MARVELL

# Marvell® QLogic® QConvergeConsole Plug-ins for vSphere

2600 and 2700 Series Marvell QLogic Fibre Channel Adapters
578xx and 41000 Series Marvell FastLinQ Intelligent Ethernet Adapters
578xx and 41000 Series Marvell FastLinQ Converged Network Adapters

**User's Guide**

DELL Technologies

Third party information brought to you courtesy of Dell.

Doc. No. TD-000965 Rev. 1
January 21, 2021

# Table of Contents

# List of Figures

# List of Tables

# 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® vCenter Server® Plug-in (Part I) and the QConvergeConsole VMware vSphere® Web Client Plug-in (Part II).

- The QConvergeConsole VMware vCenter Server Plug-in (vCenter Server 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 vCenter Server Plug-in supports the following Marvell adapters:
  - 2600 and 2700 Series Fibre Channel Adapters
  - 578xx and 41000 Series Intelligent Ethernet Adapters
  - 578xx and 41000 Series Converged Network Adapters
- QConvergeConsole VMware vSphere Web Client Plug-in (vSphere Web Client Plug-in) extends the capabilities of vSphere Web Client, giving you the ability to manage adapters installed in VMware ESX and ESXi hosts managed by VMware vCenter servers. The vSphere Web Client Plug-in supports the following Marvell adapters:
  - 2600 and 2700 Series Fibre Channel Adapters
  - 578xx and 41000 Series Intelligent Ethernet Adapters
  - 578xx and 41000 Series Converged Network Adapters

The interface and features of both plug-ins 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/

**NOTE**

The plug-ins on the VMware vCenter Server and vCenter Server Appliance operate identically. You can perform the same operation on both the VMware vCenter Server and the vCenter Server Appliance.

# Using QConvergeConsole vSphere Plug-ins

The following diagrams illustrate how to manage adapters and hosts when using the QConvergeConsole Plug-ins for vSphere: the QConvergeConsole VMware vCenter Server Plug-in, the QConvergeConsole VMware vSphere Web Client Plug-in, and the QConvergeConsole HTML5 based vSphere Client Plug-in.

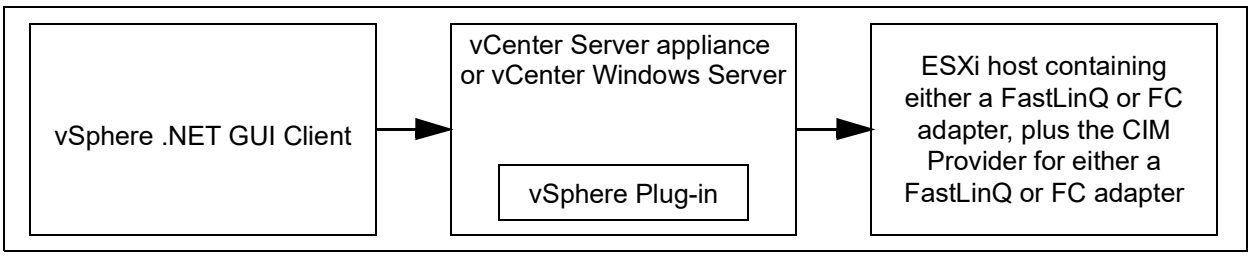



***Figure i. Managing an ESXi 6.0 Host Containing a FastLinQ or Fibre Channel Adapter***

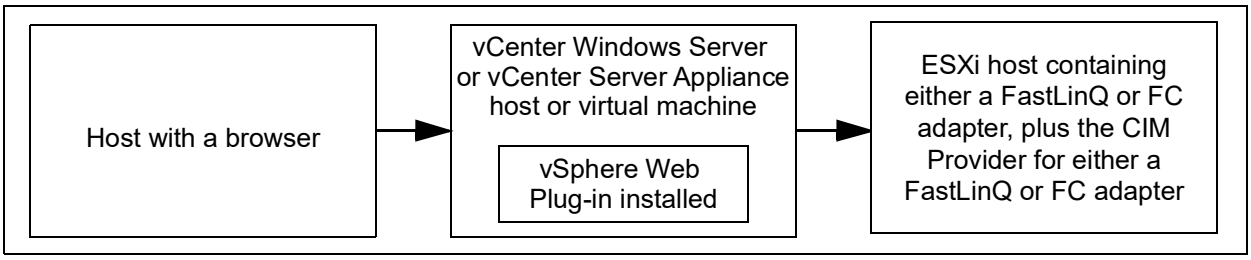



***Figure ii. Managing an ESXi 6.0/6.5 Host Using the vSphere Web Plug-in***

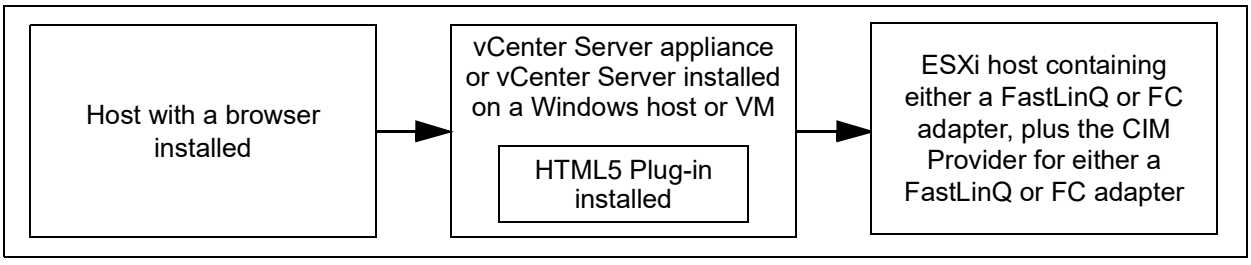



***Figure iii. Managing an ESXi 6.7/7.0 Host with a FastLinQ or Fibre Channel Adapter Using the HTML5 Plug-in***

# 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 vCenter Server Plug-in and the vSphere Web Client Plug-in.

This preface explains the purpose of each 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 parts, chapters and appendices:

- **Part I QConvergeConsole VMware vCenter Server Plug-in**
  - Chapter 1 vCenter Server Plug-in Overview lists the hardware, software, and operating system requirements for successful installation and operation of the vCenter Server Plug-in.
  - Chapter 2 Installing the vCenter Server Plug-in explains how to install, uninstall, and upgrade the vCenter Server Plug-in.
  - Chapter 3 Getting Started with vCenter Server Plug-in describes how to access the vCenter Server 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 vCenter Server Plug-in explains the features of the vCenter Server 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 578xx and 41000 Series Adapters provides detailed instructions on how to use the vCenter Server Plug-in to manage Marvell 578xx and 41000 Series Adapters and connected storage devices.
- **Part II QConvergeConsole VMware vSphere Web Client Plug-in**
  - Chapter 7 vSphere Web Client Plug-in Overview lists the hardware, software, and operating system requirements for successful installation and operation of the vSphere Web Client Plug-in.
  - Chapter 8 Installing the vSphere Web Client Plug-in provides instructions about how to install and uninstall the vSphere Web Client Plug-in.

- Chapter 9 Getting Started with vSphere Web Client Plug-in describes how to start and exit the vSphere Web Client Plug-in.
- Chapter 10 Using the vSphere Web Client Plug-in provides instructions about how to manage hosts, adapters, ports, and functions. Management tasks include displaying information, updating firmware, configuring parameters, and diagnostics for NIC, Fibre Channel, FCoE, and iSCSI ports and functions.
- Chapter 11 Managing Marvell 578xx and 41000 Series Adapters provides detailed instructions on how to use the vCenter Server Web Client Plug-in to manage Marvell 578xx and 41000 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 are a glossary with term definitions and an index to help you quickly find the information that you need.

# Related Materials

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

- *Read Me, QConvergeConsole VMware vCenter Server Plug-in*
- *Release Notes, QConvergeConsole VMware vCenter Server Plug-in*
- *Read Me, QConvergeConsole VMware vSphere Web Client Plug-in*
- *Release Notes, QConvergeConsole VMware vSphere Web Client Plug-in*
- *User's Guide—Fibre Channel Adapter, 2600 Series*
- *User's Guide—Fibre Channel Adapter, 2700 Series*
- *User's Guide—Marvell® Ethernet iSCSI Adapters and Ethernet FCoE Adapters Marvell BCM57xx and BCM57xxx*
- *User's Guide—Converged Network Adapters and Intelligent Ethernet Adapters, FastLinQ 41000 Series*

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.

*Part I*

# QConvergeConsole VMware vCenter Server Plug-in

Part 1 describes how to install the QConvergeConsole VMware vCenter Server Plug-in and configure 2600, 2700, 578xx, and 41000 Series Adapters. This section includes the following chapters:

# 1 vCenter Server Plug-in Overview

The vCenter Server 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 vCenter Server 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 vCenter Server Plug-in.

## Hardware Requirements

The vCenter Server Plug-in requires the following hardware, as shown in Figure 1-1:

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

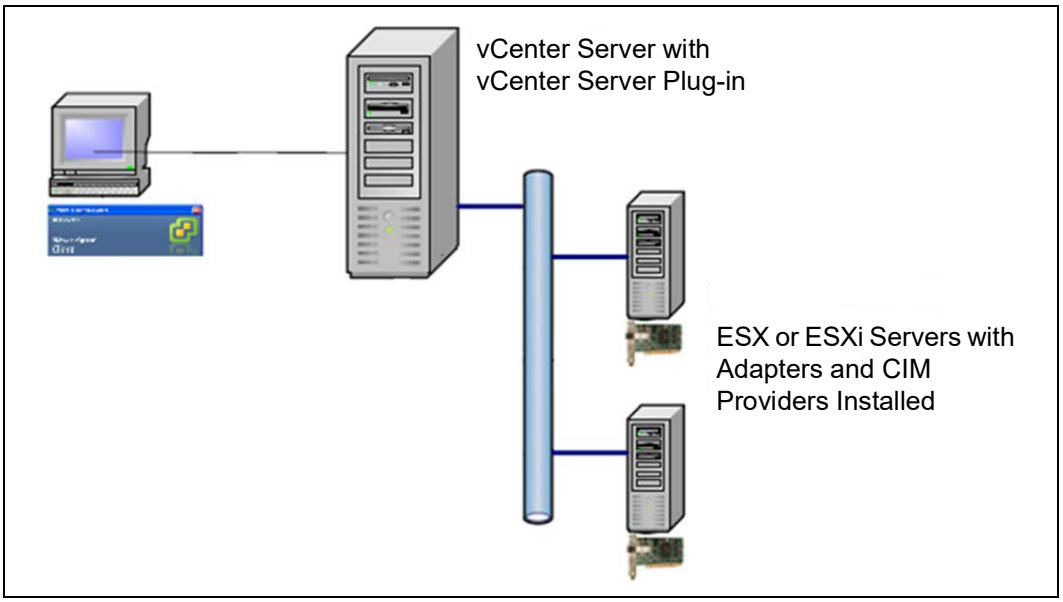



***Figure 1-1. Required Hardware***

Marvell provides the following components that must be installed on the ESX/ESXi Servers and 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 vCenter Server 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 6.*x or 7.x*
- Any operating system, including Windows, on which one of the supported versions of VMware vCenter Server is supported by VMware
- VMware vCenter Server 6.0 or later, or vCenter Server Appliance 6.0 or later
- vSphere Client 6.0 or later
- 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 vCenter Server Plug-in supports the following Marvell adapters:

- 2600 and 2700 Series Fibre Channel Adapters
- 578xx and 45000 Series Intelligent Ethernet Adapters
- 578xx and 45000 Series Converged Network Adapters

## Supported VMware ESX/ESXi and vCenter Server Versions

Refer to the vCenter Server 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 vCenter Server Plug-in.
- Root privileges are required on the ESX or ESXi host to install the QLogic Adapter CIM Provider drivers.

# 2 Installing the vCenter Server Plug-in

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



For information on installing the plug-in, refer to "Installing the vCenter Server Plug-in" on page 8.

To use the vCenter Server Plug-in, install the following software in this order:

1. **vCenter Server Plug-in**—on the vCenter Server
2. **QLogic Adapter CIM Provider**—on the ESX or ESXi Server

## Installation Package Contents

The QLogic Adapter CIM Provider and vCenter Server 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_VI_Plugin_<ver_num>.exe`
  The vCenter Server Plug-in installation package
- `QLogic_Adapter_Web_Client_Plugin_<ver_num>.exe`
  The vSphere Web Client Plug-in installation package
- `QLogic_Adapter_Web_Client Plugin_Linux_i386_<ver_num>.bin`
  The vSphere Web Client Plug-in installation package to be installed on 32-bit Linux servers
- `QLogic_Adapter_Web_Client_Plugin_Linux_x64_<ver_num>.bin`
  The vSphere Web Client Plug-in installation package to be installed on 64-bit Linux servers

- `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_i386_<ver_num>.bin`
  The vSphere Client Plug-in installation package to be installed on 32-bit Linux Servers (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)
- `esx65-1.1.13\QLGC-ESX-6.5.0-viplugin-cimprovider-1.1.13-2768847-offline_bundle-<ver_num>.zip`
  The Marvell QLogic 2500, 2600, and 2700 Series Adapter CIM Provider installation file
- `esx6x-1.7.19\VMW-ESX-6.x.0-qlogic-adapter-provider-1.7.19-1391871-offline_bundle-<ver_num>.zip`
  The Marvell FastLinQ 578xx and 41000 Series Adapter CIM Provider installation file for ESXi 6.5 and 6.7
- `esx70-1.7.19\VMW-esx-7.0.0-MRVL-adapter-provider-1.7.19-<ver_num>.zip`
  The Marvell FastLinQ 578xx and 41000 Series Adapter CIM Provider installation file for ESXi 7.0
- `esx65-1.1.13\QLGC-ESX-6.5.0-viplugin-cimprovider-1.1.13-2768847-offline_bundle-<ver_num>.zip`
  The Marvell FastLinQ 578xx and 41000 Series Adapter CIM Provider installation file for ESXi 6.5
- `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 vCenter Server Plug-in, refer to “Installing the vCenter Server Plug-in” on page 8. For detailed information on installing the CIM Provider, refer to “Installing the QLogic Adapter CIM Provider” on page 14.

# Installing the vCenter Server Plug-in

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

**To install the vCenter Server Plug-in:**

1. Download the `QLogic_Adapter_VI_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.

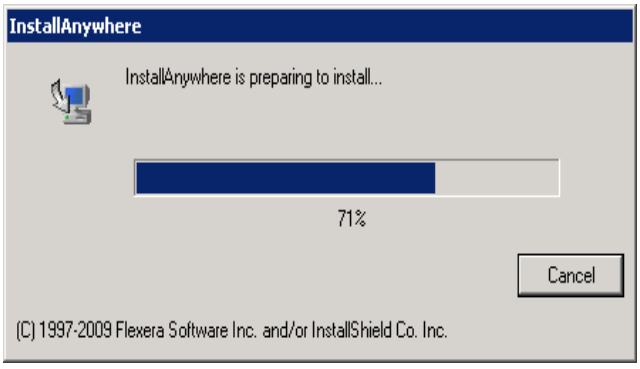



***Figure 2-1. InstallAnywhere Initial Window***

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

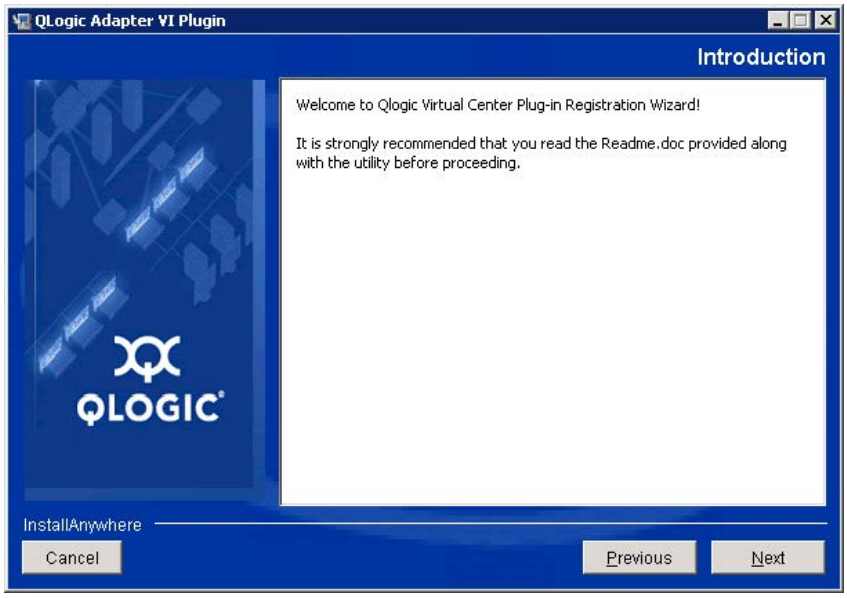



***Figure 2-2. QLogic Adapter VI Plug-in Registration Wizard—Introduction***

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

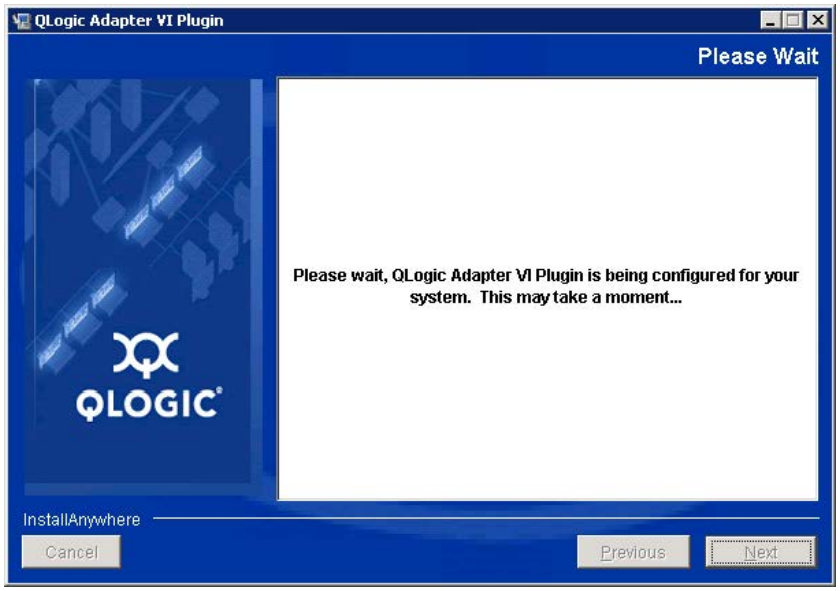



***Figure 2-3. QLogic Adapter VI Plug-in—Configuration***

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**.

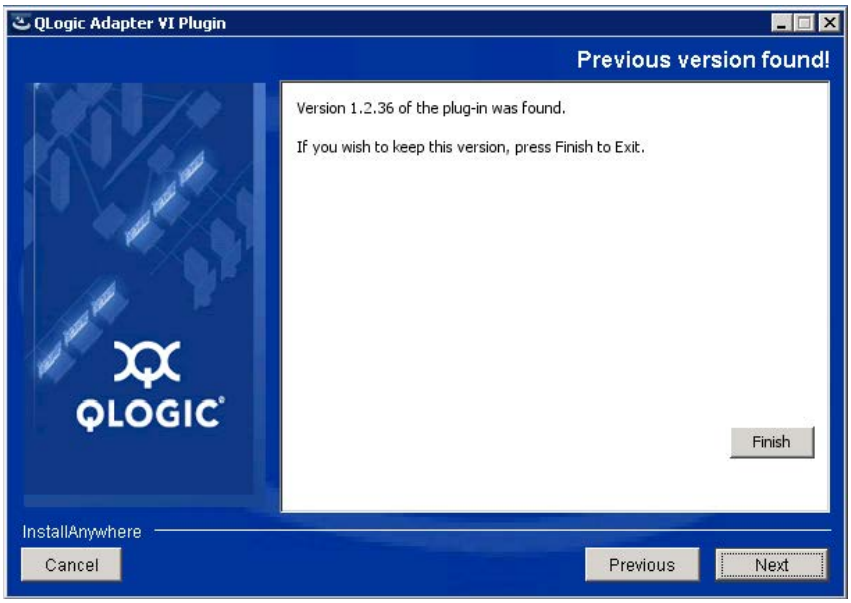



***Figure 2-4. QLogic Adapter VI Plug-in—Previous Version Found Options***

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

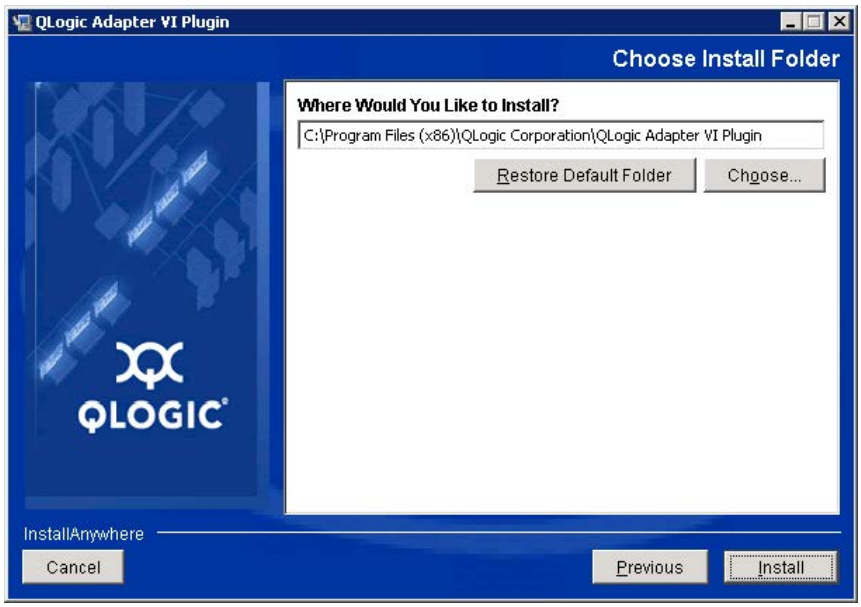



***Figure 2-5. QLogic Adapter VI Plug-in—Select the Installation Folder***

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

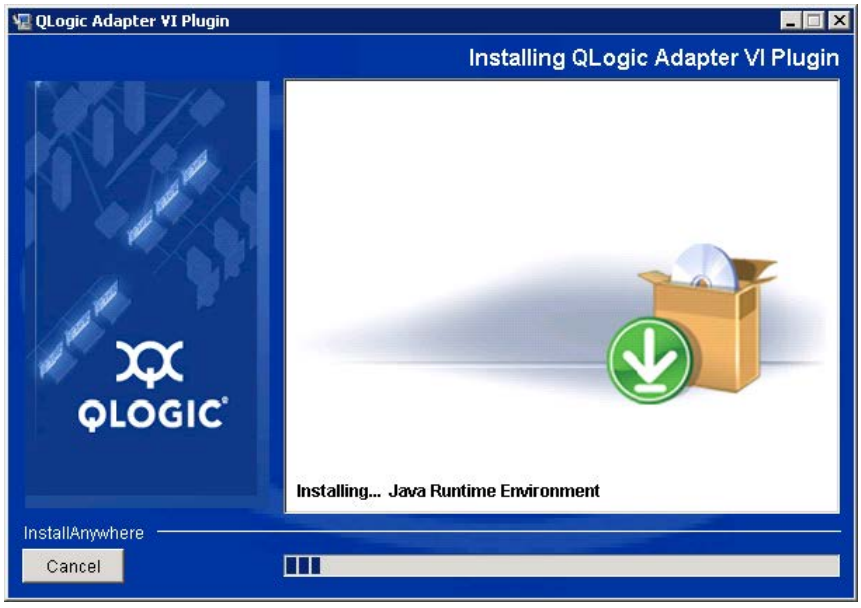



***Figure 2-6. QLogic Adapter VI Plug-in—Installing the vCenter Server Plug-in***

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 only if the embedded Tomcat Web services within vCenter Server are not used. This text box is not shown if you are installing the vCenter Server Plug-in on vCenter Server.

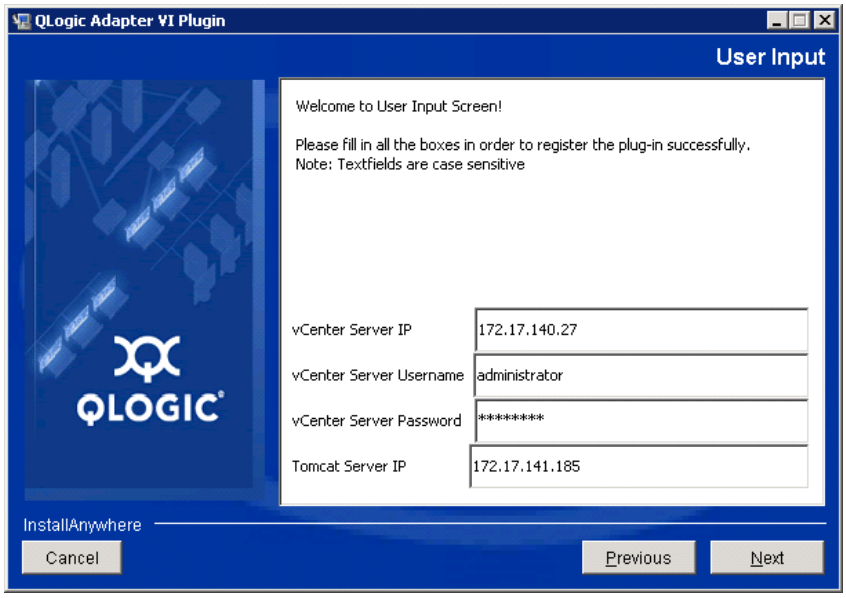



***Figure 2-7. QLogic Adapter VI Plug-in—User Input Window***

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

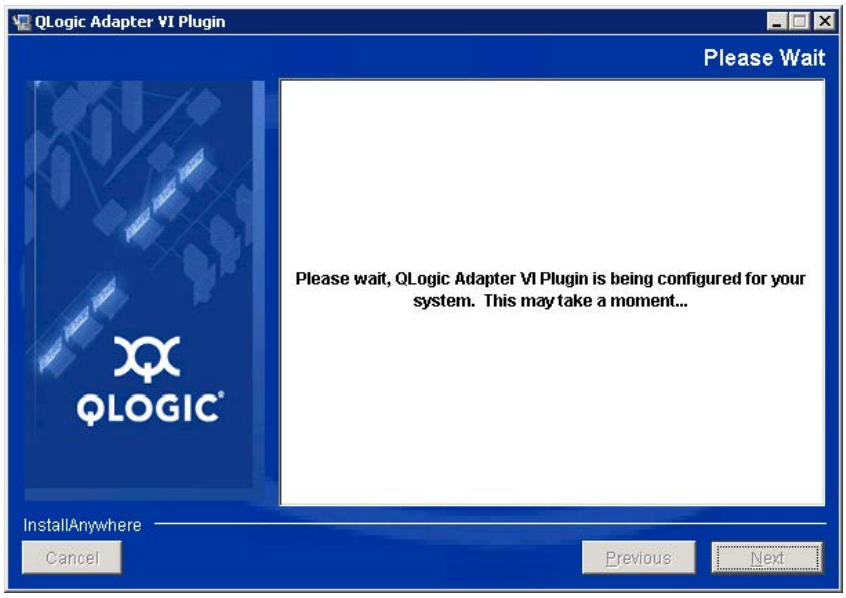



***Figure 2-8. QLogic Adapter VI Plug-in—Configuration***

7. Figure 2-9 appears when registration is completed. Click **Finish** to exit.

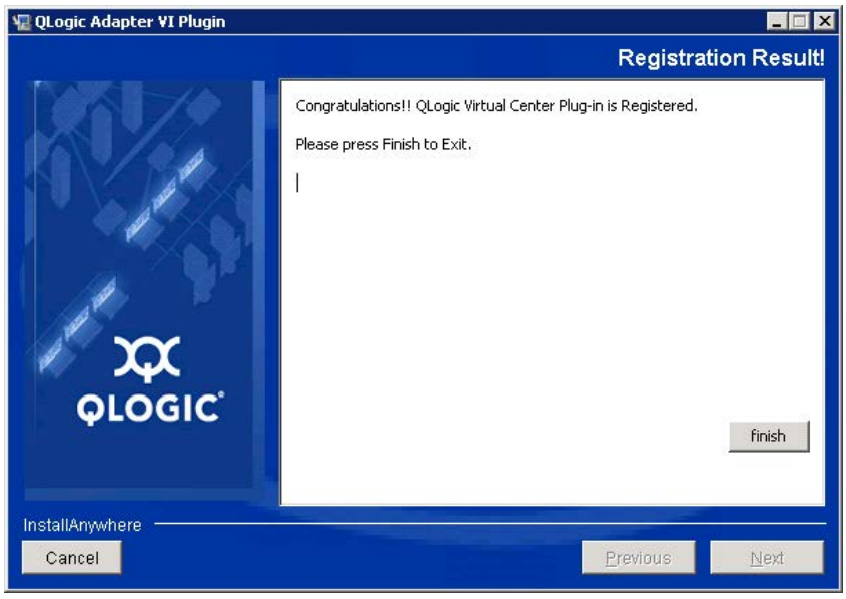



***Figure 2-9. QLogic Adapter VI Plug-in—Successful Registration***

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

# Uninstalling the vCenter Server Plug-in

**To remove the vCenter Server Plug-in:**

1. In the Windows Control Panel, select **Add or Remove Programs**. (Windows Server 2016 or later only: Select **Programs and Features**.)
2. In the Add or Remove Programs dialog box, select the vCenter Server 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. Because multiple zip packages exist, make sure that you select the zip package that matches your environment: ESXi 6.0, ESXi 6.5, ESXi 7.0, or 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 `offline-bundle.zip` contains the VIB and the necessary metadata to install the provider on VMware ESX/ESXi.

The CIM Provider bundled with the current vCenter Server 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 6.*x or 7.0 host:" on page 15.
- **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 6.*x or 7.0* host:**

1. Copy the `<CIM Provider installation file (offline-bundle.zip)>` file to the root directory (`/`) of the ESXi 6.*x* or ESXi *7.0* system.
2. Issue the `esxcli` command as follows:

```
# cd /
# esxcli software vib install -d file:///<CIM Provider installation file (offline-bundle.zip)> --maintenance-mode
```

3. Reboot the system as required.

**NOTE**

On ESXi 6.5, 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 16. After completing the VIB removal, install the new VIB by following the same steps in “Initial Installation Methods” on page 14.

# 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 6.*x* or *7.0* host:**

1. To view the VIB list and determine the CIM Provider name (in this case, `qlogic-adapter-provider` or `viplugin-cimprovider` 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 vCenter Server Plug-in

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

- Starting VMware vCenter Server Using the vCenter Server Plug-in
- "Introduction to the vCenter Server Plug-in" on page 20
- "Enabling and Disabling the vCenter Server Plug-in" on page 23

## Starting VMware vCenter Server Using the vCenter Server 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 "vCenter Server 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 vCenter Server 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 vCenter Server 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 vCenter Server 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 vCenter Server Plug-in installation and registration was not successful, the **QConvergeConsole** tab is not shown.

In the right pane of VMware vCenter, the vCenter Server 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***

VMware vCenter opens in the vSphere Client window. Figure 3-2 identifies the ESXi host node and the **QConvergeConsole** tab.


***Figure 3-2. vCenter Server 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** tab.

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

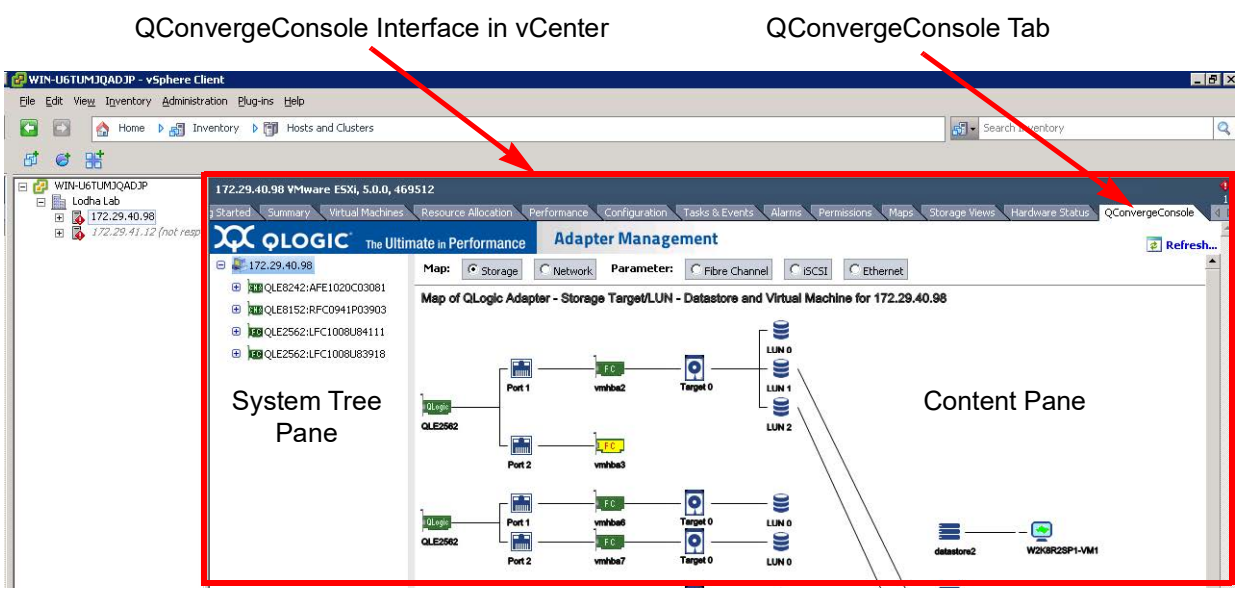



***Figure 3-3. vCenter Server Plug-in User Interface***

# Introduction to the vCenter Server Plug-in

The vCenter Server 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 |
|  | 578xx/41000 Series Adapters |
|  | 578xx/41000 Series Adapters FCoE |
|  | 578xx/41000 Series Adapters FCoE Port |
|  | 578xx/41000 Series Adapters Function (Link Down) |
|  | 578xx/41000 Series Adapters Function (Link Up) |
|  | 578xx/41000 Series Adapters iSCSI |

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

| Icon | Meaning |
|---|---|
|  | 578xx/41000 Series Adapters iSCSI Portal |
|  | A LUN on a target device connected to a 578xx/41000 Series Adapters |
|  | 578xx/41000 Series Adapters Port |
|  | A target device connected to a 578xx/41000 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 vCenter Server Plug-in.

# Enabling and Disabling the vCenter Server Plug-in

**NOTE**

If the vCenter Server 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.

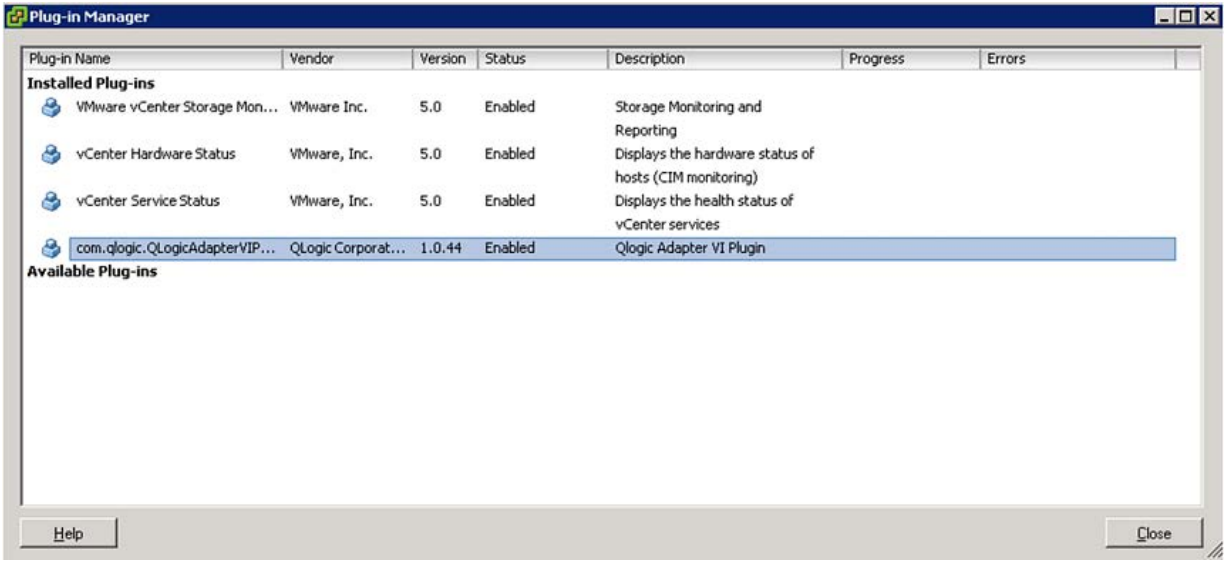



***Figure 3-4. Plug-in Manager: Verifying vCenter Server Plug-in Status***

3. To enable or disable the vCenter Server Plug-in, right-click the plug-in, and on the shortcut menu, select **Enabled** or **Disabled** (the status toggles between the two), as shown in Figure 3-5.

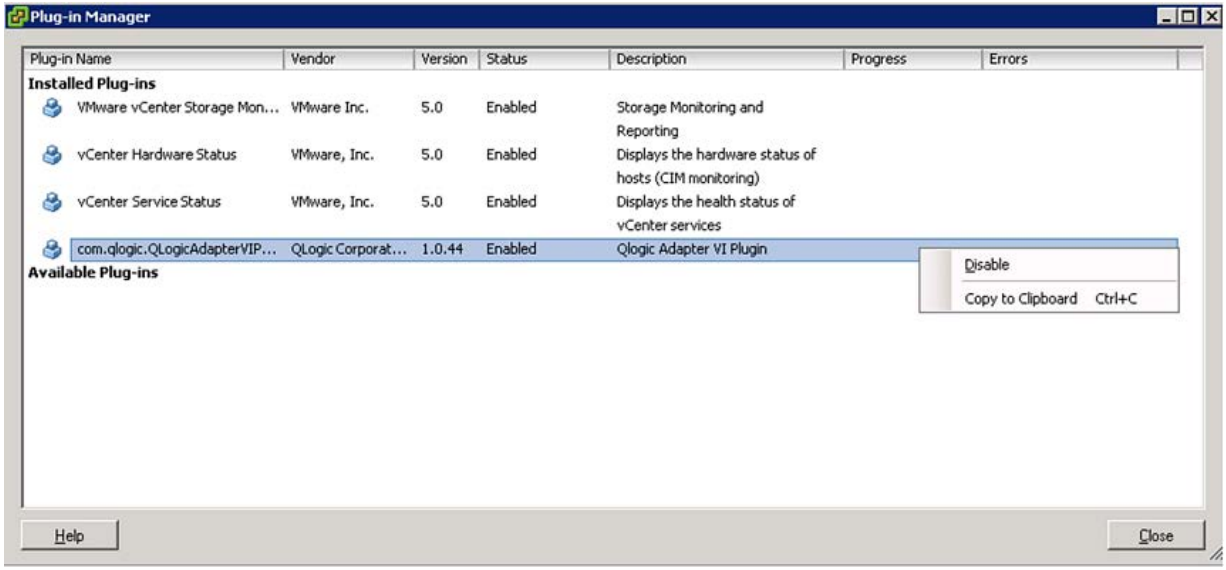



***Figure 3-5. Plug-in Manager: Toggling vCenter Server Plug-in Status***

# 4 Using the vCenter Server Plug-in

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



**NOTE**

- For instructions on using N_Port ID Virtualization (NPIV) to create and delete virtual ports, refer to the VMware vCenter Server documentation: http://pubs.vmware.com/vsphere-50/index.jsp#com.vmware.vsphere.vmadmin.doc_50/GUID-C713BCA5-71B4-4539-A4AE-8E781330755C.html.
- For instructions on how to access the vCenter Server 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 vCenter Server 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:

- 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.

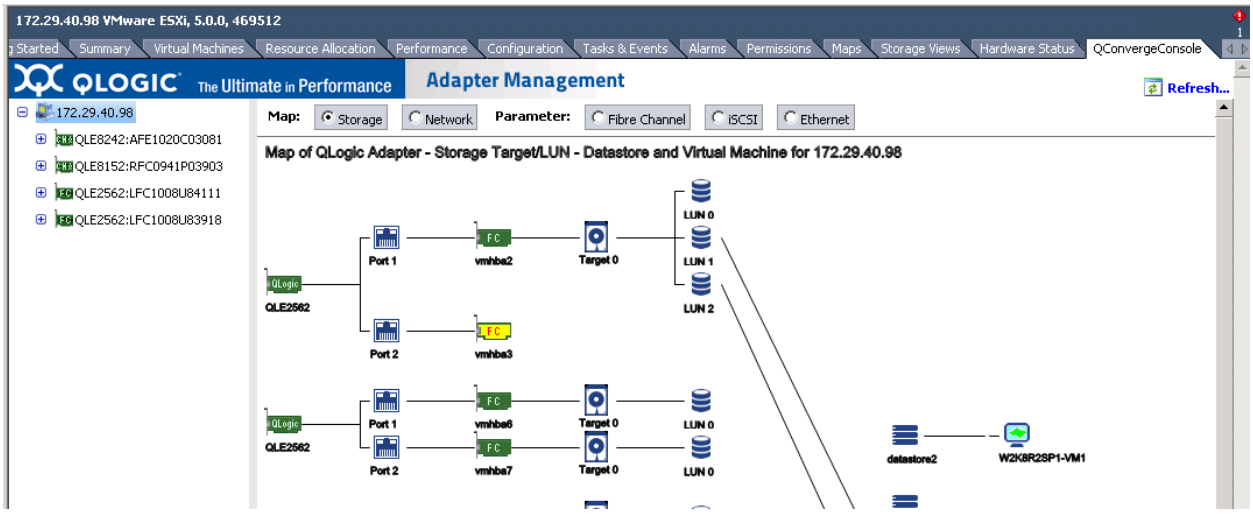



***Figure 4-1. Host View—Storage Map***

# Viewing the Network Map

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

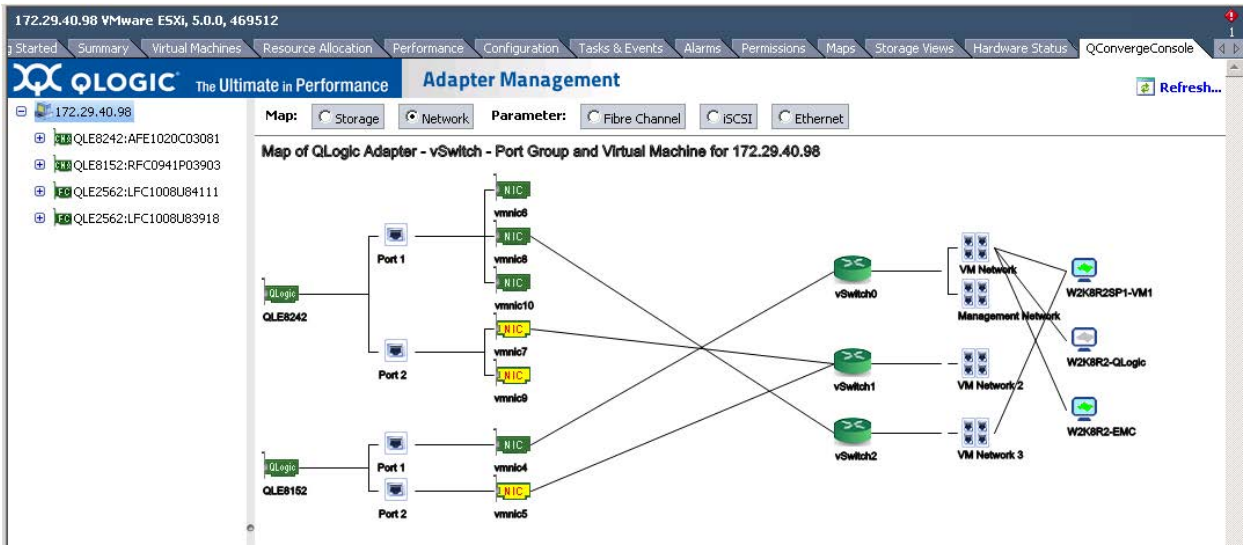



***Figure 4-2. Host View—Network Map***

# 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.

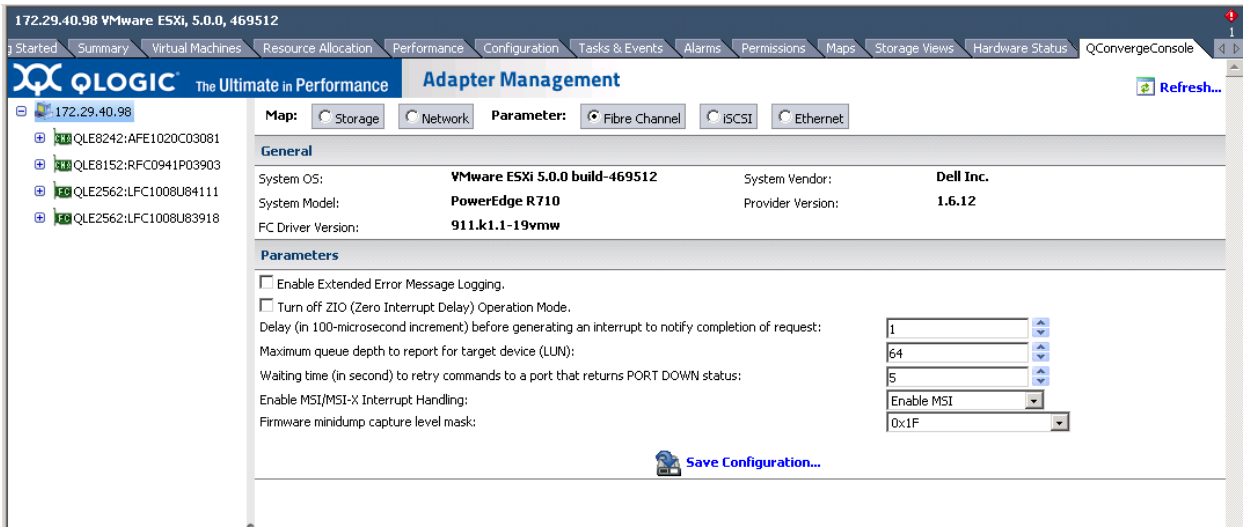



***Figure 4-3. Host View—Fibre Channel Parameters***

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 Configuration**.

# Setting iSCSI Parameters

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

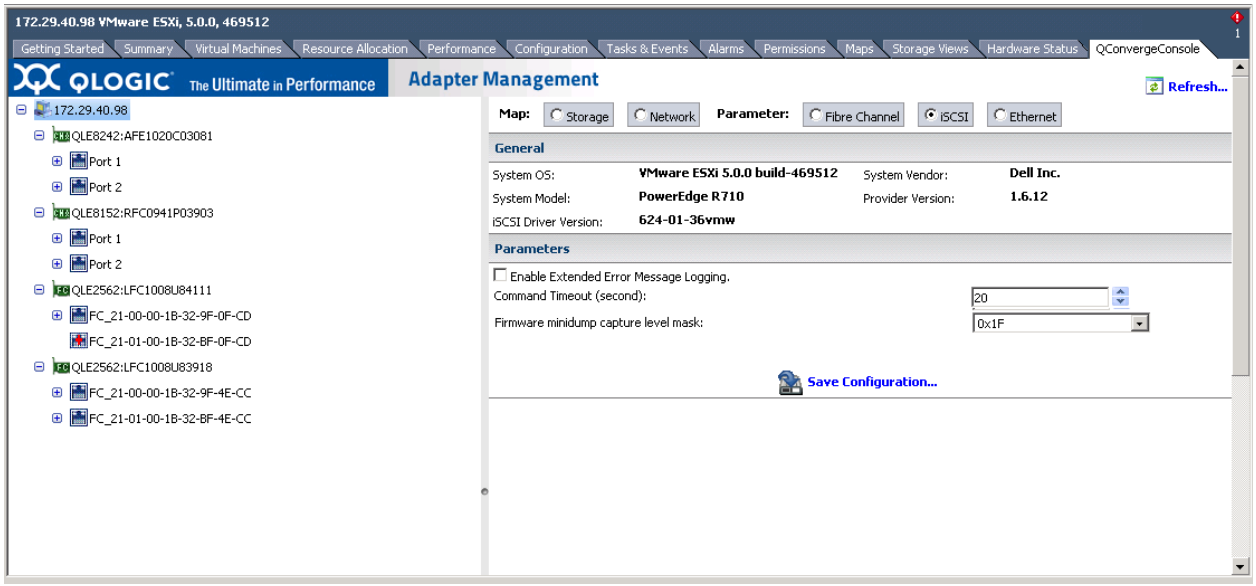



***Figure 4-4. Host View—iSCSI Parameters***

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.

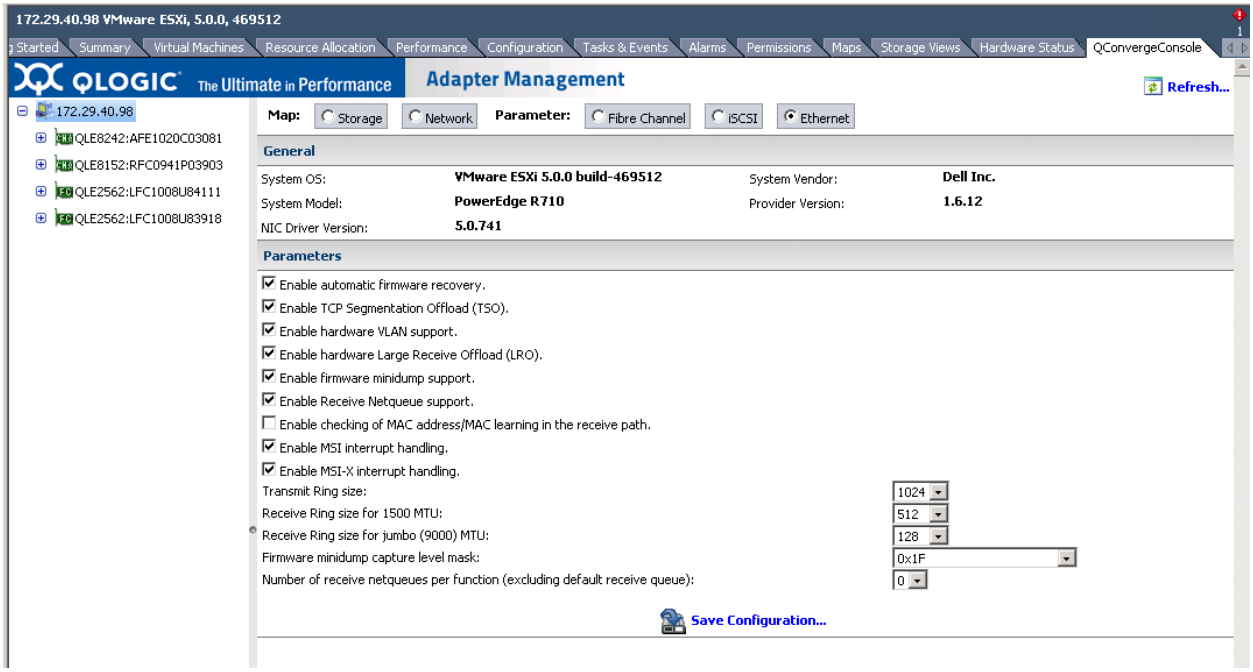



***Figure 4-5. Host View—Ethernet Parameters***

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.

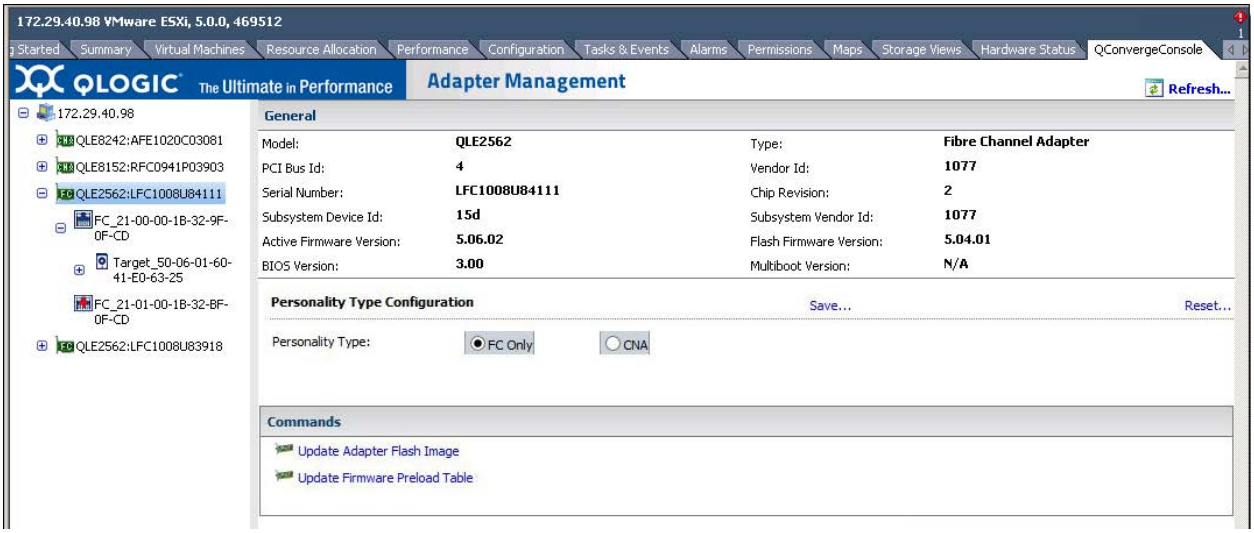



***Figure 4-6. Adapter Management for Fibre Channel Adapter***

## 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

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.

# 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 then appears as shown in Figure 4-7.

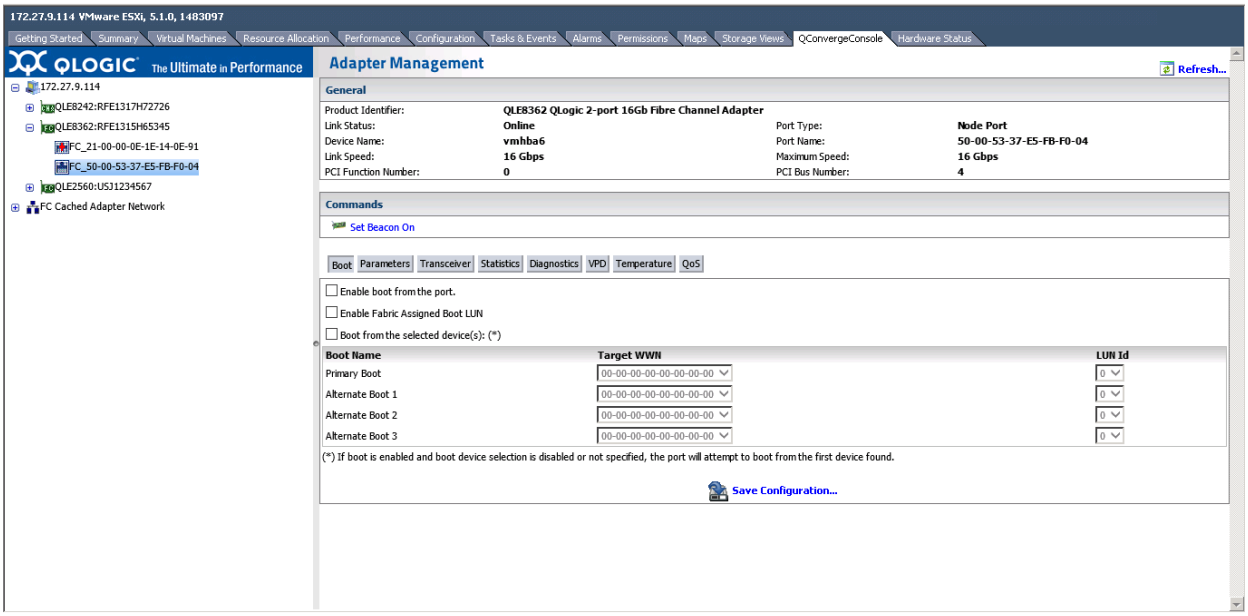



***Figure 4-7. Adapter Management Window—Fibre Channel Port***

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

- **Product Identifier**
- **Link Status**
- **Device Name**
- **Link Speed**
- **PCI Function Number**
- **Port Type**
- **Port Name**
- **Maximum Speed**
- **PCI Bus Number**

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 4-8:


***Figure 4-8. Fibre Channel Port—Information Selection***

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

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

The option that appears pressed in indicates the selected information (for example, **Boot** in Figure 4-8). 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
- QoS 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 4-9, port 50-00-53-37-E5-FB-F0-04 is assigned by the fabric through the Brocade switch.

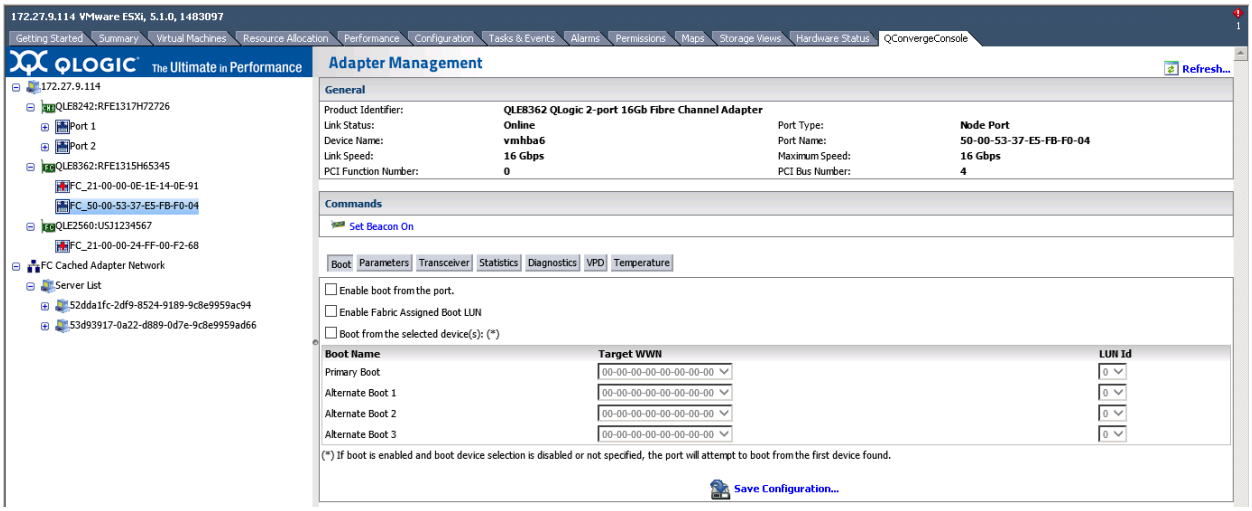



***Figure 4-9. Fabric-Assigned WWPN (50-00-53-37-E5-FB-F0-04)***

The D_Port setting on the Brocade switch also appears as (**D-port**) in the adapter tree, as shown in Figure 4-10.

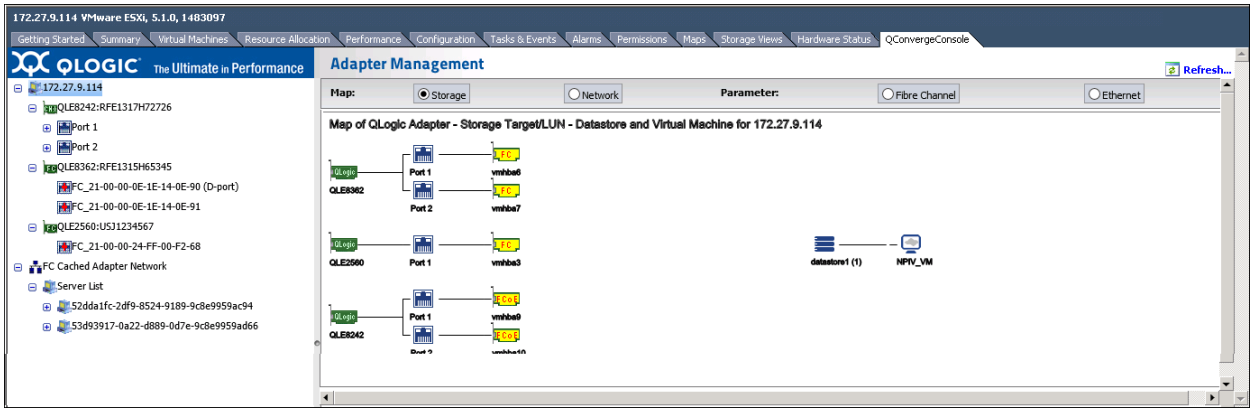



***Figure 4-10. D_Port Label on WWPN (FC_21-00-00-0E-1E-14-0E-90)***

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_21-00-00-0E-1E-08-C2-00.

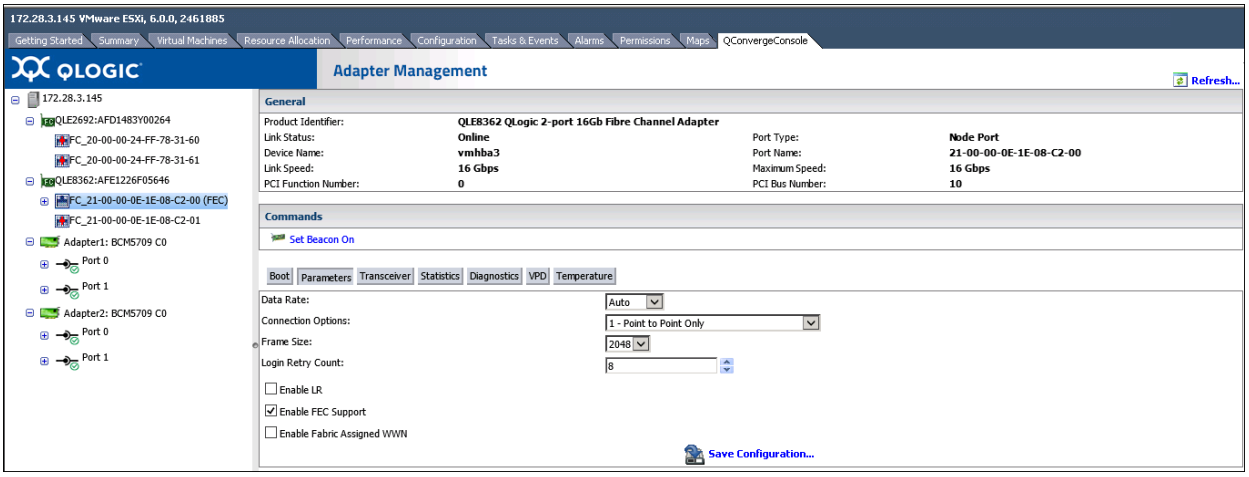



***Figure 4-11. FEC Enabled on Port FC_21-00-00-0E-1E-08-C2-00***

## Boot Configuration—Fibre Channel Port

When **Boot** is selected, the content pane appears as shown in Figure 4-12.

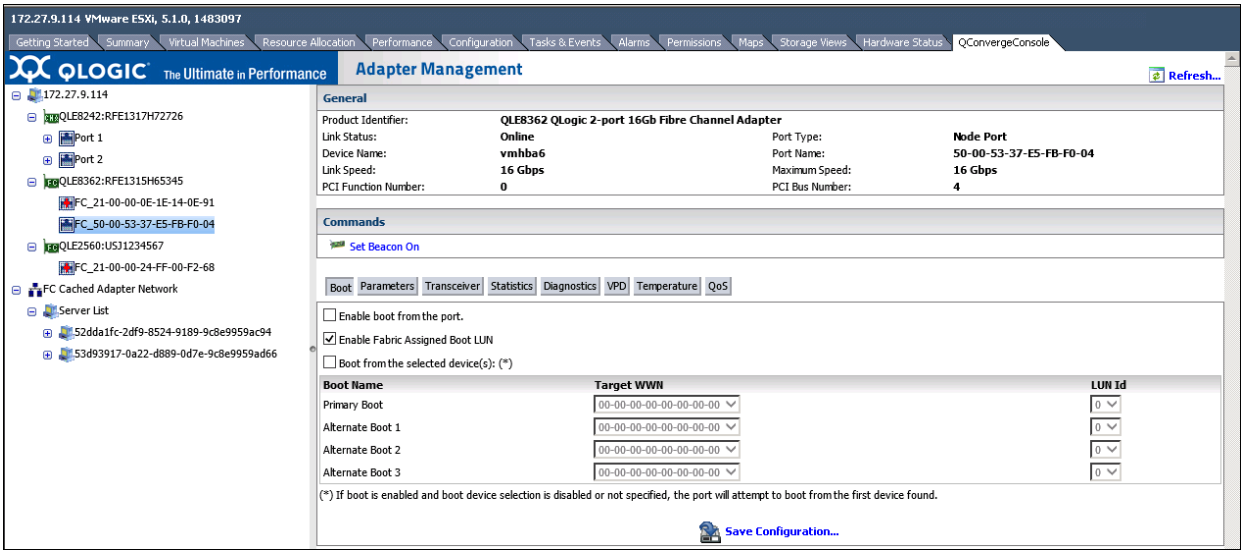



***Figure 4-12. Fibre Channel Port—Boot Configuration***

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.
- **Enable 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 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—Fibre Channel Port

If the **Parameters** button is selected, the content pane appears as shown in Figure 4-13.

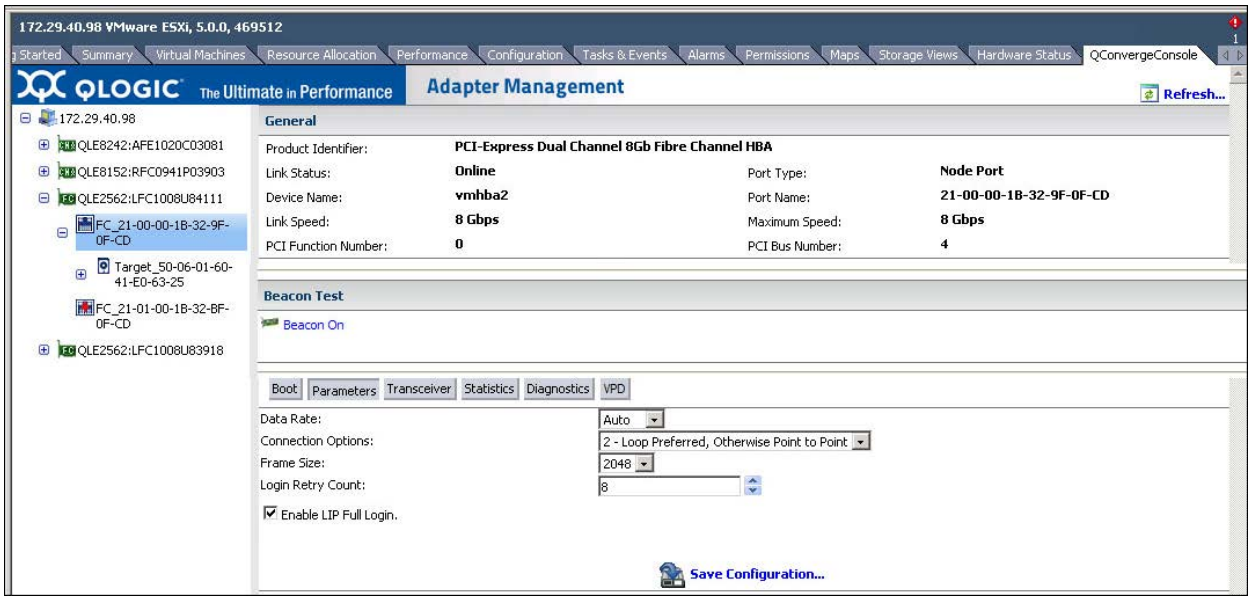



***Figure 4-13. Fibre Channel Port—Firmware Parameters***

The content pane contains the following configurable parameters:

- **Data Rate:** Determines the adapter port data rate:
  - When this setting is **32Gbps**, the 27*xx* adapter port runs at 32Gbps.
  - The FCoE ports can run at **10Gbps**.
  - When this setting is **16Gbps**, the 26*xx* adapter port runs at 16Gbps.
  - When this setting is **8Gbps**, 25*xx* and 26*xx* adapter ports run at 8Gbps.
  - When this setting is **4Gbps**, the 24*xx*, 25*xx*, and 26*xx* 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 2700/2600 Series adapters and FCoE 578xx/41000 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.
- **Enable LIP Full Login:** Instructs the ISP chip to re-log in to all ports after any loop initialization process (LIP). The default is enabled.

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 4-14.

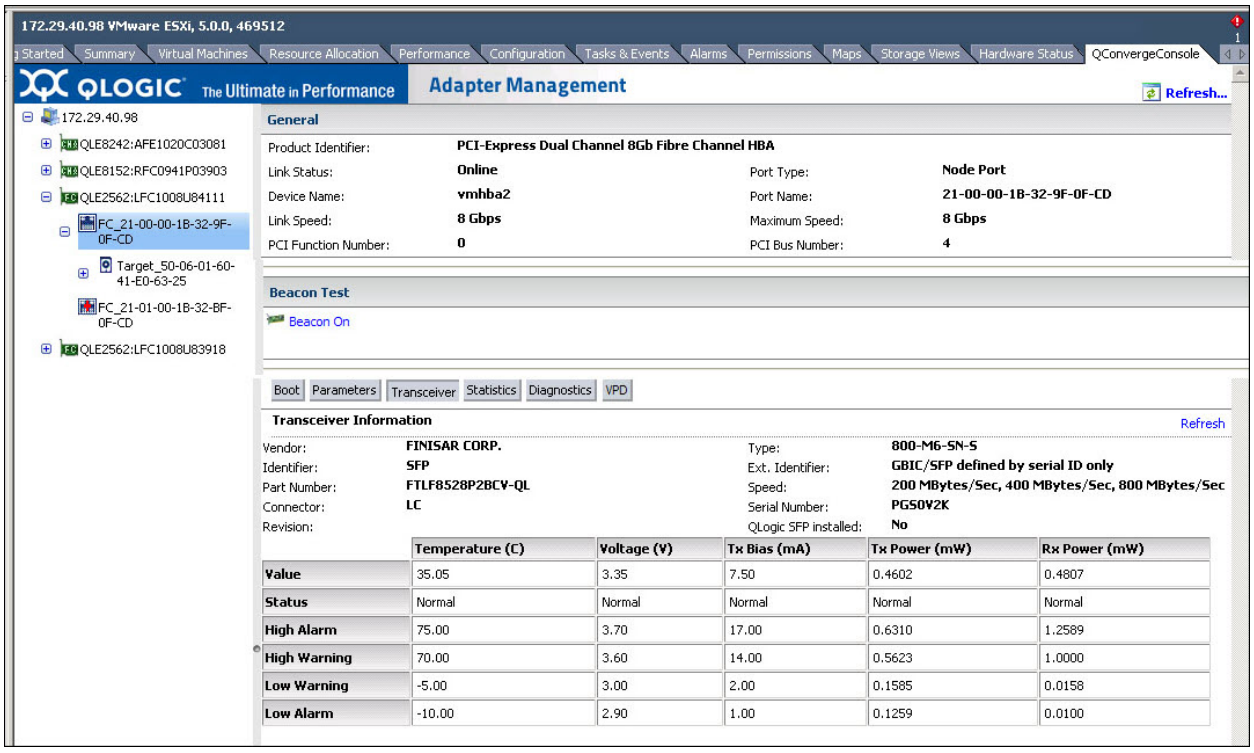



***Figure 4-14. Fibre Channel Port—Transceiver Information***

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 4-15.

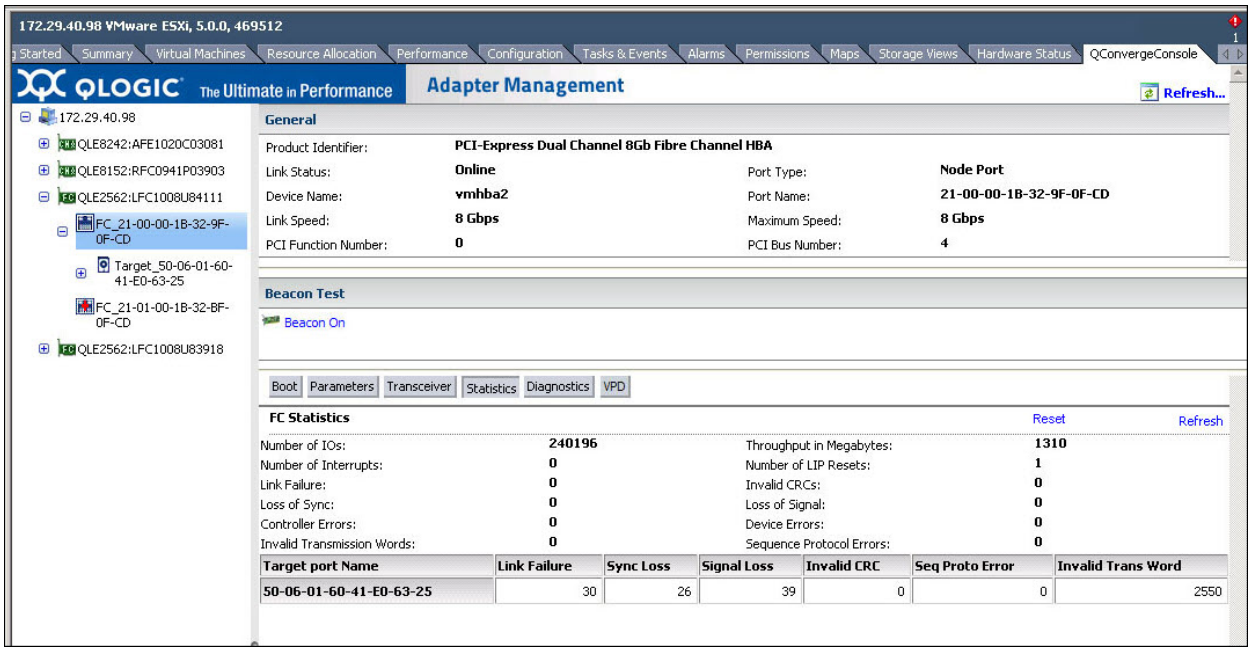



***Figure 4-15. Fibre Channel Port—Statistics Information***

**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

## Diagnostic Tests—Fibre Channel Port

If the **Diagnostics** button is selected, the content pane appears as shown in Figure 4-16.

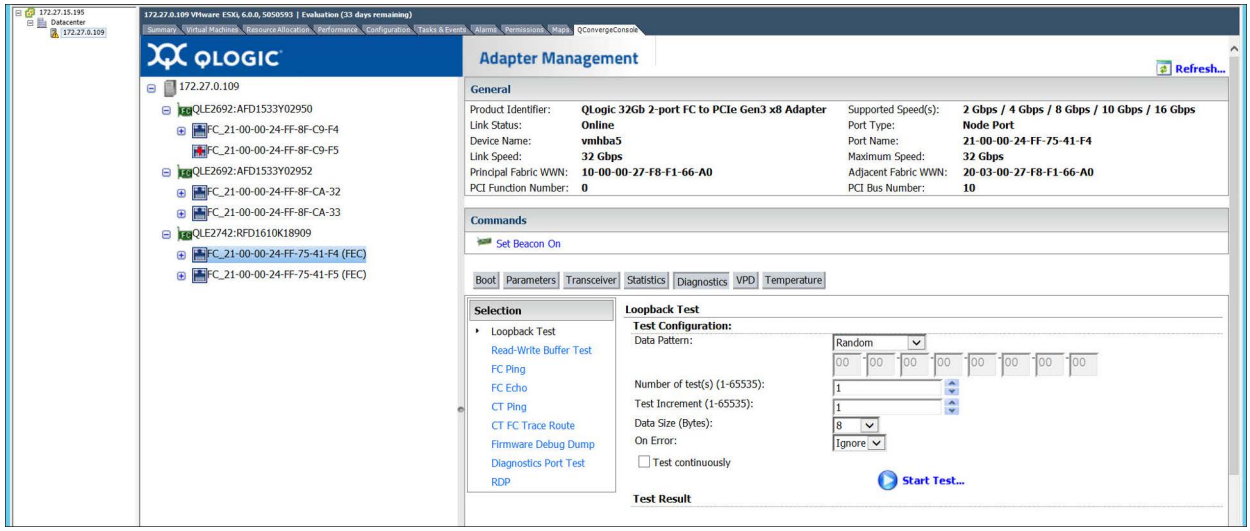



***Figure 4-16. Fibre Channel Port—Diagnostics***

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 38.

- ❑ 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 4-1 lists the available data patterns.

***Table 4-1. 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 × 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 4-17. 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.

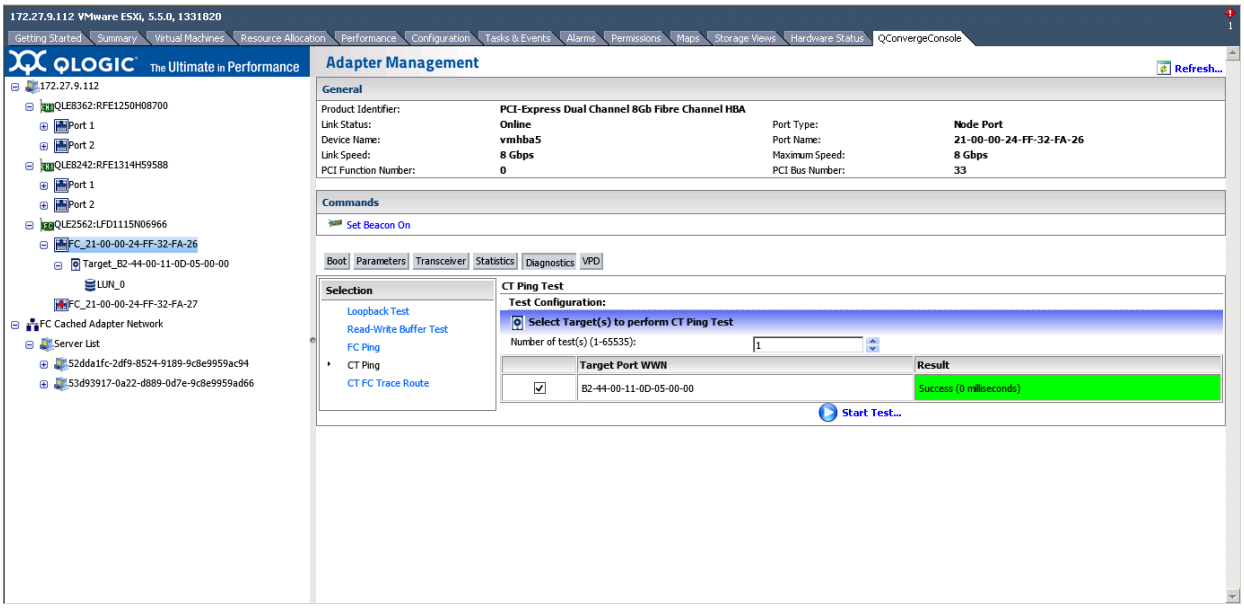



***Figure 4-17. Fibre Channel Port—Ping Test Results***

## 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 4-18.

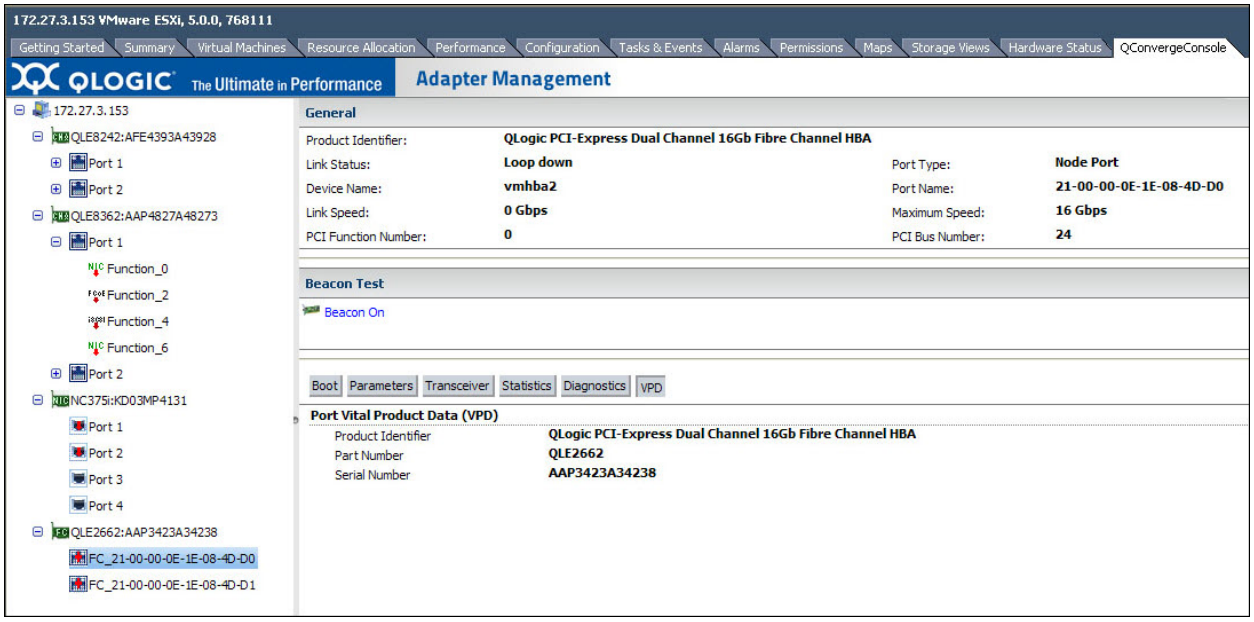



***Figure 4-18. Fibre Channel Port—VPD Information***

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

## Temperature Information—Fibre Channel Port

If the **Temperature** button is selected (if available), the content pane appears as shown in Figure 4-19. To begin monitoring temperature, specify the monitoring rate, and then click **Start**. To stop monitoring, click **Stop**.

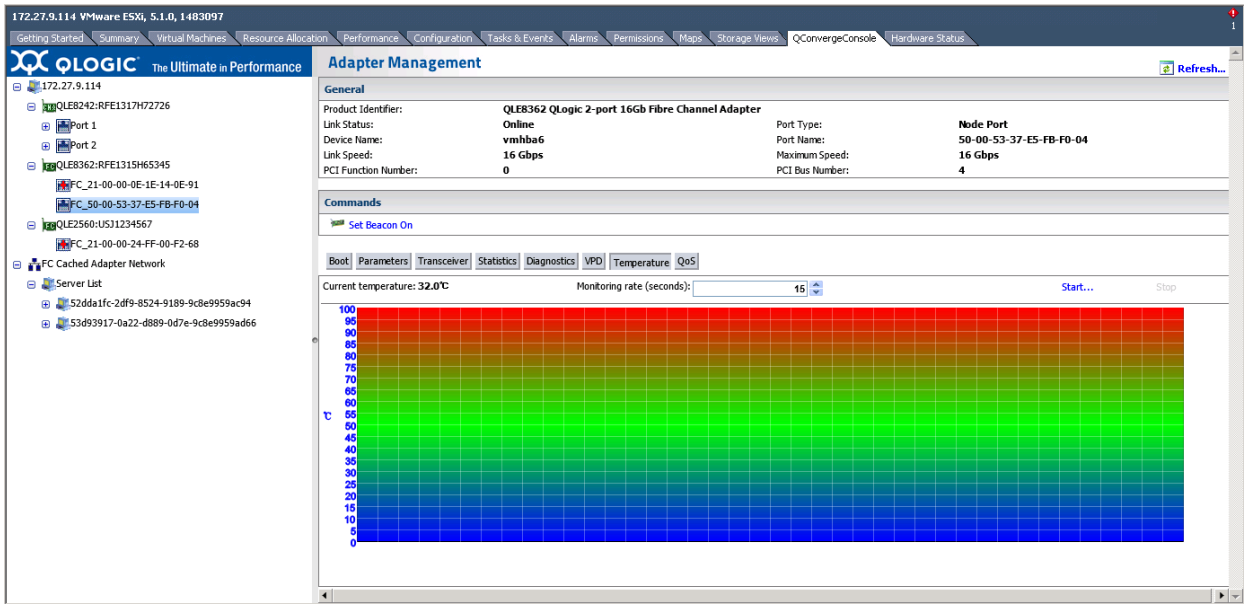



***Figure 4-19. Fibre Channel Port—Temperature Information***

## QoS Information—Fibre Channel Port

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

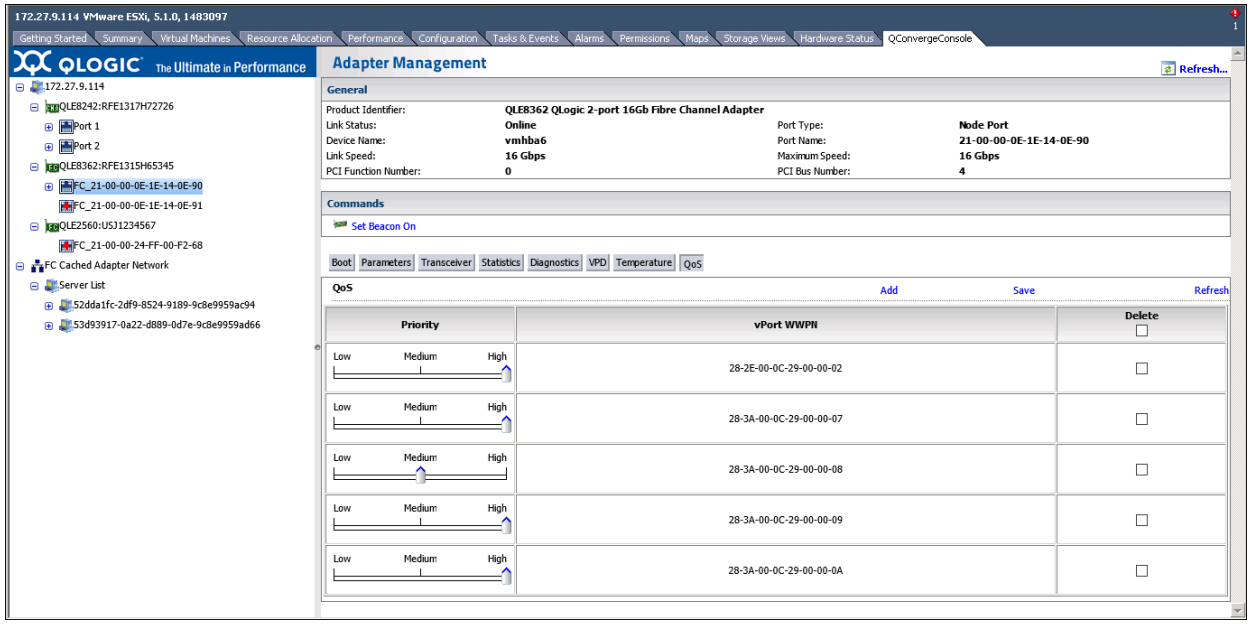



***Figure 4-20. Fibre Channel Port—QoS Information***

- To assign a priority value to a virtual port, move the slide to the chosen position, and then click **Save**. To refresh the table, click **Refresh**.
- To delete an entry from the table, select the **Delete** check box, and then click **Save**.

- To add an entry to the table, click **Add** to insert a row in the new entry table (above the QoS table), as shown in Figure 4-21. Specify the port WWN and the priority, and then click **Save**.

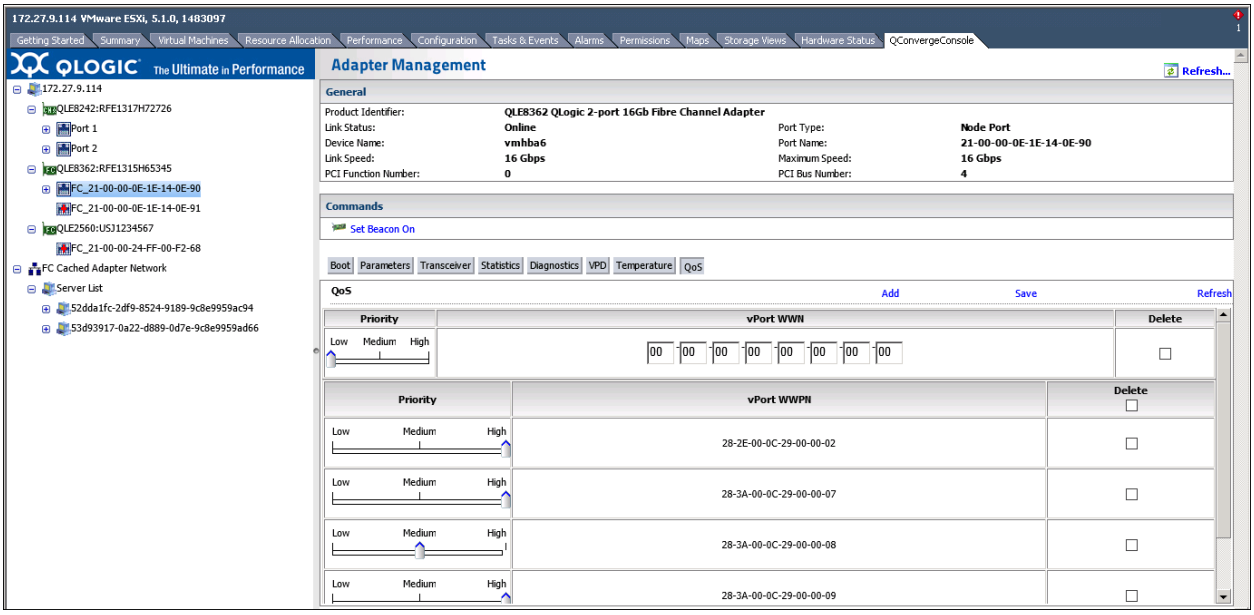



***Figure 4-21. Fibre Channel Port—Adding an Entry to the QoS Table***

# Managing Converged Network Adapters

The vCenter Server 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 4-22.

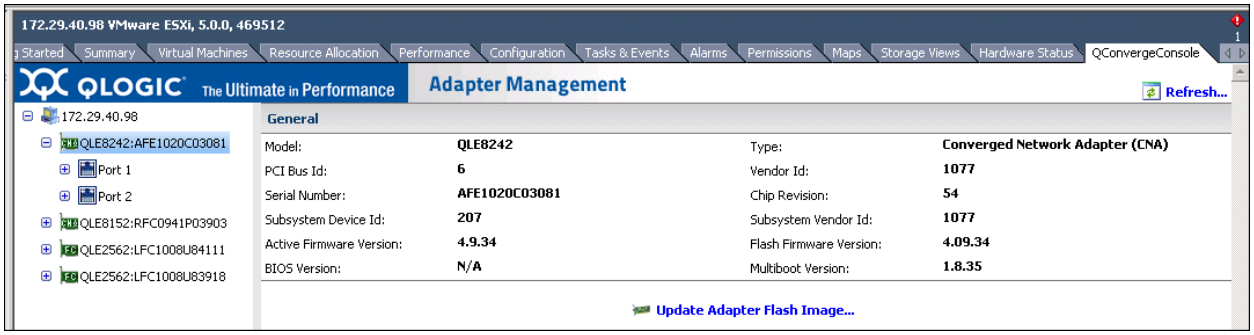



***Figure 4-22. Adapter Management Window for Converged Network Adapter***

The Adapter Management window (Figure 4-22) 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 4-23.

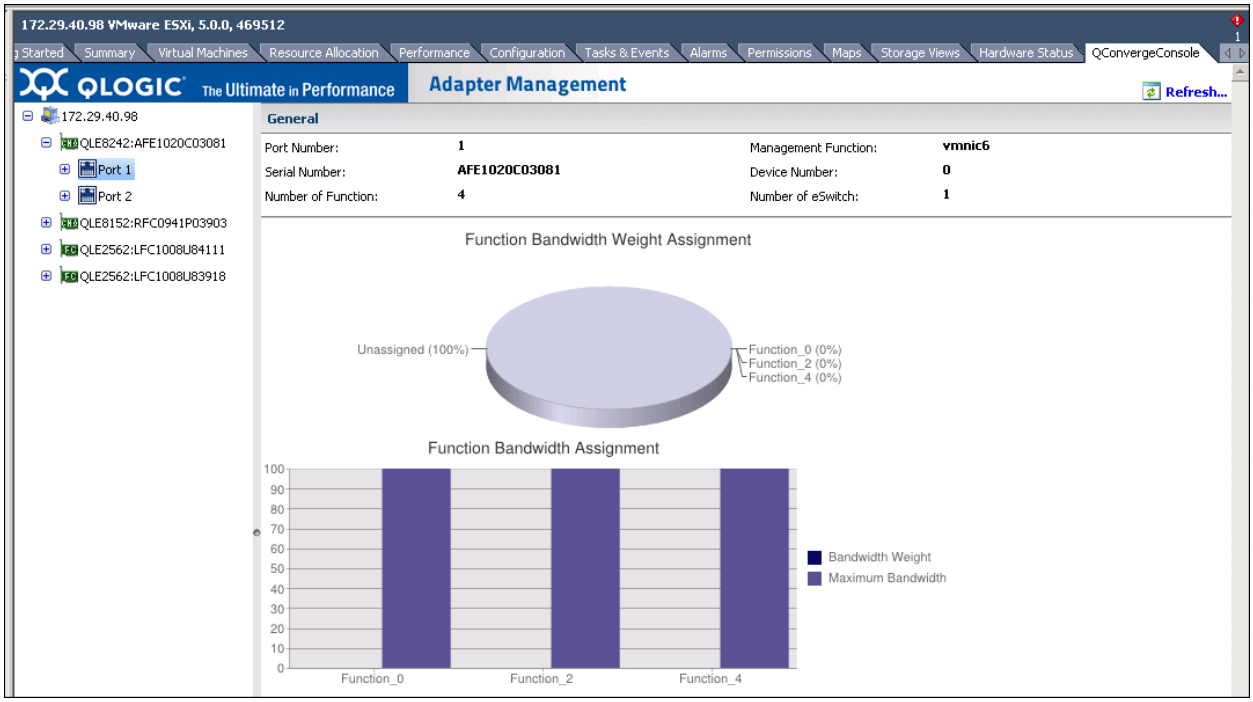



***Figure 4-23. Adapter Management Window for Converged Network Adapter Port***

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 4-24.

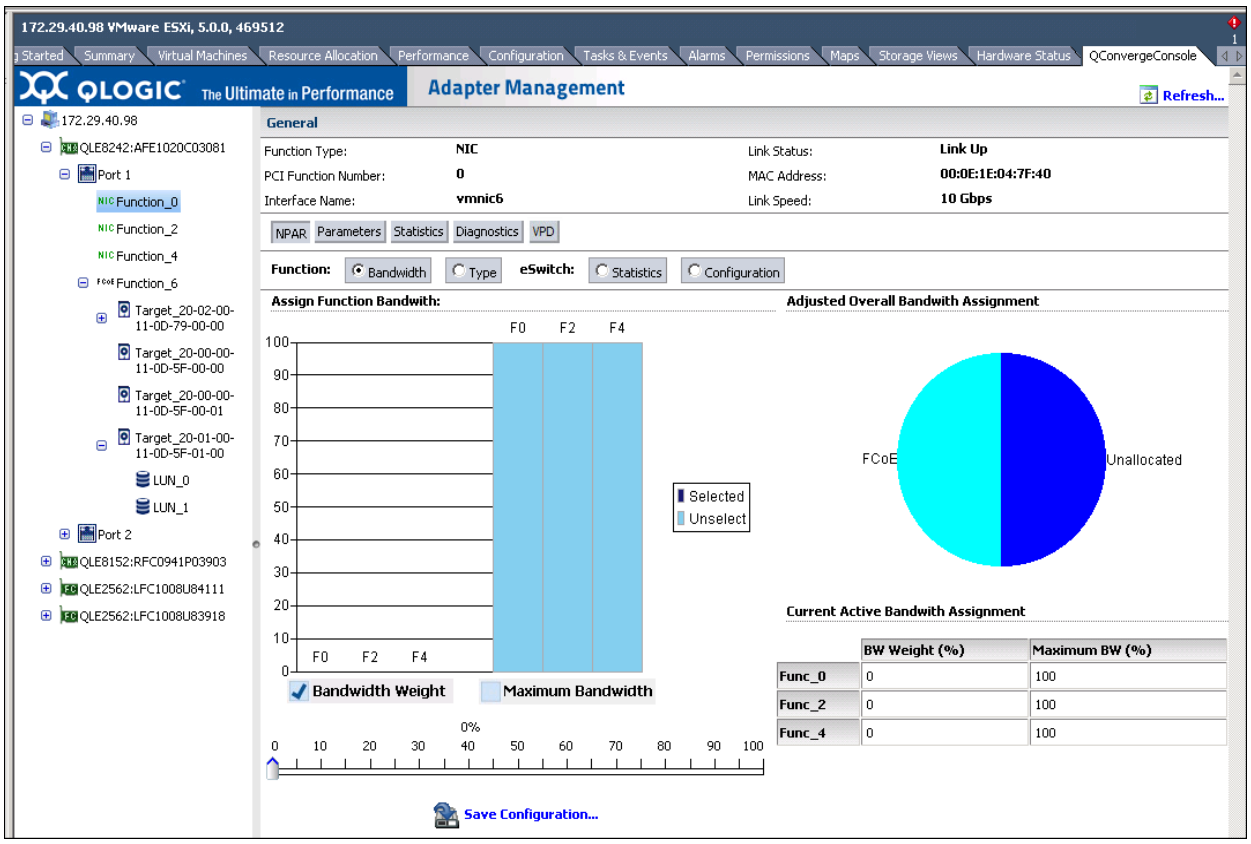



***Figure 4-24. Adapter Management Window—PCI Function***

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 4-25.


***Figure 4-25. 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 4-25). 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

## NPAR Configuration—NIC Function

If the **NPAR** button is selected, the content pane appears as shown in Figure 4-26.

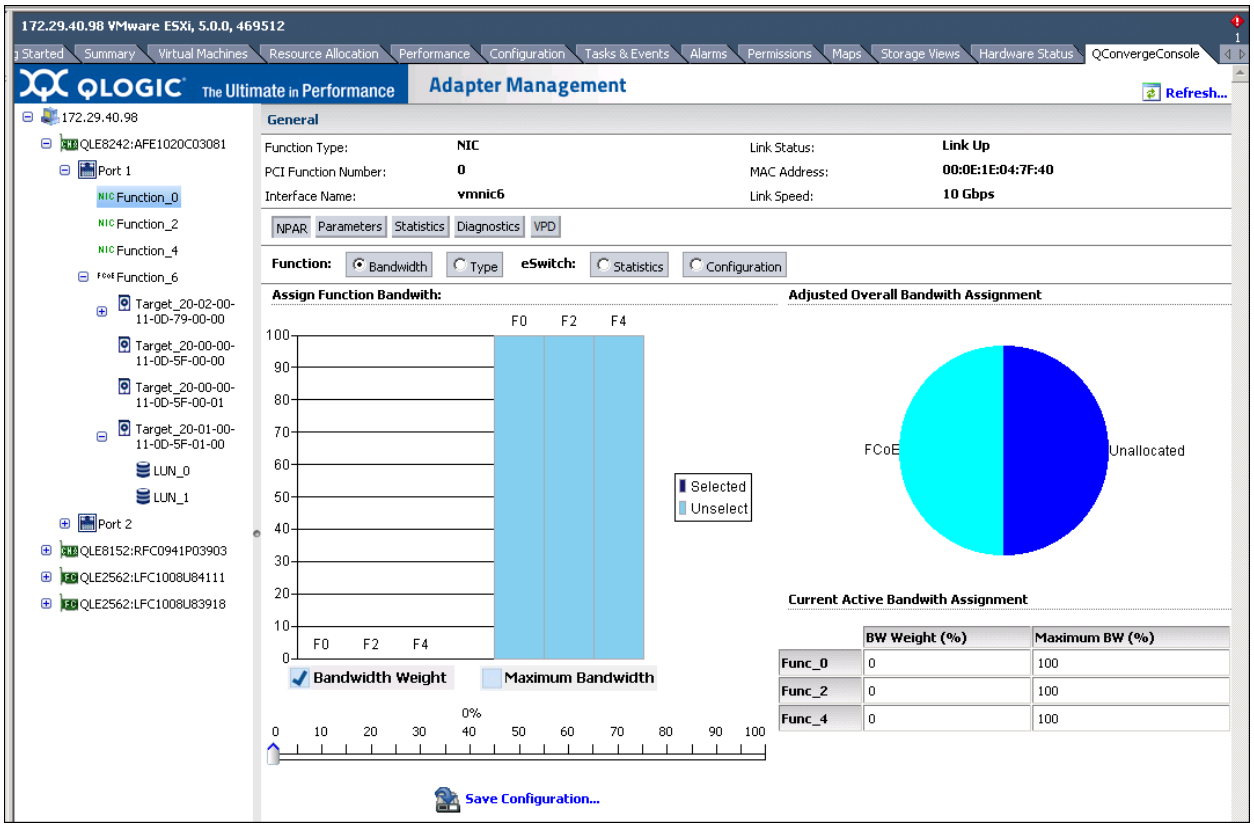



***Figure 4-26. Converged Network Adapter NIC Function—NPAR Configuration***

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 55.
- **Type** shows the current function type and allows you to change the function type. For detailed information, refer to "Function Type" on page 56.

## 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 4-27.

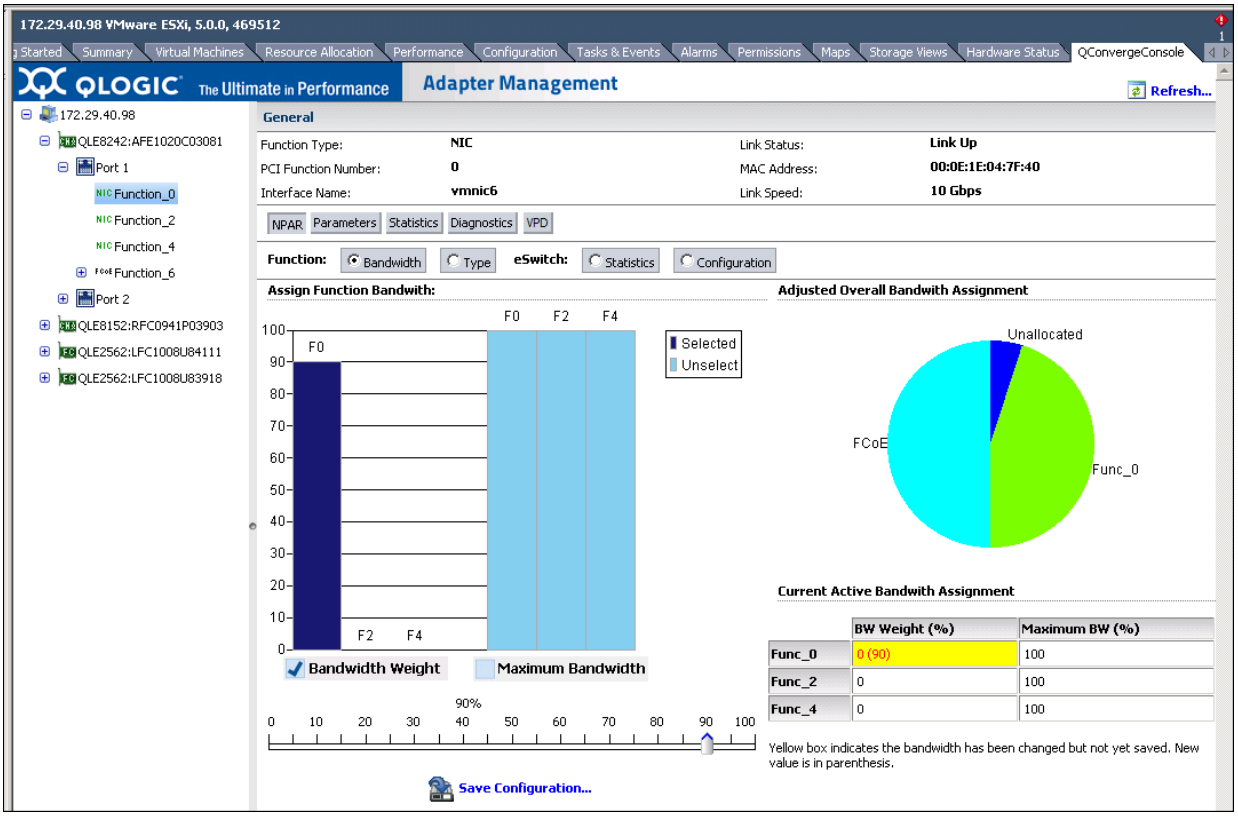



***Figure 4-27. Bandwidth Configuration***

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 4-28 and Figure 4-29 show examples.

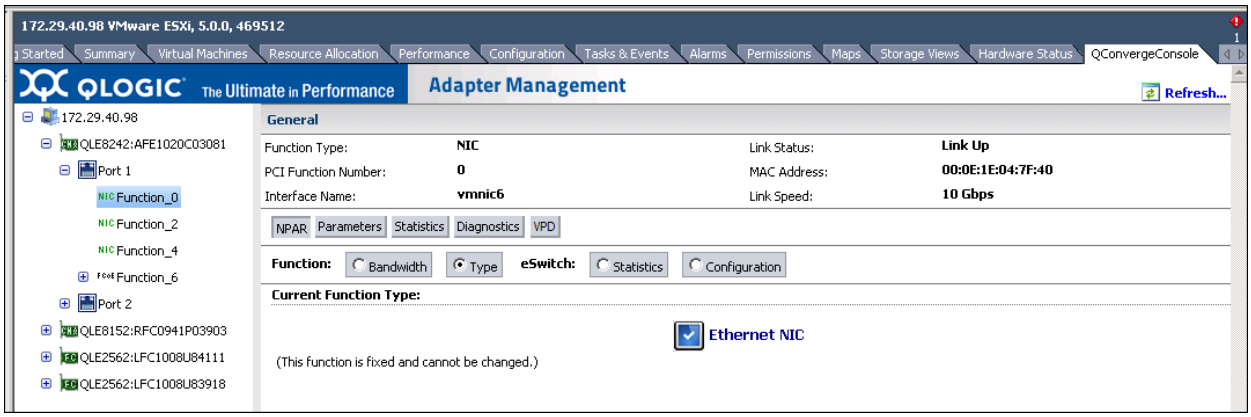



***Figure 4-28. Converged Network Adapter NIC Function 0 or 1—Function Type***

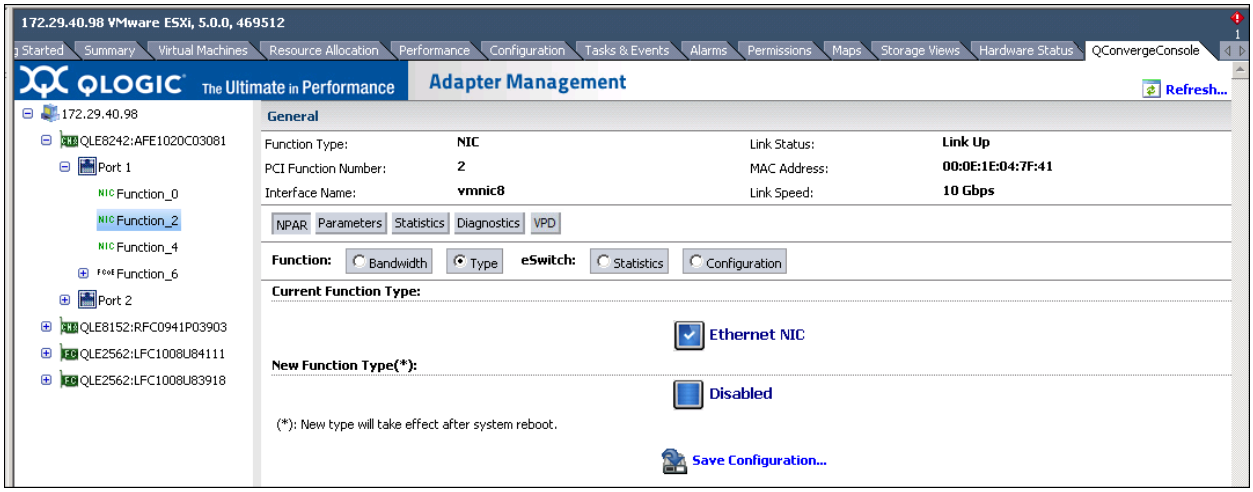



***Figure 4-29. Converged Network Adapter NIC Function 2 or 3—Function Type***

## Firmware Parameters—NIC Function

If the **Parameters** button is selected, the content pane appears as shown in Figure 4-30.

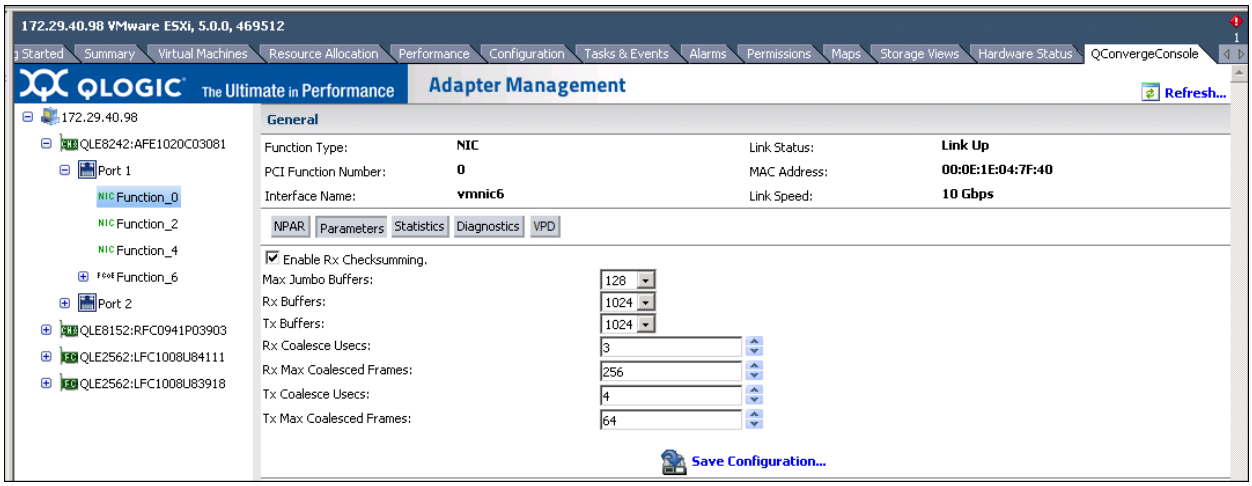



***Figure 4-30. Converged Network Adapter NIC Function—Firmware Parameters***

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 4-31.

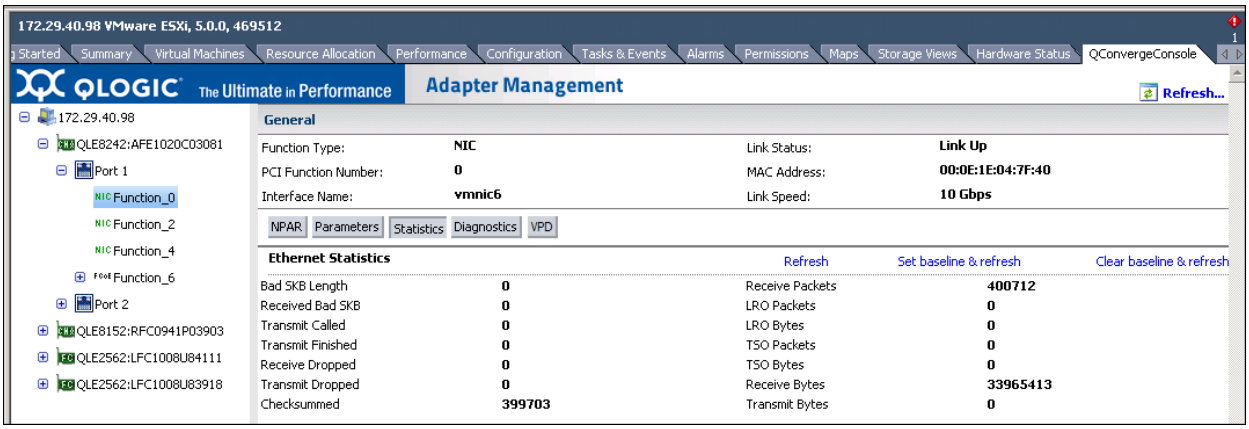



***Figure 4-31. Converged Network Adapter NIC Function—Statistics Information***

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 4-32.

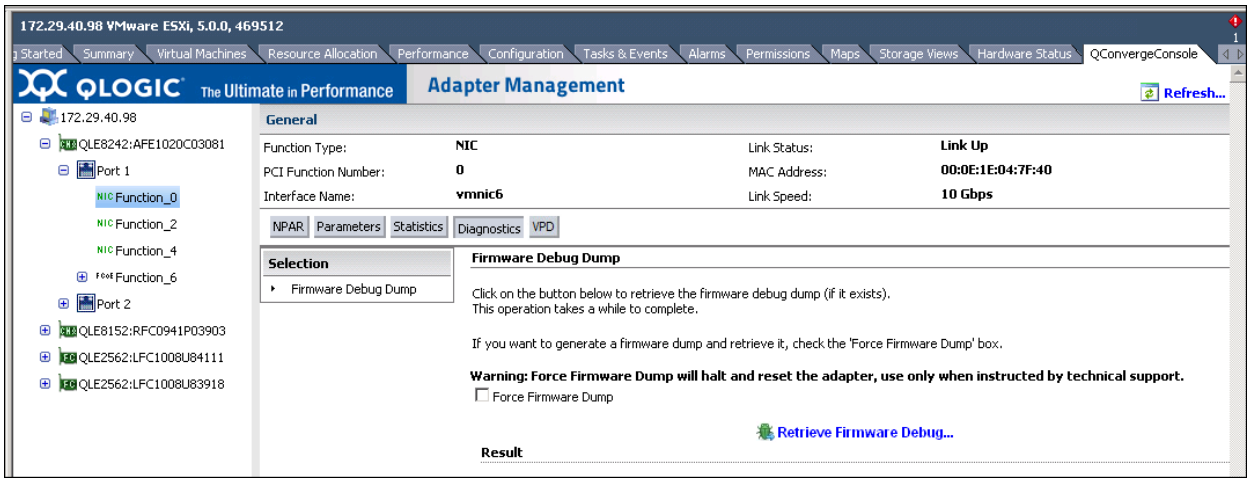



***Figure 4-32. Converged Network Adapter NIC Function—Diagnostic Tests***

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 4-33.

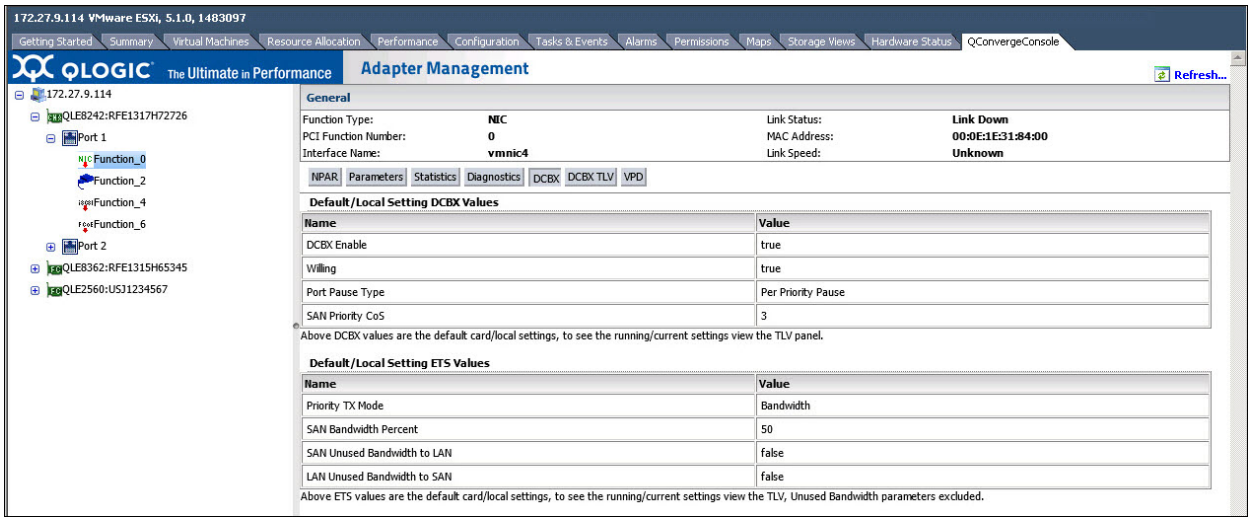



***Figure 4-33. Converged Network Adapter NIC Function—DCBX and ETS Values***

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 4-34 with DCBX TLV data.

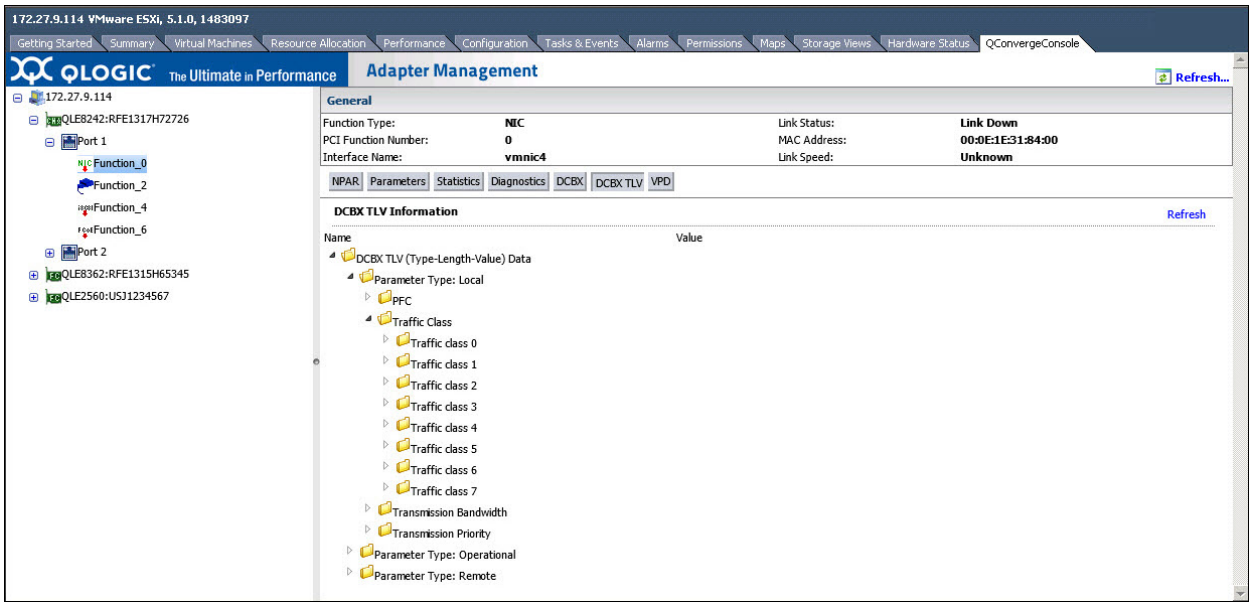



***Figure 4-34. Converged Network Adapter NIC Function—DCBX TLV Data***

**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 4-35.

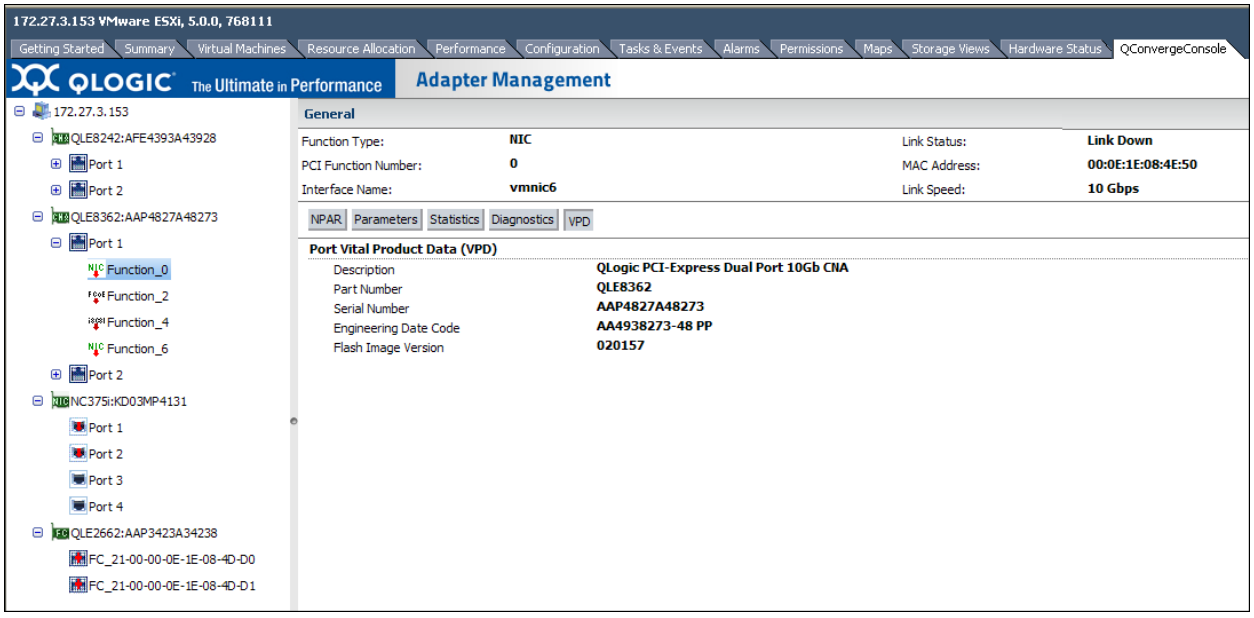



***Figure 4-35. Converged Network Adapter NIC Function—VPD Information***

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 4-36.

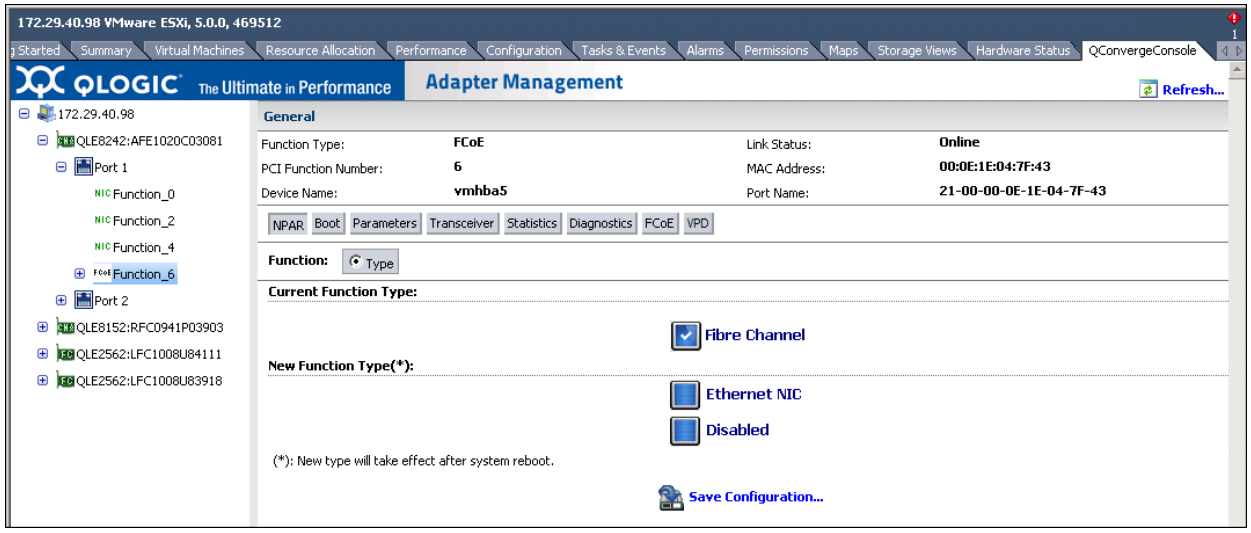



***Figure 4-36. Adapter Management Window—FCoE Function***

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 4-37:


***Figure 4-37. 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 4-37). 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 4-38.

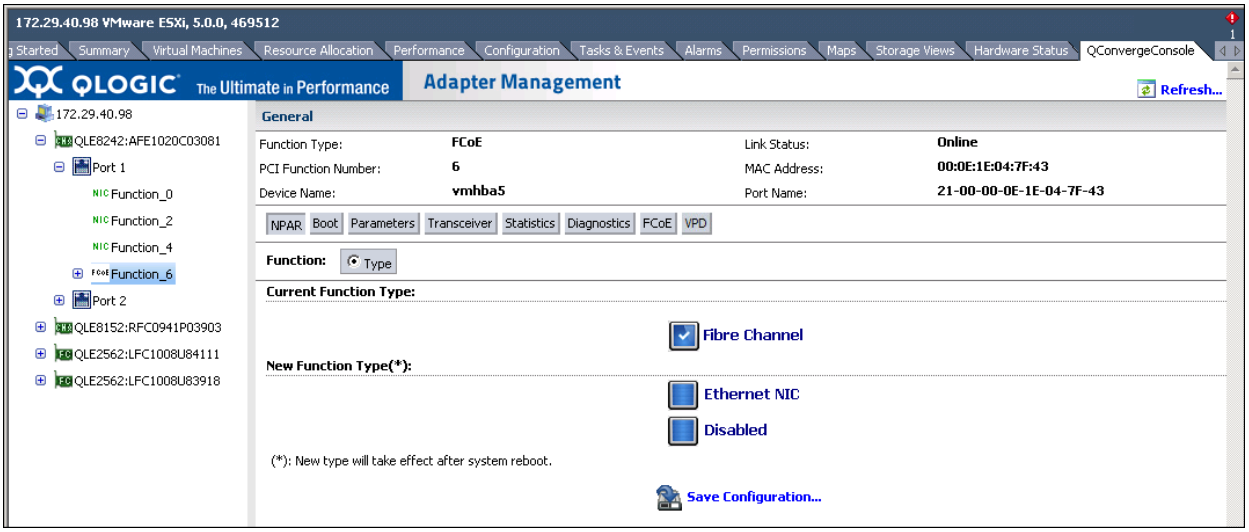



***Figure 4-38. Converged Network Adapter FCoE Function—NPAR Configuration***

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 4-39.

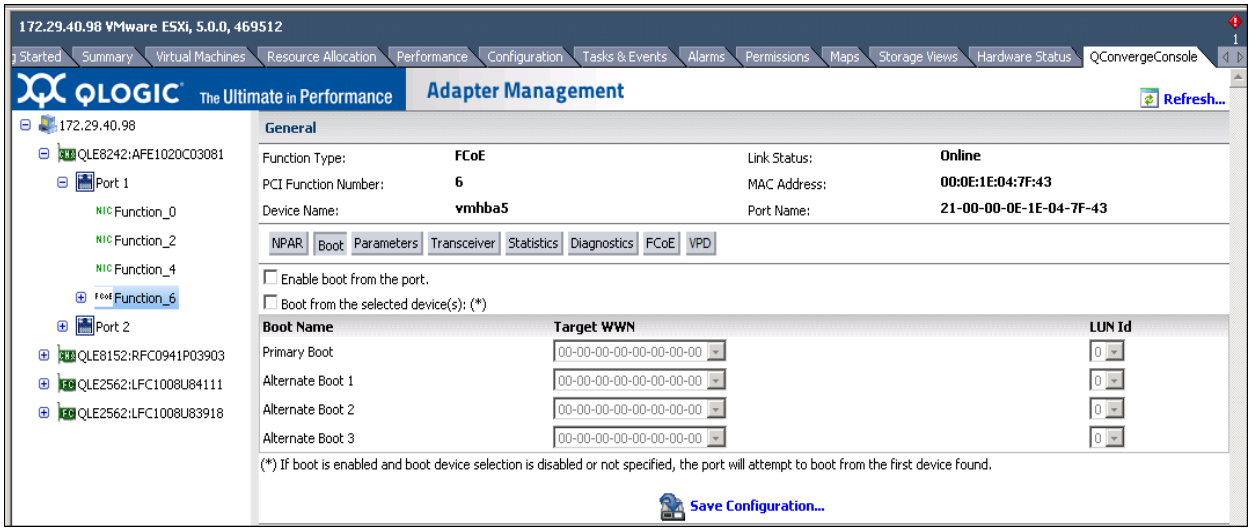



***Figure 4-39. Converged Network Adapter FCoE Function—Boot Configuration***

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 4-40.

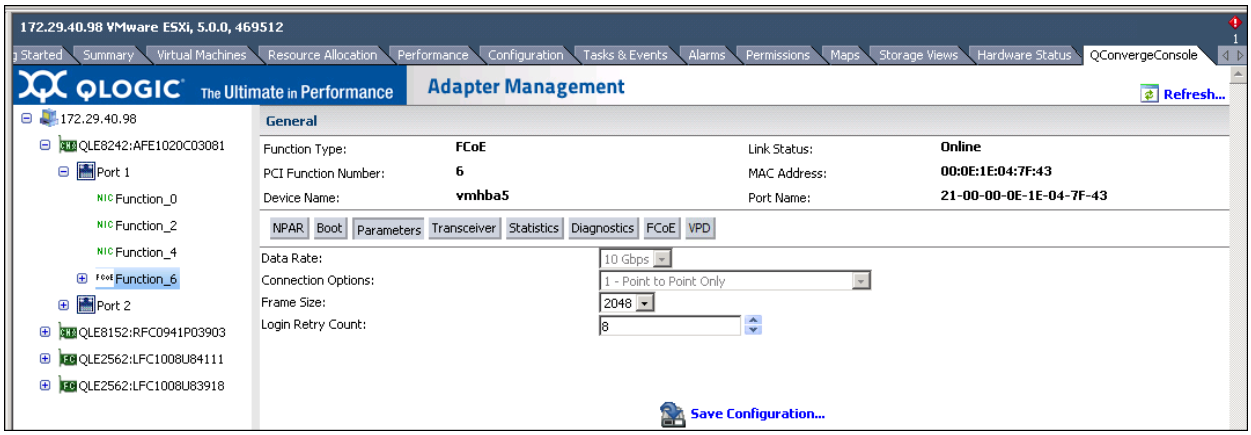



***Figure 4-40. Converged Network Adapter FCoE Function—Firmware Parameters***

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 82*xx* 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 4-41.

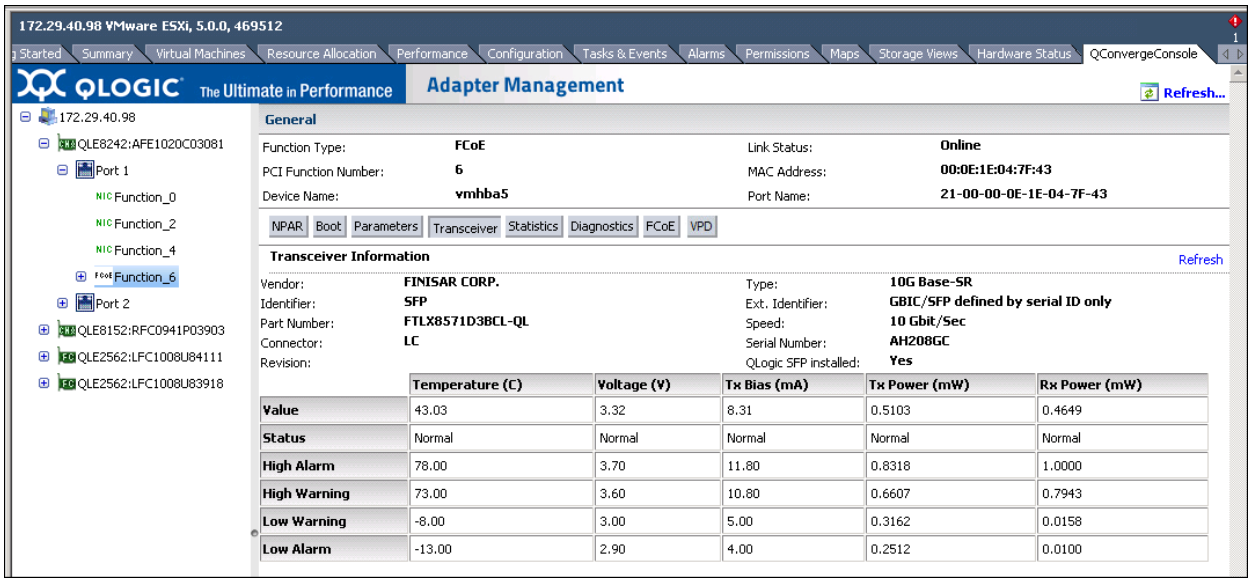



***Figure 4-41. Converged Network Adapter FCoE Function—Transceiver Information***

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 4-42.

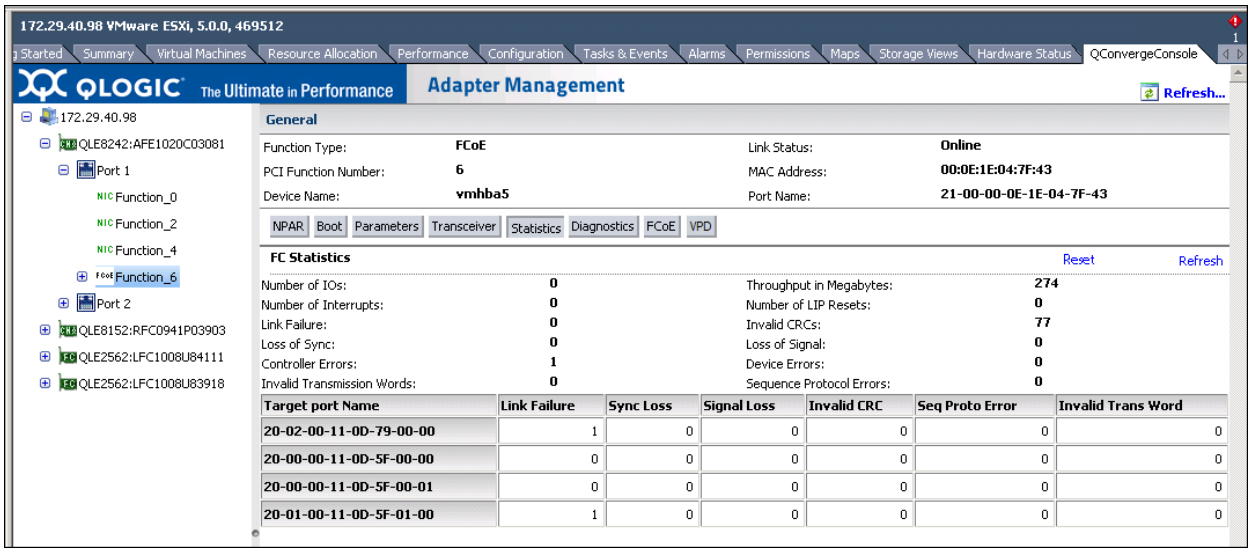



***Figure 4-42. Converged Network Adapter FCoE Function—Statistics Information***

**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 4-43.

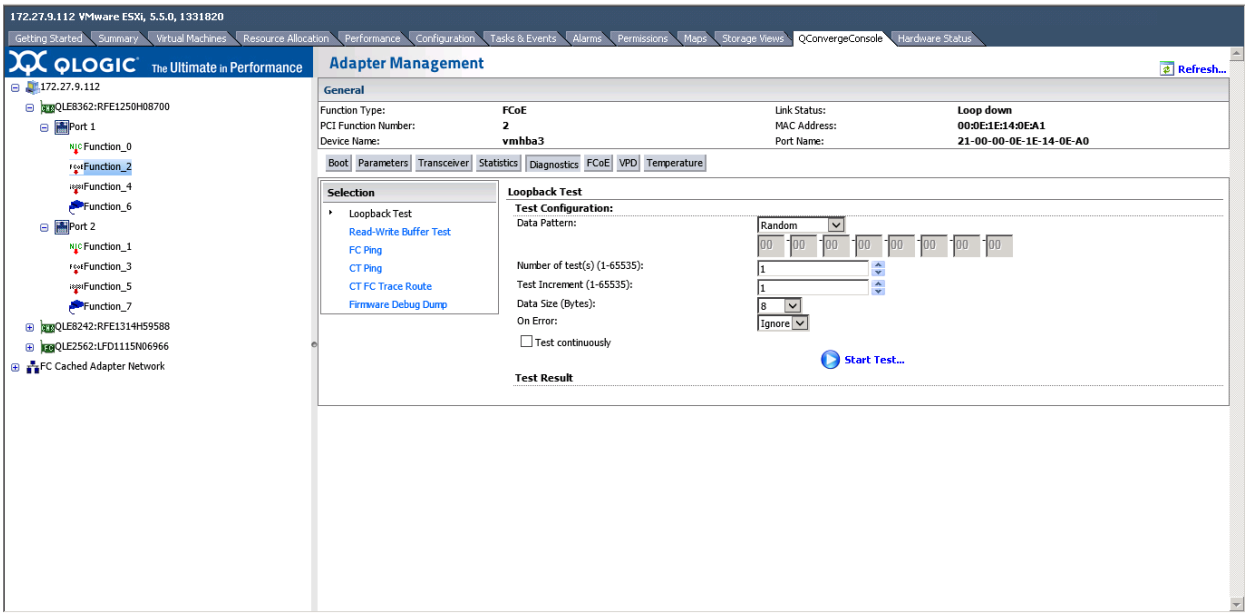



***Figure 4-43. Converged Network Adapter FCoE Function—Diagnostic Tests***

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 4-44. 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.

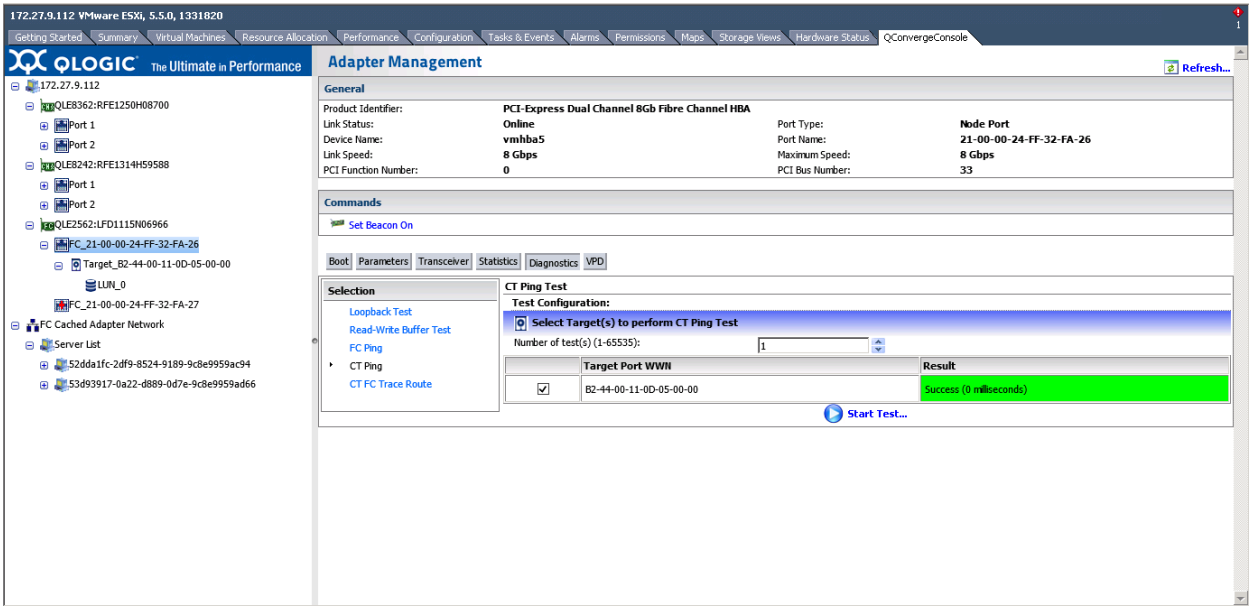



***Figure 4-44. FCoE Port—Ping Test Results***

## 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 4-45.

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

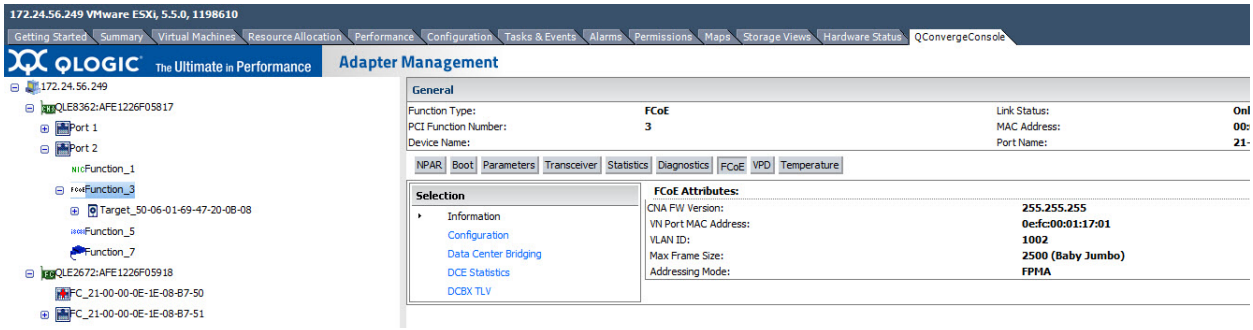



***Figure 4-45. Converged Network Adapter FCoE Function—FCoE Attribute Information***

### Configuration

Select **Configuration** to view the following options, as shown in Figure 4-46.

- **Primary FCF[1] VLAN ID (0–4095)**
- **Primary FCF VLAN Selection enable**

[1] Fibre Channel Forwarder

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

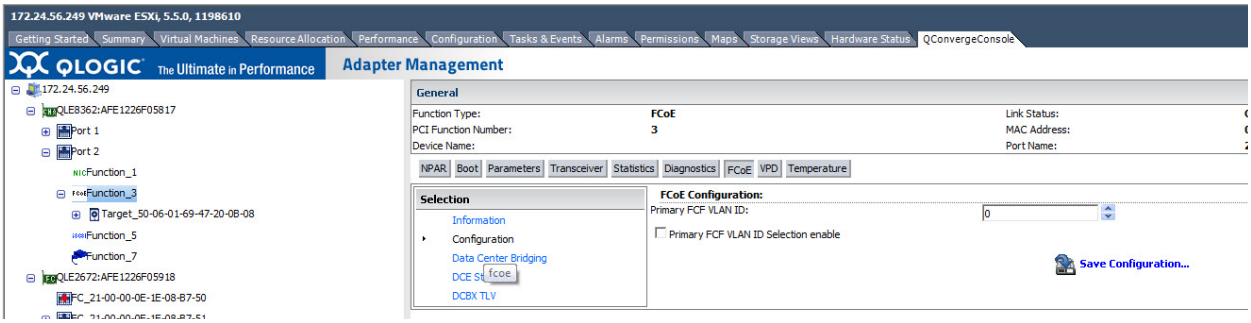



***Figure 4-46. Converged Network Adapter FCoE Function—FCoE Configuration***

## Data Center Bridging

Select **Data Center Bridging** to view the default/local setting DCBX values and ETS values, as shown in Figure 4-47.

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

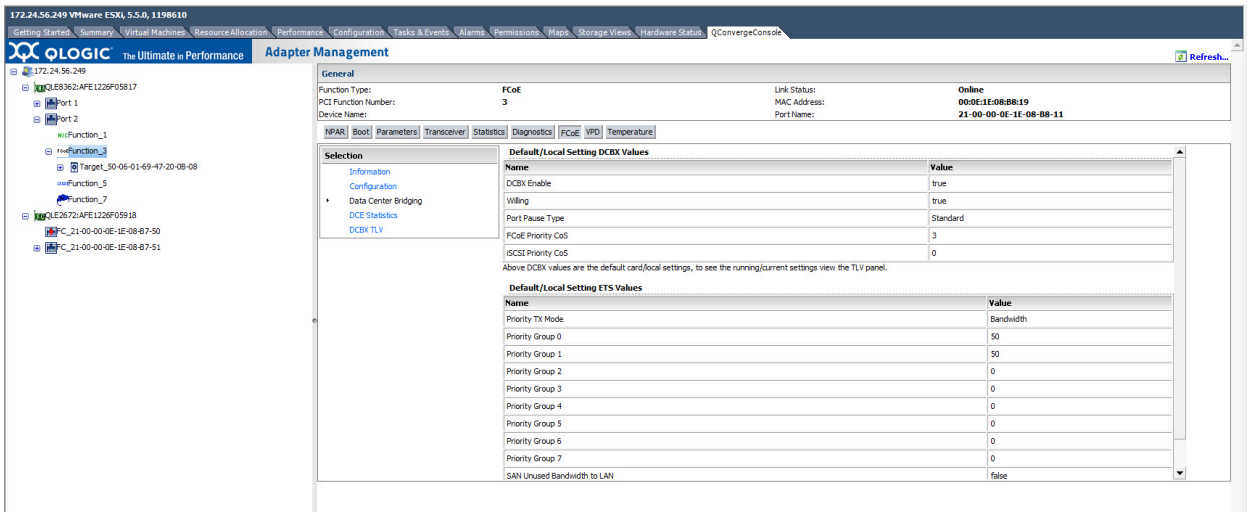



***Figure 4-47. Converged Network Adapter FCoE Function—Data Center Bridging***

### DCE Statistics

Select **DCE Statistics** to view values for the following port Data Center Ethernet (DCE) parameters, as shown in Figure 4-48:

- **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**

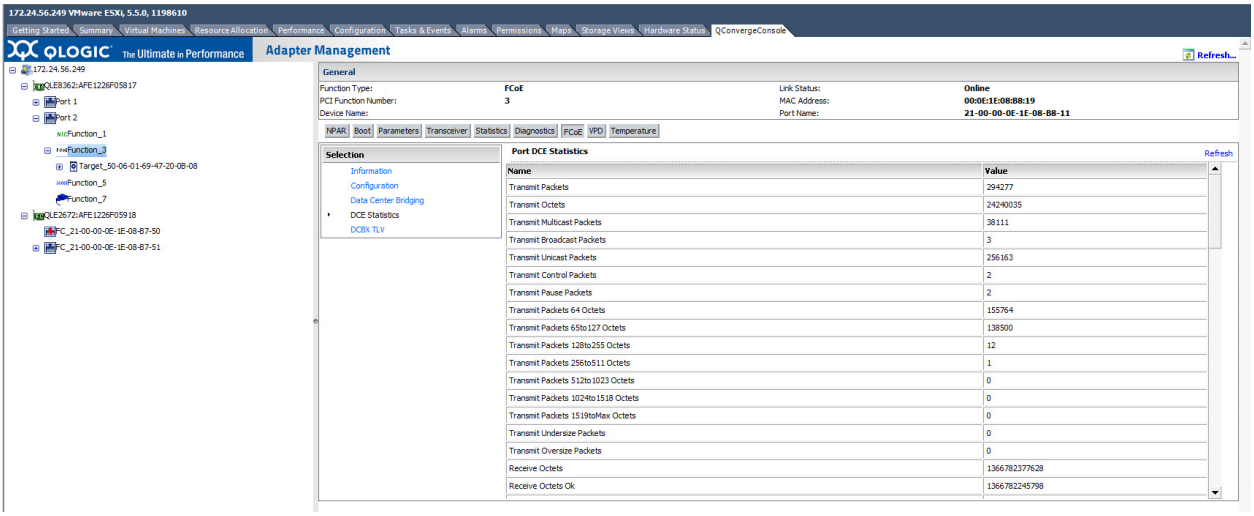



***Figure 4-48. Converged Network Adapter FCoE Function—DCE Statistics***

### DCBX TLV

Select **DCBX TLV** to view the type-length-value (TLV) information (Figure 4-49) for the LLDP frames meant for exchanging the parameters and their values.

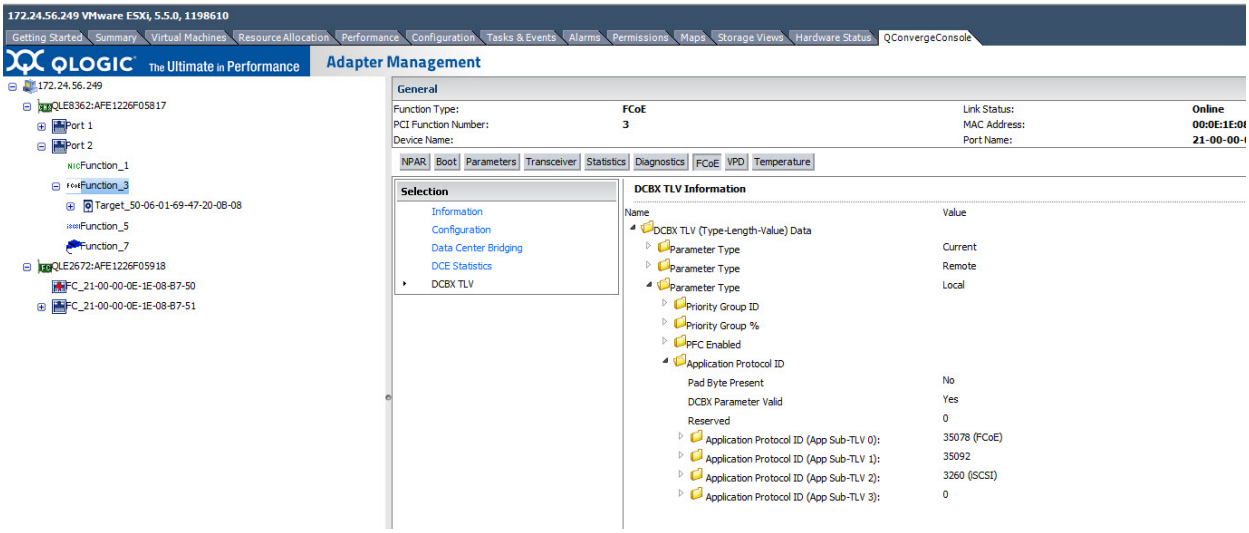



***Figure 4-49. Converged Network Adapter—DCBX TLV***

## VPD Information—FCoE Function

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

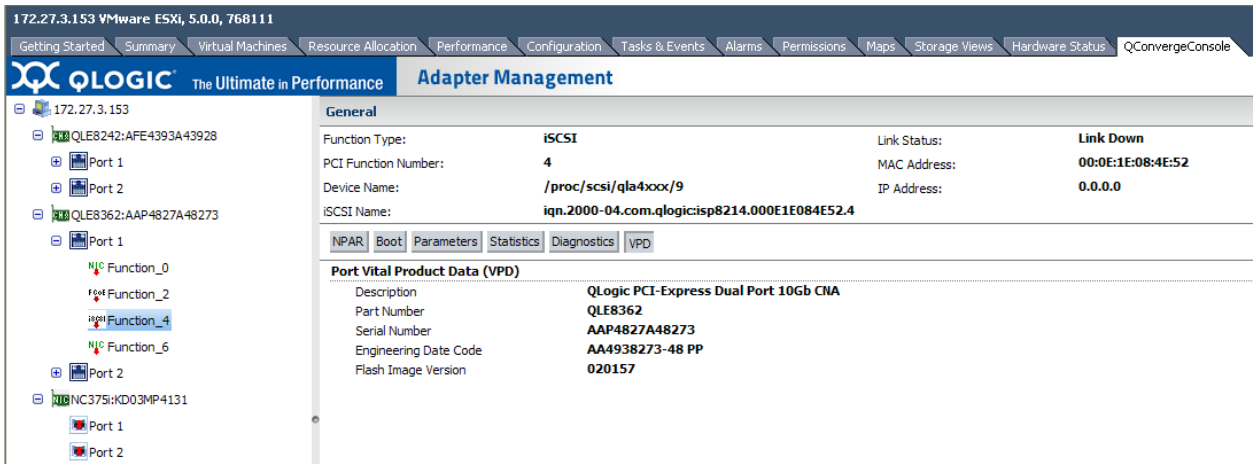



***Figure 4-50. Converged Network Adapter FCoE Function—VPD Information***

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 4-51.

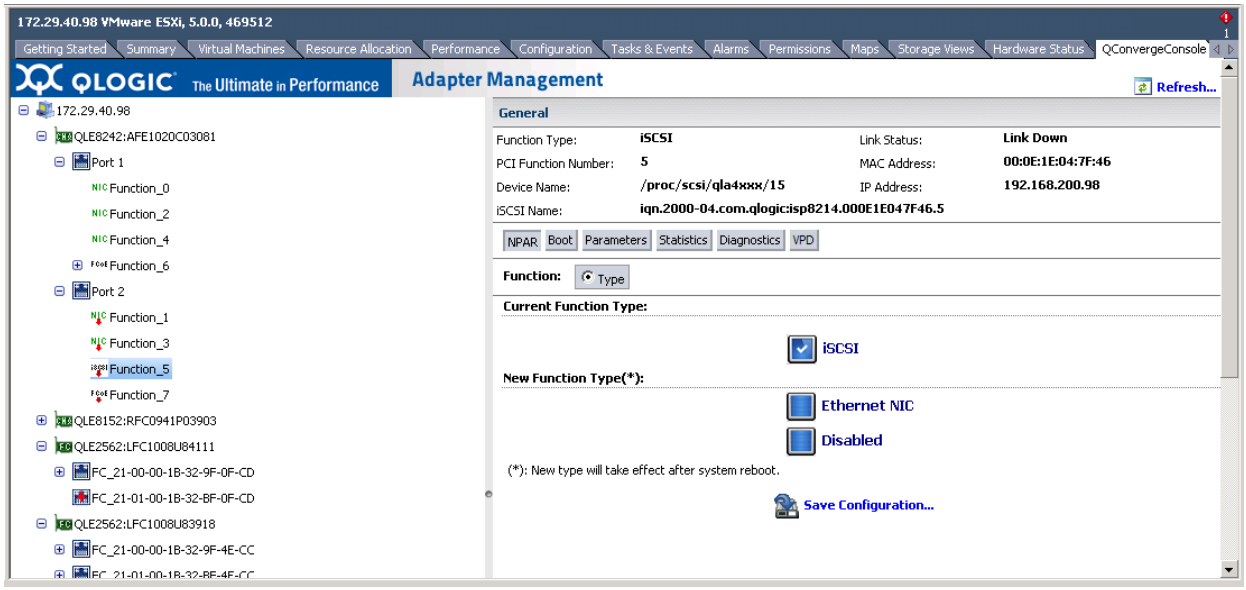



***Figure 4-51. Adapter Management Window—iSCSI Function***

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 4-52:


***Figure 4-52. 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 4-52). 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 4-53.

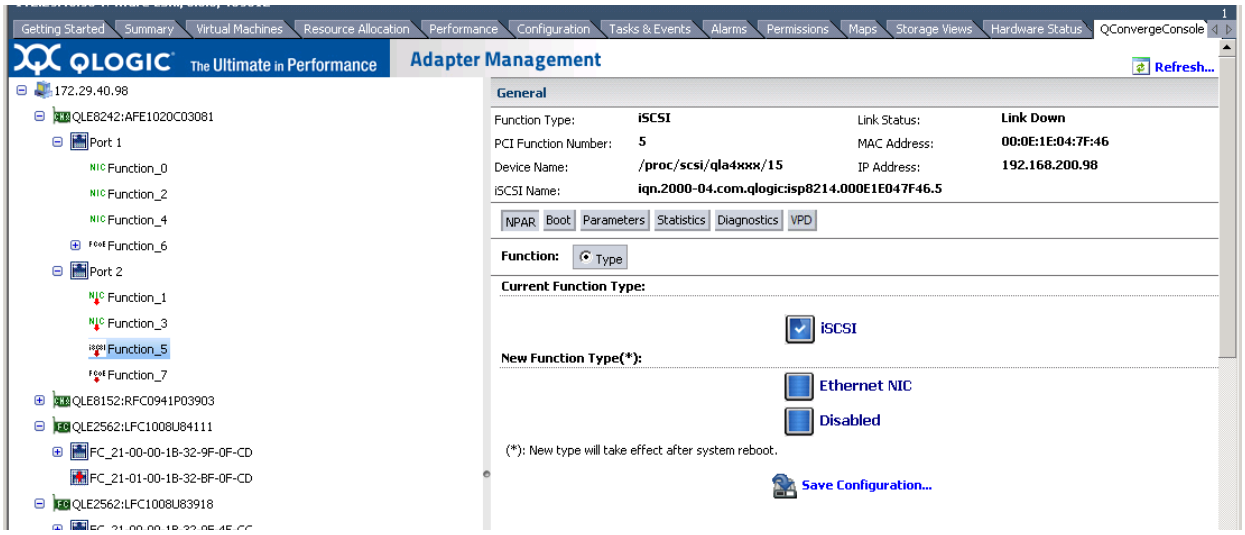



***Figure 4-53. Converged Network Adapter iSCSI Function—NPAR Configuration***

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 4-54.

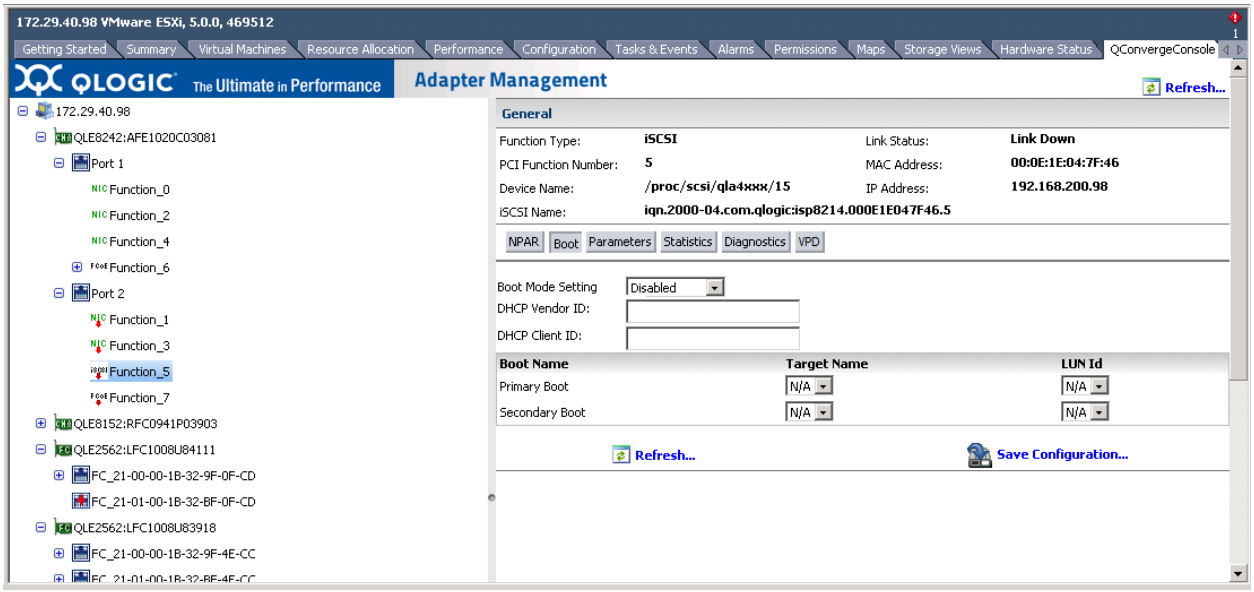



***Figure 4-54. Converged Network Adapter iSCSI Function—Boot Configuration***

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 4-55.

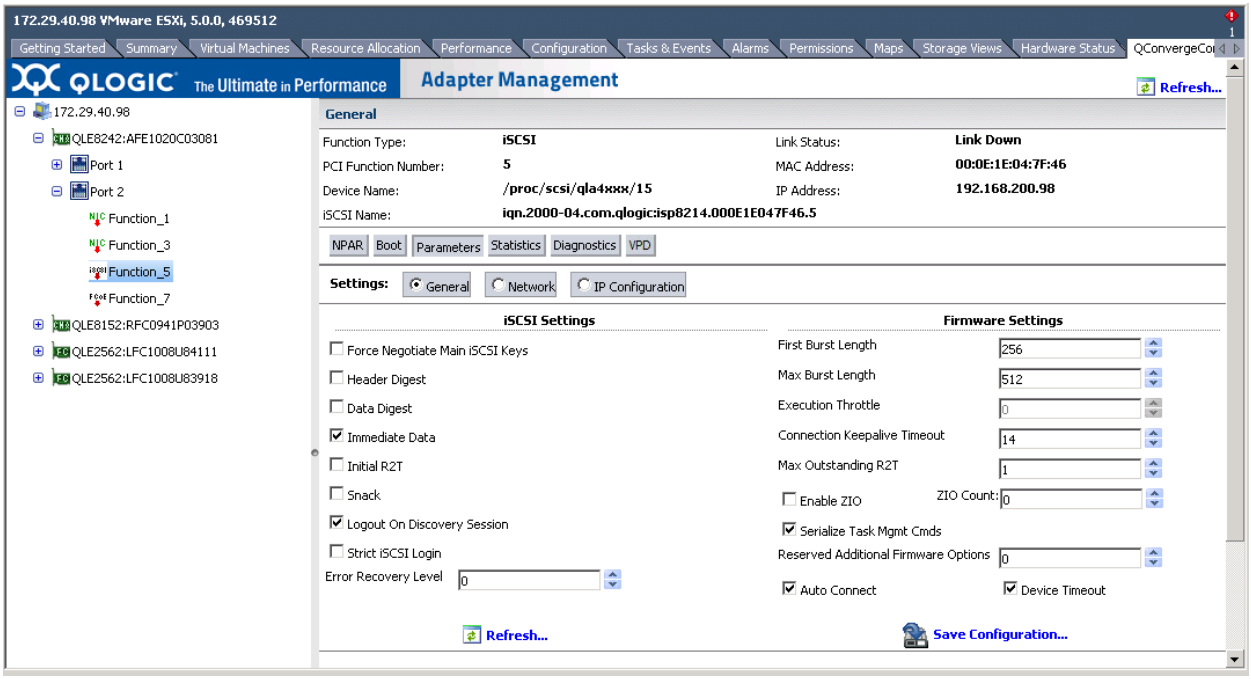



***Figure 4-55. Converged Network Adapter iSCSI Function—General Parameters***

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 4-55) 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 4-2 describes how **ImmediateData** and **IntialR2T** combine to determine how the initiator can send immediate data.

***Table 4-2. ImmediateData and IntialR2T***

| 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–$2^{23}$. 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–$2^{23}$. 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 4-56.

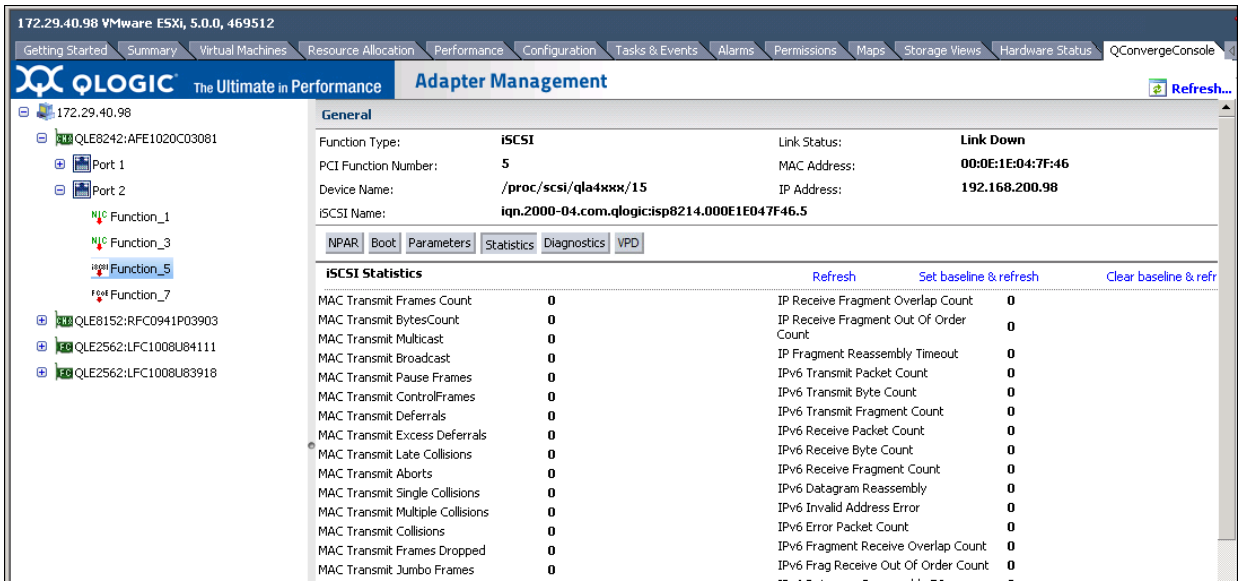



***Figure 4-56. Converged Network Adapter iSCSI Function—Statistics Information***

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 4-57.

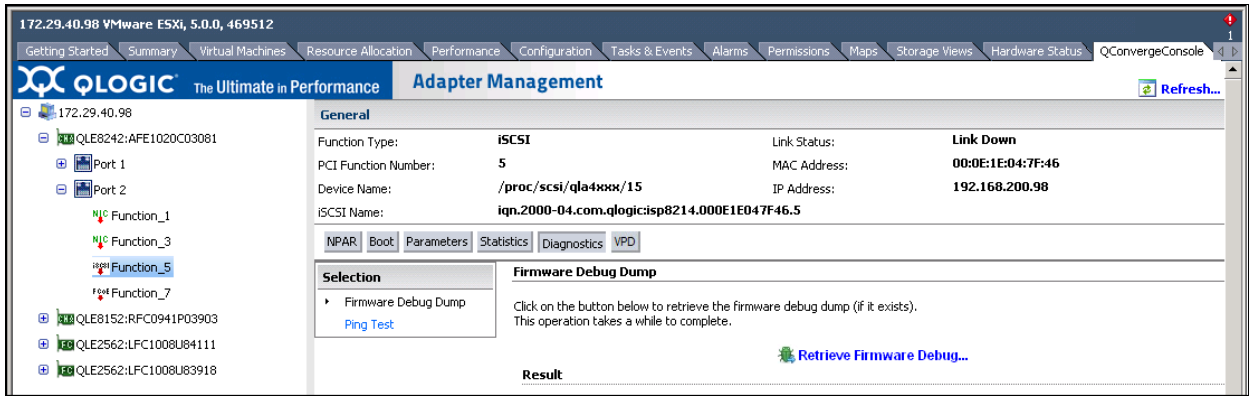



***Figure 4-57. Converged Network Adapter iSCSI Function—Diagnostics***

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 4-58.

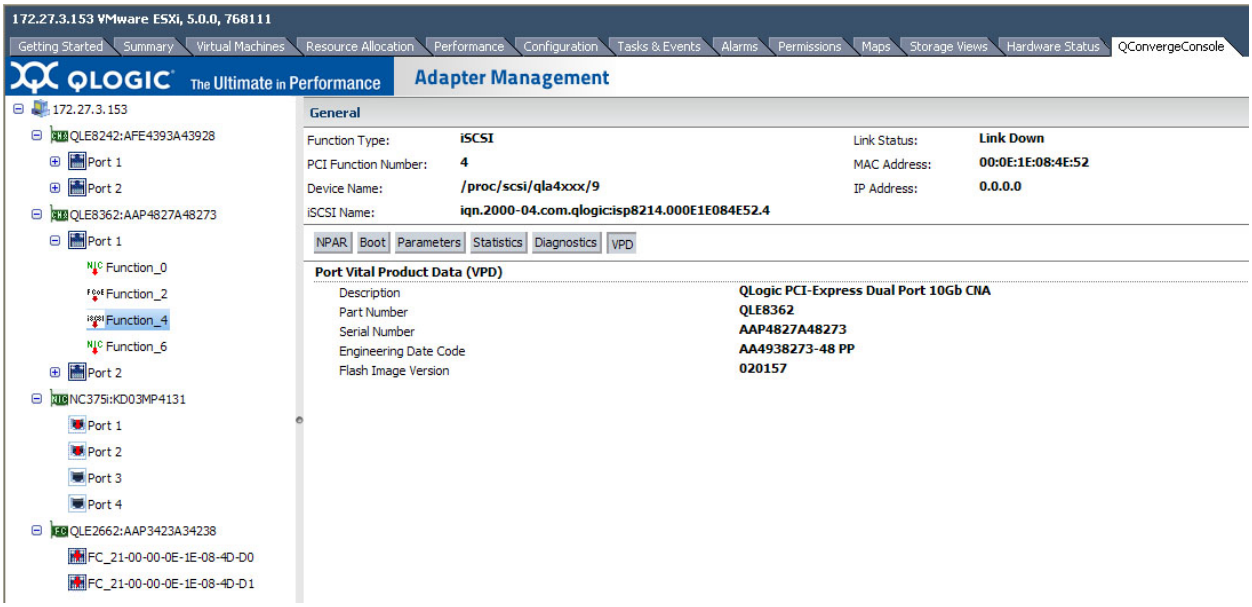



***Figure 4-58. Converged Network Adapter iSCSI Function—VPD Information***

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 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 Figure 4-59.

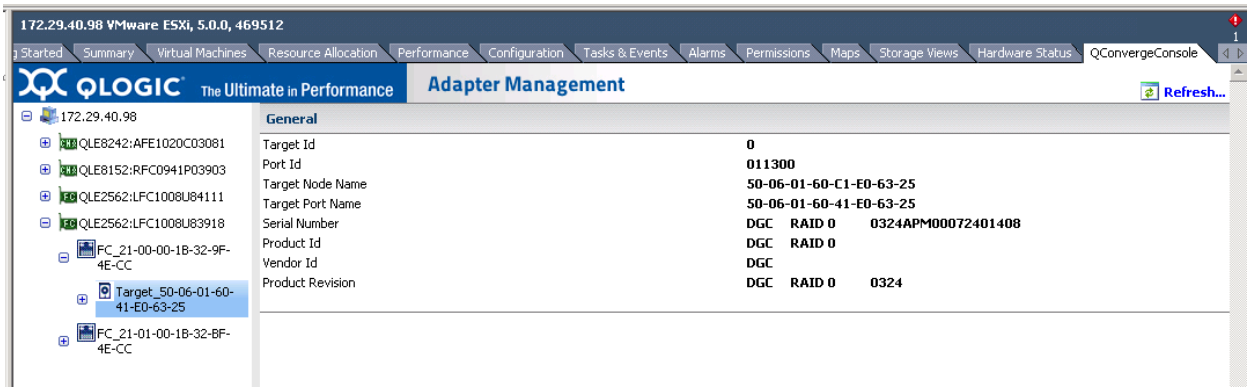



***Figure 4-59. Adapter Management Window for Target Device***

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

- **Target ID**
- **Port ID**
- **Target Node Name**
- **Target Port Name**
- **Serial Number**
- **Product ID**
- **Vendor ID**
- **Product Revision**

# 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 4-60.

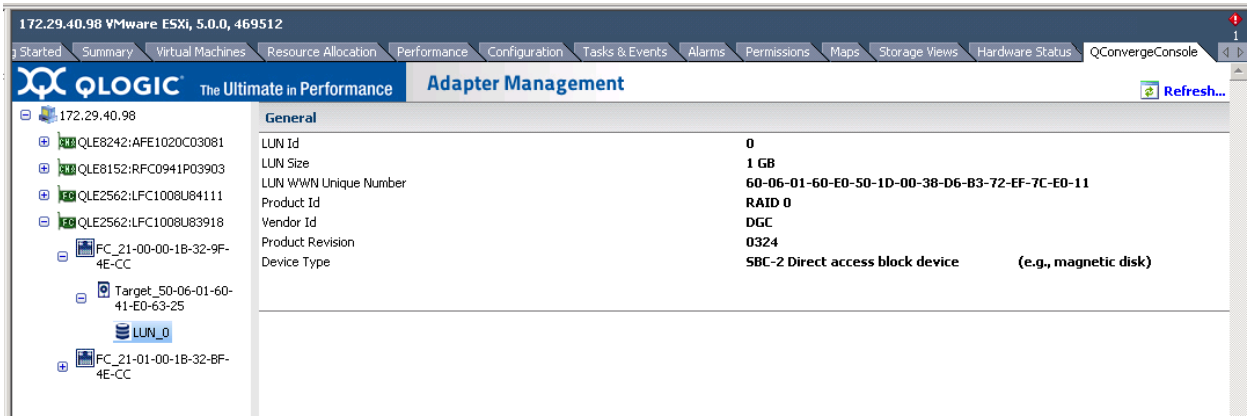



***Figure 4-60. Adapter Management Window for Target Device LUN***

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

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

# Updating Adapter Flash

**To update the Flash using vCenter Server 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 578xx and 41000 Series Adapters

This chapter provides detailed instructions on how to use the vCenter Server Plug-in to manage Marvell 578xx/41000 Series Adapters and connected storage devices, including:



## 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

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 578xx/41000 Series Adapters.

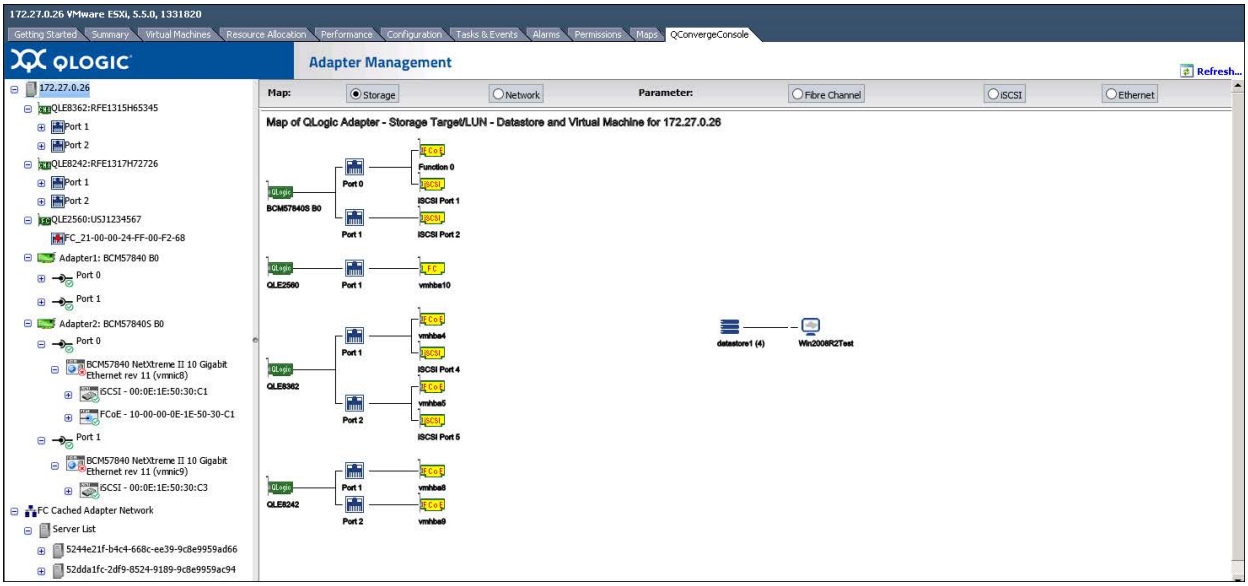



***Figure 5-1. Storage Map with 578xx/41000 Series Adapters***

## Network Map

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

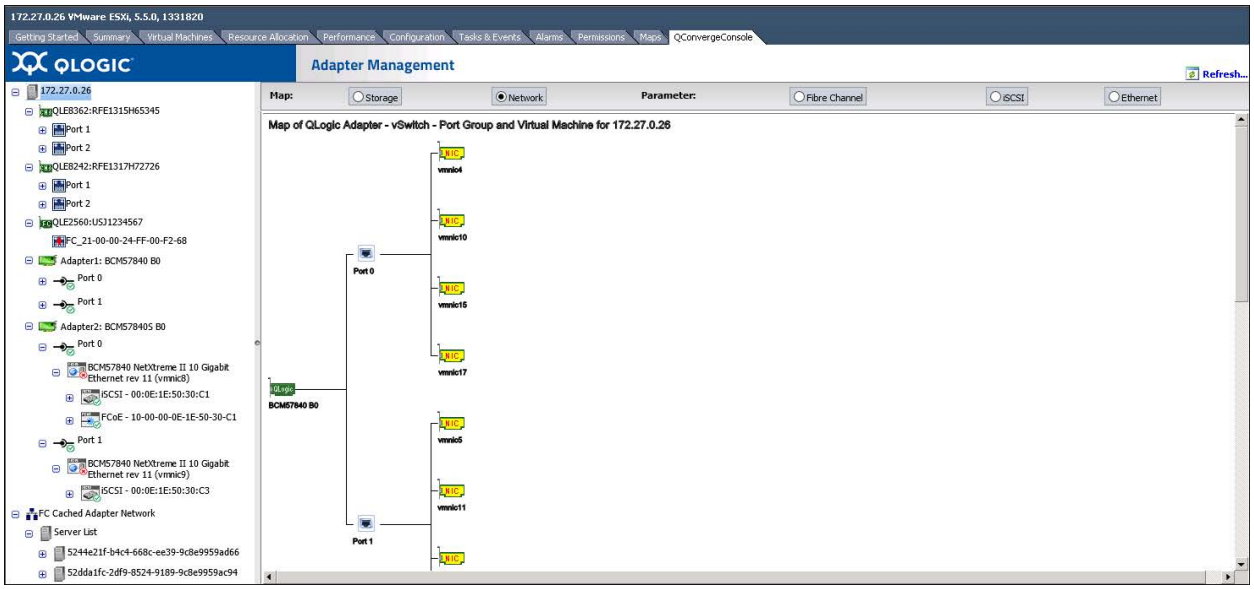



***Figure 5-2. Network Map with 578xx/41000 Series Adapters***

# Managing 578xx/41000 Series Adapters

To manage 578xx/41000 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 578xx/41000 Series Adapters.

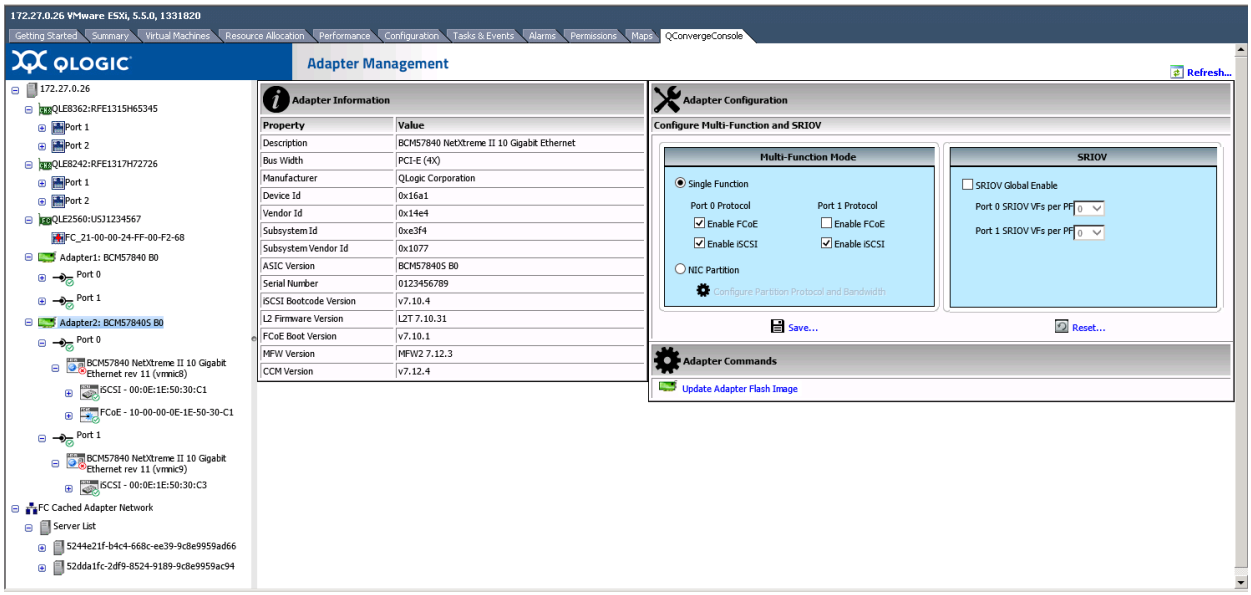



***Figure 5-3. Adapter Management of Single-Function 578xx/41000 Series Adapters***

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 (578xx/41000 Series Adapters only)
- Configuring Remote Direct Memory Access (RDMA) (41000 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 5-4 for 578xx/41000 Series Adapters.

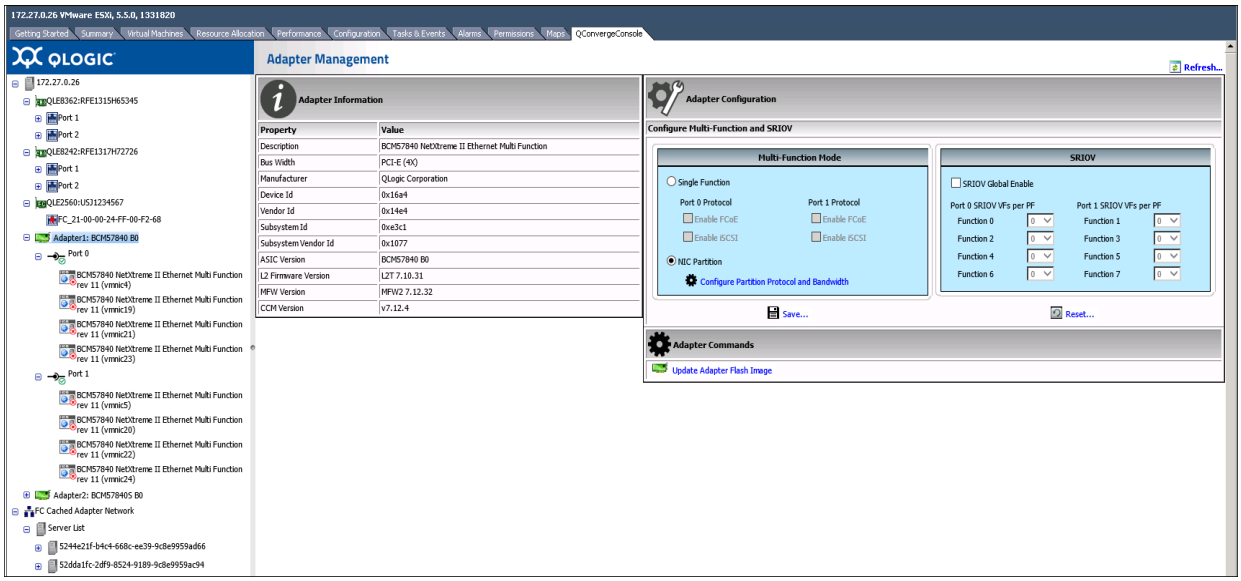



***Figure 5-4. Adapter Management of Multi-Function 578xx Series Adapters***

# 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 port may have up to two storage protocols assigned to it, with each function having either iSCSI or FCoE (578xx/41000 Series Adapters).
- Each port can have up to two iSCSI functions, or one iSCSI function with one FCoE function. The minimum bandwidth 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 Series Adapters can have up to 16 functions configured. The following shows how some of the functions work (on a dual port adapter):
  - Functions 0 and 1 cannot have storage protocols configured.
  - Functions 2 and 3 can be configured for FCoE protocol.
  - Functions 4 and 5 can be configured for iSCSI protocol.
- If RDMA is available on a 41000 Series Adapter, you can enable RDMA over converged Ethernet (RoCE) or Internet wide area RDMA protocol (iWARP).

**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 5-5 shows an example for an 578xx Series Adapter.

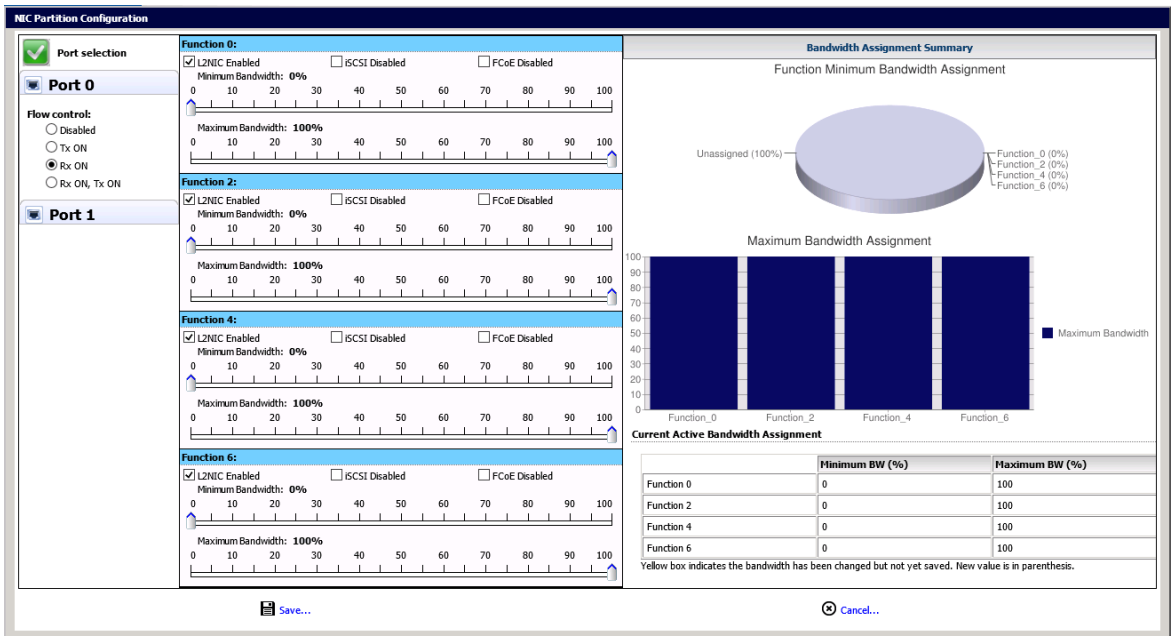



***Figure 5-5. Multi-Function Edit Dialog Box for 578xx Series Adapters***

# 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 5-6 shows the Temperature page.

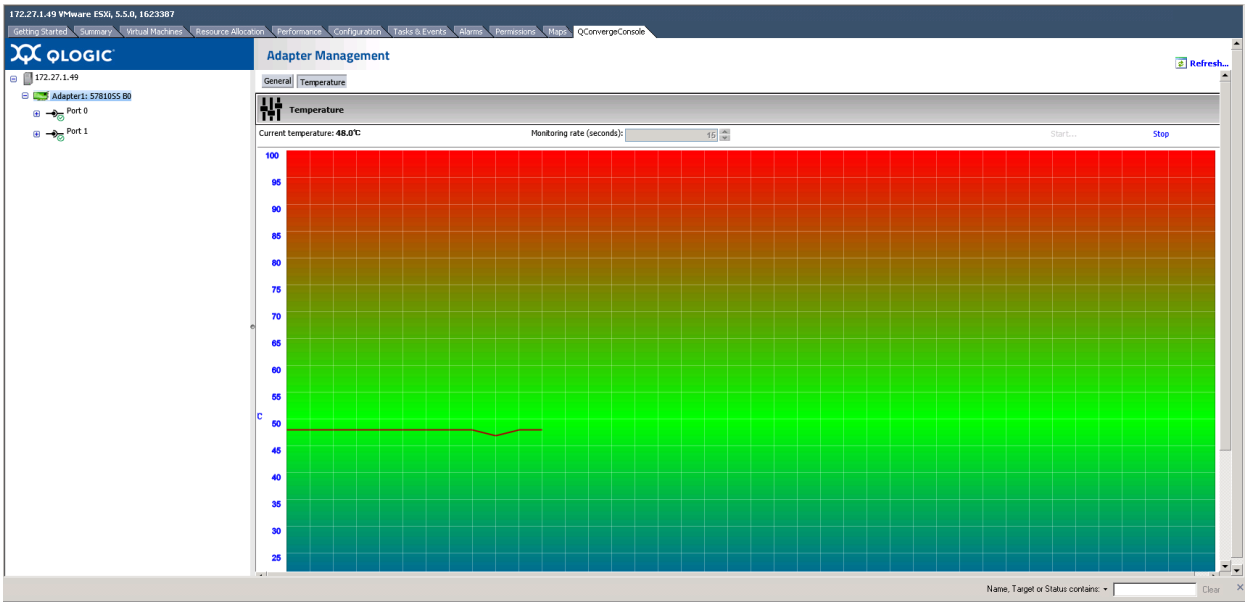



***Figure 5-6. Temperature Page***

# QinQ Configuration

For specific 578xx 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 578xx Series Adapter node.
2. In the content pane, click the **QinQ** tab to view the QinQ Configuration page (Figure 5-7).

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

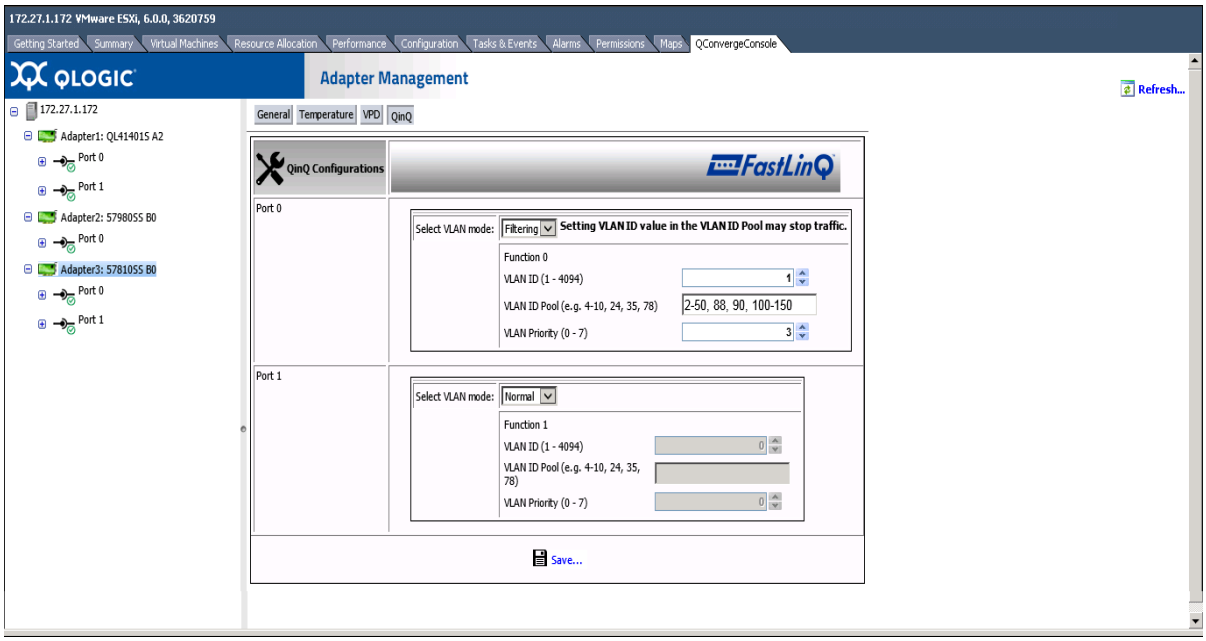



***Figure 5-7. QinQ Configuration Page***

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 578xx/41000 Series Adapters

To view information for ports on 578xx/41000 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 5-8 shows the port information for 57xxx/41000 Series Adapters.

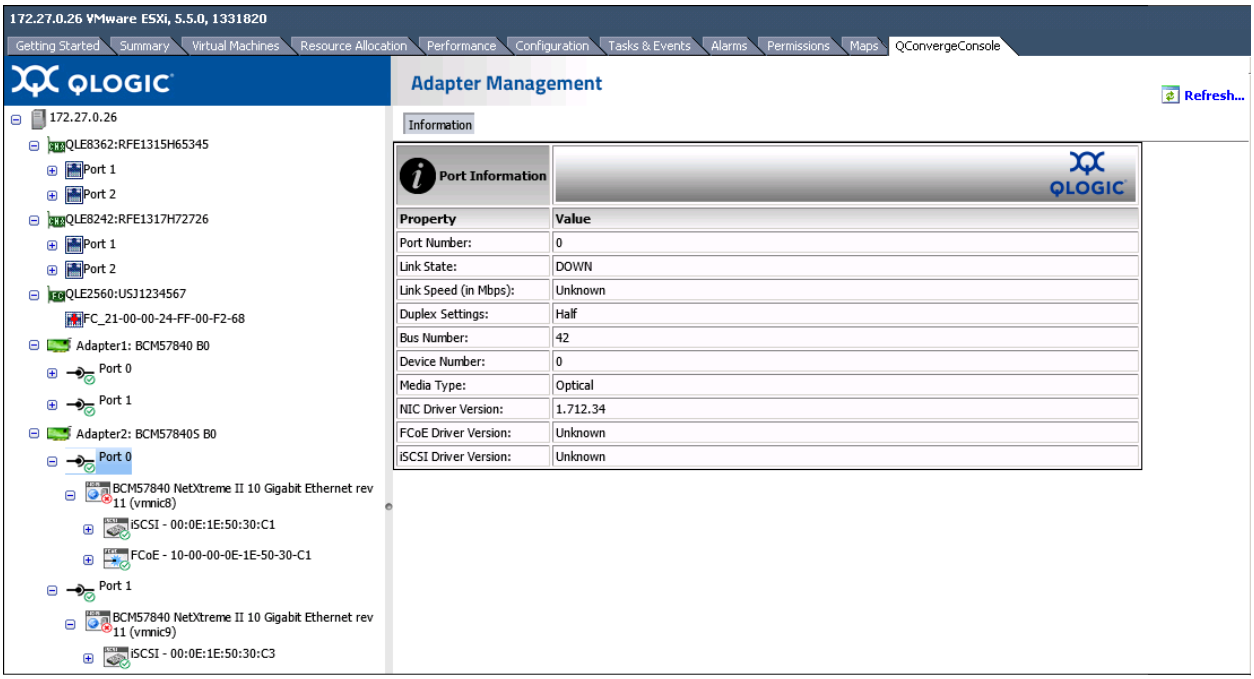



***Figure 5-8. Port Information for 578xx/41000 Series Adapters***

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 5-9 shows the port information with DCBX information.

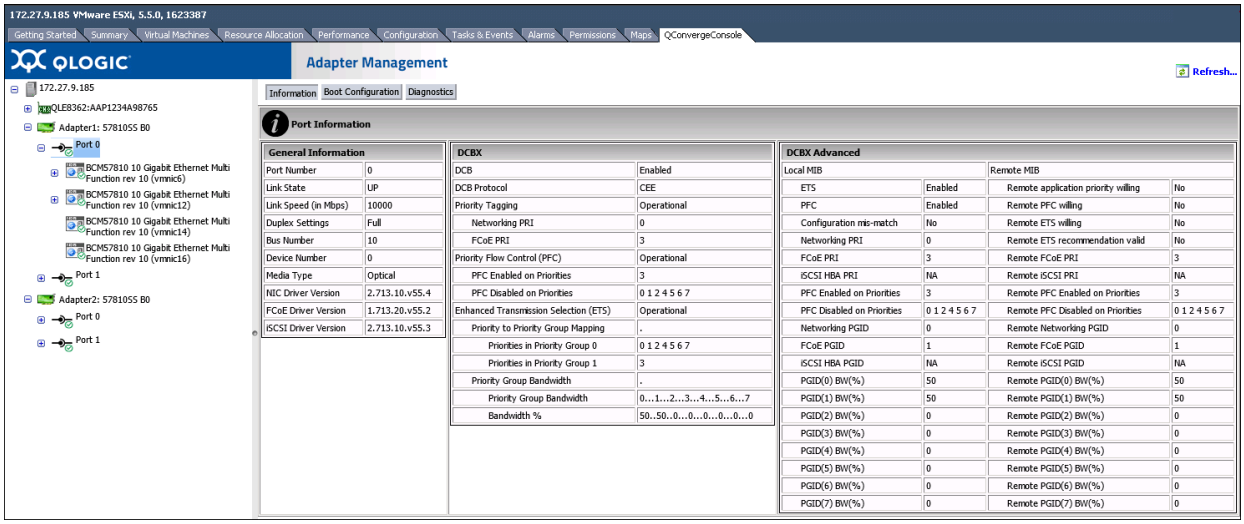



***Figure 5-9. Port Information with DCBX Information***

# 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 578xx Series Adapters:

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

      Options for 41000 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 578*xx* Adapters.
   e. Select one of the following **Setup Key Stroke** options for preboot CCM on 578*xx*Adapters:

      - **Ctrl-S**
      - **Ctrl-B**
   f. Select a value (from 0 to 14) in the **Banner Message Timeout** box for preboot CCM on 578*xx* 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 5-10 shows the boot configuration pane for MBA parameters.

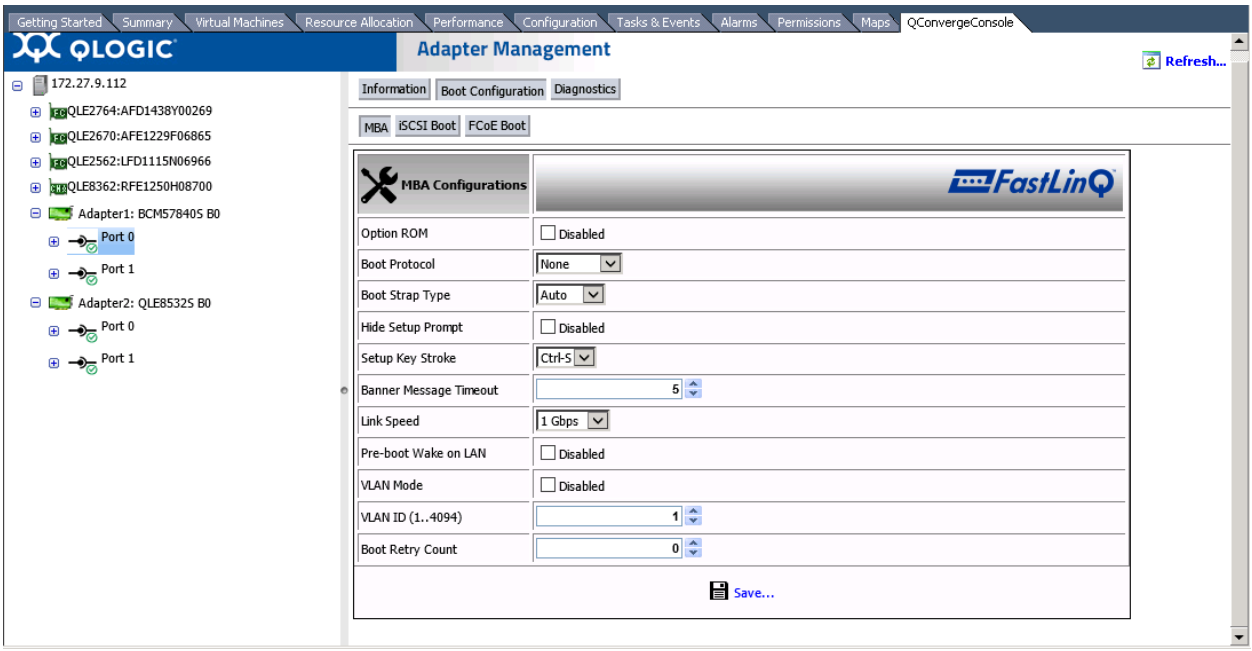



***Figure 5-10. Boot Configuration Panel for MBA Parameters***

# 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 Series Adapters. The 578*xx* adapters do not support hardware 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 Series Adapters. The 578*xx* adapters do not support hardware 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 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.

[1] This option does not apply to 41000 Series Adapters.

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 5-11 on page 106 shows the **Configure General Parameters** section in the iSCSI Boot Configuration window.

## 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 5-11 on page 106 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 5-11 on page 106 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 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 it 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 5-11 shows the **Configure MPIO Parameters** section in the iSCSI Boot Configuration window for 578xx Series Adapters.

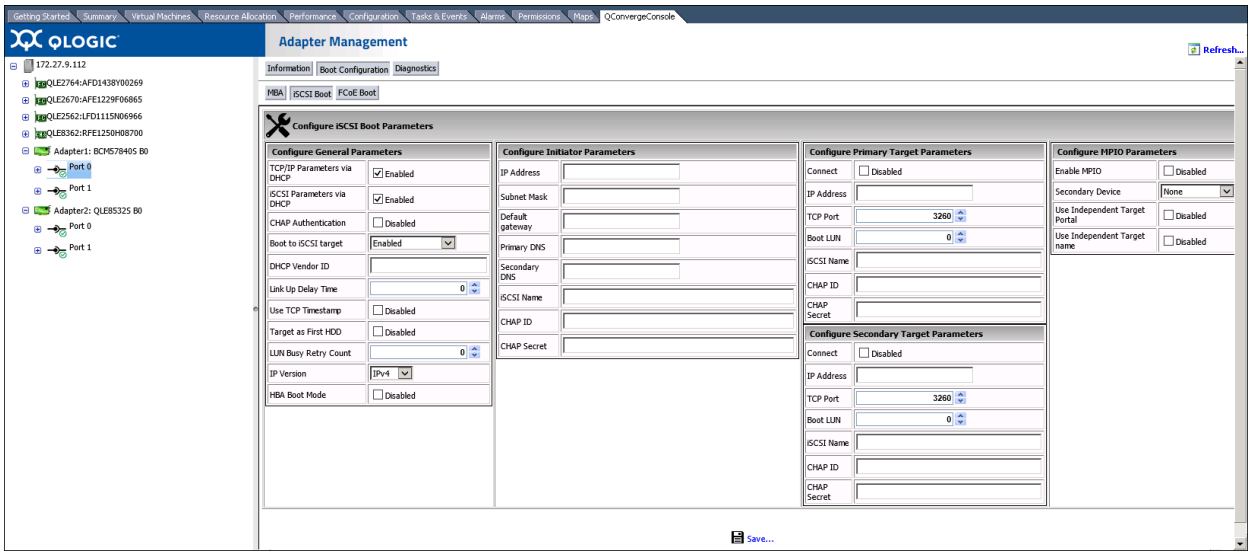



***Figure 5-11. iSCSI Boot Configuration Pane for 578xx Series Adapters***

# 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.
   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 5-12 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**.

[1] This option does not apply to 41000 Series Adapters.

Figure 5-12 shows the **Configure General Parameters** section in the Configure FCoE Boot Parameters window.

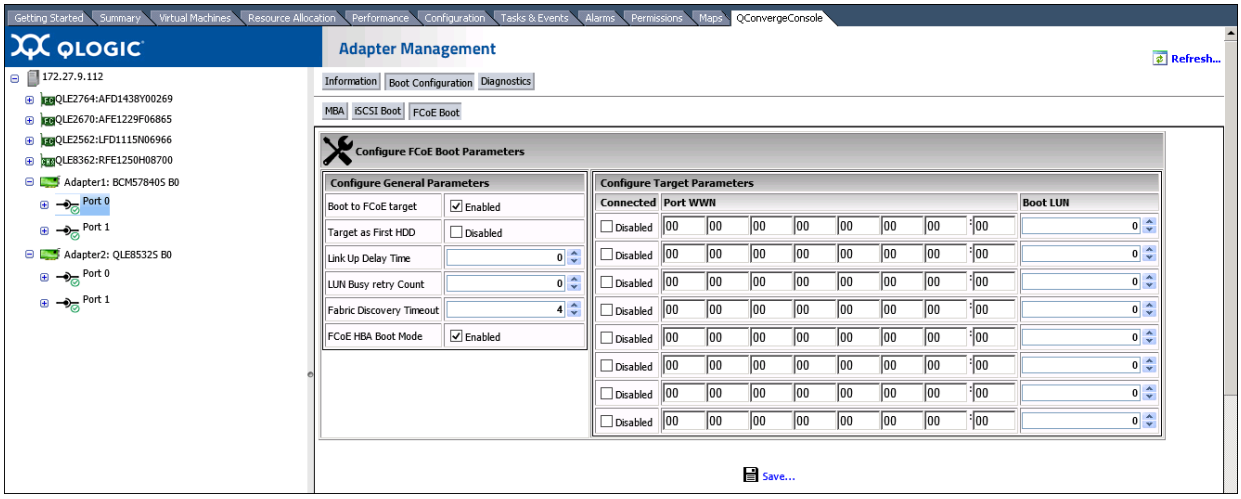



***Figure 5-12. FCoE Boot Configuration Panel***

## Configuring Link Settings

If your 578xx/41000 Series Adapters support SmartAN™ (smart auto negotiation), then the vCenter Server Plug-in has the Link Settings option, as shown in Figure 5-13.

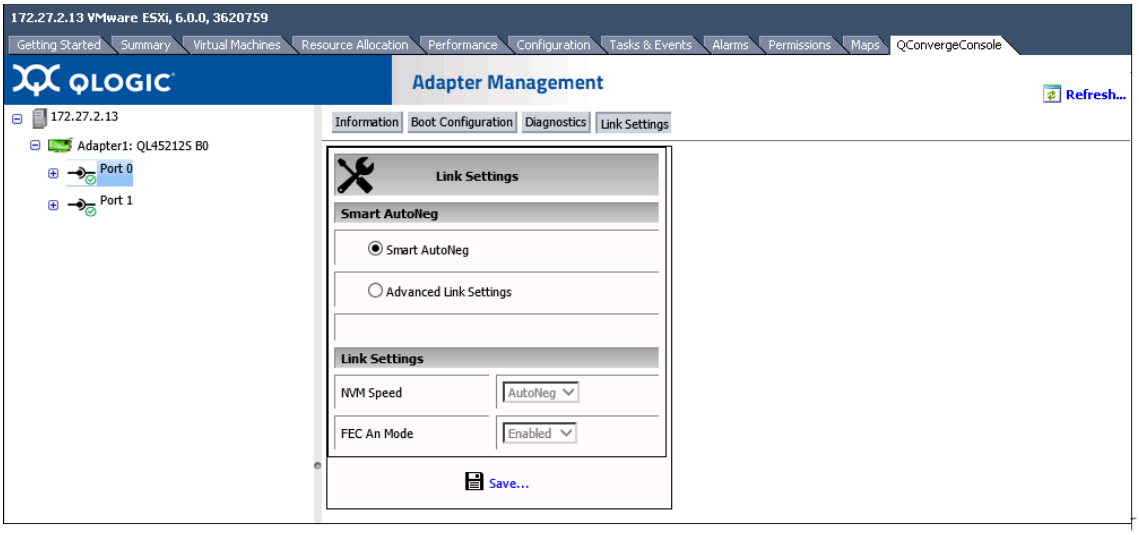



***Figure 5-13. Link Settings***

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 5-14:
   - ❑ **Control Registers**
   - ❑ **Internal Memory**
   - ❑ **EEPROM**
   - ❑ **Interrupt**
   - ❑ **Loopback MAC**[1]
   - ❑ **Loopback PHY**
   - ❑ **LED**

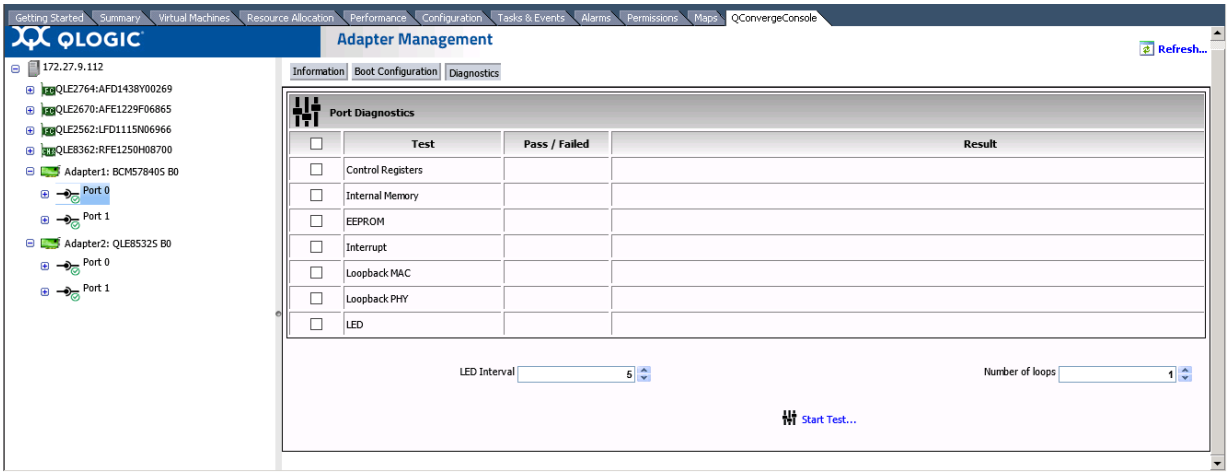



***Figure 5-14. Diagnostics Pane***

[1] This option does not apply to 41000 Series Adapters.

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

**NOTE**

After the test is complete, the Diagnostics page as shown in Figure 5-15 shows the result.

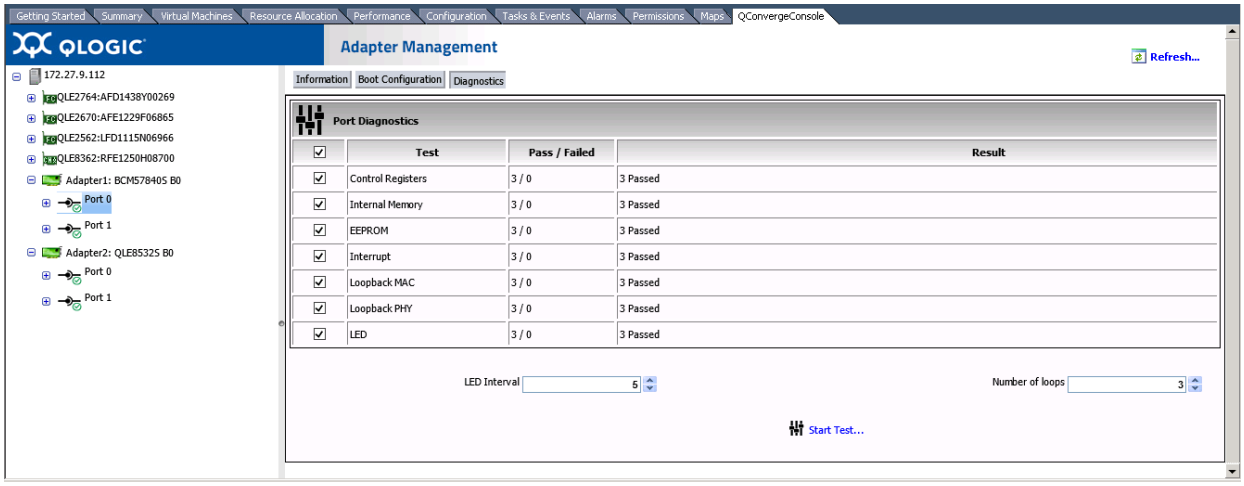



***Figure 5-15. Diagnostics Pane Test Results***

# Viewing Function Information for 578xx/41000 Series Adapters

To view information for functions on 57xxx/41000 Series Adapters, select the function in the system tree. The Adapter Management window shows the function information and function Ethernet statistics.

## Function Information

Figure 5-16 shows function information on 578xx/41000 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**

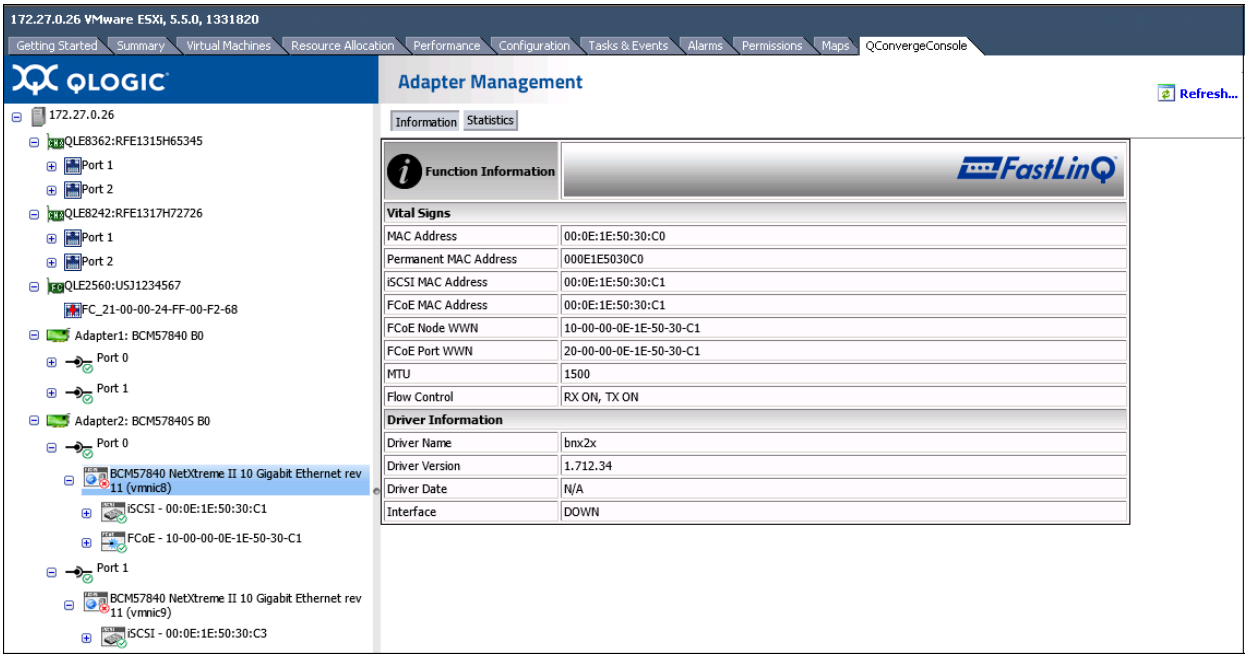



***Figure 5-16. Function Information on 578xx/41000 Series Adapters***

## Function Ethernet Statistics

Figure 5-17 shows the function Ethernet statistics on 578xx/41000 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**.

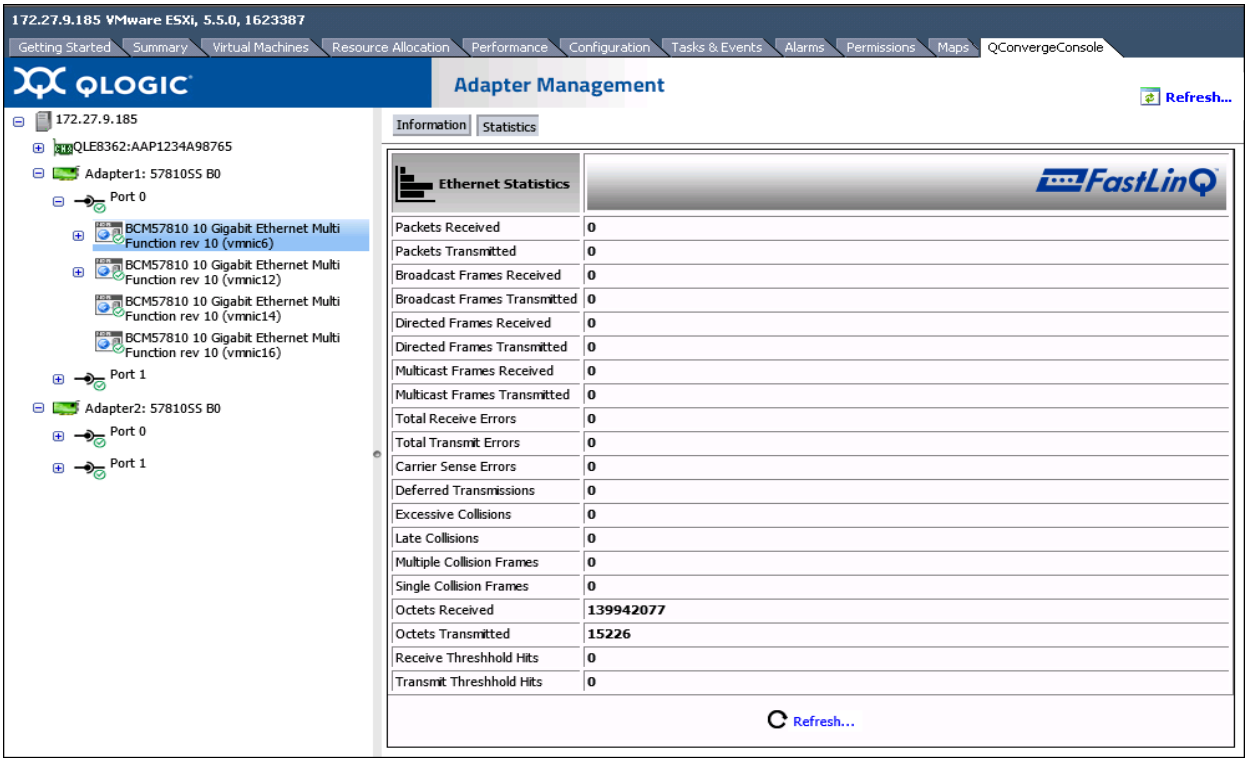



***Figure 5-17. Function Ethernet Statistics on 578xx/41000 Series Adapters***

# Viewing iSCSI Information for 578xx/41000 Series Adapters

To view iSCSI information for 578xx/41000 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 5-18 shows the iSCSI information for 578xx/41000 Series Adapters.

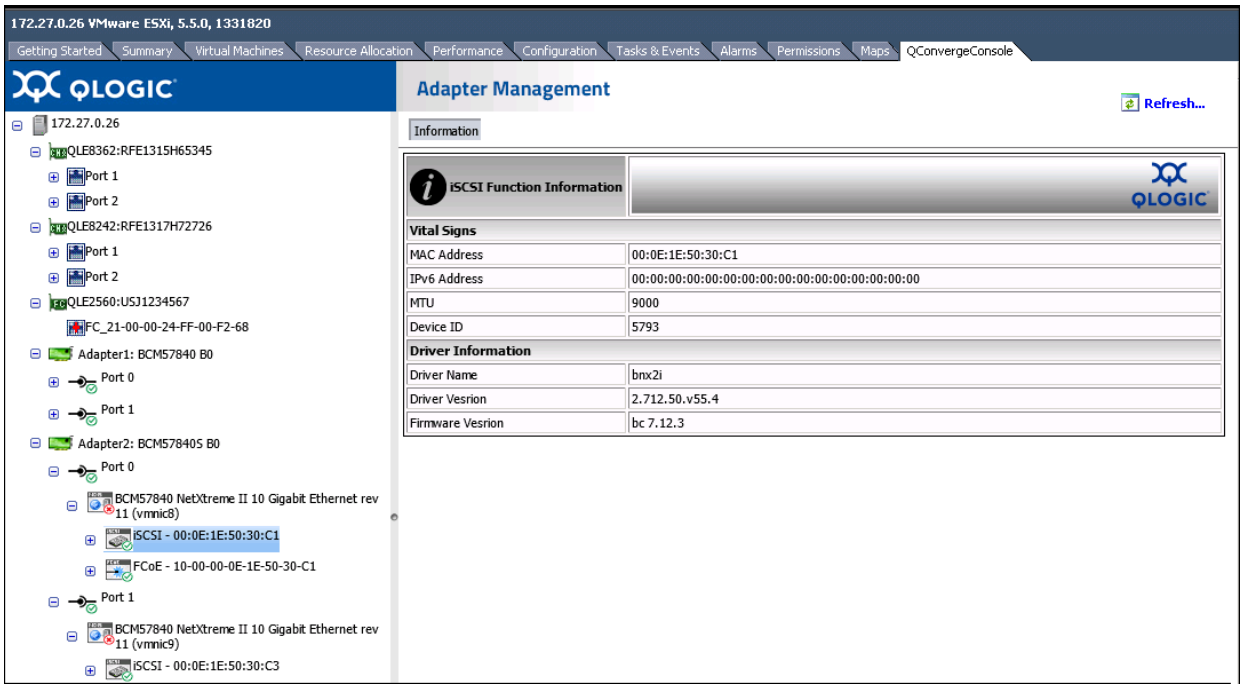



***Figure 5-18. iSCSI Information on 578xx/41000 Series Adapters***

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 5-19 shows the iSCSI Portal Information for 578xx/41000 Series Adapters.

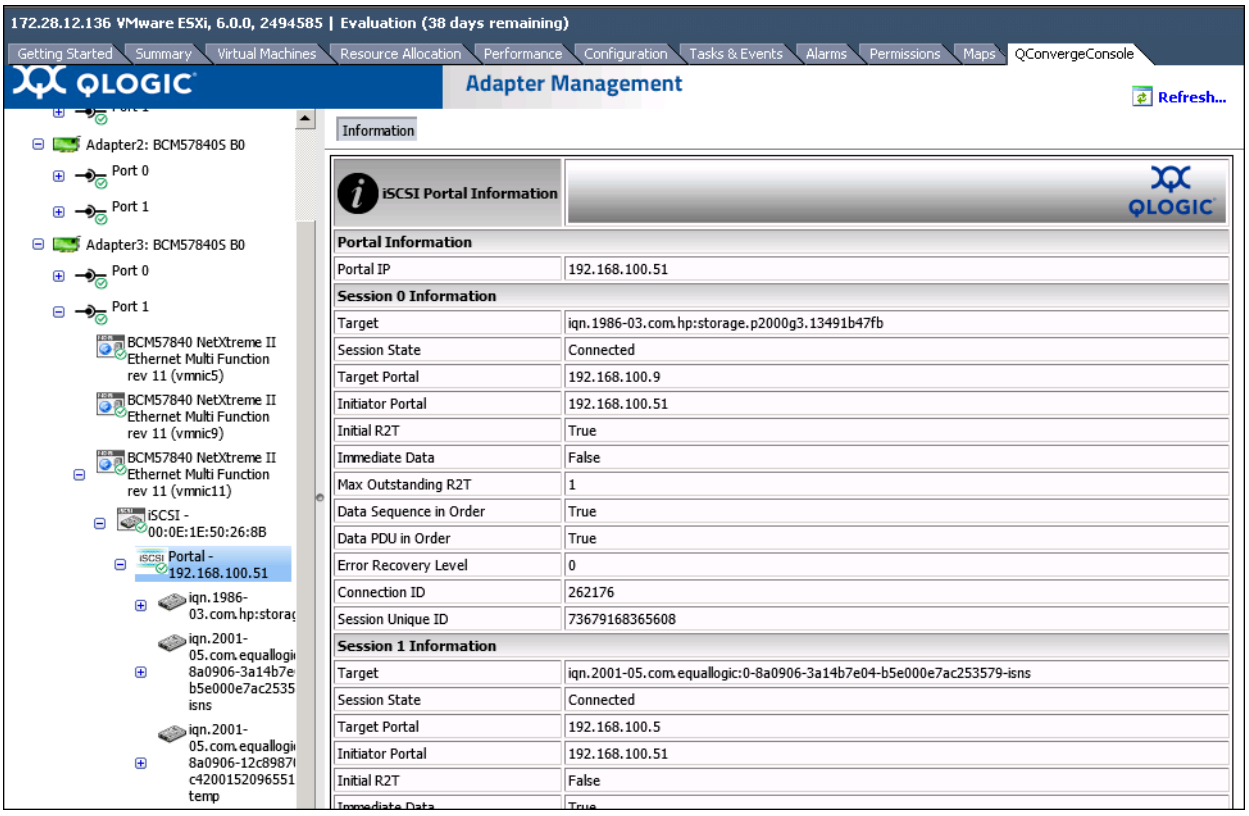



***Figure 5-19. iSCSI Portal Information on 578xx/41000 Series Adapters***

# Viewing Information for an iSCSI Target Connected to 578xx/41000 Series Adapters

To view information for an iSCSI target connected to 578xx/41000 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 5-20 shows the iSCSI target attached to 578xx/41000 Series Adapters.

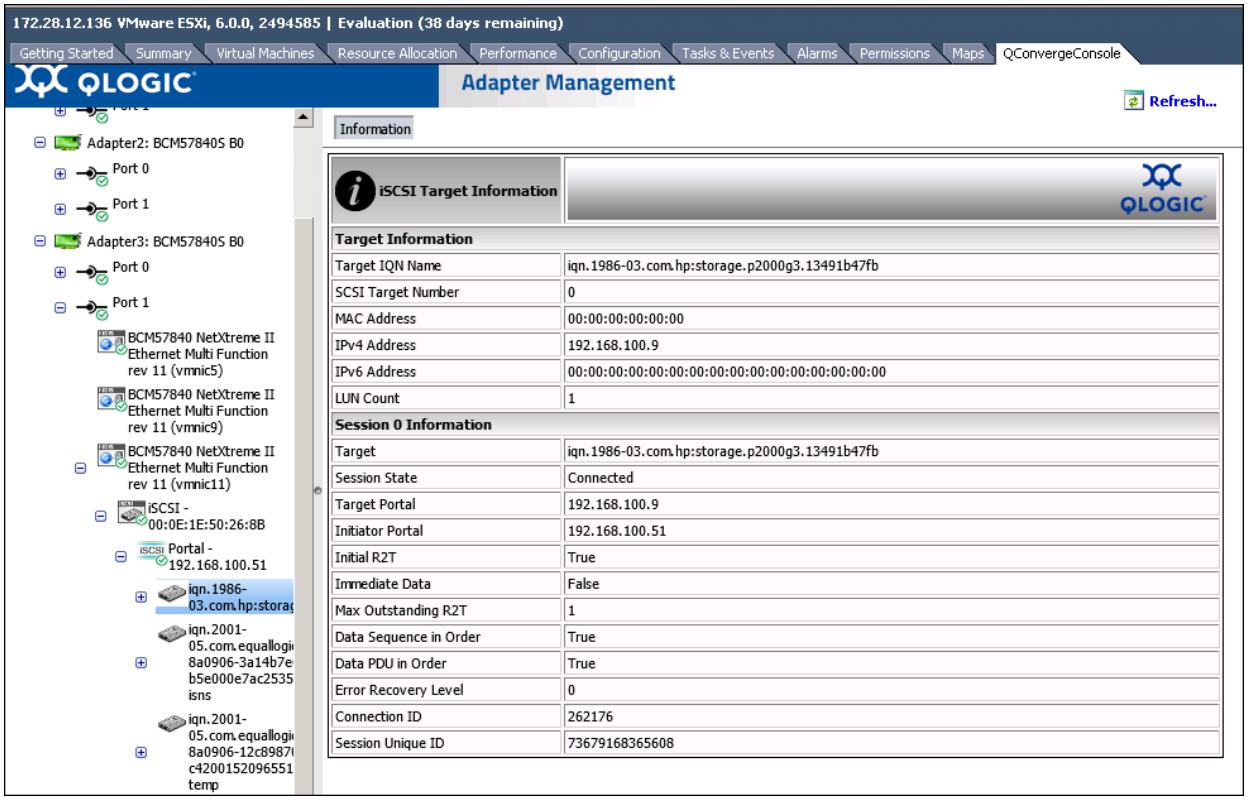



***Figure 5-20. iSCSI Target Attached to 578xx/41000 Series Adapters***

# Viewing Information for an iSCSI LUN Connected to 578xx/41000 Series Adapters

To view information for an iSCSI LUN connected to 578xx/41000 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 5-21 shows the iSCSI LUN Information on 578xx/41000 Series Adapters.

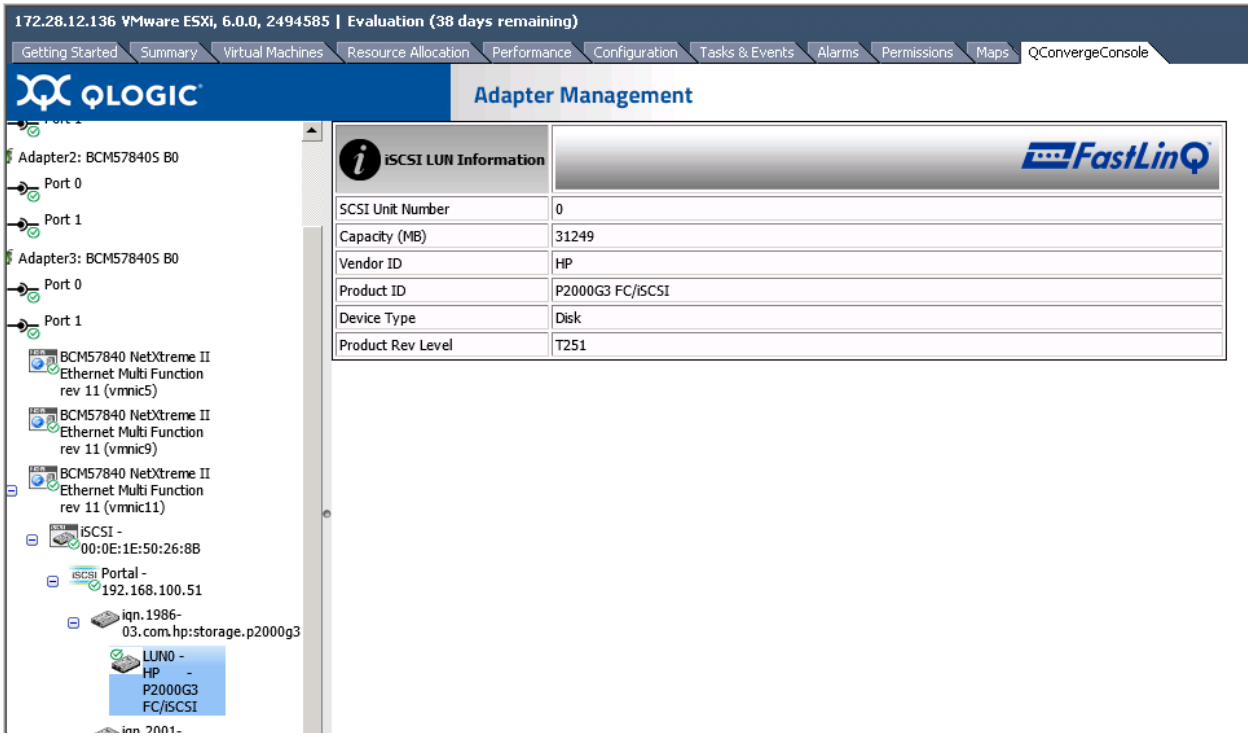



***Figure 5-21. iSCSI LUN Information on 578xx/41000 Series Adapters***

*Part II*

# QConvergeConsole VMware vSphere Web Client Plug-in

Part II describes how to install the QConvergeConsole VMware vSphere Web Client Plug-in and configure 578xx/41000 Series Adapters and adapters based on 578*xx* Controllers. This section includes the following chapters:

- Chapter 7 vSphere Web Client Plug-in Overview
- Chapter 8 Installing the vSphere Web Client Plug-in
- Chapter 9 Getting Started with vSphere Web Client Plug-in
- Chapter 10 Using the vSphere Web Client Plug-in
- Chapter 11 Managing Marvell 578xx and 41000 Series Adapters

**NOTE**

If you are using VMware ESX or ESXi, see the Chapter 2 Installing the vCenter Server Plug-in for details on installation and initial setup.

# 7 vSphere Web Client Plug-in Overview

The vSphere Web Client Plug-in configures QLogic Fibre Channel Adapters, NICs, and Converged Network Adapters using a browser within a VMware vSphere environment. This plug-in is part of the QConvergeConsole suite of management tools. These tools include the QConvergeConsole Web-based GUI and the QConvergeConsole CLI, which are used in operating system environments other than vSphere, such as Windows and Linux.The plug-in provides an interactive GUI that is similar to the QConvergeConsole Web-based tool.

The VMware vCenter Server 6.5 added a new HTML5 based vSphere Client. Marvell provides the new QConvergeConsole HTML5 based vSphere Client Plug-in (HTML5 based vSphere Client Plug-in) with the same functionality and workflow as the vSphere Web Client Plug-in for the 578xx/41000 Series Adapters. In this chapter, vSphere Web Client Plug-in refers to both plug-ins, unless otherwise noted.

## Features

The vSphere Web Client Plug-in enables you to configure Marvell QLogic 2600 and 2700 Series Fibre Channel Adapters, 578xx and 41000 Series Intelligent Ethernet Adapters, and 578xx and 41000 Series Converged Network Adapters in the following ways:

- 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 and ESXi environments.
- Dynamic management of NIC partitioning (NPAR) for supported Converged Network and Intelligent Ethernet adapters, including the ability to modify the partition function type.
- 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

# System Requirements

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

## Hardware Requirements

The vSphere Web Client Plug-in requires the following hardware:

- VMware vCenter ESXi Server with adapters installed
- Server to run the VMware vCenter Server

## Software Requirements

Marvell provides the following components that must be installed on the ESXi Server and the vCenter Server:

- vCenter Server 6.0 or later, or vCenter Server Appliance 6.0 or later with vSphere Web Client Plug-in installed or registered
- vSphere Web Client application installed and pointing to the vCenter Server with the vSphere Web Client Plug-in installed, or registered
- Latest firmware and drivers
- QLogic Adapter CIM Provider (see “Installing the QLogic Adapter CIM Provider” on page 14)
- vSphere Web Client 6.0 or later
- (Optional) Tomcat server to host the plug-in, if not installing on the same server where the vCenter Server is installed. Tomcat 7 is recommended.
- Web browser with the Adobe Flash Player plug-in installed

## Supported Adapters

The vSphere Web Client Plug-in supports the following adapters:

- 2600 and 2700 Series Fibre Channel Adapters
- 578xx and 41000 Series Intelligent Ethernet Adapters
- 578xx and 41000 Series Converged Network Adapters

The HTML5 based vSphere Client Plug-in supports the following adapters:

- BMCM57xx, BCM57xxx, and 41000 Series Intelligent Ethernet Adapters
- BMCM57xx, BCM57xxx, and 41000 Series Converged Network Adapters

# 8 Installing the vSphere Web Client Plug-in

This chapter explains how to install and uninstall the vSphere Web Client Plug-in:

- Installing the vSphere Web Client Plug-in
- “Uninstalling the vSphere Web Client Plug-in” on page 124

**NOTE**

The QLogic Adapter CIM Provider is required for the vSphere Web Client Plug-in to operate. For installation details, see “Installing the QLogic Adapter CIM Provider” on page 14 and “Uninstalling the QLogic Adapter CIM Provider” on page 16.

## Installing the vSphere Web Client Plug-in

**NOTE**

For a list of packages needed to install the vSphere Web Client Plug-in, see “Installation Package Contents” on page 6.

**To install the vSphere Web Client Plug-in:**

1. Gather all information necessary for the installation
   - ❑ IP address of the vCenter Server
   - ❑ vCenter Server credentials (user name and password)
   - ❑ Where to host the QLogic Adapter vSphere Web Client Plug-in (on vCenter Server or other server)

     If you are hosting the vSphere Web Client Plug-in on a non-vCenter Server, ensure the following:
     - The server has Tomcat running as a service. (Tomcat 7 recommended)
     - You have the IP address of the Tomcat instance ready.

- The Tomcat `CATALINA_HOME` environment variable is set to the appropriate directory.
- The Tomcat server is running the HTTPS protocol. The vSphere Web Client Plug-in must be available through an `https` URL. Consult the Tomcat documentation to enable the HTTPS protocol, if it is not already enabled.

**NOTE**

If the installer does not register the plug-in properly, or if you get the `Please check the input strings and try again` error message, and the input strings are correct, there may be an issue with the Tomcat configuration.

Try adding the **SSLv2Hello** protocol to the list of enabled protocols in the HTTPS configuration of Tomcat.

For example:

```
<Connector port="8443"
protocol="org.apache.coyote.http11.Http11Protocol"
               maxThreads="150" SSLEnabled="true" scheme="https"
secure="true" keystoreFile="C:\Users\Administrator\.keystore"
keystorePass="changeit"
                clientAuth="false" sslProtocol="TLS"
sslEnabledProtocols="SSLv2, SSLv3, TLSv1, TLSv1.1, SSLv2Hello"
/>
```

2. Run the installer on the server running the vCenter Server or providing the Tomcat service. Provide the information requested by the installer.

   - ❑ On Windows, double-click the installer and follow the instructions in the GUI.
   - ❑ On Linux:

     a. Make sure the user is the root user (or has root privileges).

     b. Create the installer executable if one does not already exist. Choose the installer for your system (32-bit or 64-bit), and issue the following command:

        **`chmod +x <installer>`**

        Where `<installer>` is the file name of the installer.

     c. Run the installer by issuing the following command:

        **`./<installer>`**

        Where `<installer>` is the file name of the installer.

     d. Follow the instructions provided by the installer.

3. Restart the vCenter Server Web services, or the Tomcat service.

   If the vSphere Web Client Plug-in is being hosted on the vCenter Server, you must restart the VMware Virtual Center Management Web services. In Windows, go to the **Administrative Tools** menu, select **Services**, and restart VMware Virtual Center Management Web services. On the vCenter Server Appliance (Linux), issue the following command:

   ```
   /etc/init.d/vmware-vpxd tomcat-restart
   ```

4. Restart any vSphere Web Client sessions.

   If you are updating a previous version of the vSphere Web Client Plug-in, restart the vSphere Web Client services. In Windows, go to the **Administrative Tools** menu, select **Services**, and restart VMware vSphere Web Client. On the vCenter Server Appliance (Linux), issue the following command:

   ```
   /etc/init.d/vsphere-client restart
   ```

# Uninstalling the vSphere Web Client Plug-in

The procedure for uninstalling the vSphere Web Client Plug-in varies by OS:

- Uninstalling the vSphere Web Client Plug-in on Windows is initiated through the Windows Uninstall Programs Control Panel. Follow the uninstaller user interface to remove the plug-in.
- Uninstalling the vSphere Web Client Plug-in on Linux is initiated by the following command:

```
/opt/qlogic/QLogic\ Adapter\ Web\ Client\ Plugin/Uninstall_QLogic\ Adapter\
Web\ Client\ Plugin/Uninstall\ QLogic\ Adapter\ Web\ Client\ Plugin
```

Follow the prompts (user interface or console commands) to remove the plug-in by the root user.

# 9 Getting Started with vSphere Web Client Plug-in

This chapter describes how to start and exit the vSphere Web Client Plug-in:

- Starting the vSphere Web Client Plug-in
- “Exiting the vSphere Web Client Plug-in” on page 133

## Starting the vSphere Web Client Plug-in

Before starting the vSphere Web Client Plug-in, you need the following:

- vCenter Server with vSphere Web Client Plug-in installed
- vSphere Web Client application installed and pointing to the vCenter Server with the vSphere Web Client Plug-in installed
- Web browser with the Adobe Flash Player plug-in installed (not required for the HTML5 based vSphere Client Plug-in)

**To start the vSphere Web Client Plug-in:**

1. Navigate the Web browser to the vCenter Server. For example:

   ```
   https://<vCenter Server IP Address>
   ```

   A link to either the vSphere Web Client or the vSphere Client (HTML 5) appears.

**NOTE**

vCenter Server 6.0 does not support vSphere Client (HTML 5) and does not show a link to the vSphere Client (HTML 5).

2. Click the link to the client to be used.

   Figure 9-3, Figure 9-4, and Figure 9-5 show examples.

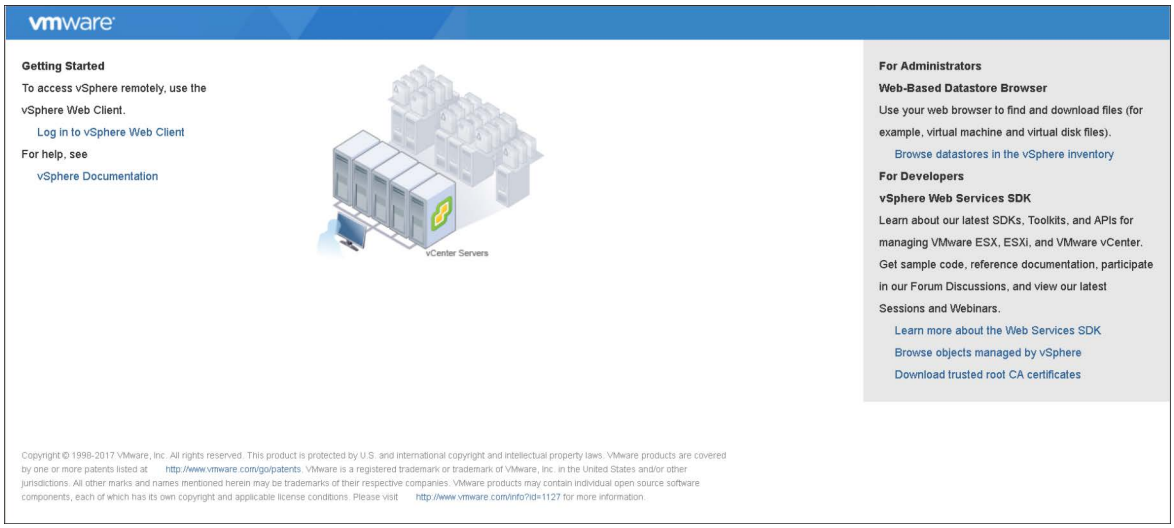



***Figure 9-1. Getting Started with vSphere Web Client Version 6.0***

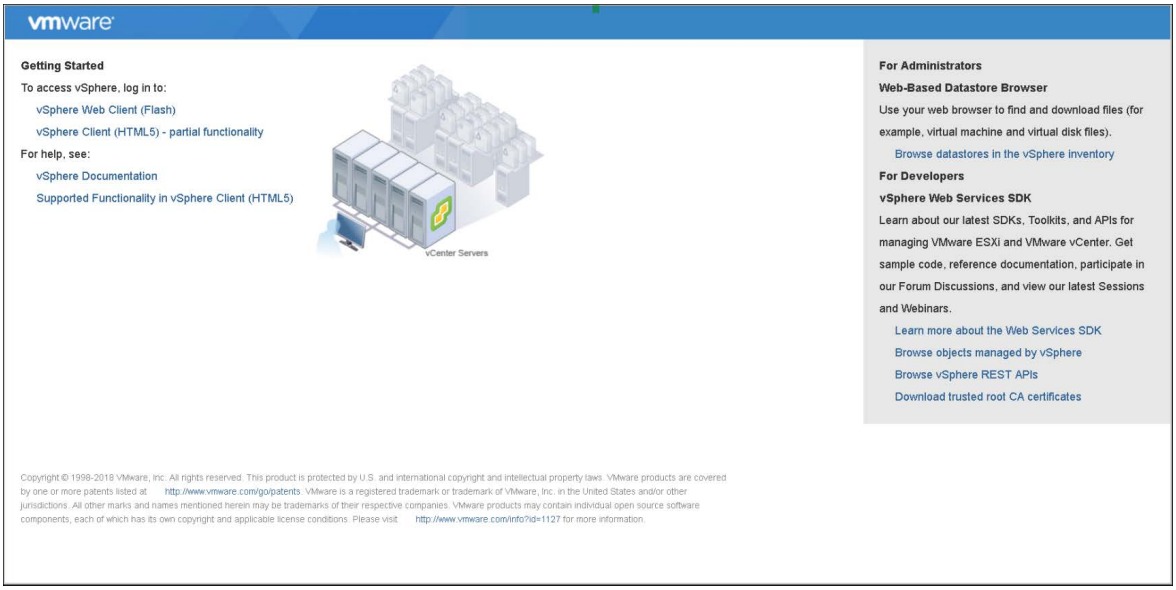



***Figure 9-2. Getting Started with vSphere Web Client Version 6.5***

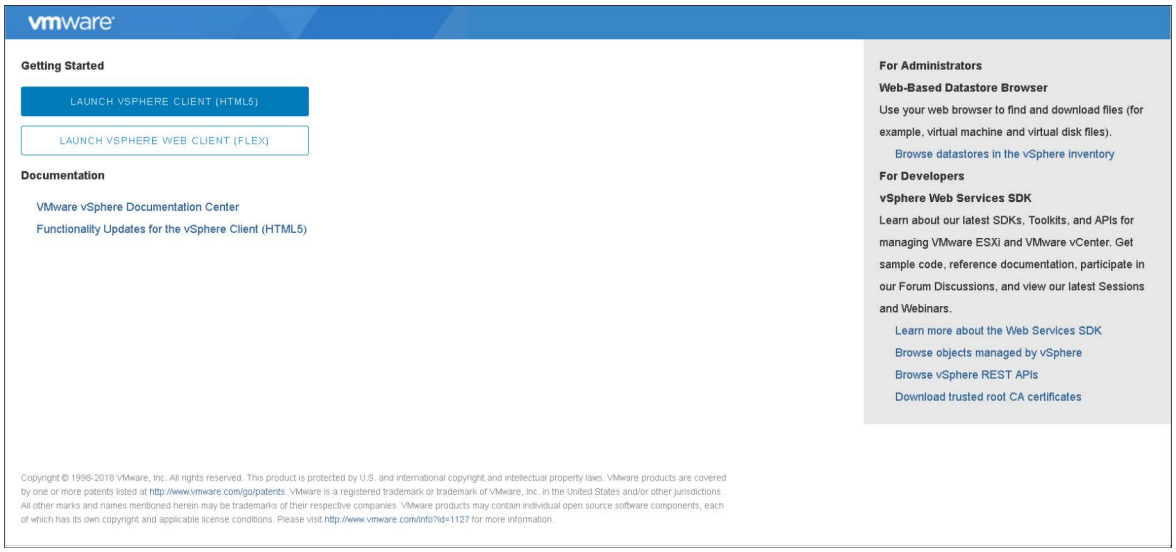



***Figure 9-3. Getting Started with vSphere Web Client Version 6.7***

The login window appears; Figure 9-4 shows an example.

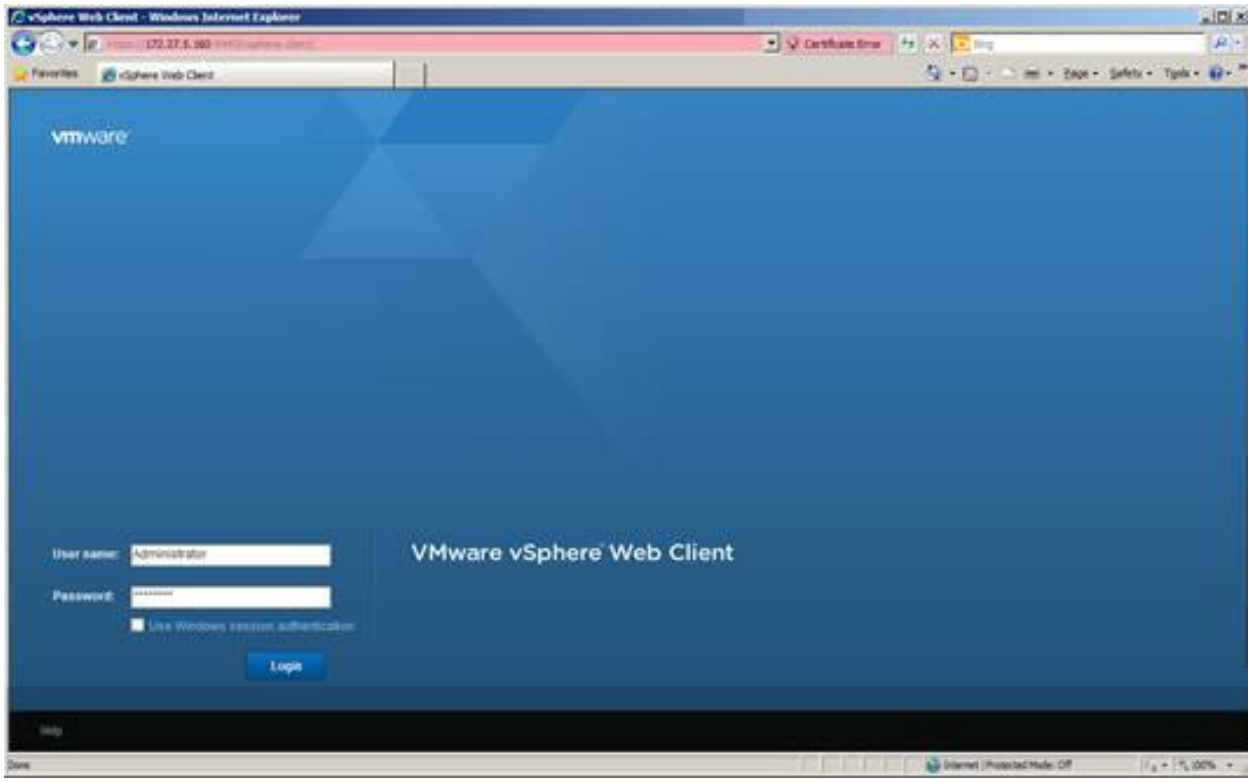



***Figure 9-4. VMware vSphere Web Client Log-in Window***

3. Enter the credentials for the vCenter Server to log in.

   The VMware vSphere Web Client opens, as shown in Figure 9-5.

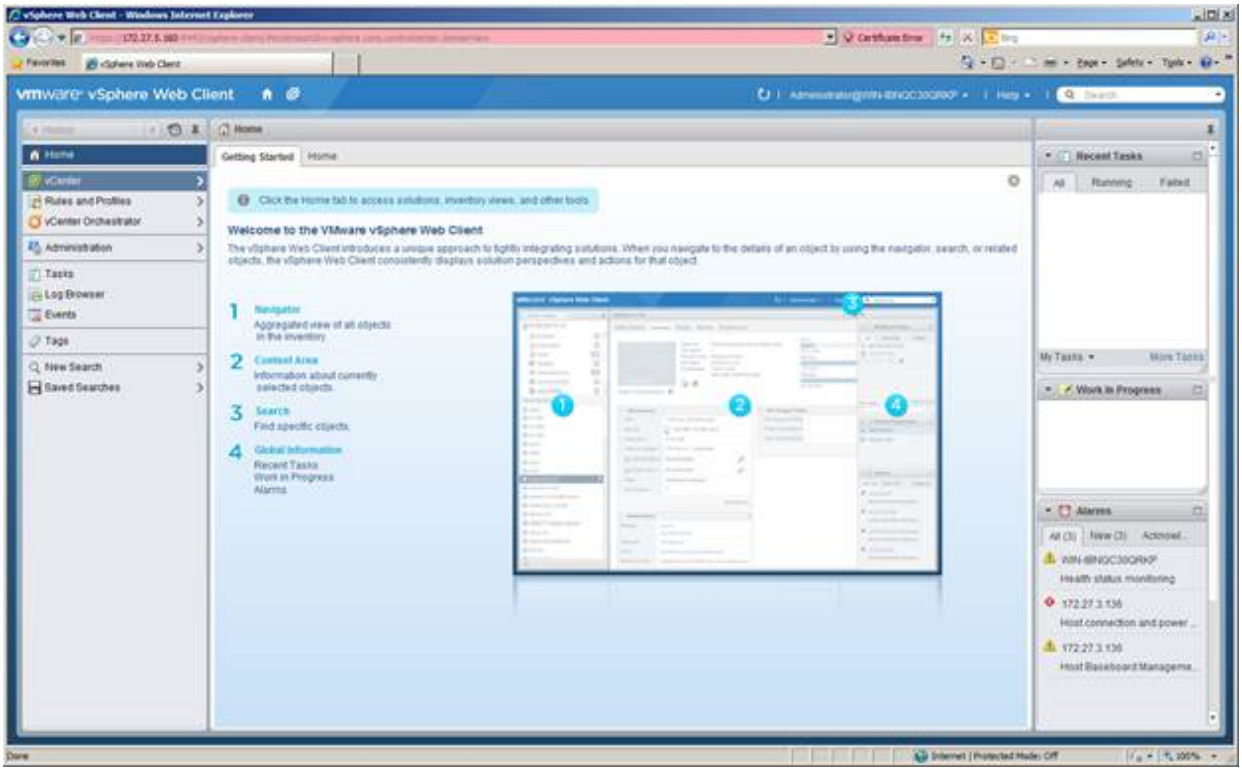



***Figure 9-5. VMware vSphere Web Client Getting Started Page***

4. Click **vCenter** in the left navigation pane.

The vCenter Home page opens, as shown in Figure 9-6.

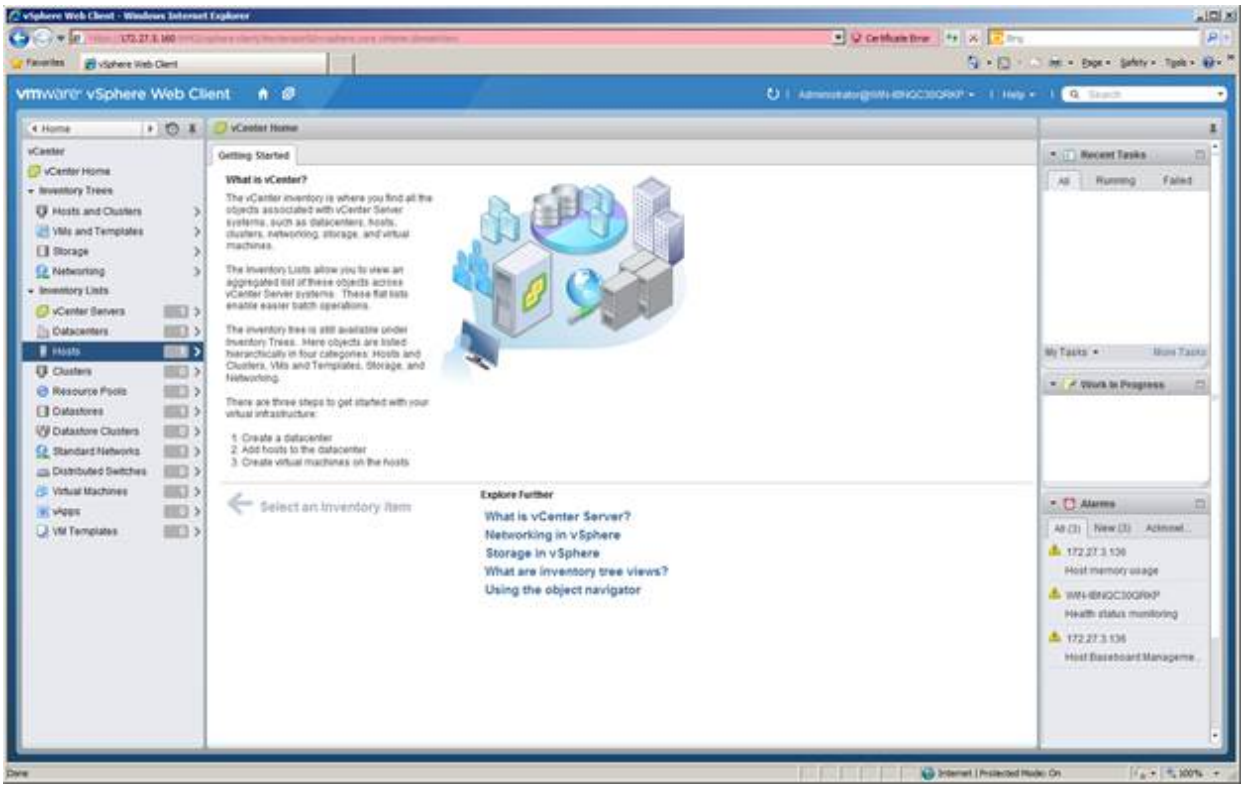



***Figure 9-6. vCenter Home***

5. In the navigation pane on the left, select **Hosts** to display a list of the hosts that are connected to this vCenter Server.

   If no hosts are connected to this vCenter Server, you must connect a host to the vCenter Server following the instructions provided by VMware.

6. Click one of the hosts in the hosts list.

The host Getting Start page opens, as shown in Figure 9-7.

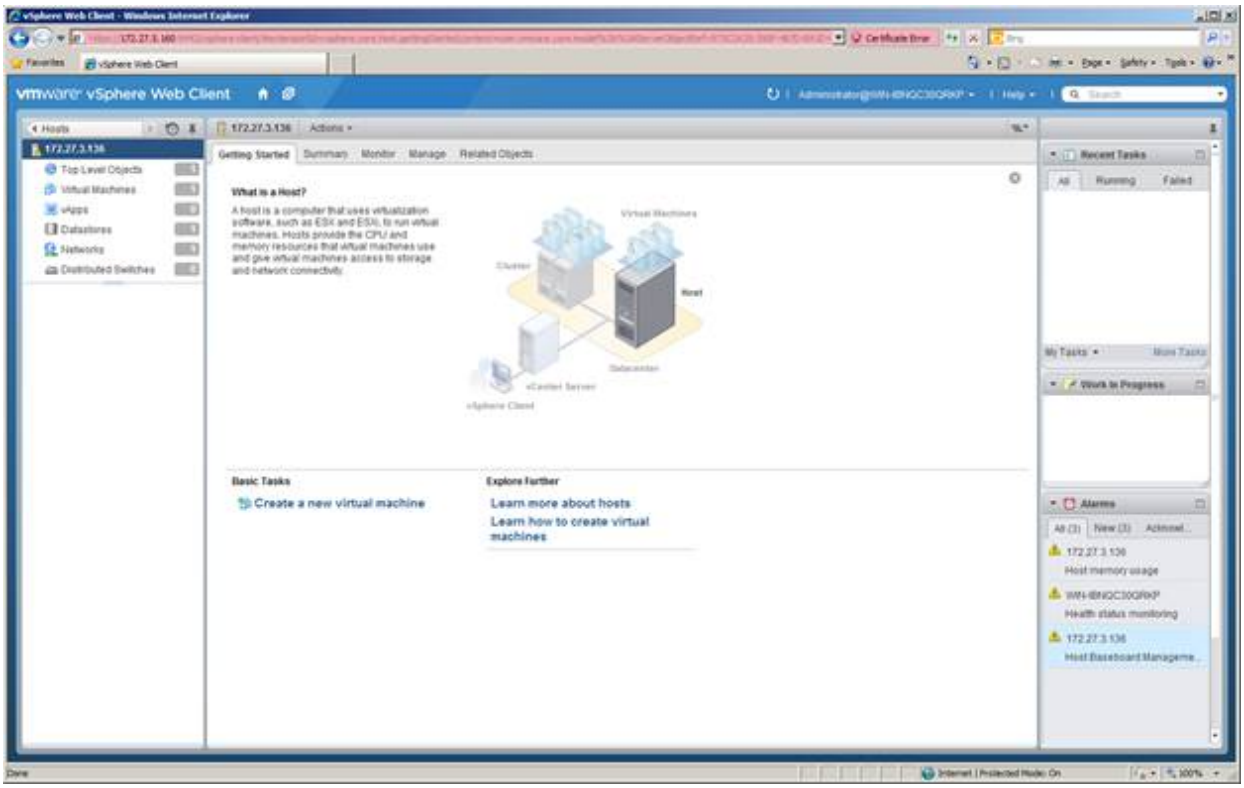



***Figure 9-7. Host Getting Started Page***

7. Follow the steps in the appropriate procedure for the vSphere Web Client version:

   - ❑ For vSphere Web Client 6.0:
     a. Click the **Manage** tab.
     b. Click the **QConvergeConsole** tab.
   - ❑ For vSphere Web Client 6.5 and 6.7:
     a. Click the **Configure** tab.
     b. In the navigation tree under **More**, click the **QConvergeConsole** link.

The QConvergeConsole page allows you to view and configure the adapters found on this host, as shown in Figure 9-8, Figure 9-9, and Figure 9-10.

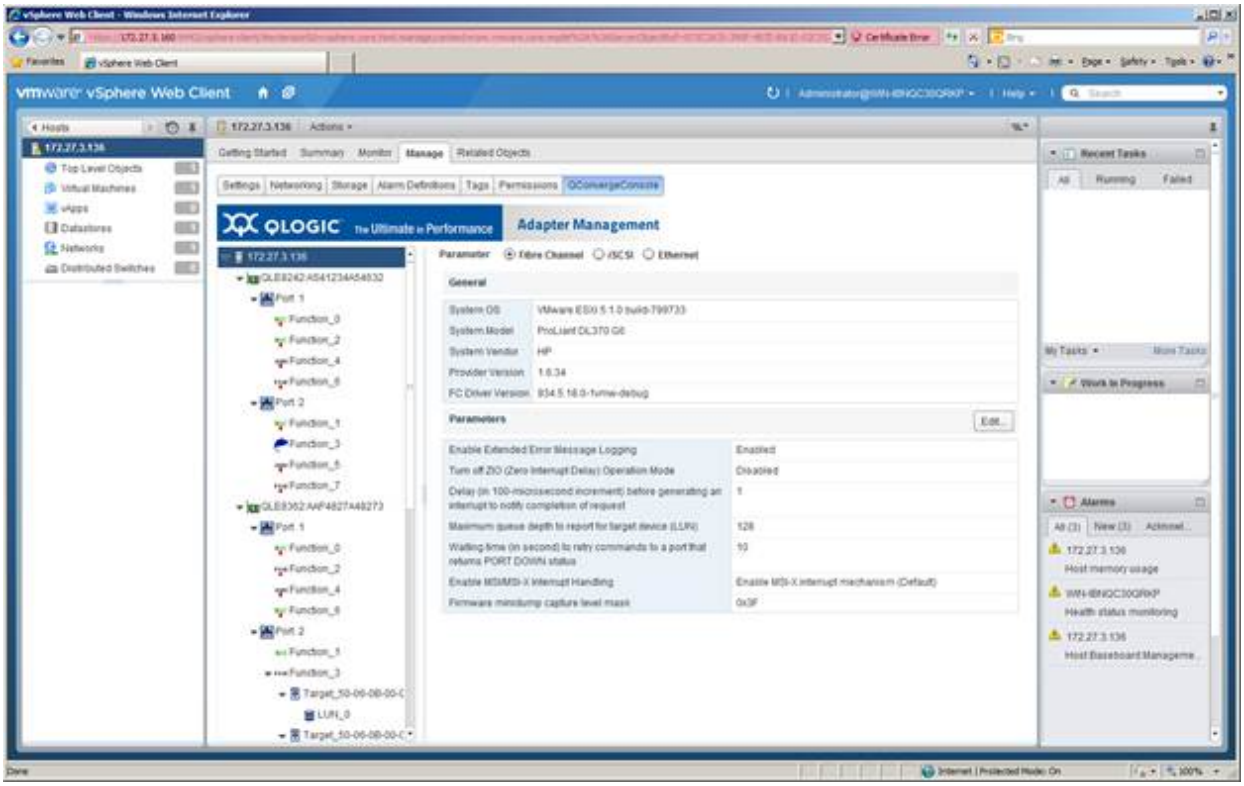



***Figure 9-8. QConvergeConsole Page, vSphere Web Client 6.0***

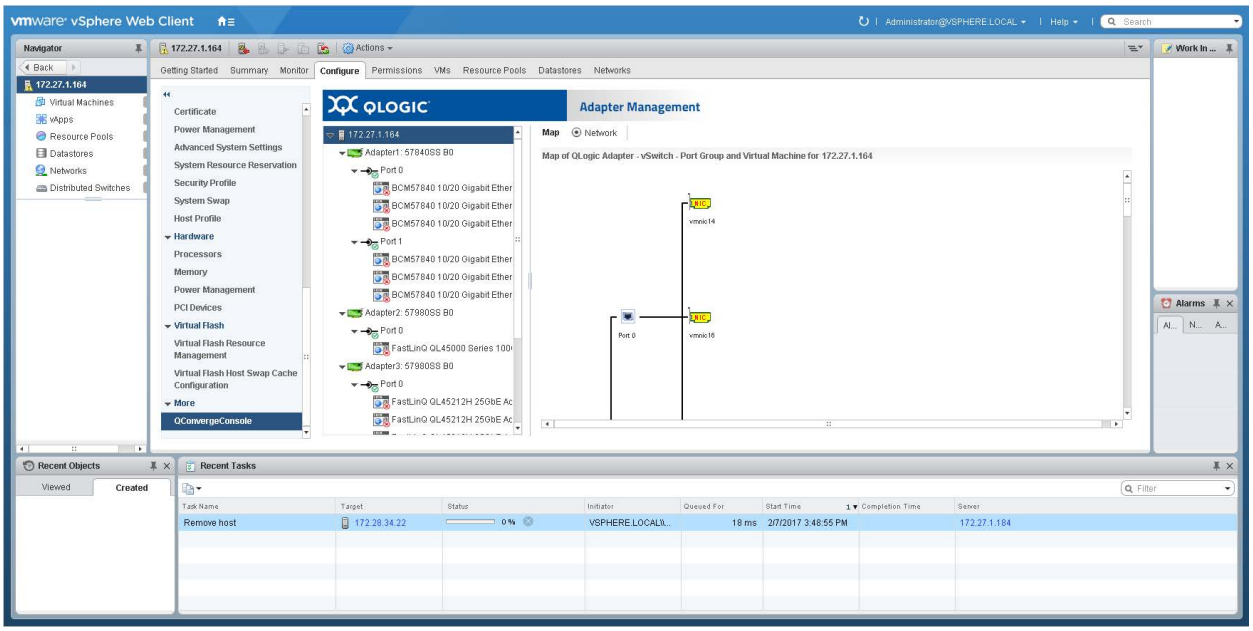



***Figure 9-9. QConvergeConsole Page, vSphere Web Client 6.5/6.7***

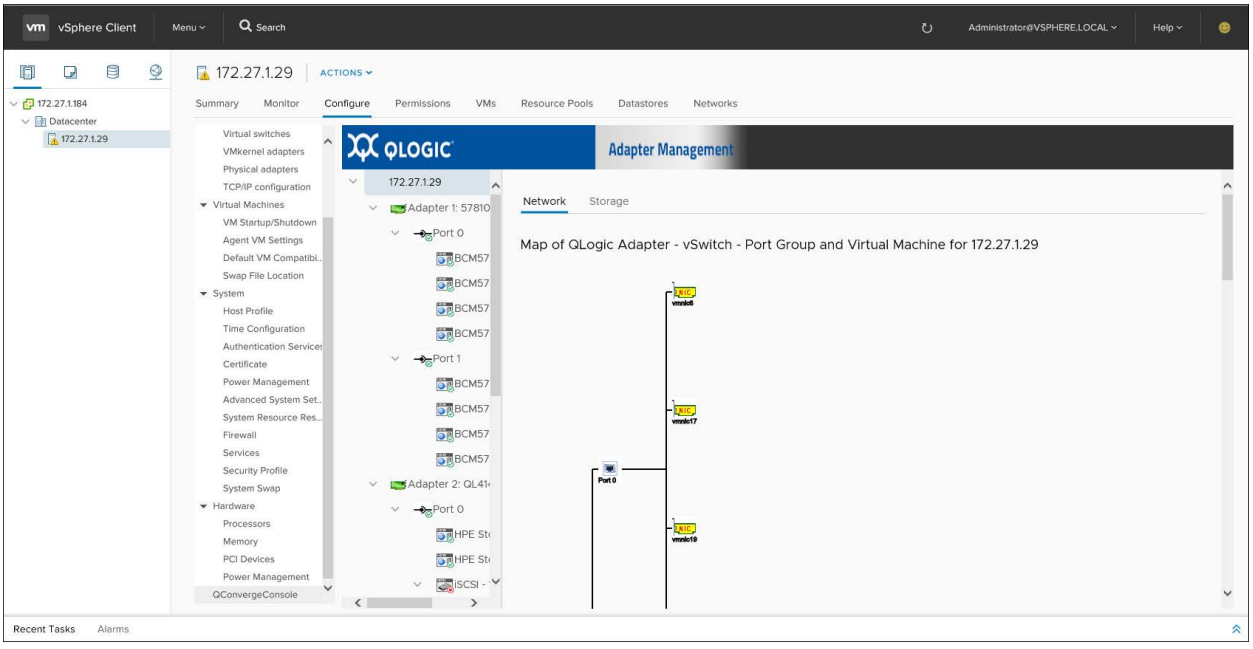



***Figure 9-10. QConvergeConsole Page, HTML Based vSphere Web Client 6.5/6.7***

# Exiting the vSphere Web Client Plug-in

**To exit the vSphere Web Client Plug-in, do either of the following:**

- Close the browser.
- Right-click in the Web Client user interface, and then on the shortcut menu, click **Log Out**.

# 10 Using the vSphere Web Client Plug-in

This chapter provides detailed instructions on how to use the vSphere Web Client Plug-in to manage Marvell adapters and connected devices, including:



## Managing Hosts

Host management using the vSphere Web Client Plug-in includes:



### Displaying the Fabric Adapter Host View

**To display a host view of the fabric adapters:**

1. From the vCenter Home window in the left pane, click **Hosts**.
2. On the Hosts page, click one of the hosts to open the Getting Started page.
3. From the window for the selected host, click the **Manage** tab to open the **Settings** display.

4. Click **QConvergeConsole** to open the host view of the fabric (Figure 10-1).

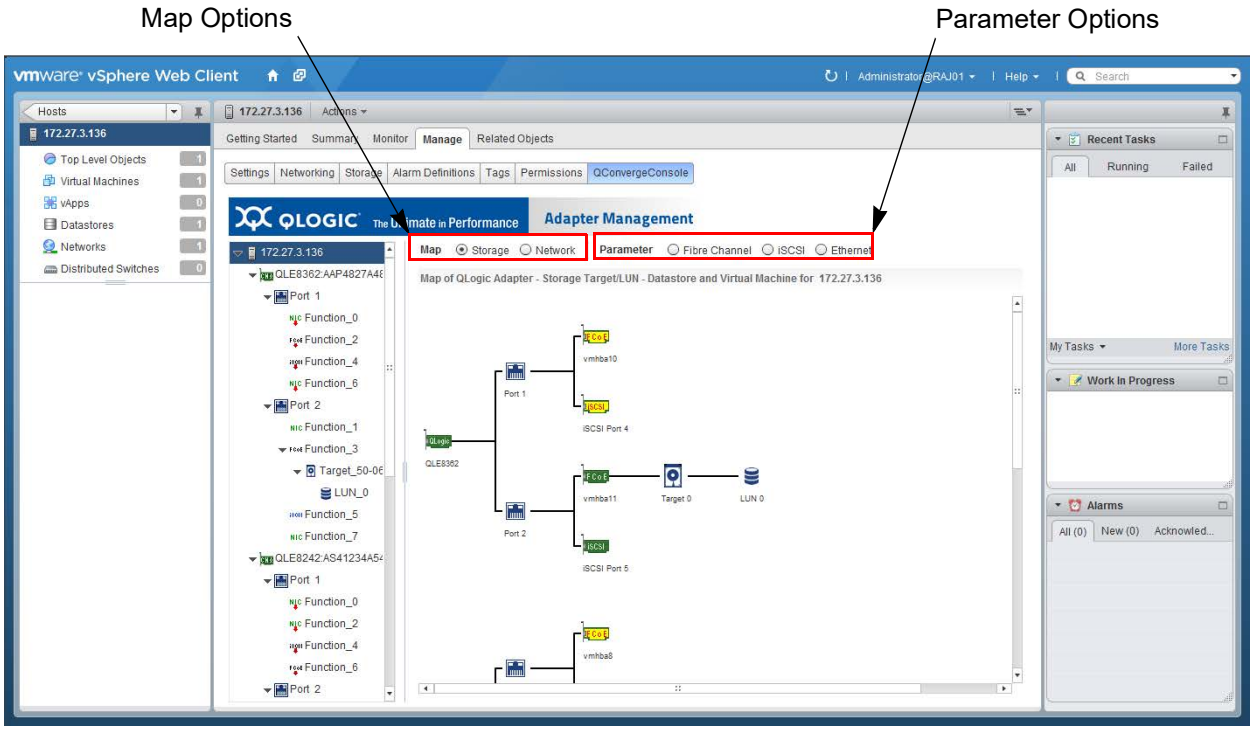



***Figure 10-1. Host View—Storage Map***

The **Map** options show 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:

- Click the **Storage** option to view the network components, target devices, and LUNs.
- Click the **Network** option to view the network components.

The **Parameter** options (**Fibre Channel**, **iSCSI**, and **Ethernet**) provide access to driver information and driver editing tasks. Mouse over an icon in the map to view information about that node in the network.

# Viewing Driver Information

**To view driver information:**

1. From the system tree, expand a host.
2. Click the appropriate **Parameter** options to view information about the **Fibre Channel**, **iSCSI**, or **Ethernet** drivers.

For example, Figure 10-2 shows Fibre Channel driver information.

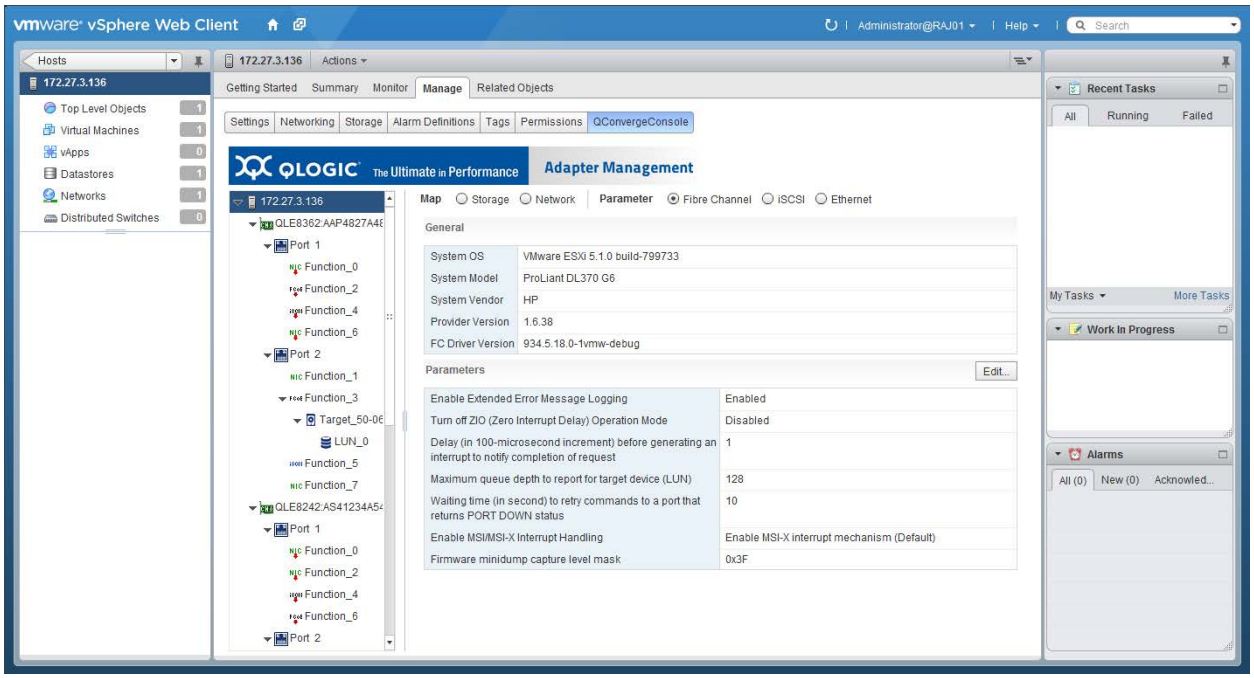



***Figure 10-2. Fibre Channel Driver Information***

# Configuring Driver Parameters

**To configure driver parameters:**

1. From the system tree, expand a host.
2. Click the appropriate **Parameter** option for the driver you want to configure (**Fibre Channel**, **iSCSI**, or **Ethernet**).
3. Click **Edit** to open the parameter dialog box in which to make changes.

Figure 10-3 shows an example of the Fibre Channel Driver Parameters dialog box.

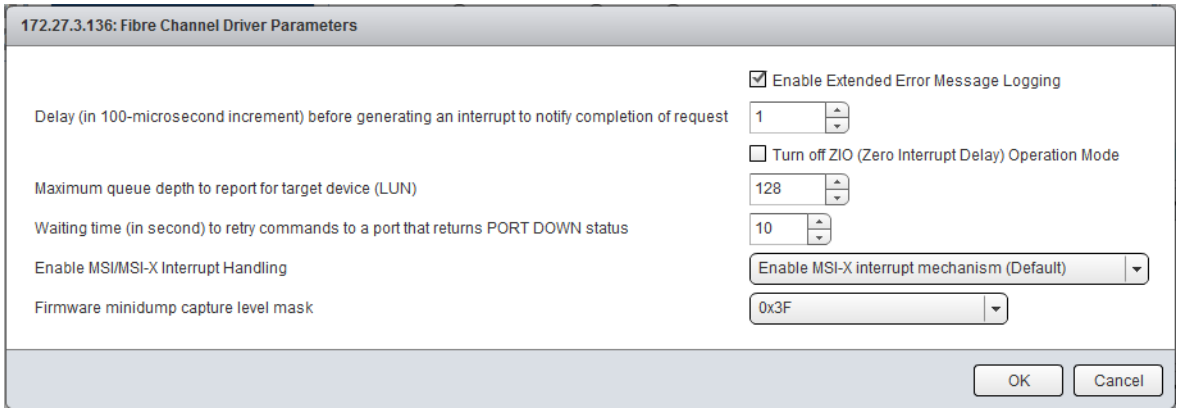



***Figure 10-3. Fibre Channel Driver Parameters***

4. Make the necessary entries and selections, and then click **OK**.

Table 10-1 lists the configurable Fibre Channel, iSCSI, and Ethernet parameters.

***Table 10-1. Driver Parameters***

| Driver Type | Parameters |
|---|---|
| Fibre Channel | Enable Extended Error Message Logging<br>Turn off ZIO (Zero Interrupt Delay) Operation Status<br>Delay before generating an interrupt to notify completion of request (100ms)<br>Maximum queue depth to report for target device (LUN)<br>Waiting time (in seconds) to retry commands to a port that returns PORT DOWN status<br>Enable MSI/MSI-X interrupt handling<br>Firmware minidump capture level mask |
| iSCSI | Command Timeout (s)<br>Firmware minidump capture level mask |

***Table 10-1. Driver Parameters (Continued)***

| Driver Type | Parameters |
|---|---|
| Ethernet | Enable automatic firmware recovery<br>Enable TCP Segmentation Offload (TSO)<br>Enable hardware VLAN support<br>Enable hardware Large Receive Offload (LRO)<br>Enable firmware minidump support<br>Enable Receive Netqueue support<br>Enable checking of MAC address/MAC learning in the receive path<br>Enable MSI interrupt handling<br>Enable MSI-X interrupt handling<br>Transmit Ring<br>Receive Ring size for 1500 MTU<br>Receive Ring size for jumbo (9000) MTU<br>Firmware minidump capture level mask<br>Number of receive netqueues per function (excluding default receive queue) |

# Managing Adapters

Click an adapter in the host view system tree to display information about the adapter, as shown in Figure 10-4.

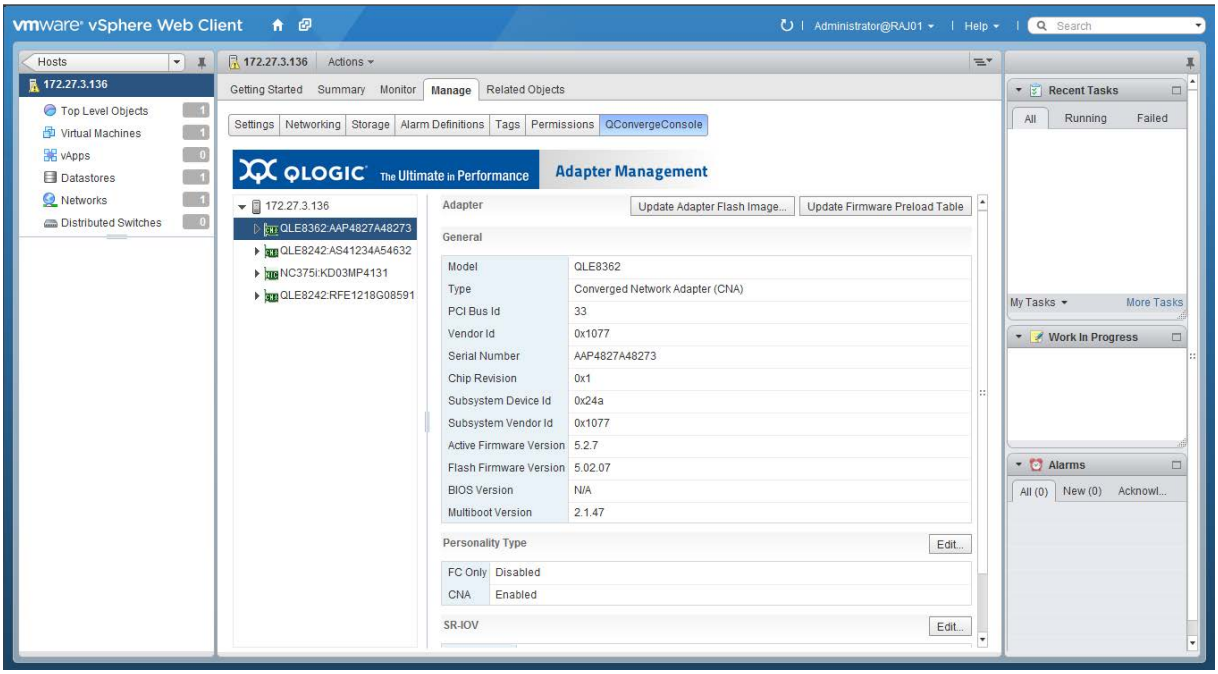



***Figure 10-4. Host View—Adapters***

Depending on the adapter you select, one or more of the following options are available:

- Updating the Adapter Flash Image
- Updating the Firmware Preload Table
- Updating the Firmware SerDes Table
- Configuring the Personality Type
- Configuring SR-IOV Parameters

## Updating the Adapter Flash Image

**To update the adapter Flash image:**

1. From the host system tree, expand a host node.
2. Select an adapter.
3. In the content pane, click **Update Adapter Flash Image**.

4. In the file selection dialog box, select the firmware file (`.bin`) with which to perform the update, and then click **OK**.
5. In the Update Adapter Flash Image dialog box, verify the current Flash version, and then click **OK** to continue with the update.

   The dialog box shows the progress of the update.

# Updating the Firmware Preload Table

Depending on the adapter you select, the **Update Firmware Preload Table** option may be available.

**To update the firmware preload table:**

1. From the host system tree, expand a host.
2. Select an adapter.
3. In the content pane, click **Update Firmware Preload Table**.
4. In the file selection dialog box, select the firmware file (`.dat`) with which to perform the update, and then click **OK**.
5. In the Update Firmware Preload Table dialog box, verify the current preload table version, and then click **OK** to continue with the update.

   The dialog box reports the progress of the update.

# Updating the Firmware SerDes Table

Depending on the adapter you select, the **Update Firmware SerDes Table** option may be available.

**To update the firmware SerDes table:**

1. From the host system tree, expand a host.
2. Select an adapter.
3. In the content pane, click **Update Firmware SerDes Table**.
4. In the file selection dialog box, select the firmware file (`.dat`) with which to perform the update, and then click **OK**.
5. In the Update Firmware SerDes Table dialog box, verify the current SerDes table version, and then click **OK** to continue with the update.

   The dialog box reports the progress of the update.

# Configuring the Personality Type

Depending on the adapter you select, the personality type **Edit** option may be available.

**To configure the personality type:**

1. From the host system tree, expand a host.
2. Select an adapter.
3. In the content pane, click the personality type **Edit** option.
4. In the Personality Type dialog box, click the option for the personality you want (**FC only** or **CNA**), and then click **OK**.

# Configuring SR-IOV Parameters

Depending on the adapter you select, the single root input/output verification (SR-IOV) **Edit** option may be available.

**NOTE**

SR-IVO Parameters are applicable to Ethernet Adapters only.

**To configure the SR-IOV parameters:**

1. From the host system tree, expand a host.
2. Select an adapter.
3. In the content pane, click the SR-IOV **Edit** option.
4. In the SR-IOV dialog box, specify the following parameters:
   - **Enable SR-IOV**—Select the check box to enable SR-IOV, or clear the check box to disable SR-IOV.
   - **VFs on Port 1**—Enter the quantity of virtual functions (VFs) on port 1.
   - **VFs on Port 2**—Enter the quantity of VFs on port 2.
5. To save your changes, click **OK**.

# Managing NIC (Ethernet) Ports

In the host system tree, expand a NIC adapter node to view the ports. Select a port to view information about the port in the content pane, as shown in Figure 10-5.

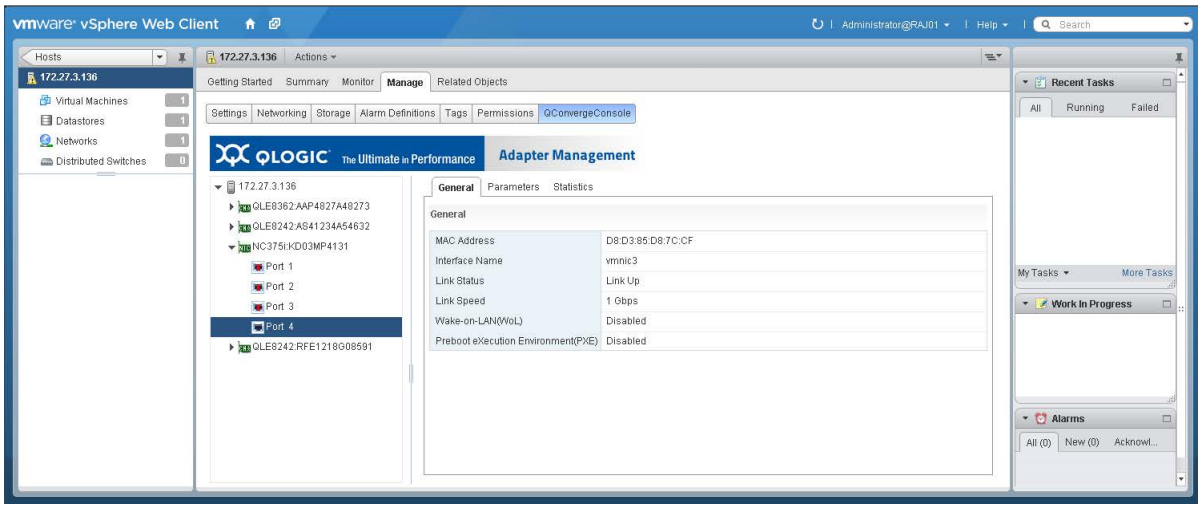



***Figure 10-5. Managing NIC Ports***

After selecting a port, you have the following options:

- Configuring NIC Port Ethernet Parameters
- Viewing NIC Port Statistics
- Retrieving NIC Port Debug Dump

## Configuring NIC Port Ethernet Parameters

**To configure Ethernet parameters:**

1. In the host system tree, expand a NIC adapter node to view the ports.
2. Select a port to view information about the port in the content pane.
3. In the content pane, click the **Parameters** tab.
4. In the Ethernet Parameters dialog box, enter values for the following parameters, and then click **OK**.
   - ❑ **Rx Coalesce (µs)**
   - ❑ **Rx Max Coalesced Frames**
   - ❑ **Tx Coalesce (µs)**
   - ❑ **Tx Max Coalesced Frames**

# Viewing NIC Port Statistics

**To view port statistics:**

1. In the host system tree, expand a NIC adapter node to view the ports.
2. Select a port to display information about the port.
3. In the content pane, click the **Statistics** tab to open the Statistics page (Figure 10-6).

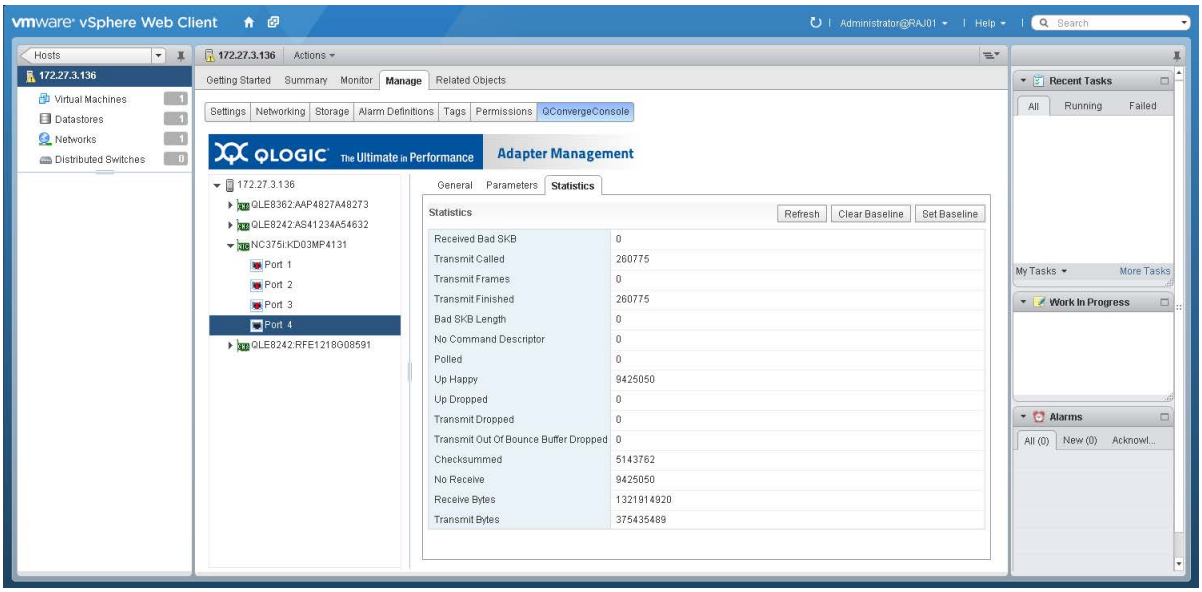



***Figure 10-6. NIC Port Statistics***

4. As needed, click the following buttons to manipulate the statistics:
   - ❑ **Set Baseline**—Records the current statistics values as a reference point.
   - ❑ **Refresh**—Updates the statistics to their current values. If there is a baseline, the **Refresh** option shows the change since the baseline.
   - ❑ **Clear Baseline**—Clears an existing baseline.

# Retrieving NIC Port Debug Dump

Depending on the port you select, the **Diagnostics** tab may be available.

**To retrieve the firmware debug dump:**

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

3. In the content pane, click the **Diagnostics** tab.

   The Diagnostics page shows the **Firmware Debug Dump** information (Figure 10-7).

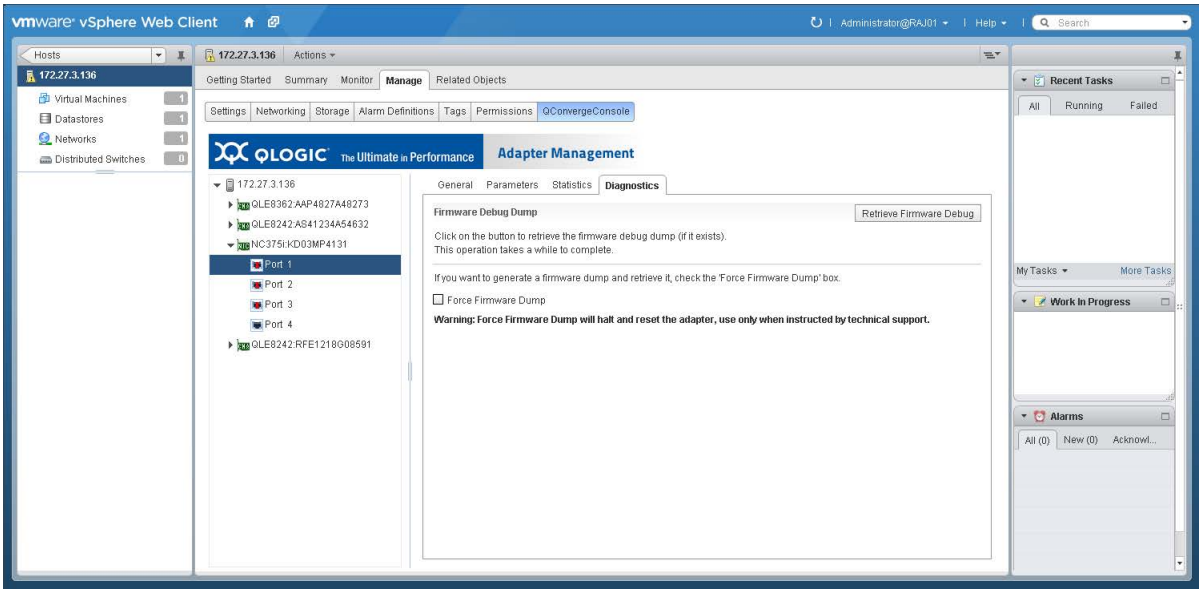



***Figure 10-7. NIC Port Firmware Debug Dump***

4. To retrieve the `debug.bin` file, click **Retrieve Firmware Debug**.

# Managing Fibre Channel Ports

In the host system tree, expand a Fibre Channel adapter node to view the ports, and then select a port. In the content pane, click the **General** tab to display information about the port, as shown in Figure 10-8. The figure shows port 50-00-53-37-E5-FB-F0-04 is assigned by the fabric through the Brocade switch.

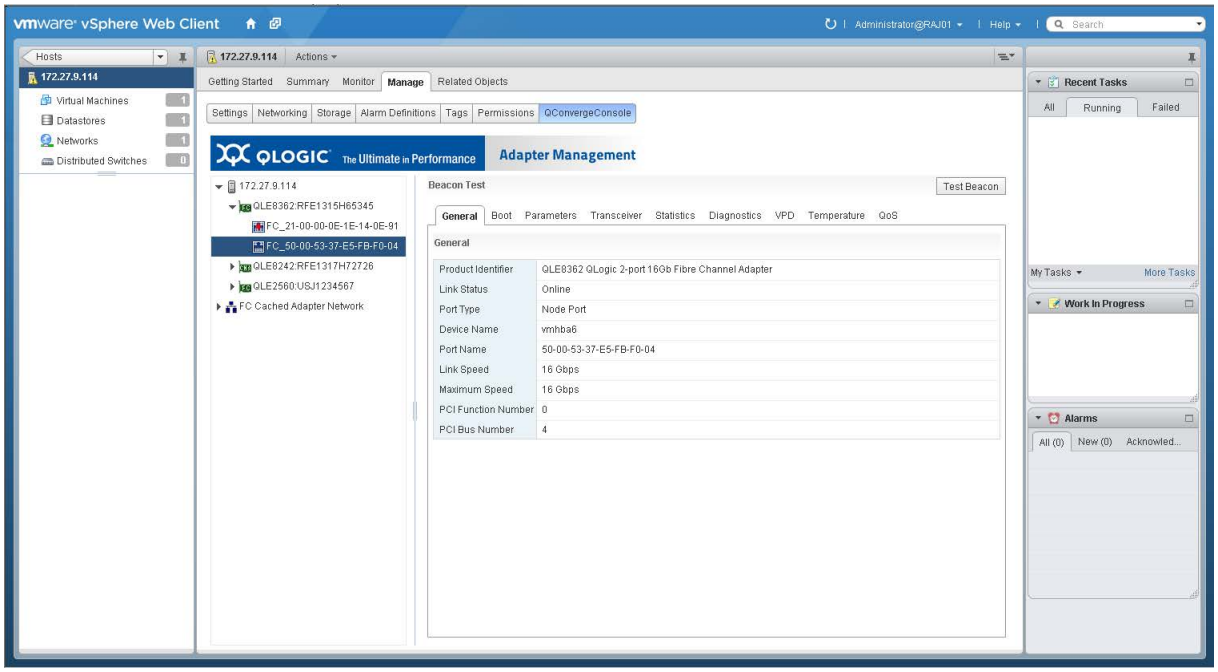



***Figure 10-8. Fibre Channel Ports***

After selecting a port, you have the options described in the following sections:

- Using the Fibre Channel Port Test Beacon
- Configuring Fibre Channel Port Boot Parameters
- Configuring Fibre Channel Port Parameters
- Viewing Fibre Channel Port Transceiver Information
- Viewing Fibre Channel Port Statistics
- Running Fibre Channel Port Diagnostics
- Viewing Fibre Channel Port VPD
- Viewing Fibre Channel Port Temperature Information
- Viewing Fibre Channel QoS Information

The fabric can assign the world wide port name (WWPN) 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.

The D_Port indication from the Brocade switch appears as a label attached to the port, as shown in Figure 10-9.

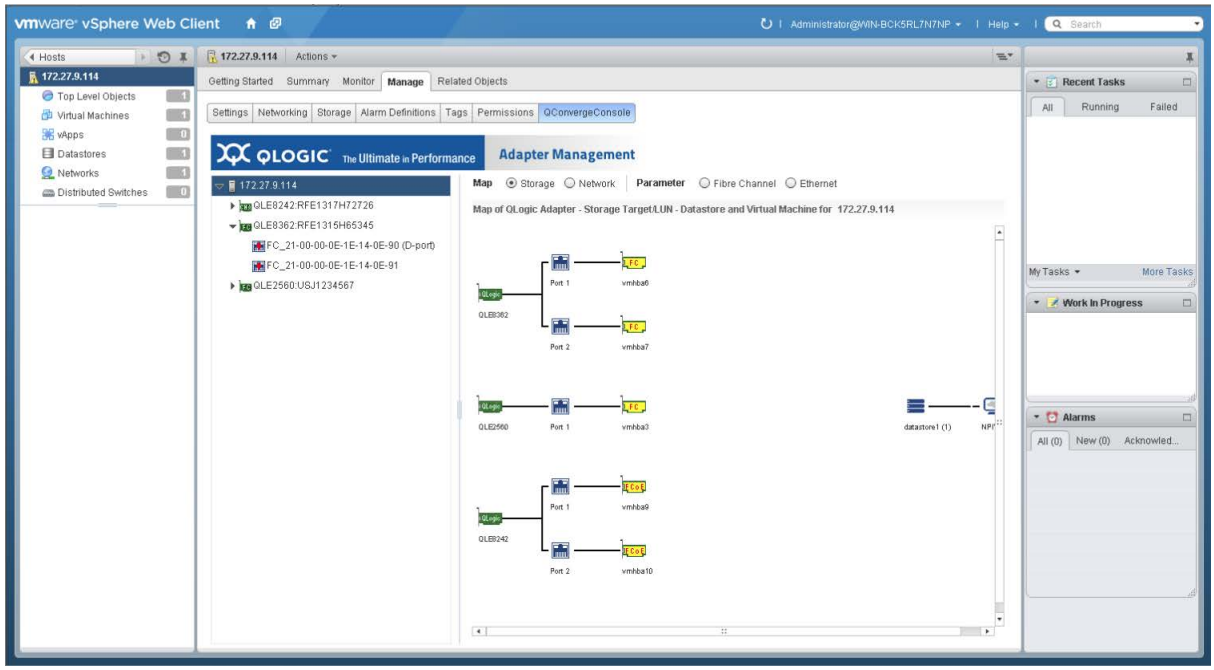



***Figure 10-9. Fibre Channel D_Port Indication***

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 10-10, FEC is enabled on port FC_21-00-00-0E-1E-08-C2-00. FEC is an optional feature that can be enabled (or disabled) on links operating at 16Gbps. Its use is mandatory, and thus it is enabled automatically on links operating at 32Gbps.

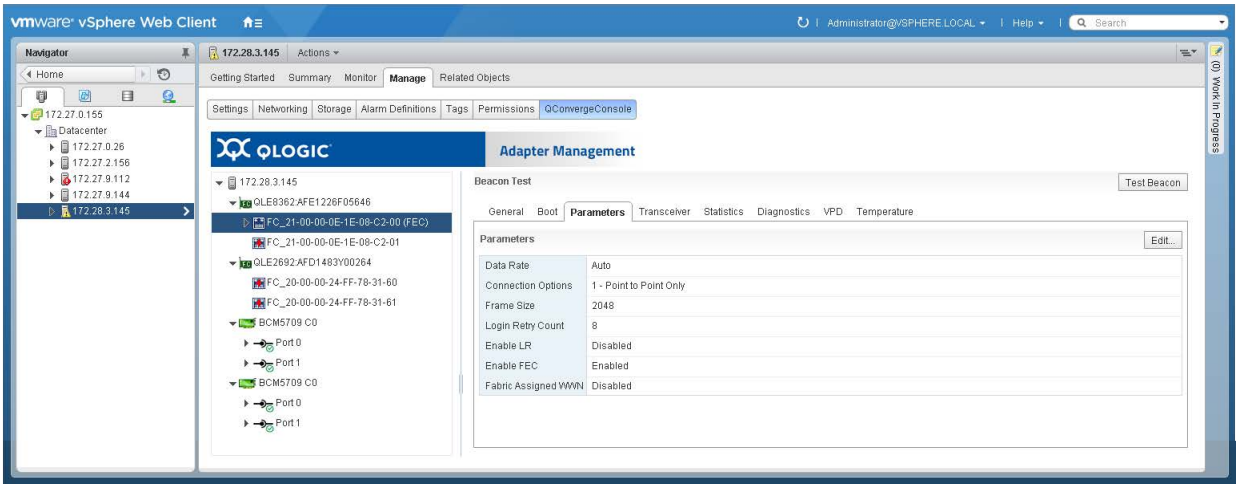



***Figure 10-10. FEC Enabled on Port FC_21-00-00-0E-1E-08-C2-00***

# Using the Fibre Channel Port Test Beacon

Depending on the port you select, the **Test Beacon** option may be available.

**To activate or deactivate the port beacon:**

1. In the host system tree, expand a Fibre Channel adapter node to view the ports.
2. Select a port to display information about the port.
3. In the content pane, click **Test Beacon**.
4. In the Beacon Test dialog box, click **Beacon On** (or **Beacon Off**), and then click **OK**.

# Configuring Fibre Channel Port Boot Parameters

**To configure port boot parameters:**

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

3. In the content pane, click the **Boot** tab to view the Boot page (Figure 10-11).

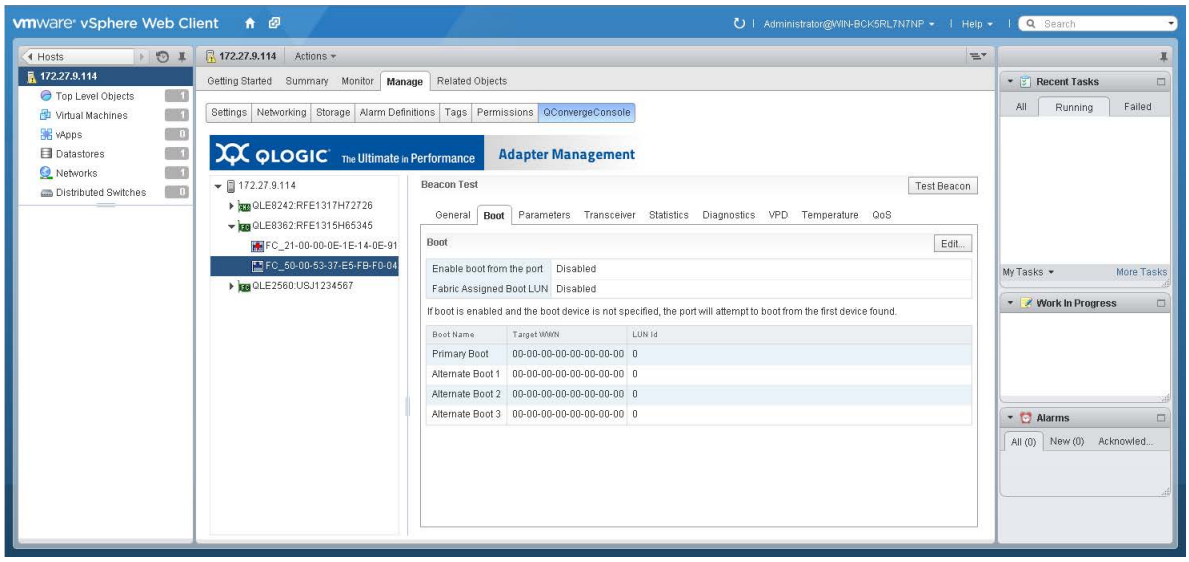



***Figure 10-11. Fibre Channel Boot Parameters***

4. On the Boot page, click **Edit**.
5. In the FC/FCoE Boot dialog box, enter values for the following parameters, and then click **OK**:

   - ❑ **Enable boot from the port**
   - ❑ **Fabric Assigned Boot LUN**
   - ❑ **Boot from the selected device(s)**
   - ❑ **Primary Boot: Target WWN, LUN ID**
   - ❑ **Alternate Boot 1: Target WWN, LUN ID**
   - ❑ **Alternate Boot 2: Target WWN, LUN ID**
   - ❑ **Alternate Boot 3: Target WWN, LUN ID**

# Configuring Fibre Channel Port Parameters

**To configure Fibre Channel port parameters:**

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

3. In the content pane, click the **Parameters** tab to open the Parameters page (Figure 10-12).

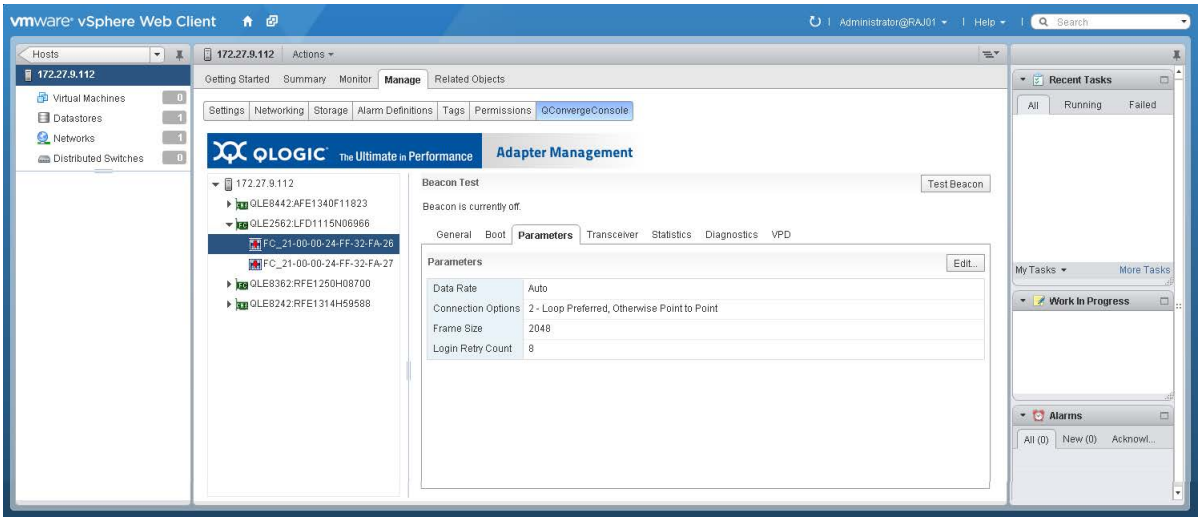



***Figure 10-12. Fibre Channel Port Parameters***

4. On the Parameters page, click **Edit**.
5. In the Fibre Channel Port Parameters dialog box, enter values for the following parameters, and then click **OK**.
   - ❑ **Data Rate**
   - ❑ **Connection Options**
   - ❑ **Frame Size**
   - ❑ **Login Retry Count**

# Viewing Fibre Channel Port Transceiver Information

**To view transceiver information:**

1. In the host system tree, expand a Fibre Channel adapter node to view the ports.
2. Select a port to display information about the port.
3. In the content pane, click the **Transceiver** tab to open the Transceiver Information page (Figure 10-13).

4. Click **Refresh** to update the display with current information.

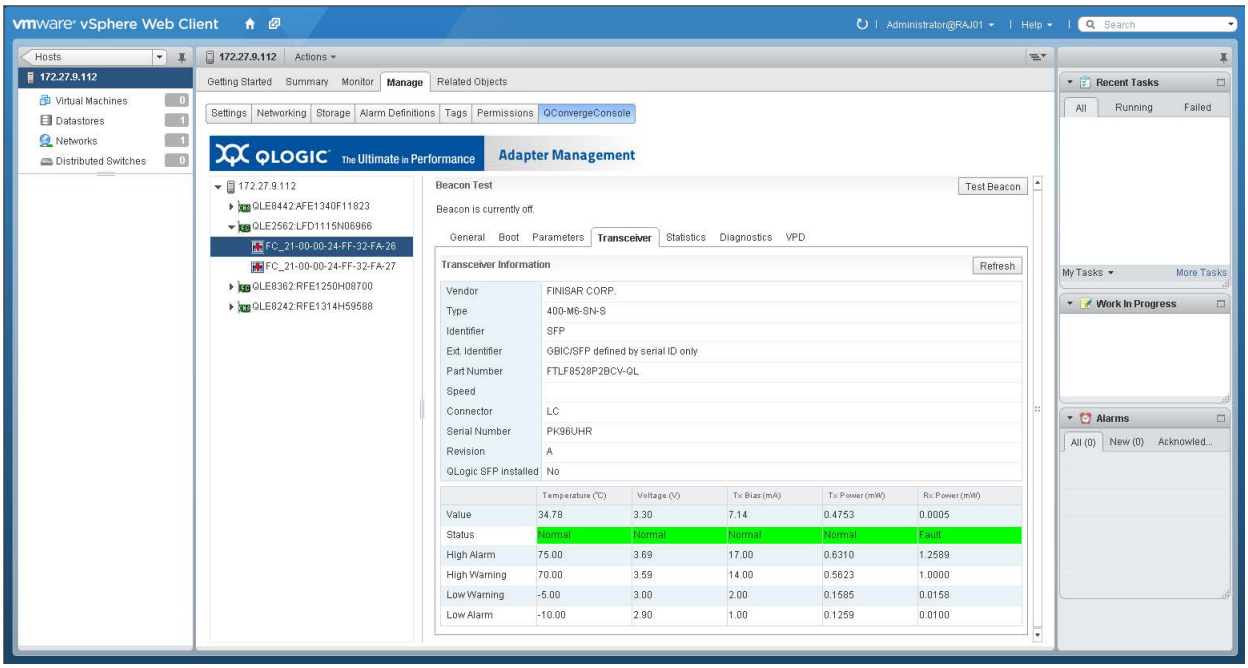



***Figure 10-13. Fibre Channel Port Transceiver Information***

# Viewing Fibre Channel Port Statistics

**To display port statistics:**

1. In the host system tree, expand a Fibre Channel adapter node to view the ports.
2. Select a port to display information about the port.
3. In the content pane, click the **Statistics** tab to open the Statistics page (Figure 10-14).

4. (Optional) Click **Refresh** to update the display with current information.

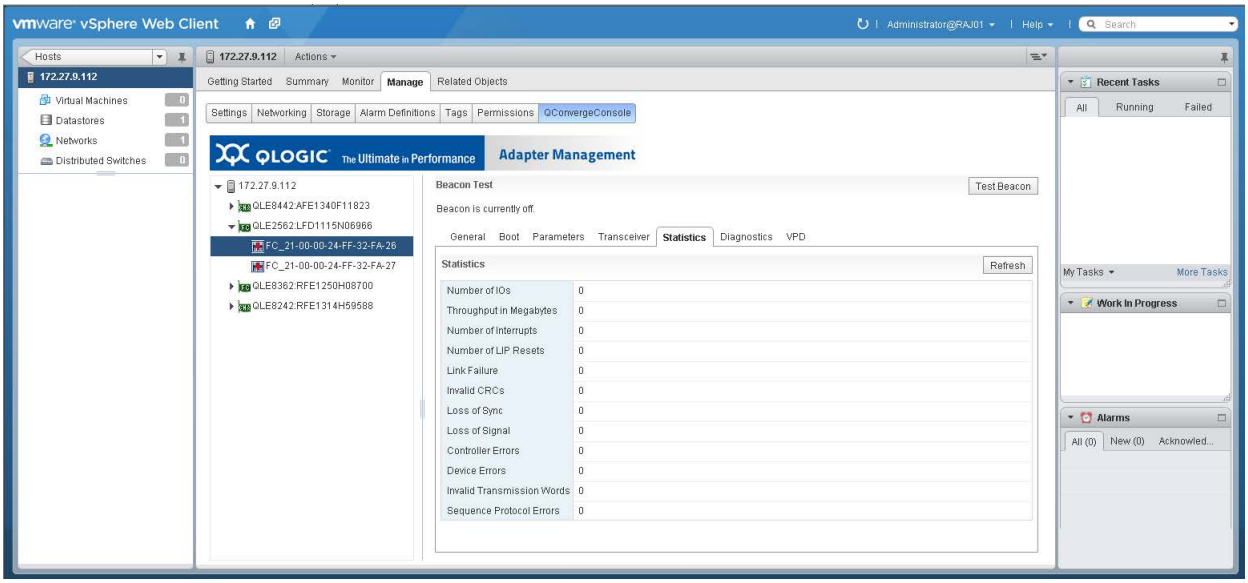



***Figure 10-14. Fibre Channel Port Statistics***

# Running Fibre Channel Port Diagnostics

To perform port diagnostic tests or to retrieve the firmware debug dump, click the **Diagnostics** tab to open the Diagnostics page (Figure 10-15).

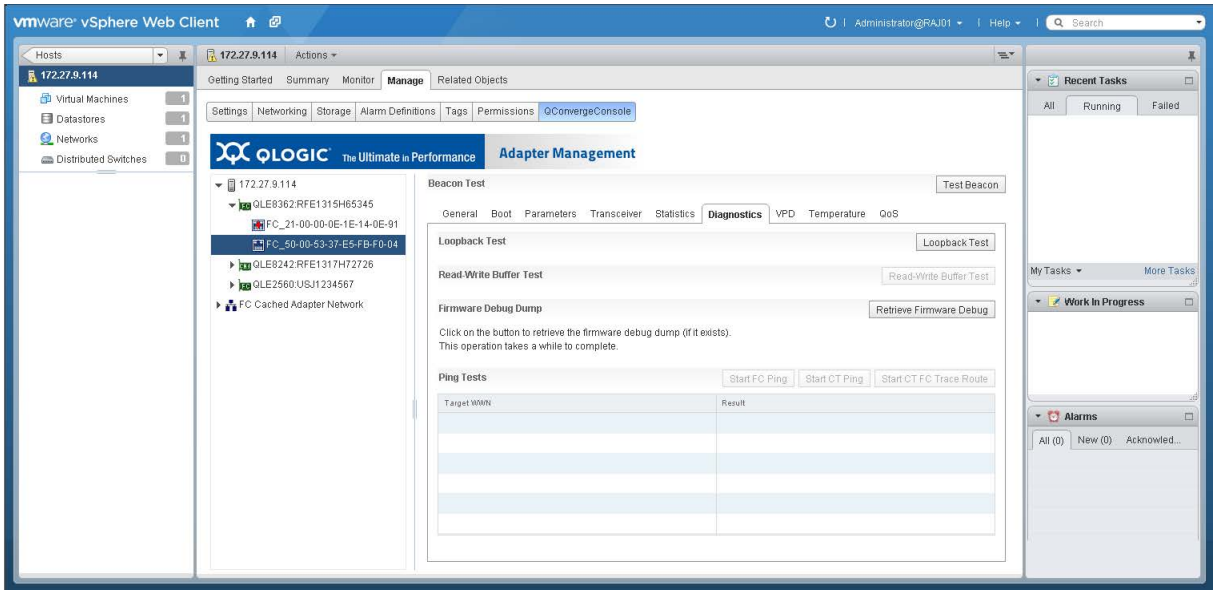



***Figure 10-15. Fibre Channel Port Diagnostics***

The port Diagnostics page provides the following test options:

- Loopback Test
- Read-Write Buffer Test
- Retrieve Firmware Debug
- Fibre Channel Ping Tests

## Loopback Test

**To perform a port loopback test:**

1. Install a loopback plug in the selected port.
2. In the host system tree, expand a Fibre Channel adapter node to view the ports.
3. Select a port.
4. In the content pane, click the **Diagnostics** tab to open the Diagnostics page.
5. Click **Loopback Test**.
6. In the Loopback Test dialog box, enter values for the following test parameters, and then click **OK**:
   - ❑ **Data Pattern**
   - ❑ **Number of tests**
   - ❑ **Test Increment**
   - ❑ **Data Size (Bytes)**
   - ❑ **On Error**
   - ❑ **Test continuously**
7. Observe the test results.

## Read-Write Buffer Test

**To perform a read-write buffer test:**

1. In the host system tree, expand a Fibre Channel adapter node to view the ports.
2. Select a port.
3. In the content pane, click the **Diagnostics** tab to open the Diagnostics page.
4. Click **Read-Write Buffer Test**.
5. In the Read-Write Buffer Test dialog box, enter values for the following test parameters, and then click **OK**:
   - ❑ **Data Pattern**
   - ❑ **Number of tests**
   - ❑ **Test Increment**

- ❑ **Data Size (Bytes)**
- ❑ **On Error**
- ❑ **Test continuously**

6. Observe the test results.

## Retrieve Firmware Debug

**To retrieve the firmware debug dump:**

1. In the host system tree, expand a Fibre Channel adapter node to view the ports.
2. Select a port.
3. In the content pane, click the **Diagnostics** tab to open the Diagnostics page.
4. Click **Retrieve Firmware Debug** to retrieve the `debug.bin` file.

## Fibre Channel Ping Tests

**To perform a ping test:**

1. In the host system tree, expand a Fibre Channel adapter node to view the ports, and then select a port.
2. In the content pane, click the **Diagnostics** tab to open the Diagnostics page.
3. In the **Ping Tests** table, select a target. To choose multiple targets, hold down the CTRL key while you click additional targets.
4. Click either **Start FC Ping**, **Start CT Ping**, or **Start CT FC Trace Route** to start the appropriate test. To successfully run a CT Ping or a CT FC Trace Route ping test, the fabric must contain a Brocade switch.
5. In the Ping Test dialog box, specify the quantity of tests, and then click **OK**.

6. Observe the test results. The result for each test appears in the table (Figure 10-16).

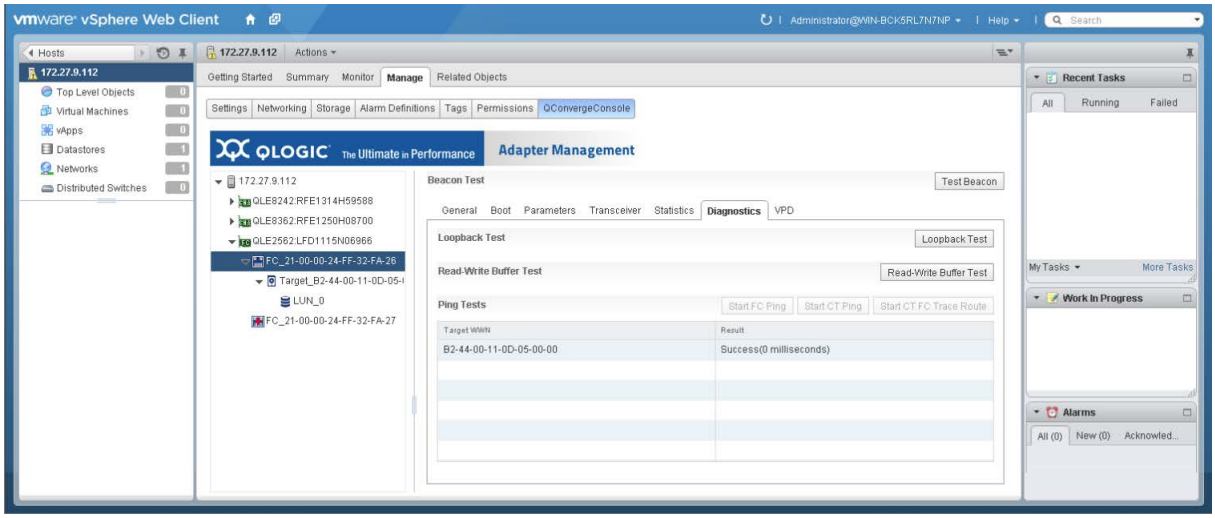



***Figure 10-16. Fibre Channel Ping Test Results***

# Viewing Fibre Channel Port VPD

**To view port vital product data (VPD):**

1. In the host system tree, expand a Fibre Channel adapter node to view the ports.
2. Select a port.
3. In the content pane, click the **VPD** tab.

The Port Vital Product Data (VPD) page (Figure 10-17) identifies the product, part number, and serial number.

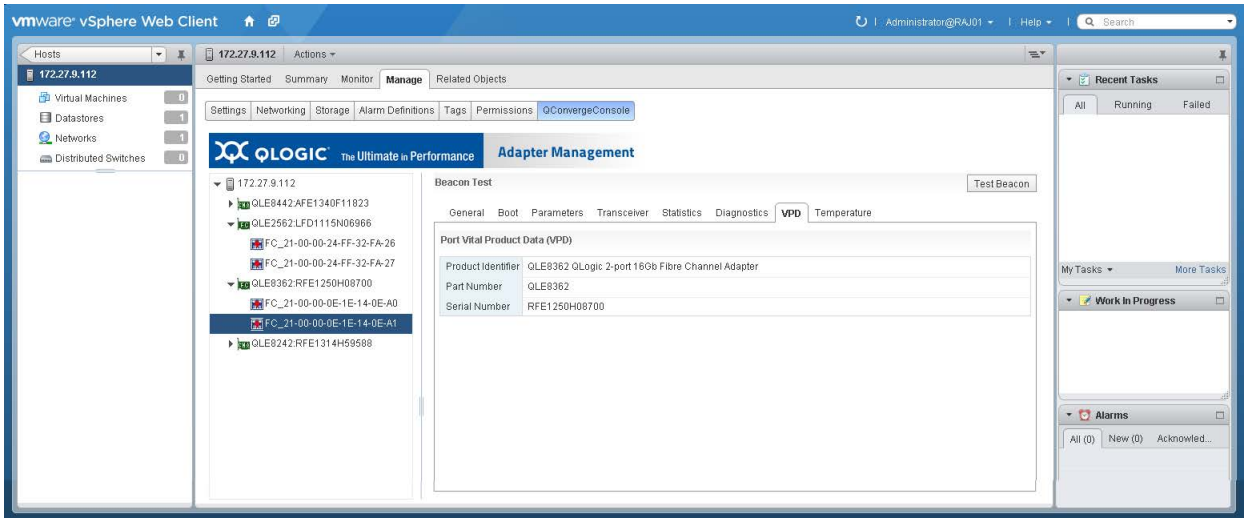



***Figure 10-17. Fibre Channel Port Vital Product Data***

# Viewing Fibre Channel Port Temperature Information

**To view port temperature information:**

1. In the host system tree, expand a Fibre Channel adapter node to view the ports.
2. Select a port.
3. In the content pane, click the **Temperature** tab.
4. On the Temperature page (Figure 10-18):
   - ❑ Click **Start** to set the monitoring rate (seconds), and then click **OK**.
   - ❑ Click **Stop** to stop reporting temperature data.

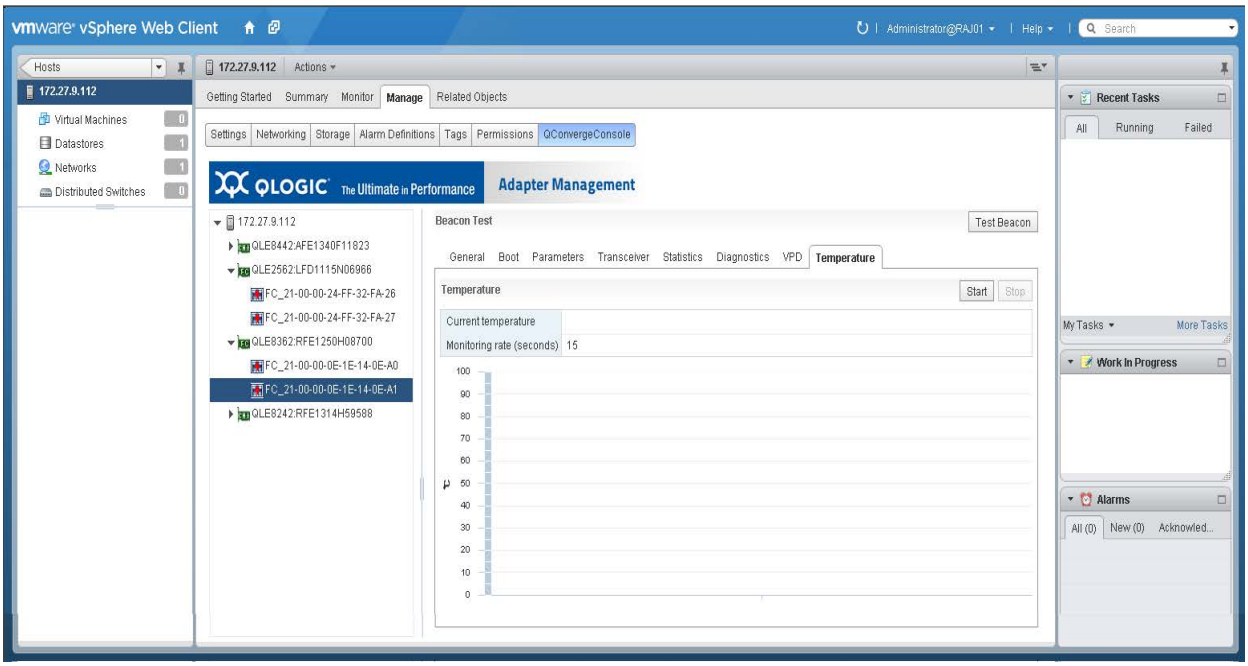



***Figure 10-18. Fibre Channel Port Temperature Information***

# Viewing Fibre Channel QoS Information

**To view quality of service (QoS) information:**

1. In the host system tree, expand a Fibre Channel adapter node to view the ports.
2. Select a port.
3. In the content pane, click the **QoS** tab to open the QoS page.

The QoS data is retrieved and listed in the table (Figure 10-19).

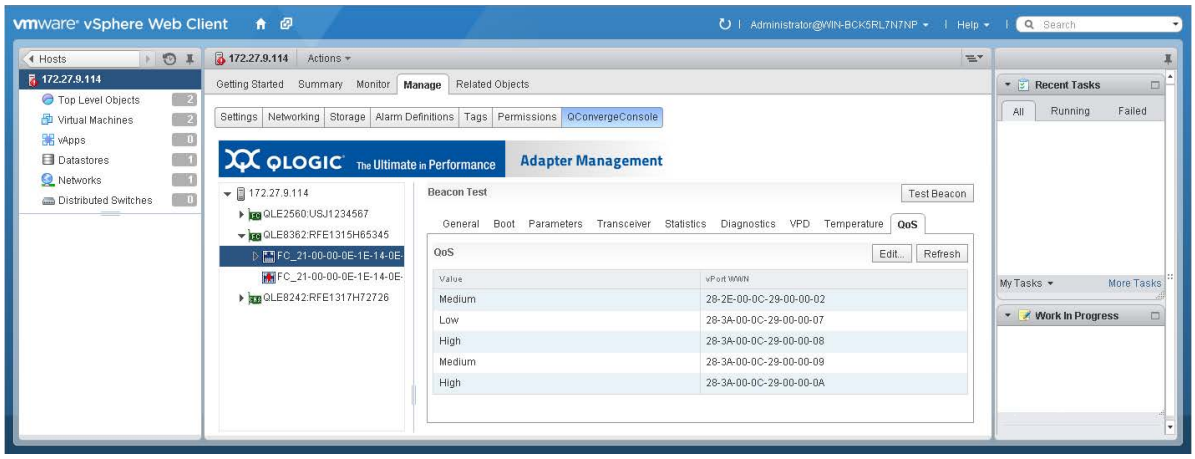



***Figure 10-19. Fibre Channel Port QoS Service Information***

4. (Optional) To update the QoS values, click **Refresh**.
5. (Optional) To edit the QoS priority values, click **Edit** to open the QoS dialog box. Figure 10-20 shows an example.

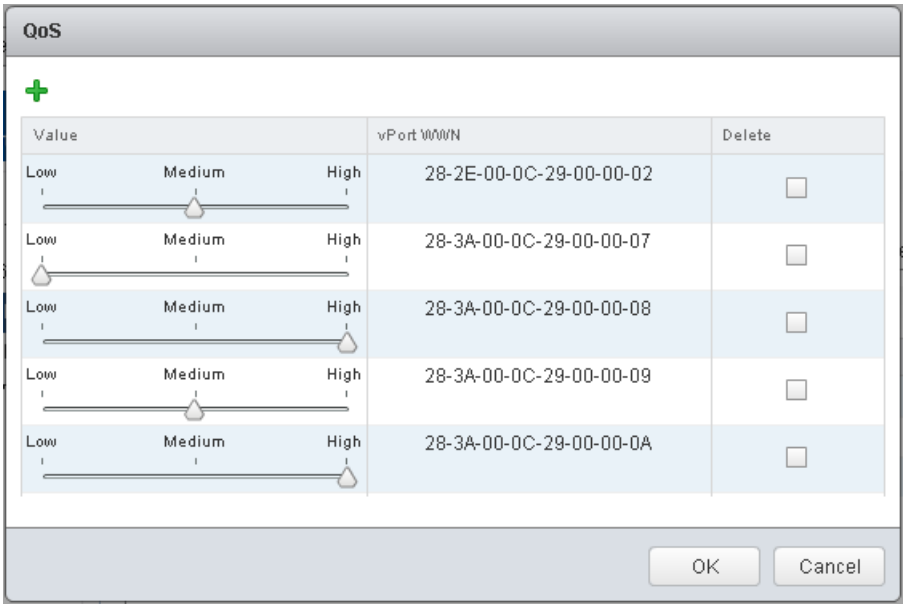



***Figure 10-20. QoS—Edit Priority***

6. In the QoS dialog box, perform the appropriate action:
   - ❑ To edit entries, move the slider for the selected vPort to **Low**, **Medium**, or **High**.
   - ❑ To remove an entry, select the **Delete** check box for the entry.
7. To save your changes and close the dialog box, click **OK**.
8. (Optional) To add an entry to the table:
   a. In the QoS dialog box, click the plus (+) icon.
   b. Specify the vPort world wide port name (WWPN) in the new table entry (see Figure 10-21).
   c. To save the entry, click **OK**.

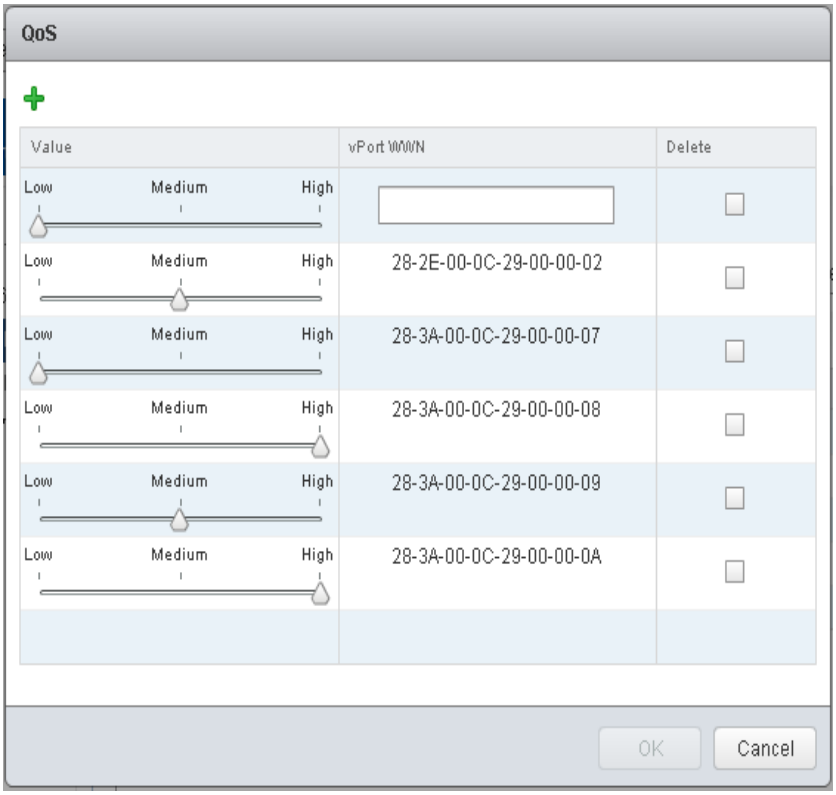



***Figure 10-21. QoS Service—Add an Entry***

# Managing Converged Network Adapter Ports

In the host system tree, expand a Converted Network Adapter to view the ports. Select a port to view information about the port in the content pane, as shown in Figure 10-22.

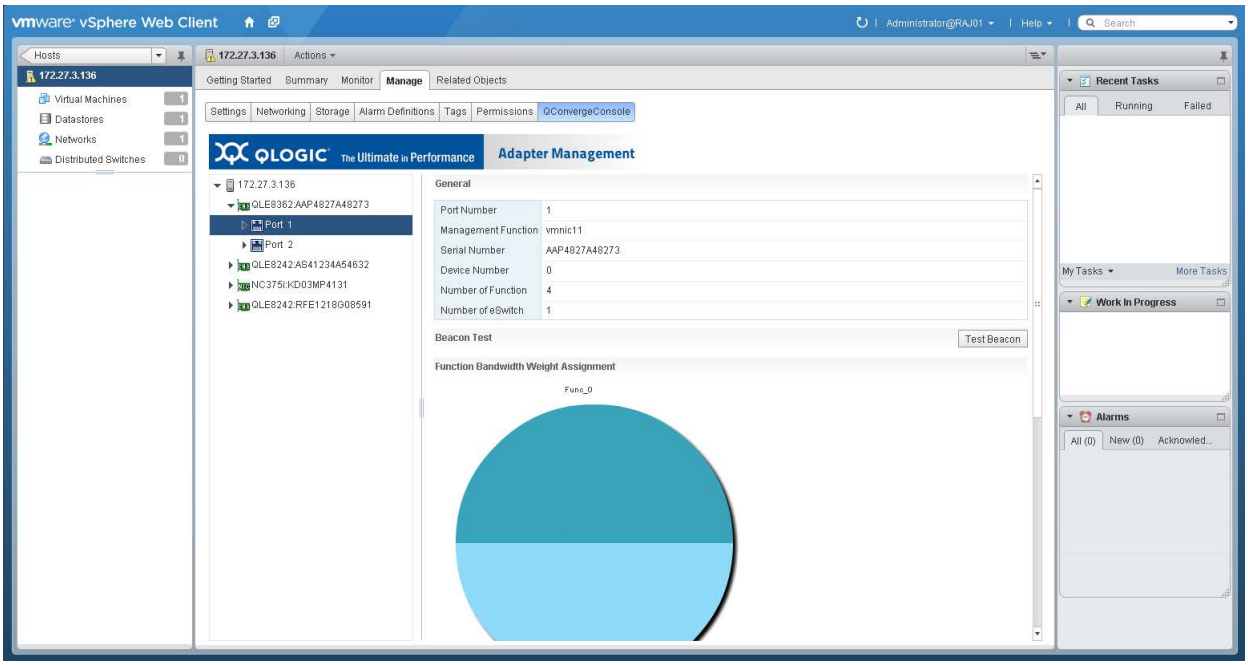



***Figure 10-22. Converged Network Adapter Ports***

Depending on the port you selected, the **Test Beacon** button may be available.

**To activate or deactivate the port beacon:**

1. Click **Test Beacon**.
2. In the Beacon Test dialog box, click **Beacon On** (or **Beacon Off**).
3. To save your changes, click **OK**.

# Managing NIC Functions

In the host system tree, expand a NIC port node to view the functions, and then select a function. In the content pane, click the **General** tab to view information about the function, as shown in Figure 10-23.

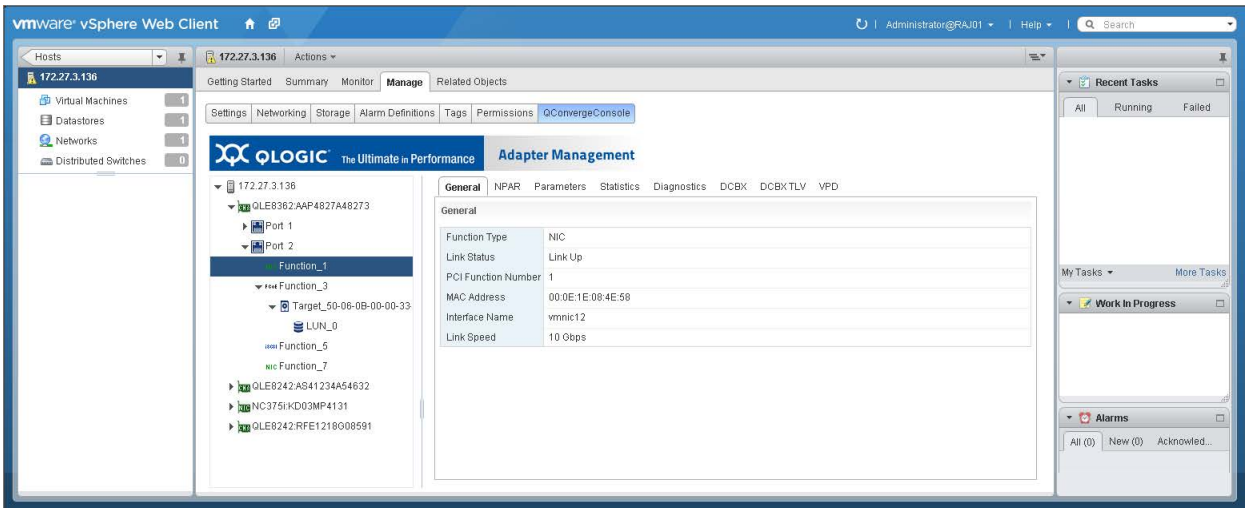



***Figure 10-23. NIC Function***

After selecting a function, you have the following options:

- Configuring NIC Function NPAR
- Configuring NIC Function Parameters
- Viewing NIC Function Statistics
- Running NIC Function Diagnostics
- Viewing NIC Function DCBX Information
- Viewing NIC Function DCBX TLV Information
- Viewing NIC Function VPD

## Configuring NIC Function NPAR

**To configure NPAR:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.

3. In the content pane, click the **NPAR** tab to open the NPAR page (Figure 10-24).

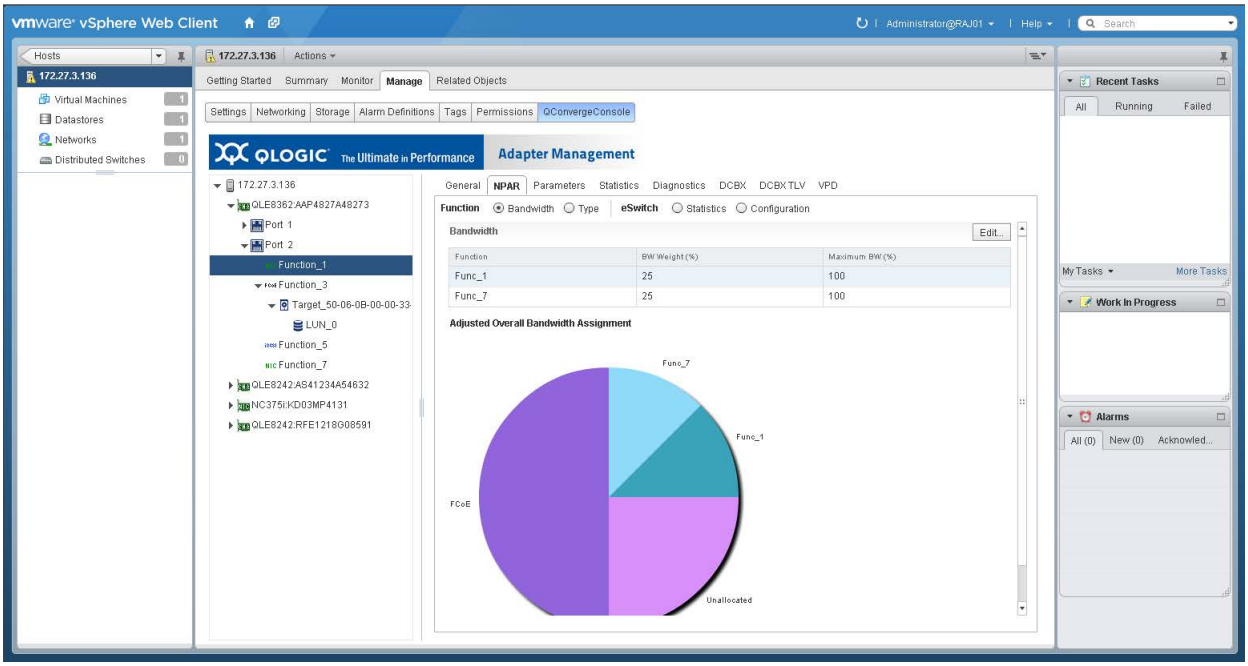



***Figure 10-24. NPAR Configuration***

The NPAR page includes the options described in the following sections:

- Configuring NIC Function NPAR Bandwidth
- Configuring NIC Function NPAR Function Type
- Displaying NIC Function eSwitch Statistics
- Configuring NIC Function eSwitch Parameters

## Configuring NIC Function NPAR Bandwidth

**To configure the NPAR bandwidth:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.
3. In the content pane, NPAR page, click **Bandwidth**.

4. To open the Function Bandwidth Assignment dialog box (Figure 10-25), click **Edit**.

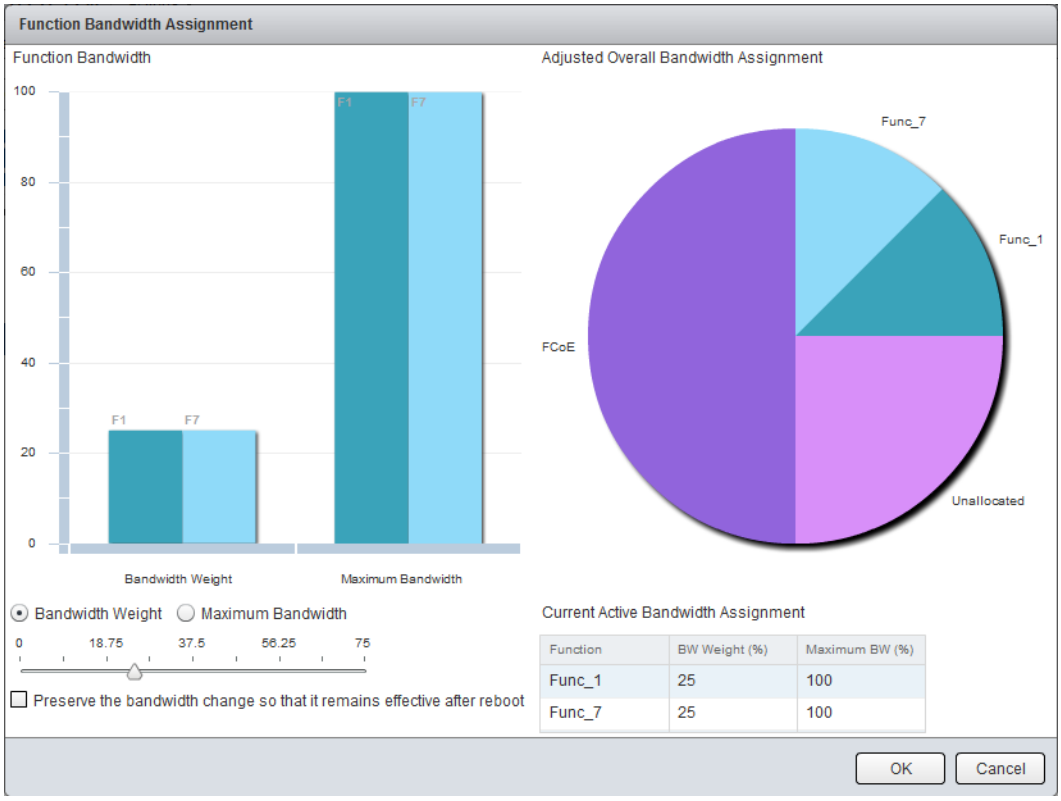



***Figure 10-25. NPAR Bandwidth Parameters***

5. Click **Bandwidth Weight** and move the slider to set the bandwidth weight value.
6. Click **Maximum Bandwidth** and move the slider to set the maximum bandwidth value.
7. If you want the bandwidth values to persist between reboots, select the **Preserve the bandwidth change so that it remains effective after reboot** check box.

8. To save your changes, click **OK**.

**NOTE**

Bandwidth changes are dynamically assigned when already in the NPAR mode. If NPAR dynamic bandwidth assignment fails to set, you are prompted to reboot.

## Configuring NIC Function NPAR Function Type

**To configure the NPAR function type:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.
3. In the content pane, NPAR page, click **Type**.
4. To open the NPAR Function Type dialog box (Figure 10-26), click **Edit**.

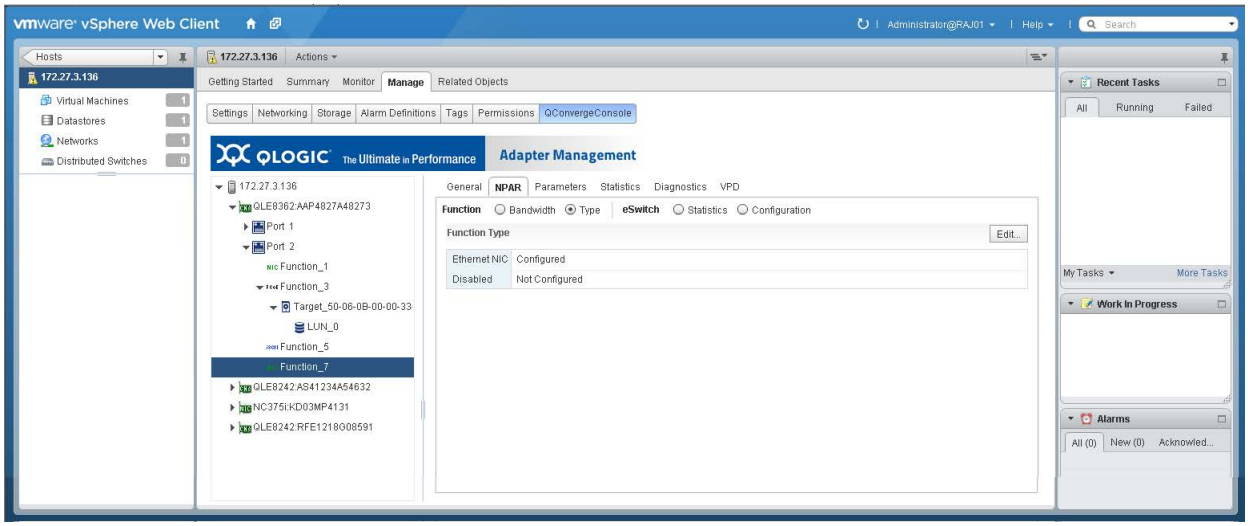



***Figure 10-26. NIC Function NPAR Function Type***

5. Choose **Ethernet NIC** or **Disabled**, and then click **OK**. Functions 0 and 1 on a port must be NIC and cannot be disabled.

## Displaying NIC Function eSwitch Statistics

**To display eSwitch statistics:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.
3. In the content pane on the NPAR page, click the eSwitch **Statistics** button.

4. To update the statistics current values on the eSwitch Statistics page (Figure 10-27), click **Refresh**.

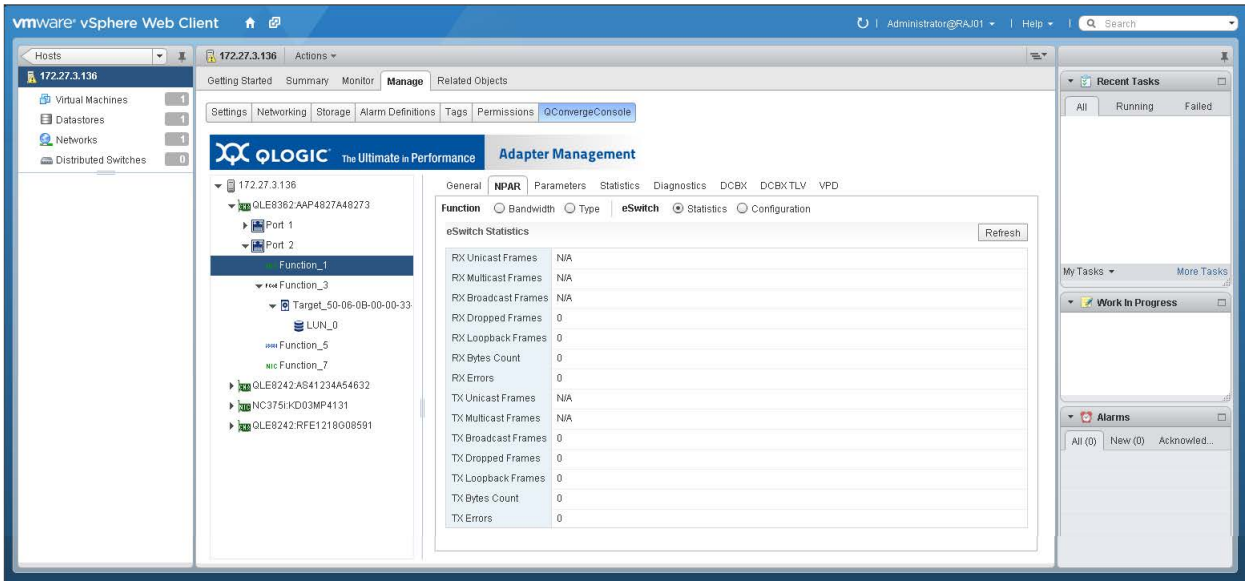



***Figure 10-27. eSwitch Statistics***

## Configuring NIC Function eSwitch Parameters

**To configure eSwitch parameters:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.

3. To view the eSwitch Configuration page (Figure 10-28) in the content pane, click the **eSwitch Configuration** button.

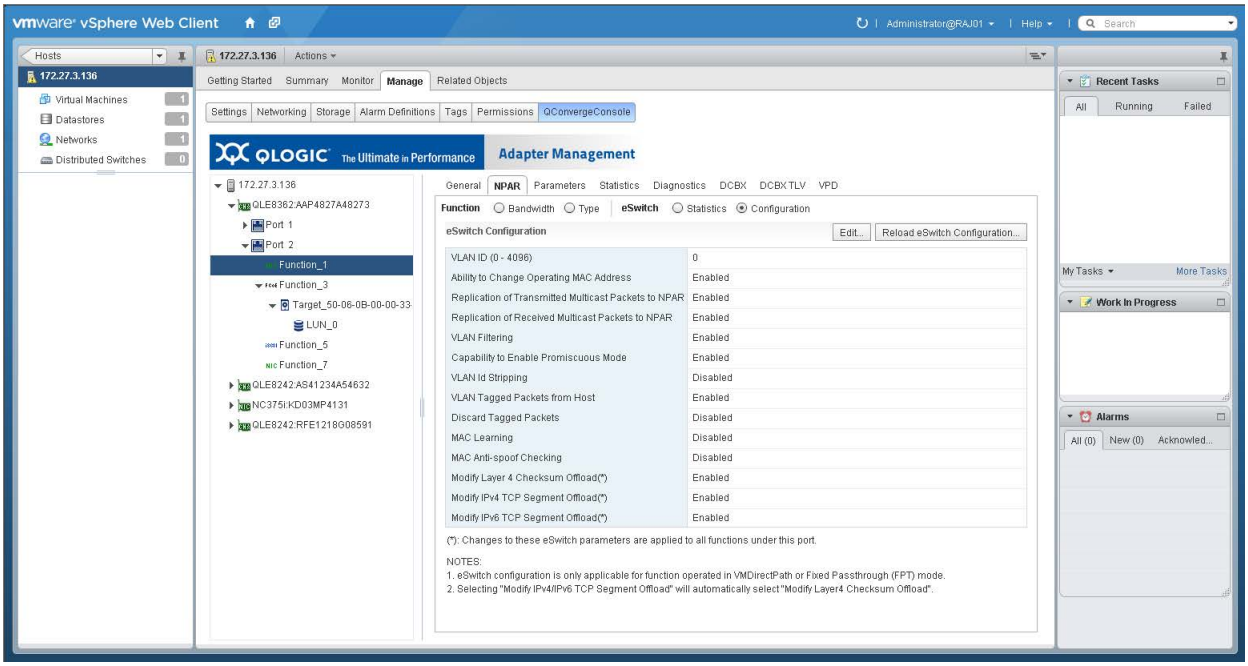



***Figure 10-28. eSwitch Configuration***

4. To open the eSwitch Configuration dialog box, click **Edit**.
5. Specify values for the following eSwitch parameters, and then click **OK**.
   - ❑ **VLAN ID**
   - ❑ **Ability to Change Operating MAC Address**
   - ❑ **Replication of Transmitted Multicast Packets to NPAR**
   - ❑ **Replication of Received Multicast Packets to NPAR**
   - ❑ **VLAN Filtering**
   - ❑ **Capability to Enable Promiscuous Mode**
   - ❑ **VLAN ID Stripping**
   - ❑ **VLAN Tagged Packets from Host**
   - ❑ **Discard Tagged Packets**
   - ❑ **MAC Learning**
   - ❑ **MAC Anti-spoof Checking**
   - ❑ **Modify Layer 4 Checksum Offload**[1]
   - ❑ **Modify IPv4 TCP Segment Offload**[1]
   - ❑ **Modify IPv6 TCP Segment Offload**[1]
6. To refresh the display, click **Reload eSwitch Configuration**.

[1] Changes to this eSwitch parameter are applied to all functions under the port.

# Configuring NIC Function Parameters

**To configure NIC function parameters:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.
3. To open the Parameters page (Figure 10-29), click the **Parameters** tab.

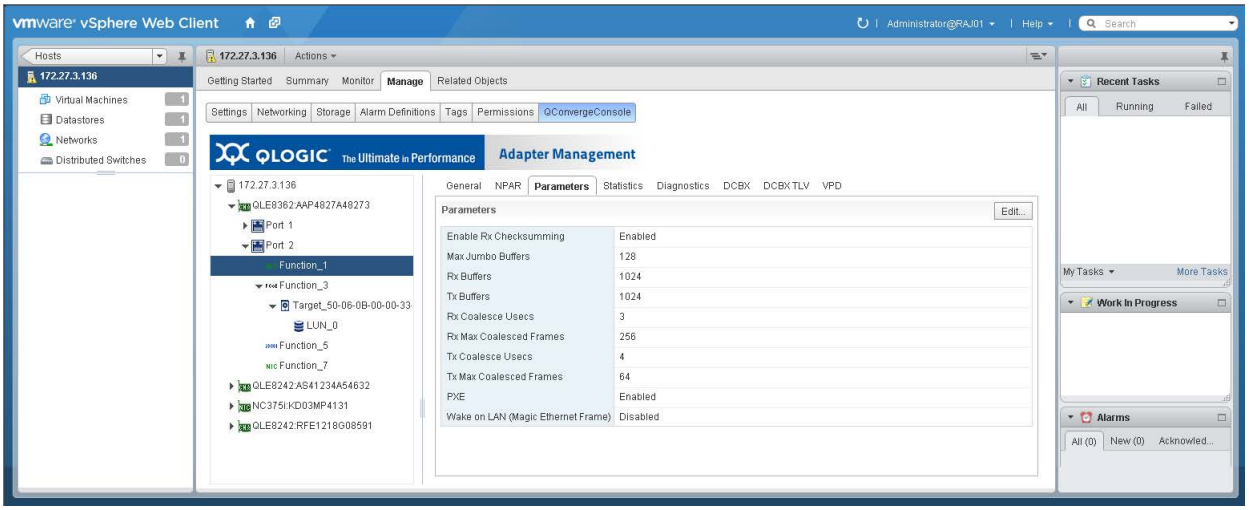



***Figure 10-29. NIC Function Parameters***

4. On the Parameters page, click **Edit**.
5. In the Ethernet Parameters dialog box, specify values for the following parameters, and then click **OK**.

- ❑ **Enable Rx Checksumming**
- ❑ **Max Jumbo Buffers**
- ❑ **Rx Buffers**
- ❑ **Tx Buffers**
- ❑ **Rx Coalesce (µs)**
- ❑ **Rx Max Coalesced Frames**
- ❑ **Tx Coalesce (µs)**
- ❑ **Tx Max Coalesced Frames**
- ❑ **PXE**
- ❑ **Wake on LAN (Magic Ethernet Frame)**

# Viewing NIC Function Statistics

**To display function statistics:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.
3. To open the Statistics page (Figure 10-30), click the **Statistics** tab.

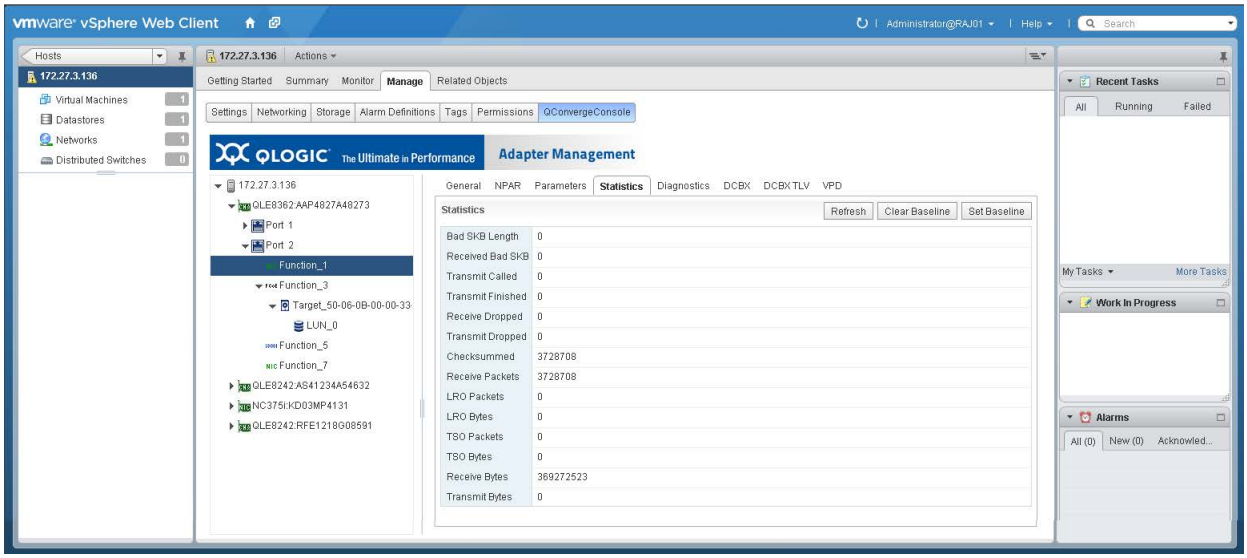



***Figure 10-30. NIC Function Statistics***

4. As appropriate, click the following options to manipulate the statistics:
   - **Set Baseline**—Records the current statistics values as a reference point.
   - **Refresh**—Updates the statistics to their current values. If there is a baseline, the **Refresh** option shows the change since the baseline.
   - **Clear Baseline**—Clears an existing baseline.

# Running NIC Function Diagnostics

To run NIC function diagnostic tests or to retrieve the firmware debug dump, click the **Diagnostics** tab to open the Diagnostics page (Figure 10-31).

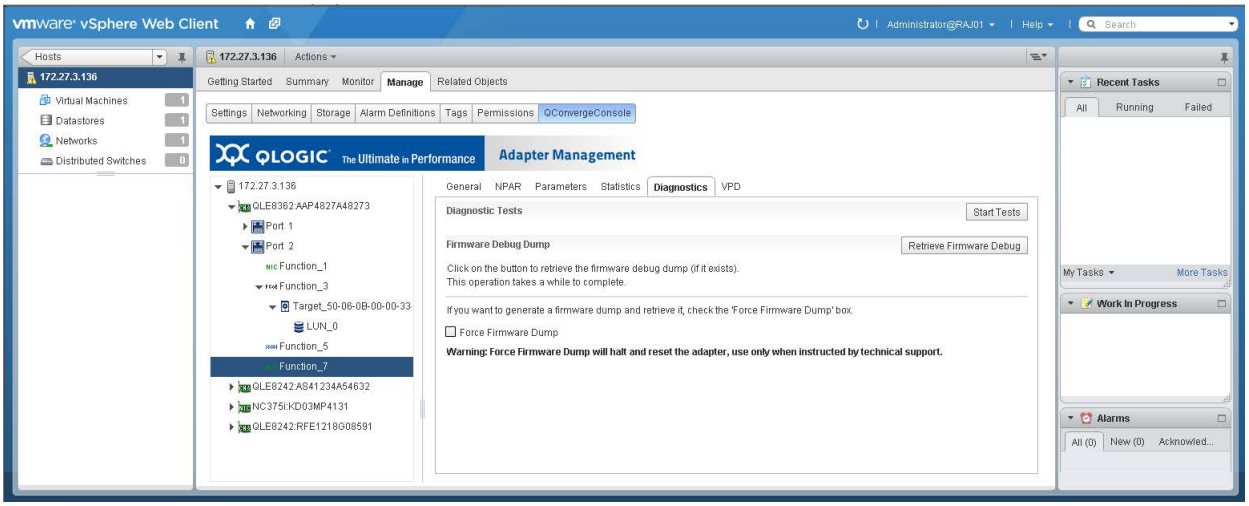



***Figure 10-31. NIC Function Diagnostics***

The Diagnostics page provides the following options:

- Running NIC Function Diagnostic Tests
- Retrieving NIC Function Firmware Debug Dump

## Running NIC Function Diagnostic Tests

**To run a diagnostic test for a NIC function:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.
3. To open the Diagnostic Tests page, click the **Diagnostics** tab.
4. Click **Start Tests**.

5. In the Diagnostic Tests dialog box (Figure 10-32), specify the quantity of test iterations and the types of test to perform, and then click **OK**.

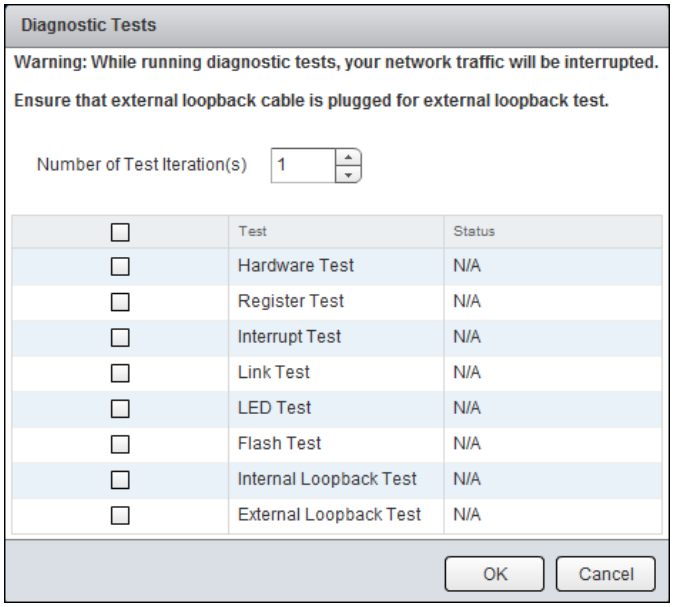



***Figure 10-32. NIC Function Diagnostic Tests***

6. Observe the test results.

### Retrieving NIC Function Firmware Debug Dump

**To retrieve the firmware debug dump:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.
3. To open the Diagnostic Tests page, click the **Diagnostics** tab.
4. Click **Retrieve Firmware Debug** to get the `debug.bin` file.

## Viewing NIC Function DCBX Information

Data center bridging exchange (DCBX) information is available for NIC functions 0 and 1.

**To view DCBX information:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.

3. To open the Default Local Setting DCBX Values page (Figure 10-33), click the **DCBX** tab.

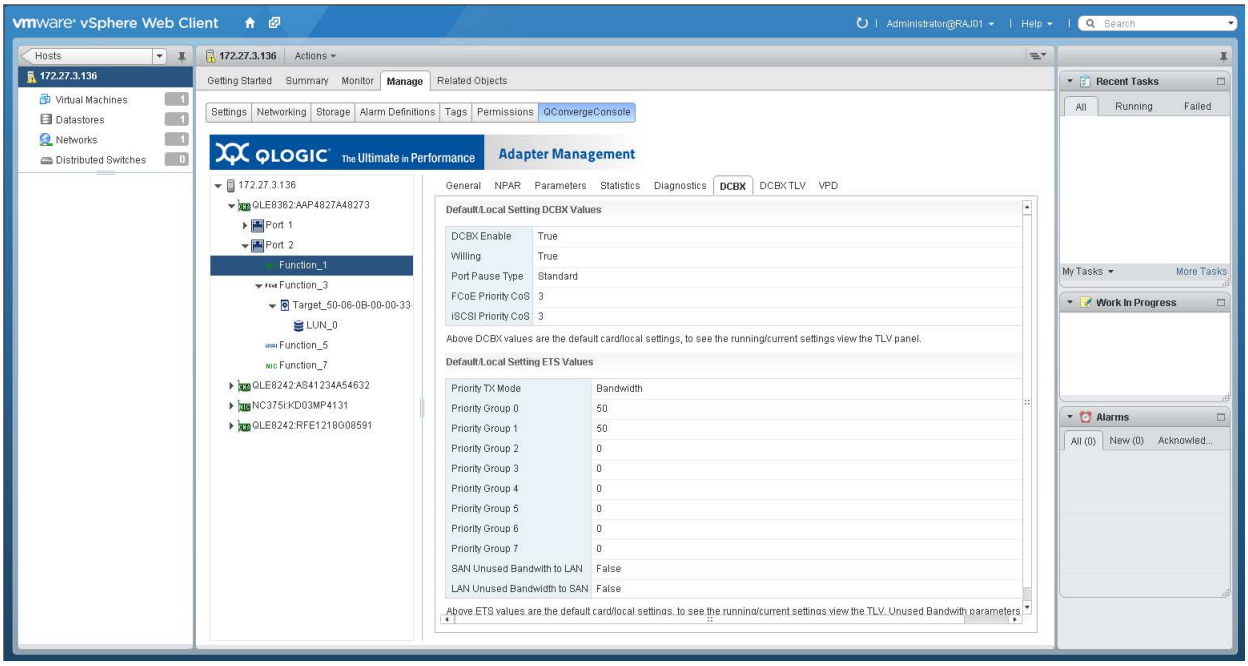



***Figure 10-33. NIC Function DCBX Information***

# Viewing NIC Function DCBX TLV Information

DCBX type-length-value (TLV) information is available for NIC functions 0 and 1.

**To view DCBX TLV information:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.

3. To open the DCBX TLV page (Figure 10-34), click the **DCBX TLV** tab.

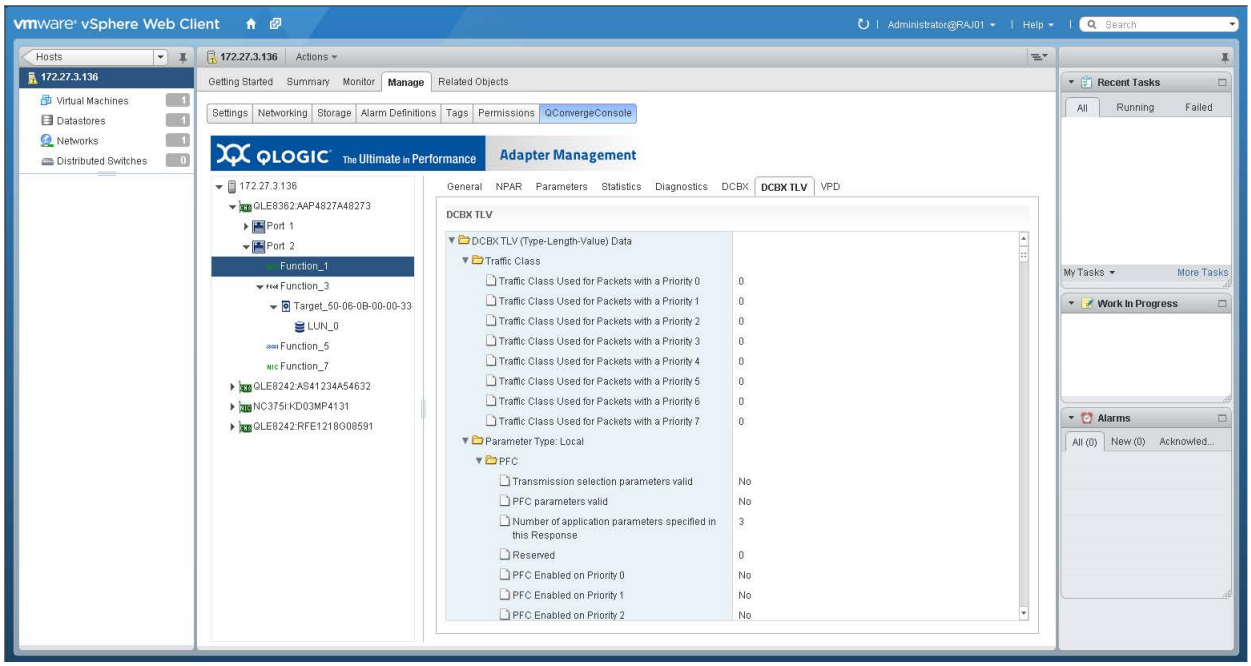



***Figure 10-34. NIC Function DCBX TLV Information***

**To determine the transmission bandwidth percentage:**

1. Under **DCBX TLV**, expand the **Traffic Class** folder and the **Traffic class <x>** folder, where <x> is the traffic class.
2. Locate the **802.1p Priority value** and take note of the priority value.
3. Expand the **Transmission Priority** folder and locate **Traffic class with priority <y>** entry, where <y> is the priority value found in 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>** (at index <z>), where <z> is the transmission priority value found in Step 3.

The value for that entry is the bandwidth percentage for the **Traffic class <x>**. Figure 10-35 shows an example.

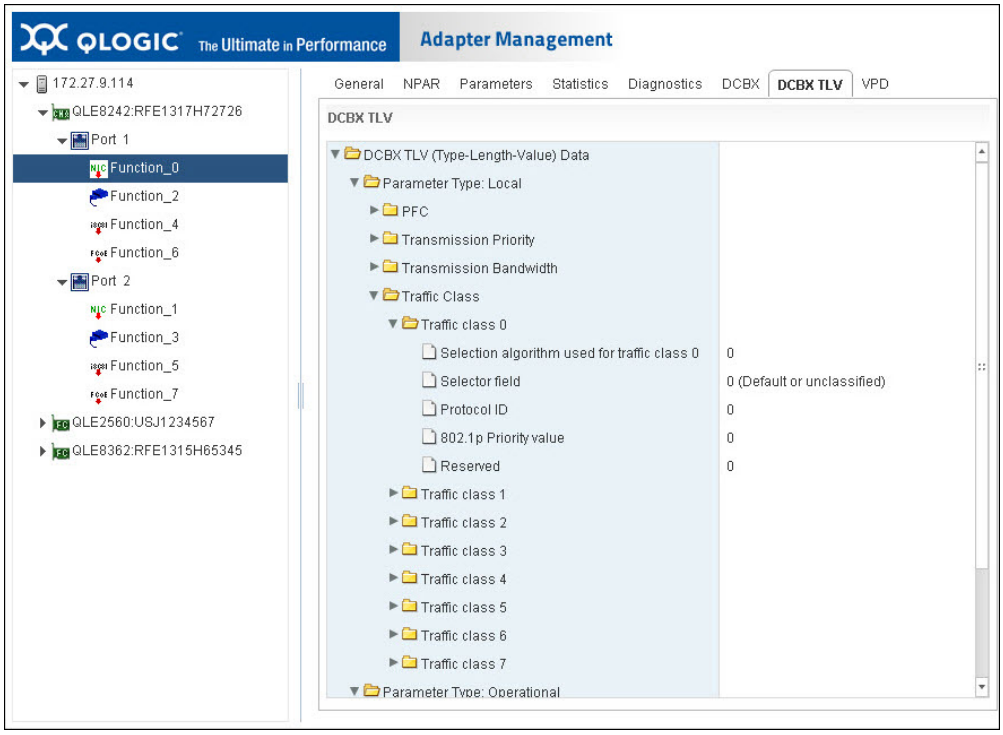



***Figure 10-35. NIC Function DCBX TLV—Transmission Bandwidth Percentage***

# Viewing NIC Function VPD

**To view NIC function vital product data (VPD) information:**

1. In the host system tree, expand a NIC port node to view the functions.
2. Select a function.

3. To open the Port Vital Product Data (VPD) page (Figure 10-36), click the **VPD** tab.

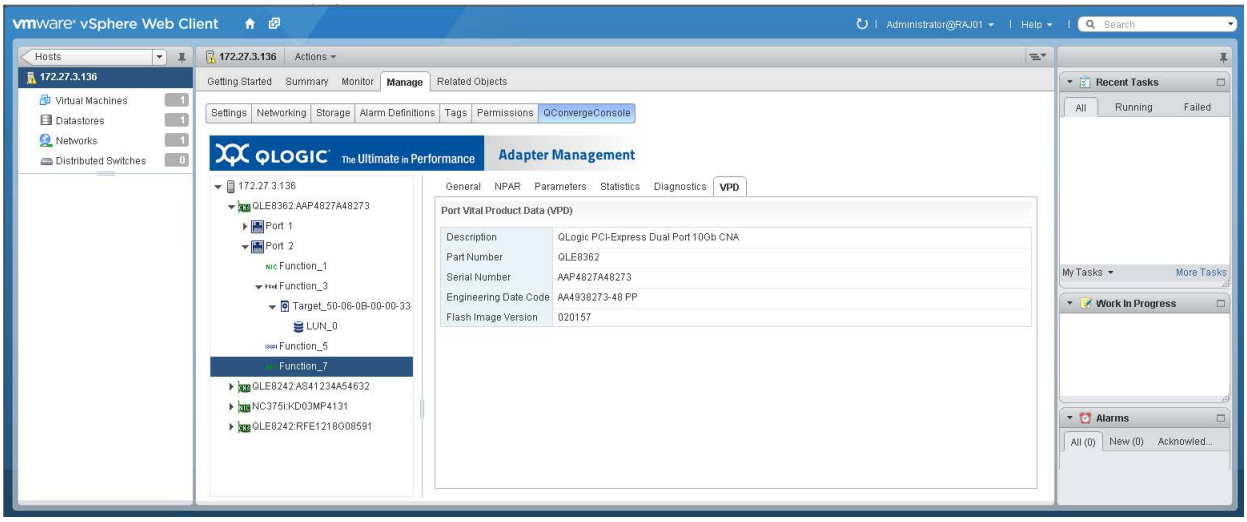



***Figure 10-36. NIC Function VPD***

# Managing FCoE Functions

In the host system tree, expand an FCoE port node to view the functions, and then select a function. In the content pane, click the **General** tab to view information about the function, as shown in Figure 10-37.

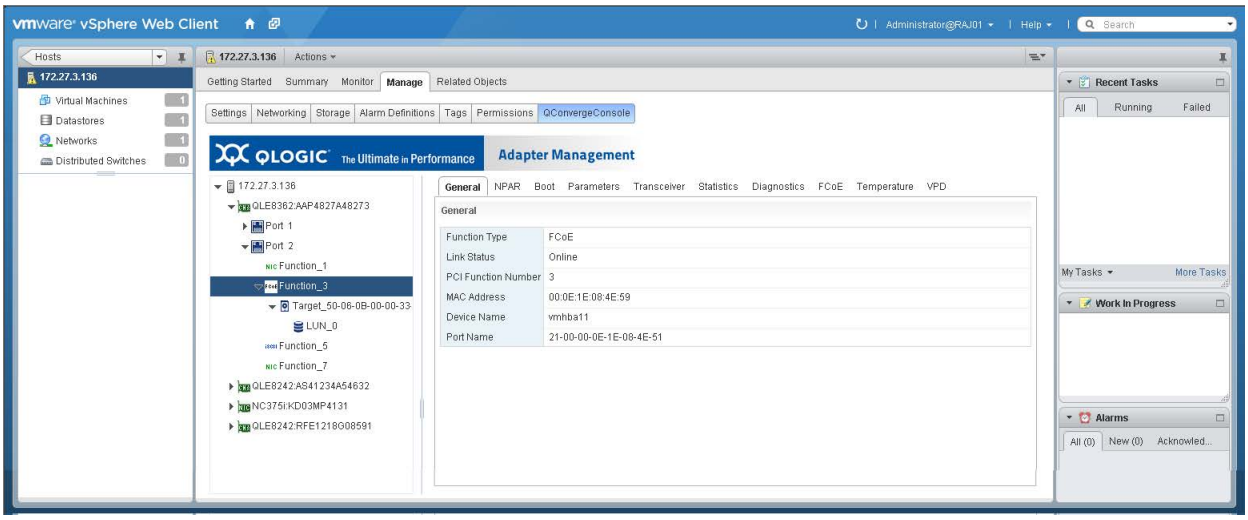



***Figure 10-37. FCoE Functions***

Additional tabs provide access to the available options for the selected function as described in the following sections:

- Configuring FCoE Function NPAR Function Type
- Configuring FCoE Function Boot Parameters
- Configuring FCoE Function Parameters
- Viewing FCoE Function Transceiver Information
- Viewing FCoE Function Statistics
- Running FCoE Function Diagnostics
- Configuring the FCoE Function
- Viewing FCoE Function Temperature Information
- Viewing FCoE Function VPD
- Viewing FCoE Function Target Information
- Viewing FCoE Function LUN Information

# Configuring FCoE Function NPAR Function Type

**To configure the NPAR function type:**

1. In the host system tree, expand an FCoE port node to view the functions.
2. Select a function.
3. To view the Function Type page (Figure 10-38), click the **NPAR** tab.

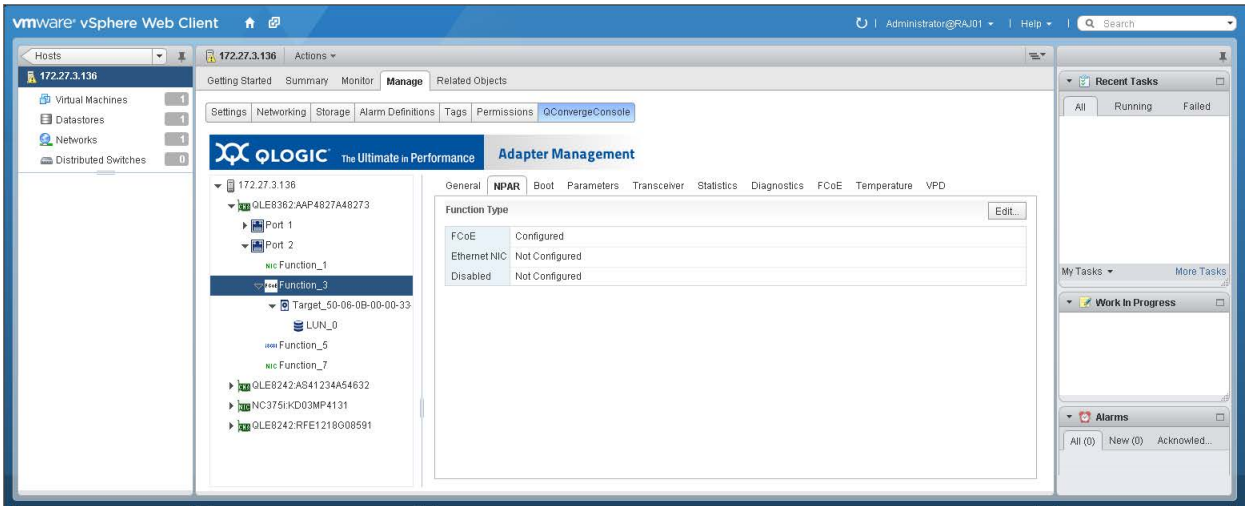



***Figure 10-38. FCoE NPAR Function Type***

4. Click **Edit** to open the NPAR Function Type dialog box.

5. Select either **FCoE**, **Ethernet NIC** or **Disabled**, and then click **OK**.

# Configuring FCoE Function Boot Parameters

**To configure the boot parameters:**

1. In the host system tree, expand an FCoE port node to view the functions.
2. Select a function.
3. To open the Boot page (Figure 10-39), click the **Boot** tab.

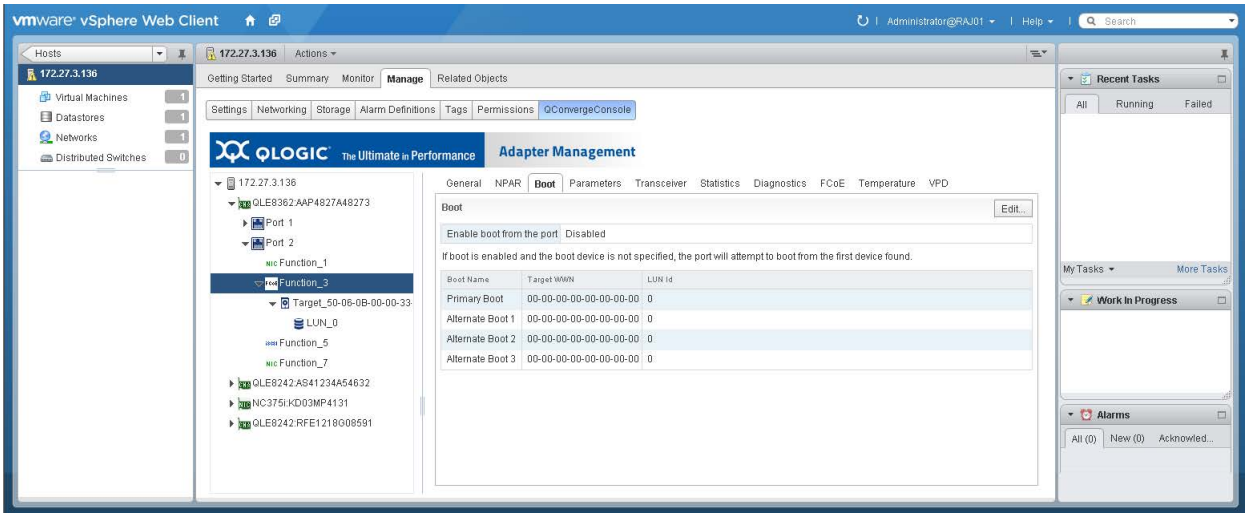



***Figure 10-39. FCoE Function Boot Parameters***

4. On the Boot page, click **Edit**.
5. On the FC/FCoE Boot dialog box, specify values for the following parameters, and then click **OK**.
   - ❑ **Enable boot from the port**
   - ❑ **Boot from the selected device(s)**
   - ❑ **Primary Boot: Target WWN, LUN ID**
   - ❑ **Alternate Boot 1: Target WWN, LUN ID**
   - ❑ **Alternate Boot 2: Target WWN, LUN ID**
   - ❑ **Alternate Boot 3: Target WWN, LUN ID**

# Configuring FCoE Function Parameters

**To configure FCoE function parameters:**

1. In the host system tree, expand an FCoE port node to view the functions.
2. Select a function.

3. To open the Parameters page (Figure 10-40), click the **Parameters** tab.

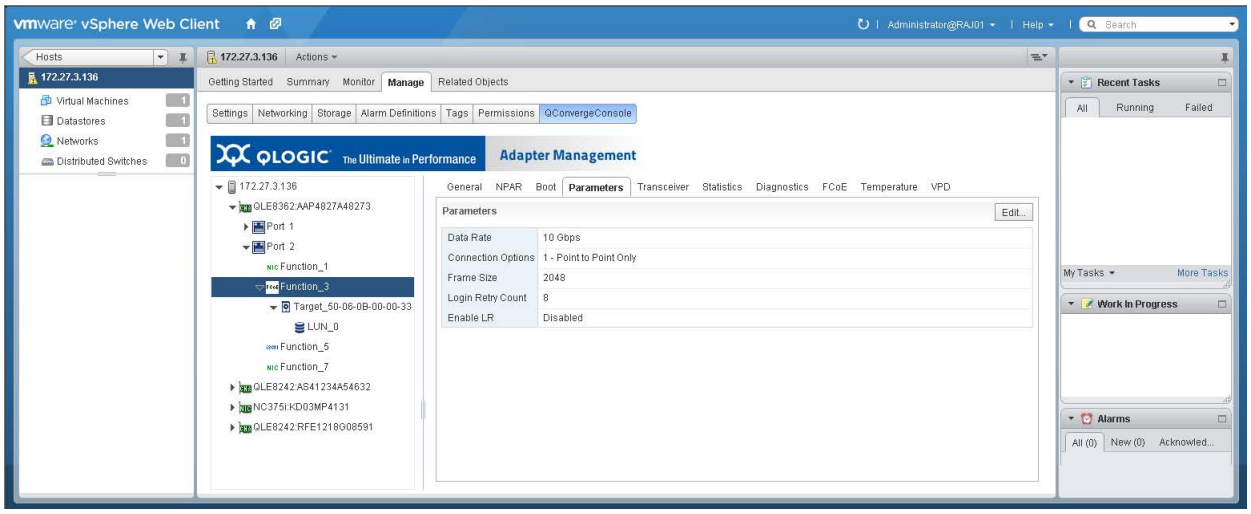



***Figure 10-40. FCoE Function Parameters***

4. On the Parameters page, click **Edit**.
5. In the Fibre Channel Port Parameters dialog box, enter values for the following parameters, and then click **OK**.
   - ❑ **Data Rate**
   - ❑ **Connection Options**
   - ❑ **Frame Size**
   - ❑ **Login Retry Count**
   - ❑ **Enable LR** (LIP reset)

# Viewing FCoE Function Transceiver Information

### To view transceiver information

1. In the host system tree, expand an FCoE port node to view the functions.
2. Select a function.

3. To open the Transceiver Information page (Figure 10-41), click the **Transceiver** tab.

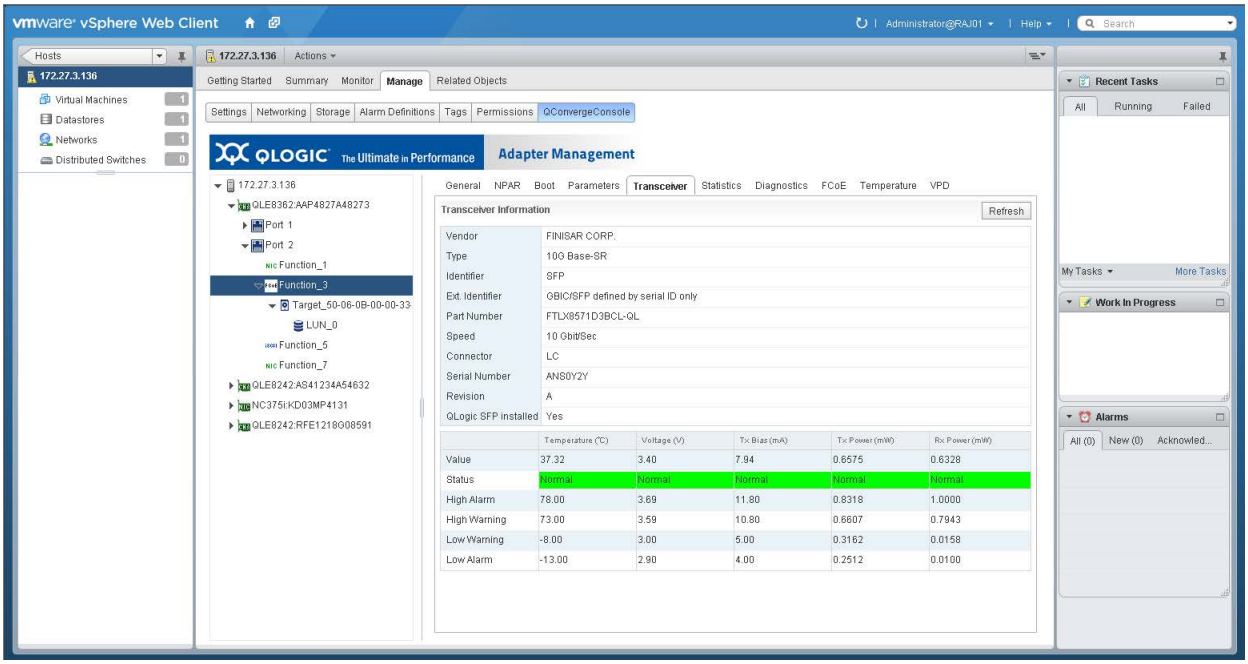



***Figure 10-41. FCoE Function Transceiver Information***

4. To update the display with current information, click **Refresh**.

# Viewing FCoE Function Statistics

**To view function statistics:**

1. In the host system tree, expand an FCoE port node to view the functions.
2. Select a function.

3. To open the Statistics page (Figure 10-42), click the **Statistics** tab.

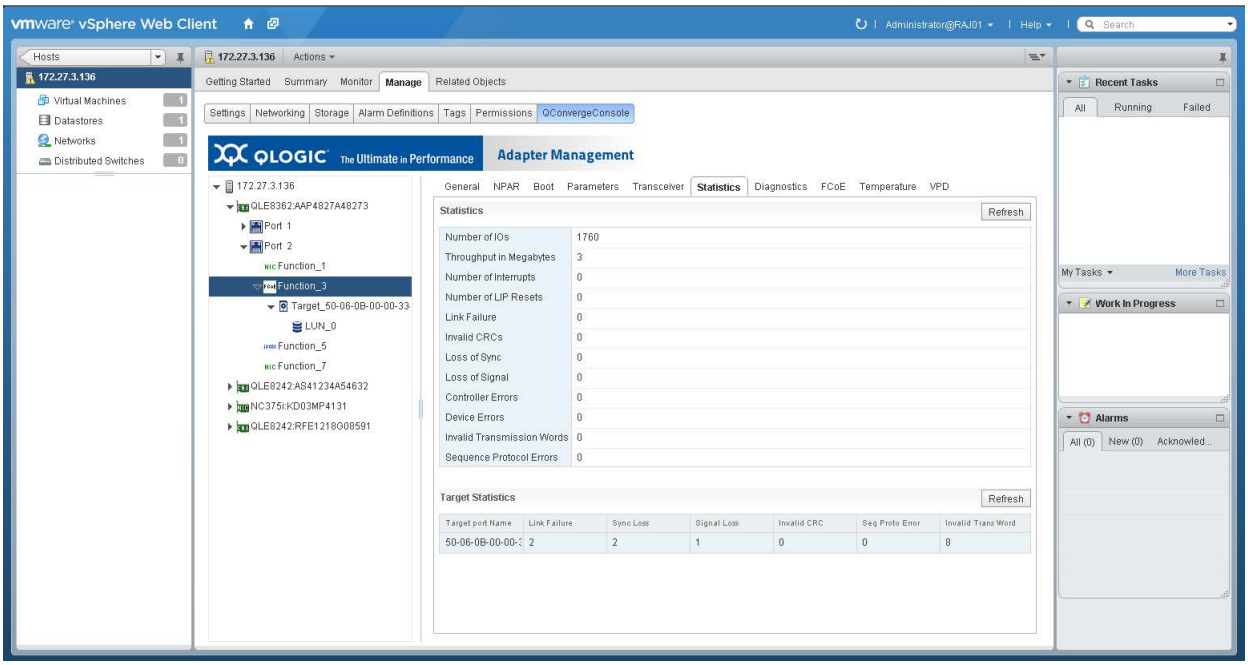



***Figure 10-42. FCoE Function Statistics***

4. To update the display with current information, click **Refresh**.

# Running FCoE Function Diagnostics

To run FCoE function diagnostic tests or to retrieve the firmware debug dump, click the **Diagnostics** tab to open the Diagnostic Test page (Figure 10-43).

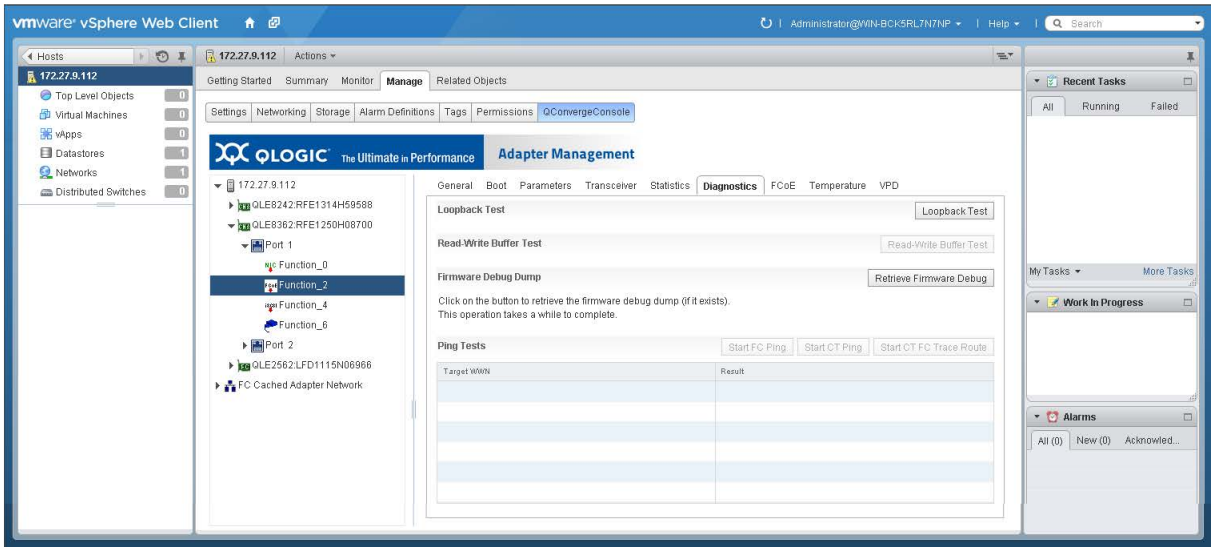



***Figure 10-43. FCoE Function Diagnostics***

After selecting a function, the following test options are available:

- Loopback Test
- Read-Write Buffer Test
- Retrieve Firmware Debug
- Ping Tests

## Loopback Test

**To perform a loopback test:**

1. Install a loopback plug in the selected port.
2. In the host system tree, expand an FCoE port node to view the functions.
3. Select a function.
4. In the content pane, click the **Diagnostics** tab to open the Diagnostic Tests page.
5. Click **Loopback Test**.

6. In the Loopback Test dialog box, specify values for the following test parameters, and then click **OK**:
   - ❑ **Data Pattern**
   - ❑ **Number of tests**
   - ❑ **Test Increment**
   - ❑ **Data Size (Bytes)**
   - ❑ **On Error**
   - ❑ **Test continuously**
7. Observe the test results.

## Read-Write Buffer Test

**To perform a read-write buffer test:**

1. Install a loopback plug in the selected port.
2. In the host system tree, expand an FCoE port node to view the functions.
3. Select a function.
4. In the content pane, click the **Diagnostics** tab to open the Diagnostic Tests page.
5. Click **Read-Write Buffer Test**.
6. In the Read-Write Buffer Test dialog box, enter values for the following test parameters, and then click **OK**:
   - ❑ **Data Pattern**
   - ❑ **Number of tests**
   - ❑ **Test Increment**
   - ❑ **Data Size (Bytes)**
   - ❑ **On Error**
   - ❑ **Test continuously**
7. Observe the test results.

## Retrieve Firmware Debug

**To retrieve the FCoE function firmware debug dump:**

1. Install a loopback plug in the selected port.
2. In the host system tree, expand an FCoE port node to view the functions.
3. Select a function.
4. In the content pane, click the **Diagnostics** tab to open the Diagnostic Tests page.
5. To retrieve the `debug.bin` file, click **Retrieve Firmware Debug**.

## Ping Tests

**To perform an FCoE function ping test:**

1. In the host system tree, expand an FCoE adapter node to view the ports, and then select a port.
2. In the content pane, click the **Diagnostics** tab to open the Diagnostic Tests page.
3. In the **Ping Tests** table, select a target. To choose multiple targets, hold down the CTRL key while you click additional targets.
4. To start a test, click either **Start FC Ping**, **Start CT Ping**, or **Start CT FC Trace Route**.

**NOTE**

To successfully run a CT Ping or a CT FC Trace Route ping test, the fabric must contain a Brocade switch.

5. In the test dialog box, specify the quantity of tests to run, and then click **OK**.
6. Observe the test results. The result for each test appears in the **Ping Tests** table (Figure 10-44).

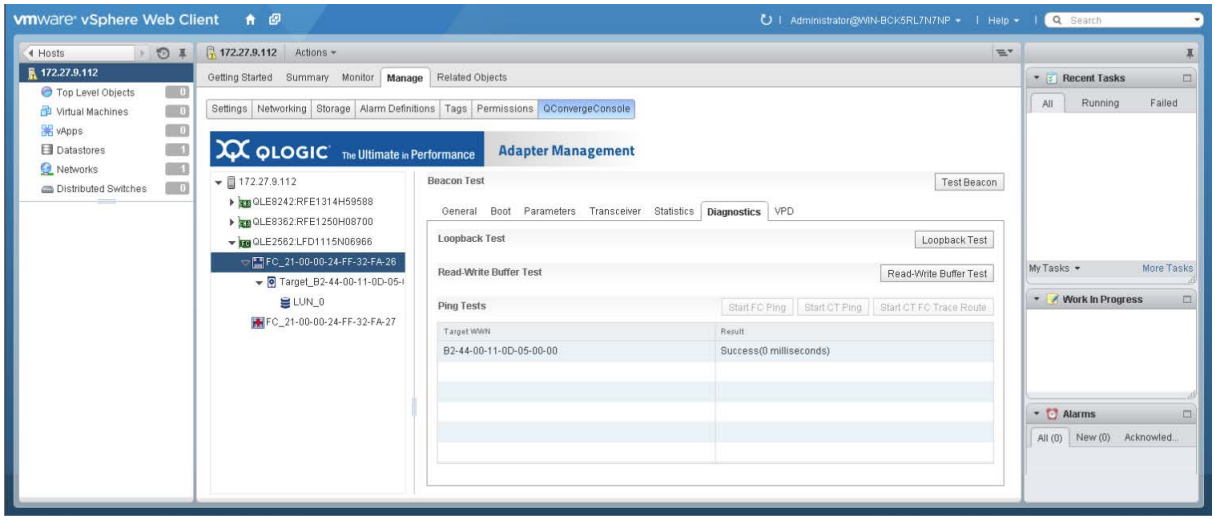



***Figure 10-44. FCoE Ping Test Results***

# Configuring the FCoE Function

To display and configure FCoE-specific parameters of the FCoE function, click the **FCoE** tab to view the FCoE Attributes page (Figure 10-45).

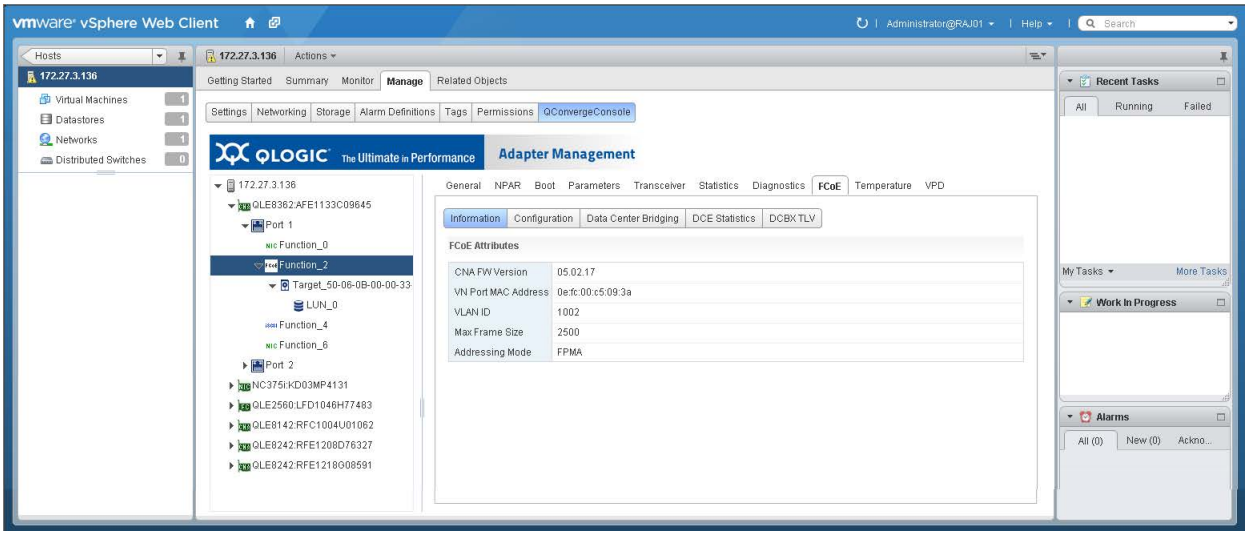



***Figure 10-45. FCoE Function Attribute Information***

The FCoE Attributes page provides the following options:

- Configuring the FCoE Function Primary FCF VLAN ID
- Viewing FCoE Function DCB Information
- Viewing FCoE Function DCE Statistics
- Viewing FCoE Function DCBX TLV Information

## Configuring the FCoE Function Primary FCF VLAN ID

**To configure the primary FCF VLAN ID:**

1. In the host system tree, expand an FCoE port node to view the functions.
2. Select a function.

3. To open the FCoE Configuration page (Figure 10-46), in the content pane click the **Configuration** tab.

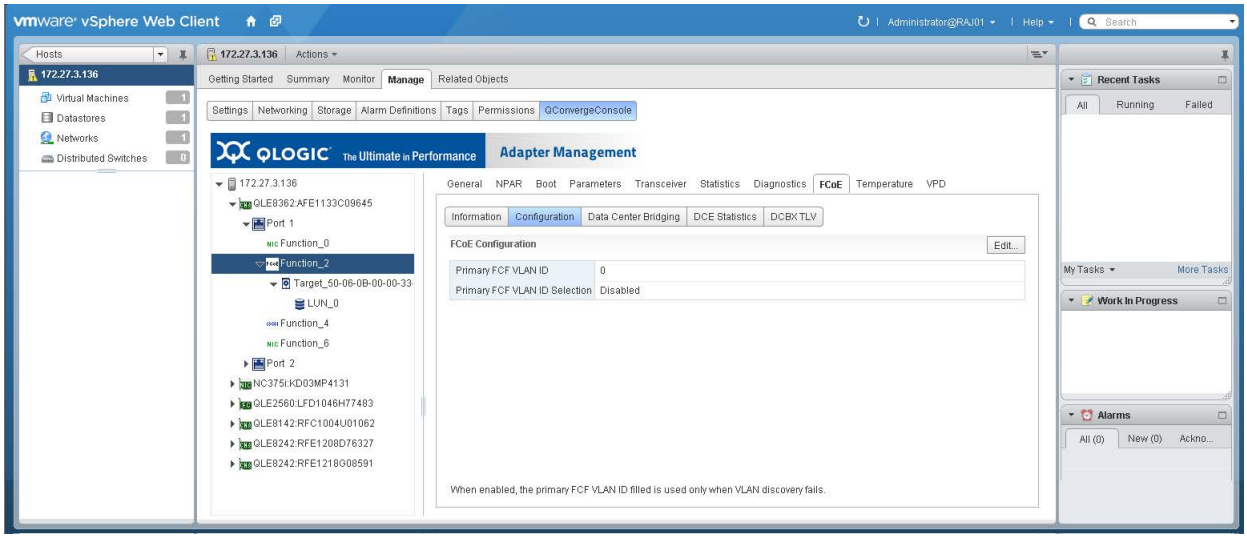



***Figure 10-46. FCoE Function Primary FCF VLAN ID***

4. To open the FCoE Configuration dialog box, click **Edit**.
5. In the FCoE Configuration dialog box, specify the **Primary FCF**[1] **VLAN ID** and the **Primary FCF VLAN ID selection** option, and then click **OK**.

## Viewing FCoE Function DCB Information

**To view data center bridging (DCB) information:**

1. In the host system tree, expand an FCoE port node to view the functions.
2. Select a function.

[1] Fibre Channel Forwarder

3. In the content pane, click the **Data Center Bridging** tab to open the DCBX Values page (Figure 10-47).

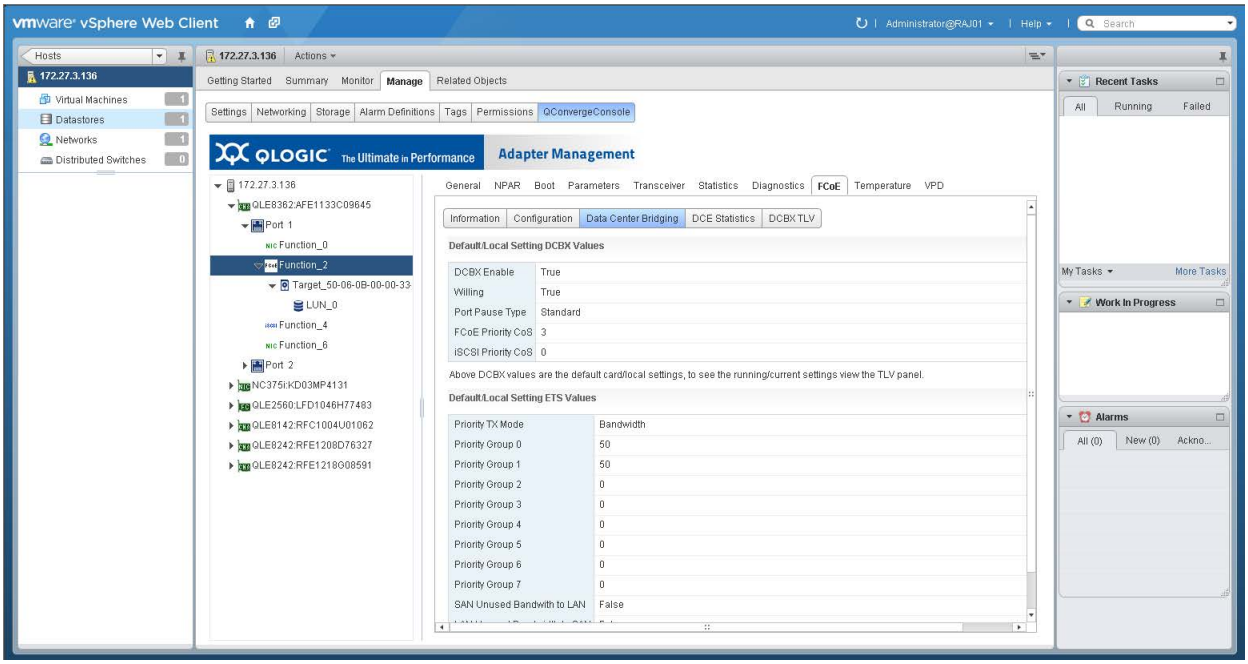



***Figure 10-47. FCoE Function Data Center Bridging Information***

## Viewing FCoE Function DCE Statistics

**To view DCE statistics:**

1. In the host system tree, expand an FCoE port node to view the functions.
2. Select a function.

3. In the content pane, click the **DCE Statistics** tab to open the DCE Statistics page (Figure 10-48). To update the page with current values, click **Refresh**.

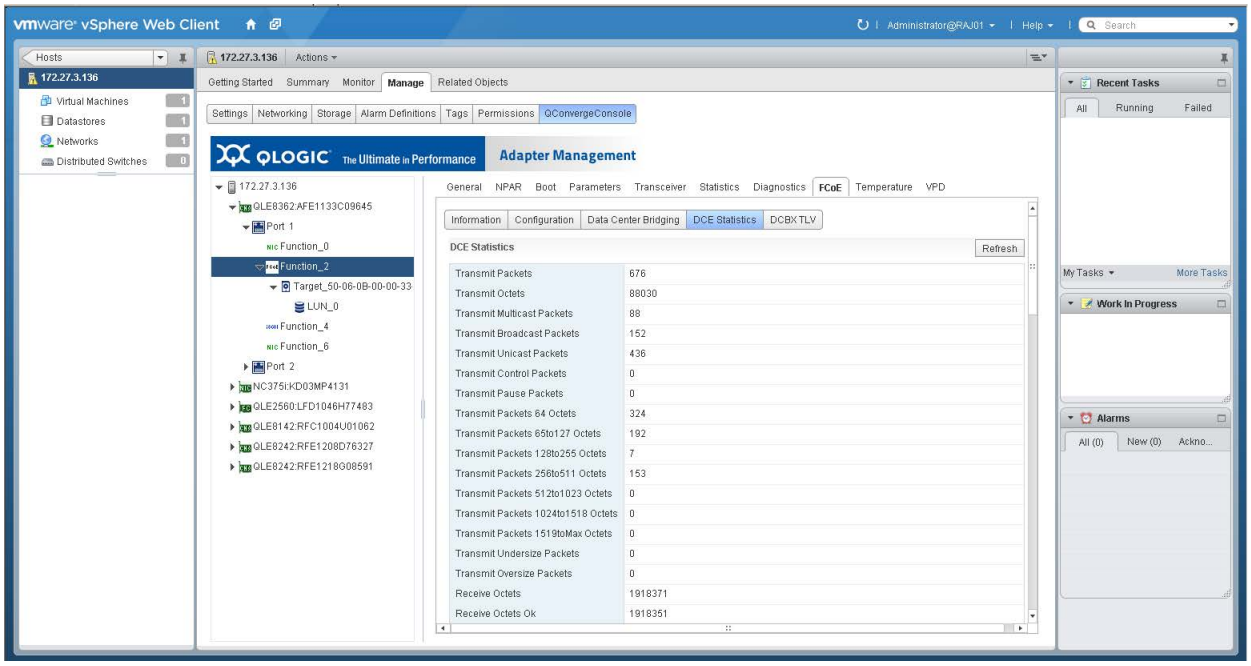



***Figure 10-48. FCoE Function DCE Statistics***

## Viewing FCoE Function DCBX TLV Information

**To view DCBX TLV information:**

1. In the host system tree, expand an FCoE port node to view the functions.
2. Select a function.

3. To open the DCBX TLV page (Figure 10-49), click **DCBX TLV**.

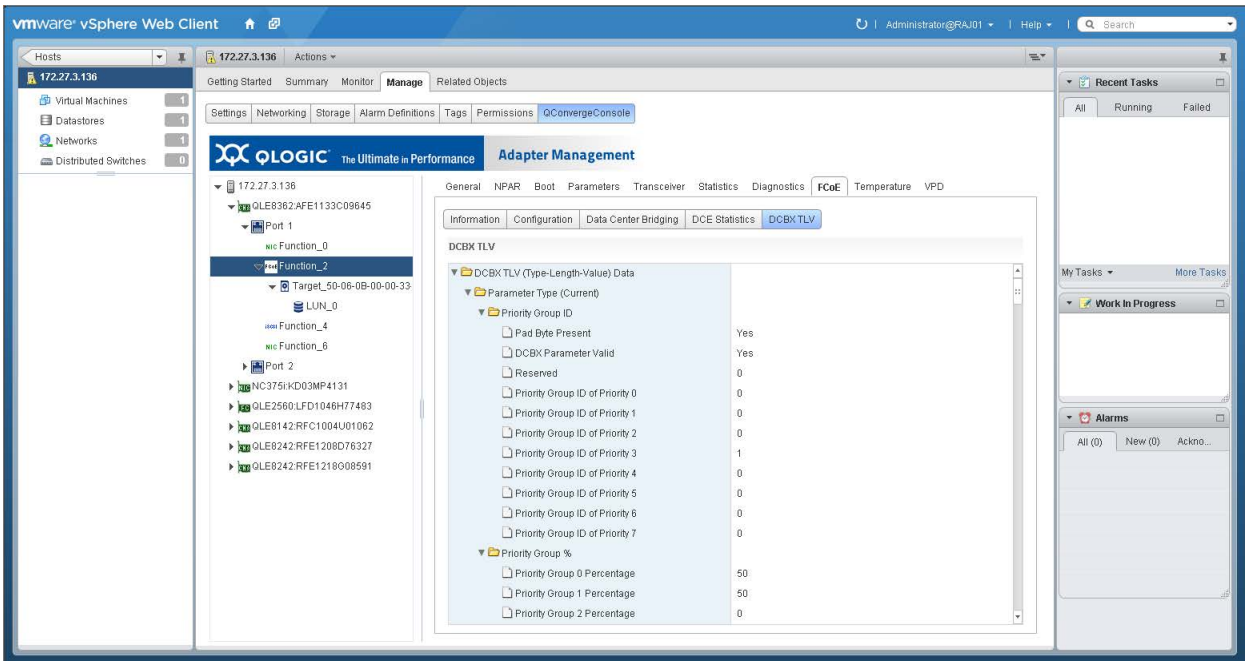



***Figure 10-49. FCoE Function DCBX TLV Information***

# Viewing FCoE Function Temperature Information

**To view function temperature information:**

1. In the host system tree, expand an FCoE port node to view the functions.
2. Select a function.

3. To open the Temperature page (Figure 10-50), click the **Temperature** tab.

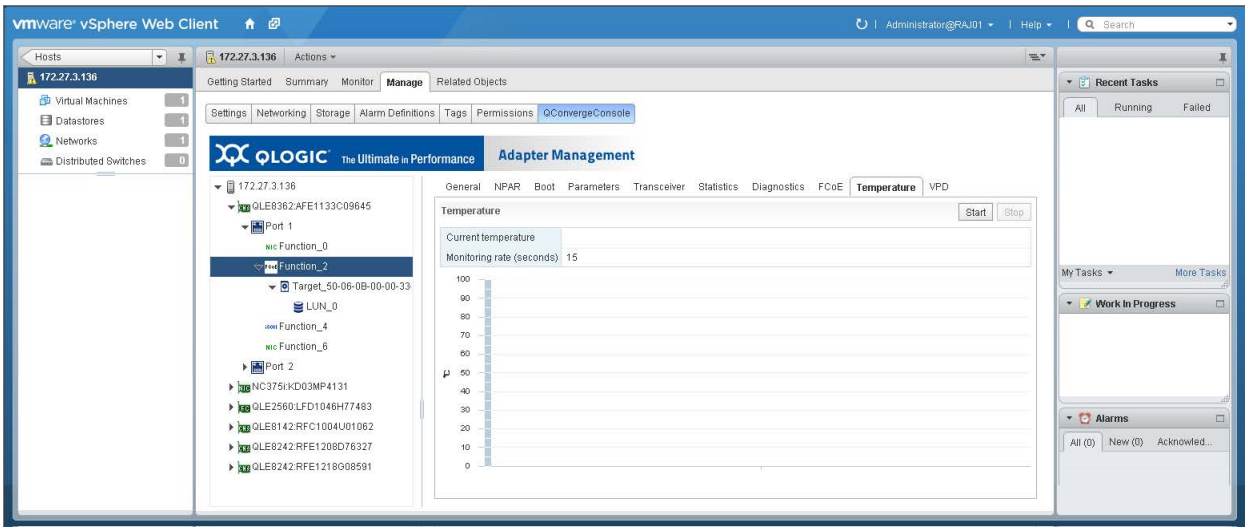



***Figure 10-50. FCoE Function Temperature***

4. Click **Start** to set the monitoring rate (seconds), and then click **OK**. Click **Stop** to stop reporting temperature data.

# Viewing FCoE Function VPD

**To view function vital product data (VPD):**

1. In the host system tree, expand an FCoE port node to view the functions.
2. Select a function.

3. To open the Port Vital Product Data (VPD) page (Figure 10-51), click the **VPD** tab.

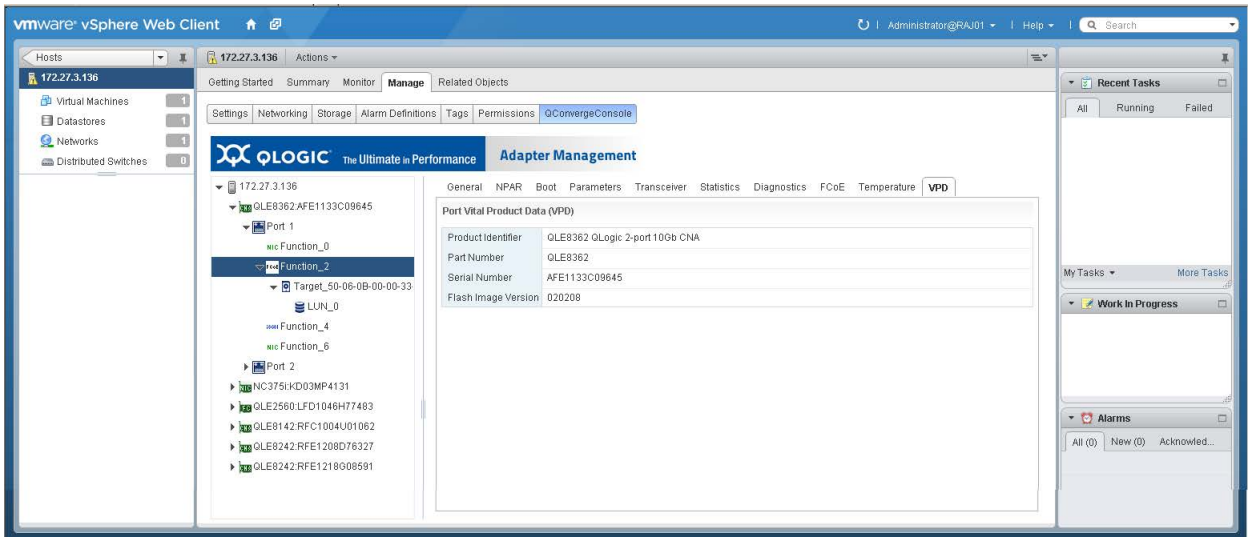



***Figure 10-51. FCoE Function Vital Product Data***

# Viewing FCoE Function Target Information

Target information is available under the FCoE function, if there is a target connected to the port.

**To view function target information:**

1. In the host system tree, expand an FCoE port node to view the functions.
2. Expand the FCoE function node, and then select the target (Figure 10-52).

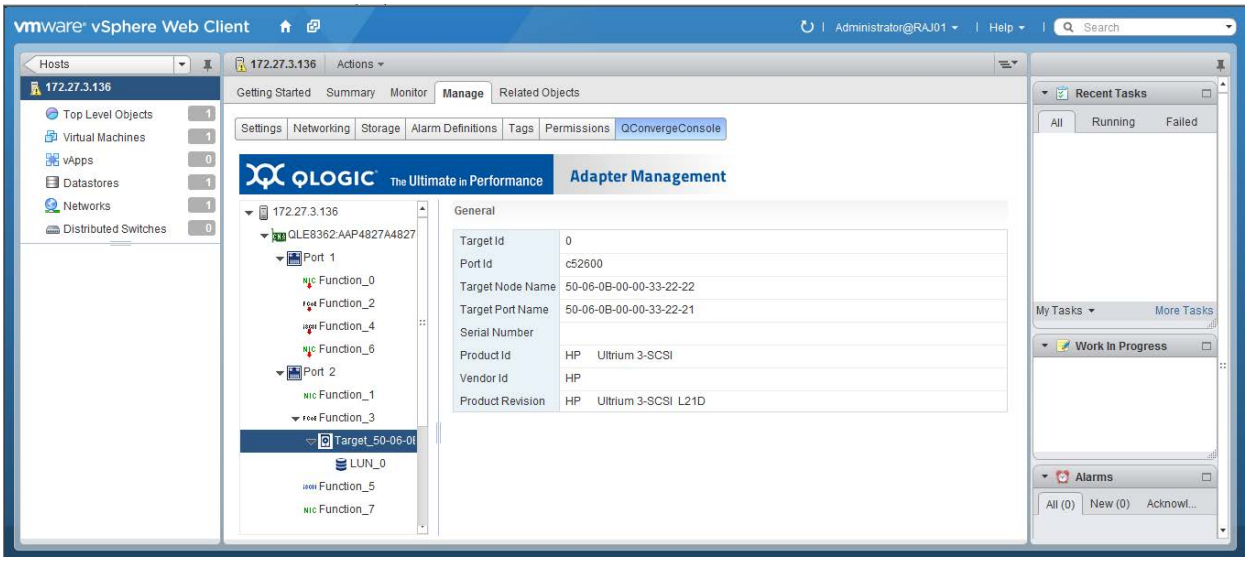



***Figure 10-52. FCoE Function Target Information***

## Viewing FCoE Function LUN Information

To view LUN information for an FCoE function target: In the host tree pane, expand a target node, and then select a LUN (Figure 10-53).

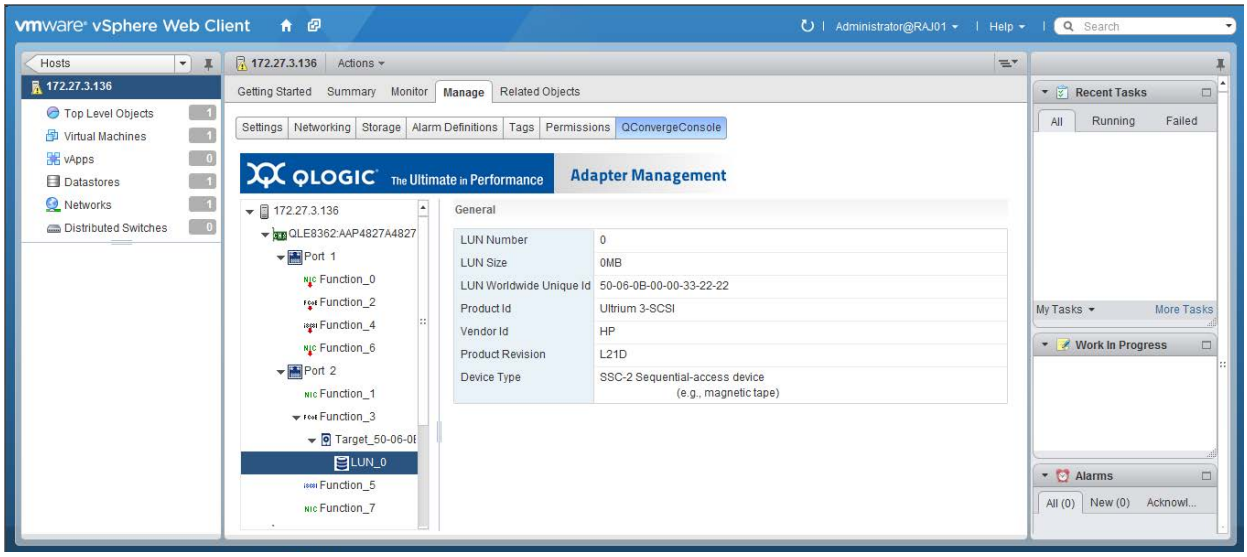



***Figure 10-53. FCoE Function LUN Information***

# Managing iSCSI Functions

In the host system tree, expand an iSCSI port node to view the functions, and then select a function. In the content pane, click the **General** tab to view information about the selected function (Figure 10-54).

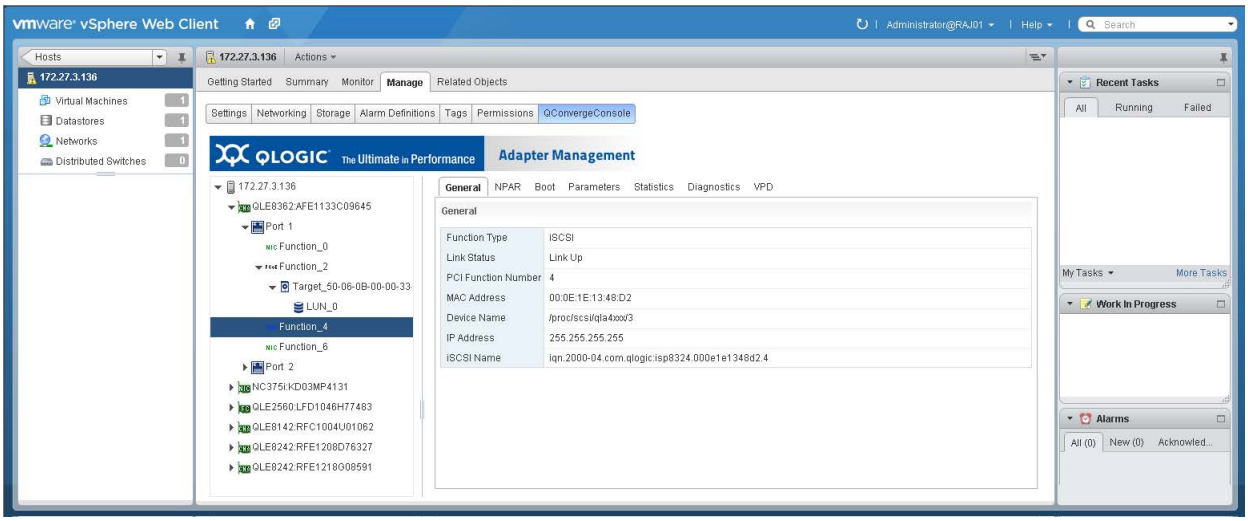



***Figure 10-54. iSCSI Functions***

The content pane for the selected iSCSI function provides tabs to access the following options:

- Configuring iSCSI Function NPAR Function Type
- Configuring iSCSI Function Boot Parameters
- Configuring iSCSI Function Parameters
- Viewing iSCSI Function Statistics
- Running iSCSI Function Diagnostics
- Viewing iSCSI Function VPD

# Configuring iSCSI Function NPAR Function Type

**To configure the NPAR function type:**

1. In the host system tree, expand an iSCSI port node to view the functions.
2. Select a function.
3. In the content pane, click the **NPAR** tab to open the Function Type page (Figure 10-55).

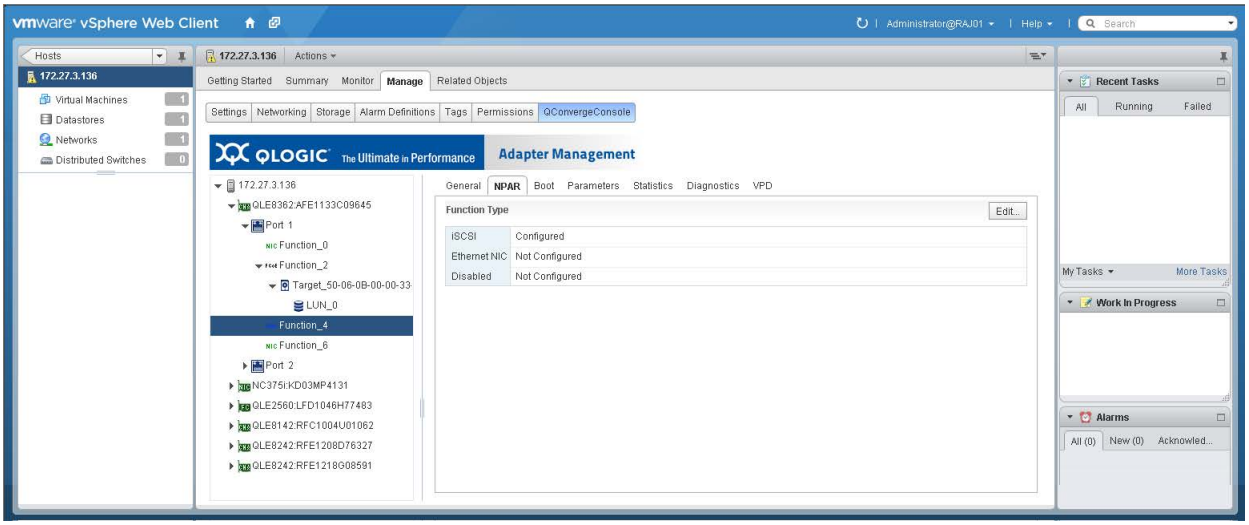



***Figure 10-55. iSCSI Function NPAR Function Type***

4. To open the NPAR Function Type dialog box, click **Edit**.
5. Select a function type of either **iSCSI**, **Ethernet NIC**, or **Disabled**, and then click **OK**.

# Configuring iSCSI Function Boot Parameters

**To configure the boot parameters:**

1. In the host system tree, expand an iSCSI port node to view the functions.
2. Select a function.
3. In the content pane, click the **Boot** tab to open the Boot page (Figure 10-56).

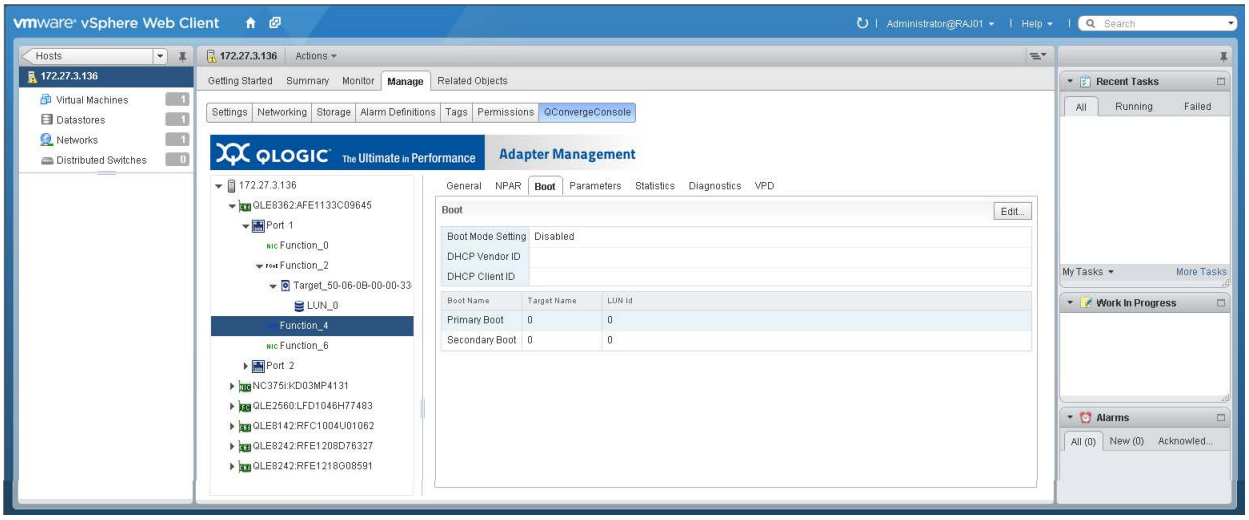



***Figure 10-56. iSCSI Function Boot Parameters***

4. In the content pane, click **Edit**.
5. In the iSCSI Boot dialog box, specify values for the following parameters, and then click **OK**.

   - ❑ **Boot Mode Setting**
   - ❑ **DHCP Vendor ID**
   - ❑ **DHCP Client ID**
   - ❑ **Primary Boot: Target name, LUN ID**
   - ❑ **Secondary Boot: Target name, LUN ID**

# Configuring iSCSI Function Parameters

To configure iSCSI function parameters, click the **Parameters** tab to open the Parameters page (Figure 10-57).

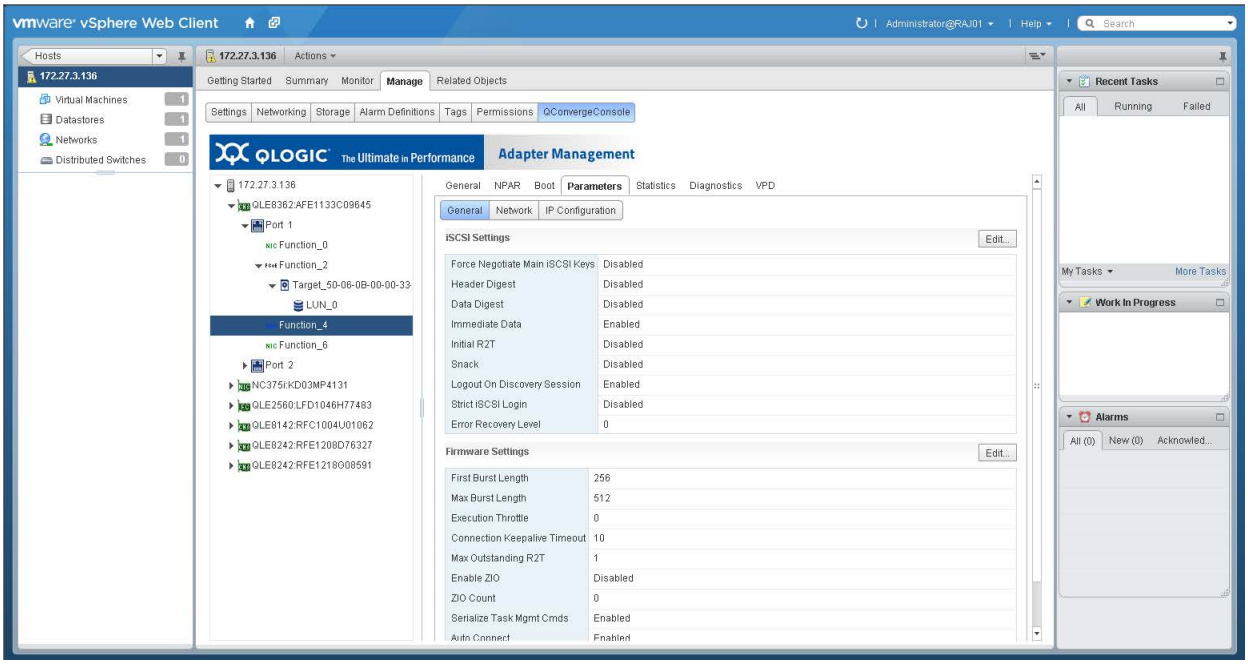



***Figure 10-57. iSCSI Function Parameters***

The Parameters page includes the **General**, **Network**, and **IP Configuration** buttons that provide access to the following groups of parameters:

- iSCSI Function iSCSI and Firmware Settings
- iSCSI Function Network Settings
- iSCSI Function IPv4 Parameters
- iSCSI Function IPv6 Parameters

## iSCSI Function iSCSI and Firmware Settings

**To configure iSCSI and firmware settings:**

1. In the host system tree, expand an iSCSI port node to view the functions.
2. Select a function.
3. In the content pane on the Parameters page, click the **General** button to open the General page with sections for **iSCSI Settings** and **Firmware Settings**.
4. Click **Edit**.

5. In the iSCSI Parameters dialog box (Figure 10-58), click the **General** tab in the left pane.

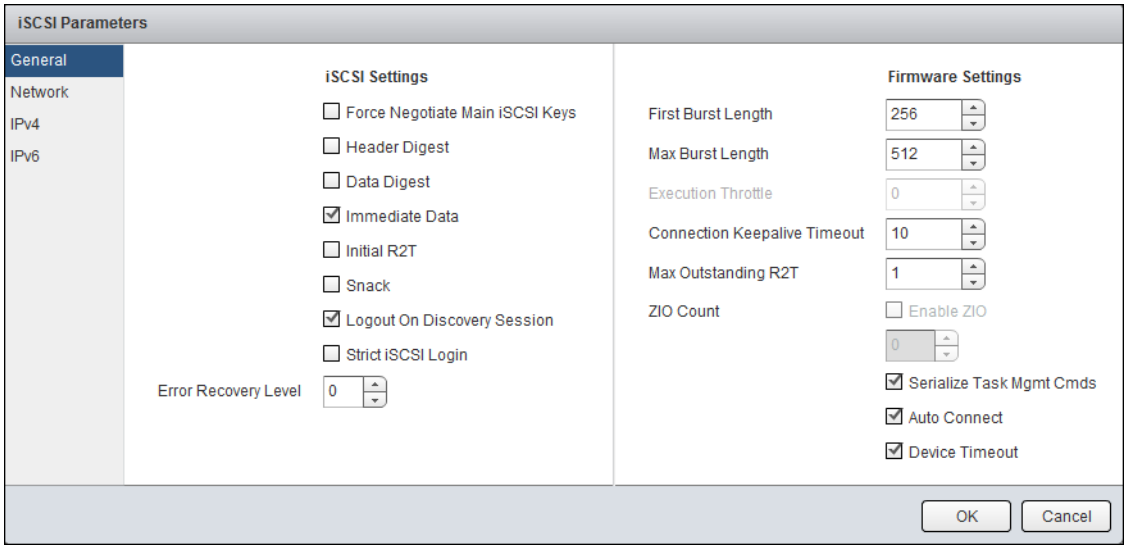



***Figure 10-58. iSCSI Function iSCSI and Firmware Settings***

6. Specify values under **iSCSI Settings** and **Firmware Settings**, and then click **OK**.

   Alternatively, click **Network**, **IPv4**, or **IPv6** to configure other iSCSI function parameters.

## iSCSI Function Network Settings

**To configure network settings:**

1. In the host system tree, expand an iSCSI port node to view the functions.
2. Select a function.
3. In the content pane on the Parameters page, click the **Network** button to open the Network page.
4. Click **Edit**.

5. In the iSCSI Parameters dialog box (Figure 10-59), click the **Network** tab in the left pane.

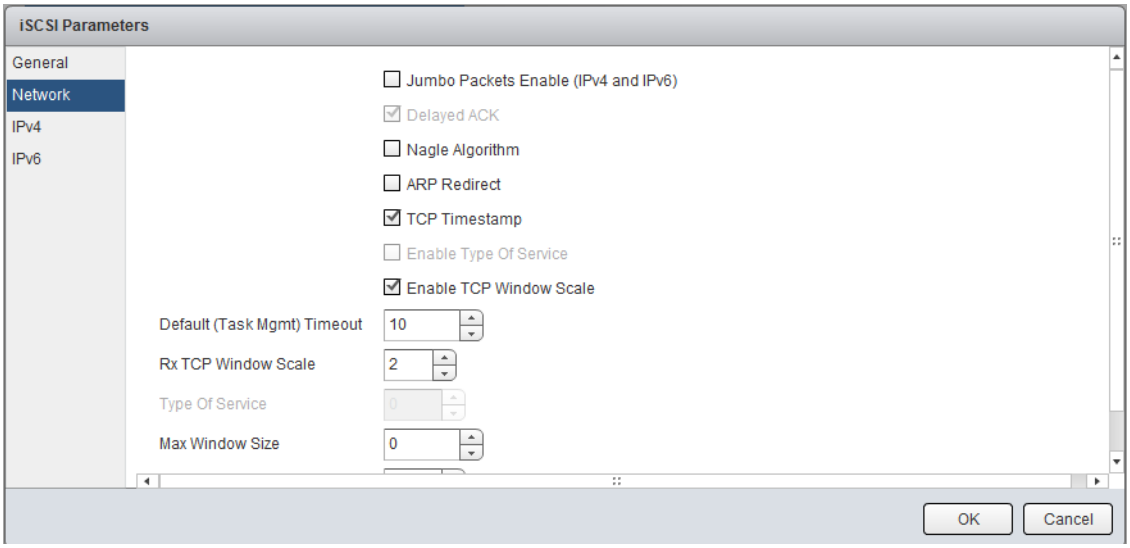



***Figure 10-59. iSCSI Function Network Parameters***

6. Specify values for the network settings, and then click **OK**.

   Alternatively, click **General**, **IPv4**, or **IPv6** to configure other iSCSI function parameters.

## iSCSI Function IPv4 Parameters

**To configure IP parameters:**

1. In the host system tree, expand an iSCSI port node to view the functions.
2. Select a function.
3. In the content pane on the Parameters page, click the **IP Configuration** button to open the IPv4 and IPv6 Parameters page.
4. Click **Edit**.

5. In the iSCSI Parameters dialog box (Figure 10-60), click the **IPv4** tab to specify values for the IPv4 parameters, and then click **OK**.

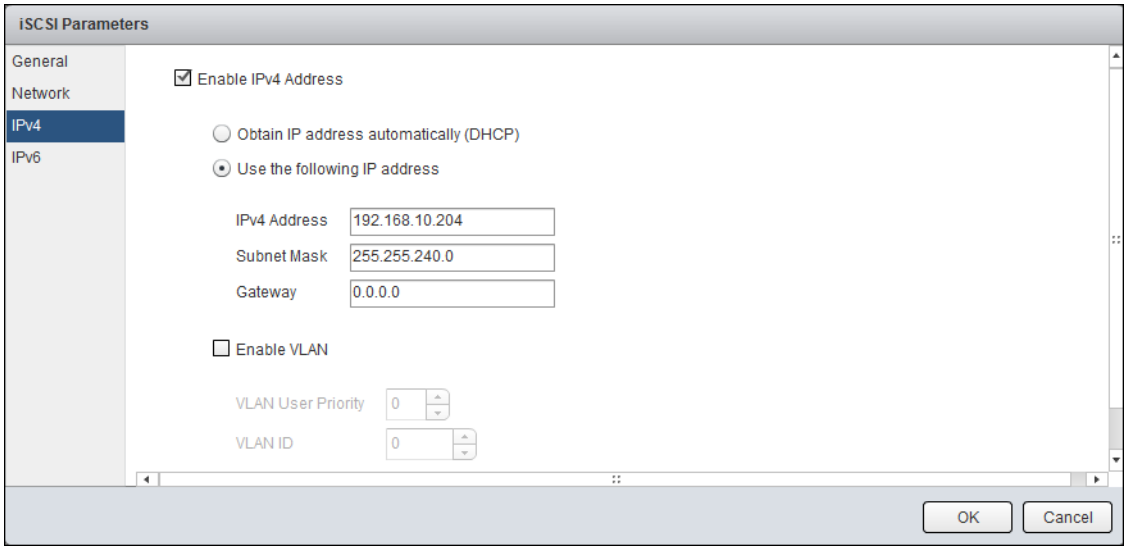



***Figure 10-60. iSCSI Function IPv4 Parameters***

Alternatively, click **General**, **Network**, or **IPv6** to configure other iSCSI parameters.

### iSCSI Function IPv6 Parameters

**To configure IP parameters:**

1. In the host system tree, expand an iSCSI port node to view the functions.
2. Select a function.
3. In the content pane on the Parameters page, click the **IP Configuration** button to open the IPv4 and IPv6 Parameters page.
4. Click **Edit**.
5. In the iSCSI Parameters dialog box, click the **IPv6** tab to specify values for the IPv6 parameters, and then click **OK**.

   Alternatively, click **General**, **Network**, or **IPv4** to configure the other iSCSI parameters.

## Viewing iSCSI Function Statistics

**To view function statistics**

1. In the host system tree, expand an iSCSI port node to view the functions.
2. Select a function.

3. In the content pane, click the **Statistics** tab to open the Statistics page (Figure 10-61).

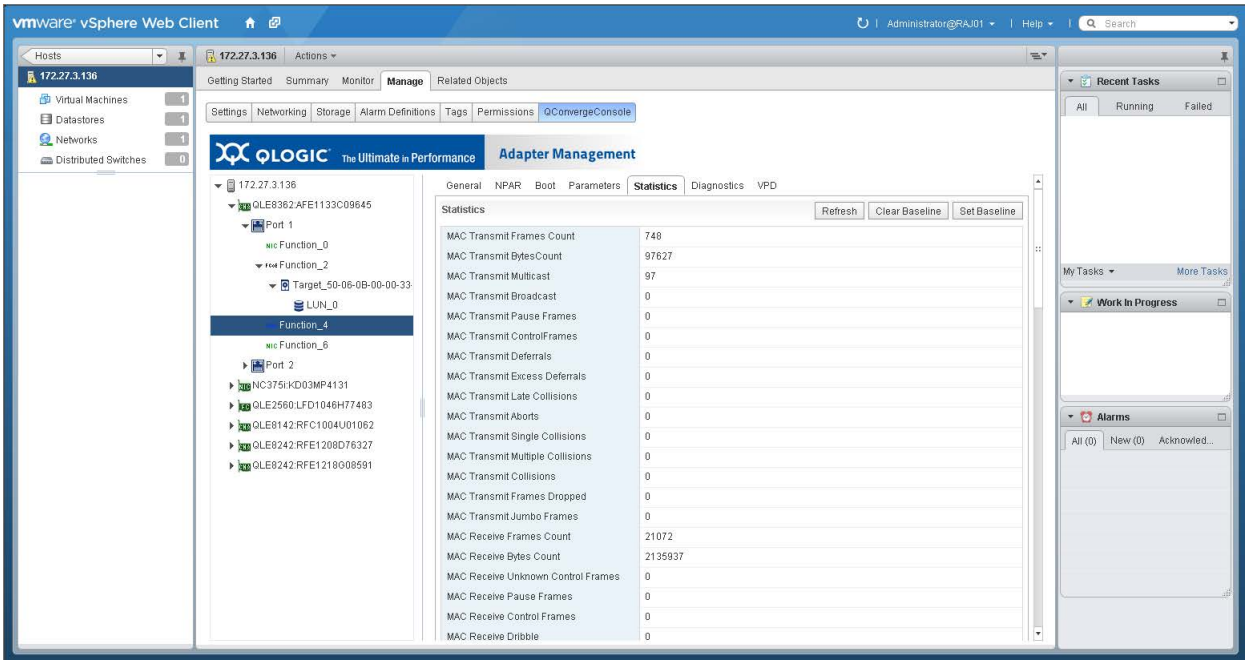



***Figure 10-61. iSCSI Function Statistics***

4. As needed, click the following options to manipulate the statistics:

   - **Refresh**—Updates the statistics to their current values. If there is a baseline, the **Refresh** option shows the change since the baseline.
   - **Clear Baseline**—Clears an existing baseline.
   - **Set Baseline**—Records the current statistics values as a reference point.

# Running iSCSI Function Diagnostics

To run function diagnostic tests or to retrieve the firmware debug dump, click the **Diagnostics** tab to open the Diagnostic page (Figure 10-62).

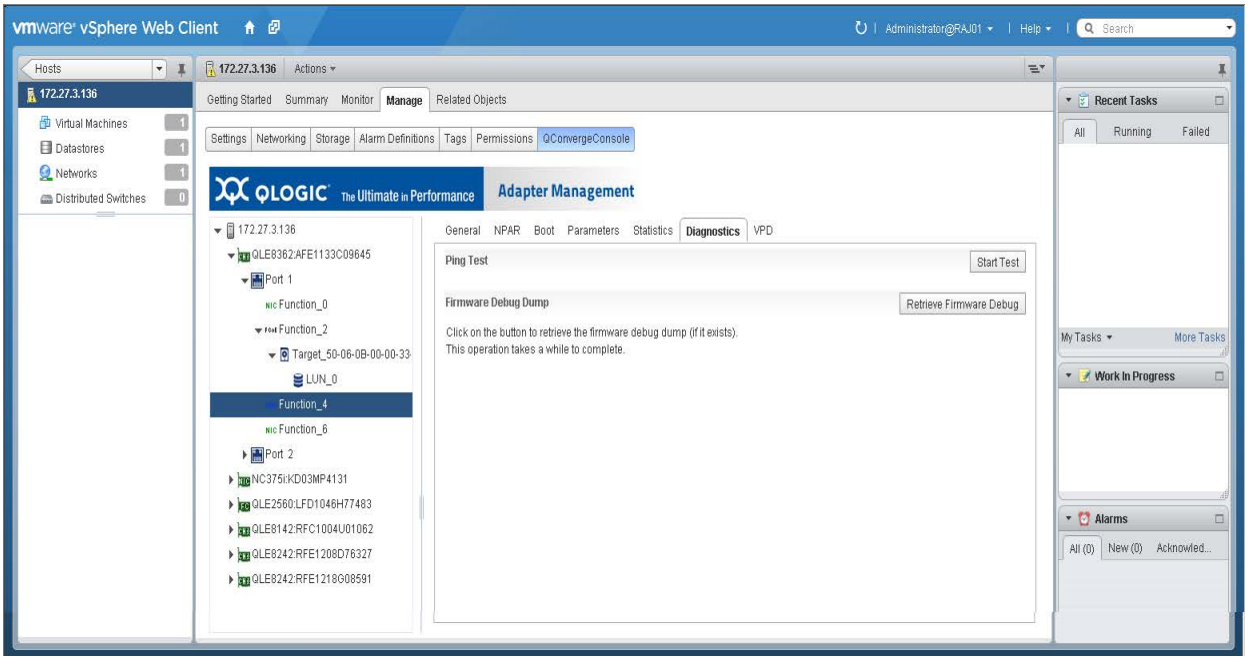



***Figure 10-62. iSCSI Function Diagnostics***

After selecting a function, you have the following diagnostic options:

- iSCSI Function Ping Test
- Retrieve iSCSI Function Firmware Debug Dump

## iSCSI Function Ping Test

**To perform an iSCSI function ping test:**

1. In the host system tree, expand an iSCSI port node to view the functions.
2. Select a function.
3. In the content pane, click the **Diagnostics** tab to open the Diagnostics page.
4. Next to **Ping Test**, click **Start Test**.

5. In the Ping dialog box (Figure 10-63), specify the IPv4 address to ping, the quantity of packets, and the packet size, and then click **OK**.

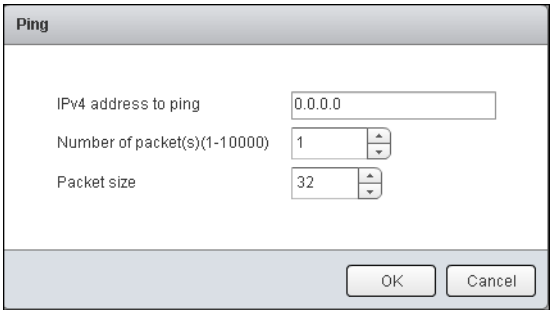



***Figure 10-63. iSCSI Function Ping Test***

6. Observe the test results.

### Retrieve iSCSI Function Firmware Debug Dump

**To retrieve the firmware debug dump:**

1. In the host system tree, expand an iSCSI port node to view the functions.
2. Select a function.
3. In the content pane, click the **Diagnostics** tab to open the Diagnostics page.
4. Next to **Firmware Debug Dump**, click **Retrieve Firmware Debug** to retrieve the `debug.bin` file.

## Viewing iSCSI Function VPD

**To view iSCSI function vital product data (VPD) information:**

1. In the host system tree, expand an iSCSI port node to view the functions.
2. Select a function.

3. In the content pane, click the **VPD** tab to open the Port Vital Product Data (VPD) page (Figure 10-64).

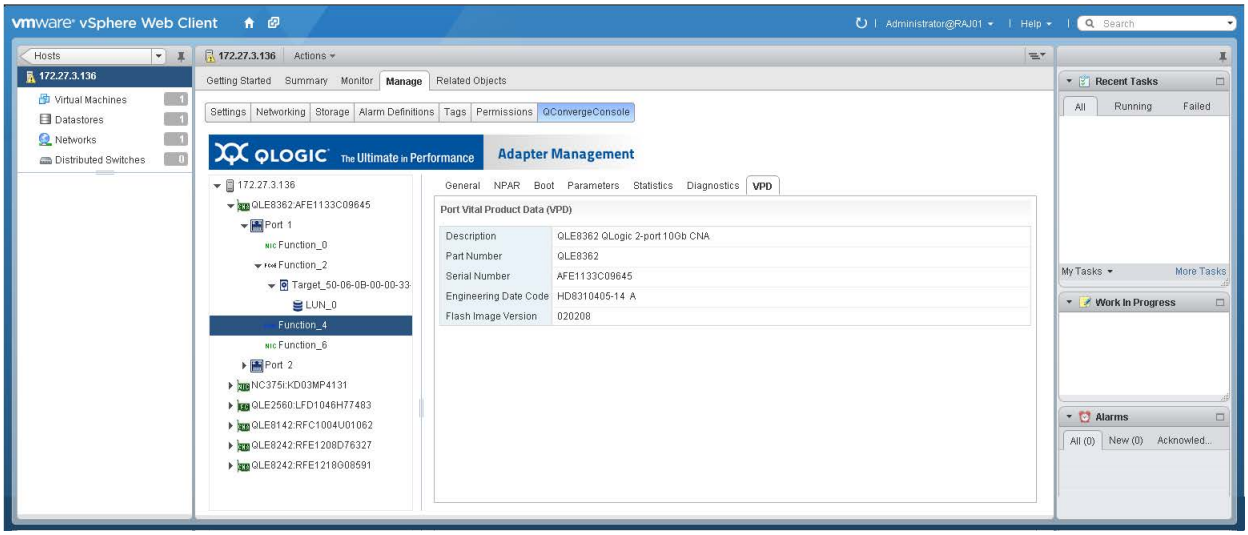



***Figure 10-64. iSCSI Function Vital Product Data***

# 11 Managing Marvell 578xx and 41000 Series Adapters

This chapter provides detailed instructions on how to use the vCenter Server Web Client Plug-in to manage Marvell 578xx/41000 Series Adapters and connected storage devices. The following topics are covered in this chapter:



## 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

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 11-1 shows an example of the vSphere Web Client Plug-in storage map with 578xx/41000 Series Adapters and Figure 11-2 shows an example of the HTML5 based vSphere Client Plug-in storage map with 578xx/41000 Series Adapters.

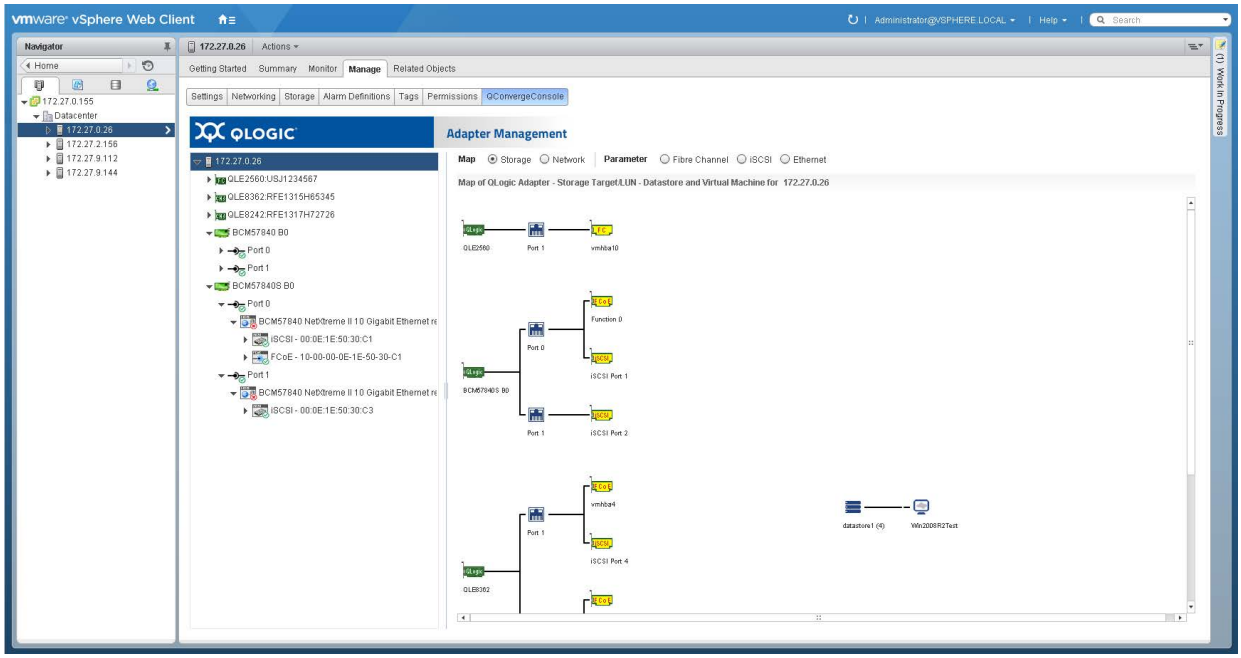



***Figure 11-1. Storage Map with 578xx/41000 Series Adapters (vSphere Web Client Plug-in)***

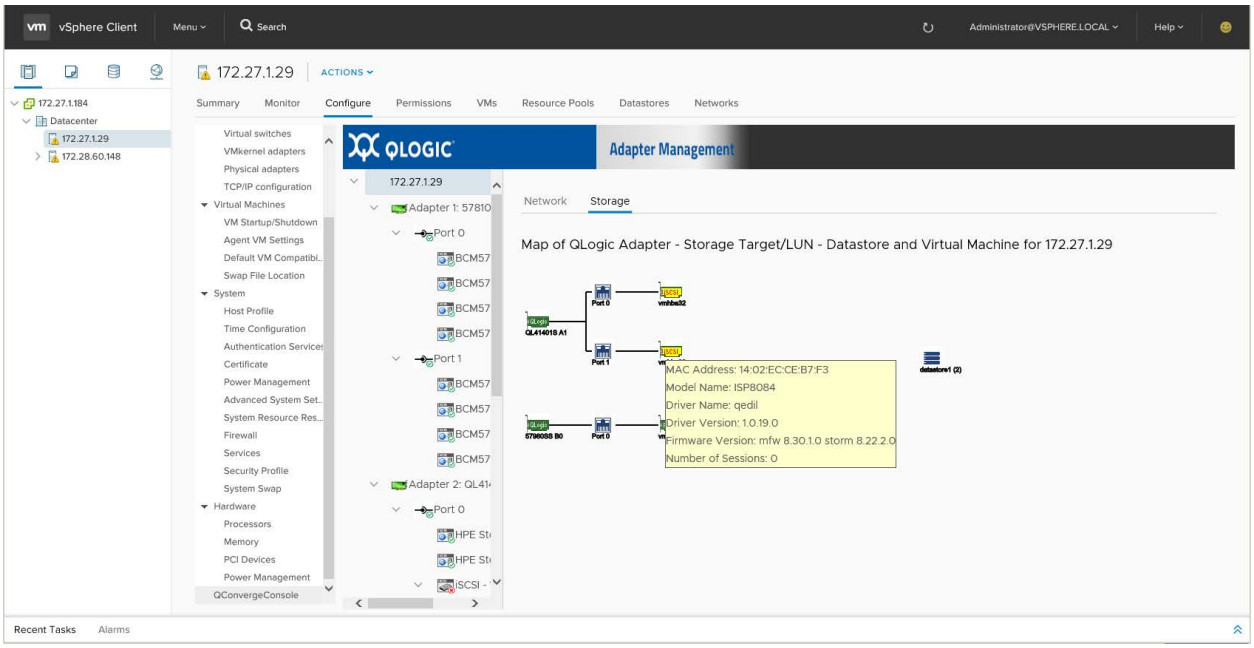



***Figure 11-2. Storage Map with 578xx/41000 Series Adapters (HTML5 based vSphere Client Plug-in)***

Figure 11-3 and Figure 11-4 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.

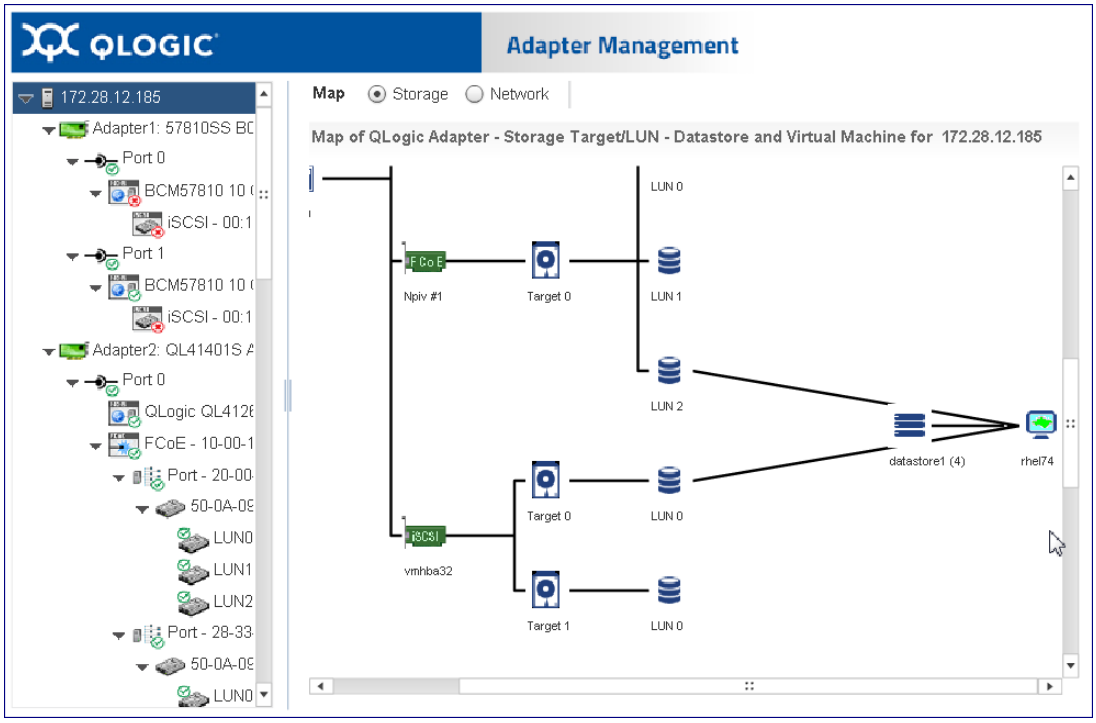



***Figure 11-3. Storage Map Showing LUNs Attached to VMs (vSphere Web Client Plug-in)***

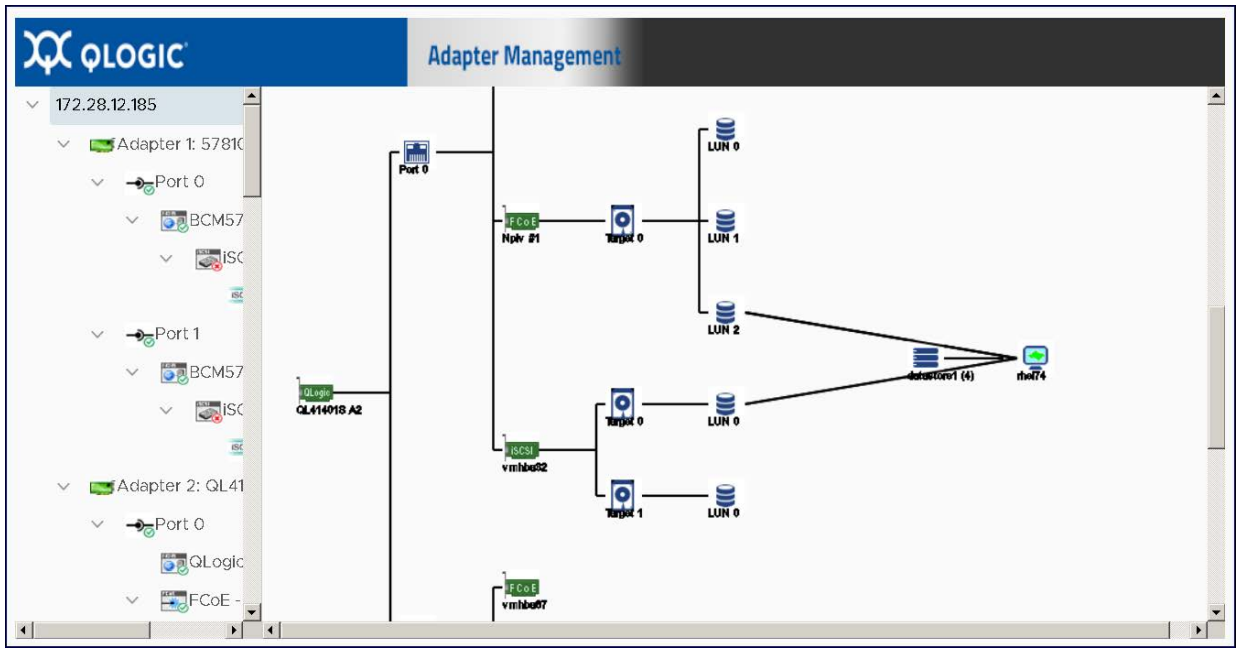



***Figure 11-4. Storage Map Showing LUNs Attached to VMs (HTML5 based vSphere Client Plug-in)***

# Network Map

Next to **Map**, click **Network** to view the selected host's network map, as shown in Figure 11-5 and Figure 11-6.

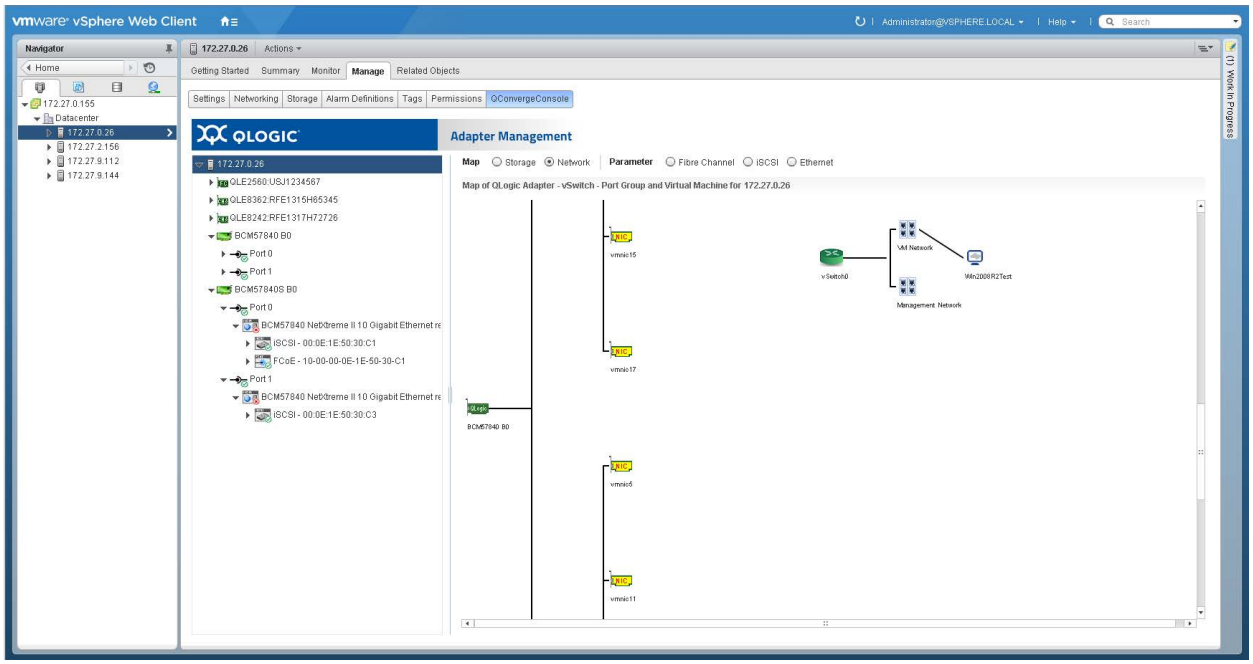



***Figure 11-5. Network Map with 578xx/41000 Series Adapters (vSphere Web Client Plug-in)***

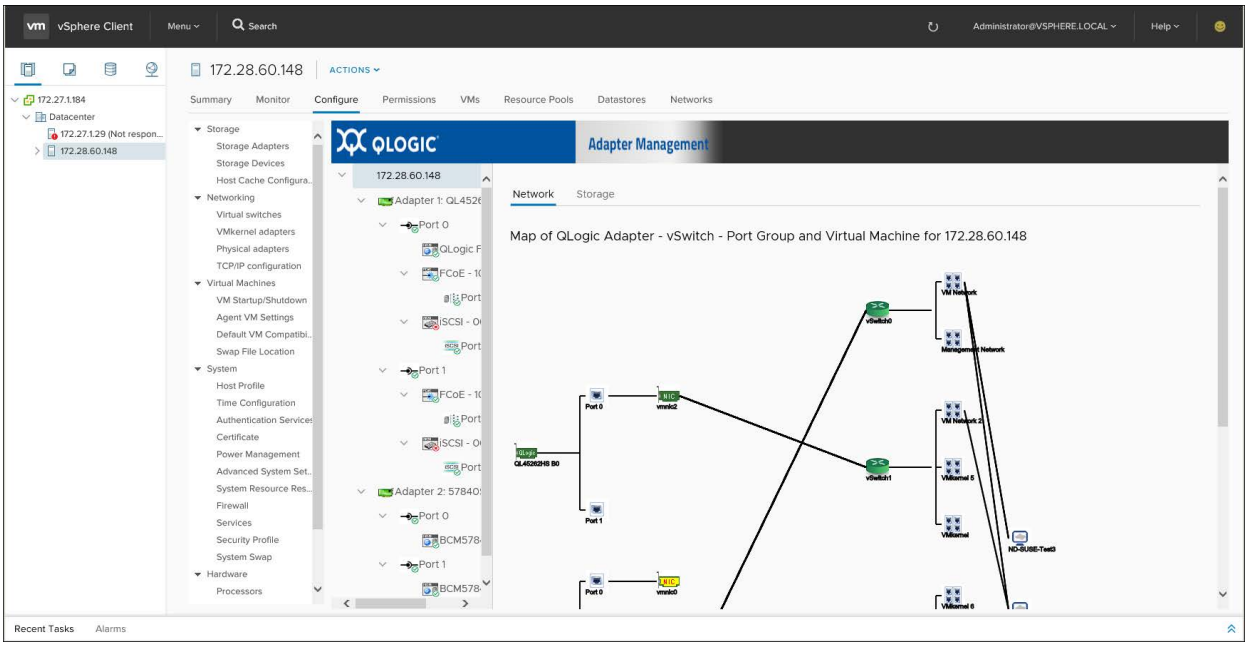



***Figure 11-6. Network Map with 578xx/41000 Series Adapters (HTML5 based vSphere Client Plug-in)***

# Managing 578xx/41000 Series Adapters

To manage 578xx/41000 Series Adapters, select the adapter in the system tree. The Adapter Management window appears in the content pane as shown in Figure 11-7 for 578xx/41000 Series Adapters.

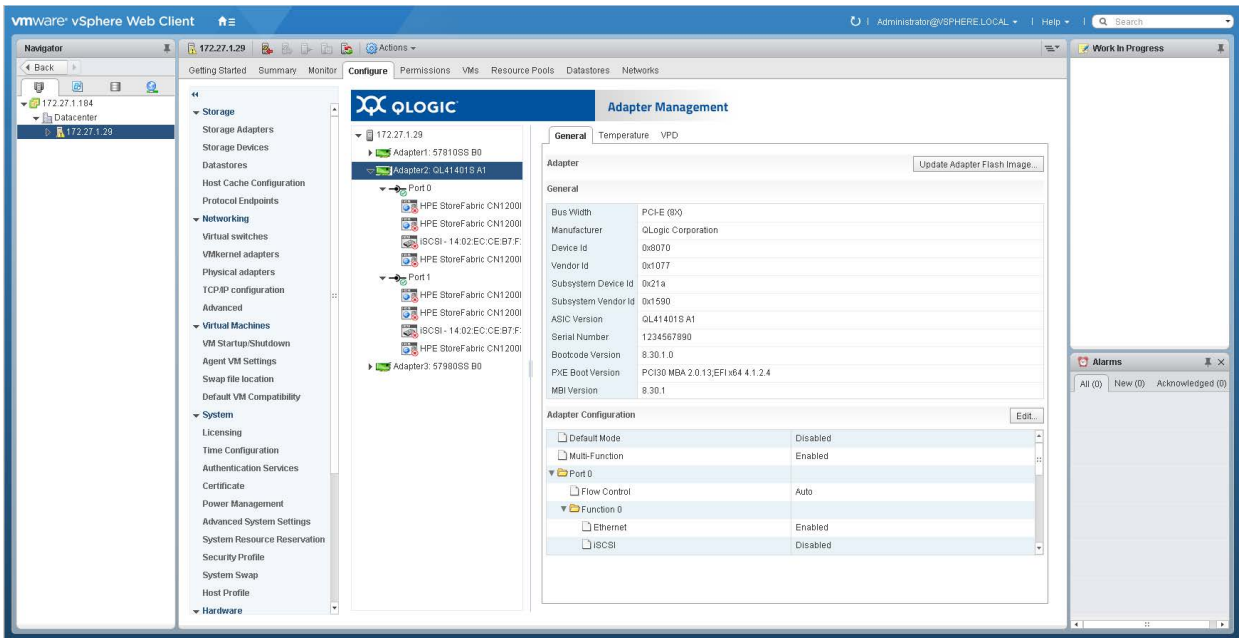



***Figure 11-7. Adapter Management on 578xx/41000 Series Adapters (vSphere Web Client Plug-in)***

In the HTML5 based vSphere Client Plug-in, the Adapter Management window appears in the content pane as shown in Figure 11-8 for 578xx/41000 Series Adapters.

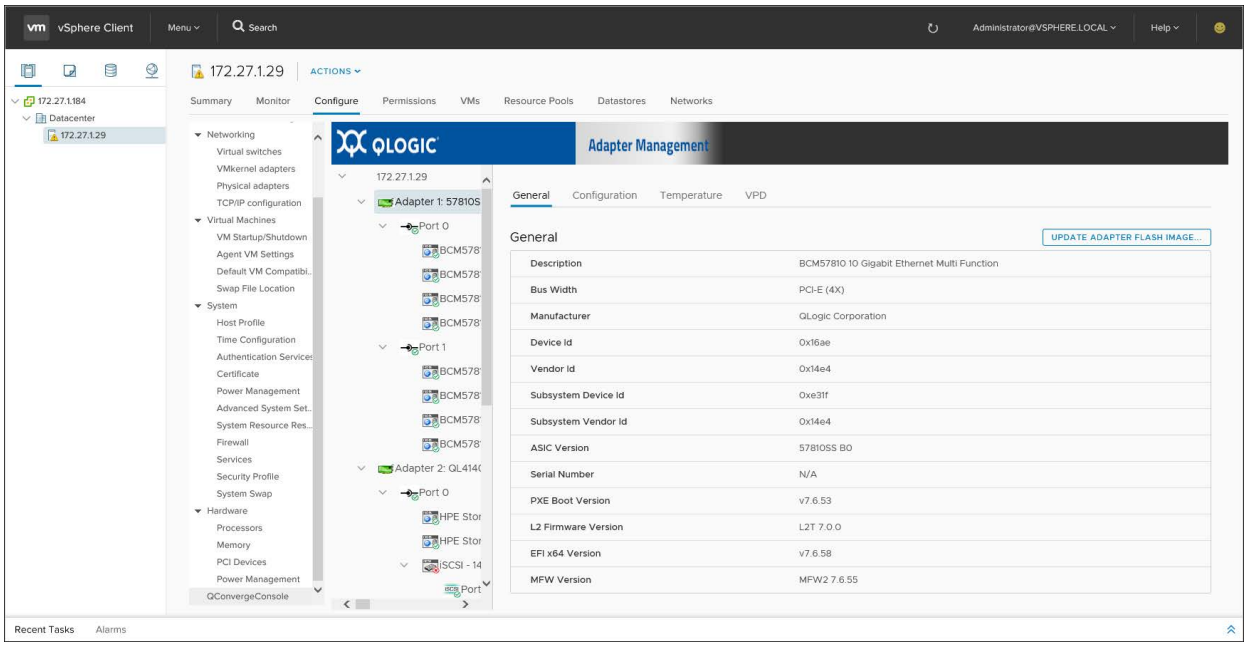



***Figure 11-8. Adapter Management on 578xx/41000 (HTML5 based vSphere Client Plug-in)***

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

# 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 (578xx/41000 Series Adapters)
- For Multi-Function, configuring flow control and bandwidth
- Configuring Remote Direct Memory Access (RDMA) (41000 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 11-9.

**NOTE**

- You can configure the protocols (iSCSI and FCoE for 578xx/41000 Series Adapters) and SR-IOV (and in the case of the Multi-Function mode, flow control and bandwidth).
- In Multi-Function mode, each port may have up to two storage protocols assigned to it with each function having either iSCSI or FCoE as shown in Figure 11-9 (578xx Series Adapters).
- There can only be up to two iSCSI functions or one iSCSI function with one FCoE function on each port (578xx Series Adapters).
- Minimum bandwidth for all functions on the same port must all be 0 or total 100%.
- The 41000 Series Adapters can have up to 16 functions configured. The following shows how some of the functions work:
  - Functions 0 and 1 cannot have storage protocols configured.
  - Functions 2 and 3 can be configured for FCoE protocol.
  - Functions 4 and 5 can be configured for iSCSI protocol.
- If RDMA is available on a 41000 Series Adapter, you can enable RoCE or iWARP.

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

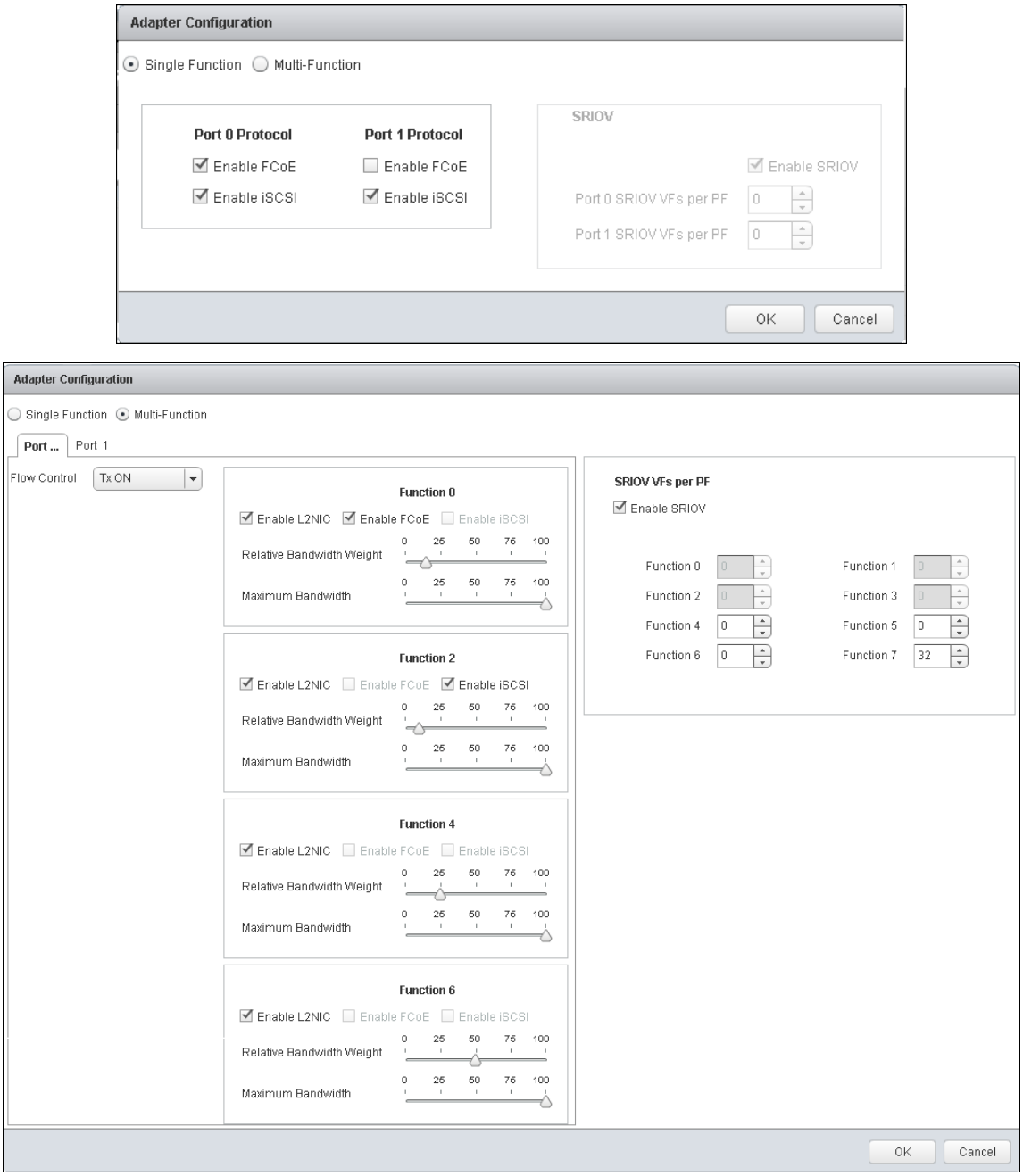



***Figure 11-9. Single/Multi-Function Configuration for 578xx Series Adapters***

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

Figure 11-10 and Figure 11-11 show the Adapter Configuration pages in the HTML5 based vSphere Client Plug-in.

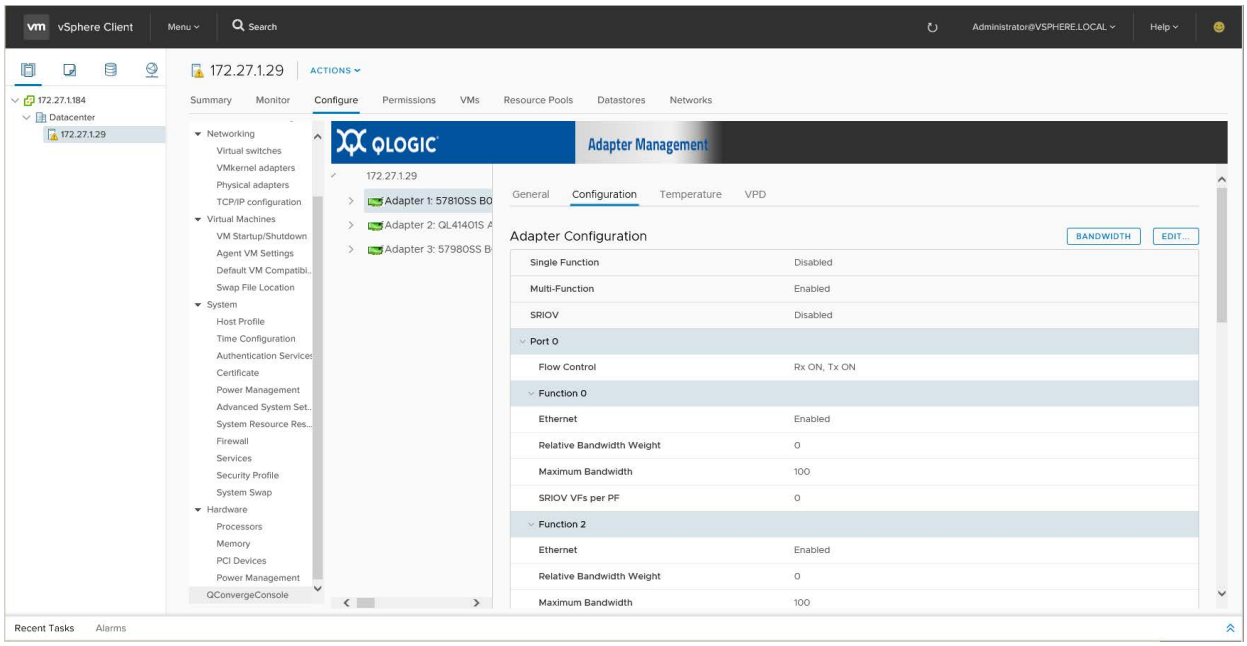



***Figure 11-10. Adapter Configuration for a 578xx Series Adapter***

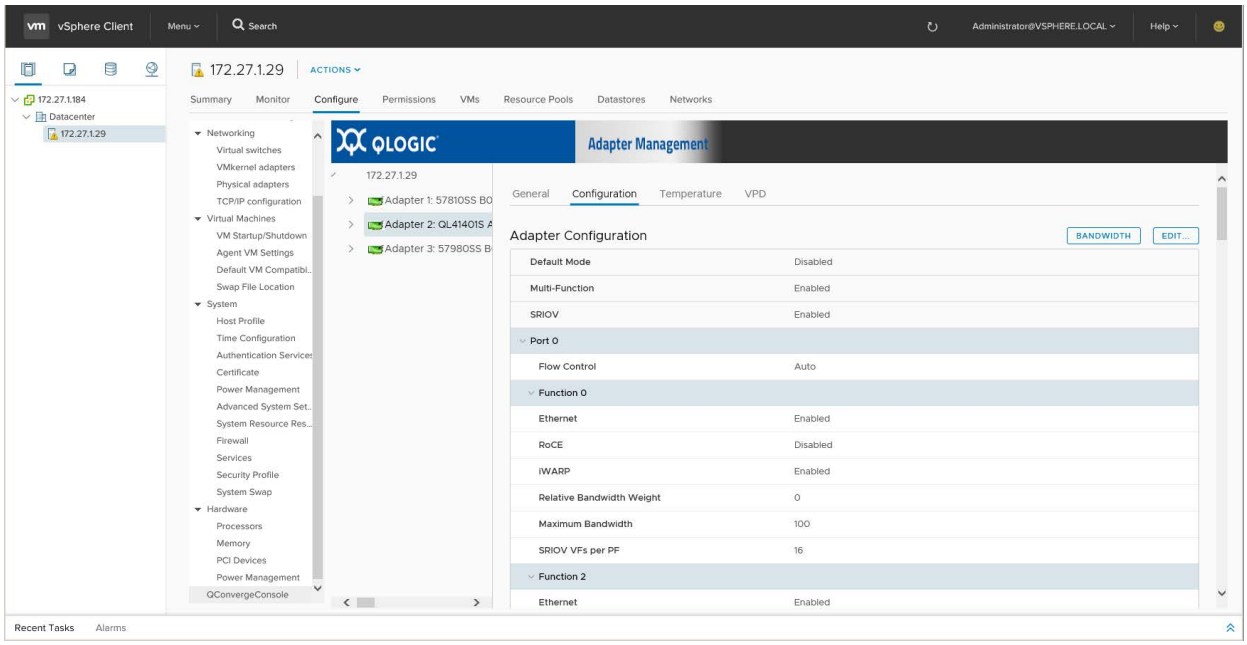



***Figure 11-11. Adapter Configuration for a 41000 Series Adapter***

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 11-12, Figure 11-13, and Figure 11-14, and then click **Next** on each.

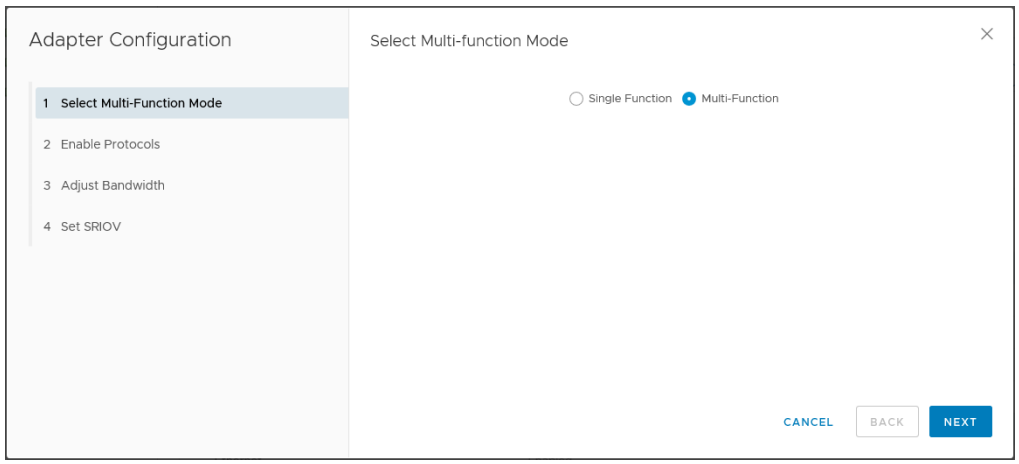



***Figure 11-12. Adapter Configuration Wizard: Select Multi-Function Mode***

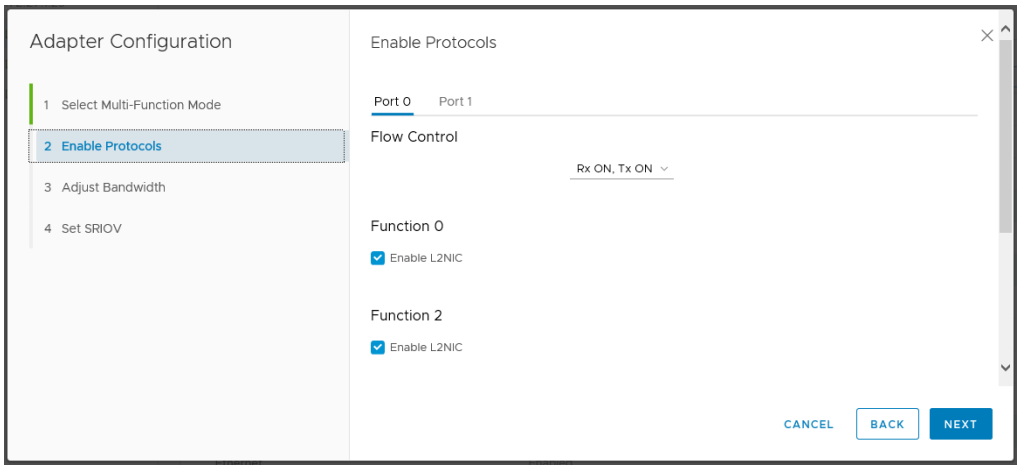



***Figure 11-13. Adapter Configuration Wizard: Enable Protocols***

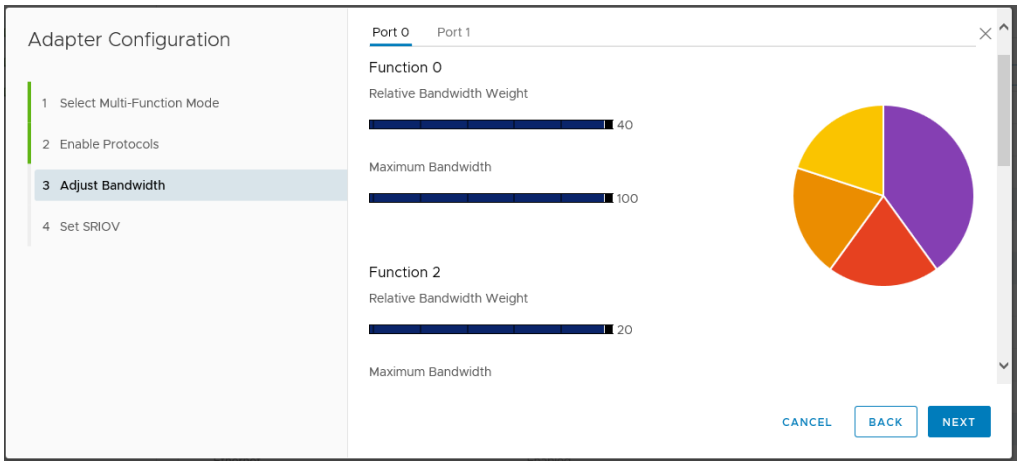



***Figure 11-14. Adapter Configuration Wizard: Adjust Bandwidth***

3. On the final wizard window shown in Figure 11-15, click **Finish**.

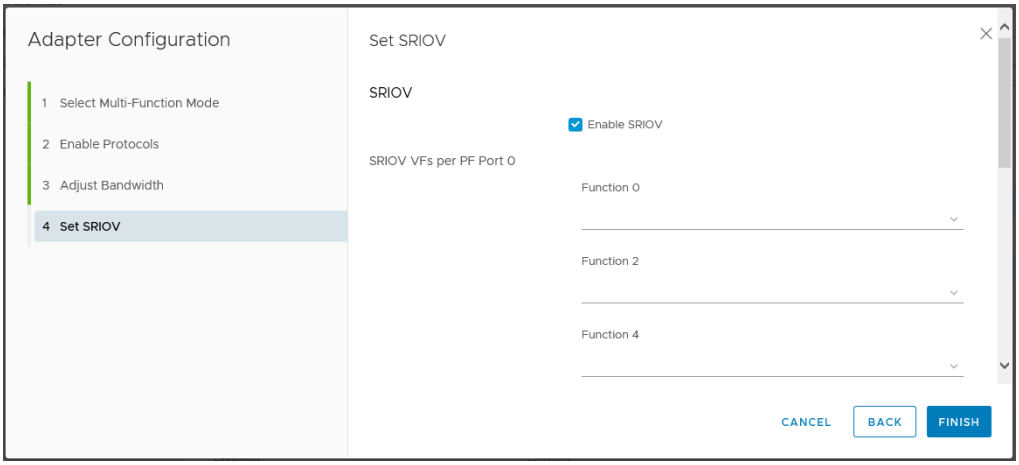



***Figure 11-15. Adapter Configuration Wizard: Set SR-IOV***

# 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 11-16 and Figure 11-17 show the Temperature page.

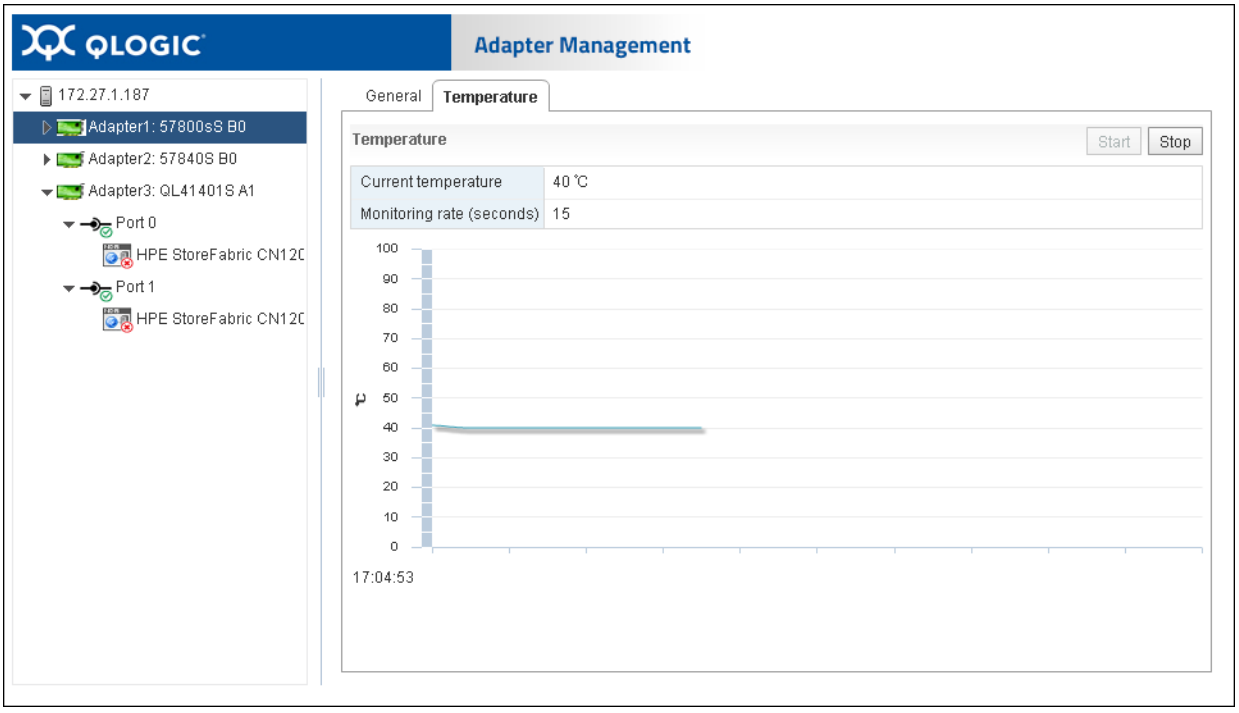



***Figure 11-16. Temperature Page (vSphere Web Client Plug-in)***

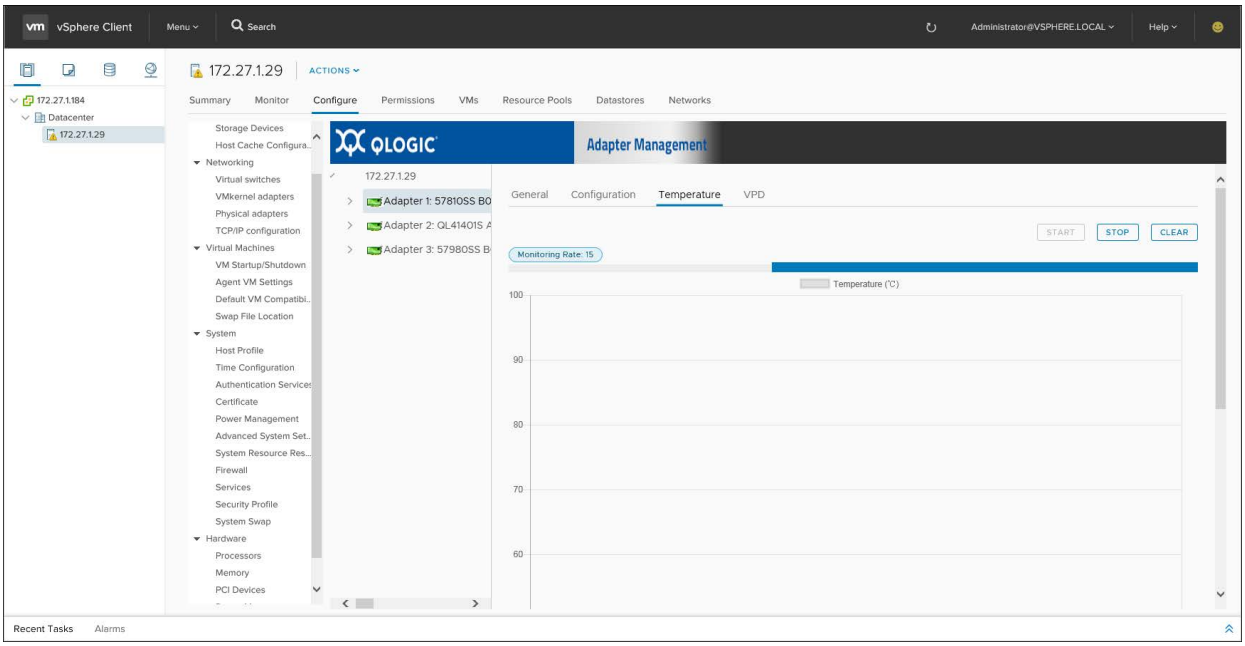



***Figure 11-17. Temperature Page (HTML5 based vSphere Client Plug-in)***

# QinQ Configuration

For specific Marvell 578xx 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 578xx 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 11-18 and Figure 11-19 show examples.

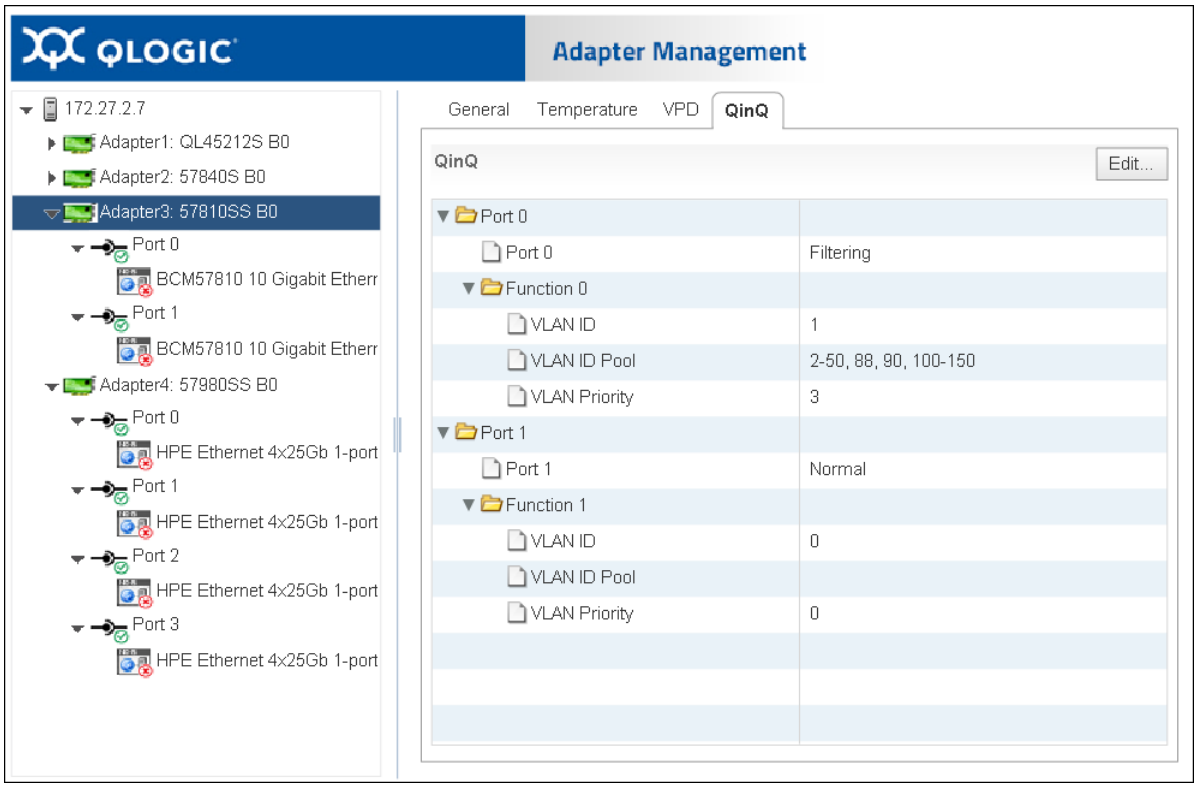



***Figure 11-18. QinQ Configuration Page (vSphere Web Client Plug-in)***

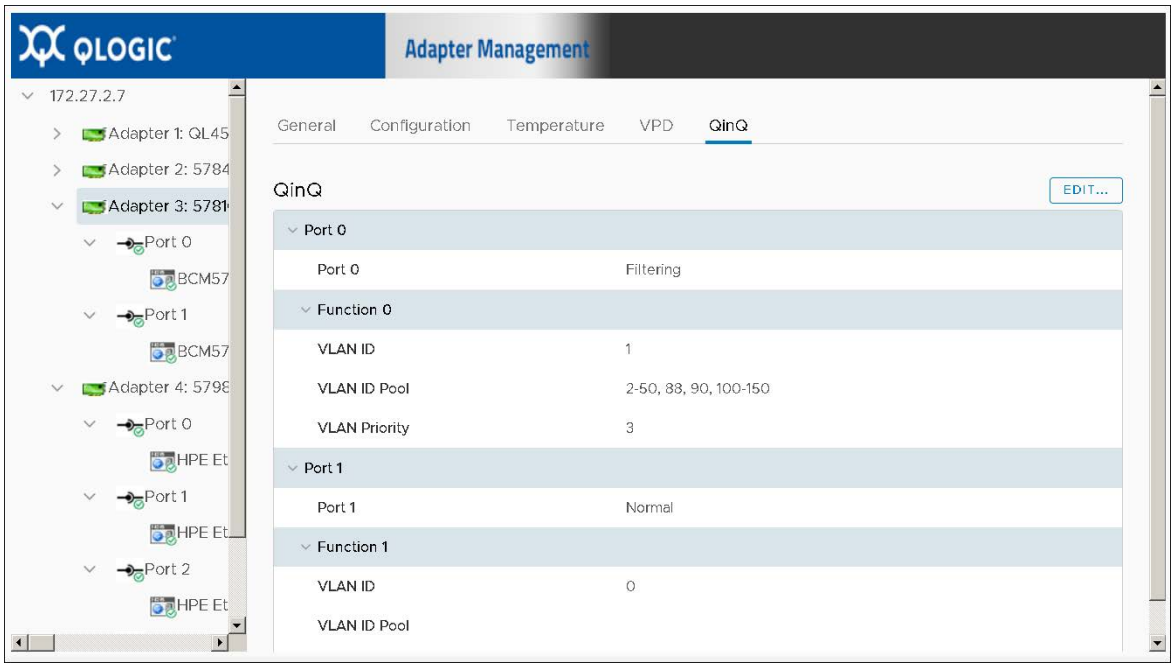



***Figure 11-19. QinQ Configuration Page (HTML5 based vSphere Client Plug-in)***

3. In the QinQ page, click **Edit** to view the QinQ Configuration dialog box (Figure 11-20 and Figure 11-21).

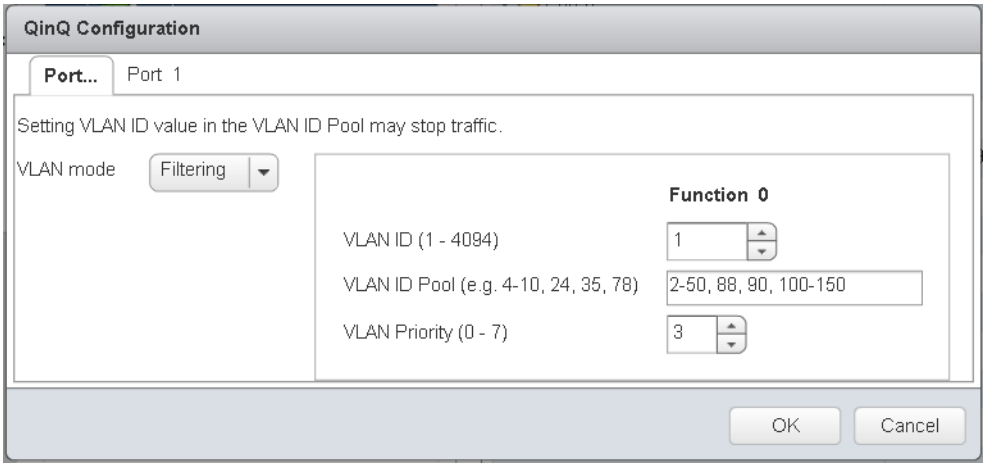



***Figure 11-20. QinQ Dialog Box (vSphere Web Client Plug-in)***

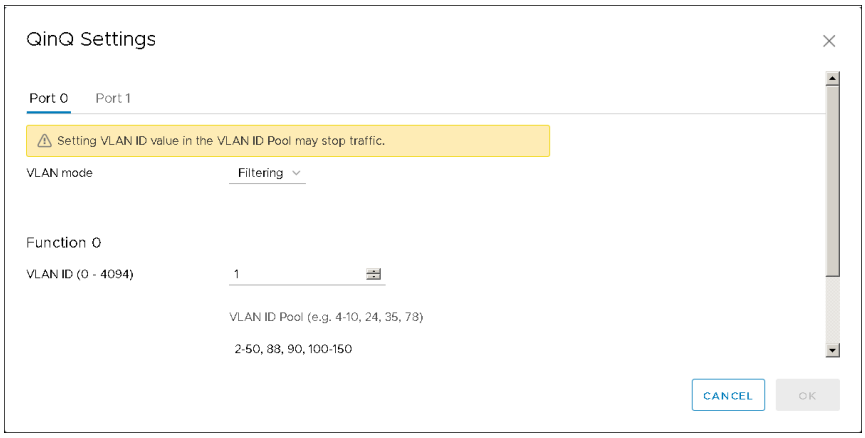



***Figure 11-21. QinQ Dialog Box (HTML5 based vSphere Client Plug-in)***

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.

# Viewing Port Information for 578xx/41000 Series Adapters

To view information about ports on 578xx/41000 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 11-22 shows the **Port Information** on 578xx/41000 Series Adapters in the vSphere Web Client Plug-in.

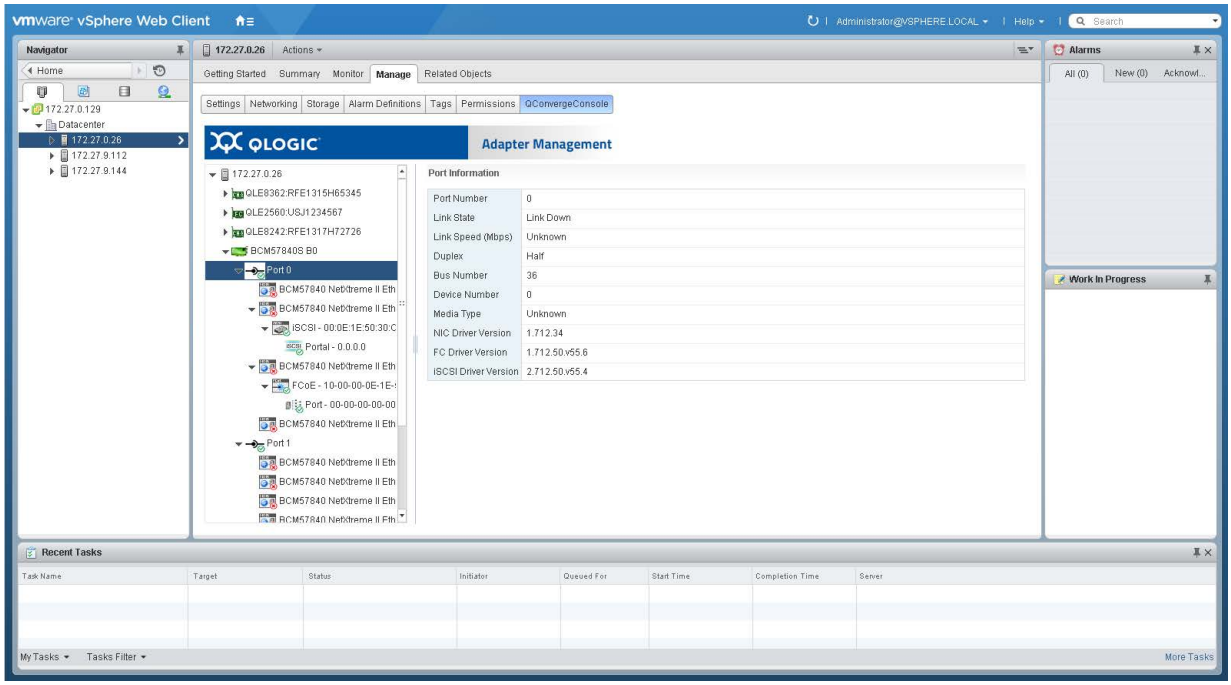



***Figure 11-22. Port Information on 578xx/41000 Series Adapters (vSphere Web Client Plug-in)***

Figure 11-23 shows the **Port Information** on 578xx/41000 Series Adapters in the vSphere Web Client Plug-in.

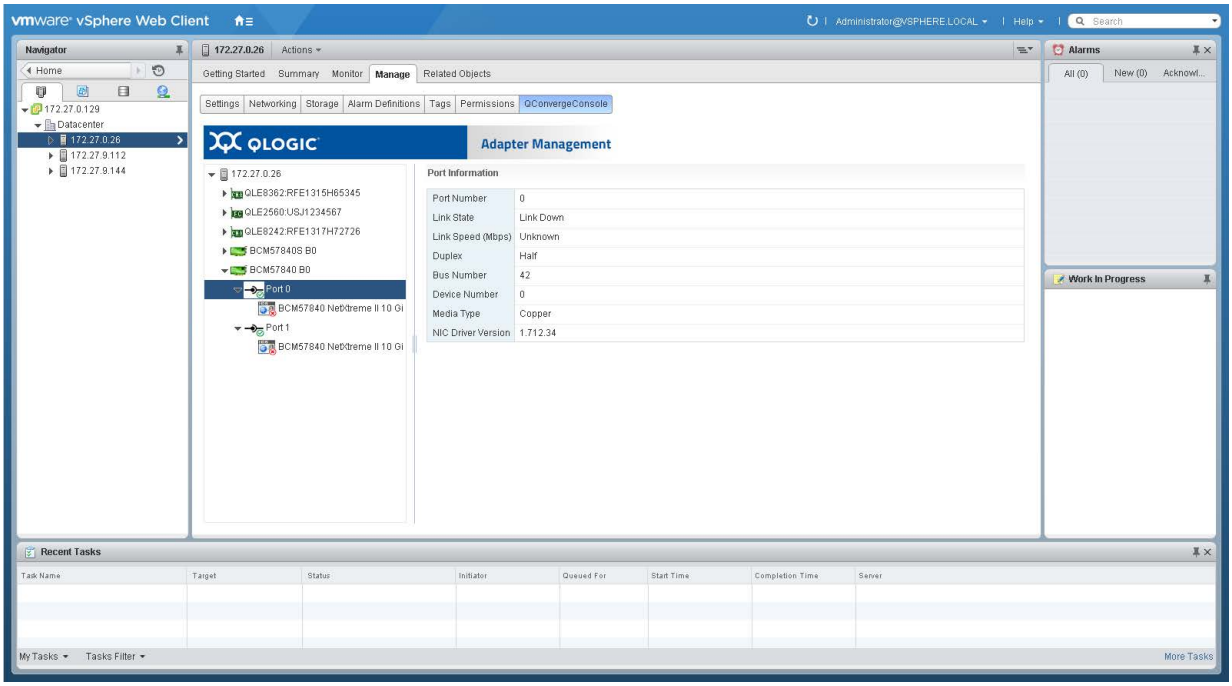



***Figure 11-23. Port Information on 578xx/41000 Series Adapters (vSphere Web Client Plug-in)***

Figure 11-24 shows the Port Information on a 41000 Series Adapter in the HTML5 based vSphere Client Plug-in.

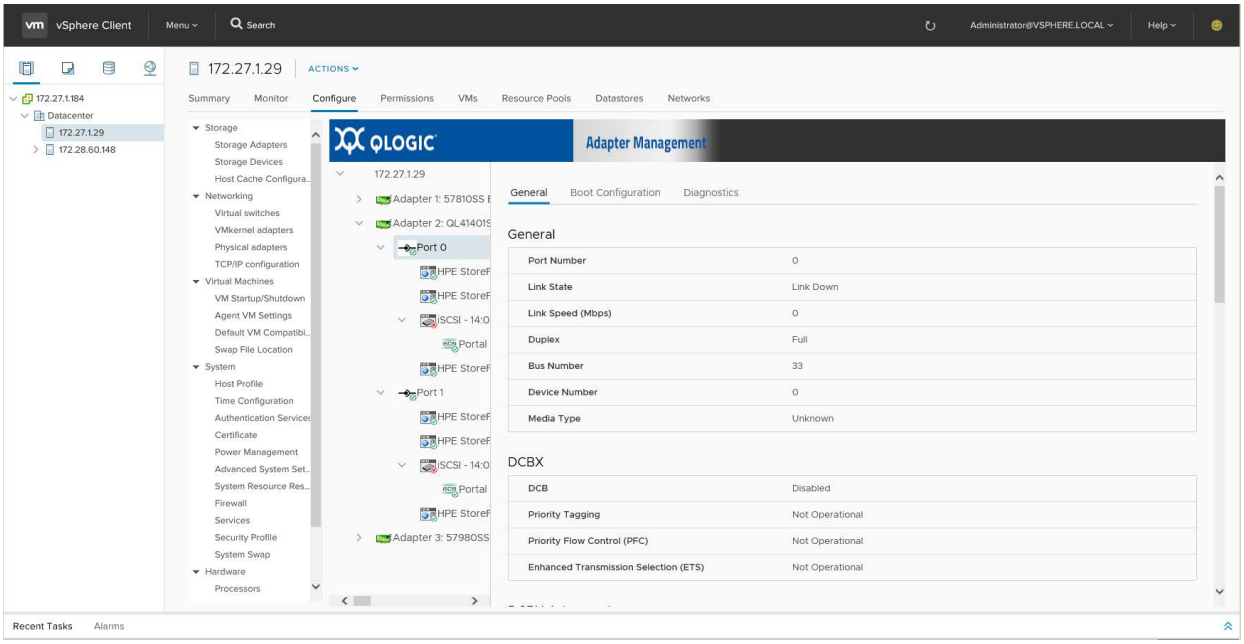



***Figure 11-24. Port Information on 41000 Series Adapters (HTML5 based vSphere Client Plug-in)***

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 11-25 shows the port information with DCBX information.

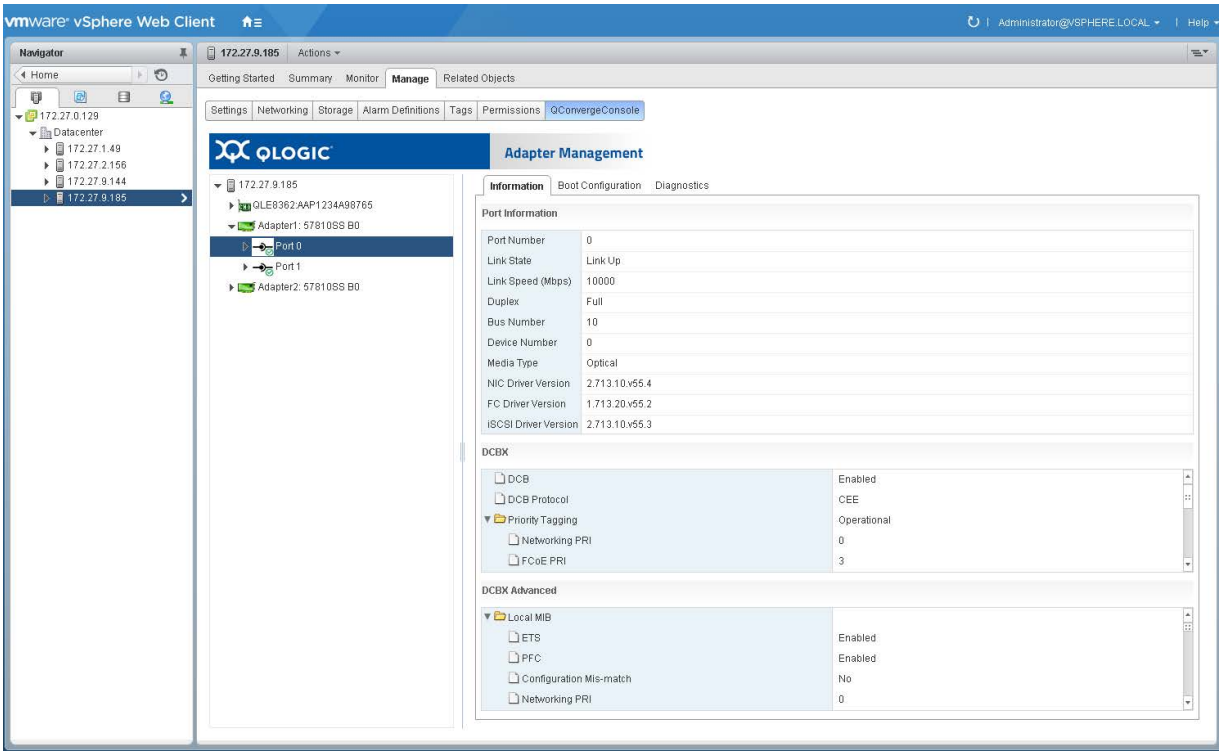



***Figure 11-25. Port Information with DCBX Information***

# 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 11-26 and Figure 11-27.

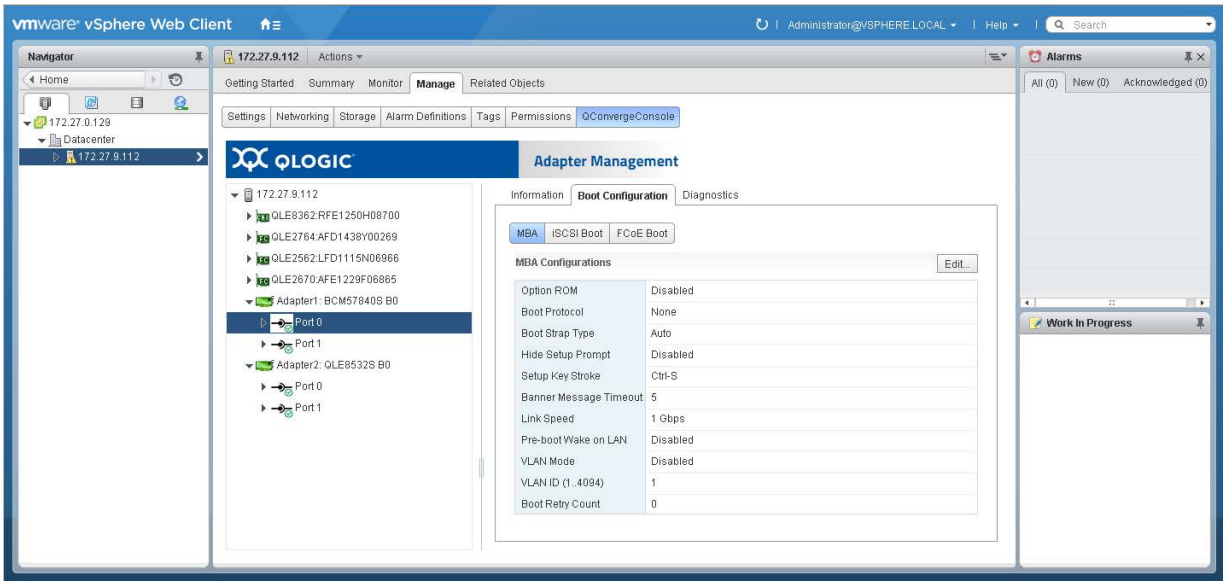



***Figure 11-26. MBA Boot Configurations (vSphere Web Client Plug-in)***

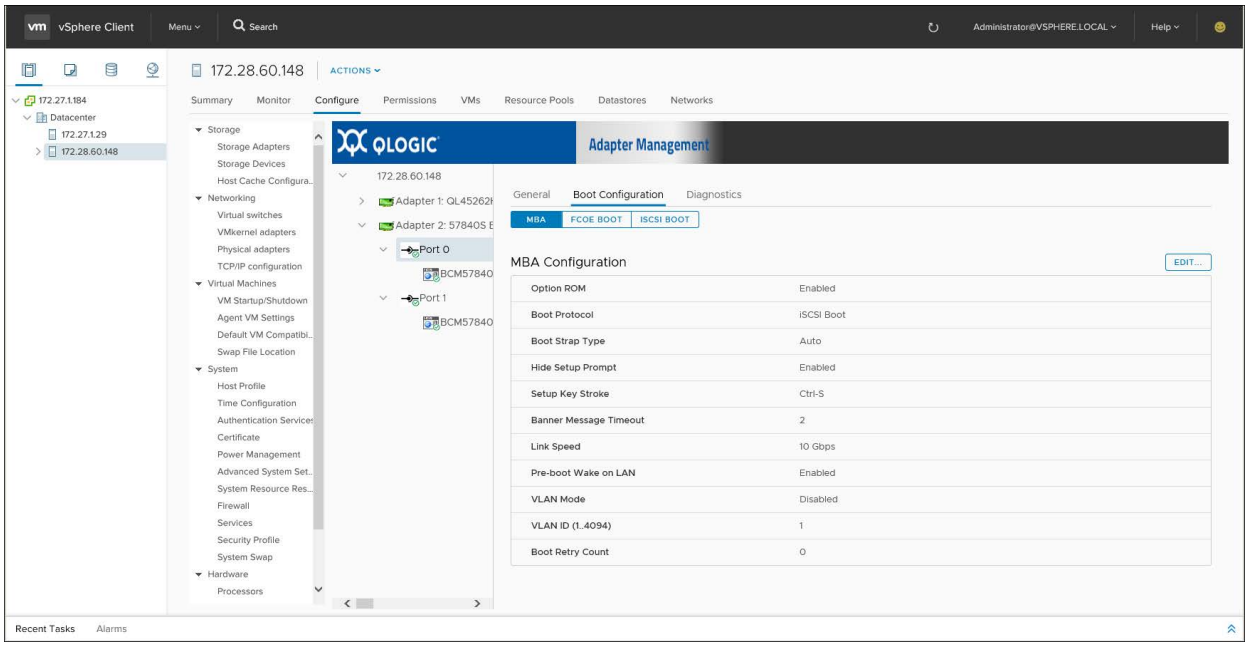



***Figure 11-27. MBA Boot Configurations (HTML5 based vSphere Client Plug-in)***

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 578xx Series Adapters include:

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

      Options for 41000 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 19**h

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 11-28 and Figure 11-29 show the Update MBA Configuration dialog box if you click the **Edit** button.

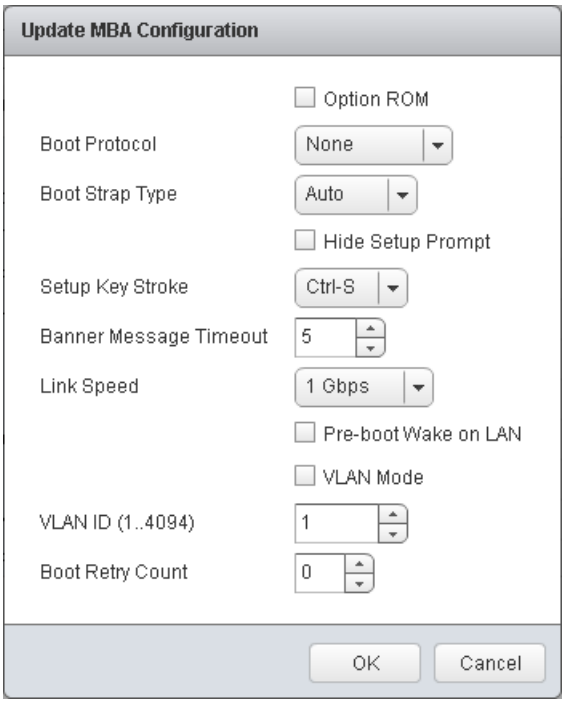



***Figure 11-28. Update MBA Configuration Dialog Box (vSphere Web Client Plug-in)***


***Figure 11-29. 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 11-30 and Figure 11-31.

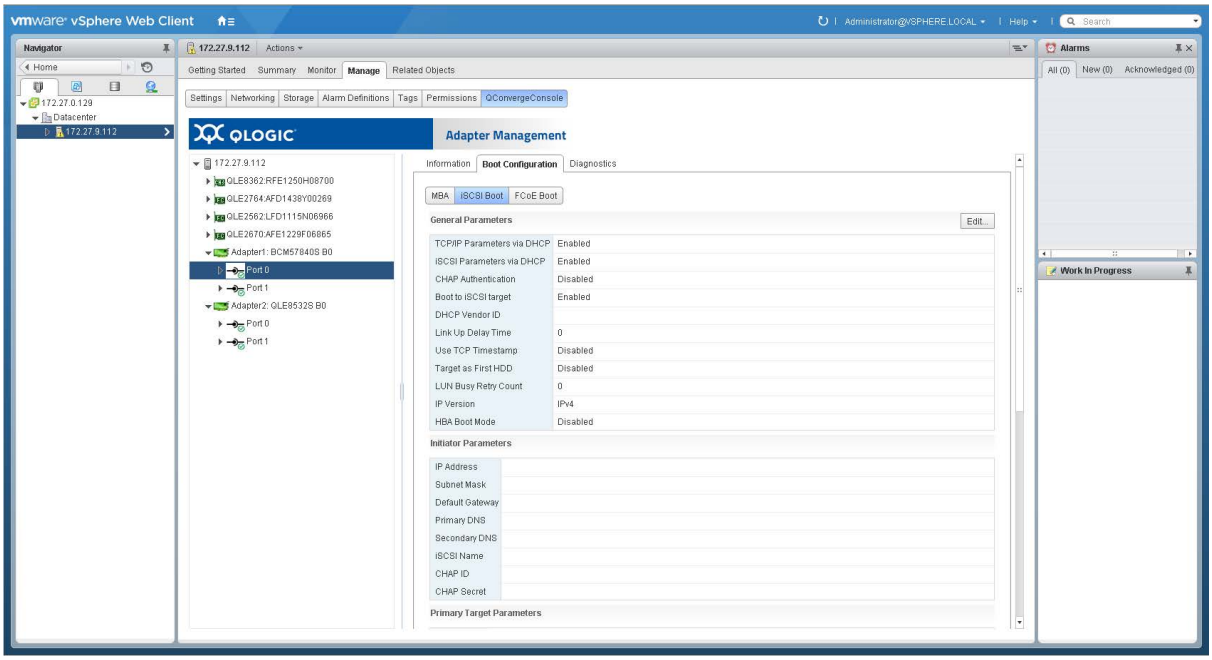



***Figure 11-30. iSCSI Boot Configuration in the vSphere Web Client Plug-in***

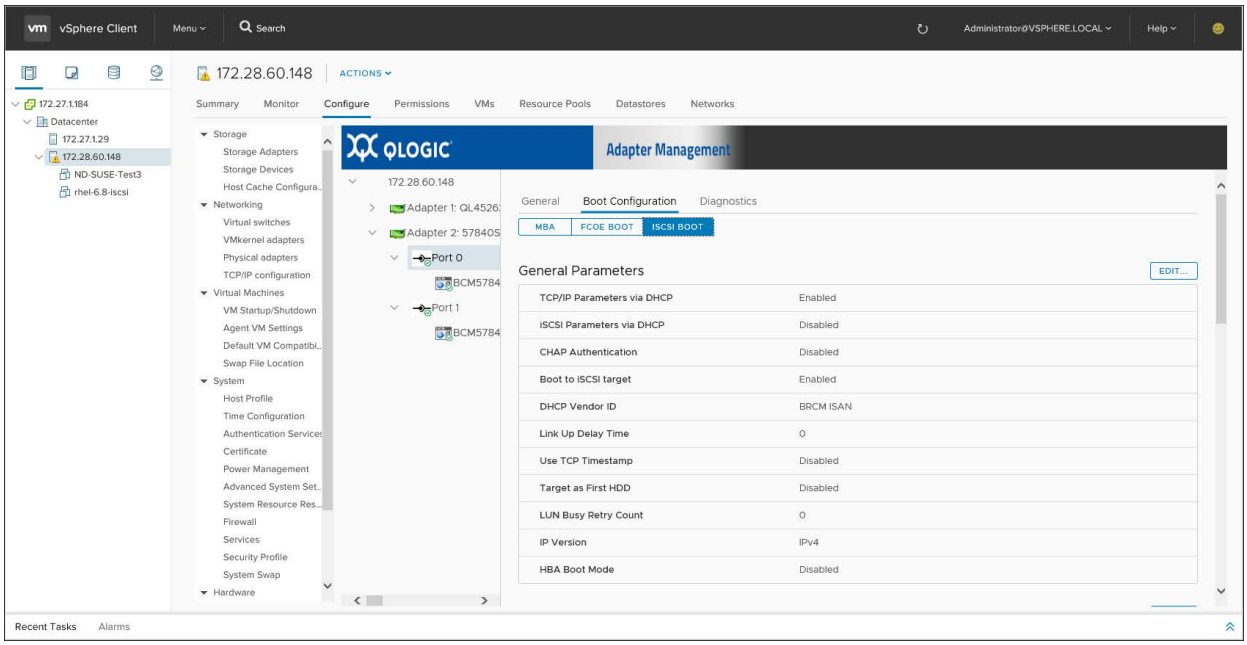



***Figure 11-31. iSCSI Boot Configuration in the HTML5 based vSphere Client Plug-in***

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 Series Adapters. The 578*xx* 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 Series Adapters. The 578*xx* adapters do not support hardware 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 11-32 shows the Update iSCSI Boot Configuration, **General Parameters** for 578xx Series Adapters. Figure 11-33 shows the Update iSCSI Boot Configuration, **General Parameters** for 41000 Series Adapters. Figure 11-34 shows the Update iSCSI Boot Configuration, **General Parameters** in the HTML5 based vSphere Client Plug-in.

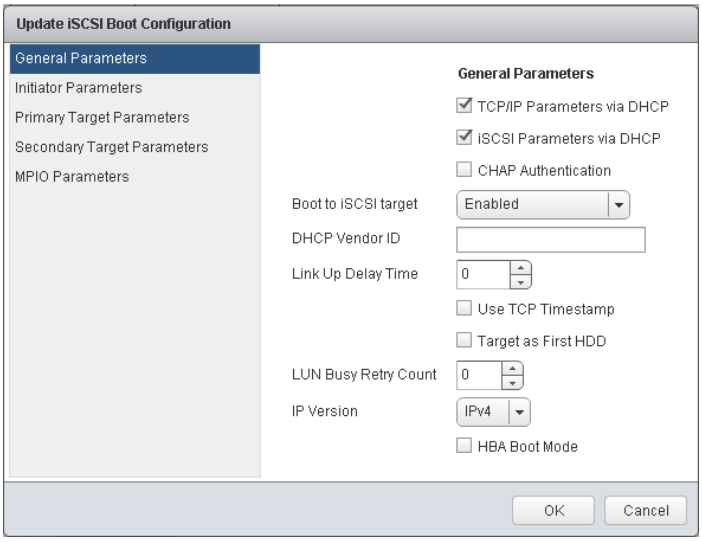



***Figure 11-32. Update iSCSI Boot Configuration, General Parameters for 578xx Series Adapters***

[1] This feature is not applicable to 41000 Series Adapters.

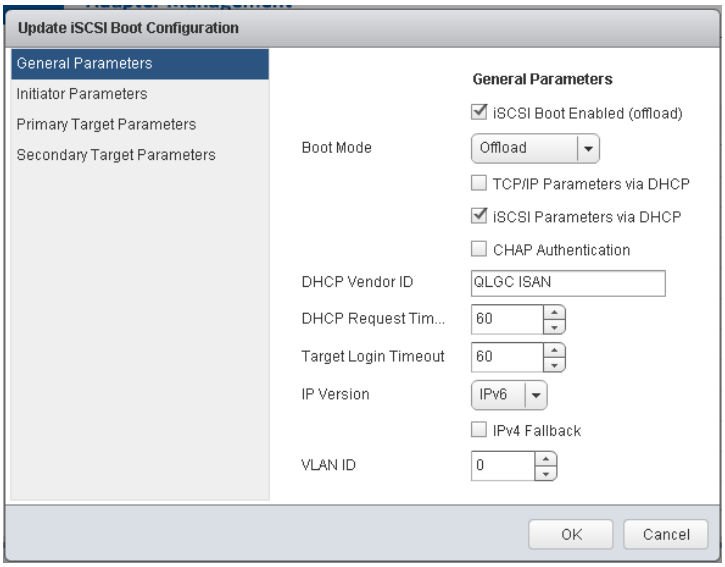



***Figure 11-33. Update iSCSI Boot Configuration, General Parameters for 41000 Series Adapters***

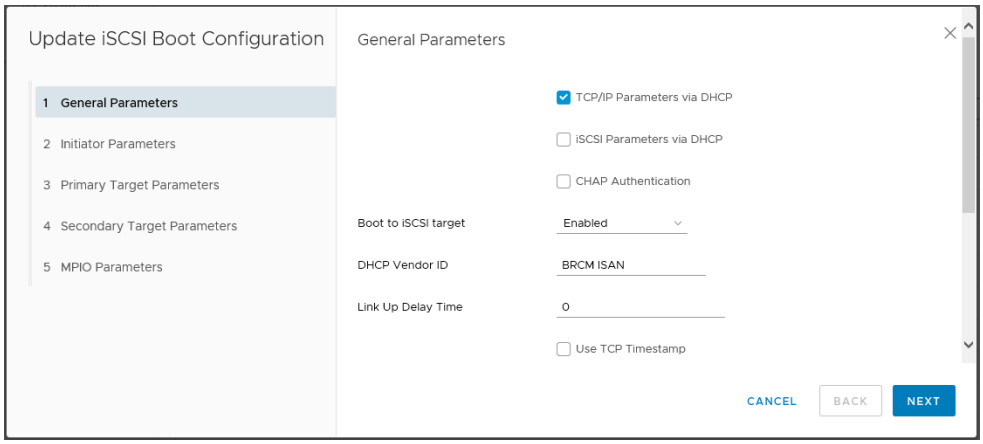



***Figure 11-34. Update iSCSI Boot Configuration, General Parameters (HTML5 based vSphere Client Plug-in)***

## 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 11-31 on page 230).
5. Click **Edit**.
6. Complete the following in the Update iSCSI Boot Configuration dialog box as shown in Figure 11-35 and Figure 11-36:
   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**.

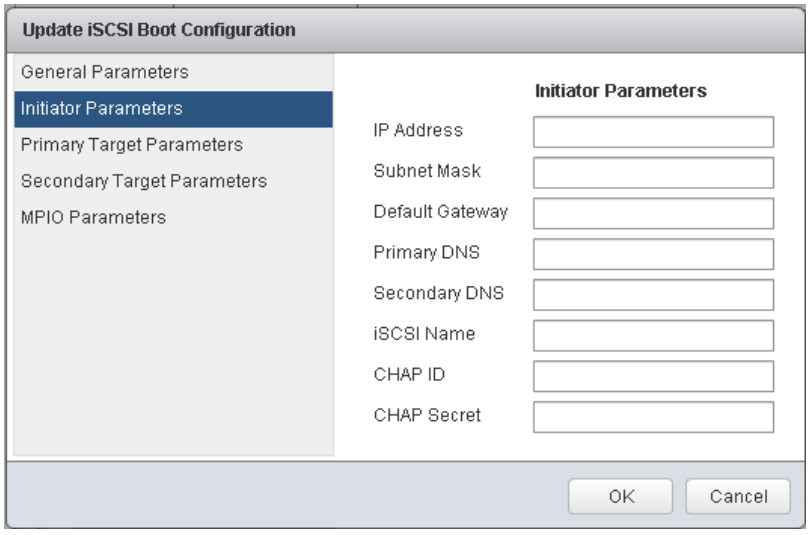



***Figure 11-35. Update iSCSI Boot Configuration, Initiator Parameters (vSphere Web Client Plug-in)***

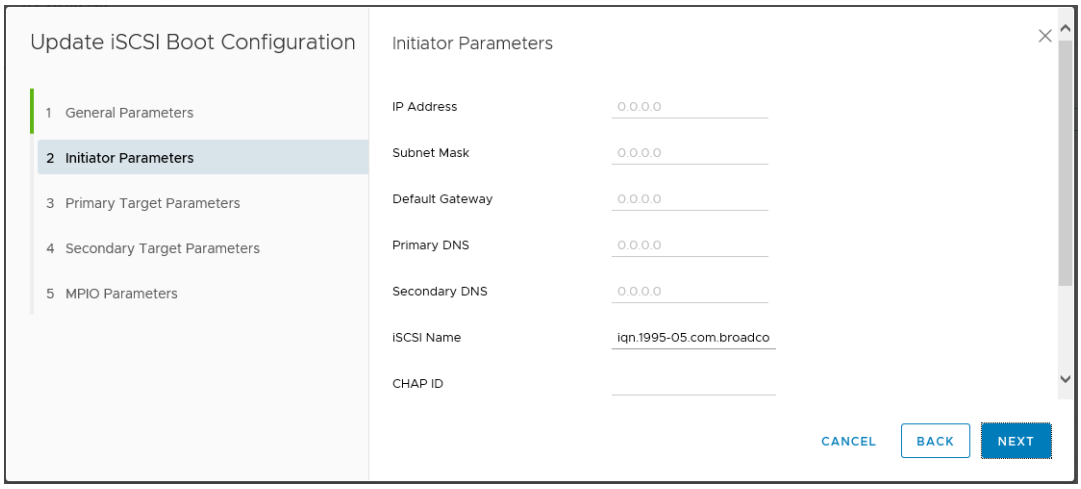



***Figure 11-36. Update iSCSI Boot Configuration, Initiator Parameters (HTML5 based vSphere Client Plug-in)***

## 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 11-31 on page 230).
5. Click **Edit**.
6. Complete the following in the Update iSCSI Boot Configuration dialog box, as shown in Figure 11-37 and Figure 11-38:
   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**.

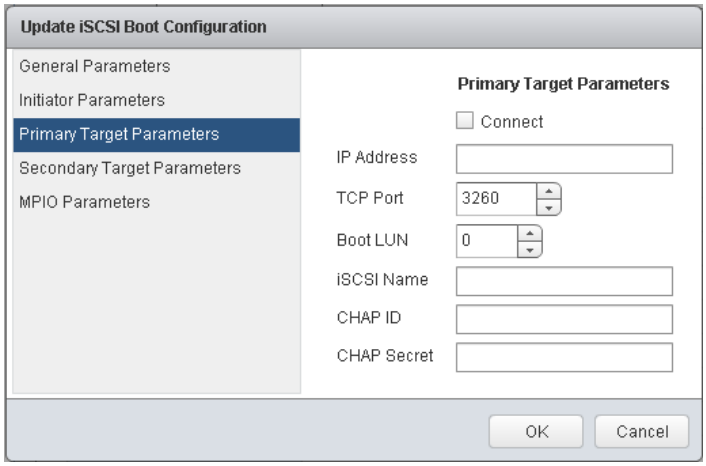



***Figure 11-37. Update iSCSI Boot Configuration, Primary Target Parameters (vSphere Web Client Plug-in)***

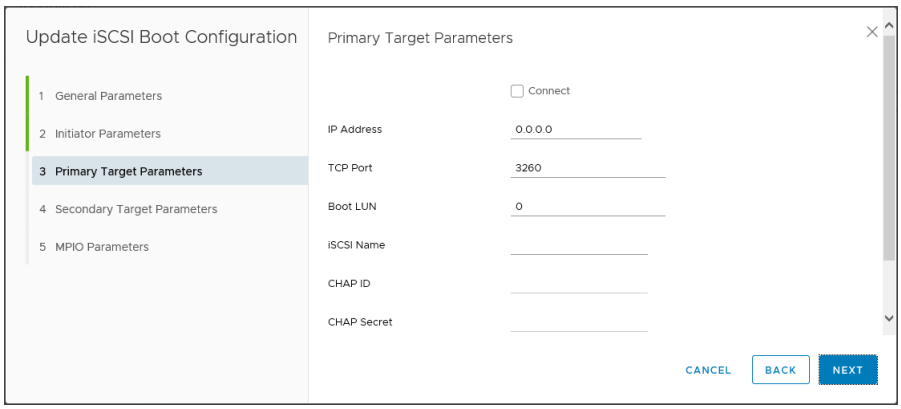



***Figure 11-38. Update iSCSI Boot Configuration, Primary Target Parameters (HTML5 based vSphere Client Plug-in)***

## Configuring MPIO Parameters

**NOTE**

This feature is not applicable to 41000 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 11-31 on page 230).
5. Click **Edit**.
6. Complete the following in the Update iSCSI Boot Configuration dialog box, as shown in Figure 11-39 and Figure 11-40:
   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**.

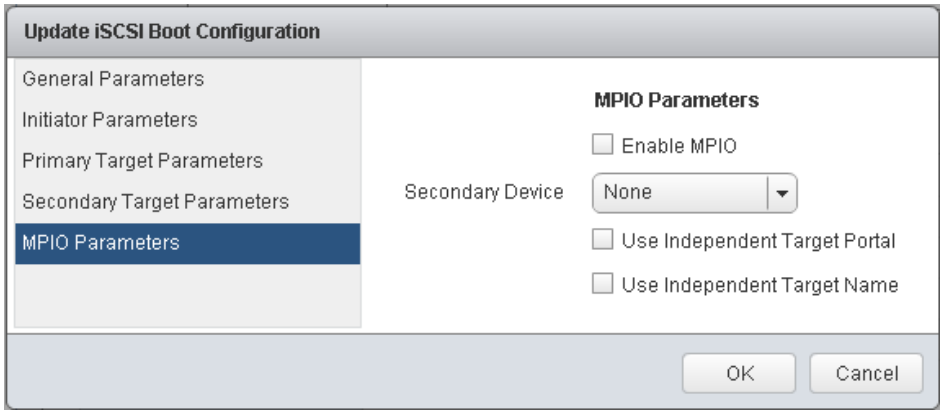



***Figure 11-39. Update iSCSI Boot Configuration, MPIO Parameters (vSphere Web Client Plug-in)***

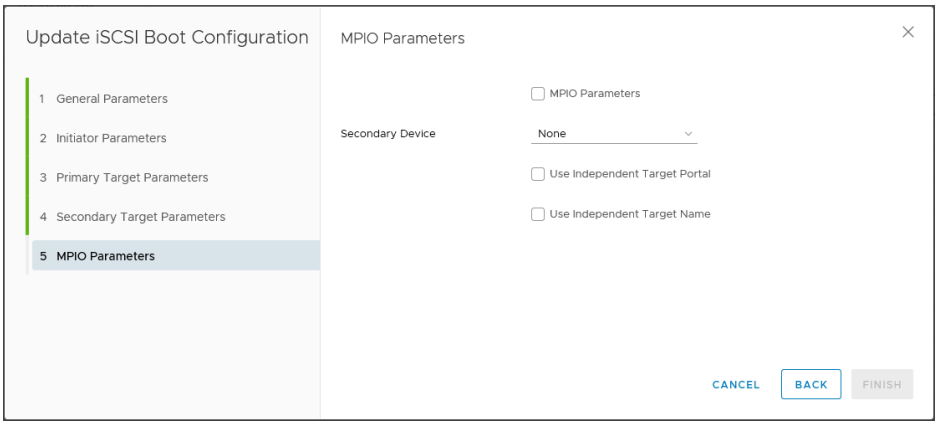



***Figure 11-40. Update iSCSI Boot Configuration, MPIO Parameters (HTML5 based vSphere Client Plug-in)***

# Configuring FCoE Boot

This section describes how to configure the following for FCoE boot:

- Configuring General Parameters
- Configuring Target Parameters

Figure 11-41 and Figure 11-42 show the Boot Configuration – FCoE Boot page.

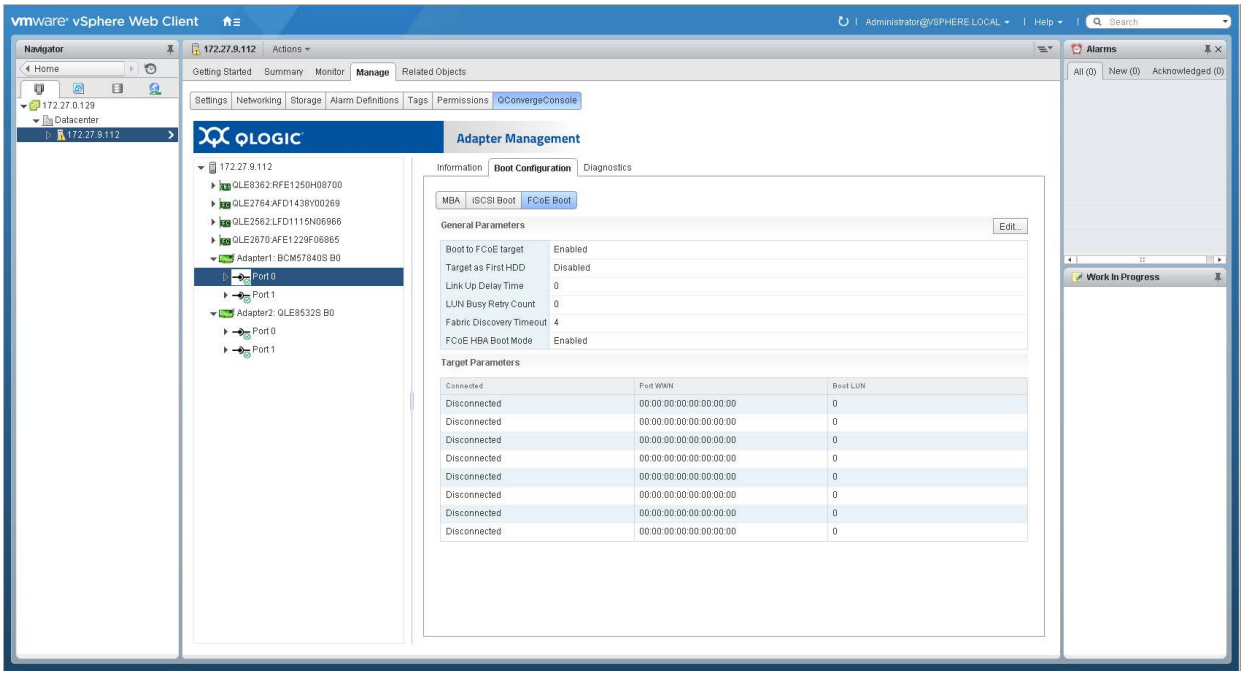



***Figure 11-41. Boot Configuration – FCoE Boot Page (vSphere Web Client Plug-in)***

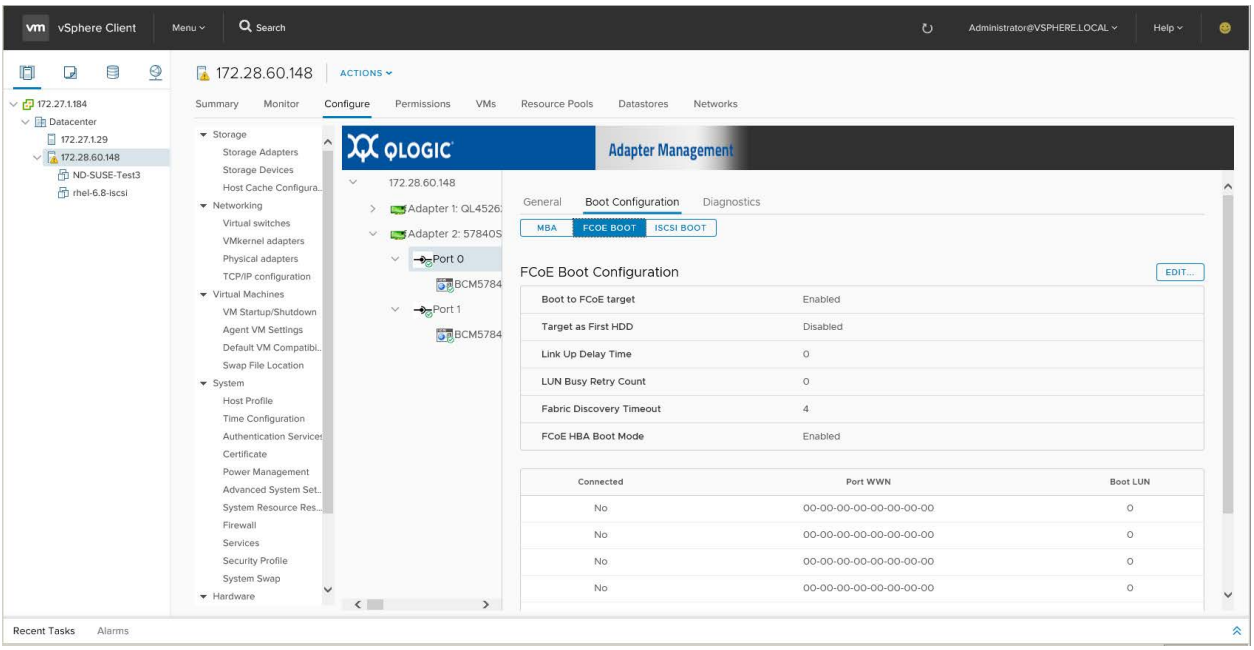



***Figure 11-42. Boot Configuration – FCoE Boot Page (HTML5 based vSphere Client Plug-in)***

## 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 11-42.
6. Click **Edit**.
7. Complete the following in the Update FCoE Boot Configuration dialog box, as shown in Figure 11-43 and Figure 11-44:
   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 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 Timeou**t box.

g. Select the F**CoE HBA Boot Mode**[1] check box to enable the FCoE HBA boot mode, or clear the check box to disable it.

8. Click **OK**.

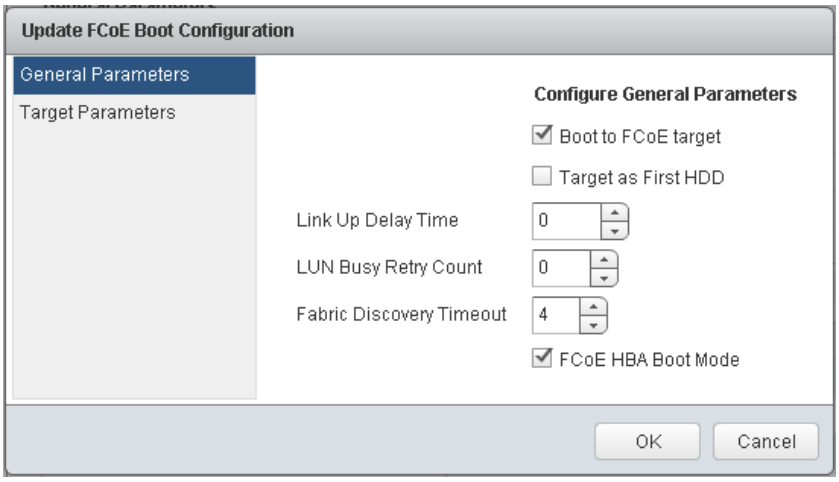



***Figure 11-43. Update FCoE Boot Configuration, General Parameters (vSphere Web Client Plug-in)***

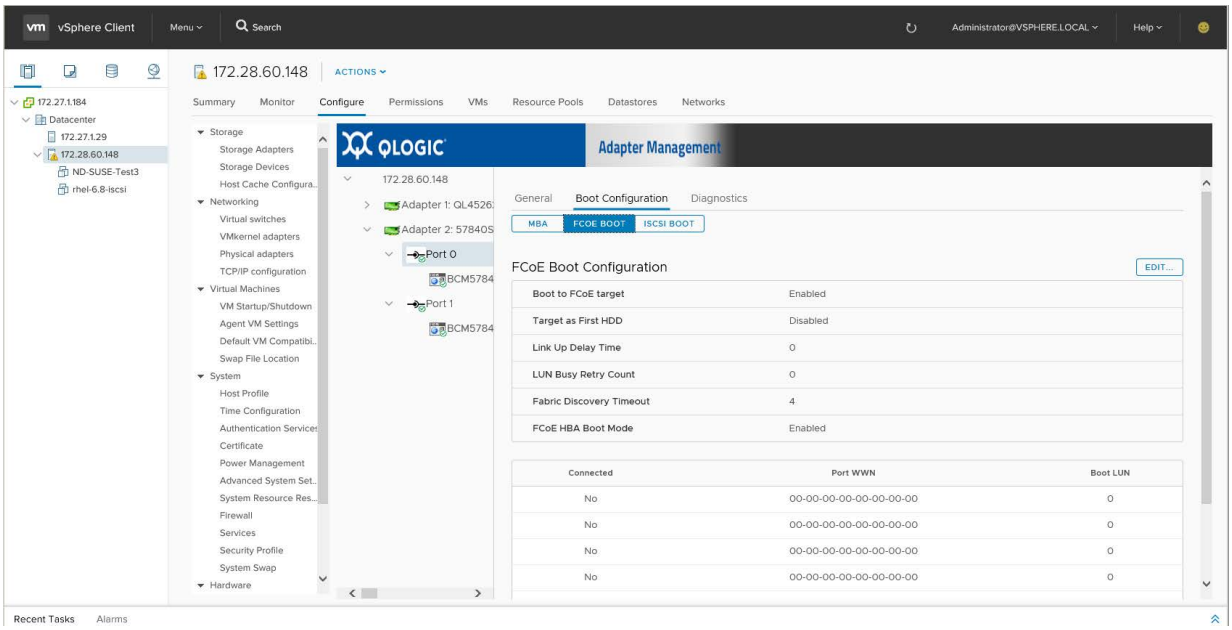



***Figure 11-44. Update FCoE Boot Configuration, General Parameters (HTML5 based vSphere Client Plug-in)***

## 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 11-42.
6. Click **Edit**.
7. Complete the following in the Update FCoE Boot Configuration dialog box as shown in Figure 11-45 and Figure 11-46:
   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**.

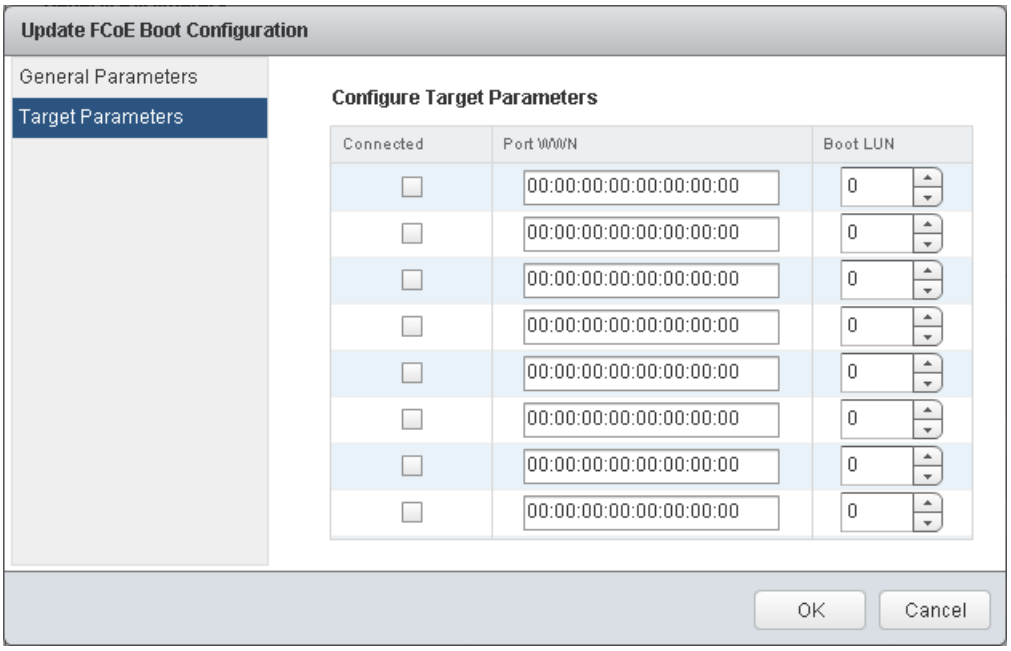



***Figure 11-45. Update FCoE Boot Configuration, Target Parameters (vSphere Web Client Plug-in)***

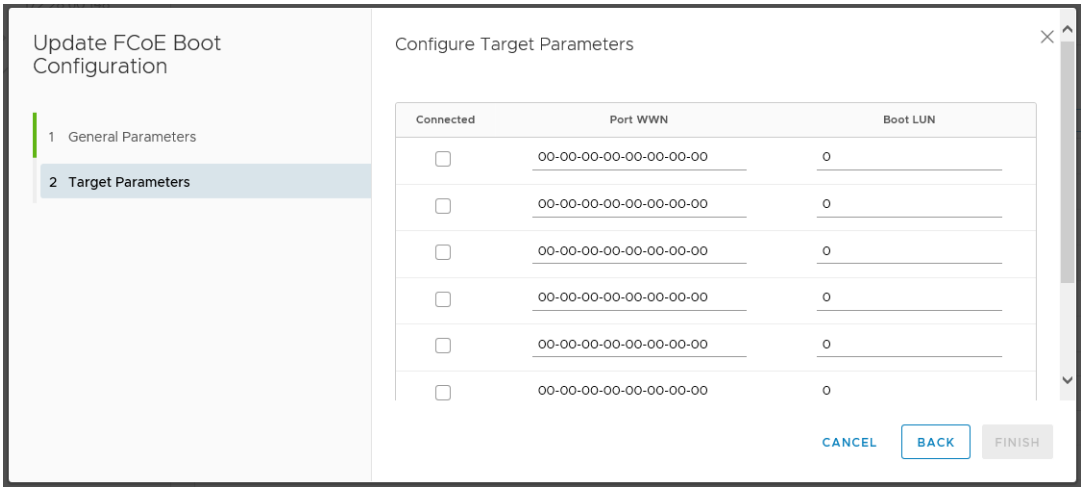
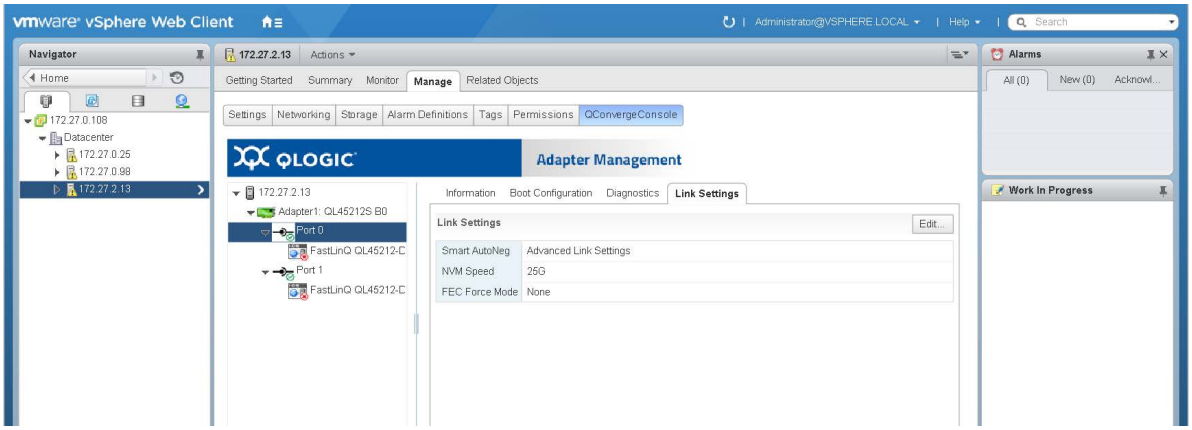


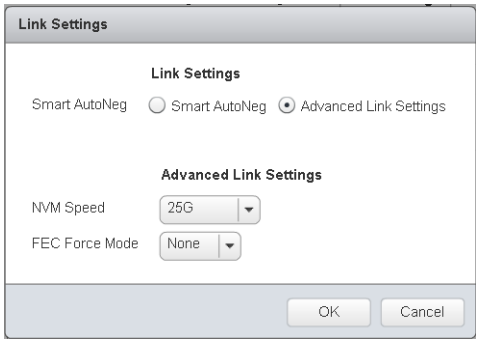

***Figure 11-46. Update FCoE Boot Configuration, Target Parameters (HTML5 based vSphere Client Plug-in)***

## Configuring Link Settings

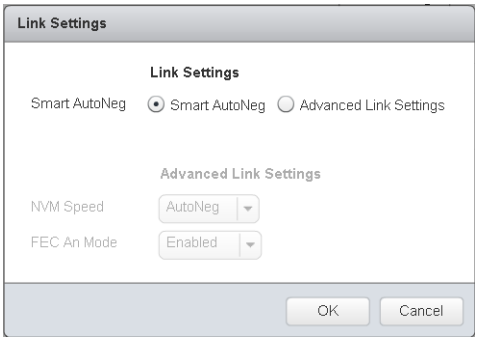
If your 578xx/41000 Series Adapters support SmartAN™ (smart auto negotiation), then the vSphere Web Client Plug-in has the Link Settings option, as shown in Figure 11-47 and Figure 11-48.




Link Settings Page

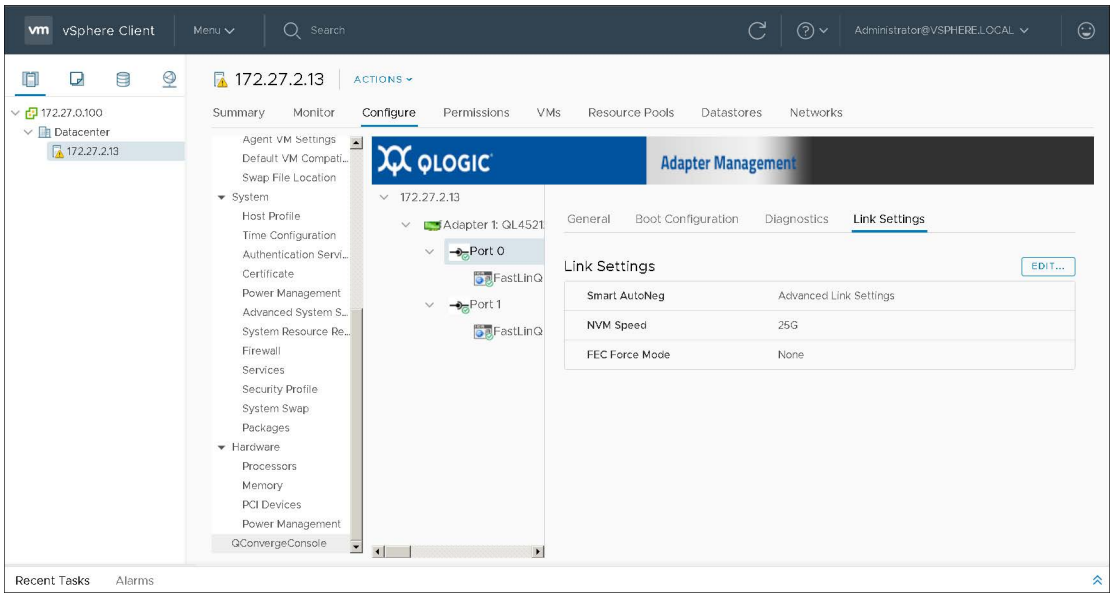



Link Settings Dialog Box with Advanced Link Settings Selected

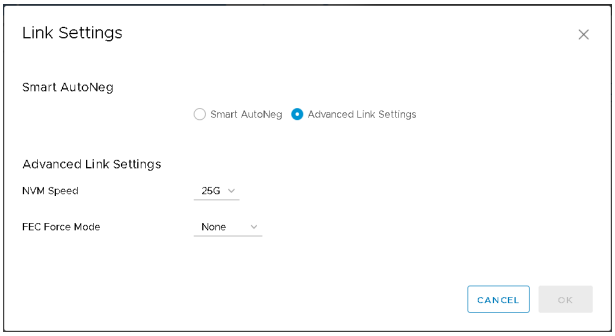



Link Settings Dialog Box with Smart AutoNeg Selected

***Figure 11-47. 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 11-48. 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 11-49 and Figure 11-50:

- **Control Registers**
- **Internal Memory**
- **EEPROM**
- **Interrupt**
- **Loopback MAC**[1]
- **Loopback PHY**
- **LED**

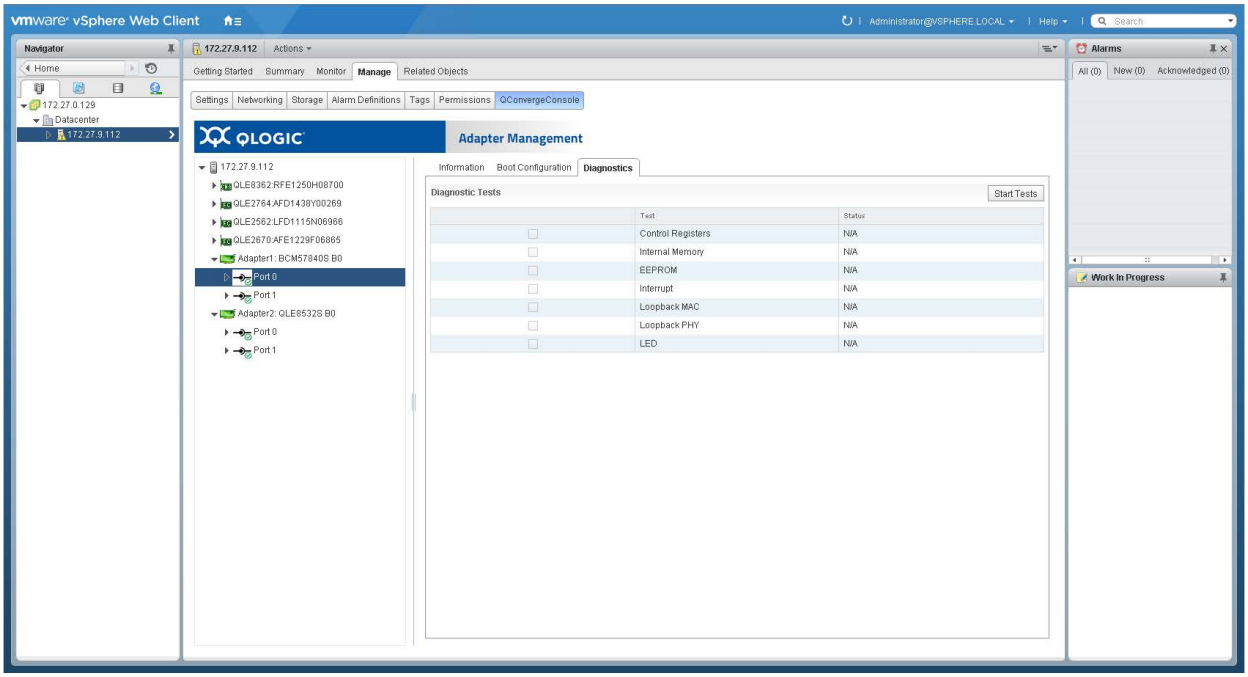



***Figure 11-49. vSphere Web Client Plug-in Diagnostics Page***

[1] The Loopback MAC feature is not applicable to 41000 Series Adapters.

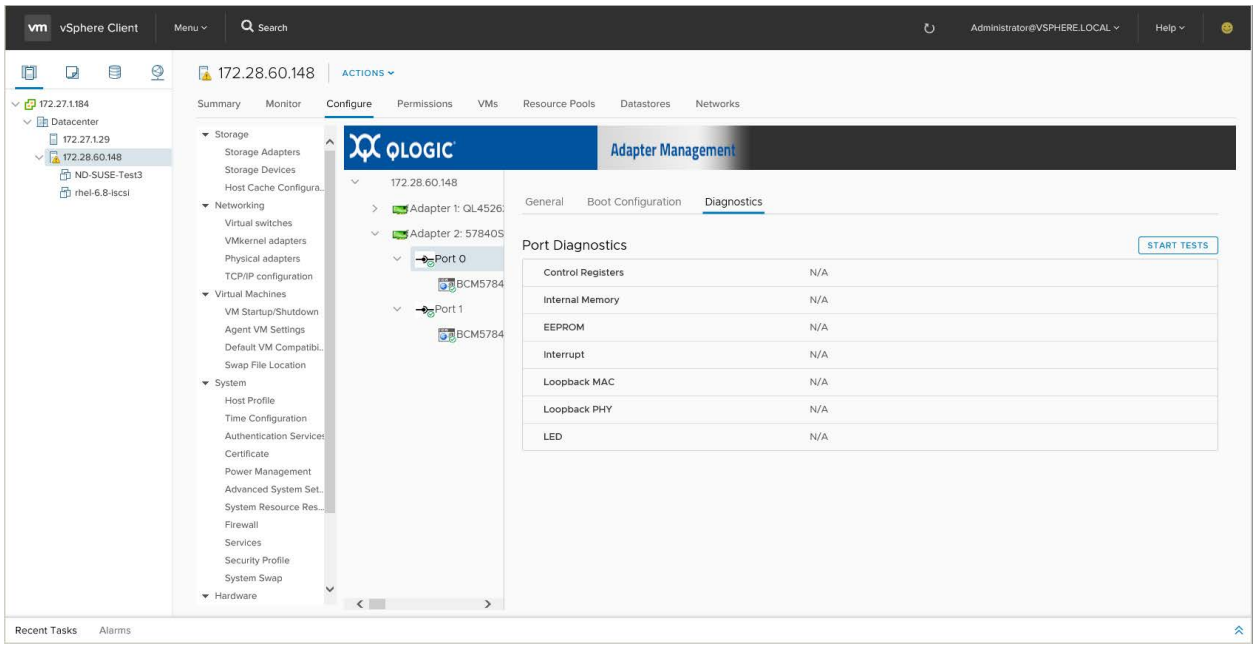



***Figure 11-50. HTML5 based vSphere Client Plug-in Diagnostics Page***

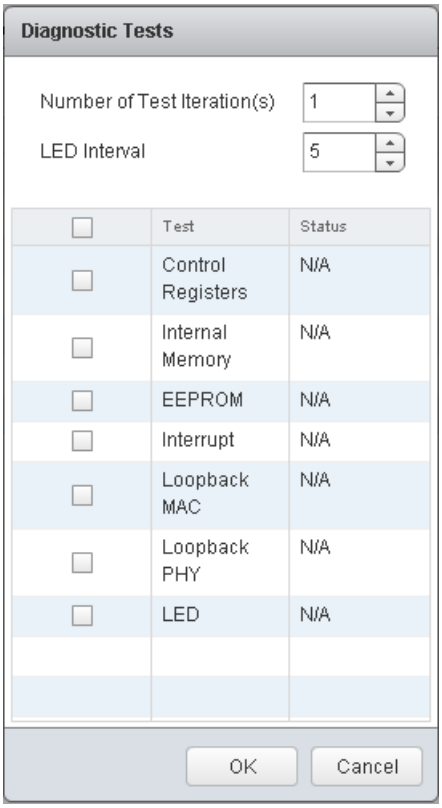
**To run a port diagnostic test:**

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 11-49 on page 244.
5. On the Diagnostics page, click **Start Tests**.
6. Complete the following in the Diagnostic Tests dialog box as shown in Figure 11-51:
   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]

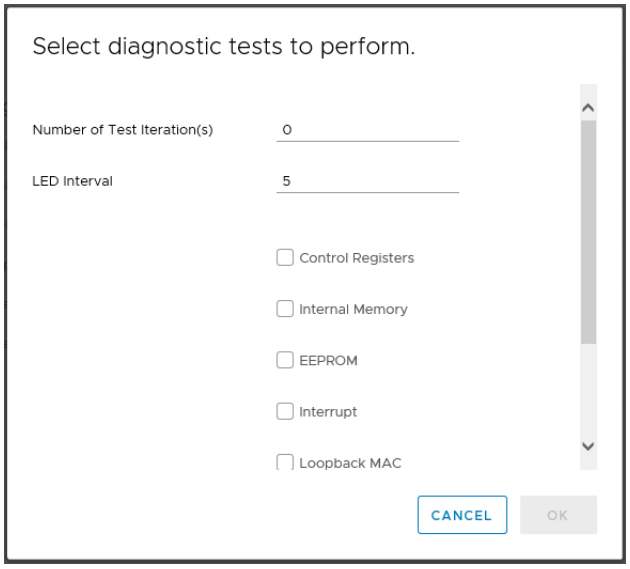
[1] The Loopback MAC feature is not applicable to 41000 Series Adapters.

- **Loopback PHY**
- **LED**

7. Click **OK**.




vSphere Web Client Plug-in




HTML5 based vSphere Client Plug-in

***Figure 11-51. Diagnostics Tests Dialog Box***

Figure 11-52 shows the Diagnostics Tests window after the tests are completed.

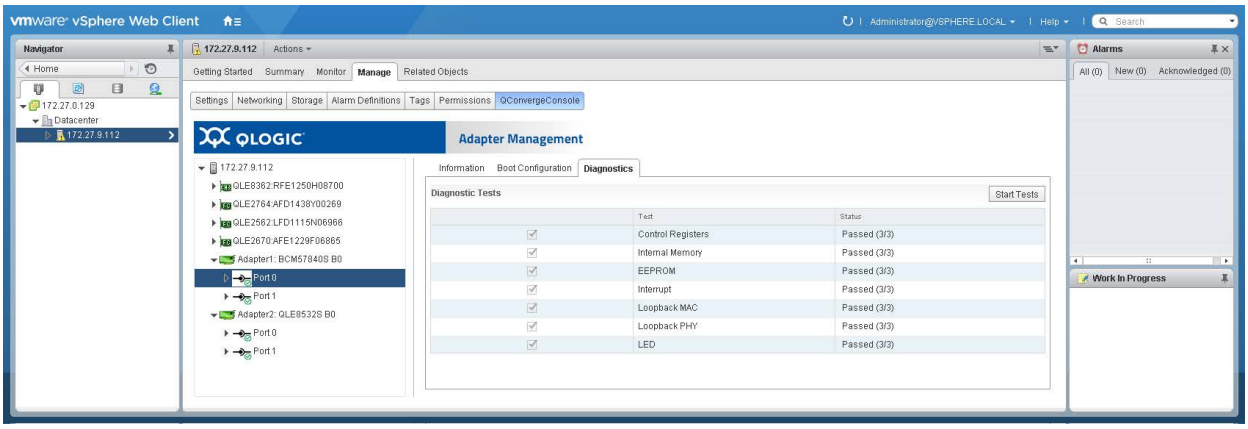



***Figure 11-52. Diagnostics Test Completed***

# Viewing Function Information for 578xx/41000 Series Adapters

To view function information for 578xx/41000 Series Adapters, select the function in the system tree. The Adapter Management window shows the function information and statistics.

## Function Information

Figure 11-53 shows the Web Client function information for the 578xx/41000 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**

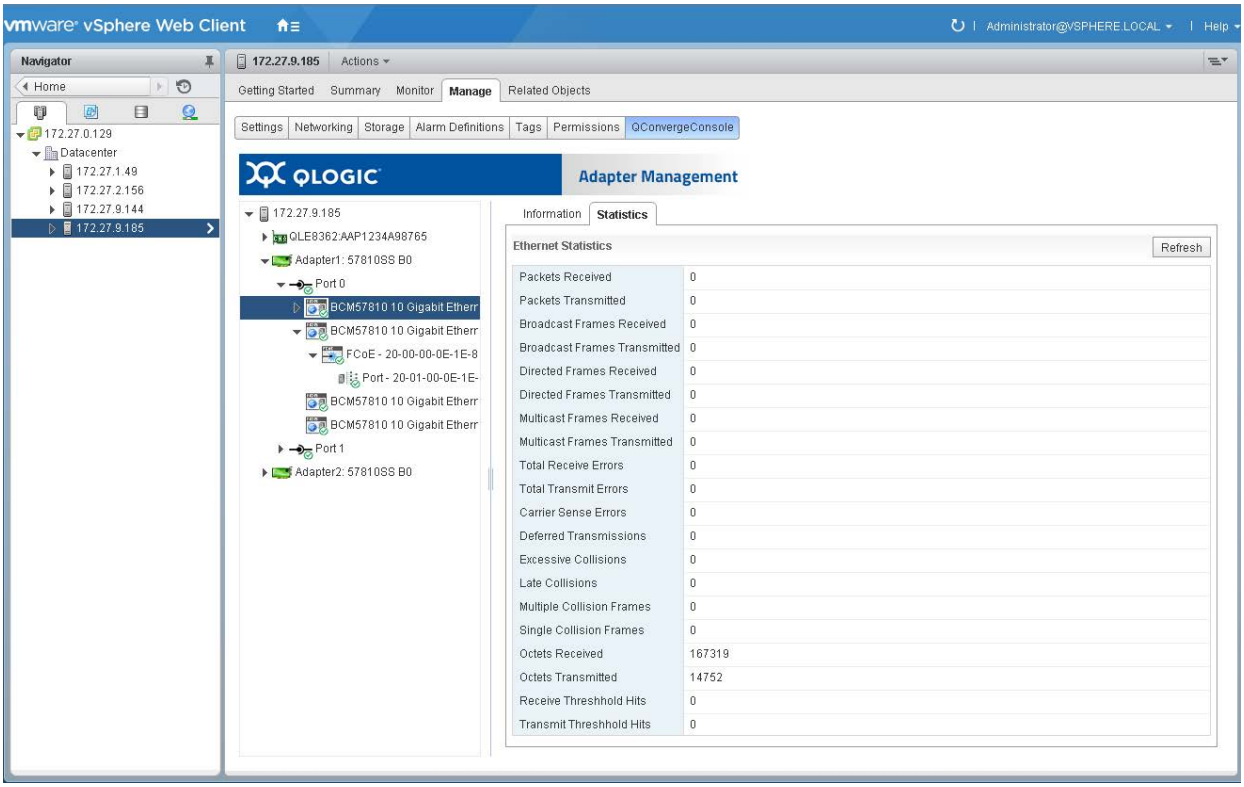



***Figure 11-53. Web Client Function Information on 578xx/41000 Series Adapters***

## Function Configuration

If available, a function configuration may be shown on the **Configuration** page for 578xx/41000 Series Adapters.

Figure 11-54 shows the Configuration page for 578xx Series Adapters.

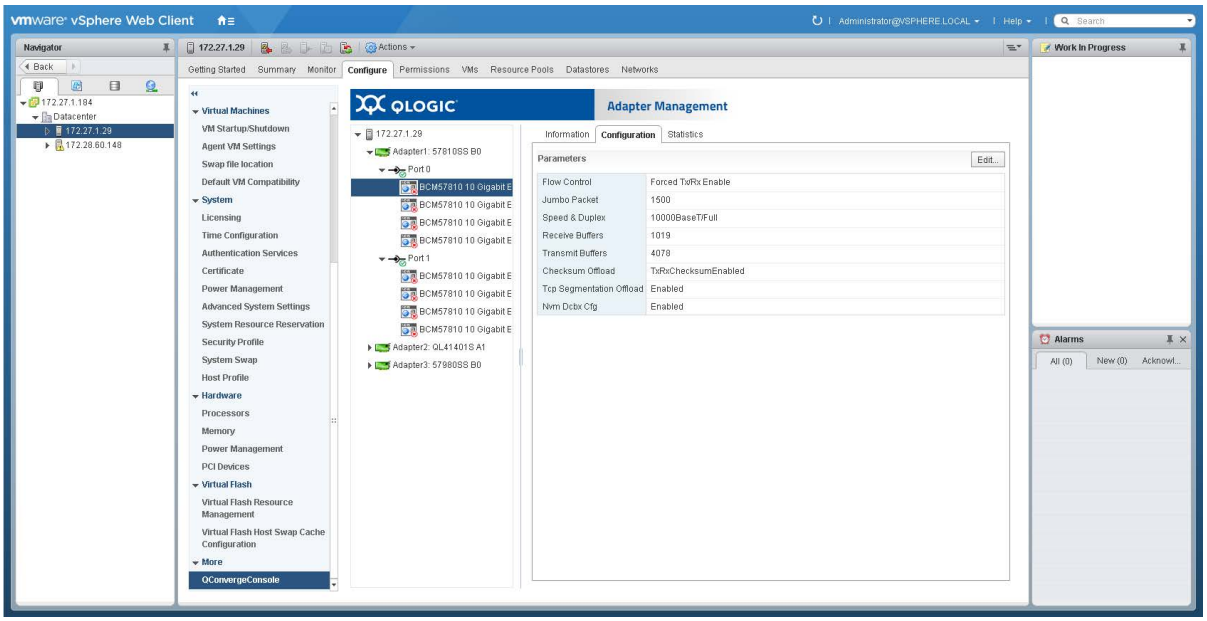



***Figure 11-54. Configuration Page for 578xx Series Adapters***

Figure 11-55 shows the Configuration page for 41000 Series Adapters.

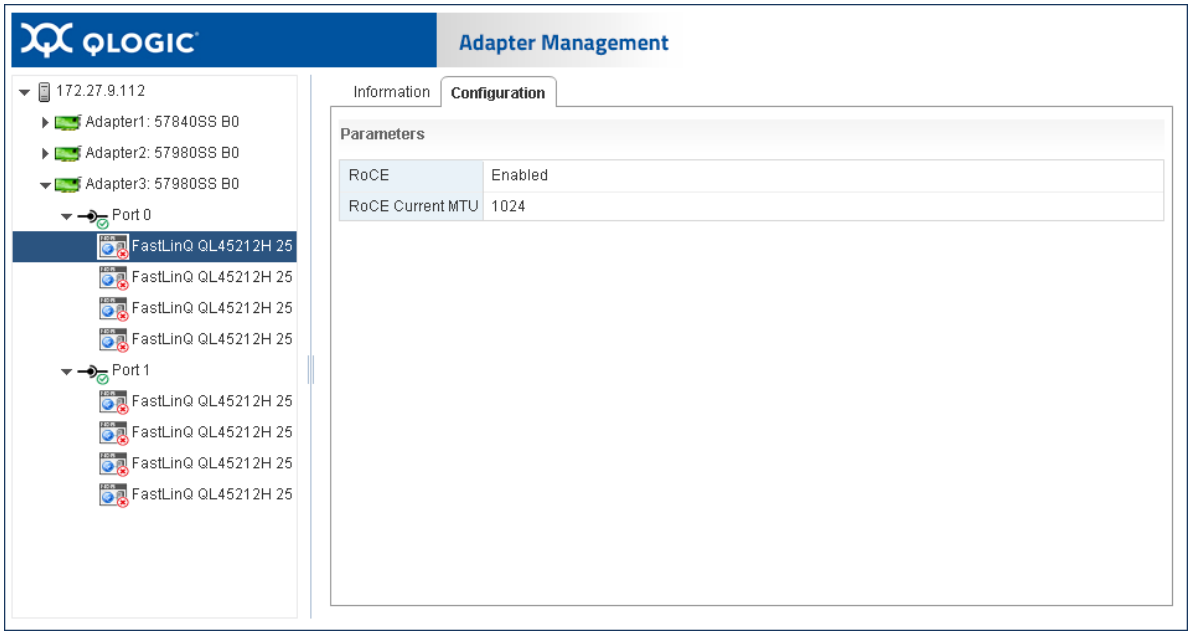



***Figure 11-55. Configuration Page for 41000/ Series Adapters***

Figure 11-56 shows the HTML5 based vSphere Client Plug-in Configuration page for 578xx Series Adapters.

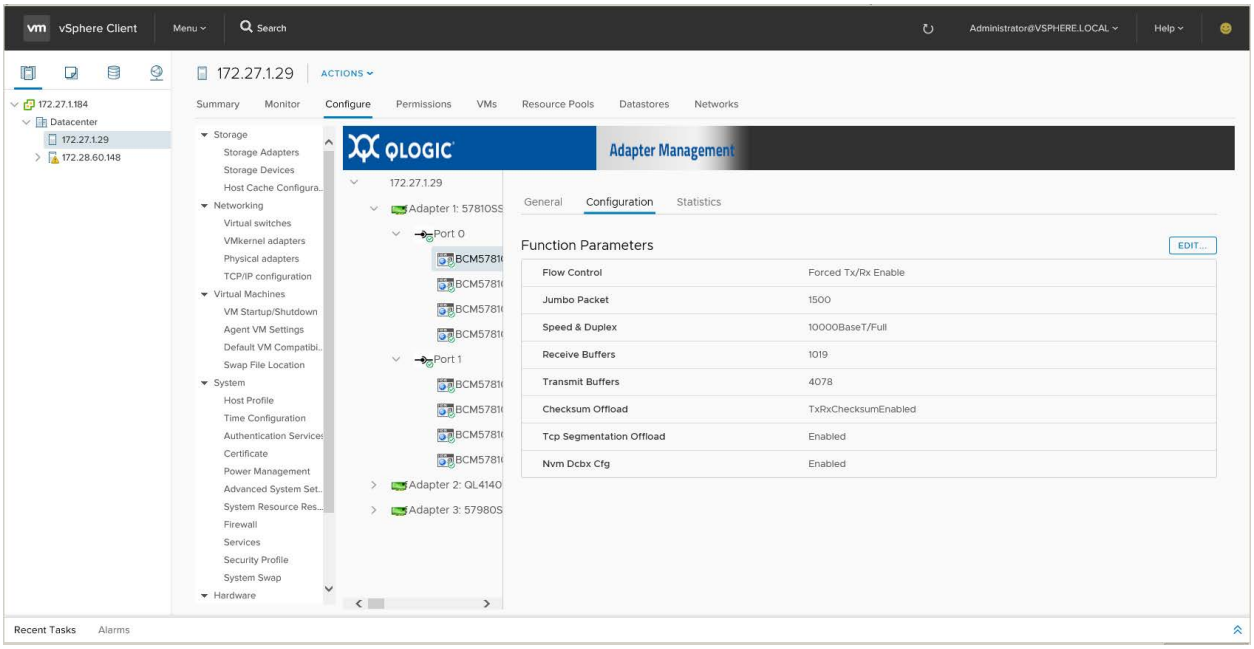



***Figure 11-56. Configuration Page for 578xx Series Adapters***

## Function Ethernet Statistics

Figure 11-57 shows the Web Client function Ethernet statistics for 578xx/41000 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**.

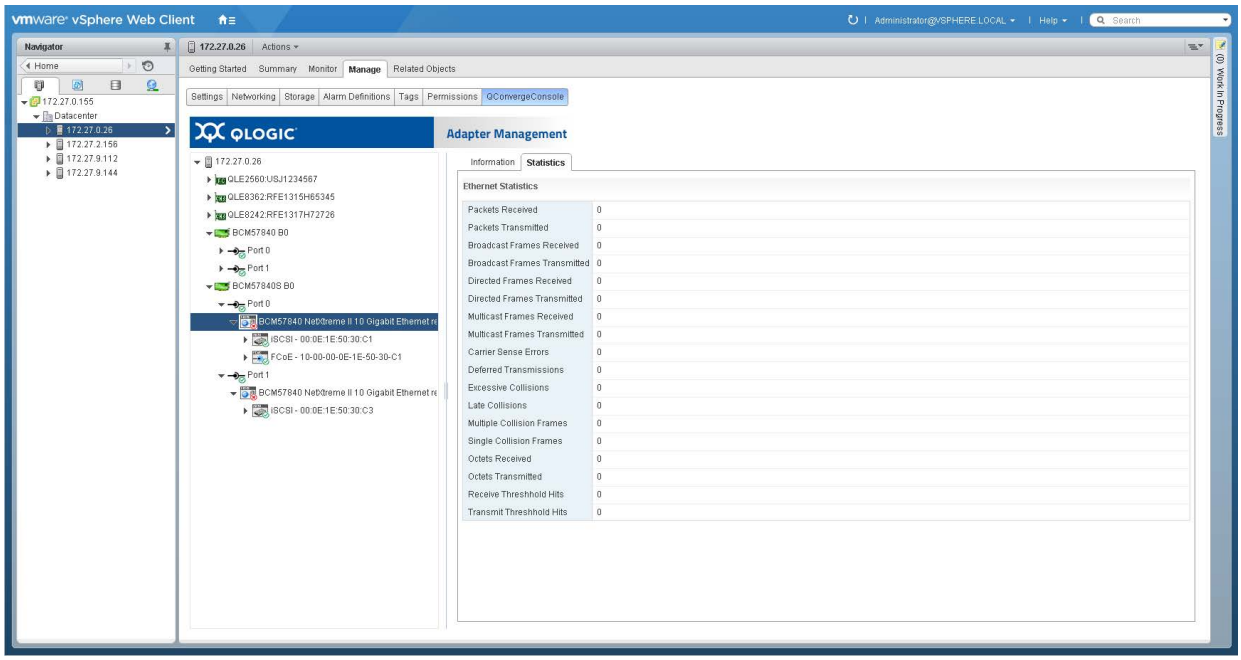



***Figure 11-57. Web Client Function Ethernet Statistics on 578xx/41000 Series Adapters***

# Viewing iSCSI Information for 578xx/41000 Series Adapters

To view iSCSI information for 578xx/41000 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 11-58 shows the Web Client iSCSI information for 578xx/41000 Series Adapters.

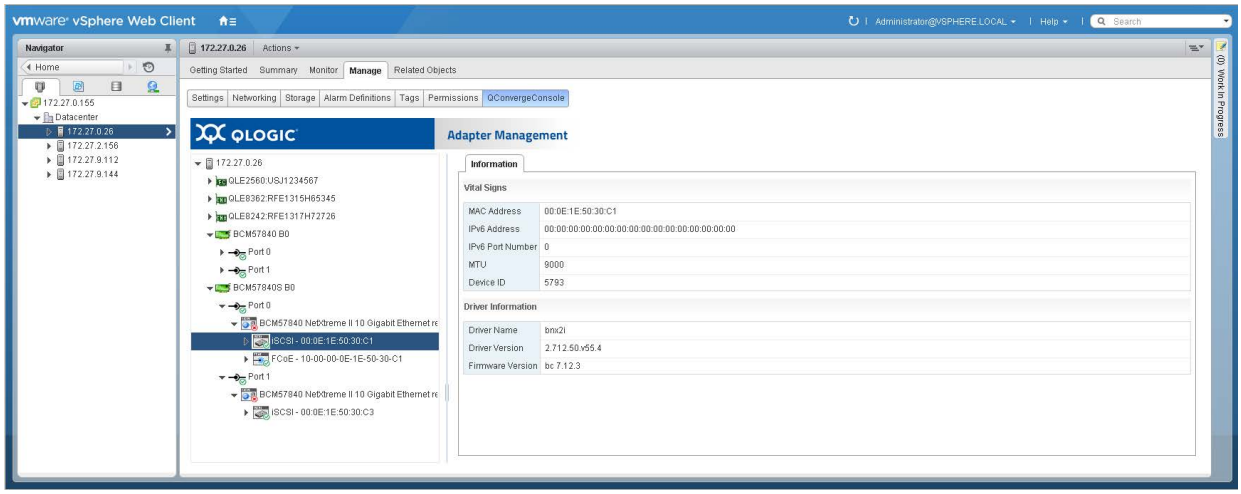



***Figure 11-58. Web Client iSCSI Information on a 578xx/41000 Series Adapters***

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 11-59 shows the iSCSI portal information for 578xx/41000 Series Adapters.

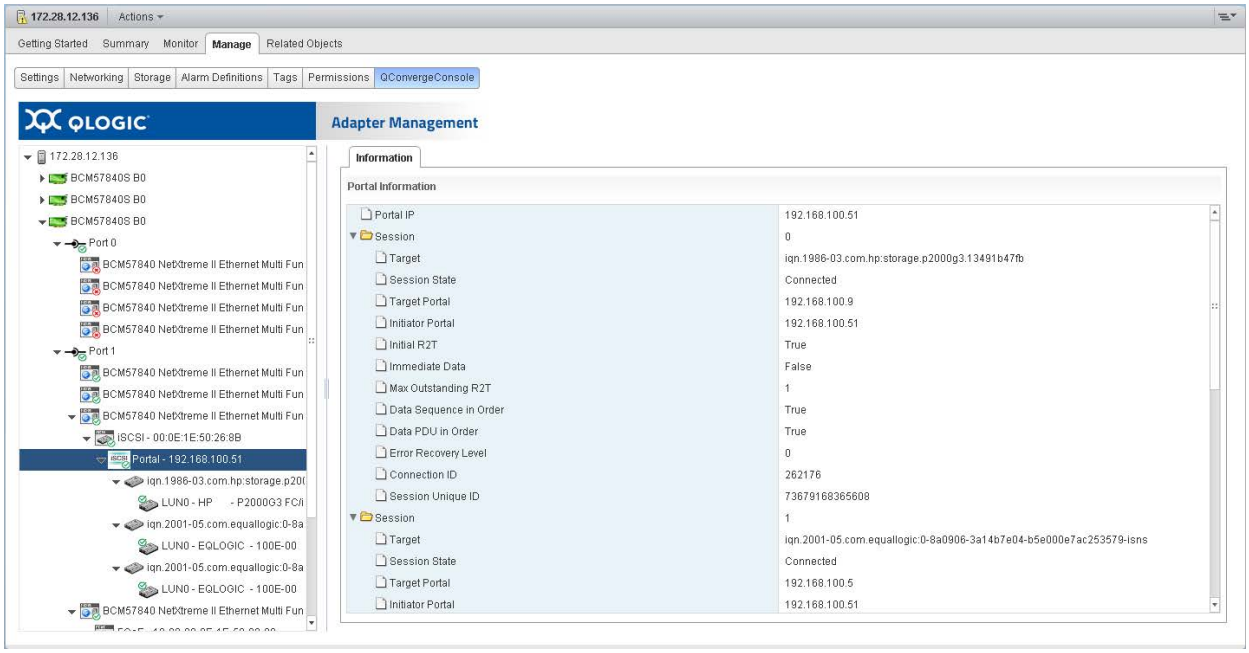



***Figure 11-59. iSCSI Portal Information on a 578xx/41000 Series Adapters***

# Viewing Information for an iSCSI Target Connected to 578xx/41000 Series Adapters

To manage an iSCSI target connected to 578xx/41000 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 11-60 shows the iSCSI target information for 578xx/41000 Series Adapters.

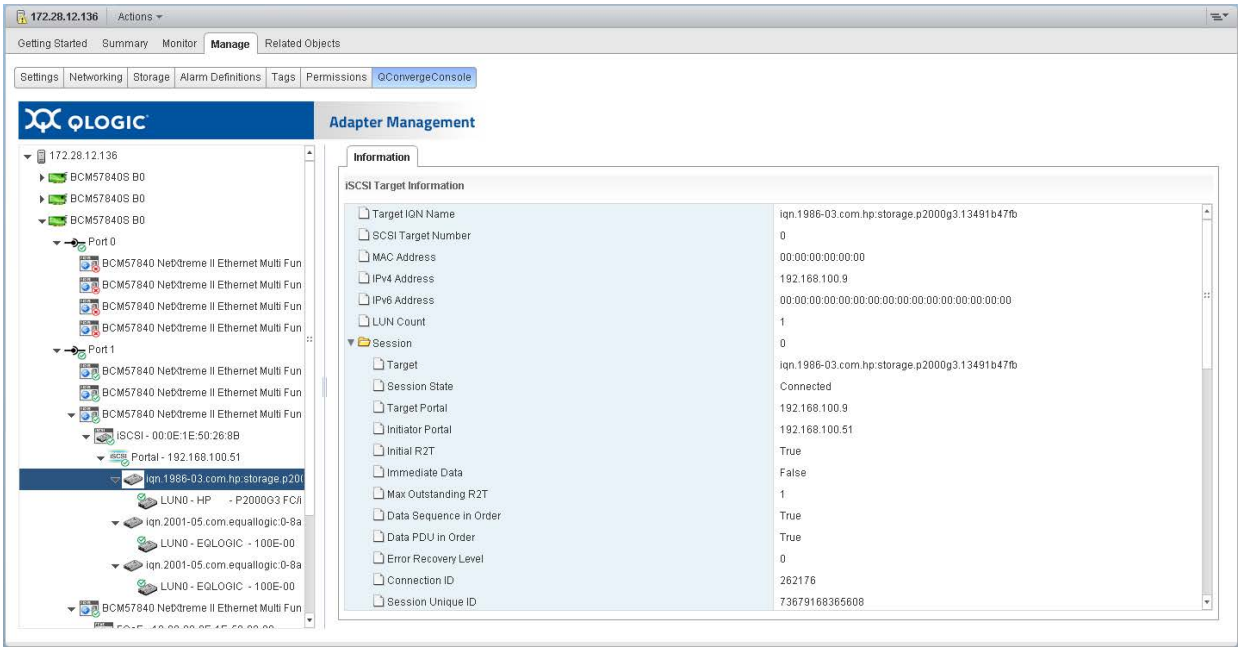



***Figure 11-60. Web Client iSCSI Target Information on 578xx/41000 Series Adapters***

# Viewing Information for an iSCSI LUN Connected to 578xx/41000 Series Adapters

To manage an iSCSI LUN connected to 578xx/41000 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 11-61 shows the iSCSI LUN information for 578xx/41000 Series Adapters.

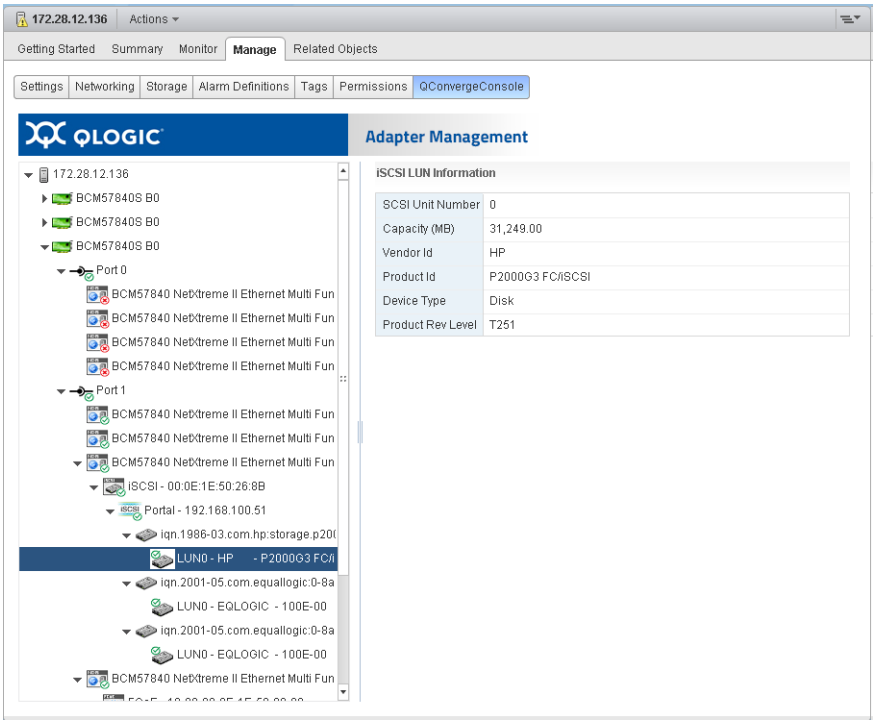



***Figure 11-61. Web Client iSCSI LUN Information on 578xx/41000 Series Adapters***

***Figure 11-62.***

# 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 and the VMware vSphere Web Client.

## 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.

## VMware vSphere Web Client Troubleshooting

If Internet Explorer on Windows Server does not display the VMware vSphere Web Client, use one of the following procedures that corresponds to your operating system.

# Windows Server 2016, Windows 2019, and Azure Stack HCI

Adobe Flash Player can only be installed (and updated) in Internet Explorer through Windows Update. On Windows Server, the Desktop Experience feature must be installed in order to have Windows Update install and update the Adobe Flash Player on the system.

**To enable the Desktop Experience feature on Windows Server:**

1. Go to the Server Manager and select **Local Server**.
2. Under the **Roles and Features**, select **Tasks, Add Roles and Features**.
3. Use the Add Roles and Features Wizard to add the Desktop Experience feature (located under the **User Interfaces and Infrastructure** feature).

# Unable to view QConvergeConsole tab in vCenter Server Appliance

If the QConvergeConsole tab does not appear in vCenter Server Appliance (VCSA), when installed in a Linux OS, use the following procedure.

1. Issue the below command in VCSA:

   ```
   /usr/lib/vmware-vmon/vmon-cli -r vsphere-client
   ```

2. Install the Web client vi plugin:

   ```
   QLogic_Adapter_Web_Client_Plugin_Linux_x64_2_0_xx_0.bin
   ```

3. Restart the Apache Tomcat server.
4. Log into VCSA ip using a Web browser.

   This should create the path:

   ```
   /etc/vmware/vsphere-client/vc-packages/vsphere-client-serenity/com.qlogic.qLogicAdapterPlugin-2.0.xx.0/plugins
   ```

5. Connect the Vmware-ESXi6.5 host to the QConvergeConsole tab to verify the adapter has been detected.
6. Check for firewall rules that may block deployment of the Qlogic web client plugin `.war` file to VCSA.
7. Verify that the `QLogicAdapterWebClient` folder and the `QLogicAdapterWebClient.war` file are present under:

   ```
   /root/apache-tomcat-7.0.94/webapps
   ```

# C Revision History

| Document Revision History | |
|---|---|
| Revision 1, January 21, 2021 | |
| **Changes** | **Sections Affected** |
| Updates to Dell/Marvell branding | All |

# 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 internetwork (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 a 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.

**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 re 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.

**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.

# Index

## A



## B

## C



## D

## E



## F

## G



## H



## I

## J



## L



## M

## N



## P

## Q



## R



## S

## T



## U

## V



## W



## Z

Marvell first revolutionized the digital storage industry by moving information at speeds never thought possible. Today, that same breakthrough innovation remains at the heart of the company's storage, networking and connectivity solutions. With leading intellectual property and deep system-level knowledge, Marvell semiconductor solutions continue to transform the enterprise, cloud, automotive, industrial, and consumer markets. For more information, visit www.marvell.com.



Doc. No. TD-000965 Rev. 1 Revised: January 21, 2021