



Mellanox FlexBoot for ConnectX[®]-4 / ConnectX[®]-4 Lx / ConnectX[®]-5 Release Notes

Rev 3.5.210

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Release Update History

Table 1 - Release Update History

Release	Date	Description
Rev 3.5.210	June 29, 2017	Initial release of this FlexBoot version for ConnectX-4/ConnectX-4 Lx/ConnectX-5/ConnectX-5 Ex 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 2 - Supported Adapter Cards and Firmware

Adapter Cards	Firmware Version
ConnectX-5 / ConnectX-5 Ex	16.20.1010
ConnectX-4 Lx EN	14.20.1010
ConnectX-4	12.20.1010
Connect-IB (OEM cards only)	10.16.1020

For the complete list of supported cards, please refer to ConnectX-4 Lx EN/ConnectX-4 EN and ConnectX-5 web pages at www.mellanox.com.

1.2 Supported Tools (MFT)

Table 3 - Supported Tools (MFT)

Tools	Version
MFT (Mellanox Firmware Tools)	4.7.0

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 4 - Supported Operating Systems

OSs	Version
ESXi	5.5
ESXi	6.0
ESXi	6.5
RHEL	6.4 (supported only when installing MLNX_OFED 4.1-x.x.x.x driver)
RHEL	6.5 (supported only when installing MLNX_OFED 4.1-x.x.x.x driver)
RHEL	6.6
RHEL	7.0

Table 4 - Supported Operating Systems

OSs	Version
RHEL	7.1
RHEL	7.2
RHEL	7.3
SLES	12.1
SLES	12.2
Ubuntu	16.04
Ubuntu	16.10
Windows Server	2012
Windows Server	2012 R2
Windows Server	2016

1.4 Tested Platforms

Table 5 - Tested Platforms

Vendor	Type of server	Bios Version
DELL	PowerEdge R730xd 13G	2.4.3
DELL	PowerEdge R630 13G	2.4.3
DELL	PowerEdge R640 14G	1.0.0
DELL	PowerEdge C6320p	1.1.3
Quanta	Yosemite AMI	F20_3A13 02/16/2017
Quanta	Leopard	AVA_3B08
SuperMicro	SuperMicro	X9DRW V3.2
HPE	ProLiant DL180 Gen9 U20	v2.20 (05/05/2016)
HPE	ProLiant XL730f Gen9 U18	v1.50 (08/04/2015)
HPE	ProLiant DL380 Gen9 P89	v2.20 (06/02/2016)
HPE	ProLiant XL260a Gen9 U24	v1.00 (05/18/2016)
Qualcomm	QDF2400 DP ARM	XBL.DF.2.0.R1-00362 QDF2400_REL CRM

2 Changes and New Features in Rev 3.5.210

Table 6 - Changes and New Features

Category	Description
Promiscuous VLAN mode	Added support for promiscuous VLAN mode.
MTU	[InfiniBand] Added support for configurable MTU.
Expansion ROM version	Enabled expansion ROM (<code>exp_rom</code>) version exposition according to the new specification (e.g. expose ARCH in flint tool).
FlexBoot UI	Added a FlexBoot menu support for <code>NV_POWER_CONF</code> . Now power consumption configuration is supported from the FlexBoot menu.
	Enhanced FlexBoot/firmware debug capability using Flexboot UI. Added the <code>reg_dump</code> option to the <code>panic_behavior</code> configuration in the FlexBoot menu
Upstream sync	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 7 - Known Issues

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

Table 7 - Known Issues

Internal Ref.	Description
-	Description: Boot over VLAN with IB port is currently not supported.
	Workaround: N/A
	Keywords: PXE Boot
-	Description: 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.
	Workaround: N/A
	Keywords: PXE Boot
-	Description: Chain-loading gPXE stack is not supported.
	Workaround: N/A
	Keywords: PXE Boot
647143	Description: Executing a partial boot loop while only downloading the NBP and selecting localboot is unsupported and may cause undefined behavior.
	Workaround: N/A
	Keywords: PXE Boot
670421	Description: 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.
	Workaround: N/A
	Keywords: PXE Boot
-	Description: iSCSI over IB is not tested.
	Workaround: N/A
	Keywords: iSCSI
-	Description: iSCSI over DCB is not supported.
	Workaround: N/A
	Keywords: iSCSI
-	Description: 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.
	Workaround: N/A
	Keywords: iSCSI

Table 7 - Known Issues

Internal Ref.	Description
-	Description: Boot retries is currently not functional when booting from iSCSI.
	Workaround: N/A
	Keywords: iSCSI
655800	Description: iSCSI over IPv6 is not supported.
	Workaround: N/A
	Keywords: iSCSI
-	Description: Boot menu is displayed as READ ONLY if the HCA card does not support flash configuration.
	Workaround: N/A
	Keywords: User Interface
-	Description: FlexBoot Boot Menu will not be visible in serial output.
	Workaround: N/A
	Keywords: User Interface
-	Description: Large Receive Offload (LRO) and iSCSI may not interoperate due to a bug in current Linux kernel distributions.
	Workaround: 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).
	Keywords: Networking
-	Description: 56Gb/s is currently not supported.
	Workaround: N/A
	Keywords: Link Speed
-	Description: Setting the number of Virtual Functions higher than the machine's memory capability may cause memory issues and system instability.
	Workaround: N/A
	Keywords: Virtualization
-	Description: SLAM, FTP, HTTPS and SRP are currently not supported.
	Workaround: N/A
	Keywords: Protocols

Table 7 - Known Issues

Internal Ref.	Description
-	<p>Description: Occasionally, using the Spanning Tree Protocol (STP) in the switches may cause packet drops and boot failure in the system.</p> <p>Workaround: Enable the "edgemode" if disabled on the switch, or use either portfast or edgemode functionality on the switch ports connected to the NICs.</p> <p>Keywords: Protocols</p>
-	<p>Description: FCoE, BCV are not supported.</p> <p>Workaround: N/A</p> <p>Keywords: Protocols</p>
655800	<p>Description: IPv6 can only run if a RADVD service is running in the network.</p> <p>Workaround: N/A</p> <p>Keywords: Protocols</p>
-	<p>Description: IPv6 over IB is not supported.</p> <p>Workaround: N/A</p> <p>Keywords: Protocols</p>
655800	<p>Description: Enabling IPv6 first and then IPv4 is currently not supported.</p> <p>Workaround: N/A</p> <p>Keywords: Protocols</p>
841198	<p>Description: FlexBoot fails to boot when the following occurs:</p> <ul style="list-style-type: none"> • Boot priority is set to iSCSI • The iSCSI TCP/IP parameters via DHCP is disabled • iSCSI boot fails or iSCSI boot to target configuration is set to disable <p>Workaround: N/A</p> <p>Keywords: PXE boot, iSCSI</p>
843377/849223	<p>Description: 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>Workaround: N/A</p> <p>Keywords: Physical MAC, Boot menu</p>
656001	<p>Description: Booting from WDS and Windows DHCP server when only Option 66 is enabled (without Option 67), is not supported.</p> <p>Workaround: N/A</p> <p>Keywords: DHCP</p>

Table 7 - Known Issues

Internal Ref.	Description
776057	Description: Citrix PVS boot is not supported.
	Workaround: N/A
	Keywords: Citrix PVS boot
689460	Description: FlexBoot uses system UUID to generate the client DUID-UUID as per RFC 6355, the data conveyed with DHCPv6 Code 1 (Option ID).
	Workaround: N/A
	Keywords: DUID-UUID
928217	Description: Installing ESXi 6.5/6.0 on iSCSI target is currently not supported.
	Workaround: N/A
	Keywords: ESXi 6.5/6.0, iSCSI target
689460	Description: To use the DHCP server to identify ipxe requests when using <code>undionly.kpxe</code> or <code>ipxe.pxe</code> when booting over IB requires special configuration. (see the Workaround below).
	Workaround: Add to the DHCP host declaration the MAC identification alongside the option 61 DUID. For example: <pre>host ib-client1 { option dhcp-client-identifier = ff:00:00:00:00:02:00:00:02:c9:00:<Port-GUID> ; hardware ethernet <Port-MAC> ; fixed-address <IPoIB Address> ; filename "ipxe.pxe" ; if exists user-class and option user-class = "iPXE" { filename "pxelinux.0" ; } }</pre>
	Keywords: undionly.kpxe or ipxe.pxe
928217	Description: Due to interoperability issue between the ESXi installer and the lpxelinux boot-loader, when trying to install ESXi 6.5 on iSCSI target using lpxelinux.0 as a boot-loader, a PSOD occurs.
	Workaround: Use FlexBoot (or iPXE) to load mboot.c32 directly instead of pxelinux.0 using the script below: <pre>#!ipxe set base /nfs/Esxi-6.5_INBOX chain \${base}/mboot.c32 -c \${base}/boot.cfg BOOTIF=01- \${mac:hexhyp}</pre> <p>where the "set base ..." specifies a suitable absolute path. Note: iPXE does not need an absolute path, however, mboot.c32 requires it.</p>
	Keywords: mboot.c32, PSOD,

Table 7 - Known Issues

Internal Ref.	Description
976878	Description: When using bootloader grub2 to boot WDS, if the WDS boot fails, an RSOD might appear.
	Workaround: N/A
	Keywords: Bootloader grub2, WDS, RSOD
1072419	Description: The FlexBoot DHCP loops indefinitely when it continuously gets NACK on the DHCP requests On some setups, it might also cause an RSOD after a a continues looping.
	Workaround: N/A
	Keywords: Bootloader grub2, WDS, RSOD

4 Bug Fixes History

Table 8 - Fixed Bugs List

Internal Ref.	Description
-	Description: FlexBoot supports only 2K MTU.
	Keywords: Networking
	Discovered in Release: 3.4.903
	Fixed in Release: 3.5.210
843209	Description: Fixed and issue which cause the link not to raise in the second port which is set as IB when the first port is ETH in PXE.
	Keywords: Link up, Ports
	Discovered in Release: 3.4.903
	Fixed in Release: 3.5.109
847950	Description: Fixed wrong default value of Boot-To-Target in FlexBoot configuration.
	Keywords: Boot-To-Target, FlexBoot configuration
	Discovered in Release: 3.4.719
	Fixed in Release: 3.4.903
691148	Description: When connecting a pre-configured port with VLAN to an IB fabric, the port runs as Ethernet port with the VLAN tag.
	Keywords: VLAN, Port Management
	Discovered in Release: 3.4.719
	Fixed in Release: 3.4.903
792432	Description: Booting PXE using Grub2.X over HP G9/G8 servers results in system hang.
	Keywords: PXE boot, Grub2.X, HP G9/G8
	Discovered in Release: 3.4.719
	Fixed in Release: 3.4.903
690792	Description: If the PMM fails to allocate memory, the system hangs since FlexBoot cannot load from the expansion ROM.
	Keywords: PMM, expansion ROM
	Discovered in Release: 3.4.719
	Fixed in Release: 3.4.812

Table 8 - Fixed Bugs List

Internal Ref.	Description
697291	Description: 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.
	Keywords: PXE Boot
	Discovered in Release: 3.4.719
	Fixed in Release: 3.4.812
689068	Description: In hybrid BIOSes, if the BIOS loads legacy driver without closing the UEFI driver, the legacy driver fails to load.
	Keywords: BIOS, legacy mode
	Discovered in Release: 3.4.719
	Fixed in Release: 3.4.812
634794	Description: Enabled 'boot_pci_busdevfn' initialization when booting from UNDI loader.
	Keywords: UNDI loader
	Discovered in Release: 3.4.650
	Fixed in Release: 3.4.719
-	Description: Removed the instruction that enabled write-protected section modifications after POST.
	Keywords: PXE Boot
	Discovered in Release: 3.4.650
	Fixed in Release: 3.4.719

5 Changes and New Feature History

Table 9 - Changes and New Feature History

Release	Changes
Rev. 3.5.110	
Networking	Ethernet only: The MTU value is set to 1500 upon driver's bring up.
Rev. 3.5.109	
FlexBoot UI	Added support for "Undi network wait timeout"
	Enhanced FlexBoot/firmware debug capability using Flexboot UI
Performance	Performance enhancements in Ethernet mode
Upstream sync	Synced the source with iPXE (upstream sync)
Rev. 3.4.903	
iSCSI re-imaging	Enables the user to install a new image on active iSCSI target
FlexBoot UI	Added new configuration for network link type for supported cards (ConnectX-4 VPI cards)
	Enabled boot configuration menu in ConnectX-4 when the physical port is IB
Booting	Enabled booting with non-default Pkey in ConnectX-4 when the physical port is IB
Link Status	Removed link status line printout at boot time
Boot Menu	Changed the Bus:Device:Function format in boot menu, from PCI-Bus:Dev.Func to 0000:Bus:Dev.Func
Upstream sync	Synced the source with iPXE (upstream sync)
Rev. 3.4.812	
FlexBoot UI	Added debug prints option in the FlexBoot boot menu. For further information, please refer to FlexBoot and UEFI User Manual.
System Diagnosis	Added the ability to diagnose problems in released ROMs by enabling the debug log levels for specific modules. Note: This ability should be used only when debug session is needed.
Interrupts	Added support for ConnectX-4/ConnectX-4 Lx interrupts
Upstream sync	Synced the source with iPXE (upstream sync)
Rev. 3.4.719	
IPv6	Added IPv6 support
x64 Architecture	Added x64 architecture support in ConnectX-4 and Connect-IB adapter cards

Table 9 - Changes and New Feature History

Release	Changes
SHELL CLI	Removed support for the following SHELL CLI commands: <ul style="list-style-type: none"> • Non-volatile option storage commands • SAN boot commands • Menu commands • Login command • Sync command • DNS resolving command • Time commands • Image crypto digest commands • Loopback testing commands • VLAN commands • PXE commands • Reboot command For further information, please refer to: http://ipxe.org/cmd
Upstream sync	Synced the source with iPXE (upstream sync)
Rev. 3.4.650	
Image size	Added support for .mrom images larger than 128kB
Adapter Cards	Added support for ConnectX-4 EN and ConnectX-4 Lx EN
Flat real mode	Moved to flat real mode when calling INT 1a,b101 to avoid BIOSes issues
Spanning Tree Protocol	Added support for detecting Spanning Tree Protocol non-forwarding ports (RSTP/MSTP)
Upstream sync	Synced the source with iPXE (upstream sync)