



Marvell® QLogic® QConvergeConsole Plug-ins for vSphere

2500, 2600, 2700, and 2800 Series Marvell QLogic Fibre Channel Adapters
3400, 41000, and 45000 Series Marvell FastLinQ Intelligent Ethernet Adapters
8300, 8400, 41000, and 45000 Series Marvell FastLinQ Converged Network Adapters

User's Guide

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Preface

This preface lists the supported products, specifies the intended audience, explains the typographic conventions used in this guide, lists related documents, provides technical support and contact information, and describes legal notices.

Supported Products

This user's guide provides information on installing and using the QConvergeConsole® VMware® vSphere Client Plug-in.

- The QConvergeConsole VMware vSphere Client Plug-in extends the capabilities of VMware vCenter Server, giving you the ability to manage adapters from Marvell installed in VMware ESX® and ESXi™ hosts using an intuitive, graphical interface. The QConvergeConsole vSphere Client Plug-in supports the following Marvell adapters:
 - ❑ 2500, 2600, 2700, and 2800 Series Fibre Channel Adapters
 - ❑ 3400, 578xx, 41000, and 45000 Series Intelligent Ethernet Adapters
 - ❑ 8300, 8400, 578xx, 41000, and 45000 Series Converged Network Adapters

The interface and features of QConvergeConsole vSphere Client Plug-in are modeled on the QConvergeConsole tool, which is used in non-VMware environments for management of Marvell adapters. For more information, see the following links:

vCenter Server: <http://www.vmware.com/products/vcenter-server/>

vSphere: <http://www.vmware.com/products/vsphere/>

Using QConvergeConsole vSphere Client Plug-in

The following diagram illustrates how to manage adapters and hosts when using the QConvergeConsole HTML5 based vSphere Client Plug-in.

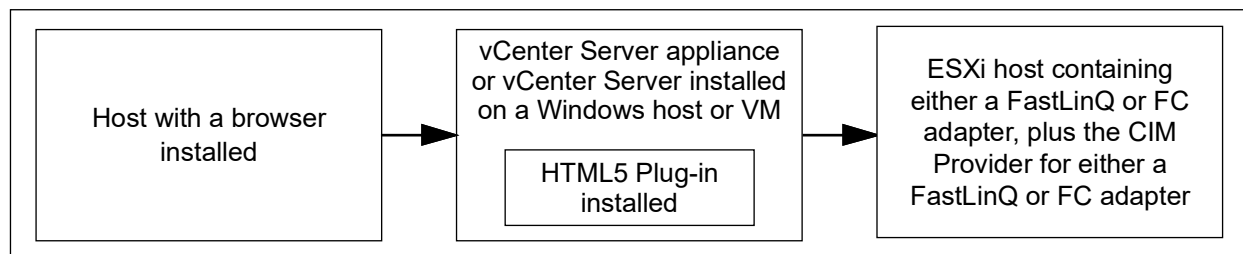


Figure i. Managing an ESXi 7 Host with a FastLinQ or Fibre Channel Adapter Using the QConvergeConsole vSphere Client Plug-in

Intended Audience

This guide is intended for use by administrators who are planning to deploy or have deployed one of the supported Marvell adapters in their VMware ESX and ESXi environments.

What Is in This Guide

This user's guide contains information you need to use the QConvergeConsole vSphere Client Plug-in.

This preface explains the purpose of the plug-in, identifies this guide's intended audience, lists related documents, describes the typographic conventions used in this guide, refers you to the applicable license agreements, and provides technical support and contact information.

The remainder of this user's guide is organized into the following chapters and appendices:

- [Chapter 1 QConvergeConsole vSphere Client Plug-in Overview](#) lists the hardware, software, and operating system requirements for successful installation and operation of the QConvergeConsole vSphere Client Plug-in.
- [Chapter 2 Installing the QConvergeConsole vSphere Client Plug-in](#) explains how to install, uninstall, and upgrade the QConvergeConsole vSphere Client Plug-in.
- [Chapter 3 Getting Started with QConvergeConsole vSphere Client Plug-in](#) describes how to access the QConvergeConsole vSphere Client Plug-in from the vCenter Server, how to navigate to a host, and how to enable or disable the plug-in.

- [Chapter 4 Using the QConvergeConsole vSphere Client Plug-in](#) explains the features of the QConvergeConsole vSphere Client Plug-in's graphical user interface (GUI), as well as detailed instructions on how to configure and manage Marvell adapters using the GUI.
- [Chapter 5 Managing Marvell 3400/8400/41000/45000 Series Adapters and Adapters Based on 57xx \(1Gb\), 577xx, 578xx, 579xx Controllers](#) provides detailed instructions on how to use the vCenter Server Plug-in to manage Marvell 3400/8400/41000/45000 Series Adapters and connected storage devices.
- [Appendix A Installing the QLogic Adapter CIM Provider Using VUM](#) explains how to install the QLogic Adapter CIM Provider using the VMware Update Manager (VUM).
- [Appendix B Troubleshooting](#) provides troubleshooting information for the QLogic Adapter CIM Provider and the VMware vSphere Web Client.
- [Appendix C Revision History](#) contains a list of changes made to this guide since the last revision.

At the end of this guide is a glossary with term definitions.

Related Materials

For additional information, refer to following documents that are available from the Marvell Web site, www.marvell.com:

- *Read Me, QConvergeConsole VMware vSphere Client Plug-in*
- *Release Notes, QConvergeConsole VMware vSphere Client Plug-in*
- *User's Guide—Fibre Channel Adapter, 2600 Series*
- *User's Guide—Fibre Channel Adapter, 2700 Series*
- *User's Guide—Fibre Channel Adapter, 2800 Series*
- *User's Guide—Converged Network Adapter, 8300 Series*
- *User's Guide—Converged Network Adapters and Intelligent Ethernet Adapters, FastLinQ 3400 and 8400 Series*
- *User's Guide—Converged Network Adapters and Intelligent Ethernet Adapters, FastLinQ 41000 Series*
- *User's Guide—Converged Network Adapters and Intelligent Ethernet Adapters, FastLinQ 45000 Series*

For information about downloading documentation from the Marvell Web site, see ["Downloading Updates and Documentation" on page xviii](#).

For VMware vCenter and vSphere documentation, see www.vmware.com.

Documentation Conventions

This guide uses the following documentation conventions:

- **NOTE** provides additional information.
- **CAUTION** without an alert symbol indicates the presence of a hazard that could cause damage to equipment or loss of data.
- Text in **blue** font indicates a hyperlink (jump) to a figure, table, or section in this guide, and links to Web sites are shown in underlined blue. For example:
 - ❑ [Table 9-2](#) lists problems related to the user interface and remote agent.
 - ❑ See [“Installation Checklist” on page 3-6](#).
 - ❑ For more information, visit www.marvell.com.
- Text in **bold** font indicates user interface elements such as a menu items, buttons, check boxes, or column headings. For example:
 - ❑ Click the **Start**, point to **All Programs**, point to **Accessories**, and then click **Command Prompt**.
 - ❑ Under **Notification Options**, select the **Warning Alarms** check box.
- Text in `Courier` font indicates a file name, directory path, or command line text. For example:
 - ❑ To return to the root directory from anywhere in the file structure:
Type `cd /root` and press ENTER.
 - ❑ Issue the following command: `# sh /install.bin`
- Key names and key strokes are indicated with UPPERCASE:
 - ❑ Press CTRL+P.
 - ❑ Press the UP ARROW key.
- Text in *italics* indicates terms, emphasis, variables, or document titles. For example:
 - ❑ For a complete listing of license agreements, refer to the applicable *Software End User License Agreement*.
 - ❑ What are *shortcut keys*?
 - ❑ To enter the date type *mm/dd/yyyy* (where *mm* is the month, *dd* is the day, and *yyyy* is the year).
- Topic titles between quotation marks identify related topics either within this manual or in the online help, which is also referred to as *the help system* throughout this document.

License Agreements

Refer to the applicable *Software End User License Agreement* for a complete listing of all license agreements affecting this product.

Technical Support

Customers should contact their authorized maintenance provider for technical support of their Marvell QLogic and FastLinQ products.

Downloading Updates and Documentation

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

To download firmware, software, and documentation:

1. Go to www.marvell.com.
2. Click **Support**, and then under **Tools & Resources**, click **Driver Downloads**.
3. In the Marvell Drivers window:
 - a. (MUST) Under CATEGORY, select either FIBRE CHANNEL ADAPTERS or CONVERGED NETWORK ADAPTERS.
 - b. (optional) Under PLATFORM/OS, select the platform/OS that matches your system.
 - c. (optional) Under PART NUMBER, select the part number for your adapter.
 - d. (optional) Under KEYWORDS, type a keyword describing what you are looking for.
4. Click **Apply**.

5. Locate the firmware (boot code), software (drivers, management tools), or document (documentation for user's guides) you need, and then do one of the following:
 - a. Click the [blue](#) text in the DESCRIPTION column.
 - b. Click the arrow in the DOWNLOAD column.

NOTE

Marvell recommends downloading the associated Read Me and Release Notes for more information. To find them, enter either **Read Me** or **Release Notes** in the KEYWORDS search box.

A message may appear asking you to review and accept the Marvell Limited Use License Agreement.

6. If applicable, read the agreement, select the check box, and then click **I ACCEPT** to accept the end license agreement and start the download.

1

QConvergeConsole vSphere Client Plug-in Overview

The QConvergeConsole vSphere Client Plug-in provides the ability to manage Marvell Fibre Channel Adapters, Converged Network Adapters, Intelligent Ethernet Adapters, and connected devices within a VMware vCenter Server environment. This plug-in is part of the Marvell QConvergeConsole suite of management tools, which includes the QConvergeConsole Web-based GUI and the QConvergeConsole CLI for other operating system environments. The plug-in provides an interactive GUI that is similar to the QConvergeConsole Web-based tool.

Features

The QConvergeConsole vSphere Client Plug-in allows users to centrally manage Marvell QLogic Fibre Channel adapters, Converged Network Adapters, and Intelligent Ethernet Adapters for all supported protocols on the QConvergeConsole page in VMware vCenter Server. The management capabilities include:

- Management for Fibre Channel, FCoE, iSCSI, and NIC adapters
- Storage and network maps that provide an end-to-end view of the adapter connections to the software and hardware components in the VMware ESX/ESXi environments.
- Updating the adapter boot code and firmware for all supported adapters
- Dynamic management of Marvell NIC partitioning (NPAR) for supported Converged Network and Intelligent Ethernet adapters, including the ability to modify partition function type and set quality of service (QoS).
- Querying and modifying driver parameters for all supported protocols.

- Viewing and managing initiators, targets, and LUNs for Fibre Channel, FCoE, and iSCSI ports
- Querying statistics, running diagnostics, and obtaining transceiver information

These capabilities produce the following key benefits:

- Marvell adapters can be managed from VMware vCenter Server
- Visibility of the virtual machine (VM) location and resource utilization
- Accelerated infrastructure deployment
- Simplified adapter management

System Requirements

This section lists the requirements for proper operation of the QConvergeConsole vSphere Client Plug-in.

Hardware Requirements

The QConvergeConsole vSphere Client Plug-in requires the following hardware, as shown in [Figure 1-1](#):

- VMware ESX or ESXi Server
- Server to run the VMware vCenter Server

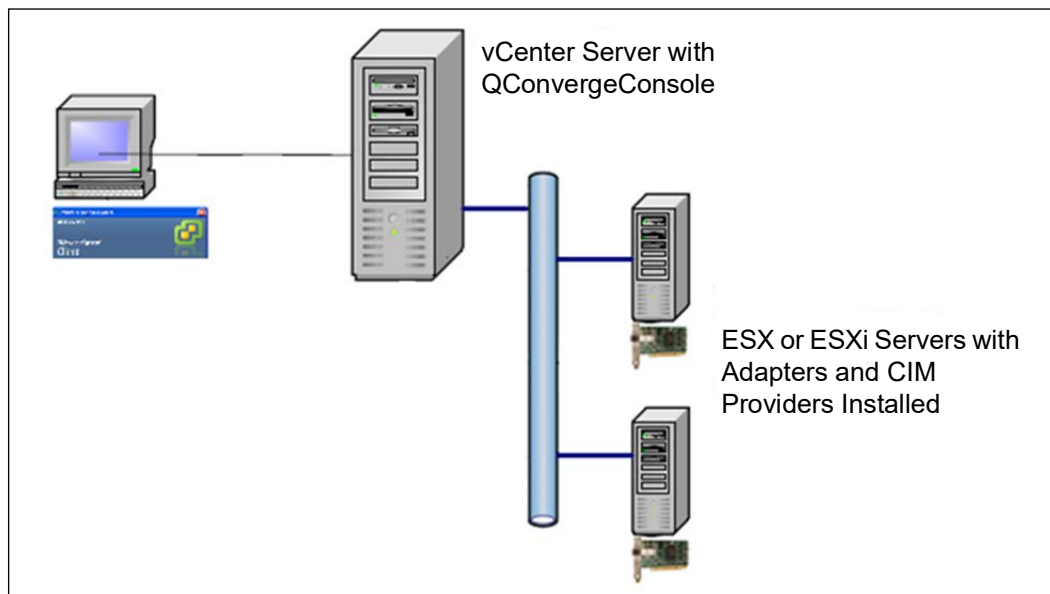


Figure 1-1. Required Hardware

Marvell provides the following components that must be installed on the ESX/ESXi Servers, Windows or Linux system and register with the vCenter Server.

ESX/ESXi Server:

- Marvell adapters with proper firmware and driver
- QLogic Adapter CIM Provider

vCenter Server:

- Software installer file to register the plug-in to the vCenter Server

The QConvergeConsole vSphere Client Plug-in requires a physical or Virtual Machine server with 200MB of free disk space and at least 4GB of RAM.

For more information about hardware requirements, see the VMware vCenter Server and vSphere documentation.

Software Requirements

The following software requirements apply:

- VMware vSphere ESX/ESXi environment 7.0
- Any operating system, including Windows, on which one of the supported versions of VMware vCenter Server is supported by VMware
- VMware vCenter Server 7.0 or vCenter Server Appliance 7.0
- vSphere Client 7.0
- Tomcat™ Web server (optional if you choose not to use the Tomcat server bundled with the VMware vCenter Server installation, or installing for the vCenter Server Appliance. Tomcat 7 is recommended)
- QLogic Adapter CIM Provider provides drivers for the adapters being managed

For information about software requirements to run VMware vCenter Server, vCenter Server Appliance, and vSphere Client, see the VMware vSphere product documentation.

Supported Adapters

The QConvergeConsole vSphere Client Plug-in supports the following Marvell adapters from Marvell:

- 2500, 2600, 2700, and 2800 Series Fibre Channel Adapters
- 3400, 578xx, 41000, and 45000 Series Intelligent Ethernet Adapters
- 8300, 8400, 578xx, 41000, and 45000 Series Converged Network Adapters

Supported VMware ESX/ESXi and vCenter Server Versions

Refer to the QConvergeConsole vSphere Client Plug-in *Read Me* and *Release Notes* documents for the latest information regarding supported versions of the following:

- VMware vCenter Server
- VMware vSphere Client

To determine what version of VMware vCenter Server can manage what versions of VMware ESX and ESXi, see the VMware vSphere product documentation.

User Privilege Requirements

User privilege requirements are as follows:

- Administrator privileges on the vSphere Client system are required to install, register, and use the QConvergeConsole vSphere Client Plug-in.
- Root privileges are required on the ESX or ESXi host to install the QLogic Adapter CIM Provider drivers.

2

Installing the QConvergeConsole vSphere Client Plug-in

This chapter explains how to install and uninstall the required software in the following sections:

- [Installation Package Contents](#)
- [“Installing the QConvergeConsole vSphere Client Plug-in” on page 6](#)
- [“Uninstalling the QConvergeConsole vSphere Client Plug-in” on page 13](#)
- [“Installing the QLogic Adapter CIM Provider” on page 13](#)
- [“Uninstalling the QLogic Adapter CIM Provider” on page 15](#)

For information on installing the plug-in, refer to [“Installing the QConvergeConsole vSphere Client Plug-in” on page 6](#).

To use the QConvergeConsole vSphere Client Plug-in, install the following software in this order:

1. **QConvergeConsole vSphere Client Plug-in**—on the Windows or Linux system and register with vCenter Server
2. **QLogic Adapter CIM Provider**—on the ESX or ESXi Server

Installation Package Contents

The QLogic Adapter CIM Provider and QConvergeConsole vSphere Client Plug-in package contains the following files (where `<ver_num>` indicates the current package version) needed to install both the plug-in and the CIM Providers:

- `QLogic_Adapter_vSphere_Client_Plugin_<ver_num>.exe`
The HTML5 based vSphere Client Plug-in installation package (for HTML5 based vSphere Client)
- `QLogic_Adapter_vSphere_Client_Plugin_Linux_x64_<ver_num>.bin`
The vSphere Client Plug-in installation package to be installed on 64-bit Linux Servers (for HTML5 based vSphere Client)

- `esx70-1.7.37\MRVL-adapter-provider_<ver_num>-package.zip`
The Marvell QLogic 2500, 2600, 2700, 2800 Series Adapter CIM Provider installation file
- `esx70-1.1.20\MRVL-viplugin-provider_<ver_num>-package.zip`
The Marvell FastLinQ 3400, 8400, 41000, and 45000 Series Adapter CIM Provider installation file for ESXi 7.0
- `readme.txt`
The Read Me document contains hardware and software requirements, operating system support, supported features, installation and removal instructions, known issues and workarounds, and support contact information.
- `release_notes.txt`
The Release Notes document lists changes, fixes, known issues, and release details.

For detailed information on installing the QConvergeConsole vSphere Client Plug-in, refer to [“Installing the QConvergeConsole vSphere Client Plug-in” on page 6](#). For detailed information on installing the CIM Provider, refer to [“Installing the QLogic Adapter CIM Provider” on page 13](#).

Installing the QConvergeConsole vSphere Client Plug-in

Follow the instructions in this section to install the QConvergeConsole vSphere Client Plug-in on a Linux or Windows server running Tomcat Web server (Tomcat 7 recommended) for the vCenter Server, or vCenter Server Appliance.

To install the QConvergeConsole vSphere Client Plug-in:

1. Download the `QLogic_Adapter_vSphere_Client_Plugin_<ver_num>.exe` file.
2. Run the installation using one of these methods:
 - ☐ Double-clicking the `.exe` file.
 - ☐ Typing the name of the `.exe` file in a Run window.
 - ☐ Clicking **Browse** and locating the `.exe` file.

The InstallAnywhere wizard opens, as shown in [Figure 2-1](#).

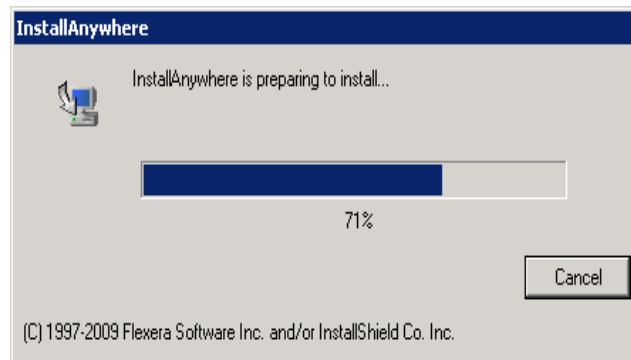


Figure 2-1. InstallAnywhere Initial Window

3. In the QLogic Adapter VI Plug-in Registration Wizard, Introduction window ([Figure 2-2](#)), click **Next**.

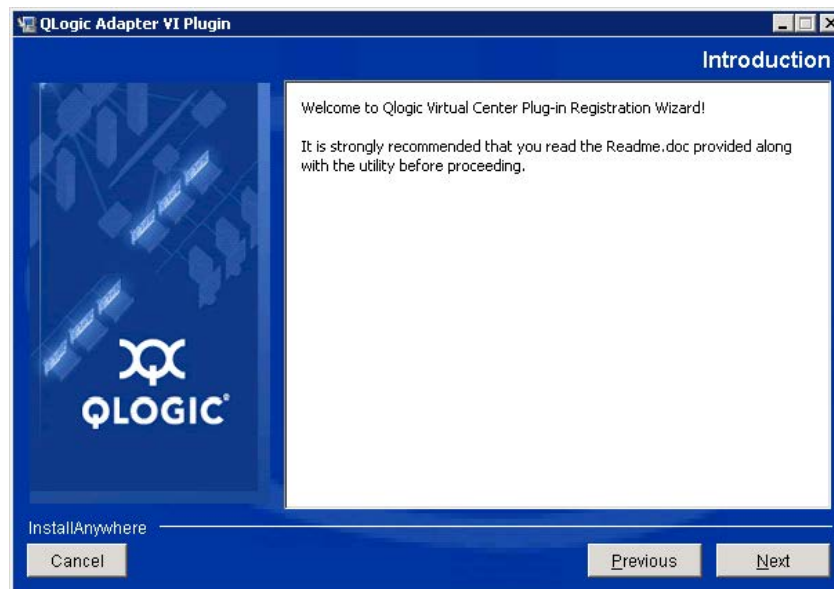


Figure 2-2. QLogic Adapter VI Plug-in Registration Wizard—Introduction

Wait while the wizard configures the plug-in ([Figure 2-3](#)).

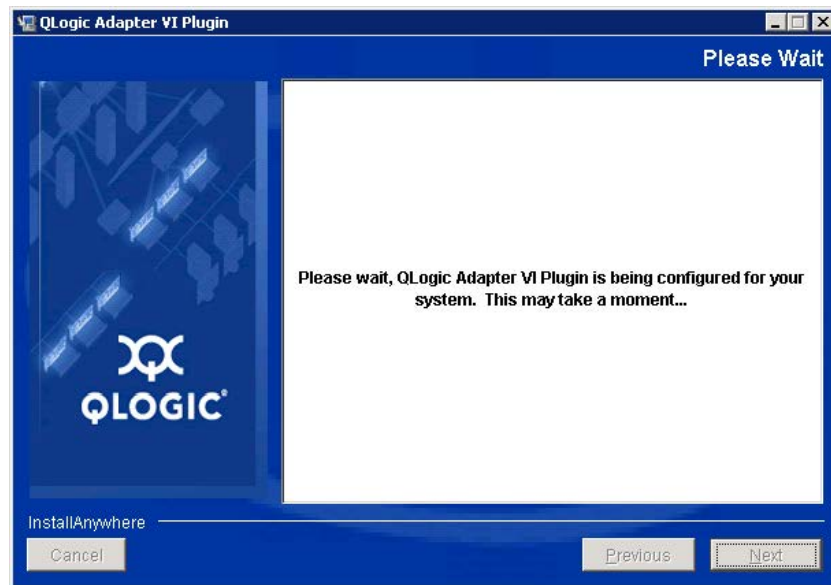


Figure 2-3. QLogic Adapter VI Plug-in—Configuration

If a previous version of the plug-in is installed on the system, select from the following options ([Figure 2-4](#)):

- ☐ To cancel the installation, click **Finish**.

- ❑ To resume the installation, click **Next**.

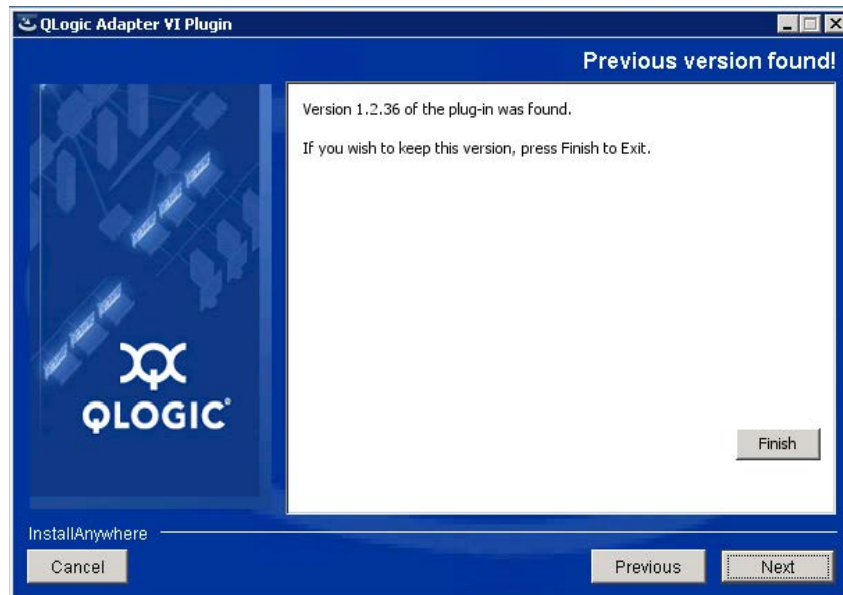


Figure 2-4. QLogic Adapter VI Plug-in—Previous Version Found Options

4. Select the installation folder, and then click **Install** (Figure 2-5).

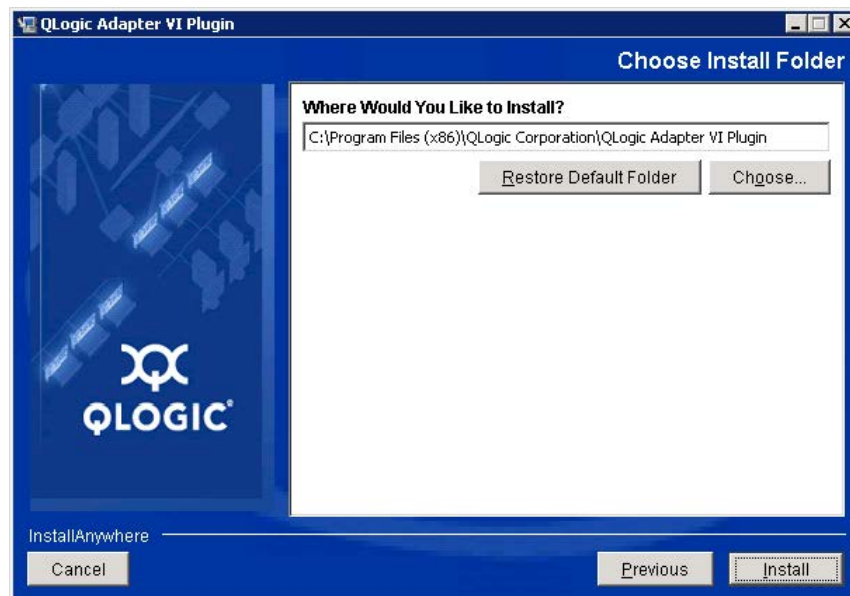


Figure 2-5. QLogic Adapter VI Plug-in—Select the Installation Folder

5. Wait while the wizard performs the installation ([Figure 2-6](#)).

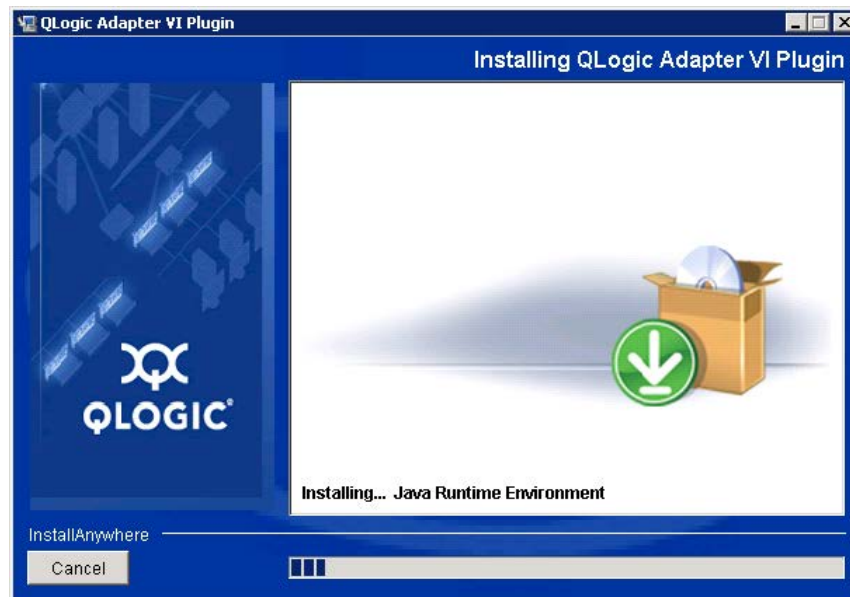


Figure 2-6. QLogic Adapter VI Plug-in—Installing the QConvergeConsole vSphere Client Plug-in

6. In the User Input window (Figure 2-7 shows an example), enter the requested information, and then click **Next** to continue.

NOTE

The **Tomcat Server IP** text box is visible since the embedded Tomcat Web services within vCenter Server are not used.

QLogic Adapter VI Plug-in

User Input

Welcome to User Input Screen!

Please fill in all the boxes in order to register the plug-in successfully.
Note: Textfields are case sensitive

vCenter Server IP: 172.17.140.27

vCenter Server Username: administrator

vCenter Server Password: *****

Tomcat Server IP: 172.17.141.185

InstallAnywhere

Cancel Previous Next

Figure 2-7. QLogic Adapter VI Plug-in—User Input Window

Wait again while the wizard finishes configuring the plug-in (Figure 2-8).

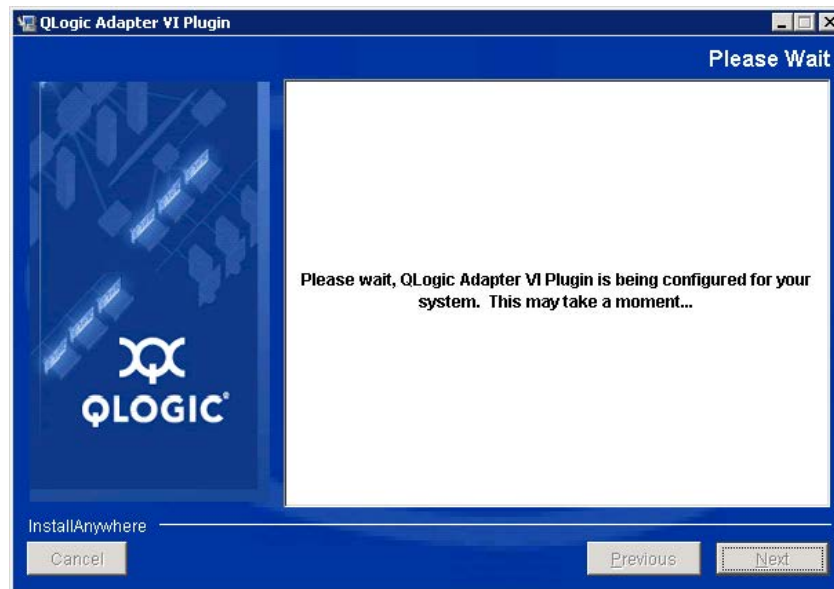


Figure 2-8. QLogic Adapter VI Plug-in—Configuration

7. [Figure 2-9](#) appears when registration is completed. Click **Finish** to exit.



Figure 2-9. QLogic Adapter VI Plug-in—Successful Registration

8. After the installation completes, restart the Tomcat service as follows:
 - ❑ If the QConvergeConsole vSphere Client Plug-in is installed on a server other than the vCenter Server, restart the Apache™ Tomcat service.

Uninstalling the QConvergeConsole vSphere Client Plug-in

To remove the QConvergeConsole vSphere Client Plug-in:

1. In the Windows Control Panel, select **Add or Remove Programs**. (Windows Server 2019 or later only: Select **Programs and Features**.)
2. In the Add or Remove Programs dialog box, select the **QLogic Adapter vSphere Client Plug-in**, and then click **Change/Remove**.
3. Follow the instructions in the plug-in installer to remove the plug-in.

Installing the QLogic Adapter CIM Provider

This section describes how to install and start the QLogic Adapter CIM Provider for VMware ESX/ESXi 7.0.

NOTE

The QLogic Adapter CIM Provider for VMware ESX was generated as a vSphere Installation Bundle (VIB) file. A VIB contains the complete set of files and binaries required to install the provider on VMware ESX/ESXi. The file `MRVL-adapter-provider-<version>-package.zip` contains the VIB and the necessary metadata to install the provider on VMware ESX/ESXi.

The CIM Provider bundled with the current QConvergeConsole vSphere Client Plug-in also includes a zip bundle to be used with VMware Update Manager (VUM) for auto-deployment of the QLogic Adapter CIM Provider.

Initial Installation Methods

Initial installation methods for the QLogic Adapter CIM Provider include the following:

- **Online**—Refer to [“To install the CIM Provider on an ESXi 7.0 host:” on page 14](#).
- **Offline**—Refer to [Appendix A Installing the QLogic Adapter CIM Provider Using VUM](#).

- **VUM**—Refer to [Appendix A Installing the QLogic Adapter CIM Provider Using VUM](#). The VMware Update Manager (VUM) is a plug-in for the vCenter Server. You can use the VUM UI to install a VIB by importing the associated offline bundle package (a zip file that contains the VIB and metadata). You can then create an add-on baseline and remediate the hosts with this baseline. For details on VUM, see the vCenter Server documentation.

To install the CIM Provider on an ESXi 7.0 host:

1. Copy the `<CIM Provider installation zip file>` file to the root directory (/) of the ESXi 7.0 system.
2. Issue the `esxcli` command as follows:

```
# cd /  
# esxcli software vib install -d file:///<CIM Provider  
installation zip file> --maintenance-mode
```
3. Reboot the system as required.

NOTE

On the ESXi system, the CIMOM (CIM object manager) may be disabled. To check to see if the CIMOM is disabled, issue the following command:

```
esxcli system wbem get
```

To enable the CIMOM, issue the following command:

```
esxcli system wbem set -e true
```

Subsequent Update Installation

To update the QLogic Adapter CIM Provider after a prior VIB installation, remove the existing VIB by following the instructions in [“Uninstalling the QLogic Adapter CIM Provider” on page 15](#). After completing the VIB removal, install the new VIB by following the same steps in [“Initial Installation Methods” on page 13](#).

Starting the QLogic Adapter CIM Provider

After a system startup, the Small-Footprint CIM Broker (SFCB) CIM object manager (CIMOM) in the ESX system should start automatically and load the QLogic Adapter CIM Provider when necessary. If the CIM Provider does not start automatically, refer to [Appendix B Troubleshooting](#) for information on how to manually stop, start, or restart the SFCB CIMOM.

Uninstalling the QLogic Adapter CIM Provider

You can uninstall the QLogic Adapter CIM Provider for your version of VMware. For information about removing the QLogic Adapter CIM Provider through a remote host, see the *QLogic Adapter CIM Provider and vCenter Plug-in for VMware ESX/ESXi Read Me* document.

To uninstall the QLogic Adapter CIM Provider from an ESXi 7.0 host:

1. To view the VIB list and determine the CIM Provider name (in this case, `qlogic-adapter-provider` or `viplugin-provider` for FastLinQ Adapters), issue the following command:

```
# esxcli software vib list
```
2. To remove the QLogic Adapter CIM Provider, issue the following command:

```
# esxcli software vib remove --vibname qlogic-adapter-provider  
--maintenance-mode -f
```

3

Getting Started with QConvergeConsole vSphere Client Plug-in

This chapter provides instructions for accessing the QConvergeConsole vSphere Client Plug-in and provides information on the plug-in's user interface, including:

- [Starting VMware vCenter Server Using the QConvergeConsole vSphere Client Plug-in](#)
- [“Introduction to the QConvergeConsole vSphere Client Plug-in” on page 20](#)
- [“Enabling and Disabling the QConvergeConsole vSphere Client Plug-in” on page 23](#)

Starting VMware vCenter Server Using the QConvergeConsole vSphere Client Plug-in

If you have not done so, create a data center (select **New Datacenter**), and then add each ESX/ESXi Server to the new data center. Then, select the server from the tree on the left side to display a row of tabs on the right side. If the server has the QLogic Adapter CIM Provider and adapters installed, and if the plug-in installation and registration have been done successfully, the row of tabs includes the **QConvergeConsole** tab (see [“QConvergeConsole vSphere Client Plug-in User Interface” on page 19](#)). Click this tab to begin using the plug-in to manage adapters in vCenter Server.

If you start and connect the vSphere Client directly to an ESX/ESXi Server, the Plug-in does not appear.

To start the QConvergeConsole vSphere Client Plug-in:

1. Start the VMware vSphere Client and connect to the VMware vCenter Server by entering the IP address or its qualified domain name, user name, and password, and then click **Login**.
2. If the Security Warning dialog box appears, click **Ignore** to use the current SSL certificate.
 - ☐ If you start and connect the vSphere Client directly to an ESX/ESXi Server, the QConvergeConsole vSphere Client Plug-in does not appear.
 - ☐ If you have not done so, create a data center (select **New Datacenter**) and add each ESX/ESXi Server to the newly created data center.
3. In the left pane, select the IP address of the VMware ESX/ESXi Server.
4. In the right pane, click the **QConvergeConsole** tab to view the plug-in. The QConvergeConsole vSphere Client Plug-in retrieves the adapter information from the server.

NOTE

If the ESXi host does not have the QLogic Adapter CIM Provider and adapters installed, or if the QConvergeConsole vSphere Client Plug-in installation and registration was not successful, the **QConvergeConsole** tab is not shown.

In the right pane of VMware vCenter, the QConvergeConsole vSphere Client Plug-in appears on the page labeled with the tab **QConvergeConsole**.

To access the QConvergeConsole tab in VMware vCenter Server:

1. On a computer or server that has the VMware vSphere Client software installed, double-click the VMware vSphere Client icon  to start the vSphere Client.

NOTE

If you start and connect the vSphere Client directly to an ESX/ESXi Server, the plug-in does not appear.

2. In the vSphere Client log-in dialog box (Figure 3-1), log in as follows:
 - a. To connect to multiple hosts, type the VMware vCenter Server's IP address in the **IP address/Name** box. Or, to connect to a single host, type the host's IP address or host name in the **IP address/Name** box.
 - b. Type your user name and password for the VMware vCenter Server in the appropriate boxes. You can also select the **Use Windows Session credentials** check box, if credentials are configured and applicable.
 - c. Click **Login**.

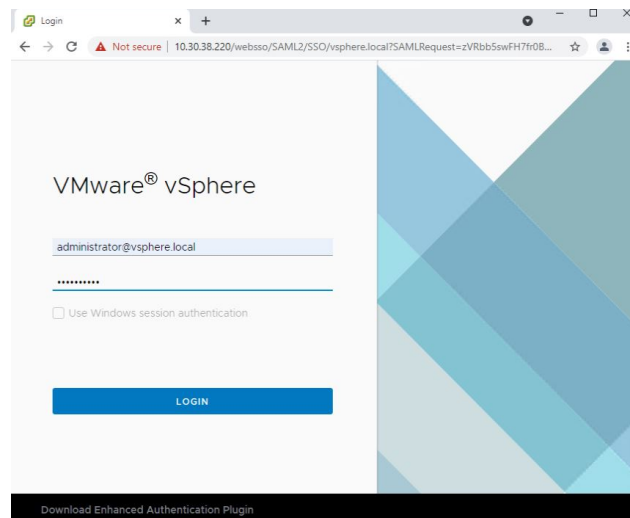


Figure 3-1. vSphere Client Login Dialog Box

3-Getting Started with QConvergeConsole vSphere Client Plug-in

Starting VMware vCenter Server Using the QConvergeConsole vSphere Client Plug-in

VMware vCenter opens in the vSphere Client window. [Figure 3-2](#) identifies the ESXi host node and the **QConvergeConsole** selection.

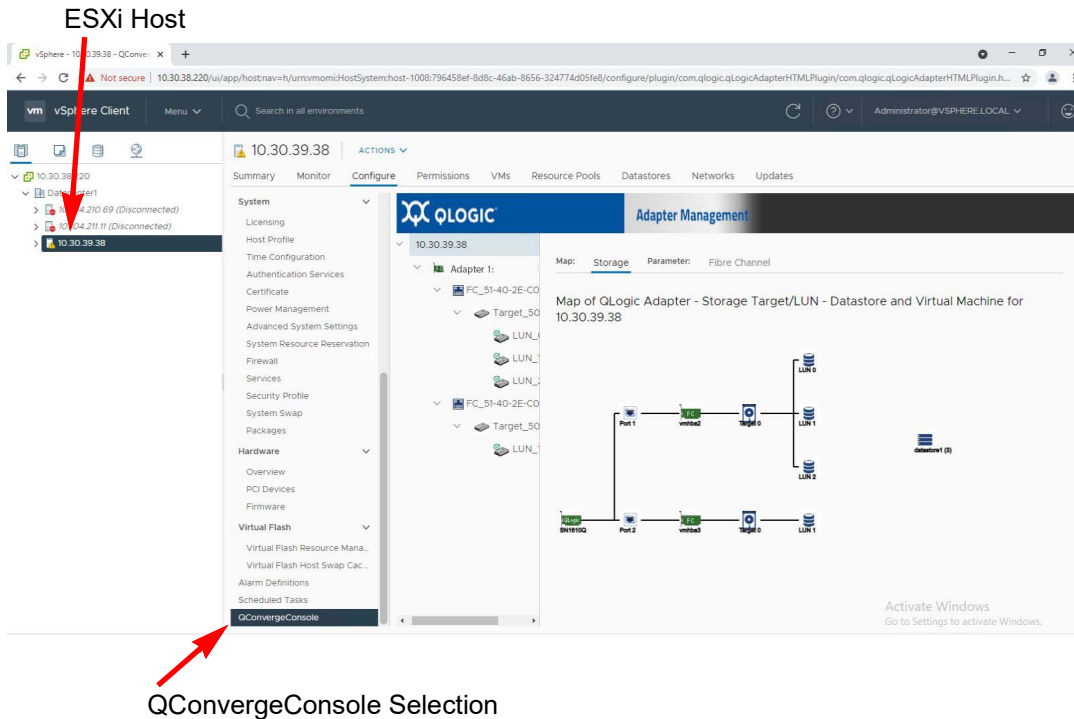


Figure 3-2. QConvergeConsole vSphere Client Plug-in User Interface

3. In the left pane of the VMware vCenter Server window under **Home, Inventory, Hosts and Clusters View**, select a VMware vSphere ESX or ESXi host.
4. In the right pane, click the **QConvergeConsole** selection.

3-Getting Started with QConvergeConsole vSphere Client Plug-in

Introduction to the QConvergeConsole vSphere Client Plug-in

The right pane displays the QConvergeConsole user interface, as shown in [Figure 3-3](#). If there is no **QConvergeConsole** selection, see [Appendix A Installing the QLogic Adapter CIM Provider Using VUM](#).

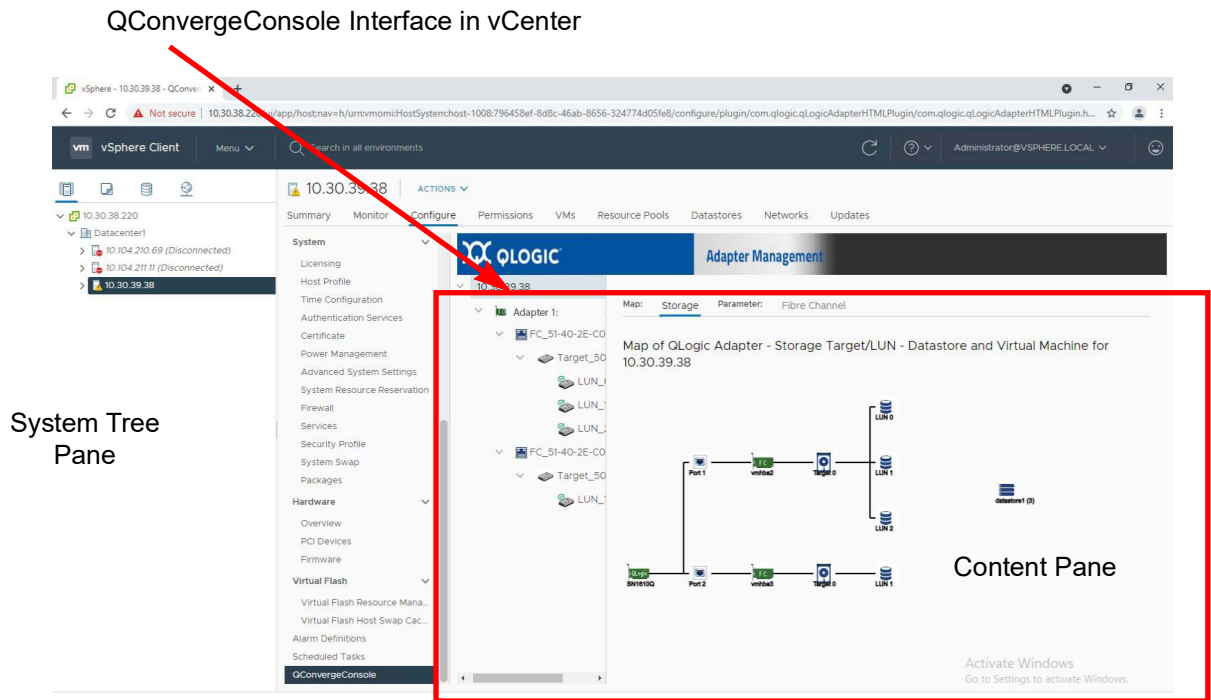


Figure 3-3. QConvergeConsole vSphere Client Plug-in User Interface

Introduction to the QConvergeConsole vSphere Client Plug-in

The QConvergeConsole vSphere Client Plug-in's graphical interface appears in the right pane of VMware vCenter Server. The interface is divided into two panes (see [Figure 3-3](#)):

- [System Tree Pane](#)
- [Content Pane](#)

Use the system tree pane to select a device to configure. The content pane then displays the configuration options for the item selected in the system tree.

System Tree Pane

The system tree resides in the left pane of the QConvergeConsole interface. The nodes of the system tree show all available ESX and ESXi hosts and their connected devices (adapters, ports, devices, and LUNs). The nodes are arranged hierarchically from host (highest level) to LUN (lowest level). You can display or hide the information in lower levels of a node, as follows:

- Click  next to any tree node to show its list of connected devices.
- Click  next to any tree node to hide its list of connected devices.

Each system tree node has an icon that identifies the associated device (host, adapter, port, target device, or LUN), as shown in [Table 3-1](#).

Table 3-1. System Tree Device Icons

Icon	Meaning
	An ESXi host
	A supported QLogic Fibre Channel Adapter
	A supported Marvell Converged Network Adapter
	A supported Marvell Ethernet Adapter
	A physical adapter
	A physical port on a supported adapter
	A target device connected to an adapter port
	A LUN on a target device
	NIC PCI function on Converged Network Adapter port
	iSCSI PCI function on Converged Network Adapter port
	FCoE PCI function on Converged Network Adapter port
	PCI function disabled on Converged Network Adapter port
	3400/8400/41000/45000 Series Adapters
	8400/41000/45000 Series Adapters FCoE
	8400/41000/45000 Series Adapters FCoE Port
	3400/8400/41000/45000 Series Adapters Function (Link Down)
	3400/8400/41000/45000 Series Adapters Function (Link Up)
	8400/41000/45000 Series Adapters iSCSI

Table 3-1. System Tree Device Icons (Continued)

Icon	Meaning
	8400/41000/45000 Series Adapters iSCSI Portal
	A LUN on a target device connected to a 8400/41000/45000 Series Adapters
	3400/8400/41000/45000 Series Adapters Port
	A target device connected to a 8400/41000/45000 Series Adapters

Table 3-2 shows symbols that are added to the basic icons in Table 3-1 to indicate additional information.

Table 3-2. Special Icon Symbols

Symbol	Meaning	Example
	Device, link, or function is down	 iSCSI PCI function is down
Yellow	Device, link, or function is not connected or link is down	 Fibre Channel port is down
Yellow or Green VM	Indicates whether VM is powered on or off	— —

Content Pane

The right pane of the QConvergeConsole interface displays information and management options for the device associated with the selected system tree node. If the device has no associated management options, the content pane displays information only.

The following options are generally available in the content pane:

- **Refresh**—Click this to update the content pane with the latest information.
- **Reset**—Click this to reset relevant information.
- **Save**—Click this to save changes made to parameter values (not available if content pane contains information only).
- **Save Configuration**—Click this to save configuration changes (not available if content pane contains information only).
- **Update Adapter Flash Image**—Click this to update the Flash using the QConvergeConsole vSphere Client Plug-in.

Enabling and Disabling the QConvergeConsole vSphere Client Plug-in

NOTE

If the QConvergeConsole vSphere Client Plug-in installation completed successfully, you do not need to enable the plug-in; it is automatically enabled during installation. You can, however, verify if the plug-in is enabled by following these steps.

To enable or disable the QConvergeConsole plug-in:

1. In the vSphere Client window, open the **Plug-ins** menu, and then click **Manage Plug-ins**.
2. In the Plug-in Manager window under **Installed Plug-ins**, locate the QConvergeConsole plug-in.

The plug-in's status (**Enabled** or **Disabled**) is displayed in the **Status** column, as shown in [Figure 3-4](#).

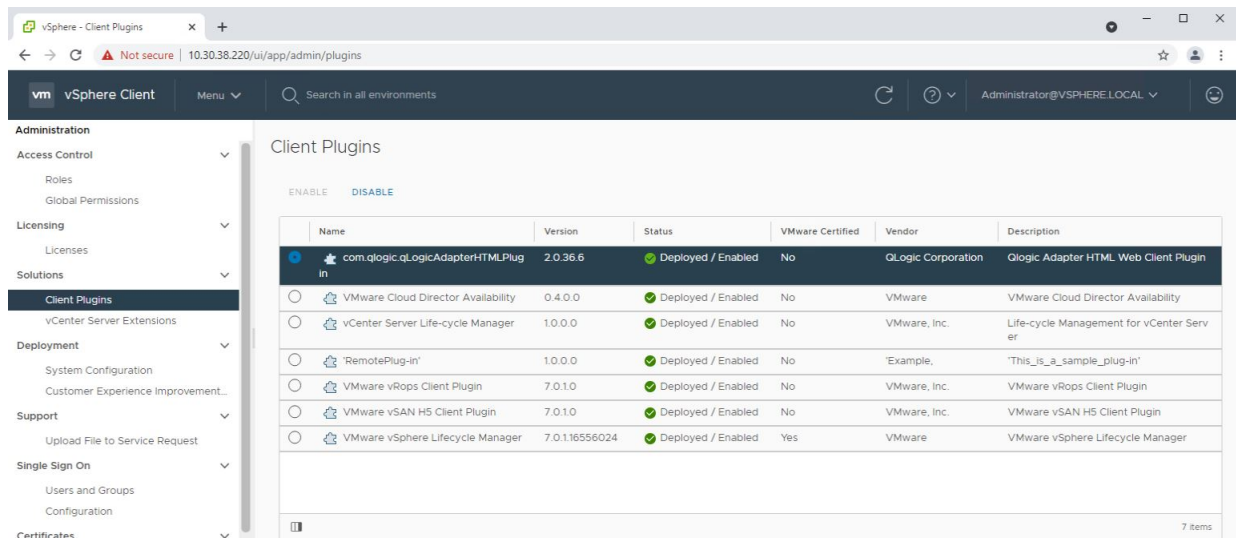


Figure 3-4. Plug-in Manager: Verifying QConvergeConsole vSphere Client Plug-in Status

3-Getting Started with QConvergeConsole vSphere Client Plug-in
Enabling and Disabling the QConvergeConsole vSphere Client Plug-in

- 3. To enable or disable the QConvergeConsole vSphere Client Plug-in, highlight the row of the item you wish to change and click the appropriate action under **Client Plugins**, as shown in [Figure 3-5](#).

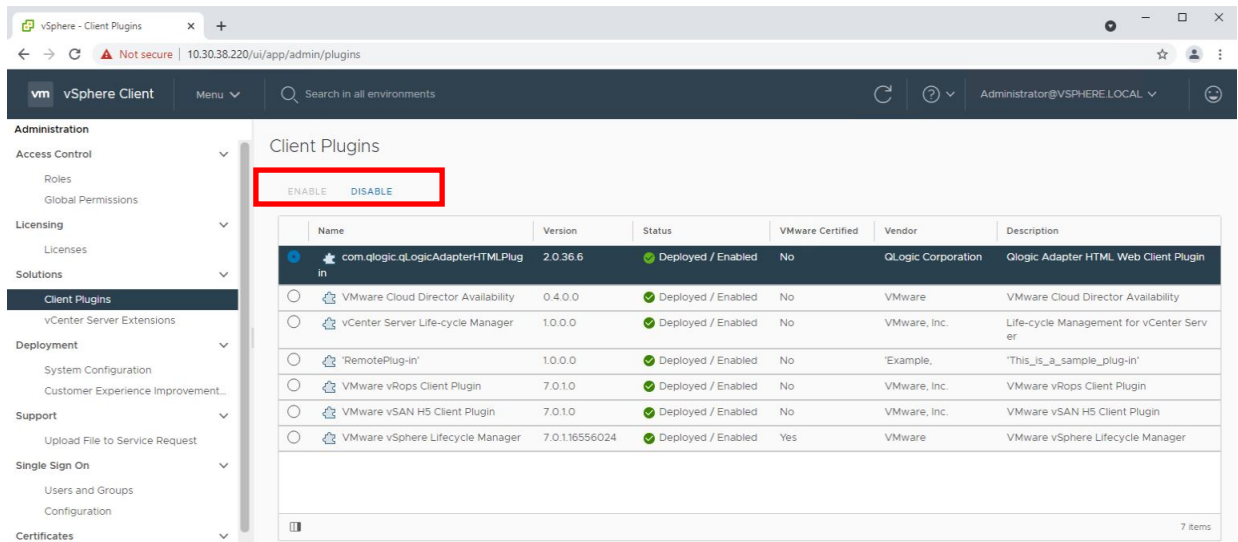


Figure 3-5. Plug-in Manager: Toggling QConvergeConsole vSphere Client Plug-in Status

4

Using the QConvergeConsole vSphere Client Plug-in

This chapter provides detailed instructions on how to use the QConvergeConsole vSphere Client Plug-in to manage Marvell adapters and connected devices, including viewing adapter and device information and updating the adapter Flash firmware.

- [Managing Hosts](#)
- [“Managing Fibre Channel Adapters” on page 32](#)
- [“Managing Converged Network Adapters” on page 72](#)
- [“Viewing Target Device Information” on page 70](#)
- [“Viewing LUN Information” on page 109](#)
- [“Updating Adapter Flash” on page 109](#)

NOTE

- For instructions on using N_Port ID Virtualization (NPIV) to create and delete virtual ports, refer to the VMware vCenter Server documentation for ESX 7.0:
https://docs.vmware.com/en/VMware-vSphere/7.0/com.vmware.vsphere.vm_admin.doc/GUID-74DDA7F7-84AC-4251-8749-552A2678A33C.html
 - For instructions on how to access the QConvergeConsole vSphere Client Plug-in, a description of the plug-in’s user interface, and information on how to connect to and disconnect from hosts, refer to [Chapter 3 Getting Started with QConvergeConsole vSphere Client Plug-in](#).
-

Managing Hosts

When you select an ESX or ESXi host, the content pane provides several display options. Select the option for the type of information you want to view, which are described in the following sections:

- [Viewing the Storage Map](#)
- [Viewing the Network Map](#)
- [Setting Fibre Channel Parameters](#)
- [Setting iSCSI Parameters](#)
- [Setting Ethernet Parameters](#)

Viewing the Storage Map

Next to **Map**, click **Storage** to view the host's storage map, with the host on one end and the VMs on the other end. [Figure 4-1](#) shows an example of a storage map.

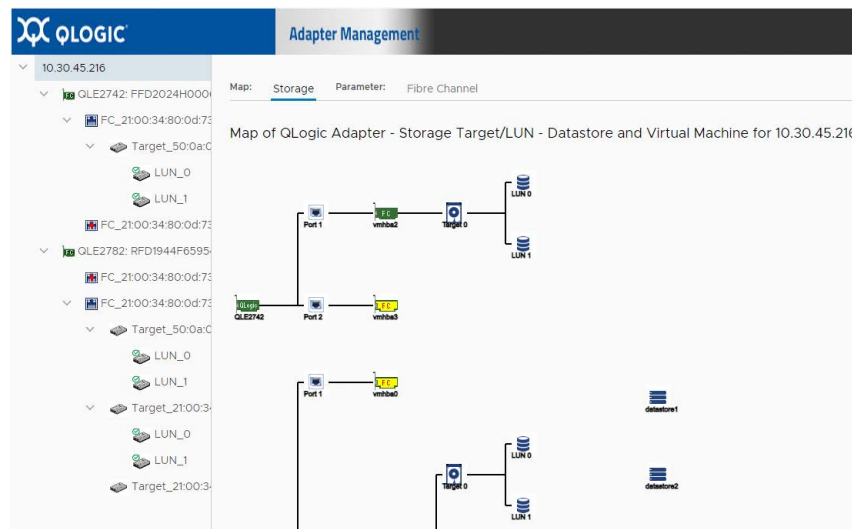


Figure 4-1. Host View—Storage Map

Viewing the Network Map

Next to **Map**, click **Network** to view the selected host's network map, as shown in [Figure 4-2](#).

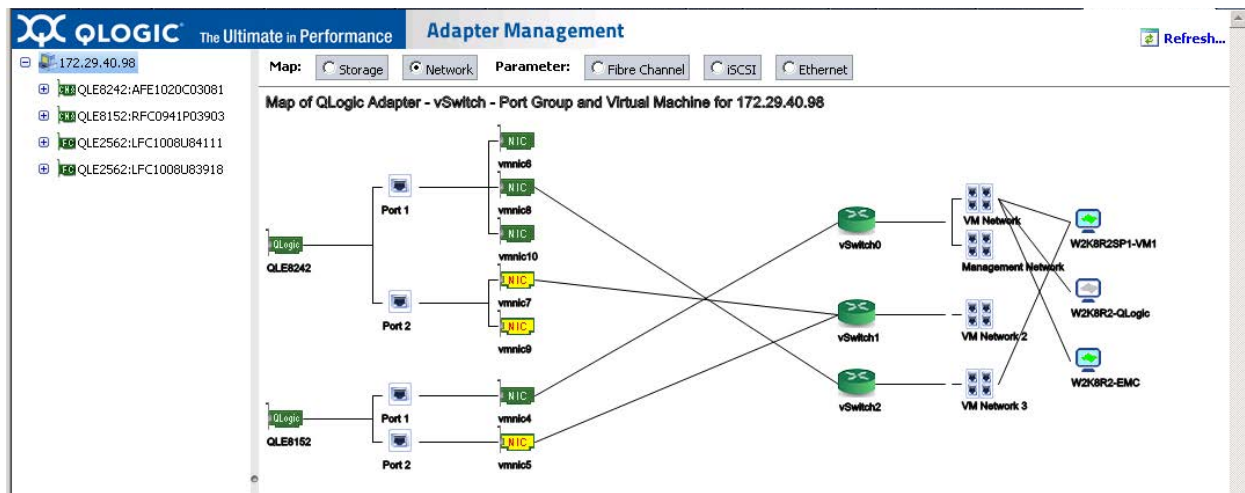


Figure 4-2. Host View—Network Map

Setting Fibre Channel Parameters

Next to **Parameter**, click **Fibre Channel** to view and edit Fibre Channel parameters for the selected host, as shown in [Figure 4-3](#).

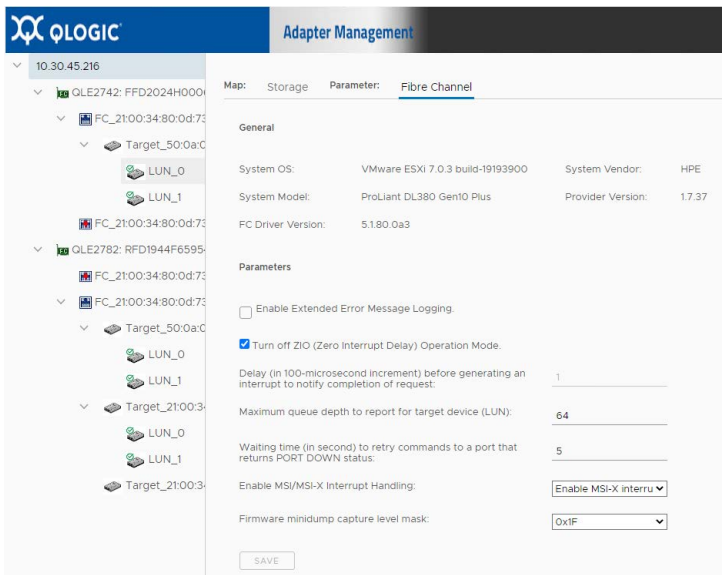


Figure 4-3. Host View—Fibre Channel Parameters

The **General** information section at the top of the window contains the following:

- **System OS:** Name and version of the host operating system
- **System Vendor:** Name of host manufacturer
- **System Model:** Model name of host
- **Provider Version:** Reduce Zoom for Plug-in version
- **FC Driver Version:** Version of the Fibre Channel driver

The **Parameters** section contains the following configurable parameters:

- **Enable Extended Error Message Logging:** Select the check box to enable extended error message logging, or clear the check box to disable extended error message logging.
- **Turn off ZIO (Zero Interrupt Delay) Operation Mode:** Select the check box to turn off ZIO mode, or clear the check box to turn on ZIO mode.
- **Delay (in 100-microsecond increment) before generating an interrupt to notify completion of request:** When ZIO mode is on, use the up and down arrows or type the delay in 100ms increments before generating an interrupt.
- **Maximum queue depth to report for target device (LUN):** Select the maximum queue depth. Allowed values are 0–65,535; the default maximum queue depth value is 64.
- **Waiting time (in seconds) to retry commands to a port that returns PORT DOWN status:** Select the number of seconds between command retry attempts when a port is down. Allowed values are 0–255. The default is 5.
- **Enable MSI/MSI-X Interrupt Handling:** Select the interrupt handling mechanism:
 - ☐ 0—Enable traditional pin-based interrupt mechanism
 - ☐ 1—Enable MSI-X interrupt mechanism (default)
 - ☐ 2—Enable MSI interrupt mechanism
- **Firmware minidump capture level mask:** Select the driver capture mask for firmware minidump:
 - ☐ 0x00—Capture mask specified by the firmware
 - ☐ 0x03—Capture mask 0x03
 - ☐ 0x0F—Capture mask 0x0F
 - ☐ 0x1F—Capture mask 0x1F (default)
 - ☐ 0x7F—Capture mask 0x7F

To save your changes, click **SAVE**.

Setting iSCSI Parameters

Next to **Parameter**, click **iSCSI** to view and edit iSCSI parameters for the selected host, as shown in [Figure 4-4](#).

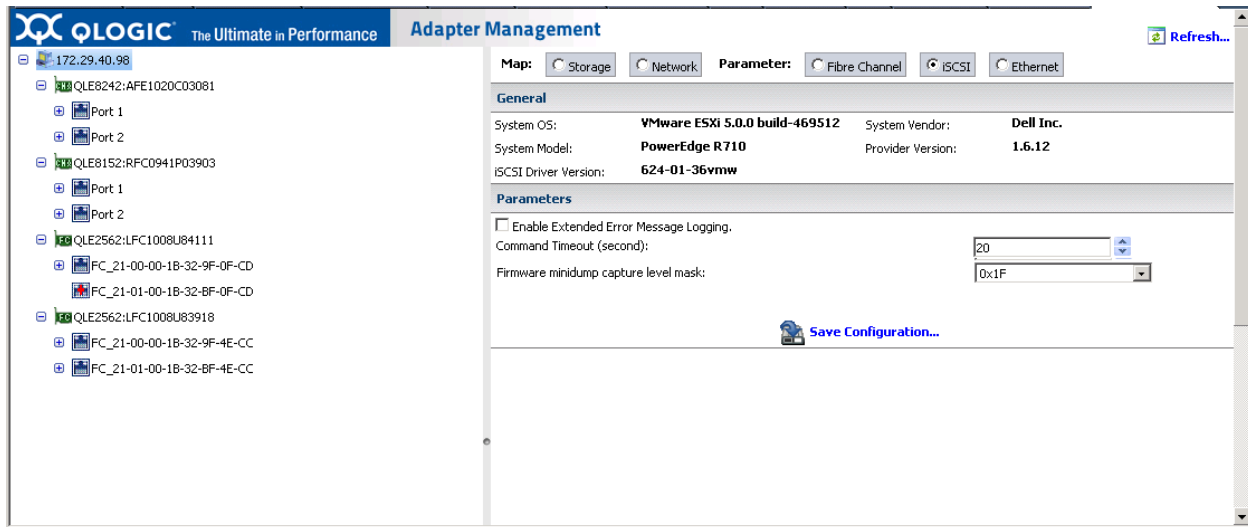


Figure 4-4. Host View—iSCSI Parameters

The **General** information section at the top of the window contains the following:

- **System OS:** Name and version of the host operating system
- **System Vendor:** Name of host manufacturer
- **System Model:** Model name of host
- **Provider Version:** Version of the QLogic Adapter CIM Provider
- **iSCSI Driver Version:** Version of the iSCSI driver

The **Parameters** section contains the following configurable parameters:

- **Enable Extended Error Message Logging:** Select the check box to enable extended error message logging, or clear the check box to disable this feature.
- **Command Timeout:** To set the command time-out in seconds, type or select a value.
- **Firmware minidump capture level mask:** Choose the driver capture mask for firmware minidump.

To save your changes, click **Save Configuration**.

Setting Ethernet Parameters

Next to **Parameter**, click **Ethernet** to view and edit Ethernet parameters for the selected host, as shown in [Figure 4-5](#).

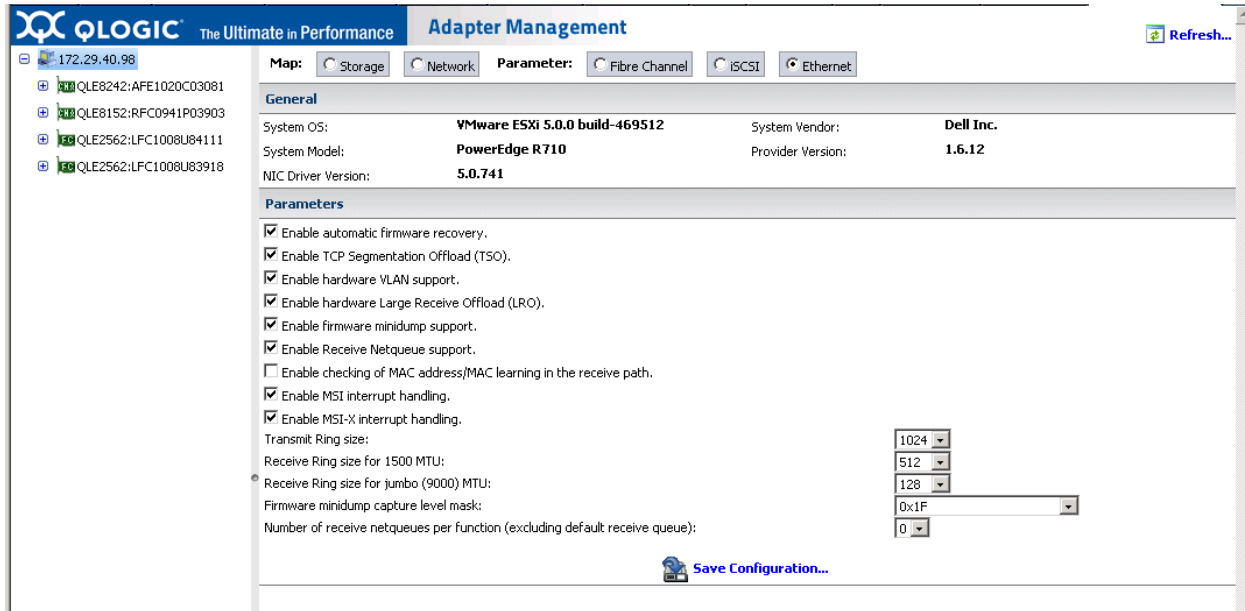


Figure 4-5. Host View—Ethernet Parameters

The **General** information section at the top of the window contains the following:

- **System OS:** Name and version of the host operating system
- **System Vendor: Name of host manufacturer**
- **System Model:** Model name of host
- **Provider Version:** Version of the CIM Provider
- **NIC Driver Version:** Version of the NIC driver

The **Parameters** section contains the following configurable parameters:

- **Enable automatic firmware recovery:** Select the check box to enable automatic firmware recovery, or clear the check box to disable this feature.
- **Enable TCP Segmentation Offload (TSO):** Select the check box to enable TCP segmentation offload, or clear the check box to disable this feature.
- **Enable hardware VLAN support:** Select the check box to enable hardware VLAN, or clear the check box to disable this feature.
- **Enable hardware Large Receive Offload (LRO):** Select the check box to enable hardware LRO, or clear the check box to disable this feature.
- **Enable firmware minidump support:** Select the check box to enable firmware minidump, or clear the check box to disable this feature.

- **Enable Receive Netqueue support:** Select the check box to enable Receive Netqueue support, or clear the check box to disable this feature.
- **Enable checking of MAC address/MAC learning in the receive path:** Select the check box to enable checking of MAC address and learning when configuring NPAR-supported devices. This feature must be enabled for NPAR configuration.
- **Enable MSI interrupt handling:** Select the check box to enable MSI interrupt handling. This parameter is enabled by default for all types of adapters.
- **Enable MSI-X interrupt handling:** Select the check box to enable MSI-X interrupt handling. If MSI-X fails at driver load time, the driver falls back to MSI.
- **Transmit Ring size:** Specify the transmit ring size for any NIC adapter. The default is adapter-dependent.
- **Receive Ring size for 1500 MTU:** Specify the 1,500 MTU receive ring size for any NIC adapter. The default is adapter-dependent.
- **Receive Ring size for jumbo (9000) MTU:** Specify the 9,000 MTU receive ring size for any NIC adapter. The default is adapter-dependent.
- **Firmware minidump capture level mask:** Choose the driver capture mask for firmware minidump, either:
 - ☐ 0x03—Capture mask 0x03
 - ☐ 0x07—Capture mask 0x07
 - ☐ 0x0F—Capture mask 0x0F
 - ☐ 0x1F—Capture mask 0x1F (default)
 - ☐ 0x3F—Capture mask 0x3F
 - ☐ 0x7F—Capture mask 0x7F
 - ☐ 0xFF—Capture mask 0xFF
- **Number of receive netqueues per function (excluding default receive queue):** Choose the quantity of receive netqueues per function:
 - ☐ Two functions—seven per function
 - ☐ NPAR—one per function

To save your changes, click **Save Configuration**.

Managing Fibre Channel Adapters

When you select a Fibre Channel adapter from the system tree, the Adapter Management window appears in the content pane, as shown in [Figure 4-6](#).

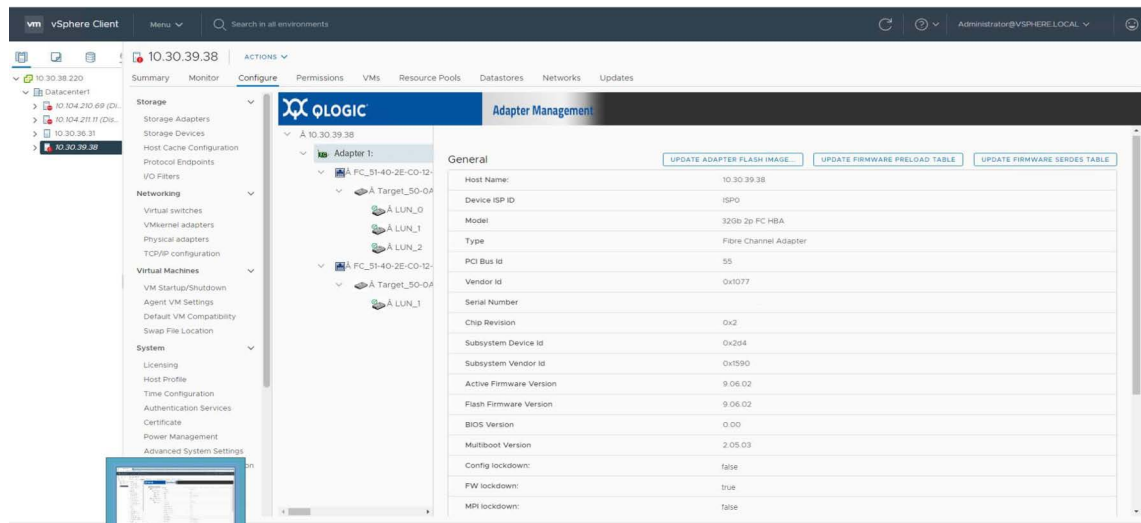


Figure 4-6. Adapter Management for Fibre Channel Adapter

Adapter Management Window

The Adapter Management window for Fibre Channel Adapters (see [Figure 4-6](#)) contains the **General** section, which displays the following read-only information:

- **Model:** Fibre Channel or FCoE adapter model
- **Type:** Either **Fibre Channel Adapter** or **Converged Network Adapter**
- **PCI Bus ID:** PCI bus number
- **Vendor ID:** Vendor ID information
- **Serial Number:** Serial number of the Fibre Channel Adapter
- **Chip Revision:** Chip revision number
- **Subsystem Device ID:** ID number of the subsystem device
- **Subsystem Vendor ID:** ID number of the subsystem vendor
- **Active Firmware Version:** Current active firmware version
- **Flash Firmware Version:** Current Flash firmware version
- **BIOS Version:** Current BIOS version
- **Multiboot Version:** Multiboot Flash kit version
- **Config lockdown:** indicates the lock down status for configuration.
- **FW lockdown:** when **true**, the firmware cannot be updated. See [“Firmware Lockdown” on page 33](#).
- **MPI lockdown:** indicates the lock down status for the MPI.

The **Personality Type Configuration** section displays the following option:

- **Personality Type:** The adapter's personality type is either **FC Only** (Fibre Channel) or **CNA** (Converged Network Adapter). The selected option indicates the adapter's current personality. To change the personality, select the other option, and then click **Save**. When instructed, reboot the machine.

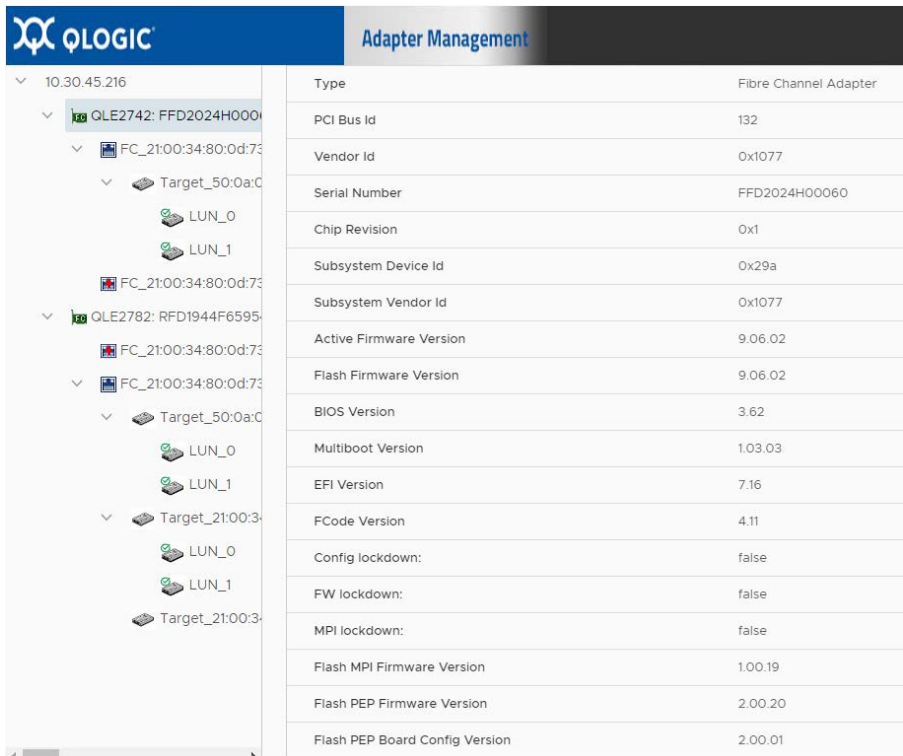
The **Commands** section provides controls to update the following:

- **Update Adapter Flash Image:** Click this option to update the adapter's Flash image.
- **Update Firmware Preload Table:** Click this option to update the firmware preload table.
- **Update Firmware SerDes Table:** Click this option to update the firmware serializer/deserializer (SerDes) table. This option is not available for all adapters and is not shown in [Figure 4-6](#).

Firmware Lockdown

Select an adapter in the host view system tree to view Firmware lockdown status for the adapter, as shown in [Figure 4-7](#).

The vSphere client prevents a Flash update if the Firmware is in lockdown mode.



QLOGIC Adapter Management	
10.30.45.216	Type Fibre Channel Adapter
QLE2742: FFD2024H0000	PCI Bus Id 132
FC_21:00:34:80:0d:73	Vendor Id 0x1077
Target_50:0a:00:00:00:00	Serial Number FFD2024H000060
LUN_0	Chip Revision 0x1
LUN_1	Subsystem Device Id 0x29a
FC_21:00:34:80:0d:73	Subsystem Vendor Id 0x1077
QLE2782: RFD1944F6595	Active Firmware Version 9.06.02
FC_21:00:34:80:0d:73	Flash Firmware Version 9.06.02
FC_21:00:34:80:0d:73	BIOS Version 3.62
Target_50:0a:00:00:00:00	Multiboot Version 1.03.03
LUN_0	EFI Version 7.16
LUN_1	FCode Version 4.11
Target_21:00:34:80:0d:73	Config lockdown: false
LUN_0	FW lockdown: false
LUN_1	MPI lockdown: false
Target_21:00:34:80:0d:73	Flash MPI Firmware Version 1.00.19
LUN_0	Flash PEP Firmware Version 2.00.20
LUN_1	Flash PEP Board Config Version 2.00.01

Figure 4-7. Firmware Lockdown

Managing a Fibre Channel Adapter Port

To manage a port on a Fibre Channel adapter, select the port in the system tree. The Adapter Management window appears as shown in [Figure 4-8](#).

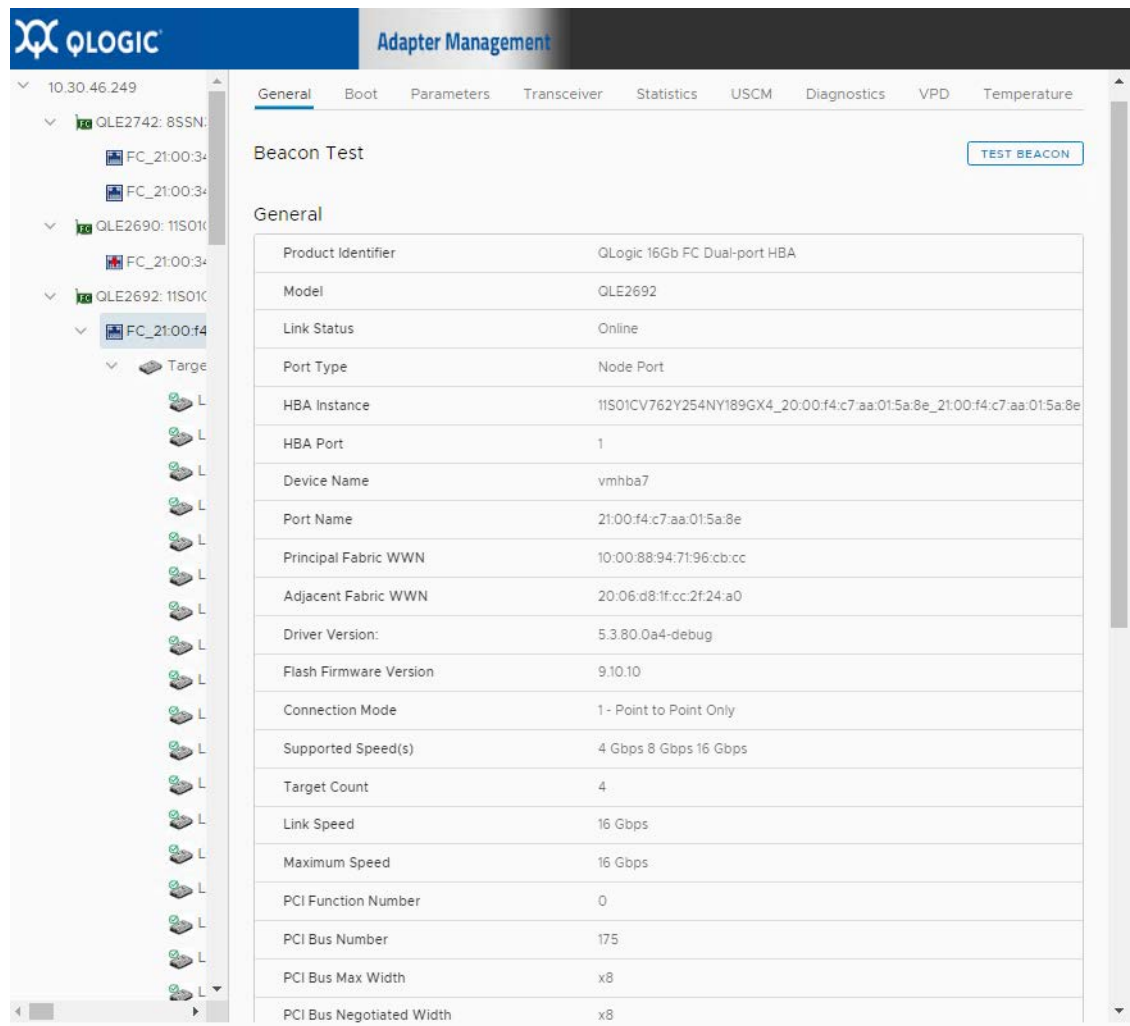


Figure 4-8. Adapter Management Window—Fibre Channel Port

The **General** information section at the top of the content pane contains the following:

- | | |
|-------------------------------|---------------------------------|
| ■ Product Identifier | ■ Advanced Fabric WWN |
| ■ Link Status | ■ Driver Version |
| ■ Port Type | ■ Flash Firmware Version |
| ■ HBA Instance | ■ Connection Mode |
| ■ HBA Port | ■ Supported Speeds |
| ■ Device Name | ■ Target Count |
| ■ Port Name | ■ Link Speed |
| ■ Principal Fabric WWN | |

The **Beacon Test** section of the content pane contains the following option:

- **Beacon On/Beacon Off**—Click this to toggle the beacon from on to off, or off to on.

Below the identifying information is a row of buttons, as shown in [Figure 4-9](#):



Figure 4-9. Fibre Channel Port—Information Selection

Click the following buttons to select the information to manage on the port:

- **General**—Displays general port information
- **Boot**—Boot configuration
- **Parameters**—Firmware parameters
- **Transceiver**—Transceiver information
- **Statistics**—Statistics information
- **Diagnostics**—Diagnostic tests
- **VPD**—Vital product data (VPD) information
- **Temperature**—Temperature information

The option that is underlined indicates the selected information (for example, **Boot** in [Figure 4-9](#)). The information for that option appears in the content pane. The following sections describe the Fibre Channel port information types:

- [Boot Configuration—Fibre Channel Port](#)
- [Firmware Parameters—Fibre Channel Port](#)
- [Transceiver Information—Fibre Channel Port](#)
- [Statistics Information—Fibre Channel Port](#)
- [Diagnostic Tests—Fibre Channel Port](#)
- [VPD Information—Fibre Channel Port](#)
- [Temperature Information—Fibre Channel Port](#)

The world wide port name (WWPN) can be assigned by the fabric through a Brocade® switch if both the adapter and Brocade switch are enabled to allow fabric-assigned WWPNs. For information about enabling fabric-assigned WWPNs, see the adapter user's guide and Brocade switch documentation.

In [Figure 4-10](#), port 21:00:00:24:ff:86:9e:59 is the BIOS boot configuration before this port has been assigned by the fabric through the Brocade switch.

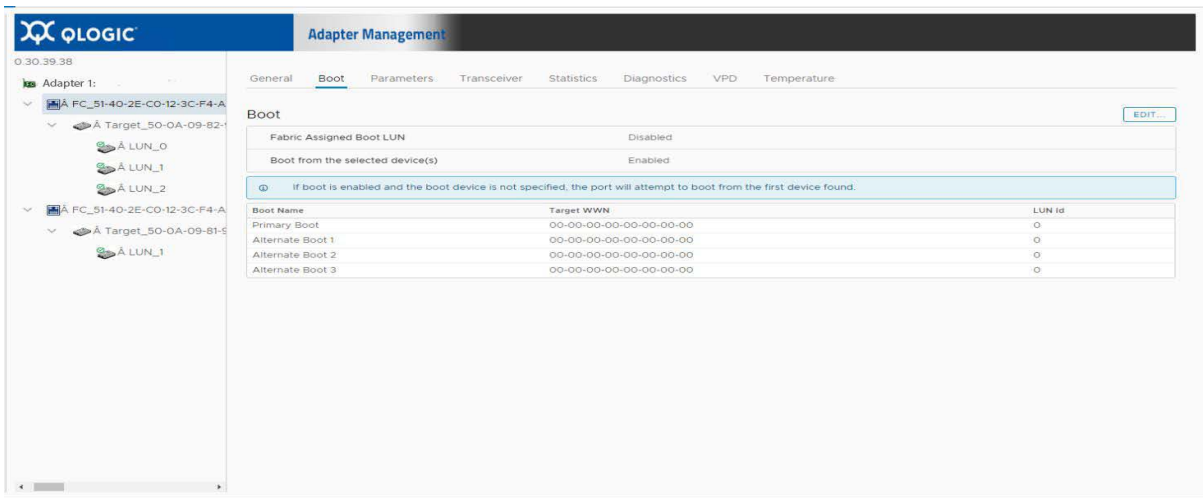


Figure 4-10. Boot Configuration for Port 21:00:00:24:ff:86:9e:59 (Before FA-WWPN Has Been Assigned)

After re-initializing the ports to enable FA-WWPN, the assigned WWNs are shown in [Figure 4-11](#).

For forward error correction (FEC) to be enabled for a connection, the port on the Brocade switch and the connected adapter port must have FEC enabled. In [Figure 4-11](#), FEC is enabled on port FC_51:40:2e:c0:12:3c:f4:a0.

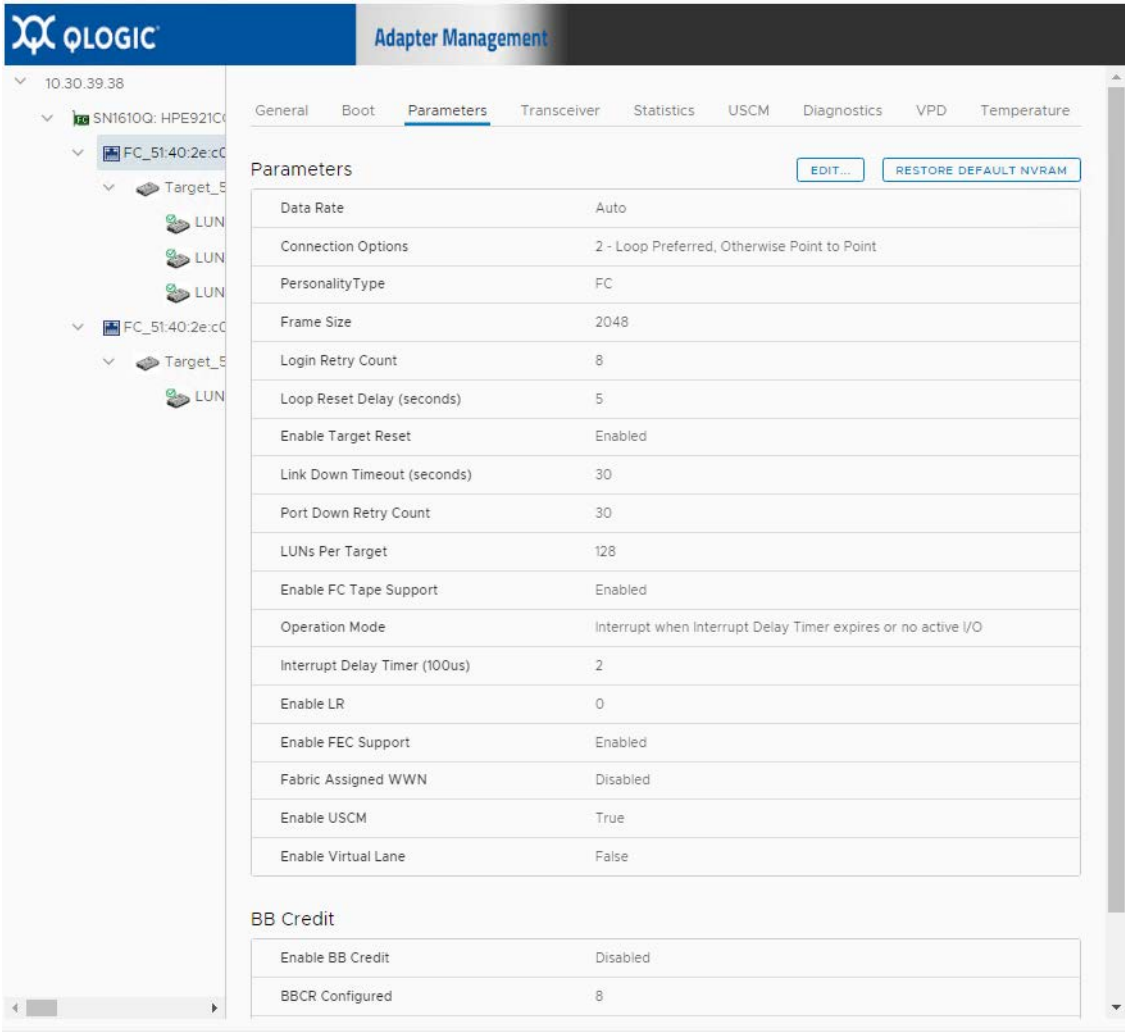


Figure 4-11. FEC Enabled on Port FC_51:40:2e:c0:12:3c:f4:a0

Boot Configuration—Fibre Channel Port

The following sections describe how to view and configure a boot configuration for a Fibre Channel port in either BIOS mode or UEFI mode.

BIOS Mode

To view the current BIOS boot configuration, select **Boot** ▶ **BIOS**. The content pane appears as shown in [Figure 4-12](#).

When **Boot** is selected, the content pane appears as shown in [Figure 4-12](#).

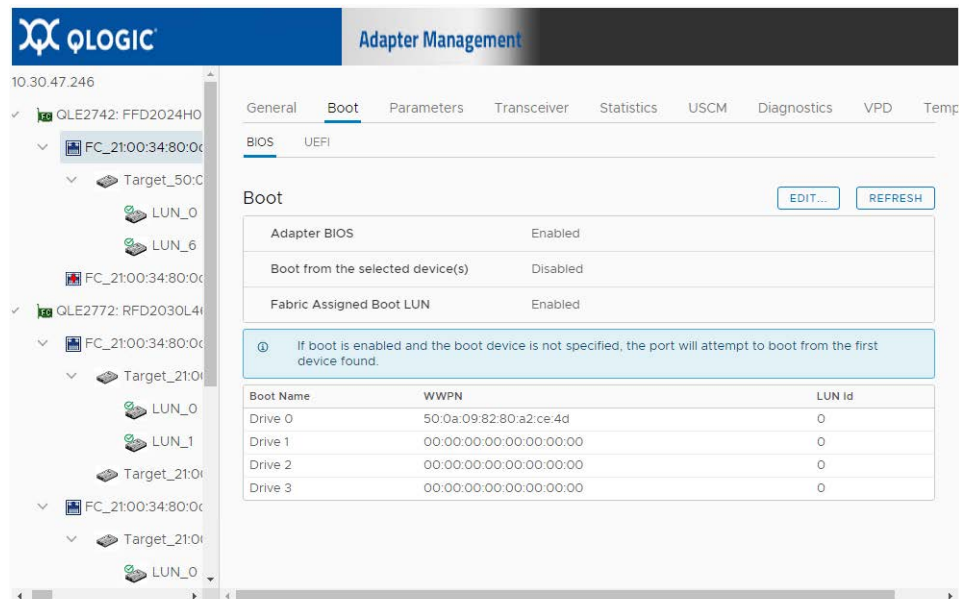


Figure 4-12. Fibre Channel Port—Boot Configuration in BIOS Mode

To change the BIOS boot mode parameters, click **Edit**. The content pane appears as shown in [Figure 4-13](#).

Boot Name	WWPN	LUN Id
Drive 0	50:0a:09:82:80:a2:ce:4c	6
Drive 1	00:00:00:00:00:00:00:00	0
Drive 2	00:00:00:00:00:00:00:00	0
Drive 3	00:00:00:00:00:00:00:00	0

Figure 4-13. Fibre Channel Port—Boot Configuration in BIOS Mode, Setting

The content pane contains the following configurable parameters:

- **Adapter BIOS:** Select the check box to enable booting from the selected port, or clear the check box to disable booting from the port.
- **Fabric Assigned Boot LUN:** Select the check box to enable booting from the fabric assigned boot LUN, or clear the check box to disable booting from the fabric assigned boot LUN.

When using the fabric-assigned boot LUN:

- ☐ The Fabric Assigned Boot LUN parameter must be enabled on both the initiator (adapter) and the Brocade switch for the FA-WWPN to be assigned to the adapter.
- ☐ If the Fabric Assigned Boot LUN parameter is disabled on the adapter and enabled on the Brocade switch, the FA-WWPN cannot be assigned to the adapter.
- ☐ If the Fabric Assigned Boot LUN parameter is enabled on the adapter and disabled on the Brocade switch, the FA-WWPN cannot be assigned to the adapter.
- **Boot from the selected device(s):** Select the check box to allow booting from a boot device that you specify. Clear the check box to disable this feature.

The following option is available only if **Boot from the selected device(s)** is selected:

- **Drive 0–3:** Specify the primary boot device by selecting its worldwide name in **WWPN**, and then select the device's LUN ID in **LUN ID**.

UEFI Mode

In UEFI boot configuration, you can select either **FCP** target devices or **NVMe** target namespaces in boot from SAN configuration.

FCP

To view the current UEFI boot configuration, select **Boot** ▶ **UEFI** ▶ **FCP**. The content pane appears as shown in [Figure 4-14](#).

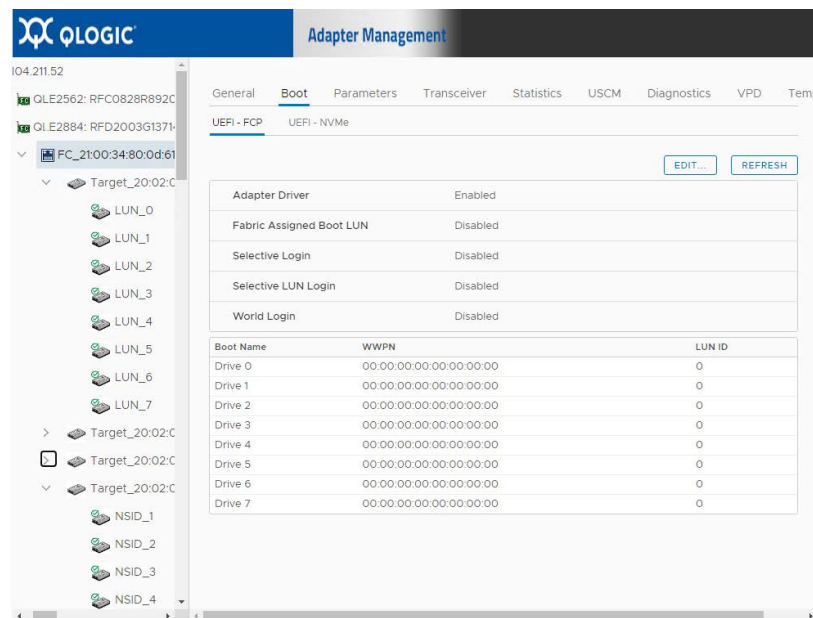


Figure 4-14. Fibre Channel Port—Boot Configuration in UEFI—FCP

To change the UEFI boot mode parameters, click **Edit**. The content pane appears as shown in [Figure 4-15](#).

Boot Name	WWPN	LUN ID
Drive 0	00:00:00:00:00:00:00 ▾	0 ▾
Drive 1	00:00:00:00:00:00:00 ▾	0 ▾
Drive 2	00:00:00:00:00:00:00 ▾	0 ▾
Drive 3	00:00:00:00:00:00:00 ▾	0 ▾

Figure 4-15. Fibre Channel Port—Boot Configuration in UEFI FCP, Setting

The content pane contains the following configurable parameters:

- **Adapter Driver:** Select the check box to enable booting from the selected port, or clear the check box to disable booting from the port.
- **Fabric Assigned Boot LUN:** Select the check box to enable booting from the fabric assigned boot LUN, or clear the check box to disable booting from the fabric assigned boot LUN.

When using the fabric-assigned boot LUN:

- ☐ The Fabric Assigned Boot LUN parameter must be enabled on both the initiator (adapter) and the Brocade switch for the FA-WWPN to be assigned to the adapter.
- ☐ If the Fabric Assigned Boot LUN parameter is disabled on the adapter and enabled on the Brocade switch, the FA-WWPN cannot be assigned to the adapter.
- ☐ If the Fabric Assigned Boot LUN parameter is enabled on the adapter and disabled on the Brocade switch, the FA-WWPN cannot be assigned to the adapter.
- **Selective Login**
- **Selective LUN Login**

■ **World Login**

The following device selection options are available:

- **Drive 0–3:** Specify the boot device by selecting its worldwide name in **WWPN**, and then select the device's LUN ID in **LUN ID**.

NVMe

To view the current UEFI (NVMe) boot configuration, select **Boot ▶ UEFI ▶ NVMe**. The content pane appears as shown in [Figure 4-16](#).

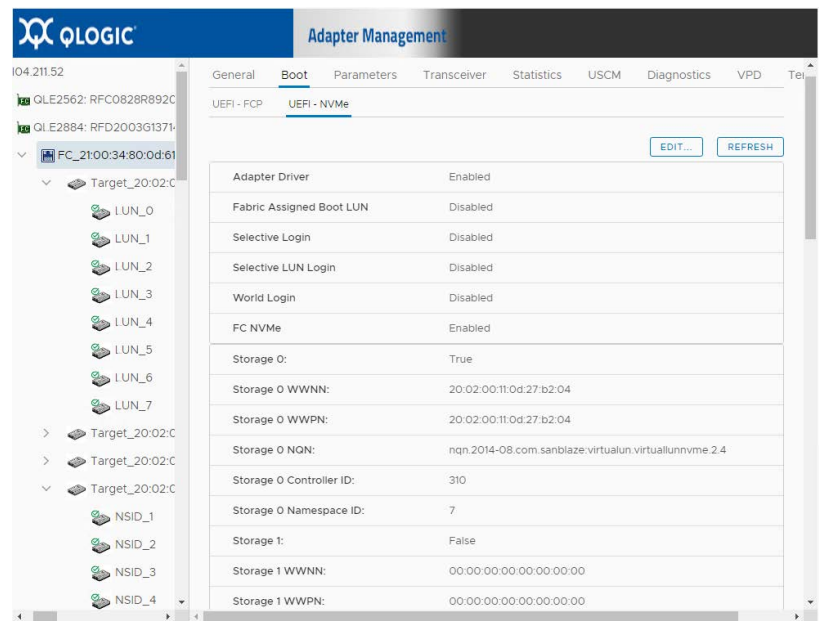


Figure 4-16. Fibre Channel Port—Boot Configuration in UEFI—NVMe

To change the UEFI (NVMe) boot mode parameters, click **Edit**. The content pane appears as shown in [Figure 4-17](#).

Boot Name	Enabled	WWPN	NSID
Storage 0	☒	20:02:00:11:0d:27:b2:04	7
Storage 1	☐	00:00:00:00:00:00:00	0
Storage 2	☒	20:02:00:11:0d:27:b2:02	2
Storage 3	☐	00:00:00:00:00:00:00	0

Figure 4-17. Fibre Channel Port—Boot Configuration in UEFI (NVMe) Mode, Setting

The content pane contains the following configurable parameters:

- **Adapter Driver:** Select the check box to enable booting from the selected port, or clear the check box to disable booting from the port.
- **Fabric Assigned Boot LUN:** Select the check box to enable booting from the fabric assigned boot LUN, or clear the check box to disable booting from the fabric assigned boot LUN.

When using the fabric-assigned boot LUN:

- ☐ The Fabric Assigned Boot LUN parameter must be enabled on both the initiator (adapter) and the Brocade switch for the FA-WWPN to be assigned to the adapter.
- ☐ If the Fabric Assigned Boot LUN parameter is disabled on the adapter and enabled on the Brocade switch, the FA-WWPN cannot be assigned to the adapter.
- ☐ If the Fabric Assigned Boot LUN parameter is enabled on the adapter and disabled on the Brocade switch, the FA-WWPN cannot be assigned to the adapter.
- **Selective Login**
- **Selective LUN Login**

- **World Login**

- **FC NVMe:** Select the check box to enable booting from the selected port and NVMe namespace or clear the check box to disable NVMe namespace selection when booting from the port.

The following device selection options are available:

- **Drive 0–7:** Specify the boot device by selecting its worldwide name in **WWPN**, and then select the device's NSID in **Namespace ID**.

Firmware Parameters—Fibre Channel Port

If the **Parameters** button is selected, the content pane appears as shown in Figure 4-18.

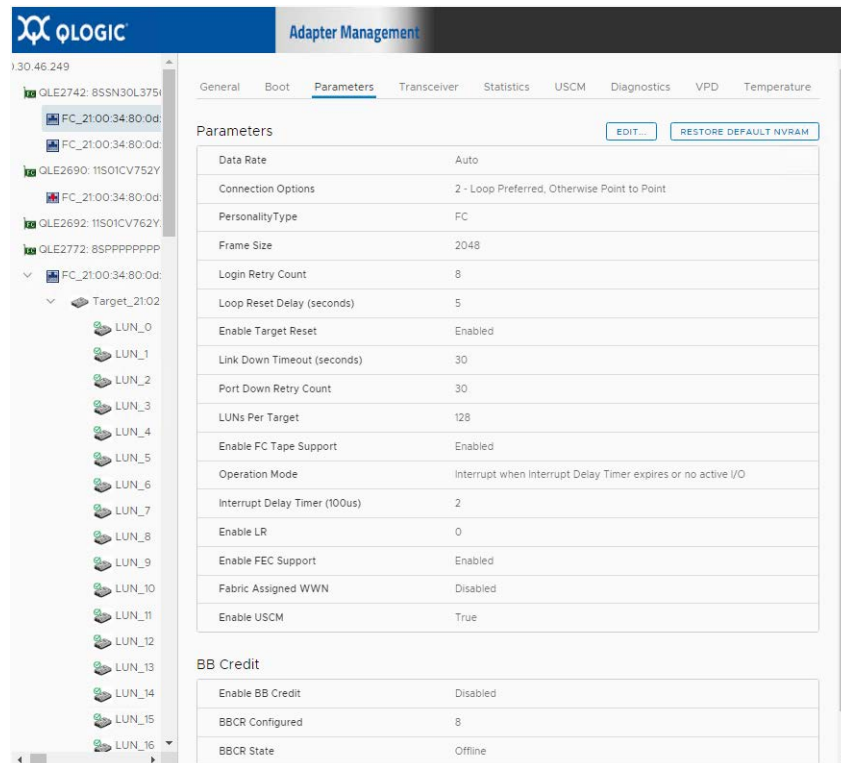


Figure 4-18. Fibre Channel Port—Firmware Parameters

The content pane contains the following configurable parameters:

- **Data Rate:** Determines the adapter port data rate:
 - ☐ When this setting is **32Gbps**, the 27xx adapter port runs at 32Gbps.
 - ☐ The FCoE ports can run at **10Gbps**.
 - ☐ When this setting is **16Gbps**, the 26xx adapter port runs at 16Gbps.

- ☐ When this setting is **8Gbps**, 25xx and 26xx adapter ports run at 8Gbps.
- ☐ When this setting is **4Gbps**, the 24xx, 25xx, and 26xx adapter ports run at 4Gbps.
- ☐ When this setting is **Auto**, QConvergeConsole determines what rate your system can accommodate and sets the rate accordingly. The default is **Auto**.
- **Connection Options:** Defines the type of connection (loop or point-to-point) or connection preference.
- **Frame Size:** Specifies the maximum frame length supported by the adapter. The default size is 2,048 for both the Fibre Channel 2800/2700/2600/2500 Series adapters and FCoE 3400/8400/41000/45000 Series adapters, which provides maximum performance for F_Port (point-to-point) connections.
- **Login Retry Count:** Specifies the number of times the software tries to log in to a device. The default is eight retries.
- **Loop Reset Delay:** After resetting the loop, the firmware refrains from initiating any loop activity for the number of seconds specified in this setting.
- **Link Down Timeout:** Specifies the time the driver waits for the link to come up after link down before returning the I/Os. This is analogous to the Port Down Retry Count setting, which is used when the port is down. Valid values for the Link Down Timeout setting are in the range of 0–240. A value of 0 indicates that no timeout is used. A value in the range of 1–240 indicates the number of seconds that the driver waits for the link to come up before returning the I/O.
- **Port Down Retry Count:** Specifies the number of times the software retries a command to a port returning port down status. Valid values are in the range of 0–255.
- **Interrupt Delay Timer:** Contains the value (in 100-microsecond increments) used by a timer to set the wait time between accessing (DMA) a set of handles and generating an interrupt. This setting is enabled only when the Operation Mode setting is 5 or 6. When the Operation Mode setting is 0, this setting is disabled.
- **LUNs per Target:** Specifies the number of LUNs per target. Multiple LUN support is typically for RAID boxes that use LUNs to map drives. If you do not need multiple LUN support, set the number of LUNs to 0.
- **Operation Mode:** Specifies the reduced interrupt operation (RIO) modes, if supported by the software driver. RIO modes allow posting multiple command completions in a single interrupt. When this setting is 0, the Interrupt Delay Timer setting is disabled.

- **Enable LR:** Determines if the long range support is enabled for the given adapter port. There is also a required LR enabled SFP.
- **Enable FEC Support:** QConvergeConsole supports forward error correction (FEC), which is a correction technique used for high-speed telecommunications devices to control errors in data transmission over unreliable or noisy communication channels. This setting is used only if the current adapter port is connected to a Brocade switch with FEC support.
- **Fabric Assigned WWN:** Enables the Fabric Assigned WWN feature.
- **Enable USCM.** Check this box to enable Marvell's Universal SAN Congestion Mitigation feature.
- **BB Credit:** Select the check box to enable buffer-to-buffer credit, enables two FC peer ports (N_Port, F_Port, or E_Port) to periodically send and receive the quantity of receiver ready (R_RDY) signals transmitted.

To save your changes, click **Save Configuration**.

Transceiver Information—Fibre Channel Port

If the **Transceiver** button is selected, the content pane appears as shown in Figure 4-19.

The screenshot shows the QLogic Adapter Management interface. The left sidebar lists two adapters: 'FC_51-40-2E-C0-12-3C-F4-A0' and 'FC_51-40-2E-C0-12-3C-F4-A2'. The first adapter is expanded, showing its target and three LUNs. The 'Transceiver' tab is selected for the first adapter. The main pane displays 'Transceiver Information' with a 'GENERAL' tab active. Below this is a 'General' section with a table of transceiver details. At the bottom is a table of operational metrics.

	Temperature (°C)	Voltage (V)	Tx Bias (mA)	Tx Power (mW)	Rx Power (mW)
Value	34.66	3.30	7.87	0.7507	0.7487
Status	Normal	Normal	Normal	Normal	Normal
High Alarm	75.00	3.60	12.00	1.9953	1.9953
High Warning	70.00	3.50	11.50	1.5849	1.5849
Low Warning	0.00	3.10	2.00	0.1565	0.0158

Figure 4-19. Fibre Channel Port—Transceiver Information

The content pane displays the following read-only information:

- **Vendor:** Transceiver manufacturer
- **Type:** Transceiver type

- **Identifier:** Transceiver form factor
- **Ext. Identifier:** Additional information about the transceiver
- **Part Number:** Transceiver part number
- **Speed:** Transceiver transmission speed
- **Connector:** Transceiver external optical or electrical cable type
- **Serial Number:** Transceiver serial number
- **Revision:** Vendor revision level
- **QLogic SFP installed:** **Yes**, if a QLogic SFP is installed; **No**, if an unsupported SFP is installed, or no SFP is installed.

A table at the bottom of the content pane displays information for the following transceiver characteristics: **Temperature**, **Voltage**, **Tx Bias**, **Tx Power**, and **Rx Power**. The information displayed for each of these characteristics includes:

- **Value:** Current value
- **Status:** Current status
- **High Alarm:** If a datum exceeds this value, the conditions are likely to cause an inoperable link and require immediate action.
- **High Warning, Low Warning:** Warnings indicate conditions outside the normally guaranteed bounds, but are not necessarily causes for immediate link failures.
- **Low Alarm:** If a datum is less than this value, the conditions are likely to cause an inoperable link and require immediate action.

Statistics Information—Fibre Channel Port

If the **Statistics** button is selected, the content pane appears as shown in Figure 4-20.

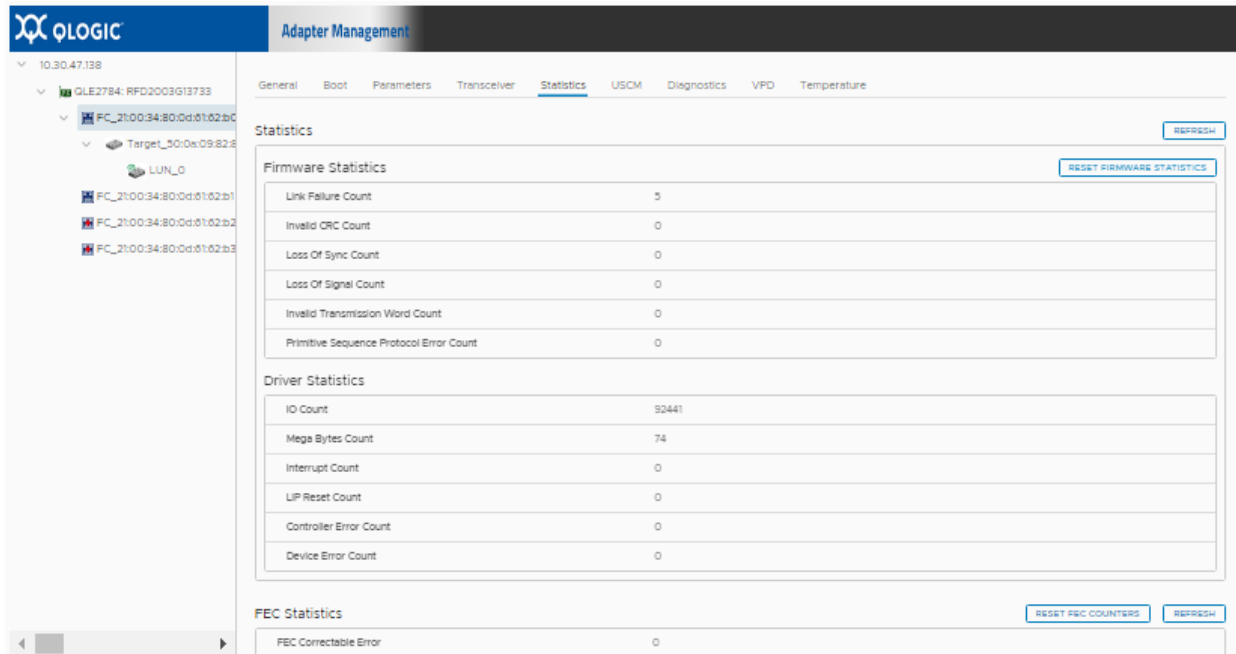


Figure 4-20. Fibre Channel Port—Statistics Information

NOTE

Selecting the **Reset** option permanently clears the counters. Any tools that use these counters for historical trending must be readjusted.

The content pane reports the following read-only statistics information:

- **Number of IOs:** Quantity of I/Os generated by the adapter port per second
- **Throughput in Megabytes:** Throughput generated by the adapter port in megabytes
- **Number of Interrupts:** Quantity of interrupts
- **Number of LIP Resets:** Quantity of LIP resets
- **Link Failure:** Quantity of times the link has failed
- **Invalid CRCs:** Quantity of frames received that contain CRC failures
- **Loss of Sync:** Number of times loss of synchronization has occurred
- **Loss of Signal:** Number of times the signal was lost

- **Controller Errors:** Quantity of controller errors
- **Device Errors:** Quantity of device errors
- **Invalid Transmission Words:** Total quantity of invalid words transmitted by this adapter port
- **Sequence Protocol Errors:** Sequence protocol error count
- **FEC Statistics:** Shows the quantity of received correctable and uncorrectable FEC errors.

Universal SAN Congestion Mitigation (USCM) Status and Statistics—Fibre Channel Initiator Port

NOTE

USCM is not supported on all adapters.

SAN congestion management (SCM) is a common noun, and describes a standards-based Fibre Channel technology.

Universal SAN Congestion Mitigation (USCM) is Marvell's IP, and describes Marvell's capabilities that encompass SCM and additional functionalities to further assist users.

The Enable USCM check box must be selected to view this information (see [“Firmware Parameters—Fibre Channel Port” on page 44](#))

USCM statistics are gathered for all ports on the Marvell QLogic FC adapter and connected targets in the configured zones with active sessions.

- USCM statistics are not gathered for other initiators in the configured zones.
- USCM is supported only on 2690, 2770, and 2800 Series Adapters.
- USCM statistics track the following types of Fabric Performance Impact Notification (FPIN) Extended Link Services (ELSs) to provide SAN congestion awareness:

FPIN ELS Statistic	Initiator Port	Target Port
Congestion	✓	—
Peer congestion	—	✓
Link integrity	✓	✓

- USCM also displays a set of congestion mitigation statistics that reflect actions taken by the adapter to minimize the impact of congestion caused by the endpoints.

You can view the USCM congestion mitigation status and statistics; the statistics can also be reset.

Universal SAN Congestion Mitigation (USCM) Status—Fibre Channel Initiator Port

To display USCM status:

1. In the host system tree, expand a Fibre Channel adapter node to view the ports.
2. Select a Fibre Channel port to display information about the port.
3. Click the **USCM** tab (Figure 4-21).

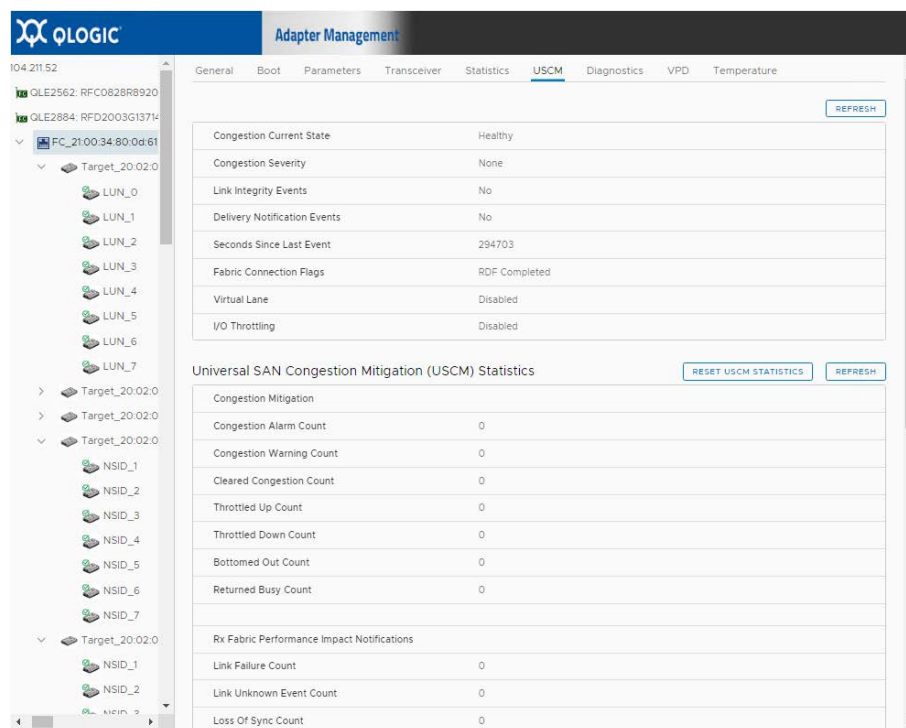


Figure 4-21. Fibre Channel Initiator Port—USCM Status

4. (Optional) Click **REFRESH** to update the display with the current USCM status.

Not all of the port parameters described in this section are available on all systems. The parameters are based on the adapter driver version.

The USCM initiator port congestion status ([Table 4-1](#)) indicate the current status of the particular HBA port, based on congestion events (both extended link service (ELS) and signals) from the switch. At a given point in time, the HBA port is either *congested* or *healthy*. The other status indicates the severity of congestion and the time since the last congestion event.

Contact the fabric/switch vendor for more information relating to congestion severity within their products.

Table 4-1. USCM Initiator Port Status

Status	Description
Congestion Current State	Valid values are: Healthy Congested
Congestion Severity	Warning. Congestion is building and may have reached a severe level. Alarm. Congestion has reached a severe level. None. No congestion present. NOTE: For more FPIN information, see the user's guide for your switch.
Seconds Since Last Event	Event time period (in seconds) since the last congestion notification was received.
Fabric Connection Flags	RDF Rejected. The adapter is either not connected or does not support RDF; or the connected switch does not support USCM. RDF Completed. Either the connected Brocade or Cisco switch does not support virtual lanes or the virtual lane feature is disabled at the initiator port. RDF Completed (Cisco). The connected Cisco switch has virtual lanes up and running. NOTE: RDF stands for Registration Diagnostic Function.
Virtual Lane ¹	Valid values are: Operational Non-operational Disabled

Table 4-1. USCM Initiator Port Status (Continued)

Status	Description
I/O Throttling ²	Valid values are: Active. I/O throttling is currently active. The I/O queue depth is ramping up or down. Disabled. I/O throttling is disabled on the adapter. None. I/O throttling is not active. I/Os are running with the normal queue depth value. NA. I/O throttling is not supported for the adapter.

¹ Virtual Lane is supported only on 2770 and 2870 Series Marvell QLogic Adapters. See [“Universal SAN Congestion Mitigation \(USCM\) Virtual Lanes” on page 62](#) for more information.

² I/O Throttling is supported only on 2690, 2770, and 2870 Series Marvell QLogic Adapters.

Universal SAN Congestion Mitigation (USCM) Statistics—Fibre Channel Initiator Port

To view the USCM statistics for the specified Fibre Channel Port:

1. In the host system tree, expand a Fibre Channel adapter node to view the ports.
2. Select a Fibre Channel port to display information about the port.

3. In the content pane, click the **Statistics** tab to open the Statistics page (Figure 4-22).

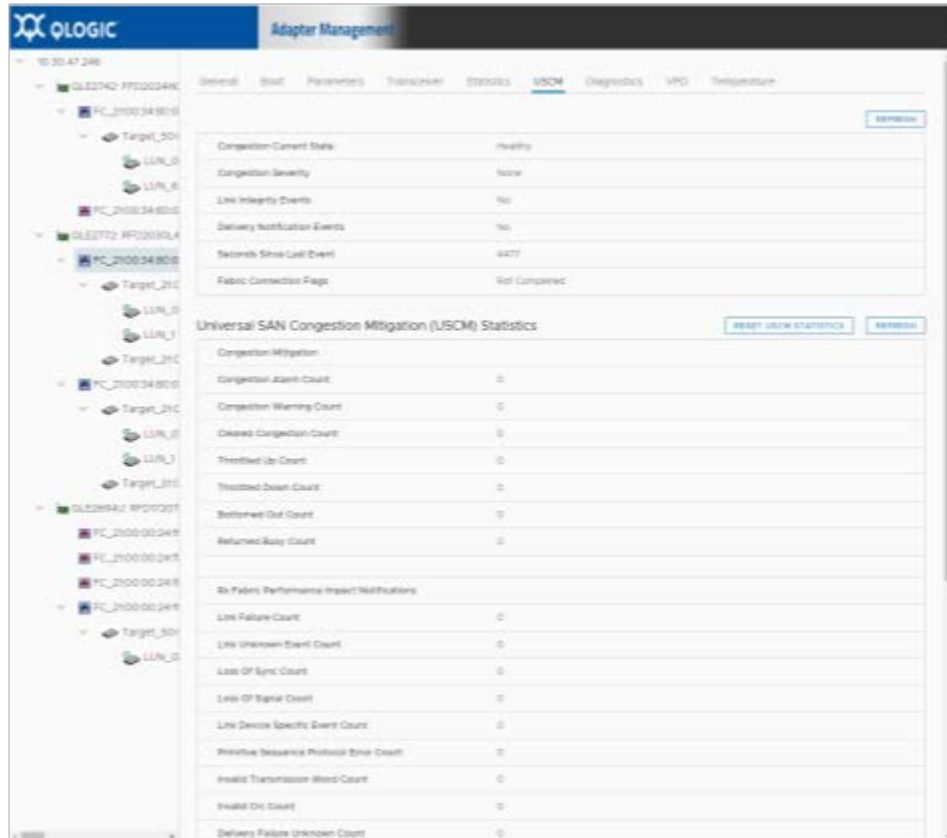


Figure 4-22. Fibre Channel Initiator Port—USCM Statistics

4. (Optional) Click **REFRESH** to update the display with the current USCM statistics.
5. (Optional) Click **RESET USCM STATISTICS** to clear port-level USCM statistics for both the specified Marvell Adapter Fibre Channel port and all the targets connected to that port.

Not all of the port parameters described in this section are available on all systems. The parameters are based on the adapter driver version.

USCM statistics are gathered for all initiator ports of this adapter.

USCM statistics are not gathered for other initiators in the configured zones.

USCM statistics for initiators provide SAN congestion awareness by tracking three types of FPIs: congestion, link integrity, and delivery.

USCM also displays a set of statistics to track the actions taken by the adapter to minimize the impact of congestion in the fabric at the initiator ports.

The initiator congestion mitigation port statistics in [Table 4-2](#) are part of Marvell's USCM functionality that reflects actions taken by the Marvell QLogic FC adapter to mitigate the congestion, while providing visibility into the initiator port's performance as a result of SAN congestion.

Table 4-2. USCM Initiator Port Congestion Mitigation Statistics

Statistic	Description
Congestion Alarm Count	Counter for the number of alarm events in Congestion Severity .
Congestion Warning Count	Counter for the number of warning events in Congestion Severity .
Cleared Congestion Count	The number of times the congestion event was cleared for this port.
Throttled Down Count	The fabric is congested at this port. ■ Each increment indicates that the port is receiving congestion notifications from the fabric. ■ For each increment, the port decreases the I/O bandwidth. Incrementing stops when the low watermark performance for the port is reached.
Throttled Up Count	The fabric is <i>not</i> congested at this port. ■ Each increment indicates that the port is <i>not</i> receiving congestion notifications from the fabric. ■ For each increment, the port increases the I/O bandwidth (up to the maximum I/O bandwidth for the port). ■ Incrementing starts only after the Throttle Down Count increments (and congestion notifications abate). Incrementing stops when the port reaches its optimal performance.
Bottomed Out Count	This port is operating at its low watermark performance and the fabric continues to be congested at this port. ■ Each increment indicates that the port is receiving congestion notifications from the fabric. ■ This port cannot decrease the I/O bandwidth any further.

Table 4-2. USCM Initiator Port Congestion Mitigation Statistics (Continued)

Statistic	Description
Returned Busy Count	The number of times the driver returns an I/O request queued by the initiator's storage stack. This request must be retried because the port is congested. The count is incremented faster when the driver is throttling down, and slower when the driver is throttling up.
Link Uncorrectable FEC Count	Number of uncorrectable FEC errors received.

Universal SAN Congestion Mitigation (USCM) Status and Statistics—Fibre Channel Target

USCM statistics are gathered for all ports on the Marvell QLogic FC adapter and connected targets in the configured zones with active sessions.

- USCM statistics are not gathered for other initiators in the configured zones.
- USCM is supported only on 2690, 2770, and 2800 Series Adapters.
- USCM statistics track the following types of Fabric Performance Impact Notification (FPIN) Extended Link Services (ELs) to provide SAN congestion awareness:

FPIN ELS Statistic	Initiator Port	Target Port
Congestion	✓	—
Peer congestion	—	✓
Link integrity	✓	✓

- USCM also displays a set of congestion mitigation statistics that reflect actions taken by the adapter to minimize the impact of congestion caused by the endpoints.

You can view the USCM congestion mitigation status and statistics; the statistics can also be reset.

To view USCM status and statistics for a Fibre Channel adapter target:

1. Expand the host system tree and select the desired target.
2. Click the **Statistics** button.

3. Use the scroll bar on the right side of the content pane to navigate to the Universal SAN Congestion Mitigation (USCM) information (status) and Universal SAN Congestion Mitigation (USCM) Statistics sections (Figure 4-23).

The screenshot displays the QLOGIC Adapter Management interface. On the left, a tree view shows the hierarchy of Fibre Channel adapters and targets. The 'Target_20:02:0' is selected. The main pane shows the 'USCM' (Universal SAN Congestion Mitigation) section. It contains two sub-sections: 'Universal SAN Congestion Mitigation (USCM) Information' and 'Universal SAN Congestion Mitigation (USCM) Statistics'. Both sections have a 'REFRESH' button. The information section shows the current state as 'Healthy', link integrity events as 'No', seconds since last event as 298144, virtual lane as 'Non-Operational', and I/O throttling as 'Disabled'. The statistics section shows various counts, including cleared congestion, throttled up/down, bottomed out, and returned busy counts, all currently at 0. It also includes Rx Fabric Performance Impact Notifications with various error counts.

Attribute	Value
Congestion Current State	Healthy
Link Integrity Events	No
Seconds Since Last Event	298144
Virtual Lane	Non-Operational
I/O Throttling	Disabled

Category	Count
Congestion Mitigation	
Cleared Congestion Count	0
Throttled Up Count	0
Throttled Down Count	0
Bottomed Out Count	0
Returned Busy Count	0
Rx Fabric Performance Impact Notifications	
Link Failure Count	0
Link Unknown Event Count	0
Loss Of Sync Count	0
Loss Of Signal Count	0
Link Device Specific Event Count	0
Primitive Sequence Protocol Error Count	0
Invalid Transmission Word Count	0
Invalid CRC Count	0

Figure 4-23. Fibre Channel Target—USCM Statistics and Status

4. (optional) To refresh the status information, click **REFRESH**.
The target status attributes are refreshed.
5. (optional) To refresh the statistics information, click **REFRESH**.
The targets statistics are refreshed.

The USCM target congestion status (Table 4-3) indicates the current status/health of connected target ports based on FPIN ELSS received from the switch.

This status includes peer congestion, link integrity, and delivery notifications, as well as details about each of these events for each active target port.

Table 4-3. USCM Target Port Status

Status	Description
Congestion Current State	See Congestion Current State .
Last Event	Link Integrity Delivery Peer Congestion None
Seconds Since Last Event	See Seconds Since Last Event .
Link Integrity Event Type	Unknown Link Failure Loss-of-Synchronization Loss-of-Signal Primitive Sequence Protocol Error Invalid Transmission Word Invalid CRC Device Specific Reserved
Link Integrity Event Threshold	Time (in milliseconds)
Delivery Reason Code Type	Unknown Timeout Unable to route Device specific Reserved
Peer Congestion Event Type	Clear Lost Credit Credit Stall Oversubscription Device Specific Reserved
Peer Congestion Event Period	Time (in milliseconds)
Virtual Lane ¹	Slow Normal Non-operational N/A

Table 4-3. USCM Target Port Status (Continued)

Status	Description
I/O Throttling ²	Valid values are: Active. I/O throttling is currently active. The I/O queue depth is ramping up or down. Disabled. I/O throttling is disabled on the adapter. None. I/O throttling is not active. I/Os are running with the normal queue depth value. NA. I/O throttling is not supported for the adapter.

¹ Virtual Lane is supported only on 2770 and 2870 Series Marvell QLogic Adapters. See [“Universal SAN Congestion Mitigation \(USCM\) Virtual Lanes” on page 62](#) for more information.

² I/O Throttling is supported only on 2690, 2770, and 2870 Series Marvell QLogic Adapters.

USCM statistics are gathered for all targets connected to all ports on this adapter in the configured zones with active sessions.

USCM statistics for targets provide SAN congestion awareness by tracking three types of FPIs: peer congestion, link integrity, and delivery.

USCM also displays a set of congestion mitigation statistics to track the actions taken by the Marvell QLogic FC adapter to minimize the impact of congestion in the fabric at target ports.

The target congestion mitigation port statistics in [Table 4-4](#) are part of Marvell's USCM functionality that reflects actions taken by the adapter to mitigate the congestion, while providing visibility into the target port's performance as a result of SAN congestion.

NOTE

The peer congestion FPIs reflect fabric congestion at the specified target port.

Table 4-4. USCM Target Port Congestion Mitigation Statistics

Parameter	Description
Cleared Congestion Count	Counter for the number of times the congestion event was cleared for this target.
Throttled Up Count	See Throttled Up Count .
Throttled Down Count	See Throttled Down Count .

Table 4-4. USCM Target Port Congestion Mitigation Statistics (Continued)

Parameter	Description
Bottomed Out Count	See Bottom Out Count .
Returned Busy Count	See Returned Busy Count .
Link Failure Count	Counter for number of link failure events.
Link Unknown Event Count	Counter for the number of unknown events.
Loss of Sync Count	Counter for the number of loss of sync events.
Loss of Signal Count	Counter for the number of loss of signal count events.
Link Device Specific Event Count	Counter for the number of device specific events.
Primitive Seq Protocol Error Count	Counter for the number of primitive sequence protocol errors.
Invalid Transmission Word Count	Counter for the number of transmission word errors.
Invalid Crc Count	Counter for the number of invalid CRC events.
Delivery Failure Unknown Count	Counter for the number of unknown events.
Delivery Timeout Count	Counter for the number of timeout events.
Delivery Unable to Route Count	Counter for the number of unable to route events.
Delivery Failure Device Specific Count	Counter for the number of device specific events.
Peer Congestion Clear Count	Counter for the number of times the peer congestion event was cleared for this target.
Peer Congestion Lost Credit Count	Counter for the number of lost credit events.
Peer Congestion Credit Stall Count	Counter for the number of credit stall events.
Peer Congestion Oversubscription Count	Counter for the number of oversubscription events.

Table 4-4. USCM Target Port Congestion Mitigation Statistics (Continued)

Parameter	Description
Peer Congestion Device Specific Count	Counter for the number of device-specific events.
PUN Count	Number of priority update notifications received.
Link Uncorrectable FEC Count	Number of uncorrectable FEC errors received.

Universal SAN Congestion Mitigation (USCM) Profile—Fibre Channel Initiator Port

The USCM profile allows the adapter to manage adapter congestion by selecting either the driver default profile settings, or customizing different profile settings for each adapter port on a case-by-case basis.

To display the USCM profile:

1. In the host system tree, expand a Fibre Channel adapter node to view the ports.
2. Select a Fibre Channel port to display information about the port.
3. Click the **USCM** tab and scroll down to view the USCM Profile Information (Figure 4-24).

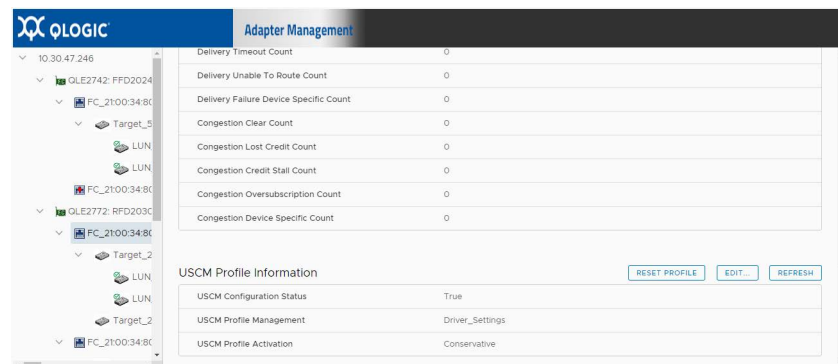


Figure 4-24. Fibre Channel Initiator Port—USCM Profile

The USCM profile parameters are described in [Table 4-5](#).

Table 4-5. USCM Profile Display

Profile	Description
USCM Configuration Status	Indicates if the USCM feature of the specified adapter port is supported. Valid values are: True False
USCM Profile Management	Indicates the current active profile setting for congestion on the specified adapter port. Valid values are: Driver_Settings (default). The USCM profile is set using either a Windows driver registry parameter; or a Linux or VMware ESXi driver module parameter. NVRAM_Settings . The USCM profile is set in the adapter NVRAM.
USCM Profile Activation	Valid values are: Monitor Only (default). Records adapter performance and congestion history for review. No actions are taken to resolve congestion. Conservative . Maintains optimum throughput while gradually reducing congestion. Queue depth (outstanding I/Os) is reduced to half of the current value as part of the throttle down operation. Marvell recommends this setting for high-priority workloads. Moderate . Queue depth (outstanding I/Os) is reduced to one-quarter of the current value as part of the throttle down operation. Aggressive . Reduces congestion on priority while reducing throughput. Queue depth (outstanding I/Os) is reduced to one-eighth of the current value as part of the throttle down operation. Marvell recommends this setting for low-priority workloads.
Refresh	Reads the latest profile setting and updates this menu to show the current USCM profile.
Reset	Reverts the current USCM profile settings by driver (driver module parameter or Windows registry settings). The command takes effect immediately; a system reboot or driver reload is not required.

To edit the USCM profiles:

1. In the USCM Profile section, click **EDIT**.

The Modify Profile content pane appears as shown in [Figure 4-25](#).

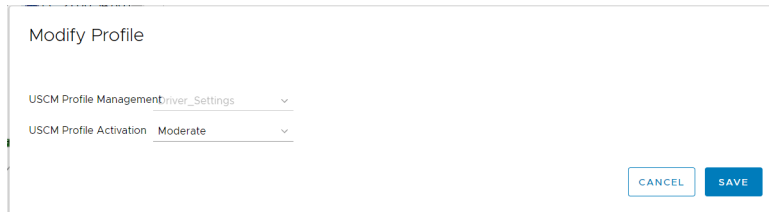


Figure 4-25. Fibre Channel Port—Edit USCM Profile

2. Change the appropriate profile, and then click **SAVE**.

The changes take effect immediately; a system reboot is not required.

Universal SAN Congestion Mitigation (USCM) Virtual Lanes

When setting up virtual lanes, consider the following:

- This feature is available only when the adapter is connected to a supported Cisco switch running a fabric OS version that supports the equivalent feature on the fabric.
- USCM must be enabled to use the virtual lanes feature. See [“Firmware Parameters—Fibre Channel Port” on page 44](#)
- By default, the USCM virtual lanes feature is disabled.
- USCM virtual lanes feature can be enabled on both target and initiator ports.
- The USCM virtual lanes feature is available only on Fibre Channel 2770 and 2870 Series Adapters.

There are two ways to enable this feature: using a driver module/registry parameter (see the appropriate Marvell QLogic Adapter user’s guide) or through the firmware parameters.

After the virtual lanes feature is enabled, you can view the status.

In initiator ports, the virtual lane feature works as follows:

Disabled	Virtual lanes are disabled at either the driver or the initiator port parameter (NVRAM).
Non-operational	Virtual lane negotiation with the switch failed.
Operational	Virtual lane negotiation is complete and fully functional.

In target ports, the virtual lane feature works as follows:

Slow	The current target is marked as slow device and was moved to a slow virtual lane due to congestion.
Normal	The current target is healthy. No congestion is detected.
Non-operational	Either virtual lanes is disabled at the initiator or it is not supported by the connected switch.
NA	Virtual lanes is not supported on the connected adapter and/or the driver.

Target Link Statistics

If the **Target Link Statistics** button is selected, target link statistics of the selected Fibre Channel target appears as shown in [Figure 4-26](#).

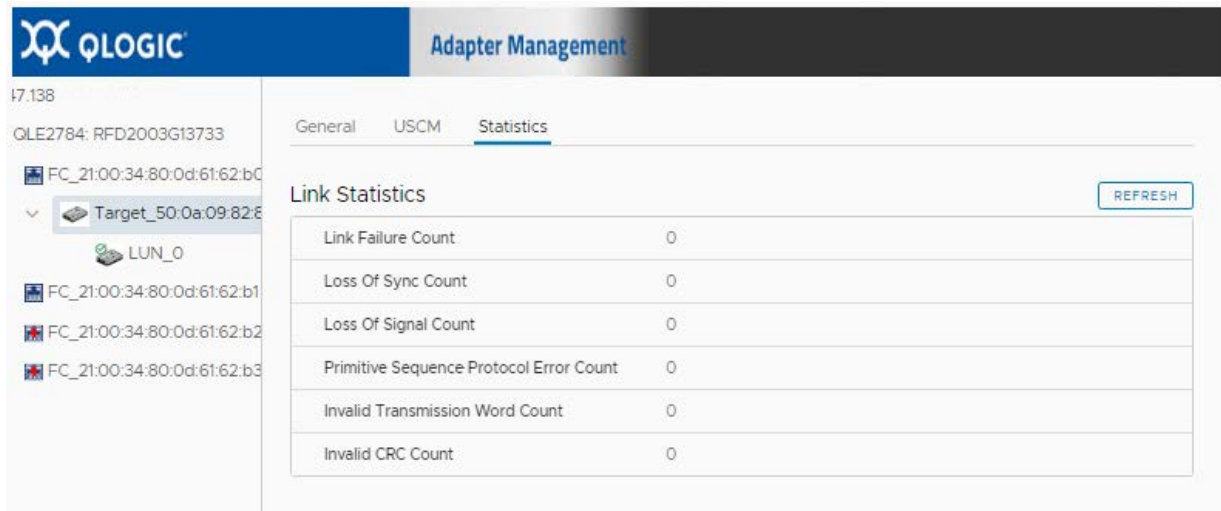


Figure 4-26. Target Link Statistics

Diagnostic Tests—Fibre Channel Port

If the **Diagnostics** button is selected, the content pane appears as shown in Figure 4-27.

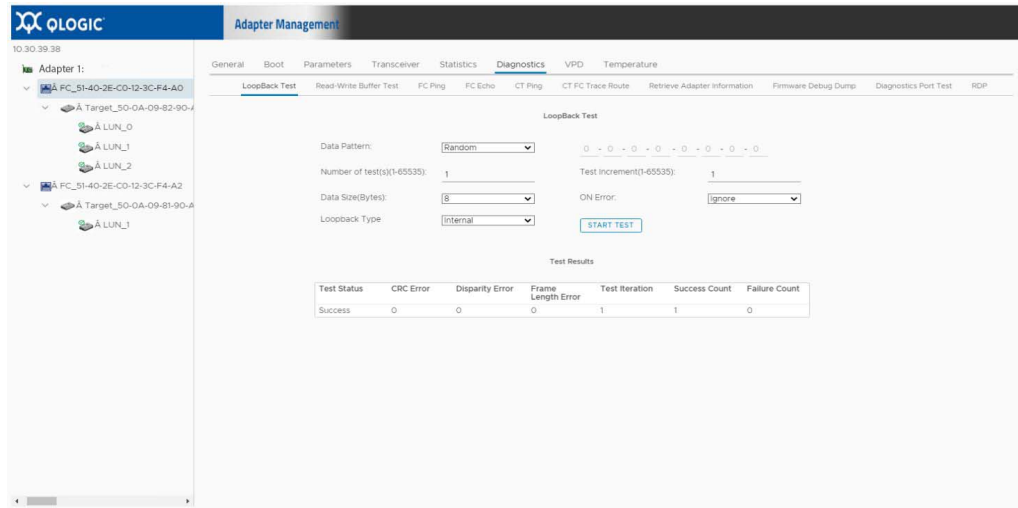


Figure 4-27. Fibre Channel Port—Diagnostics

In the content pane, select the type of diagnostic test to perform: **Loopback Test** or **Read-Write Buffer Test**. Then, under **Test Configuration**, specify the following test parameters:

- **Data Pattern:** Select the type of data pattern (jitter pattern) to use in the test. Or, type the pattern to use into the boxes provided.

Data pattern sequences are the bit sequences that are transmitted by a serializer onto a link or bit sequences received by a deserializer from a link. The data pattern sets the test pattern for evaluating the jitter compliance of a Fibre Channel link. Test bit sequences have a significant impact on stressing the link's jitter characteristics.

For more information see American National Standards Institute (ANSI), *Fibre Channel – Methodologies for Jitter and Signal Quality Specification – MJSQ, Annex A - Test bit sequences*.

In addition to selecting a data pattern, you must also specify the **Data Size (Bytes)**. The maximum data size available is dependent on the frame size of the device you are testing and the kind of test you are conducting. For more information about frame size, see [“Firmware Parameters—Fibre Channel Port” on page 44](#).

- ☐ Loopback and echo tests support data sizes from 8 bytes to 2,048 (2K) bytes.

NOTE

For Linux operating systems only, the following data size values apply: 2048, 4096, 8192, up to 65535 (2K bytes to 64K bytes).

NOTE

Echo tests are available when the **HBA Port Connection Option** is set to **Point to Point Only**. If the connection option is set to **Loop Only**, the loopback test is available.

- ☐ Read/write buffer tests support data sizes from 8 bytes to 128 bytes.

[Table 4-6](#) lists the available data patterns.

Table 4-6. Data Patterns Available for Use

Data Pattern	Bit Sequence
00	00000000
55	01010101
5A	01011010
A5	10100101
AA	10101010
FF	11111111

To set test parameters on the HBA Diagnostics page:

1. From the **Data Pattern** list, do one of the following:
 - ☐ Select a data byte or compliant jitter pattern.
 - ☐ Click **Customized** to specify an eight-byte pattern. Type the data in hexadecimal format (00–FF) into the eight **Customized** boxes.
 - ☐ Click **Random** to randomly generate an eight-byte data pattern.

The data size sets the quantity of bytes transferred per test per iteration when the test is run.
2. From the **Data Size** list, specify the quantity of bytes to transfer. Allowed values are 8, 16, 32, 64, 128, 256, 512, 1024, and 2048.
3. To set the test frequency, do one of the following:
 - ☐ In the **Number of Tests** box, type or select the quantity of tests you want to run. Testing stops when the passes complete. The valid range is between 1 and 65,536.
 - ☐ Select the **Test Continuously** check box. You determine when testing stops.
4. For **On Error**, select one of the following to determine how errors are handled. This selection applies whether you entered the quantity of tests or opted to test continuously.
 - ☐ **Ignore on Error:** Ignores errors and continues the test sequence.
 - ☐ **Stop on Error:** Stops the test sequence when an error is encountered.
 - ☐ **Loop on Error:** Uses the same data pattern and tests until the failure is cleared.
5. In the Test Increment box, type or select the quantity of passes you want to run before the test stops. The valid range is between 1 and 10,000, and must be less than or equal to the value in the **Number of Tests** box (see step 3). For example, if the **Number of Tests** box contains 100 and the **Test Increment** box contains 15, 100 tests are run in seven passes. The first six passes run 15 tests each; the seventh pass runs 10 tests ($6 \times 15 + 10 = 100$).
6. When you finish setting the diagnostic test parameters, you are ready to start diagnostic testing. To begin the selected test, click **Start Test**.

When the test is finished, the test results are displayed in the **Test Result** section of the content pane.

When a target with LUNs is connected to the port, you can conduct a ping test to any target in the table. To conduct a ping test, select a target in the table, specify the quantity of tests, and then click **Start Test**. The status for each test appears in the **Result** column, as shown in [Figure 4-28](#). The CT Ping and CT FC Trace Route ping tests are conducted in a similar fashion. However, to successfully run a CT Ping or a CT FC Trace Route ping test, the fabric must contain a Brocade switch.

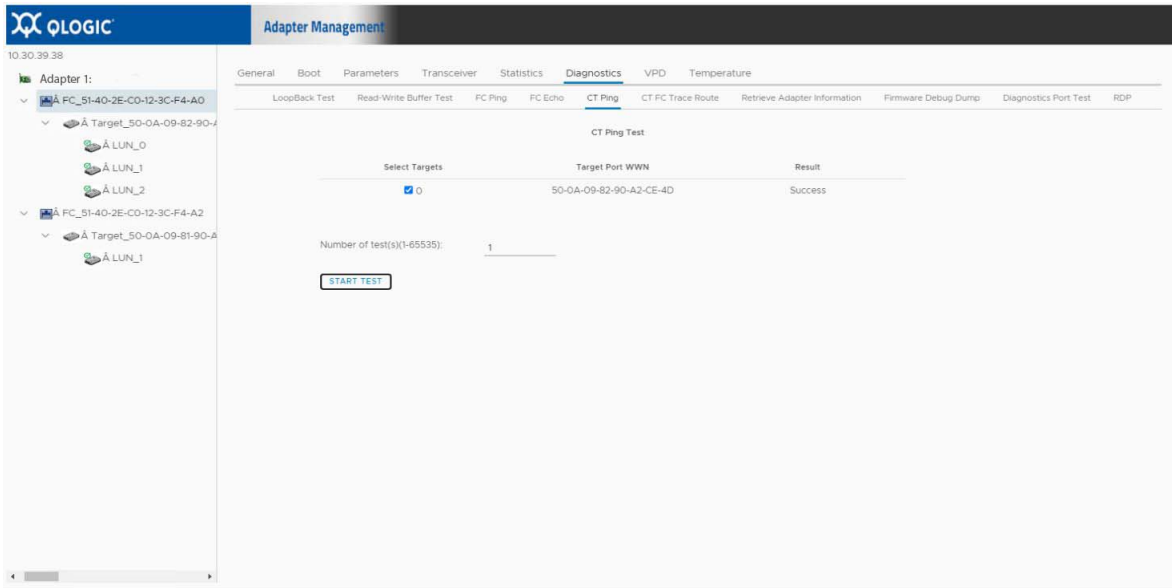


Figure 4-28. Fibre Channel Port—Ping Test Results

Retrieving Adapter Information

To view information for 2500/2600/2700 Series Adapters, select Adapter Management, Diagnostics, then **Retrieve Adapter Information**.

Select one of the available buttons:

- **FW Table**
Saves the Firmware Preload table contents to a readable text file.
- **NVRAM Configuration**
Saves NVRAM contents to a readable text file.
- **SerDes Table**
Saves the SerDes information to a readable text file.

NOTE

Information retrieved is view-only and no configuration changes can be made.

VPD Information—Fibre Channel Port

If the **VPD** button is selected, the content pane appears as shown in [Figure 4-29](#).

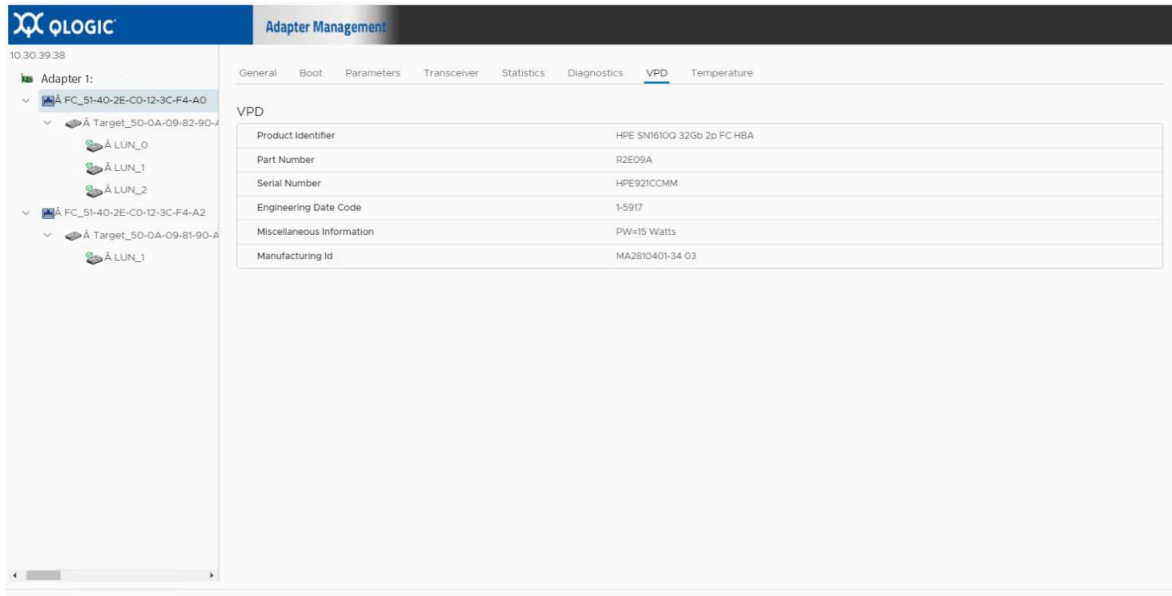


Figure 4-29. Fibre Channel Port—VPD Information

The content pane also contains the following read-only VPD information:

- **Product Identifier:** Adapter product identifier
- **Part Number:** Adapter part number
- **Serial Number:** Adapter serial number
- **Engineering Date Code:** Date code engineering uses to identify release information on an FCoE adapter port
- **Miscellaneous information:** Miscellaneous information for the 4Gb, 8Gb, or 16Gb adapter port
- **Manufacturing ID:** Manufacturing ID of the 4Gb, 8Gb, or 16Gb adapter

Temperature Information—Fibre Channel Port

If the **Temperature** button is selected (if available), the content pane appears as shown in [Figure 4-30](#). To begin monitoring temperature, specify the monitoring rate, and then click **Start**. To stop monitoring, click **Stop**.

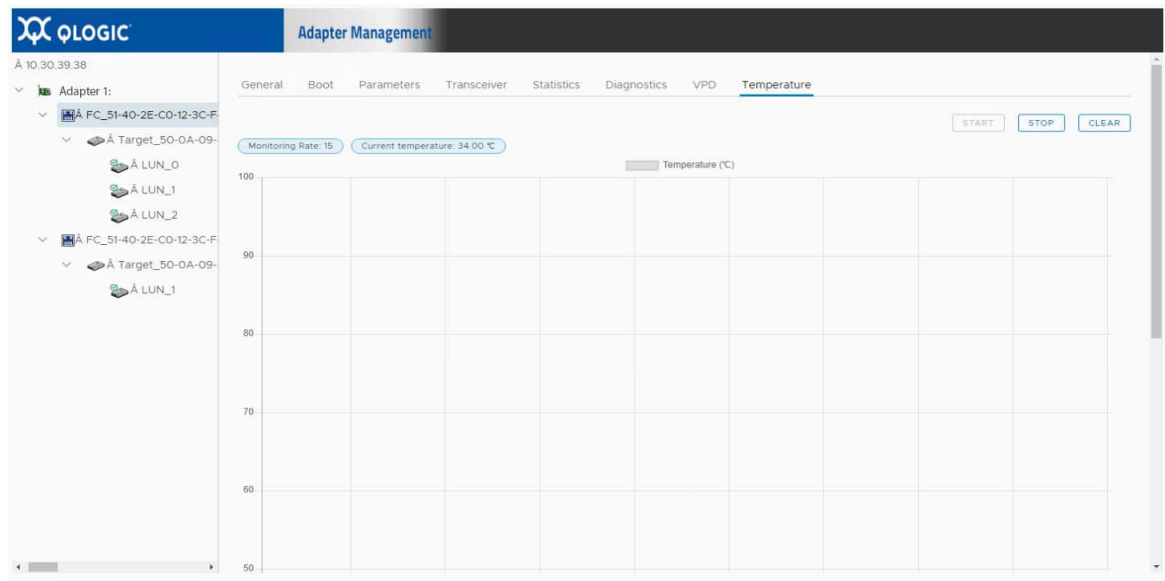


Figure 4-30. Fibre Channel Port—Temperature Information

Viewing Target Device Information

To display information on a target device connected to a port on a Fibre Channel adapter or a Converged Network Adapter, select the target device in the system tree. The Adapter Management window then appears as shown in either [Figure 4-31](#) or [Figure 4-32](#).

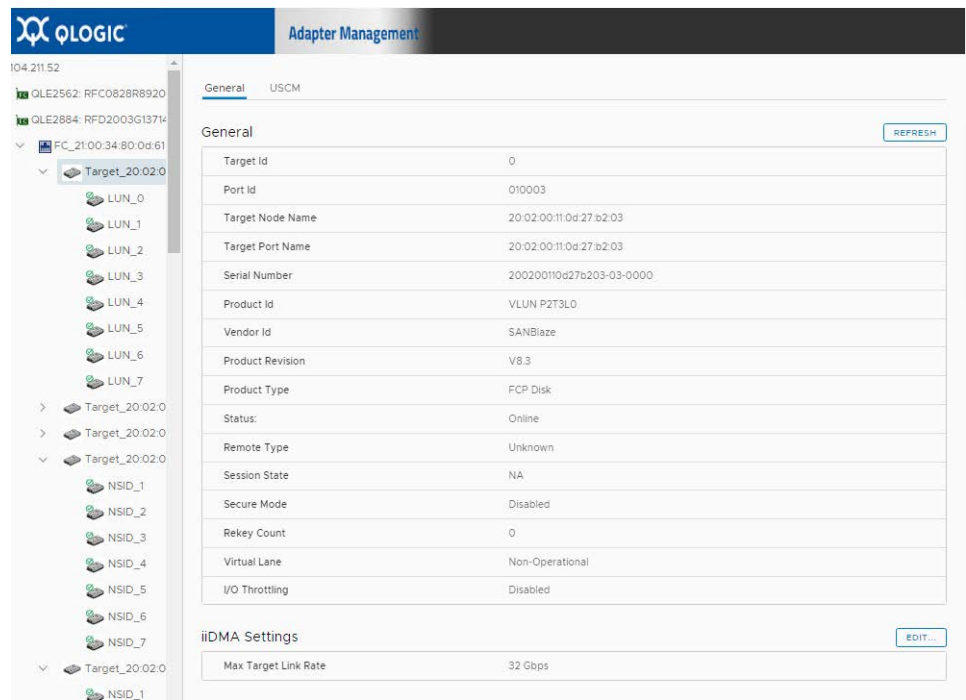


Figure 4-31. Adapter Management Window for FCP Target Device

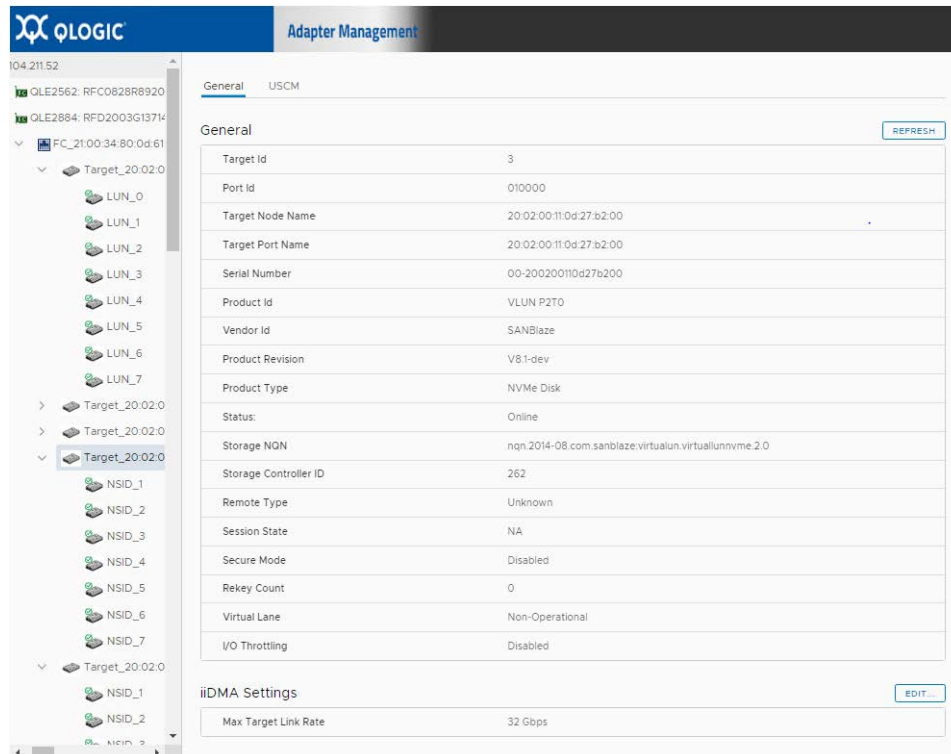


Figure 4-32. Adapter Management Window for NVMe Target Device

The Adapter Management window for target devices contains the General section, which displays read-only information for the selected target device, as follows:

General

- Target ID
- Port ID
- Target Node Name
- Target Port Name
- Serial Number
- Product ID
- Vendor ID
- Product Revision
- Product Type
- Status
- Storage NQN (NVMe target device only)
- Storage Controller ID (NVMe target device only)
- Remote Type
- Session State
- Secure Mode

- Virtual Lane
- I/O Throttling

iiDMA Settings

This setting is the current maximum link rate configuration of the specified target detected on the Marvell FC port. To change this setting, click **Edit**. The iiDMA Settings box appears (Figure 4-33).

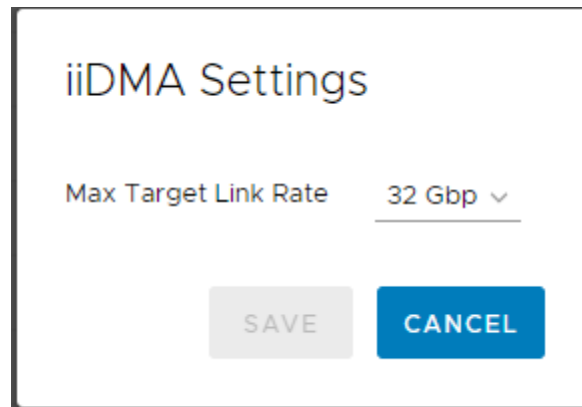


Figure 4-33. iiDMA Settings

After selecting the maximum target link rate at which data is sent for the selected FC target from the Marvell FC port, click **SAVE**.

Managing Converged Network Adapters

The QConvergeConsole vSphere Client Plug-in allows you to configure and view identifying information for the adapter itself, a physical port on the adapter, or a physical function on one of the adapter ports, as described in the following sections:

- [Managing a Converged Network Adapter](#)
- [Managing a Port on a Converged Network Adapter](#)
- [Managing NIC Functions on a Converged Network Adapter](#)
- [Managing FCoE Functions on a Converged Network Adapter](#)
- [Managing iSCSI Functions on a Converged Network Adapter](#)

Managing a Converged Network Adapter

To manage a Converged Network Adapter, select the adapter in the system tree. The Adapter Management window appears in the content pane, as shown in [Figure 4-34](#).

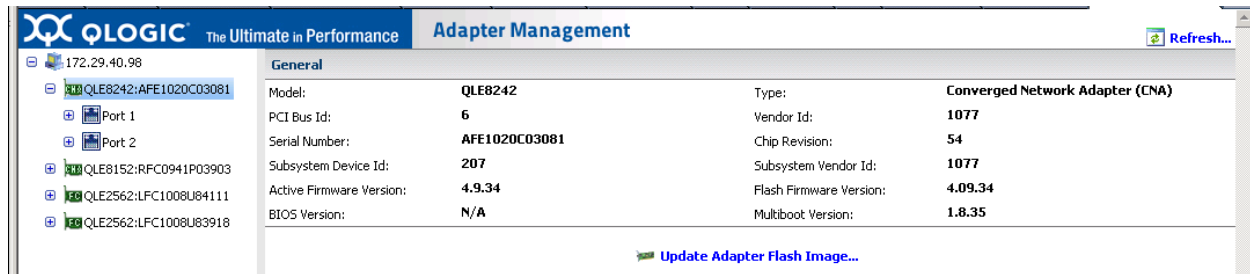


Figure 4-34. Adapter Management Window for Converged Network Adapter

The Adapter Management window ([Figure 4-34](#)) displays information for the selected adapter. The window contains the **General** section, which lists the following read-only information for the selected adapter:

- **Model:** Adapter model number
- **Type:** Adapter type (Converged Network Adapter)
- **PCI Bus ID:** PCI bus identifier
- **Vendor ID:** Adapter vendor identifier
- **Serial Number:** Adapter serial number
- **Chip Revision**
- **Subsystem Device ID**
- **Subsystem Vendor ID**
- **Active Firmware Version:** Active firmware version
- **Flash Firmware Version:** Flash firmware version
- **BIOS Version:** BIOS version
- **Multiboot Version:** Multiboot version

Managing a Port on a Converged Network Adapter

To manage a Converged Network Adapter port, select the port in the system tree. The Adapter Management window then appears as shown in [Figure 4-35](#).

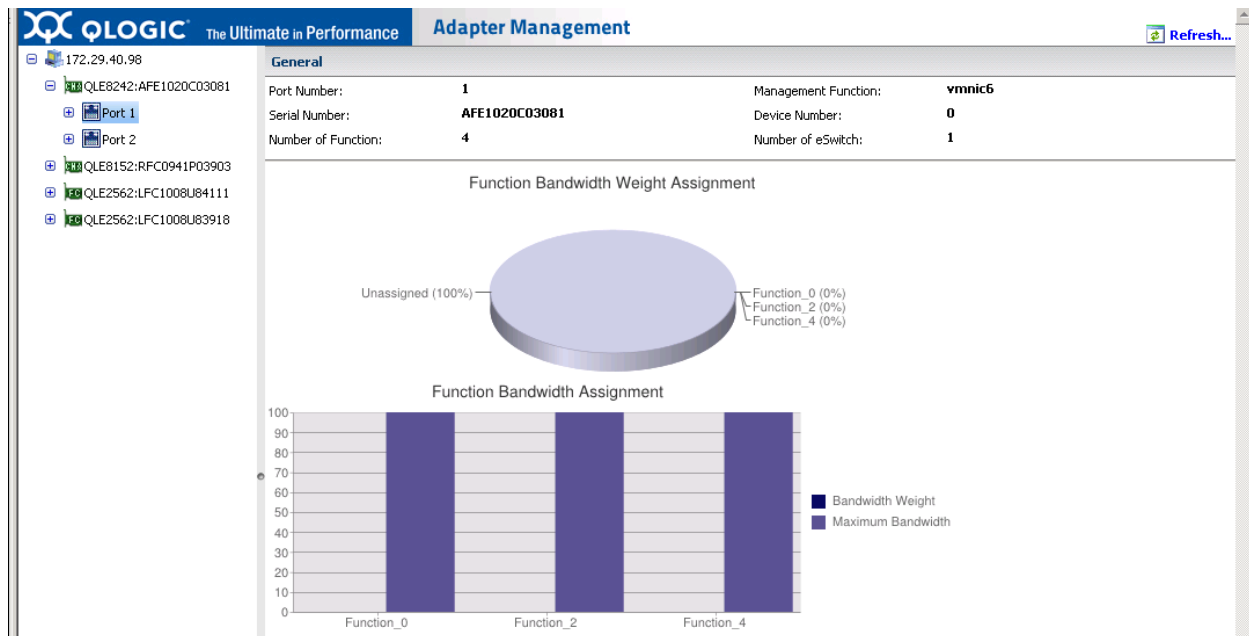


Figure 4-35. Adapter Management Window for Converged Network Adapter Port

The Adapter Management window for Converged Network Adapter ports contains the following sections.

General Section

The **General** section displays the following read-only information for the selected adapter port:

- **Port Number:** Adapter port number
- **Management Function**
- **Serial Number:** Adapter serial number
- **Device Number**
- **Number of Function**
- **Number of eSwitch**

Function Bandwidth Weight Assignment

The function bandwidth weight assignment chart shows the bandwidth percentages for the various functions.

Managing NIC Functions on a Converged Network Adapter

To manage a NIC function on a Converged Network Adapter port, select the NIC function in the system tree. The Adapter Management window then appears as shown in [Figure 4-36](#).

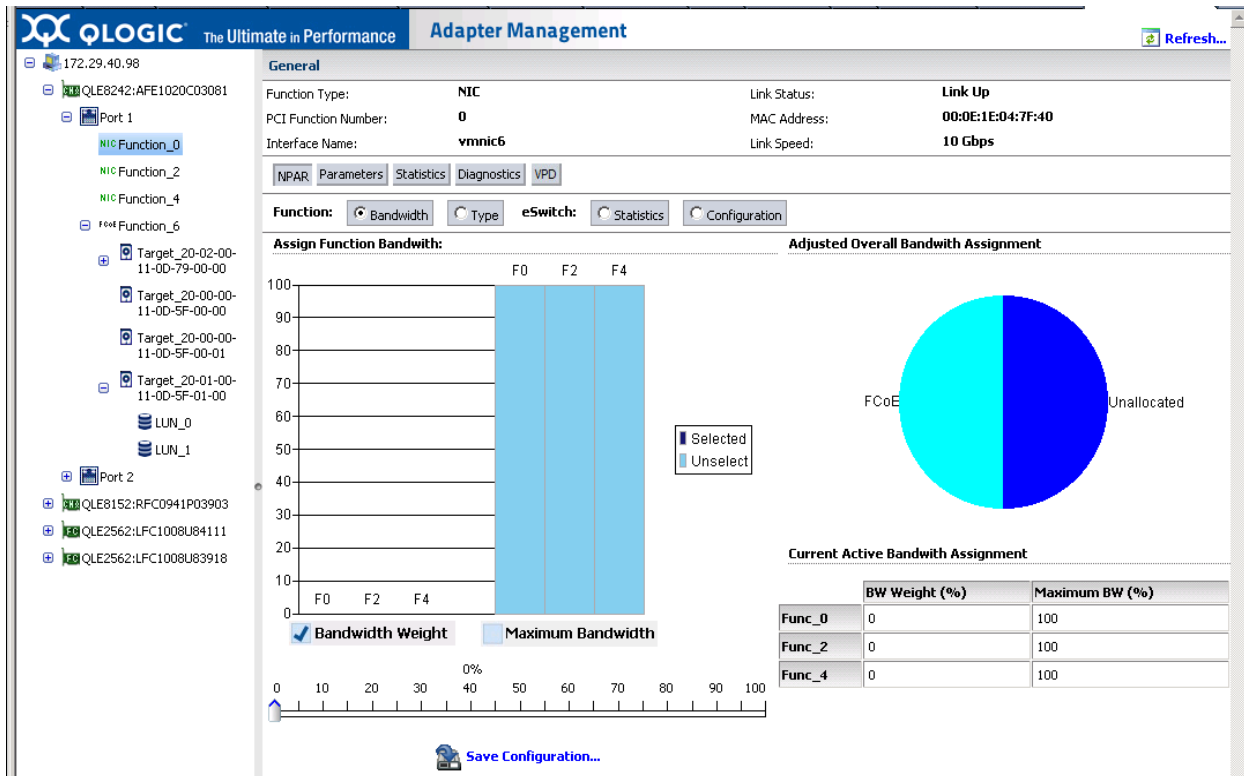


Figure 4-36. Adapter Management Window—PCI Function

The **General** section at the top of the content pane contains the following non-configurable information:

- **Function Type:** Type of function (NIC)
- **Link Status:** Link status (Up or Down)
- **PCI Function Number:** 0, 2, 4, or 6 for Port 1; 1, 3, 5, or 7 for Port 2
- **MAC Address:** PCI function MAC address
- **Interface Name:** Name of the NIC port
- **Link Speed:** Adapter transmission speed

Below the general information is a row of buttons, as shown in [Figure 4-37](#).

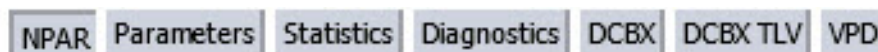


Figure 4-37. Converged Network Adapter NIC Function—Information Selection

These buttons let you select the information to manage for the NIC function:

- **NPAR**—NIC partitioning configuration
- **Parameters**—Firmware parameters
- **Statistics**—Statistics information
- **Diagnostics**—Diagnostic tests
- **DCBX**—DCBX and ETS values
- **DCBX TLV**—DCBX TLV values
- **VPD**—VPD Information

The button that appears pressed in indicates the selected information (for example, **NPAR** in [Figure 4-37](#)). The selected information is displayed in the content pane. The different types of information for a NIC function are described in the following sections:

- [NPAR Configuration—NIC Function](#)
- [Firmware Parameters—NIC Function](#)
- [Statistics Information—NIC Function](#)
- [Diagnostics Tests—NIC Function](#)
- [DCBX Information—NIC Function](#)
- [DCBX TLV Information—NIC Function](#)
- [VPD Information—NIC Function](#)

NPAP Configuration—NIC Function

If the **NPAP** button is selected, the content pane appears as shown in Figure 4-38.

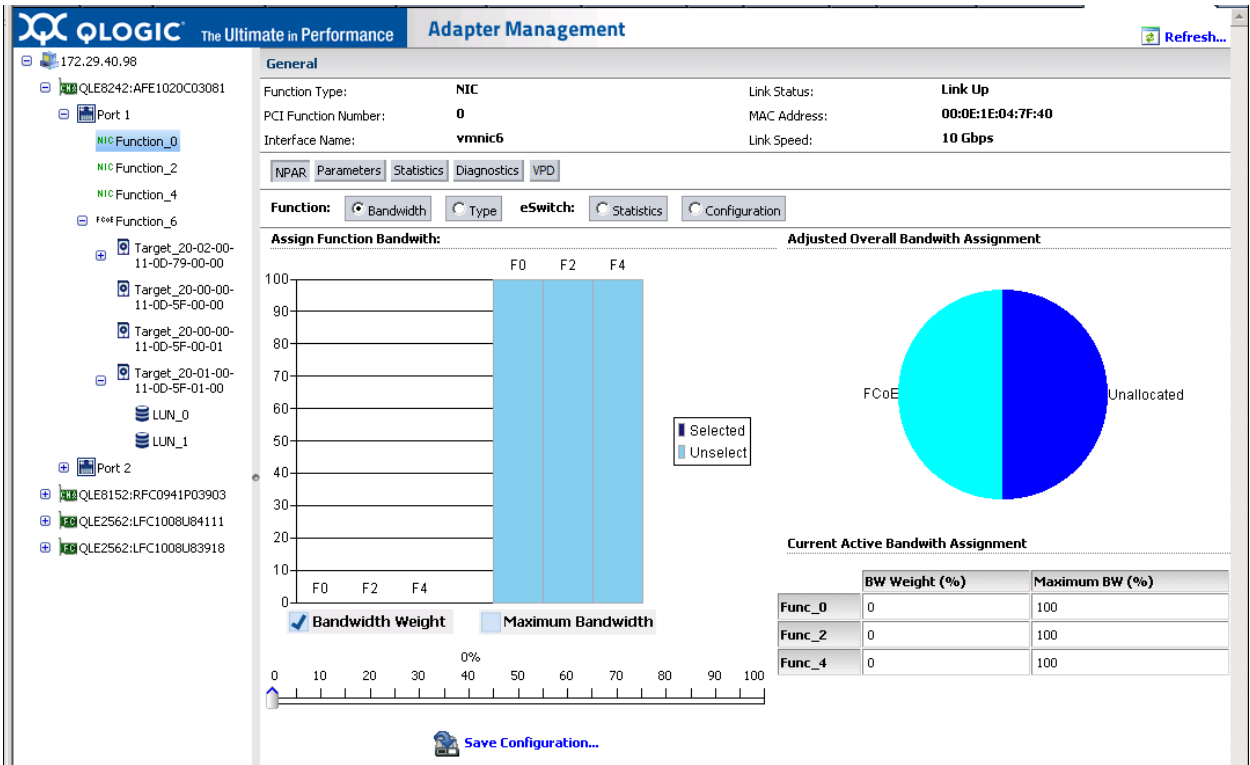


Figure 4-38. Converged Network Adapter NIC Function—NPAP Configuration

The content pane varies depending on which **Function** is selected:

- **Bandwidth** allows you to view and set the bandwidth allocation for the NIC function. For detailed information, refer to [“Bandwidth Allocation” on page 78](#).
- **Type** shows the current function type and allows you to change the function type. For detailed information, refer to [“Function Type” on page 79](#).

Bandwidth Allocation

Selecting the **Bandwidth** option displays the current bandwidth allocation settings in the content pane, and allows you to change the settings as needed, as shown in Figure 4-39.

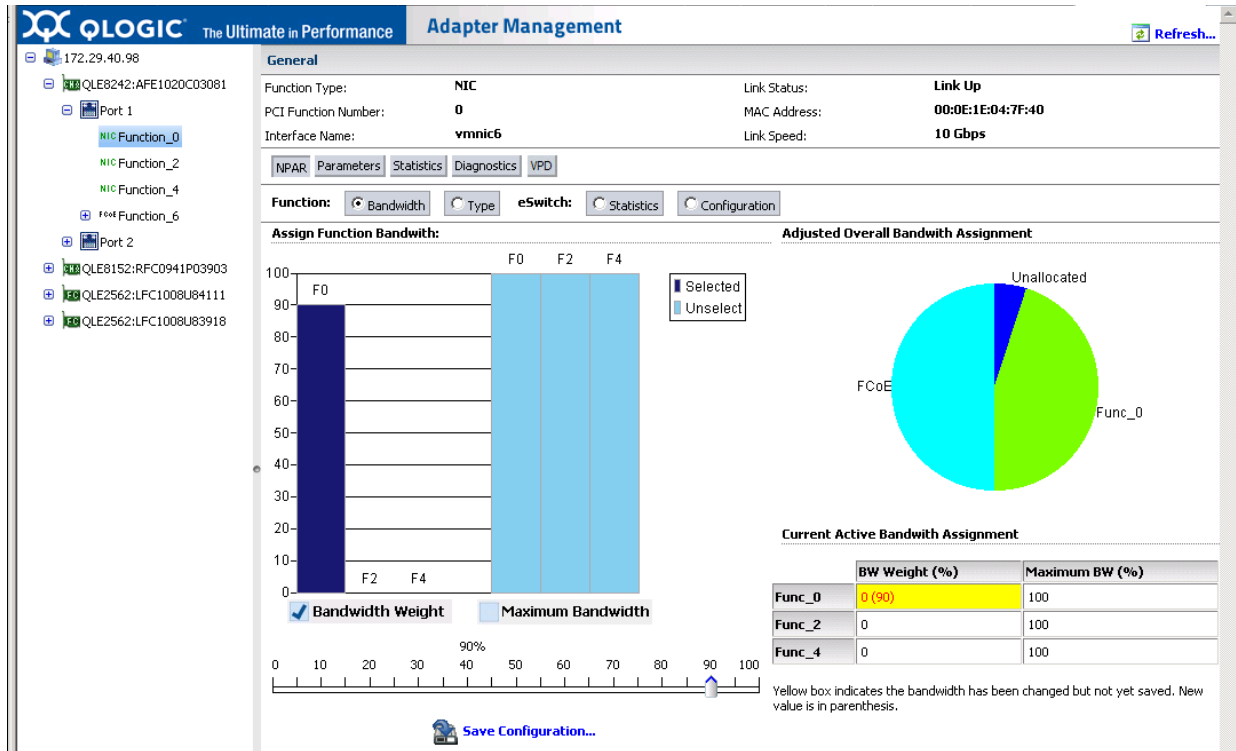


Figure 4-39. Bandwidth Configuration

The content window is divided into the following sections:

- **Assign Function Bandwidth** contains a slider control used to set the parameters **Bandwidth Weight** and **Maximum Bandwidth**. To set a parameter, select the appropriate box and then drag the slider to change the setting. To save the new settings, click **Save Configuration**.
- **Adjusted Overall Bandwidth Assignment** is a pie chart diagram that shows the amount of the total bandwidth assigned to the NIC function.
- **Current Active Bandwidth Assignment** lists the current settings for the Bandwidth Assignment and Maximum Bandwidth parameters. A yellow background indicates that the new value (in parentheses) has not been saved yet.

To save your changes, click **Save Configuration**.

NOTE

Bandwidth changes are dynamically assigned when already in the NPAR mode. You will be prompted to reboot if the NPAR dynamic bandwidth assignment fails to set.

Function Type

Selecting the **Type** option displays the current function type (NIC) and allows you to change the function type. To change the function type, select the new type and click **Save Configuration**. The new type takes effect after the next system reboot.

Figure 4-40 and Figure 4-41 show examples.

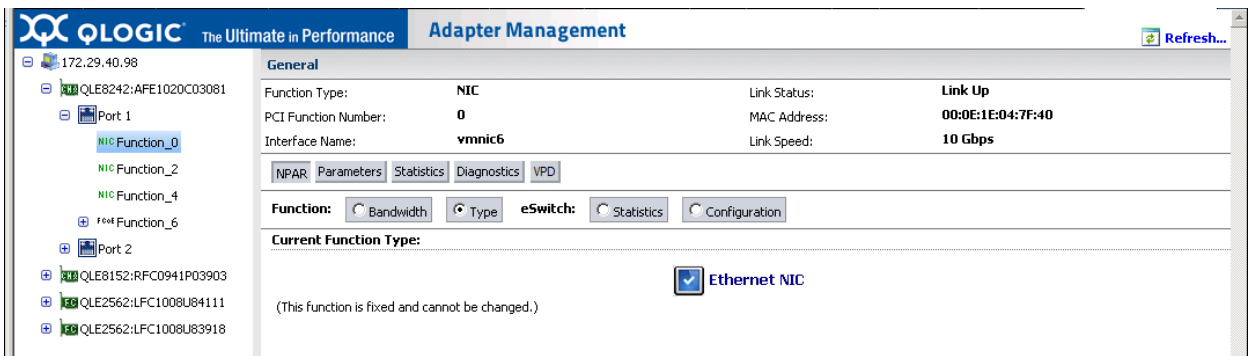


Figure 4-40. Converged Network Adapter NIC Function 0 or 1—Function Type

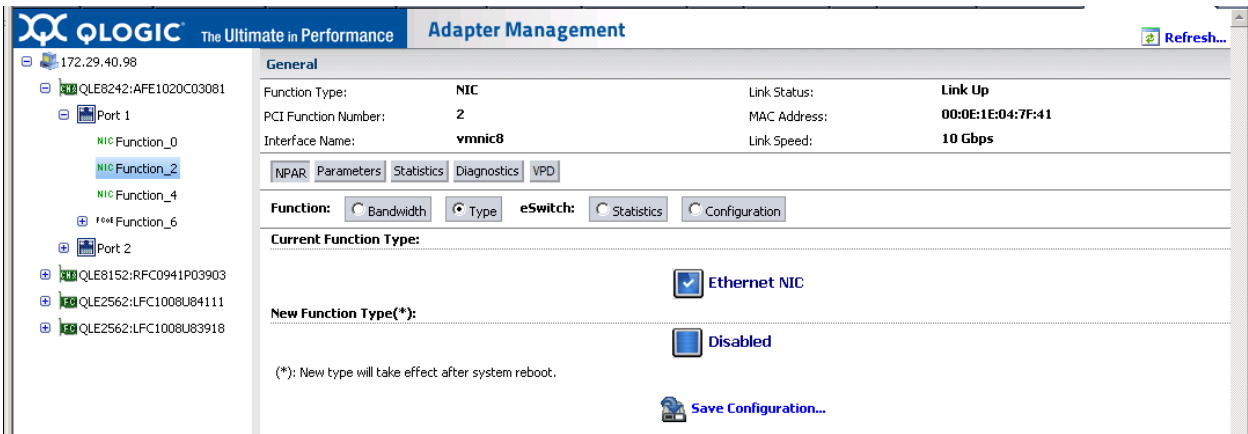


Figure 4-41. Converged Network Adapter NIC Function 2 or 3—Function Type

Firmware Parameters—NIC Function

If the **Parameters** button is selected, the content pane appears as shown in Figure 4-42.

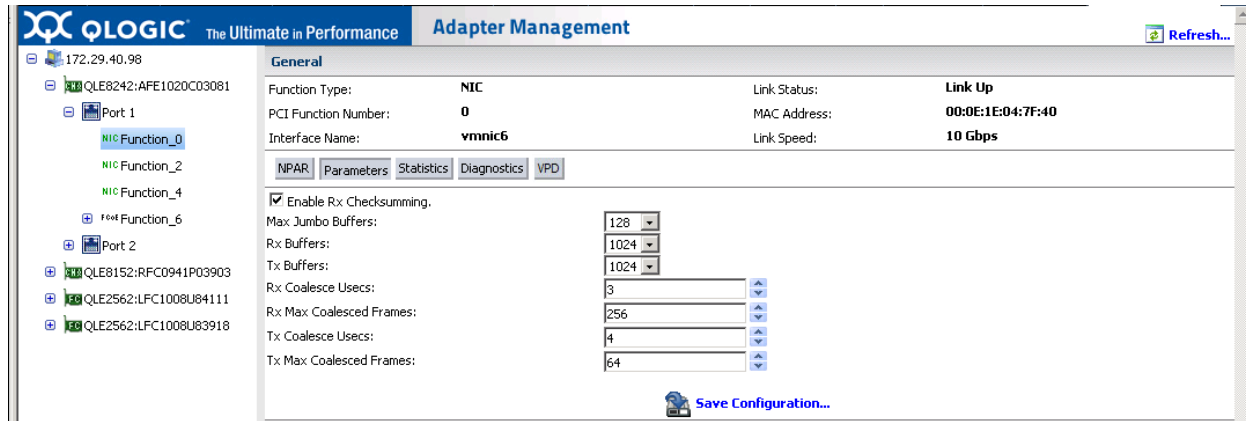


Figure 4-42. Converged Network Adapter NIC Function—Firmware Parameters

The content pane contains the following configurable parameters:

- **Enable Rx Checksumming**
- **Max Jumbo Buffers**
- **Rx Buffers**
- **Tx Buffers**
- **Rx Coalesce Usecs**
- **Rx Max Coalesced Frames**
- **Tx Coalesce Usecs**
- **Tx Max Coalesced Frames**

To save your changes, click **Save Configuration**.

Statistics Information—NIC Function

If the **Statistics** button is selected, the content pane appears as shown in Figure 4-43.

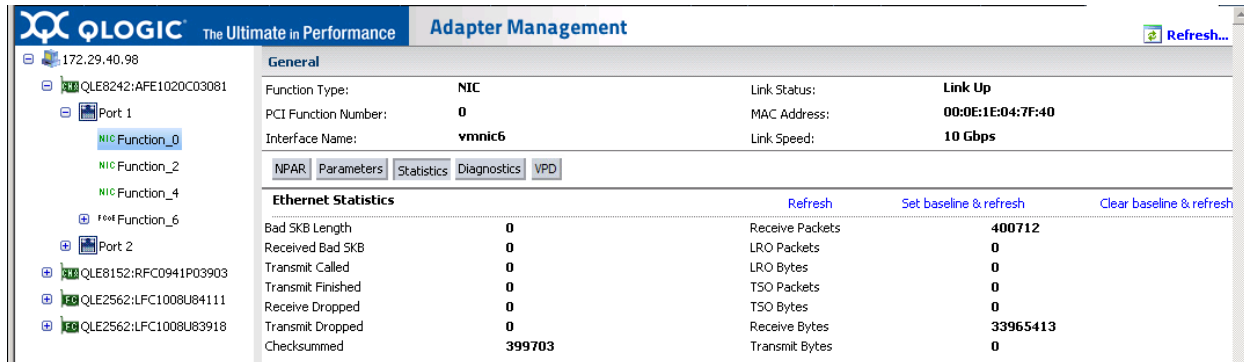


Figure 4-43. Converged Network Adapter NIC Function—Statistics Information

The content pane contains the following read-only Ethernet statistics:

- Bad SKB Length
- Received Bad SKB
- Transmit Called
- Transmit Finished
- Receive Dropped
- Transmit Dropped
- Checksummed
- Receive Packets
- LRO Packets
- LRO Bytes
- TSO Packets
- TSO Bytes
- Receive Bytes
- Transmit Bytes

Resetting and Refreshing NIC Port Statistics

- To immediately update the statistics counters, click **Refresh**.
- To set the baseline for statistics counters to the current counts, click **Set baseline and refresh**.
- To reset the statistics counters to zero, click **Clear baseline and refresh**.

Diagnostics Tests—NIC Function

If the **Diagnostics** button is selected, the content pane appears as shown in Figure 4-44.

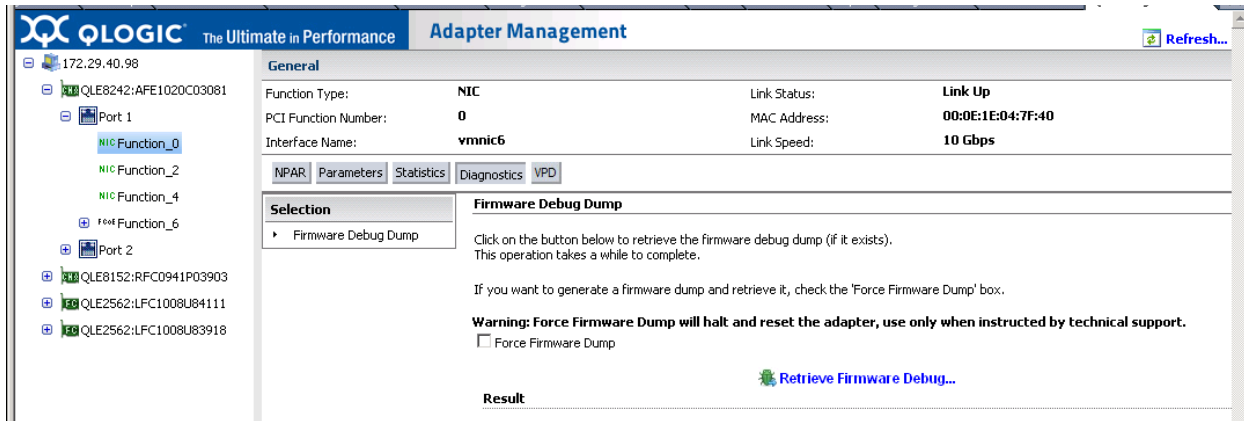


Figure 4-44. Converged Network Adapter NIC Function—Diagnostic Tests

The content pane allows you to perform a firmware debug dump:

- Click **Retrieve Firmware Debug** to begin retrieving the firmware debug dump (`debug.bin`), if one exists.
- Select **Force Firmware Dump** if there is no firmware dump and you want to generate one.

If the firmware debug dump is successfully retrieved, the results are shown under **Result**.

DCBX Information—NIC Function

If the **DCBX** button is selected, the content pane appears as shown in Figure 4-45.

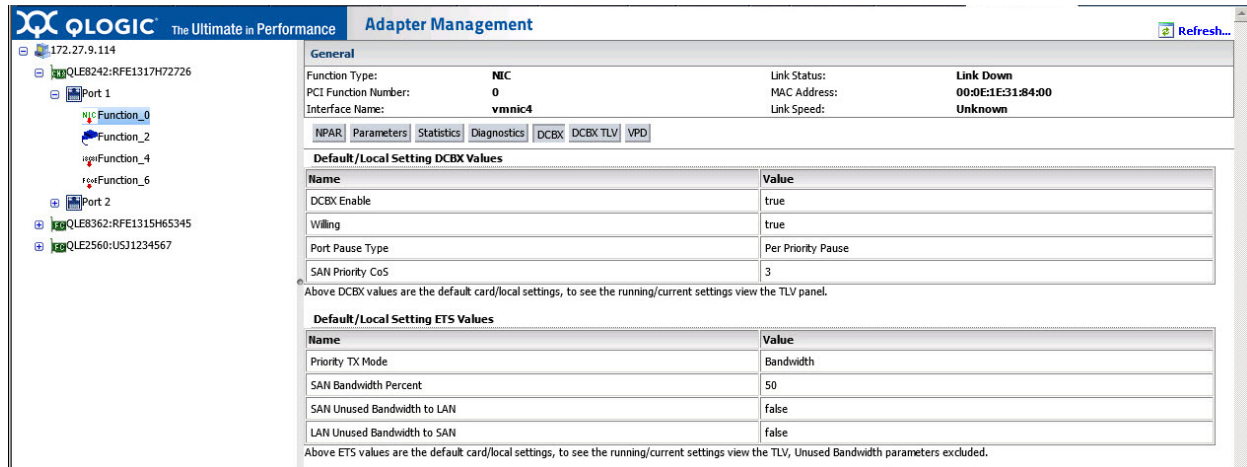


Figure 4-45. Converged Network Adapter NIC Function—DCBX and ETS Values

The content pane shows the following non-configurable values for the DCBX default card (local):

- **DCBX Enabled**
- **Willing**
- **Port Pause Type**
- **SAN Priority CoS**

The content pane shows the following non-configurable values for the ETS default card (local):

- **Priority TX Mode**
- **SAN Bandwidth Percent**
- **SAN Unused Bandwidth to LAN**
- **LAN Unused Bandwidth to SAN**

DCBX TLV Information—NIC Function

If the **DCBX TLV** button is selected, the content pane appears as shown in [Figure 4-46](#) with DCBX TLV data.

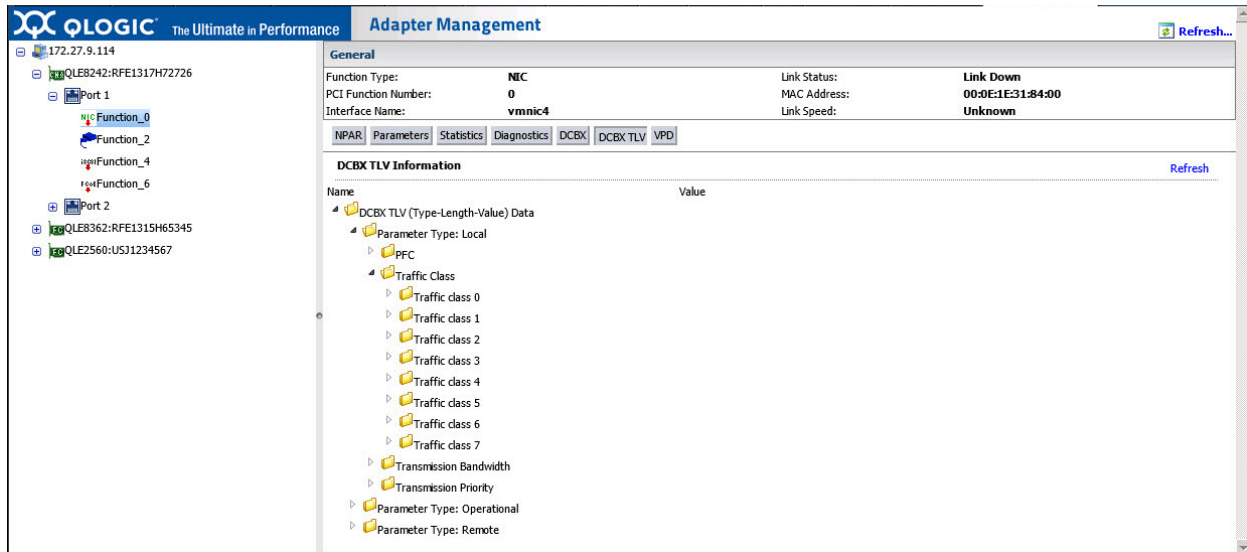


Figure 4-46. Converged Network Adapter NIC Function—DCBX TLV Data

To determine the transmission bandwidth percentage:

1. Under **DCBX TLV Information**, expand the **Traffic Class** folder and open the **Traffic class <x>** folder, where <x> is the traffic class.
2. Locate and take note of the **802.1p Priority** value.
3. Expand the **Transmission Priority** folder and locate the **Traffic class with priority <y>** entry, where <y> is the priority value found in the [Step 2](#). Take note of the entry's value as the transmission priority.
4. Expand the **Transmission Bandwidth** folder and locate the **Bandwidth in % for traffic class <z>** entry (at index <z>), where <z> is the transmission priority value found in [Step 3](#).

The value for that entry is the bandwidth percentage for **Traffic class <x>**.

VPD Information—NIC Function

If the **VPD** button is selected, the content pane appears as shown in [Figure 4-47](#).

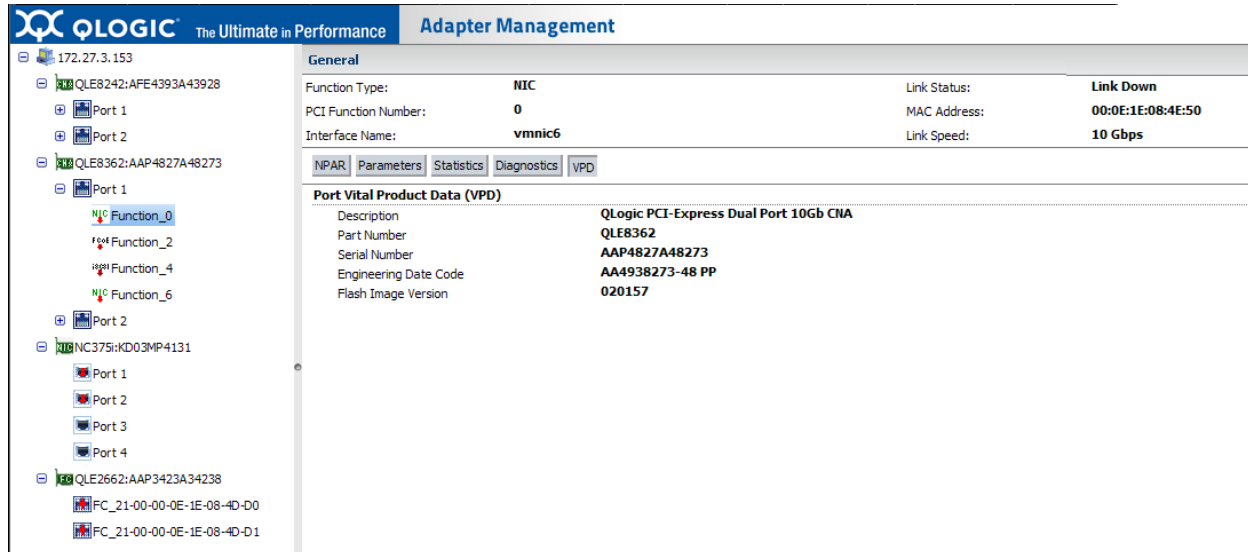


Figure 4-47. Converged Network Adapter NIC Function—VPD Information

The content pane contains the following information:

- **Description**—Description of the adapter
- **Part Number**—Adapter part number
- **Serial Number**—Adapter serial number
- **Engineering Date Code**—Date code that engineering uses to identify release information on an FCoE adapter port
- **Flash Image Version**—Multiflash image version on an FCoE adapter port

Managing FCoE Functions on a Converged Network Adapter

To manage an FCoE function on a Converged Network Adapter port, select the FCoE function in the system tree. The Adapter Management window then appears as shown in [Figure 4-48](#).

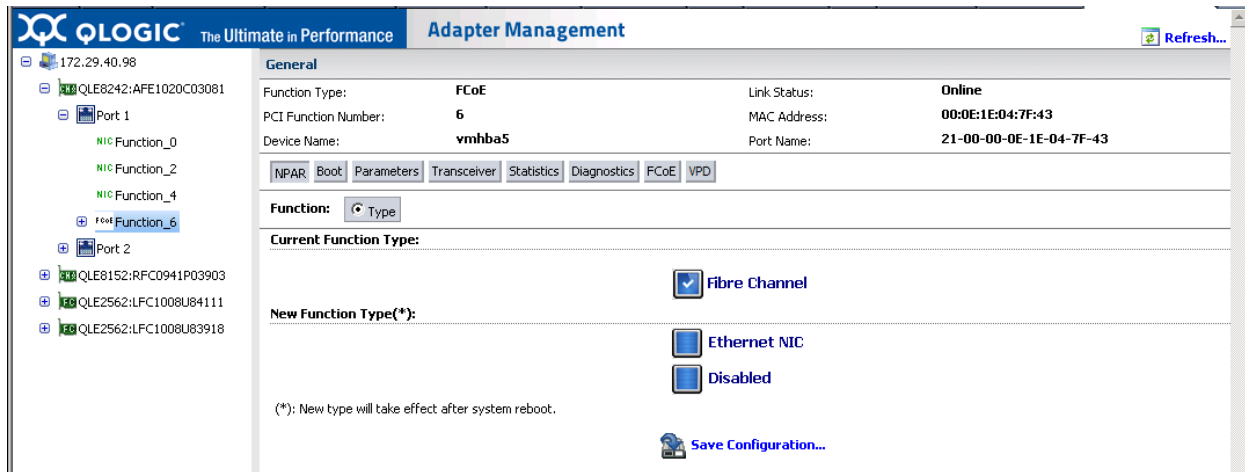


Figure 4-48. Adapter Management Window—FCoE Function

The identifying information at the top of the content pane includes the following:

- **Function Type:** (FCoE)
- **Link Status:** (Up or Down)
- **PCI Function Number:** For Port 1: 2, 4, or 6. For Port 2: 3, 5, or 7
- **MAC Address:** MAC address of the PCI function
- **Device Name:** Device name
- **Link Speed:** The speed of the link—10Gb

Below the identifying information is a row of buttons, as shown in [Figure 4-49](#):



Figure 4-49. Converged Network Adapter FCoE Function—Information Selection

These buttons let you select the information to manage for the FCoE function:

- **NPAR**—NIC partitioning configuration
- **Boot**—Boot device configuration
- **Parameters**—Firmware parameters
- **Transceiver**—Transceiver information
- **Statistics**—Statistics information
- **Diagnostics**—Diagnostic tests
- **FCoE**—FCoE parameter configuration
- **VPD**—VPD information

The button that appears pressed in indicates the selected information (for example, **NPAR** in Figure 4-49). The selected information is shown in the content pane. The following sections describe the different types of information for an FCoE function:

- [NPAR Configuration—FCoE Function](#)
- [Boot Configuration—FCoE Function](#)
- [Firmware Parameters—FCoE Function](#)
- [Transceiver Information—FCoE Function](#)
- [Statistics Information—FCoE Function](#)
- [Diagnostics Tests—FCoE Function](#)
- [FCoE Configuration—FCoE Function](#)
- [VPD Information—FCoE Function](#)

NPAR Configuration—FCoE Function

If the **NPAR** button is selected, the content pane appears as shown in Figure 4-50.

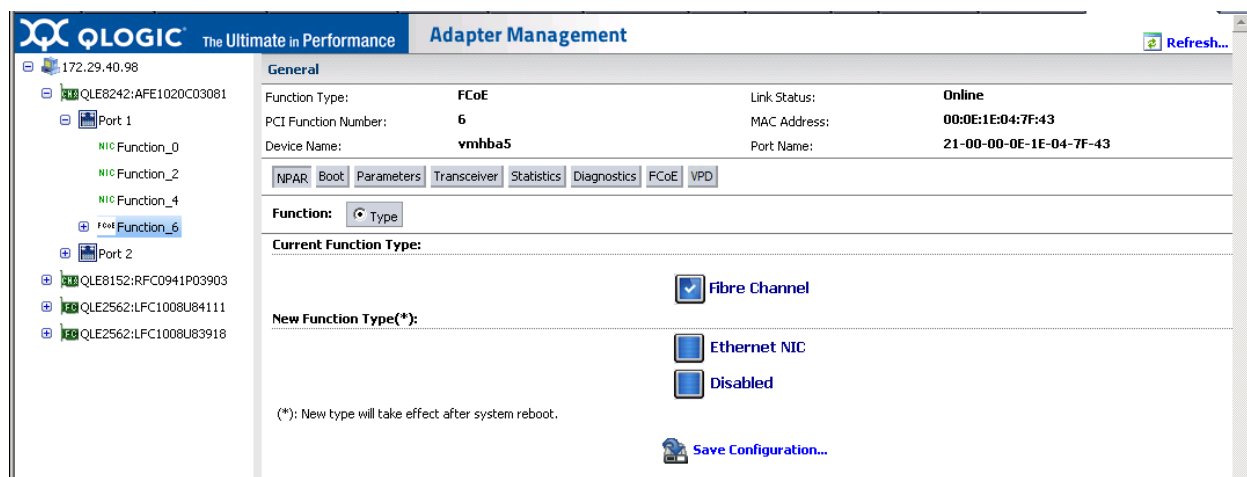


Figure 4-50. Converged Network Adapter FCoE Function—NPAR Configuration

The content pane contains the following:

- **Current Function Type:** The selected function's current type—**Fibre Channel** (FCoE).
- **New Function Type:** To change the function type from Fibre Channel to **Ethernet NIC** or **Disabled**, select the appropriate box and click **Save Configuration**. The new type does not take effect until the next system reboot.

Boot Configuration—FCoE Function

If the **Boot** button is selected, the content pane appears as shown in [Figure 4-51](#).

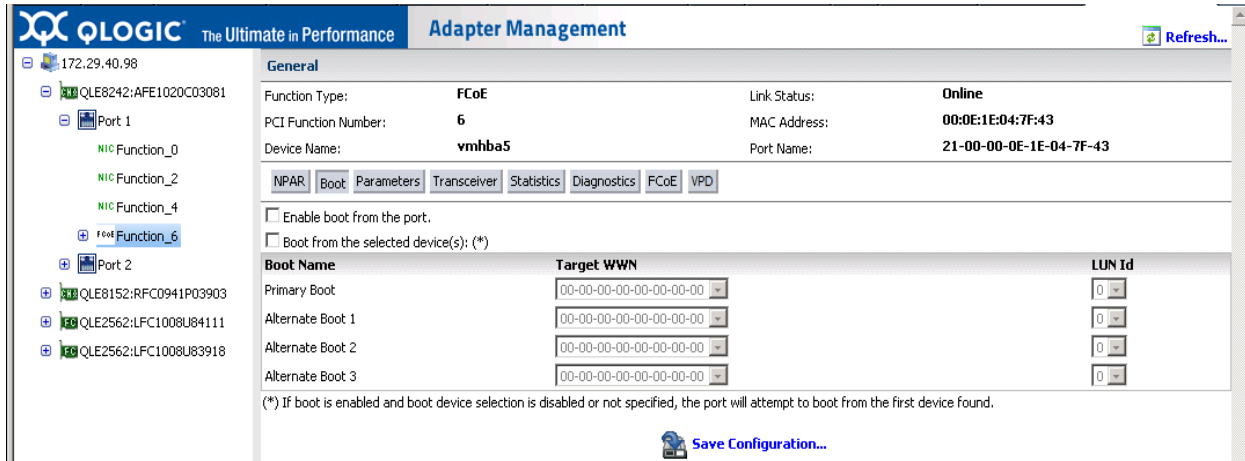


Figure 4-51. Converged Network Adapter FCoE Function—Boot Configuration

The content pane contains the following configurable parameters:

- **Enable boot from the port:** Select the check box to enable booting from the selected port, or clear the check box to disable booting from the port.
- **Boot from the selected device(s):** Select the check box to allow booting from a boot device that you specify, or clear the check box to disable this feature.

The following options are available only if **Boot from the selected device(s)** is selected:

- **Primary Boot:** Specify the primary boot device by selecting its worldwide name in **Target WWN**, and then select the device's LUN ID in **LUN ID**.
- **Alternate Boot 1/2/3:** Specify three alternate boot devices by selecting their worldwide names in **Target WWN**, and their LUN IDs in **LUN ID**.

To save your changes, click **Save Configuration**.

Firmware Parameters—FCoE Function

If the **Parameters** button is selected, the content pane appears as shown in Figure 4-52.

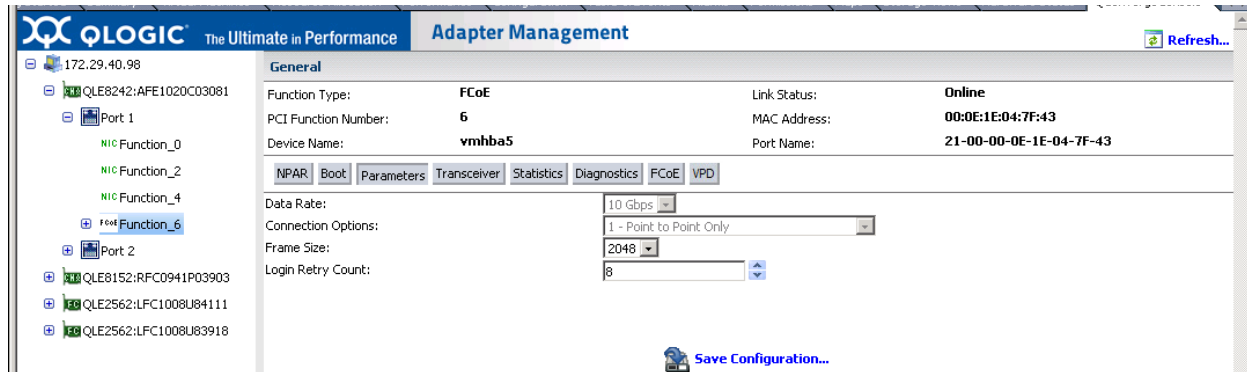


Figure 4-52. Converged Network Adapter FCoE Function—Firmware Parameters

The content pane contains the following configurable parameters:

- **Data Rate:** This setting determines the adapter port data rate. The FCoE ports can run at **10Gbps**. When this setting is **Auto**, QConvergeConsole determines what rate your system can accommodate and sets the rate accordingly. The default is **Auto**.
- **Connection Options:** This setting defines the type of connection (loop or point-to-point) or connection preference. The FCoE port default setting is **Point to Point Only**.
- **Frame Size:** This setting specifies the maximum frame length supported by the adapter. The default size is 2,048 for 10Gbps FCoE ports, which provides maximum performance for F_Port (point-to-point) connections.
- **Login Retry Count:** Specifies the number of times the software tries to log in to a device. The default is eight retries for 82xx adapters and five for all other adapters.

To save your changes, click **Save Configuration**.

Transceiver Information—FCoE Function

If the **Transceiver** button is selected, the content pane appears as shown in Figure 4-53.

The screenshot displays the QLogic Adapter Management interface. On the left, a tree view shows the adapter hierarchy, with 'FCoE Function_6' selected. The main pane shows the 'Transceiver' tab for this function. It includes general information like Function Type (FCoE), PCI Function Number (6), and Device Name (vmhba5). Below this, the 'Transceiver Information' section provides details about the SFP: Vendor (FINISAR CORP.), Identifier (SFP), Part Number (FTLX8571D3BCL-QL), Connector (LC), and Revision. A table lists various parameters including Temperature, Voltage, Tx Bias, Tx Power, and Rx Power, along with their current values and status (Normal, High Alarm, High Warning, Low Warning, Low Alarm).

	Temperature (C)	Voltage (V)	Tx Bias (mA)	Tx Power (mW)	Rx Power (mW)
Value	43.03	3.32	8.31	0.5103	0.4649
Status	Normal	Normal	Normal	Normal	Normal
High Alarm	78.00	3.70	11.80	0.8318	1.0000
High Warning	73.00	3.60	10.80	0.6607	0.7943
Low Warning	-8.00	3.00	5.00	0.3162	0.0158
Low Alarm	-13.00	2.90	4.00	0.2512	0.0100

Figure 4-53. Converged Network Adapter FCoE Function—Transceiver Information

The content pane contains the following read-only information:

- **Vendor:** Transceiver manufacturer
- **Type:** Transceiver type
- **Identifier:** Transceiver form factor
- **Ext. Identifier:** Additional information about the transceiver
- **Part Number:** Transceiver part number
- **Speed:** Transceiver transmission speed
- **Connector:** Transceiver external optical or electrical cable type
- **Serial Number:** Transceiver serial number
- **Revision:** Vendor revision level
- **QLogic SFP installed:** **Yes**, if a QLogic SFP is installed; **No**, if an unsupported SFP is installed or if no SFP is installed.

Statistics Information—FCoE Function

When the **Statistics** button is selected, the content pane appears as shown in Figure 4-54.

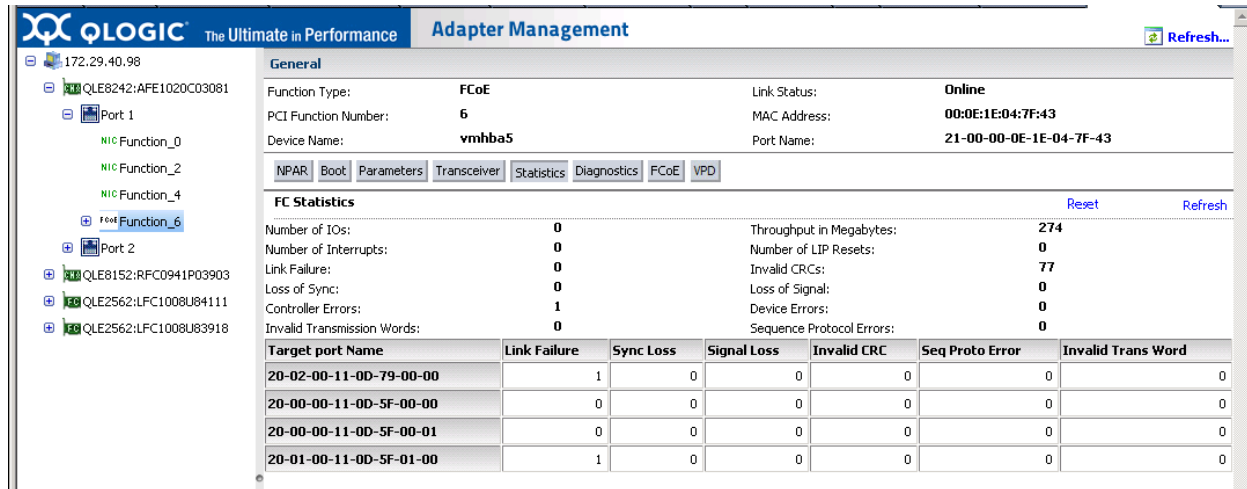


Figure 4-54. Converged Network Adapter FCoE Function—Statistics Information

NOTE

Selecting the **Reset** option will permanently rest the counters. Any tools that use these counters for historical trending must be readjusted.

The content pane contains the following read-only statistics information:

- Number of IOs
- Throughput in Megabytes
- Number of Interrupts
- Number of LIP Resets
- Link Failure
- Invalid CRCs
- Loss of Sync
- Loss of Signal
- Controller Errors
- Device Errors
- Invalid Transmission Words
- Sequence Protocol Errors

If a target is attached to the function, the content pane also contains a table that lists how many of each of the following errors have occurred for the target:

- Link Failure
- Sync Loss

- Signal Loss
- Invalid CRC
- Seq Proto Error
- Invalid Trans Word

Diagnostics Tests—FCoE Function

If the **Diagnostics** button is selected, the content pane appears as shown in Figure 4-55.

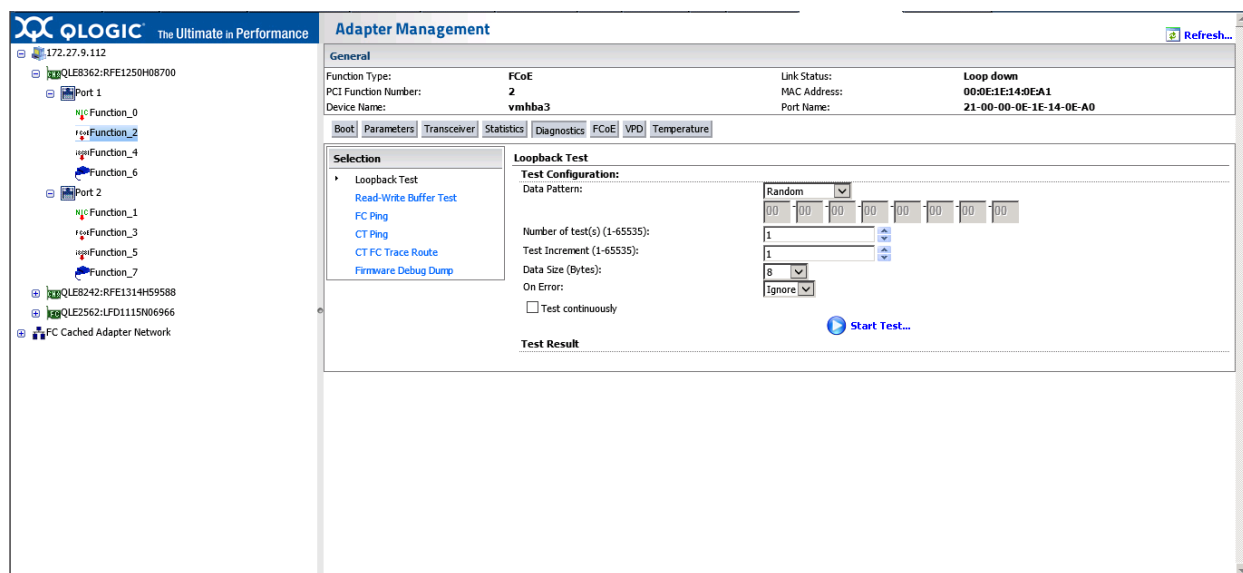


Figure 4-55. Converged Network Adapter FCoE Function—Diagnostic Tests

In the content pane, select the type of diagnostic test to perform: **Loopback Test**, **Read-Write Buffer Test**, **FC Ping**, **CT Ping**, **CT FC Trace Route**, or **Firmware Debug Dump**. Then specify the following information:

Loopback Test and Read-Write Buffer Test

- **Data Pattern:** Select the type of data pattern to use in the test. Or, type the pattern to use into the boxes provided.
- **Number of test(s):** Specify the quantity of tests to run (1–65,536).
- **Test Increment:** Specify the test increment (1–65,536).
- **Data Size (Bytes):** Specify the data size in bytes.
- **On Error:** Indicate the action to take if an error occurs.
- **Test continuously:** Select this check box to run the test continuously. Clear the check box to run the test once only.

Click **Start Test** to begin the selected test. When the test is finished, the **Test Result** section of the content pane shows the results.

FCoE Ping Tests

When a target with LUNs is connected to the port, you can conduct a ping test to any target in the table. To conduct a ping test, select a target in the table, specify the quantity of tests, and then click **Start Test**. The status for each test appears in the **Result** column, as shown in Figure 4-56. The CT Ping and CT FC Trace Route ping tests are conducted in a similar fashion. However, to successfully run a CT Ping or a CT FC Trace Route ping test, the fabric must contain a Brocade switch.

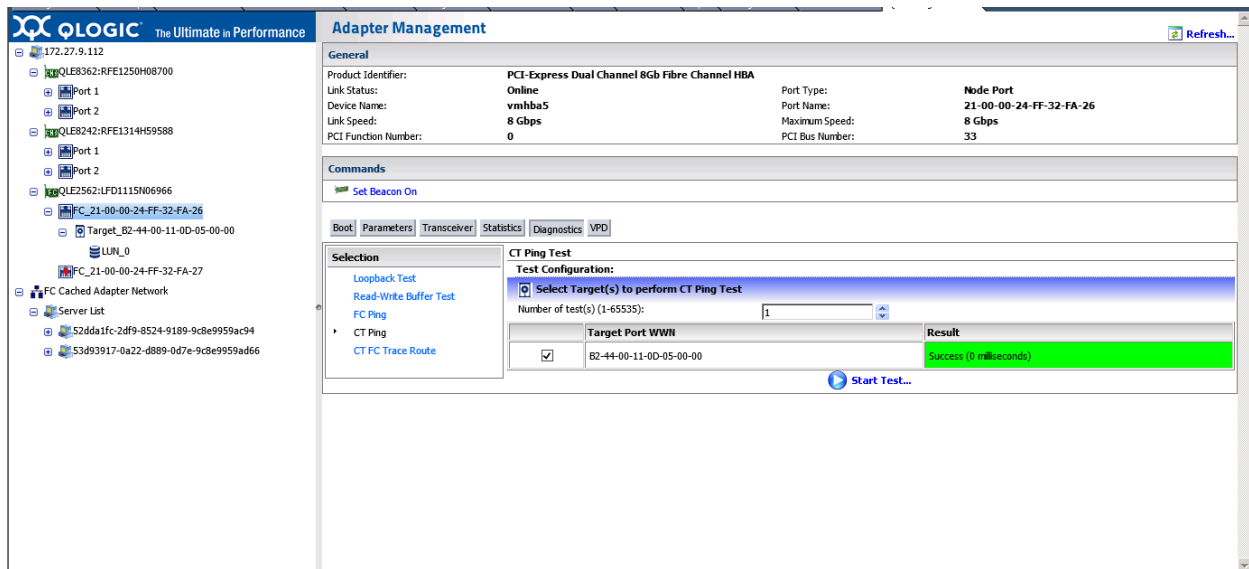


Figure 4-56. FCoE Port—Ping Test Results

Firmware Debug Dump

Click **Retrieve Firmware Debug** to retrieve the firmware debug dump (if it exists) and display it in the **Result** area of the content pane.

NOTE

After you click **Retrieve Firmware Debug**, the operation may take a while to complete.

FCoE Configuration—FCoE Function

If the **FCoE** button is selected, the content pane shows the **Information**, **Configuration**, **Data Center Bridging**, **DCE Statistics**, and **DCBX TLV** options.

Information

Select **Information** to view the following FCoE Attributes, as shown in [Figure 4-57](#).

- CNA FW Version
- VN Port MAC Address
- VLAN ID
- Max Frame Size
- Addressing Mode

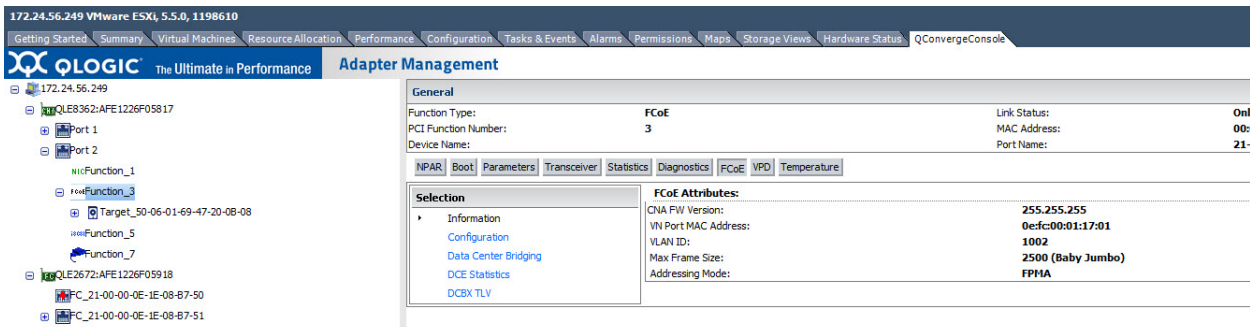


Figure 4-57. Converged Network Adapter FCoE Function—FCoE Attribute Information

Configuration

Select **Configuration** to view the following options, as shown in [Figure 4-58](#).

- Primary FCF¹ VLAN ID (0–4095)
- Primary FCF VLAN Selection enable

To save the configuration values, click **Save Configurations**.

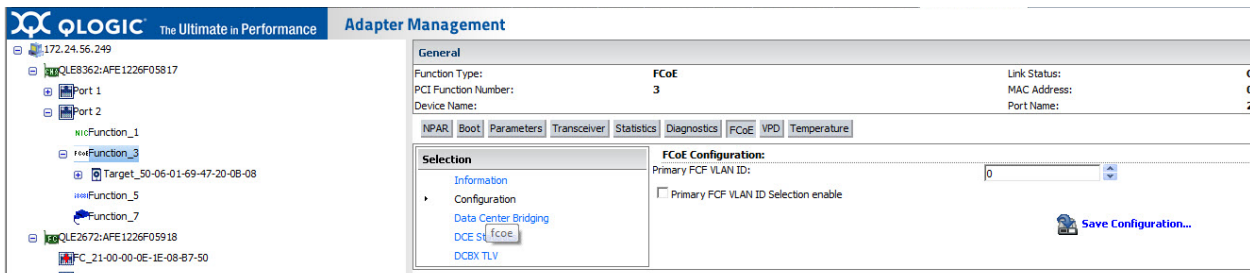


Figure 4-58. Converged Network Adapter FCoE Function—FCoE Configuration

¹ Fibre Channel Forwarder

Data Center Bridging

Select **Data Center Bridging** to view the default/local setting DCBX values and ETS values, as shown in [Figure 4-59](#).

- **DCBX Enable**
- **Willing**
- **Port Pause Type**
- **FCoE Priority CoS**
- **iSCSI Priority CoS**
- **Priority TX Mode**
- **Priority Groups 0–7**
- **SAN Unused Bandwidth to LAN**

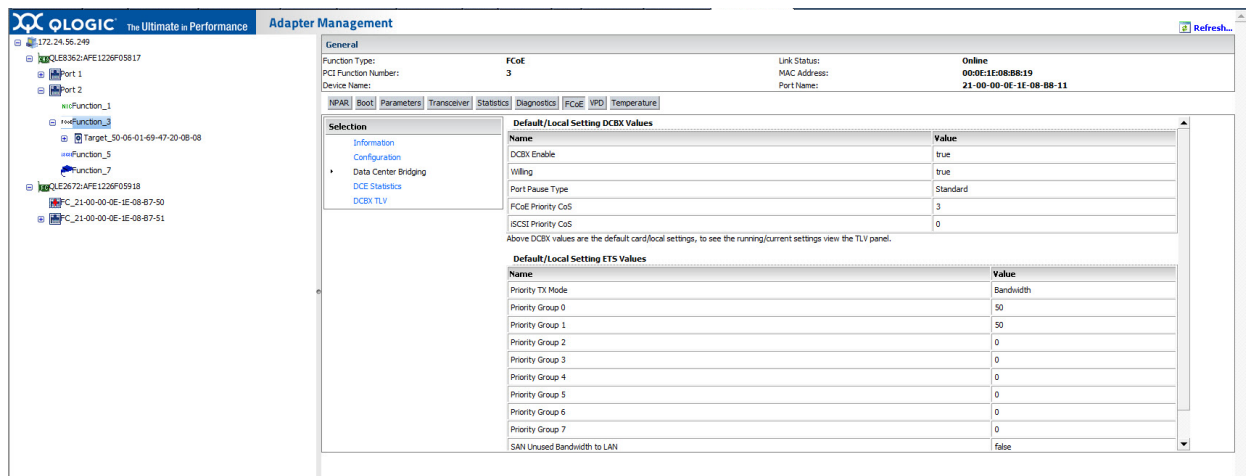


Figure 4-59. Converged Network Adapter FCoE Function—Data Center Bridging

DCE Statistics

Select **DCE Statistics** to view values for the following port Data Center Ethernet (DCE) parameters, as shown in [Figure 4-60](#):

- **Transmit Packets**
- **Transmit Octets**
- **Transmit Multicast Packets**
- **Transmit Broadcast Packets**
- **Transmit Unicast Packets**
- **Transmit Control Packets**
- **Transmit Pause Packets**
- **Transmit Packets 64 Octets**
- **Transmit Packets 65to127 Octets**
- **Transmit Packets 128to255 Octets**
- **Transmit Packets 256to511 Octets**
- **Transmit Packets 512to1023 Octets**

- **Transmit Packets 1024to1518 Octets**
- **Transmit Packets 1519toMax Octets**
- **Transmit Undersize Packets**
- **Transmit Oversize Packets**
- **Receive Octets**
- **Receive Octets Ok**
- **Receive Packets**
- **Receive Packets Ok**
- **Receive Broadcast Packets**
- **Receive Multicast Packets**
- **Receive Unicast Packets**
- **Receive Undersize Packets**
- **Receive Oversize Packets**
- **Receive Jabber Packets**
- **Receive Undersize FCS Error Packets**
- **Receive Control Packets**
- **Receive Pause Packets**
- **Receive Packets 64 Octets**
- **Receive Packets 65to127 Octets**
- **Receive Packets 128to255 Octets**
- **Receive Packets 256to511 Octets**
- **Receive Packets 512to1023 Octets**
- **Receive Packets 1024to1518 Octets**
- **Receive Packets 1519toMax Octets**
- **Transmit CBFC Pause Frames 0 through 7**
- **Transmit FCoE Packets**
- **Transmit Mgmt Packets**
- **Receive CBFC Pause Frames 0 through 7**
- **Receive FCoE Packets**
- **Receive Mgmt Packets**
- **Receive Packets Priority 0 through 7**
- **Transmit Packets Priority 0 through 7**
- **Receive Packets Discarded Priority 0 through 7**

4—Using the QConvergeConsole vSphere Client Plug-in
Managing Converged Network Adapters

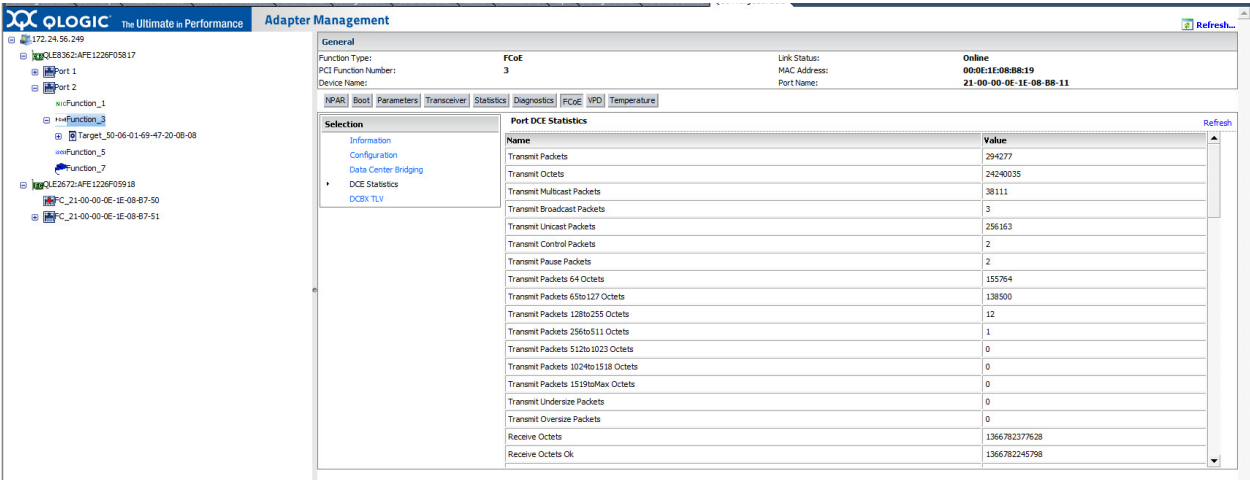


Figure 4-60. Converged Network Adapter FCoE Function—DCE Statistics

DCBX TLV

Select **DCBX TLV** to view the type-length-value (TLV) information (Figure 4-61) for the LLDP frames meant for exchanging the parameters and their values.

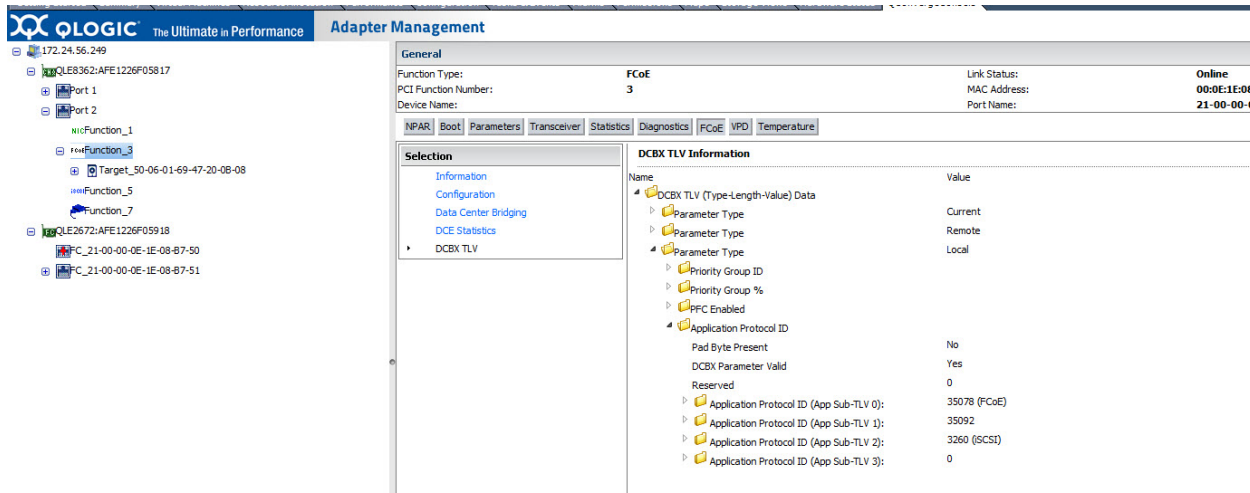


Figure 4-61. Converged Network Adapter—DCBX TLV

VPD Information—FCoE Function

If the **VPD** button is selected, the content pane appears as shown in [Figure 4-62](#).

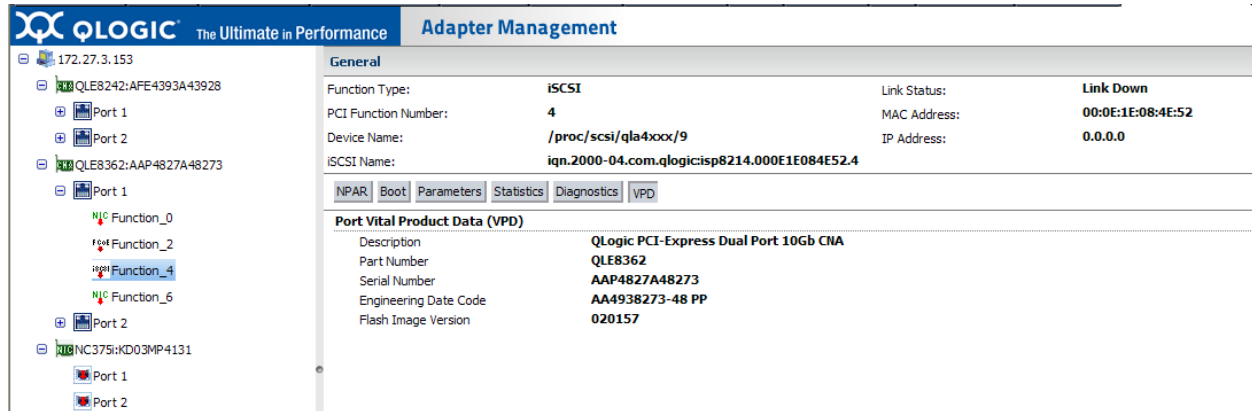


Figure 4-62. Converged Network Adapter FCoE Function—VPD Information

The content pane displays the following information:

- **Description**—Description of the adapter
- **Part Number**—Part number of the adapter
- **Serial Number**—Serial number of the adapter
- **Engineering Date Code**—Date code that engineering uses to identify release information on an FCoE adapter port
- **Flash Image Version**—Multiflash image version on an FCoE adapter port

Managing iSCSI Functions on a Converged Network Adapter

To manage an iSCSI function on a Converged Network Adapter port, select the iSCSI function in the system tree. The Adapter Management window then appears, as shown in [Figure 4-63](#).

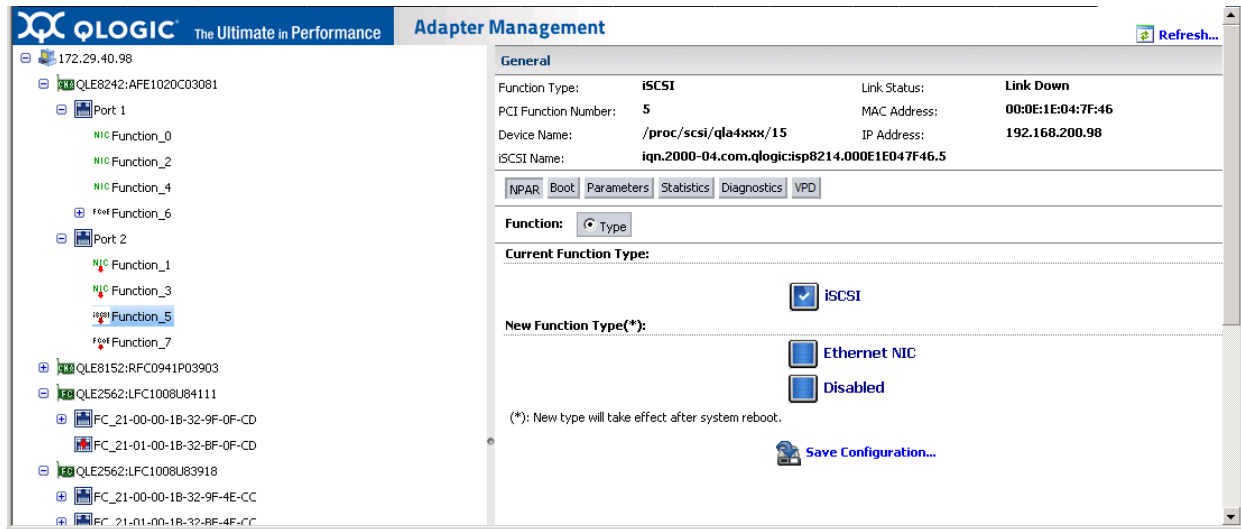


Figure 4-63. Adapter Management Window—iSCSI Function

The identifying information in the **General** section at the top of the content pane contains the following:

- **Function Type:** iSCSI
- **Link Status** (Up or Down)
- **PCI Function Number:** For Port 1: 2, 4, or 6. For Port 2: 3, 5, or 7
- **MAC Address:** The MAC address of the iSCSI port
- **Device Name:** The name of the iSCSI port
- **IP Address:** The IP address of the iSCSI port
- **iSCSI Name:** By default, this is the QLogic manufacturing name of the iSCSI port. This name concatenates adapter port details that uniquely identifies the selected iSCSI port.

Below the identifying information is a row of buttons, as shown in [Figure 4-64](#):

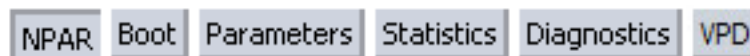


Figure 4-64. Converged Network Adapter iSCSI Function—Information Selection

These buttons let you select the information to manage for the NIC function:

- **NPAR**—NIC partitioning configuration
- **Boot**—Boot device configuration
- **Parameters**—Firmware parameters
- **Statistics**—Statistics information
- **Diagnostics**—Diagnostic tests

The button that appears pressed in indicates the selected information (for example, **NPAR** in Figure 4-64). The selected information is displayed in the content pane. The different types of information for a NIC function are described in the following sections:

- [NPAR Configuration—iSCSI Function](#)
- [Boot Configuration—iSCSI Function](#)
- [Parameters—iSCSI Function](#)
- [Statistics Information—iSCSI Function](#)
- [Diagnostics Configuration—iSCSI Function](#)
- [VPD Information—iSCSI Function](#)

NPAR Configuration—iSCSI Function

If the **NPAR** button is selected, the content pane appears as shown in Figure 4-65.

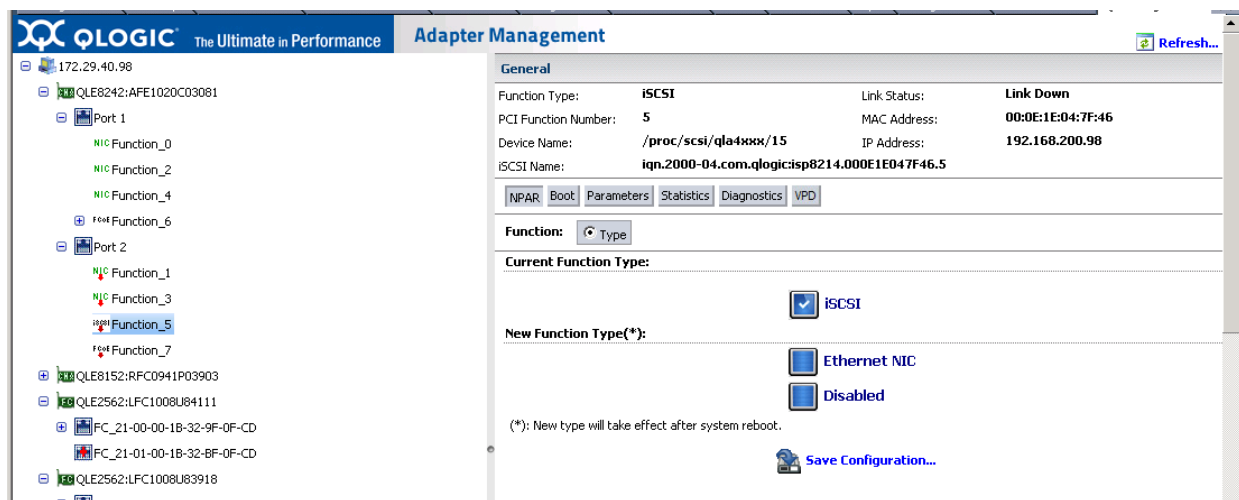


Figure 4-65. Converged Network Adapter iSCSI Function—NPAR Configuration

The content pane contains the following NPAR-related information:

- **Current Function Type:** The selected function's current type—**iSCSI**.
- **New Function Type:** To change the function type from iSCSI to **Ethernet NIC** or **Disabled**, select the appropriate box and click **Save Configuration**. The new type does not take effect until the next system reboot.

Boot Configuration—iSCSI Function

When the **Boot** button is selected, the content pane appears as shown in Figure 4-66.

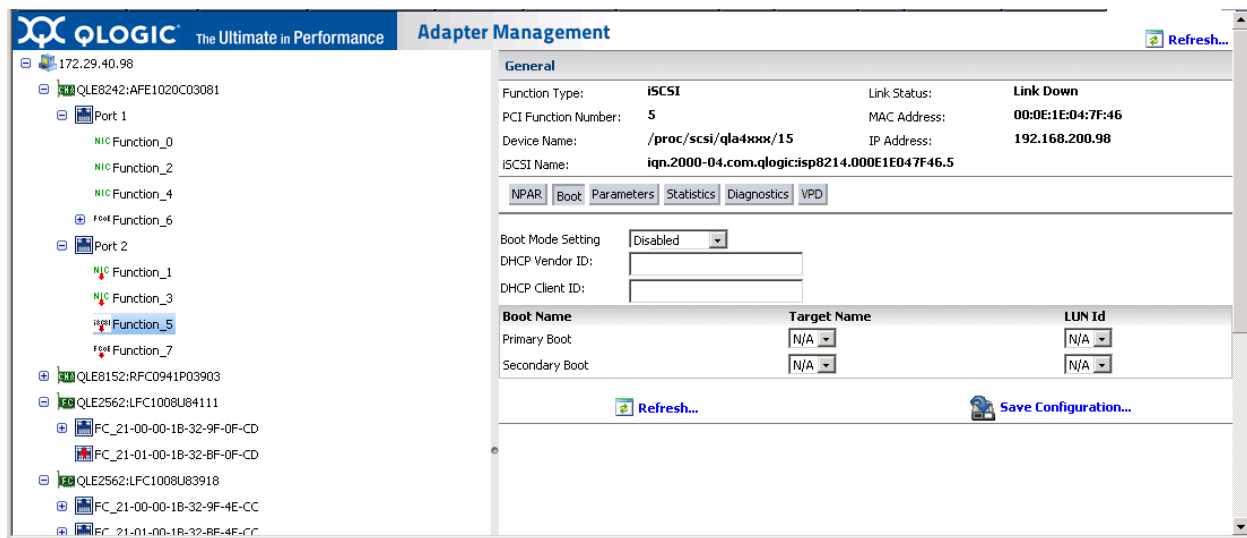


Figure 4-66. Converged Network Adapter iSCSI Function—Boot Configuration

The content pane contains the following boot configuration-related information:

- **Boot Mode Setting:** Set the boot mode as follows:
 - ☐ **Disabled:** Disables booting from an iSCSI target with this iSCSI port
 - ☐ **Manual:** Enables booting from either the primary or secondary iSCSI boot targets configured for this port
 - ☐ **DHCP:** Enables automatic configuration of iSCSI boot targets using DHCP
- **DHCP Vendor ID:** DHCP vendor ID appears here if you assigned it.
- **DHCP Client ID:** DHCP client ID
- **Target Name:** Select the target name for the primary or secondary boot device.
- **LUN ID:** Select the LUN ID for the primary or secondary boot device.

Parameters—iSCSI Function

If the **Parameters** button is selected, the content pane appears as shown in Figure 4-67.

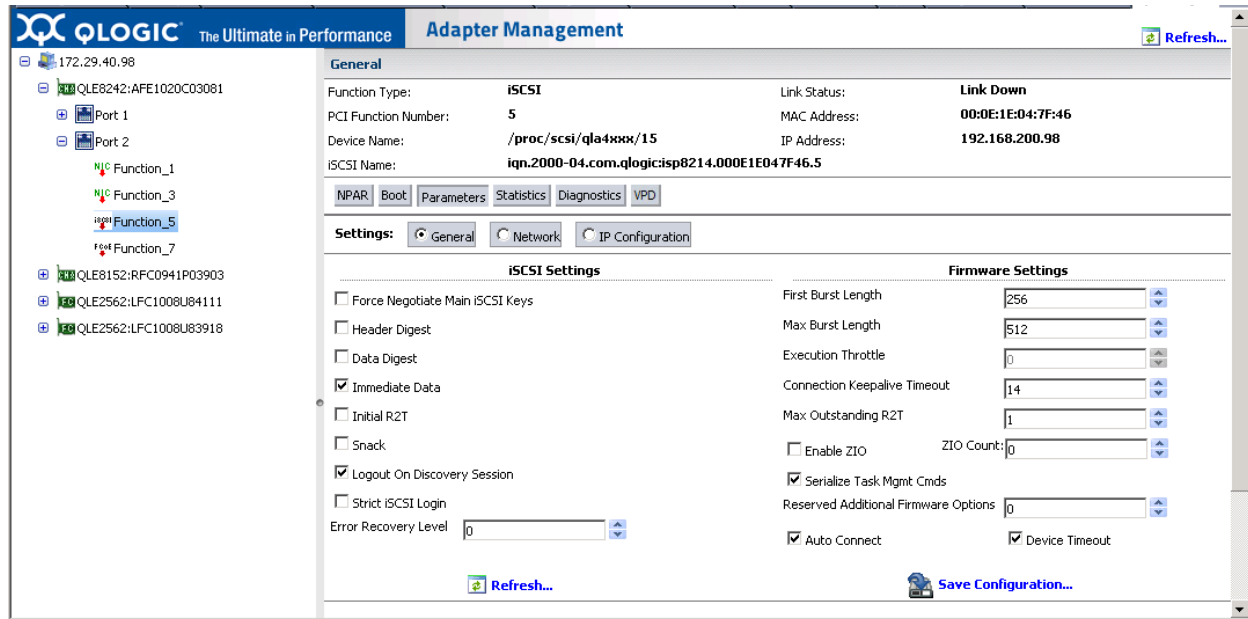


Figure 4-67. Converged Network Adapter iSCSI Function—General Parameters

The content pane contains options for **General**, **Network**, or **IP Configuration** to show the general, network, or IP configuration parameters, respectively. Refer to the appropriate following section for a list of the parameters for each type of information.

General Parameters

The general parameters (see Figure 4-67) include sections for **iSCSI Settings** and **Firmware Settings**, as follows:

■ iSCSI Settings

- ☐ **Force Negotiate Main iSCSI Keys** forces the initiator to negotiate all the main iSCSI keys during the login phase.
- ☐ **Header Digest** enables header digest on the initiator to protect the integrity of the iSCSI header. The target must accept the header digest during parameter negotiation.
- ☐ **Data Digest** enables data digest on the initiator to protect the integrity of the iSCSI data. The target must accept the data digest during parameter negotiation.

- ❑ **ImmediateData** and **InitialR2T**. [Table 4-7](#) describes how **ImmediateData** and **InitialR2T** combine to determine how the initiator can send immediate data.

Table 4-7. ImmediateData and InitialR2T

ImmediateData ¹	InitialR2T	Result
Yes	Yes	Only immediate data are accepted in the first burst.
Yes	No	Initiator may send unsolicited immediate data and/or one unsolicited burst of data-out protocol data units (PDUs) ² .
No	Yes	Initiator must not send unsolicited data, and the target must reject unsolicited data with the corresponding response code.
No	No	Initiator must not send unsolicited immediate data, but may send one unsolicited burst of data-out PDUs.

¹ Immediate data stands for data that is part of the command PDU.

² Data-out PDU is a PDU that only contains data.

- ❑ **Snack** enables the initiator to request retransmission of numbered responses, data, or R2T PDUs from the target.
- ❑ **Logout on Discovery Session** enables issuing a logout after completing the discovery session (default).
- ❑ **Strict iSCSI Login** enables strict iSCSI login, in which the adapter adheres to the iSCSI login rules, and therefore cannot operate with devices that do not conform to these rules. When disabled, the iSCSI login rules are relaxed, and the adapter can operate with devices that do not conform to these rules.
- ❑ **Error Recovery Level** currently supports only error recovery level 0.

■ **Firmware Settings**

- ❑ **FirstBurstLength** is the maximum amount of unsolicited data (in bytes) that an iSCSI initiator can send to the target during the execution of a single SCSI command. The initiator and target negotiate the actual value. The allowed values are 512–2²³. The default is 65,536. This value must not exceed the **MaxBurstLength**.

- ☐ **MaxBurstLength** is the maximum iSCSI data payload (in bytes) in a data-in or a solicited data-out iSCSI sequence. The initiator and target negotiate the actual value. The allowed values are 512–2²³. The default is 262,144.
- ☐ **Execution Throttle** is the maximum quantity of commands executing on any one port. When a port's execution throttle is reached, no new commands are executed until the current command finishes executing.
- ☐ **Connection Keepalive Timeout** is the minimum time to wait (in seconds) before attempting an explicit or implicit logout. The initiator and target negotiate the actual value.
- ☐ **Max Outstanding R2T** is the maximum quantity of outstanding R2Ts per task, excluding any implied initial R2T that might be part of that task. The initiator and target negotiate the actual value. The allowed values are 1–65,535. The default is 1.
- ☐ **Enable ZIO** enables interrupt coalescing in the firmware to reduce the quantity of interrupts generated to indicate command completions.
- ☐ **ZIO Count** indicates the quantity, if ZIO is enabled.
- ☐ **Reserved Additional Firmware Options** indicates a quantity.
- ☐ **Auto Connect** check box; select to enable or clear to disable automatic connection.
- ☐ **Device Timeout** check box; select to enable or clear to disable device timeout.

To save your changes, click **Save Configuration**.

Statistics Information—iSCSI Function

If the **Statistics** button is selected, the content pane appears as shown in Figure 4-68.

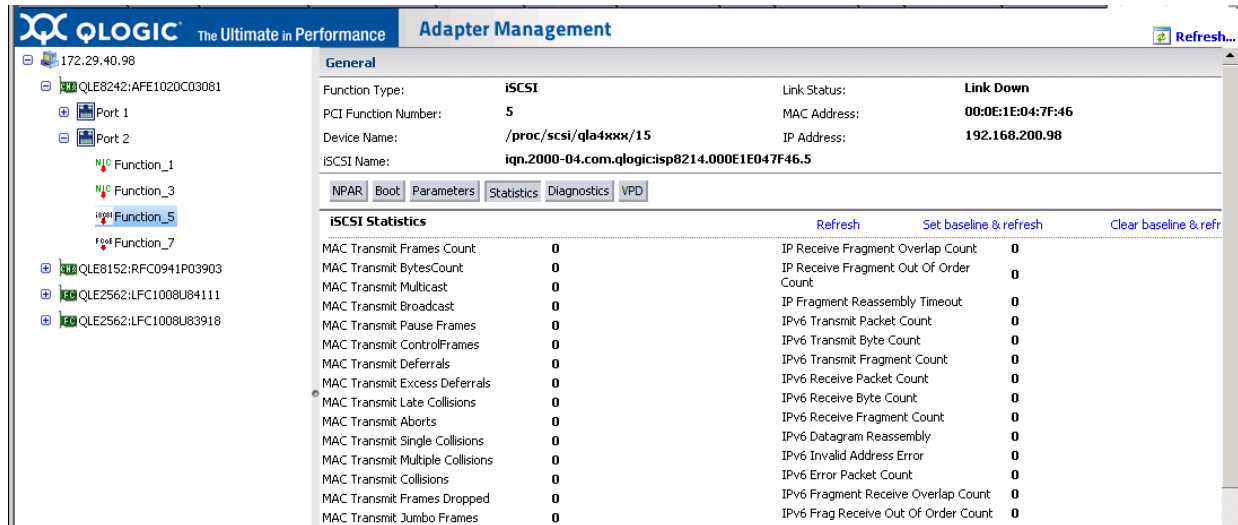


Figure 4-68. Converged Network Adapter iSCSI Function—Statistics Information

The content pane contains the following statistical information:

- **MAC Transmit Frames Count**
- **MAC Transmit BytesCount**
- **MAC Transmit Multicast**
- **MAC Transmit Pause Frames**
- **MAC Transmit ControlFrames**
- **MAC Transmit Deferrals**
- **MAC Transmit Excess Deferrals**
- **MAC Transmit Late Collisions**
- **MAC Transmit Aborts**
- **MAC Transmit Single Collisions**
- **MAC Transmit Multiple Collisions**
- **MAC Transmit Collisions**
- **MAC Transmit Frames Dropped**
- **MAC Transmit Jumbo Frames**
- **MAC Receive Frames Count**
- **MAC Receive Bytes Count**
- **MAC Receive UnKnown Control Frames**
- **MAC Receive Pause Frames**
- **MAC Receive Control Frames**
- **MAC Receive Dribble**
- **MAC Receive Frame Length Error**
- **MAC Receive Jabber**

- MAC Receive Carrier Sense Error
- MAC Receive Frames Discarded
- MAC Receive Frames Dropped
- MAC CRC Error Count
- MAC Encoding Error Count
- MAC Receive Length Error Count Large
- MAC Receive Length Error Count Small
- MAC Receive Multicast
- MAC Receive Broadcast
- IP Transmit Packets Count
- IP Transmit Bytes Count
- IP Transmit Fragments Count
- IP Receive Packets Count
- IP Receive Bytes Count
- IP Receive Fragments Count
- IP Datagram Reassembly Count
- IP Invalid Address Error Count
- IP Receive Packet Error Count
- IP Receive Fragment Overlap Count
- IP Receive Fragment Out Of Order Count
- IP Fragment Reassembly Timeout
- IPv6 Transmit Packet Count
- IPv6 Transmit Byte Count
- IPv6 Transmit Fragment Count
- IPv6 Receive Packet Count
- IPv6 Receive Byte Count
- IPv6 Receive Fragment Count
- IPv6 Datagram Reassembly
- IPv6 Invalid Address Error
- IPv6 Error Packet Count
- IPv6 Fragment Receive Overlap Count
- IPv6 Frag Receive Out Of Order Count
- IPv6 Datagram Reassembly TO
- TCP Transmit Segments Count
- TCP Transmit Bytes Count
- TCP Receive Segments Count
- TCP Receive Bytes Count
- TCP Duplicate ACK Retrans
- TCP Retrans Timer Expired Count
- TCP Receive Duplicate ACK Count
- TCP Receive Pure ACK Count
- TCP Transmit Delayed ACK Count
- TCP Transmit Pure ACK Count
- TCP Segment Error Count
- TCP Segment Out Of Order Count

- TCP Window Probe Count
- TCP Window Update Count
- TCP Window Probe Persist Count
- ECC Error Correction Count
- iSCSI Transmit PDU Count
- iSCSI Transmit Bytes Count
- iSCSI Receive PDU Count
- iSCSI Receive Bytes Count
- iSCSI Complete IOs Count
- iSCSI Unexpected IO Receive Count
- iSCSI Format Error Count
- iSCSI Header Digest Count
- iSCSI Data Digest Error Count
- iSCSI Sequence Error Count

Diagnostics Configuration—iSCSI Function

If the **Diagnostics** button is selected, the content pane appears as shown in Figure 4-69.

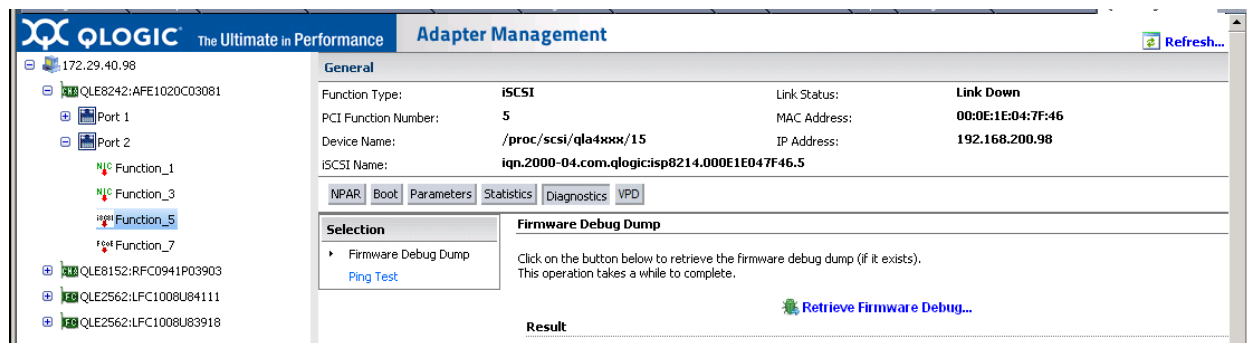


Figure 4-69. Converged Network Adapter iSCSI Function—Diagnostics

The content pane contains the following diagnostics information:

- **Selection:** Select the type of diagnostics test to run: **Firmware Debug Dump** or **Ping Test**.

Firmware Debug Dump

Click **Retrieve Firmware Debug** to retrieve the firmware debug dump (if it exists) and display it in the **Result** area of the content pane.

NOTE

After you click **Retrieve Firmware Debug**, the operation may take a while to complete.

Ping Test

- **IPv4 address to ping:** Type the IPv4 address of the target.
- **Number of packet(s):** Type the quantity of packets to test.
- **Packet Size:** Minimum packet size is 32. Maximum packet size varies by path MTU size. If the path MTU size is 1,500, the maximum size that succeeds is 1,472 for IPv4. If the path MTU is set for jumbo frames and the MTU is 9,000, the maximum size that succeeds is 8,972 for IPv4.

VPD Information—iSCSI Function

If the **VPD** button is selected, the content pane appears as shown in [Figure 4-70](#).

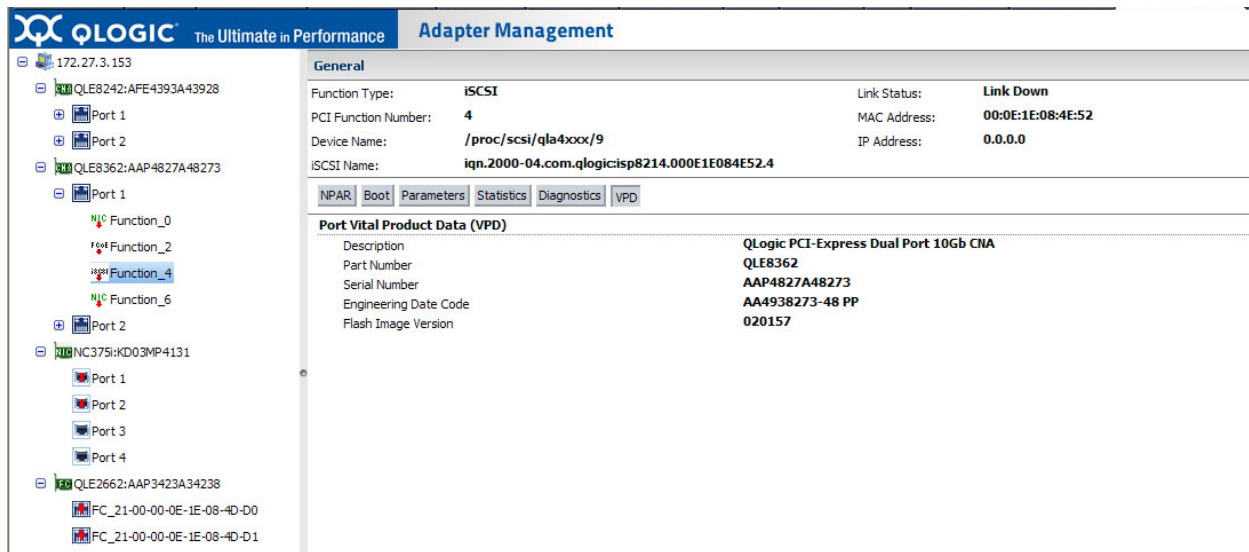


Figure 4-70. Converged Network Adapter iSCSI Function—VPD Information

The content pane contains the following read-only information:

- **Description**—Description of the adapter
- **Part Number**—Part number of the adapter
- **Serial Number**—Serial number of the adapter
- **Engineering Date Code**—Date code that engineering uses to identify release information on an FCoE adapter port
- **Flash Image Version**—Multiflash image version on an FCoE adapter port

Viewing LUN Information

To display information on a LUN for a device connected to a Fibre Channel adapter port or a Converged Network Adapter port, select the LUN in the system tree. The Adapter Management window then appears as shown in [Figure 4-71](#).

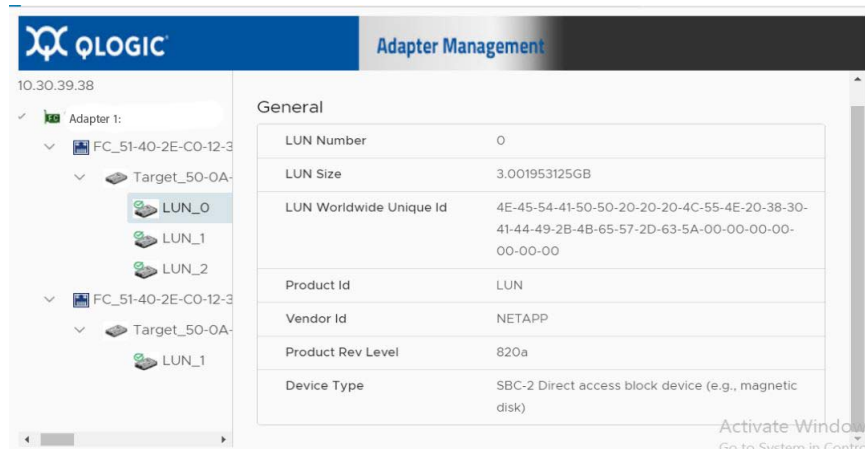


Figure 4-71. Adapter Management Window for Target Device LUN

The Adapter Management window for LUNs contains the General section, which displays read-only information for the selected LUN, as follows:

- **LUN Number**
- **LUN Size**
- **LUN WWN Unique Number**
- **LUN ID**
- **Vendor ID**
- **Product Rev Level**
- **Device Type**

Updating Adapter Flash

To update the Flash using QConvergeConsole vSphere Client Plug-in:

1. In the left pane of the QConvergeConsole page, select the adapter, and then click the **Update Adapter Flash Image** link.
2. In the Select Flash File for Update dialog box, click **Browse**.
3. In the Choose File To Upload dialog box, select the **.bin** Flash file from the extracted Flash kit package that is compatible with your adapter, and then click **Open**.
4. In the Select Flash File for Update dialog box, click **Send**.

5. Verify the current Flash version and file version, and then click **OK** to continue the update.
6. When prompted to reset the adapter to activate the firmware, click **OK** to activate the new firmware immediately, or click **Cancel** to wait until the next system reboot.

CAUTION

The Flash update may take several minutes to complete. Do not cancel the task or reboot the server during this time. Doing so may corrupt the firmware on the adapter.

7. When the Flash update is complete, click **OK** in the Flash update successful completion message box.
8. Click **Refresh** to verify the new firmware version.
9. If the adapter is a Converged Network Adapter, reboot the host ESX system.

5

Managing Marvell 3400/8400/41000/45000 Series Adapters and Adapters Based on 57xx (1Gb), 577xx, 578xx, 579xx Controllers

This chapter provides detailed instructions on how to use the QConvergeConsole vSphere Client Plug-in to manage Marvell 3400/8400/41000/45000 Series Adapters and connected storage devices, including:

- [“Viewing Host Maps” on page 112](#)
- [“Managing 3400/8400/41000/45000 Series Adapters” on page 113](#)
- [“Viewing Port Information for 3400/8400/41000/45000 Series Adapters” on page 122](#)
- [“Configuring Port Boot Options” on page 125](#)
- [“Running Adapter Port Diagnostics” on page 133](#)
- [“Viewing Function Information for 3400/8400/41000/45000 Series Adapters” on page 135](#)
- [“Viewing iSCSI Information for 8400/41000/45000 Series Adapters” on page 138](#)
- [“Viewing FCoE Information for 8400/41000/45000 Series Adapters” on page 142](#)
- [“Viewing Information for an FCoE Target Connected to 8400/41000/45000 Series Adapters” on page 145](#)
- [“Viewing Information for an FCoE LUN Connected to 8400/41000/45000 Series Adapters” on page 146](#)

Viewing Host Maps

If you select an ESX or ESXi host, the content pane provides a few options. Select the option for the type of information you want to view, which are described in the following sections:

- [Storage Map](#)
- [Network Map](#)

Storage Map

Next to **Map**, click **Storage** to view the host's storage map, with the host on one end and the VMs on the other end. [Figure 5-1](#) shows an example of a storage map with 3400/8400/41000/45000 Series Adapters.

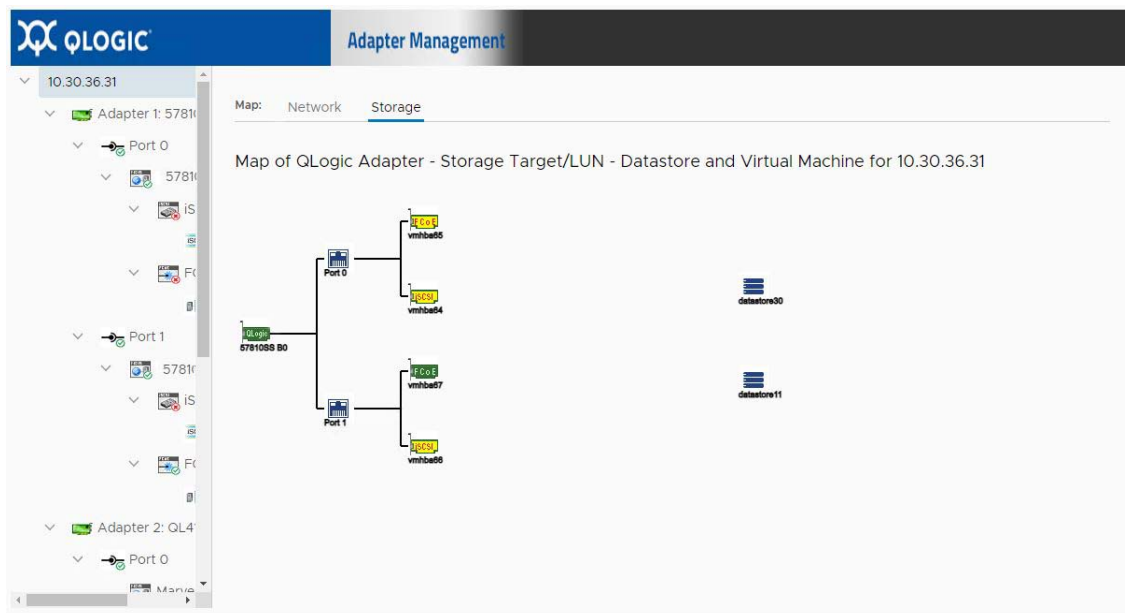


Figure 5-1. Storage Map with 3400/8400/41000/45000 Series Adapters

Network Map

Next to **Map**, click **Network** to view the selected host's network map, as shown in [Figure 5-2](#).

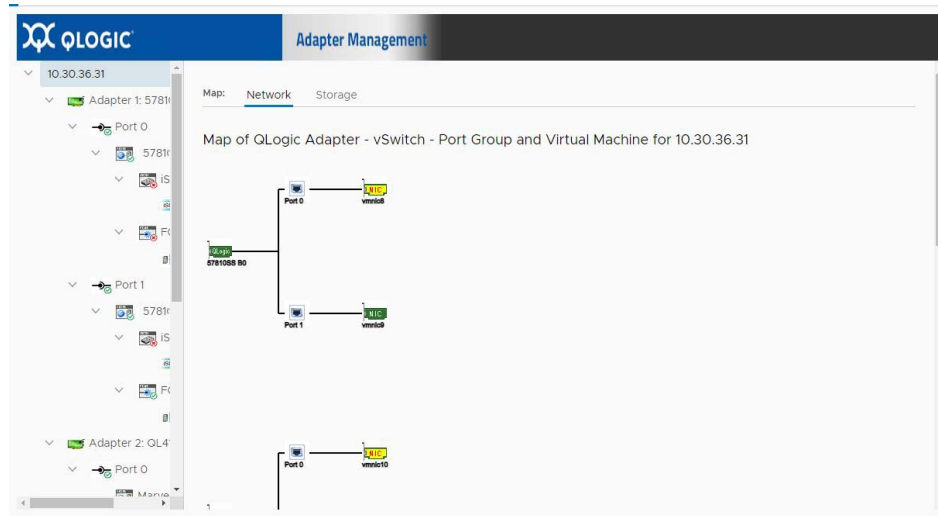


Figure 5-2. Network Map with 3400/8400/41000/45000 Series Adapters

Managing 3400/8400/41000/45000 Series Adapters

To manage 3400/8400/41000/45000 Series Adapters, select the adapter in the system tree. The Adapter Management window appears in the content pane as shown in [Figure 5-3](#) for 8400/41000/45000 Series Adapters, and [Figure 5-4](#) for 3400/41000/45000 Series Adapters.

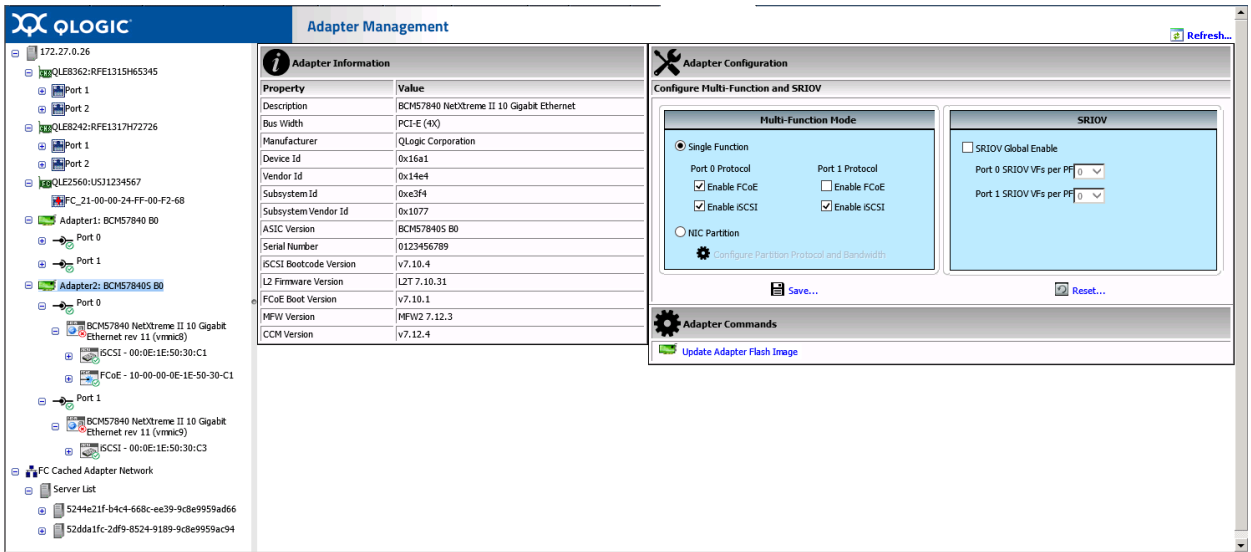


Figure 5-3. Adapter Management of Single-Function 8400/41000/45000 Series Adapters

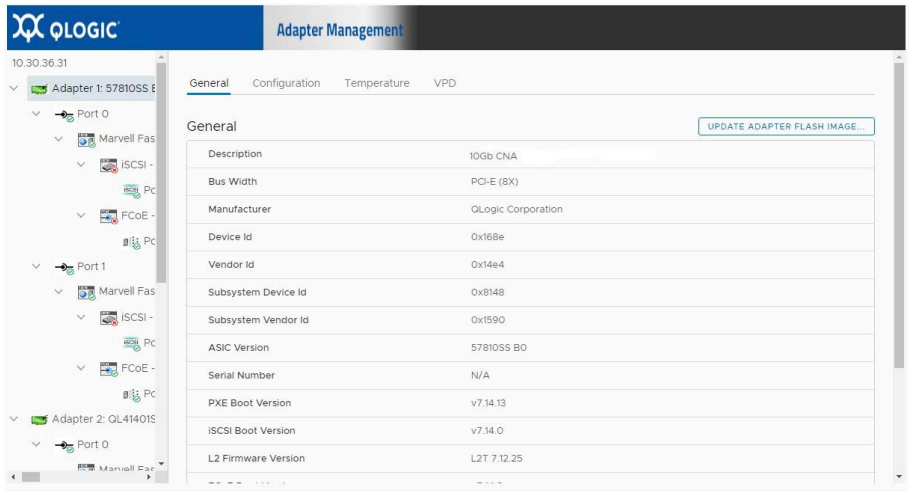


Figure 5-4. Adapter Management of Single-Function 3400/41000/45000 Series Adapters

The Adapter Management window displays information and provides configuration options for the selected adapter, as described in the following sections:

- Adapter Information
- Adapter Configuration

- [Adapter Commands: Updating Flash Firmware](#)
- [Configuring the Flow Control, Protocol, and Bandwidth](#)
- [Starting and Stopping the Adapter Temperature Monitor](#)

Adapter Information

The **Adapter Information** section provides the following information:

- **Description**
- **Bus Width**
- **Manufacturer**
- **Device ID**
- **Vendor ID**
- **Subsystem ID**
- **Subsystem Vendor ID**
- **ASIC Version**
- **Serial Number**
- **Firmware Versions**

Adapter Configuration

Use the **Adapter Configuration** section to configure the following:

- Changing between Single Function and Multi-Function
- Configuring single root-input/output virtualization (SR-IOV)
- Configuring Protocols (8400/41000/45000 Series Adapters only)
- Configuring Remote Direct Memory Access (RDMA) (41000/45000 Series Adapters only)
- For Multi-Function, configuring flow control and bandwidth

NOTE

- If the adapter is in Single Function mode, the protocols for each port can be configured by checking the appropriate box. SR-IOV settings may also be configured for each port as shown in [Figure 5-3](#).
 - If the adapter is in Multi-Function mode, the SR-IOV settings may be configured for each function as shown in [Figure 5-5](#) for 8400/41000/45000 Series Adapters, and [Figure 5-6](#) for 3400/41000/45000 Series Adapters.
-

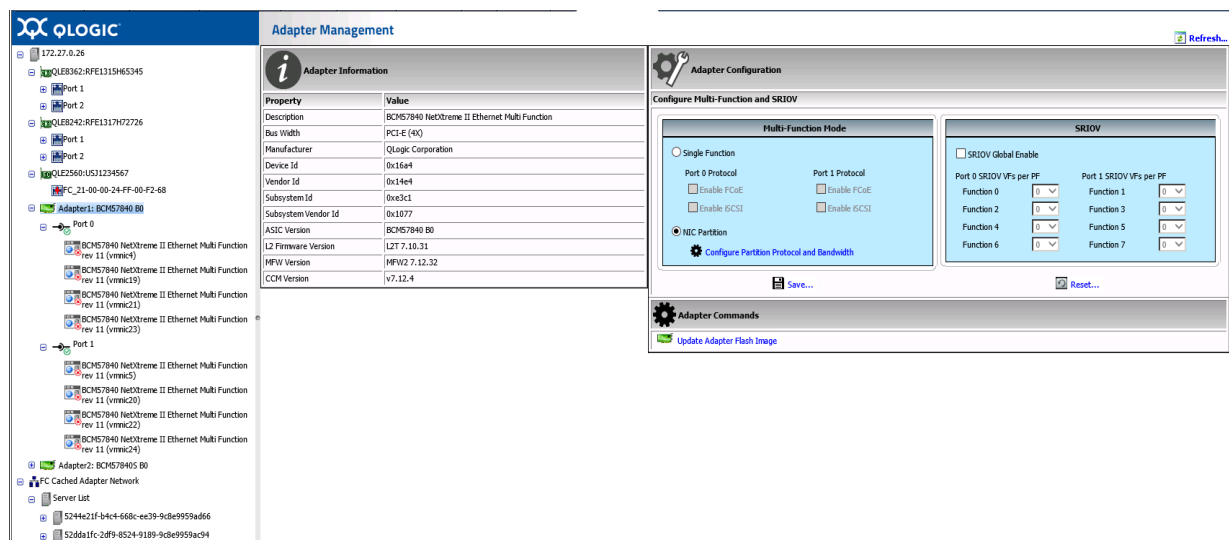


Figure 5-5. Adapter Management of Multi-Function 8400 Series Adapters

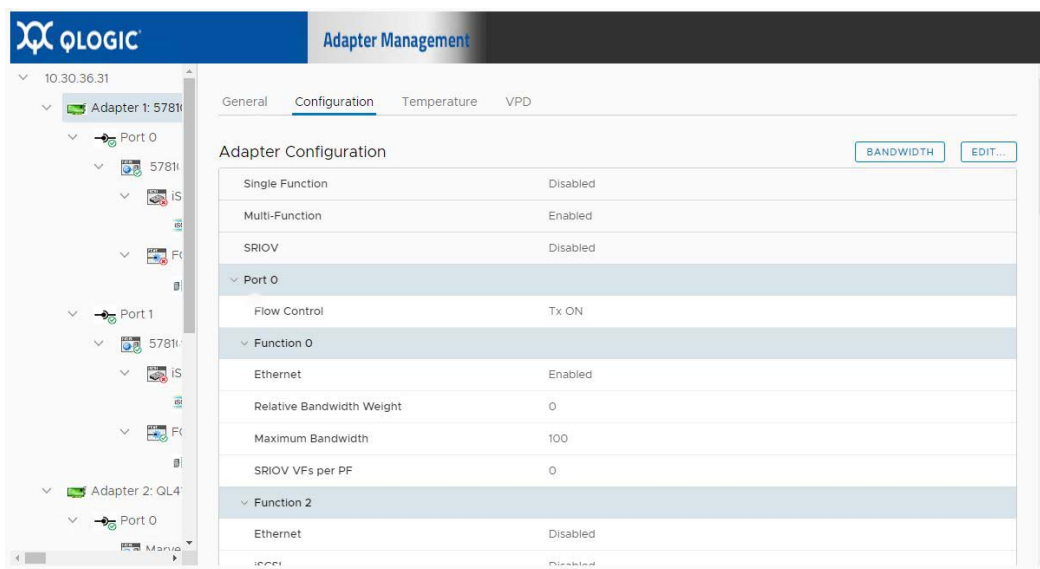


Figure 5-6. Adapter Management of Multi-Function 3400 Series Adapters

Adapter Commands: Updating Flash Firmware

Use the **Adapter Commands** section to update the flash firmware on the adapter. Click **Update Adapter Flash Image** to open a dialog box and select the firmware file. After selecting the file that is appropriate for the adapter, the adapter is updated.

Configuring the Flow Control, Protocol, and Bandwidth

NOTE

- Each 8400/578xx Series Adapter physical port may have up to two storage protocols assigned to it, with each physical port having up to two iSCSI functions, or one iSCSI function with one FCoE function. The 3400/8400/578xx adapters only support 8 function NPAR mode.
- The 3400/8400/578xx/41000/45000 Series Adapters minimum bandwidth settings for all functions on the same port must all be 0 or total 100 percent.
- Use the **Adapter Commands** section to update the flash firmware on the adapter (if available for the adapter).
- The 41000/45000 Series Adapters can have up to 16 functions configured, with up to one storage offload protocol enabled, per physical port. The 41000/45000 Series Adapters can be in DEFAULT (single Ethernet function) mode or 8 function NPAR/16 function NPAREP mode, to enable either FCoE or iSCSI-Offload. The following shows how some of the functions work (on an NPAREP mode adapter):
 - ❑ The first functions of a port (0 and 1 on dual port adapters and 0-3 on quad port adapters) are always enabled with only the Ethernet protocol (with or without RDMA) and cannot have storage protocols configured.
 - ❑ The second functions of a port (2 and 3 on dual port adapters and 4-7 on quad port adapters) can be configured for FCoE protocol or Ethernet protocol (with or without RDMA) or hidden (disabled). On the quad port adapters, the second function of each physical port can also have the iSCSI protocol enabled.
 - ❑ The third functions of each port (4 and 5 on dual port adapters) can be configured for iSCSI protocol or Ethernet protocol (with or without RDMA) or hidden (disabled). On the quad port adapters, the third function of each physical port can only have Ethernet (with or without RDMA) or be hidden (disabled).
 - ❑ All remaining functions can be enabled with the Ethernet protocol (with or without RDMA) or hidden (disabled). Storage protocols cannot be configured.
 - ❑ If RDMA (PVRDMA or NVMe-oF over RDMA) is available on a 41000/45000 Series Adapter, you can enable RDMA over converged Ethernet (RoCE) or Internet wide area RDMA protocol (iWARP), on any Ethernet enabled function. Currently, iWARP is not supported on VMware.

To configure the partition protocol and bandwidth settings:

1. In the Adapter Configuration pane, click **Configure Partition Protocol and Bandwidth**.
2. In the NIC Partition Configuration dialog box:
 - ☐ Select settings for flow control for each port.
 - ☐ Select the protocol and bandwidth for each function.

Figure 5-7 shows an example for an 8400 Series Adapter, and Figure 5-8 shows an example for a 3400 Series Adapter.

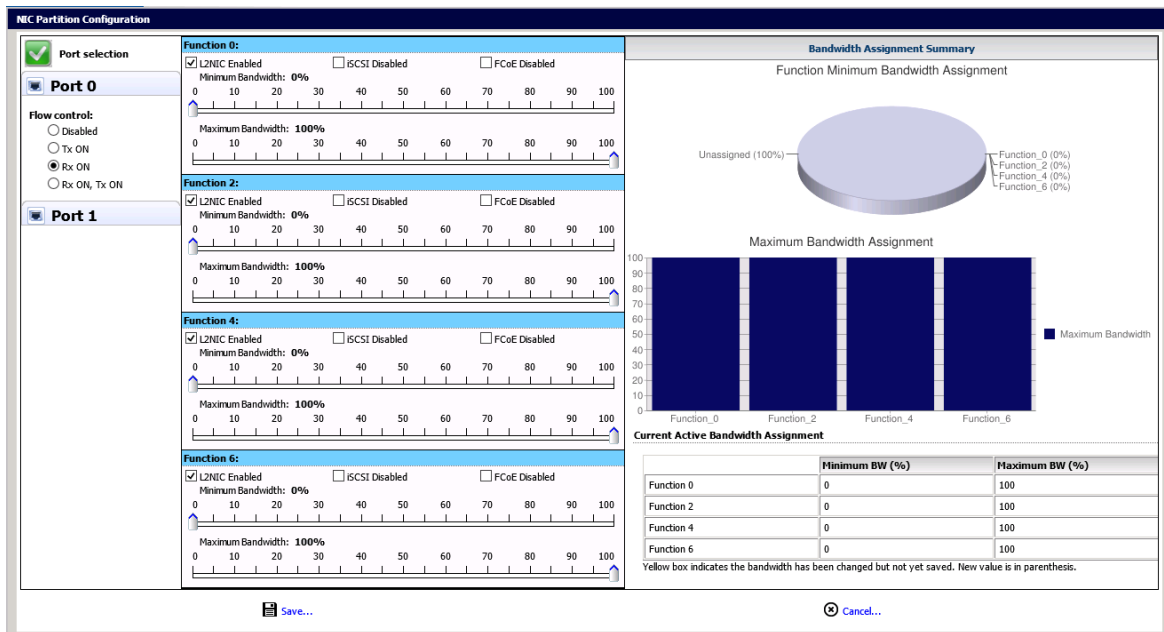


Figure 5-7. Multi-Function Edit Dialog Box for 8400 Series Adapters

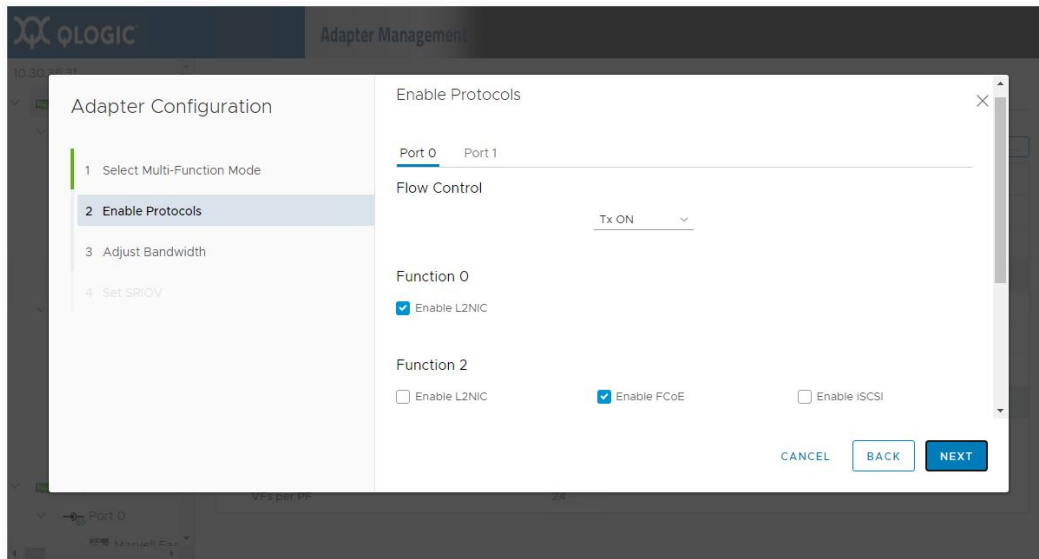


Figure 5-8. Multi-Function Edit Dialog Box for 3400 Series Adapters

Starting and Stopping the Adapter Temperature Monitor

If available for the adapter, click the **Temperature** button in the adapter pane. The Temperature page shows a graph of the temperature over time in degrees Celsius. The graph is updated at the monitoring rate indicated in the pane.

- To start the temperature monitoring, click **Start**.
- To stop the temperature monitoring, click **Stop**.

The monitoring rate can be changed when the sampling of the temperature has been stopped. [Figure 5-9](#) shows the Temperature page.



Figure 5-9. Temperature Page

QinQ Configuration

For specific Marvell 8400 Series 1/10Gbps Ethernet Adapters that have the QinQ option enabled, you can use the QinQ page at the adapter level to configure QinQ for VLAN IDs on a per physical function (PF) basis.

QinQ is an implementation of the *IEEE 802.1ad* (or Q-in-Q) specification. QinQ further segregates traffic by allowing the creation of VLANs within a VLAN by adding an additional 802.1Q tag (VLAN ID field) to the Ethernet frames.

To configure QinQ:

1. In the adapter tree, select the 8400 Series Adapter node.
2. In the content pane, click the **QinQ** tab to view the QinQ Configuration page ([Figure 5-10](#)).

If the **QinQ** tab is not visible, QinQ is not enabled for your adapter model.

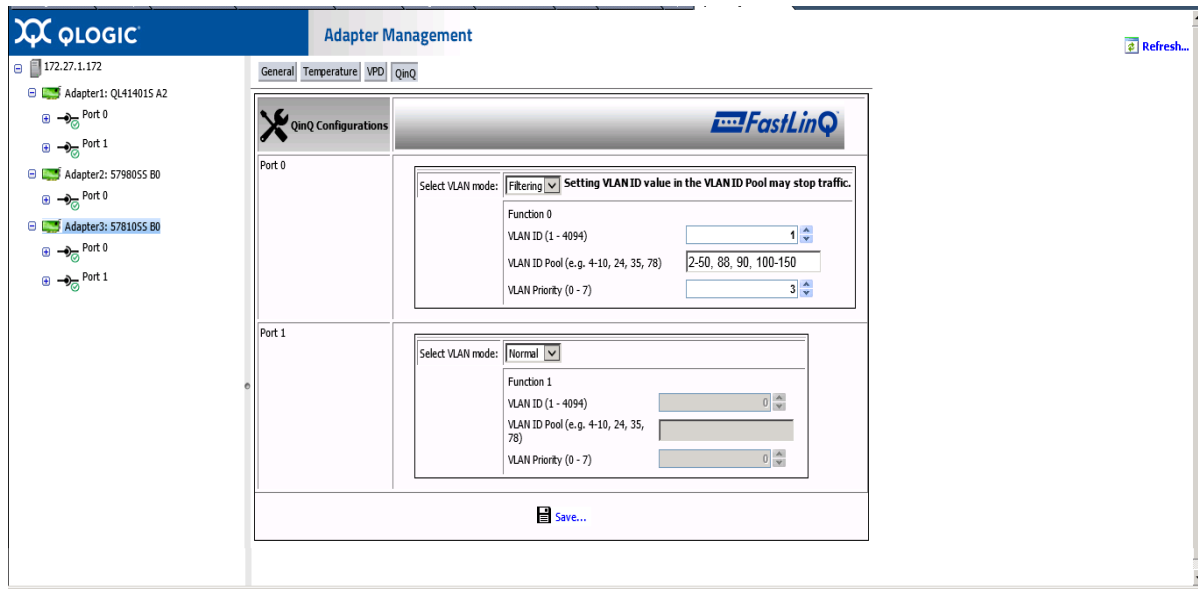


Figure 5-10. QinQ Configuration Page

3. On the QinQ page, configure the **Select VLAN mode** options as follows:
 - ☐ **Normal** mode configures the port to operate using the standard VLAN configuration.
 - ☐ **Filtering** mode configures the port to use QinQ VLAN packet filtering based on the VLAN IDs specified in the VLAN ID and VLAN ID Pool options.
 - ☐ **QinQ** mode configures the port to use QinQ VLAN packet filtering based on the specified VLAN ID.
4. If you selected **Filtering** or **QinQ** mode in [Step 3](#), select from the following values for each port function:
 - ☐ **VLAN ID** must be within the range of 0–4094, where 0 indicates no VLAN ID. In QinQ mode, the VLAN ID cannot be 0.
 - ☐ **VLAN ID Pool** (available in Filtering mode only) must specify a set of ID numbers in the range of 1-4094. You can specify the ID numbers as either a comma-separated list, a range indicated by a dash (-), or a combination of a comma-separated list and a dash-specified range.
 - ☐ **VLAN Priority** must be within the range of 0–7.

NOTE

If you set the same value for **VLAN ID** and **VLAN ID Pool**, traffic may stop. This is a known issue.

In **Filtering** mode, enter valid values for the **VLAN ID** or the **VLAN ID Pool** or both. Both fields may have valid values, which cannot both be 0 and empty at the same time for the same PF.

The maximum quantity of VLAN IDs (specified in the **VLAN ID** option and the **VLAN ID Pool** option for each port function) for the entire adapter is 256.

5. To save the QinQ configuration, click **Save**.
6. If a message indicates that the QinQ configuration update is successful, reboot the system.

Viewing Port Information for 3400/8400/41000/45000 Series Adapters

To view information for ports on 3400/8400/41000/45000 Series Adapters, select the appropriate port in the system tree. The Adapter Management window shows the following port information:

- Port Number
- Link State
- Link Speed
- Duplex Setting
- Bus Number
- Device Number
- Media Type
- NIC Driver Version
- FCoE Driver Version
- iSCSI Driver Version

Figure 5-11 shows the port information for 8400/41000/45000 Series Adapters, and Figure 5-12 shows the port information for 3400/41000/45000 Series Adapters.

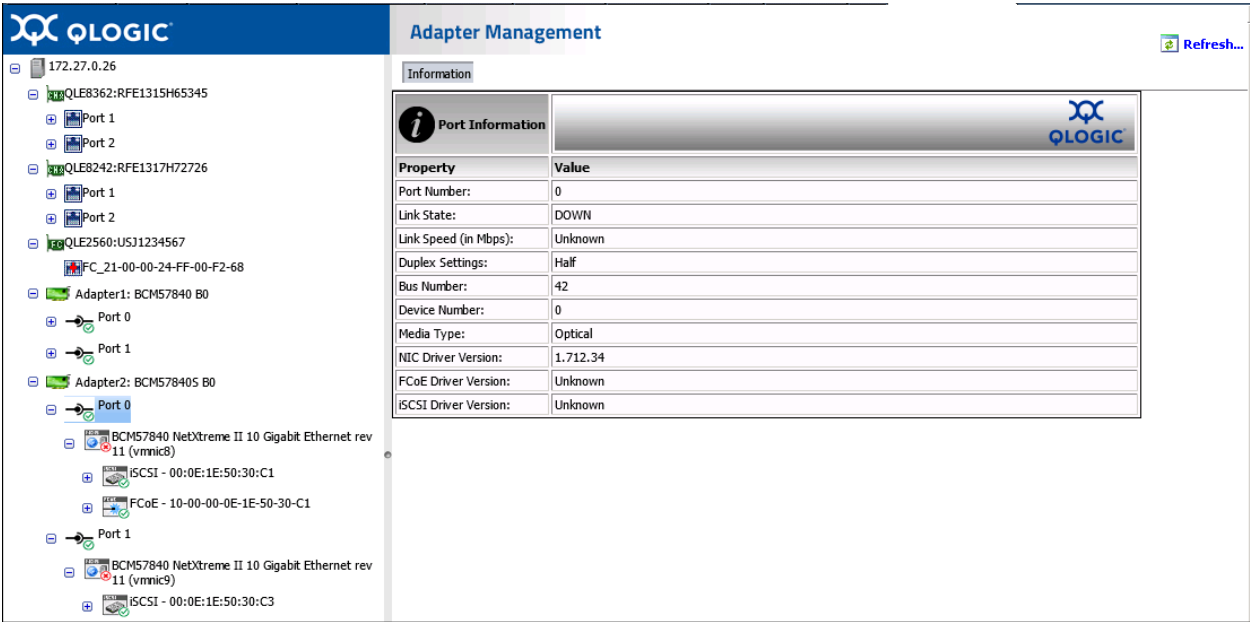


Figure 5-11. Port Information for 8400/41000/45000 Series Adapters

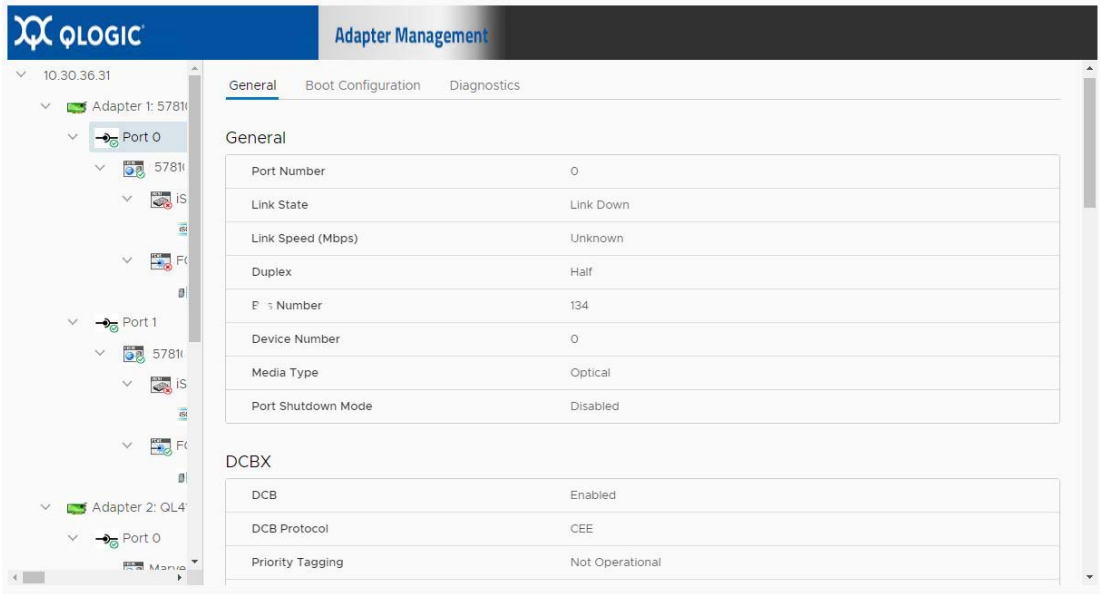


Figure 5-12. Port Information for 3400/41000/45000 Series Adapters

If data center bridging exchange (DCBX) information is available, it is shown as part of the port information.

DCBX information includes:

- **DCB State** (enabled or disabled)
- **DCB Protocol**
- **Priority**
- **Priority Flow Control (PFC)**
- **Enhanced Transmission Selection (ETS)**

DCBX Advanced information includes:

- **Local MIB:**
 - ☐ **ETS** (enabled or disabled)
 - ☐ **PFC** (enabled or disabled)
 - ☐ **Configuration mismatch**
 - ☐ **Networking, FCoE, and iSCSI HBA PRI** (priorities)
 - ☐ **PFC** (priority flow control) **Enabled/Disabled on Priorities**
 - ☐ **Networking, FCoE, and iSCSI HBA PGID** (priority group ID)
 - ☐ **PGID(x) BW(%)** (bandwidth percent)
- **Remote MIB:**
 - ☐ **Remote application priority willing** (enabled or disabled)
 - ☐ **Remote PFC willing**
 - ☐ **Remote ETS willing**
 - ☐ **Remote ETS recommendation valid**
 - ☐ **Remote FCoE PRI**
 - ☐ **Remote iSCSI PRI**
 - ☐ **Remote PFC Enabled/Disabled on Priorities**
 - ☐ **Remote Networking, FCoE, and iSCSI PGID** (priority group ID)
 - ☐ **Remote PGID(x) BW(%)** (bandwidth percent)

Figure 5-13 shows the port information with DCBX information.

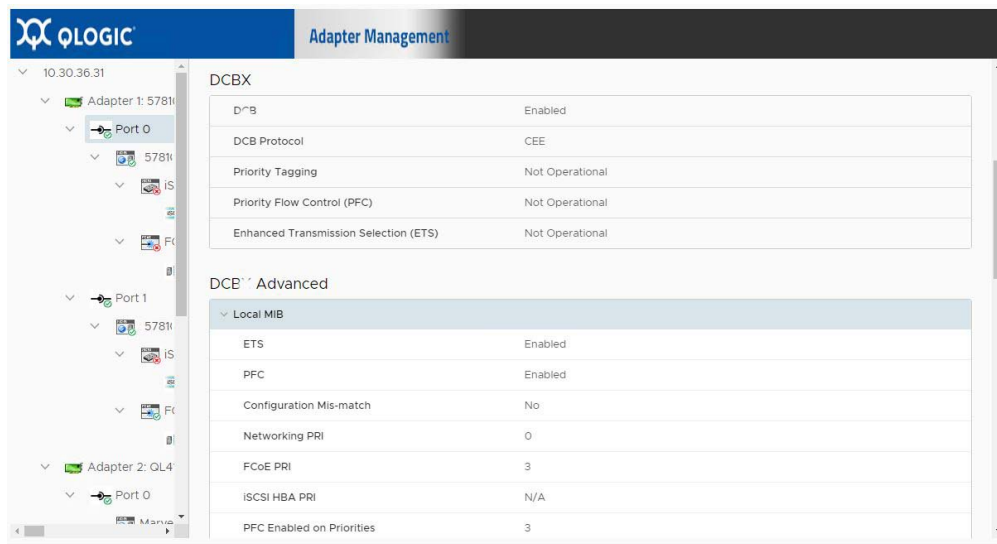


Figure 5-13. Port Information with DCBX Information

Configuring Port Boot Options

If the adapter has the ability to boot from external storage, the following boot configuration options for each boot method are available:

- **MBA** (see [Configuring MBA Boot](#))
- **iSCSI Boot** (see [Configuring iSCSI Boot](#))
- **FCoE Boot** (see [Configuring FCoE Boot](#))

Configuring MBA Boot

To configure the MBA boot:

1. In the QConvergeConsole system tree, select an adapter, and then select the appropriate port.
2. In the content pane on the right, click **Boot Configuration**.
3. Click the **MBA** button.

4. On the MBA Configurations page, complete the following:
 - a. Select the **Option ROM** check box to enable the ROM option, or clear the check box to disable it.
 - b. Select one of the options for **Boot Protocol**.

Options for 3400 and 8400 Series Adapters:

 - **None**
 - **PXE**
 - **FCoE Boot** (if available)
 - **iSCSI Boot** (if available)

Options for 41000 and 45000 Series Adapters:

 - **None**
 - **PXE**
 - **iBFT**

Note that selecting **PXE** will disable the **iSCSI (offload) Boot**. Selecting **iBFT** will disable the **iSCSI (offload) Boot**, and set the **iSCSI Boot Mode** to non-offload.
 - c. Select one of these options for **Boot Strap Type**:
 - **Auto**
 - **BBS**
 - **Int 18h**
 - **Int 19h**
 - d. Select the **Hide Setup Prompt** check box to enable the **Hide Setup Prompt**, or clear the check box to disable the prompt for preboot comprehensive configuration management (CCM) on 57xx/5771x/578xx/3400/8400 Adapters.
 - e. Select one of the following **Setup Key Stroke** options for preboot CCM on 57xx/5771x/578xx/3400/8400 Adapters:
 - **Ctrl-S**
 - **Ctrl-B**
 - f. Select a value (from 0 to 14) in the **Banner Message Timeout** box for preboot CCM on 57xx/5771x/578xx/3400/8400 Adapters.
 - g. Select the appropriate **Link Speed** option:
 - **AutoNeg** (auto negotiation)
 - **SmartAN** (smart auto negotiation (if available))
 - **1Gbps**
 - **10Gbps**
 - **25Gbps** (if available)
 - **40Gbps** (if available)

- **50Gbps** (if available)
 - **100Gbps** (if available)
 - h. Select the **Pre-boot Wake on LAN** check box to enable the Pre-boot Wake on LAN option, or clear the check box to disable it.
 - i. Select the **VLAN Mode** check box to enable VLAN Mode, or clear the check box to disable it.
 - j. Set a value (from 1 to 4094) in the **VLAN ID (1..4094)** box.
 - k. Set a value (from 0 to 7) for the **Boot Retry Count** option.
5. Click **Save**.

Figure 5-14 shows the boot configuration pane for MBA parameters.

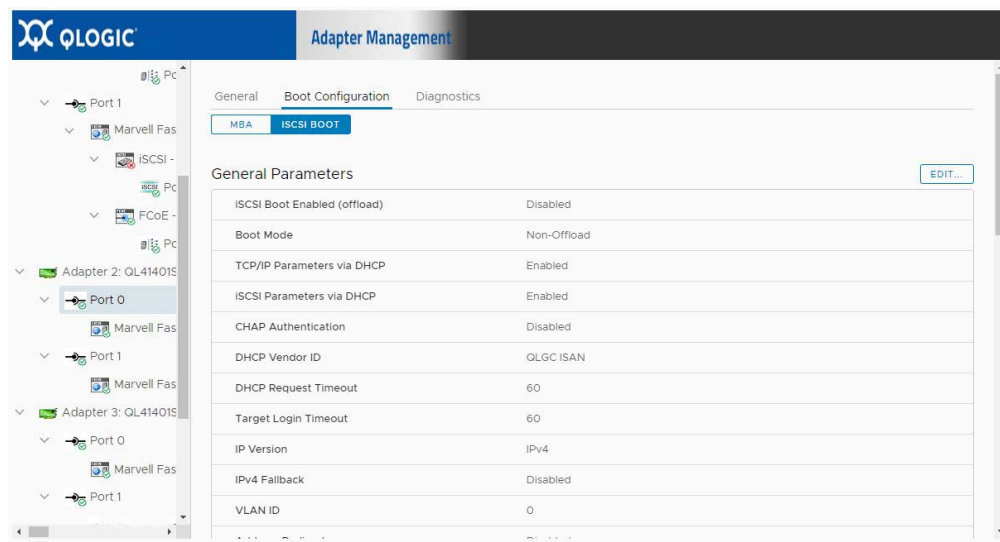


Figure 5-14. Boot Configuration Pane for MBA Parameters

Configuring iSCSI Boot

This section describes how to set up the iSCSI boot configuration.

Configuring General Parameters

To configure the iSCSI general parameters:

1. In the QConvergeConsole system tree, select an adapter, and then select the appropriate port.
2. In the content pane on the right, click **Boot Configuration**.
3. Click the **iSCSI Boot** button.

4. Under **Configure General Parameters**, complete the following:
 - a. Select the **iSCSI Boot Enabled (offload)** check box to enable the iSCSI Boot offload mode, or clear the check box to disable it.

Note that this check box option is only available when **Boot Mode** is set to **Offload**. Also, enabling iSCSI offload mode will set the **MBA Boot Protocol** to **None**. This feature is only applicable to 41000/45000 Series Adapters. The 8400/57xx/5771x/578xx adapters do not support hardware (offload) iSCSI boot on VMware.
 - b. For the **Boot Mode**, select **Non-offload or Offload**.

Note that selecting **Non-offload** sets the MBA Boot Protocol to **iBFT**. Selecting **Offload** and enabling the iSCSI Boot (offload) sets the **MBA Boot Protocol** to **None**. This feature is only applicable for 41000/45000 Series Adapters. The 3400/8400/57xx/5771x/578xx adapters only support Non-offload iSCSI boot on VMware.
 - c. Select the **TCP/IP Parameters via DHCP** check box to enable the TCP/IP parameters via DHCP, or clear the check box to disable it.
 - d. Select the **iSCSI Parameters via DHCP** check box to enable the iSCSI parameters via DHCP, or clear the check box to disable it.
 - e. Select the **CHAP Authentication** check box to enable the CHAP authentication, or clear the check box to disable it.
 - f. Select **Enabled** or **Disabled** in the **Boot to iSCSI target*** option. (not applicable to 41000/45000 Series Adapter).
 - g. Type the DHCP vendor ID in the **DHCP Vendor ID** box.
 - h. Set a value (from 0 to 255) in the **Link Up Delay Time** box.
 - i. Select the **Use TCP Timestamp**¹ check box to enable the TCP time stamp, or clear the check box to disable it.
 - j. Select the **Target as First HDD**¹ check box to enable the target as first HDD, or clear the check box to disable it.
 - k. Set a value (from 0 to 60) in the **LUN Busy Retry Count**¹ box.
 - l. Select **IPv4** or **IPv6** for the **IP Version** option.
 - m. Select the **HBA Boot Mode**¹ check box to enable the HBA boot mode or clear the check box to disable it.
5. Click **Save**.

[Figure 5-15 on page 131](#) shows the **Configure General Parameters** section in the iSCSI Boot Configuration window.

¹ This option does not apply to 41000/45000 Series Adapters.

Configuring Initiator Parameters

To configure the iSCSI initiator parameters:

1. In the QConvergeConsole system tree, select an adapter, and then select the appropriate port.
2. In the content pane on the right, click **Boot Configuration**.
3. Click the **iSCSI Boot** button.
4. Under **Configure Initiator Parameters**, complete the following:
 - a. Type the IP address in the **IP Address** box.
 - b. Type the subnet mask in the **Subnet Mask** box.
 - c. Type the default gateway in the **Default gateway** box.
 - d. Type the primary DNS in the **Primary DNS** box.
 - e. Type the secondary DNS in the **Secondary DNS** box.
 - f. Type the iSCSI name in the **iSCSI Name** box.
 - g. Type the CHAP ID in the **CHAP ID** box.
 - h. Type the CHAP secret key in the **CHAP Secret** box.
5. Click **Save**.

[Figure 5-15 on page 131](#) shows the Configure Initiator Parameters section in the iSCSI Boot Configuration window.

Configuring Primary/Secondary Target Parameters

To configure the iSCSI primary and secondary target parameters:

1. In the QConvergeConsole system tree, select an adapter, and then select the appropriate port.
2. In the content pane on the right, click **Boot Configuration**.
3. Click the **iSCSI Boot** button.
4. Under **Configure Primary Target Parameters**, complete the following:
 - a. Select the **Connect** check box to enable connect, or clear the check box to disable it.
 - b. Type the IP address in the **IP Address** box.
 - c. Type a value in the **TCP Port** box.
 - d. Type a value in the **Boot LUN** box.
 - e. Type the iSCSI name in the **iSCSI Name** box.
 - f. Type the CHAP ID in the **CHAP ID** box.

- g. Type the CHAP secret key in the **CHAP Secret** box.
 - h. Complete [Step 5](#) as needed.
5. Under **Configure Secondary Target Parameters**, complete the following:
 - a. Select the **Connect** check box to enable connect, or clear the check box to disable it.
 - b. Type the IP address in the **IP Address** box.
 - c. Type a value in the **TCP Port** box.
 - d. Type a value (from 0 to 255) in the **Boot LUN** box.
 - e. Type the iSCSI name in the **iSCSI Name** box.
 - f. Type the CHAP ID in the **CHAP ID** box.
 - g. Type the CHAP secret key in the **CHAP Secret** box.
6. Click **Save**.

[Figure 5-15 on page 131](#) shows the **Configure Primary Target Parameters** and **Configure Secondary Target Parameters** section in the Configure iSCSI Boot Parameters window.

Configuring MPIO Parameters

NOTE

This feature is not applicable to 41000/45000 Series Adapters.

To configure the MPIO parameters:

1. Select the appropriate port in the QConvergeConsole system tree.
2. Click **Boot Configuration**.
3. Click the **iSCSI Boot** option.
4. Complete the following in the **Configure MPIO Parameters** pane:
 - a. Select the **Enable MPIO** check box to enable MPIO, or clear the check box to disable it.
 - b. Select a MAC address from an adapter (or select **None**) for the **Secondary Device**.
 - c. Select the **Use Independent Target Portal** check box to enable the use of independent target portal, or clear the check box to disable it.
 - d. Select the **Use Independent Target name** check box to enable the use of independent target name, or clear the check box to disable it.
5. Click **Save**.

Figure 5-15 shows the **Configure MPIO Parameters** section in the iSCSI Boot Configuration window for 3400 and 8400 Series Adapters.

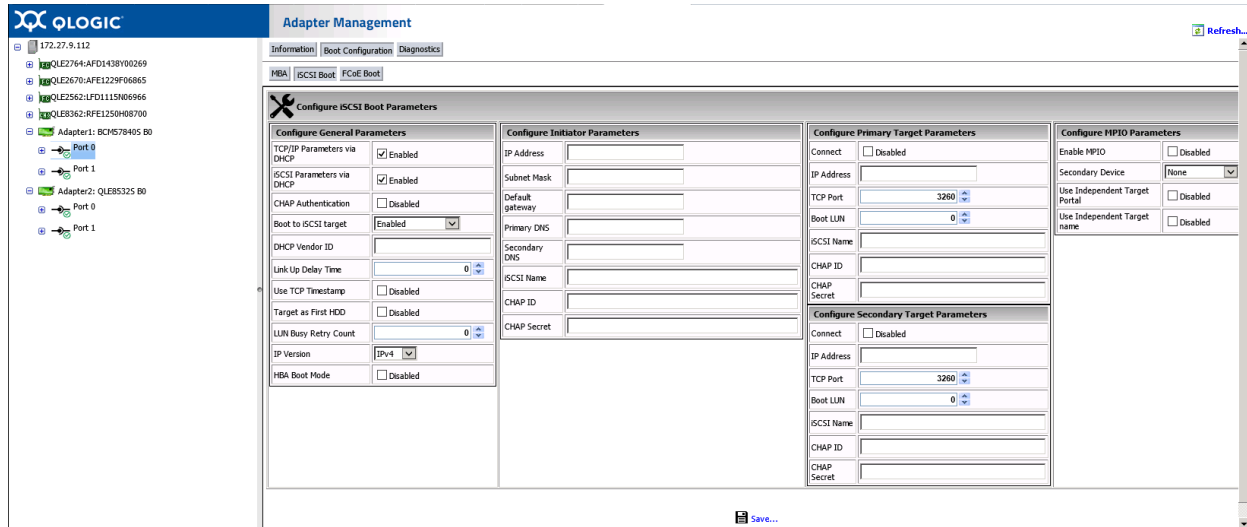


Figure 5-15. iSCSI Boot Configuration Pane for 3400 and 8400 Series Adapters

Configuring FCoE Boot

This section describes how to configure general and target FCoE boot.

Configuring General Parameters

To configure the FCoE general parameters:

1. In the QConvergeConsole system tree, select an adapter, and then select the appropriate port.
2. In the content pane on the right, click **Boot Configuration**.
3. Click the **FCoE Boot** button.
4. Under **Configure General Parameters**, complete the following:
 - a. Select the **Boot to FCoE target**¹ check box to enable boot to FCoE target, or clear the check box to disable it.
 - b. Select the **Target as First HDD**¹ check box to enable target as first HDD, or clear the check box to disable it.
 - c. Set a value (from 0 to 255) in the **Link Up Delay Time** box.
 - d. Set a value (from 0 to 60) in the **LUN Busy Retry Count**¹ box.
 - e. Set a value (from 0 to 8) in the **Fabric Discovery Timeout** box.

¹ This option does not apply to 41000/45000 Series Adapters.

- f. Select the **FCoE HBA Boot Mode**¹ check box to enable the FCoE HBA Boot Mode, or clear it to disable it.

5. Click **Save**.

Figure 5-16 shows the **Configure General Parameters** section in the Configure FCoE Boot Parameters window.

Configuring Target Parameters

To configure the FCoE target parameters:

1. In the QConvergeConsole system tree, select an adapter, and then select the appropriate port.
2. In the content pane on the right, click **Boot Configuration**.
3. Click the **FCoE Boot** button.
4. Under **Configure Target Parameters**, complete the following:
 - a. Select the appropriate **Port WWN** check box(es) to enable the port WWN to be connected, or clear the check box to disable it.
 - b. Type the port worldwide name in the **Port WWN** boxes.
 - c. Set a value (from 0 to 255) in the **Boot LUN** box.
5. Click **Save**.

Figure 5-16 shows the **Configure General Parameters** section in the Configure FCoE Boot Parameters window.

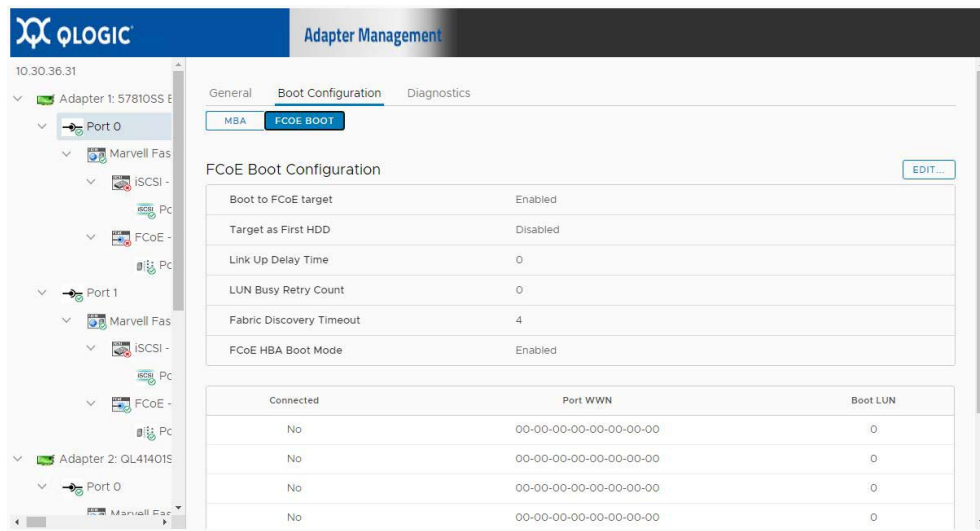


Figure 5-16. FCoE Boot Configuration Panel

Configuring Link Settings

If your 41000/45000 Series Adapters support SmartAN™ (smart auto negotiation), then the QConvergeConsole vSphere Client Plug-in has the Link Settings option, as shown in [Figure 5-17](#).

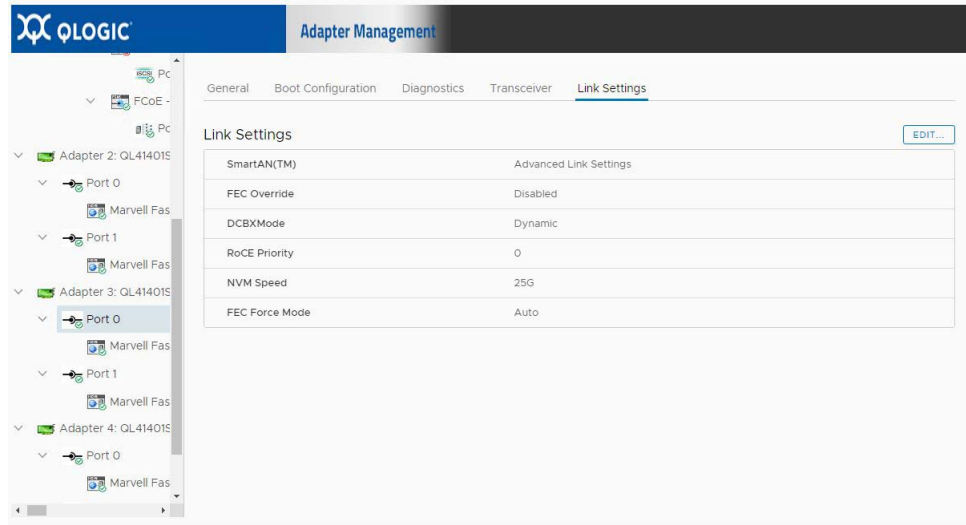


Figure 5-17. Link Settings

On the Link Settings page, the adapter port can be configured for **Smart AutoNeg** or **Advanced Link Settings**. Selecting **Advanced Link Settings** allows you to configure the speed and FEC modes. The available speeds vary based on the speed capability of the adapter.

The **Smart AutoNeg** option may also appear in the **MBA Boot Configuration** list of available speeds. Changing the speed on the Link Settings page also changes the speed in the **MBA Boot Configuration** list.

Running Adapter Port Diagnostics

This section describes how to run a port diagnostic test.

To run a port diagnostic test:

1. In the QConvergeConsole system tree, select an adapter, and then select the appropriate port.
2. In the content pane on the right, click **Diagnostics**.
3. Specify the test type to run by selecting the appropriate **Test** check box or boxes, as shown in [Figure 5-18](#):
 - ☐ **Control Registers**
 - ☐ **Internal Memory**

- ☐ **EEPROM**
- ☐ **Interrupt**
- ☐ **Loopback MAC¹**
- ☐ **Loopback PHY**
- ☐ **LED**

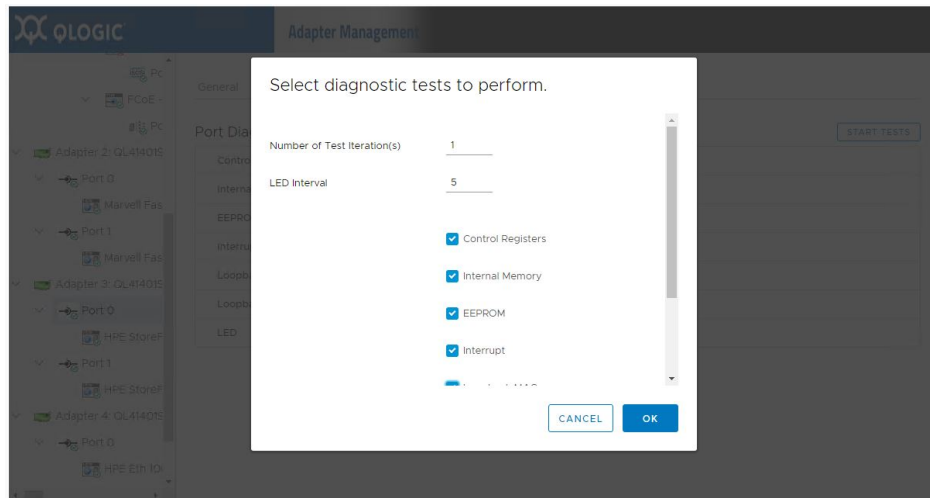


Figure 5-18. Diagnostics Pane

4. Select a value in the **LED Interval** box.
5. Select the number of iterations of each test in the **Number of Loops** box.

¹ This option does not apply to 41000/45000 Series Adapters.

6. Click **Start Test**.

NOTE

After the test is complete, the Diagnostics page as shown in [Figure 5-19](#) shows the result.

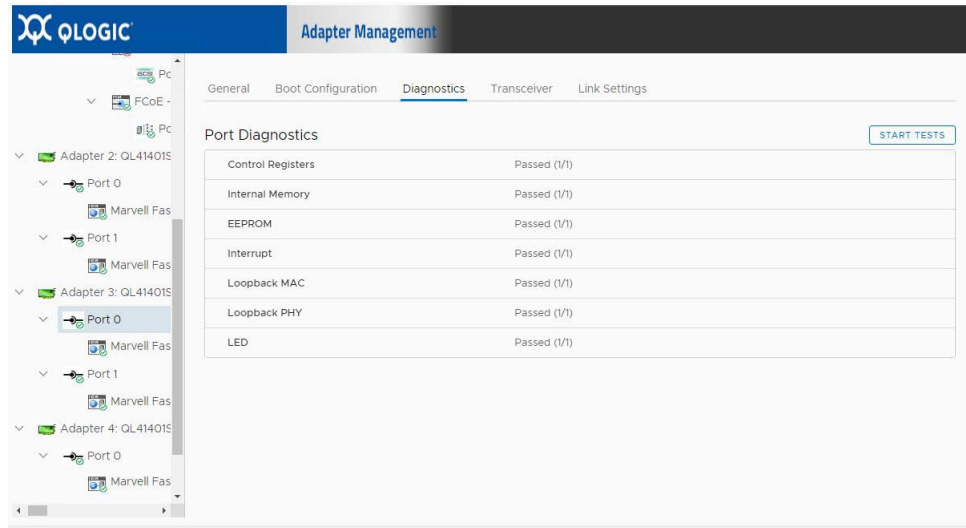


Figure 5-19. Diagnostics Pane Test Results

Viewing Function Information for 3400/8400/41000/45000 Series Adapters

To view information for functions on 3400/8400/41000/45000 Series Adapters, select the function in the system tree. The Adapter Management window shows the function information and function Ethernet statistics.

Function Information

[Figure 5-20](#) shows function information on 3400/8400/41000/45000 Series Adapters.

■ Vital Signs:

- ☐ **MAC Address**
- ☐ **Permanent MAC Address**
- ☐ **iSCSI MAC Address** (when storage is enabled)
- ☐ **FCoE MAC Address** (when storage is enabled)
- ☐ **FCoE Node WWN** (when storage is enabled)
- ☐ **FCoE Port WWN** (when storage is enabled)
- ☐ **MTU**

- ☐ **Flow Control**
- **Driver Information:**
 - ☐ **Driver Name**
 - ☐ **Driver Version**
 - ☐ **Driver Date**
 - ☐ **Interface (UP or DOWN)**
- **Multi-function:**
 - ☐ **Physical Network MAC Address**
 - ☐ **Physical FCoE MAC Address**
 - ☐ **Physical iSCSI MAC Address**
 - ☐ **Minimum Bandwidth (%)**
 - ☐ **Maximum Bandwidth (%)**
 - ☐ **L2NIC Protocol**
 - ☐ **iSCSI Protocol**
 - ☐ **FCoE Protocol**

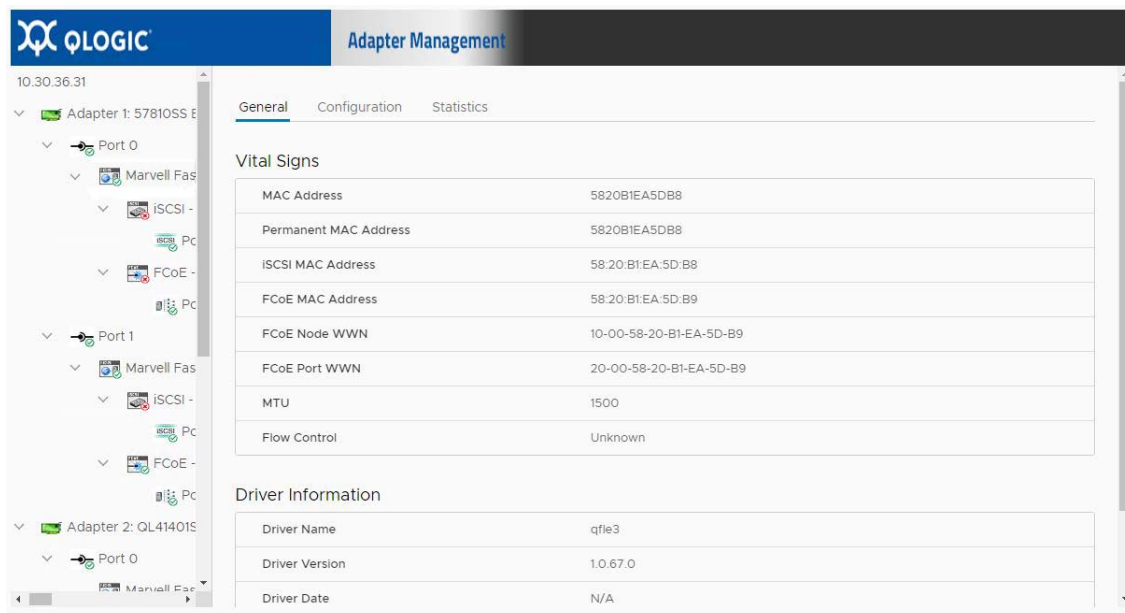


Figure 5-20. Function Information on 3400/8400/41000/45000 Series Adapters

Function Ethernet Statistics

Figure 5-21 shows the function Ethernet statistics on 3400/8400/41000/45000 Series Adapters. Statistics include:

- **Packets Received**
- **Packets Transmitted**
- **Broadcast Frames Received**

- Broadcast Frames Transmitted
- Directed Frames Received
- Directed Frames Transmitted
- Multicast Frames Received
- Multicast Frames Transmitted
- Carrier Sense Errors
- Deferred Transmissions
- Excessive Collisions
- Late Collisions
- Multiple Collision Frames
- Single Collision Frames
- Octets Received
- Octets Transmitted
- Receive Threshold Hits
- Transmit Threshold Hits

To update the statistics, click **Refresh**.

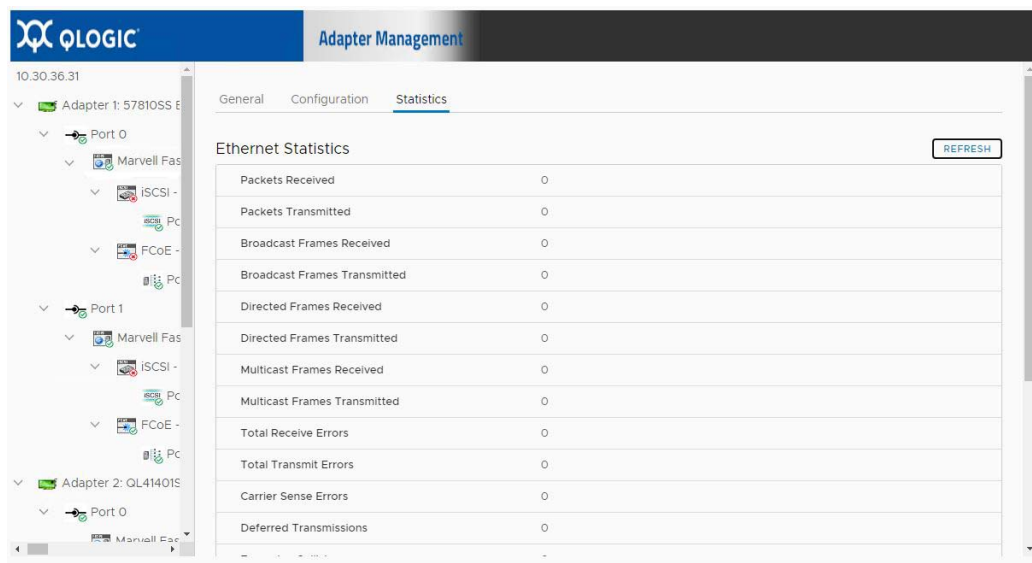


Figure 5-21. Function Ethernet Statistics on 3400/8400/41000/45000 Series Adapters

Viewing iSCSI Information for 8400/41000/45000 Series Adapters

To view iSCSI information for 8400/41000/45000 Series Adapters, select the iSCSI in the system tree.

NOTE

iSCSI must be configured for a function in the adapter content pane.

The Adapter Management window shows the following iSCSI information:

■ Vital Signs:

- ☐ **MAC Address**
- ☐ **IPv4 Address**
- ☐ **IPv6 Address**
- ☐ **MTU**
- ☐ **Device ID**

■ Driver Information:

- ☐ **Driver Name**
- ☐ **Driver Version**
- ☐ **Driver Firmware Version**

Figure 5-22 shows the iSCSI information for 8400/41000/45000 Series Adapters.

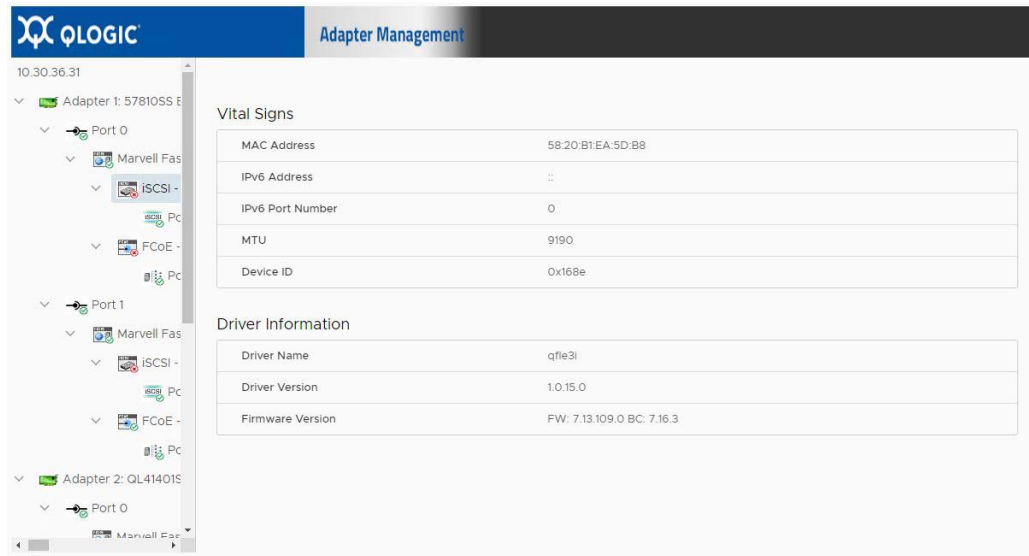


Figure 5-22. iSCSI Information on 8400/41000/45000 Series Adapters

If there are active iSCSI sessions, selecting the portal in the system tree shows function information regarding the sessions. The iSCSI **Portal information** includes the **Portal IP** and each session's information, including:

- **Target**
- **Session State**
- **Target Portal**
- **Initiator Portal**
- **Initial R2T**
- **Immediate Data**
- **Max Outstanding R2T**
- **Data Sequence Order**
- **Data PDU in Order**
- **Error Recovery Level**
- **Connection ID**
- **Session Unique ID**

Figure 5-23 shows the iSCSI Portal Information for 8400/41000/45000 Series Adapters.

The screenshot displays the QLOGIC Adapter Management web interface. On the left, a system tree shows the hierarchy of adapters and ports. The selected item is 'iSCSI Portal - 192.168.100.51'. The main panel shows the 'iSCSI Portal Information' tab with the following data:

Portal Information	
Portal IP	192.168.100.51

Session 0 Information	
Target	iqn.1986-03.com
Session State	Connected
Target Portal	192.168.100.9
Initiator Portal	192.168.100.51
Initial R2T	True
Immediate Data	False
Max Outstanding R2T	1
Data Sequence in Order	True
Data PDU in Order	True
Error Recovery Level	0
Connection ID	262176
Session Unique ID	73679168365608

Session 1 Information	
Target	iqn.2001-05.com.equallogi:0-8a0906-3a14b7e04-b5e000e7ac253579-ins
Session State	Connected
Target Portal	192.168.100.5
Initiator Portal	192.168.100.51
Initial R2T	False
Immediate Data	True

Figure 5-23. iSCSI Portal Information on 8400/41000/45000 Series Adapters

Viewing Information for an iSCSI Target Connected to 8400/41000/45000 Series Adapters

To view information for an iSCSI target connected to 8400/41000/45000 Series Adapters, select the iSCSI target in the system tree.

The Adapter Management window shows the following iSCSI target information:

■ **Target Information:**

- ☐ **Target IQN Name**
- ☐ **SCSI Target Number**
- ☐ **MAC Address**
- ☐ **IPv4 Address**
- ☐ **IPV6 Address**
- ☐ **LUN Count**

■ **Session Information:**

- ☐ **Target**
- ☐ **Session State**
- ☐ **Target Portal**
- ☐ **Initiator Portal**
- ☐ **Initial R2T**
- ☐ **Immediate Data**
- ☐ **Max Outstanding R2T**
- ☐ **Data Sequence in Order**
- ☐ **Data PDU in Order**
- ☐ **Error Recovery Level**
- ☐ **Connection ID**
- ☐ **Session Unique ID**

Figure 5-24 shows the iSCSI target attached to 8400/41000/45000 Series Adapters.

The screenshot displays the QLOGIC Adapter Management interface. On the left, a system tree lists various adapters, including BCM57840S B0, BCM57840 NetXtreme II Ethernet Multi Function rev 11 (vmnic5), and an iSCSI - 00:0E:1E:50:26:8B adapter. The main panel, titled 'Adapter Management', shows 'iSCSI Target Information'. This section includes a table for 'Target Information' and another for 'Session 0 Information'.

Target Information	
Target IQN Name	iqn.1986-03.com
SCSI Target Number	0
MAC Address	00:00:00:00:00:00
IPv4 Address	192.168.100.9
IPv6 Address	00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00
LUN Count	1

Session 0 Information	
Target	iqn.1986-03.com
Session State	Connected
Target Portal	192.168.100.9
Initiator Portal	192.168.100.51
Initial R2T	True
Immediate Data	False
Max Outstanding R2T	1
Data Sequence in Order	True
Data PDU in Order	True
Error Recovery Level	0
Connection ID	262176
Session Unique ID	73679168365608

Figure 5-24. iSCSI Target Attached to 8400/41000/45000 Series Adapters

Viewing Information for an iSCSI LUN Connected to 8400/41000/45000 Series Adapters

To view information for an iSCSI LUN connected to 8400/41000/45000 Series Adapters, select the iSCSI LUN in the system tree. The Adapter Management window shows the following iSCSI LUN information:

- iSCSI Unit Number
- Capacity (MB)
- Vendor ID
- Product ID
- Device Type
- Product Rev Level

Figure 5-25 shows the iSCSI LUN Information on 8400/41000/45000 Series Adapters.

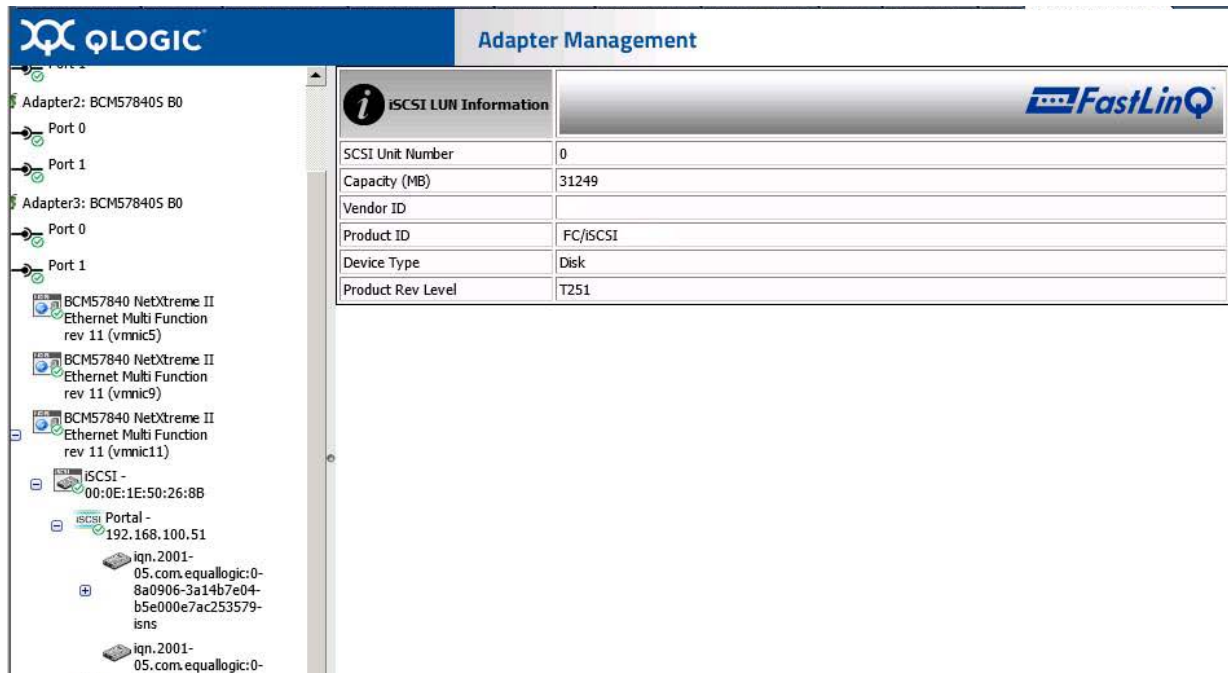


Figure 5-25. iSCSI LUN Information on 8400/41000/45000 Series Adapters

Viewing FCoE Information for 8400/41000/45000 Series Adapters

To view FCoE information on 8400/41000/45000 Series Adapters, select the FCoE in the system tree. The Adapter Management window shows the FCoE information and statistics.

NOTE

FCoE must be configured for a function in the adapter content pane.

FCoE Function Information

Click the **Information** button to view the FCoE function information for 8400/41000/45000 Series Adapters, as shown in Figure 5-26.

■ Vital Signs:

- ☐ **MAC Address**
- ☐ **MTU**
- ☐ **FCF Selection**

- ☐ WWNN
- ☐ WWPN
- **Driver Information:**
 - ☐ Driver Name
 - ☐ Driver Version
 - ☐ Driver Date
 - ☐ Firmware Version
 - ☐ Symbolic Node Name

The screenshot shows the QLogic Adapter Management web interface. On the left is a tree view of network devices. The main panel on the right is titled 'Adapter Management' and has tabs for 'Information' and 'Statistics'. The 'Information' tab is active, displaying 'FCoE Function Information'. This section includes a 'Vital Signs' table with fields like MAC Address, MTU, FCF Selection, WWNN, and WWPN. Below this is a 'Driver Information' table with fields like Driver Name, Driver Version, Driver Date, Firmware Version, and Symbolic Node Name. A 'Refresh...' button is in the top right corner of the main panel.

FCoE Function Information	
Vital Signs	
MAC Address	00:0E:1E:50:30:C1
MTU	1500
FCF Selection	First Received
WWNN	10-00-00-0E-1E-50-30-C1
WWPN	20-00-00-0E-1E-50-30-C1
Driver Information	
Driver Name	bnx2fc
Driver Version	1.712.50.v55.6
Driver Date	Oct 16, 2014
Firmware Version	bc 7.12.3
Symbolic Node Name	Unknown

Figure 5-26. FCoE Information on 8400/41000/45000 Series Adapters

FCoE Statistics

Click the **Statistics** button to view the FCoE statistics for 8400/41000/45000 Series Adapters, as shown in [Figure 5-27](#).

- FCoE transmitted frames
- FCoE transmitted bytes
- FCoE received frames
- FCoE received bytes
- Packets received with wrong FC-CRC
- FCoE dropped frames

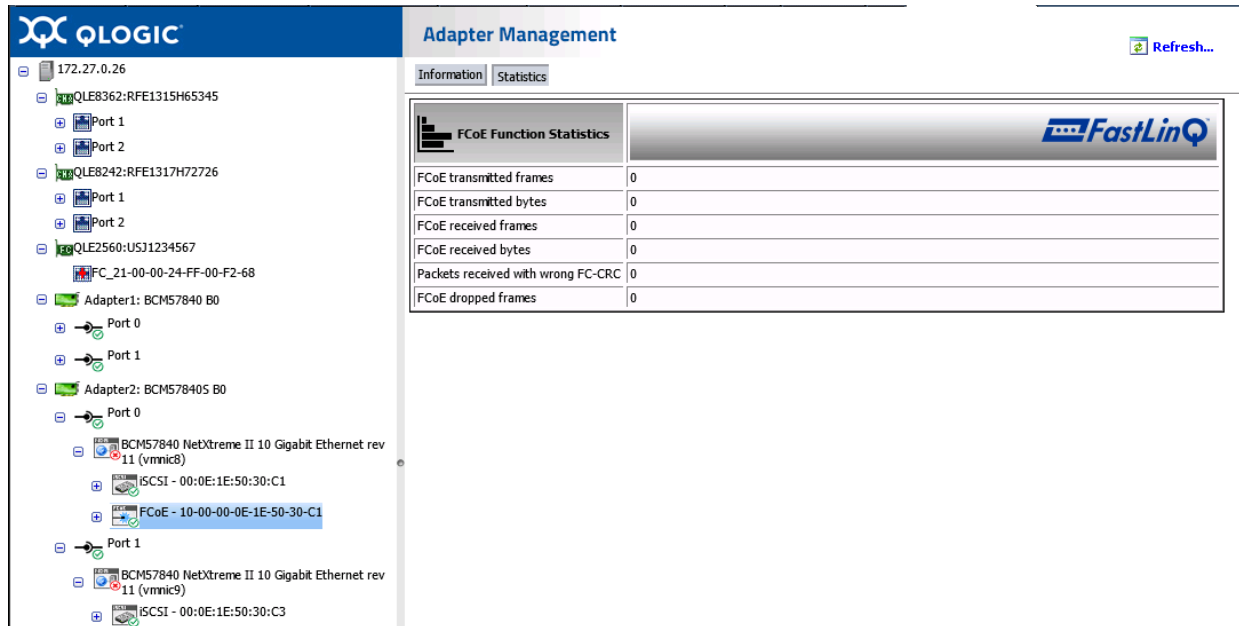


Figure 5-27. FCoE Statistics on 8400/41000/45000 Series Adapters

If there are active FCoE connections, select an FCoE port in the system tree to view information regarding the port.

The **FCoE Port Information (Fabric Information)** includes:

- Port Type
- Port State
- WW Port Name
- WW Node Name
- Parent WW Port Name
- Port FCID
- FCF Mac Address
- FCF WW Port Name
- FCF WW Node Name
- Fabric Priority
- Link Keep Alive Interval (ms)

Figure 5-28 shows the FCoE Port Information for 8400/41000/45000 Series Adapters.

The screenshot shows the QLogic Adapter Management interface. On the left, a system tree lists three BCM57840S B0 adapters, each with two ports (Port 0 and Port 1). The right pane displays the FCoE Port Information for the selected adapter. The table below represents the data shown in the screenshot.

FCoE Port Information	
Fabric Information	
Port Type	NPort
Port State	Up
WW Port Name	20-00-00-0E-1E-50-00-00
WW Node Name	10-00-00-0E-1E-50-00-00
Parent WW Port Name	20-00-00-0E-1E-50-00-00
Port FCID	8f0941
FCF MacAddress	00:05:9B:23:D8:00
FCF WW Port Name	00-00-00-00-00-00-00-00
FCF WW Node Name	00-00-00-00-00-00-00-00
Fabric Priority	128
Link Keep Alive Interval (ms)	800

Figure 5-28. FCoE Port Information on 8400/41000/45000 Series Adapters

Viewing Information for an FCoE Target Connected to 8400/41000/45000 Series Adapters

To view information for an FCoE target connected to 8400/41000/45000 Series Adapters, select the FCoE target in the system tree. The Adapter Management window shows the following **FCoE Target Information**:

- **SCSI Target Number**
- **Port State**
- **Target Port ID**
- **Target WW Node Name**
- **Target WW Port Name**
- **LUN Count**

Figure 5-29 shows the **FCoE Target Information** for 8400/41000/45000 Series Adapters.

The screenshot displays the QLogic Adapter Management web interface. On the left, a system tree shows three BCM57840S B0 adapters, each with two ports. The third adapter is expanded, showing three BCM57840 NetXtreme II Ethernet Multi Function cards (vmmic5, vmmic9, vmmic13). Under vmmic13, an FCoE LUN is selected, showing its WWN (53-90-00-11-0D-05-00-00) and associated SANBlaze - VLUN FC RANDisk. The main panel on the right, titled 'Adapter Management', shows the 'FCoE Target Information' tab. It contains a table with the following data:

FCoE Target Information	
SCSI Target Number	0
Port State	2
Target Port ID	00-01-01-00
Target WW Node Name	53-90-00-11-0D-05-00-00
Target WW Port Name	53-90-00-11-0D-05-00-00
LUN Count	3

Figure 5-29. FCoE Target Information on 8400/41000/45000 Series Adapters

Viewing Information for an FCoE LUN Connected to 8400/41000/45000 Series Adapters

To view information for an FCoE LUN connected to 8400/41000/45000 Series Adapters, select the FCoE LUN in the system tree. The Adapter Management window shows the following **FCoE LUN Information**:

- **SCSI Unit Number**
- **Capacity (MB)**
- **Vendor ID**
- **Product ID**
- **Device Type**
- **Product Rev Level**

Figure 5-30 shows the **FCoE LUN Information** for 8400/41000/45000 Series Adapters.

Adapter Management

172.28.12.136

Adapter1: BCM57840S B0

Port 0

Port 1

Adapter2: BCM57840S B0

Port 0

Port 1

Adapter3: BCM57840S B0

Port 0

Port 1

BCM57840 NetXtreme II Ethernet Multi Function rev 11 (vmmic5)

BCM57840 NetXtreme II Ethernet Multi Function rev 11 (vmmic9)

BCM57840 NetXtreme II Ethernet Multi Function rev 11 (vmmic11)

iSCSI - 00:0E:1E:50:26:8B

Portal - 00:00:00:00:00:00:00:00:00:00:00:00:00:00:00

BCM57840 NetXtreme II Ethernet Multi Function rev 11 (vmmic13)

FCoE - 10-00-00-0E-1E-50-00-00

Port - 20-00-00-0E-1E-50-00-00

53-90-00-11-0D-05-00-00

LUN0 - SANBlaze - VLUN FC RAMDisk

LUN1 - SANBlaze - VLUN FC RAMDisk

FCoE LUN Information

SCSI Unit Number	0
Capacity (MB)	16
Vendor ID	SANBlaze
Product ID	VLUN FC RAMDisk
Device Type	Disk
Product Rev Level	4.1.

Figure 5-30. FCoE LUN Information on 8400/41000/45000 Series Adapters

6

Managing 3400/8400/41000/45000 Series Adapters and Adapters Based on 57xx (1Gb), 577xx, 578xx, 579xx Controllers

This chapter provides detailed instructions on how to use the vCenter Server Web Client Plug-in to manage Marvell 3400/8400/41000/45000 Series Adapters and connected storage devices. The following topics are covered in this chapter:

- [“Managing Hosts” on page 149](#)
- [“Managing 3400/8400/41000/45000 Series Adapters” on page 155](#)
- [“Viewing Port Information for 3400/8400/41000/45000 Series Adapters” on page 174](#)
- [“Configuring Port Boot Options” on page 178](#)
- [“Running Adapter Port Diagnostics” on page 198](#)
- [“Viewing Function Information for 3400/8400/41000/45000 Series Adapters” on page 201](#)
- [“Viewing iSCSI Information for 8400/41000/45000 Series Adapters” on page 205](#)
- [“Viewing Information for an iSCSI Target Connected to 8400/41000/45000 Series Adapters” on page 207](#)
- [“Viewing Information for an iSCSI LUN Connected to 8400/41000/45000 Series Adapters” on page 208](#)
- [“Viewing FCoE Information for 8400/41000/45000 Series Adapters” on page 209](#)

- “Viewing Information for an FCoE Target Connected to 8400/41000/45000 Series Adapters” on page 213
- “Viewing Information for an FCoE LUN Connected to 8400/41000/45000 Series Adapters” on page 214

Managing Hosts

If you select an ESX or ESXi host, the content pane provides a few options. Select the option for the type of information you want to view, which are described in the following sections:

- [Storage Map](#)
- [Network Map](#)

Storage Map

Next to **Map**, click **Storage** to view the host's storage map, with the host on one end, and the VMs on the other end. [Figure 6-1](#) shows an example of the vSphere Web Client Plug-in storage map with 3400/8400/41000/45000 Series Adapters and [Figure 6-2](#) shows an example of the HTML5 based vSphere Client Plug-in storage map with 3400/8400/41000/45000 Series Adapters.

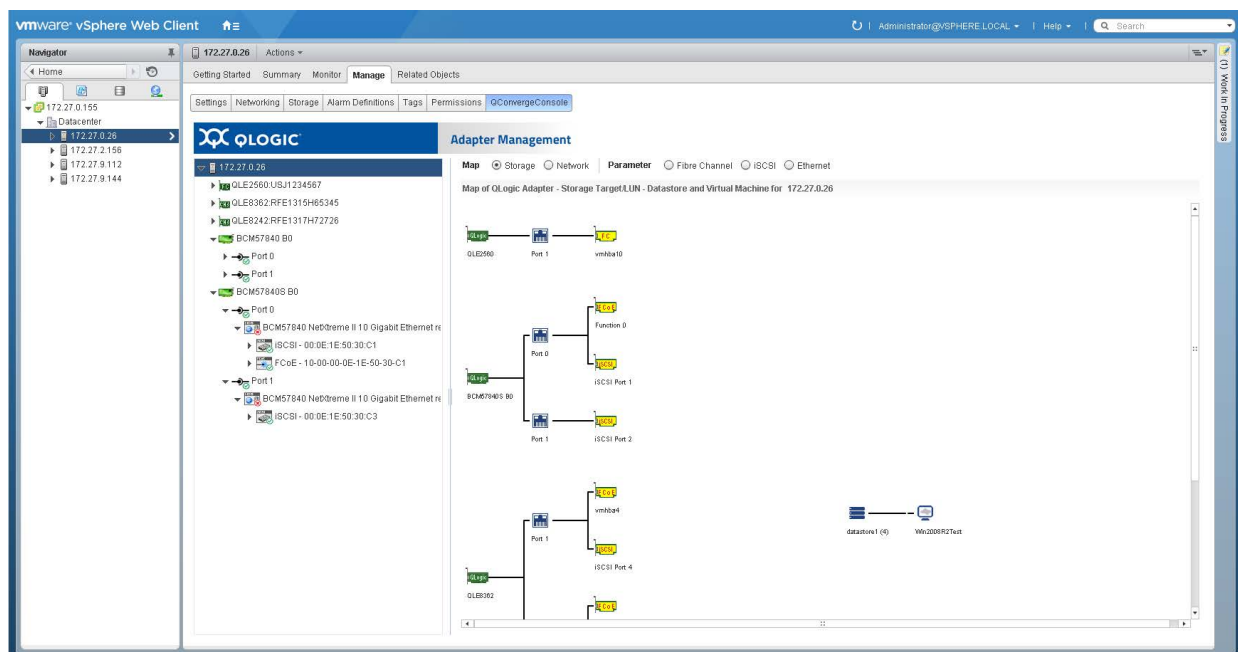


Figure 6-1. Storage Map with 3400/8400/41000/45000 Series Adapters (vSphere Web Client Plug-in)

6—Managing 3400/8400/41000/45000 Series Adapters and Adapters Based on 57xx (1Gb), 577xx, 578xx, 579xx Controllers

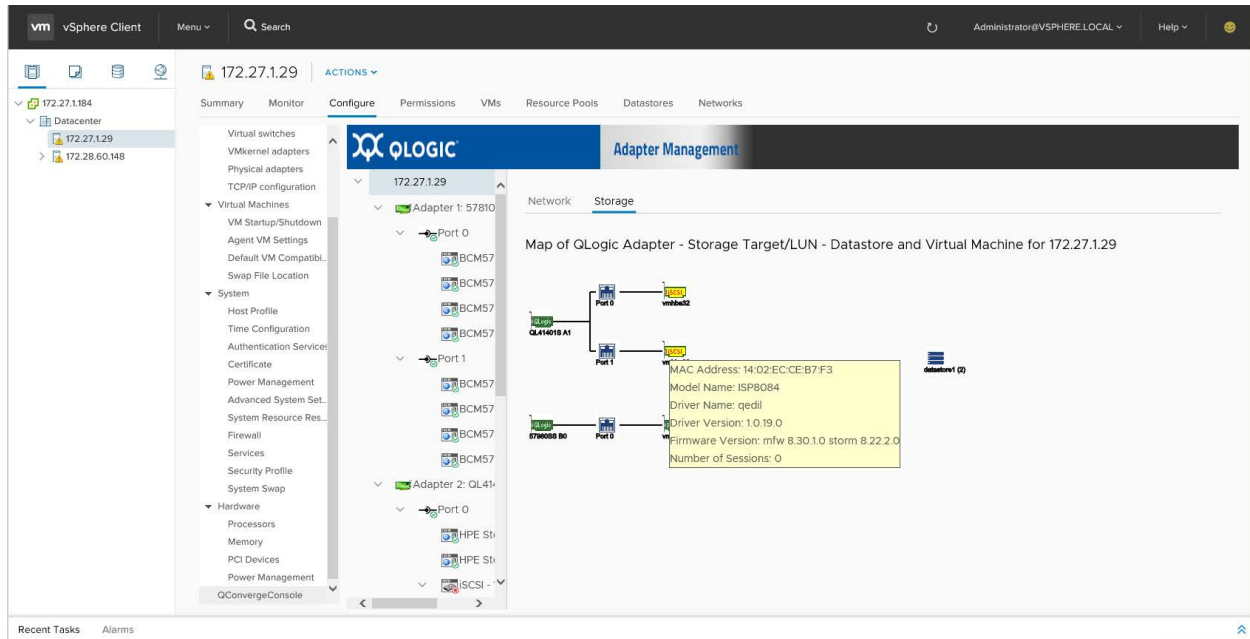


Figure 6-2. Storage Map with 3400/8400/41000/45000 Series Adapters (HTML5 based vSphere Client Plug-in)

Figure 6-3 and Figure 6-4 show examples of the vSphere Web Client Plug-in and HTML5 based vSphere Client Plug-in storage maps. On these storage maps, the lines indicate LUNs that are attached to the VMs as raw device mapping (RDM) disks.

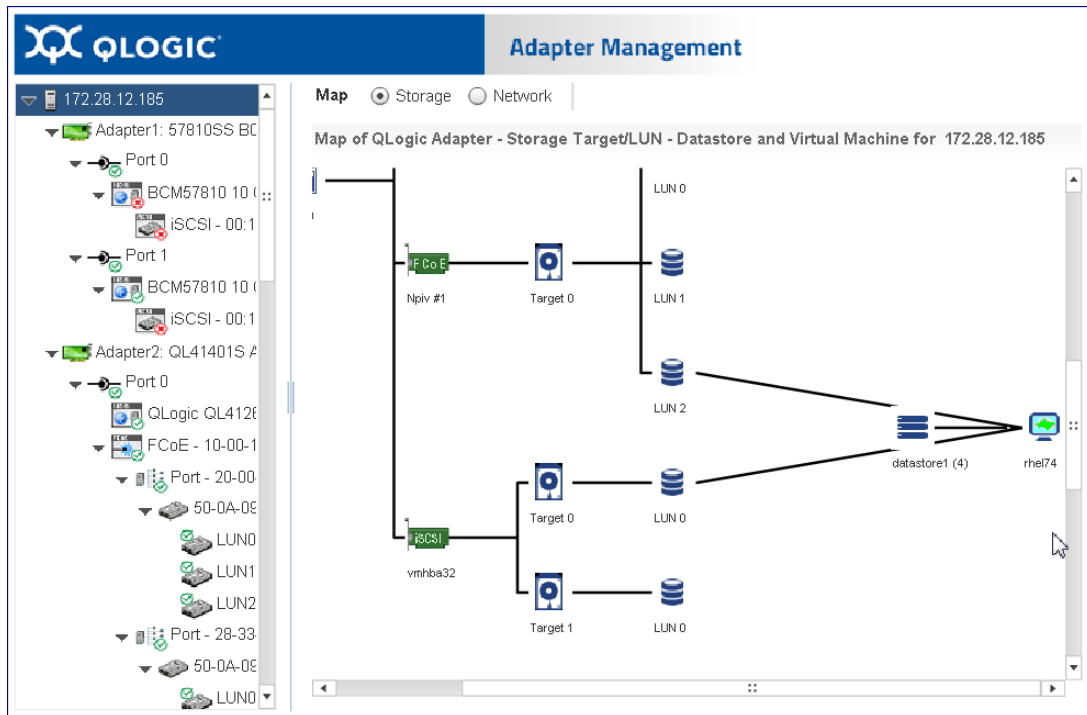


Figure 6-3. Storage Map Showing LUNs Attached to VMs (vSphere Web Client Plug-in)

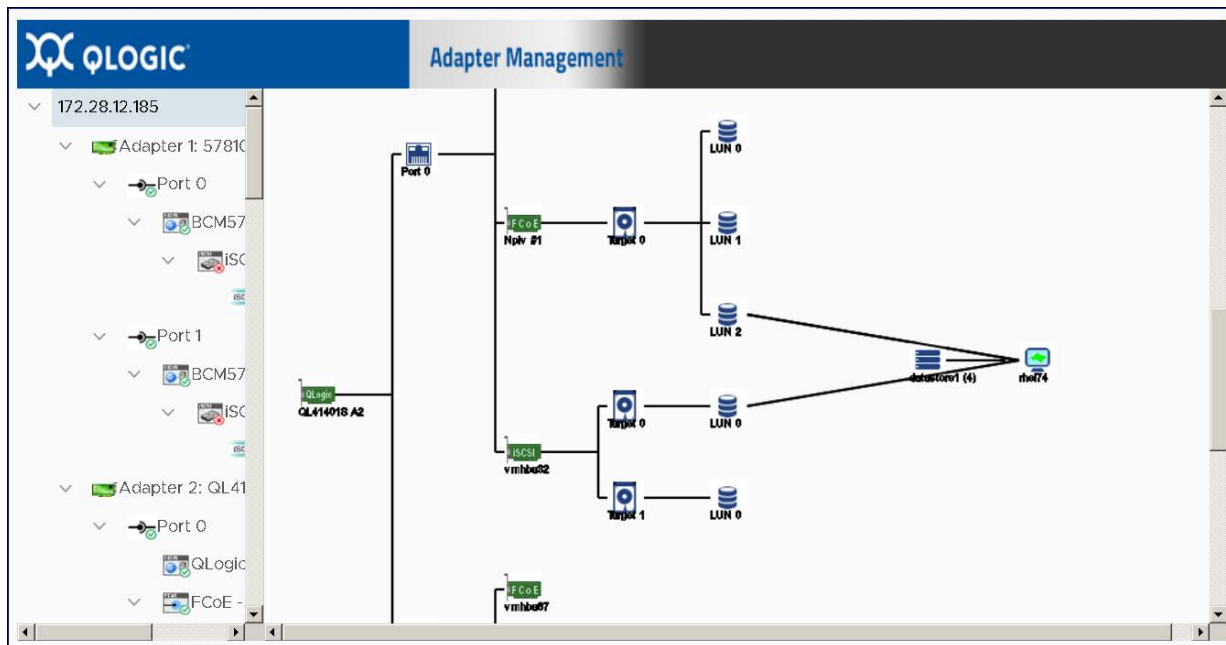


**Figure 6-4. Storage Map Showing LUNs Attached to VMs
(HTML5 based vSphere Client Plug-in)**

Network Map

Next to **Map**, click **Network** to view the selected host's network map, as shown in [Figure 6-5](#) and [Figure 6-6](#).

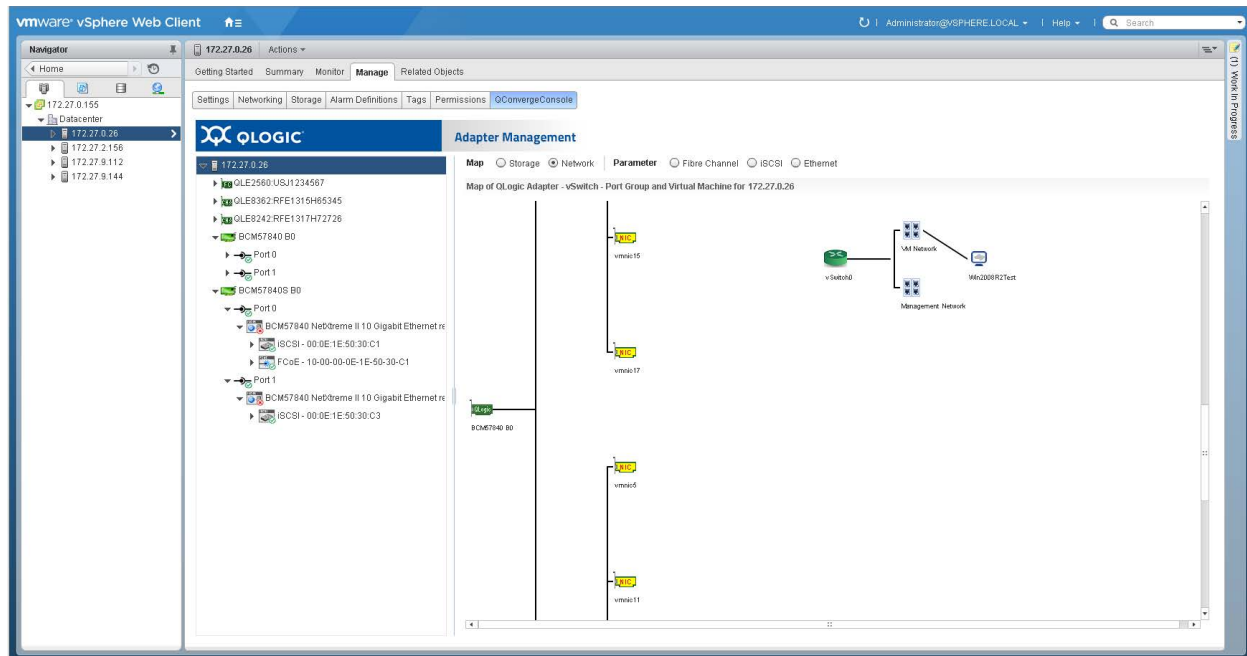


Figure 6-5. Network Map with 3400/8400/41000/45000 Series Adapters (vSphere Web Client Plug-in)

6—Managing 3400/8400/41000/45000 Series Adapters and Adapters Based on 57xx (1Gb), 577xx, 578xx, 579xx Controllers

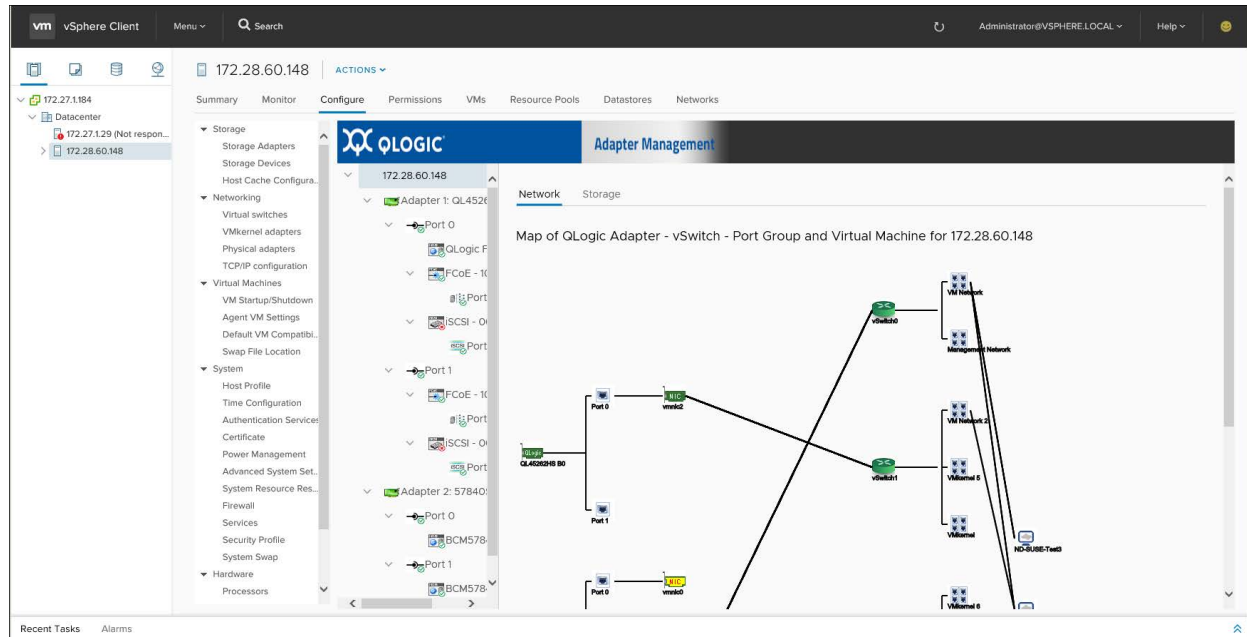


Figure 6-6. Network Map with 3400/8400/41000/45000 Series Adapters (HTML5 based vSphere Client Plug-in)

Managing 3400/8400/41000/45000 Series Adapters

To manage 3400/8400/41000/45000 Series Adapters, select the adapter in the system tree. The Adapter Management window appears in the content pane as shown in [Figure 6-7](#) for 8400/41000/45000 Series Adapters and [Figure 6-8](#) for 3400/41000/45000 Series Adapters.

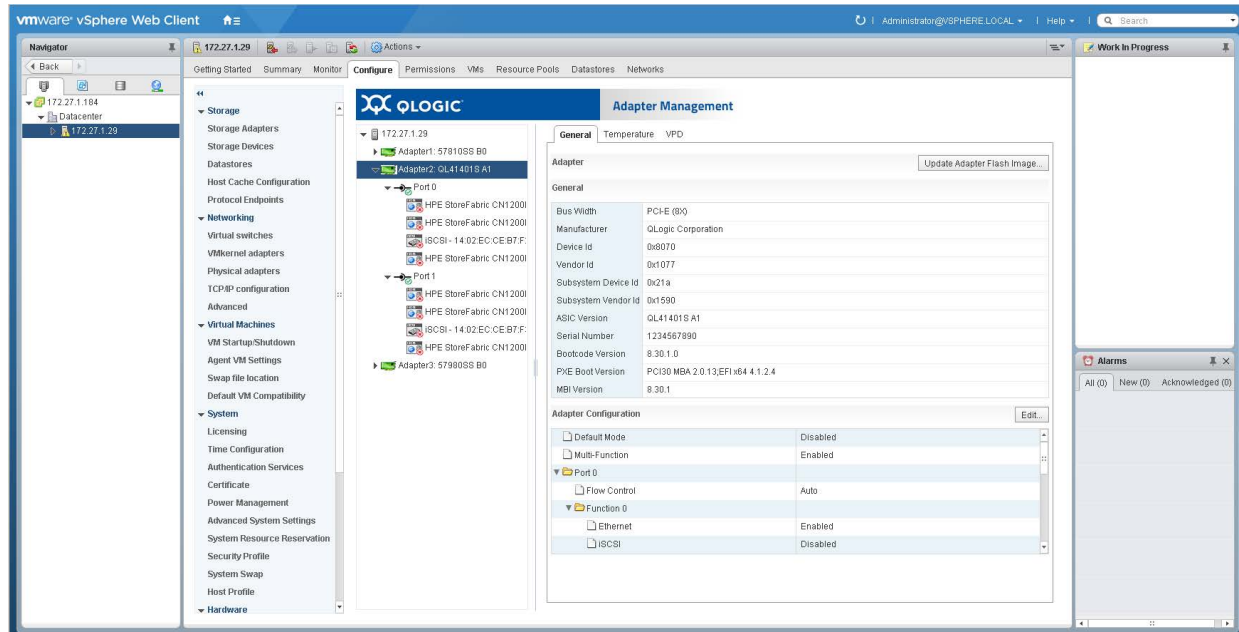


Figure 6-7. Adapter Management on 8400/41000/45000 Series Adapters (vSphere Web Client Plug-in)

6—Managing 3400/8400/41000/45000 Series Adapters and Adapters Based on 57xx (1Gb), 577xx, 578xx, 579xx Controllers

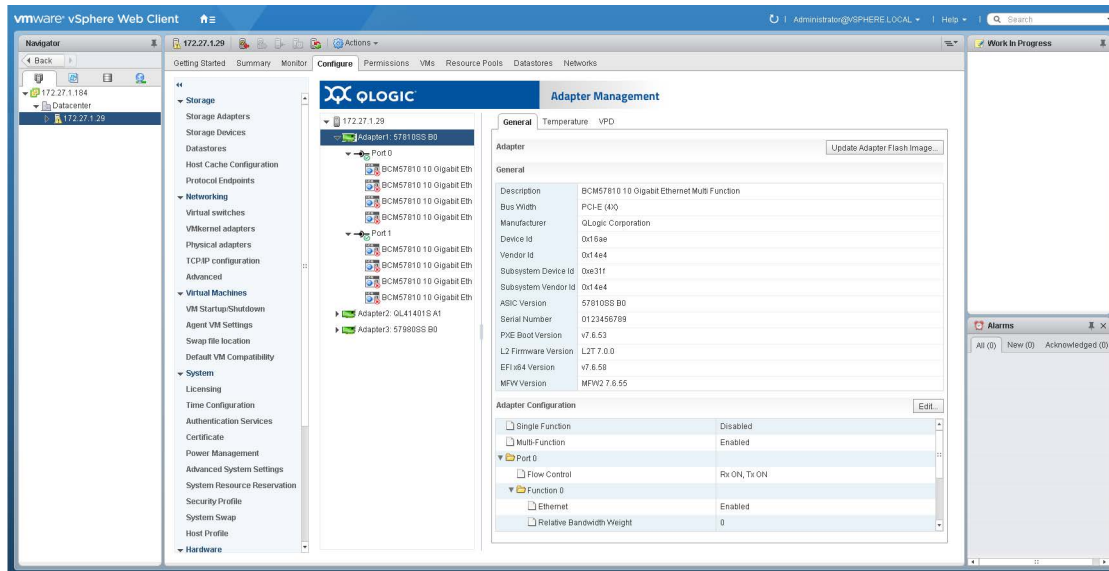


Figure 6-8. Adapter Management on 3400/41000/45000 Series Adapters (vSphere Web Client Plug-in)

In the HTML5 based vSphere Client Plug-in, the Adapter Management window appears in the content pane as shown in [Figure 6-9](#) for 3400/41000/45000 Series Adapters.

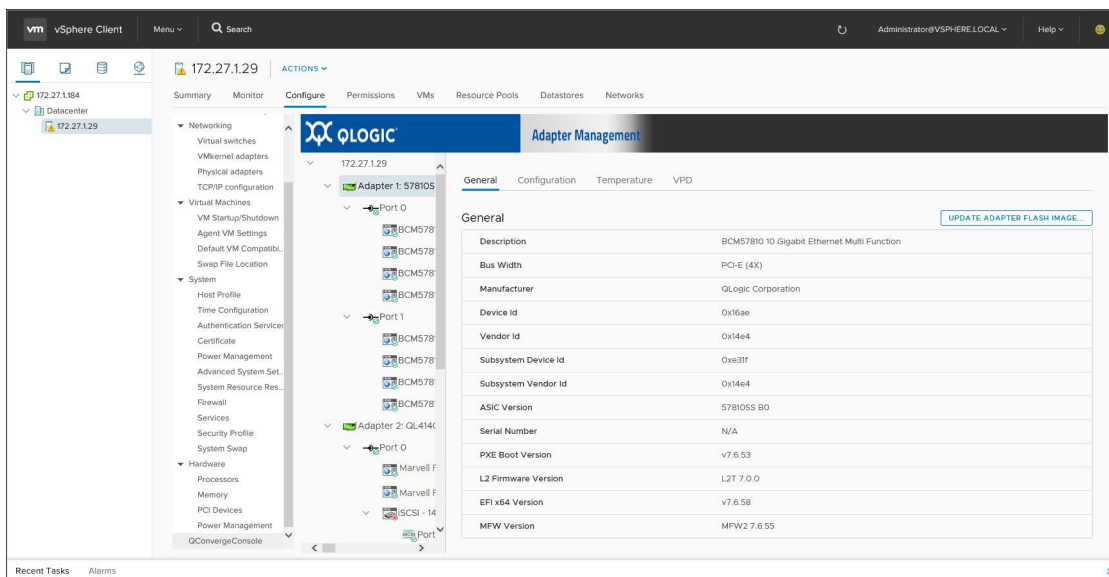


Figure 6-9. Adapter Management on 3400/41000/45000 Series Adapters (HTML5 based vSphere Client Plug-in)

The Adapter Management window shows information for the selected adapter. The window contains the following sections:

- [Adapter Information](#)
- [Adapter Configuration](#)
- [Adapter Commands: Updating the Flash Firmware](#)
- [Starting and Stopping the Adapter Temperature Monitor](#)
- [QinQ Configuration](#)
- [Changing the Ethernet Adapter Port Mode](#)

Adapter Information

The adapter information area provides the following information:

- **Description**
- **Bus Width**
- **Manufacturer**
- **Device ID**
- **Vendor ID**
- **Subsystem ID**
- **Subsystem Vendor ID**
- **ASCI Version**
- **Serial Number**
- **Firmware Versions**

Adapter Configuration

Use the **Adapter Configuration** section to configure the following:

- Changing between Single Function and Multi-Function
- Configuring SR-IOV
- Configuring protocols (8400/41000/45000 Series Adapters)
- For Multi-Function, configuring flow control and bandwidth
- Configuring Remote Direct Memory Access (RDMA) (41000/45000 Series Adapters only)

Configuring the Adapter Using the vSphere Web Client Plug-in

The **Adapter Configuration** section also has the following options:

- **Edit** opens the Adapter Configuration dialog box where you can change the adapter to **Single Function** or **Multi-Function**, as shown in [Figure 6-10](#).

NOTE

- You can configure the protocols (iSCSI and FCoE for 57xx/8400/578xx/41000/45000 Series Adapters) and SR-IOV (and in the case of the Multi-Function mode, flow control and bandwidth).
- Each 8400/578xx Series Adapter physical port may have up to two storage protocols assigned to it, with each physical port having up to two iSCSI functions, or one iSCSI function with one FCoE function as shown in [Figure 6-10](#) (8400 Series Adapters) and [Figure 6-11](#) (3400 Series Adapters). The 3400/8400/578xx adapters only support 8 function NPAR mode.
- Use the **Adapter Commands** section to update the flash firmware on the adapter (if available for the adapter).
- The 3400/8400/578xx/41000/45000 Series Adapters minimum bandwidth settings for all functions on the same port must all be 0 or total 100%.
- The 41000/45000 Series Adapters can have up to 16 functions configured, with up to one storage offload protocol enabled, per physical port. The 41000/45000 Series Adapters can be in DEFAULT (single Ethernet function) or NPAR/NPAREP mode, to enable either FCoE or iSCSI-Offload. The following shows how some of the functions work (on an NPAREP mode adapter).
 - ❑ The first functions of a port (0 and 1 on dual port adapters and 0 - 3 on quad port adapters) are always enabled with only the Ethernet protocol (with or without RDMA) and cannot have storage protocols configured.
 - ❑ The second functions of a port (2 and 3 on dual port adapters and 4 - 7 on quad port adapters) can be configured for FCoE protocol or Ethernet protocol (with or without RDMA) or hidden (disabled). On the quad port adapters, the second function of each physical port can also have the iSCSI protocol enabled.
 - ❑ The third functions of each port (4 and 5 on dual port adapters) can be configured for iSCSI protocol or Ethernet protocol (with or without RDMA) or hidden (disabled). On the quad port adapters, the third function of each physical port can only have Ethernet (with or without RDMA) or be hidden (disabled).
 - ❑ All remaining functions can be enabled with the Ethernet protocol (with or without RDMA) or hidden (disabled). Storage protocols cannot be configured.
- If RDMA (PVRDMA or NVMe-oF over RDMA) is available on a 41000/45000 Series Adapter, you can enable RoCE or iWARP on any Ethernet enabled function. Currently, iWARP is not supported on VMware.

- **Save** saves the configuration.
- **Cancel** closes the Adapter Configuration dialog box without submitting the changes.

The dialog box is titled "Adapter Configuration". It has two radio buttons: "Single Function" (selected) and "Multi-Function". Below these are two columns of checkboxes for "Port 0 Protocol" and "Port 1 Protocol". For both ports, "Enable FCoE" and "Enable iSCSI" are checked. To the right, under the "SRIOV" section, "Enable SRIOV" is checked. Below this, "Port 0 SRIOV VFs per PF" and "Port 1 SRIOV VFs per PF" are both set to 0. At the bottom right are "OK" and "Cancel" buttons.

The dialog box is titled "Adapter Configuration". It has two radio buttons: "Single Function" and "Multi-Function" (selected). Below these is a "Port ..." dropdown menu with "Port 1" selected. To the left of the main configuration area is a "Flow Control" dropdown menu with "Tx ON" selected. The main area contains four sections for "Function 0", "Function 2", "Function 4", and "Function 6". Each section has checkboxes for "Enable L2NIC", "Enable FCoE", and "Enable iSCSI", and sliders for "Relative Bandwidth Weight" and "Maximum Bandwidth". To the right of these sections is a "SRIOV VFs per PF" section with "Enable SRIOV" checked and a grid of sliders for Functions 0 through 7. At the bottom right are "OK" and "Cancel" buttons.

Figure 6-10. Single/Multi-Function Configuration for 8400 Series Adapters

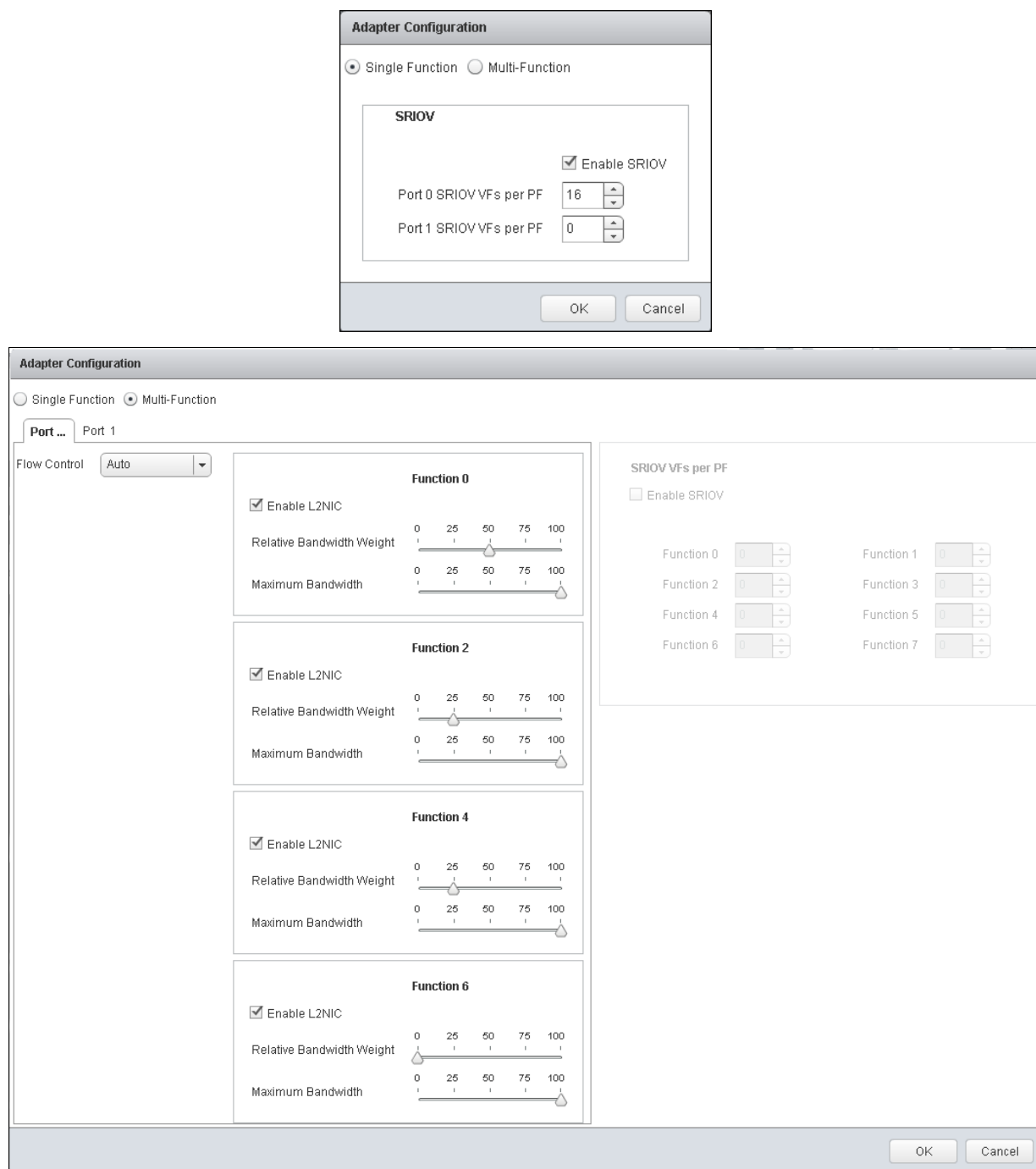


Figure 6-11. Single/Multi-Function Configuration for 3400 Series Adapters

Configuring the Adapter Using the HTML5 based vSphere Client Plug-in

Figure 6-12 and Figure 6-13 show the Adapter Configuration pages in the HTML5 based vSphere Client Plug-in.

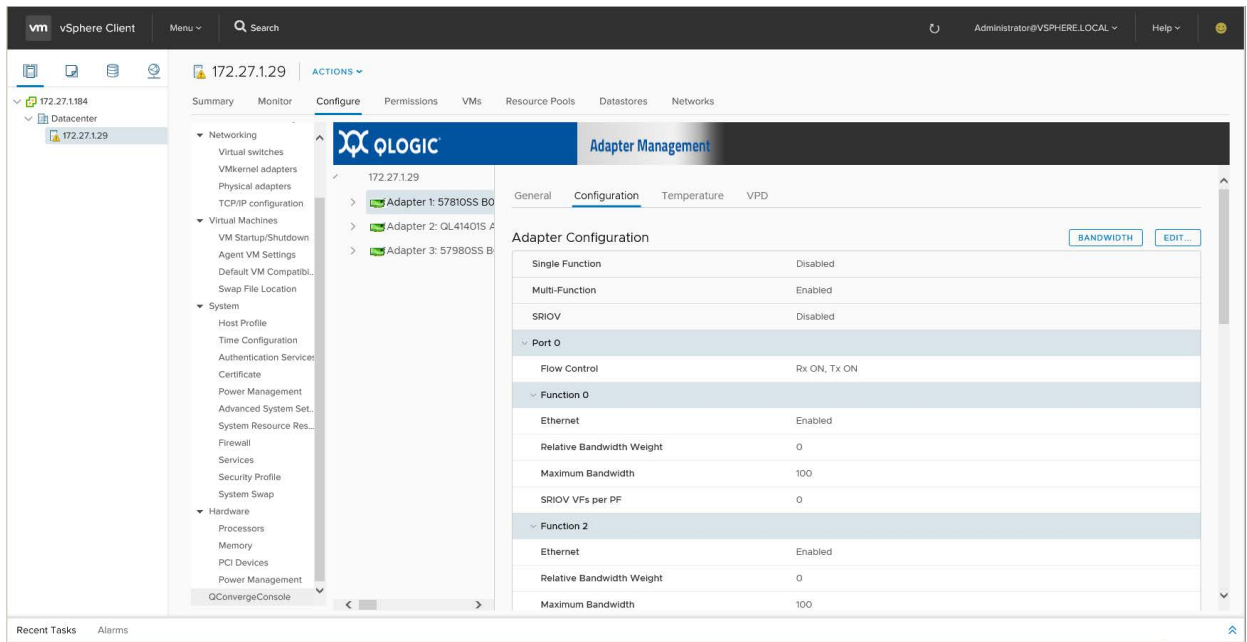


Figure 6-12. Adapter Configuration for a 3400 Series Adapter

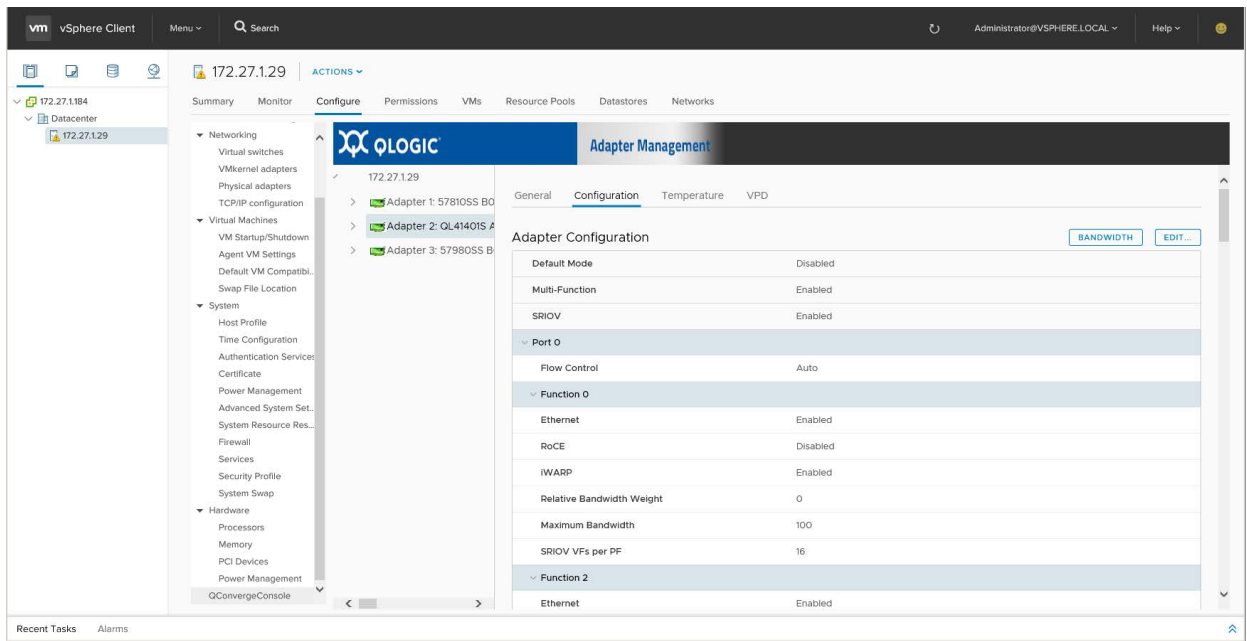


Figure 6-13. Adapter Configuration for a 41000 Series Adapter

The QConvergeConsole HTML5 based vSphere Client Plug-in provides a wizard to help you configure adapters.

To configure adapters with the wizard:

1. To access the wizard, on the Adapter Configuration page, click **Edit**.
2. Complete each of the first three configuration steps in the wizard as shown in [Figure 6-14](#), [Figure 6-15](#), and [Figure 6-16](#), and then click **Next** on each.

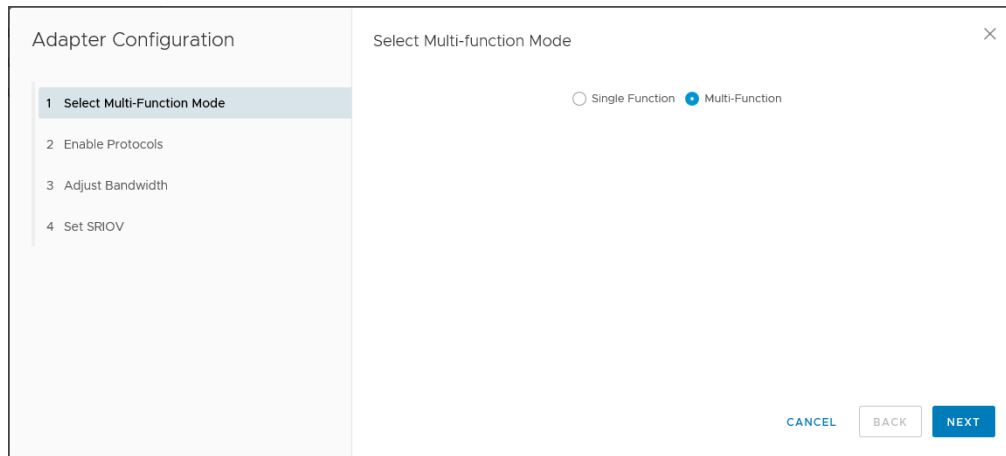


Figure 6-14. Adapter Configuration Wizard: Select Multi-Function Mode

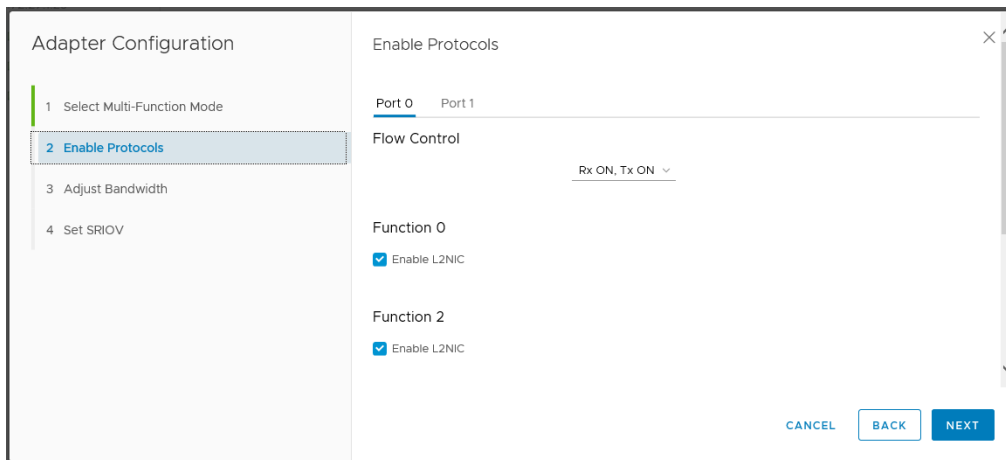


Figure 6-15. Adapter Configuration Wizard: Enable Protocols

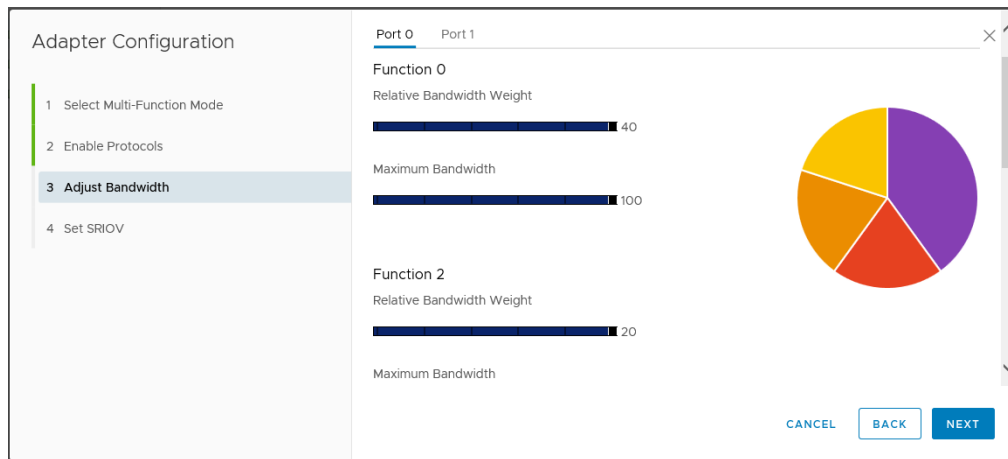


Figure 6-16. Adapter Configuration Wizard: Adjust Bandwidth

3. On the final wizard window shown in [Figure 6-17](#), click **Finish**.

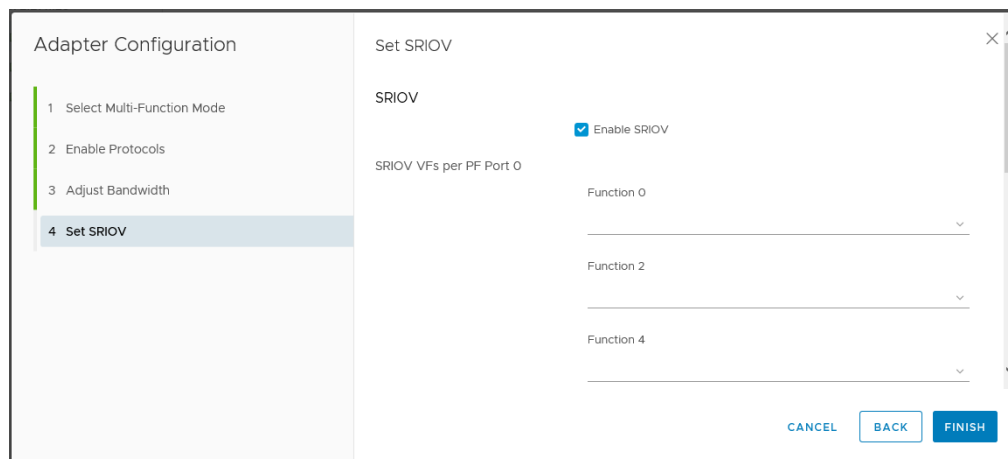


Figure 6-17. Adapter Configuration Wizard: Set SR-IOV

Adapter Commands: Updating the Flash Firmware

Use the **Adapter Commands** section to update the flash firmware on the adapter. Click **Update Adapter Flash Image** to open a dialog box and select the firmware file. After selecting the file that is appropriate for the adapter, the adapter is updated.

Starting and Stopping the Adapter Temperature Monitor

If available for the adapter, a **Temperature** tab may appear in the adapter panel. Click the tab to view the Temperature page, which shows a graph of the temperature over time in degrees Celsius. The graph is updated at the monitoring rate indicated in the panel.

- To start the temperature monitoring, click **Start**.
- To stop the temperature monitoring, click **Stop**.

The monitoring rate can be changed when the sampling of the temperature has been stopped. [Figure 6-18](#) and [Figure 6-19](#) show the Temperature page.

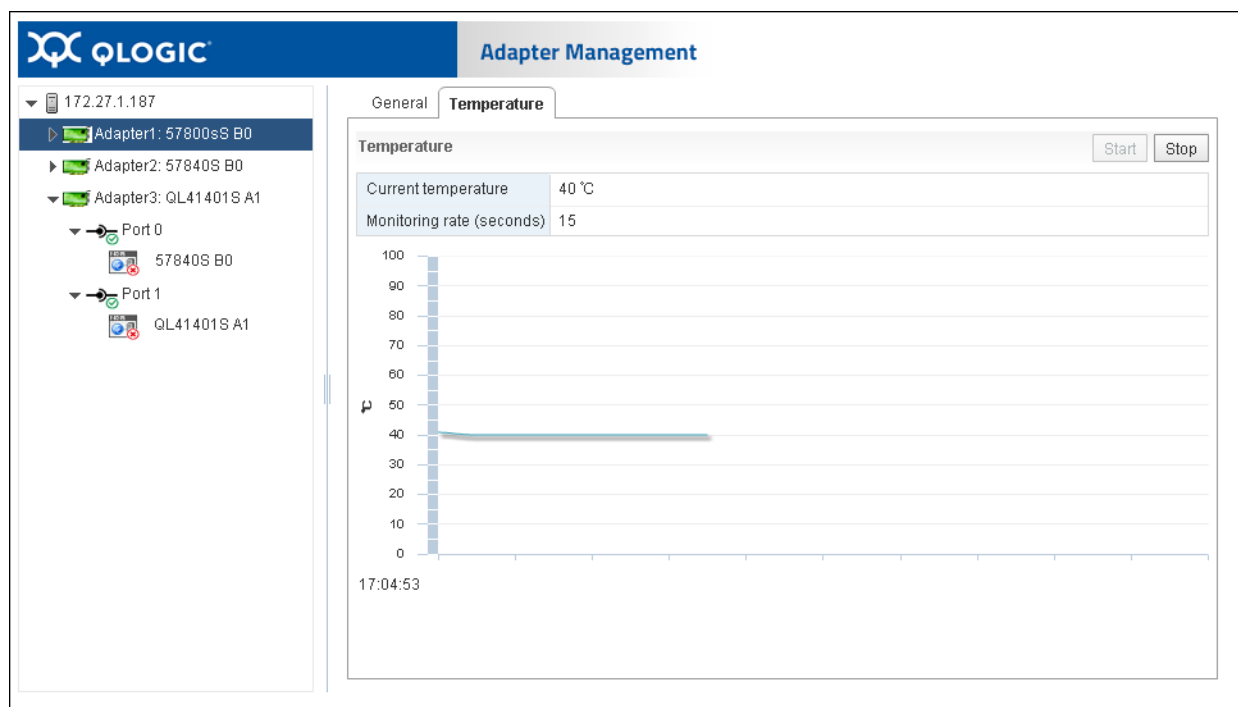


Figure 6-18. Temperature Page (vSphere Web Client Plug-in)

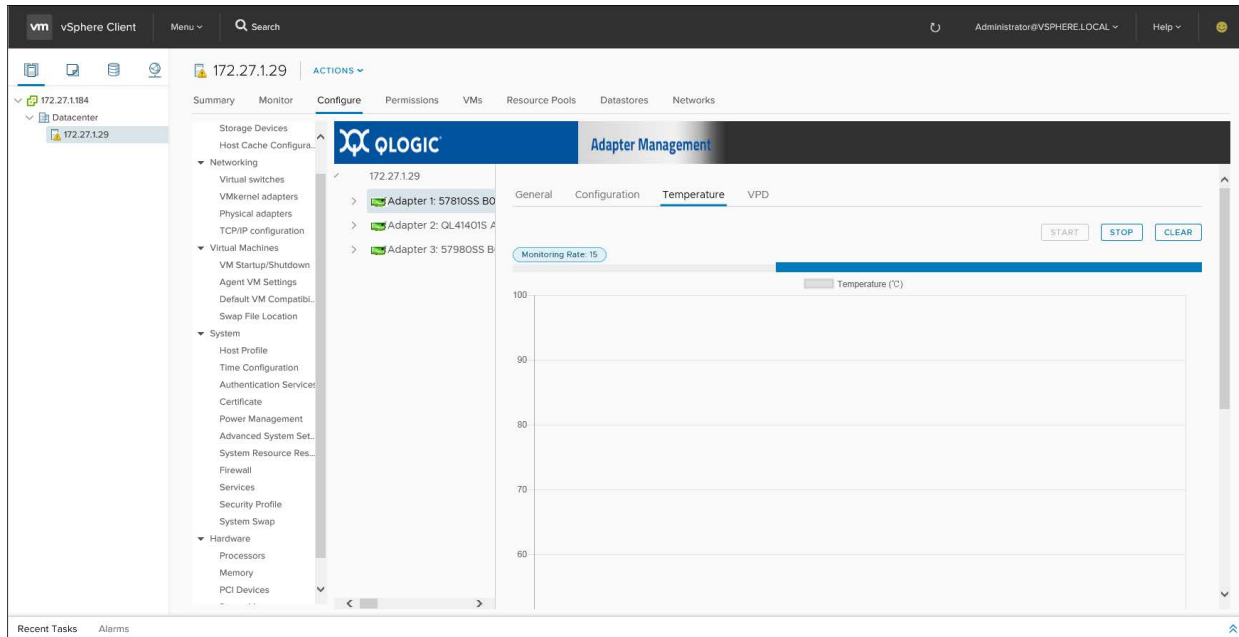


Figure 6-19. Temperature Page (HTML5 based vSphere Client Plug-in)

QinQ Configuration

For specific Marvell 8400 Series 1/10Gbps Ethernet Adapters that have the QinQ option enabled, you can use the QinQ tab at the adapter level to configure QinQ for VLAN IDs on a per physical function (PF) basis.

QinQ is an implementation of the *IEEE 802.1ad* (or Q-in-Q) specification. QinQ further segregates traffic by allowing the creation of VLANs within a VLAN by adding an additional 802.1Q tag (VLAN ID field) to the Ethernet frames.

To configure QinQ:

1. In the adapter tree, select the 8400 Series Adapter node.
2. In the content pane, click the **QinQ** tab to view the QinQ Configuration page. If the QinQ tab is not visible, QinQ is not enabled for your adapter model.

Figure 6-20 and Figure 6-21 show examples.

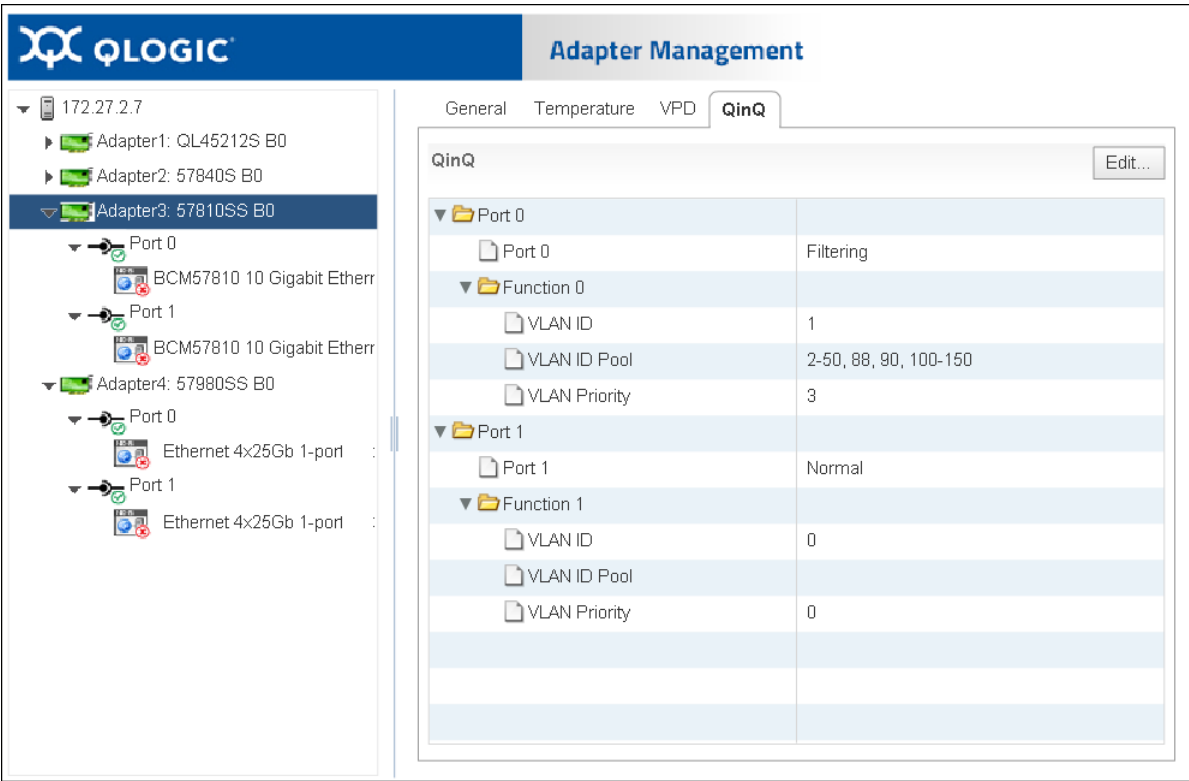


Figure 6-20. QinQ Configuration Page (vSphere Web Client Plug-in)



Figure 6-21. QinQ Configuration Page (HTML5 based vSphere Client Plug-in)

3. In the QinQ page, click **Edit** to view the QinQ Configuration dialog box (Figure 6-22 and Figure 6-23).

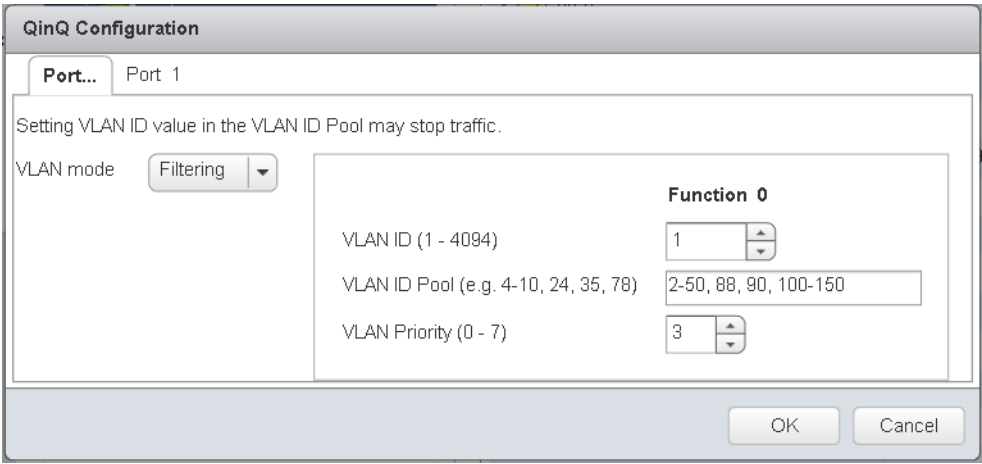


Figure 6-22. QinQ Dialog Box (vSphere Web Client Plug-in)

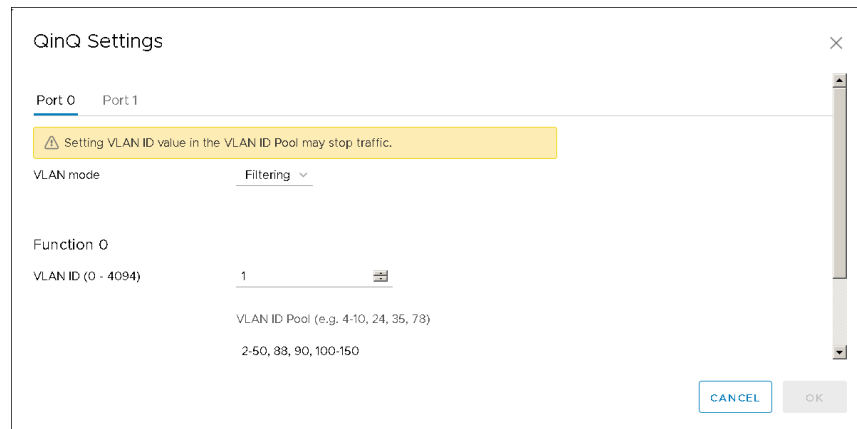


Figure 6-23. QinQ Dialog Box (HTML5 based vSphere Client Plug-in)

4. On the QinQ dialog box, in **VLAN mode** drop-down menu, select one of the following:
 - ☐ **Normal** mode configures the port to operate using the standard VLAN configuration.
 - ☐ **Filtering** mode configures the port to use QinQ VLAN packet filtering based on the VLAN IDs specified in the VLAN ID and VLAN ID Pool options.
 - ☐ **QinQ** mode configures the port to use QinQ VLAN packet filtering based on the specified VLAN ID.
5. If you selected **Filtering** or **QinQ** mode in [Step 4](#), select from the following values for each port function:
 - ☐ **VLAN ID** must be within the range of 0–4094, where 0 indicates no VLAN ID. In QinQ mode, the VLAN ID cannot be 0.
 - ☐ **VLAN ID Pool** (available in Filtering mode only) must specify a set of ID numbers in the range of 1-4094. You can specify the ID numbers as either a comma-separated list, a range indicated by a dash (-), or a combination of a comma-separated list and a dash-specified range.
 - ☐ **VLAN Priority** must be within the range of 0–7.

NOTE

If you set the same value for VLAN ID and VLAN ID Pool, traffic may stop. This is a known issue.

In Filtering mode, enter valid values for the VLAN ID and/or the VLAN ID Pool. Both fields may have valid values, which cannot both be 0 and empty at the same time for the same PF.

The maximum quantity of VLAN IDs (specified in the VLAN ID options and the VLAN ID Pool options for each port function) for the entire adapter is 256.

6. To save the QinQ configuration, click **OK**.
7. If a message indicates that the QinQ configuration update is successful, reboot the system.

Changing the Ethernet Adapter Port Mode

You can use the QConvergeConsole GUI to change the port configuration of select 45000 Series FastLinQ Ethernet Adapters with SmartAN. Port mode changes may require a special connector and splitter cable.

- [Converting a 100G Adapter to a Four-port 25G Adapter](#)
- [Converting a 25G Adapter to a Single-port 100G Adapter](#)
- [Converting a 100G Adapter to a Four-port 10G Adapter](#)
- [Converting a 10G Adapter to a Single-port 100G Adapter](#)
- [Converting a 40G Adapter to a Four-port 10G Adapter](#)
- [Converting a 10G Adapter to a 40G Adapter](#)

NOTE

Before changing the adapter port mode, ensure that your adapter has the most current Flash version. For details on obtaining the latest Flash version from the Downloads Web page, [“Downloading Updates and Documentation” on page xviii](#)

Converting a 100G Adapter to a Four-port 25G Adapter

Follow the steps in this procedure to convert a single QSFP28-ported Marvell FastLinQ QL45611HLCU or QL45631HOCU from single-port 100G mode to four-port 25G mode.

To convert a single-port 100G adapter to a four-port 25G adapter:

1. In the system tree pane, select a QL45611HLCU or QL45631HOCU Adapter, and then select a port.
2. In the content pane, click the **Advanced Parameters** tab.
3. On the Advanced Parameters page, for the **Port Mode** parameter, select the **4x25** value.
4. Click **Apply**.
5. Save the changes and then power cycle the system. The adapter port mode change takes effect after the cold reboot.

CAUTION

Adapter port mode changes alter the base PCIe configuration. Marvell recommends that you perform a cold boot (power cycle) to prevent undefined results.

Converting a 25G Adapter to a Single-port 100G Adapter

Follow the steps in this procedure to convert a single QSFP28-ported Marvell FastLinQ QL45611HLCU or QL45631HOCU from four-port 25G mode to single-port 100G mode.

To convert a four-port 25G adapter to a single-port 100G adapter:

1. In the system tree pane, select a QL45611HLCU or QL45631HOCU Adapter, and then select a port.
2. In the content pane, click the **Advanced Parameters** tab.
3. On the Advanced Parameters page, for the **Port Mode** parameter, select the **1x100** value.
4. Click **Apply**.
5. Save the changes and then power cycle the system. The adapter port mode change takes effect after the cold reboot.

CAUTION

Adapter port mode changes alter the base PCIe configuration. Marvell recommends that you perform a cold boot (power cycle) to prevent undefined results.

Converting a 100G Adapter to a Four-port 10G Adapter

Follow the steps in this procedure to convert a Marvell FastLinQ QL45611HLCU or QL45631HOCU from single-port 100G mode to four-port 10G mode.

To convert a single-port 100G adapter to a four-port 10G adapter:

1. In the system tree pane, select a QL45611HLCU or QL45631HOCU Adapter, and then select a port.
2. In the content pane, click the **Advanced Parameters** tab.
3. On the Advanced Parameters page, for the **Port Mode** parameter, select the **4x10** value.
4. Click **Apply**.
5. Save the changes and then power cycle the system. The adapter port mode change takes effect after the cold reboot.

CAUTION

Adapter port mode changes alter the base PCIe configuration. Marvell recommends that you perform a cold boot (power cycle) to prevent undefined results.

Converting a 10G Adapter to a Single-port 100G Adapter

Follow the steps in this procedure to convert a Marvell FastLinQ QL45611HLCU or QL45631HOCU from four-port 10G mode to single-port 100G mode.

To convert a four-port 10G adapter to a single-port 100G adapter

1. In the system tree pane, select a QL45611HLCU or QL45631HOCU Adapter, and then select a port.
2. In the content pane, click the **Advanced Parameters** tab.
3. On the Advanced Parameters page, for the **Port Mode** parameter, select the **1x100** value.
4. Click **Apply**.
5. Save the changes and then power cycle the system. The adapter port mode change takes effect after the cold reboot.

CAUTION

Adapter port mode changes alter the base PCIe configuration. Marvell recommends that you perform a cold boot (power cycle) to prevent undefined results.

Converting a 40G Adapter to a Four-port 10G Adapter

Follow the steps in this procedure to convert a Marvell FastLinQ QL454xxHLCU or QL45412HLCU from 40G mode to four-port 10G mode.

To convert a 40G adapter to a four-port 10G adapter:

1. In the system tree pane, select a FastLinQ QL454xxHLCU or QL45412HLCU Adapter, and then select a port.
2. In the content pane, click the **Advanced Parameters** tab.
3. On the Advanced Parameters page, for the **Port Mode** parameter, select the **4x10** value.
4. Click **Apply**.
5. Save the changes and then power cycle the system. The adapter port mode change takes effect after the cold reboot.

CAUTION

Adapter port mode changes alter the base PCIe configuration. Marvell recommends that you perform a cold boot (power cycle) to prevent undefined results.

NOTE

On the dual QSFP+ port 40G QL454x2HxCU adapter, one QSFP+ port is disabled while the other QSFP+ port is placed into 4x10G mode. On the single QSFP+ four-port 40G QL454x1HxCU, the single port is placed into 4x10G mode.

Converting a 10G Adapter to a 40G Adapter

Follow the steps in this procedure to convert a Marvell FastLinQ QL454xxHxCU adapter from four-port 10G mode to 40G mode.

To convert a four-port 10G adapter to a 40G adapter:

1. In the system tree pane, select a QL454xx Adapter, and then select a port.
2. In the content pane, click the **Advanced Parameters** tab.

3. On the Advanced Parameters page, for the **Port Mode** parameter, select the **1x40** value.
4. Click **Apply**.
5. Save the changes and then power cycle the system. The adapter port mode change takes effect after the cold reboot.

CAUTION

Adapter port mode changes alter the base PCIe configuration. Marvell recommends that you perform a cold boot (power cycle) to prevent undefined results.

NOTE

On the dual QSFP+ port 40G QL454x2HxCU adapter, the one QSFP+ port that was previously disabled is now enabled, and both QSFP+ ports are placed into 40G mode. On the single QSFP+ port 40G QL454x1HxCU, the single port is placed into 40G mode.

Viewing Port Information for 3400/8400/41000/45000 Series Adapters

To view information about ports on 3400/8400/41000/45000 Series Adapters, select the port in the system tree. The Adapter Management window shows the following port information:

- **Port Number**
- **Link State**
- **Link Speed**
- **Duplex Setting**
- **Bus Number**
- **Device Number**
- **Media Type**
- **NIC Driver Version**
- **FCoE Driver Version**
- **iSCSI Driver Version**

Figure 6-24 shows the **Port Information** on 8400/41000/45000 Series Adapters in the vSphere Web Client Plug-in.

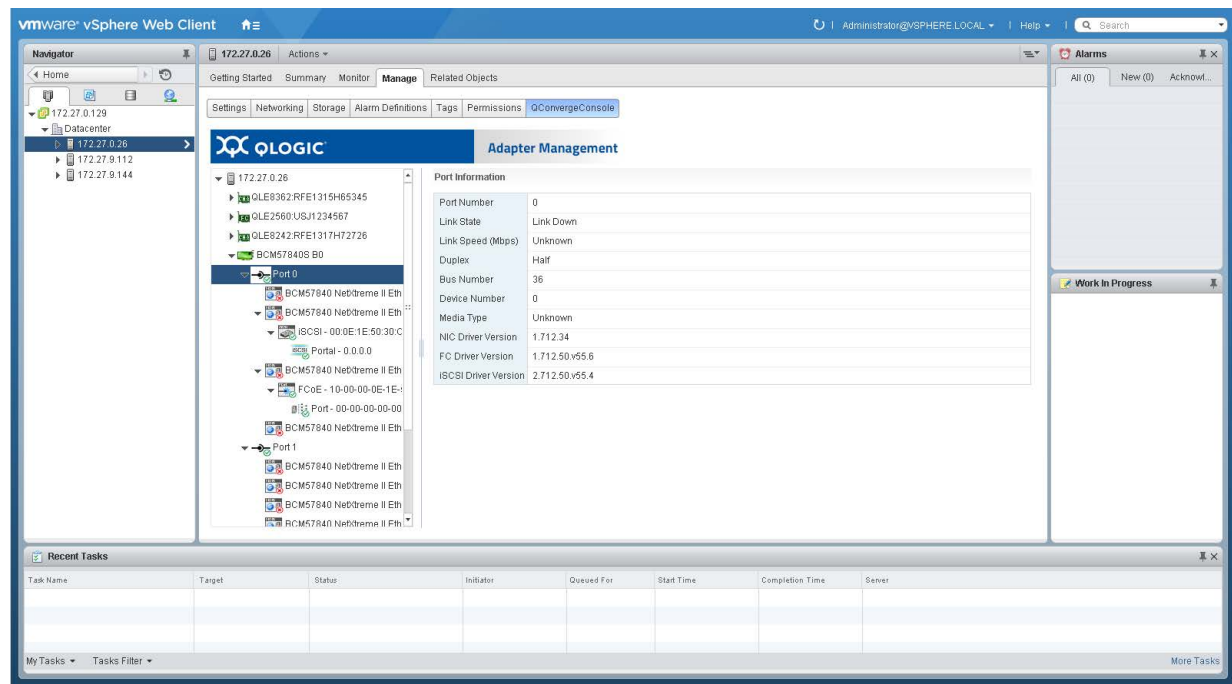


Figure 6-24. Port Information on 8400/41000/45000 Series Adapters (vSphere Web Client Plug-in)

Figure 6-25 shows the **Port Information** on 3400/41000/45000 Series Adapters in the vSphere Web Client Plug-in.

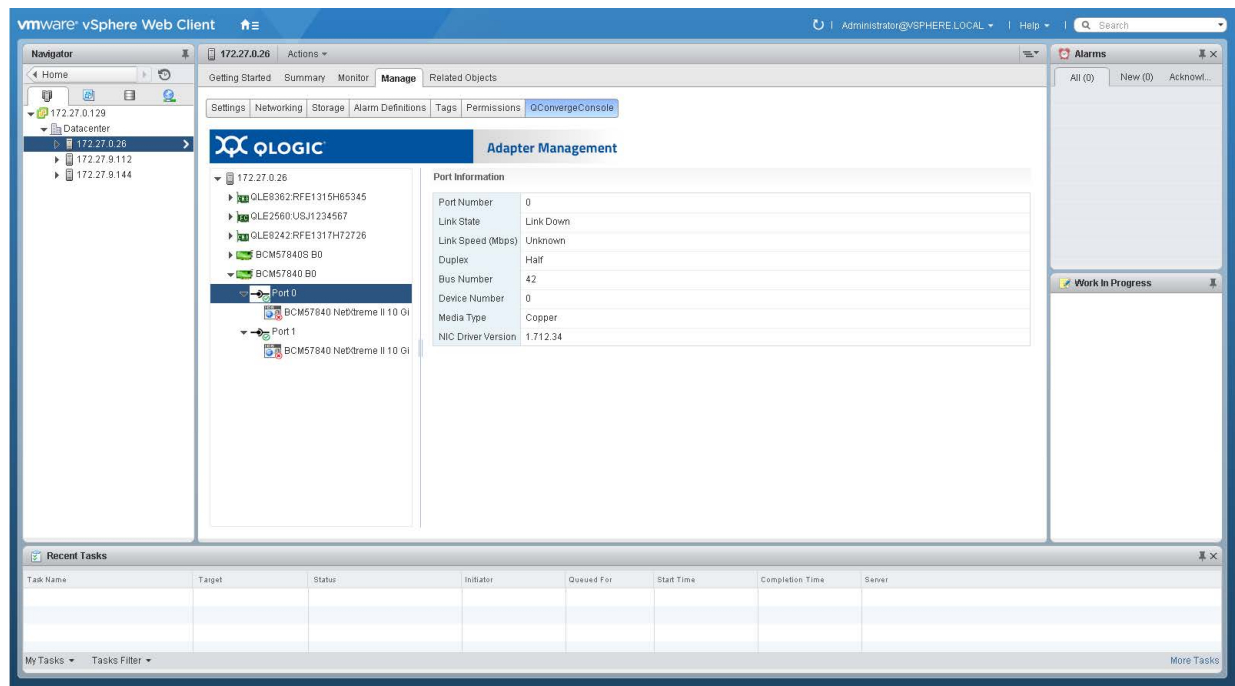


Figure 6-25. Port Information on 3400/41000/45000 Series Adapters (vSphere Web Client Plug-in)

Figure 6-26 shows the Port Information on a 41000 Series Adapter in the HTML5 based vSphere Client Plug-in.

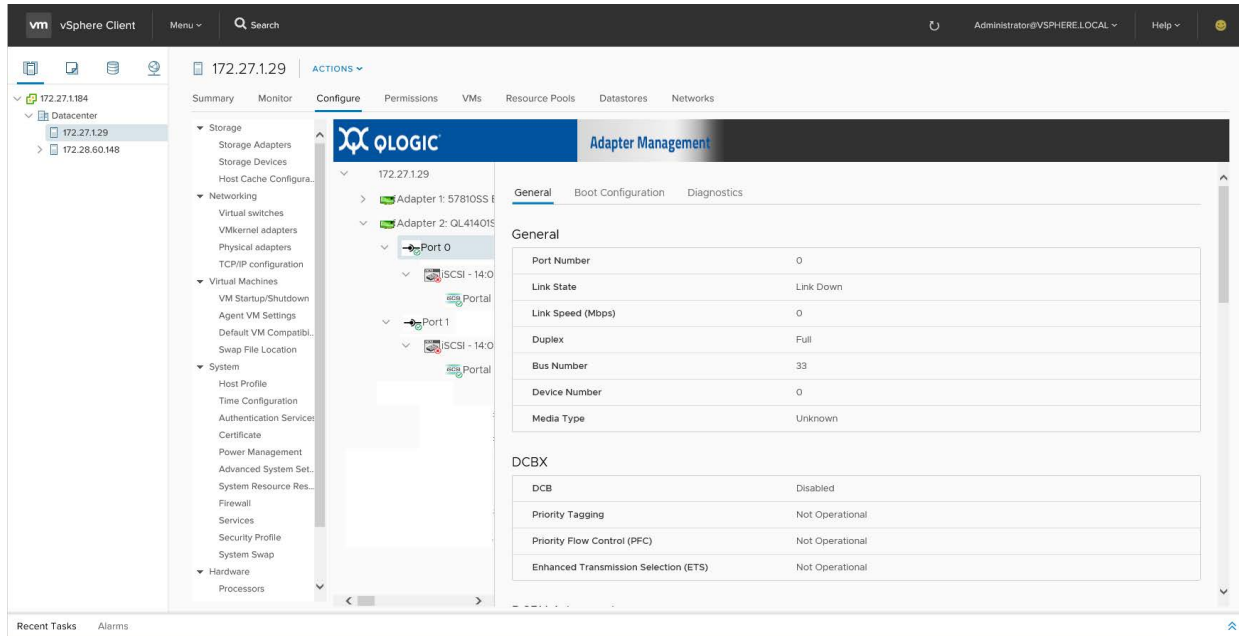


Figure 6-26. Port Information on 41000 Series Adapters (HTML5 based vSphere Client Plug-in)

If data center bridging exchange (DCBX) information is available, it is shown as part of the port information.

DCBX information includes:

- **DCB State** (enabled or disabled)
- **DCB Protocol**
- **Priority**
- **Priority Flow Control (PFC)**
- **Enhanced Transmission Selection (ETS)**

DCBX Advanced information includes:

Local MIB:

- ☐ **ETS** (enabled or disabled)
- ☐ **PFC** (enabled or disabled)
- ☐ **Priorities for Networking, FCoE, iSCSI**
- ☐ **Priority Flow Control Enabled on Priorities**
- ☐ **Priority Group ID for Networking, FCoE, iSCSI**
- ☐ **Priority Group ID Bandwidth (%)**

Remote MIB:

- ☐ Remote Application Priority Willing (enabled or disabled)
- ☐ Remote PFC Willing
- ☐ Remote ETS Willing
- ☐ Remote ETS Recommendation valid
- ☐ Remote FCoE Priority
- ☐ Remote iSCSI Priority
- ☐ Remote PFC Enabled on Priorities
- ☐ Remote Priority Group ID for Networking, FCoE, iSCSI
- ☐ Remote Priority Group ID Bandwidth (%)

Figure 6-27 shows the port information with DCBX information.

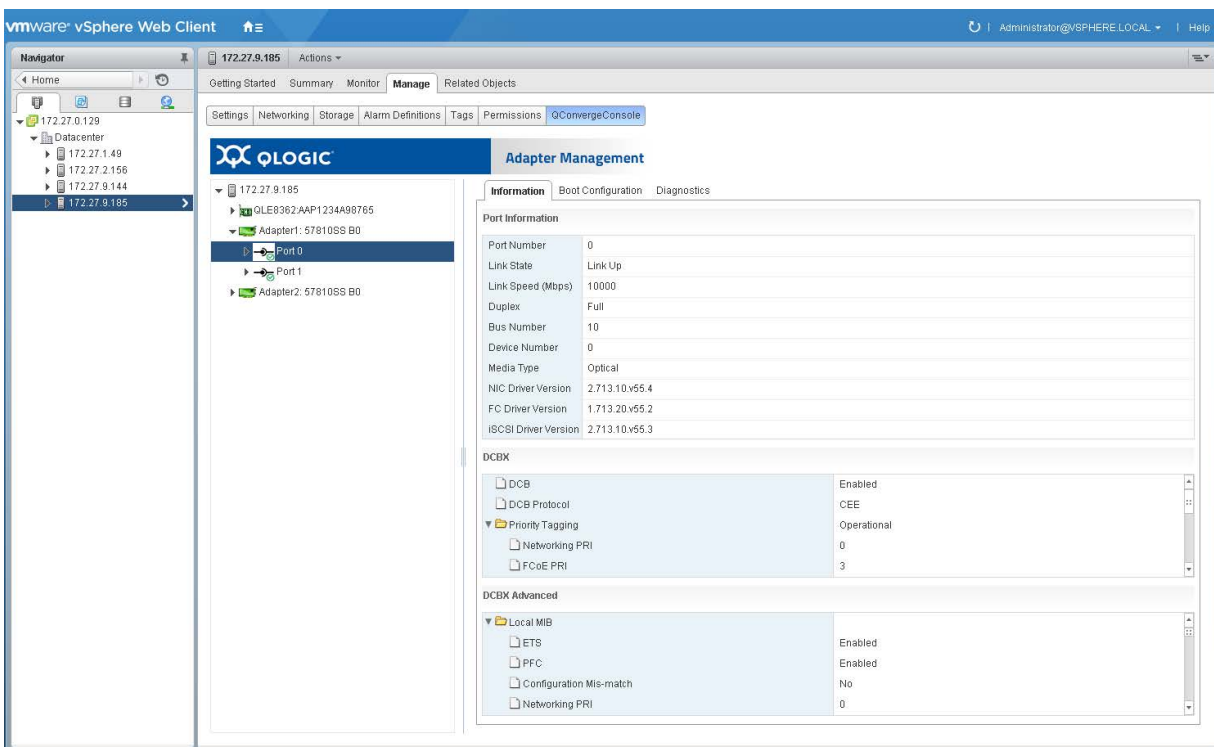


Figure 6-27. Port Information with DCBX Information

Configuring Port Boot Options

If the adapter has the ability to boot from external storage, the following boot configuration options for each boot method are available:

- **MBA** (see [Configuring MBA Boot](#))
- **iSCSI Boot** (see [Configuring iSCSI Boot](#))
- **FCoE Boot** (see [Configuring FCoE Boot](#))

Configuring MBA Boot

To configure the MBA boot:

1. Select the appropriate port in the QConvergeConsole system tree.
2. Select the **Manage** tab.
3. On the Manage page, click the **QConvergeConsole** tab.
4. On the QConvergeConsole page, click the **Boot Configuration** tab.
5. On the Boot Configuration page, click **MBA** as shown in [Figure 6-28](#) and [Figure 6-29](#).

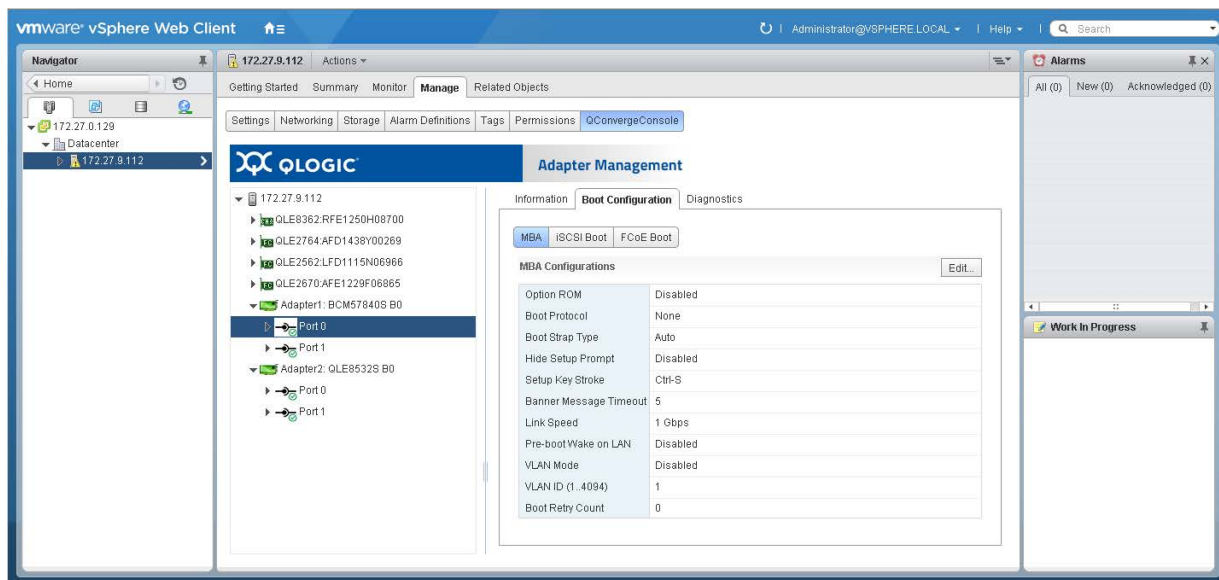


Figure 6-28. MBA Boot Configurations (vSphere Web Client Plug-in)

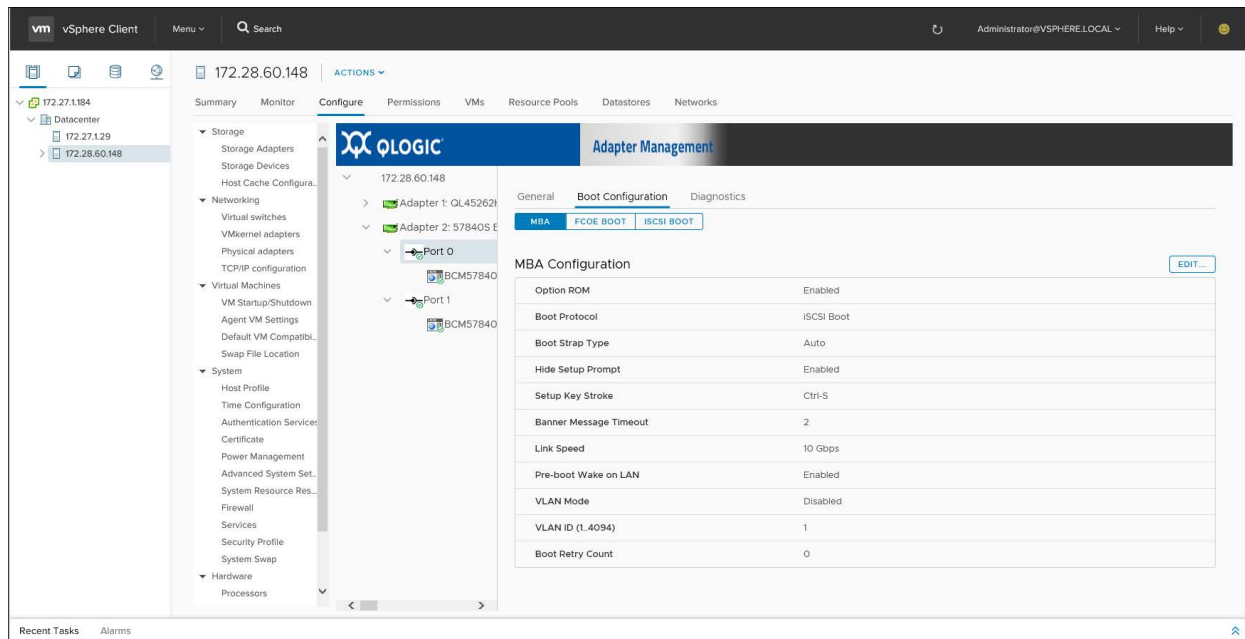


Figure 6-29. MBA Boot Configurations (HTML5 based vSphere Client Plug-in)

6. On the MBA Configurations page, click **Edit**.
7. Complete the following in the Update MBA Configuration panel:
 - a. Select the **Option ROM** check box to enable this feature, or clear the check box to disable it.
 - b. Select a value for the **Boot Protocol**.

Options for 3400 and 8400 Series Adapters include:

- **None**
- **PXE**
- **FCoE Boot** (if available)
- **iSCSI Boot** (if available)

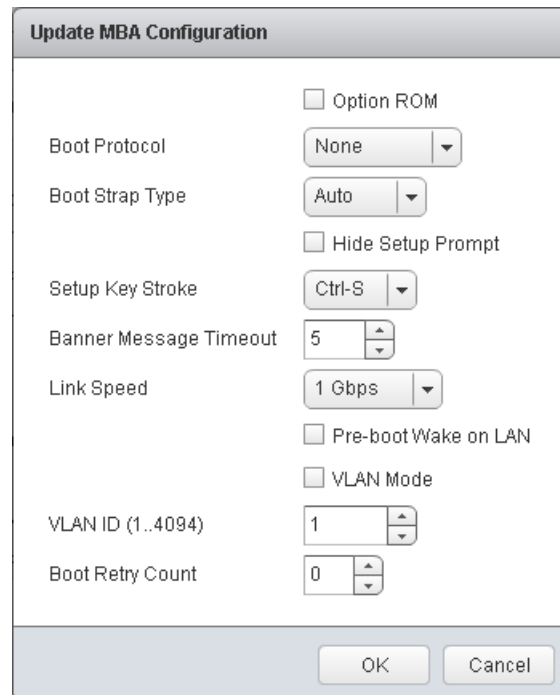
Options for 41000/45000 Series Adapters include:

- **None**
- **PXE**
- **iBFT**

Note that selecting **PXE** will disable the iSCSI (offload) Boot. Selecting **iBFT** will disable the iSCSI (offload) Boot, and set the iSCSI Boot Mode to non-offload.

- c. Select a value for **Boot Strap Type**:
 - **Auto**
 - **BBS**
 - **Int 18h**
 - **Int 19h**
- d. Select the **Hide Setup Prompt** check box to enable the hide setup prompt, or clear the check box to disable it.
- e. Select a value for **Setup Key Stroke**:
 - **Ctrl-S**
 - **Ctrl-B**
- f. Set a value (from 0 to 14) in the **Banner Message Timeout** box.
- g. Select a value for **Link Speed**:
 - **AutoNeg** (auto negotiation)
 - **SmartAN** (smart auto negotiation (if available))
 - **1Gbps**
 - **10Gbps**
 - **25Gbps** (if available)
 - **40Gbps** (if available)
 - **50Gbps** (if available)
 - **100Gbps** (if available)
- h. Select the following check box options to enable them as needed:
 - **Pre-boot Wake on LAN**
 - **VLAN Mode**
- 8. Select a value (from 1 to 4094) in the **VLAN ID (1..4094)** box.
- 9. Select a value (from 0 to 7) in the **Boot Retry Count** box.
- 10. Click **OK**.

[Figure 6-30](#) and [Figure 6-31](#) show the Update MBA Configuration dialog box if you click the **Edit** button.

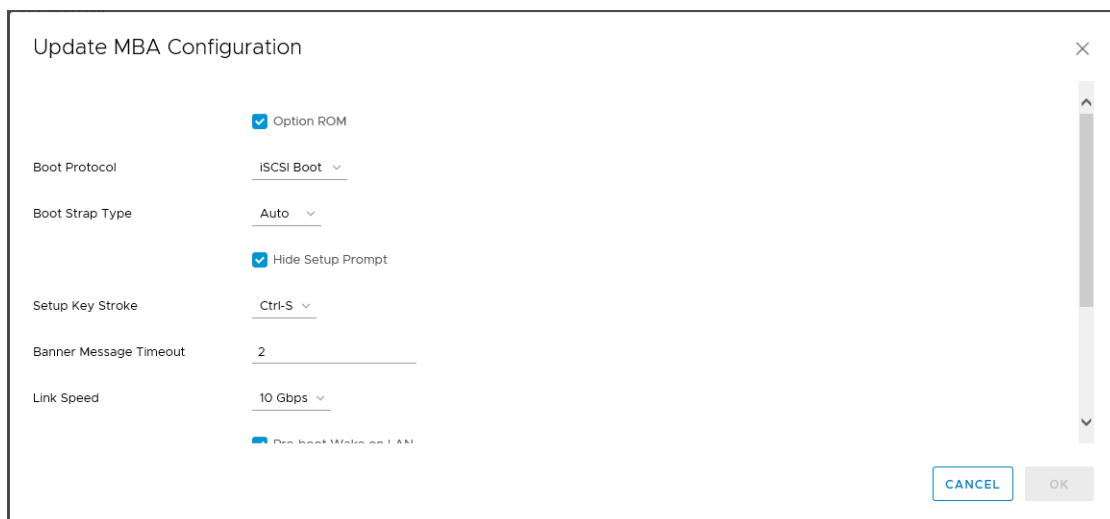


The dialog box is titled "Update MBA Configuration". It contains the following settings:

- ☐ Option ROM
- Boot Protocol: None (dropdown)
- Boot Strap Type: Auto (dropdown)
- ☐ Hide Setup Prompt
- Setup Key Stroke: Ctrl-S (dropdown)
- Banner Message Timeout: 5 (spinner)
- Link Speed: 1 Gbps (dropdown)
- ☐ Pre-boot Wake on LAN
- ☐ VLAN Mode
- VLAN ID (1..4094): 1 (spinner)
- Boot Retry Count: 0 (spinner)

Buttons: OK, Cancel

Figure 6-30. Update MBA Configuration Dialog Box (vSphere Web Client Plug-in)



The dialog box is titled "Update MBA Configuration". It contains the following settings:

- ☒ Option ROM
- Boot Protocol: iSCSI Boot (dropdown)
- Boot Strap Type: Auto (dropdown)
- ☒ Hide Setup Prompt
- Setup Key Stroke: Ctrl-S (dropdown)
- Banner Message Timeout: 2 (text input)
- Link Speed: 10 Gbps (dropdown)
- ☒ Pre-boot Wake on LAN

Buttons: CANCEL, OK

Figure 6-31. Update MBA Configuration Dialog Box (HTML5 based vSphere Client Plug-in)

Configuring iSCSI Boot

This section describes how to set up the iSCSI boot configuration in the following four sections:

- [Configuring General Parameters](#)
- [Configuring Initiator Parameters](#)
- [Configuring Primary and Secondary Target Parameters](#)
- [Configuring MPIO Parameters](#)

Configuring General Parameters

To configure the general parameters:

1. Select the appropriate port in the QConvergeConsole system tree.
2. Select the **Manage** tab.
3. On the Manage page, click the **QConvergeConsole** tab.
4. On the QConvergeConsole page, click the **Boot Configuration** tab.
5. On the Boot Configuration page, click **iSCSI Boot** as shown in [Figure 6-32](#) and [Figure 6-33](#).

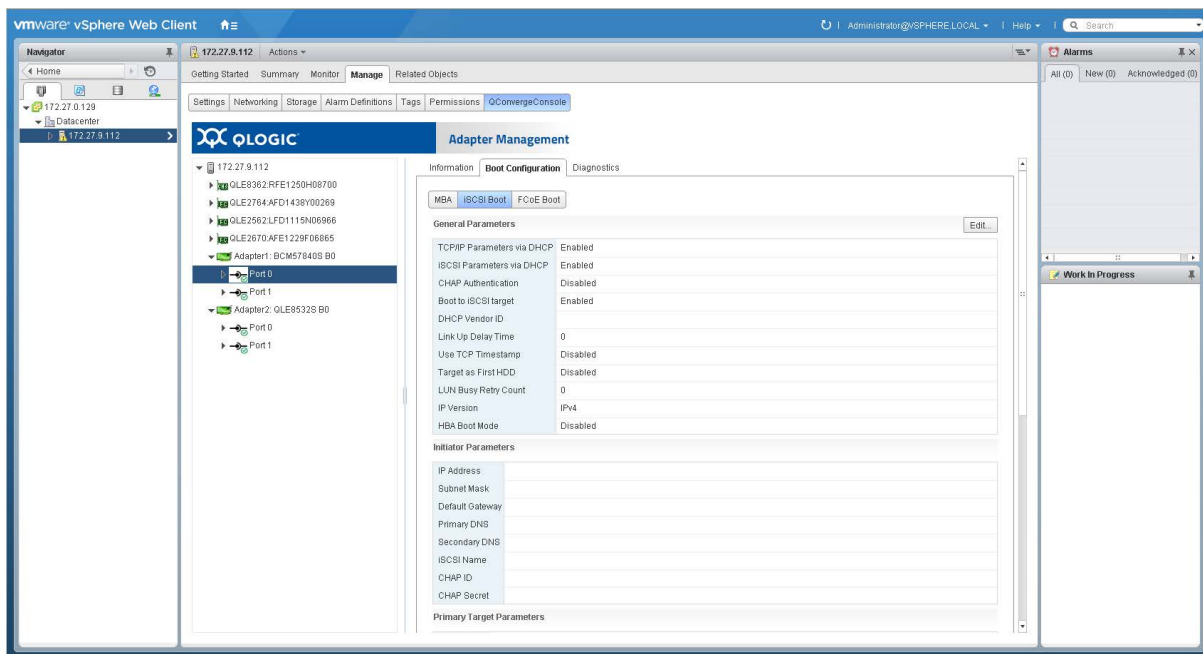


Figure 6-32. iSCSI Boot Configuration in the vSphere Web Client Plug-in

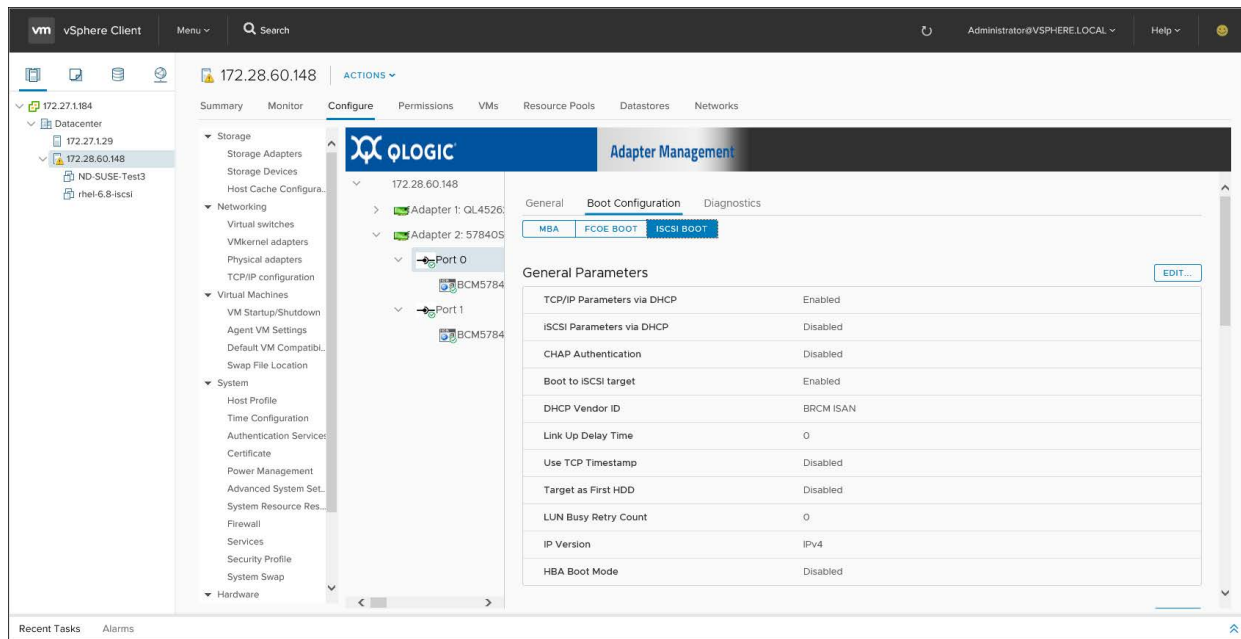


Figure 6-33. iSCSI Boot Configuration in the HTML5 based vSphere Client Plug-in

6. Click **Edit**.
7. Complete the following in the Update iSCSI Boot Configuration dialog box:
 - a. In the left pane, click **General Parameters**.

- b. Select the **iSCSI Boot Enabled (offload)** check box to enable the iSCSI Boot offload mode, or clear the check box to disable it.

Note that this check box is only available when **Boot Mode** is **Offload**. Also, enabling iSCSI offload mode will set the **MBA Boot Protocol** to **None**. This feature is only applicable to 41000/45000 Series Adapters. The 8400/57xx/5771x/578xx adapters do not support hardware iSCSI boot on VMware.

- c. Select **Non-offload** or **Offload** for **Boot Mode**.

Note that selecting **Non-offload** will set the **MBA Boot Protocol** to **iBFT**. Selecting **Offload** and enabling the **iSCSI Boot** (offload) will set the **MBA Boot Protocol** to **None**. This feature is only applicable to 41000/45000 Series Adapters. The 3400/8400/57xx/5771x/578xx adapters only support Non-offload iSCSI boot on VMware.

- d. Select the **TCP/IP Parameters via DHCP** check box to enable TCP/IP parameters by DHCP, or clear the check box to disable it.
 - e. Select the **iSCSI Parameters via DHCP** check box to enable iSCSI parameters by DHCP, or clear the check box to disable it.

- f. Select the **CHAP Authentication** check box to enable CHAP authentication, or clear the check box to disable it.
 - g. Select **Enabled** or **Disabled** for the **Boot to iSCSI target**¹ option.
 - h. Type the DHCP vendor ID in the **DHCP Vendor ID** box.
 - i. Set a value (from 0 to 255) in the **Link Up Delay Time** box.
 - j. Select the **Use TCP Timestamp**¹ check box to enable TCP time stamp, or clear the check box to disable it.
 - k. Select the **Target as First HDD**¹ check box to enable target as first HDD, or clear the check box to disable it.
 - l. Set a value (from 0 to 60) in the **LUN Busy Retry Count**¹ box.
 - m. Select **IPv4** or **IPv6** as the **IP Version**.
 - n. Select the **HBA Boot Mode**¹ check box to enable HBA boot mode, or clear the check box to disable it.
8. Click OK.

Figure 6-34 shows the Update iSCSI Boot Configuration, **General Parameters** for 3400/8400 Series Adapters. Figure 6-35 shows the Update iSCSI Boot Configuration, **General Parameters** for 41000/45000 Series Adapters. Figure 6-36 shows the Update iSCSI Boot Configuration, **General Parameters** in the HTML5 based vSphere Client Plug-in.

The screenshot shows a dialog box titled "Update iSCSI Boot Configuration". On the left is a sidebar with a tree view containing "General Parameters" (selected), "Initiator Parameters", "Primary Target Parameters", "Secondary Target Parameters", and "MPIO Parameters". The main area is titled "General Parameters" and contains the following settings:

- ☒ TCP/IP Parameters via DHCP
- ☒ iSCSI Parameters via DHCP
- ☐ CHAP Authentication
- Boot to iSCSI target: **Enabled** (dropdown menu)
- DHCP Vendor ID: [Empty text box]
- Link Up Delay Time: **0** (spin box)
- ☐ Use TCP Timestamp
- ☐ Target as First HDD
- LUN Busy Retry Count: **0** (spin box)
- IP Version: **IPv4** (dropdown menu)
- ☐ HBA Boot Mode

At the bottom right are "OK" and "Cancel" buttons.

Figure 6-34. Update iSCSI Boot Configuration, General Parameters for 3400/8400 Series Adapters

¹ This feature is not applicable to 41000/45000 Series Adapters.

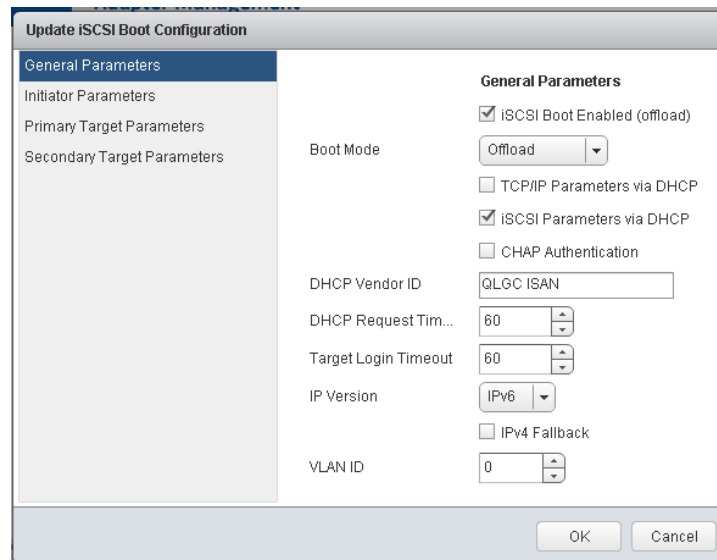


Figure 6-35. Update iSCSI Boot Configuration, General Parameters for 41000/45000 Series Adapters

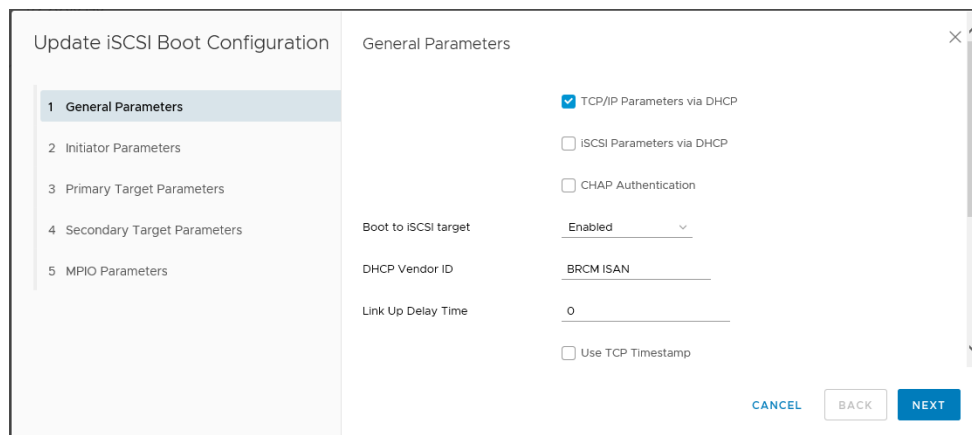


Figure 6-36. Update iSCSI Boot Configuration, General Parameters (HTML5 based vSphere Client Plug-in)

Configuring Initiator Parameters

To configure the initiator parameters:

1. Select the appropriate port in the QConvergeConsole system tree.
2. Select the **Manage** tab.
3. On the Manage page, click the **QConvergeConsole** tab.

4. On the QConvergeConsole page, click **Boot Configuration**, and then click **iSCSI Boot** (see [Figure 6-33 on page 184](#)).
5. Click **Edit**.
6. Complete the following in the Update iSCSI Boot Configuration dialog box as shown in [Figure 6-37](#) and [Figure 6-38](#):
 - a. Click **Initiator Parameters**.
 - b. Type the IP address in the **IP Address** box.
 - c. Type the subnet mask in the **Subnet Mask** box.
 - d. Type the default gateway in the **Default Gateway** box.
 - e. Type the primary DNS in the **Primary DNS** box.
 - f. Type the secondary DNS in the **Secondary DNS** box.
 - g. Type the iSCSI name in the **iSCSI Name** box.
 - h. Type the CHAP ID in the **CHAP ID** box.
 - i. Type the CHAP secret key in the **CHAP Secret** box.
7. Click **OK**.

Update iSCSI Boot Configuration	
General Parameters	
Initiator Parameters	Initiator Parameters
Primary Target Parameters	IP Address
Secondary Target Parameters	Subnet Mask
MPIO Parameters	Default Gateway
	Primary DNS
	Secondary DNS
	iSCSI Name
	CHAP ID
	CHAP Secret
OK Cancel	

Figure 6-37. Update iSCSI Boot Configuration, Initiator Parameters (vSphere Web Client Plug-in)

Update iSCSI Boot Configuration

Initiator Parameters

1 General Parameters

2 Initiator Parameters

3 Primary Target Parameters

4 Secondary Target Parameters

5 MPIIO Parameters

IP Address 0.0.0.0

Subnet Mask 0.0.0.0

Default Gateway 0.0.0.0

Primary DNS 0.0.0.0

Secondary DNS 0.0.0.0

iSCSI Name iqn.1995-05.com.broadco

CHAP ID

CANCEL BACK NEXT

Figure 6-38. Update iSCSI Boot Configuration, Initiator Parameters (HTML5 based vSphere Client Plug-in)

Configuring Primary and Secondary Target Parameters

To configure the primary and secondary target parameters:

1. Select the appropriate port in the QConvergeConsole system tree.
2. Select the **Manage** tab.
3. On the Manage page, click the **QConvergeConsole** tab.
4. On the QConvergeConsole page, click the **Boot Configuration** tab, and then click **iSCSI Boot** (see [Figure 6-33 on page 184](#)).
5. Click **Edit**.
6. Complete the following in the Update iSCSI Boot Configuration dialog box, as shown in [Figure 6-39](#) and [Figure 6-40](#):
 - a. Click **Primary Target Parameters**.
 - b. Select the **Connect** check box to connect the primary target parameters, or clear the check box to disable the primary target parameter connection.
 - c. Type the IP address in the **IP Address** box.
 - d. Set a value in the **TCP Port** box.
 - e. Set a value (from 0 to 255) in the **Boot LUN** box.
 - f. Type the iSCSI name in the **iSCSI Name** box.
 - g. Type the CHAP ID in the **CHAP ID** box.
 - h. Type the CHAP secret key in the **CHAP Secret** box.

7. Repeat [Step 6](#) for the secondary target parameters.
8. Click **OK** or **Next**.

The screenshot shows a dialog box titled "Update iSCSI Boot Configuration". On the left is a sidebar with five tabs: "General Parameters", "Initiator Parameters", "Primary Target Parameters" (which is selected and highlighted in blue), "Secondary Target Parameters", and "MPIO Parameters". The main area of the dialog is titled "Primary Target Parameters" and contains the following fields: a "Connect" checkbox, an "IP Address" text field, a "TCP Port" spinner field set to 3260, a "Boot LUN" spinner field set to 0, an "iSCSI Name" text field, a "CHAP ID" text field, and a "CHAP Secret" text field. At the bottom right are "OK" and "Cancel" buttons.

Figure 6-39. Update iSCSI Boot Configuration, Primary Target Parameters (vSphere Web Client Plug-in)

The screenshot shows a modern, HTML5-based version of the "Update iSCSI Boot Configuration" dialog box. The left sidebar has a numbered list of tabs: "1 General Parameters", "2 Initiator Parameters", "3 Primary Target Parameters" (selected and highlighted), "4 Secondary Target Parameters", and "5 MPIO Parameters". The main area is titled "Primary Target Parameters" and contains: a "Connect" checkbox, an "IP Address" text field with "0.0.0.0" entered, a "TCP Port" text field with "3260" entered, a "Boot LUN" text field with "0" entered, and empty text fields for "iSCSI Name", "CHAP ID", and "CHAP Secret". At the bottom right are "CANCEL", "BACK", and "NEXT" buttons.

Figure 6-40. Update iSCSI Boot Configuration, Primary Target Parameters (HTML5 based vSphere Client Plug-in)

Configuring MPIO Parameters

NOTE

This feature is not applicable to 41000/45000 Series Adapters.

To configure the MPIO parameters:

1. Select the appropriate port in the QConvergeConsole system tree.
2. Select the **Manage** tab.
3. On the Manage page, click the **QConvergeConsole** tab.
4. On the QConvergeConsole page, click the **Boot Configuration** tab, and then click **iSCSI Boot** (see [Figure 6-33 on page 184](#)).
5. Click **Edit**.
6. Complete the following in the Update iSCSI Boot Configuration dialog box, as shown in [Figure 6-41](#) and [Figure 6-42](#):
 - a. Click **MPIO Parameters**.
 - b. Select the **Enable MPIO** check box to enable the MPIO, or clear the check box to disable the MPIO.
 - c. Select a MAC Address from the adapter (or select **None**) for the **Secondary Device**.
 - d. Select the **Use Independent Target Portal** check box to enable the independent target portal, or clear the check box to disable the independent target portal.
 - e. Select the **Use Independent Target Name** check box to enable the independent target name, or clear the check box to disable the independent target name.
7. Click **OK** or **Finish**.

The screenshot shows the 'Update iSCSI Boot Configuration' dialog box. On the left, a sidebar contains the following tabs: 'General Parameters', 'Initiator Parameters', 'Primary Target Parameters', 'Secondary Target Parameters', and 'MPIO Parameters'. The 'MPIO Parameters' tab is currently selected and highlighted in blue. The main content area of the dialog is titled 'MPIO Parameters' and contains the following elements: a 'Secondary Device' label followed by a dropdown menu showing 'None'; three checkboxes, each followed by a label: 'Enable MPIO' (unchecked), 'Use Independent Target Portal' (unchecked), and 'Use Independent Target Name' (unchecked). At the bottom right of the dialog, there are two buttons: 'OK' and 'Cancel'.

Figure 6-41. Update iSCSI Boot Configuration, MPIO Parameters (vSphere Web Client Plug-in)

Update iSCSI Boot Configuration

MPIO Parameters

1 General Parameters

2 Initiator Parameters

3 Primary Target Parameters

4 Secondary Target Parameters

5 MPIO Parameters

MPIO Parameters

Secondary Device

None

Use Independent Target Portal

Use Independent Target Name

CANCEL BACK FINISH

Figure 6-42. Update iSCSI Boot Configuration, MPIO Parameters (HTML5 based vSphere Client Plug-in)

Configuring FCoE Boot

This section describes how to configure the following for FCoE boot:

- [Configuring General Parameters](#)
- [Configuring Target Parameters](#)

Figure 6-43 and Figure 6-44 show the Boot Configuration – FCoE Boot page.

vmware vSphere Web Client

Administrator@vSPHERE LOCAL

172.27.9.112

Adapter Management

Information Boot Configuration Diagnostics

General Parameters

Boot to FCoE target Enabled

Target as First HOD Disabled

Link Up Delay Time 0

LUN Busy Retry Count 0

Fabric Discovery Timeout 4

FCoE HBA Boot Mode Enabled

Target Parameters

Connected	Port WWN	Boot LUN
Disconnected	00:00:00:00:00:00:00:00	0
Disconnected	00:00:00:00:00:00:00:00	0
Disconnected	00:00:00:00:00:00:00:00	0
Disconnected	00:00:00:00:00:00:00:00	0
Disconnected	00:00:00:00:00:00:00:00	0
Disconnected	00:00:00:00:00:00:00:00	0
Disconnected	00:00:00:00:00:00:00:00	0
Disconnected	00:00:00:00:00:00:00:00	0
Disconnected	00:00:00:00:00:00:00:00	0
Disconnected	00:00:00:00:00:00:00:00	0

Figure 6-43. Boot Configuration – FCoE Boot Page (vSphere Web Client Plug-in)

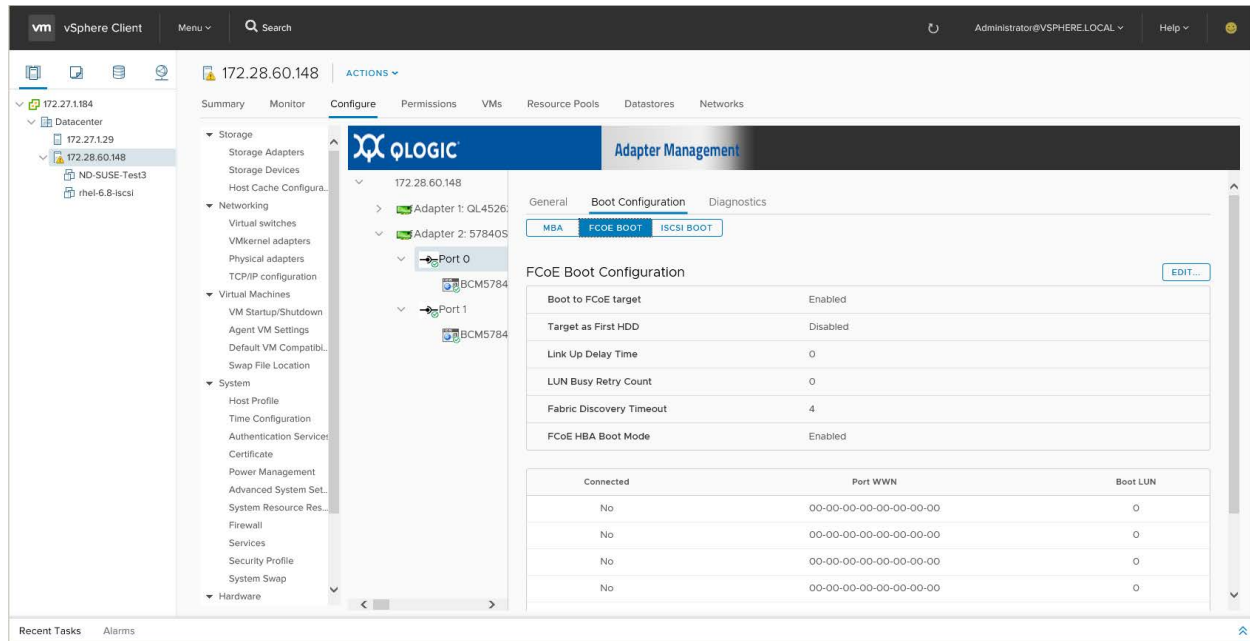


Figure 6-44. Boot Configuration – FCoE Boot Page (HTML5 based vSphere Client Plug-in)

Configuring General Parameters

To configure the general parameters:

1. Select the appropriate port in the QConvergeConsole system tree.
2. Select the **Manage** tab.
3. On the Manage page, click the **QConvergeConsole** tab.
4. On the QConvergeConsole page, click the **Boot Configuration** tab.
5. On the Boot Configuration page, click **FCoE Boot** as shown in Figure 6-44.
6. Click **Edit**.
7. Complete the following in the Update FCoE Boot Configuration dialog box, as shown in Figure 6-45 and Figure 6-46:
 - a. Click **General Parameters**.
 - b. Select the **Boot to FCoE target**¹ check box to enable boot to FCoE target, or clear the check box to disable it.
 - c. Select the **Target as First HDD**¹ check box to enable target as first HDD, or clear the check box to disable it.
 - d. Set a value (from 0 to 255) in the **Link Up Delay Time** box.

¹ This feature is not applicable to 41000/45000 Series Adapters.

- e. Set a value (from 0 to 60) in the **LUN Busy Retry Count**¹ box.
 - f. Set a value (from 0 to 8) in the **Fabric Discovery Timeout** box.
 - g. Select the **FCoE HBA Boot Mode**¹ check box to enable the FCoE HBA boot mode, or clear the check box to disable it.
8. Click **OK**.

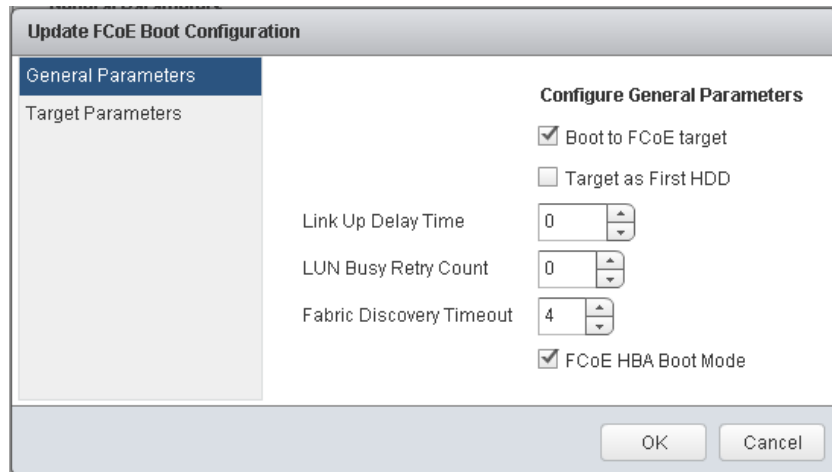


Figure 6-45. Update FCoE Boot Configuration, General Parameters (vSphere Web Client Plug-in)

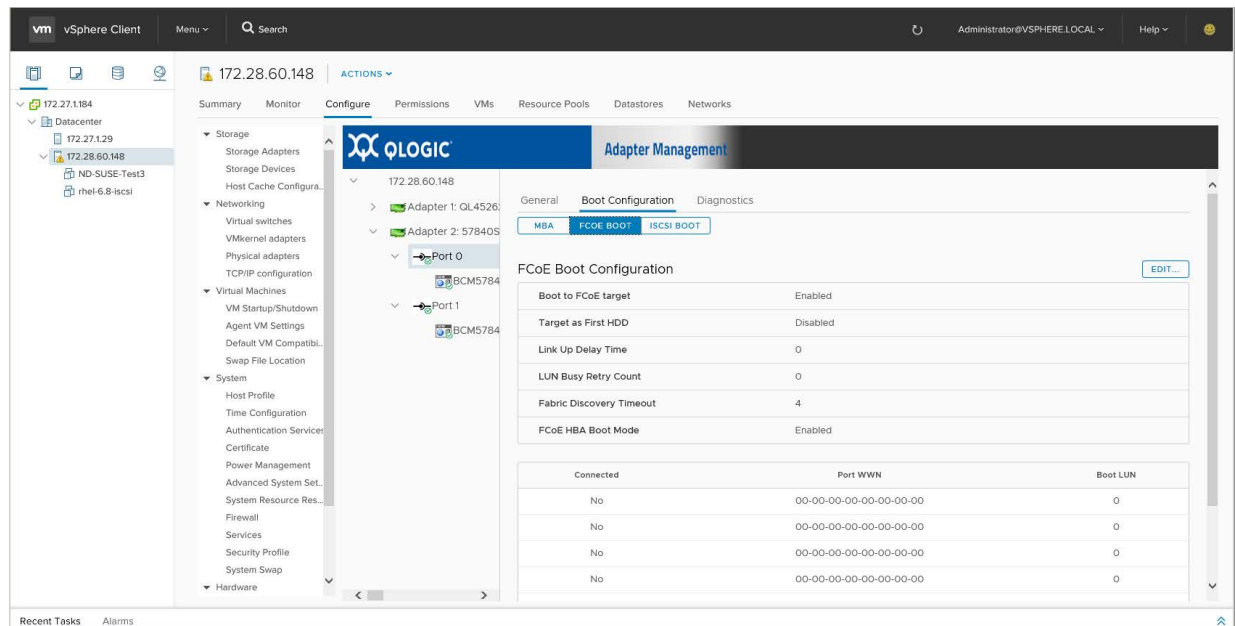


Figure 6-46. Update FCoE Boot Configuration, General Parameters (HTML5 based vSphere Client Plug-in)

Configuring Target Parameters

To configure the target parameters:

1. Select the appropriate port in the QConvergeConsole system tree.
2. Select the **Manage** tab.
3. On the Manage page, click the **QConvergeConsole** tab.
4. On the QConvergeConsole page, click the **Boot Configuration** tab.
5. On the Boot Configuration page, click **FCoE Boot** as shown in [Figure 6-44](#).
6. Click **Edit**.
7. Complete the following in the Update FCoE Boot Configuration dialog box as shown in [Figure 6-47](#) and [Figure 6-48](#):
 - a. Click **Target Parameters**.
 - b. Select one or more **Connected** check boxes for the corresponding Port WWN to connect, or clear the check boxes to disconnect.
 - c. Type the port world wide name in the **Port WWN** box(es).
 - d. Set a value (from 0 to 255) in the **Boot LUN** box.
8. Click **OK** or **Finish**.

The dialog box is titled "Update FCoE Boot Configuration". It has two tabs: "General Parameters" and "Target Parameters". The "Target Parameters" tab is selected. It contains a table with three columns: "Connected", "Port WWN", and "Boot LUN". There are eight rows in the table, each with a checkbox in the "Connected" column, a text box for "Port WWN" (all containing "00:00:00:00:00:00:00"), and a spinner box for "Boot LUN" (all set to "0"). At the bottom right are "OK" and "Cancel" buttons.

Connected	Port WWN	Boot LUN
☐	00:00:00:00:00:00:00	0
☐	00:00:00:00:00:00:00	0
☐	00:00:00:00:00:00:00	0
☐	00:00:00:00:00:00:00	0
☐	00:00:00:00:00:00:00	0
☐	00:00:00:00:00:00:00	0
☐	00:00:00:00:00:00:00	0
☐	00:00:00:00:00:00:00	0

Figure 6-47. Update FCoE Boot Configuration, Target Parameters (vSphere Web Client Plug-in)

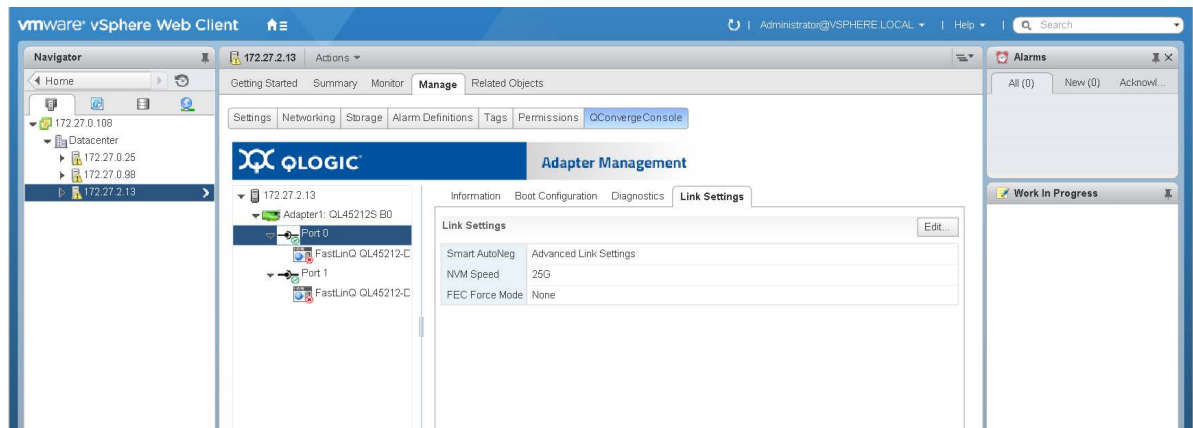
The dialog box is titled "Update FCoE Boot Configuration". It has two tabs: "1 General Parameters" and "2 Target Parameters". The "2 Target Parameters" tab is selected. It contains a table with three columns: "Connected", "Port WWN", and "Boot LUN". There are six rows in the table, each with a checkbox in the "Connected" column, a text box for "Port WWN" (all containing "00-00-00-00-00-00-00"), and a text box for "Boot LUN" (all containing "0"). At the bottom right are "CANCEL", "BACK", and "FINISH" buttons.

Connected	Port WWN	Boot LUN
☐	00-00-00-00-00-00-00	0
☐	00-00-00-00-00-00-00	0
☐	00-00-00-00-00-00-00	0
☐	00-00-00-00-00-00-00	0
☐	00-00-00-00-00-00-00	0
☐	00-00-00-00-00-00-00	0

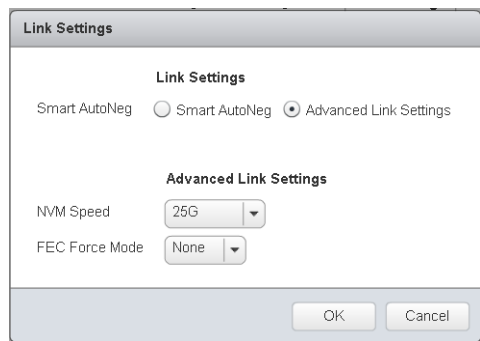
Figure 6-48. Update FCoE Boot Configuration, Target Parameters (HTML5 based vSphere Client Plug-in)

Configuring Link Settings

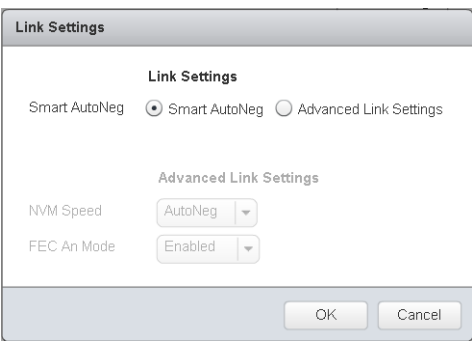
If your 41000/45000 Series Adapters support SmartAN™ (smart auto negotiation), then the vSphere Web Client Plug-in has the Link Settings option, as shown in [Figure 6-49](#) and [Figure 6-50](#).



Link Settings Page

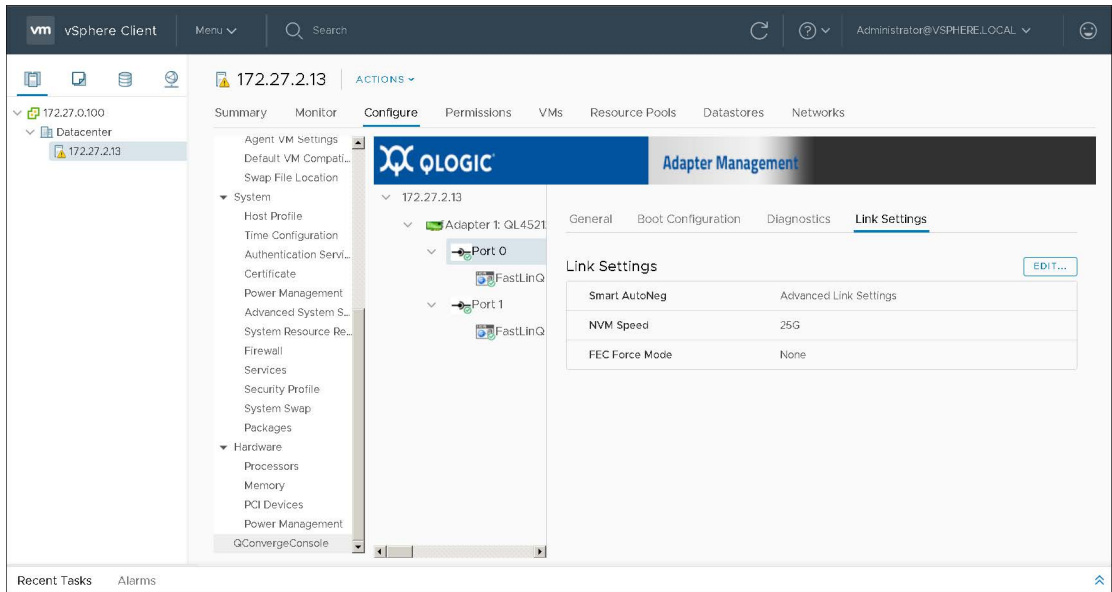


Link Settings Dialog Box with
Advanced Link Settings Selected

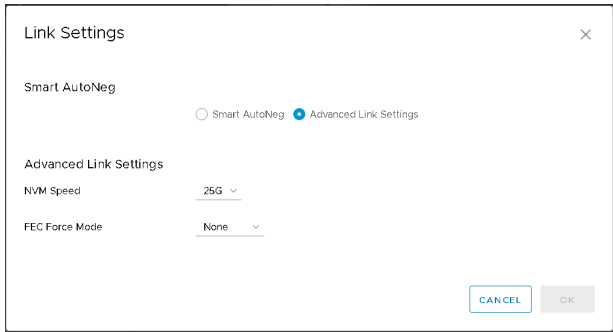


Link Settings Dialog Box with
Smart AutoNeg Selected

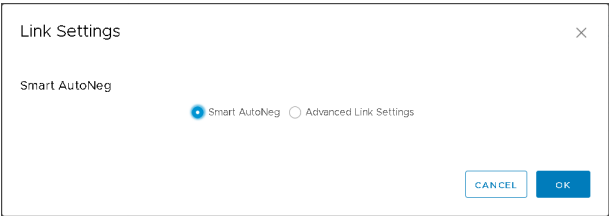
Figure 6-49. vSphere Web Client Plug-in Link Settings



Link Settings Page



Link Settings Dialog Box with
Advanced Link Settings Selected



Link Settings Dialog Box with
Smart AutoNeg Selected

Figure 6-50. HTML5 based vSphere Client Plug-in Link Settings

In the Link Settings page, the adapter port can be configured for Smart AutoNeg or Advanced Link Settings. Selecting Advanced Link Settings allows you to configure the speed and FEC modes. The available speeds will vary based on the speed capability of the adapter.

The Smart AutoNeg option may also appear in the MBA Boot Configuration list of available speeds. Changing the speed through the Link Settings page also changes the speed in the MBA Boot Configuration list.

Running Adapter Port Diagnostics

If the adapter has the capability of executing diagnostics, the following diagnostics tests are available, as shown in [Figure 6-51](#) and [Figure 6-52](#):

- **Control Registers**
- **Internal Memory**
- **EEPROM**
- **Interrupt**
- **Loopback MAC¹**
- **Loopback PHY**
- **LED**

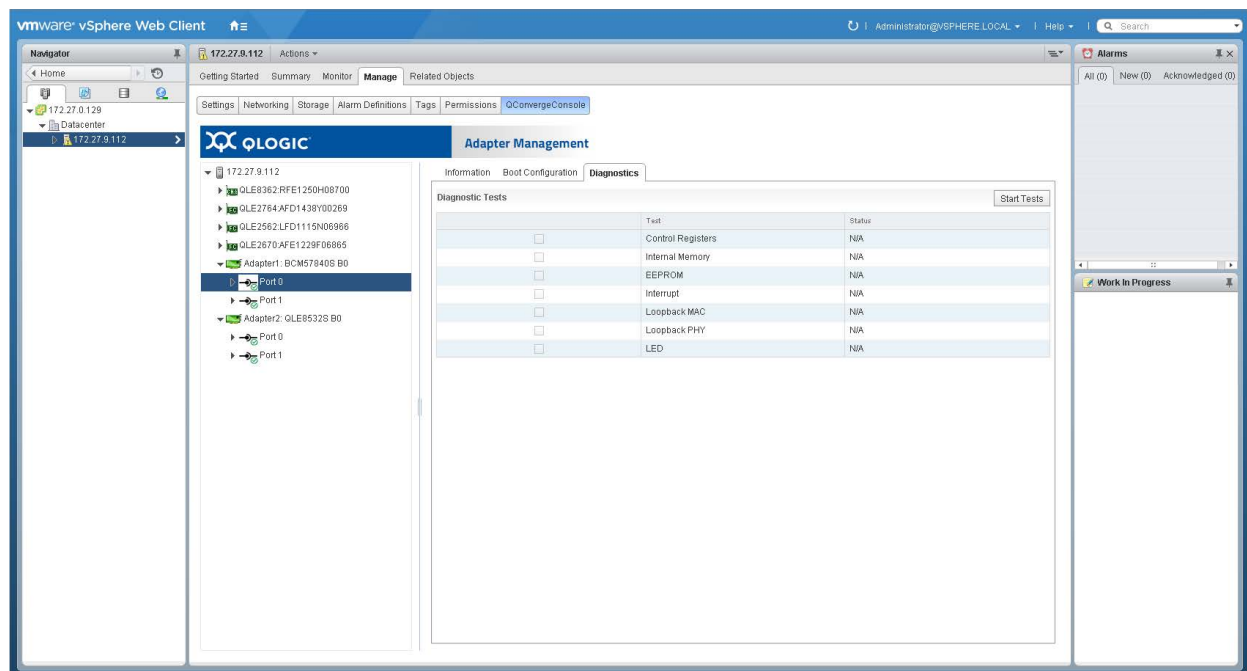


Figure 6-51. vSphere Web Client Plug-in Diagnostics Page

¹ The Loopback MAC feature is not applicable to 41000/45000 Series Adapters.

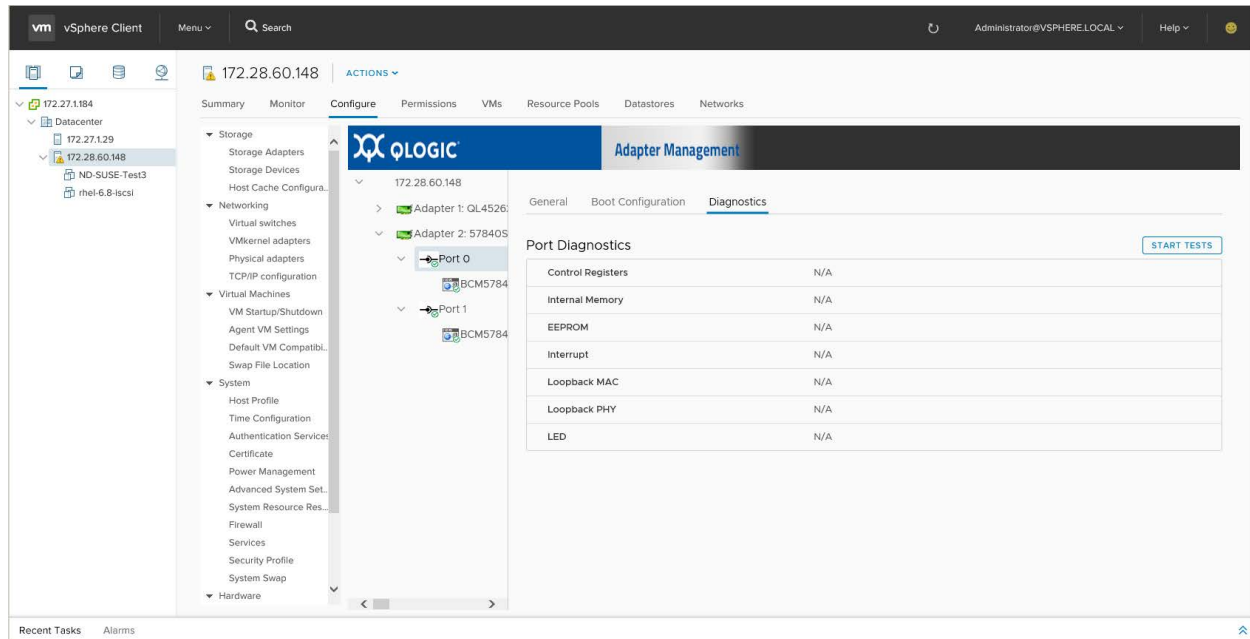


Figure 6-52. HTML5 based vSphere Client Plug-in Diagnostics Page

To run a port diagnostic test:

1. Select the appropriate port in the QConvergeConsole system tree.
2. Select the **Manage** tab.
3. On the Manage page, click the **QConvergeConsole** tab.
4. On the QConvergeConsole page, click the **Diagnostics** tab, as shown in [Figure 6-51 on page 198](#).
5. On the Diagnostics page, click **Start Tests**.
6. Complete the following in the Diagnostic Tests dialog box as shown in [Figure 6-53](#):
 - a. Set a value in the **Number of Test Iteration(s)** box.
 - b. Set a value in the **LED Internal** box.
 - c. Select the appropriate test check boxes:
 - **Test** (to run all tests)
 - **Control Registers**
 - **Internal Memory**
 - **EEPROM**
 - **Interrupt**
 - **Loopback MAC**¹

¹ The Loopback MAC feature is not applicable to 41000/45000 Series Adapters.

- Loopback PHY
- LED

7. Click **OK**.

Diagnostic Tests

Number of Test Iteration(s)

LED Interval

☐	Test	Status
☐	Control Registers	N/A
☐	Internal Memory	N/A
☐	EEPROM	N/A
☐	Interrupt	N/A
☐	Loopback MAC	N/A
☐	Loopback PHY	N/A
☐	LED	N/A

vSphere Web Client Plug-in

Select diagnostic tests to perform.

Number of Test Iteration(s)

LED Interval

☐ Control Registers

☐ Internal Memory

☐ EEPROM

☐ Interrupt

☐ Loopback MAC

HTML5 based vSphere Client Plug-in

Figure 6-53. Diagnostics Tests Dialog Box

Figure 6-54 shows the Diagnostics Tests window after the tests are completed.

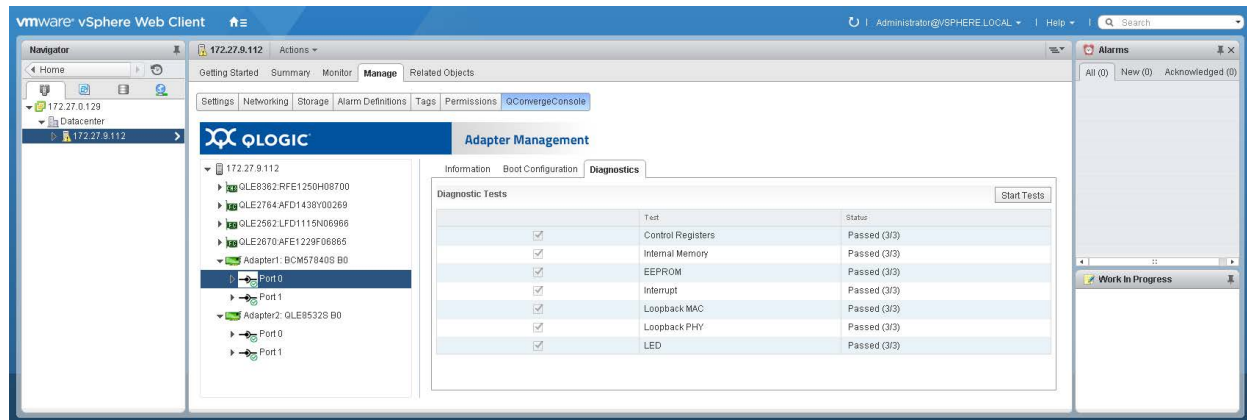


Figure 6-54. Diagnostics Test Completed

Viewing Function Information for 3400/8400/41000/45000 Series Adapters

To view function information for 3400/8400/41000/45000 Series Adapters, select the function in the system tree. The Adapter Management window shows the function information and statistics.

Function Information

Figure 6-55 shows the Web Client function information for the 3400/8400/41000/45000 Series Adapters. The function information includes:

- **Vital Signs:**
 - ☐ **MAC Address**
 - ☐ **Permanent MAC Address**
 - ☐ **MTU**
 - ☐ **Flow Control**
- **Driver Information:**
 - ☐ **Driver Name**
 - ☐ **Driver Version**
 - ☐ **Driver Date**
 - ☐ **Interface (UP or DOWN)**
- **Multi-function:**
 - ☐ **Physical Network MAC Address**
 - ☐ **Physical FCoE MAC Address**
 - ☐ **Physical iSCSI MAC Address**
 - ☐ **Minimum Bandwidth (%)**

- ☐ **Maximum Bandwidth (%)**
- ☐ **L2NIC Protocol**
- ☐ **iSCSI Protocol**
- ☐ **FCoE Protocol**

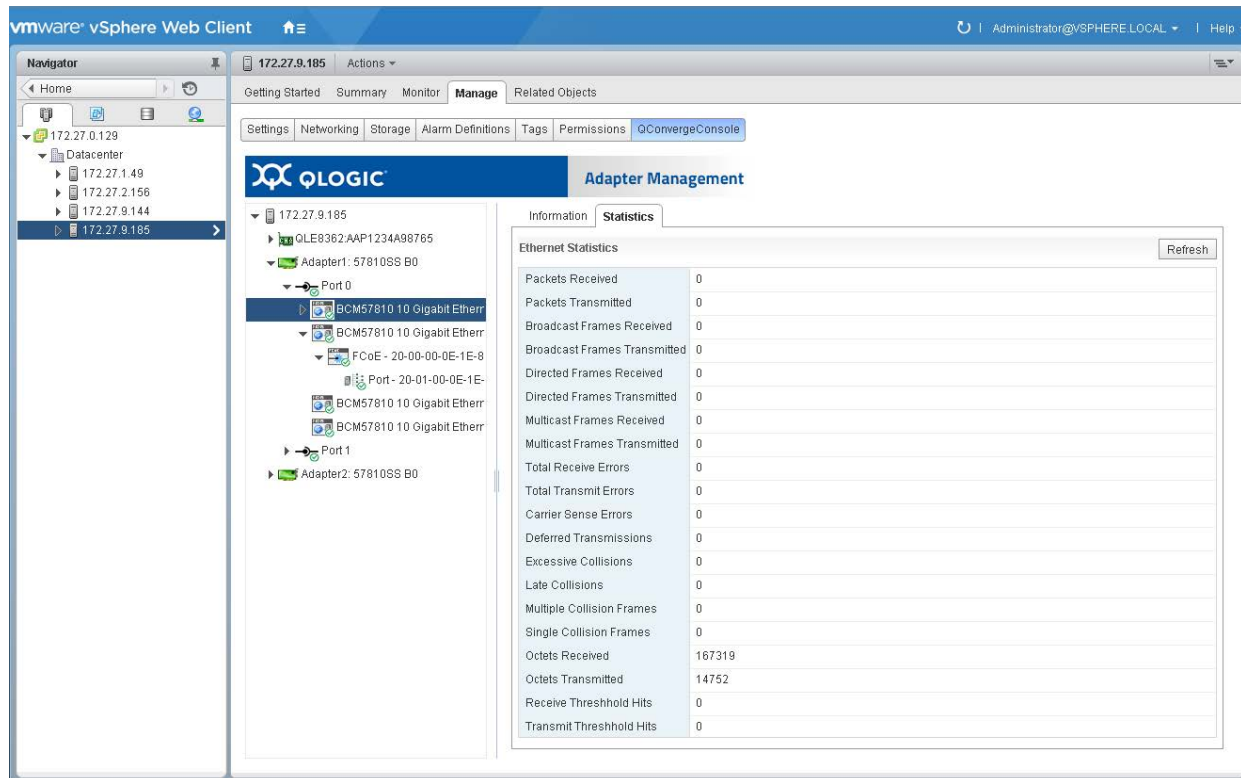


Figure 6-55. Web Client Function Information on 3400/8400/41000/45000 Series Adapters

Function Configuration

If available, a function configuration may be shown on the **Configuration** page for 3400/8400/41000/45000 Series Adapters.

Figure 6-56 shows the Configuration page for 3400/8400 Series Adapters.

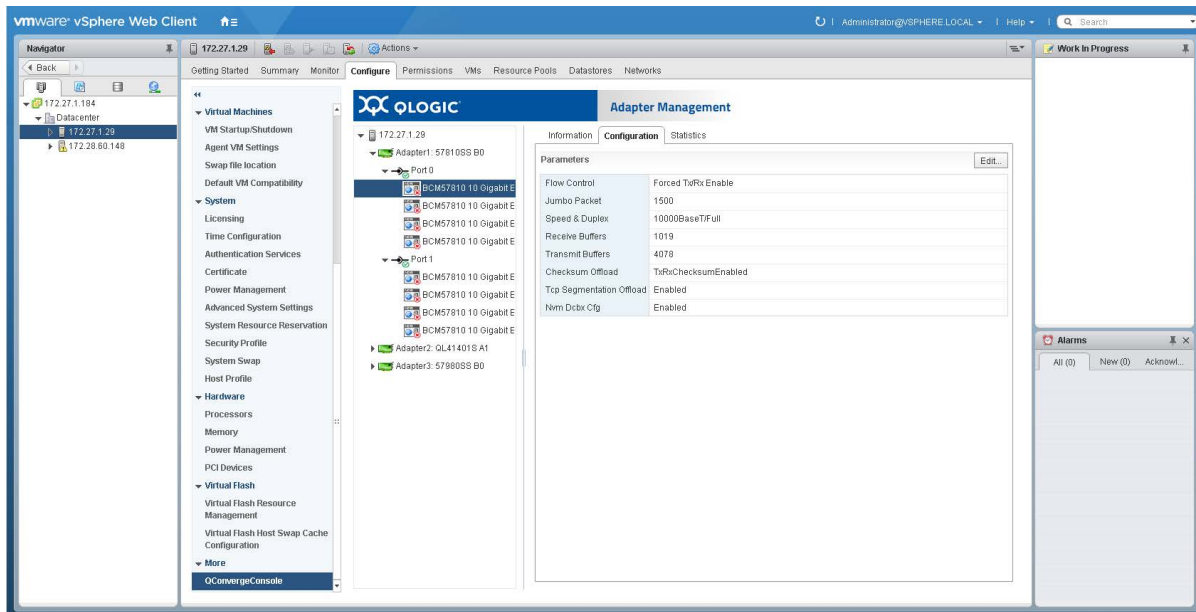


Figure 6-56. Configuration Page for 3400/8400 Series Adapters

Figure 6-57 shows the Configuration page for 41000/45000 Series Adapters.

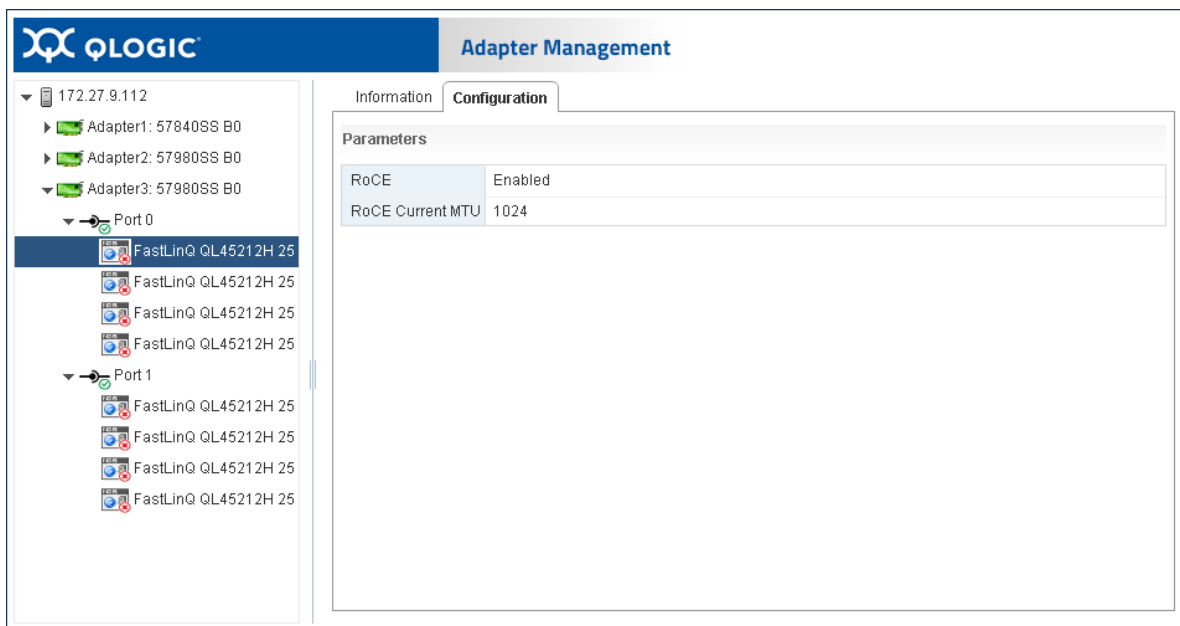


Figure 6-57. Configuration Page for 41000/45000 Series Adapters

Figure 6-58 shows the HTML5 based vSphere Client Plug-in Configuration page for 3400/8400 Series Adapters.

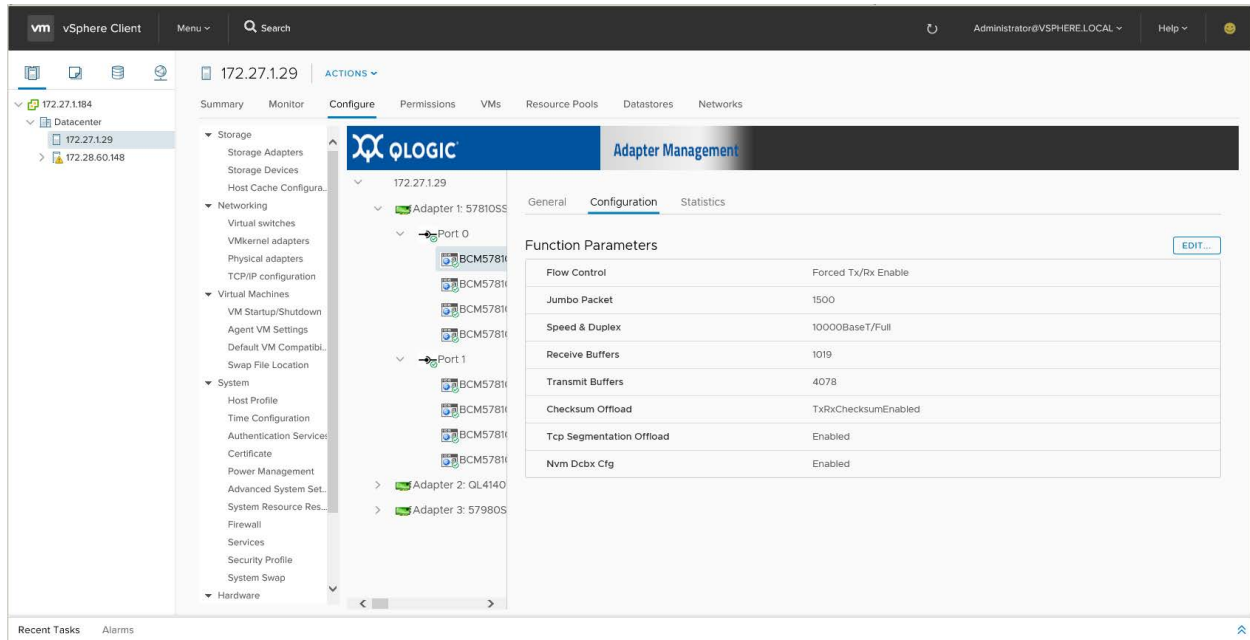


Figure 6-58. Configuration Page for 3400/8400 Series Adapters

Function Ethernet Statistics

Figure 6-59 shows the Web Client function Ethernet statistics for 3400/8400/41000/45000 Series Adapters. The function Ethernet statistics include:

- Packets Received
- Packets Transmitted
- Broadcast Frames Received
- Broadcast Frames Transmitted
- Directed Frames Received
- Directed Frames Transmitted
- Multicast Frames Received
- Multicast Frames Transmitted
- Carrier Sense Errors
- Deferred Transmissions
- Excessive Collisions
- Late Collisions
- Multiple Collision Frames
- Single Collision Frames
- Octets Received
- Octets Transmitted
- Receive Threshold Hits
- Transmit Threshold Hits

To update the statistics, click **Refresh**.

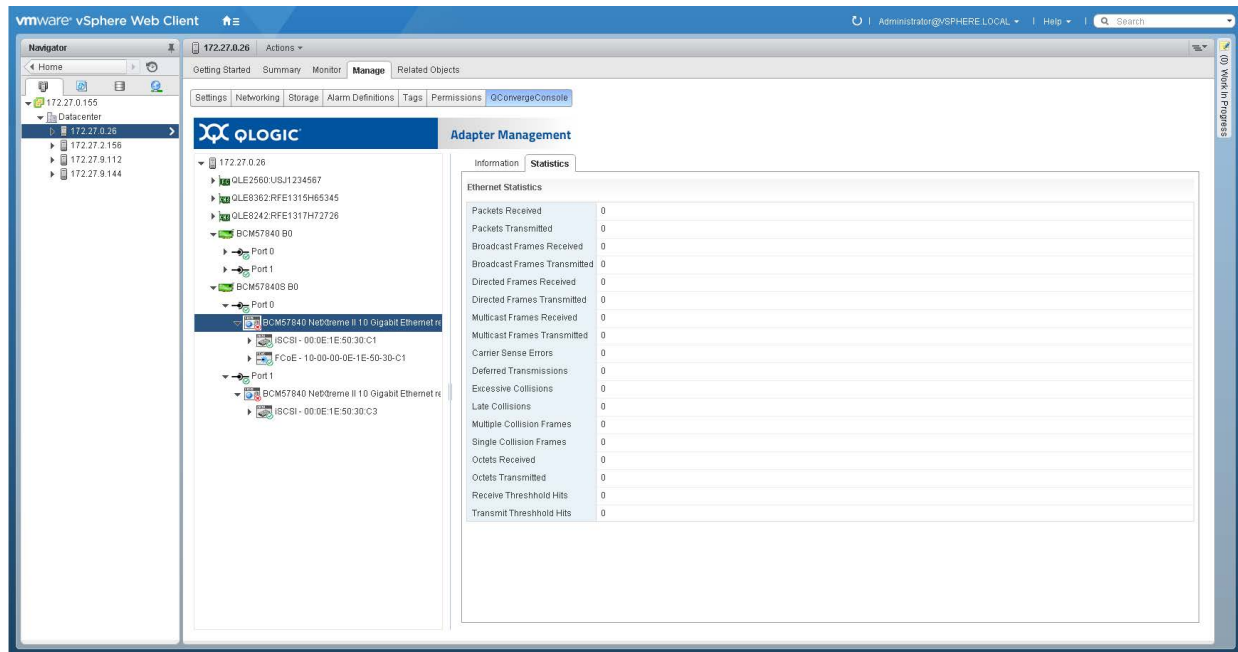


Figure 6-59. Web Client Function Ethernet Statistics on 3400/8400/41000/45000 Series Adapters

Viewing iSCSI Information for 8400/41000/45000 Series Adapters

To view iSCSI information for 8400/41000/45000 Series Adapters, select the iSCSI in the system tree.

NOTE

iSCSI must be configured for a function in the adapter content pane.

The Adapter Management window shows the following iSCSI information:

■ Vital Signs:

- ☐ **MAC Address**
- ☐ **IPv4 Address**
- ☐ **IPv6 Address**
- ☐ **MTU**
- ☐ **Device ID**

- **Driver Information:**
 - ❑ **Driver Name**
 - ❑ **Driver Version**
 - ❑ **Driver Firmware Version**

Figure 6-60 shows the Web Client iSCSI information for 8400/41000/45000 Series Adapters.

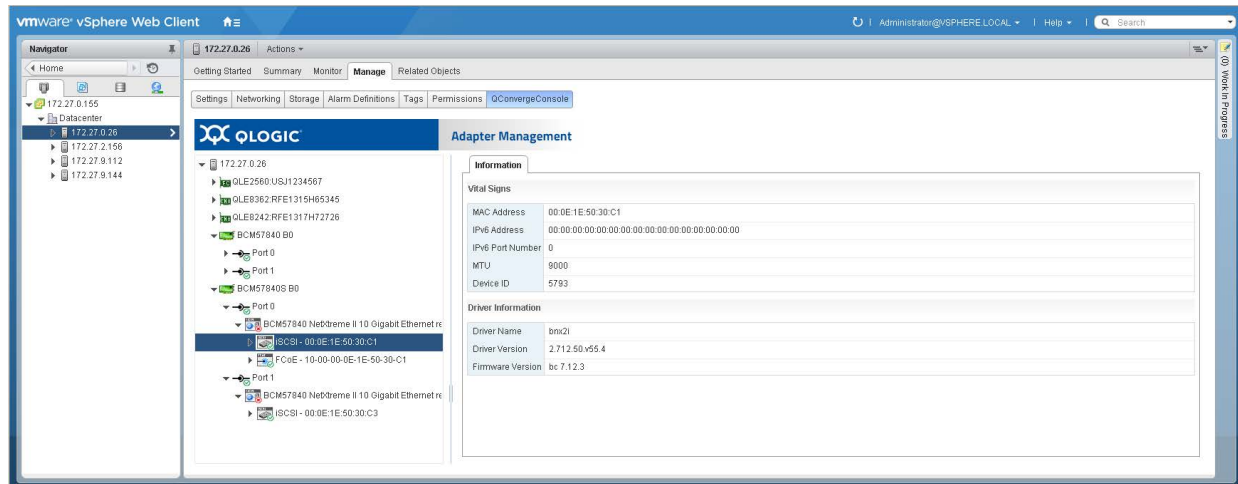


Figure 6-60. Web Client iSCSI Information on a 8400/41000/45000 Series Adapters

If there are active iSCSI sessions, selecting the portal in the system tree shows the information regarding the sessions. The iSCSI **Portal Information** includes the **Portal IP** and the following session information:

- **Target**
- **Session State**
- **Target Portal**
- **Initiator Portal**
- **Initial R2T**
- **Immediate Data**
- **Max Outstanding R2T**
- **Data Sequence Order**
- **Data PDU in Order**
- **Error Recovery Level**
- **Connection ID**
- **Session Unique ID**

Figure 6-61 shows the iSCSI portal information for 8400/41000/45000 Series Adapters.

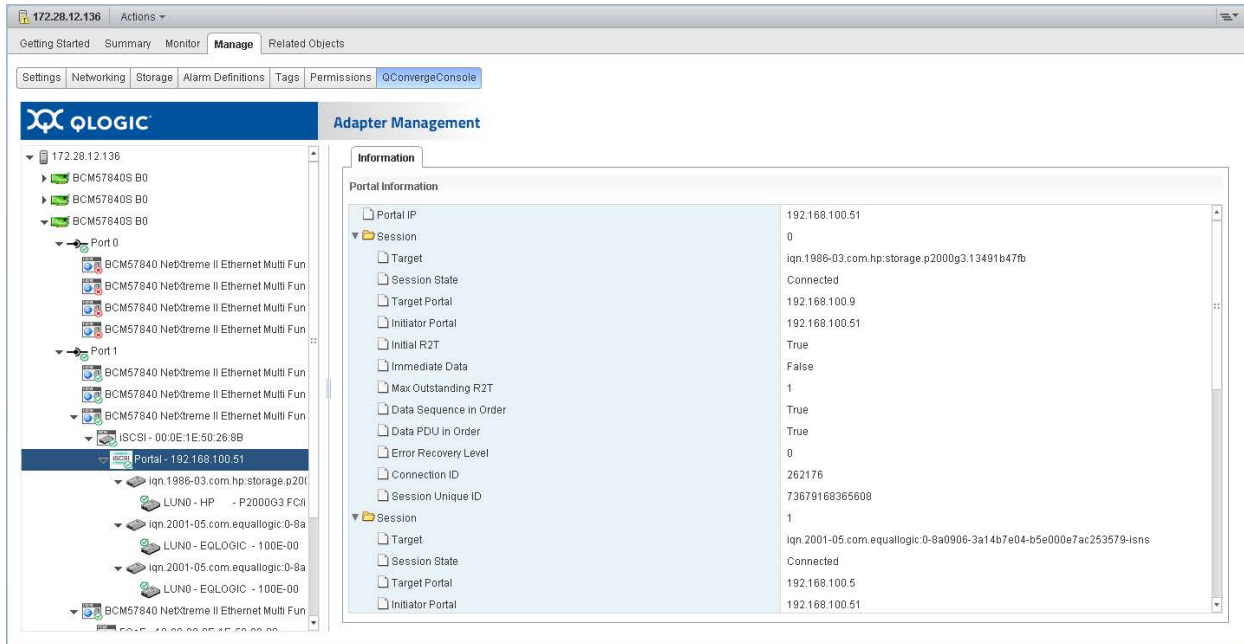


Figure 6-61. iSCSI Portal Information on a 8400/41000/45000 Series Adapters

Viewing Information for an iSCSI Target Connected to 8400/41000/45000 Series Adapters

To manage an iSCSI target connected to 8400/41000/45000 Series Adapters, select the iSCSI target in the system tree.

The Adapter Management window shows the following iSCSI target information:

■ Target Information:

- ☐ Target IQN Name
- ☐ SCSI Target Number
- ☐ MAC Address
- ☐ IPv4 Address
- ☐ IPV6 Address
- ☐ LUN Count

■ Session Information:

- ☐ Target
- ☐ Session State
- ☐ Target Portal
- ☐ Initiator Portal

- ☐ Initial R2T
- ☐ Immediate Data
- ☐ Max Outstanding R2T
- ☐ Data Sequence in Order
- ☐ Data PDU in Order
- ☐ Error Recovery Level
- ☐ Connection ID
- ☐ Session Unique ID

Figure 6-62 shows the iSCSI target information for 8400/41000/45000 Series Adapters.

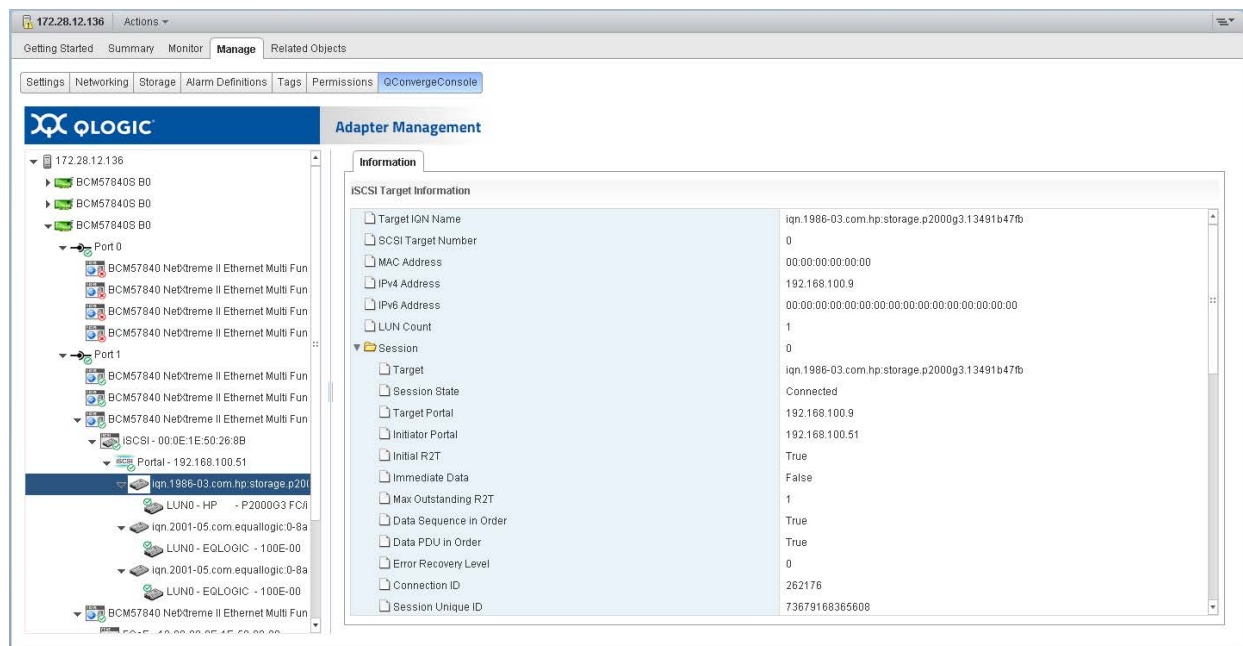


Figure 6-62. Web Client iSCSI Target Information on 8400/41000/45000 Series Adapters

Viewing Information for an iSCSI LUN Connected to 8400/41000/45000 Series Adapters

To manage an iSCSI LUN connected to 8400/41000/45000 Series Adapters, select the iSCSI LUN in the system tree.

The Adapter Management window shows the following iSCSI LUN information:

- SCSI Unit Number
- Capacity (MB)
- Vendor ID
- Product ID

- **Device Type**
- **Product Rev Level**

Figure 6-63 shows the iSCSI LUN information for 8400/41000/45000 Series Adapters.

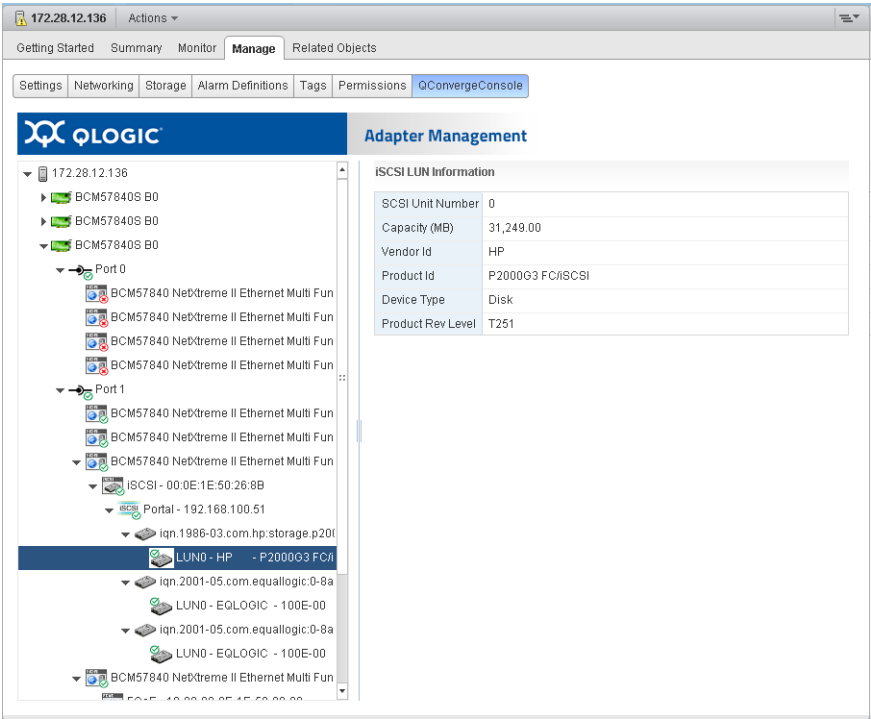


Figure 6-63. Web Client iSCSI LUN Information on 8400/41000/45000 Series Adapters

Viewing FCoE Information for 8400/41000/45000 Series Adapters

To view FCoE information for 8400/41000/45000 Series Adapters, select the FCoE in the system tree.

NOTE

FCoE must be configured for a function in the adapter content pane.

The Adapter Management window shows the FCoE information and statistics.

FCoE Information

Figure 6-64 shows the FCoE information for 8400/41000/45000 Series Adapters. The FCoE includes the following information:

- **Vital Signs:**
 - ☐ **MAC Address**
 - ☐ **MTU**
 - ☐ **FCF Selection**
 - ☐ **WWNN**
 - ☐ **WWPN**
- **Driver Information:**
 - ☐ **Driver Name**
 - ☐ **Driver Version**
 - ☐ **Driver Date**
 - ☐ **Firmware Version**
 - ☐ **Symbolic Node Name**

FCoE Statistics

[Figure 6-65](#) shows the FCoE Statistics information for 8400/41000/45000 Series Adapters. The FCoE statistics includes the following information:

- **FCoE transmitted frames**
- **FCoE transmitted bytes**
- **FCoE received frames**
- **FCoE received bytes**
- **Packets received with wrong FC-CRC**
- **FCoE dropped frames**

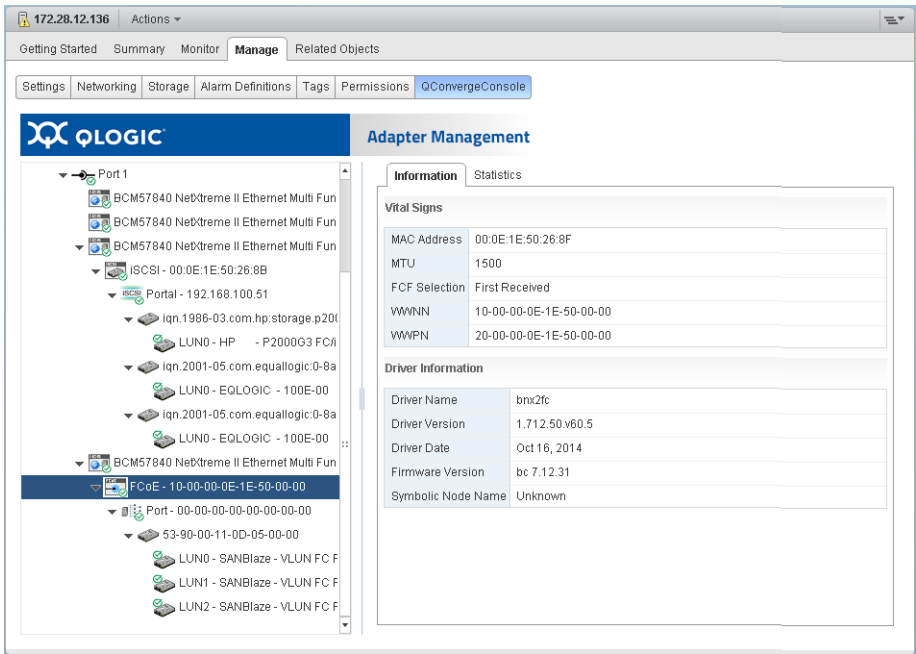


Figure 6-64. Web Client FCoE Information on 8400/41000/45000 Series Adapters

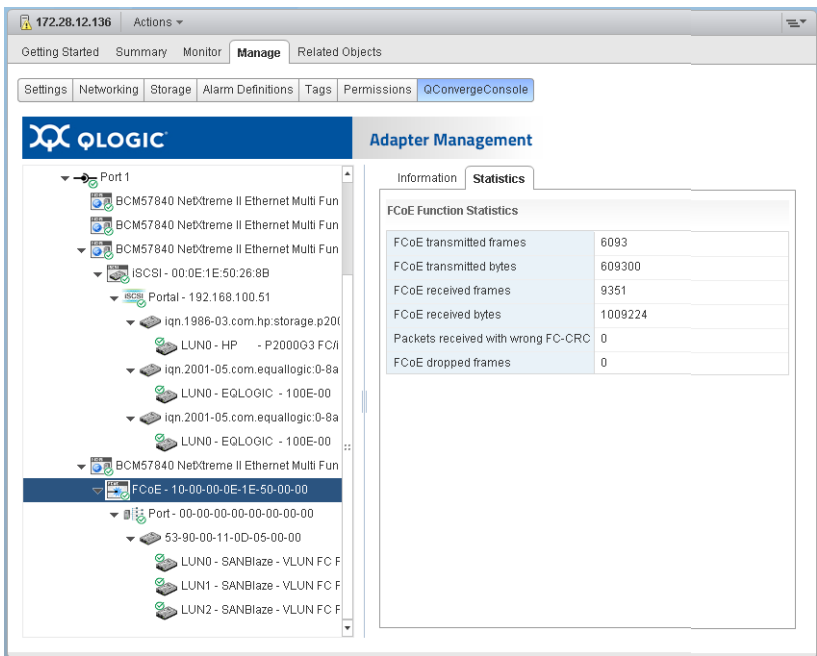


Figure 6-65. Web Client FCoE Statistics on 8400/41000/45000 Series Adapters

If there are active FCoE connections, an FCoE port in the system tree may be selected to view information regarding the port. The **FCoE Port Information (Fabric Information)** includes:

- **Port Type**
- **Port State**
- **WW Port Name**
- **WW Node Name**
- **Parent WW Port Name**
- **Port FCID**
- **FCF Mac Address**
- **FCF WW Port Name**
- **FCF WW Node Name**
- **Fabric Priority**
- **Link Keep Alive Interval (ms)**

Figure 6-66 shows the FCoE port information for 8400/41000/45000 Series Adapters.

The screenshot displays the QLogic Web Client interface. On the left, a tree view shows the system hierarchy, including BCM57840S B0 adapters and their ports. A specific FCoE port is selected. On the right, the 'Fabric Information' table provides details for this port.

Fabric Information	
Port Type	NPort
Port State	Up
WW Port Name	20-00-00-0E-1E-50-00-00
WW Node Name	10-00-00-0E-1E-50-00-00
Parent WW Port Name	20-00-00-0E-1E-50-00-00
Port FCID	800941
FCF MAC Address	00:05:9B:23:D8:00
FCF WW Port Name	00-00-00-00-00-00-00-00
FCF WW Node Name	00-00-00-00-00-00-00-00
Fabric Priority	128
Link Keep Alive Interval (ms)	800

Figure 6-66. Web Client FCoE Port Information on 8400/41000/45000 Series Adapters

Viewing Information for an FCoE Target Connected to 8400/41000/45000 Series Adapters

To view information for an FCoE target connected to 8400/41000/45000 Series Adapters, select the FCoE target in the system tree. The Adapter Management window shows the following **FCoE Target Information**:

- **SCSI Target Number**
- **Port State**
- **Target Port ID**
- **Target WW Node Name**
- **Target WW Port Name**
- **LUN Count**

Figure 6-67 shows the FCoE target information on 8400/41000/45000 Series Adapters.

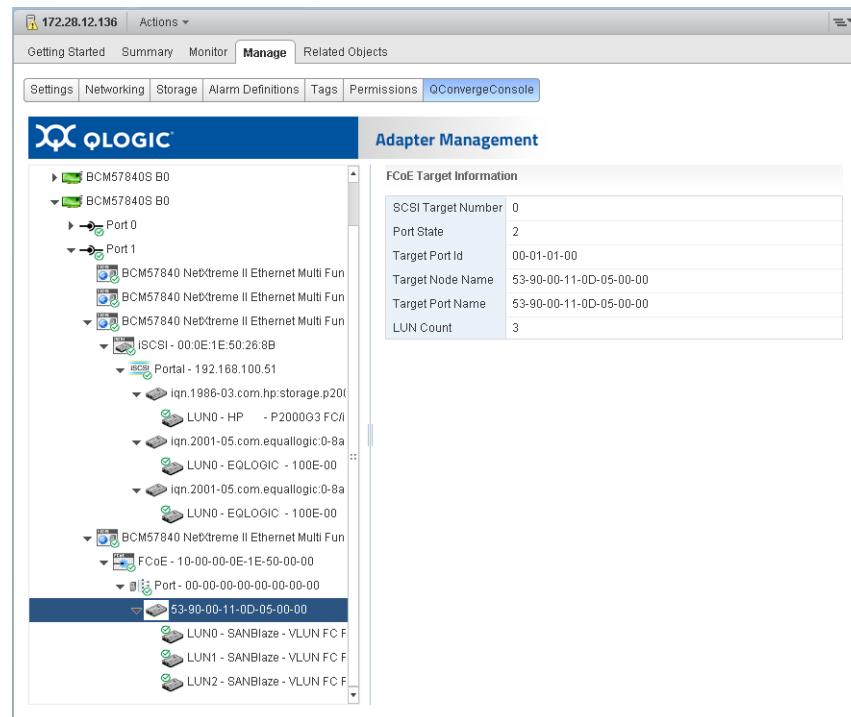


Figure 6-67. Web Client FCoE Target Information on 8400/41000/45000 Series Adapters

Viewing Information for an FCoE LUN Connected to 8400/41000/45000 Series Adapters

To view information for an FCoE LUN connected to 8400/41000/45000 Series Adapters, select the FCoE LUN in the system tree. The Adapter Management window shows the following **FCoE LUN Information**:

- **SCSI Unit Number**
- **Capacity**
- **Vendor ID**
- **Product ID**
- **Device Type**
- **Product Rev Level**

Figure 6-68 shows the FCoE LUN information on 8400/41000/45000 Series Adapters.

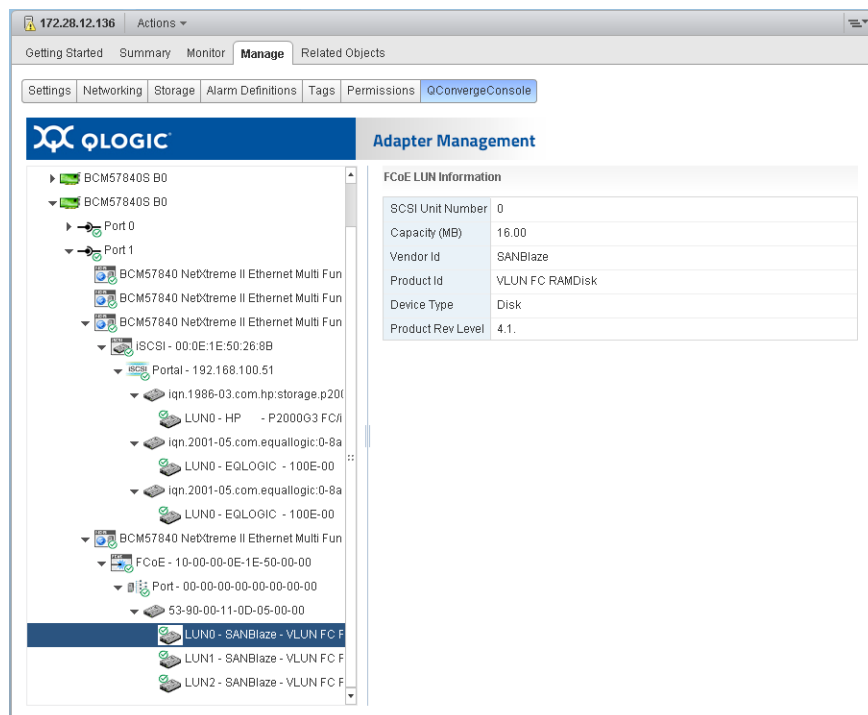


Figure 6-68. Web Client FCoE LUN Information on 8400/41000/45000 Series Adapters

A Installing the QLogic Adapter CIM Provider Using VUM

This appendix provides information on how to install the QLogic Adapter CIM Provider on the ESX and ESXi Server using the VMware Update Manager (VUM).

To install the QLogic Adapter CIM Provider on an existing ESX/ESXi installation using VUM:

1. Identify one or more `offline-bundle.zip` files.
2. From vCenter Server, go to **Home > Update Manager**.
3. Click the **Patch Repository** tab.
4. At the top right of the window, click the **Import Patches** link.
5. Click **Finish**.

The QLogic Adapter CIM Provider is now added to the patch repository.

6. Create a baseline and remediate the ESX/ESXi host. For more information, refer to *Installing and Administering VMware vSphere Update Manager* available from the VMware Web site:

https://www.vmware.com/support/pubs/vum_pubs.html

B Troubleshooting

This appendix provides troubleshooting information for the QLogic Adapter CIM Provider.

CIM Provider Troubleshooting

After a system startup, the SFCB (Small-Footprint CIM Broker) CIMOM (CIM object manager) in the ESX system should start automatically and load the QLogic Adapter CIM Provider when necessary.

If the CIM Provider does not start automatically, you can manually stop, start, or restart the SFCB CIMOM by issuing the following commands.

To stop the SFCB CIMOM and the QLogic Adapter CIM Provider:

```
# /etc/init.d/sfcbd-watchdog stop
```

To start the SFCB CIMOM and the QLogic Adapter CIM Provider:

```
# /etc/init.d/sfcbd-watchdog start
```

To restart the SFCB CIMOM and the QLogic Adapter CIM Provider:

```
# /etc/init.d/sfcbd-watchdog restart
```

After starting the SFCB CIMOM, use a CIM client utility to query the QLogic Adapter CIM Provider for information.

C Revision History

Document Revision History
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Changes	Sections Affected
Added section “Target Link Statistics” on page 63	“Managing Fibre Channel Adapters” on page 32
Removed delivery notification from Fabric Performance Impact Notification (FPIN) Extended Link Services statistics table	“Universal SAN Congestion Mitigation (USCM) Status and Statistics—Fibre Channel Initiator Port” on page 49

Glossary

adapter

The board that interfaces between the host system and the target devices. Adapter is synonymous with *Host Bus Adapter*, *Host Channel Adapter*, *host adapter*, and *adapter board*.

adapter port

A port on the adapter board.

adapter port beacon

An LED on the adapter. Flashing it enables you to locate the adapter.

alias

A user-defined name for an adapter, adapter port, logical disk, or subsystem.

API

Application programming interface. A set of routines, protocols, and tools for building software applications. API simplifies development by providing the building blocks.

bandwidth

A measure of the volume of data that can be transmitted at a specific transmission rate. A 1Gbps or 2Gbps Fibre Channel port can transmit or receive at nominal rates of 1 or 2Gbps, depending on the device to which it is connected. This corresponds to actual bandwidth values of 106MB and 212MB, respectively.

basic input output system

See [BIOS](#).

BIOS

Basic input output system. Typically in Flash PROM, the program (or utility) that serves as an interface between the hardware and the operating system and allows booting from the adapter at startup.

boot code

The program that initializes a system or an adapter. Boot code is the first program to run when a system or a device within a system, such as an adapter, is powered on. FCode, [BIOS](#), and extensible firmware interface (EFI) are all forms of boot code for specific hardware/operating system environments.

Boot code for QLogic Fibre Channel Adapters is required if the computer system is booting from a storage device (disk drive) attached to the adapter. The primary function of the boot code is communication with the external boot device before the operating system is up and running. Boot code can also perform secondary functions, including managing the setup for the adapter and initializing and testing the adapter's ISP.

boot device

The device, usually the hard disk, that contains the operating system the [BIOS](#) uses to boot from when the computer is started.

cache

A temporary high-speed storage (memory) area where recently used or frequently accessed data is stored for rapid access, thus increasing the efficiency of processor operations.

CLI

Command line interface. A program interface driven by entering commands and parameters.

command line interface

See [CLI](#).

data center bridging

See [DCB](#).

data center bridging exchange

See [DCBX](#).

Data Center Ethernet

See [DCE™](#).

DCB

Data center bridging. Provides enhancements to existing 802.1 bridge specifications to satisfy the requirements of protocols and applications in the data center. Because existing high-performance data centers typically comprise multiple application-specific networks that run on different link layer technologies (Fibre Channel for storage and Ethernet for network management and LAN connectivity), DCB enables 802.1 bridges to be used for the deployment of a converged network where all applications can be run over a single physical infrastructure.

DCBX

Data center bridging exchange. A protocol used by DCB devices to exchange configuration information with directly connected peers. The protocol may also be used for misconfiguration detection and for configuration of the peer.

DCE™

Data Center Ethernet. Cisco's foundation for delivering a unified fabric in which the end-state network where LAN, SAN, and inter-process communication (IPC) traffic are converged onto a single network infrastructure. The enhancements described within Cisco Data Center Ethernet helped create the IEEE 802.1 Data Center Bridging (DCB) working group.

device

A [target](#), typically a disk drive. Hardware such as a disk drive, tape drive, printer, or keyboard that is installed in or connected to a system. In Fibre Channel, a *target device*.

DHCP

Dynamic host configuration protocol. Enables computers on an IP network to extract their configuration from servers that have information about the computer only after it is requested.

driver

The software that interfaces between the file system and a physical data storage device or network media.

dynamic host configuration protocol

See [DHCP](#).

embedded switch

See [eSwitch](#).

eSwitch

Embedded switch. Functionality provided by adapters as a basic Layer 2 switch for Ethernet frames. Each physical port has one instance of an eSwitch, which supports all NIC partitioning on that physical port.

Ethernet

The most widely used LAN technology that transmits information between computer, typically at speeds of 10 and 100 million bits per second (Mbps).

FC

See [Fibre Channel](#).

FCoE

Fibre Channel over Ethernet. A new technology defined by the T11 standards body that allows traditional Fibre Channel storage networking traffic to travel over an Ethernet link by encapsulating Fibre Channel frames inside Layer 2 Ethernet frames. For more information, visit www.fcoe.com.

Fibre Channel

A high-speed serial interface technology that supports other higher layer protocols such as [SCSI](#) and [IP](#).

Fibre Channel over Ethernet

See [FCoE](#).

firmware

Low-level software typically loaded into read-only memory and used to boot and operate an intelligent device.

Flash

Non-volatile memory where the boot code is saved. At times, Flash and boot code are used interchangeably.

Forward Error Correction (FEC)

A method of obtaining error control in data transmission in which the source (transmitter) sends redundant data and the destination (receiver) recognizes only the portion of the data that contains no apparent errors.

frame

Data unit consisting of a start-of-frame (SOF) delimiter, header, data payload, CRC, and an end-of-frame (EOF) delimiter.

Host Bus Adapter

An adapter that connects a host system (the computer) to other network and storage devices.

initiator

System component, such as a network interface card, that originates an I/O operation.

Internet Protocol

See [IP](#).

Internet small computer system interface

See [iSCSI](#).

IP

Internet protocol. A method by which data is sent from one computer to another over the Internet. IP specifies the format of packets, also called *datagrams*, and the addressing scheme.

IPv4

Internet protocol version 4. A data-oriented protocol used on a packet switched inter-network (Ethernet, for example). It is a best-effort delivery protocol: it does not guarantee delivery, ensure proper sequencing, or avoid duplicate delivery. These aspects are addressed by an upper layer protocol (TCP, and partly by UDP). IPv4 does, however, provide data integrity protection through the use of packet checksums.

IPv6

Internet protocol version 6. Next-generation version of IP that, among other things, lengthens the IP address from 32 bits to 128 bits.

iSCSI

Internet small computer system interface. Protocol that encapsulates data into IP packets to send over Ethernet connections.

jumbo frames

Large [IP](#) frames used in high-performance networks to increase performance over long distances. Jumbo frames generally means 9,000 bytes for Gigabit [Ethernet](#), but can refer to anything over the IP [MTU](#), which is 1,500 bytes on an Ethernet.

LED

Light-emitting diode. Status indicator on a switch, router, adapter, or other device.

light-emitting diode

See [LED](#).

LIP

Loop initialization process. The initialization process in an arbitrated loop that occurs when the loop is powered up or a new device is added. One function of a LIP is to assign addresses. All data transmission on the loop is suspended during a LIP.

logical unit number

See [LUN](#).

loop initialization process

See [LIP](#).

loopback

A diagnostic tool that routes transmit data through a loopback connector back to the same adapter.

LUN

Logical unit number, a subdivision of a SCSI target. It is the small integer handle that differentiates an individual disk drive or partition (volume) within a common SCSI target device such as a disk array.

Technically, a LUN can be a single physical disk drive, multiple physical disk drives, or a portion (volume) of a single physical disk drive. However, LUNs are typically not entire disk drives but rather virtual partitions (volumes) of a RAID set.

Using LUNs, the Fibre Channel host can address multiple peripheral devices that may share a common controller.

MAC address

Media access control address. A unique hardware device identifier used in IP address assignment.

maximum transmission unit

See [MTU](#).

media access control address

See [MAC address](#).

message signaled interrupts

See [MSI](#), [MSI-X](#).

MSI, MSI-X

Message signaled interrupts. One of two PCI-defined extensions to support message signaled interrupts (MSIs), in PCI 2.2 and later and PCI Express. MSIs are an alternative way of generating an interrupt through special messages that allow emulation of a pin assertion or deassertion.

MSI-X (defined in PCI 3.0) allows a device to allocate any number of interrupts between 1 and 2,048 and gives each interrupt separate data and address registers. Optional features in MSI (64-bit addressing and interrupt masking) are mandatory with MSI-X.

MTU

Maximum transmission unit. Refers to the size (in bytes) of the largest packet (IP datagram) that a specified layer of a communications protocol can transfer.

multiboot

The act of installing multiple operating systems on a computer, and being able to choose which one to boot when starting the computer. Multibooting may require a custom boot loader.

N_Port

Node port. A port that connects by a point-to-point link to either a single N_Port or a single F_Port. N_Ports handle creation, detection, and flow of message units to and from the connected systems. N_Ports are end ports in virtual point-to-point links through a fabric, for example, N_Port to F_Port to F_Port to N_Port using a single Fibre Channel fabric switch.

network interface card

See [NIC](#).

NIC

Network interface card. Computer card installed to enable a dedicated network connection.

NIC partitioning

See [NPAR](#).

node port

See [N_Port](#).

NPAR

[NIC](#) partitioning. The division of a single NIC port into multiple physical functions or partitions, each with a user-configurable bandwidth and personality (interface type). Personalities include [NIC](#), [FCoE](#), and [iSCSI](#).

path

A path to a device is a combination of an adapter [port instance](#) and a target port as distinct from internal paths in the fabric network. A fabric network appears to the operating system as an opaque network between the adapter (initiator) and the target.

Because a path is a combination of an adapter and a target port, it is distinct from another path if it is accessed through a different adapter and/or it is accessing a different target port. Consequently, when switching from one path to another, the driver might be selecting a different adapter (initiator), a different target port, or both.

This is important to the driver when selecting the proper method of failover notification. It can make a difference to the target device, which might have to take different actions when receiving retries of the request from another initiator or on a different port.

PCI Express (PCIe)

A third-generation I/O standard that allows enhanced Ethernet network performance beyond that of the older peripheral component interconnect (PCI) and PCI extended (PCI-x) desktop and server slots.

personality

When used in the context of an adapter, the term *personality* refers to the entire adapter. It includes all the I/O ports and the functions on that adapter. For example, a QLogic adapter can have dual personality, converting from Fibre Channel to Converged Network Adapter or vice versa. Therefore, all the I/O functions and all the I/O physical ports on the adapter changes from Fibre Channel Adapter to Converged Network Adapter.

ping

A computer network administration utility used to test whether a specified host is reachable across an IP network, and to measure the round-trip time for packets sent from the local host to a destination computer.

point-to-point

Also FC-P2P. Two Fibre Channel nodes directly connected (not in a loop).

port

Access points in a device where a link attaches. There are four types of ports, as follows:

- **N_Port**—a Fibre Channel port that supports point-to-point topology.
- **NL_Port**—a Fibre Channel port that supports loop topology.
- **FL_Port**—a port in a fabric where an N_Port can attach.
- **FL_Port**—a port in a fabric where an NL_Port can attach.

port instance

The number of the port in the system. Each adapter may have one or multiple ports, identified with regard to the adapter as port 0, port 1, and so forth. To avoid confusion when dealing with a system containing numerous ports, each port is assigned a port instance number when the system boots up. So port 0 on an adapter might have a port instance number of 8, for example, if it is the eighth port discovered by the system.

QoS

Quality of service. Refers to the methods used to prevent bottlenecks and ensure business continuity when transmitting data over virtual ports by setting priorities and allocating bandwidth.

quality of service

See [QoS](#).

RAID

Redundant array of independent disks. Fault-tolerant disks that look like either single or multiple volumes to the server.

redundant array of independent disks

See [RAID](#).

router log

Log of messages describing events that occur on the intelligent storage router.

SAN

Storage area network. Multiple storage units (disk drives) and servers connected by networking topology.

SCM

SAN congestion management (SCM) is a common noun, and describes a standards-based Fibre Channel technology.

SCSI

Small computer system interface. A high-speed interface used to connect devices, such as hard drives, CD drives, printers, and scanners, to a computer. The SCSI can connect many devices using a single controller. Each device is accessed by an individual identification number on the SCSI controller bus.

SerDes

Serializer/deserializer. A pair of functional blocks commonly used in high-speed communications to compensate for limited input/output. These blocks convert data between serial data and parallel interfaces in each direction.

serializer/deserializer

See [SerDes](#).

small computer system interface

See [SCSI](#).

SR-IOV

Single root input/output virtualization.

storage area network

See [SAN](#).

target

The storage-device endpoint of a SCSI session. Initiators request data from targets. Targets are typically disk-drives, tape-drives, or other media devices. Typically a SCSI peripheral device is the target but an adapter may, in some cases, be a target. A target can contain many LUNs.

A target is a device that responds to a requested by an initiator (the host system). Peripherals are targets, but for some commands (for example, a SCSI COPY command), the peripheral may act as an initiator.

target binding

The process in which the adapter driver binds a target ID using a target's world-wide port name ([WWPN](#)) or port ID. This binding enables the target ID to always connect to the WWPN or port ID across reboots regardless of [SAN](#) reconfiguration.

TCP

Transmission control protocol. A set of rules to send data in packets over the Internet protocol.

TLV

Type-length-value. Optional information that may be encoded as an element inside of the protocol. The type and length fields are fixed in size (typically 1—4 bytes), and the value field is of variable size. These fields are used as follows:

- **Type**—A numeric code that indicates the kind of field that this part of the message represents.
- **Length**—The size of the value field (typically in bytes).
- **Value**—Variable-sized set of bytes that contains data for this part of the message.

transmission control protocol

See [TCP](#).

type-length-value

See [TLV](#).

USCM

SAN congestion management (SCM) is a common noun, and describes a standards-based Fibre Channel technology. Universal SAN Congestion Mitigation (USCM) is Marvell's IP, and describes Marvell's SCM feature set.

Virtual Lanes (VLs)

Traffic can be steered onto various virtual lanes; each lane can carry different storage protocols or sessions. This avoids congestion on one protocol or session to affect another protocol or session. When there is peer congestion, the traffic for a designated slow device can be moved to a slow virtual lane without affecting the traffic to other devices. Marvell's technology can be used with Cisco Extended Receiver Ready (ER_RDY) and Virtual Links.

virtual logical area network

See [VLAN](#).

vital product data

See [VPD](#).

VLAN

Virtual logical area network (LAN). A group of hosts with a common set of requirements that communicate as if they were attached to the same wire, regardless of their physical location. Although a VLAN has the same attributes as a physical LAN, it allows for end stations to be grouped together even if they are not located on the same LAN segment. VLANs enable network reconfiguration through software, instead of physically relocating devices.

VPD

Vital product data. Information provided by the manufacturer about the current working adapter. Information varies by manufacturer, or may not be provided at all.

world wide node name

See [WWNN](#).

world wide port name

See [WWPN](#).

WWNN

World wide node name. A unique 64-bit address assigned to a device.

WWPN

World wide port name. A unique 64-bit address assigned to each port on a device. One WWNN may contain multiple WWPN addresses.



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