



Hewlett Packard
Enterprise

HPE ProLiant Converged Network

Utility

Help

Abstract

This document is for the person who installs, administers, and troubleshoots servers and storage systems. Hewlett Packard Enterprise assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

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Overview

Supported features

The CNU is a single, common utility that manages storage, Ethernet, iSCSI, and FCoE ports, as well as NPAR configuration. Configure HPE FlexFabric and HPE StoreFabric adapters through the network-attached ports of a host server.

The CNU provides the following features:

- Advanced settings for adapters
- Compatibility with Gen8 and later servers
- Adapter statistics
- Diagnostics
- NPAR 1.5
- Export and import CNU configuration options
- Scripting of Ethernet, iSCSI, FCoE, and NPAR with CLI

Available features depend on adapter functionality. For information about using CNU features, see "Configuration (on page 8)."

Supported adapters

The CNU supports Windows Server 2008 (x86, x64, and R2), Windows Server 2012 and R2, Windows Server 2016, RHEL (6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 7.0, 7.1, and 7.2), SLES 11 (SP2, SP3 and SP4), and SLES 12 and SP1. Be sure to install the latest applicable service packs and updates.



IMPORTANT: If you are running an older OS, be sure to install the latest NIC firmware and drivers prior to installing CNU. CNU can only be deployed when the drivers and firmware support your OS.

Standup adapters:

- HP StoreFabric CN1100R Dual Port Converged Network Adapter
- HPE StoreFabric CN1100R 10GBASE-T Dual Port Converged Network Adapter
- HPE StoreFabric CN1200E 10GBASE-T Dual Port Converged Network Adapter

Mezzanine adapters:

- HP FlexFabric 10Gb 2-port 534M Adapter
- HP FlexFabric 20Gb 2-port 630M Adapter
- HP FlexFabric 20Gb 2-port 650M Adapter
- HP Flex-10 10Gb 2-port 530M Adapter

FlexibleLOM for Racks adapters:

- HP FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter
- HP FlexFabric 10Gb 2-port 556FLR-SFP+ Adapter

- HP FlexFabric 10Gb 2-port 533FLR-T Adapter
- HPE FlexFabric 10Gb 2-port 556FLR-T Adapter
- HPE FlexFabric 10Gb 4-port 536FLR-T Adapter

FlexibleLOM for Blades adapters:

- HP FlexFabric 10Gb 2-port 534FLB Adapter
- HP FlexFabric 10Gb 2-port 536FLB Adapter
- HP FlexFabric 20Gb 2-port 630FLB Adapter
- HP FlexFabric 20Gb 2-port 650FLB Adapter

Synergy adapters:

- HPE Synergy 2820C 10Gb Converged Network Adapter
- HPE Synergy 3820C 10/20Gb Converged Network Adapter

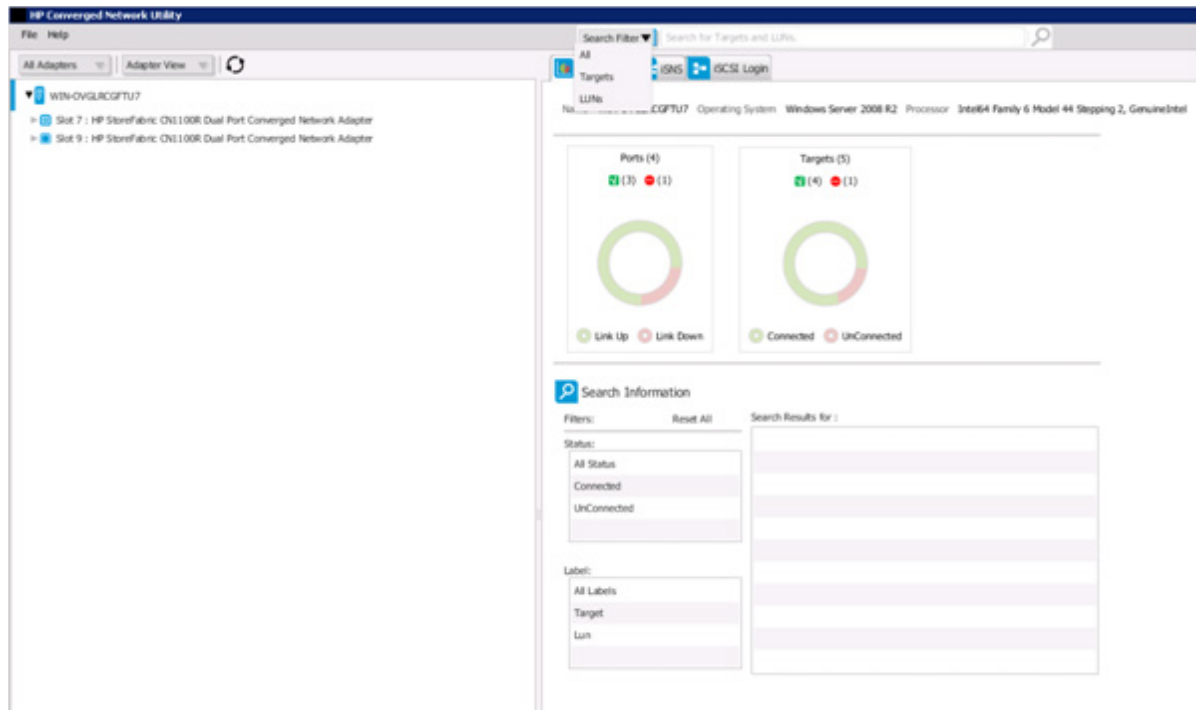
Ethernet adapters:

- HP Ethernet 10Gb 2-port 557SFP+ Adapter
- HP Ethernet 10Gb 2-port 530SFP+ Adapter
- HP Ethernet 10Gb 2-port 530T Adapter
- HPE Ethernet 4x25Gb 1-port 620QSFP28 Adapter

Setup

Dashboard tab

The CNU opens to the Dashboard tab, which displays details and graphical views of all ports for the server selected in the tree.



The tab includes descriptions of the host server name, operating system, and processor. The graphics display link status for connected ports and available targets and LUNs. The pie chart indicates the proportion of functional and non-functional ports. The target pie chart displays discovered targets and the proportion of targets with a connected or not connected status.

For a description of status icons, see "Window features (on page 6)."

Search Information displays search results from the Search box. Click a filter to sort search results, or click **Reset All** to remove the filters.

Window features

All views within the CNU interface include the following menu options:





- **File** includes several system-wide options including Export, Refresh, and Exit.
For more information about Export, see "Exporting a configuration (on page 7)."
Refresh brings tree information up to current.
Exit closes the CNU.
- **Help** opens the online help contents and version information about the CNU.
- **Search** includes a search box and a menu option to search targets, LUNs, or all.

Search results display on the Dashboard tab (on page 6).

All views also include the server and adapter tree section:

- The **tree** displays the names and relationships of the host server, connected adapters and ports, targets, and LUNs.
Click the arrow to display lower branches. Click a branch to select an item and open detail tabs with related options and information.
- **All Adapters** toggles the tree between different slots and connected adapters.
- **Adapter View** toggles the tree between FCoE and iSCSI views to display different systems.
- **Refresh** brings the data up to date for items selected in the tree. Select the server, and then click **Refresh** to refresh all views.

The following legend describes the server and adapter tree icons.

Icon	Description or status
	A green check mark indicates a positive status, including link up, operational, and enabled.
	A red circle with a line indicates a negative status, including link down and disabled.
	An exclamation point in a yellow triangle indicates a caution status, including that a target or LUN is not reachable.
	A green circular arrow updates tree data.

Exporting a configuration

The File menu includes an export option for replicating a CNU configuration for other devices and systems.

To export a CNU configuration:

1. Click **File**, and then select **Export**.
2. Click the folder icon in the Export window to select a location to store an XML file.
3. Click **Browse Folders**, enter a location in the address bar, or use the search box to enter location.
4. Enter the file name, and then click **Save**.
5. Click **Export** on the Export window to begin the export process.

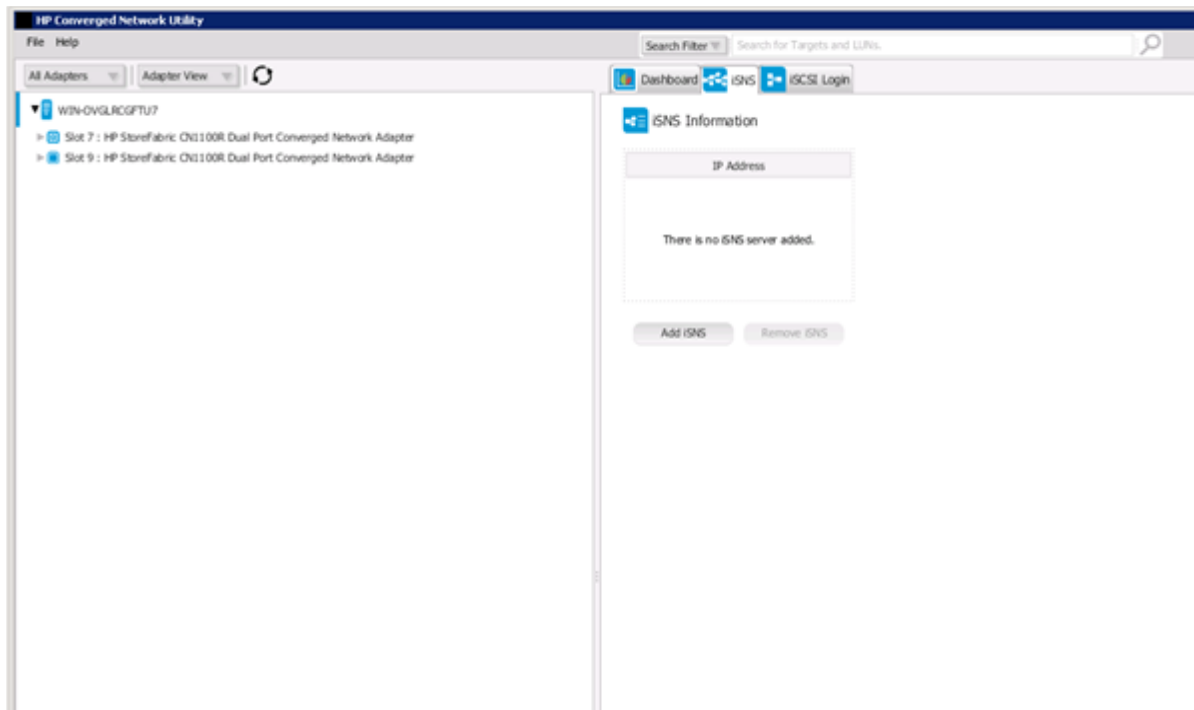
Importing a configuration

Use the CLI to replicate a CNU configuration from an existing setup to another device or system. After importing a configuration, refresh the XML file imported from the CNU to update the MAC address for the specific system. For more information, see the CNU CLI user guide.

Configuration

iSNS tab

The iSNS tab displays information for the IP address for any iSNS servers. Use available iSNS servers to find targets during configuration.

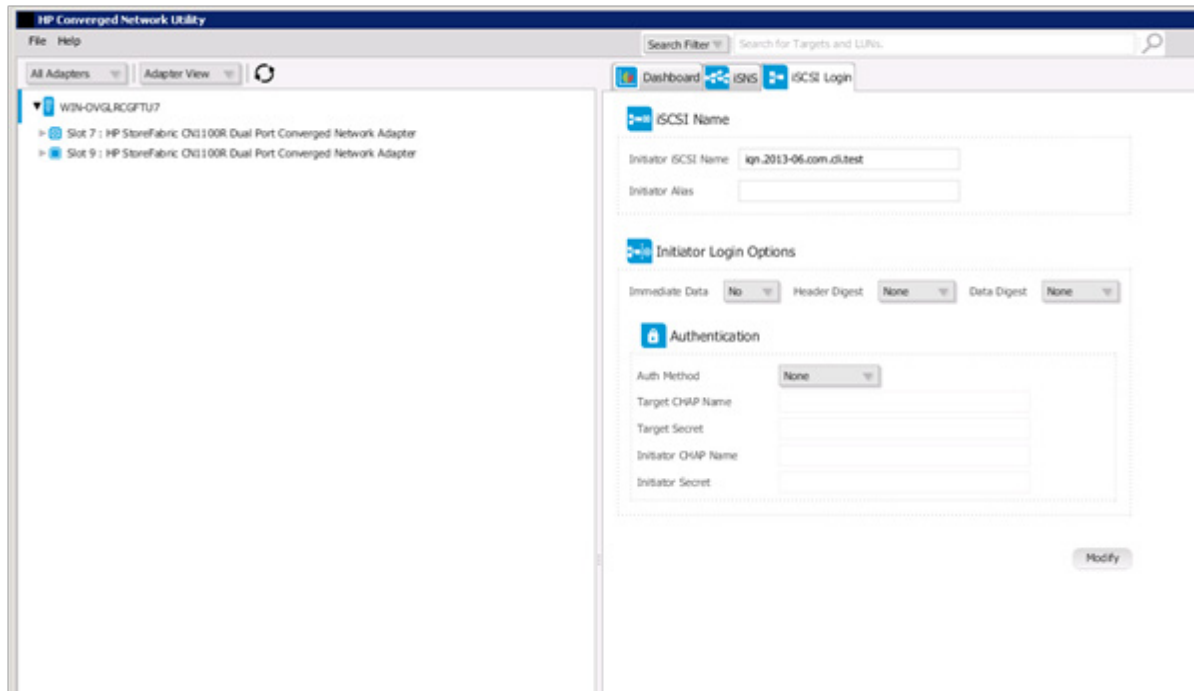


To add an iSNS server:

1. Click **Add iSNS**.
2. Enter the IP address of a network-connected server, and then click **OK**.
3. To remove an iSNS server, click **Remove iSNS**.

iSCSI Login tab

The iSCSI Login tab sets initiator login parameters for the server selected in the tree. iSCSI login information can also be modified in the iSCSI Target Discovery tab. To discover targets before adding target login information, see "iSCSI Target Discovery tab (on page 32)."



To set initiator login options:

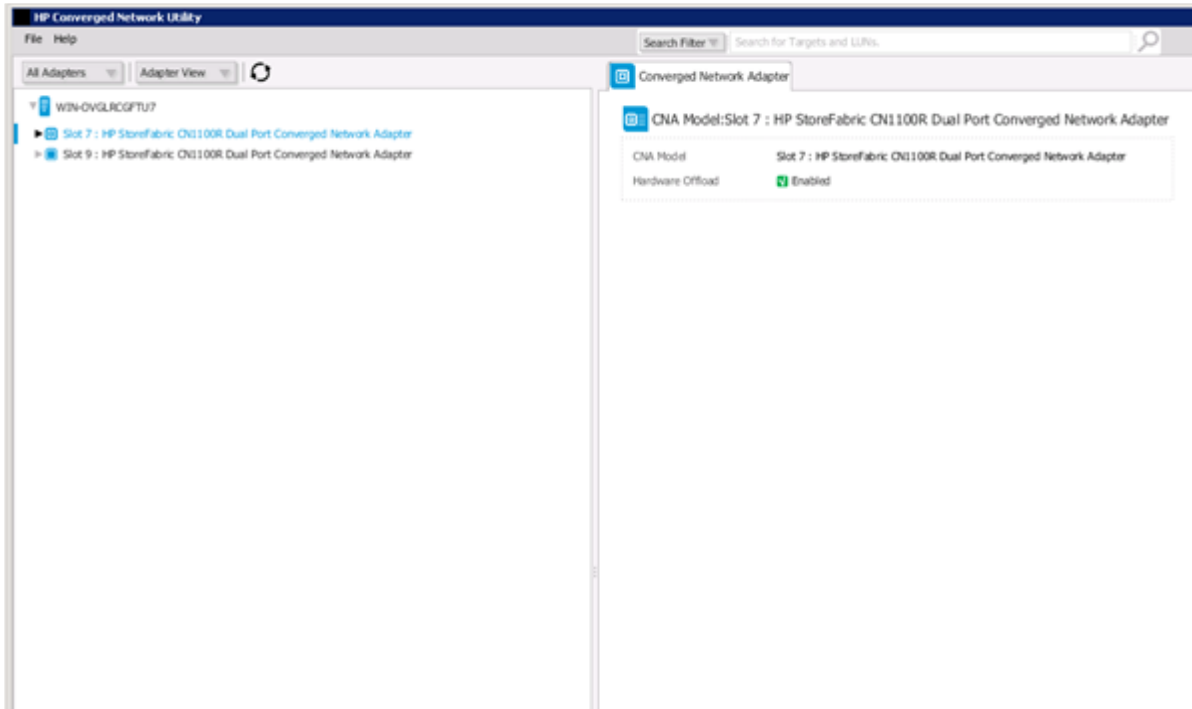
1. Enter the Initiator iSCSI Name to identify the initiator.
2. (Optional) Enter an Initiator Alias to use an alias for convenience.
3. Select login options for the appropriate rate of data delivery based on the protocol used:
 - a. **Immediate Data** determines whether the initiator can append unsolicited data to a SCSI command.
 - b. **Header Digest** protects the integrity of iSCSI PDU header segments with a CRC32C checksum.
 - c. **Data Digest** protects the integrity of an iSCSI PDU data segment with a CRC32C checksum.Different systems support different login options. For information about compatibility, see the system documentation.
4. Enter login information referenced during authentication:
 - a. Auth Method
Select one-way or mutual CHAP authentication to authenticate logins for information security.
 - **One-way CHAP** requires the target to authenticate the initiator with the Target CHAP Name and Target Secret.
 - **Mutual CHAP** requires the target and initiator to authenticate each other with the Target and Initiator CHAP Names and the Target and Initiator Secrets.
 - b. Target CHAP Name
 - c. Target Secret
 - d. Initiator CHAP Name
 - e. Initiator Secret

For names, use 1 to 256 characters and numbers in any sequence.

For secrets, use 12 to 16 characters and numbers in any sequence.

Converged Network Adapter tab

The Converged Network Adapter tab displays the server slot number and adapter model for the adapter selected in the tree.

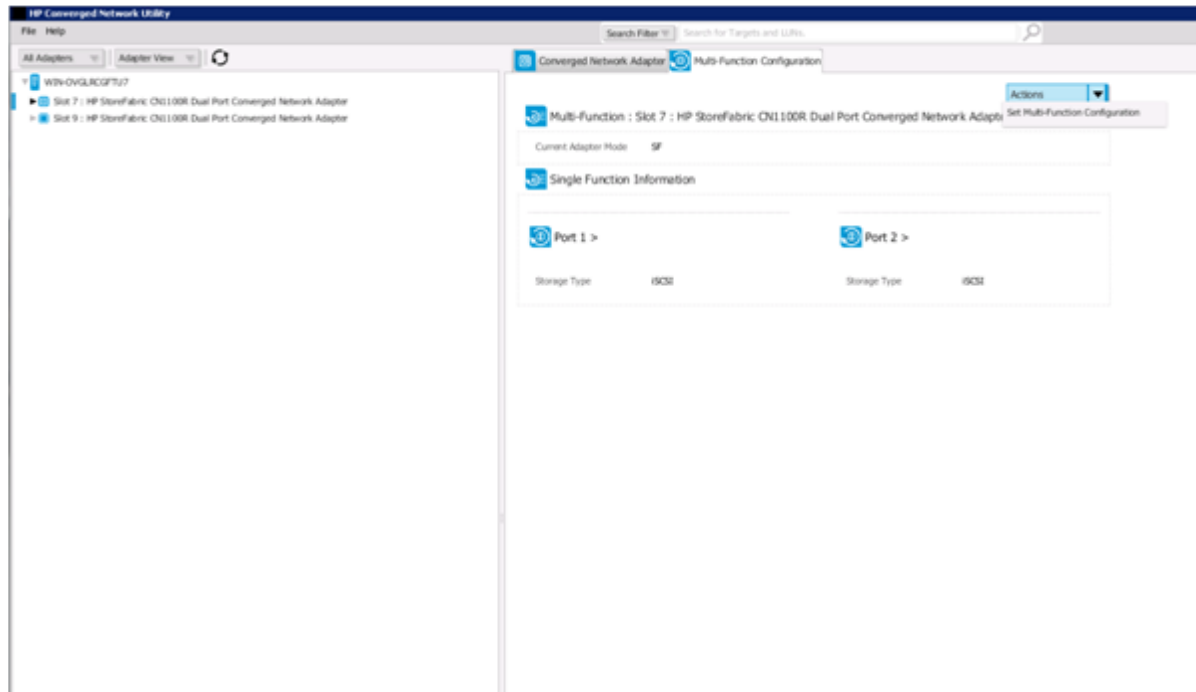


Multifunction Configuration tab

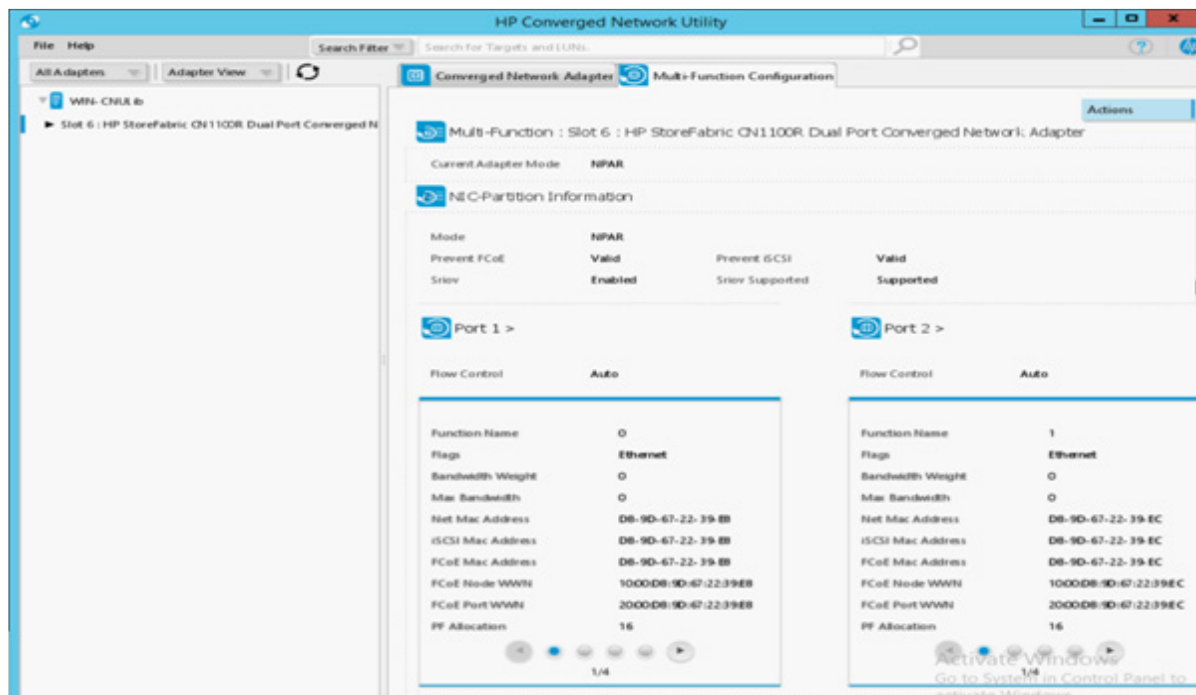
The Multifunction Configuration tab enables some modification for the SF and NPAR modes.

To configure multifunction mode, select **Set Multi-Function Configuration** from the **Actions** drop-down list.

Single Function Mode



NIC Partition Mode



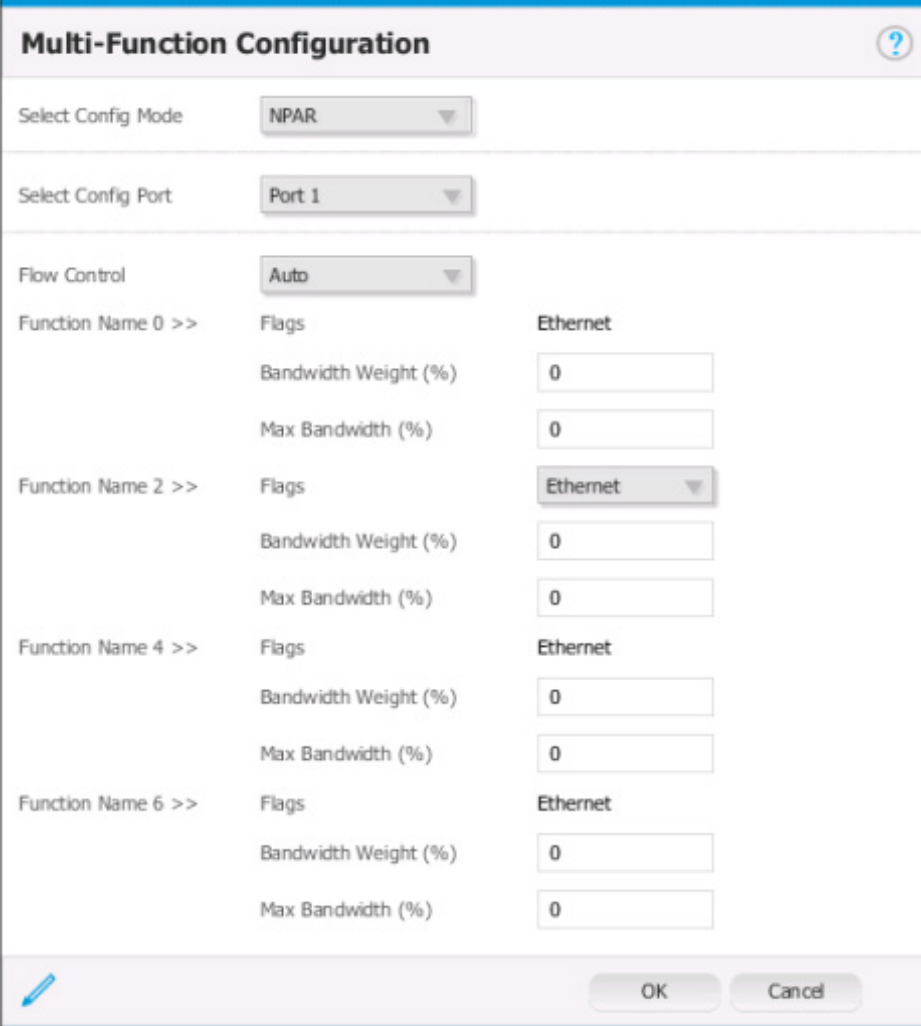
1. Click **Actions**, and then select **Set Multi-Function Configuration**. The Multi-function Configuration window appears.



The image shows a 'Multi-Function Configuration' dialog box. At the top, there is a title bar with the text 'Multi-Function Configuration' and a help icon (a question mark in a circle). Below the title bar, there is a section labeled 'Select Config Mode' with a dropdown menu currently showing 'SF'. Underneath this, there are two columns labeled 'Port 1' and 'Port 2'. Each column has a dropdown menu; 'Port 1' is currently set to 'iSCSI' and 'Port 2' is also set to 'iSCSI'. At the bottom of the dialog, there is a blue pencil icon on the left, and two buttons labeled 'OK' and 'Cancel' on the right.

2. From the **Config Mode** drop-down list, select **SF** or **NPAR**, and then select **iSCSI** or **FCoE** from the **Port 1** and **Port 2** drop-down lists.
3. If NPAR mode was selected, select the following options:
 - Select either **Port 1** or **Port 2** from the **Select Config Port** drop-down list
 - Select **Auto**, **Tx Enabled**, **Rx/Tx Enabled**, or **Disabled** from the **Flow Control** drop-down list
 - Select **Ethernet**, **iSCSI**, or **FCoE** from the **Flags** drop-down lists
 - Enter the **Bandwidth Weight (%)**
 - Enter the **Max Bandwidth (%)**

- Click **OK** to save the selected options.



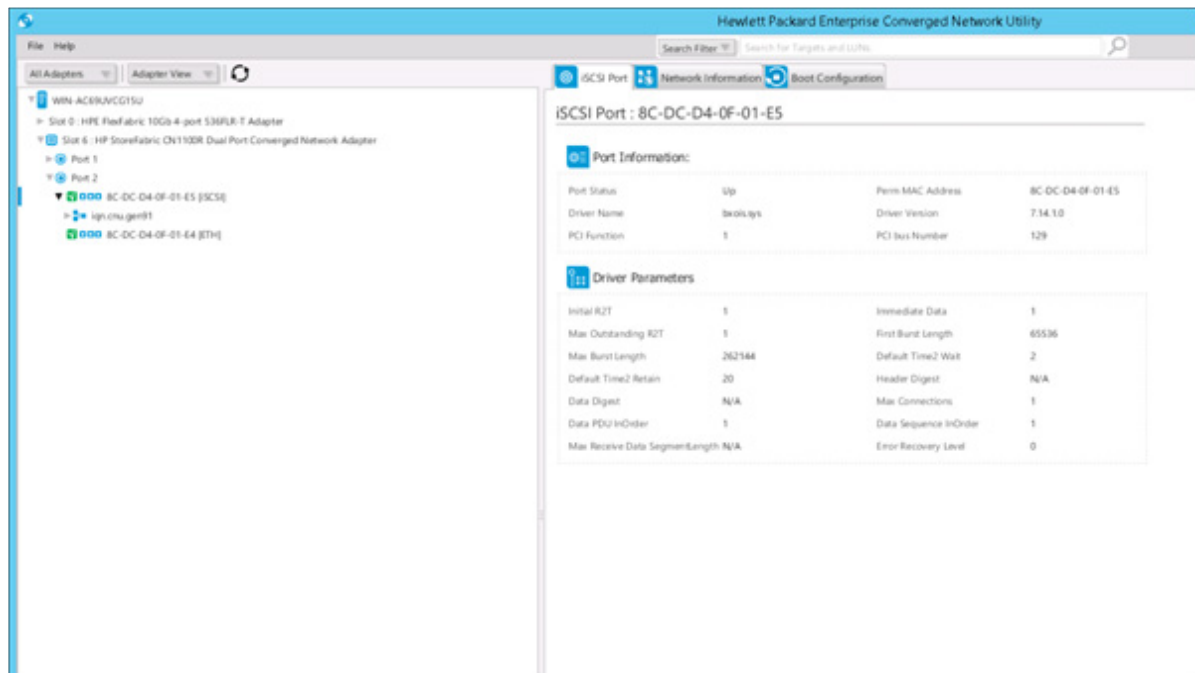
The image shows a 'Multi-Function Configuration' dialog box. At the top, there's a title bar with a question mark icon. Below the title bar, there are two dropdown menus: 'Select Config Mode' set to 'NPAR' and 'Select Config Port' set to 'Port 1'. Underneath, there's a 'Flow Control' dropdown set to 'Auto'. The main area contains four function configuration sections, each with a 'Function Name' followed by '>>'. Each section has a 'Flags' dropdown set to 'Ethernet', and two input fields for 'Bandwidth Weight (%)' and 'Max Bandwidth (%)', both containing the value '0'. At the bottom left, there's a blue pencil icon. At the bottom right, there are 'OK' and 'Cancel' buttons.

Function Name	Flags	Bandwidth Weight (%)	Max Bandwidth (%)
Function Name 0 >>	Ethernet	0	0
Function Name 2 >>	Ethernet	0	0
Function Name 4 >>	Ethernet	0	0
Function Name 6 >>	Ethernet	0	0

Port Information tab

The Port Information tab displays hardware port information for the adapter port selected in the tree. The available information depends on the iSCSI or FCoE configuration. The tree displays whether a port uses iSCSI or FCoE protocols.

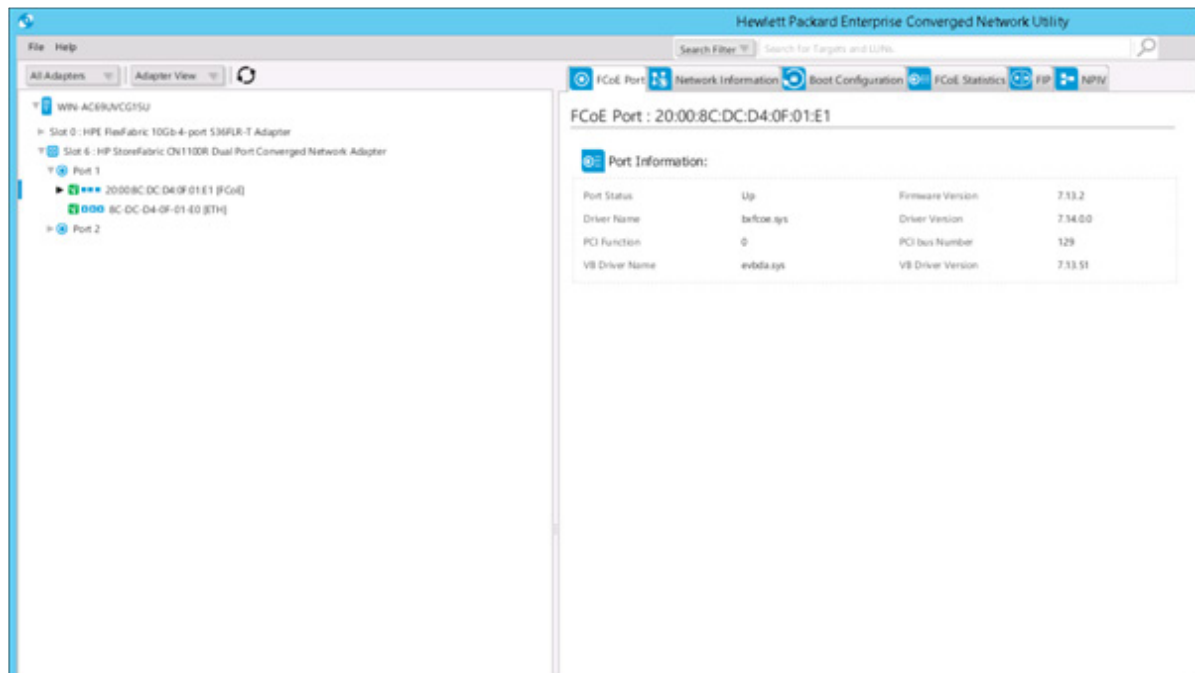
iSCSI configuration



IMPORTANT: In single function mode, there are two tabs for the adapter port selected in the tree. One tab displays hardware port information as well as driver parameters, and the other is Boot Configuration. After NPAR is enabled, both the Boot Configuration tab and either the iSCSI port or the FCoE port tab moves from Port # to the iSCSI FCoE port.

- **Port Status**
A status icon displays port status.
- **Driver Name**
The name identifies the driver.
- **Driver Version**
The version identifies the driver.
- **Perm MAC Address**
The MAC address is unique and permanently assigned to the port by the manufacturer. The format is a 6-byte, layer 2 address.
- **PCI Function**
PCI function is indicated by a number assigned by the system.
- **PCI Bus Number**
The bus number is assigned to the PCI device.
- **Driver Parameters**
The driver parameters for the selected port are displayed.

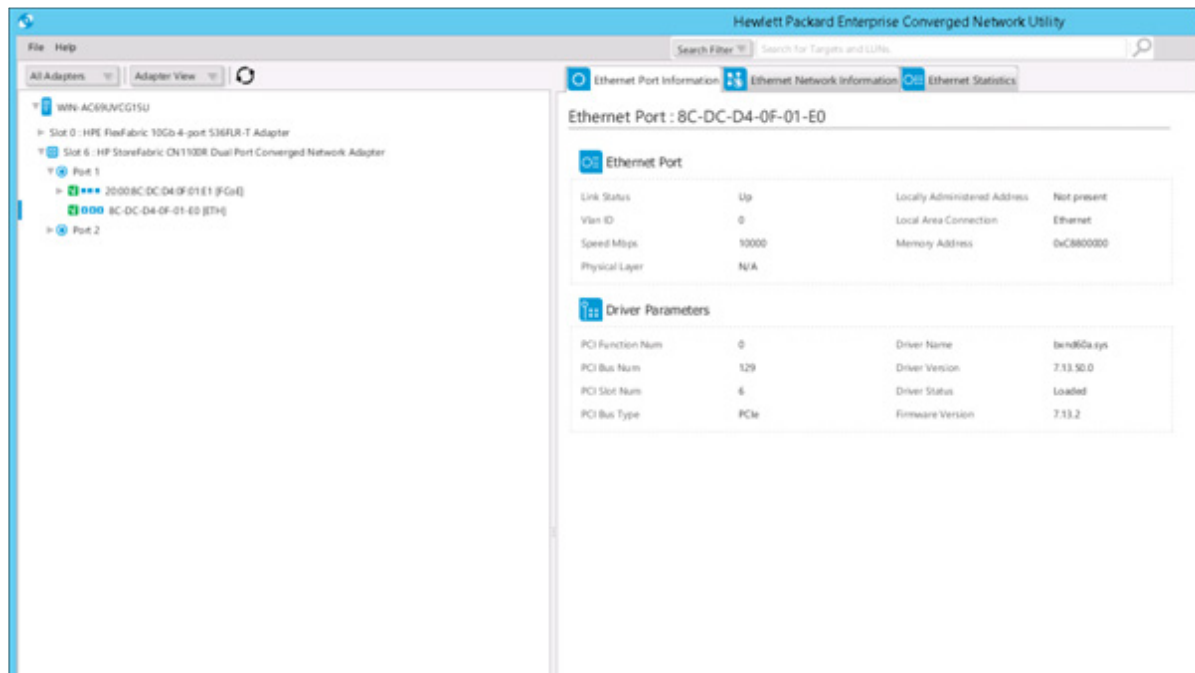
FCoE configuration



- Port Status
A status icon displays port status.
- PCI Bus Number
The number is assigned to the FC function.
- Firmware Version
The version identifies the firmware currently active on the selected adapter port.
- PCI Function
The PCI function is indicated by a number assigned by the system.
- Driver Name
The name identifies the driver.
- Driver Version
The version identifies the driver.
- VB Driver Name
The name identifies the virtual bus driver.
- VB Driver Version
The version identifies the virtual bus driver.

An FCoE configuration enables the DCB Configuration tab (on page 36).

Ethernet configuration



- **Link Status**
A status icon displays port link status.
- **VLAN ID**
The ID is the value that identifies the Ethernet device.
- **Team Status**
The status indicates team status.
- **Speed Mbps**
The speed indicates the current operating speed for the selected Ethernet port.
- **Locally Administered Address**
A locally administered address is assigned to a device by a network administrator, overriding the burned-in address.
- **Local Area Connection**
The connection of the local network.
- **Memory Address**
The unique identifier used for data tracking.
- **Physical Layer**
The physical connections of the network.
- **PCI Function Number**
The PCI function is indicated by a number assigned by the system.
- **PCI Bus Number**
The number is assigned to the PCI device.
- **PCI Slot Number**
The slot number of the PCI device.
- **PCI Bus Type**

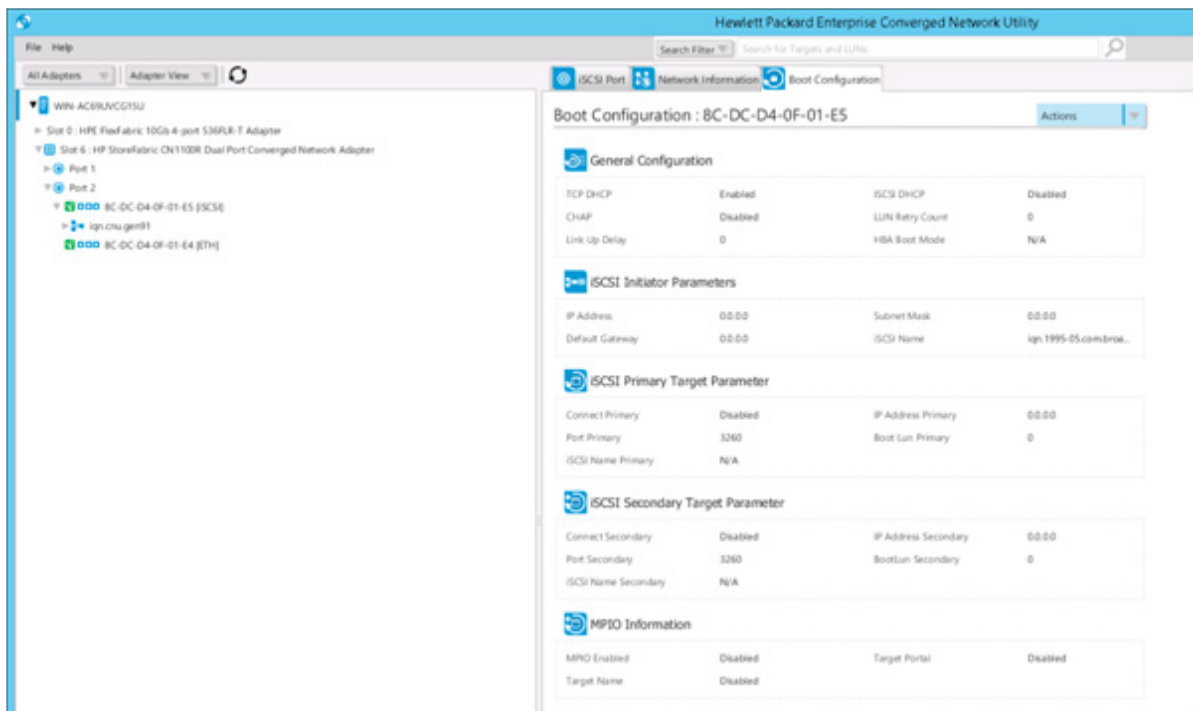
The type of the PCI device.

- Driver Name
The name identifies the driver.
- Driver Version
The version identifies the driver.
- Driver Status
The status of the driver.
- Firmware version
The version identifies the firmware currently active on the selected adapter port.

Boot Configuration tab

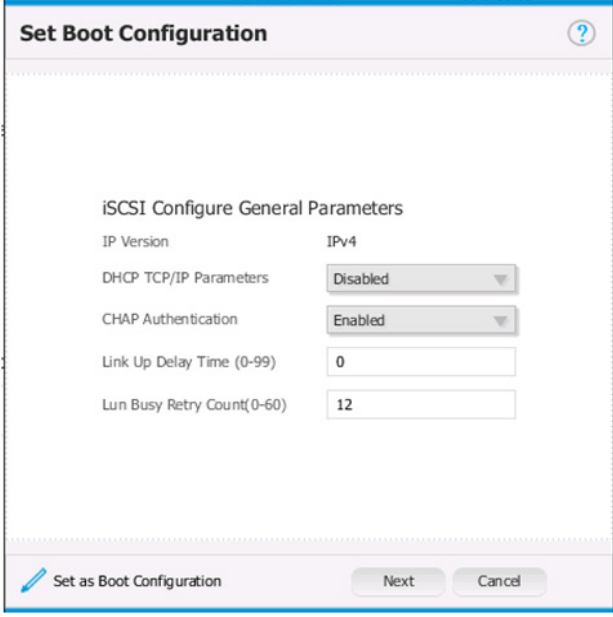
iSCSI configuration

To make modifications to the iSCSI configuration, select **Set Boot Configuration** from the **Actions** drop-down list.



Click **Actions**, and then select **Set Boot Configuration**. The Set Boot Configuration window appears.

1. iSCSI Configure General Parameters

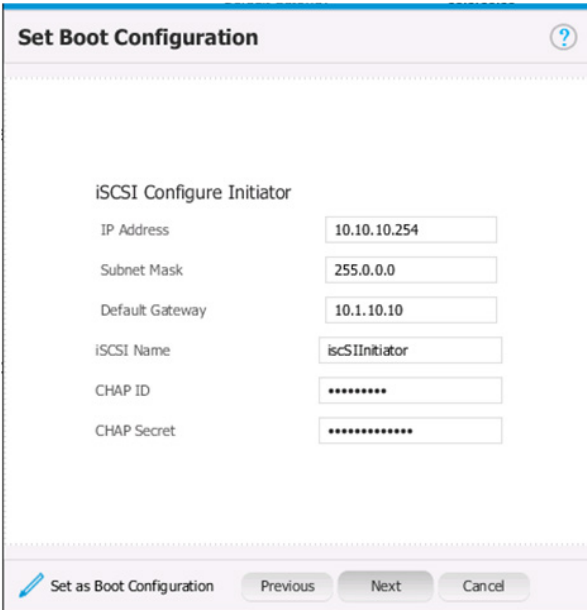


The dialog box is titled "Set Boot Configuration" with a question mark icon in the top right corner. The main content area is titled "iSCSI Configure General Parameters". It contains the following fields:

Parameter	Value
IP Version	IPv4
DHCP TCP/IP Parameters	Disabled
CHAP Authentication	Enabled
Link Up Delay Time (0-99)	0
Lun Busy Retry Count(0-60)	12

At the bottom, there is a "Set as Boot Configuration" button with a pencil icon, and "Next" and "Cancel" buttons.

2. iSCSI Configure Initiator.



The dialog box is titled "Set Boot Configuration" with a question mark icon in the top right corner. The main content area is titled "iSCSI Configure Initiator". It contains the following fields:

Parameter	Value
IP Address	10.10.10.254
Subnet Mask	255.0.0.0
Default Gateway	10.1.10.10
iSCSI Name	iscsiInitiator
CHAP ID	*****
CHAP Secret	*****

At the bottom, there is a "Set as Boot Configuration" button with a pencil icon, and "Previous", "Next", and "Cancel" buttons.

3. iSCSI Configure primary target.

Set Boot Configuration

iSCSI Configure primary Target

Connect

Disabled

IP Address

10.10.1.10

TCP Port

2345

Boot LUN

5

iSCSI Name

iSCSIPrimary-Demo

CHAP ID

CHAP Secret

Set as Boot Configuration

Previous

Next

Cancel

4. iSCSI Configure secondary target.

Set Boot Configuration

iSCSI Configure Secondary Target

Connect

Disabled

IP Address

10.20.30.36

TCP Port

0

Boot LUN

0

iSCSI Name

CHAP ID

CHAP Secret

Set as Boot Configuration

Previous

Next

Cancel

5. Configure MPIO.

Set Boot Configuration

Configure MPIO

Secondary Device

Enabled

Secondary Mac

Use Independent Target Portal

Enabled

Use Independent Target Name

Enabled

Set as Boot Configuration

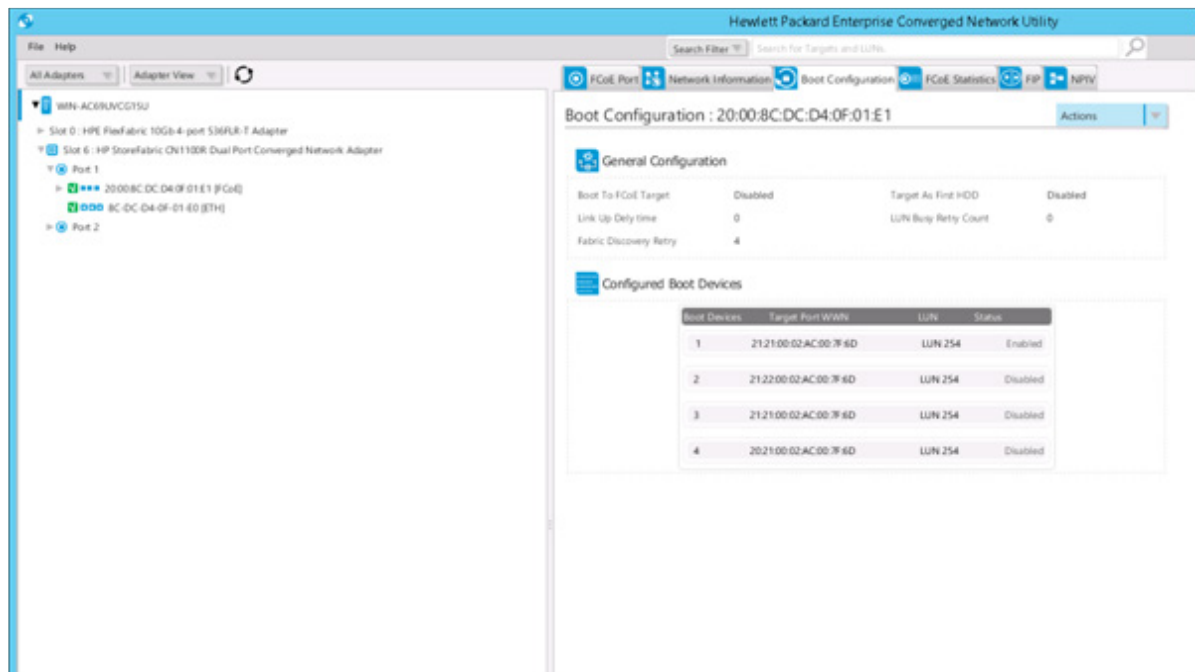
Previous

Submit

Cancel

FCoE configuration

To make modifications in the Boot Configuration tab, click **Actions**, and then select **Set Boot Configuration**.



Edit FCoE Boot Configuration

General Configuration

Boot To FCoE Target
Enabled

Link Up Delay time (0-255)
0

Target As First HDD
Enabled

LUN Busy Retry Count (0-60)
60

Fabric Discovery Retry (0-8)
3

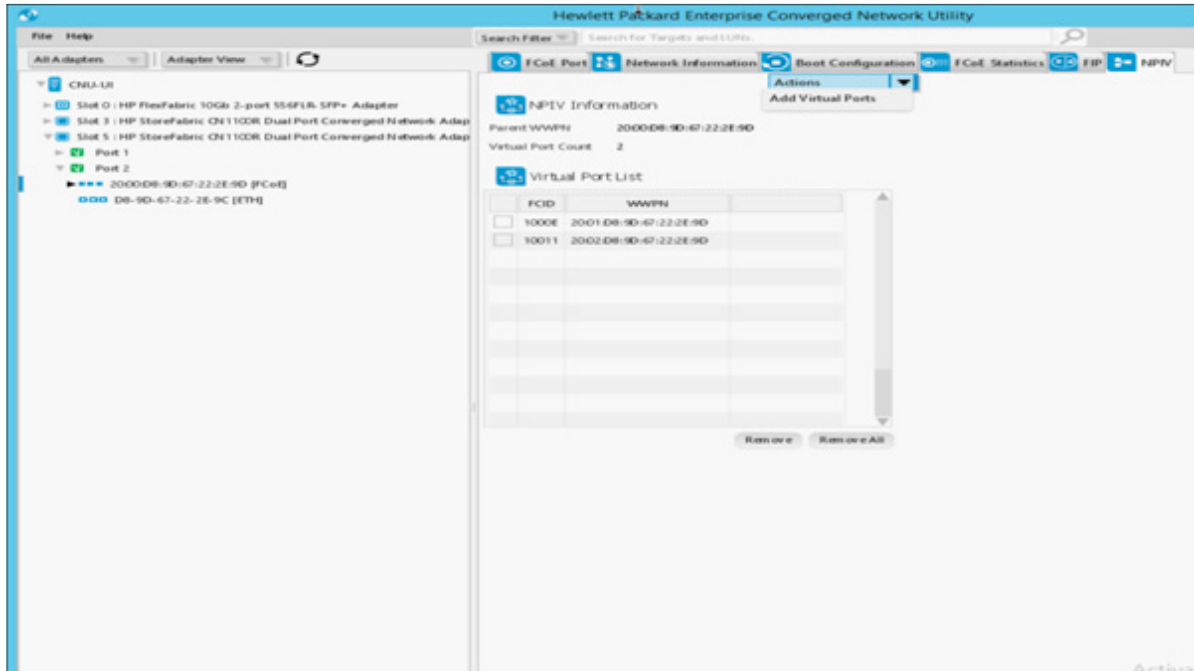
Configured Boot Devices

Boot Devices	Select Targets	Select LUN	Enabled
0	25:70:00:C0:FF:13:AE:05	LUN 0	<input checked="" type="checkbox"/>
1	25:70:00:C0:FF:13:AE:05	LUN 2	<input checked="" type="checkbox"/>
2	25:70:00:C0:FF:13:AE:05	LUN 1	<input checked="" type="checkbox"/>
3	Select	Select	<input checked="" type="checkbox"/>
4	Select	Select	<input checked="" type="checkbox"/>
5	Select	Select	<input checked="" type="checkbox"/>

Edit FCoE Boot Configuration
Apply
Cancel

NPIV Configuration tab

The NPIV tab enables you to add and remove virtual ports.



- Parent WWPN
WWPN for the physical port.
- Virtual Port Count
The number of virtual ports.
- Virtual Port Lists
List FCID and WWPN for each virtual port. Each virtual port has its own WWPN, but its WWNN is the same as the physical ports WWNN.

To remove virtual ports:

1. Select each virtual port in the **Virtual Port List**.
2. Click **Remove** to delete the selected virtual ports.
3. To remove all virtual ports, click **Remove All**.

To add virtual ports:

1. Select **Add Virtual Ports** from the **Actions** list.

2. Click **Actions**, and then select **Add Virtual Ports**. The **Add Virtual Ports** window appears.



3. Choose one of the following:
 - Select the **Create virtual ports automatically** option. Selecting this option disables the **Start** and **End** fields. Enter an amount into the **Virtual port count** field, which enables you to automatically create up to 255 unique virtual ports for each physical port. CNU creates unique WWPNs for each new virtual port, based on the parent WWPN.
 - Deselect the **Create virtual ports automatically** option, and then enter a unique WWPN into the **Start** and **End** fields. Enter an amount into the **Virtual port count** field, which enables you to automatically create up to 255 unique virtual ports for each physical port. CNU creates unique WWPNs for each new virtual port within the range of the virtual WWPN.
4. Click **OK** to save the selected options.

FIP Configuration tab

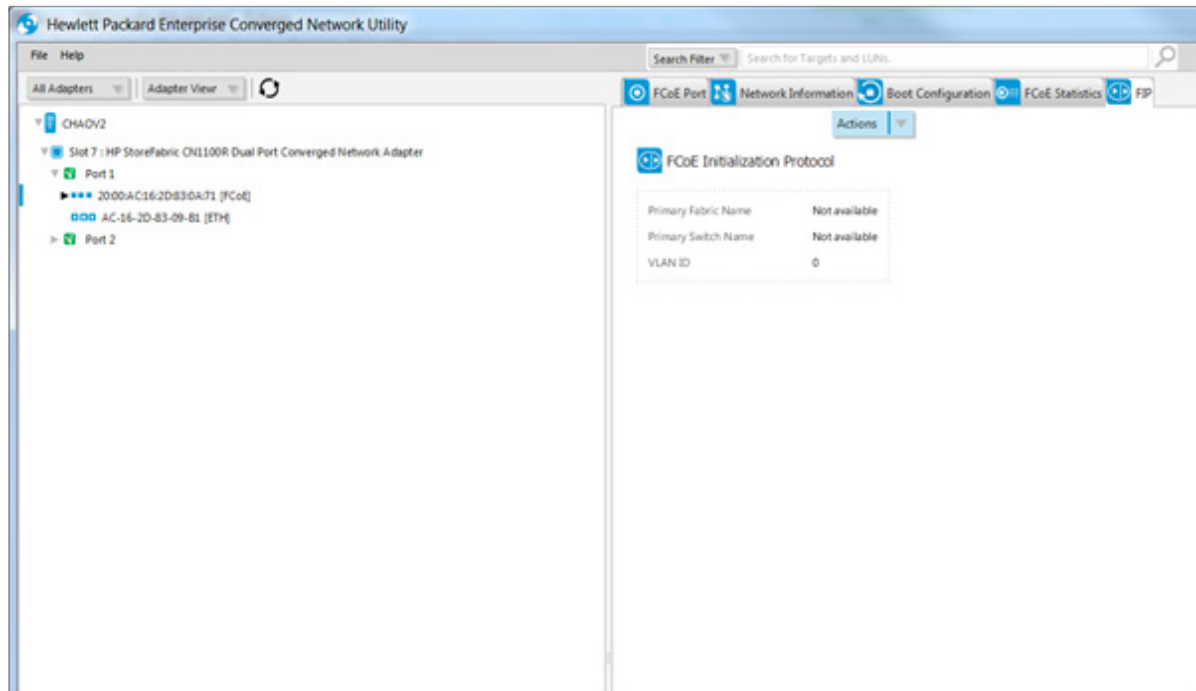
The FIP tab enables some modification for FIP.



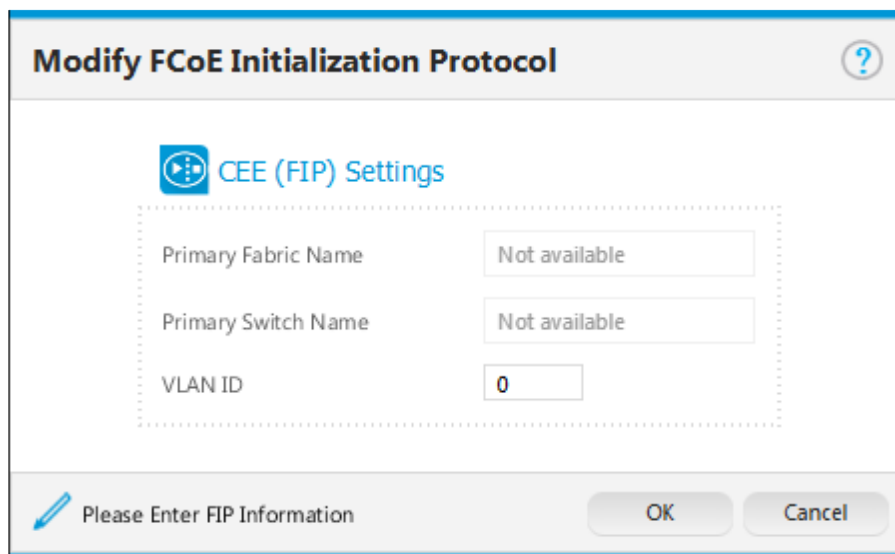
IMPORTANT: VLAN ID is the only available item for FIP.

To configure FIP:

1. Click **Actions**, and then select **Edit**.



The Modify FCoE Initialization Protocol window appears.



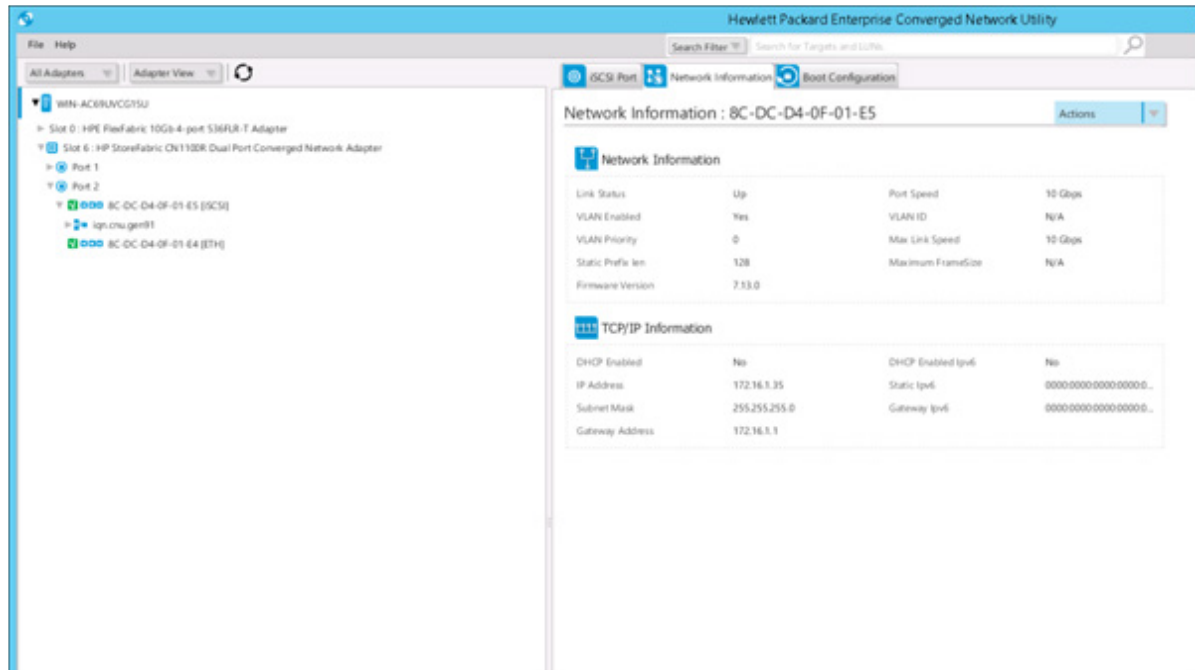
2. Edit the following options
 - **Primary Fabric Name** - Determines a fabric name that allows the WWN of the FC fabric to connect. If the Primary Fabric Name is wild, that is, all 0xFFs, connection to any fabric name is allowed.
 - **Primary Switch Name** - Determines a switch name that allows the WWN of the FC fabric to connect. If the Primary Switch Name is wild, that is, all 0xFFs, connection to any switch name is allowed.
 - **VLAN ID** - Indicates the adapter FCoE service which VLAN ID is available. Ranges from 0 to 4095.
3. Click **OK** to save the selected options.

Network Information tab

Click the MAC address in the tree to view network information. The Network Information tab displays network and TCP/IP information for an iSCSI configuration or network port and fabric information for an FCoE configuration.

iSCSI configuration

An iSCSI configuration enables some modification of network and TCP/IP information. To edit the information, see "Editing the network information for iSCSI (on page 30)."



Network Information

- **Link Status**
A status icon displays link status.
- **Port Speed**
The speed indicates the current operating speed for the selected adapter port.
- **VLAN Enabled**
The parameter enables the ability to insert or remove the 802.1q tags for VLAN.
- **VLAN ID**
The ID is the value that identifies the iSCSI device.
- **VLAN Priority**
The parameter enables the ability to insert or remove the 802.1q tags for priority.
- **Max Link Speed**
The speed indicates the maximum operating speed for the selected adapter port.
- **Static Prefix len**
The static prefix length indicates the number of bits set in the subnet mask.
- **Maximum FrameSize**

The maximum frame size specifies the maximum number of bytes in a single packet. Larger frames can increase throughput and decrease CPU use by putting more data in each packet to send fewer packets.

- **Firmware Version**

The version identifies the firmware currently active on the selected adapter port.

TCP/IP Information

The VLAN, IPv4 and IPv6 details identify the adapter connection.

VLAN Details:

- VLAN Enabled
- VLAN ID

IPv4 Details:

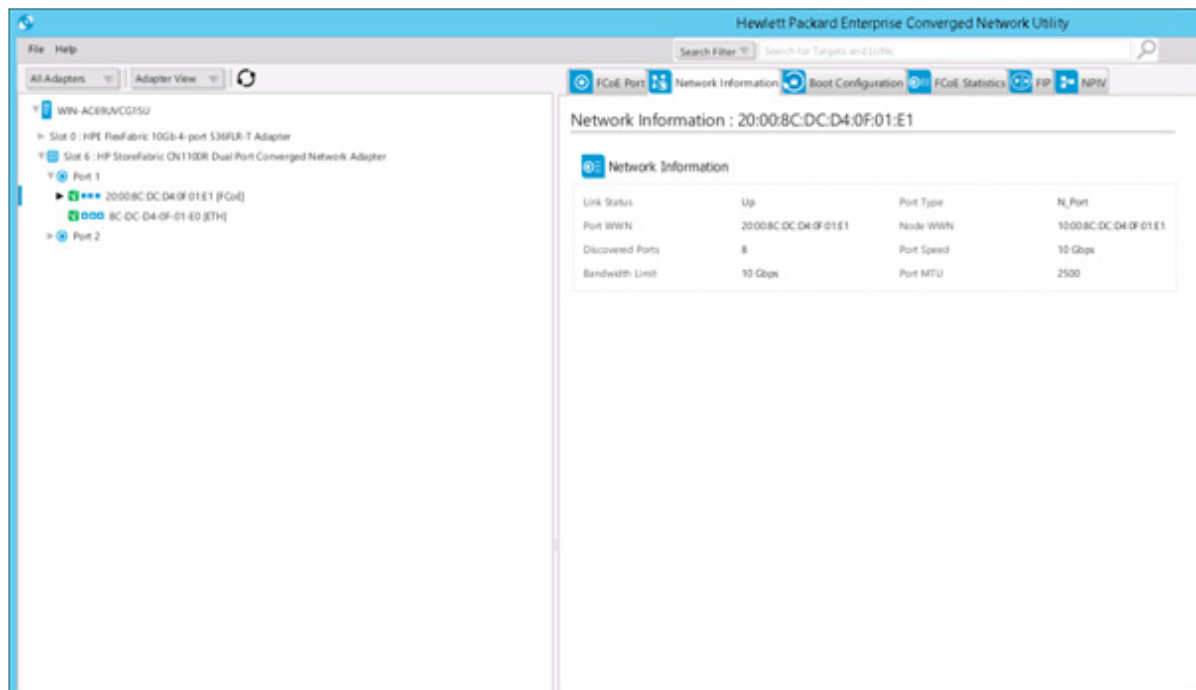
- DHCP Enabled
- IP Address
- Subnet Mask
- Gateway Address

IPv6 Details:

- Obtain an IPv6 address automatically
- Link-local IPv6 Address
- IPv6 Address
- IPv6 Default Gateway
- Subnet Prefix Length

FCoE configuration

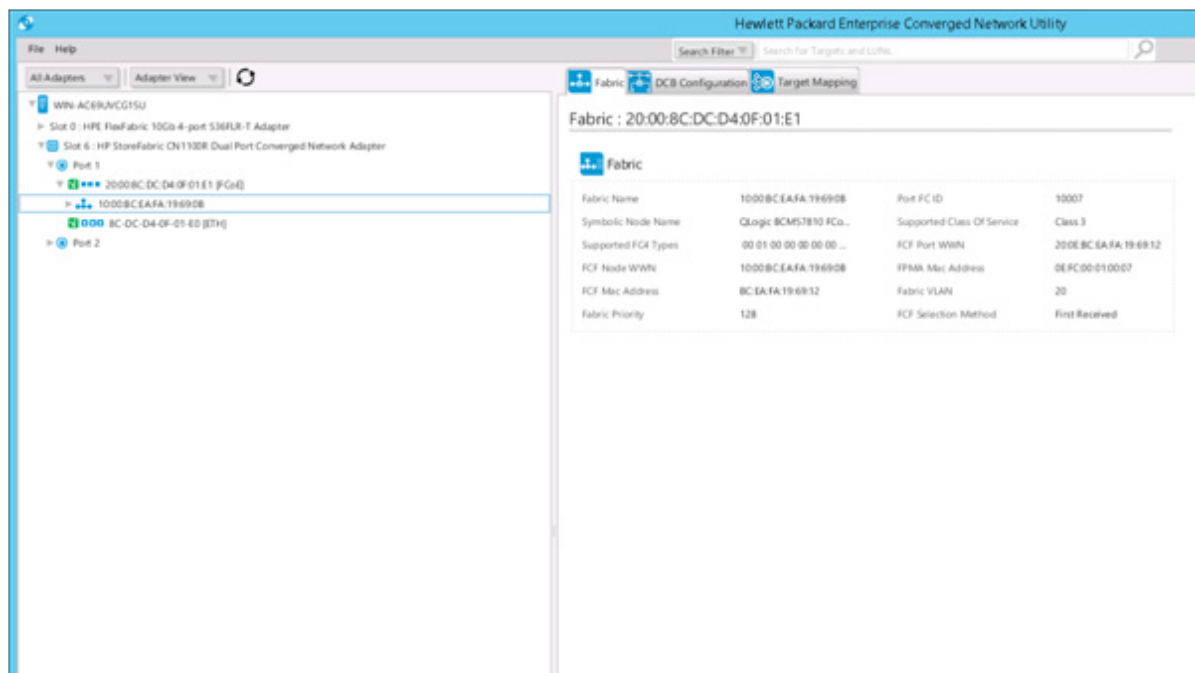
An FCoE configuration enables the FCoE Statistics tab (on page 40) and Target Mapping tab (on page 43) when the MAC address is selected.



Network Port Information

- Link Status
A status icon displays link status.
- Port WWN
The World Wide Name uniquely identifies the adapter.
- Node WWN
The World Wide Name uniquely identifies the node.
- Port Type
The type is the current operational mode of the selected adapter port.
- Discovered Ports
The adapter driver defines the number of mapped and unmapped ports that were found during discovery.
- Port Speed
The speed indicates the current operating speed for the selected adapter port.
- Bandwidth Limit
The limit describes the QoS bandwidth restriction on the port.
- Port MTU
The port MTU shows the MTU size for the network.

Fabric Information

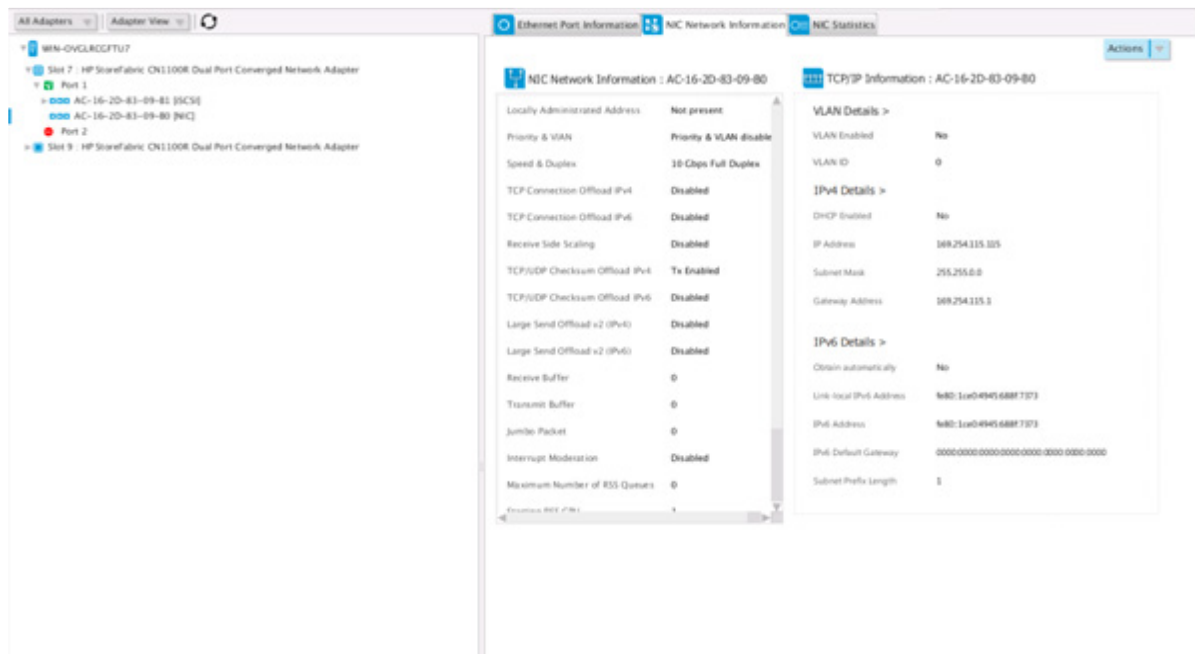


- Fabric Name
The name indicates the type of FC fabric WWN connection.
- Port FC ID
The ID identifies the FC for the selected adapter port.
- Symbolic Node Name
The name identifies the FC registered to the driver with the name server.

- Supported Class of Service
The class of service is a frame delivery scheme with a specified set of delivery characteristics and attributes.
- Supported FC4 Types
A 256-bit (8-word) map describes the FC-4 protocol types supported by the selected adapter port.
- FCF Port WWN
- FCF Node WWN
- FPMA Mac Address
- FCF Mac Address
- Fabric VLAN
- Fabric Priority
- FCF Selection Method

NIC configuration

A NIC configuration enables some modifications to the network and TCP/IP information. To edit the information, see "Editing the network information for the NIC (on page 30)."



NIC Network Information

- Locally Administered Address
- Priority and VLAN
- Speed & Duplex
- Flow Control
- TCP Connection Offload (IPv4)
- TCP Connection Offload (IPv6)
- Receive Side Scaling
- TCP/UDP Checksum Offload (IPv4)

- TCP/UDP Checksum Offload (IPv6)
- Large Send Offload v2 (IPv4)
- Large Send Offload v2 (IPv6)
- Receive Buffer
- Transmit Buffer
- Jumbo Packet
- SR-IOV
- Encapsulated Packet Task Offload
- Interrupt Moderation
- Maximum Number of RSS Queue
- Quality of Service
- Recv Segment Coalescing (IPv4)
- Recv Segment Coalescing (IPv6)
- Starting RSS CPU
- Receive CPU Affinity
- Transmit CPU Affinity
- Virtual Machine Queue
- Wake On Magic Packet
- Wake On Pattern Match
- Wake Up Capability
- Checksum Offload
- TCP Segmentation Offload

TCP/IP Information

The VLAN, IPv4, and IPv6 details identify the adapter connection.

VLAN Details:

- VLAN Enabled
- VLAN ID

IPv4 Details:

- DHCP Enabled
- IP Address
- Subnet Mask
- Gateway Address

IPv6 Details:

- Obtain an IPv6 address automatically
- Link local IPv6 Address
- IPv6 Address
- IPv6 Default Gateway

- Subnet Prefix Length

Editing the network information for iSCSI

1. Click **Actions**, and then select **Edit**.
The Modify TCP/IP window appears.

Modify TCP/IP

VLAN ☒ VLAN Enabled

VLAN ID: 3

VLAN Priority: 0

Maximum FrameSize: 1500

IPv4 Address ☒ DHCP Enabled

IP Address: 10.10.10.3

Subnet Mask: 255.0.0.0

Gateway Address: 0.0.0.0

IPv6 Address ☐ DHCP Enabled IPv6

Static Ipv6: 0000:0000:0000:0000:0000:0000:0000:0000

Gateway Ipv6: 0000:0000:0000:0000:0000:0000:0000:0000

Static Prefix len: 128

Please Enter VLAN & IP Address

OK Cancel

2. Select or clear the check box to enable or disable VLAN, IPv4 Address, or IPv6 Address as appropriate for the adapter capabilities.
3. To edit the information, do any of the following:
 - Edit VLAN ID, VLAN Priority, and Maximum FrameSize.
 - Edit IPv4 Address, Subnet Mask, and Gateway Address.
 - Edit Static Ipv6, Gateway Ipv6, and Static Prefix len.
4. Click **OK** to save changes.

Editing the network information for the NIC

1. Click **Actions**, and then select **Edit**.

The Modify NIC window appears.

Modify NIC Network Information

NIC Network Information

Locally Administrated Address: 0

Priority & VLAN: Priority & VLAN enabled

Speed & Duplex: Auto Negotiation

Flow Control: Autoneg Tx/Rx Enable

TCP/UDP Checksum Offload IPv4: Enabled

Receive Buffer: 500

Jumbo Packet: 1514

Starting RSS CPU: 3

Wake Up Capability: Magic Packet

Checksum Offload: Rx & Tx Enabled

TCP Segmentation Offload: Enabled

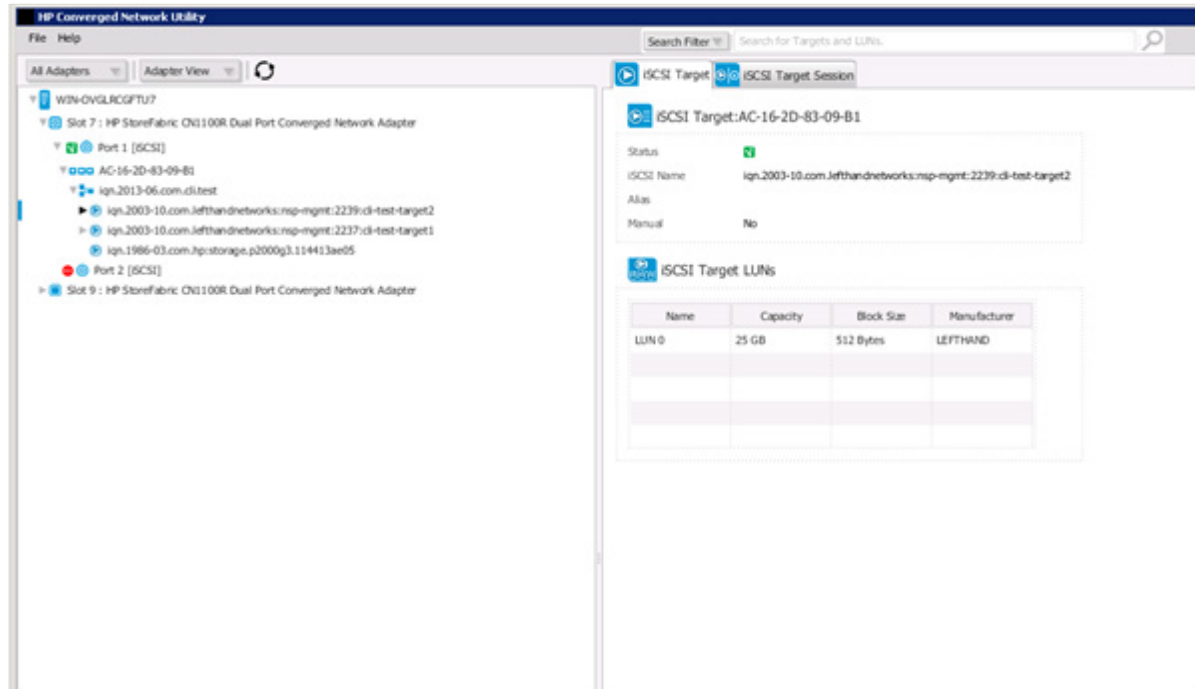
Please Enter NIC Network Information

OK Cancel

2. Select or clear the check box to enable or disable VLAN, IPv4 Address, or IPv6 Address as appropriate for the adapter capabilities.
3. To edit the information, do any of the following:
 - Edit NIC Network Information.
 - Edit VLAN ID and VLAN Priority.
 - Edit IPv4 Address, Subnet Mask, and Gateway Address.
 - Edit Static IPv6, Gateway IPv6, and Static Prefix len.
4. Click **OK** to save changes.

iSCSI Target Discovery tab

Click the initiator name in the tree of an iSCSI configuration to access the iSCSI Target Discovery tab. The iSCSI Target Discovery tab displays information and options for target portals and targets. To discover a target, add a target portal, and then perform a target login. Alternately, add the target manually, and then log in.



To add an iSCSI target:

1. Click **Actions**, and then select **Add Target**.

The Add Target window appears.

Add Target

Enter iSCSI target name and IP address and click "OK" to add target.
Optionally, change the TCP port or Login Options.

Portal Address: 172.16.254.1 Port Number: 3260

Target Alias: Target Multipath: Yes

Target Name: Ping

Initiator Login Options

Immediate Data: Yes Header Digest: CRC32C

Data Digest: CRC32C

Authentication

Auth Method: Mutual CHAP

Target CHAP Name: Target Secret: Initiator CHAP Name: Initiator Secret:

Changed: Portal Address to "172.16.254.1" OK Cancel

2. Enter the identifying information for the target:
 - a. Target Name
 - b. Target Alias
The alias appears in the tree for later reference.
 - c. Portal Address
 - d. Target Multipath
Select **Yes** or **No** to indicate whether the target is configured with multipathing software.
 - e. Port Number (TCP)
3. Enter initiator login options:
 - a. Immediate Data
 - b. Digest Data
 - c. Header Data
4. Enter authentication options:
 - a. Auth Method
Select one-way or mutual CHAP authentication.

- b. Target CHAP Name
 - c. Target Secret
 - d. Initiator CHAP Name
 - e. Initiator Secret
5. Click **OK** to save changes.
- Once a target is added, the target is locked.

(Optional) To refresh iSCSI target information:

1. Click **Actions**, and then select **Refresh**.
Up-to-date target information displays for targets that are available for login.
2. Click the **Target Login** icon to log in to a target that is not connected.

To add an iSCSI target portal:

1. Click **Actions**, and then select **Add Portal**.
The Add Target Portal window appears.

Add Target Portal ?

Enter the Portal IP Address below and click "OK" to add.
Optionally, change the TCP port or Login Options.

Portal Address Port

Initiator Login Options

Immediate Data Header Digest
Data Digest

Authentication





Auth Method
Target CHAP Name
Target Secret
Initiator CHAP Name
Initiator Secret

Changed: Portal Address to "172.16.254.1"

2. Enter the Portal Address.
3. To edit optional information, do any of the following:
 - o Enter Port (TCP).
 - o Select options in the Initiator Login Options.
 - o Enter login parameters in Authentication.
4. Click **OK** to save the changes.

Target portal information appears and can be modified in the iSCSI Login tab.

The following legend describes the target action icons.

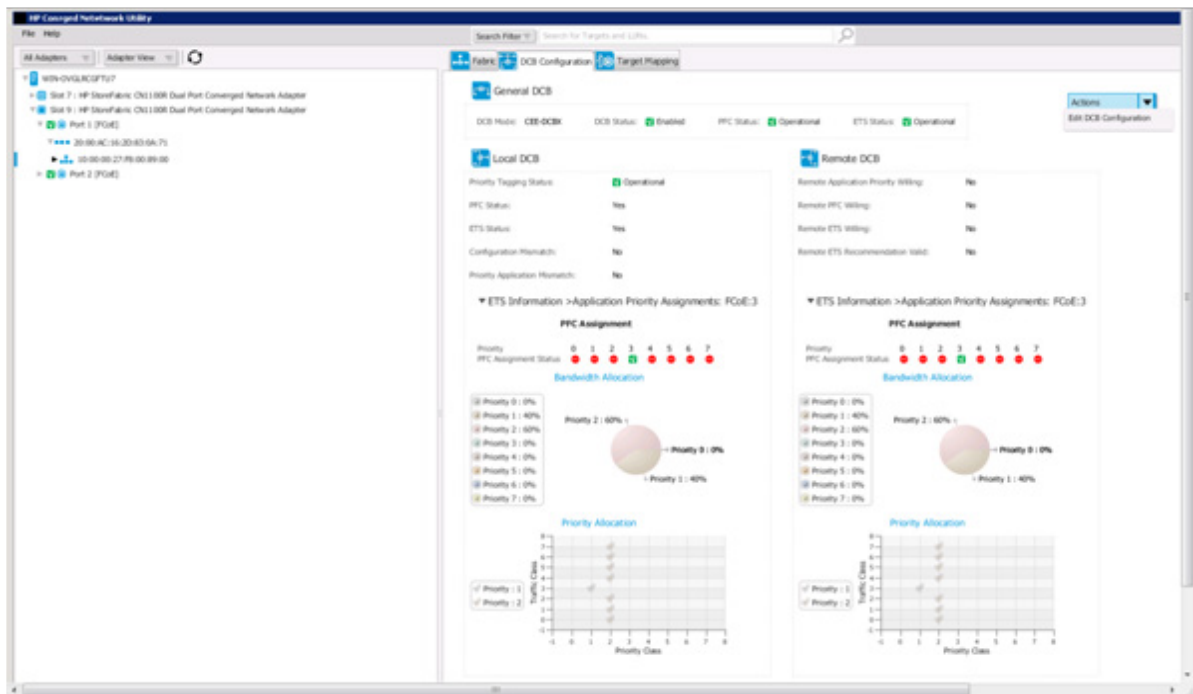
Icon	Description
	Target login opens a login window.
	Add target session opens a login window.
	Remove target removes the target.
	Target details opens the iSCSI Target tab.

An iSCSI configuration enables the iSCSI Statistics tab (on page [38](#)).

Storage management


DCB Configuration tab

An FCoE configuration enables the DCB Configuration tab. The DCB Configuration tab displays general, local, and remote DCB information.



?

Edit Local DCB Configuration

 DCB Settings

PFC Status

Enabled

ETS Status


Enabled

Application Type









FCoE


Application Priority


1

▼  Configure PFC Settings >











Priority Settings


Priority	0	1	2	3	4	5	6	7
Enabled	<input type="radio"/>	<input checked="" type="radio"/> 	<input type="radio"/>	<input checked="" type="radio"/> 	<input checked="" type="radio"/> 	<input type="radio"/>	<input checked="" type="radio"/> 	<input type="radio"/>
Disabled	<input checked="" type="radio"/> 	<input type="radio"/>	<input checked="" type="radio"/> 	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/> 	<input type="radio"/>	<input checked="" type="radio"/> 


 Active Configuration ☒ Changed Configuration

▼  Configure ETS Settings >

Priority Membership Settings

Priority Groups	Priority								Bandwidth %
	0	1	2	3	4	5	6	7	
Priority Group 0	<input type="radio"/>	<input checked="" type="radio"/> 	<input checked="" type="radio"/> 	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/> 	<input checked="" type="radio"/> 	<input checked="" type="radio"/> 	<div><div></div></div>
Priority Group 1	<input checked="" type="radio"/> 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<div><div></div>50 </div>
Priority Group 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/> 	<input checked="" type="radio"/> 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<div><div></div>50 </div>
Priority Group 3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<div><div></div></div>
Priority Group 4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<div><div></div></div>
Priority Group 5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<div><div></div></div>
Priority Group 6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<div><div></div></div>
Priority Group 7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<div><div></div></div>

 Active Configuration ☒ Changed Configuration

 Edit Local DCB Properties

OK

Cancel

- ETS Status

Local DCB Information

A Yes or No parameter indicates if PFC Status is provided and if any mismatch exists for the local DCB.

- Priority Tagging Status
A status icon displays status.
- PFC Status
- Configuration Mismatch
- Priority Application Mismatch

Remote DCB Information

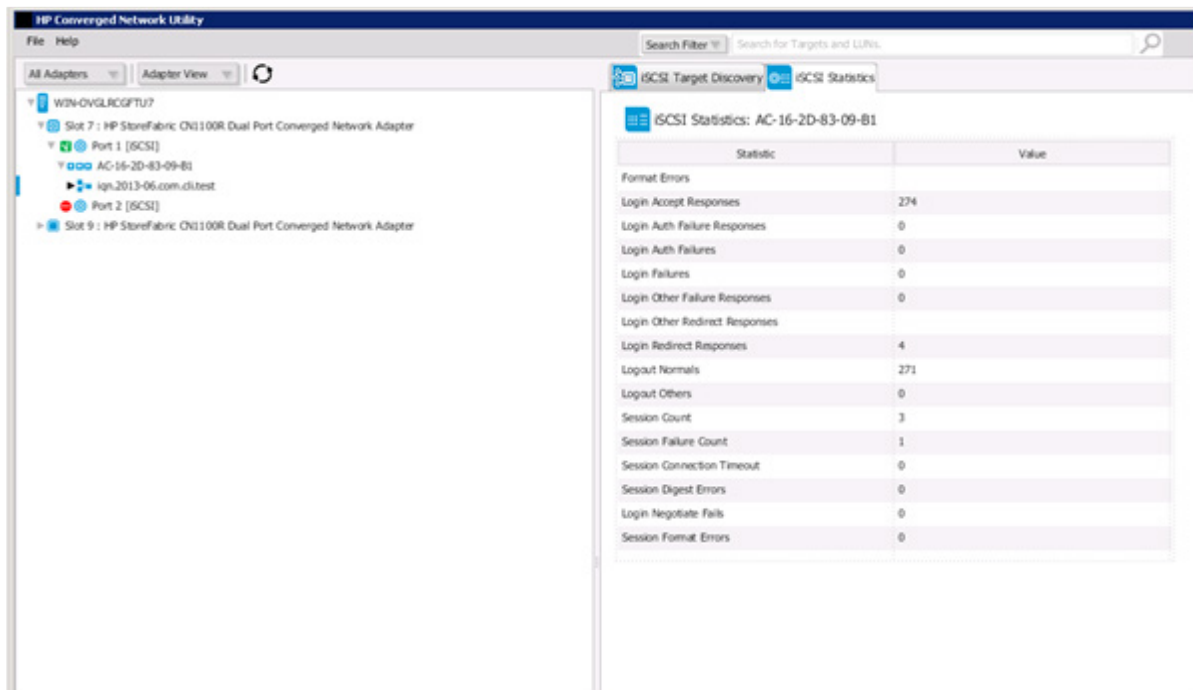
A Yes or No parameter indicates if Application Priority, PFC, and ETS are willing, and if the ETS recommendation is valid, for the remote DCB.

- Remote Application Priority Willing
- Remote PFC Willing
- Remote ETS Willing
- Remote ETS Recommendation Valid

Click **ETS Information >Application Priority Assignments: FCoE: 3** to maximize or minimize details and pie charts of PFC assignment, bandwidth allocation, and priorities. Status icons display PFC Assignments Status for the different priorities.

iSCSI Statistics tab

The iSCSI Statistics tab displays physical iSCSI statistical parameters and values for the initiator name selected in the tree.



iSCSI configurations yield the following statistics:

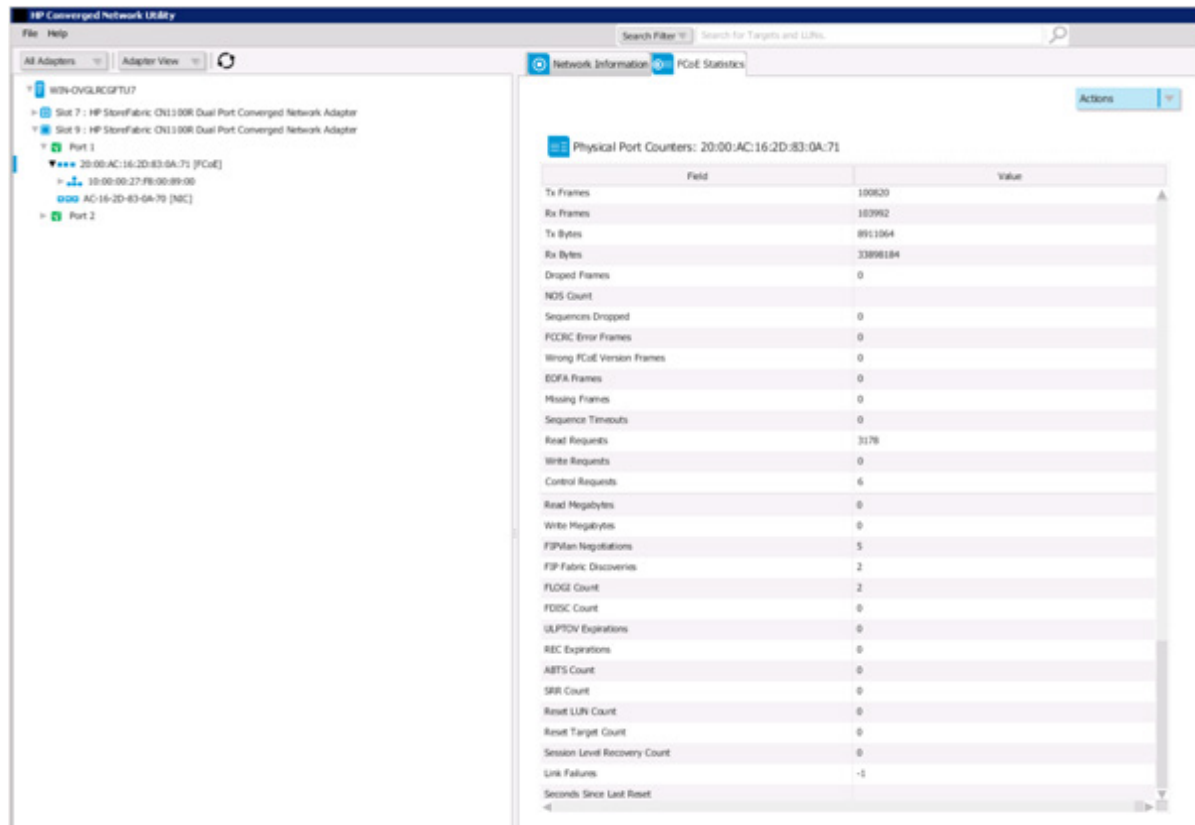
- Format Errors

The errors describe the most recent session failure that received an iSCSI PDU with a format error.

- Login Accept Responses
The count is the number of accepted Login Response PDUs received by the initiator.
- Login Auth Failures Responses
The count is the number of failed Login Response PDUs with status class 0x201 Authentication Failed received by the initiator.
- Login Auth Failures
The count is the number of times the initiator aborted a login because the target was not authenticated.
- Login Failures
The count is the number of times the initiator login failed.
- Login Other Failure Responses
The count is the number of failed Login Response PDUs received by the initiator with any status code not included in the other counts.
- Login Other Redirect Responses
The count indicates the redirected Login Response PDUs received by the initiator with any status code not included in the other counts.
- Login Redirect Responses
The count indicates the redirected Login Response PDUs received by the initiator.
- Logout Normals
The count indicates the normal Logout Command PDUs generated by the initiator.
- Logout Others
The count indicates the Logout Command PDUs generated by the initiator with any status code other than normal.
- Session Count
The count is the number of rows in the iSCSI session type table that are currently associated with the iSCSI instance.
- Session Failure Count
The count is the number of times a session on the active port failed.
- Session Connection Timeout
The count is the number of failed sessions due to a timeout.
- Session Digest Errors
The count is the number of failed sessions that received a PDU with header or data digest errors.
- Login Negotiate Fails
The count is the number of times the initiator aborted a login because parameter negotiation with the target failed.
- Session Format Errors
The count is the number of sessions that failed due to receipt of an iSCSI PDU with a format error.

FCoE Statistics tab

The FCoE Statistics tab displays physical port counter fields and values associated with the MAC address selected in the tree.



Physical Port Counters: 20:00:AC:16:2D:83:0A:71

Field	Value
Tx Frames	100620
Rx Frames	103962
Tx Bytes	8913664
Rx Bytes	33896184
Dropped Frames	0
NOS Count	0
Sequences Dropped	0
FCCRC Error Frames	0
Wrong FCoE Version Frames	0
EOFA Frames	0
Missing Frames	0
Sequence Timeouts	0
Read Requests	3178
Write Requests	0
Control Requests	6
Read Megabytes	0
Write Megabytes	0
FIP/MLN Negotiations	5
FIP Fabric Discoveries	2
FLOGI Count	2
FDISC Count	0
ULPTOV Expirations	0
REC Expirations	0
ABTS Count	0
SRP Count	0
Reset LUN Count	0
Reset Target Count	0
Session Level Recovery Count	0
Link Failures	-1
Seconds Since Last Reset	<1

FCoE configurations yield the following statistics:

- Tx Frames
The count is the number of FC frames transmitted by the adapter port.
- Rx Frames
The count is the number of FC frames received by the adapter port.
- Tx Bytes
The count is the number of FC bytes transmitted by the adapter port.
- Rx Bytes
The count is the number of FC bytes received by the adapter port.
- Dropped Frames
The count is the number of frames lost because of unavailable host buffers.
- NOS Count
The count is the number of NOS events on the switched fabric.
- Sequences dropped
- FCCRC Error Frames
- Wrong FCoE Version Frames
- EOFA Frames

- Missing Frames
- Sequence Timeouts
- Read Requests
- Write Requests
- Control Requests
- Read Megabytes
- Write Megabytes
- FIPVlan Negotiations
- FIP Fabric Discoveries
- FLOGI Count
- FDISC Count
- ULPTOV Expirations
- REC Expirations
- ABTS Count
- SRR Count
- Reset LUN Count
- Reset Target Count
- Session Level Recovery Count
- Link Failures

A link failure is a possible cause of a timeout.
- Seconds Since Last Reset

The clock indicates the seconds passed since the last adapter reset.

NIC Statistics tab

The NIC Statistics tab displays physical port counter fields and values associated with the MAC address selected in the tree.

The screenshot shows the 'NIC Statistics' tab in a storage management application. The left pane displays a tree view of network adapters and ports. The main pane shows two tables: 'Activity' and 'Category'.

Activity Table:

Field	Transmit	Receive
Total Bytes	6394912	106065596
Total Frames	33010	752559
Unicast Frames	6321	0
Multicast Frames	19760	422861
Broadcast Frames	6929	329698

Category Table:

Field	Value
Total Bytes	6394912
Tx Total Frames	33010
Tx Unicast Frames	6321
Tx Multicast Frames	19760
Tx Broadcast Frames	6929
Tx Errors	0
Tx Discards	0
Tx Queue Length	0
Tx Underrun Frames	0
Tx One Collision Frames	0
Tx More Collision Frames	0
Tx Max Collision Frames	0
Tx Late Collision Frames	0
Tx Deferred Frames	0

Below the Category table, there are sections for 'Frame Receive' and 'TCP Connection Offload'.

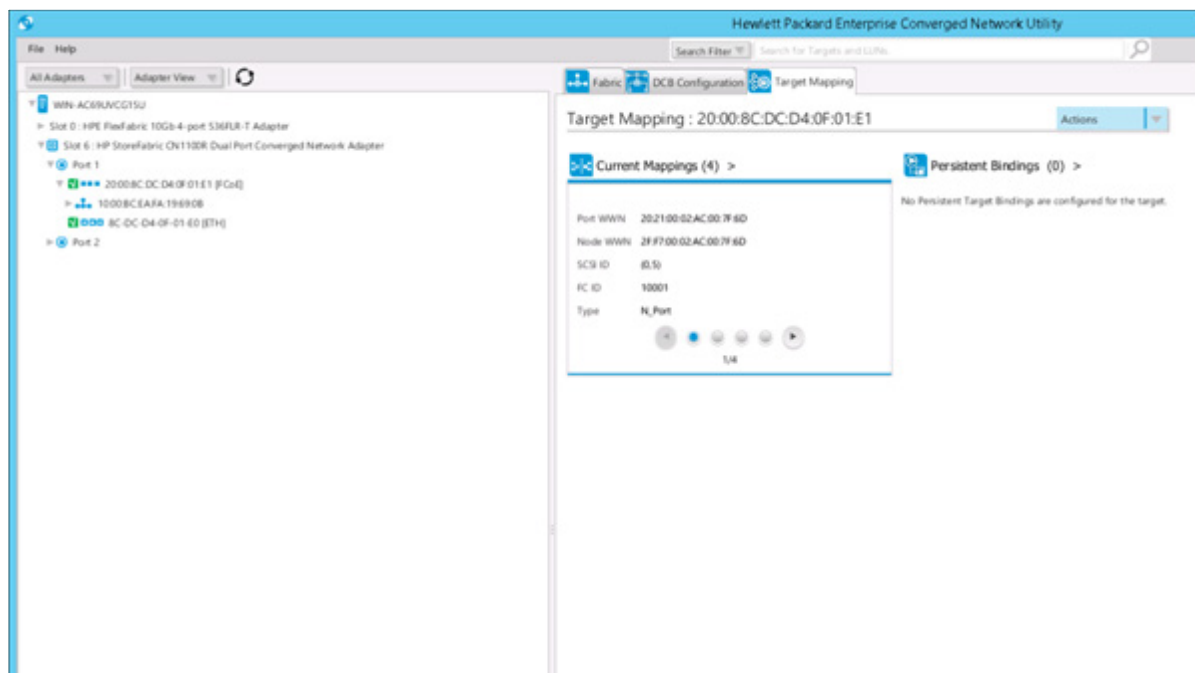
NIC configurations yield the following statistics:

- Total Bytes
- Tx Total Frames
- Tx Unicast Frames
- Tx Multicast Frames
- Tx Broadcast Frames
- Tx Errors
- Tx Discards
- Tx Queue Length
- Tx Underrun Frames
- Tx One Collision Frames
- Tx More Collision Frames
- Tx Max Collision Frames
- Tx Late Collision Frames
- Tx Deferred Frames
- Rx Total Bytes

- Rx Total Frames
- Rx Unicast Frames
- Rx Multicast Frames
- Rx Broadcast Frames
- Rx Errors
- Rx Discards
- Rx Overrun Frames
- Rx CRC Error Frames
- Rx Alignment Error Frames
- Rx No Buffer Frames
- TCP IPv4 Connection Count
- TCP IPv6 Connection Count
- TCP IPv4 Error Count
- TCP IPv6 Error Count

Target Mapping tab

The Target Mapping tab displays port mappings, settings, and persistent binding configurations associated with the MAC address selected in the tree.



Persistent Binding Configuration

Current configurations are listed. Persistent binding applies to assigned target/bus combinations, SCSI ID, and WWPNs. The configuration retains the parameters when the system is rebooted.

Current Mappings

- Port WWN

The World Wide Name uniquely identifies the adapter.

- Node WWN

The World Wide Name uniquely identifies the node.

- SCSI ID

The ID is unique to an assigned target/bus combination. The SCSI ID that is specified in a binding request must not be mapped to another target.

- FC ID

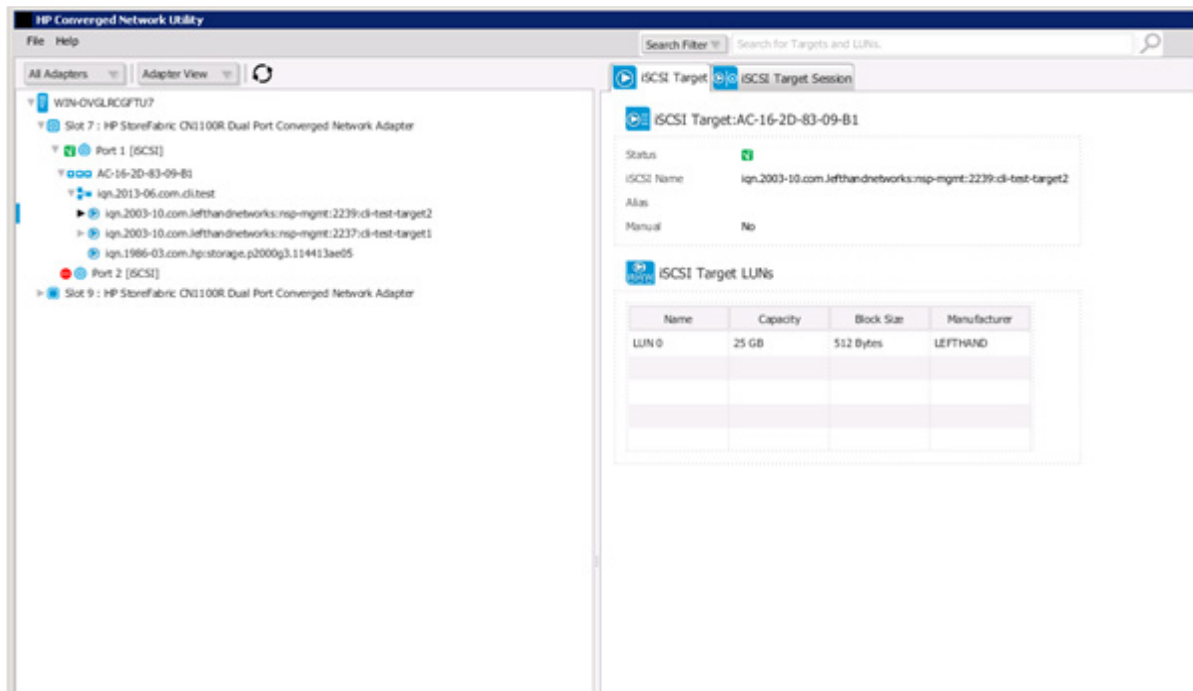
The ID is unique to the type of FC fabric.

- Type

Type indicates the current binding type assigned.

iSCSI Target tab

The iSCSI Target tab displays iSCSI target, session, and LUN information for the target selected in the tree.



iSCSI Target

- iSCSI Name

The name identifies the iSCSI target.

- Alias



Target alias is assigned at the target portal.

- Status

A status icon displays connection status.

- Manual

A Yes or No parameter indicates if the target requires manually initiated sessions.

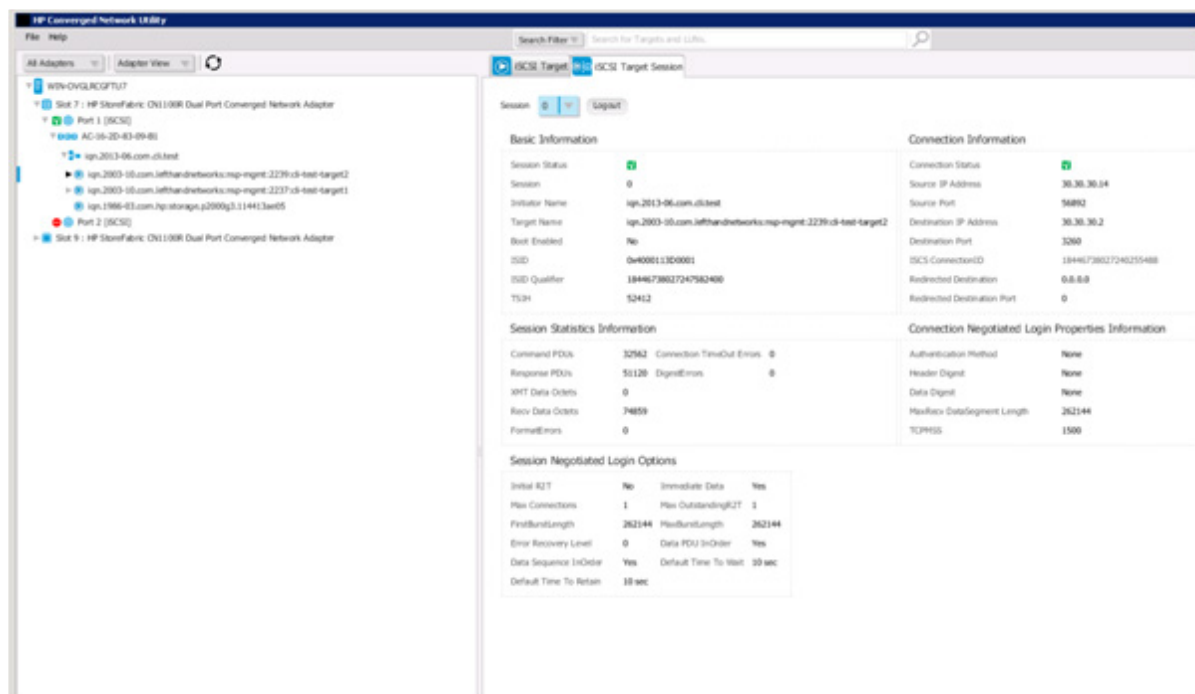
Icon	Description
	Target login opens a login window.
	Target logout closes a target session.

Target LUNs

- **Name**
The name identifies the target LUN.
- **Capacity**
The capacity indicates the unformatted size of the LUN.
- **Block Size**
The size is a logical unit block in bytes.
- **Manufacturer**
The name indicates the manufacturer of the LUN.

Target Session tab

The Target Session tab displays management information for all logins and sessions for the target selected in the tree. Target session information includes basic information, session statistics, session negotiated login options, connection information, and connection negotiated login properties information.



Select a number from the **Session** menu to view details for different sessions. Multiple target sessions can run concurrently.

Basic Information

- **Session Status**
The status indicates session login and recovery information.
- **Session**

The session number appears on the iSCSI Target tab.

- Initiator Name
The name identifies the initiator used to log into the session.
- Target Name
The name identifies the target used in the session.
- Boot Enabled
A Yes or No parameter indicates if iSCSI boot is enabled for the target session.
- ISID
The ID is unique for each session.
- ISID Qualifier
The qualifier is the first two bytes of the ISID and is unique for each session.
- TSIH
The ID is unique for each target session.

Connection Information

Connection Information identifies the source, destination, and redirected IP addresses and ports.

- Connection Status
The status indicates if there is an active connection.
- Source IP Address
- Source Port
- Destination IP Address
- Destination Port
- iSCSI ConnectionID
The ID is uniquely assigned to each connection.
- Redirected Destination
- Redirected Destination Port

Session Statistics Information

- Command PDUs
A count is the number of Command PDUs transferred in the session.
- Connection TimeOut Errors
A count is the number of connections terminated due to a timeout during the session.
- Response PDUs
A count is the number of Response PDUs transferred in the session.
- DigestErrors
The count is the number of PDUs with header or data digest errors received in the session.
- XMT Data Octets
A count is the number of data octets transmitted by the local iSCSI node in the session.
- Recv Data Octets
A count is the number of data octets received by the local iSCSI node in the session.
- FormatErrors

A count is the number of iSCSI PDUs received with a format error.

Connection Negotiated Login Properties Information

The Authentication Method, Header Digest, and Data Digest indicate the parameters set for the target on the iSCSI Target Discovery tab (on page 32).

- Authentication Method
- Header Digest
- Data Digest
- MaxRecvSegment Length

The length indicates the maximum data segment in bytes that an initiator or target receives in an iSCSI PDU.

- TCPMSS

The length indicates the maximum segment size for the connection. The driver uses the parameter to determine the size of the data PDU whenever required to transmit the entire PDU with a single iSCSI header.

Session Negotiated Login Options

- Initial R2T

A Yes or No parameter indicates if the initiator waits for the target to solicit SCSI data before sending the initial request to transmit. If the parameter is No, the initiator can send a burst of unsolicited FirstBurstLength bytes.

- Immediate Data

A Yes or No parameter indicates if the initiator can append unsolicited data to a command.

- Max Connections

The number indicates the maximum target connections allowed in a single session.

- Max OutstandingR2T

The number indicates the maximum outstanding R2Ts per task in a session, each up to the MaxBurstLength bytes.

- FirstBurstLength

The length indicates the maximum amount of unsolicited data (in bytes) the initiator can send to the target during the execution of a single iSCSI command.

- MaxBurstLength

The length indicates the maximum amount of either unsolicited or solicited data the initiator can send in a single burst. Any amount of data exceeding the value must be solicited by the target.

- Error Recovery Level

The level indicates the error recovery parameter set for the session:

0—recovery only by session restart

1—recovery by re-issuing commands, data, or status

2—connection failure recovery

- Data PDU InOrder

The order is the sequence of data PDUs.

- Data Sequence InOrder

The order is the data sequence.

- Default Time To Wait

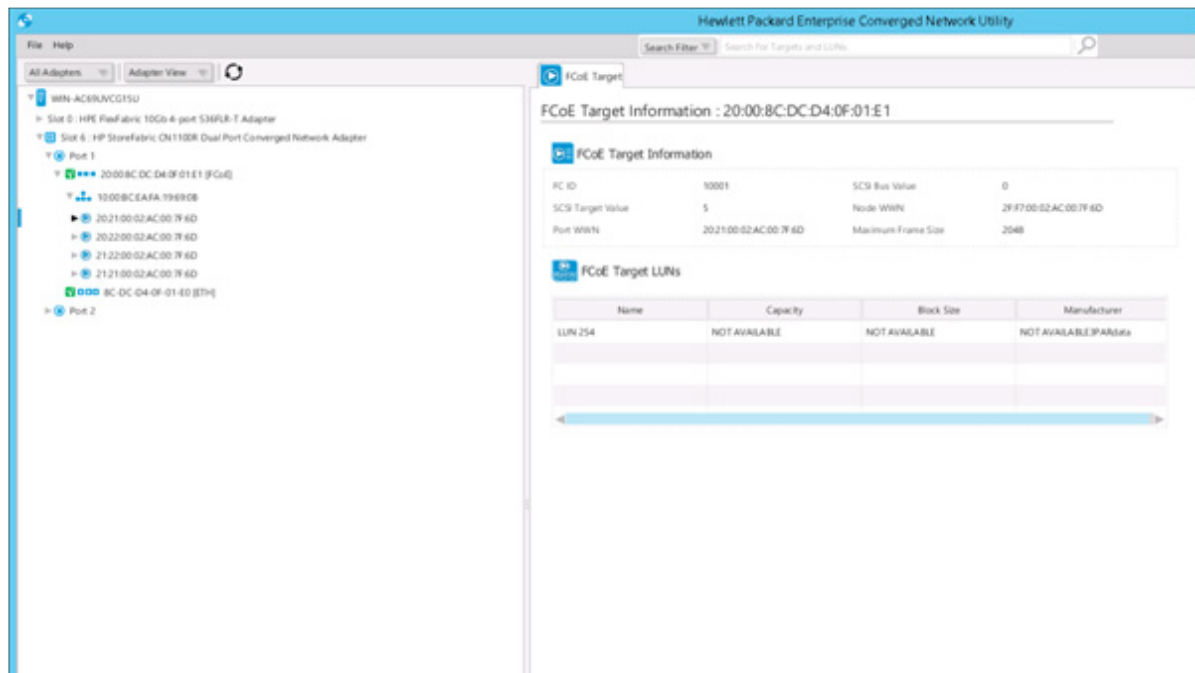
The default indicates the minimum time to wait, in seconds, before the initiator attempts to reconnect or reassign a connection or task that is dropped because of an unexpected connection termination or reset. The initiator and target negotiate the value.

- Default Time to Retain

The default indicates the maximum time, in seconds, to reassign a connection after the DefaultTimeToWait is elapsed. The initiator and target negotiate the value.

FCoE Target tab

The FCoE Target tab displays target information for the target selected in the tree.



Target Information

The Target Information includes target parameters that also display in the Network Information tab (on page 25).

- FC ID
- SCSI Bus Value
The value identifies the SCSI bus that is mapped to the target.
- SCSI Target Value
The value identifies the SCSI target that is mapped to the bus.
- Node WWN
- Port WWN
- Maximum Frame Size

Target LUNs

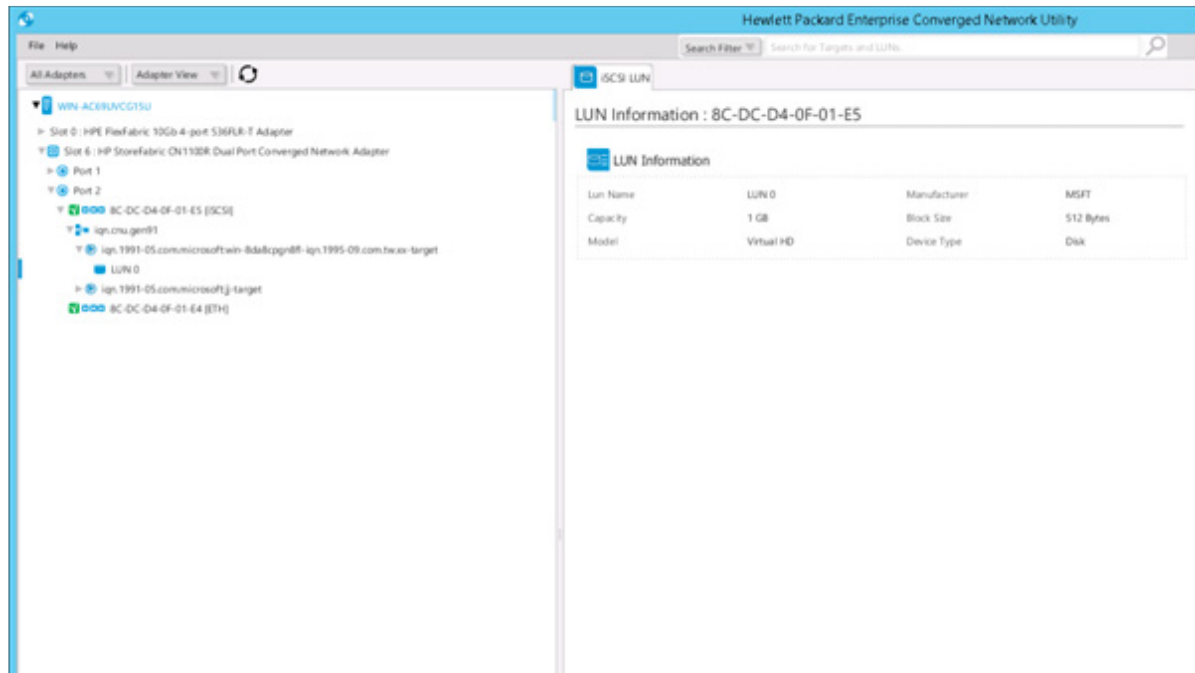
The Target LUNs information includes a summary of LUN parameters that also display on the FCoE Target LUN tab (on page 50).

- Name
- Capacity

- Block Size
- Manufacturer

iSCSI LUN tab

The iSCSI LUN tab displays LUN information for the specific LUN selected in the tree. Click the LUN in the tree to view the information for a specific LUN.



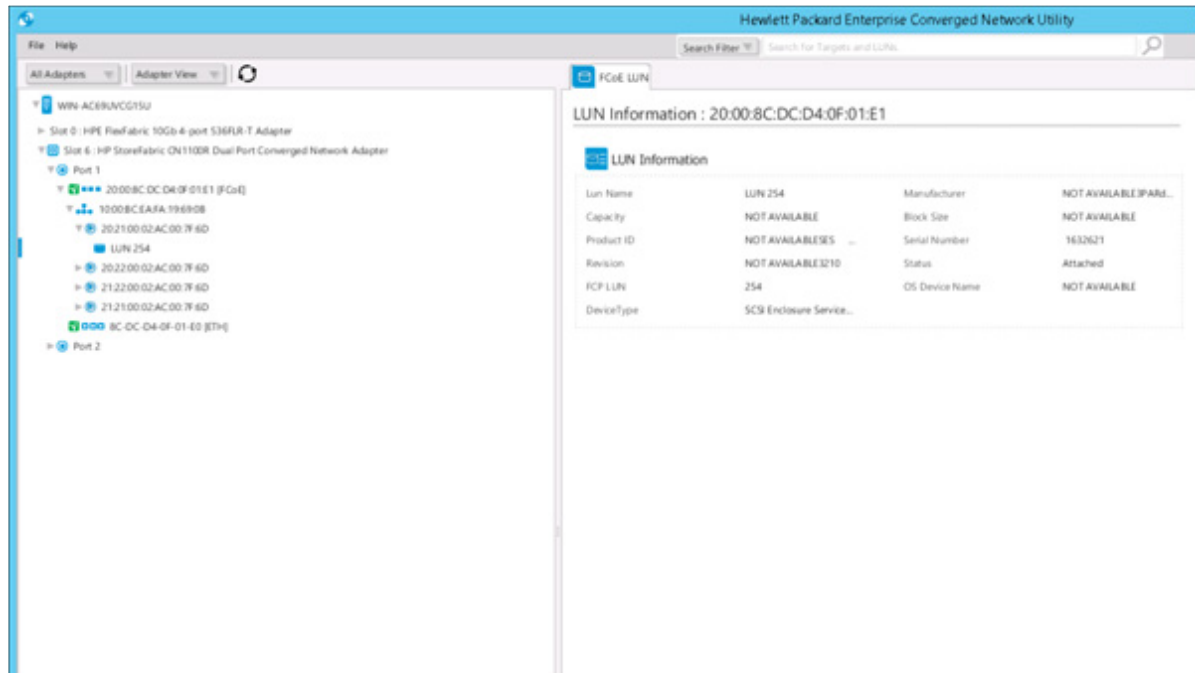
LUN Information

- Lun Name
- Manufacturer
- Capacity
- Block Size
- Model
- Device Type
- Status

The information also displays on the iSCSI Target tab.

FCoE Target LUN tab

The FCoE Target LUN tab displays LUN information for the specific LUN selected in the tree. Click the LUN in the tree to view the information for a specific LUN.



LUN Information


- **Lun Name**
The name identifies the target LUN.
- **Manufacturer**
The name indicates the manufacturer for the LUN.
- **Block Size**
The size is a logical unit block in bytes.
- **Capacity**
The capacity indicates the unformatted size of the LUN.
- **Product ID**
The ID is vendor-specific for the LUN.
- **Serial Number**
The number identifies the unique device LUN.
- **Revision**
The revision is a vendor-specific number assigned to the LUN.
- **Status**
A status icon displays status.
- **FCP LUN**
The adapter uses the FC identifier to map to the SCSI OS LUN.
- **OS Device Name**
The OS assigns a device name to the LUN.

- Device Type

The type indicates the category of the device.

The LUN Name, Manufacturer, Block Size, and Capacity also display on the FCoE Target tab (on page 48).

The following legend describes the LUN icon.

Icon	Status
	The LUN is attached.

Troubleshooting

iSCSI limitations

General limitations

iSCSI VLANs cannot be added, edited, or removed for an iSCSI-booted device.

The CNU requires a system reboot for iSCSI device configurations of an iSCSI-booted adapter.

Windows operating systems

Microsoft iSCSI Software Initiator version 2.0 or later must be installed on your system.

Linux operating systems

iSCSI initiator utilities and SG utilities need to be present.

Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website (<http://www.hpe.com/assistance>).
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website (<http://www.hpe.com/support/hpesc>).

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates, go to either of the following:
 - Hewlett Packard Enterprise Support Center **Get connected with updates** page (<http://www.hpe.com/support/e-updates>)
 - Software Depot website (<http://www.hpe.com/support/softwaredepot>)
- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page (<http://www.hpe.com/support/AccessToSupportMaterials>).



IMPORTANT: Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HP Passport set up with relevant entitlements.

Websites

- Hewlett Packard Enterprise Information Library (<http://www.hpe.com/info/enterprise/docs>)
- Hewlett Packard Enterprise Support Center (<http://www.hpe.com/support/hpesc>)
- Contact Hewlett Packard Enterprise Worldwide (<http://www.hpe.com/assistance>)

- Subscription Service/Support Alerts (<http://www.hpe.com/support/e-updates>)
- Software Depot (<http://www.hpe.com/support/softwaredepot>)
- Customer Self Repair (<http://www.hpe.com/support/selfrepair>)
- Insight Remote Support (<http://www.hpe.com/info/insightremotesupport/docs>)
- Serviceguard Solutions for HP-UX (<http://www.hpe.com/info/hpux-serviceguard-docs>)
- Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix (<http://www.hpe.com/storage/spock>)
- Storage white papers and analyst reports (<http://www.hpe.com/storage/whitepapers>)

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product.

If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website (<http://www.hpe.com/support/selfrepair>).

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

For more information and device support details, go to the Insight Remote Support website (<http://www.hpe.com/info/insightremotesupport/docs>).

Documentation feedback

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Acronyms and abbreviations

CEE

Converged Enhanced Ethernet

CHAP

Challenge Handshake Authentication Protocol

CNU

Converged Network Utility

CRC

cyclic redundant checks

DCB

Datacenter Bridging Capability

DCBX

Datacenter Bridging Capability Exchange protocol

DHCP

Dynamic Host Configuration Protocol

DID

destination identifier (ID)

ETS

enhanced transmission selection

FC

Fibre Channel

FCoE

Fibre Channel over Ethernet

FCP

Fibre Channel Protocol

FIP

FCoE Initialization Protocol

FLOGI

fabric login (Fibre Channel)

iLO

Integrated Lights-Out

IPv4

Internet Protocol version 4

IPv6

Internet Protocol version 6

iSCSI

Internet Small Computer System Interface

ISID

initiator session identifier (ID)

LUN

logical unit number

MAC

Media Access Control

MSS

maximum segment size

NDIS

network driver interface specification

NOS

network operating system

PDU

protocol data unit

PFC

power factor corrected

PFS

perfect forward secrecy

QoS

Quality of Service

R2T

request to transmit

RHEL

Red Hat Enterprise Linux

SG

SCSI generic

SLES

SUSE Linux Enterprise Server

SR-IOV

Single root I/O Virtualization

TSIH

target session identifier handle

UTF

Unicode Transformation Format

VLAN

virtual local-area network

WWN

World Wide Name

WWPN

worldwide port name

Documentation feedback

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