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# **Mellanox FlexBoot for ConnectX®-4 / ConnectX®-4 Lx and Connect-IB® Release Notes**

Rev 3.4.903

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## Release Update History

Release	Date	Description
Rev. Rev 3.4.903	September, 2016	Initial release of this FlexBoot version for ConnectX-4/ConnectX-4 Lx adapter cards.

# 1 Overview

These are the release notes for "Mellanox FlexBoot", the software for Boot over Mellanox Technologies adapter devices supporting VPI. FlexBoot enables booting kernels or operating systems (OS) from remote servers in compliance with the PXE specification.

This package is based on the open source project iPXE available at <http://www.ipxe.org>.

## 1.1 Supported Adapter Cards and Firmware

**Table 1 - Supported Adapter Cards and Firmware**

Adapter Cards	Firmware Version
ConnectX-4 Lx EN	14.17.xxxx
ConnectX-4	12.17.xxxx
Connect-IB (OEM cards only)	10.16.1006

For the complete list of supported cards, please refer to ConnectX-4 Lx EN and ConnectX-4 EN web pages at [www.mellanox.com](http://www.mellanox.com).

## 1.2 Supported Tools (MFT)

**Table 2 - Supported Tools (MFT)**

Tools	Version
MFT (Mellanox Firmware Tools)	4.5.0

## 1.3 Supported Operating Systems



All the Operating Systems below expect for RedHat 7.3 are supported in Ethernet protocol only. RedHat 7.3 is supported in both InfiniBand and Ethernet protocol.

**Table 3 - Supported Operating Systems**

OSs	Version
ESXi	5.5
ESXi	6.0
RHEL	6.4
RHEL	6.6
RHEL	7.0
RHEL	7.1
RHEL	7.2
RHEL	7.3
SLES	11.3
SLES	11.4
SLES	12

OSs	Version
SLES	12.1
Ubuntu	14.04
Ubuntu	15.4
Ubuntu	16.04
Windows Server	2012
Windows Server	2012 R2
Windows Server	2016

## 1.4 Tested Platforms

**Table 4 - Tested Platforms**

Server Vendor & Model	BIOS Manuf. & Version
DELL C6220	Dell Inc. 2.5.3
DELL C6220 II	Dell Inc. 2.4.2
DELL C7220N	2.1.11
DELL M630	Dell Inc. 1.4.4
DELL R720	Dell Inc. 2.5.2
DELL R730	Dell Inc. 1.5.4
HP BL460c Gen9	I36 v1.52
HP DL160 Gen9	U20 9/14/2015
HP DL360 Gen9	P89 10/04/2015
HP DL380 Gen9	P89 10/04/2015
HP Moonshot Anders M710	HP systems – H06
HP ProLiant SE2140s Gen8 (MiniPooch)	P87
HP ProLiant XL230b Gen9	U13 v2.0
HP SE.02140s Gen8	P87
HP SE2160w Gen9	U16 v1.30
HP SL230s Gen8	P75
HP XL230a Gen9	U13 09/25/2015
HP XL230b Gen9	U12 12/12/2014
IBM Flex system x220	KSE144BUS-1.61
IBM Flex system x240	B2E142AUS-1.50
IBM System x3650 M4	VVE146AUS-2.0
IBM System x3850 X6	A8E11AUS-1.00 2014/07/18
Quanta Winterfell	American Megatrends Inc. F03_3B07
Supermicro X9DRW	American Megatrends Inc. 3.0c
ZT	American Megatrends Inc. 2.59

## 2 Changes and New Features in Rev 3.4.903

**Table 5 - Changes and New Features**

Category	Description
<b>iSCSI re-imaging</b>	<ul style="list-style-type: none"> <li>Now the user can install a new image on an active iSCSI target</li> </ul>
<b>FlexBoot UI</b>	Enabled boot configuration menu in ConnectX-4 when the physical port is IB
	Added new configuration for network link type for supported cards (ConnectX-4 VPI cards).
<b>Link Status</b>	Removed link status line printout at boot time.
<b>Booting</b>	Enabled booting with non-default Pkey in ConnectX-4 when the physical port is IB
<b>Boot Menu</b>	Changed the Bus:Device:Function format in boot menu, from PCI - Bus:Dev.Func to 0000:Bus:Dev.Func
<b>Upstream sync</b>	Synced the source with iPXE (upstream sync)



### 3 Known Issues

The following is a list of general limitations and known issues of the various components of this FlexBoot release.

**Table 6 - Known Issues**

Internal Ref.	Description
-	<b>Description:</b> Several BIOS vendors have limited boot-vector space and may not display FlexBoot in their boot menu.
	<b>WA:</b> Disable the embedded NIC boot agent in BIOS
	<b>Keywords:</b> BIOS
-	<b>Description:</b> In several BIOS, the server might hang during FlexBoot booting due to wrong configuration of the PMM.
	<b>WA:</b> N/A
	<b>Keywords:</b> BIOS
-	<b>Description:</b> Only EBX, ESI, DS, ES registers can be saved in Boot Entry.
	<b>WA:</b> N/A
	<b>Keywords:</b> BIOS
-	<b>Description:</b> If a client returned control to the BIOS after a successful connection to an iSCSI target (but did not boot from it), then, unexpected behavior may occur.
	<b>WA:</b> Follow the instructions described in the FlexBoot UM for the proper iSCSI boot/install
	<b>Keywords:</b> BIOS
673114/821899	<b>Description:</b> FlexBoot banner might not be shown in some BIOSes.
	<b>WA:</b> N/A
	<b>Keywords:</b> BIOS
-	<b>Description:</b> In some cases, PXE boot will not work if the client was given only the file-name without next-server (siaddr).
	<b>WA:</b> N/A
	<b>Keywords:</b> PXE Boot
-	<b>Description:</b> PXE boot after iSCSI boot with static configuration is currently not supported.
	<b>WA:</b> N/A
	<b>Keywords:</b> PXE Boot

**Table 6 - Known Issues**

Internal Ref.	Description
-	<b>Description:</b> Boot over VLAN with IB port is currently not supported.
	<b>WA:</b> N/A
	<b>Keywords:</b> PXE Boot
-	<b>Description:</b> Some faulty boot loaders do not close the underlying UNDI device which may result in unexpected behavior and possible system crash after the OS starts to load.
	<b>WA:</b> N/A
	<b>Keywords:</b> PXE Boot
-	<b>Description:</b> Chain-loading gPXE stack may result in undesirable behavior.
	<b>WA:</b> N/A
	<b>Keywords:</b> PXE Boot
647143	<b>Description:</b> Executing a partial boot loop while only downloading the NBP and selecting localboot is unsupported and may cause undefined behavior.
	<b>WA:</b> N/A
	<b>Keywords:</b> PXE Boot
670421	<b>Description:</b> Using filename for PXE boot with rootpath for hooking an iSCSI target (to install) is not supported when the PXE boot loader uses UNDI API, since all traffic must get to the boot loader.
	<b>WA:</b> N/A
	<b>Keywords:</b> PXE Boot
-	<b>Description:</b> iSCSI over IB is not tested.
	<b>WA:</b> N/A
	<b>Keywords:</b> iSCSI
-	<b>Description:</b> iSCSI over DCB is not supported.
	<b>WA:</b> N/A
	<b>Keywords:</b> iSCSI
-	<b>Description:</b> FlexBoot supports only a single active iSCSI connection. Thus, when iSCSI-boot via Port 1 succeeds to connect but fails to boot, it will fail to connect via Port 2.
	<b>WA:</b> N/A
	<b>Keywords:</b> iSCSI

**Table 6 - Known Issues**

Internal Ref.	Description
-	<b>Description:</b> Boot retries is currently not functional when booting from iSCSI.
	<b>WA:</b> N/A
	<b>Keywords:</b> iSCSI
655800	<b>Description:</b> IPv6 is not supported.
	<b>WA:</b> N/A
	<b>Keywords:</b> iSCSI
-	<b>Description:</b> Boot menu is displayed as READ ONLY if the HCA card does not support flash configuration.
	<b>WA:</b> N/A
	<b>Keywords:</b> User Interface
-	<b>Description:</b> FlexBoot Boot Menu will not be visible in serial output.
	<b>WA:</b> N/A
	<b>Keywords:</b> User Interface
-	<b>Description:</b> FlexBoot Boot Menu will not be shown in ConnectX-4 and ConnectX-4 Lx if the physical port is IB
	<b>WA:</b> N/A
	<b>Keywords:</b> User Interface
-	<b>Description:</b> Large Receive Offload (LRO) and iSCSI may not interoperate due to a bug in current Linux kernel distributions.
	<b>WA:</b> Disable LRO in the IPoIB module when using iSCSI. See the Mellanox FlexBoot user's manual for details under the Diskless Machines chapter (InfiniBand Ports).
	<b>Keywords:</b> Networking
-	<b>Description:</b> FlexBoot supports only 2K MTU.
	<b>WA:</b> N/A
	<b>Keywords:</b> Networking
-	<b>Description:</b> 56Gb/s is currently not supported.
	<b>WA:</b> N/A
	<b>Keywords:</b> Link Speed
-	<b>Description:</b> Blink LEDs are currently not supported.
	<b>WA:</b> N/A
	<b>Keywords:</b> LED

**Table 6 - Known Issues**

Internal Ref.	Description
-	<b>Description:</b> Setting the number of Virtual Functions higher than the machine's memory capability may cause memory issues and system instability.
	<b>WA:</b> N/A
	<b>Keywords:</b> Virtualization
-	<b>Description:</b> SLAM, FTP, HTTPS and SRP are currently not supported.
	<b>WA:</b> N/A
	<b>Keywords:</b> Protocols
-	<b>Description:</b> Occasionally, using the Spanning Tree Protocol (STP) in the switches may cause packet drops and boot failure in the system.
	<b>WA:</b> Enable the "edgemode" if disabled on the switch, or use either portfast or edgemode functionality on the switch ports connected to the NICs.
	<b>Keywords:</b> Protocols
-	<b>Description:</b> FCoE, BCV are not supported.
	<b>WA:</b> N/A
	<b>Keywords:</b> Protocols
655800	<b>Description:</b> IPv6 can only run if a RADVD service is running in the network.
	<b>WA:</b> N/A
	<b>Keywords:</b> Protocols
-	<b>Description:</b> IPv6 over IB is not supported.
	<b>WA:</b> N/A
	<b>Keywords:</b> Protocols
655800	<b>Description:</b> IPv6 over WDS is not supported.
	<b>WA:</b> N/A
	<b>Keywords:</b> Protocols
655800	<b>Description:</b> Enabling IPv6 first and then IPv4 is currently not supported.
	<b>WA:</b> N/A
	<b>Keywords:</b> Protocols

**Table 6 - Known Issues**

Internal Ref.	Description
841198	<p><b>Description:</b> FlexBoot fails to boot when the following occurs:</p> <ul style="list-style-type: none"> <li>• Boot priority is set to iSCSI</li> <li>• The iSCSI TCP/IP parameters via DHCP is disabled</li> <li>• iSCSI boot fails or iSCSI boot to target configuration is set to disable</li> </ul> <p><b>WA:</b> N/A</p> <p><b>Keywords:</b> PXE boot, iSCSI</p>
843377/849223	<p><b>Description:</b> The physical MAC assigned via the boot menu is displayed as zeroes instead of the set MAC when ConnectX-4 VPI adapter card is configured as InfiniBand.</p> <p><b>WA:</b> N/A</p> <p><b>Keywords:</b> Physical MAC, Boot menu</p>
656001	<p><b>Description:</b> Booting from WDS and Windows DHCP server when only Option 66 is enabled (without Option 67), is not supported.</p> <p><b>WA:</b> N/A</p> <p><b>Keywords:</b> DHCP</p>
-	<p><b>Description:</b> As ConnectX-4 and Connect-IB HCAs do not support FlexBoot menu, pressing Ctrl-B will not open the UI menu although the Ctrl-B prompt at the FlexBoot banner is present.</p> <p><b>WA:</b> N/A</p> <p><b>Keywords:</b> Ctrl-B, ConnectX-4 and Connect-IB HCAs, FlexBoot menu</p>
776057	<p><b>Description:</b> Citrix PVS boot is not supported.</p> <p><b>WA:</b> N/A</p> <p><b>Keywords:</b> Citrix PVS boot</p>
780862	<p><b>Description:</b> Set default (CTRL+d key) feature is not supported in Wake-On-Lan setting.</p> <p><b>WA:</b> N/A</p> <p><b>Keywords:</b> CTRL+d, WoL</p>

## 4 Bug Fixes History

**Table 7 - Fixed Bugs List**

Internal Ref.	Description
847950	<b>Description:</b> Fixed wrong default value of Boot-To-Target in FlexBoot configuration.
	<b>Keywords:</b> Boot-To-Target, FlexBoot configuration
	<b>Discovered in Release:</b> 3.4.719
	<b>Fixed in Release:</b> 3.4.903
691148	<b>Description:</b> When connecting a pre-configured port with VLAN to an IB fabric, the port runs as Ethernet port with the VLAN tag.
	<b>Keywords:</b> VLAN, Port Management
	<b>Discovered in Release:</b> 3.4.719
	<b>Fixed in Release:</b> 3.4.903
792432	<b>Description:</b> Booting PXE using Grub2.X over HP G9/G8 servers results in system hang.
	<b>Keywords:</b> PXE boot, Grub2.X, HP G9/G8
	<b>Discovered in Release:</b> 3.4.719
	<b>Fixed in Release:</b> 3.4.903
690792	<b>Description:</b> If the PMM fails to allocate memory, the system hangs since FlexBoot cannot load from the expansion ROM.
	<b>Keywords:</b> PMM, expansion ROM
	<b>Discovered in Release:</b> 3.4.719
	<b>Fixed in Release:</b> 3.4.812
697291	<b>Description:</b> In ConnectX-4, the PXE boot time measurement over TFTP Ethernet is 1:30 min for image size of 1GB, TFTP InfiniBand is 1:20 min, and iSCSI boot time measurement is 8 seconds for image size of 25 MB.
	<b>Keywords:</b> PXE Boot
	<b>Discovered in Release:</b> 3.4.719
	<b>Fixed in Release:</b> 3.4.812
689068	<b>Description:</b> In hybrid BIOSes, if the BIOS loads legacy driver without closing the UEFI driver, the legacy driver fails to load.
	<b>Keywords:</b> BIOS, legacy mode
	<b>Discovered in Release:</b> 3.4.719
	<b>Fixed in Release:</b> 3.4.812

**Table 7 - Fixed Bugs List**

Internal Ref.	Description
634794	<b>Description:</b> Enabled 'boot_pci_busdevfn' initialization when booting from UNDI loader.
	<b>Keywords:</b> UNDI loader
	<b>Discovered in Release:</b> 3.4.650
	<b>Fixed in Release:</b> 3.4.719
-	<b>Description:</b> Removed the instruction that enabled write-protected section modifications after POST.
	<b>Keywords:</b> PXE Boot
	<b>Discovered in Release:</b> 3.4.650
	<b>Fixed in Release:</b> 3.4.719

## 5 Changes and New Feature History

**Table 8 - Changes and Fixes**

Release	Changes
3.4.812	<p><b>FlexBoot UI:</b> Added debug prints option in the FlexBoot boot menu. For further information, please refer to FlexBoot and UEFI User Manual.</p> <p><b>System Diagnosis:</b> Added the ability to diagnose problems in released ROMs by enabling the debug log levels for specific modules.  <b>Note:</b> This ability should be used only when debug session is needed.</p> <p><b>Interrupts:</b> Added support for ConnectX-4/ConnectX-4 Lx interrupts.</p> <p><b>Upstream sync:</b> Synced the source with iPXE (upstream sync)</p>
3.4.719	<ul style="list-style-type: none"> <li>• Added x64 architecture support in ConnectX-4 EN adapter cards</li> <li>• Added IPv6 support (Beta level)</li> <li>• Removed support for the following SHELL CLI commands: <ul style="list-style-type: none"> <li>• Non-volatile option storage commands</li> <li>• SAN boot commands</li> <li>• Menu commands</li> <li>• Login command</li> <li>• Sync command</li> <li>• DNS resolving command</li> <li>• Time commands</li> <li>• Image crypto digest commands</li> <li>• Loopback testing commands</li> <li>• VLAN commands</li> <li>• PXE commands</li> <li>• Reboot command</li> </ul> </li> </ul> <p>For further information, please refer to: <a href="http://ipxe.org/cmd">http://ipxe.org/cmd</a></p> <ul style="list-style-type: none"> <li>• Synced the source with iPXE (upstream sync)</li> </ul>
3.4.650	<ul style="list-style-type: none"> <li>• Added support for .mrom images larger than 128kB</li> <li>• Added boot over IB with non-default PKey for ConnectX®-3, ConnectX®-3 Pro cards</li> <li>• Synced the source with iPXE (upstream sync)</li> <li>• Added support for detecting Spanning Tree Protocol non-forwarding ports (RSTP/MSTP)</li> <li>• Moved to flat real mode when calling INT 1a,b101 to avoid BIOSes issues</li> <li>•</li> </ul>



