

# Marvell<sup>®</sup> QLogic<sup>®</sup> UEFI Human Interface Infrastructure

2690 Series Enhanced 16GFC, 2740/2760 Series 32GFC, 2770 Series Enhanced 32GFC, 2870 Series 64GFC Marvell QLogic Fibre Channel Adapters

User's Guide

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#### **Revision History**

## **Preface**

This guide describes the use of the Human Interface Infrastructure (HII) application to configure the Marvell® QLogic® Fibre Channel Adapters' parameters and boot-from-SAN settings.

#### **Supported Adapters**

This guide supports the following Marvell QLogic adapters:

■ QLE2690	■ QLE2742	■ QLE2870
■ QLE2692	■ QLE2764	■ QLE2872
■ QLE2694	■ QLE2770	■ QLE2874
■ QLE2694L	■ QLE2772	
■ QLE2740	■ QLE2774	

#### **Intended Audience**

This guide is for system administrators and those responsible for configuring motherboard devices and plug-in adapters.

#### **Related Materials**

For information about downloading documentation from the Marvell Web site, see "Downloading Updates" on page vii.

### **Documentation Conventions**

This guide uses the following documentation conventions:

	NOTE	provides additional information.
		nt indicates a hyperlink (jump) to a figure, table, or section in links to Web sites are shown in <u>underlined blue</u> . For example
	Table 9-2	lists problems related to the user interface and remote agen
	See "Inst	allation Checklist" on page 3-6.
	For more	information, visit <u>www.marvell.com</u> .
		nt indicates user interface elements such as a menu items, boxes, or column headings. For example:
<b></b>		<b>Start</b> button, point to <b>Programs</b> , point to <b>Accessories</b> , and <b>Command Prompt</b> .
<b>_</b>	Under <b>N</b> e	otification Options, select the Warning Alarms check box.
	in Couri out. For exa	er font indicates a file name, directory path, or screen ample:
<b></b>		to the root directory from anywhere in the file structure, type
Text	in Couri	er bold font indicates a command. For example:
	Issue the	<pre>following command: sh ./install.bin</pre>
<b>Се</b> у	names an	d key strokes are indicated with UPPERCASE:
	Press C1	RL+P.
	Press the	e UP ARROW key.
	in <i>italics</i> in mple:	ndicates terms, emphasis, variables, or document titles. For
		nplete listing of license agreements, refer to the <i>QLogic End User License Agreement</i> .
	What are	shortcut keys?
		the date type <i>mm/dd/yyyy</i> (where <i>mm</i> is the month, <i>dd</i> is the yyyy is the year).
Topi	c titles bet	ween 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.

### **Technical Support**

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

#### **Downloading Updates and Documentation**

To download firmware, software, and documentation:

- 1. Go to www.marvell.com.
- 2. Click **Support**, and then under **Tools & Resources**, click **Driver Downloads**.
- 3. In the Marvell Drivers window:
  - a. (MUST) Under CATEGORY, select either FIBRE CHANNEL ADAPTERS or CONVERGED NETWORK ADAPTERS.
  - b. (optional) Under PLATFORM/OS, select the platform/OS that matches your system.
  - c. (optional) Under PART NUMBER, select the part number for your adapter.
  - d. (optional) Under KEYWORDS, type a keyword describing what you are looking for.
- 4. Click Apply.
- 5. Locate the firmware (boot code), software (drivers, management tools), or document (documentation for user's guides) you need, and then do one of the following:
  - a. Click the blue text in the DESCRIPTION column.
  - b. Click the arrow in the DOWNLOAD column.

#### NOTE

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

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

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

# 1 Using HII

This guide provides procedures for using the Human Interface Infrastructure (HII) user interface, including:

- "Starting HII" on page 2
- "Configuring Basic Port Parameters" on page 4
- "Configuring Advanced Port Parameters" on page 6
- "Configuring Boot-from-SAN Parameters and Drive Mapping" on page 9
- "Configuring the WWN Database" on page 12
- "Configuring NVMe Parameters" on page 13
- "Displaying Adapter Port Information" on page 16

### **Starting HII**

To start the HII application, open the Device Manager window for your platform. For information about launching the Device Manager, consult the user's guide for your platform.

Figure 1 shows an example of a Device Manager window listing system settings and adapters (one entry for each port) that you can manage using the HII application.

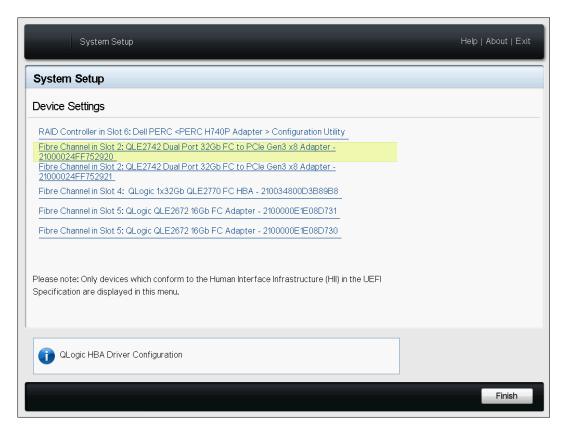


Figure 1. Device Manager Window: System Settings

- To select a device, press the press the UP ARROW or DOWN ARROW keys.
- To configure a device using HII, place the selector on an adapter port, and then press ENTER.
- To exit the Device Manager, press the ESC key.

After you select an adapter port and press ENTER, the HII application opens the Main Configuration Page (Figure 2) from which you can perform the following tasks:

- Configure operational parameters
- Configure advanced operational parameters
- Configure boot-from-SAN parameters and drive mapping
- Configure the WWN database
- Configure NVMe parameters
- Display adapter information



Figure 2. HII Main Configuration Page

- To select a parameter, press the UP ARROW or DOWN ARROW keys.
- To modify the selected parameter, press ENTER.

## **Configuring Basic Port Parameters**

To configure basic port parameters, select **Adapter Settings** from the Main Configuration Page (see Figure 2 on page 3), and then press ENTER. Figure 3 is an example of an Adapter Settings window showing the operational parameters.

- To select a parameter, press the UP ARROW or DOWN ARROW keys.
- To modify the selected parameter, press ENTER.



Figure 3. Adapter Settings Window

Table 1 describes the basic port parameters.

Table 1. Basic Port Parameters

Parameter	Default	Description
Enable Hard Loop ID	Disabled	Applies (Enabled) the hard loop identifier to the adapter port that is specified in the <code>Hard Loop ID</code> parameter. The <code>Disabled</code> setting leaves the adapter hard loop identifier undefined.
		This parameter applies only for speeds of 8Gbps and lower when the adapter is in loop mode.
Hard Loop ID	0	Specifies the hard loop identifier applied to the adapter port when the Enable Hard Loop ID parameter is enabled.
Reset Delay	5	Specifies the number of seconds to delay loop activity after a loop reset.
FC Tape	Enabled	Enables or disables FCP-2 recovery for Fibre Channel tape devices.

Table 1. Basic Port Parameters (Continued)

Parameter	Default	Description
Frame Size	2,048	Specifies the maximum frame size in bytes.  The 2,112 frame size is supported only on the QLE2780 Series Adapters.
Connection Option	Loop Preferred, Otherwise Point To Point	Specifies the connection type.  Loop Only is not supported on QLE2800 Series Adapters.
Data Rate	Auto	Specifies the Fibre Channel data rate.  QLE2800 adapters support the following values: 16Gbps, 32Gbps, 64Gbps, and Auto.  QLE2700 adapters support the following values: 8Gbps, 16Gbps, 32Gbps, and Auto.  QLE2690 adapters support the following values: 4Gbps, 8Gbps, 16Gbps, and Auto.  The Auto setting tells the adapter to match the detected

## **Configuring Advanced Port Parameters**

To configure advanced port parameters, select **Advanced Settings** from the Main Configuration Page (see Figure 2 on page 3), and then press ENTER. Figure 4 is an example of an Advanced Settings window showing the advanced port parameters.

- To select a parameter, press the UP ARROW or DOWN ARROW keys.
- To modify the selected parameter, press ENTER.

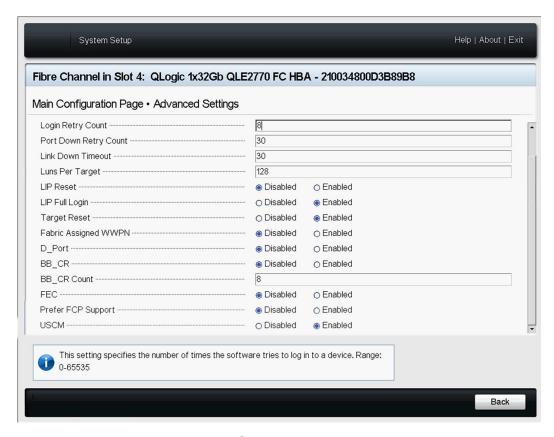


Figure 4. Advance Settings Window

Table 2 describes the advanced port parameters.

Table 2. Advanced Port Parameters

Parameter	Default	Description
Login Retry Count	8	Specifies the number of times that the adapter port will attempt to log into a device.
Port Down Retry Count	30	Specifies the time interval in seconds over which the adapter will reissue a command to a port whose status is down.
Link Down Timeout	30	Specifies the time interval in seconds that the adapter will wait for the link to recover.
LUNs Per Target	128	Specifies the number of LUNs per target device for older storage arrays that do not support the Report LUNs SCSI command. This parameter is ignored when the Report LUNs command is supported.
LIP Reset	Disabled	Specifies the type of LIP reset that is applied when the operating system resets the bus. When enabled, this parameter applies a global LIP reset to clear target device reservations. When disabled, this parameter applies a global LIP reset with full login.
LIP Full Login	Enabled	Enables or disables the adapter to log in to all ports after a LIP reset.
Target Reset	Enabled	Enables or disables the UEFI driver to issue a Target Reset command to all devices on the loop when a SCSI Bus Reset command is issued.
Fabric Assigned WWPN	Disabled	FOS 9.2.0 or earlier: Fabric-assigned worldwide port name (WWPN) allows you to enable an adapter port to use a switch-assigned WWPN rather than the physical adapter port WWPN for communication.
D_Port	Disabled	D_Port (diagnostic port) mode allows the adapter to identify and isolate link failures resulting from faulty modules (link, cable, or SFP). D_Port mode requires a Brocade® Fibre Channel switch with the ClearLink® D_Port feature installed. For additional D_Port details, see the Brocade switch documentation.
BB_CR	Enabled	Buffer-to-buffer credit recovery (BB-CR) enables two FC peer ports (N_Port, F_Port, or E_Port) to periodically send and receive the quantity of receiver ready (R_RDY) signals transmitted. Enable the BB-CR feature to allow the peer port to recover from possible R_RDY signals lost over a lossy link.

Table 2. Advanced Port Parameters (Continued)

Parameter	Default	Description
BB_CR Count	8	Specifies the quantity of frame RX/TX counters maintained by the port to track R_RDYs and frames received.
FEC	Disabled	Forward error correction (FEC) improves performance and link integrity to support higher end-to-end data rates by automatically recovering from transmission errors. This setting applies only to 16Gbps speeds.
		At 32Gbps, FEC is mandatory and enabled, and does not require any user configuration. At 16Gbps, FEC is optional and does require user configuration. At 8Gbps, FEC is not supported.
Prefer FCP	Disabled	Specifies where to login on storage devices.
Support		This parameter applies to storage devices that support FCP and NVMe. Enable this parameter to log into FCP LUNs on the storage device. Disable this parameter to log into NVMe namespaces on the storage device.
USCM	Enabled	Enable Universal SAN Congestion Mitigation. The USCM feature helps detect and prevent both potential or actual congestion occurrences in the FC SAN environment.

#### NOTE

Universal SAN congestion mitigation (USCM) is supported only on the QLE2690, QLE2692, QLE2694, QLE2694L, QLE2770, QLE2772, QLE2774, QLE2870, QLE2872, and QLE2874 adapters.

- SAN congestion management (SCM) is a common noun, and describes a standards-based Fibre Channel technology.
- Universal SAN Congestion Mitigation (USCM) is Marvell's IP, and describes Marvell's capabilities that encompass SCM and additional functionalities to further assist users.

# **Configuring Boot-from-SAN Parameters and Drive Mapping**

To configure boot-from-SAN port parameters and drive mapping, select **Boot Settings** from the Main Configuration Page (see Figure 2 on page 3), and then press ENTER.

- To select a parameter, press the UP ARROW or DOWN ARROW keys.
- To modify the selected parameter, press ENTER.

#### **Boot Settings**

Figure 5 is an example of a Boot Settings window showing the boot-from-SAN port parameters.

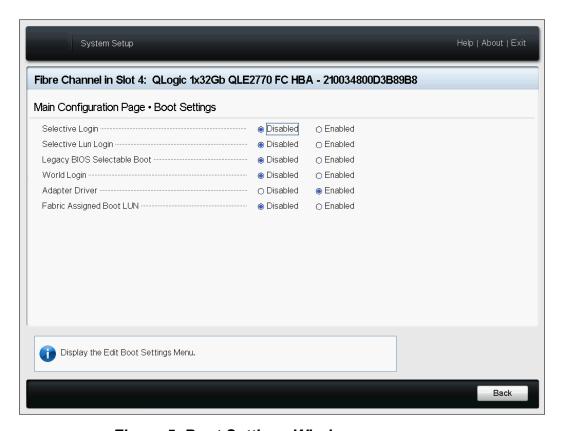


Figure 5. Boot Settings Window

#### **Port Login Methods**

The Boot Settings window provides four login modes. The login mode that is enabled determines which drives are mapped by UEFI.

- **Force World Login** forces all drives to be mapped by UEFI. This mode takes precedence over the other login modes.
- Selective Login allows you to specify which drives are mapped by UEFI. The WWN Database window (see Figure 6 on page 12) contains the drives that will be mapped. This mode has medium precedence.
- World Login is used when all other login modes are disabled. In this mode, all drives will be mapped by UEFI.
- Fabric Assigned Boot LUN obtains drive information from the FC switch, which must support the Fabric Assigned Boot LUN feature. This mode has medium precedence.

#### **Boot-from-SAN and Drive Mapping**

Table 3 describes the boot-from-SAN and drive mapping parameters.

Table 3. Boot-from-SAN and Drive Mapping Parameters

Parameter	Default	Description
Selective Login	Disabled	Login method that restricts device logins to the adapter port to those devices in the WWN Database (Enabled), or allows any device to log in (Disabled).
Selective LUN Login <sup>a</sup>	Disabled	Login method that restricts LUN logins to the adapter port to those LUNs associated with a device in the WWN Database (Enabled), or allows any LUN associated with a device to log in (Disabled).
Legacy BIOS Selectable Boot	Disabled	Controls boot drive selection in Legacy BIOS mode. For additional information, refer to the HBA BIOS documentation.
World Login	Disabled	Login method that enables or disables forced world login. When enabled, this parameter allows all devices to log in to the adapter, overriding all other login methods. Enabling <code>WorldLogin</code> is typically done to troubleshoot Fibre Channel link and target device issues, and can significantly increase the boot time if there are many devices connected to the adapter.

Table 3. Boot-from-SAN and Drive Mapping Parameters (Continued)

Parameter	Default	Description
Adapter Driver	Disabled	Enables or disables the UEFI driver. The boot time is shorter when the UEFI driver is disabled. To boot from a Fibre Channel disk, the UEFI driver must be enabled.
Fabric Assigned Boot LUN	Disabled	FOS 9.2.0 or earlier: Fabric-based boot LUN discovery (F-BLD) allows you to eliminate the manual boot LUN configuration process of each adapter from individual servers. Instead, the adapters can query the SAN fabric at boot time to retrieve boot LUN configuration information. When the boot LUN configuration is available from the fabric, the server retrieves the information and boots from the SAN.

<sup>&</sup>lt;sup>a</sup> If Selective LUN Login is Disabled, LUNs are ignored. All LUNs are mapped for each WWPN entry when Selective Login is Enabled.

If Selective LUN Login is Enabled, the one LUN associated with the WWPN entry is mapped (when Selective Login is Enabled).

## **Configuring the WWN Database**

To configure the list of storage devices in the WWN database, select **WWN Database** from the Main Configuration Page (see Figure 2 on page 3), and then press ENTER. Figure 6 is an example of a WWN Database window showing the list of storage device WWPNs and storage device LUNs.

- To move the selector about in the parameter list, press the press the UP ARROW or DOWN ARROW keys.
- To modify the selected parameter, press ENTER.



Figure 6. WWN Database Window

### **Configuring NVMe Parameters**

To configure NVMe parameters, select **NVMe Settings** from the Main Configuration Page (see Figure 2 on page 3), and then press ENTER.

- To select a parameter, press the UP ARROW or DOWN ARROW keys.
- To modify the selected parameter, press ENTER.



Figure 7. NVMe Settings

Each mapped NVMe storage device requires the following fields to be set:

- Storage
- Storage WWPN
- Storage NQN
- Storage Controller ID
- Storage Namespace ID

Up to eight storage devices can be mapped.

NVMe storage device configuration values can be obtained from the NVMe storage configuration tool. Storage WWPN, WWNN, and NQN information is provided by the configuration tool.

Table 4 describes the fields on the HBA Configuration Page.

Table 4. NVMe Configuration Page Settings

Setting	Description
FC NVMe	Enables the NVMe storage feature, which can Boot from SAN. When enabled, the driver searches for NVMe storage based on the configuration settings described in this table.
Host NQN	This field identifies the FC adapter. NVMe storage devices typically use this value in access lists. The default value of this field is based on the system UUID. All FC adapters in a system will have the same default Host NQN. This field can be changed, but many storage arrays expect a specific Host NQN format. See the NVMe Base spec for more details about the Host NQN format. The OS driver also uses a Host NQN. The UEFI driver and OS driver must use the same Host NQN. To view the OS driver Host NQN value, use the QCC CLI tool. Use <code>qaucli -i</code> to display the OS driver Host NQN value. If the Host NQN starts with <code>nqn.2014-08.org.nvmexpress:uuid:</code> , the UUID value will be automatically populated by the driver and cannot be changed. User defined Host NQNs must not start with <code>nqn.2014-08.org.nvmexpress:uuid:</code> . An example of a user defined Host NQN is: <code>nqn.2014-08.com.example:nvme.host.sys.xyz</code> .
Host ID	This field identifies the FC adapter.
	The Host ID is a sequence of 32 hex digits (non-hex characters cannot be used).
	Example: 00112233445566778899AABBCCDDEEFF.
	The default value of this field is based on the system UUID. If the Host NQN field starts with nqn.2014-08.org.nvmexpress:uuid: and the UUID changes, the Host ID will be updated to match the new UUID.
Storage 0	Enables a specific NVMe storage device. When enabled, the device will be mapped by the UEFI FC driver.

Table 4. NVMe Configuration Page Settings (Continued)

Setting	Description
Storage 0 WWPN	The World Wide Port Name of an NVMe storage device. The WWPN can be obtained from the NVMe storage device configuration tool.
Storage 0 WWNN	The World Wide Node Name of an NVMe storage device. This field is optional. A value of 0 means ignore this field. The WWNN can be obtained from the NVMe storage device configuration tool.
Storage 0 NQN	Identifies an NVMe storage Subsystem. There can be multiple Subsystems attached to an NVMe storage device WWPN. The Storage NQN can be obtained from the NVMe storage device configuration tool.
Storage 0 Controller ID	Identifies a Controller attached to an NVMe Subsystem. There can be multiple Controllers attached to an NVMe Subsystem. In most cases, FFFF is the proper value for this field. A value of FFFF means any available Controller.
Storage 0 Namespace ID	Identifies a Namespace attached to an NVMe Controller. There can be multiple Namespaces attached to an NVMe Controller. The Namespace ID can be obtained from the NVMe storage device configuration tool.

For additional information on setting up NVMe Boot-from-SAN when using ESX 7.0 or ESX 8.0 and Citrix Hypervisor, see:

- User's Guide—Marvell® QLogic® Marvell QLogic Fibre Channel Adapters 2600 Series (part number FC0054609-00).
- User's Guide—Marvell® QLogic® Fibre Channel Adapters 2700 Series (part number 83270-546-00).
- User's Guide—*Marvell*® *QLogic*® *Fibre Channel Adapters 2800 Series* (part number MA2854601-00).

### **Displaying Adapter Port Information**

To view adapter information, select **Adapter Information** from the Main Configuration Page (see Figure 2 on page 3), and then press ENTER. The Adapter Information window (Figure 8) presents adapter and port information. To return to the main menu, press ESC.



Figure 8. Adapter Information Window

Table 5 describes the adapter port information settings.

Table 5. Adapter Port Information

Parameter	Description
Device Path	UEFI device path of the adapter port
WWPN	World wide port name
WWNN	World wide node name
Multiboot Version	Multiboot version number
UEFI Driver Version	UEFI driver version number
BIOS Version	BIOS version number
FCode Version	FCode version number This parameter is not supported on 2770 and 2800 Series Adapters.
Firmware Version	Adapter firmware version number

# **A** Revision History

Document Revision History			
Revision A, June 28, 2016			
Revision B, January 8, 2018			
Revision C, January 18, 2019			
Revision D, September 20, 2019			
Revision E, November 22, 2019			
Revision F, May 1, 2020			
Revision G, February 5, 2021			
Revision H, February 12, 2021			
Revision I not released. All updates from revision I included in revision J			
Revision J, August 10, 2021			
Revision K, March 22, 2022			
Revision L, October 12, 2022			
Revision M, March 25, 2023			
Revision N, June 10, 2024			
Changes	Sections Affected		
Updated Table 2 - Added FOS 9.2.0 or earlier to Fabric Assigned WWPN.	"Configuring Advanced Port Parameters" on page 6		
Updated Table 3 - Added FOS 9.2.0 or earlier to Fabric Assigned Boot LUN.	"Boot-from-SAN and Drive Mapping" on page 10		
Updated Table 4 - Updated description for FC NVMe.	"NVMe Configuration Page Settings" on page 14		



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