



Troubleshooting Guide

BR-Series Adapters

Converged Network Adapters BR-1007, 1020, 1741
Host Bus Adapters BR-425, 804, 815, 825, 1867, 1869
Fabric Adapter BR-1860

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| Document Revision History | |
|--|---|
| Revision A, April 21, 2014 | |
| Revision B, October 6, 2014 | |
| Revision C, March 31, 2015 | |
| Changes | Sections Affected |
| Updated the support headquarters address | "Contact Information" on page 4 |

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Preface

Intended Audience

This guide provides information on troubleshooting the QLogic BR-Series adapters. It is intended for users who are responsible for operating and servicing network equipment.

What Is in This Guide

This manual provides troubleshooting information on QLogic BR-Series host bus adapters, Converged Network Adapters, and Fabric Adapters. It is organized to help you find the information that you want as quickly and easily as possible.

The document contains the following components:

- [Chapter 1, "Troubleshooting Overview"](#), provides an introduction and approach to troubleshooting adapter problems, as well as tips for gathering problem information. A checklist is also provided to verify that required procedures have been followed during installation.
- [Chapter 2, "Isolating Problems"](#), provides information on common adapter problems and procedures to diagnose and recover from these problems.
- [Chapter 3, "Tools for Collecting Data"](#), provides a summary of diagnostic and monitoring tools available through the QLogic Host Connectivity Manager (HCM), QLogic BCU CLI, Brocade® Fabric OS® commands, and host system to help you isolate and resolve adapter-related problems.
- [Chapter 4, "Performance Optimization"](#), contains guidelines for optimizing adapter performance on your host system.
- [Appendix A, "Adapter BIOS and Event Message Reference"](#), contains details on all event messages generated by adapter drivers.
- [Appendix B, "QLogic HCM and Installer Message Reference"](#), lists all error messages that may display during operation of QLogic HCM and the QLogic Adapter Software Installer application. Causes of each message and actions to perform to resolve problems are also included.

NOTE

This publication is a companion guide to be used with the *BR-Series Adapters Administrator's Guide*. That publication provides detailed information on adapter monitoring and diagnostic tools in the QLogic HCM and the QLogic BCU CLI.

Technical Support

Customers should contact their authorized maintenance provider for technical support of their QLogic products. QLogic-direct customers may contact QLogic Technical Support; others will be redirected to their authorized maintenance provider. Visit the QLogic support Web site listed in “[Contact Information](#)” on [page 4](#) for the latest firmware and software updates.

For details about available service plans, or for information about renewing and extending your service, visit the Service Program Web page at <http://www.qlogic.com/Support/Pages/ServicePrograms.aspx>.

Downloading Updates

The QLogic Web site provides periodic updates to product firmware, software, and documentation.

To download firmware, software, and documentation:

1. Go to the QLogic Downloads and Documentation page: driverdownloads.qlogic.com.
2. Type the QLogic model name in the search box.
3. In the search results list, locate and select the firmware, software, or documentation for your product.
4. View the product details Web page to ensure that you have the correct firmware, software, or documentation. For additional information, click **Read Me** and **Release Notes** under Support Files.
5. Click **Download Now**.
6. Save the file to your computer.
7. If you have downloaded firmware, software, drivers, or boot code, follow the installation instructions in the *Readme* file.

Instead of typing a model name in the search box, you can perform a guided search as follows:

1. Click the product type tab: **Adapters**, **Switches**, **Routers**, or **ASICs**.
2. Click the corresponding button to search by model or operating system.

3. Click an item in each selection column to define the search, and then click **Go**.
4. Locate the firmware, software, or document you need, and then click the item's name to download or open the item.

Training

QLogic Global Training maintains a Web site at www.qlogictraining.com offering online and instructor-led training for all QLogic products. In addition, sales and technical professionals may obtain Associate and Specialist-level certifications to qualify for additional benefits from QLogic.

Contact Information

QLogic Technical Support for products under warranty is available during local standard working hours excluding QLogic Observed Holidays. For customers with extended service, consult your plan for available hours. For Support phone numbers, see the Contact Support link at support.qlogic.com.

| | |
|-----------------------------------|--|
| Support Headquarters | QLogic Corporation 12701 Whitewater Drive Minnetonka, MN 55343 USA |
| QLogic Web Site | www.qlogic.com |
| Technical Support Web Site | support.qlogic.com |
| Technical Support E-mail | support@qlogic.com |
| Technical Training E-mail | training@qlogic.com |

Knowledge Database

The QLogic knowledge database is an extensive collection of QLogic product information that you can search for specific solutions. QLogic is constantly adding to the collection of information in the database to provide answers to your most urgent questions. Access the database from the QLogic Support Center: support.qlogic.com.

1 Troubleshooting Overview

How to Use this Manual for Troubleshooting

An adapter, such as a host bus adapter, Converged Network Adapter, or Fabric Adapter, is one component of a larger network consisting of switches, storage devices, host systems, and the cabling and connections to these components. Although there may be a problem in the adapter or an adapter component, the problem could also originate in another network component or connections between components. Before removing and replacing adapters, launching adapter diagnostics, or even gathering statistics on adapter operation, it is important that you perform the following tasks:

1. Fully describe the problem and gather complete information about the symptoms that suggest a problem exists. Refer to [“Gathering Problem Information” on page 3](#).
2. Isolate or resolve the problem by using information in [Chapter 2, “Isolating Problems”](#).

Search through the list of problems in [Table 2-1 on page 5](#). Problems are organized in the table by problem title, category, and whether the problem is operating system-specific. Click on a problem to go to the chapter section containing details of possible causes and actions for resolution.

Adapter problems are organized under the following categories:

- [“General Adapter Problems” on page 12](#)
- [“Fabric Adapter Problems” on page 38](#)
- [“HBA Problems” on page 38](#)
- [“Network Interface Problems \(CNA or NIC\)” on page 42](#)
- [“FCoE and Fibre Channel Problems” on page 54](#)
- [“DCB Network Problems” on page 61](#)
- [“QLogic HCM and QLogic HCM Agent Problems” on page 62](#)
- [“Troubleshooting Mezzanine Card Problems” on page 71](#)

Each problem section in Chapter 2 provides a complete description of the problem, possible causes, and actions for resolution. Fixes and actions may reference QLogic BCU CLI commands, QLogic HCM features, and host operating system commands. These are described in [Chapter 3, "Tools for Collecting Data"](#).

3. Use the QLogic BCU CLI commands, QLogic HCM features, and host operating system commands described in [Chapter 3, "Tools for Collecting Data"](#) to gather data for resolving problems. These tools include event logs, operating statistics, and diagnostics.
4. Consider these factors when isolating and resolving the problem:
 - Can the issue be resolved using the latest supported combination of host system BIOS, operating system, operating system updates, or adapter drivers?
 - Refer to “Software installation and driver packages” and “Operating system support” in Chapter 1 of the *BR-Series Adapters Installation Guide* for details on driver packages and operating system support. Also download the latest release notes (for download instructions, refer to [“Downloading Updates” on page 3](#)).
 - Does the issue persist when the adapter is installed in a different platform or blade server or connected to a different switch port?
 - Does the problem persist if using a different SFP or cable (stand-up adapters)?
 - Can this problem be reproduced on one or more adapters, ports, or host system? Can you identify specific steps that consistently reproduce this problem on one or more hosts?
 - Is the problem documented in release notes for the adapter, operating system, or host system BIOS?
 - Is the problem documented in release notes for the switch and target storage system?
 - Is unexpected behavior intermittent or always present?

If the problem is in a Fibre Channel or FCoE switch, storage device, or in connectivity between these components, refer to the documentation, help systems, or service providers for that equipment.

5. If you cannot resolve the problem, gather and provide problem information to your adapter support provider for resolution.

NOTE

If troubleshooting information in this manual does not resolve problems, check the installed version of the adapter (chip revision) and driver (firmware version) using the QLogic BCU CLI **adapter --query** command. To use this command, refer to [“Data Collection using QLogic BCU CLI Commands and QLogic HCM” on page 92](#). Also download the latest release notes (for download instructions, refer to [“Downloading Updates” on page 3](#)).

Gathering Problem Information

Perform the following tasks to obtain as much information as possible before contacting technical support. Be sure to take careful notes for use as a record and reference.

- Describe the symptoms that you are observing. Be specific. Here are some examples:
 - User experiences, such as slow performance or file access.
 - Expected storage devices not visible from the QLogic HCM or host system’s storage management application.
 - Adapter not recognized by host system BIOS.
 - Adapter not recognized as PCI device by host system operating system.
 - LEDs not functioning on an adapter port that is connected to the fabric (stand-up adapters).
 - All LEDs on adapter port flashing amber (stand-up adapters).
- What happened prior to the observed symptoms?
- Describe all observed behavior that is unexpected and compare against expected behavior.
- Gather information for support:
 - Use appropriate tools on storage targets to gather information such as disk, tape, and controller model and firmware levels.
 - Use the Support Save feature. This feature captures all driver, internal libraries, firmware, and other information needed to diagnose suspected system issues. You can save captured information to the local file system and send it to support personnel for further investigation. For details on using the Support Save feature, refer to [“Data Collection Using Support Save” on page 77](#).

- Draw a topology map of the SAN from the adapters to the storage targets. Include the components described in [Table 1-1](#).

Table 1-1. Topology Map Details

| Component | How to identify |
|--|---|
| adapter | Model, World-Wide Name (WWN), and driver release level. |
| Fibre Channel switches | Model, WWN, and Fabric OS version. |
| Fiber-optic links between adapter, switches, and storage ports | Port WWNs connected to all links. |
| Host hardware | Model and hardware revision. |

The **bfa_supportsave** and FOS **supportsave** commands can provide current information for the topology map.

- Run appropriate diagnostic tools for storage targets.
- Determine what has changed in the SAN. For example, if the SAN functioned without problems before installing the adapter, then the problem is most likely in the adapter installation or configuration, adapter hardware, or adapter driver package. Other examples of things to investigate might be changes in the connected switch or storage system firmware, or an offline switch.

For stand-up adapters, investigate disconnected or faulty cables between the adapter, switch, or storage controller fiber optic ports. Check if target storage devices are correctly connected to the switch and are turned on.

For mezzanine card adapters, make sure that the adapter, the blade server where the adapter is installed, and the modules in the blade system enclosure that support adapter operation are compatible. Verify that the blade server and modules that support adapter operation are installed in the appropriate enclosure bays. Also check whether target storage devices are connected to the appropriate switch, interconnect module, or I/O module in the blade system enclosure and are turned on.

- Record the time and frequency of symptoms and the period of time symptoms have been observed.
- Determine if unexpected behavior is intermittent or always present.
- List steps that have been taken to troubleshoot the problem, including changes attempted to isolate the problem.

2 Isolating Problems

How to Use this Chapter

Operation problems are arranged in this chapter in these categories:

- [“General Adapter Problems” on page 12](#)
- [“Fabric Adapter Problems” on page 38](#)
- [“Network Interface Problems \(CNA or NIC\)” on page 42](#)
- [“HBA Problems” on page 38](#)
- [“Network Interface Problems \(CNA or NIC\)” on page 42](#)
- [“FCoE and Fibre Channel Problems” on page 54](#)
- [“DCB Network Problems” on page 61](#)
- [“QLogic HCM and QLogic HCM Agent Problems” on page 62](#)
- [“Troubleshooting Mezzanine Card Problems” on page 71](#)

Use [Table 2-1](#) to navigate quickly to sections in this chapter that cover specific adapter problems. Each problem section in this chapter contains a description of the problem, possible causes, and actions for resolution. Click the problem in the table to link to the appropriate problem section.

Table 2-1. Isolate Adapter Problems

| Problem | Category | OS Specific |
|--|--|-------------|
| Adapter Not Reported Under Server's PCI Subsystem | General Adapter Problems | All |
| Names Truncated in QLogic BCU CLI command --list outputs | General Adapter Problems | All |
| No Adapters Reported Through QLogic BCU CLI adapter --list Command | General Adapter Problems | All |
| Port Link Is Not Active | General Adapter Problems | All |
| Host System Freezes or Crashes | General Adapter Problems | All |

Table 2-1. Isolate Adapter Problems (Continued)

| Problem | Category | OS Specific |
|---|--------------------------|--------------|
| Operating System Errors (Blue Screen) | General Adapter Problems | All |
| Driver Event Messages Appearing in Host System Log Files | General Adapter Problems | All |
| QLogic BCU CLI Version Mismatch Warning | General Adapter Problems | All |
| Errors or Problems when Entering QLogic BCU CLI Commands | General Adapter Problems | All |
| bcu pcifn --list and vhba --query Commands Return Errors | General Adapter Problems | All |
| I/O Data Traffic Issues | General Adapter Problems | All |
| Cannot Reserve SCSI Target IDs 0-3 for Bus ID 0 | General Adapter Problems | All |
| Errors when USING GUI-based Software Installer | General Adapter Problems | All |
| Support Save File Is too Large (Windows Only) | General Adapter Problems | Windows |
| Host System Running Microsoft Windows Fails to Hibernate | General Adapter Problems | Windows |
| QLogic BCU CLI Desktop Shortcut Missing (Windows Only) | General Adapter Problems | Windows |
| Device Drivers Not Loading for All Adapter Instances | General Adapter Problems | Windows |
| Removing Ethernet (Network) Drivers Causes Error | General Adapter Problems | Windows |
| Files Needed for bfad.sys Message Appears | General Adapter Problems | Windows |
| Cannot Roll Back Driver on All Adapter Instances Using Device Manager | General Adapter Problems | Windows |
| Driver Preinstallation Problems | General Adapter Problems | Windows |
| Upgrading to Windows Server 2012 Does Not Load In-box Driver | General Adapter Problems | Windows 2012 |
| Unable to Update Module Options after Fresh Driver Install | General Adapter Problems | VMware |
| Driver Installation Fails on ESX Systems | General Adapter Problems | VMware |

Table 2-1. Isolate Adapter Problems (Continued)

| Problem | Category | OS Specific |
|--|--|-------------|
| NOKEY Warning when Installing SLES 11 SP2 KMP Package | General Adapter Problems | VMware |
| NOKEY Warning when Installing SLES 11 SP2 KMP Package | General Adapter Problems | Linux |
| RHEL OS Installation Hangs on HP Servers with Driver Update | General Adapter Problems | Linux |
| Errors when Installing brocade_driver_linux_<versions>.tar.gz Package | General Adapter Problems | Linux |
| System Reports “soft lockups” with Serial Console Redirection | General Adapter Problems | Linux |
| QLLogic BCU CLI CLI fc pim --lunlist Command Returns “Report LUNs failed” Message | General Adapter Problems | Linux |
| vNIC Creation Using ASU Command Fails on IBM Servers Supported by UCM | General Adapter Problems UEFI Boot Problems | All |
| System Will Not Boot over SAN or on Local Disk in Legacy BIOS Mode | General Adapter Problems UEFI Boot Problems | All |
| Host Not Booting from Remote LUN | General Adapter Problems UEFI Boot Problems | All |
| Boot Devices not Available in Host’s Boot Manager Menu | General Adapter Problems UEFI Boot Problems | All |
| Driver and Operating System Installation Failure on Boot LUN | General Adapter Problems UEFI Boot Problems | All |
| System Hangs when Launching HII Menu with v3.2.0.0 Boot Code | General Adapter Problems UEFI Boot Problems | All |
| Boot over SAN Not Functioning with BR-1867 Adapter Installed | General Adapter Problems BIOS Boot Problems | Linux |
| QLLogic BR-series BIOS Config Menu Not Launched on Fujitsu Primequest 1800E Server | General Adapter Problems BIOS Boot Problems | All |
| Driver and Operating System Installation Failure on Boot LUN | General Adapter Problems BIOS Boot Problems | All |

Table 2-1. Isolate Adapter Problems (Continued)

| Problem | Category | OS Specific |
|--|--|------------------------|
| Target Not Visible from Host | General Adapter Problems BIOS Boot Problems | Windows |
| Ctrl-B Option Does Not Display when Booting Host | General Adapter Problems BIOS Boot Problems | Windows |
| No Target Devices Found or Link Down Message Displays in QLogic BR-series BIOS Config Menu | General Adapter Problems BIOS Boot Problems | Windows |
| Unable to Boot from the Stored Boot Device Settings in the Adapter | General Adapter Problems BIOS Boot Problems | Windows |
| Remote LUNs are not Visible to the Host | General Adapter Problems BIOS Boot Problems | Windows |
| Cannot Boot over SAN from Installed CNAs or Fabric Adapters | General Adapter Problems BIOS Boot Problems | Windows |
| Boot from SAN May Stop on Some Hewlett Packard Hosts | General Adapter Problems BIOS Boot Problems | Windows |
| Adapter <port id>: BIOS Not Installed Displays During Boot Process | General Adapter Problems BIOS Boot Problems | Windows |
| No Bootable LUNs Discovered During OS Install Using DUD | General Adapter Problems BIOS Boot Problems | Windows 2008 R2 |
| VLANs and Teams Persist after Changing Port to HBA Mode | Fabric Adapter Problems | Windows |
| QLogic HCM Not Discovering All Ethernet Ports for vNICs | Fabric Adapter Problems | Windows |
| Mismatch Firmware Event Occurs after Changing Port Mode | Fabric Adapter Problems | All |
| VM Failover Not Successful in Windows Server 2012 Environments | HBA Problems | Windows Server 2012 |
| No Adapters Found on Local Host Message in QLogic HCM | HBA Problems | Windows |
| Quality of Service Performance Issues | HBA Problems | All |

Table 2-1. Isolate Adapter Problems (Continued)

| Problem | Category | OS Specific |
|---|---|-------------------|
| Unable to Create More than 126 Virtual (NPIV) Ports for Adapter | HBA Problems | All |
| Version Mismatch Error after Installing Version v3.x Drivers | HBA Problems | All |
| Frames Delivered Out of Order with Trunking Enabled | HBA Problems Trunking Problems | All |
| One Port in Trunk Goes to “Linkdown” State | HBA Problems Trunking Problems | Linux |
| Only One Adapter Port Participates in Trunk | HBA Problems Trunking Problems | All |
| Trunked Port Disabled on the Switch | HBA Problems Trunking Problems | All |
| Cannot Disable Trunking | HBA Problems Trunking Problems | All |
| Ethernet Loopback Test Problems | Network Interface Problems (CNA or NIC) | All |
| Binding Issues after Hyper-V Enabled with Teaming | Network Interface Problems (CNA or NIC) | All |
| Ping to Remote Host is Failing | Network Interface Problems (CNA or NIC) | All |
| Bandwidth Settings for vNICs Not Saved after Downgrade | Network Interface Problems (CNA or NIC) | Windows, Linux |
| Poor Network Performance | Network Interface Problems (CNA or NIC) | Linux Windows |
| Loss of Adapter Hardware Address in Linux | Network Interface Problems (CNA or NIC) | Linux |
| Loss of Adapter IP address in Linux | Network Interface Problems (CNA or NIC) | Linux |
| Ethernet Link Ports or LOM Not Coming Up on Reboot in Linux | Network Interface Problems (CNA or NIC) | Linux |

Table 2-1. Isolate Adapter Problems (Continued)

| Problem | Category | OS Specific |
|--|--|-----------------|
| Network Stack Runs out of Heap | Network Interface Problems (CNA or NIC) | VMware |
| NIC Numbering Unexpected on VMware Systems | Network Interface Problems (CNA or NIC) | VMware |
| VLAN Creation and Operation Problems | Network Interface Problems (CNA or NIC) | VMware |
| VMQs Not Created for Virtual Network Adapter Instances | Network Interface Problems (CNA or NIC) | Windows 2008 R2 |
| Applications Using TDI Driver Stop Responding | Network Interface Problems (CNA or NIC) | Windows Vista |
| RSS Network Throughput Decreases | Network Interface Problems (CNA or NIC) | Windows 2008 R2 |
| SNMP MIB Browser Not Displaying Information on VLAN-related OIDs | Network Interface Problems (CNA or NIC) | Windows |
| Teaming Errors | Network Interface Problems (CNA or NIC) | Windows |
| Binding Issues after Hyper-V Enabled with Teaming | Network Interface Problems (CNA or NIC) | Windows |
| Configured VLANs Lost after PXE Boot | Network Interface Problems (CNA or NIC) Network Boot Problems | All |
| PXE Boot Fails on IBM 3630 M4 Server in UEFI Mode | Network Interface Problems (CNA or NIC) Network Boot Problems | All |
| FCoE Logins Are Lost or Dropped | FCoE and Fibre Channel Problems | All |
| Loss of Sync and Loss of Signal Errors in Port Statistics | FCoE and Fibre Channel Problems | All |
| Fabric Authentication Failures | FCoE and Fibre Channel Problems | All |
| Adapter Is Not Showing in the Fabric | FCoE and Fibre Channel Problems | All |

Table 2-1. Isolate Adapter Problems (Continued)

| Problem | Category | OS Specific |
|---|--|----------------------------|
| Virtual Devices Not Listed in Name Server | FCoE and Fibre Channel Problems | All |
| Adapter Not Registering with the Name Server or Cannot Access Storage | FCoE and Fibre Channel Problems | All |
| FCoE Link is Down | FCoE and Fibre Channel Problems | All |
| I/O Problem on Connected FCoE Device | FCoE and Fibre Channel Problems | All |
| I/O Operations Are Not Failing over Immediately on Path Failure in MPIO Setup | FCoE and Fibre Channel Problems | Windows Linux VMware |
| Disk I/O Requests Cause Low Throughput and High Latency on Linux | FCoE and Fibre Channel Problems | Linux |
| Disk I/O Requests Cause Low Throughput and High Latency on VMware | FCoE and Fibre Channel Problems | VMware |
| DCB Is Not Enabled | DCB Network Problems | All |
| WWPN and MAC Display as Zeros in QLogic HCM Master Log | QLogic HCM and QLogic HCM Agent Problems | All |
| “Failed to Connect to Agent on host localhost” Message | QLogic HCM and QLogic HCM Agent Problems | All |
| SELinux May Prevent the hcmagent from Loading /usr/lib/libdbfaj.so | QLogic HCM and QLogic HCM Agent Problems | Linux |
| QLogic HCM Agent Not Auto-starting if 3.0 Driver Updated with 2.3 QLogic HCM | QLogic HCM and QLogic HCM Agent Problems | Windows |
| Unable to Completely Uninstall QLogic HCM | QLogic HCM and QLogic HCM Agent Problems | Windows |

General Adapter Problems

This section provides possible resolutions for common problems that could occur with installed CNAs, HBAs, or Fabric Adapters. For additional information on troubleshooting problems on mezzanine or expansion card adapters, refer to [“Troubleshooting Mezzanine Card Problems” on page 71](#).

Host System Freezes or Crashes

If the BIOS and the operating system recognize the adapter, but the host system freezes or crashes during startup and does not boot, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Causes:

- Conflicts with adapter port operating speed or topology of attached devices.
- Adapter not compatible with host system.
- Faulty fiber-optic cabling and connections (stand-up adapters only).
- Faulty or unseated SFP transceivers or unsupported SFP transceivers (stand-up adapters only).

Action: Disconnect all devices from the adapter, then reboot the host system.

- If the system does not freeze when rebooted and operates correctly, use the following information to resolve the problem:
 1. Check for faulty cable and cable connections.
 2. Try rebooting the system without any connectivity to the switch. This will help isolate any hang caused by switch and device interactions.
 3. Reseat SFP transceivers in the adapter (stand-up adapters only). Determine whether the installed SFP transceivers are faulty by observing LED operation by the adapter ports. If all LEDs are flashing amber, the SFP transceiver is invalid and may not be a required model. You can also verify SFP transceiver operation by replacing them with SFP transceivers in a known operating condition. If the problem is resolved after replacement, the original SFP transceivers are faulty.
 4. Check for conflicts with attached devices. Verify that data speed and connection topology (for example, point-to-point) for devices attached through the adapter are compatible with settings on the adapter port. Although *auto* may be set, configuring settings manually on the adapter port and devices may allow connection. Refer to the *BR-Series Adapters Administrator's Guide* for procedures to configure adapter ports.

NOTE

Observe the LEDs on adapter ports (stand-up adapters only). Illuminated LEDs indicate connection, link activity, and connection speed negotiated with the attached device. For the meaning of LED operation, refer to the *BR-Series Adapters Installation Guide*.

- If the system freezes perform the following tasks:
 1. Verify whether the host system firmware supports PCIe specifications listed in the *BR-Series Adapters Installation Guide*. If not, download a firmware update to support the adapter.
 2. Verify compatibility by going to driverdownloads.qlogic.com, searching for the BR-Series adapter, and reviewing the adapter's supported host systems and operating systems.
 3. On Windows systems, determine when the system freezes during the boot process. If it freezes as the driver loads, uninstall and reinstall the driver. If it freezes during hardware recognition, uninstall both the driver and adapter, then reinstall both.
 4. Remove the adapter and reboot the system. If the system boots, reinstall the adapter.
 5. Reseat the adapter in the host system.
 6. Uninstall and reinstall the driver.
 7. Try installing the adapter into a different compatible slot.
 8. Try installing the adapter into another host system. If the problem does not occur, the adapter may not be compatible with the original host system. If the problem occurs in the new system, replace the adapter.

Action: Refer to “[Verifying Fibre Channel and DCB links \(Stand-up Adapters\)](#)” on [page 64](#) for more information to isolate this problem on stand-up adapters.

Operating System Errors (Blue Screen)

If critical errors display for the host system and the system blue screen appears, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Cause: Adapter driver not loaded.

Action: Refer to “[Adapter Driver Installation Verification](#)” on [page 65](#) for methods to verify driver installation.

Driver Event Messages Appearing in Host System Log Files

If event messages for the adapter driver are appearing in the host system log files, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Cause: Various causes and severity levels.

Action: Follow the recommended action in the message.

Action: Resolve critical-level messages and multiple major- or minor-level messages relating to the same issue as soon as possible.

Action: For details on event messages, refer to [“Logs” on page 87](#).

QLogic BCU CLI Version Mismatch Warning

Output from QLogic BCU CLI commands has the following warning message.

```
WARNING: BCU and Driver versions don't match !!!
```

1. **Possible Cause:** Installation may be incomplete. Either the QLogic BCU CLI or one or more driver instances were not upgraded to the latest version.

Action: Remove the driver package, then reinstall. Refer to the “Software Installation” chapter in the *BR-Series Adapters Installation Guide*.

NOTE

Make sure that the server does not reboot before reinstalling the driver. This will corrupt the installation because, without the driver, the boot LUN cannot be located. To safeguard against a reboot, open an additional remote desktop session to the console or terminal during removal and reinstallation. If a reboot occurs, you will be prompted that others are logged on to the system and asked if you want continue with the reboot.

Action: Refer to [Errors or Problems when Entering QLogic BCU CLI Commands](#).

2. **Possible Cause:** In Windows systems, this message may occur if there are redundant entries in the Temporary and Environmental Path string pointing to a previous installation.

Action: For Windows systems, go to **My Computer > Properties > Advanced > Environmental Variables**. Check for a multiple entry for a previous installation in the **Path** variable string. For example, if `C:\Program Files (x86)\BROCADE\ADAPTER\driver` appears twice in the string, there were two x86 driver installations. You can select **Edit** and remove one of the instances from the string.

3. If you are booting your system from the SAN (boot over SAN feature) and you just upgraded a driver, this message may appear until you reboot your server.

Errors or Problems when Entering QLogic BCU CLI Commands

Entering a QLogic BCU CLI command at your operating system command prompt may yield one of the following results:

- A version mismatch message displays.
- QLogic BCU CLI is not recognized as an internal or external command, operable program, or batch file.

Possible Cause: QLogic BCU CLI commands are not in directory path because BCU desktop shortcut was created during adapter software installation.

Action: Launch QLogic BCU CLI command prompt using BCU desktop shortcut.

bcu pcifn --list and vhba --query Commands Return Errors

The QLogic BCU CLI **pcifn --list** command returns an error titled "ERROR: IOC failure - Retry if persists contact support". Also the **vhba --query** command returns "--" for pcifn bandwidth.

Possible Cause: vhba 0 of port 0 is not enabled.

Action: Make sure that vhba 0 of port 0 is enabled by running the QLogic BCU CLI **vhba --enable** command for this vhba and port, and then retry the **pcifn -list** and **vhba -query** commands.

I/O Data Traffic Issues

I/O data traffic issues are occurring, such as an application is not receiving data, FTP problems on an Ethernet network, data is not reaching a target on a Fibre Channel network, or ping failures.

1. **Possible Cause:** Ethernet traffic problem

NOTE

This applies to CNAs or Fabric Adapter ports configured in CNA mode.

Action: Run the Ethernet loopback serdes test on the suspected Ethernet port using the QLogic BCU CLI **diag --ethloopback** command. This tests internal adapter hardware components. If the test passes, suspect the following external problems:

- Faulty fiber

- Faulty software
- Destination host problem

Action: Run the QLogic BCU CLI Ethernet external loopback test using the QLogic BCU CLI command **diag --ethloopback** command (stand-up adapters only). Be sure that a loopback connector is installed in the port. If the serdes or internal loopback test passes, but the external test fails, suspect the following problems:

- Loopback connector not inserted in transceiver
- Faulty SFP transceiver or loopback connector.

2. **Possible Cause:** Fibre Channel or FCoE I/O problems.

NOTE

This applies to CNAs, HBAs, and Fabric Adapter ports configured in CNA or HBA mode.

Action: Run the loopback serdes test on the suspected Fibre Channel port (HBA port) or FCoE port (CNA port) using the QLogic BCU CLI **diag --loopback <port_id> -t serdes** command. If the test passes, suspect the following external problems:

- Faulty fiber
- Faulty software
- Target problem

Action: Run the QLogic BCU CLI external loopback test (stand-up adapters only) using the QLogic BCU CLI command **diag --loopback <port_id> <pattern>**. Be sure that a loopback connector is installed in the port. If the serdes or internal loopback test passes, but the external test fails, suspect the following problems:

- Loopback connector not inserted in transceiver
- Faulty SFP transceiver or loopback connector.

Cannot Reserve SCSI Target IDs 0-3 for Bus ID 0

Cannot configure persistent binding to reserve target ids 0-3 on bus id 0.

Possible Cause. Bus 0 target ids 0-3 are reserved for boot target.

Action: To reserve target ids 0-3, use bus ids 1-7. Do not reserve target ids 0-3 on bus id 0.

Errors when USING GUI-based Software Installer

Errors occur when launching the GUI-based QLogic Adapter Software Installer, such as InvocationTargetException errors

Possible Cause: Your system may not be able to run a GUI-based application.

Action: Use the Software Installer commands detailed in the *BR-Series Adapters Installation Guide*.

Support Save File Is too Large (Windows Only)

The Support Save file is getting too large (it may be larger than 1 Gb).

Possible Cause: The hbaagent.log file may be exceeding its maximum size.

Action: Delete the larger files, especially hbaAgent.log if it exceeds 10 Mb, in the following location, and then run Support Save again

C:\Program Files\BROCADE\Adapter\driver\util\hbaagent\log\

Host System Running Microsoft Windows Fails to Hibernate

A host system with Microsoft Windows and a QLogic BR-Series adapter fails to go into hibernation mode with the following message:

The following items are preventing hibernation on this system.

The system does not support hibernation.

The storage drivers do not support hibernation.

Possible cause: Microsoft hotfix KB932755 has not been installed on the server. This happens if the adapter driver was installed through a driver update disk (DUD). The DUD does not perform the prerequisite checks as part of installation.

Action: Install the KB932755 hotfix.

No LUNs Found After Driver Installation from DUD

When installing Windows Server 2008 R2 with driver update disk (DUD), the driver loads in only 30 seconds and returns with failure - no LUNs found.

Possible Cause: Boot over SAN is configured on a server with either a QLogic BR-425, BR-815, or BR-825 Host Bus Adapter or BR-1860 Fabric Adapter, with both adapters installed.

Action: Install one adapter, configure for boot over SAN, and load the DUD and operating system. Once the operating system is functioning, install additional adapters. If a Fabric Adapter port is configured for PXE operation and cannot be physically removed, disable any Fabric Adapter configured in HBA mode from the system BIOS prior to installing the operating system. Re-enable the port after the operating system is functioning.

Driver Installation Fails and System Cannot Be Booted

Installation of a new Windows 2008 driver package fails in systems where an adapter is used for booting over SAN and the operating system becomes unbootable.

Possible Cause: Existing driver package that was accessing the remote boot LUN was removed and system was rebooted.

Action: Install the new adapter driver without uninstalling the existing driver. This is the recommended procedure for updating adapter drivers.

NOTE

If you remove the adapter driver (which requires a system reboot because the adapter was modified), and then reinstall the driver, installation will fail because the operating system cannot update the driver while a system reboot is pending. However, if you reboot the system after removing the driver, the operating system will not come up because the driver accessing the operating system was removed.

QLogic BCU CLI Desktop Shortcut Missing (Windows Only)

QLogic BCU CLI desktop shortcut not visible on system desktop.

Possible Cause: Shortcut was deleted or not installed with adapter software.

Action: Re-install the adapter driver package with the software installer command for your system using the DFORCE option. Reboot the host system if required.

Action: Create the shortcut again manually. To create the shortcut on Windows systems, use the following steps.

1. Go to the `C:\Program Files\Brocade\Adapter\driver\util` directory.

NOTE

This is the location of the QLogic BCU CLI executable (bcu.exe) if it is installed and the default location was selected during installation.

2. Right-click bcu.exe and select **Send to Desktop**. to create a shortcut.

Device Drivers Not Loading for All Adapter Instances

On Windows systems, not all adapter instances have device drivers loaded after a driver update. As a result, some of the adapter instances show up in Device Manager with a yellow bang (yellow circle with explanation point). This is more often seen when there are a large number of adapter instances on the server.

Possible Cause: The available memory resources on the server are insufficient to support all adapter instances for the current boot.

Action: Try rebooting the system to force a resource rebalance. If the problem persists, increase the system memory or disable some of the adapter instances.

Removing Ethernet (Network) Drivers Causes Error

NOTE

This applies to CNAs or Fabric Adapter ports configured in CNA or NIC mode.

When removing Ethernet or network drivers on Windows systems and no previous drivers are installed, the following occurs:

- The install log displays the following intermediate error message.
`Error = 6, Failed to uninstalled device instance ID.....`
- The adapters disappear from the Device Manager as network devices.

Possible Cause: Normal behavior for Windows systems.

Action: Take the following actions:

- Rescan for the devices in the Device Manager.
- Ignore the error message.

Files Needed for bfad.sys Message Appears

If a “Files needed for bfad.sys” message appears on Windows systems when removing a driver, refer to the following possible cause and recommended action to help resolve the problem.

Possible Cause: A “Files needed for bfad.sys” message will occur if you perform the following sequence of steps.

1. Install the driver using the driver installer program (brocade_installer.bat) or QLogic BR-series Adapter Software Installer (GUI or command-based application).
2. Uninstall the BR-Series adapter using Windows Device Manager.

3. Re-install the driver using the driver installer program (brocade_installer.bat) or QLogic BR-series Adapter Software Installer (GUI or command-based application).
4. Uninstall the driver using the driver installer program (brocade_installer.bat) program.

Action: To avoid the message when removing a driver, do not uninstall the driver using the Device Manager if you have used QLogic BR-series driver installer programs to install driver instances. Always use the QLogic BR-series installer programs. If only one driver is present in the system, then the QLogic BR-series installer programs also remove the Fibre Channel devices from the Device Manager.

Cannot Roll Back Driver on All Adapter Instances Using Device Manager

If you cannot roll back the driver for all adapter instances using Windows Device Manager, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Cause: Installing the driver using the QLogic BR-series driver installer program (brocade_installer.bat) or QLogic BR-series Adapter Software Installer (GUI or command-based application), then rolling back driver adapter instances using the Device Manager.

Actions: Perform the following actions:

- Install the driver for each adapter instance using the Device Manager, then roll back the driver using Device Manager.
- Use the driver installer script (brocade_installer.bat) or QLogic Adapter Software Installer (GUI or command-based application) to install or upgrade the driver, then use the QLogic BR-series Software Uninstaller to roll back drivers on all adapter instances in one step.

Driver Preinstallation Problems

The following problems may occur when drivers are preinstalled to your Windows host system driver store.

Preinstallation failed when attempted twice in a row without inserting adapters

Preinstallation of drivers fail when attempted twice in a row and adapters are not inserted in the system.

Possible Cause: Windows restricts upgrading a preinstalled driver before installing the hardware.

Action: Remove the driver package that was preinstalled earlier, then retry preinstalling the new driver package.

Preinstallation with adapter installed in system does not update the installed driver image

Preinstallation does not update the currently installed driver image when an adapter is already present in the system.

Possible Cause: This is an expected behavior in Windows. You must install (instead of preinstall) the driver to update the currently loaded driver if the hardware is already present on the system.

Action: Reinstall the driver using `brocade_install.bat` installer script command with the `FORCED_INSTALL=TRUE` option.

Upgrading to Windows Server 2012 Does Not Load In-box Driver

When upgrading the host operating system from Windows Server 2008 R2 to Windows Server 2012, the storage driver from the Windows 2008 R2 installation is loaded instead of the in-box driver version included with Windows Server 2012.

Case 1: The Adapter v3.0 drivers are running in Windows 2008 R2. The OS is upgraded to Windows Server 2012. For QLogic BR-Series Host Bus Adapters or Fabric Adapter ports configured in HBA mode, v3.0 will be loaded, Converged Network Adapters or Fabric Adapter ports configured in CNA or NIC mode will use the v3.0.2.21 in-box driver.

Case 2: The Adapter v3.1 and v3.0.3 drivers are running in Windows 2008 R2. The OS is upgraded to Windows Server 2012. All adapters will use the v3.1 and v3.0.3 drivers.

Possible Cause: QLogic BR-Series storage drivers do not get upgraded to the in-box version, possibly because they are marked as boot-critical Converged Network Adapters and Fabric Adapters with ports configured in CNA or NIC mode will load the driver with a higher version number.

NOTE

A boot-critical driver indicates that it will load early during the operating system boot strap sequence. All BR-Series Host Bus Adapter drivers are registered as boot-critical devices during installation.

Action: Manually upgrade the storage drivers after upgrading to Windows Server 2012.

Adapter Not Reported Under Server's PCI Subsystem

The adapter is installed but not visible as a device in the host system's PCI subsystem.

Verify whether the adapter is visible as a PCI device by executing your host's operating system command to list PCI devices in the system. For details on this command, refer to the "List PCI Devices" row in [Table 3-1 on page 74](#). If the adapter is not in the device list, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

- Possible Cause:** Adapter slot is disabled in your system's BIOS.
Action: Examine your system BIOS settings to make sure the slot has not been disabled (Refer to your system's Administration Guide for details on BIOS settings).
- Possible Cause:** Card not seated in host system connector properly.
Action: Reseat the adapter.
- Possible Cause:** Host system connector issues.
Action: Install an adapter in known working condition to determine whether there is a connector malfunction.
Action: Try installing the adapter into a different slot, if available.
- Possible Cause:** Adapter not compatible with host operating system or connected storage systems.
Action: Verify compatibility by going to driverdownloads.qlogic.com, searching for the BR-Series adapter, and reviewing the adapter's supported host systems and operating systems.

Names Truncated in QLogic BCU CLI command `--list` outputs

Names such as port and team IDs, do not display completely when using QLogic BCU CLI "list" commands, such as `port --list`, `team --list`, or `lport --list`. Names are truncated in command output.

Possible Cause: Size of the name strings might be too long to fit into output.

Action: Use associated `--query` commands, such as `bcu port --query`, `bcu team --query`, or `bcu lport --query` to provide complete names.

Action: Configure port and team IDs with 32 characters or less.

No Adapters Reported Through QLogic BCU CLI adapter --list Command

If the adapter does not display when the QLogic BCU CLI **adapter --list** command is initiated, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

- Possible Cause:** Adapter is not reported under server's PCI subsystem.
Action: If the adapter is newly detected or the driver has just been installed, you may need to reboot the system for QLogic BCU CLI to discover your new adapter.
Action: Verify if the adapter is visible as a PCI device by executing your host's operating system command to list PCI devices in the system. For details on this command, refer to the "List PCI Devices" row in [Table 3-1 on page 74](#).
Action: If the adapter does not appear in the list of PCI devices, refer to "[Boot Devices not Available in Host's Boot Manager Menu](#)" on page 29 for possible causes and recommended actions.
- Possible Cause:** Adapter driver is not loaded.
Action: Verify if the adapter is visible as a PCI device by executing your host's operating system command to list PCI devices in the system. For details on these commands, refer to the "List PCI Devices" row in [Table 3-1 on page 74](#).

Port Link Is Not Active

The link between the adapter and switch port does not appear to be active because of adapter LED operation (stand-up adapters only), lack of data over the link, or the QLogic BCU CLI **port --query** or **port --list** command shows that the link state is down. Refer to "[Displaying the Port List](#)" on page 130 for more information.

Refer to the following descriptions of possible causes and recommended actions or fixes for the problems:

- Possible Cause:** SFP transceiver or cable problems (stand-up adapters).
Action: Ensure that the SFP transceivers and cables are connected properly on both adapter and switch sides. Check for any cable damage.
Action: Swap the SFP transceiver or cable for known working ones.
- Possible Cause:** Switch port is disabled or switch is disabled.

Action: Execute either the Fabric OS **switchShow** or **portShow** commands on the attached switch to ensure that the switch or individual port is not disabled or offline. Use appropriate switch commands to enable the port.

3. **Possible Cause:** Adapter port is disabled.

Action: Verify port state using the QLogic HCM **Port Properties** dialog box or QLogic BCU CLI **port --list** command. Use QLogic BCU CLI **port --enable** command to enable the port.

4. **Possible Cause:** Adapter's port speed or topology mismatch with the switch port (HBAs or Fabric Adapter ports configured in HBA mode only).

Action: Check the port topology setting on the switch using the Fabric OS **portCfgShow** command to ensure that Locked L_Port is OFF. Use the **portCfgLport** command to change the setting to OFF if required.

Action: Check the switch port speed using the Fabric OS **portCfgShow** command to verify that speed is either AUTO or matches the speed of the attached adapter port (for example, the speed setting for both ports is 4 Gbps).

Action: Check port speed on the adapter with the QLogic BCU CLI **port --list** or **port --query** commands to display the current and configured speed. Refer to [“Displaying Port Speed” on page 131](#) and [“Performing a Port Query” on page 130](#) for details on using these commands.

5. **Possible Cause:** Non-QLogic-supported SFP transceiver installed (stand-up adapters). If non-QLogic-branded SFP transceivers are inserted on the adapter or switch, the port link will not come up.

Action: Action: On the switch, execute the Fabric OS **switchShow** command to verify that “Mod_Inv” (invalid module) does not display for the port state.

Action: On the adapter, execute the **port --list** or **port --query** QLogic BCU CLI commands to verify display in the **Sfp** field. Refer to [“Displaying the Port List” on page 130](#) and [“Performing a Port Query” on page 130](#). If an unsupported SFP transceiver is detected, the **Sfp** field displays “us” (unsupported SFP transceiver) for **port --list**, and the **Media** field displays “Unsupported SFP” for **port --query**.

For additional actions and fixes for the port link not coming up, refer to [“Verifying Fibre Channel and DCB links \(Stand-up Adapters\)” on page 64](#).

6. **Possible Cause:** Firmware failure. In most cases this causes a heartbeat failure, and if auto-recovery is enabled, the driver recovers. No corrective action is needed.

Action: If link does not recover and QLogic BCU CLI **port --list** command shows fcoe and eth state is **link down**, download the latest driver package, and then remove and reinstall the package using instructions in the “Software Installation” chapter of the *BR-Series Adapters Installation Guide*. For instructions on downloading the driver package, refer to “[Downloading Updates](#)” on page 3.

Unable to Update Module Options after Fresh Driver Install

Fresh installation of QLogic BR-Series storage driver on ESXi 5.x systems causes error “unknown module bfa.” This error does not occur after driver upgrade.

Possible Causes:

The settings for module parameters *host_name* and *os_name* do not work without the driver loaded into memory.

Action:

After installing the driver, reboot the system, then reinstall the same driver again.

Driver Installation Fails on ESX Systems

Driver(s) are not installing on VMware ESX system. If installing through QLogic HCM, the following error message may display when updating drivers.

```
Uploading of the driver file is failed. Reason - Maintenance mode is not enabled or could not be determined.
```

Possible Cause: ESX systems must be in maintenance mode to install or update drivers.

Action: Place system in maintenance mode, then reinstall driver package(s).

NOKEY Warning when Installing SLES 11 SP2 KMP Package

The following warning displays when installing the QLogic 3.0.3.3 version KMP package for SLES 11 SP2:

```
warning: brocade-bna-kmp-default-3.0.3.3_3.0.13_0.27-0.x86_64.rpm:  
Header V3 RSA/SHA256 signature: NOKEY, key ID c2bea7e6
```

Possible Cause: The KMP package is digitally signed by Novell with a “PLDP Signing Key.” If your SLES 11 SP2 system doesn’t have the same key installed, RPM installation will generate the warning.

Action: Install the public PLDP key (if not already installed) before installing the driver package.

Find the key and installation instructions at
https://drivers.suse.com/doc/Usage/Package_Signing_Key.html.

Silent Installation Fails

Problem Cause: Silent installation fails to install drivers on RHEL 5.9

Action: Verify that the Network Adapter interfaces are not selected under the Devices settings in the Network Configuration GUI. This ensures that the driver does not load automatically following an unload during installation.

RHEL OS Installation Hangs on HP Servers with Driver Update

RHEL v6.2 installation with the QLogic BR-Series Adapters driver update disk (DUD) hangs on some HP servers. If HP Smart Array Controller is enabled during installation, the installer will hang at “Examining storage device” message.

Possible Cause: Operating system Installer hangs during HP Smart Array controller driver (hpsa) reload. During hpsa reload, the following error messages may occur:

```
hpsa 0000:04:00.0: hpsa0: <0x323a> at IRQ 51 using DAC
DRHD: handling fault status reg 2
INTR-REMAP: Request device [[04:00.0] fault index 24
INTR-REMAP:[fault reason 34] Present field in the IRTE entry is
clear
INFO: task modprobe:1057 blocked for more than 120 seconds.
```

Action: Disable the HP Smart Array controller from the system BIOS and use the QLogic BR-Series Adapters v3.2 or later BFA/BNA DUD for in box driver upgrade.

Errors when Installing brocade_driver_linux_<versions>.tar.gz Package

If errors occur when installing the no architecture (noarch) `brocade_driver_linux_<versions>.tar.gz` driver package, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Cause: Appropriate distribution kernel development packages are not installed on your host system for the currently running kernel.

Action: If you are installing the `brocade_driver_linux_<versions>.tar.gz` driver package, the driver module compiles on the system during installation. If driver build errors result when you install the package, verify that the appropriate distribution kernel development packages are installed on your host system for the currently running kernel. These packages should include the gcc compiler and the kernel sources. If these are not installed, you will need to install them through your Linux OS Software Management tools or reinstall the operating system before you can continue the driver installation. Be sure to “install everything” including the developer library options.

System Reports “soft lockups” with Serial Console Redirection

In RHEL 5.x systems using serial console redirection, the system reports “soft lockups” with a message similar to the following in `/var/log/messages`:

```
May 11 19:59:10 sysname kernel: BUG: soft lockup - CPU#0 stuck for 10s! [multipathd:15307]
```

Possible Cause: Serial console redirection

Action: We recommend removing serial console redirection to work around this issue.

QLogic BCU CLI CLI `fc pim --lunlist` Command Returns “Report LUNs failed” Message

When a host system using Oracle UEK 6.3 is under heavy load and an interconnect in blade server chassis is rebooted, paths do not recover. Entering the QLogic BCU CLI command `fc pim --lunlist` may return a “Report LUNs failed” message.

Possible Cause: Oracle storage (scsi) driver is slow to create underlying device entries.

Action: Enter the `bfa_lunscan all` command.

UEFI Boot Problems

This section describes problems that may occur when using a QLogic BR-Series adapter and unified extensible firmware interface (UEFI) for booting a host system from a remote storage device (boot over SAN). Possible causes and recommended actions to help resolve the problems are provided.

vNIC Creation Using ASU Command Fails on IBM Servers Supported by UCM

Attempts to create vNICs using the IBM Advanced Settings Utility (ASU) command fail on IBM servers supported by Oracle Universal Content Management (UCM).

Possible Cause: System BIOS.

Action. Use the UEFI HII to create vNICs.

System Will Not Boot over SAN or on Local Disk in Legacy BIOS Mode

On some IBM UEFI-based systems, **Hard Disk 0** is not present after **Legacy Only** option in boot manager and system will not boot as local disk or over SAN.

Possible Cause: **Hard Disk** not present in the boot manager list.

Action: Follow these steps:

1. Press F1 to enter **System Setup** during early phase of booting.
2. Select **Boot Manager** and press Enter.
3. Select **Add Boot Option** and press Enter.
4. Select **Legacy Only** and press Enter.
5. Press Esc to return to Boot Manager.
6. Select **Change Boot Order** and press Enter.
7. Select the existing **Boot Order** and press Enter.
8. Select **Legacy Only** and press the + key to promote the boot order to a position above the local device that contains the operating system (typically, this would be above Hard Disk 0). Press Enter.
9. Confirm that Hard Disk 'x' is present in the list. If not, return to [Step 3](#) and add **Hard Disks** to the boot order.
10. Select **Commit Changes** and press Enter.
11. Press Esc to return to Boot Manager.
12. Select **Reset System** and press Enter.

Host Not Booting from Remote LUN

If the host system where the adapter is installed does not boot from the remote boot LUN, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Cause: Boot over SAN is not configured correctly.

Action: If booting the host from a remote boot device, verify whether “boot over SAN” configuration is complete and correct. For example, verify the following:

- A zone is created on the attached switch that contains only the PWWN of the storage system port for the boot LUN and the PWWN of the adapter port.
- BIOS or EFI is enabled to support boot over SAN from a specific adapter port.

- BIOS or EFI is configured to boot from a specific LUN.
- The host's operating system, adapter driver, and other necessary files are installed on the boot LUN.

Boot Devices not Available in Host's Boot Manager Menu

Fibre Channel attached boot devices do not appear in the EFI Boot Manager menu or a boot device appears, but it is not functioning. Following are descriptions of possible causes and recommended actions or fixes for the problem.

1. **Possible Cause:** The adapter is not seated properly in the host system.

Action: Select the EFI Shell from the EFI Boot Menu and use the **devices** command to determine if EFI has detected the QLogic BR-Series adapter.

A BR-Series adapter will have "QLogic BR-Series Fibre Channel" in the device name. A Converged Network Adapter or Fabric Adapter port configured in CNA mode will also have "QLogic BR-Series Ethernet Controller" in a device name.

If the adapter is not listed, perform the following steps:

- Reseat the adapter.
- Replace the adapter with an adapter in known working condition to determine whether there is a host connector malfunction.

2. **Possible Cause:** Adapter connector problems in host.

Action: Perform the following steps.

- a. Reseat the adapter.
- b. Replace the adapter with an adapter in known working condition to determine whether there is a host connector malfunction.
- c. Reinstall the adapter in a different host connector.

3. **Possible Cause:** The adapter is not compatible with the host operating system or connected storage systems.

Action: Verify compatibility by going to driverdownloads.qlogic.com, searching for the BR-Series adapter, and reviewing the adapter's supported host systems and operating systems.

4. **Possible Cause:** No Fibre Channel attached drives are available from the attached Fibre Channel switch.

Action: Check for attached disk devices.

- a. Use the **devices** EFI shell command to display the detected devices.

A QLogic BR-Series adapter may be displayed as the following.

```
29 B X - 1 2 8 QLogic BR-Series Fibre Channel HBA
```

“29” is the device handle, and will be different in most systems. More than one BR-Series adapter may be displayed.

- b. Use the EFI shell **dh** command to display additional information about each BR-Series adapter. This will include any attached Fibre Channel disk devices. For example, you would enter the following for the Host Bus Adapter or Fabric Adapter port configured in HBA mode with device handle 29:

```
Shell> dh -d 29
```

The following displays:

```
29: PciIo ScsiPassThruExt BusSpecificDriverOverride  
DevPath (...P0A08,300)/Pci(0|0)/Pci(0|0))
```

```
...
```

```
Managed by :
```

```
Drv[25] : QLogic BR-series Fibre Channel Adapter  
Bus Driver
```

```
Drv[26] : SCSI Bus Driver
```

```
...
```

```
Child Controllers :
```

```
Child[70] : SCSI Disk Device
```

```
Child[71] : SCSI Disk Device
```

```
Child[72] : SCSI Disk Device
```

The SCSI Disk Devices under “Child Controllers” are the LUNs that the Fibre Channel adapter can access.

- c. If an expected Fibre Channel attached disk does not appear in the “dh -d” list for a BR-Series adapter, check the cabling, the adapter’s link status LEDs, and the Fibre Channel switch configuration.

NOTE

The BR-Series adapter port may have been disabled with the EFI shell **drvcfg** command. Use the **drvcfg -s** shell command to check the enabled status and configuration of the port, including the requested speed. After entering **drvcfg -s**, select the appropriate adapter from the **Adapter List** screen and press Enter to view and modify port properties.

Driver and Operating System Installation Failure on Boot LUN

Installation fails when installing drivers with the driver update disk (DUD) and an installing operating system to a remote LUN being used for booting over SAN.

Possible Cause: The appropriate driver update disk (DUD) may not have been used for the host operating system and platform. For example, if the `brocade_adapter_rhel53_x86_64` DUD is used during RHEL 5.3 x86 installation, installation will fail.

Action: Download the appropriate DUD for your host platform from the QLogic Web site (for download instructions, refer to [“Downloading Updates” on page 3](#)).

System Hangs when Launching HII Menu with v3.2.0.0 Boot Code

Dell 12G and 11G systems hang when launching HII menu with BR-1860 Adapter running 3.2.0.0 boot code. The system will hang at the “Loading device configuration data. Please wait.” message. The system may also hang when launching the Unified Server Configurator.

Possible Cause: The HII browser on systems using Dell Server BIOS 1.1.2 or older cannot parse QLogic adapter attributes.

Action: Upgrade to boot code 3.2.3.2 or later.

Unable to Save BIOS Configuration on Fujitsu Primequest 1800E with HII

Cannot save the BIOS configuration on Fujitsu Primequest 1800E server using UEFI HII screens.

Possible Cause: This server is not currently supported with BOS/PXE. As a result:

- The Fujitsu server BIOS doesn't provide an option to save the BR-Series adapter configuration when exiting out of the UEFI HII screens.
- The BR-Series adapter BIOS doesn't provide an option to explicitly save the adapter configuration in the HII menu.

Action: Configure and save BIOS setting using appropriate QLogic BCU CLI **bios** commands, legacy QLogic BIOS Configuration Utility screens, or QLogic HCM.

Installing Windows 2008 R2 DUD on UEFI system Results in Offline Disk

Installing the Windows 2008 R2 DUD and operating system on a formatted UEFI system disk that you are configuring as a bootable device results in an offline disk.

Possible Cause: This behavior is working as designed by Microsoft if the disk is formatted, as the default SAN POLICY is OFFLINESHARED, which marks SAN disks as Read Only during setup to ensure that no data center-related data are accidentally overwritten.

Action: Use an unformatted “fresh” disk for DUD and operating system installation. Also refer to the “How to Use Windows Setup to Install Windows with UEFI Support” section of the *Microsoft UEFI Guide*.

BIOS Boot Problems

This section describes problems that may occur when using a BR-Series adapter and Basic Input/Output System (BIOS) for booting a host system from a remote storage device (boot over SAN). Possible causes and recommended actions that may fix the problems are provided.

Boot over SAN Not Functioning with BR-1867 Adapter Installed

Boot over SAN ceases on servers running RHEL 6.2 with a BR-1867 Fabric Adapter installed as the adapter cannot be found during intermediate reboots.

Possible Cause: The version 3.0.2.2 in-box driver in RHEL 6.2 does not support the BR-1867 adapter.

Action: Use the version 3.0.3.0 driver update disk (DUD) or later.

Solaris 10 Fails to Install in a Boot over SAN Environment

When installing Solaris 10 in a boot over SAN environment with BR-1020 adapter, with a BR-1860 adapter on the server, a kernel panic could be observed.

Action: Ensure that only the BR-1020 is present on the system while installing Solaris 10 on a boot over SAN environment. Insert the other adapter(s) after the installation is completed successfully.

LUN Discovery Failure Occurs in Legacy BIOS

LUN discovery fails in legacy BIOS mode when attempting to boot from storage.

Possible Cause: An inconsistency between the boot configuration settings and port configuration caused the LUN discovery to fail.

Action: After changing the topology (point-to-point/FC-AL) or speed in the QLogic BR-series BIOS Configuration Menu, perform the same setting through bcu (Command Line Utility), either from a LiveCD or after booting into an operating system and reboot the server.

QLogic BR-series BIOS Config Menu Not Launched on Fujitsu Primequest 1800E Server

QLogic BR-series BIOS Config Menu does not launch on Fujitsu Primequest 1800E Server.

Possible Cause: System BIOS.

Action: This is a server BIOS issue. This server is not currently supported with BIOS or PXE.

Driver and Operating System Installation Failure on Boot LUN

When installing drivers using the driver update disk (DUD) and an operating system to a remote LUN being used for booting over SAN, the installation fails.

Possible Cause: The appropriate DUD may not have been used for the host operating system and platform. For example, if the `brocade_adapter_rhel53_x86_64` DUD is used during RHEL 5.3 x86 installation, installation will fail.

Action: Verify the DUD for your system using information in Chapter 1 of the *BR-Series Adapters Installation Guide*. Using the correct DUD, reinstall appropriate drivers and the operating system as necessary.

Target Not Visible from Host

If the storage target configured for containing the boot LUN is not visible from the host, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

1. **Possible Cause:** No fabric connectivity between adapter and target, or target is not online.

Action: Execute the Fabric OS `nsAllShow` command on the attached switch to verify that the target and the host are online in the fabric and registered in the name server.

2. **Possible Cause:** The target and the adapter are not on the same zone.

Action: Execute the Fabric OS `cfgActvShow` command on the attached switch and verify that the host and target are in the same zone (either using domain area members, port area members, or port or node WWNs).

3. **Possible Cause:** The adapter driver is not loaded.

Action: The adapter driver may not be loaded. Refer to [“Adapter Driver Installation Verification” on page 65](#) for methods to verify driver installation

4. **Possible Cause:** There is a problem with the remote port.

Action: Verify that the remote target port (rport) is reporting itself online by comparing rport online and rport offline statistics. Refer to [“Remote Port Statistics” on page 106](#) for details on displaying these statistics. The rport online counter should be one greater than the rport offline counter. If not, clear the counters and try connecting to the remote port again. Verify the rport online and rport offline statistics again.

Ctrl-B Option Does Not Display when Booting Host

When booting the host, the Ctrl-B option does not display for accessing the **BIOS Configuration** menu.

1. **Possible Cause:** The adapter might not be loaded with the latest adapter boot image.

Action: Download the latest boot code image for installed BR-Series adapters from the QLogic Web site (for download instructions, refer to [“Downloading Updates” on page 3](#)).

NOTE

For instructions on updating the boot image, refer to the “Boot Code” chapter in the *BR-Series Adapters Installation Guide*.

2. **Possible Cause:** Due to memory constraints system BIOS might not be able to execute the adapter option ROM.

Action: Disable option ROM on several add-in cards installed in system.

No Target Devices Found or Link Down Message Displays in QLogic BR-series BIOS Config Menu

“No target devices found or link down” message displays on the QLogic BR-series BIOS Config Menu during boot device discovery.

1. **Possible Cause:** There is no fabric connectivity between the BR-Series adapter and target, or the target is not online.

Action: Execute the Fabric OS **nsAllShow** command on the attached switch to verify that the target and the host are online in the fabric and registered in the name server.

2. **Possible Cause:** The target and the adapter port are not on the same zone.

Action: Execute the Fabric OS **cfgActvShow** command on the attached switch and verify that the host and target are in the same zone by using either domain area members, port area members, or port or node WWNs.

3. **Possible Cause:** The link between the adapter port and target is not active yet.
Action: Check that the speeds for the adapter port and the connected switch port match. The best approach is to set both speeds to “auto” or “autonegotiate.”

Unable to Boot from the Stored Boot Device Settings in the Adapter

The host is unable to boot from the boot device settings stored in the adapter. A “No boot LUNs configured” message will display next to the adapter value when booting.

1. **Possible Cause:** In the QLogic BR-series BIOS Config Menu, the **Boot LUN** field in the **Adapter Settings** screen is set to **Auto Discover** or **First LUN**.
Action: Change the **Boot LUN** setting on the **Adapters Settings** screen to **Flash Values**. Refer to the Boot Code chapter in the *BR-Series Adapters Installation Guide* for details.
2. **Possible Cause:** In QLogic HCM, the boot option is set to **Auto Discovered from Fabric** or **First Visible LUN** in the **Boot over SAN** dialog box.
Action: Change the boot options to **User Configured LUNs** in the **Boot Over SAN** dialog box. Refer to the “Boot Code” chapter in the *BR-Series Adapters Installation Guide* for details.

Remote LUNs are not Visible to the Host

If LUNs from which the host system will boot are not visible from the host system, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

1. **Possible Cause:** The driver update disk (DUD) used to install the driver and necessary file structure on remote LUNs for boot over SAN operation is not correct for the host operating system being installed on the LUN.
Action: Download and install the correct the driver update disk for the OS that is being installed from the QLogic Web site (for download instructions, refer to [“Downloading Updates” on page 3](#)).
2. **Possible Cause:** Missing or improper storage array LUN mask setting.
Action: Check LUN mapping and masking using the storage array configuration applications.
3. **Possible Cause:** Missing or improper storage array LUN mask setting.

Action: Check LUN mapping and masking using storage array configuration tools.

4. **Possible Cause:** Adapter driver not loaded.

Action: The adapter driver may not be loaded. Refer to [“Adapter Driver Installation Verification” on page 65](#) for methods to verify driver installation.

Cannot Boot over SAN from Installed CNAs or Fabric Adapters

You cannot boot over SAN from CNAs or Fabric Adapter ports configured in CNA mode. However, you can boot from HBAs or Fabric Adapter ports configured in HBA mode installed on the same system.

Possible Cause: A maximum of four boot LUNs are exported to the system. Boot LUNs connected through HBAs and Fabric Adapter ports configured in HBA mode take precedence over boot LUNs connected through CNAs or Fabric Adapter ports configured in CNA mode. If all four boot LUNs are connected through HBAs or Fabric Adapter HBA ports, boot over SAN will not occur through installed CNAs or Fabric Adapter CNA ports.

Action: If you want to boot over SAN through a CNA or Fabric Adapter port configured in CNA mode, disable BIOS on all installed HBAs. To disable BIOS, use QLogic BCU CLI commands, the BIOS configuration utility, or QLogic HCM. Refer to the “Boot Code” chapter in the *BR-Series Adapters Installation Guide* for instructions.

Boot from SAN May Stop on Some Hewlett Packard Hosts

The boot process may stop on some Hewlett Packard systems, such as the HP DL180, and the following message displays.

```
02a2: BMC System Error Log (SEL) Full`  
/Press F1 to Continue, Press F2 to Setup/
```

Possible Cause: The System Event Log may become full of erroneous IPMI (intelligent platform management interface) events reported by the system BIOS.

Action: Perform the following steps.

1. Boot the server and press **F10** when prompted to run BIOS Setup.
2. Select the **Advanced** menu.
3. Scroll down to **IPMI** and press **Enter**.
4. Scroll down to the **System Event Log** selection and press **Enter**.
5. At the **Clear System Event Log** selection, press **Enter** to toggle between **Enable** and **Disable**.
6. Select **Enable**.

7. Press **F10** to save the changes and exit the BIOS Setup.

NOTE

Action: Refer to *Hewlett Packard (HP) Customer Advisory Document c01199684* on the HP technical support website for detailed information.

Adapter <port id>: BIOS Not Installed Displays During Boot Process

An “Adapter <port id>: BIOS not installed” message displays when booting from an adapter.

Possible Cause: Either the boot image is not present in the adapter option ROM or initialization of the adapter failed for some reason.

1. Boot image is not present in the adapters.
2. Adapter might have failed to initialize.
3. Link did not come up.

Action: Bring up the host system either using the QLogic LiveCD or boot from local disk.

Action: Download the latest boot code image for installed BR-Series adapters from the QLogic Web site (for download instructions, refer to [“Downloading Updates” on page 3](#)).

NOTE

For instructions on updating the boot image, refer to the “Boot Code” chapter in the *BR-Series Adapters Installation Guide*.

No Bootable LUNs Discovered During OS Install Using DUD

When installing the drivers from 2008 R2 Driver Update Disk (DUD), no LUNs are discovered for installing the operating system.

Possible Cause: The server has a combination of BR-425, BR-815, BR-825 and BR-1860 adapters, with one of the adapter ports used to host the boot LUN on the server.

Action: If a port on a BR-1860 Fabric Adapter is hosting the boot LUN, disable all BR-425, BR-815, and BR-825 adapters from system BIOS during the OS installation process. Enable these adapters after the successful OS installation.

Action: If a port on a BR-425, BR-815, or BR-825 adapter is hosting the boot LUN, disable all the storage port instances of BR-1860 Fabric Adapter from system BIOS during the OS installation process. Enable these storage port instances after the successful OS installation.

Fabric Adapter Problems

This section provides information for resolving problems more specific to Fabric Adapters. For additional information on troubleshooting problems on mezzanine card adapters, refer to [“Troubleshooting Mezzanine Card Problems” on page 71](#).

VLANs and Teams Persist after Changing Port to HBA Mode

If a vNIC is configured on a port that is in CNA or NIC mode and a VLAN or team is configured with the vNIC, the VLAN or team will persist if the user changes the port to HBA mode. The VLAN or team will continue to display in the Device Manager and will persist even after reboot. This is because the network driver will not reload after changing the port to HBA mode.

Possible Cause: Port is changed from CNA or NIC mode to HBA mode and network driver is not reloaded on system reboot.

Action: Ensure that all the teams and VLANs are removed from the port before changing from CNA or NIC mode to HBA mode.

QLogic HCM Not Discovering All Ethernet Ports for vNICs

vNICs are created for adapter on Windows systems, but QLogic HCM is not discovering all related Ethernet ports.

Possible Cause: Agent started before network driver came online to discover ports.

Action: Restart **QLogic BR-series HCM Agent Service** from Windows **Services** window.

Mismatch Firmware Event Occurs after Changing Port Mode

After changing port mode and rebooting system, a “mismatch” firmware event occurs.

Possible Cause: Drivers installed for new port mode do not match current adapter firmware.

Action: Install drivers for port mode that match current firmware level.

HBA Problems

This section provides information for resolving problems more specific to functions of HBAs or Fabric Adapter ports configured in HBA mode. For additional information on troubleshooting problems on mezzanine card adapters, refer to [“Troubleshooting Mezzanine Card Problems” on page 71](#).

VM Failover Not Successful in Windows Server 2012 Environments

In failover clustering environments on Windows Server 2012 systems with Virtual Machines (configured with virtual HBAs) as resources, if physical machines are not available, the Virtual Machines may not successfully failover to the alternate nodes in the failover cluster.

Possible Cause: As part of node failover, the WWPN used for the virtual HBAs is the same between the failing node and the node to where the resource moves. However, there could be a window of time where the WWPN from the failing node may still be active on the fabric. This causes a conflict in the WWPN at the fabric level.

Action: Configure the failover clustering resources (in this case, the virtual machines) so they restart after 5 minutes in case of a failure.

No Adapters Found on Local Host Message in QLogic HCM

When trying to access adapters on local Windows host through QLogic HCM, a “no adapters found on local host” displays.

1. **Possible Cause:** HBA itself is not present, but the driver is installed.

Action: Verify if the adapter is visible as a PCI device by executing your host’s operating system command to list PCI devices in the system. For details on this command, refer to the “List PCI Devices” row in [Table 3-1 on page 74](#).

Action: If the adapter does not appear in the list of PCI devices, refer to [“Boot Devices not Available in Host’s Boot Manager Menu” on page 29](#) for possible causes and recommended actions.

2. **Possible Cause:** Driver was removed from the device manager.

Action: Confirm driver installation using instructions under [“Confirming Driver Package Installation in Windows Systems” on page 67](#). If driver is not installed, use instructions in the *BR-Series Adapters Installation Guide* to install it.

Quality of Service Performance Issues

If enabling Quality of Service (QoS) is causing poor performance or QoS does not appear to be functioning, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

NOTE

QoS is not supported on CNAs or Fabric Adapter ports configured in CNA mode.

NOTE

QoS works only with non-routed targets and requires an 8 Gbps or faster switch.

- Possible Cause:** QoS is not enabled on both switch and adapter port.

Action: Verify if QoS is enabled for an adapter port using the **qos -query <port_id>** QLogic BCU CLI command. Verify if it is enabled on the switch using the **isIShow** command.

Action: Verify zones on the switch using the Fabric OS **cfgActvShow** command.
- Possible Cause:** QoS zones are not created properly on the switch for high, medium, and low priority targets.

Action: Verify that QoS is configured on the switch using instructions in the *Brocade Fabric OS Administrator's Guide*.
- Possible Cause:** One or both of the required licenses are not installed on the edge switch connected to the Adapter port if the switch is running Fabric OS prior to 7.2:

 - Adaptive Networking (AN) license.
 - Server Application Optimization (SAO) license.

Action: Enter the QLogic BCU CLI **qos --query** command for the adapter port connected to the switch. If the QoS state is "Unknown" instead of "Online" and total BB-Credits is "zero," licenses may not be installed. Verify if licenses are installed by executing the Fabric OS **licenseshow** command on the switch. Install licenses as required. For more information about Fabric OS commands and QoS support, refer to the *Brocade Fabric OS Administrator's Guide*.

NOTE

For switches using Fabric OS 7.2 and later, these licenses are installed. They will not appear in **licenseshow** output.

Unable to Create More than 126 Virtual (NPIV) Ports for Adapter

If you cannot configure more than 126 N-Port ID Virtualization (NPIV) ports (maximum is 255 for Fibre Channel) refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Cause: The maximum NPIV limit for the connected switch has been reached.

Action: Execute the Fabric OS **configure** command on the attached switch and change the maximum logins per port parameter under the **F_Port login parameters** menu to increase the maximum NPIV IDs allowed per port.

Version Mismatch Error after Installing Version v3.x Drivers

“Version mismatch” error displays after installing v3.x drivers and rebooting the host system.

Possible Cause: Older boot code (v1.1.x.x or v2.0.0.x.x) installed on HBA.

Action: Use LiveCD image to update boot code. Refer to “Using a LiveCD image” instructions in *BR-Series Adapters Installation Guide*.

If updating v1.1.x.x or v2.x boot code installed on BR-825, BR-815, BR-804, BR-425 Host Bus Adapters to v3.0 or later, download and use a LiveCD image to update boot code. If you do not do this, a “mismatch” firmware error message may display after you reboot the server with 3.x drivers installed. Follow instructions to update the adapter boot code under “Using a LiveCD image” in the Boot Code chapter of the *BR-Series Adapters Installation Guide*.

Trunking Problems

This section provides information to resolve problems when N_Port trunking is enabled on adapters.

Frames Delivered Out of Order with Trunking Enabled

With trunking enabled on adapter, frames are delivered to target out of order.

Possible Cause: Target rate limiting, QoS, or both are also enabled, but not on both ports in trunk or default speed for target rate limiting does not match on both ports.

Action: Make sure that QoS settings match and that the default speed for target rate limiting is set to default on both ports.

One Port in Trunk Goes to “Linkdown” State

With trunking enabled, one port in the trunk goes to “linkdown” state.

Possible Cause: The port configuration does not match for the two ports forming the trunk.

Action. Verify that the configuration on both ports is the same.

Only One Adapter Port Participates in Trunk

Only one port on the adapter configured for trunking is participating in the trunk.

1. **Possible Cause:** The adapter ports are connected to switch ports in different trunk groups. ports participating in trunking should be connected to the same port group on the switch.

Action: Connect both adapter ports to the same port group on the switch.

2. **Possible Cause:** Only one adapter port is connected to the switch. The other port is down or not connected.

Action: Make sure other port is enabled and connected to switch.

3. **Possible cause:** Required licenses not installed on the connected switch.

Action: Verify if the following licenses are installed by executing the Fabric OS **licenseshow** command on the switch. Install licenses as required.

NOTE

The switch where the HBA or Fabric Adapter port configured in HBA mode connects must be running Fabric OS 4.6.1 or greater.

Trunked Port Disabled on the Switch

One of the trunked ports gets persistently disabled on the switch.

Possible cause: Trunking is not enabled and configured on the adapter.

Action: Enable trunking on the adapter. Follow procedures in the *BR-Series Adapters Administrator's Guide*.

Cannot Disable Trunking

Cannot disable trunking.

Possible cause: Trunking is not disabled on switch and the adapter.

Action: Disable trunking following procedures in the *BR-Series Adapters Administrator's Guide*.

Network Interface Problems (CNA or NIC)

Use the following information to isolate problems that are more specific to the function of a CNA or Fabric Adapter port configured in CNA or NIC mode. For additional information on troubleshooting problems on mezzanine and expansion card adapters, refer to [“Troubleshooting Mezzanine Card Problems” on page 71](#).

NOTE

Switch command examples used in this section are for the Brocade 8000 Switch.

Ethernet Loopback Test Problems

Errors occur during QLogic BCU CLI Ethernet loopback tests.

- Symptom:** Loopback test returns “Check link/cable or SFP” error when executed with *-t cable* option (stand-up adapters only).

Possible Cause: Loopback cable not inserted in tested port.

Action: Verify that loopback cable is securely inserted in the port that you are testing.
- Symptom:** Loopback test returns a “port not disabled” error.

Possible Cause: Port is enabled.

Action: Disable the port using the **port --disable** QLogic BCU CLI command before running loopback test.
- Symptom:** Loopback test returns a “port not disabled” error. The error displays even after disabling the port.

Possible Cause: Network load balancing service is enabled. This will cause the adapter to disable and enable, and the previously configured state (port disable) is lost.

Action: Disable network load balancing and retest.
- Symptom:** The loopback test returns “Device busy - Retry operation” or “diag busy.”

Possible Cause: Other users or sessions are running another instance of loopback tests.

Action: Check if instances of this diagnostic are running using **ps -ef** for Linux and VMware, and Task Manager for Windows systems.

Action: If instances are still running, wait a few minutes, then again check if the tests done using the **ps -ef** command or Task Manager.
- Symptom:** The loopback test returns “Missing frame check and replace SFP/cable” (stand up cards only).

Possible Cause: The loopback cable was pulled during the test and the test is run in external mode (not serdes mode).

Action: Restart the test with the cable connected.

Binding Issues after Hyper-V Enabled with Teaming

Following are issues to consider when enabling Hyper-V when teams are created.

BNI Driver Upgraded, Installed, or Removed

Binding issues may result when the QLogic network intermediate (BNI) driver is upgraded, installed, or removed if there is a team created through QLogic BCU CLI or QLogic HCM and it is enabled with Hyper-V (bound to Microsoft Hyper-V Switch Protocol).

Possible Cause: When the BNI driver is upgraded, the current configuration is saved, the old driver is removed, and the new driver installed. If a team is created and bound to Hyper-V, the virtual adapter in the team is removed when the BNI driver is removed. Therefore, the upper edge of the virtual adapter created through the Hyper-V manager for virtual managers will not have any lower edge bindings. This will lead to upper protocol and other binding issues on the system and multiple issues when reinstalling the operating system.

Action: Before upgrading, installing, or removing network driver packages, first remove the Hyper-V enablement from the team, if it is present.

Non-zero VLAN IDs

There is no restriction on creating a VLAN with non-zero ID on top of the physical adapter, using it as a base port for an existing team, and then enabling Hyper-V. However, binding issues may result.

Possible Cause: The BNI driver limits the Hyper-V enablement only to the team and not to any non-zero VLANs created on top of the BR-Series physical adapter.

Action: Enable Hyper-V only for the team created on the BR-Series physical adapter and not for any virtual adapters with non-zero VLAN IDs.

Enabling Hyper-V on Port that is Team Member

Binding issues may result if you try to enable Hyper-V on a physical port that is already part of a team.

Possible Cause: This occurs if you select a port that is a member of an existing team for Hyper-V enablement. The BNI driver cannot restrict this operation.

Action: Remove the port from the team before enabling Hyper-V.

Recovery Steps

If binding issues occur when enabling Hyper-V, the following steps may work to recover the system.

- Remove the virtual adapter created through the Hyper-V manager.
- Enable the BR-Series physical adapter bindings to all the upper protocols and not to the BNI driver or any other Intermediate driver.
- Reboot the server.

- Assign an IP address to the physical adapter and ping a peer in the network. If this works, then the user can assume that the system has recovered.

Ping to Remote Host is Failing

Pings generated between servers are failing or there is no response from ping.

1. **Possible Cause:** Ethernet interface on either server is in the following states:

- Administratively down. Running the Linux or VMware **ifconfig** command shows that the UP flag is not set.
- Administratively up, but link is down. Running the Linux or VMware **ifconfig** command shows that the RUNNING flag is not set.

Action: To determine link state, run the **ifconfig** command for Linux or VMware systems. For Windows systems, run **ipconfig /all** or use **Settings > Network Connections**.

Action: For the interface to send and receive packets, both the UP and RUNNING flags must be set.

Action: If pinging a server on a different network. make sure that the route to that host network or that the default gateway is correctly configured.

2. **Possible Cause:** Other link problems.

Action: Refer to [“Port Link Is Not Active” on page 23](#).

3. **Possible Cause:** IP address and network mask of adapter port are set incorrectly.

Action: Verify and set IP address and network mask if necessary.

- Linux - Run the **ifconfig** command to determine if port has proper IP address and network mask and to verify that the link is up.
- Windows - Use Device Manager and network connection tools.

4. **Possible Cause:** Packets are not being received or stack is dropping packets at remote server due to incorrect IP address set on adapter or incorrect MTU size.

Action: Verify if packets arrived at the remote server using the following commands:

- Linux - Run the **tcpdump** command.
- Windows - Run the Wireshark application.

Action: Verify MTU size on your system and increase size if necessary. Note that MTU size set on adapter must not be more than MTU size set on attached FCoE switch. To set MTU size on the adapter, refer to the “Adapter Configuration” Chapter in the *BR-Series Adapters Installation Guide*.

Action: Verify and set IP address and network mask if necessary.

- Linux - Run the **ifconfig** command to determine if port has proper IP address and network mask and to verify that the link is up.
- Windows - Use Device Manager and network connection tools.

5. **Possible Cause:** If hosts with Windows operating systems do not reply to broadcast/multicast ICMP **ping** commands, this is by design. Windows systems will not reply for security reasons.

Action: Refer to Windows KB137421 on <http://support.microsoft.com/kb/137421>.

Bandwidth Settings for vNICs Not Saved after Downgrade

The minimum and maximum allowable output bandwidth settings for vNICs are not saved when downgrading from version 3.1 to 3.0.3. This has been verified on Windows and RHEL systems.

Possible cause: Downgrade changes bandwidth settings configured for vNICs with QLogic BCU CLI **vnic --create** command and QLogic HCM **vNIC Creation** dialog box to unpredictable values.

Action: After downgrade, reset minimum and maximum bandwidth values using QLogic HCM or QLogic BCU CLI for configured vNICs.

Poor Network Performance

Poor network performance apparent for Windows and Linux systems.

1. **Possible Cause:** Checksum offloads are disabled.

Action: For Windows, verify if checksum offload parameters are enabled using the **Advanced** tab on the **Network Adapters > Properties** dialog box in Device Manager.

Action: For Linux, run the **ethtool -k <interface ID>** command. If offload parameters are on, information similar to the following displays in the output.

```
rx-checksumming: on
tx-checksumming: on
tcp segmentation offload: on
```

Action: Checksum offloads should be enabled by default. If not, refer to the “Adapter Configuration” appendix in the *BR-Series Adapters Installation Guide*.

2. **Possible Cause:** Dynamic interrupt moderation is disabled.

Action: For Windows, verify if interrupt moderation is enabled using the **Advanced** tab on the **Network Adapters > Properties** dialog box in Device Manager.

Action: For Linux, run the `ethtool -c <interface ID>` command. If interrupt moderation is enabled, information similar to the following displays in the output.

```
Coalesce parameters for eth2:  
Adaptive RX: on TX: off
```

Action: Interrupt moderation should be enabled by default. If not, refer to the “Adapter Configuration” appendix in the *BR-Series Adapters Installation Guide*.

3. **Possible Cause:** Not all eight lanes of PCIe bus are functioning.

Action: For Linux, run the following command:

```
lspci -vv -d 1657:0014
```

If eight lanes are detected, information similar to the following should appear in the command output:

```
Link: Supported Speed unknown, Width x8, ASPM L0s L1,  
Port 0  
Link: Speed 2.5Gb/s, Width x8
```

Action: If eight lanes are not detected, try rebooting the system. If this does not fix the problem, contact customer support for your adapter.

Loss of Adapter Hardware Address in Linux

The `ifconfig` command displays, HW Addr as 00:00:00:00:00:00.

Possible Cause: The adapter failed to initialize.

Action: Disable the Ethernet I/O controller by entering the QLogic BCU CLI `vnic --disable` command, then enable the I/O controller by entering the QLogic BCU CLI `vnic --enable` command.

Loss of Adapter IP address in Linux

The IP address set in Linux with the **ifconfig** command disappears when the adapter goes down or host system reboots.

1. **Possible Cause:** The IP address was set with the **ifconfig** command and the adapter is enabled in DHCP (Dynamic Hardware Configuration Protocol) mode.
Action: Configure IP address using system GUI-based networking tools.
2. **Possible Cause:** The IP address is not configured in the ifcfg-ethX script.
Action: Manually configure IP address in ifcfg-ethX script.

Ethernet Link Ports or LOM Not Coming Up on Reboot in Linux

The host system's LAN on motherboard (LOM) is not coming up or ports are not visible after rebooting Linux host.

1. **Possible Cause:** A ifcfg-ethX script is not configured to bring up each LOM and CNA during the system boot process.
Action: Make sure that a script is configured for each adapter and LOM once drivers are installed. Scripts are located in the following directories:
 - SLES - /etc/sysconfig/network
 - RHEL - /etc/sysconfig/network-scripts
2. **Possible Cause:** NetworkManager is enabled. There are known issues with NetworkManager managing multiple NICs in some Linux distributions.

Action: Disable NetworkManager.

To check if NetworkManager is running, enter either of the following commands:

- `chkconfig --list | grep NetworkManager`
- `nm-tool`

To disable NetworkManager for RHEL 5 systems, enter the following commands.

```
chkconfig NetworkManager off  
chkconfig NetworkManagerDispatcher off
```

To disable NetworkManager for SLES systems, perform the following steps.

- a. Open YaST.
- b. Select the **Network Devices Network Card**.

- c. On the first screen set the **Network Setup Method** option to **Traditional Method with ifup**.

Network Stack Runs out of Heap

The network stack on VMware systems is running out of heap space.

Possible Cause: Enabling NetQueue and using jumbo frames has caused the network stack to run out of heap with default values set for netPktHeapMaxSize and netPktHeapMinSize. Leaving default values can result in unpredictable behavior.

Action: Perform the following steps.

1. Log in to the VI Client.
2. Click the **Configuration** tab for the ESX Server host.
3. Click **Advanced Settings**.
4. Click **VMkernel**.
5. Find the corresponding value field for VMkernel.Boot.netPktHeapMaxSize, and enter 128.
6. Find the corresponding value field for VMkernel.Boot.netPktHeapMinSize, and enter 32.
7. Click **OK** to save the changes.
8. Reboot the system.

NIC Numbering Unexpected on VMware Systems

After installing adapter drivers on VMware systems, NIC numbering is not what is normally expected. For example, instead of vmnic32 or vmnic33, the number is vmnic2 and vmnic3.

Possible Cause: Adapter hardware was installed before drivers.

Action: When installing a CNAs or Fabric Adapters with ports configured in CNA or NIC mode on a VMware systems, it is advisable to install the driver before the adapters so that the NICs will be properly enumerated in the system. To resolve the problem, you must perform the following steps.

1. Uninstall the drivers.
2. Remove the adapter.
3. Reboot your system without the adapter.
4. Install the drivers.
5. Install the card.

6. Reboot the host system.

VLAN Creation and Operation Problems

VLAN creation fails with QLogic BCU CLI command, or QLogic HCM or pass-through VLAN stops working after creating with Device Manager. These problems result when VLANs are created using QLogic HCM or QLogic BCU CLI commands and also using Device Manager. Follow these guidelines to avoid problems:

- If you need to create a single VLAN and VLANs have not been created using QLogic BCU CLI commands or QLogic HCM, you can use Device Manager.
- If you want to configure multiple VLANs, disable the port VLAN created in Device Manager (set to 0 value), then configure VLANs using QLogic HCM or QLogic BCU CLI. Refer to the *BR-Series Adapters Administrator's Guide* for instructions.

1. **Symptom:** When using QLogic BCU CLI commands or QLogic HCM, to create VLANs, the initial VLAN fails with an error message.

Possible Cause: Port VLAN was created through Device Manager.

Action: Set port VLANID to 0 in Device Manager and create VLANs using QLogic BCU CLI commands or QLogic HCM.

2. **Symptom:** Passthru VLAN stops working.

Possible Cause: Port VLAN was configured through Device Manager.

Action: Set port VLANID to 0 in Device Manager.

3. **Symptom:** Right-clicking on a VLAN device in Device Manager, then selecting **Update** does not work.

Possible Cause: The upgrade option for QLogic 10 Gig Ethernet service is not available.

Action: Uninstall and install the service.

4. **Symptom:** No VLAN operation works except “bcu ethport --vlanlist.”

Possible Cause: Port VLAN is configured in Device Manager.

Action: Set port VLANID to 0 in Device Manager.

5. **Symptom:** “Illegal Configuration - Remove Port VLAN” is displayed when you use the **bcu vlan --list** command or list VLANs through QLogic HCM.

Possible Cause: VLAN or Passthru VLAN was created with QLogic BCU CLI commands or QLogic HCM and user has modified the PVID on the port with VLANs to a nonzero value.

Action. Use Device Manager to modify the PVID on the port with VLANs to a zero (0) value.

Enabling and Disabling Port VLAN in Device Manager

Access the port VLAN configuration in Device Manager using the following steps.

1. Open Device Manager.
2. Expand **Network Adapters**
An instance of the adapter model should display for each installed adapter port.
3. Right-click an adapter instance and select **Properties**.
4. Select the **Advanced** tab.
5. Select **VlanID**.
6. Set VLANID to 0 to disable or enable by setting an ID number.

Receive-side Scaling Disables Unexpectedly

Receive-side scaling (RSS) is unexpectedly disabled on Windows Server 2008 systems.

Possible Cause: Windows hotfix KB958015 is not installed.

Action: Download and install hotfix KB958015. This hotfix is recommended.

VMQs Not Created for Virtual Network Adapter Instances

Virtual Machine Queue (VMQ) support is enabled on the adapter and Virtual Network optimization is enabled in properties for the virtual machine (VM). When VM is started, the QLogic BCU CLI **vnic -query display** command does not confirm VMQ creation.

Possible Cause:

1. The shared memory resources reserved for VQM creation is insufficient to support the number of Virtual Machines.
2. VMQ is disabled on the management operating system.

Action:

1. Try changing the jumbo packet size to a smaller value or configure less receive buffers.
2. Create a sub-key "TenGigVmqEnabled" under the registry hive HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\VMSMP\Parameters on the management operation system.

NOTE

Note that VMQ support is only available on systems running windows Server 2008 R2.

Applications Using TDI Driver Stop Responding

Applications that use the TDI driver for network traffic may stop responding on Windows Vista systems.

Possible Cause: Windows hotfix KB2029048 is not installed.

Action: Download and install hotfix KB2029048. This hotfix is optional.

RSS Network Throughput Decreases

Receive-side scaling (RSS) network throughput performance decreases on Windows Server 2008 R2 systems with more than 32 processors.

Possible Cause: Windows hotfix KB977977 is not installed.

Action: Download and install hotfix KB977977. This hotfix is recommended.

SNMP MIB Browser Not Displaying Information on VLAN-related OIDs

For Windows systems, when a large number of VLANs are created on a port, the SNMP MIB browser sometimes doesn't display the requested info for snmp_getBulk/snmp_walk/snmp_table operations on VLAN-related object identifiers (OIDs). Instead a "Failed to connect to the SNMP agent" message displays.

Possible Cause: The browser is timing out before all data is populated.

Action: Increase the default timeout value of the SNMP MIB browser to a sufficiently large value (40 seconds - 50 seconds) so that all the values populate before time-out.

Teaming Errors

Although you can create teams, ports configured as team members are in an error state and output from the QLogic BCU CLI `team --vlanquery` command shows mismatching of teaming parameters. Although you can still create teams, the parameters configured for the first port (primary port) added to a team should match parameters of subsequent ports added to the team.

In the following example output from the QLogic BCU CLI **team --vlanquery** command, a conflict displays for the port associated with local area connection 6 because its PVID does not match the PVID of the primary port (local area connection 3).

```
2/0 : Local Area Connection 3 (Primary) (Active) (Linkdown)
3/1 : Local Area Connection 6 )Conflict)
Conflict Reason: Mismatching PVIDs configured for adapters
```

Possible Cause: Parameters configured for the first port (primary port) added to a team do not match parameters of subsequent ports added to the team.

Action: Note that you can still create teams even though these conflicts exist. However to avoid conflicts, make sure the following parameters match for all ports added to a team:

- Receive side scaling
- Offload parameters
- Port VLAN ID (PVID)
- MTU size
- Link speed

NOTE

For CNAs and Fabric Adapter ports configured in CNA or NIC mode, link speed is always 10 Gbps. You cannot change this parameter.

You can view and change these parameters for each port using the following steps for Windows Device Manager.

1. Run **devmgmt.msc** to open the **Device Manager** window.
2. Expand **Network Adapters**.
An instance of the adapter model should display for each installed adapter port.
3. Right-click on the adapter instance that corresponds to the port where you want to change parameters, and select **Properties**.
4. Select the **Advanced** tab.
5. Select the property and change the value as appropriate.

For more details, refer to the “Adapter Configuration” appendix in the *BR-Series Adapters Installation Guide*.

Network Boot Problems

This section provides resolution for problems that occur when booting LUNs over the network using PXE and gPXE.

Configured VLANs Lost after PXE Boot

After upgrading adapter drivers to 3.1 or later, created VLANs are lost.

Possible Cause: VLANs are not supported for PXE boot with Adapter firmware version 3.1 or later.

Action: Reconfigure VLANs after PXE boot.

PXE Boot Fails on IBM 3630 M4 Server in UEFI Mode

PXE boot fails on IBM 3630 M4 Server in UEFI mode. Although the adapter ports do not get initialized, the NIC ports display in network tab of human interface infrastructure (HII).

Possible Cause: Server BIOS.

Action: Upgrade to latest BIOS.

Performance Differences of Two VMs

For QLogic BR-Series adapters in NIC mode, performance of two VMs is different, depending on which is the sender and receiver.

Possible Cause:

- VMs hosted on the same ESX host are going through two different vSwitches.
- VMs are hosted on two different ESX hosts.

Action: Turn off iptables for RHEL6.5 by executing the following commands:

```
# service iptables save;  
# service iptables stop
```

To turn on iptables for RHEL6.5, issue the following command:

```
# service iptables start
```

FCoE and Fibre Channel Problems

This section provides resolution of the following:

- Fibre Channel problems on HBAs and Fabric Adapter ports configured in HBA mode.
- FCoE problems on CNAs and Fabric Adapter ports configured in CNA mode.

FCoE Logins Are Lost or Dropped

FCoE logins are lost or dropped on switch ports running FCOE traffic from CNAs.

Possible Cause: Spanning tree topologies enabled on switch ports.

Action 1: Disable spanning tree topologies on switch ports connected to CNAs running FCoE traffic.

Action 2: Configure switch port interfaces as edgeport (RSTP, MSTP) or portfast (STP)

Action 3: Refer to the DCB switch administrator's guide for further details on configuring spanning tree.

Loss of Sync and Loss of Signal Errors in Port Statistics

If the port is having loss of synchronization and signal errors, refer to the following descriptions of possible causes and recommended actions to help resolve the problem. Learn more about displaying port statistics in [“Port Statistics” on page 104](#).

Possible Cause: Possible physical link problem.

Action: Check authentication settings on the switch and adapter. For the switch, execute the **authutil --show Fabric** Fabric OS command. For the adapter, execute the QLogic BCU CLI **auth --show** command (refer to [“Authentication Settings” on page 134](#)).

Action: Use the QLogic BCU CLI **auth --show <port>** command on the adapter and Fabric OS **authutil --show** command on the switch.

Action: Check the shared secret configuration on the attached switch and on the adapter. For the switch, execute the **secAuthSecret** Fabric OS command. For the adapter, execute the **auth --secret** QLogic BCU CLI command. Refer to [“Authentication Settings” on page 134](#) for details on using the auth-secret command.

Fabric Authentication Failures

If failures in the authentication process between the adapter in host system and the connected switch occur, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Cause: Authenticating configuration is incorrect.

Action: Check authentication settings on the switch and adapter. For the switch, execute the **authutil --show** Fabric OS command. For the adapter, execute the QLogic BCU CLI **auth --show** command (refer to [“Authentication Settings” on page 134](#)).

Action: Check the shared secret configuration on the attached switch and adapter. For the switch, execute the **secAuthSecret Fabric OS** command. For the adapter, execute the **auth --secret** QLogic BCU CLI command. Refer to [“Authentication Settings” on page 134](#) for details on using the **auth-secret** command.

Adapter Is Not Showing in the Fabric

If the adapter does not appear as a Fibre Channel device in the fabric, refer to the following descriptions of the possible cause and recommended action to help resolve the problem.

Possible Cause: There is a problem in the fabric or a protocol issue between the adapter and a fabric.

Action: Check the fabric statistics. Refer to [“Fabric Statistics” on page 97](#) for methods to display fabric statistics for the adapter.

- If counts for FLOGI sent and FLOGI accept fabric statistics do not match, suspect fabric problem or protocol issue between adapter and fabric.
- If fabric offline counts increase and fabric maintenance is not occurring, this may indicate a serious fabric problem. Refer to your switch troubleshooting guide to isolate and resolve the problem.

Virtual Devices Not Listed in Name Server

If virtual devices are not listed in the fabric’s name server, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Cause:

- Problem in the fabric or a protocol issue between the adapter and fabric.
- NPIV is not supported or is disabled on the switch.

Action: Check virtual port statistics, such as FDISC sent, FDISC accept, and No NPIV support statistics. Refer to [“Virtual Port Statistics” on page 110](#) for methods to display virtual port statistics.

Adapter Not Registering with the Name Server or Cannot Access Storage

If the adapter is not registering with the name server or cannot access storage, refer to the following descriptions of possible causes and recommended actions to help solve the problem.

- Possible Cause:** Adapter cannot log in to the name server.

Action: Display logical port statistics (refer to [“Logical Port Statistics” on page 100](#) for details on displaying these statistics). Check for increasing name server port login (NS PLOGI) error rejects and unknown name server port login response (NS login unknown rsp). These errors mean that the adapter most likely cannot log in to the name server.
- Possible Cause:** Adapter has a problem registering with the name server.

Action: Display logical port statistics (refer to [“Logical Port Statistics” on page 100](#) for details on displaying these statistics). Check for increasing errors of the following types. These indicate that the adapter has a problem registering with the name server:

 - Name server register symbolic port name identifier (NS RSPN_ID) errors.
 - Name server register symbolic port name identifier response (NS RFT_ID rsp) errors.
 - Name server register symbolic port name identifier response rejects (NS RFT_ID rejects).
- Possible Cause:** Adapter has a problem querying the name server for available storage.

Action: Display logical port statistics (refer to [“Logical Port Statistics” on page 100](#) for details on displaying these statistics). Check for increasing name server “get all port ID response” (NS GID_FT rsp), rejects (NS_GID_FT rejects), or unknown responses (NS_GID_FT unknown rsp). This indicates that the adapter has a problem querying the name server for available storage.

FCoE Link is Down

NOTE

This issue applies to CNAs and Fabric Adapter ports configured in CNA mode only.

The FCoE link is down between the adapter and switch.

- Possible Cause:** The FCoE link is not administratively enabled.

Action: Determine if the link is enabled by entering the QLogic BCU CLI **port --list** command. If the port is administratively disabled, the **“port state”** field will show **Disabled**.

Action: Enable the port by entering the QLogic BCU CLI **port --enable <port_id>** command.

2. **Possible Cause:** The FCoE license may not be installed on the connected switch.

Action: Execute the Fabric OS **licenseshow** command on the connected switch to determine if the license is installed. Install license if not installed. For more information about Fabric OS commands and QoS support, refer to the Brocade *Fabric OS Administrator's Guide*.

3. **Possible Cause:** The DCB link is not enabled on the adapter.

Action: Verify that the DCB status using the QLogic BCU CLI **port -list** command is displayed as "DCB Linkup". If "Linkdown" or "Linkup" displays, refer to "[DCB Is Not Enabled](#)" on page 61.

4. **Possible Cause:** The VLAN to which the FCoE switch front-end port belongs is not FCF-capable.

Action: Verify if VLAN on front-end port is FCF-capable using the appropriate Fabric OS command on the attached switch. Refer to the *Fabric-OS Command Reference Manual* for more information.

Action: Set the VLAN as FCF-capable using the appropriate Fabric OS commands on the attached FCoE switch. Refer to the *Fabric-OS Command Reference Manual* for more information.

5. **Possible Cause:** The FC-MAP on the FCoE switch is not set for a VLAN with FCF capability.

Action: Verify if the FC-MAP on the switch is set for a VLAN with FCF capability using appropriate Fabric OS command on the attached switch. Refer to the Brocade *Fabric OS Command Reference* for more information.

Action: Set the FC-MAP for a VLAN with FCF capability using the appropriate Fabric OS command on the attached switch. Refer to the Brocade *Fabric OS Command Reference* for more information.

6. **Possible Cause:** The FCoE Login group is not created on the FCoE switch, not allowing all VF-Ports to be part of the login group.

Action: Verify if FCoE Login group is created on switch using the appropriate Fabric OS command. Refer to the Brocade *Fabric OS Command Reference* for information.

Action: Create an FCoE login group on the switch using the appropriate Fabric OS command.

7. **Possible Cause:** PFC (priority flow control), DCB Map, and FCoE Map is not configured correctly on the FCoE switch.
Action: Refer to [“DCB Is Not Enabled” on page 61](#).
8. **Possible Cause:** For IBM blade systems, the BladeCenter Open Fabric Manager (BOFM) support in adapter option ROM expects non-zero values for PWWN and NWWN for the FCoE port. If any values are zero, the link will not come up and port status will display Linkdown.
Action: Verify if the PWWN or NWWN has a zero value using one of these methods:
 - Windows system log or Linux /var/log/messages file displays a port error indicating a zero PWWN or NWWN.
 - Output from QLogic BCU CLI port --query <port_id> command for the port shows zero value for PWWN or NWWN.
 - Advanced Management Module (AMM) Open Fabric Manager (OFM) status page displays an error status for the corresponding port of the blade.If values are zero, use BOFM to configure non-zero values for the PWWN and NWWN.

I/O Problem on Connected FCoE Device

NOTE

This issue applies to CNAs and Fabric Adapter ports configured in CNA mode only.

There is an I/O problem on a connected FCoE device.

1. **Possible Cause:** Link between the adapter and switch is down.
Action: Refer to [“FCoE Link is Down” on page 57](#).
Action: Refer to [“DCB Is Not Enabled” on page 61](#).
2. **Possible Cause:** PFC (priority flow control), DCB Map, and FCoE Map is not configured correctly on the FCoE switch.
Action: Verify configuration using the appropriate Fabric OS command on the attached switch. Refer to the Brocade *Fabric OS Command Reference* for information.

Action: Configure PFC using the appropriate Fabric OS command on the attached switch while in switch configuration mode.

3. **Possible Cause:** Zoning is configured incorrectly on FCoE switch.

Action: Verify zoning configuration on the attached switch using the appropriate Fabric OS command. Refer to the Brocade *Fabric OS Command Reference* for more information.

I/O Operations Are Not Failing over Immediately on Path Failure in MPIO Setup

When multipath I/O (MPIO) is enabled and input/output operations are not failing over immediately when a path failure occurs, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Cause: Improper driver mpiomode setting.

Action: Execute the `port --query <port_id>` QLogic BCU CLI command and ensure fcpim MPIO mode is enabled (which implies zero Path TOV values) or that fcpim MPIO mode is disabled with the expected "Path TOV" settings (default is 30 seconds).

Disk I/O Requests Cause Low Throughput and High Latency on Linux

If a high number of I/O requests is causing low throughput and high latency on Linux systems, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Cause: The maximum input/output operations per second are too low on Linux hosts.

Action: Refer to ["Linux Tuning" on page 142](#) for suggestions to optimize adapter performance in Linux systems.

Disk I/O Requests Cause Low Throughput and High Latency on VMware

If a high number of I/O requests is causing low throughput and high latency on VMware systems, refer to the following descriptions of possible causes and recommended actions to help resolve the problem.

Possible Cause: The maximum input/output operations per second are too low on VMware hosts.

Action: Refer to ["VMware Tuning" on page 146](#) for suggestions to optimize adapter performance in VMware systems.

DCB Network Problems

NOTE

This issue applies to CNAs and Fabric Adapter ports configured in CNA mode only.

This section provides information to resolve problems of adapter operation on the Data Center Bridging (DCB) network. For additional information on troubleshooting problems on mezzanine card or expansion card adapters, refer to [“Troubleshooting Mezzanine Card Problems” on page 71](#).

DCB Is Not Enabled

The DCB state does not show “DCB Linkup” when you run the BCU **port --query** command.

- Possible Cause:** The link between the adapter port and switch is down.

Action: Run the **dcb --query** command for the port to gain a better understanding of LLDP attributes, DCB maps, and priority tables configured for the port. Also check the error reason code for the DCB link failure. The error reason code will tell you why the DCB is not enabled or active. If the error reason is “Physical Link down,” refer to [“Port Link Is Not Active” on page 23](#) and [“Verifying Fibre Channel and DCB links \(Stand-up Adapters\)” on page 64](#).
- Possible Cause:** Adapter did not receive DCB configuration or received invalid DCB configuration from the FCoE switch.

Action: Run the QLogic BCU CLI **dcb --query** command for the port to gain a better understanding of LLDP attributes and DCB configuration (such as DCB maps and priority tables) configured for the port. Also check for the error reason code for the DCB link failure. The reason code will tell you why the DCB is not enabled or active. Change or fix the DCB configuration at the switch appropriately based on the displayed error reason code.

Action: Check FCoE switch configuration using the appropriate Fabric OS command on the attached switch. Refer to the Brocade *Fabric OS Command Reference* for information. Change configuration as necessary using appropriate Fabric OS command on the attached switch. Refer to the Brocade *Fabric OS Command Reference* for information.
- Possible Cause:** The front-end Ethernet port on the FCoE switch is not configured as “switchport” or is not set to converged mode.

Action: Use the appropriate Fabric OS command on the attached switch to display information about the VLAN interface. Refer to the Brocade *Fabric OS Command Reference* for information.

Action: Configure the FCoE port as a “switchport” using the appropriate Fabric OS command on the attached switch. Refer to the Brocade *Fabric OS Command Reference* for information.

Action: Configure the FCoE port to converged mode using the appropriate Fabric OS command on the attached switch.

QLogic HCM and QLogic HCM Agent Problems

This section provides information to help resolve problems with QLogic HCM installation and operation.

WWPN and MAC Display as Zeros in QLogic HCM Master Log

The WWPN and MAC address display as all zeros in QLogic HCM Master Log.

Possible Cause: Address enable (AEN) was posted before adapter initialization was completed.

Action: Ignore.

“Failed to Connect to Agent on host localhost” Message

After installing adapter software using the QLogic Adapter Software Installer, launching QLogic HCM may result in “Failed to connect to agent on host localhost” message.

Possible Cause: QLogic HCM agent may have become unresponsive.

Action: Try using QLogic HCM after the next system reboot.

Action: Restart the QLogic HCM agent. Refer to the *BR-Series Adapters Installation Guide* for details.

SELinux May Prevent the hcmagent from Loading /usr/lib/libdbfaj.so

When loading QLogic HCM agent to some Linux versions in adapters v3.0.x and v3.1.x, the following message displays:

```
SELinux is preventing hcmagent from loading /usr/lib/libdbfaj.so  
which requires test relocation.
```

Possible Cause: Security Enhanced Linux (SELinux) is enabled by default and preventing the QLogic HCM agent from running.

Action: From your Linux desktop, access Administration>SELinux Management and change the system default enforcing mode and current enforcing mode to “Permissive.” Although warning messages still display, QLogic HCM agent is not blocked.

NOTE

This problem is not applicable to adapters v3.2.0 and later.

QLogic HCM Agent Not Auto-starting if 3.0 Driver Updated with 2.3 QLogic HCM

QLogic HCM agent will not start automatically after system reboot if upgrading with 3.0 drivers and 2.3 QLogic HCM is installed.

Possible Cause: Driver update is setting the QLogic HCM agent to manual start.

Action: Enter the following command at the command line:

```
sc config hcmagent start= auto
```

Unable to Completely Uninstall QLogic HCM

Removing QLogic HCM using Windows **Add or Remove Programs** causes “Unable to completely uninstall application” error.

Possible Cause: QLogic HCM was installed on a host system through the QLogic HCM agent on server system using the web browser.

Action: Use one of the following methods to remove QLogic HCM from the host system:

Method 1

1. Enter the following at the command prompt:

```
Javaws -viewer
```

The **Java Cache Viewer** screen displays.

2. Select **Host Connectivity Manager**, right click, and then select **Delete** from the menu.

Method 2

Enter the following at the command prompt:

```
Javaws -uninstall
```

This installs all applications in the Java cache.

Verifying Fibre Channel and DCB links (Stand-up Adapters)

Check for link problems on stand-up adapters by observing LED operation for adapter ports. LED operation other than expected or LEDs may indicate link problems. For example, all LEDs flashing amber for a port indicates that an invalid unsupported SFP transceiver may be installed. For details on adapter LED operation, refer to the “LED Operation” section for your adapter in the *BR-Series Adapters Installation Guide*. If LEDs do not illuminate to indicate an active link, use appropriate Fabric OS and adapter diagnostic commands and QLogic HCM options in [Table 2-2 on page 65](#). For additional diagnostics commands, refer to [3, “Tools for Collecting Data”](#) for QLogic HCM and QLogic BCU CLI commands and the Brocade *Fabric OS Administrator’s Guide* for Fabric OS commands.

NOTE

Also verify LED operation on a switch port that is connected to an adapter port. Refer to the switch hardware reference manual to analyze LED meaning.

Common link problems can be caused by the following:

- Damaged cables. (Note that damaged cables can also cause errors and invalid data on links.)
- Cables that are not rated or compatible with adapter port speeds. Refer to cable specifications in the *BR-Series Adapters Installation Guide*.
- Faulty switch or adapter SFP transceivers. Verify if an SFP transceiver is the problem by connecting a different link to the adapter port or, if convenient, replace the cable with a cable of known quality. If the errors or invalid data on the link still indicate a cable problem, the SFP transceiver may be faulty. Try replacing the SFP transceiver.
- SFP transceiver issues on the adapter or switch. For example, the SFP transceiver may not be compatible with the adapter, but is compatible with the switch, or vice versa. SCSI retries and time-outs determine communication between the adapter and storage. Dropped packets cause time-outs, and packets can drop because of SFP transceiver issues. Run the QLogic BCU CLI **port -stats** command to display port statistics, and look for errors and dropped frames.

Table 2-2 lists QLogic HCM options and QLogic BCU CLI commands, as well as Fabric OS commands that you can use to determine link status.

Table 2-2. Tools to Determine Link Status

| Application | Tool | References |
|------------------|---|--|
| QLogic HCM | <ul style="list-style-type: none"> ■ Port Statistics ■ Loopback and PCI loopback test ■ Fibre Channel ping, echo, and trace route tests ■ Link Beaconsing ■ Port Properties ■ SFP transceiver information | Chapter 3, "Tools for Collecting Data" |
| QLogic BCU CLI | <ul style="list-style-type: none"> ■ fcdiag and diag commands. ■ Port commands, such as port --stats, port --list, and port --query. | Chapter 3, "Tools for Collecting Data" |
| Switch Fabric OS | <ul style="list-style-type: none"> ■ switchShow ■ portShow ■ portStatsShow ■ portErrShow ■ fcpProbeShow ■ fPortTest | <ul style="list-style-type: none"> ■ Chapter 3, "Tools for Collecting Data" ■ <i>Brocade Fabric OS Administrator's Guide</i> ■ <i>Brocade Fabric OS Troubleshooting and Diagnostics Guide</i> |

Adapter Driver Installation Verification

Problems with adapter operation may be due to improper hardware or software installation, incompatibility between the adapter and your host system, unsupported SFP transceivers installed on the adapter, improper cable connected to the fabric, or the adapter not operating within specifications. Determine if problems may exist because of these factors by reviewing your installation with information in the *BR-Series Adapters Installation Guide* listed in [Table 2-3](#).

Table 2-3. Installation and Reference Manual References

| Information | Chapter |
|--|------------------|
| Hardware and software compatibility information. | Product Overview |
| Software installation packages supported by host operating system and platforms. | Product Overview |
| Hardware and software installation instructions. | Installation |
| Product specifications. | Specifications |

Adapter driver packages from QLogic contain the current driver, firmware, and QLogic HCM agent for specific operating systems. Make sure that the correct package is installed for your operating system. Refer to the Product Overview chapter in the *BR-Series Adapters Installation Guide*.

An out-of-date driver may cause the following problems:

- Storage devices and targets not being discovered by the device manager or appearing incorrectly in the host's device manager.
- Improper or erratic behavior of QLogic HCM (installed driver package may not support QLogic HCM version).
- Host operating system not recognizing adapter installation.
- Operating system errors (blue screen).

NOTE

If a driver is not installed, try re-installing the driver or re-installing the adapter hardware and then the driver.

You can use QLogic HCM and tools available through your host's operating system to obtain information such as driver name, driver version, and adapter PWWNs.

Confirming Driver Package Installation with QLogic HCM

Use the following steps to display the adapter PWWN, driver name and version, firmware name and version, and the BIOS version currently in operation.

1. Launch QLogic HCM.
2. Select the adapter in the device tree
3. Select the **Properties** tab in the right pane to display the **Properties** dialog box.

The dialog box displays adapter properties.

Confirming Driver Package Installation in Windows Systems

Use the Device Manager to determine driver installation. Verify if the driver is installed and Windows is recognizing the adapter using the following steps.

1. Open the Device Manager.
 - For Converged Network Adapters, Host Bus Adapters, and Fabric Adapters, when you expand the list of **SCSI and RAID controllers** or **Storage controllers** an instance of the adapter model should display for adapter port installed.
 - For Converged Network Adapter and Fabric Adapter ports configured in CNA or NIC mode, when you expand **Network adapters**, an instance of **QLogic BR-series 10G Ethernet Adapter** should also display for each port installed.

For example, if two two-port CNAs (total of four ports) are installed, four instances of the adapter model display (two under **SCSI and RAID controllers** and two under **Network adapters**). As another example, if only one port on a Fabric Adapter is configured in CNA or NIC mode, two instances of the adapter model display (one under **SCSI and RAID controllers** and one under **Network adapters**).

If instances of your adapter model do not display, but generic instances flagged with yellow question marks *do* display under **Other Devices**, the driver is not installed. For example, **Fibre Channel Controller** may display as a generic instance for an HBA or Fabric Adapter port configured in HBA mode.

2. Right-click the BR-Series adapter model where you are installing the driver.
3. Select **Properties** to display the **Properties** dialog box.
4. Click the **Driver** tab to display the driver date and version. Click **Driver Details** for more information.

NOTE

If driver is not installed, try re-installing the driver or re-installing the adapter hardware and then the driver.

Confirming Driver Package Installation in Linux Systems

Verify if the adapter driver installed successfully using the following commands:

- **# rpm -qa|grep -i bfa**
This command prints the names of the BR-Series Adapter storage driver package (bfa) if installed.

- **# rpm -qa|grep -i bna**
This command prints the names of the BR-Series Adapter network driver package (bfa) if installed.
- **# lspci**
This utility displays information about all PCI buses in the system and all devices connected to them. **Fibre Channel: Brocade Communications Systems, Inc.** displays for an HBA or Fabric Adapter port configured in HBA mode. **Fibre Channel: Brocade Communications Systems, Inc.** and **Ethernet Controller** display for a CNA or Fabric Adapter port configured in CNA or NIC mode if driver packages have correctly loaded.
- **# lsmod**
This command displays information about all loaded modules. If **bfa** appears in the list, the storage driver is loaded to the system. If **bna** appears in the list, the network driver is loaded to the system.
- **# dmesg**
This command prints kernel boot messages. Entries for **bfa** (storage driver) and **bna** (network driver) should display to indicate driver activity if the hardware and driver are installed successfully.
- These commands display the location of the driver modules if loaded to the system:
 - The following command displays the storage driver module location. The module will have a **bfa** prefix.

```
# modprobe -l bfa
```
 - The following command displays the network driver module location. The module will have a **bna** prefix.

```
# modprobe -l bna
```

Confirming Driver Package Installation in Solaris Systems

Verify if the adapter driver installed successfully using the following commands:

NOTE

BR-804 and BR-1007 adapters are not supported on Solaris systems, so these commands do not apply to those adapters.

- **pkgchk -nv bfa**
This checks for and lists the installed adapter storage driver package files.

Following is an example for Solaris 11 x86 and SPARC systems when storage driver (bfa) is installed:

```
-bash-4.1# pkgchk -nv bfa
/opt
/opt/brocade
/opt/brocade/adapter
/opt/brocade/adapter/bfa
/opt/brocade/adapter/bfa/bfa_drv_arc.tar
-bash-4.1# pkgchk -nv bna
/opt
/opt/brocade
/opt/brocade/adapter
/opt/brocade/adapter/bna
/opt/brocade/adapter/bna/bna_drv_arc.tar
-bash-4.1# pkginfo -i bna
system      bna QLogic BR-series Network Adapter Driver
-bash-4.1# pkginfo -i bfa
system      bfa QLogic BR-series Fibre Channel Adapter Driver
-bash-4.1#
```

■ **pkginfo -l bfa**

This displays details about installed QLogic storage (bfa) adapter drivers. Look for information to display like in the following example. Note that the VERSION may be different, depending on the driver version you installed. The ARCH and DESC information may also be different, depending on your host system platform. If the adapter driver package is installed, bfa_pkg should display with a “completely installed” status.

Following is an example for Solaris 10 x86 systems when storage driver (bfa) is installed:

```
PKGINST: bfa
  NAME:   QLogic BR-series Fibre Channel Adapter Driver
CATEGORY: system
  ARCH:   sparc&i386
VERSION:  alpha_bld31_20080502_1205
BASEDIR:  /
VENDOR:   QLogic
  DESC:   32 bit & 64 bit Device driver for QLogic
BR-series Fibre Channel adapters
PSTAMP:   20080115150824
INSTDATE: May 02 2008 18:22
HOTLINE:  Please contact your local service provider
STATUS:   completely installed
```

Confirming Driver Package Installation in VMware Systems

Verify if the adapter driver installed successfully using the following commands:

- **esxcfg-module -l**
This lists installed driver names, R/O and R/W addresses, and whether the ID is loaded. For storage drivers, verify that an entry for **bfa** exists and that the ID loaded. For network drivers, verify that an entry for **bn**a exists and that the ID loaded.
- **cat /proc/vmware/version**
This displays the latest versions of installed drivers. For storage drivers look for a **bfa** entry and related build number. For network drivers, look for a **bn**a entry and related build number.
- **rpm -qa|grep -i bfa**
This command prints the names of the BR-Series Adapter storage driver package (bfa) if installed.
- **rpm -qa|grep -i bn**a
This command prints the names of the BR-Series Adapter network driver package (bn)a if installed.
- **lspci**
This utility displays information about all PCI buses in the system and all devices connected to them. **Brocade Communications Fibre Channel** displays for an HBA or Fabric Adapter port configured in HBA mode. **Brocade Communications Fibre Channel** and **Ethernet Controller** display for a CNA or Fabric Adapter port configured in CNA or NIC mode if driver packages have correctly loaded.

Confirming Driver Installation on ESXi 5.X Systems

Verify if the adapter driver installed successfully using the following commands on ESXi 5.X systems:

- **esxcli software vib list | grep bfa**
This command prints the names of the BR-Series Adapter storage driver package (bfa) if installed.
- **esxcli software vib list | grep bna**
This command prints the names of the BR-Series Adapter network driver package (bna) if installed.
- **esxcli.exe software vib list**
This lists all installed driver packages on the system using esxcli.
- **Get-EsxSoftwarePackage**
This displays the driver package name, version, vendor, and release date using vSphere ESXi Image Builder CLI.

Troubleshooting Mezzanine Card Problems

As mezzanine adapters are installed in blade servers or compute nodes as part of a blade system enclosure, problems may occur for reasons other than when adapters are installed in standard host systems. This section outlines some general methods for isolating causes of problems with adapter operation. For more information, refer to troubleshooting and maintenance information published for your specific blade server, server blade, compute node, and blade system enclosure. Also, refer to the support location on the manufacturer's website for your blade server or compute node and blade system enclosure.

If problems exist with adapter operation on a blade server or compute node, verify the following:

- The blade server or computer node is turned on.
- The adapter is installed in the appropriate connector on the blade server or compute node. On some blade servers or compute nodes, connectors may only support a specific adapter type. Refer to your blade server or compute node documentation for help.
- The blade system enclosure is configured for adapter operation. Refer to your blade system enclosure and documentation for blade system enclosure components for help.

- The blade server or compute node on which the adapter is installed is correctly configured for adapter operation and is correctly installed in the blade system enclosure. Refer to your blade server or compute node and blade system enclosure documentation for help.
- All modules or blades in that support adapter operation are installed in the appropriate enclosure bays and correctly configured. Refer to the documentation for your blade system enclosure for help.
- You are using the latest device drivers, firmware, and BIOS for the blade server or compute node and other components in the blade system enclosure that support adapter operation.
- Make sure that the blade server or compute node is correctly configured.
- Make sure that the IBM chassis unit and all other IBM chassis components are correctly configured.

Additional References for Isolating Problems

Refer to the following publications and to chapters in this manual for gathering information to further isolate and resolve adapter problems.

- [Chapter 3, "Tools for Collecting Data"](#)
Contains procedures to perform adapter diagnostics, display adapter statistics and display event logs, and collect data for troubleshooting using QLogic BCU CLI commands, QLogic HCM options, Fabric OS commands, and your host system commands.
- *Brocade Fabric OS Administrator's Guide*
Provides detailed information on features available on Brocade storage area network (SAN) products, and how to configure and administer these products
- *Brocade Fabric OS Command Reference*
Provides detailed descriptions of command line interface commands to help system administrators and technicians operate, maintain, and troubleshoot Brocade SAN products.
- *Brocade Fabric OS Troubleshooting and Diagnostics Guide*
Provides help with isolating problems in other Brocade SAN components.
- Your host's operating system documentation and help system
Provides details on commands for gathering information and isolating problems.

3 Tools for Collecting Data

For Detailed Information

This chapter provides basic instruction on tools useful for gathering information to isolate adapter problems. For more detailed information on using these tools, refer to the *BR-Series Adapters Administrator's Guide*.

The following chapters in this guide cover adapter QLogic HCM and QLogic BCU CLI monitoring and diagnostics tools:

- Monitoring
- Diagnostics
- QLogic BCU CLI
- *Brocade Fabric OS Troubleshooting and Diagnostics Guide*
This guide provides detailed information on collecting troubleshooting information and isolating general SAN problems between the Brocade switch, host systems, and storage systems.
- *Fabric OS Command Reference Manual*
Fabric OS diagnostic and monitoring commands for Brocade switches.
- Your host system's operating system user and administrator's guides.
Host system diagnostics, logs, and system monitoring tools.
- Your blade system enclosure and blade server troubleshooting publications.
Use these to troubleshoot mezzanine or expansion card adapter problems.

Data to Provide Technical Support

When problems occur requiring support assistance, provide a detailed description of the problem, as well as output collected from the following QLogic HCM and QLogic BCU CLI tools:

- Support Save
- Diagnostics
- Port logs
- Port statistics and properties
- Adapter properties
- Host operating system error logs

Data Collection Using Host System Commands

Table 3-1 describes commands common to each supported operating system that you can use to gather information for troubleshooting problems. For details on these commands, refer to your system's online help and documentation.

Output from all of these commands is captured using the Support Save feature.

Table 3-1. Host System Data Collection Commands

| Task | Linux | Windows | VMware | Solaris |
|---------------------------------------|---------------------|--|---|-------------------------------------|
| Listing PCI devices | lspci -vv | In Windows registry location HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Enum\PCI devcon find pci* | lspci -vv, esxcfg-info -w | prtdiag -v, prtconf -pv |
| Listing installed HW details | lsdev | msinfo32.exe Click the plus sign(+) next to Components to view hardware details. | esxcfg-info -a | prtdiag -v, prtconf -pv |
| Displaying process information | ps -efl, top | Windows Task Manager, tasklist.exe | ps -efl, top | ps -efl, top |
| Displaying memory usage | top, vmstat -m | Windows Task Manager, tasklist.exe | top, vmstat -m | vmstat -s |
| Monitoring performance | iostat, vmstat, sar | Windows Task Manager, perfmon.exe | vmstat, VM Performance: esxtop [first type 'v', 'e' then enter vm# in the list down], Disk Performance: esxtop [type 'v' then 'd']. | iostat -nx 1 5, vmstat, mpstat, sar |
| Listing driver modules | lsmod | driverquery | esxcfg-module -l | modinfo |

Table 3-1. Host System Data Collection Commands (Continued)

| Task | Linux | Windows | VMware | Solaris |
|---|--|---|--|--|
| Checking for QLogic BR-series Fibre Channel adapter (BFA) driver module | lsmod grep bfa | driverquery /v findstr bfad | esxcfg-module -l grep bfa | modinfo grep bfa |
| Checking for QLogic BR-series network (BNA) driver module | lsmod grep bna | driverquery /v findstr bnad | esxcfg-module -l grep bna | modinfo grep bna |
| Displaying driver information | <ul style="list-style-type: none"> ■ Use lsmod command for general driver information. ■ Use ethtool options to query network driver information and settings. | On Device Manager Right-click storage controller or network adapter instances, select Properties, then select Driver tab. | <ul style="list-style-type: none"> ■ For general driver information use esxcfg-module . ■ For network driver information, use esxcfg-nics. | Use modinfo options for bna or bfa driver. |
| Locating system log messages NOTE: For more information, refer to “Host System Logs” on page 87. | dmesg, /var/log/message* | System Category in Windows Event Viewer (eventvwr.exe) | /var/log/vmkernel* /var/log/vmkwarning*/proc/vmware/log /var/log/message* | dmesg, /var/adm/message* |
| Showing operating system distribution info | (SuSE) cat /etc/SuSE-release, (RedHat) cat /etc/redhat-release | systeminfo.exe | cat /etc/vmware-release | uname -a, cat /etc/release |

Table 3-1. Host System Data Collection Commands (Continued)

| Task | Linux | Windows | VMware | Solaris |
|---|---------------|--|-----------------------------------|---|
| Locating BFA configuration file | /etc/bfa.conf | Windows Registry (HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\bfa\Parameters\Device), adapter Flash | /etc/bfa.conf | /kernel/drv/bfa.conf |
| Locating BNA configuration file | /etc/bna.conf | Windows Registry (HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\bfa\Parameters\Device), adapter Flash | /etc/bna.conf | /kernel/drv/bfa.conf |
| Locating BFA device file | /dev/bfa* | Windows Registry (HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\Scsi\Scsi Port x) | /opt/brocade/adapter/bfa/bfa.conf | <ul style="list-style-type: none"> ■ (Release 1.0) - /devices/pci*/pci*/fibre-channel@0:devctl, ■ (Release 1.1 and later) - /devices/pci*/pci*/bfa@0:devctl |
| Locating BNA device file | /dev/bna* | Windows Registry (HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\Scsi\Scsi Port x) | /dev/bna* | <ul style="list-style-type: none"> ■ (Release 1.0) - /devices/pci*/pci*/fibre-channel@0:devctl, ■ (Release 1.1 and later) - /devices/pci*/pci*/bna@0:devctl |
| Verifying network interface parameters, such as link status, IP address, and subnet mask. | ifconfig | ipconfig Settings > Network Connections | ifconfig | ifconfig -a |

Table 3-1. Host System Data Collection Commands (Continued)

| Task | Linux | Windows | VMware | Solaris |
|----------------------|------------------------------------|---------|------------------------------------|-------------|
| Ethernet statistics | ethtool -S <interface_name > | netstat | ethtool -S <interface_name > | N/A |
| Ethernet link status | ethtool interface_name> | netstat | esxcfg-nics -l | ifconfig -a |

Data Collection Using Support Save

The Support Save feature is an important tool for collecting debug information from the driver, internal libraries, and firmware. You can save this information to the local file system and send to support personnel for further investigation. Use one of the following options to launch this feature:

- For QLogic HCM, launch Support Save through the **Tools** menu.
- For management applications, such as Network Advisor, use the **Technical SupportSave** dialog box.
- For QLogic BCU CLI on Windows systems, launch QLogic BCU CLI using the BCU desktop shortcut and enter **bfa_supportsave** at the QLogic BCU CLI command prompt (BCU>).
- For QLogic BCU CLI on non-Windows systems, enter **bfa_supportsave** at your operating system prompt (direct mode) or at the BCU> command prompt using the BCU shell mode. For details on using QLogic BCU CLI commands, refer to the *BR-Series Adapters Administrator's Guide*.
- Through your Internet browser (Internet Explorer 6 or later or Firefox 2.0 or later), you can collect bfa_supportsave output if you do not have root access, do not have access to file transfer methods such as FTP and SCP, or do not have access to the QLogic Host Connectivity Manager (HCM).
- A bfa_supportsave collection can also occur automatically for a port crash event. To occur through QLogic HCM, QLogic HCM must be running. This feature supported on Linux, Windows and Solaris. It is not supported on ESXi5.x.

NOTE

Before collecting data through the Support Save feature, you may want to disable auto-recovery on the host system. For Linux systems, use module parameters. For Windows systems, do this through the Windows registry.

Launching Support Save through QLogic BCU CLI, QLogic HCM, and during a port crash event collects the following information:

- Adapter model and serial number
- Adapter firmware version
- Host model and hardware revision
- All support information
- Adapter configuration data
- All operating system and adapter information needed to diagnose field issues
- Information about all adapters in the system
- Firmware and driver traces
- Syslog message logs
- Windows System Event log .evt file
- QLogic HCM-related engineering logs
- Events
- Adapter configuration data
- Environment information
- Operating system information
- Data .xml file
- Vital CPU, memory, network resources
- QLogic HCM (logs, configuration)
- Driver logs
- Install logs
- Core files
- Details on the Ethernet interface, including IP address and mask (CNAs and Fabric Adapter ports configured in CNA or NIC mode)
- Status and states of all adapter ports, including the Ethernet, FCoE, and DBA ports (CNAs and Fabric Adapter ports configured in CNA or NIC mode)

- DCB status and statistics (CNAs and Fabric Adapter ports configured in CNA mode only)
- Network driver information, Ethernet statistics, offload parameters, and flow control coalesce parameters (CNAs and Fabric Adapter ports configured in CNA or NIC mode only)
- Ethernet offload, flow control, and coalescing parameters (CNAs and Fabric Adapter ports configured in CNA or NIC mode only)

NOTE

Before collecting data through the Support Save feature, you may want to disable auto-recovery on the host system. This is because when adapters are reset after an auto-recovery from a failure, traces initiated before the failure may be lost or overwritten.

To disable auto-recovery, use the following commands.

- For Linux, use the following commands.
 - To disable auto-recovery for the network (BNA) driver.
`insmod bna.ko ioc_auto_recover=0`
 - To disable auto-recovery for the storage (BFA) driver.
`insmod bfa.ko ioc_auto_recover=0`

- For VMware, use the following commands.
 - ❑ To unload and load the network (BNA) driver with IOC auto-recovery disabled, use the following commands.

```
esxcfg-module -u bna
esxcfg-module bna bnad_ioc_auto_recover=0
```
 - ❑ To disable IOC auto-recovery for the BNA driver across reboots, use the following command.

```
esxcfg-module -s "bnad_ioc_auto_recover=0" bna
```
 - ❑ To unload and load the storage (BFA) driver with IOC auto-recovery disabled, use the following commands.

```
esxcfg-module -u bfa
esxcfg-module bfa bfad_ioc_auto_recover=0
```
 - ❑ To disable IOC auto-recovery for the BFA driver across reboots, use the following command.

```
esxcfg-module -s "ioc_auto_recover=0" bfa
```
- For Windows, use the Registry Edit tool (regedt32) or the QLogic BCU CLI **drvconf --key** command. Following is the **drvconf --key** command.

```
bcu drvconf --key ioc_auto_recover --val 0
```
- For Solaris, edit /kernel/drv/bfa.conf using the following.

```
ioc_auto_recover=0
```

NOTE

QLogic BR-804 and BR-1007 adapters are not supported on Solaris systems so Solaris commands do not apply to these adapters.

Initiating Support Save through QLogic HCM

Launching the Support Save feature in QLogic HCM collects QLogic HCM application data. Initiate Support Save by selecting **Tool > Support Save**.

Messages display during the Support Save operation that provide the location of the directory where data is saved. If you are initiating Support Save from a remote management station and receive a warning message that support files and Agent logs could not be collected, the QLogic HCM agent is unavailable on the remote host. Select **Tool > Backup** to backup data and configuration files manually.

Support data is collected to a file in your system's tmp directory by default.

For more information and additional options for using this feature, refer to the *BR-Series Adapters Administrator's Guide*.

Initiating Support Save through Management Applications

To capture technical support and event information for installed adapters in Management applications, such as Network Advisor, complete the following steps.

1. Select **Monitor > Technical Support > SupportSave**.
The **Technical SupportSave** dialog box displays.
2. Click the **Generate Now** tab.
3. Click the **Hosts** tab.
4. Right-click in the **Available Hosts** table and select **Expand All**.
5. Select the host where adapters are installed, and click the right arrow to move them to the **Selected Switches and Hosts** table.
6. Click **OK** on the **Technical SupportSave** dialog box.
7. Click **OK** on the confirmation message.

To view Support Save information use the following steps.

1. Select **Monitor > Technical Support > View Repository**.
The **Repository** dialog box displays.
2. Select the **Hosts** tab to view technical support information on hosts.
3. Click **View** to view the repository in an Internet browser window.
The technical support information displays in an Internet browser window.

Initiating Support Save through QLogic BCU CLI Commands

Launching the Support Save feature using the **bfa_supportsave** command collects information for the selected adapter. For information on entering QLogic BCU CLI commands, refer to [“Data Collection using QLogic BCU CLI Commands and QLogic HCM” on page 92](#).

The **bfa_supportsave** command creates and saves the supportsave data to the following locations:

- The /tmp directory on Linux and Solaris systems.
- The current directory for Windows systems.

Following are examples of other parameters you can use with this command:

- `bfa_supportsave <dir>` - Creates and saves the supportsave data under a directory name that you provide.
- `bfa_supportsave <dir> <ss_file_name>` - Creates and saves the supportsave data under a directory and file name that you provide. If the directory already exists, it will be overwritten.

NOTE

If specifying a directory, make sure that the directory does not already exist to prevent overwriting the directory. Do not just specify a driver (such as C:) or C:\Program Files.

Messages display as the system gathers information. When complete, an output file and directory display. The directory name specifies the date when the file was saved.

For more information and additional options for using this feature, refer to the *BR-Series Adapters Administrator's Guide*.

Using supportsave on VMware ESX systems

For VMware ESX 5.0 and later systems, QLogic BCU CLI commands are integrated with the `esxcli` infrastructure. Enter the following to initiate the QLogic BCU CLI `supportsave` command:

```
esxcli brocade supportsave
```

Initiating Support Save through the internet browser

Launching Support Save through the internet browser collects information for adapters installed on a selected host system. Use the following steps to launch this feature.

1. Open an Internet browser and type the following URL.

```
https://localhost:34568/JSONRPCServiceApp/SupportSaveController.do
```

where `localhost` is the IP address of the host system from which you want to collect the **bfa_supportsave** information.

2. Log in using the factory default user name (`admin`) and password (`password`). Use the current user name and password if they have changed from the default.

The **File Download** dialog box displays, prompting you to save the `supportSaveController.do` file.

3. Click **Save** and navigate to the location where you want to save the Support Save file.
4. Save the file, but rename with a “zip” extension. For example, `supportSaveController.zip`.
5. Open the file and extract contents using any compression utility program.

Initiating Support Save through a Port Crash Event

If the port crashes and triggers a port crash event, Support Save data is collected at a system-wide level. An Application Log message is generated with the following message.

```
Port Crash Support Save Completed
```

Port crash events have a CRITICAL severity and you can view the details in the Master Log and Application Log tables in QLogic HCM. For more information on these logs, refer to [“QLogic HCM Logs” on page 88](#).

Support Save Differences

Following are differences in data collection for the QLogic HCM, QLogic BCU CLI, and browser applications of **bfa_supportsave**:

- QLogic BCU CLI - Collects driver-related logs, QLogic HCM agent information, and configuration files.
- Browser - Collects driver-related and QLogic HCM agent logs and configuration files.
- QLogic HCM - Collects QLogic HCM application data, driver information, QLogic HCM agent logs, and configuration files.

NOTE

QLogic HCM Master logs and application logs are saved when Support Save is initiated through QLogic HCM, but not through the QLogic BCU CLI command.

Data Collection Using Fabric OS Commands (Brocade Switches Only)

Use the following Fabric OS commands on attached Brocade switches to gather information and help isolate connectivity and other problems between the adapter, switch, and storage ports. For details on using these commands, refer to the Brocade *Fabric OS Command Reference*.

- **authUtil**
Use this command to display and set local switch authentication parameters.
- **cfgShow**
Use this command to display zone configuration information for the switch. You can use command output to verify target ports (by port WWN) and LUNs that are intended to be accessible from the adapter.
- **fcpProbeShow**
Use this command to display the Fibre Channel Protocol daemon (FCPd) device-probing information for the devices attached to a specified F_Port or FL_Port. This information includes the number of successful logins and SCSI INQUIRY commands sent over this port and a list of the attached devices.
- **nsShow**
Use this command to display local NS information about all devices connected to a specific switch. This includes information such as the device PID, device type, and the port and node WWN.
- **zoneshow**
Use this command without parameters to display all zone configuration information (both defined and enabled).
- **portErrShow**
Use this command to display an error summary for all switch ports.
- **portLogShow**
Use this command to display the port log for ports on a switch.
- **portLogShowPort**
Use this command to display the port log for a specified switch port.
- **portPerfShow**
Use this command to display throughput information for all ports on the switch.
- **portStatsShow**
Use this command to display hardware statistics counters for a specific switch port.
- **portShow**
Use this command to display information and status of a specified switch port, including the speed, ID, operating state, type, and WWN.

- **SecAuthSecret**
Use this command to manage the DH-CHAP shared secret key database used for authentication. This command displays, sets, and removes shared secret key information from the databases.
- **sfpShow**
Use this command to display detailed information about specific SFP transceivers installed in a switch. This command is supported on stand-up adapters only.
- **show vlan brief**
Displays information about a VLAN interface on the switch.
- **show dcb maps**
Displays information about the configured DCB maps in the switch.
- **switchShow**
Use this command to display switch and port information. Output may vary depending on the switch model. Use this information to determine the fabric port WWN and PID connected to an adapter port. Also display topology, speed, and state of each port on the switch.
- **trunkshow**
Use this command to display trunking information for the switch, such as the configuration, bandwidth, and throughput of trunk groups.

Adapter Event Messages

When applicable events occur during adapter operation, the adapter driver generates event messages. These messages are captured in your host system logs. These messages are also captured in an agtEvent.log file by the QLogic HCM and displayed in the QLogic HCM master log. Note that message display may differ in your host system log and the QLogic HCM master log, however messages may contain the following information:

- Message ID
- Description
- Severity level
- Event category
- Cause of event
- Recommended action
- Date and time event occurred

NOTE

For details of all driver event messages, refer to [Appendix A, "Adapter BIOS and Event Message Reference"](#)

Message details are also contained in HTML files, which load your system when you install the adapter driver. You can view these HTML files using any Internet browser application. [Table 3-2](#) provides the default location where these message files install for each supported operating system.

Table 3-2. Message Catalog Location

| Operating System | Catalog Location |
|------------------|--|
| Linux | /opt/bfa |
| VMware | /opt/bfa |
| Solaris | /opt/bfa |
| Windows | aen.zip loaded to your driver installation directory. Unzip this file to obtain all message catalog files. |

[Table 3-3](#) lists the message file names and content for the message files.

Table 3-3. Event Message Files

| Event Catalog File | Content |
|----------------------|--|
| bfa_aen_adapter.html | Adapter events, such as adapter added or removed |
| bfa_aen_audit.html | Audit events, such as authentication enabled or disabled for base port |
| bfa_ethport.html | Base port Ethernet events, such as the Ethernet link up and link down. |
| bfa_aen_ioc.html | I/O controller (IOC) events. |
| bfa_aen_itnim.html | Initiator-target nexus events. |
| bfa_aen_lport.html | Logical port events. |
| bfa_aen_port.html | Physical base port events. |
| bfa_aen_rport.html | Remote port (R_Port) events. |

Table 3-3. Event Message Files (Continued)

| Event Catalog File | Content |
|---------------------|---|
| hba_error_codes.doc | List of error codes and meanings for the following events: <ul style="list-style-type: none">■ Adapter - events relating to the adapter■ Physical port■ L_Port - logical port■ R_Port - remote initiator or target port■ ITNIM - initiator target nexus■ Audits■ IOC - I/O controller■ Ethernet port |

NOTE

Complete content for adapter driver event messages is included in [Appendix A, "Adapter BIOS and Event Message Reference"](#)

Logs

Event and error messages that occur during adapter, driver, and QLogic HCM operation are important tools for isolating and resolving problems. These messages provide descriptions of an event or problem, severity, time and date of the event, and in some cases, cause and recommended actions. Messages are captured in logs available through QLogic HCM, QLogic BCU CLI commands, and through host system commands. Monitoring events and errors in these logs allows early fault detection and isolation on a specific adapter.

Host System Logs

BR-Series adapter event messages are captured in host system log files. All messages related to the adapter are identified in these logs by BFA (QLogic BR-series fabric adapter), BNA (QLogic BR-series network adapter), and BFAL (QLogic BR-series fabric adapter library). [Table 3-4 on page 88](#) describes the logs for each supported operating system where adapter event messages display and how to view these logs.

Table 3-4. System Event Logs

| Operating System | Log Name | Location | Viewing Message Log |
|----------------------|--------------|---|--|
| Solaris ^a | Syslog | /var/adm/messages | dmesg command |
| Windows | Event Log | Not applicable | <ul style="list-style-type: none"> ■ System category in Event Viewer (eventvwr.exe) ■ bcu winlog command^b |
| Linux | Messages Log | /var/log/message | dmesg command |
| VMware ^c | Messages Log | /var/log/message* , /var/log/vmkernel* , /var/log/vmkwarning* , /proc/vmware/log | dmesg command |

a. BR-804 and BR-1007 adapters are not supported on Solaris systems.

b. Supported on Windows systems only.

c. For ESX Server platforms. For Guest system, refer to information in Windows or Linux.

Syslog Support

You can configure the QLogic HCM agent to forward events to a maximum of three system log destinations using the **Syslog** option on the QLogic HCM **Configure** menu. These events will display in the operating system logs for systems such as Solaris and Linux. For procedures to configure syslog destinations, refer to the *BR-Series Adapters Administrator's Guide*.

QLogic HCM Logs

You can view data about adapter operation through QLogic HCM logs that display in QLogic HCM. These logs display on the bottom of the QLogic HCM main window. Click the **Master Log** or **Application Log** to toggle between the following logs:

- The **Master Log** displays informational and error messages during adapter operation. This log contains the severity level, event description, date and time of event, and the function that reported the event (such as a specific adapter port or remote target port).

- The **Application Log** displays informational and error messages related to user action in QLogic HCM, discovery, or QLogic HCM application issues.

Master Log

The **Master Log** displays event information in seven fields:

- **Sr No.**
Sequence number assigned to the event when it occurred, in ascending order.
- **Severity**
Event severity level (informational, minor, major, or critical).
 - Critical-level messages indicate that the software has detected serious problems that will eventually cause a partial or complete failure of a subsystem if not corrected immediately. For example, IO controller heartbeat failure is a critical error.
 - Major messages represent conditions that do not impact overall system functionality significantly.
 - Minor messages highlight a current operating condition that should be checked or it might lead to a failure.
 - Information-level messages report the current non-error status of the system components, for example, the online and offline status of a port.
- **WWN**
World-Wide Name of adapter where the event occurred.
- **Category**
The category or type of event. Categories define the component where events occur:
 - ADAPTER - Events pertaining to the adapter.
 - PORT - Events pertaining to a physical port.
 - LPORT - Events pertaining to a specific logical port (one logical port always exists per physical port).
 - RPORT - Events pertaining to a specific remote port (could be an initiator or target).
 - ETHPORT - Events pertaining to the Ethernet port.
 - AUDIT - Audit events subcategory.

- IOC - Events pertaining to the I/O controller.
- ITNIM - Events pertaining to an initiator-target nexus.
- VLAN - Events pertaining to a virtual LAN.
- TEAM - Events pertaining to a team (link aggregation group).
- Subcategory of main category.
- Event description, Date, and Time
Brief description of event and date and the time when the event occurred.

NOTE

Complete content of adapter event messages is provided in [Appendix A, "Adapter BIOS and Event Message Reference"](#)

You can block events from displaying in the **Master Log** by severity, category, and WWN of adapter using the **Master Log Filter** dialog box. To display this dialog box, click the **Filter** button in the **Master Log** section of the main QLogic HCM screen. Select areas that you want to filter and click **OK**.

Application Log

The **Application Log** displays all application-related informational and error messages, as well as the following attributes:

- Date and time the message occurred.
- Severity of the message.
- Description of the message.
- The Agent IP address.

Logging Levels Adjustment

Adjust the logging level for related adapter logs using QLogic BCU CLI commands and QLogic HCM options. By adjusting the logging level, you can control the number and type of messages that are captured the log.

NOTE

For greater detail on adjusting logging levels, refer to the *BR-Series Adapters Administrator's Guide*.

Adjusting the Adapter Event Logging Level

Specify the number of event messages logged by the host system log for the storage driver using this QLogic BCU CLI command.

Port Logging Level

Adjust logging level for port logs using QLogic BCU CLI commands and QLogic HCM.

Adjusting the port logging levels through QLogic HCM

Use the following steps to adjust port logging level for CNAs, HBAs, and Fabric Adapter ports configured in CNA or HBA mode.

1. Select a host, adapter, or adapter port from the device tree.
2. Select **Configure > Basic Port Configuration** from QLogic HCM.
The **Basic Port Configuration** dialog box displays.
3. Select a value from the **Port Logging Level** list.
Supported values are Log Critical, Log Error, Log Warning, and Log Info.
Click **Apply** to apply the changes.
4. Click **OK** to save the changes and close the window.

Use the following steps to adjust port logging level for Fabric Adapter ports configured in NIC mode.

1. Select an Ethernet port from the device tree.
2. Select **Configure > Eth Configuration**.
The **Eth Configuration** dialog box displays.
3. Select a value from the **Port Logging Level** list.
Supported values are Log Critical, Log Error, Log Warning, and Log Info.
4. Click **OK** to save the changes and close the window.

Adjusting the port logging level through QLogic BCU CLI

```
bcu log --level <port_id> [<level>]
```

where:

port_id

The ID of the port for which you want to set the log level. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification.

level Critical | Error | Warning | Info

Specifies the severity level. Error is the default setting. If no level is specified, the current log level displays.

Configure logging levels for QLogic HCM logs

Adjust the number of messages logged to the following QLogic HCM logs:

- Agent Communication Log, where all messages are exchanged between the QLogic HCM application and the QLogic HCM agent.
- QLogic HCM Debug Log, where messages are logged locally.

To adjust the logging level, use the following steps.

1. Select **Configure > HCM Logging Levels** to display the QLogic HCM Logging Levels dialog box.
2. Select a level on the **Agent Communication Log** and **HCM Debug Log** lists.

Values are Trace, Debug, Info, Warning, Error, and Fatal.

Data Collection using QLogic BCU CLI Commands and QLogic HCM

You can collect a variety of information on installed BR-Series adapters, such as firmware version installed, operational status, port speed, WWN, PCI data, configuration data, flash status, and other details for troubleshooting using QLogic BCU CLI commands, QLogic HCM menu options, Management applications, such as Network Advisor, and host operating system commands.

NOTE

For Windows systems only, launch QLogic BCU CLI and display the QLogic BCU CLI command prompt through the BCU desktop shortcut. Launching QLogic BCU CLI using other methods is not recommended and may result in display of inconsistent information.

To use QLogic BCU CLI commands, enter commands at the BCU> command prompt. For Windows systems, open the command prompt using the BCU desktop shortcut, which is automatically installed to your desktop with the adapter software. Note that if installation fails (for example, because devices are not present on the system), the shortcut is still created. The BCU shortcut provides quick access to the installation folder where you can perform the following tasks:

- Run the Support Save feature
- Reinstall drivers
- Run adapter utilities

NOTE

Launching QLogic BCU CLI on Windows systems through methods other than through the desktop shortcut is not recommended and may result in display of inconsistent information.

To list all the commands and subcommands, type the following command:

```
bcu --help
```

To check the CLI and Driver version number, type the following command:

```
bcu --version
```

For complete details on QLogic BCU CLI commands, refer to the *BR-Series Adapters Administrator's Guide*.

VMware ESX 5.0 and Later Systems

For VMware ESX 5.0 and later systems, QLogic BCU CLI commands are integrated with the `esxcli` infrastructure.

To run a QLogic BCU CLI command, use the following syntax:

```
esxcli brocade bcu --command="command"
```

where:

`command` QLogic BCU CLI command, such as **port --list**.

For example:

```
esxcli brocade bcu --command="port -list"
```

Statistics

You can access a variety of statistics using QLogic BCU CLI commands and QLogic HCM. Use these statistics to monitor adapter performance and traffic between the adapter and LUNs and isolate areas that impact performance and device login.

You can display statistics for the following:

- Adapter ports
- Authentication activities
- DCB
- Fibre Channel over Ethernet (FCoE)
- Firmware
- vHBA

- vNIC
- Virtual ports (vport)
- Link Layer Discovery Protocol (LLDP)
- Logical ports (lport)
- Remote ports (rport)
- Fibre Channel Protocol (FCP) initiator mode
- Fabric
- Teaming
- Targets
- Teaming
- Trunking
- Real-time performance of DCB port
- Security authentication
- VLAN
- vHBA

This section provides an overview of these statistics and how to access them. For more detail, refer to the *BR-Series Adapters Administrator's Guide*.

Authentication Statistics

Use QLogic BCU CLI commands and QLogic HCM to display statistics related to transmitted and received DH-CHAP attempts for a selected port. You can display statistics such as the following:

- The number of times security authentication failed
- The number of times security authentication succeeded
- The number of rejected transmitted Fibre Channel authentication attempts (Tx Auth Rjts)
- The number of transmitted Fibre Channel authentication negotiation attempts (Tx Auth Negs)
- The number of completed Fibre Channel authentication negotiation attempts (Tx Auth Dones)
- The number of transmitted DH-CHAP replies (Tx DHCHAP)
- The number of transmitted DH-CHAP challenge attempts (Tx DHCHAP Challenges)
- The number of times a transmitted Fibre Channel authentication attempt was successful (Tx DHCHAP Successes)

- The number of rejected received Fibre Channel authentication attempts (Rx Auth Rjts)
- The number of received Fibre Channel authentication negotiation attempts (Rx Auth Negs)
- The number of completed received Fibre Channel authentication attempts (Rx Auth Dones)
- The number of received DH-CHAP challenge attempts (Rx DHCHAP Challenges)
- The number of received DH-CHAP replies (Rx DHCHAP Replies)
- The number of times a received DH-CHAP challenge was successful (Rx DHCHAP Successes)

Displaying Statistics Through QLogic BCU CLI

Use the following QLogic BCU CLI command to display authentication statistics for CNAs and Fabric Adapter ports configured in CNA mode.

```
bcu auth --stats <port_id>
```

where:

<port_ID> The ID of the Ethernet port. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, use 1/1 as the port identification.

Displaying Statistics Through QLogic HCM

Display the **Authentication Statistics** dialog box using the following steps.

1. Select an HBA port or Fabric Adapter port configured in HBA mode from the device tree.
2. Select **Configure > FC_SP > Authentication Statistics**.

DCB Statistics (CNA only)

Use QLogic BCU CLI commands and QLogic HCM to display Data Center Bridging (DCB) statistics for CNAs or Fabric Adapter ports configured in CNA mode. Statistics such as the following display:

- Logical link layer discovery protocol (LLDP) frames transmitted, received, timed out, discarded, with error, type-length-values (TLVs) discarded, and TLVs unrecognized.
- Data center bridging capability exchange (DCBX) TLVs unrecognized, negotiation fails, remote configurations changed, TLVs received and invalid, status up and down, and received invalid configurations.

Displaying Statistics Through QLogic BCU CLI

Use the following QLogic BCU CLI command to display DCB statistics.

```
bcu dcb --stats <port_id>
```

where:

<port_ID> The ID of the Ethernet port. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification.

Displaying Statistics Through QLogic HCM

Display the **DCB Statistics** dialog box using the following steps.

1. From the device tree, select a physical port of a CNA or Fabric Adapter ports configured in CNA mode.
2. Select **Monitor > Statistics > DCB Statistics**.

DCB Query (CNA only)

Use this query for CNAs or to Fabric Adapter ports configured in CNA mode only. Query the DCB information on a selected port and display such information as LLDP attributes and the DCB group map priority tables.

```
bcu dcb --query <port_id>
```

where:

<port_ID> The ID of the Ethernet port. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification.

FCoE Statistics (CNA)

These statistics are available on CNAs and on Fabric Adapters configured in CNA mode. Use QLogic BCU CLI and QLogic HCM to display statistical information related to a selected Fibre Channel over Ethernet (FCoE) port. Statistics include the number of transmitted and received packets and transmitted and received bytes. You can also select options to continue running data, configure polling frequency, and start polling.

Displaying FCoE Statistics Through QLogic BCU CLI

Use the **fcoe --stats** command to display FCoE statistics.

```
fcoe --stats <port_id>
```

where:

port_id ID of the adapter port for which you want to display statistics. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification.

Displaying FCoE Statistics Through QLogic HCM

To display FCoE statistics through QLogic HCM, use the following steps.

1. Select an FCoE port from the device tree.
2. Select **Monitor > Statistics > FCoE Statistics** from the device tree.

OR

Right-click the FCoE port and select **Statistics > FCoE Statistics** from the list.

The **FCoE Statistics** dialog box at the host level displays.

Fabric Statistics

Use QLogic BCU CLI and QLogic HCM to display statistics for fabric login (FLOGI) activity and fabric offlines and onlines detected by the port. Use these statistics to help isolate fabric login problems. Examples include number of FLOGIs sent, FLOGI response errors, FLOGI accept errors, FLOGI accepts received, FLOGI rejects received, unknown responses for FLOGI, allocation waits prior to sending, the number of delayed fabric login allocations, FLOGIs received, and incoming FLOGIs rejected.

Following are two examples of how to use these statistics for troubleshooting:

- If the adapter is not showing in the fabric, check the FLOGI sent and FLOGI accept statistics. If the counts do not match, the switch or fabric may not be ready to respond. This is normal as long as it does not persist. If the problem persists, this could indicate a problem in the fabric or a protocol issue between the adapter and fabric.
- If fabric offline counts increase and fabric maintenance is not being done, this may indicate a serious fabric problem. Slow fabric performance or hosts unable to address storage could also be seen.

Displaying Fabric Statistics through QLogic BCU CLI

Use the **fabric --stats** command to display fabric statistics.

```
fabric --stats <port_id>
```

where:

port_id ID of the adapter port for which you want to display statistics. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification.

Displaying Fabric Statistics through QLogic HCM

Use the **Fabric Statistics** dialog box to monitor a variety of port data.

1. Launch the QLogic HCM.
2. Select the FC port from the device tree window.
3. Click **Monitor > Statistics > Fabric Statistics**.

Displaying FCP Initiator Mode Statistics

Use the **fcpim --stats** command to display FCP initiator mode statistics and attributes.

```
fcpim --stats <port_id> <pcifn> <rpwwn> [-l <lpwwn>]
```

where:

stats Displays FCP initiator mode statistics.

pcifn PCI function number associated with the physical port.

-l lpwwn Logical PWWN. This is an optional argument. If the **-l lpwwn** argument is not specified, the base port is used.

-l rpwwn Remote PWWN.

To clear FCP initiator mode statistics, enter the following command.

```
fcpim --statsclr <pcifn> <rpwwn> [-l <lpwwn>]
```

FCP Initiator Mode Statistics

Use QLogic HCM to display FCP IM module statistics for each initiator target nexus (ITN). Statistics display such as I/Os waiting for circular queue space, number of I/O context requests, I/O abort requests, number of task management I/O context requests, I/O completions with OK status, number of successful firmware I/O under run operations, number of successful firmware I/O overrun operations, aborted I/O requests, I/O timeouts, I/O selection timeouts, I/O protocol errors, host I/O abort requests, PRLI statistics, and remote port statistics.

Use the following steps to display the **FCP IM Statistics** dialog box.

1. Launch the QLogic HCM.
2. Select the base adapter port from the device tree window.
3. Click **Monitor > Statistics > FCP IM Module Statistics**.

or

Right-click a port from the device tree and select **Statistics > FCP IM Module Statistics**.

Firmware Statistics

Use QLogic HCM to display I/O controller (IOC) firmware statistics for the following categories:

- IOC firmware
- IOC Fibre Channel (FC) firmware
- Firmware IO (Initiator Mode)
- Firmware port FPG

Use the following steps to display the **Firmware Statistics** dialog box.

1. Launch the QLogic HCM.
2. Select the base adapter port from the device tree window.
3. Click **Monitor > Statistics > Firmware Statistics**

or

Right-click a port from the device tree and select **Statistics > Firmware Statistics**.

I/O Performance

Use the **fcpim --ioperf** command to display I/O performance in terms of IOPs and throughput for physical ports and I-T nexus (ITN) sessions for a logical port. Use the command with a physical port range or with a specific physical port ID.

Using Port Range

The following command displays IOPs and throughput for a range of physical ports.

```
--ioperf <port_range> [-l | -r] [-c count] [-i interval]
```

where:

| | |
|------------|--|
| port_range | This is the adapter number/port number-adapter number/port number. For example, the range 1/0-2/0, includes adapter 1, port 0 and adapter 2, port 0. |
| -l | Displays information about all logical ports in all physical ports in the range. |
| -r | Displays information about all ITM sessions in all physical ports in the range. This includes all logical and remote port information. |
| -c | Count. The number of iterations of the display. The default behavior is to continuously refresh. Use Ctrl-C to terminate. |
| -i | Interval. The sampling delay in seconds [default is 1 second]. The sampling interval can be between 1 and 10. |

Using Specific Port ID

The following command displays IOPs and throughput for a specific physical port ID.

```
--ioperf <port_ID> <port_id> [-l <lpwwn>] [-r <rpwwn>] [-c count] [-i interval]
```

where:

| | |
|---------|---|
| port_id | ID of the port for which you want to display statistics. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification. |
| -l pwwn | Displays information about a specific logical port for the physical port. To display data about all logical ports, use -l without a PWWN. |
| -r pwwn | Displays information at I-T nexus between a given logical port and specified remote port for the physical port. To display data about all remote ports, use -r without a PWWN. |
| -c | Count. The number of iterations of the display. The default behavior is to continuously refresh. Use Ctrl-C to terminate. |
| -i | Interval. The sampling delay in seconds [default is 1 second]. The sampling interval can be between 1 and 10. |

Logical Port Statistics

Use QLogic HCM and QLogic BCU CLI to display logical port statistics for the following:

- Discover address (ADISC)
- FC-AL activity
- Name server (NS) port logins (plogin) activity
- NS port response activity
- NS command activity
- Register symbolic port name (RSPN_ID) identifier activity
- Register FC4 type identifier (RFT_ID) activity
- Register FC4 type identifier (RFT_ID) activity
- “Get all port ID requests” for a given FC4 type (NS_GID_FT) activity
- Port logout (LOGO)
- MS command activity
- MS port login activity
- Port login (PLOGI)
- Process login (PRLI)
- Process logout (PRLO)
- Retries
- Timeouts
- Registered state change notifications (RSCN) received
- Received ELS command activity
- Virtual port performance

Use these statistics to help determine if the adapter is not registering with the name server or cannot access storage. Following are examples of how these statistics indicate these problems:

- If name server port login (NS PLOGI) error rejects and unknown name server port login response (NS login unknown rsp) errors increase, then the adapter most likely cannot log in to the name server.
- If name server register symbolic port name identifier (NS RSPN_ID), or if name server register symbolic port name identifier response (NS RFT_ID rsp) errors or rejects (NS RFT_ID rejects) are increasing, the adapter has a problem registering with the name server.
- If name server “get all port ID response” NS GID_FT rsp), rejects (NS_GID_FT rejects), or unknown responses (NS_GID_FT unknown rsp) are increasing, the adapter has a problem querying the name server for available storage.

Displaying Logical Port Statistics through QLogic HCM

Display logical port statistics by selecting **Monitor > Statistics > Logical Port Statistics**.

OR

Right-click a logical port from the device tree and select **Logical Port Statistics**.

Displaying Logical Port Statistics through QLogic BCU CLI

Use the **lport --stats** command to display logical port statistics.

```
lport --stats <port_id> [-l <lpwwn>]
```

where:

port_id ID of the port for which you want to display statistics. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification.

-l lpwwn Logical port world wide name for which you want to display statistics. This is an optional argument. If the **-l lpwwn** argument is not specified, the base port is used.

Performance Data

Using QLogic HCM, you can collect real-time and historical performance data on the following managed devices:

- Port statistics for the adapter.
- Virtual Port statistics on the virtual port
- Ethernet statistics on the Ethernet node
- FCP IM statistics on the remote port

Data is displayed in graphs using utilization (Mbps) and errors per second. Polling intervals can be configured to 10, 20, and 30 seconds. Data collected will not be lost once the graph is closed.

To generate a real-time performance graph for a device, complete the following steps.

1. Select the device (such as adapter, remote port, virtual port) Ethernet node) for which you want to generate a real-time performance graph.
2. Select **Configure > Performance > Realtime Statistics**.

PHY Module Statistics

The Ethernet PHY module, located in the mezzanine card port hardware, aids in communications to and from the Ethernet LAN. Use the **bcu phy --stats** command to display the following statistics:

- PHY status
- Line breaks after linkup
- PMA (physical medium attachment sublayer) and PMD (physical medium dependent sublayer) receive and transmit faults
- PCS (physical coding sublayer) receive and transmit faults
- Speed negotiations
- Transmit EQ trainings and timeouts
- CRC errors

```
bcu phy --stats <port_id>
```

where:

<port_id> ID of port for which you want to display statistics. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification.

Port Performance

Use the QLogic BCU CLI port --perf command to display throughput information, in number of bytes received and transmitted, for a specific physical port.

```
port --perf <port_range|all> [-c count] [-i interval]
```

where:

port_range Port range to be displayed. If the range exceeds 80 columns, a warning displays. The maximum ports within the 80 column limit will display. Specify port range as the adapter number/port number-adapter number/port number. For example, the range 1/0-2/0, includes adapter 1, port 0 and adapter 2, port 0.

c Count. The number of iterations of the display. The default behavior is to continuously refresh. Use Ctrl-C to terminate.

-i Interval. The sampling delay in seconds [default is 1 second]. The sampling interval can be between 1 and 10.

ESX 5.0 Systems

On ESX 5.0 and later systems, the port `--perf` will not work unless the `-c` option is used. The `-c` option can be any number (limited by `esxcli` buffer size). For example, you can use the following:

```
esxcli brocade bcu --command="port --perf -c 1"
```

For more information on using QLogic BCU CLI commands on ESX 5.0 and later systems, refer to [“VMware ESX 5.0 and Later Systems” on page 93](#)

Port Statistics

Use QLogic BCU CLI and QLogic HCM to display a variety of port statistics. Following is an overview of port statistics for different adapter types:

- For HBAs and Fabric Adapter ports configured in HBA mode, statistics include credit recovery statistics, transmitted and received frames and words, received loop initialization primitive (LIP) event counts, error frames received, loss of synchronization, link failure and invalid CRS counts, end of frame (EOF) errors, encoding non-frame errors, and credit recovery statistics. Use these statistics to isolate link and frame errors. For example, loss of synch and loss of signal errors indicate a physical link problem. To resolve these problems, check cables, SFP transceivers on adapters (stand-up adapters only) or switch, and patch panel connections.
- For CNAs and Fabric Adapter ports configured in CNA mode, statistics include total transmit and receive counts for different sizes and types of frames. Data is included on 64-byte to 1519-1522-byte, multicast, broadcast, control, jabber, drop, control, FCS error, alignment error, code error, pause MAC control, zero pause MAC control, FCoE pause MAC control, and zero pause MAC control frames.

Displaying Statistics through QLogic BCU CLI

Use the `port --stats` QLogic BCU CLI command to display statistics for a specified adapter port.

```
port --stats <port_id>
```

where:

`port_id` ID of the port for which you want to display statistics. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification.

Displaying Statistics Through QLogic HCM

Use the **Port Statistics** dialog box to monitor a variety of port data. Launch this dialog box using the following steps:

1. Launch the QLogic HCM.
2. Select the base adapter port from the device tree window.
3. Click **Monitor > Statistics > Port Statistics**.

Real-time and Historical Performance Statistics

Use QLogic HCM to collect and display real-time and historical performance data in graphs for the following counters.

- Tx bytes (Mbps)
- Rx bytes (Mbps)
- Tx drops
- Rx drops—The number of dropped received frames
- Tx FCS errors
- Rx FCS errors
- Rx packets

Display statistics for the following managed devices:

- Ports on all adapter types.
- Virtual ports
- Ethernet ports on the Ethernet node (CNAs and Fabric Adapter ports configured in CNA or NIC mode)
- Remote port (FCP IM statistics)

You can launch graphs for multiple ports to observe the historical trend or real-time behavior of statistics across multiple ports. You can also change the polling intervals in seconds for collecting data to display.

To generate a real-time performance graph for a device, use the following steps.

1. Select a device port in the device tree.
2. Select **Configure > Performance > Realtime Statistics** to display the **Realtime Performance** dialog box.
3. Select the type of statistics that you want to run from the Statistics Name list.
4. Select the polling interval.
5. Click **Apply** to save your changes.

To display the **Historical Performance** dialog box and graphs for a port, use the following steps.

1. Select a device for which you want to generate a historical performance graph.
2. Select **Monitor > Performance**.
3. Select the **Enable Historical Data Collection** check box to display the Historical Performance dialog box.
4. Select the type of statistics that you want to run from the **Statistics Name** list.
5. Click **Apply** to save your changes.

Remote Port Statistics

Remote port statistics can help isolate end-to-end login problems. Use QLogic HCM and QLogic BCU CLI to display statistics for the following:

- Port login (PLOGI) activity
- Authentication and discovery (ADISC) activity
- Logout (LOGO) activity
- RCSNs received
- Process logins (PRLI) received
- Hardware abstraction layer (HAL) activity
- Remote port speed capability (RPSC)

As an example of using these statistics for troubleshooting, if the host cannot see the target, you can verify that the remote port (rport) is reporting itself online by comparing the rport offline and rport online statistics. The rport online counter should be one greater than the rport offline counter. If not, clear the counters and retry connecting to the remote port. Verify the rport online and rport offline statistics again.

Displaying Target Statistics through QLogic HCM

Launch the **Target Statistics** dialog box using the following steps to display target statistics.

1. Launch the QLogic HCM.
2. Select the base adapter port from the device tree window.
3. Click **Monitor > Statistics > Remote Port Statistics > Target Statistics**.

Displaying Remote Port Statistics through QLogic BCU CLI

Use the **rport --stats** command to display remote port and link statistics.

```
rport --stats <port_id> <rpwwn> [-l <lpwwn>]
```

where:

port_id ID of the port for which you want to display rport statistics. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification.

lpwwn Displays the logical PWWN. This is an optional argument. If the -l lpwwn argument is not specified, the base port is used.

rpwwn Displays the remote port's PWWN.

Quality of Service Statistics (HBA)

Use QLogic HCM and QLogic BCU CLI to display quality of service (QoS) statistics for individual HBA ports and Fabric Adapter ports configured in HBA mode. You can display statistics for fabric login (FLOGI) activity, exchange link parameter (ELP) activity, and received QOS registered state change notifications (RSCNs).

Displaying QoS Statistics through QLogic HCM

Use the **QOS Statistics** dialog box to display QoS statistics.

1. Launch the QLogic HCM.
2. Select the base adapter port from the device tree window.
3. Click **Monitor > Remote Port Statistics > QOS Statistics**.

Displaying QoS Statistics through QLogic BCU CLI

Use the **qos --stats** command to display remote port statistics.

```
qos --stats <port_id> <vpwwn>
```

where:

port_id ID of the port for which you want to display QoS statistics. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification.

Trunking Attributes

Use the QLogic BCU CLI **trunk --query** command to display trunk attributes for the adapter.

```
trunk --query <ad_id>
```

where:

ad_id ID of the adapter.

vHBA Statistics

Display vHBA statistics on HBAs, CNAs, or Fabric Adapter ports configured in HBA or CNA mode. Use QLogic HCM and QLogic BCU CLI to display statistics related to virtual host bus adapters (vHBA) associated with an FC or FCoE port. Statistics such as the following display:

- Polling frequency
- Heartbeat failures
- Firmware boots
- vHBA statistics timeouts
- Enable/disable replies
- Enable/disable requests
- I/O path TOVs expired
- I/O clean-up requests
- IT Nexus onlines, offlines, create requests
- TM requests
- I/O timeouts
- Total I/O count
- TM cleanup requests, completions
- Host abort requests

Displaying Statistics through QLogic HCM

To display statistics, perform the following steps:

1. Launch the QLogic HCM.
2. Select an FC or FCoE port from the device tree
3. Click **Monitor > Statistics > vHBA Statistics**.

The **vHBA Statistics for FCoE Port** dialog box displays.

Displaying Statistics through QLogic BCU CLI

Use the **vhba --stats** command to display remote port statistics.

```
vhba --stats <pcifn>
```

where:

pcifn PCI function number associated with the vHBA.

vNIC Statistics (CNA or NIC)

Display virtual Network Interface Card (vNIC) statistics on Fabric Adapter ports configured in CNA or NIC mode. Use QLogic HCM and QLogic BCU CLI to display statistics, which are relevant to the Ethernet I/O controller (IOC). Statistics such as the following display:

- Mailbox interrupts
- Enable and disable events
- Heartbeat failures
- Firmware boots
- vNIC statistics timeouts
- Disable and enable requests
- Disable and enable replies
- Link toggle count
- CEE toggle count
- BPC statistics
- RAD statistics
- Ethernet ICO statistic timeouts

You can also select options to keep running data, set the polling frequency, start polling data, and reset statistics.

Displaying Statistics through QLogic HCM

To display statistics, perform the following steps:

1. Launch the QLogic HCM.
2. Select an FC or FCoE port from the device tree
3. Click **Monitor > Statistics > vNIC Statistics**.

The **vNIC Statistics for Eth Port** dialog box displays.

Displaying Statistics through QLogic BCU CLI

Use the **vnic--stats** command to display remote port statistics.

```
vnic --stats <pcifn>
```

where:

pcifn PCI function number associated with the vNIC.

Virtual Port Statistics

Use QLogic HCM and QLogic BCU CLI to display logical port statistics for fabric discovery (FDISC) activity, logouts (LOGO) activity, NPIV support, number of fabrics online and offline, and fabric cleanups.

Use these statistics to isolate NPIV login problems. Following are examples of what to check if virtual devices are not listed in the name server:

- If FDISC sent and FDISC accept statistics do not match, the fabric or switch may not be ready for data transmission. This is normal as long as it does not persist. If it does persist, there may be a problem in the fabric or a protocol issue between the adapter and fabric. Note that in this case FDISC retries also increase.
- Check the No NPIV support statistics to verify that NPIV is supported and enabled on the switch.

Displaying Virtual Port Statistics through QLogic HCM

Display statistics by selecting **Monitor > Statistics > Virtual Port Statistics**.

OR

Right-click a virtual port on the device tree and select **Virtual Port Statistics**.

Displaying Virtual Port Statistics through QLogic BCU CLI

Use the **vport --stats** command to display statistics.

```
vport --stats <port_id> <vpwwn>
```

where:

port_id ID of the port for which you want to display virtual rport statistics. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification.

vpwwn Displays the statistics for the virtual port by its WWN. If no PWWN is specified, the information provided is for the base vport.

VLAN Statistics for a Team (CNA and NIC)

Use QLogic HCM and QLogic BCU CLI to display VLAN statistics for a team that use CNA ports or Fabric Adapter ports configured in CNA or NIC mode. VLAN statistics related to a specific team can include VLAN ID, VLAN name, number of transmit and receive bytes, length of time between byte transmission and reception, and correction status. You can also use options to set the polling frequency, start polling, and reset statistics.

Displaying VLAN Statistics through QLogic HCM

VLAN statistics for a team can only be opened if the VLANs are added to a team from the **Teaming Configuration** dialog box.

To display the **VLAN Statistics** dialog box for a team, use the following steps.

1. From the Ethernet port level, select an Ethernet port from the device tree.
2. Click **Statistics** on the **Teaming Configuration** dialog box.

The **VLAN Statistics** dialog box displays.

Displaying VLAN Statistics through QLogic BCU CLI

Use the **team --vlanquery** command to display VLAN statistics for a team (Windows systems only).

```
team --vlanquery <team-name> <vlan_id>
```

where:

vlan_id Specifies the VLAN identifier. The range for the VLAN ID is 1 to 4094.

VLAN Statistics for a Port (CNA and NIC)

Use the QLogic BCU CLI **ethport** command to display VLAN statistics for a specific port, such as transmit and receive bytes, duration, and status.

```
ethport --vlanquery <pcifn> <vlan_id>
```

where:

pcifn Specifies the PCIFN function number related to the port.

vlan_id Specifies the VLAN identifier. The range for the VLAN ID is 1 to 4094.

Diagnostics

Diagnostics available through QLogic BCU CLI commands and QLogic HCM evaluate the integrity of adapter hardware and end-to-end connectivity in the fabric. All of these diagnostics can be used while the system is running.

NOTE

Be sure to disable the port before running any type of port diagnostics.

NOTE

It is advisable not to perform other operations on the adapter while running QLogic HCM or QLogic BCU CLI diagnostics.

Beaconing (Stand-up Adapters)

Initiate beaconing on a specific adapter port to flash the port LEDs and make it easier to locate the adapter in an equipment room.

Initiate link beaconing to flash the LEDs on a specific adapter port and the LEDs on a connected switch port to verify the connection between adapter and switch. When you initiate link beaconing, commands are sent to the other side of the link. When the remote port receives these commands, that port's LEDs flash. The remote port sends a command back to the originating port. When that port receives this command, the port's LEDs flash.

NOTE

To initiate link beaconing, this feature must be available on the connected switch.

Toggle beaconing on and off and set beaconing duration using the QLogic BCU CLI or QLogic HCM.

Enabling Beaconing through QLogic BCU CLI

Use the **diag --beacon** command to enable beaconing for a specific adapter port.

```
diag --beacon <port_id> <on | off>
```

where:

| | |
|---------|---|
| port_id | ID of the port for which you want to enable beaconing. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification. |
|---------|---|

Use the **fcdiag --linkbeacon** command to enable end-to-end beaconing.

```
fcdiag --linkbeacon <portid> {on | off}
```


where:

port_id ID of the port for which you want to run a link beacon test. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification.

on | off Toggle on or off. If turned on, you can specify duration.

Enabling Beaconsing through QLogic HCM

Enable link and port beaconsing using the following steps.

1. Launch the QLogic HCM.
2. Select the base adapter port from the device tree window.
3. Click **Configure > Beacon**.
4. Click the **Link** check box, the **Port** check box, or both.

Internal and External Loopback Tests

Use the QLogic BCU CLI or the QLogic HCM to perform a loopback test for a specific port. Loopback tests require that you disable the port. The following loopback tests are available:

■ Internal

Random data patterns are sent to the adapter port, then returned without transmitting through the port. The returned data is validated to determine port operation. Errors may indicate a failed port.

■ External

For this test, a loopback connector is required for the port. For mezzanine adapters, this test can be performed using a pass-through module. Random data patterns are sent to the adapter port. The data transmits from the port and then returns. The returned data is validated to determine port operation. Errors may indicate a failed port.

NOTE

Loopback tests also run through the D_Port feature. For details, refer to [“Diagnostic Port” on page 118](#)

Performing Loopback Tests through QLogic BCU CLI

Use the **diag --loopback** QLogic BCU CLI command test to verify port function through a loopback test.

```
bcu diag --loopback <port_id> [-t <loopback_type>][-s <speed>]  
[-c <frame_count>] [-p <pattern>]
```

where:

| | |
|---------------|--|
| port_id | ID of the port for which you want to run the test. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification. |
| loopback type | Type of loopback test. Possible values are internal, external, and serdes. |
| speed | For HBAs and Fabric Adapter ports configured in HBA mode only. For a 4 Gbps port, this is 2 or 4. For an 8 Gbps port, this is 2, 4, or 8. For a 16 Gbps port, this is 4, 8, or 16. |
| frame count | Integer from 0 to 4,294,967,295. Default is 8192. |
| -p pattern | Hex number. Default value is A5A5A5A5. |

Performing Loopback Tests through QLogic HCM

Use the **Hardware Tests** tab on the **Diagnostics** dialog box to perform a loopback test.

1. Launch the QLogic HCM.
2. Select **Configure > Diagnostics**.
3. Click the **Hardware Tests** tab.
4. Select **Loopback Test**.

You can modify the following test parameters:

- Subtest - The three options are Internal, Serdes, and External.
 - Link Speed (HBAs and Fabric Adapter ports configured in HBA mode)
- For 16G ports, 4G, 8G, or 16G. For 8G ports, 2G, 4G, and 8G. For 4G ports, 1G, 2G, and 4G. For 4G ports, 2G and 4G.
 - Frame Count - Integer from 0 to 4,294,967,295. Default value is 8192.
 - Data Pattern - Hex value. Default value is A5A5A5A5.
5. Click **Start**.

Ethernet Port Loopback Test (CNA)

Run Ethernet loopback tests on CNA ports and Fabric Adapter ports configured in CNA or NIC mode. Use QLogic BCU CLI commands and QLogic HCM to test the Ethernet data path from the host to serdes or external loopback based on your selection. For mezzanine or expansion card adapters, this test can be performed using a pass-through module. You must disable the port before testing and use a loopback connector for the test.

NOTE

For 64-bit platforms only, you cannot perform Ethernet loopback tests on the port unless a VLAN is first created for the port.

Performing Ethernet Loopback Tests through QLogic HCM

Using the **Ethernet Tests** tab on the **Diagnostics** dialog box, you can run Ethernet loopback tests and set test parameters such as external subtests, serdes subtests, link speed, frame count, test cycle, and data pattern to test. Results display on the bottom of the tab as the test commences.

1. Launch the QLogic HCM.
2. Select **Configure > Diagnostics**.
3. Click the **Ethernet Tests** tab.
4. Select **eth Loopback Test**.

Performing Ethernet Loopback Tests through QLogic BCU CLI

Refer to [“Performing Loopback Tests through QLogic BCU CLI”](#) on page 114.

PCI Loopback Test

Use QLogic BCU CLI commands or QLogic HCM to perform a PCI loopback test for a specific port. In this test, a data pattern is sent from the host to adapter firmware through the PCI bus. The returned data is validated to determine PCI operation.

NOTE

You must disable the port before you run loopback tests.

Performing PCI Loopback Tests through QLogic BCU CLI

Use the **diag --pciloopback** QLogic BCU CLI command to perform a PCI loopback test.

```
diag --pciloopback <port_id> [-p <pattern>] [-c <frame_count>]
```

where:

| | |
|-------------|--|
| port_id | ID of the port from which you want to run the test. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification. |
| pattern | Specifies the data test pattern. Must be at least one hexadecimal word. |
| frame count | Specifies the frame count as an integer from 0 to 4,294,967,295. |

Performing PCI Loopback Tests through QLogic HCM

Use the **Hardware Tests** tab on the **Diagnostics** dialog box to perform a PCI loopback test as follows.

1. Launch the QLogic HCM.
2. Select **Configure > Diagnostics**.
3. Click the **Hardware Tests** tab.
4. Select **PCI Loopback Test**.

You can modify the following parameters:

- Frame count: Specifies the frame count as an integer from 0 to 4,294,967,295.
 - Data pattern: Specifies the data test pattern. Must be at least one hexadecimal word.
 - Test cycle: The number should be positive and the default is 1.
5. Click **Start**.

Memory Test

Use the QLogic BCU CLI or the QLogic HCM to perform a memory test for the adapter.

NOTE

Performing the memory test disables the adapter.

Performing a Memory Test Through QLogic BCU CLI

Use the **diag --memtest** command to test the adapter's memory blocks.

```
diag --memtest <ad_id>
```

where:

ad_id ID of the adapter.

Performing a Memory Test through QLogic HCM

Use the **Hardware Tests** tab on the **Diagnostics** dialog box as follows to perform a memory test.

1. Launch the QLogic HCM.
2. Select **Configure > Diagnostics**.
3. Click the **Hardware Tests** tab.
4. Select **Memory Test**.
5. Specify the test cycle using a positive number.
6. Click **Start**.

Pinging Fibre Channel End Points

Use the QLogic BCU CLI and QLogic HCM to ping a Fibre Channel end point from an adapter port to determine the basic connectivity to the remote port and monitor network latency.

NOTE

Ping testing is not supported on Solaris systems.

Issuing a Ping Command to End Points through QLogic BCU CLI

Use the **fcdiag --fcping** QLogic BCU CLI command to test the connection to a Fibre Channel end point.

```
fcdiag --fcping <port_id> <rpwwn> [-l <lpwwn>]
```

where:

port_id ID of the adapter port from which you want to ping the remote port. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification.

rpwwn Remote PWWN that you want to ping.

lpwwn Logical PWWN. 0 indicates the base port.

Issuing a Ping Command to End Points through QLogic HCM

Use the **FC Protocol Tests** tab on the **Diagnostics** dialog box to test the connection to Fibre Channel end points. Use the following steps to ping end points.

1. Launch the QLogic HCM.
2. Select **Configure > Diagnostics** to display the **Diagnostics** dialog box.
3. Click the **FC Protocol Tests** tab.
4. Select **FC Ping Test**.
5. Select the adapter port and target that you wish to ping.
6. Enter a test cycle if applicable.
7. Click **Start**.

Adapter Temperature

Use the QLogic BCU CLI **diag --tempshow** command to read the adapter's temperature sensor registers.

```
diag --tempshow <ad_id>
```

where:

ad_id ID of adapter.

Diagnostic Port

When a switch or adapter port is enabled as a Diagnostic (D_Port), electrical loopback, optical loopback, and link traffic diagnostic tests initiate on the link between the adapter and the connected switch port. Results can be viewed from the switch using Fabric OS commands, or from the adapter using QLogic BCU CLI commands and QLogic HCM. Once an adapter port is enabled as a D_Port, the port does not participate in fabric operations, log in to a remote device, or run data traffic.

D_Port testing is supported only on BR-1860 Fabric Adapter ports operating in HBA mode with a 16 Gbps SFP and on Brocade 16 Gbps switches running Fabric OS v7.1.0 or later.

A D_Port can be initiated in one of two modes:

- **Dynamic mode** - If the D_Port is enabled on the switch only, it enables the connected adapter port as a D_Port. The switch initiates and stops tests on the adapter port as specified by switch configuration. You cannot restart the test or specify a test parameter through QLogic BCU CLI commands or QLogic HCM. For dynamic mode, D_Port configuration is not required on the adapter. Also, if D_Port is enabled on HBA port, this will automatically enable connected switch port as D_Port.

In dynamic mode, you can disable the adapter physical port using the **bcu port --disable** command. This will disable the port as a D_Port. When the adapter port is enabled again, the switch will again enable the adapter port as a D_Port if the switch port is still enabled as a D_Port. However, you must restart tests from the switch side.

- **Static mode** - This mode is initiated after disabling the adapter port using **bcu port --disable**, enabling D_Port on the switch port using appropriate Fabric OS commands, then configuring the adapter port as a D_Port through QLogic BCU CLI commands or QLogic HCM. In static mode, you can control and configure tests, establish a test pattern and transmit frame count for loopback tests, display results, and restart testing from the adapter using QLogic BCU CLI commands. You can use QLogic HCM to enable D_Port testing, set the test pattern, and transmit frame count. This mode cannot be initiated if the adapter is in dynamic mode.

D_Port Commands

Following are QLogic BCU CLI commands that you can use for D_Port configuration and control:

- **bcu diag --dportenable** - Enables D_Port on a specific port, sets the test pattern, and sets the frame count for testing.
- **bcu diag --dportdisable** - Disables D_Port on a specific port and sets the port back to an N_Port or NL_Port.
- **bcu diag --dportshow** - Displays test results for a test in progress on a specific port.
- **bcu diag --dportstart** - Restarts a test on a specific port when the test has completed.
- **bcu port --list** - Displays the D_Port enabled or disabled state on the adapter and connected switch.

NOTE

If you stop testing from the switch side, you should disable D_Port on the HBA side. Use **bcu diag --dportdisable** in static D_Port mode or **bcu port --disable** in dynamic D_Port mode.

For additional details on the D_Port feature, especially switch and adapter configuration procedures, refer to the Brocade *Fabric OS Troubleshooting and Diagnostics Guide*. For details on adapter configuration, commands, and feature limitations and considerations, refer to the *BR-Series Adapters Administrator's Guide*.

Queue Test

Use QLogic BCU CLI commands and the QLogic HCM to send a health check message from the host to the firmware through message queues memory mapped over the PCI.

Performing a Queue Test through QLogic BCU CLI

Use the **diag --queuetest** command to perform a queue test.

```
diag --queuetest <port_id> [-q <queue_num>]
```

where:

| | |
|-----------------|---|
| port_id | Adapter port number. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification. |
| -q queue_number | Specifies the CPE queue number from 0 to 3. If the queue number is not specified, all queues are tested. |

Performing a Queue Test through QLogic HCM

Use the **Hardware Tests** tab on the **Diagnostics** dialog box as follows to perform a queue test.

1. Launch QLogic HCM.
2. Select **Configure > Diagnostics**.
3. Click the **Hardware Tests** tab.
4. Select **Queue Test**.
5. Click **Start**.

SCSI Test

Use the **fcdiag --scsittest** command to test SCSI components and display discovered LUN information, such as LUN number, device type and qualifier, vendor ID, product ID, revision number, size of LUN, and LUN status.

```
fcdiag --scsittest <port_id> <rpwwn> [-l <lpwwn>]
```

where:

| | |
|---------|--|
| port_id | ID of the port from that you want to test. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 use 1/1 as the port identification. |
|---------|--|

| | |
|-------|---|
| rpwwn | Remote PWWN to which you want to trace the route. |
| lpwwn | Logical PWWN. 0 indicates the base port or else the virtual port. |

Trace Route

Use the QLogic BCU CLI and QLogic HCM to trace the SAN path between the adapter and remote end point.

Tracing the Route Through QLogic BCU CLI

Use the **fcdiag --tracertoute** QLogic BCU CLI command to trace the route between end points.

```
fcdiag --fctracertoute <port_id> <rpwwn> [-l <lpwwn>]
```

where:

port_id ID of the port from which you want to trace the route. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 use 1/1 as the port identification.

rpwwn Remote PWWN to which you want to trace the route.

lpwwn Logical PWWN. 0 indicates the base port.

Tracing the Route Through QLogic HCM

Use the FC Trace Route test to trace the route between the adapter port and a Fibre Channel target port. To run this test, use the following steps:

1. Launch the QLogic HCM.
2. Select **Configure > Diagnostics** to display the **Diagnostics** dialog box.
3. Click the **FC Protocol Tests** tab.
4. Select **FC Trace Route**.
5. Select the adapter port and target for which you wish to trace the route.
6. Enter a test cycle if desired.
7. Click **Start**.

Echo Test

Use the QLogic BCU CLI and QLogic HCM to initiate an echo test between the adapter port and a Fibre Channel end point. This sends an ECHO command and response sequence between the adapter port and target port to verify connection with the target.

Performing an Echo Test through QLogic BCU CLI

Use the **fcdiag --fcecho** QLogic BCU CLI command to initiate an echo test between the adapter and remote port.

```
fcdiag --fcecho <port_id> <rpwwn> [-l <lpwwn>]
```

where:

| | |
|---------|---|
| port_id | ID of the port that you want to test. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification. |
| rpwwn | Remote port WWN to which the echo command is being sent. |
| lpwwn | Logical port WWN. 0 indicates the base port. |

Performing an Echo Test through QLogic HCM

Use the Echo Test feature as follows to initiate an echo test between the adapter port and a Fibre Channel end point.

1. Launch the QLogic HCM.
2. Select **Configure > Diagnostics** to display the **Diagnostics** dialog box.
3. Click the **FC Protocol Tests** tab.
4. Select **Echo Test**.
5. Select the adapter port and target port for the test.
6. Enter a test cycle if applicable.
7. Click **Start**.

Collecting BIOS Data

Collect information on the currently configured BIOS and boot over SAN configuration using the QLogic BCU CLI and QLogic HCM.

Displaying BIOS Data through QLogic BCU CLI

Use the **bios --query** QLogic BCU CLI command to display such information as the boot over SAN enabled or disabled state, port speed, boot LUNs obtained from flash, and boot LUNs obtained from the fabric (only if automatic discovery of boot LUNs from the fabric is enabled). Any “Preboot” output means that parameters were configured using a blade system management application. Preboot configuration data can include port speed, BIOS (boot over SAN) state,

and configured boot LUN identification. Preboot data can also include the FCoE MAC, WWN, and VLAN and Ethernet MAC and VLAN information.

```
bios --query <port_id>
```

where:

| | |
|---------|--|
| port_id | The ID of the port for which you want to display the data. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification. |
|---------|--|

Display BIOS Data through QLogic HCM

Display current BIOS information through the QLogic HCM Boot over SAN dialog box. Information includes BIOS (boot over SAN) enabled or disabled state, port speed, boot option, preboot BIOS enable and port speed, and details on current boot LUNs. To access this dialog box, use the following steps.

1. Select a host, an adapter, or an adapter's physical port from the QLogic HCM device tree.
2. Select **Configure > Basic Port Configuration**.
The **Basic Port Configuration** dialog box displays.
3. Click the **Boot-over-SAN** tab.
The **Boot over SAN** dialog box displays.

Collecting LLDP Data (CNA)

Collect information on the Link Layer Discovery Protocol (LLDP) associated with a specific CNA or a Fabric Adapter port configured in CNA mode using the QLogic HCM **LLDP Properties** panel.

The **LLDP Properties** panel displays information such as the MAC address of the local system, LLDP operational status, system management address, user-configured port description, port identification, configured name of local system, system capabilities based on system model, and time to live (TTL) values in LLDP frames.

To collect LLDP data, perform the following steps.

1. Select a CNA or Fabric Adapter in the device tree.
2. Click the **LLDP** tab in the right pane.

Collecting SFP Transceiver Data (Stand-up Adapters)

This section provides an overview of QLogic BCU CLI commands and QLogic HCM features that provide information on small form factor pluggable (SFP) transceivers.

SFP Transceiver Properties

QLogic BCU CLI and QLogic HCM provide detailed information on the SFP transceiver for a selected port, such as its health status, port speed, connector type, minimum and maximum distance, as well as details on the extended link.

Displaying SFP Transceiver Properties through QLogic BCU CLI

Use the **diag --sfpshow** QLogic BCU CLI command to display detailed attributes for a specific SFP transceiver.

```
diag --sfpshow <port_id>
```

where:

port_id ID of the port for which you want to display SFP transceiver attributes. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification.

Initiating SFP Transceiver Properties through QLogic HCM

Launch the port **SFP** properties dialog box as follows to display properties for a selected small form-factor pluggable (SFP) transceiver.

1. Launch the QLogic HCM.
2. Select a port in the device tree.
3. Click the **SFP** tab in the right pane.

Predictive Optical Monitoring (POM)

Use the **POM** field in the port properties panel to monitor the SFP transceiver attributes. A notification is given for any parameters that are not within the power, temperature, voltage, and current specifications. To display this panel, use the following steps.

1. Select a port in the device tree.
2. Click the **Properties** tab in the right pane.

Collecting Port Data

This section provides an overview of QLogic BCU CLI commands and QLogic HCM features that provide information on adapter ports, such as PWWN, node WWN, port type, configured speed, operating speed, configured topology, operating topology, link and port beaconing state, and other information.

Displaying Port Properties

Use the port **Properties** tab to display information about a selected base adapter port, such as the following:

- Port number
- PWWN and node WWN
- Factory PWWN and node WWN
- Port type (CNA or HBA)
- Media type (for example “mezz” for mezzanine)
- Current FCoE and factory MAC address (CNAs Fabric Adapter ports configured in CNA mode)
- Offline or online state
- Role of port (for example, FCP initiator)
- Fibre Channel address (HBAs and Fabric Adapter ports configured in HBA mode)
- WWN of the attached switch
- Configured I/O Execution Throttle values
- Operating topology (for example, point-to-point)
- Receive and transmit BB_Credits
- BB_Credit recovery state
- Forward error recovery state

NOTE

“Mezz” for the media type indicates “mezzanine.” The “Pre-Boot” identification for certain properties means that the property was configured using a blade system management application.

Use the following steps to display base port properties.

1. From the device tree, select a base port.
2. Click the **Base Port Properties** tab in the right pane.

Displaying BB_Credit Recovery State

Use the **port --bbcr_query** command to display the BB_Credit recovery online or offline state.

Enter the following command:

```
bru port --bbcr_query <port_id>
```

where:

port_id ID of the port for which you want to display the BB_Credit recovery state.

Displaying DCB Port Properties (CNA)

Use the **DCB Port Properties** panel to display information for a selected DCB adapter port on a CNA or Fabric Adapter with a port configured in CNA mode.

Information such as the following displays:

- DCB status
- FCoE logical link status
- DCBCXP version
- Network priority configuration
- Network priority group ID
- Bandwidth percentage for given port group
- Priority flow control status
- FCoE quality of service that specifies a priority value

To display DCB port properties, use the following steps.

1. Select a DCB port in the device tree.
2. Click the **Properties** tab in the right pane.

Displaying Ethernet Port Properties (CNA or NIC)

You can display Ethernet properties for CNA ports or Fabric Adapter ports configured in CNA or NIC mode using the QLogic HCM **Ethernet Port Properties** panel.

Information such as the following displays:

- Name of Ethernet device
- Port type
- Current (FCoE) and factory MAC address
- IOC identification

- Minimum and maximum bandwidth settings for vNICs
- WWN of hardware
- Status of port, such as linkup
- Ethernet logging level

To display Ethernet port properties, use the following steps.

1. Select an Ethernet port in the device tree.
2. Click the **Properties** tab in the right pane.

Displaying FCoE Port Properties (CNA)

Use the QLogic HCM **FCoE Port Properties** to display FCoE port properties for CNAs or Fabric Adapter ports configured in CNA mode. Properties include the following:

- Current FCoE MAC address
- Supported class
- FC frame size
- Maximum transmission unit (MTU)
- Target rate limiting (TRL) enabled or disabled status
- Default rate limit
- Beaconsing status
- Fibre Channel Initialization Protocol (FCIP) operational state
- Local (factory) port MAC address
- Fibre Channel address
- Priority group ID (PGID)
- Queue depth
- Interrupt control delay
- Bandwidth percentage for priority group
- MAC address for FCoE forwarder
- Fabric WWN
- Fibre Channel map ID
- FCoE forwarder writing or nonwriting mode
- Maximum speed supported
- Port operating topology
- Authentication status, algorithm, group, and error status

Displaying FCoE Port Properties

To display the QLogic HCM **FCoE Port Properties** panel, use these steps.

1. Select an FCoE port in the device tree.
2. Click the **Properties** tab in the right pane.

Displaying FC Port Properties (HBA)

Use QLogic HCM **vHBA Properties** to display FC port properties for HBAs or Fabric Adapter ports configured in HBA mode. Properties include the following:

- Port WWN
- Node WWN
- Path TOV (not displayed for Solaris systems)
- Port log
- I/O profile

To display the QLogic HCM **vHBA Port Properties** panel, use these steps.

1. Select an FC port in the device tree.
2. Click the **vHBA** tab in the right pane.

Displaying Forward Error Recovery State

Use the **port --fec_query** command to display the Forward Error Correction (FEC) enabled or disabled state.

Enter the following command:

```
bru port --fec_query <port_id>
```

where:

port_id ID of the port for which you want to display the FEC state.

Displaying Remote Port Properties

Use the QLogic HCM **Remote Port Properties** panel to display properties that are associated with the remote port, such as WWN, node WWN, port name, Fibre Channel address, frame data field size, online or offline state, role (such as target or initiator), remote device information, QoS priority, QoS flow, and target ID. Display this properties panel using the following steps.

1. From the device tree, select a remote port.
2. Click the **Remote Port Properties** tab in the right panel.

If it is a target port, two tabs display in the right pane: **Properties** and **LUNs**.

Displaying Logical Port Properties

Use the QLogic HCM **LPorts Properties** panel to display properties associated with a logical port, such as port and node WWN, Fibre Channel address, online or offline state, fabric name, and name server activity. To display logical port properties, use the following steps.

1. From the device tree, select a logical port.
2. Click the **LPORTs Properties** tab in the right panel.

Displaying Virtual Port Properties

Use the QLogic HCM **Virtual Port Parameters** properties panel to display the properties associated with a virtual port, such as PWWN and node WWN, Fibre Channel address, offline or online state, role (such as FCP initiator), and attached switch WWN. For mezzanine adapters, “pre-boot” display indicates that virtual port configuration was accomplished using a blade system management application.

To display virtual port properties, use the following steps.

1. From the device tree, select a virtual port.
2. The **Virtual Port Parameters** properties panel displays.

Displaying the Port Log

Use the **debug --portlog** QLogic BCU CLI command to display a log of Fibre Channel frames and other main control messages that were sent out and received on a specific port. You can use this information to isolate adapter and Fibre Channel protocol problems.

```
debug --portlog <port_id>
```

where:

| | |
|---------|--|
| port_id | The ID of the port for which you want to display the port log. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification. |
|---------|--|

NOTE

If the port log is disabled, a warning message displays. Use the **debug -portlogctl** command to enable and disable the port log.

Displaying the Port List

Use the **port --list** QLogic BCU CLI command to list all physical ports on the adapter along with their physical attributes, such as PWWN, media type, Fibre Channel address, port type, trunking state, speed, operating state, loopback mode state, and diagnostics state. For CNAs and Fabric Adapter ports configured in CNA mode, output also includes Ethernet and DCB link states. For mezzanine adapters only, a # symbol next to a “disabled” state indicates that the port was disabled using a blade system management application. A “pre-boot” display indicates that virtual port configuration was accomplished using a blade system management application. The media entry will be “mz” to indicate mezzanine card.

```
port --list [<-verbose | -terse>]
```

Performing a Logical Port Query

Use the **lport --query** QLogic BCU CLI command to list the logical port attributes, which includes the ports online or offline state, FC address, port and node WWN, and symbolic name.

```
lport --query <port_id>
```

where:

| | |
|---------|--|
| port_id | ID of the port for which you want to display information. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification. |
|---------|--|

Performing a Port Query

Use **port --query** QLogic BCU CLI command to display information, such as port name, state, current and configured speed, topology (p2p or loop), media type, received and transmitted BB_Credits, beacon status, QoS priority status, QoS flow identification, port binding status, beaconing status, target rate limiting (TRL) status, network partitioning status, and TRL default speed. Other information includes FCoE attributes, such as the current PWWN and NWWN, factory PWWN and NWWN, current and factory MAC address, link state, as well as Ethernet attributes, such as the current and factory MAC address, current and factory VLAN values, and link state.

For mezzanine adapters, a # symbol next a “disabled” state indicates the port was disabled using a blade system management application. A “pre-boot” display indicates that virtual port configuration was accomplished using a blade system management application. The media entry will be “mz” to indicate mezzanine card.

```
port --query <port_id>
```

where:

port_id ID of the port for which you want to display information. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification.

NOTE

If port topology is set to loop, related information will not be displayed.

Displaying Port Speed

Use **port --speed** QLogic BCU CLI command to display the current port speed setting.

```
port --speed <port_id>
```

where:

port_id ID of the port for which you want to display port speed. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification.

FCP-IM I/O Profiling

This feature, available through QLogic BCU CLI commands and QLogic HCM, can be enabled or disabled on a physical port. When enabled, the driver firmware separates I/O latency data into average, minimum, and maximum categories. I/O latency information can be collected for all or individual targets and LUNs. Use this feature to analyze traffic patterns and help tune adapters, fabrics, and targets for better performance. Note that enabling this feature impacts I/O performance.

Enabling FCP-IM Profile through QLogic HCM

1. Select an FC or FCOE port from the QLogic HCM device tree.
2. Select **Configure > vHBA Configuration**.
The **vHBA Configuration** dialog box displays.
3. Click the **FCP-IM IO profile on** checkbox.
Adding a check mark enables profiling. Removing the check mark disables profiling.

NOTE

This option is disabled at for remote ports.

Enabling FCP-IM Profile through QLogic BCU CLI

Use the following **fcvim --profile** commands to start, stop, and reset I/O profile collection, and to show, query, and clear data.

- Use **fcvim --iopprofile_start** for a specific port to start data collection for a specific LUN, range of LUNs, or all active LUNs.
- Use **fcvim iopprofile_stop** to stop data collection for a specific port, logical port, LUN, or range of LUNs.
- Use **fcvim --iopprofile_clr** to clear data for a specific port.or logical port.
- Use **fcvim --iopprofile_reset** to reset data on a specific port, logical port, LUN, or range of LUNs.
- Use **fcvim --iopprofile_show** to display data for a specific port, logical port, or LUN. Since LUN I/O profile collection depreciates performance on R_Ports, use **rport --list** to display if LUN I/O profiling is enabled on specific R_Ports.
- Use the **fcvim --lunlist** command to list LUNs enabled for I/O profiling
- Use **fcvim --iopprofile_query** to show all active lport-rport combinations active at when I/O profiling starts.

Target Reset Control

Using the QLogic BCU CLI **fcvim --trs_disable** and **bcu fcvim --trs_enable** command you can disable or enable target reset capability for specific targets.

Use the following command to list all I-T nexuses where target reset has been disabled. This will list the WWNs of each initiator-target pair here target reset has been disabled.

```
bcu fcvim --trs_query <port_id>
```

where:

port_id ID of the port for which you want to list all I-T nexuses where target reset is disabled. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification.

Collecting Teaming Information (CNA or NIC)

Use the QLogic BCU CLI (BCU) or QLogic HCM to display information on teaming for CNAs or Fabric Adapter ports configured in CNA or NIC mode.

NOTE

Teaming commands apply to Windows operating systems only.

Displaying Team Data and Statistics through QLogic HCM

Use the **Teaming Configuration** dialog box to display the team name, members, mode, MAC address, time delay, transmit policy, and active link for a selected team. You can also display teaming statistics for a selected team, such as transmit and receive bytes, connection status, and connection duration. Use the following steps to display this dialog box.

1. Select a local host icon from the device tree in QLogic Host Connectivity Manager (HCM).
2. Select **Configure > Teaming**.

OR

Right-click the local host icon and select **Teaming**.

The **Teaming Configuration** dialog box displays.

3. Select a team from the **Teams** list to display properties for the team.
4. Click the **Statistics** button beneath the **Teams** field to display statistics for the selected team.

Display teaming statistics for all configured teams using the following steps.

1. Select a local host icon from the device tree.
2. Right-click the local host icon and select **Statistics > Teaming Statistics**.

Statistics display for all teams configured on the host.

Displaying Configured Team Data through QLogic BCU CLI

Use the **bcu team --list** and **bcu team --query** commands to display information about configured teams. Following is an overview of both commands:

- The **bcu team --list** command displays all configured teams by their configured IDs, the team mode (failback, failover, or 902.3ad), and the team's MAC address.
- The **bcu team --query** command displays the teaming configuration for a specific team including the team mode, MAC address, and number of ports. Also included are statistics, such as transmit and receive bytes, connection status, and connection duration.

```
team --list
```

```
team --query <team-name>
```

where:

team-name ID of the team for which you want to display information.

Authentication Settings

Use the QLogic BCU CLI or QLogic HCM to display the adapter authentication settings and status.

Displaying Authentication Settings through QLogic HCM

Launch the **Fibre Channel Security Protocol Configuration** dialog box to display authentication settings. To launch this dialog box, right-click an adapter on the device tree and select **Authentication** from the list. The dialog box displays the current CHAP secret, hashing algorithm, and group value.

Displaying Authentication Settings through QLogic BCU CLI

Use the QLogic BCU CLI **auth --show** command to display authentication settings.

```
auth --show <port_id>
```

where:

port_id ID of the port for which you want to display authentication settings. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1, you would use 1/1 as the port identification.

PHY Module Data

The Ethernet PHY module, located in the mezzanine card port hardware, aids in communications to and from the Ethernet LAN. Use the **bcu phy --query** command to query the PHY module and determine attributes, such as the PHY module status, installed firmware version, link partner auto-negotiation ability, PHY auto-negotiation ability, PMA (physical medium attachment sublayer) and PMD (physical medium dependent sublayer) link status and signal detected, and PCS (physical coding sublayer) link status.

```
bcu phy --query <port_id>
```

where:

<port_id> ID of port for which you want to display data. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification.

QoS Settings (HBA)

Display Quality of Service (QoS) settings on HBAs and Fabric Adapter ports configured in HBA mode. QoS works in conjunction with the QoS feature on Brocade switches to assign traffic priority (high, medium (default), low) to a given source and destination traffic flow.

Determining QoS Settings through QLogic BCU CLI

Use the following commands to determine QoS settings:

- Use the following QLogic BCU CLI command to display QoS enabled status.

```
port --query <port-id>
```

where:

port_id ID of the port for which you want to display settings.

- Use the following command to display QoS status and other information for a port.

```
qos --query <port_id>
```

where:

port_id ID of the port for which you want to display settings.

- Use the following command to determine operating speed of the remote port and QoS status.

```
rport --query <port_id> <rpwwn> [-l <lpwwn>]
```

where:

| | |
|----------|--|
| port_id | Specifies the ID of the port for which you want to query attributes of a remote port. |
| rpwwn | Remote PWWN. You can obtain the RPWWN from the QLogic BCU CLI <code>rport --list <port_id></code> command. |
| -l lpwwn | Logical PWWN. This is an optional argument. If the <code>-l lpwwn</code> argument is not specified, the base port is used. |

Determining QoS Settings through QLogic HCM

Use QLogic HCM in the following ways to determine current status and configuration for QoS:

- Use the **Port Properties** panel in QLogic HCM to display configured QoS parameters.

1. Select a port in the device tree.
2. Click the **Properties** tab in the right pane.

The **Port Properties** panel displays

- Use the **Remote Port Properties** panel in QLogic HCM to display information on QoS for the remote port.

1. From the device tree, select a remote port (target or initiator).
2. Click the **Remote Port Properties** tab in the right pane.

The **Remote Port Properties** panel displays.

Target Rate Limiting Settings (HBA)

Display target rate limiting settings on HBA ports or Fabric Adapter ports configured in HBA mode. Target rate limiting throttles the Fibre Channel Protocol (FCP) read traffic rate to slow-draining targets to reduce or eliminate network congestion and alleviate I/O slowdowns to faster targets.

Use the following QLogic BCU CLI commands to determine current status and configuration for target rate limiting settings:

Determining Target Rate Limiting Settings through QLogic BCU CLI

Use the following QLogic BCU CLI commands to determine current status and configuration for target rate limiting settings:

- Use the following QLogic BCU CLI command to determine target rate limiting speed and enabled status.

```
ratelim --query <port-id>
```

where:

port_id ID of the port for which you want to display target rate limiting settings. This could be the PWWN, port hardware path, or user-specified port name. This could also be the adapter-index/port-index. For example, to specify adapter 1, port 1 you would use 1/1 as the port identification.

- Use the following QLogic BCU CLI command to display target rate limiting enabled status and default speed.

```
port --query <port-id>
```

where:

port_id ID of the port for which you want to display port information.

- Use the following command to determine operating speed of the remote port and target rate limiting enforcement.

```
rport --query <port_id> <rpwwn> [-l <lpwwn>]
```

where:

port_id Specifies the ID of the port for which you want to query attributes.

rpwwn Remote PWWN. You can obtain the RPWWN from the QLogic BCU CLI `rport --list <port_id>` command.

-l lpwwn Logical PWWN. This is an optional argument. If the `-l lpwwn` argument is not specified, the base port is used.

Determining Settings Through QLogic HCM

Launch the **Remote Port Properties** panel in QLogic HCM as follows to display information on target rate limiting and QoS for the remote port.

1. From the device tree, select a remote port (target or initiator).
2. Click the **Remote Port Properties** tab in the right pane.

The **Remote Port Properties** panel displays.

Persistent Binding

Persistent binding is a feature of adapters that enables you to assign a system SCSI target ID to a specific Fibre Channel (FC) device permanently, even though the device's ID on the FC loop may be different each time the FC loop initializes. Persistent binding is available in the Windows and VMware environments only.

Use QLogic HCM features or QLogic BCU CLI commands to display target ID mapping for an adapter port.

Displaying Persistent Binding Settings through QLogic BCU CLI

Use the **pbind --list** QLogic BCU CLI command to query the list of mappings for persistent binding on a specific port.

```
pbind --list <port_id> <pwwn>
```

where:

| | |
|---------|--|
| port_id | ID of the port for which you want to display settings. |
| pwwn | Port World Wide Name |

Displaying Persistent Binding Settings through QLogic HCM

Launch the **Persistent Binding** dialog box as follows to determine SCSI target ID mappings:

1. Launch the QLogic HCM.
2. Select an adapter, host, DCB port, or FCoE port from the device tree.
3. Launch
4. Select **Configure > Persistent Binding. > View Persistent Binding**.

Adapter Properties

Display properties for the following using QLogic HCM:

- CNAs or Fabric Adapter ports configured in CNA mode.

- HBAs or Fabric Adapter ports configured in HBA mode.

CNA Properties

Following are the some of the properties that you can display for CNAs or Fabric Adapter ports configured in CNA mode:

- MAC address
- Adapter name
- Operating status
- Vendor ID
- PCIe generation
- Subsystem vendor ID
- Serial number
- Manufacturer
- Model description
- Maximum speed supported
- Number of ports
- OEM information
- Card type
- Hardware Path
- Serial number
- Temperature
- Driver Version
- Driver name
- Firmware version
- BIOS version

To display the properties panel, perform the following steps:

1. Select a CNA or Fabric Adapter port configured in CNA mode
2. Click the **Properties** tab in the right pane.

HBA Properties

Following are some of the properties that you can display for HBAs or Fabric Adapter ports configured in HBA mode:

- Node WWN

- Adapter name
- Operating status
- Manufacturer
- Model description
- Maximum speed supported
- Number of ports
- OEM information
- Card type
- Chip revision
- Trunking supported
- Junction temperature
- Driver name, version
- Firmware version
- BIOS version
- Subsystem vendor ID
- Number of PCI lanes
- PCIe generation

To display the properties panel, perform the following steps:

1. Select an HBA or Fabric Adapter port configured in HBA mode
2. Click the **Properties** tab in the right pane.

Adapter Queries

Use QLogic BCU CLI commands to list and query available adapters seen by the driver.

The **bcu adapter --list** command lists all adapters on the system with a brief summary of information such as model number, serial number, and adapter number. Enter the following command:

```
adapter --list
```

where:

| | |
|------|--|
| list | Lists all adapters in the system. For each adapter in the system, a brief information line displays containing the adapter type, model number, serial number, and hardware path. |
|------|--|

The **adapter --query** command displays adapter information, such as the current version of the adapter, adapter type, firmware version, maximum port speed, model information, serial number, number of ports, PCIe information, pwwn, nwwn, hardware path, flash information (such as firmware version), BIOS version, EFI version, current power mode, and port information (PWWN, NWWN, beacon status).

```
adapter --query <ad_id>
```

where:

`ad_id` ID of the adapter for which you want to query.

4 Performance Optimization

Tuning Storage Drivers

This section provides resources for optimizing performance in adapters by tuning the unified storage drivers on Linux, Windows, Solaris, and VMware systems. To optimize performance for CNAs and Fabric Adapter ports configured in CNA or NIC mode, also use resources under [“Tuning Network Drivers \(CNA or NIC\)” on page 147](#).

Linux Tuning

Tools for Linux performance tuning include disk I/O scheduling, (interrupt request) IRQ balancing, and IRQ binding.

Disk I/O Scheduling

Linux disk I/O scheduling reorders, delays, and merge requests to achieve better throughput and lower latency than would happen if all the requests were sent straight to the disk. Linux 2.6 has four different disk I/O schedulers: noop, deadline, anticipatory and completely fair queuing. Enabling the “noop” scheduler avoids any delays in queuing of I/O commands. This helps in achieving higher I/O rates by queuing multiple outstanding I/O requests to each disk.

To enable the noop scheduler, run the following commands on your system.

```
for i in /sys/block/sd[b-z]/queue/scheduler
do
echo noop > $i
done
```

NOTE

You must disable the default scheduler because it is not tuned for achieving the maximum I/O performance.

IRQ Balancing

RHEL 6.2 and greater supports IRQ balancing. This distributes IRQs across available CPUs. To start IRQ balancing manually, enter the following command on your system:

```
irqbalance --oneshot
```

IRQ Binding

The `bfa_irqbind` script installs with out-of-the box Linux drivers for the adapter. This script binds IRQs for each port to one or all CPUs. There is no strict binding. To use this script, enter the following command.

```
bfa_irqbind option
```

options:

| | |
|---------------|--|
| -s, --show | Show the current IRQ binding |
| -b, --bind | Bind IRQ(S) for each port to one CPU |
| -a, -all | Bind IRQ(s) for each port to all CPUs. |
| anything else | Displays <code>bfa_irqbind</code> usage and options. |

For More Information

For more information on performance tuning for Linux systems, refer to the following publications:

- *Workload Dependent Performance Evaluation of the Linux 2.6 IO Schedulers*
Heger, D., Pratt, S., Linux Symposium, Ottawa, Canada, July 2004
- *Optimizing Linux Performance*
HP Professional Books, ISBN: 0-13-148682-9
- *Performance Tuning for Linux Servers*
Sandra K. Johnson, Gerrit Huizenga, Badari Pulavarty, IBM Press, ISBN: 013144753X
- *Linux Kernel Development*
Robert Love, 2nd edition, 2005

Solaris Tuning

To increase I/O transfer performance, set the following parameters on your system:

- Set the maximum device read/write directive (`maxphy`).
- Set the disk maximum transfer parameter (`ssd_max_xfer_size`).

Please refer to the *Sun StorageTek SAM File System Configuration and Administration Guide* document for details of the two parameters.

To increase I/O write performance, set the `pcie-max-read-reqsz` parameter on your system. This parameter is defined in `/kernel/drv/bfa.conf`. It determines the maximum read through PCIe. The default value is 512. To increase performance, you can change the value to 256, 1024, or 2048.

NOTE

The BR-804 and BR-1007 adapters are not supported on Solaris systems so Solaris commands do not apply to these adapters.

Windows Tuning

Windows tuning involves configuring the driver and operating system tunable parameters.

Driver Tunable Parameters

You can manipulate several driver parameters to increase performance.

bfa_lun_queue_depth (Outstanding I/O Requests per LUN)

The driver uses a default LUN queue depth value of 32. This value is chosen to reflect the average operating I/O load in most scenarios. Storport manages the I/O throttling at the per-LUN level to guarantee the configured queue depth. During performance testing with specific high-end array LUNs, it may be necessary to increase this I/O queue depth to a much larger value. Microsoft recommends a value of 96 during high-performance testing scenarios. If the queue depth is not sufficient, then you will notice performance degradation.

The queue depth can be configured at the following registry location with any value within the range 1 through 254.

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\bfa\Parameters\Device\bfa_lun_queue_depth
```

Interrupt Moderation Using Interrupt Coalescing Feature

Moderating interrupts can often result in reduced CPU load on the host but, unless interrupt moderation is performed intelligently, the CPU savings might increase latency.

The default values for the Fibre Channel port interrupt attributes are configured as follows:

- Interrupt coalescing
Default: ON
- Interrupt delay

Default:

- 75 microseconds on the BR-425, BR-815, and BR-825
Valid Range: Only 5 or 75 microseconds supported.
- 1125 microseconds on the BR-1860 and BR-1867
Valid Range: 1 through 1125 microseconds
- 25 microseconds on the BR-804, BR-1007, and BR-1741
Valid Range: 1 through 1125 microseconds

NOTE

A value of 0 is not supported and cannot be set.

■ Interrupt latency

Default:

- 15 microseconds on the BR-425, BR-815, and BR-825
Valid Range: Only 1 or 15 microseconds supported.
- 225 microseconds on the BR-1860 and BR-1867
Valid Range: 1 through 225 microseconds
- 5 microseconds on the BR-804, BR-1007, and BR-1741
Valid Range: 1 through 225 microseconds

NOTE

A value of 0 is not supported and cannot be set. The latency value should always be less than the delay value.

■ Interrupt Coalescing

When this feature is turned off, I/O completion requests are not coalesced by the firmware. While this helps reduce I/O latency, the host CPU will frequently be interrupted, leading to a slower system response under heavy I/O load (more than 7000 I/Os per second).

When this feature is turned on, the adapter will not interrupt the host until **Interrupt delay** duration. **Interrupt delay**, together with **Interrupt latency**, helps to reduce the number of interrupts that the host CPU processes per second, leading to improved overall CPU utilization. However, if the number of interrupts handled between the **Interrupt delay** period is relatively smaller, then this will result in performance degradation as the I/O completion process has slowed down.

The QLogic BCU CLI **vhba** command can be used to configure these interrupt attributes for the desired port.

```
vhba --intr pcifn <-c> {on | off} [<Latency> <Delay>]
```

Message Signaled Interrupts (MSI-X)

All BR-Series adapters support MSI-X, an eXtended version of the MSI defined in PCI 3.0 specification. MSI-X helps improve overall system performance by contributing to lower interrupt latency and improved host CPU utilization.

MSI-X is supported in Windows Vista and Windows Server 2008.

To enable MSI-X, set the following registry key value to 0.

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\bfad\Parameters\Device\msix_disable
```

OS Tunable Parameters

Please see the section “Storage Stack Drivers” in *Disk Subsystem Performance Analysis for Windows Server 2003 optimizations* located on the following website.

<http://download.microsoft.com>

Please see the sections “Performance Tuning for Storage Subsystem” and “I/O Priorities” in *Performance Tuning Guidelines for Windows Server 2008* located on the following website.

<http://www.microsoft.com>

VMware Tuning

For performance tuning on VMware, refer to the following publications on the VMware website at www.vmware.com:

- *Performance Tuning Best Practices* Guides for ESX and ESXi. Refer to the following sections:
 - Storage Performance Best Practices
 - Related Publications
- *Fibre Channel SAN Configuration Guide*. Refer to “Using ESX Server with SAN: Concepts.”

Tuning Network Drivers (CNA or NIC)

This section provides resources for tuning network drivers for CNAs or Fabric Adapter ports configured in CNA or NIC mode on Linux, Windows, and VMware systems. Note that the default values set for the driver parameters discussed in this section should provide optimum performance. However, you may need to modify these values depending on your network environment. Please follow your host and operating system guidelines when doing so.

Windows Tuning

All Windows tunable parameters for the network driver are optimized for best performance using default values. For details on parameters in the following table, refer to the “Adapter Configuration” appendix in the *BR-Series Adapters Installation Guide*. [Table 4-1](#) provides default parameters for Windows tunable parameters.

Table 4-1. Default Values for Windows Tunable Parameters

| Parameter | Default |
|--|-------------|
| Log Level | 3 |
| Interrupt Moderation (Set for receive interrupts) | On |
| Jumbo Packet Size | 1,514 bytes |
| TCP-UDP Checksum Offload | Enabled |
| Network Address | N/A |
| Receive Side Scaling (RSS) | Enabled |
| Large Send Offload V1 IPv4 (LSOv1) | Enabled |
| Large Send Offload V2 IPv4 (LSOv2) | Enabled |
| Large Send Offload V2 IPv6 (LSOv2) | Enabled |
| FlowControl, Transmit (Tx) and Receive (Rx) | Enabled |
| VLAN ID | Disabled |

Linux Tuning

All Linux tunable parameters for the network driver are optimized for best performance using default values. For details on configuring the parameters in the following table, refer to the “Adapter Configuration” appendix in the *BR-Series Adapters Installation Guide*. [Table 4-2](#) provides default values for all Linux tunable parameters.

Table 4-2. Default Values for Linux Tunable Parameters

| Parameter | Default |
|--|-------------|
| Interrupt moderation | Enabled |
| Log Level | 3 |
| Jumbo packet size | 9,000 bytes |
| TCP=UDP checksum offload | Enabled |
| TCP Segmentation Offload (TSO) | Enabled |
| MSI-X (Message Signaled Interrupts Extended) | Enabled |

VMware Tuning

All VMware tunable parameters for the network driver are optimized for best performance using default values. For details on configuring the parameters in the following table, refer to the “Adapter Configuration” appendix in the *BR-Series Adapters Installation Guide*. [Table 4-3](#) provides default values for VMware tunable parameters.

Table 4-3. Default Values for VMware Tunable Parameters

| Parameter | Default |
|---|-------------|
| Jumbo Packet Size | 9,000 bytes |
| VLAN ID | Disabled |
| MSI-X (Message Signaled Interrupts Extended) | Enable |

Table 4-3. Default Values for VMware Tunable Parameters (Continued)

| Parameter | Default |
|--|----------|
| Interrupt Moderation (Set for receive interrupts) | On |
| NetQueue | Disabled |

Jumbo Packet Size

Recommendations to enhance performance

Increase throughput by setting MTU to 9000 bytes.

How to change values

Refer to instructions for Windows “network driver parameters” in “Adapter Configuration” appendix of the *BR-Series Adapters Installation Guide*.

NetQueue

NetQueue improves receive-side networking performance on servers in 10 Gigabit Ethernet virtualized environments. NetQueue provides multiple receive queues on the CNA or Fabric Adapter port configured in CNA mode, which allows processing on multiple CPUs to improve network performance.

MSI-X is an eXtended version of Message Signaled Interrupts defined in the PCI 3.0 specification. All BR-Series adapters support MSI-X, which helps improve overall system performance by contributing to lower interrupt latency and improved host CPU utilization. MSI-X is enabled by default in VMware ESX Server, and must remain enabled for NetQueue to function. Please make sure that `bnad_msix_disable=1` is not listed in VMware module parameters because that would disable NetQueue.

For the adapter driver, you cannot directly configure the number of NetQueue and filters per NetQueue. By default, these values are based on the number of receive queue sets used, which is calculated from the number of CPUs in the system.

Default value: Disable

Possible values: Enable, Disable

Recommendations to enhance performance

Enabling NetQueue utilizes multiple receive queues of the adapter, which can be handled by multiple CPUs on the host system, thus improving performance.

How to change values

Refer to instructions for Windows “network driver parameters” in “Adapter Configuration” appendix of the *BR-Series Adapters Installation Guide*.

References for More Tuning Information

Refer to the *10Gbps Networking Performance on ESX 3.5 Update 1* available through www.vmware.com.

Solaris Tuning

All Solaris tunable parameters for the network driver are optimized for best performance using default values. For details, refer to the “Adapter Configuration” appendix in the *BR-Series Adapters Installation Guide*.

For Solaris 10 and 11, you can enable support for jumbo packet frames and set the MTU size for these frames from 1,500 (default) to 9,000 bytes.

A Adapter BIOS and Event Message Reference

Adapter BIOS Messages

Table A-1 provides details on BIOS-related messages generated during operation of option ROM. The message, possible cause, and user action are provided.

Table A-1. Adapter BIOS Messages

| Message | Cause | Recommended Action |
|--|--|--|
| Adapter<no> : No firmware present. Skipping card | There is no boot firmware present on the card. | Download the latest boot code file for installed BR-Series adapters from your adapter's website. The boot code file is designated as: <code>brocade_adapter_boot_fw_v<x-y-z></code> where x-y-z is the version number. Update boot code on all the adapters in the system using instructions in the "Boot Code" chapter of the <i>BR-Series Adapters Installation Guide</i> . |
| Adapter<no> : Version mismatch: Card Ver<XXX>. Disabling BIOS | Current executing option ROM version is different from the one on the adapter. | Download the latest boot code file for installed BR-Series adapters from your adapter's website. The boot code file is designated as: <code>brocade_adapter_boot_fw_v<x-y-z></code> where x-y-z is the version number. Update boot code on all the adapters in the system using instructions in the "Boot Code" chapter of the <i>BR-Series Adapters Installation Guide</i> . |

Table A-1. Adapter BIOS Messages (Continued)

| Message | Cause | Recommended Action |
|---|---|---|
| Adapter<no> : No boot devices. Disabling BIOS | BIOS on this adapter is enabled, however no boot devices are configured. | If booting from this adapter is not required, then ignore this message. If booting from this adapter is required, perform the following steps: 1. Check if boot devices are configured through the QLogic BR-series BIOS Config Menu. If not, configure devices and try booting again. 2. In the zoning information on the switch, verify if the target's WWN are in the same zone as that of initiator's WWN. |
| Failed:<Disk: WWN<Target's PWWN> LUN<LUN Id>. Adapter<no> | This adapter is unable to connect to the configured boot device. This error message is displayed only when boot option is set to Flash Values through the QLogic BR-series BIOS Config Menu. | 1. Check the zoning information on the switch and verify if the target's WWN is in the same zone as the initiator's WWN. 2. Check that there is path configured between the initiator and the target boot device. |
| Adapter<no> : BIOS is disabled | BIOS is disabled for this adapter. | If booting through this adapter is desired, then launch the QLogic BR-series BIOS Config Menu by pressing Ctrl-B or Alt-B, then enable BIOS on the adapter port where connection is required. |
| Adapter<no> : Link initialization failed. Disabling BIOS | Unable to bring up the link for this adapter. | Check connectivity between the adapter port and the switch. |

Table A-1. Adapter BIOS Messages (Continued)

| Message | Cause | Recommended Action |
|---|--|---|
| Boot device discovery failed. Disabling BIOS. | The boot option is set to Fabric Discovered through the QLogic BR-series BIOS Config Menu, and the adapter is unable to discover any boot device. Possibly the configuration is not included on the switch or the target or LUN is missing. | If booting through this adapter is not desired, then ignore this message. If booting through this adapter is desired: 1. Launch the QLogic BR-series BIOS Config Menu by pressing Ctrl-B or Alt-B. 2. For the desired port, select Auto Discover for the Boot LUN field in the Adapter Settings menu. 3. Check if any boot devices are visible. If none are visible, then connect a boot device and repeat step 2. You should see the target and LUN information displayed during the discovery process. |
| QLogic BR-series BIOS installed successfully | This message displays if any adapters in the system are able to connect to a boot device. | None. |

Adapter Driver Event Messages

Table A-2 provides details on event messages generated by adapter drivers. These events display in host system logs and the QLogic HCM master log. Events are organized as originating from the network driver only, storage driver only, or network and storage driver.

Table A-2. Adapter Driver Event Messages

| Message | Severity | Event Type | Category | Sub Category | Cause | Action |
|--|-------------|----------------|--------------|--------------|--------------------------------|---------------------|
| Network Driver Events (CNAS only) | | | | | | |
| Base port link up: Hardware Address = [Base port MAC]. | Information | Network driver | 10 (EthPort) | Up | Base port Ethernet link is up. | No action required. |

Table A-2. Adapter Driver Event Messages

| Message | Severity | Event Type | Category | Sub Category | Cause | Action |
|---|-------------|----------------|--------------|--------------|--|---------------------|
| Base port link down: Hardware Address = [Base port MAC]. | Warning | Network driver | 10 (EthPort) | Down | Base port Ethernet link is down. | No action required. |
| Base port Ethernet Link is enabled: Hardware Address = [Base port MAC]. | Information | Network driver | 10 (EthPort) | Enabled | Ethernet port enabled by user. | No action required. |
| Base port link is disabled: Hardware Address = [Base port MAC]. | Warning | Network driver | 10 (EthPort) | Disabled | Ethernet port disabled by the user. | No action required. |
| Storage Driver Events | | | | | | |
| Authentication enabled for base port: WWN = [Base port WWN]. | Information | Storage driver | 8 (AUDIT) | Enabled | Authentication enabled by user command. | No action required. |
| Authentication disabled for base port: WWN = [Base port WWN]. | Information | Storage driver | 8 (AUDIT) | Disabled | Authentication disabled by user command. | No action required. |
| Fabric name changed for base port: WWN = [Base port WWN]. | Warning | Storage driver | 2 (PORT) | Changed | Fabric name changed for base port. | No action required. |

Table A-2. Adapter Driver Event Messages

| Message | Severity | Event Type | Category | Sub Category | Cause | Action |
|--|-------------|----------------|-----------|--------------|--|---|
| Logical port WWN: [logical port WWN], Role: [initiator, target, IPFC mode etc.] is deleted. | Information | Storage driver | 3 (LPORT) | Deleted | Logical port deleted. | No action required. |
| Logical port online: WWN = [logical port WWN], Role: [initiator, target, IPFC mode etc.]. | Information | Storage driver | 3 (LPORT) | Online | Logical port (base or logical) logged into fabric. | No action required. |
| Logical port taken offline: WWN = WWN = [logical port WWN], Role: [initiator, target, IPFC mode etc.]. | Information | Storage driver | 3 (LPORT) | Offline | Logical port (base or logical) logged out of fabric. | No action required. |
| Logical port lost fabric connectivity: WWN = [logical port WWN], Role: [initiator, target, IPFC mode etc.]. | Error | Storage driver | 3 (LPORT) | Offline | Logical port (base or logical) lost fabric connectivity. | Check switch and adapter configuration. |
| New logical port created: WWN = [logical port WWN], Role = [initiator, target, IPFC mode etc.]. | Information | Storage driver | 3 (LPORT) | Created | New logical port created. | No action required. |
| New virtual port created using proprietary interface: WWN = [logical port WWN], Role: [initiator, target, IPFC mode etc.]. | Information | Storage driver | 3 (LPORT) | Created. | New virtual port created. | No action required. |

Table A-2. Adapter Driver Event Messages

| Message | Severity | Event Type | Category | Sub Category | Cause | Action |
|---|-------------|----------------|-----------|--------------|--|---------------------|
| New virtual port created using standard interface: WWN = [logical port WWN], Role: [initiator, target, IPFC mode etc.]. | Information | Storage driver | 3 (LPORT) | Created | New virtual port created. | No action required. |
| QOS priority changed to [New QOS flow ID]: RPWWN = [Remote port WWN] and LPWWN = [Logical port WWN]. | Information | Storage driver | 4 (RPORT) | Changed | QOS priority changed. | No action required. |
| QOS flow ID changed to [New QOS flow ID]: RPWWN = [Remote port WWN] and LPWWN = [Logical port WWN]. | Information | Storage driver | 4 (RPORT) | Changed | QOS flow ID changed. | No action required. |
| Remote port (WWN = [remote port WWN] online for logical port (WWN = [logical port WWN]). | Information | Storage driver | 4 (RPORT) | Online | Login nexus established with remote port. | No action required. |
| Remote port (WWN = [remote port WWN]) offlined by logical port (WWN = [logical port WWN]). | Information | Storage driver | 4 (RPORT) | Offline | Login nexus with remote port terminated by logical port. | No action required. |

Table A-2. Adapter Driver Event Messages

| Message | Severity | Event Type | Category | Sub Category | Cause | Action |
|--|-------------|----------------|-----------|--------------|---|--|
| Remote port (WWN = [remote port WWN]) connectivity lost for logical port (WWN = [logical port WWN]). | Error | Storage driver | 4 (RPORT) | Offline | Login nexus with remote port is lost. | Check if remote port is having issues. |
| Target (WWN = [Target WWN]) is online for initiator (WWN = [Initiator WWN]). | Information | Storage driver | 5 (ITNIM) | Online | SCSI IT-Nexus established between initiator and target. | No action required. |
| Target (WWN = [Target WWN]) offlined by initiator (WWN = [Initiator WWN]). | Information | Storage driver | 5 (ITNIM) | Offline | SCSI IT-Nexus terminated by Initiator. | No action required. |
| Target (WWN = [Target WWN]) connectivity lost for initiator (WWN = [Initiator WWN]). | Error | Storage driver | 5 (ITNIM) | Offline | SCSI IT-Nexus terminated between initiator and target. | No action required. |
| Virtual port deleted using proprietary interface: WWN = [logical port WWN], Role: [initiator, target, IPFC mode etc.]. | Information | Storage driver | 3 (LPORT) | Deleted | Virtual port deleted. | No action required. |

Table A-2. Adapter Driver Event Messages

| Message | Severity | Event Type | Category | Sub Category | Cause | Action |
|---|-------------|----------------------------|-------------|--------------|---|--|
| Virtual port deleted using standard interface: WWN = [logical port WWN], Role: [initiator, target, IPFC mode etc.]. | Information | Storage driver | 3 (LPORT) | Deleted | Virtual port deleted. | No action required. |
| Virtual port login failed. Duplicate WWN = [logical port WWN] reported by fabric. | Warning | Storage driver | 3 (LPORT) | Failed | Duplicate WWN reported by fabric. | Delete this vport and create with a different WWN. |
| Virtual port (WWN = [logical port WWN]) login failed. Max NPIV ports already exist in fabric/fport. | Warning | Storage driver | 3 (LPORT) | Failed | Max NPIV ports already exist in fabric/fport. | Check fabric and fport configuration |
| Virtual port (WWN = %s) login failed. | Warning | Storage driver | 3 (LPORT) | Failed | Unknown error. | Check fabric/fport configuration. |
| Network and Storage Driver Events | | | | | | |
| Adapter removed: SN = [adapter serial number]. | Warning | Network and storage driver | 1 (Adapter) | Removed | Adapter removed. | Check PCIe connector and configuration. |
| Authentication successful for base port: WWN = [base port WWN or MAC]. | Information | Network and storage driver | 2 (Port) | Successful | Authentication successful. | No action required. |

Table A-2. Adapter Driver Event Messages

| Message | Severity | Event Type | Category | Sub Category | Cause | Action |
|--|-------------|----------------------------|----------|--------------|-------------------------------------|--|
| Authentication unsuccessful for base port: WWN = [base port WWN or MAC]. | Error | Network and storage driver | 2 (Port) | Failure | Authentication failure. | Mismatch of FC-SP configuration between switch and HBA. Also, check the authentication secret setting. |
| Base port enabled: Hardware Address = [base port WWN or MAC]. | Information | Network and storage driver | 2 (Port) | Enabled | Base port enabled by user command. | No action required. |
| Base port disabled: Hardware Address = [base port WWN or MAC]. | Warning | Network and storage driver | 2 (Port) | Disabled | Base port disabled by user command. | No action required. |
| Base port online: WWN = [Base Port WWN]. | Information | Network and storage driver | 2 (Port) | Online | Base port logged into fabric. | No action required. |
| Base port offline: WWN = [Base Port WWN]. | Warning | Network and storage driver | 2 (Port) | Offline | Base port logged out of fabric. | No action required. |

Table A-2. Adapter Driver Event Messages

| Message | Severity | Event Type | Category | Sub Category | Cause | Action |
|--|-------------|----------------------------|----------|--------------|---|---|
| Base port (WWN = [base port WWN or MAC]) lost fabric connectivity. | Error | Network and storage driver | 2 (Port) | Logout | Base port lost connection with fabric. | Check switch and HBA configuration. Also, check SFP transceiver and cable connection stand-up adapters. |
| Heart Beat of IOC [IOC instance number] is good. | Information | Network and storage driver | 9 (TOC) | Restart | Successful restart of firmware after a failure. | No action required. |
| Heart Beat of IOC [IOC instance number] has failed. | Critical | Network and storage driver | 9 (TOC) | Crash | Firmware not responding. | Collect all error information and restart the firmware. Invoke bfa_supportsave. |
| IOC [IOC instance number] is enabled. | Information | Network and storage driver | 9 (TOC) | Enabled | Adapter firmware started by user command. | No action required. |

Table A-2. Adapter Driver Event Messages

| Message | Severity | Event Type | Category | Sub Category | Cause | Action |
|--|-------------|---|-------------|--------------|---|--|
| IOC [IOC instance number] is disabled. | Warning | Network and storage driver | 9 (TOC) | Disabled | Adapter firmware stopped by user command. | No action required. |
| New adapter found: SN = [adapter serial number] base port WWN = [Base port WWN]. | Information | Network and storage driver | 1 (Adapter) | Added | Adapter added to host. | No action required. |
| New SFP transceiver found: port [base port number], Hardware Address = [Base port WWN or MAC]. | Information | Network and storage driver (stand-up adapters only) | 2 (Port) | Found | User plugged in an SFP transceiver. | No action required. |
| QoS negotiation failed for base port: WWN = base port WWN or MAC. | Warning | Network and storage driver | 2 (Port) | Failure | QoS negotiation failed. | Check switch and HBA configuration. |
| SFP transceiver removed: port [base port number], Hardware Address = [base port WWN or MAC]. | Warning | Network and storage driver (stand-up adapters only) | 2 (Port) | Removed | SFP transceiver removed. | Check if SFP transceiver is inserted properly. |

Table A-2. Adapter Driver Event Messages

| Message | Severity | Event Type | Category | Sub Category | Cause | Action |
|--|-------------|--|----------|--------------|--|--|
| SFP transceiver POM level to [aggregated SFP transceiver temperature, voltage, rx and tx power level]: port [base port number], Hardware Address = [base port WWN or MAC]. | Warning | Network and storage driver (stand-up adapters only) | 2 (Port) | Unhealthy | Change of current value against threshold of temperature, voltage and rx/tx power of SFP transceiver. Pluggable optical module (POM) plugs into the SFP transceiver. | If POM level is not normal, check the SFP transceiver. |
| Network Intermediate Driver Events | | | | | | |
| VLAN id = # added/enabled on port mac = # | Information | Intermediate driver | VLAN | | New VLAN created. | No action required. |
| New VLAN id = # removed/disabled from port mac = #. | Warning | Intermediate driver | VLAN | | Existing VLAN deleted. | No action required. |
| New VLAN id = # added/enabled on mac = # | Information | Intermediate driver | VLAN | Team | New team VLAN created. | No action required. |

Table A-2. Adapter Driver Event Messages

| Message | Severity | Event Type | Category | Sub Category | Cause | Action |
|--|-------------|---------------------|----------|--------------|---|---------------------|
| New VLAN id = # removed/disabled from mac = #. | Warning | Intermediate driver | VLAN | Team | Existing team VLAN deleted. | No action required. |
| New team mac =# created/enabled. | Information | Intermediate driver | Team | | New team created. | No action required. |
| Team mac = # deleted/disabled. | Warning | Intermediate driver | Team | | Existing team deleted. | No action required. |
| A port is added to team mac = #. | Information | Intermediate driver | Team | | An Ethernet port is added to an existing team. | No action required. |
| A port is removed from team mac = #. | Warning | Intermediate driver | Team | | An Ethernet port is removed from an existing team | No action required. |
| Active port has changed in team mac = # | Information | Intermediate driver | Team | | An ethernet port has become primary in the team. | No action required. |

B QLogic HCM and Installer Message Reference

<http://www.microsoft.com/downloads/details.aspx?FamilyID=95ac1610-c232-4644-b828-c55eec605d55&displaylang=en>

This appendix provides details on messages that display during operation of the QLogic Host Connectivity Manager (HCM) and QLogic Adapter Software Installer program. The following tables in this appendix provide reasons why these messages display and actions that you should take to resolve any problems associated with the messages:

- **Table B-1** provides details on messages that display during operation of the QLogic Host Connectivity Manager (HCM). Causes for each message and actions that you should perform are provided.
- **Table B-2** provides details on messages that display during operation of the QLogic Adapter Software Installer program. Causes for each message and actions that you should perform are provided.

Table B-1. Host Connectivity Manager Messages

| Message | Cause | Corrective Action or Notes |
|--|--|--|
| A maximum of eight ports are allowed in a team. | Occurs when the user tries to create a team with more than eight ports. | Create a team with eight or fewer ports. |
| A maximum of three IP addresses are allowed. | Occurs when more than three IP addresses are entered in the Syslog Server Configuration dialog box. | Configure three or less IP addresses. |
| Add Team failed. <Runtime Reason> | Occurs when addition of team failed due to runtime error. | <ul style="list-style-type: none"> ■ Refer to the runtime reason. ■ Refer to QLogic HCM logs. ■ Verify if the team was already added. |
| Add Team failed. Given adapter is part of another Team or VLANS exist. | Occurs when the user tries to create a team using an adapter for which are VLANS configured. | Do not create team when VLANS are configured. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|--|--|--|
| After driver file upload, older agent is stopped. Driver update is started. | Older Agent stops after the driver upload. | Information message. |
| Add Team failed due to an unexpected error. <Runtime Reason> | Adding a team failed due to an unexpected error. | Determine why the error happens when adding a team. |
| All pending test(s) will be stopped. Started test(s) will continue to run until they are finished. Do you really want to close the window? | Occurs when the user stops a diagnostics test before it finishes. | Do not stop the test until it finishes. |
| All statistics data displayed here will be lost if you do not save them. Do you want to proceed? | Occurs when the user closes the any Statistics dialog box. | Information message. |
| Are you sure you wish to clear the selected Name(s)? | Occurs when the user deletes the names in Configure Names using the Remove option. | Select Yes to delete the selected name and no , to not delete the selected name. |
| Authentication failed. | Occurs when adapter's authentication policy (CHAP secret, group, or algorithm) does not match with switch's authentication policy. | Enter the same authentication policy as the switch. |
| Backup data failed. <Runtime Reason> | Occurs when user tries to back up the data and the process of backup failed. | Error message. Backup failed in Runtime. |
| Backup data successfully completed. | Occurs when the data backup successfully completes. | Information message. |
| Backup of VLAN and Team configurations is successful. | Occurs when the user clicks on the Backup VLAN and Team menu item in Tool menu. | Information message. |
| Backup of VLAN and Team configurations is failed. <Runtime Reason> | Occurs when the user clicks on the Backup VLAN and Team menu item in Tool menu. | Error message. Backup failed in Runtime. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|---|--|---|
| Backup is in progress. Please wait. | Occurs when the user initiates a backup operation using HCM Backup dialog box. | |
| Beaconing operation failed | Occurs in many cases. One case is if the user performs beaconing operation for a disabled port, the message "Port is not online Beaconing operation failed" displays. | Beacon port and beacon link for valid ports. |
| Boot image update is in progress. Do not close the dialog. | Occurs when user clicks the 'X' button in the Update Boot Image dialog box while the boot image update is in progress. | Information message. |
| Cannot connect to the server. Update failed. | Occurs when the user attempts operation in Basic Port Configuration , Advanced Port Configuration , or a Reset operation in a Statistics dialog box when the agent is not running. | Check if agent is still running. |
| Cannot get Teaming statistics for this host. No Teaming configured. | Occurs when the user launches the Teaming Statistics dialog box when there are no teams configured in the host. | Error message. Teams must be configured before using this dialog box. |
| Cannot find the adapter. Try again later. | Occurs when user enables or disables the adapter in the following scenario. <ol style="list-style-type: none"> 1. QLogic HCM discovers the adapter and places it into the product tree. 2. Another user removes the adapter before the next discovery. 3. User now tries to enable/disable the adapter. | Refresh the product tree and check if the adapter is still available. |
| Choose any of the event severity levels to filter. | Occurs when the user selects an event severity level, and then clicks OK in the Master Log Filter dialog box. | Select at least one severity level (such as major or minor), and then click OK in the Master Log Filter dialog box. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|--|--|--|
| Clear Filter cannot be performed while the Event Properties dialog is open. | Occurs if the Event Properties dialog is kept open and the user clicks Clear Filter . | Close the Event Properties dialog box, and then click Clear Filter to clear configured filters. |
| Could not validate the selected file as it does not have meta data information. Are you sure you want to continue? | Occurs when the meta data information is missing in the driver file. | Download a new driver and try again. |
| Dialog cannot be closed since the driver update\no-operation is in progress. | Occurs when the driver update or no-operation is in progress. | Information message. |
| Data Pattern for PCI Loopback Test cannot be empty. Enter valid data. | Occurs when the Data Pattern field is left empty while executing a PCI loopback Test. | Error message. |
| Data has been entered in preparation for adding a name but the name was not added. Do you want to add that name before you exit? | Occurs when user configures names in the following scenario. <ol style="list-style-type: none"> 1. Modifies name of any adapter or port 2. Enters WWN and name values in the Detached WWN/MAC and Name fields 3. Clicks OK. | Verify if the detached WWN/name is to be added to QLogic HCM alias store. If yes, click Yes to add or No . |
| Driver update is completed. | Occurs when the driver update has completed. | Information message. |
| Driver update is failed | Occurs when the driver update fails. | Information message. |
| Driver update is successful. | Occurs when the driver update is successful. | Information message. |
| Driver update is success. New agent {0} is up. | Occurs when the driver update is success and the new agent is running. | Information message. |
| Duplicate File: <Export File Name>. Do you want to replace the file? | Occurs when the user exports names to a file that already exists. | Try to export the names with a different file name. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|--|---|---|
| Duplicate names still exists. Click cancel to discard duplicated names. Do you want to continue? | Occurs when the user selects Cancel button in Duplicated Names dialog box without making any changes. | Information message. |
| Enter a valid host name or IP address | Occurs when the user clicks Add button in the Syslog Server Configuration dialog box without providing any host name or IP address or by providing an invalid host name or IP address. | Enter a valid host name and IP address in the host name field of the Setup for Discovery dialog box. Enter a valid host name/IP address in the Host name/IP address field of Syslog Server Configuration dialog box. |
| Enter a valid number for the test cycle. | Occurs when invalid number is provided in Test Cycle field. | Enter a valid number within the limit for the test cycle. |
| Event Filter cannot be launched while the Event Properties dialog is open. | Occurs when the user tries to launch the Master Log Filter dialog box while the Event Properties dialog box is open. | Close the Event Properties dialog box, and then launch the Master Log Filter dialog box. |
| Failed to connect to the Agent | Occurs when the agent connection is lost. | Start the QLogic HCM agent service, and then proceed. |
| Failed to create virtual port: | Occurs when there is a error while creating virtual ports. | Determine why the error happens when creating a virtual port. |
| Failed to refresh the team data due to an unexpected error. <Runtime Reason> | Occurs when an error occurs while refreshing the team data. | Determine why the error happens, and then proceed. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|--|---|---|
| Failed to restore the VLAN and Team configurations. Reason: Caused by no saved configurations. | Occurs when there is VLAN/Teaming configuration file is not present to restore when user clicks Tool > Restore Data > VLAN and Team . | The VLAN and Teaming configuration save only occurs during installation or upgrade of network or intermediate drivers through the QLogic Adapters Software Installer. There must be a saved configuration for a successful restore. |
| Failed to restore the VLAN and Team configurations. <Runtime Reason> | Occurs when the restore of VLAN and Team configuration fails in QLogic HCM. | Retry the operation. |
| Fibre Channel Trunking cannot be enabled on the adapter {0} while QoS or TRL is enabled on the port {1}. | Quality of Service (QoS) or Target Rate Limiting (TRL) is enabled on an associated port. | Make sure QoS or TRL is disabled in any of the associated ports. |
| Found duplicate name(s). Please resolve. | Occurs when the user selects User/Administrator will manually fix option in the Duplicated Names dialog box and does not provide a unique name. | Provide a unique name in the Duplicated Names dialog box. |
| Frame Count for PCI Loopback Test cannot be empty. Enter valid data. | Occurs when the Frame Count field is left empty while executing a PCI loopback test. | Error message. |
| Import of Names is complete, <Count> name(s) failed to import due to invalid WWW/MAC Address | Occurs when user imports the names file with invalid WWNs or MAC addresses. | Verify that all the WWNs and MAC addresses in the names file are valid. |
| Installation is not complete beyond the timeout value. Closing the driver update operation. | Occurs when the installation has not completed and the timeout value is reached. | Information message. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|---|--|--|
| Invalid time range. Enter a valid time range. | Occurs when the user enters an invalid time range in the Masterlog Log Filter dialog box. | Enter a valid time range and collect the events logged for that time. |
| IOC for Port 1 will be disabled to enable trunking. Do you want to proceed? | Occurs when the user tries to enable trunking on the adapter. | Warning that selected port's IOC will be disabled when you enable trunking. |
| Log Invalid cannot be configured as Eth logging level. | Occurs when the user selects Log Invalid from the Eth Logging Level menu in the Basic Port Configuration dialog box. | Set valid logging level and proceed. |
| Log Invalid cannot be configured as Port logging level. | Occurs when the user selects Log Invalid from the Port Logging Level menu in the Basic Port Configuration dialog box. | Set valid logging level and proceed. |
| Loopback test cannot be performed on pre-boot disabled port | Occurs when user executes loopback test for preboot disabled port. | Make sure the preboot port is in enabled state and then execute the loopback test |
| Member not found. Team modification failed. | Occurs when user modified a team while another user removes the respective adapter. | Verify whether the adapter still exists in the host. |
| Modify Team failed due to an unexpected error. <Runtime Reason> | Occurs when a runtime error happens while modifying the team. | Determine why the error occurs. |
| Name should start with an alphabet. Allowed characters are 0-9, A-Z, a-z, hyphen (-) and underscore (_) and should not exceed 15 characters | Occurs when user provides a invalid name with special characters other than hyphen and underscore or name with more than 15 characters. | Enter a valid name which does not include any special character, other than hyphen and underscore, and is not more than 15 characters. |
| New password should not be blank. | Occurs when New Password field is left blank. | Enter a password in the New Password field and proceed |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|--|---|--|
| No configurations need to be saved | Occurs when the user selects Apply on the VLAN Configuration or Teaming Configuration dialog box without making any modifications. | Information message. Nothing was configured, so nothing will be saved. |
| No item found | Occurs when the user searches for a WWN/MAC/name that does not exist using the search option in the Configure Names dialog box. | Provide an existing WWN/MAC/name when searching. |
| No Team for deleting | Occurs when the user selects Delete when there is no team configured. | Information message. |
| No tests have been selected. Select one or more tests. | Occurs when the user clicks Start without selecting any test. | Select a test, and then click Start . |
| Password cannot be blank. | Occurs when the Password field is left blank. | Enter a valid Password in the password field. |
| Password changed for agent. | Occurs when password is changed. | Information message. |
| Password has been successfully changed. | Occurs when password is changed successfully. | Information message. |
| Please assign at least one port for a Team | Occurs when the user clicks on Apply or Ok without selecting a port while creating or editing a Team configuration. | Be sure to selected a port when creating or editing a team. |
| Please select a Team | Occurs when the user selects Statistics or Delete without selecting a team. | Select at least one port while creating or editing a team. |
| Please select a VLAN | Occurs when the user selects Edit or Remove in the VLAN Configuration dialog box without selecting a VLAN. | Select a VLAN for editing or deleting in the dialog box. |
| Please type the same CHAP Secret. | Occurs when a different CHAP secret is entered in the Retype Secret field. | Enter the same CHAP secret in both the CHAP Secret and Retype Secret fields. |
| Please type a different password. | Occurs when user types in same value for old and new password fields. | Enter a different password other than old password. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|---|--|--|
| Remove Team failed due to an unexpected error. <Runtime Reason>. | An unexpected error occurred while removing a team. | Determine why the error happens when removing a team. |
| Port update failed for port. <Runtime reason> | Occurs when port configuration fails. | Verify if the agent is active. |
| Port <WWN> parameters update succeeded. Note: Setting will be enforced after port disable and enable. | Occurs when user makes configuration changes and clicks Apply to save the configurations. | Information message. |
| Provide a port number in the range [1025-65535]. | Occurs when the user provides a port number out of the range (1025-65535) in the Setup for Discovery dialog box. | Enter a port number between 1025 and 65535. |
| QoS and Target rate limiting cannot be enabled at the same time. | Occurs when QoS and target rate limiting are enabled at the same time in the Basic Port Configuration dialog box. | Do not enable QoS and target rate limiting at the same time. |
| Refresh cannot be performed while the Event Properties dialog is open. | Occurs when the Event Properties dialog box is kept opened and the user tries to refresh the master log. | Close the Event Properties dialog box, and then click Refresh to display updated values. |
| Restore data is in progress. Please Wait. | Occurs when the user initiates a restore data operation using the Restore data dialog box. | Information message. |
| Restore data is successfully completed. Please restart HCM for new data to take effect. | Occurs upon successful restore of backed-up QLogic HCM data. | Information message. |
| Select a valid driver file. | Occurs when driver file field is left blank. | Select the appropriate driver file. |
| Selected driver file version {0} is not supported. | Occurs when the selected driver version is not supported. | Use a supported driver. |
| Starting the driver update... | Occurs when the driver update starts. | Information message. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|---|---|---|
| Successfully updated the parameters for all ports. | Occurs when the configurations done in the Basic Port Configuration dialog box are successfully updated using the Apply button. | The configuration will be reflected only after a successful process. |
| Syslog configuration failed | Occurs when the user tries to configure a syslog server using the Syslog Server Configuration dialog box. | Retry the operation. |
| System reboot is required for the newer driver to take effect | Occurs when the driver update is complete. A system reboot is required for the new driver to take effect. | Information message. |
| Team name should start with an alphabet. Allowed characters are 0-9, A-Z, a-z, hyphen (-) and underscore (_) and should not exceed 31 characters. | Occurs when the user provides an invalid team name. | Make sure the team name starts with a letter. Allowable characters in the team name are 0-9, A-Z, a-z, hyphen (-) and underscore (_). |
| The adapter will be disabled for executing the Memory test. This will also disable all the ports and their devices on the adapter. Are you sure you want to continue? | Occurs when the user selects the Memory test in the Hardware Tests Diagnostics dialog box. | Click OK to proceed or Cancel to cancel the operation. |
| The boot image update failed: <Runtime Reason> | Occurs when a invalid boot code image file is updated. | Select a valid boot image file for the boot image update. |
| The boot image successfully updated. You must reboot the system for the updated image to be effective. | Occurs when the boot code image is updated successfully. | After successful boot image update, reboot the system. |
| The change has not been sent to device. Do you want to commit the change? | Occurs when user clicks on OK in the Basic Port Configuration dialog box after making configuration changes. | Select to commit the change or to not commit the change. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|---|---|--|
| The changes will take effect only on port reset. | Occurs when the user adds a new authentication policy or edits the existing authentication policy in the Fibre Channel Security Protocol dialog box. | Information message. |
| The CHAP Secret and Retype Secret fields must have at least 8 alphanumeric characters. | Occurs when the secret key provided in the CHAP Secret and Retype CHAP Secret fields are less than eight alphanumeric characters. | Provide a proper secret key which has at least 8 alphanumeric characters. |
| The External Loopback Test requires a plugged-in loopback cable; otherwise, the test will fail. | Occurs when the user selects external loop back test. | Plug in a loopback cable, and then run external loopback test to complete it successfully. |
| The file "{0}" does not exist | Occurs when file in the driver file field does not exist. | Select an existing driver file. |
| The following VLAN operation(s) failed: <VLAN operation>:<Runtime Reason> | An error occurs while creating or deleting a VLAN. | Determine the problem with creating or deleting a VLAN, and then proceed. |
| The Name is already in use. Enter a different name or clear the existing name. | Occurs when the user enters duplicate name in Configure Names or Define Names dialog box. | Provide unique names in these dialog boxes. |
| The operation will take effect after you click OK or Apply on the Configuration dialog. | Occurs when the user makes configuration changes in the Basic Port Configuration dialog box and clicks Apply or OK . | Clicking Apply or OK will make the configuration changes. |
| The specified file is not a valid file to import. | Occurs when invalid file is imported through the Configure Names dialog box. | Import a valid file with appropriate data in the Configure Names dialog box. |
| The team name is duplicated. Please enter a qualified Team Name. | Occurs when the user tries to add a team with existing team name. | Provide different name for the new team. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|--|---|---|
| The virtual node WWN is not valid. Enter a valid Node WWN. | Occurs when the user enters a invalid WWN in the Virtual Port Creation dialog box. | Provide valid WWN. |
| The virtual port is a duplicate. Enter a valid WWN. | Occurs when the user enters a duplicate virtual port WWN in the Virtual Port Creation dialog box. | Provide a unique virtual port WWN. |
| The VLAN name is reserved. Please choose a different one. | Occurs when the name provided for a VLAN is already reserved. | Use a unique name for the VLAN. |
| The WWN or MAC address already exists in the All WWNs/MACs table. Edit the existing record(s). Record(s) with the same WWN address are highlighted. | Occurs when user enters a WWN or MAC address which is already present the WWN/MAC field in the Define Names dialog box. | Check the same WWN or MAC address is available in the WWNs/MAC view of the Configure Names dialog box. Enter a different WWN or MAC address. |
| There are VLANs associated with the port you have selected to be added as a member of the team. If you add the port, all associated VLANS will be removed. Are you sure you want to add this port to the team and remove all associated VLANs? | Occurs when the user creates a team with a port for which a VLAN is already configured. | Remove the VLAN configured for the port, and then try creating a team with that port. |
| This action resets all listed counters. Do you want to continue? | Occurs when the user selects Reset on a Statistics dialog box. | Select Yes to reset all the counter values in the dialog box. |
| Unexpected Error. Test(s) will be stopped. | Occurs when the user tries to execute the diagnostics test when the agent is stopped. | Start the agent, and then execute the diagnostics test. |
| Unexpected Error. eth Loopback Test will be stopped. Please contact the technical support | Occurs when the user executes the loopback test for a port and connection is lost. | Verify the connection, and then proceed with loopback test. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|--|--|--|
| Unable to find the host. Please provide another host. | Occurs when an invalid host name or IP address is given in Host Name field in the Setup for Discovery dialog box. | Enter a valid host name or IP address in the Host Name field. |
| Unable to extract the driver file {0}. | Occurs when the driver cannot be extracted. | |
| Unable to find the host. Please provide another host. | Occurs when link local ipv6 address (such as fe80:216:cbff:fea9:c3b5%en0 or fe80:216:cbff:fea9:c3b5%3) is provided in the Setup for Discovery dialog box. | Provide the IPv6 address without using the scope-id and the delimiter (%). Just use fe80:216:cbff:fea9:c3b5. |
| Unable to retrieve the driver update status. | Occurs when the driver update status cannot be retrieved. | Information message. |
| Update is not started beyond the timeout value. Closing the driver update operation. | Occurs when the driver update did not start the timeout value was reached. | Information message. |
| Uploading of the driver file is failed. | Occurs when driver file upload failed to Agent host. | Information message. |
| Uploading of the driver file is failed. Reason - Maintenance mode is not enabled or could not be determined. | ESX systems must be in maintenance mode to update drivers. | Place system in maintenance mode and reinstall driver(s). |
| Uploading the driver file to the agent {0} | Occurs when QLogic HCM GUI uploads the driver file to the agent. | Information message. |
| Uploading the driver file is successful. | Occurs when driver file uploaded successfully to the Agent host. | Information message. |
| VLAN and Team configurations successfully restored. | Occurs when the VLAN and Team configurations are successfully restored in QLogic HCM. | Information message. |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|---|--|--|
| <WWN> is an invalid WWN or MAC | Occurs when the user adds a invalid WWN (for example, 00:00:00:00:00:00:00) or invalid MAC address (for example, 00:00:00:00:00:00) in the Detached WWN/MAC field or Configure Names dialog box. | Add a valid WWN or MAC address in the Detached WWN/MAC field or Configure Names dialog box. Provide a valid MAC address in the Detached WWN/MAC field. |
| You are going to stop the pending test(s) only. All Started test(s) will continue to run. Are you sure you want to continue? | This occurs when the user stops a diagnostics test before it finishes. | Information message. |
| You are about to delete a large number of virtual port(s). Are you sure you want to continue? | Occurs when user deletes virtual ports the Virtual Port Deletion dialog box were configured using QLogic HCM and QLogic BCU CLI. | Information message. |
| You are about to delete all the test logs. Are you sure you want to continue? | Occurs when the user selects a test log and selects option to clear the log. | Warning. This clears all the test logs. |
| You are about to disable the Port <WWN>. This will disable all the devices on this Port. Are you sure you want to continue? | Occurs when port is disabled from the right- click drop down menu for the port and in the Basic Port Configuration dialog box. | Warning that disabling the port will disable all the devices on the port. Confirm that you wish to do this. |
| You are about to send the information to the agent. Do you want to proceed? | Occurs when the user performs actions in the Configure Names dialog box and selects OK or Apply . | Either select Yes to save all configurations or No to discard configurations. |
| You are about to update boot image to all Adapters. Are you sure you want to continue? | Occurs when the user clicks OK to update the boot code image for all installed adapters. | Information message. |
| You did not select any virtual port. Select one or more virtual ports. | Occurs when the user selects Apply on the Virtual Port Deletion dialog box without selecting any virtual ports. | Select the desired virtual ports, then select Apply . |

Table B-1. Host Connectivity Manager Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|---|---|--|
| You do not have write permission to export file to the folder <path> | Occurs when user tries to export a names file to a folder where access is denied. | Make sure the folder has write permission and then export names file to that folder. |
| You have unsaved configurations. Do you want to save the previous configurations? | Occurs when the user removes, adds, or edits VLANS in the VLAN Configuration dialog box, and then clicks Cancel . | Either select Yes to save the unsaved configurations or No not to save the unsaved configurations. |

Table B-2 provides details on messages that display during operation of the QLogic Adapter Software Installer program. Causes for each message and actions that you should perform are provided.

Table B-2. QLogic Adapter Software Installer Messages

| Message | Cause | Corrective Action or Notes |
|---|---|---|
| <p>A newer version of the product <VERSION> is already installed in this system. Downgrading to an older version is not allowed. Installer will quit now. Please refer to the Installation and Reference manual for the recommended downgrade procedure.</p> | <p>Occurs when there is a new version of the software installed already in the system and you try to downgrade with an older version.</p> | <p>The installer quits the installation.</p> <p>Install the latest software for the installed adapter.</p> |
| <p>Could not proceed with the Installation of driver as the below Hot Fixes are missing <HOT FIX MISSING INFO></p> <p>Please download the Hot Fix from the below website and retry installation of driver http://www.microsoft.com/downloads/en/default.aspx</p> | <p>Occurs when a hot fix is missing in Windows systems.</p> | <p>Download the hot fix and install the hot fix, and then try installing the software.</p> |
| <p>Default module loading setting</p> <p>The Driver module was not loaded because of the variable "LOAD_UNSUPPORTED_MODULES_AUTOMATICALLY" in /etc/sysconfig/hardware/config file is set to "no", please change it to "yes" and retry the installation.</p> | <p>Occurs when the variable "LOAD_UNSUPPORTED_MODULES_AUTOMATICALLY" in /etc/sysconfig/hardware/config file is set to "no".</p> | <p>Change the "No" to "Yes" in variable "LOAD_UNSUPPORTED_MODULES_AUTOMATICALLY" located in /etc/sysconfig/hardware/config file then proceed with installation.</p> |
| <p>Default module loading setting</p> <p>The Driver module was not loaded because of the Variable "allow_unsupported_modules" in /etc/modprobe.d/unsupported-modules file is set to "0", please change it to "1" and retry the installation.</p> | <p>Occurs when the variable "allow_unsupported_modules" in /etc/modprobe.d/unsupported-modules file is set to "0"</p> | <p>Change the "0" to "1" in variable "allow_unsupported_modules" located in /etc/modprobe.d/unsupported-modules file then proceed with installation.</p> |

Table B-2. QLogic Adapter Software Installer Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|---|--|--|
| Default module loading setting Variable "LOAD_UNSUPPORTED_MODULES_AUTOMATICALLY" in /etc/sysconfig/hardware/config file is set to "no", please change it to "yes" before continuing installation otherwise the driver module will not be loaded. | Occurs when the variable "LOAD_UNSUPPORTED_MODULES_AUTOMATICALLY" in the /etc/sysconfig/hardware/config file is set to "no". | Change the "No" to "Yes" in variable "LOAD_UNSUPPORTED_MODULES_AUTOMATICALLY" in /etc/sysconfig/hardware/config file then continue installation. |
| Disk space calculation Available space is <Available space>. Please free up at least 50 MB in /opt and re-attempt the installation. | Occurs when the available space in /opt is less than 50MB. | Free at least 50MB in /opt, and then try installation. |
| Do you want to back up the HCM configurations? Configurations are stored in data directory. <Three buttons displays like Don't Backup, Backup and Cancel> | Occurs when you remove the application. | If you want to back up the data, click on "Backup" or else click "Don't backup." |
| File backup Successfully backed up <brcd_initrd_backup_filename> in /boot. | Occurs when Initrd file is backed up successfully in /boot. | No action required. |
| File backup There is a back up file <brcd_initrd_backup_filename> already available in /boot. Do you want to overwrite? | Occurs when a backup file named <brcd_initrd_backup_filename> is already available in /boot | When user wish to overwrite the existing backup file press "Yes" else "No" |
| Found Backed up data. Backed up configuration directory of HCM <backedup_gui_version> dated <Backup_Date> is found at <Backup_Directory>. Do you want to restore old configurations? | Occurs during the course of installation when a backup data is already present in the system. | If the user wishes to restore the backed-up data, the user can give "Yes" else "No" |

Table B-2. QLogic Adapter Software Installer Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|---|--|---|
| <p>No matching binary rpm found</p> <p>Do you want to install noarch rpm?</p> <p>Note:</p> <ul style="list-style-type: none"> - noarch rpm is not recommended for RHEL/SLES. - noarch rpm requires kernel devel/source rpm and GCC. | Occurs when a matching binary rpm is not found. | Click Yes to proceed with the installation using the noarch rpm or click No to stop installation. |
| <p>Path is not Valid.</p> <p>You have entered an invalid backup output directory. Please make sure the directory path is correct.</p> | Occurs if provide an invalid path name or leave the path field blank. | Enter a valid path to backup the files. |
| <p>Pre-Installation Message</p> <p>It is strongly recommended that you quit all HCM application running on this machine before continuing with the Upgrade/Reinstall.</p> | Occurs after the upgrade/reinstall message. | Stop QLogic HCM from running before upgrading or reinstalling the software. |
| Pre-requisite check is done... | Occurs when driver's pre-requisite check is completed. | Information message. |
| <p>Pre-Uninstallation Message</p> <p>It is strongly recommended that you quit all HCM application running on this machine before continuing with the Upgrade/Reinstall.</p> | Occurs during removing the QLogic HCM application. | Close QLogic HCM or the installer will close it before proceeding with software removal. |
| Please free up at least 50MB in the /opt directory and try the installation again. | Occurs when the space in the /opt directory is less than 50MB. | Free at least 50MB and then proceed with installation. |
| <p>ReStart Message For Solaris</p> <p>SUCCESSFUL installation of Driver may require System</p> | Occurs in all Solaris systems when the driver is installed successfully. | Restart the system to complete installation. |
| <p>ReStart Message For Linux</p> <p>Please reboot your system for the new driver to get loaded.</p> | Occurs when the driver is installed successfully on Linux systems. | Restart the system to complete installation. |

Table B-2. QLogic Adapter Software Installer Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|---|--|--|
| ReStart Message For Solaris SUCCESSFUL uninstallation of driver may require System | Occurs for Solaris systems when the driver is successfully removed. | Restart the system to complete removal. |
| ReStart Message For Linux SUCCESSFUL uninstallation of driver may require System | Occurs on Linux systems when the driver is successfully removed. | Restart the system to complete removal. |
| System dependencies not available. GCC and Kernel rpms are required for installing Storage and Network Driver and HCM and Storage and Network Driver. Variable "LOAD_UNSUPPORTED_MODULES_AUTOMATICALLY" in /etc/sysconfig/hardware/config file is set to "no", please change it to "yes" before continuing installation otherwise the driver module will not be loaded. | Occurs when you install a drivers on a Linux system that does not contain GCC and Kernel rpm and when the variable "LOAD_UNSUPPORTED_MODULES_AUTOMATICALLY" in /etc/sysconfig/hardware/config file is set to "no". | Change the "No" in variable "LOAD_UNSUPPORTED_MODULES_AUTOMATICALLY" present in /etc/sysconfig/hardware/config file to "Yes." Load the GCC and Kernel rpms onto the system and install the drivers. |
| System dependencies not available. GCC and Kernel rpms are required for installing Storage and Network Driver and HCM and Storage and Network Driver. Variable "allow_unsupported_modules" in /etc/modprobe.d/unsupported-modules file is set to "0", please change it to "1" before continuing installation otherwise the driver module will not be loaded. | Occurs when you install drivers on a Linux system that does not contain the GCC and kernel rpm and when the variable "allow_unsupported_modules" in /etc/modprobe.d/unsupported-modules file is set to "0" | Change the "0" in variable "allow_unsupported_modules" present in /etc/modprobe.d/unsupported-modules file to "1." Load the GCC and Kernel rpms on the system, and install the drivers. |
| System dependencies not available. GCC and Kernel rpms are required for installing Storage and Network Driver and HCM and Storage and Network Driver. | Occurs when you install drivers on Linux systems that do not contain the GCC and Kernel rpm. | Load the GCC and kernel rpms on the system and then install the drivers. |

Table B-2. QLogic Adapter Software Installer Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|--|--|---|
| <p>The following component(s) exist in your system.</p> <p>Product : <Already installed version></p> <p><Components list displays with tabular format></p> <p>HCM/ configuration preference</p> <p>- option 1 -> Install with existing configuration</p> <p>- option 2 -> Install with default configuration</p> <p><Two buttons displays like Continue, Exit></p> | <p>Occurs when you try to overwrite currently installed software with a newer version.</p> | <p>Select whether you want to install software using the default configuration or the configuration that exists for the currently installed software.</p> |
| <p>The following component(s) exist in your system.</p> <p>Product : <Installer Driver Name></p> <p><Components list displays with tabular format></p> <p><Two buttons displays like Continue and Exit ></p> | <p>Occurs when a driver was installed using native installer scripts or system commands and you are trying to overwrite with a newer driver.</p> | <p>Continue installing new components or exit the installation.</p> |
| <p>Unable to start the driver update.</p> | <p>Occurs when driver update not able to start.</p> | <p>Information message.</p> |
| <p>VLAN ID cannot be empty. Enter a valid VLAN ID.</p> | <p>Occurs when the user add a new VLAN without providing a VLAN ID in the VLAN Configuration dialog box.</p> | <p>Provide a valid VLAN ID while creating VLAN.</p> |
| <p>Warning message</p> <p>If booting over QLogic BR-series HBA, you must have a version of driver installed before you restart the system.</p> | <p>Occurs on Linux systems during removal of driver or QLogic HCM and driver.</p> | <p>If booting a BR-Series Host Bus Adapter, make sure driver is installed in the system before rebooting.</p> |

Table B-2. QLogic Adapter Software Installer Messages (Continued)

| Message | Cause | Corrective Action or Notes |
|---|--|--|
| <p>Would you like to overwrite the existing driver?</p> <p>The adapters on the system have a better driver version than the one you are trying to install.</p> <p>Click OK to continue.</p> | <p>Occurs when the system has a better driver version than the one you are installing.</p> | <p>If you want to overwrite the existing driver, click OK to continue.</p> |

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