

PEM-FDR 56 Gb/s FDR InfiniBand card **User Guide**

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About this guide

This user guide contains the information you need when installing and configuring the server management board.

How this guide is organized

This guide contains the following parts:

Chapter 1: Product introduction

This chapter describes the PEM-FDR Ethernet card features and the new technologies it supports.

Chapter 2: Firmware update

This chapter provides information in updating the firmware of PEM-FDR card.

Chapter 3: Driver installation

This chapter provides instructions in installing the PEM-FDR card's drivers on different operating systems.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. ASUS websites

The ASUS website provides updated information on ASUS hardware and software products. Refer to the ASUS contact information.

2. Optional documentation

Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

Conventions used in this guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.



DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.



CAUTION: Information to prevent damage to the components when trying to complete a task.



IMPORTANT: Instructions that you MUST follow to complete a task.



NOTE: Tips and additional information to help you complete a task.

Typography

Bold text	Indicates a menu or an item to select.
Italics	Used to emphasize a word or a phrase.
<key></key>	Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.
	Example: <enter> means that you must press the Enter or Return key.</enter>
<key1>+<key2>+<key3></key3></key2></key1>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+).
	Example: <ctrl>+<alt>+</alt></ctrl>
Command	Means that you must type the command exactly as shown, then supply the required item or value enclosed in brackets.
	Example: At the DOS prompt, type the command line:
	format a:

PEM-FDR card specifications summary

	PEM-FDR
Controller	Mellanox ConnectX-3 FDR
Interface	PCI-E Gen3 x8
Port	QSFP
Data transfer rate	Up to 56 Gb/s FDR InfiniBand
Form factor	4.72 in. x 1.77 in. (lower than standard low profile)

* Specifications are subject to change without notice.

** Supports ASUS Z10, Z9, and P9 series motherboard/system.

Product introduction

1

This chapter provides information about the PEM-FDR card features and the new technologies it supports.

1.1 Welcome!

Thank you and congratulations for buying an ASUS® PEM-FDR card!

Before installing the 56 Gb/s FDR InfiniBand card, check the items in your package with the list below.

1.2 Package contents

Check your package for the following items.

	Standard Gift Box Pack	Standard Bulk Pack
Support DVD	1	1 (per carton)
Full height bracket with screws	1	1
Low profile bracket with screws	1	1
Packaging Quantity	1 pc per carton	5 pcs per carton



If any of the above items is damaged or missing, contact your retailer.

The default small bracket for node is a proprietray bracket that supports ASUS Z10PH-D16 series, ES4000 G3 series, and RS720Q-E8 series models*. The complete and updated list of supported models are subject to change without prior notice.

1.3 System requirements

Check if your system meets the following requirements:

- ASUS motherboard/system* with a PCI Express x8 or x16 card slot
- Supported operating system:

Windows[®] and Linux operating systems (refer to the ASUS website for the latest updates).



* Go to <u>www.asus.com</u> for the complete and updated list of supported motherboard/system models.

Other requirements:

Appropriate thermal solution



Ensure to update your BIOS to the latest version before using PEM-FDR on ASUS Z9 or P9 series platform server motherboard or system.



- 1. QSFP connector
- 2. PCI Express Gen3 x8 interface
- 3. MLED1
- 4. MLED2

LED indications

MLED2	MLED1	Description						
Activity/Link LED	Link	Description						
OFF	OFF	No device						
Orange	Green	Device plugged in; Ready						
Orange Blinking	Green	Device plugged in; Data transmitting						

1.5 Replacing the card bracket

The ASUS PEM-FDR card is bundled with a full-heigth bracket, a low-profile bracket, and an ASUS proprietary bracket. By default, the card is pre-installed with an ASUS proprietary bracket.



The proprietray bracket is a small bracket for node that supports ASUS Z10PH-D16 series, ES4000 G3 series, and RS720Q-E8 series models. The supported list of models are subject to change without prior notice.

To replace the card bracket:

- 1. Get the PEM-FDR card and place it on a stable and flat surface. Ensure that the printed circuit board (PCB) is facing down.
- 2. Remove the two screws that secures the PEM-FDR card to the card bracket then remove the card bracket.



- 3. Get the replacement card bracket.
- Align and insert the PEM-FDR card into the mounting hole of the card bracket. Ensure that the screw holes on the PEM-FDR card matches the screw holes of the card bracket.
- 5. Replace the screws that you removed earlier in step 2.



Firmware update

This chapter provides information in updating the firmware of $\ensuremath{\mathsf{PEM}}\xspace{\mathsf{FDR}}$ card.



2.1 Updating the firmware



You can download the latest firmware of PEM-FDR at www.asus.com.

To update the firmware:

- 1. Unzip or extract the firmware file then copy it into a bootable USB device.
- 2. Go to the DOS prompt and key in the following command:

```
mst start
```

```
C:\IB\FDR>mst start
c:/ib/fdr/mst.exe: List available mst devices.
Usage: c:/ib/fdr/mst.exe status
```

3. Key in the following command:

```
mst status
```



Take note of the name of the device.

4. Key in the following command:

```
flint -d [device name] -i [file name].bin -allow_psid_change -nofs
burn
```



files on the USB device

5. When the firmware is successfully updated, reboot the system.



Driver installation

This chapter provides instructions in installing the PEM-FDR card's drivers on different operating systems.



3.1 Mellanox ConnectX-3 Infiniband driver installation

This section provides instructions on how install the Mellanox driver.

3.1.1 Windows[®] operating system

To install the Mellanox driver:

- 1. Restart the computer, then log on with Administrator privileges.
- 2. Insert the Mellanox Infiniband support DVD into the optical drive.

The support DVD automatically displays the Drivers menu if Autorun is enabled in your computer.

3. Click Mellanox ConnectX Virtual Channel Adapter Driver.



4. Click Next to start installing the driver.

🔀 MLNX_VPI - InstallShield Wi	zard	×
2	Welcome to the InstallShield Wizard for MLNX_VPI	
•	The InstallShield(R) Wizard will install MLNX_VPI on your computer. To continue, click Next.	
2	WARNING: This program is protected by copyright law and international treaties.	
	< Back Cancel	

5. Tick I accept the terms in the license agreement then click Next to continue.



6. Click Change to select your desired destination folder then click Next to continue.



7. Tick the check box and click Next to continue.



8. Click Install to begin the installation.



9. Tick the check box on your preferred options then click **Finish** to exit the wizard.



10. Click Yes to restart your system for the configuration changes to take effect.



3.1.2 Red Hat[®] Enterprise Linux OS



For users using SUSE Linux Enterprise Server OS, follow the general instructions in this section to mount the Mellanox driver on your system.

To mount the Mellanox driver:

- 1. Log in to the system as root.
- Create a folder on the desktop and copy the latest Mellanox driver into the same folder. Rename the folder according to your preference, then key in the following commands:

cd /

mkdir [folder name]



3. Key in the command:

mount -o ro,loop /tmp/[image file name] /[folder name] then mount the driver into the system.



The driver version and the OS label may vary. Ensure that the command line matches your driver version and operating system.



4. Key in the following commands:

cd /[folder name]

./mlnxofedinstall





All other Mellanox, OEM, OFED, or distribution IB packages will be removed.

5. Press <Y> to continue.



6. Wait while the system installs the driver.



7. When done, reboot your system.



- If your system has the latest firmware, no firmware update will occur.
- To force the firmware update, key in the following command:
 - -- force-fw-update

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ASUS contact information

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Technical Support

Telephone Online Support 400-620-6655 http://support.asus.com/techserv/techserv.aspx

EC Declaration of Conformity	We, the undersigned,	Manufacturer: ASUSTeK COMPUTER INC.	Address: 4F, No. 150, LI-TE Hd., PETTOU, TAIPEI 112, TAIWAN Authorized representative in Europe: ASUS COMPUTER GmbH	Address. City: HARKORT STR. 21-23, 40580 PATINGEN	Country: GERMANY	declare the following apparatus:	Product name : InfiniBand Card	Model name : PEM-FDR	conform with the essential requirements of the following directives:	X2004108/EC-EMC Directive N 55:00:A72011 XEN 55:04-7201 T 11:00:00:00:00:00:00:00:00:00:00:00:00:0	E EN BIURDS-S-2004-A41:2003-A2:2006		E N 30 228 Y.1.71(2010-11) E N 30 426 Y 1.4.71(2010-48) E N 30 440 Y 15 (2010-48) E N 30 440 Y 14 (2010-48) E N 30 440 S Y 14 (2010-48)	E N 201 51 1 V9.2 (2003-03) E N 301 489-7 V 1.3 (2005-1) E N 201 908-1 V5.2 (2011-05) E N 201 489-9 V 1.4 (2005-1)	EN 301 908-2 V5.2.1(2011-07) EN 301 489-17 V2.2.1(2012-09) EN 201 908-2 V6.4.1(2011-11) EN 301 489-17 V2.2.1(2010-09)	E N 302 5942 V1.1.1(2009-01) E N 302 2656 V1.2.2(200-0) E N 302 2656 V1.2.1(2000-01) E N 302 2656 V1.2.1(2000-01)	C = 1 = 1 = 2 = 2 = 2 = 2 = 2 = 2 = 2 = 2	CN 62311:2008 X2006/95/EC-LVD Directive	X EN 60950-1/A122011 C EN 60065-2002/A122011	2009/125/EC-ErP Directive	C Regulation (EC) No. 1275/2008 C Regulation (EC) No. 278/2009	C Regulaton (EC) No. 642/2009 C Regulation (EC) No. 617/2013	Z2011/65/EU-RoHS Directive ZCE marking		(EC conformity marking)	Position: CEO	Name : Jerry Shen	C	1 mil	Declaration Date: 2006/2014 Signature :		
		Per FCC Part 2 Section 2. 1077(a))	A Ct Ttot	ame: Asus Computer International	ress: 800 Cornorate Way Fremont, CA 94539.		x No: (510)739-3777/(510)608-4555	a wordport		lame : InfiniBand Card	mber : PEM-FDR		ing specifications:	rt 15, Subpart B, Unintentional Radiators	nation.		s with part 15 of the FCC Rules. Operation is subject to the	tions: (1) This device may not cause harmful interference,	nust accept any interference received, including interference sired operation.	onio Namo - Stava Chana / Ducaidant	SOILS INSULE: DIEVE CHAIRY / FREMERIC	1. 01	Steve Chang		Signature :	Date: Jun. 20, 2014	Ver. 140331	

DECLARATION OF CONFORMITY Per FCC Part 2 Section 2. 1077(a)	Responsible Party Name: Asus Computer International	Address: 800 Corporate Way, Fremont, CA 94539.	Phone/Fax No: (510)739-3777/(510)608-4555	hereby declares that the product	Product Name : InfiniBand Card	Model Number : PEM-FDR	Conforms to the following specifications:	KC Part 15, Subpart B, Unintentional Radiators	Supplementary Information:	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	Representative Person's Name: Steve Chang / President	Steve Change Signature:	Date: Jun. 20, 2014	Ver. 140231	
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