

Application Note

Enabling Storage Offloads on Dell® and Marvell® FastLinQ® 41000 Series Adapters

This application note describes how to use NIC partitioning (NPar) to configure Marvell FastLinQ 41000 Series Adapters for iSCSI or FCoE storage offloads on Dell 14G Servers.

- FCoE storage offloads use partition 2.
- iSCSI storage offloads use partition 3 (on dual port adapters) and partition 2 (on quad port adapters).

The following procedures use the LIFECYCLE CONTROLLER; the graphics are from family firmware version (FFV) 14.10.07. Ensure that you are using the latest adapter firmware from the Dell driver download Web site.

¹ Configuring FCoE Storage Offloads

To configure 41000 Series Adapters for FCoE storage offloads:

1. From the LIFECYCLE CONTROLLER (Figure 1-1), select System Setup.



Figure 1-1. System Setup

2. On the System Setup page (Figure 1-2), select Advanced Hardware Configuration.



Figure 1-2. System Setup

3. On the System Setup Main Menu (Figure 1-3), select **Device Settings**.

System Setup	
System Setup Main Menu	
System BIOS	
iDRAC Settings	
Device Settings	
-	
Select to configure device settings.	

Figure 1-3. System Setup Main Menu

4. On the Device Settings page (Figure 1-4), select the 41000 Series Adapter port you want to configure.

DelLEMC System Setup	Help About Exit
System Setup	
Device Settings	
RAID Controller in Slot 3: Dell PERC <perc adapter="" h740p=""> Configuration Utility</perc>	•
Integrated NIC 1 Port 1: Broadcom Gigabit Ethernet BCM5720 - 80:18:44:E5:8B:70	
Integrated NIC 1 Port 2: Broadcom Gigabit Ethernet BCM5720 - 80:18:44:E5:8B:71	
Integrated NIC 1 Port 3: Broadcom Gigabit Ethernet BCM5720 - 80:18:44:E5:8B:72	
Integrated NIC 1 Port 4: Broadcom Gigabit Ethernet BCM5720 - 80:18:44:E5:8B:73	
NIC in Slot 4 Port 1: QLogic CNA 10 Gigabit Ethernet QLE8262 - 00:0E:1E:37:94:08	
NIC in Slot 4 Port 2: QLogic CNA 10 Gigabit Ethernet QLE8262 - 00:0E:1E:37:94:09	
NIC in Slot 6 Port 1: QLogic 25GE 2P QL41262HxCU-DEt&dapter - 34:80:0D:13:02:AE	
NIC in Slot 6 Port 2: QLogic 25GE 2P QL41262HxCU-DE Adapter - 34:80:0D:13:02:AF	
Fibre Channel in Slot 2: QLogic QLE2690 16Gb FC Adapter - 21000024FF134575	
Configuration interface for QLogic 25GE 2P QL41262HxCU-DE Adapter	
PowerEdge R840 Service Tag : H8GRXM2	Finish

Figure 1-4. Device Settings Page

NOTE

NPAR or NPAR-EP mode is enabled per adapter and enables NPAR/NPAR-EP on all ports on the adapter.

NPAR/NPAR-EP must be enabled to configure storage offloads on Dell versions of the adapter.

5. On the adapter port Main Configuration Page (Figure 1-5), select **Device** Level Configuration.

D≪LLE MC System Setup		Help About Exit
NIC in Slot 6 Port 1: QLogic 25GE 2P QL41262	2HxCU-DE Adapter - 34:80:0D:13:02:AE	
Main Configuration Page		
Firmware Image Properties		
Data Center Bridging (DCB) Settings Device Name	QLogic 25GE 2P QL41262HxCU-DE Adapter	
Chip Type PCI Device ID	BCM57940S A2 8070	
PCI Address	5B:00:00	
Link Status	Disconnected 34:80:0D:13:02:AE	
U View and configure global device level parameters	such as Virtualization Mode.	
PowerEdge R840 Service Tag: H8GRXM2	Defa	ult Finish

Figure 1-5. Adapter Port Main Configuration Page

6. From the Virtualization Mode menu (Figure 1-6), select either **NPar** or **NPar** + **SR-IOV**, as appropriate.



Figure 1-6. Device Level Configuration Page

After NPar is enabled, you can enable NParEP mode (Figure 1-7).

Sixteen physical function (PF) NParEP mode enables 8 PFs, or partitions per port, on a dual-port 41000 Series Adapter, or 4 PFs per port on a quad-port 41000 Series Adapter, for a total of 16 PFs per adapter.

Eight PF NPar mode enables four PFs per port on a dual-port 41000 Series Adapter, or two PFs per port on a quad-port 41000 Series Adapter, for a total of eight PFs per adapter.

On the quad port adapters, in NPar/NParEP mode, FCoE-Offload and iSCSI-Offload are controlled only on the second PF. This configuration is different from the dual port adapters, which have the FCoE-Offload on the second PF, and iSCSI-Offload on the third PF, of each physical port. However, both dual and quad port adapters support only one storage offload per physical port.

NIC in Slot 6 Port 1: QLogic 25GE 2P QL41262HxCU-DE Adapter - 34:80:0D:13:02:AE			
Main Configuration Page • Device Level Configuration			
Virtualization Mode	NPar		
NParEP Mode	O Enabled		
UEFI Driver Debug Level	10		

Figure 1-7. Device Level Configuration Page, Enabling NParEP Mode

- 7. Select **Enable** or **Disable** to NParEP mode, as appropriate.
- 8. Click the **Back** button at the bottom of the page.

9. On the Main Configuration Page (Figure 1-8), select **NIC Partitioning Configuration**.

This selection is not visible until NPar mode has been enabled in Step 6.

DelLEMC System Setup		Help	About Exit	
NIC in Slot 6 Port 1: QLogic 25GE 2P QL41262HxCU-DE Adapter - 34:80:0D:13:02:AE				
Main Configuration Page				
Firmware Image Properties			•	
Device Level Configuration				
NIC Configuration				
Data Center Bridging (DCB) Settings				
NIC Partitioning Configuration				
Device Name	QLogic 25GE 2P QL41262HxCU-DE Ada	oter		
Chip Type	BCM57940S A2			
PCI Device ID	8070			
PCI Address	5B:00:00			
Blink LEDs	- 0			
Link Status	Disconnected		-	
Configure the NIC Partitions				
PowerEdge R840		Default	Finish	
Service Tag: H8GRXM2		and the second second second		

Figure 1-8. Adapter Port Main Configuration Page

10. Select **Partition 2 Configuration** to enable FCoE (Figure 1-9).



Figure 1-9. Adapter Port Main Configuration Page, NIC Partitioning Configuration

11. Click the **Enabled** button for FCoE Mode (Figure 1-10), which is disabled by default.

lain Configuration Page • NIC Partition	ing Configuration • Partition 2 Configuration	
NIC Mode	Enabled Disabled Disabled Olisabled Olisabled ORCE OlivARP Finabled Olisabled Olisabled	2

Figure 1-10. Adapter Port Main Configuration Page, Partition Configuration

When FCoE Mode is enabled, NIC Mode, NIC+RDMA Offload Mode, RDMA Operational Mode, and iSCSI-Offload Mode (quad port adapters) are disabled.

NOTE

All but the first partition of a physical port can be disabled (hidden from the OS) by disabling all of the modes on this respective page of the desired partition. Therefore, the number of ports visible to the OS partitions can be tailored from one to the maximum allowed. Additionally, only one personality is allowed per partition. The personalities are NIC/NIC+RDMA-Offload on any partition, FCoE-Offload on the second partition, or iSCSI-Offload on either the third partition (dual port adapters) or the second partition (quad port adapters) (see Figure 2-4). 12. Click **Back** to return to the NIC Partitioning Configuration Page, and then click **Back** again to return to the Main Configuration page (Figure 1-11).

The FCoE Configuration option is now visible on the Main Configuration Page for that port.

DelLEMC System Setup		Help	About Exit
NIC in Slot 6 Port 1: QLogic 25GE 2P QL4126	2HxCU-DE Adapter - 34:80:0D:13:02:AE		
Main Configuration Page			
Firmware Image Properties Device Level Configuration NIC Configuration Data Center Bridging (DCB) Settings NIC Partitioning Configuration			
FCoE Configuration Device Name Chip Type PCI Device ID PCI Address	QLogic 25GE 2P QL41262HxCU-DE Adapter BCM57940S A2 8070 58:00:00		
View and configure FCoE parameters. PowerEdge R840 Service Tag : H0GRXM2		Default	Finish

Figure 1-11. Main Configuration Page

13. If you want FCoE boot from LUN, click **FCoE Configuration** (Figure 1-11).

14. If you want FCoE remote boot from LUN, on the Main Configuration Page, select **FCoE Configuration**, and then configure the FCoE general parameters, boot LUNs, and VLAN ID (Figure 1-12). Click **Back** when you are done.

/irtual LAN ID		
Connect 1		
Norld Wide Port Name Target 1	00:00:00:00:00:00	
Boot LUN 1		
Connect 2	O Enabled	
Norld Wide Port Name Target 2	00:00:00:00:00:00:00	
Boot LUN 2		
Connect 3	⊖ Enabled	
Norld Wide Port Name Target 3	00:00:00:00:00:00:00	
Boot LUN 3	0	

Figure 1-12. Main Configuration Page - FCoE Configuration

15. On the Main Configuration Page, click **Finish**. When the Saving Changes Warning box appears, click **Yes** (Figure 1-13).



Figure 1-13. Saving Changes

16. When the Success box appears, click **OK** (Figure 1-14).



Figure 1-14. Changes Saved Successfully

17. Exit LIFECYCLE CONTROLLER and reboot for the changes to take effect (Figure 1-15).

DelLEMC System Setup		Help About Exit
System Setup		
System BIOS IDRAC Settings Device Settings	Warning Confirm Exit Are you sure you want to exit and reboot? No	
Select to configure system BIOS s	ettings.	
PowerEdge R840 Service Tag : H8GRXM2		Finish

Figure 1-15. Exit and Reboot

² Configuring iSCSI Storage Offloads

To configure 41000 Series Adapters for FCoE storage offloads:

- 1. Complete Steps 1 through 9 in "Configuring FCoE Storage Offloads" on page 1.
- 2. Do one of the following:
 - □ For dual port adapters, select **Partition 3 Configuration** to enable iSCSI (Figure 2-1).
 - For quad port adapters, select Partition 2 Configuration to enable iSCSI (Figure 2-1).

DIFLEMC System Setup		Help About Exit
NIC in Slot 6 Port 1: QLogic 25GE	2P QL41262HxCU-DE Adapter - 34:80	0D:13:02:AE
Main Configuration Page • NIC Parti	tioning Configuration	
Global Bandwidth Allocation		
Partition 1	Enabled	
Partition 2	Enabled	
Partition 3	Enabled	
Partition 4	Enabled	
Partition 1 Configuration		
Partition 2 Configuration		
Partition 3 Configuration		
Partition 4 Configuration		
PowerEdge R840 Service Tag : H8GRXM2		Back

Figure 2-1. Adapter Port Main Configuration Page, NIC Partitioning Configuration

3. Click the **Enabled** button for iSCSI Offload Mode (Figure 2-2 for dual port adapters and Figure 2-3 for quad port adapters), which is disabled by default.

D≪LLE MC System Setup	Help About Exit
NIC in Slot 6 Port 1: QLogic 25GE 2P	QL41262HxCU-DE Adapter - 34:80:0D:13:02:AE
Main Configuration Page • NIC Partition	ing Configuration • Partition 3 Configuration
NIC Mode NIC + RDMA Mode RDMA Operational Mode ISCSI Offload Mode ISCSI Offload MAC Address Virtual ISCSI Offload MAC Address PCI Device ID	
PCI Address	58:00:04 16
Specify use of the partition for iSCSI off single offload mode enabled,please disat	load storage traffic.Device shall have only a ple FCoE Offload, to (Press <f1> for more help)</f1>

Figure 2-2. Dual Port Adapter Port Main Configuration Page, Partition Configuration

Main Configuration Page • NIC Partitioning Configuration • Partition 2 Configuration				
NIC Mode	O Enabled	Disabled		
NIC + RDMA Mode	Enabled	O Disabled		
RDMA Operational Mode	O RoCE	O iWARP	● RoCE/iWARP	
FCoE Mode	 Enabled 	Oisabled		
iSCSI Offload Mode	 Enabled 	Oisabled		
MAC Address	F4:E9:D4:70	D:D0:74		
Virtual MAC Address	00:00:00:00:	00:00		
PCI Virtual Functions Advertised	16			
PCI Device ID	8070			
PCI Address	AF:00:04			

Figure 2-3. Quad Port Adapter Port Main Configuration Page, Partition Configuration

When iSCSI Offload Mode is enabled, NIC Mode, NIC+RDMA Offload Mode, RDMA Operational Mode, and FCoE Mode (quad port adapters) are disabled.

NOTE

All but the first partition of a physical port can be disabled (hidden from the OS) by disabling all of the modes on this respective page of the desired partition. Therefore, the number of ports visible to the OS partitions can be tailored from one to the maximum allowed. Additionally, only one personality is allowed per partition. The personalities are NIC/NIC+RDMA-Offload on any partition, FCoE-Offload on the second partition, or iSCSI-Offload on either the third partition (dual port adapters; Figure 2-2) or the second partition (quad port adapters; Figure 2-3).

4. Click **Back** to return to the NIC Partitioning Configuration Page, and then click **Back** again to return to the Main Configuration page (Figure 2-4).

The iSCSI Configuration option is now visible in the Main Configuration Page for that port.

QLogic 25GE 2P QL41262HxCU-DE Adapter	
BCM57940S A2	
8070	
5B:00:00	
	QLogic 25GE 2P QL 41282HxCU-DE Adapter BCM57940S A2 8070 5B:00x00

Figure 2-4. Main Configuration Page

5. If you want iSCSI remote boot, on the Main Configuration Page, select **iSCSI Configuration**, and then configure the iSCSI general parameters, initiator parameters, and target parameters (Figure 2-5). Click **Back** when you are done.



Figure 2-5. Main Configuration Page - iSCSI Configuration

6. On the Main Configuration Page, click **Finish**. When the Warning box appears, click **Yes** (Figure 2-6).



Figure 2-6. Saving Changes

7. When the Success box appears, click **OK** (Figure 2-7).



Figure 2-7. Changes Saved Successfully

 Exit LIFECYCLE CONTROLLER and reboot for the changes to take effect (Figure 2-8).

DOLLEMC System Setup		Help About Exit
System Setup		
System Setup Main Menu		
System BIOS DRAC Settings Device Settings	Warning Confirm Exit Are you sure you want to exit and reboot? Yes No	
Select to configure system PowerEdge R840 Service Tag::H8GRXM2	BIOS settings.	Finish

Figure 2-8. Exit and Reboot

Document Revision History

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Changes

Added instructions for quad port adapters.



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