-compilation?

Auto-compilation is the ability to have the QLogic Fibre Channel HBA driver automatically compile itself when a new kernel is loaded. The advantage of having the QLogic FC HBA driver compile itself automatically is that an administrator will not have to manually invoke the driver compile scripts, so that the new kernel is running the HP-approved FC HBA driver for QLogic.

How does auto-compilation work?

Auto-compilation is achieved by adding a trigger script to the kernel-source and kernel-devel RPMs in both Red Hat and Novell Linux distributions. What a trigger script does is when either the kernel-source or kernel-devel RPMs are either installed or upgraded, a small script will run and see if the QLogic FC HBA driver needs to be compiled for the new kernel. This script is actually located in /opt/hp/src/hp_qla2x00src/smart_compile.

What happens is this script is initially run when the hp_qla2x00src RPM is installed to take an inventory of kernels that have already been installed on the server. When the trigger script runs, it calls the smart compile script to compile the currently installed HP QLogic FC HBA driver for all the kernels that it does not have in its repository.

Once smart_compile is finished compiling the driver for all the newly installed kernels, it updates its inventory of kernels so that it contains the new kernels it just compiled the driver for. Thus, if smart_compile is run again it won’t compile the drivers that it has already compiled the kernel for again.
Example 1. Auto-compilation example

An example of what would happen during an auto-compile follows:

1. User enables auto-compilation as specified in the section How to enable auto-compilation.
2. User installs the actual kernel binary RPM.
3. User installs the kernel development RPM (either kernel-source or kernel-devel).
4. Trigger script is run. If auto-compilation has been enabled, then smart_compile is run.
5. Auto-compilation script (smart_compile) compiles the QLogic FC HBA driver for the newly installed kernel.
   The HP supported QLogic FC HBA driver will then load on next reboot.

How to enable auto-compilation

Auto-compilation of the QLogic driver is turned off by default. To enable auto-compilation, perform the following steps:

1. Change directory to /opt/hp/src/hp_qla2x00src.
2. Run the following command.
   
   # ./set_parm -a

   The script should then output that auto-compilation has been set to yes. If the output says that it has been set to no, simply rerun the set_parm -a command again as the -a switch simply toggles this functionality on and off.

How to disable auto-compilation

1. Change directory to /opt/hp/src/hp_qla2x00src.
2. Run the following command.
   
   # ./set_parm -a

   The script should then output that auto-compilation has been set to no. If the output says that it has been set to yes, simply rerun the set_parm -a command again as the -a switch simply toggles this functionality on and off.

NOTE:

When installing new kernels, in order for auto-compilation to work correctly, you must install the kernel rpm first, followed by the kernel development environment for the same kernel (kernel-source for SLES and kernel-devel for RHEL). Failure to do this will mean that the driver will not get compiled for the new kernel.
NOTE:
In order for auto-compile to work in RHEL 4, you must install the Kernel RPMs in the following order (perform steps 2 and 3 if required).
1. kernel-<version>.<arch>.rpm
2. kernel-<smp/largesmp/hugemem>-<version>.<arch>.rpm
3. kernel-<smp/largesmp/hugemem>-devel-<version>.<arch>.rpm
4. kernel-devel-<version>.<arch>.rpm

About warning messages
During the Kernel upgrade process, the following messages can be ignored.

RHEL 4 All Updates
WARNING: No module qla2xxx_conf found for kernel 2.6.9-55.0.9.EL, continuing anyway

SANsurfer benign messages
While the x86_64 SANsurfer RPM is installing, the following message may appear:
Command.run(): process completed before monitors could start.
This message can be ignored, as SANsurfer will still install and run correctly.
While uninstalling the SANsurfer RPM, the following message will appear at the completion of the uninstall:
Installation complete.
This message can be ignored, as SANsurfer is uninstalled.

Dynamic target addition not supported
Dynamic target addition is defined as adding a new Fibre Channel target (such as adding a new storage array) to a SAN, presenting that new target to a Fibre Channel host bus adapter, and then prompting the operating system to do an online scan (such as using the hp_rescan utility that comes with fibreutils). This functionality is not supported with the QLogic failover driver. If you add a new Fibre Channel target to a host server, you must reboot that host server.

scsi_info command on older XP arrays
When running the scsi_info command on older XP arrays (such as the XP1024/128), you may see output similar to that shown in the following example. Ignore the error, and note that the XP array's WWN is not all zeros.
The XP array returns INQUIRY data that differs slightly from that returned by EVA or MSA arrays.
[root@coco /]# scsi_info /dev/sdal SCSI_ID="4,0,8,0":VENDOR="HP":MODEL="OPEN-E":FW_REV="5005":WWN="0000000000000000":LUN="5235303020303030-3130353930203030"
SANsurfer limitations

- As a safety mechanism, the SANsurfer application does not retain any updates when the user abruptly quits using the Close/Exit button. Users must click on the Save button for any changes or edits made to the HBA.
- Under certain conditions, some LUNs may not appear under the target in the left hand pane. Should this occur, refer to the LUNs displayed in the right hand pane. The O/S has visibility to all of the LUNs. The anomaly is the lack of LUNs being displayed under the target. This behavior is benign and may be ignored.
- With V5.0.1b31, there are a small number of help file links that are in error. These will be fixed in the next SANsurfer release.
- After updating the HBA firmware or multiboot image a system reboot is required.

Enabling extended error logging on 2-Gb cards

The Enable Extended Error Logging feature on 2-Gb cards sets the bit in the /sys/module/qla2xxx/ parameters. However, disabling this feature does not clear the bit.

LUN numbering requirement

When presenting LUNs from a specific storage array to a server, each LUN number must be unique. Specifically, all LUN numbers from a specific storage array to a specific server must be unique. This LUN numbering requirement includes presenting LUNs from the same storage array, but to different sets of HBA ports in the same server. Also, the LUN numbers must be consistent across all HBA ports for the same physical LUN.

Controller Targets Require Data LUNs

After configuring a controller target, you must present at least one data LUN to the server (controller LUNs cannot be presented alone, without a data LUN).

XP load balancing

Automatic dynamic load balancing is not supported on HP XP arrays.
Using SANsurfer

To determine version information on Linux systems:

1. Open SANsurfer.
2. Click an HBA in the left pane to select it.
3. Click the Information tab in the right pane to view the HBA's version information.

Using the Linux more command

To determine version information on Linux systems enter the following more command:

```
more /proc/scsi/qla2xxx/*
```

For 81Q and 82Q only

HP StorageWorks Simple SAN Connection Manager (SSCM) is supported on the Windows based management server and connects to the qlremote agent on the Linux server.

Windows restrictions and issues

This section describes restrictions and issues for QLogic adapters running Windows.

Windows on ProLiant restrictions

Windows on ProLiant restrictions for HBAs are as follows:

- SANsurfer restrictions:
  - You cannot disable an HBA port using Windows Device Manager when the SANsurfer agent is running. If you need to disable the port, stop the SANsurfer agent in the services window or uninstall SANsurfer.
  - The EVA firmware version displayed in SANsurfer may be incorrect due to an EVA issue. When EVA is configured in Windows host mode, the standard Inquiry data returns a constant EVA firmware version number. Obtain the correct EVA firmware version using the SAN Appliance Command View.
  - In an IA64 EFI or IA64 Windows environment, the VPD data on HP QLogic FC HBAs may be displayed incorrectly by SANsurfer. To correct this problem, update a QLogic multiboot package with SANsurfer in a Windows IA64 operating system. Repeat this step a second time.
  - When running Windows Server 2003 x64 using HP Secure Path the entries for Event ID 50, 26, or 57 may be logged to the event log. To correct this problem, follow the instructions in the resolution section for Microsoft hotfix 912593, available on the following website:
    [http://support.microsoft.com/kb/912593](http://support.microsoft.com/kb/912593)
  - On a Windows server, you can use SCSIport and STORport miniport drivers for HBAs from different vendors. However, on that server, all HBAs from a single vendor must operate exclusively with either all SCSIport miniport drivers or all STORport miniport drivers.
  - For the FCA2214 HBA, the event log shows QL2300 Event ID 11 when you reboot one cluster node using the SCSIport miniport driver 9.1.0.13. An internal parity error occurs when de-referencing an invalid XmIoctlList pointer in the following configurations:
    - HP ProLiant DL580 (G2) servers
    - MSA1000 with MSAHUB 2/3
To correct this problem, use the latest driver.

- HP ProLiant DL380 (G4) servers must have System ROMPaq Firmware 4.05 P51-08/16/2005 or later to be compatible with the FC1142SR and FC1242SR HBAs. Failure to use this ROMPaq version can cause the HBAs to hang during the power-on self-test (POST). For more information or to download the firmware, see the following website: 
  

Minimum requirements for 9.1.6.15 and later STORport drivers

Driver upgrades with an HP Smart Component requires at a minimum Windows Server 2003 SP2 with the Microsoft update KB932755, although KB950448 is recommended. Apply the Microsoft STORport update (KB932755) before installing or upgrading to this version of the STORport driver. For boot installations, the Windows Server 2003 SP2 install image is required followed by the KB update.

STORport miniport driver installation restrictions

When upgrading to the STORport miniport driver from a previous versions, consider the following:

- The STORport miniport driver is supported only on Windows 2003 and later.
- Before installing the Windows Server 2003 STORport miniport driver, you must install the latest Microsoft QFE to update the storport.sys driver.
- On any given server, SCsIport and STORport miniport drivers from different vendors may be mixed across an HBA population. All HBAs from a single vendor must operate exclusively with either all SCSIport miniport drivers or all STORport miniport drivers.
- If you are running Secure Path for Windows, you must upgrade to Secure Path 4.0c SP2 or later for Windows. STORport drivers are not supported with earlier versions of Secure Path. You must install the latest STORport QFE before installing the Multipath software.

STORport miniport driver installation restriction for Windows Server 2008 IA64

If you are running Windows Server 2008 for Itanium-based systems on an rx2660, rx3600, rx6600, rx7640, rx8640 or Superdome sx2000 with an AH400A or AH401A 8-GB Fibre Channel HBA, you must complete the following steps:

- If you are using the AH400A/AH401A as a data controller, check the Engineering Date Code (EDC) on your controller before performing an installation on an Integrity server running Windows. The EDC is on the part-number label located on the back side of the controller. If the EDC version is lower than A-4832, run the ASPM/MSI-X Vector Update Utility, and then install Microsoft QFE 957018. If the EDC version is A-4832 or higher, you only need to install Microsoft QFE 957018.

  - To run the ASPM/MSI-X Vector Update Utility:
    2. Install the controller and boot to the EFI shell.
    3. Run the set_msi_vect.nsh tool at the EFI shell. Select Option #1 (Load preload table with 32 MSI-x vectors + ASPM fix) when prompted.

  - To install Microsoft QFE 957018:
    1. After the flash is complete, boot to the operating system and then install the update described in Microsoft Knowledge Base article 957018.
• If you are using the AH400A/AH401A as a boot controller:
  1. Run the ASPM/MSI-X Vector Update Utility before installing the operating system to change the supported MSI-X vectors to 2 when installing to, and booting from, the AH400A/AH401A.
  2. Install Microsoft QFE 957018.
• To run the ASPM/MSI-X Vector Update Utility:
  2. Install the controller and boot to the EFI shell.
  3. Run the set_msi_vect.nsh tool at the EFI shell. Select Option #2 (Load preload table with 2 MSI-x vectors + ASPM fix) when prompted.
• To install Microsoft QFE 957018:
  1. After the flash is complete, boot to the operating system, and then install the update described in Microsoft Knowledge Base article 957018.

NOTE:
For more information, refer to the Microsoft Knowledge Base article 957018 available at the website: http://support.microsoft.com/kb/957018. This update can also be found on your HP Smart Update media, in OS Updates section on QFEs for WS2008 tab.

2. After installing the QFE, you can set the number of supported MSI-X vectors back to 32 by repeating the update utility at the EFI shell and selecting Option #1 (Load preload table with 32 MSI-x vectors + ASPM fix).

Diagnostics to determine HBA/transceiver status for QLogic 8-Gb HBAs

To determine the status of transceivers that are installed in 8-Gb HBAs, view the SANsurfer FC HBA Manager, Diagnostics page > Transceiver Details. The Transceiver Details page contains two nested pages:

• **General**—Shows an overview of the status data and inventory data from the optical transceiver device.

• **Details**—Shows detailed digital diagnostic data from the optical transceiver device after running diagnostics (per SFF-8472 Specification for Diagnostic Monitoring Interface for Optical Xcvrs, Revision 9.3 August 1, 2002).

The following identifying information appears above the nested pages: Hostname is the name or IP address of the host connected to the adapter. HBA Model specifies the model number for the adapter (any ISP2422/2432 SFF-8472 Specification for Diagnostic Monitoring Interface for Optical Xcvrs, Revision 9.3 August 1, 2002). The following identifying information appears above the nested pages:

• **Hostname**—The name or IP address of the host connected to the adapter.

• **HBA Model**—Specifies the model number for the adapter (any ISP2422/2432 based adapter).

• **HBA Port**—Indicates the adapter port number.
• **Node Name**—Indicates the worldwide adapter node name.

**NOTE:**

The read/write buffer test must be run without the loopback connector on a device (disk or tape) that supports the SCSI Read Buffer and SCSI Write Buffer commands.

The Transceiver Details page is available only for 4-Gb or greater adapter devices. The transceiver details function is not available if you are using in-box drivers with Red Hat 5.0 or SLES 10.0.

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**Windows Server 2003 restriction for Integrity servers**

The 9.1.8.17 STORport driver is not supported on Integrity servers running Windows Server 2003.

**2-Gb HBA/mezzanine card restriction**

QLogic 2-Gb HBAs and mezzanine cards are not supported with Windows Server 2008 R2.

**HP Smart Component issues**

The following HP Smart Component restrictions could occur during driver installation:

- When using the HP Smart Component to install drivers, if you observe the following message during reboot, ignore it and complete the reboot procedure. No known issue has been observed in connection with the display of this message.
  
  The application failed to initialize because the windows station is shutting down.

- When booting as a single-path boot device from a Modular Smart Array (MSA) directly attached through an I/O module, you may lose connectivity temporarily to the boot LUN at the EFI driver level. If this occurs, restart the server. Temporary loss of connectivity occurs only during initial startup of the EFI driver and does not affect normal system operations.

- When using the HP Smart Component to install drivers, if you observe windows displaying the following information during reboot, click **Finish**, do not reply to Microsoft, and then complete the reboot procedure. No known issue has been observed in connection with the display of these messages.
  
  There was a problem installing this hardware. This device is not working properly because Windows cannot load the drivers required for this device. (Code 31)

  Uninstall and then reinstall your device.

**SCSIPort miniport driver issues**

On Windows Server 2003 systems, clients may be disconnected, generating Event ID 11 and Event ID 15 in the application log. This problem can occur under high-stress conditions due to a SCSIPort miniport driver error. It can also cause network timeouts if the remote computers are accessing data on drives that use the SCSIPort driver on the Windows Server 2003 system. To correct this problem, install the latest Microsoft QFE, available on the following website:

http://support.microsoft.com/default.aspx?scid=kb;en-us;895573
Boot from SAN issues

Boot from SAN on c-Class blade servers using QLogic mezzanine cards is not supported on the MSA1000/1500 running firmware 5.20.

Windows 2008 multipath issue

On a server running any variant of Windows 2008, a STOP message (blue screen) can occur during discovery of multiple paths on QLogic HBAs using an in-box driver. To avoid a STOP error, you must update the driver before adding additional paths to storage and enabling multipathing functionality.

Use the following procedure:
1. Install the Microsoft Windows 2008 operating software.
2. Update the QLogic driver to Version 91717 or later.
3. Reboot the system.
4. Install the MPIO software.
5. Reboot the system.
6. Configure the new paths.

**NOTE:**
After you install Windows 2008, you must update the servers with the latest supported HP drivers by running either the current version of HPSUM or Proliant Support Pack.

Secure Path 4.0c SP1 issues

With Secure Path 4.0c SP1, during a rolling driver upgrade, a blue-screen error may occur under any of the following conditions:
- The server boots from a SAN.
- All HBAs access their LUNs in a single-path configuration.
- The HBA is directly connected in a single path to its own MSA controller.

If the blue-screen error occurs, reboot the server and check the driver version to verify that the upgrade is complete on all HBAs. Upgrading to Secure Path 4.0c SP2 corrects this problem.

**NOTE:**
Secure Path is not supported on Windows Server 2008 and with 8-Gb HBAs and mezzanine cards.

Miscellaneous issues

Consider the following:
- On ProLant PCI-Gen2-capable servers, there is a negotiation issue between PCI Gen2-capable HP QLogic 8-Gb mezzanine and 8G stand-up HBAs and the server if the ROM-Based Setup Utility (RBSU) PCI Express Generation 2.0 Support value is set to AUTO. This setting prevents
these products from running at PCI-Gen2 speeds automatically, resulting in the servers running at Gen1 functionality.

To enable Gen2 functionality, you must set the **PCI Express Generation 2.0 Support to GEN2** value setting in the RBSU. This setting forces the server to run in PCI-Gen2 mode.

- In a c-Class Virtual Connect environment, a minimum vc-fc module firmware version of 1.32 is required to enable crash dumps to be written to the boot from SAN LUN.
- An issue with Brocade Access Gateway mode and Brocade switch firmware 6.2.0d prevents the writing of crash dumps to disk.

**VMware restrictions and issues**
- VMware is not supported on the IA64 architecture.

**Citrix restrictions and issues**
- Citrix is not supported on the IA64 architecture.
- Citrix does not support MSA1000 or MSA1500.

**Effective date**
- May 2010