



# Mellanox FlexBoot for ConnectX<sup>®</sup>-4 / ConnectX<sup>®</sup>-4 Lx / ConnectX<sup>®</sup>-5 Release Notes

---

Rev 3.5.403

## NOTE:

THIS HARDWARE, SOFTWARE OR TEST SUITE PRODUCT ("PRODUCT(S)") AND ITS RELATED DOCUMENTATION ARE PROVIDED BY MELLANOX TECHNOLOGIES "ASIS" WITH ALL FAULTS OF ANY KIND AND SOLELY FOR THE PURPOSE OF AIDING THE CUSTOMER IN TESTING APPLICATIONS THAT USE THE PRODUCTS IN DESIGNATED SOLUTIONS. THE CUSTOMER'S MANUFACTURING TEST ENVIRONMENT HAS NOT MET THE STANDARDS SET BY MELLANOX TECHNOLOGIES TO FULLY QUALIFY THE PRODUCT(S) AND/OR THE SYSTEM USING IT. THEREFORE, MELLANOX TECHNOLOGIES CANNOT AND DOES NOT GUARANTEE OR WARRANT THAT THE PRODUCTS WILL OPERATE WITH THE HIGHEST QUALITY. ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT ARE DISCLAIMED. IN NO EVENT SHALL MELLANOX BE LIABLE TO CUSTOMER OR ANY THIRD PARTIES FOR ANY DIRECT, INDIRECT, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES OF ANY KIND (INCLUDING, BUT NOT LIMITED TO, PAYMENT FOR PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY FROM THE USE OF THE PRODUCT(S) AND RELATED DOCUMENTATION EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.



Mellanox Technologies  
350 Oakmead Parkway Suite 100  
Sunnyvale, CA 94085  
U.S.A.  
www.mellanox.com  
Tel: (408) 970-3400  
Fax: (408) 970-3403

© Copyright 2018. Mellanox Technologies Ltd. All Rights Reserved.

Mellanox®, Mellanox logo, Accelio®, BridgeX®, CloudX logo, CompustorX®, Connect-IB®, ConnectX®, CoolBox®, CORE-Direct®, EZchip®, EZchip logo, EZappliance®, EZdesign®, EZdriver®, EZsystem®, GPUDirect®, InfiniHost®, InfiniBridge®, InfiniScale®, Kotura®, Kotura logo, Mellanox CloudRack®, Mellanox CloudXMellanox®, Mellanox Federal Systems®, Mellanox HostDirect®, Mellanox Multi-Host®, Mellanox Open Ethernet®, Mellanox OpenCloud®, Mellanox OpenCloud Logo®, Mellanox PeerDirect®, Mellanox ScalableHPC®, Mellanox StorageX®, Mellanox TuneX®, Mellanox Connect Accelerate Outperform logo, Mellanox Virtual Modular Switch®, MetroDX®, MetroX®, MLNX-OS®, NP-1c®, NP-2®, NP-3®, NPS®, Open Ethernet logo, PhyX®, PlatformX®, PSIPHY®, SiPhy®, StoreX®, SwitchX®, Tiler®, Tiler logo, TestX®, TuneX®, The Generation of Open Ethernet logo, UFM®, Unbreakable Link®, Virtual Protocol Interconnect®, Voltaire® and Voltaire logo are registered trademarks of Mellanox Technologies, Ltd.

All other trademarks are property of their respective owners.

For the most updated list of Mellanox trademarks, visit <http://www.mellanox.com/page/trademarks>

## Table of Contents

<b>Table of Contents</b> .....	<b>3</b>
<b>List Of Tables</b> .....	<b>4</b>
<b>Release Update History</b> .....	<b>5</b>
<b>Chapter 1 Overview</b> .....	<b>6</b>
1.1 Supported Adapter Cards and Firmware .....	6
1.2 Supported Tools (MFT).....	6
1.3 Supported Operating Systems.....	6
1.4 Tested Platforms.....	7
<b>Chapter 2 Changes and New Features in Rev 3.5.403</b> .....	<b>9</b>
<b>Chapter 3 Known Issues</b> .....	<b>10</b>
<b>Chapter 4 Bug Fixes History</b> .....	<b>17</b>
<b>Chapter 5 Changes and New Feature History</b> .....	<b>19</b>

## List Of Tables

Table 1:	Release Update History . . . . .	5
Table 2:	Supported Adapter Cards and Firmware . . . . .	6
Table 3:	Supported Tools (MFT) . . . . .	6
Table 4:	Supported Operating Systems . . . . .	6
Table 5:	Tested Platforms . . . . .	7
Table 6:	Changes and New Features. . . . .	9
Table 7:	Known Issues . . . . .	10
Table 8:	Fixed Bugs List . . . . .	17
Table 9:	Changes and New Feature History . . . . .	19

## Release Update History

*Table 1 - Release Update History*

Release	Date	Description
Rev 3.5.403	March 1, 2018	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	16.22.1002
ConnectX-4 Lx EN	14.22.1002
ConnectX-4	12.22.1002
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](http://www.mellanox.com).

## 1.2 Supported Tools (MFT)

**Table 3 - Supported Tools (MFT)**

Tools	Version
MFT (Mellanox Firmware Tools)	4.9.0

## 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	6.5
RHEL	7.0
RHEL	7.1
RHEL	7.2
RHEL	7.3
RHEL	7.4
SLES	12.1

**Table 4 - Supported Operating Systems**

OSs	Version
SLES	12.2
SLES	12.3
Ubuntu	16.04
Ubuntu	16.10
Windows Server	2012 R2
Windows Server	2016

## 1.4 Tested Platforms

**Table 5 - Tested Platforms**

Vendor	Type of server	Bios Version
Lenovo	3650 M5	2.4 TCE130K (11-04-2017)
Lenovo	3650 M5	1.20 TCE108IUS (17/2/2015)
Lenovo	3550 M5	1.20 TBE108IUS (17/2/2017)
Lenovo	7X06CTO1WW	1.05 CDI306U (15/08/2017)
Quanta	Leopard-DDR4	2.17.1249
Quanta	Leopard-DDR4	2.17.1249
Quanta	Yosemite v1	F20_3A13
Quanta	Yosemite v2	F09_2B04
Quanta	TiogPass Wiwynn	Tpp06
Fujitsu	PRIMERGY RX4770 M4	V5.0.0.12 R1.5.0 for D3753-A1x
Fujitsu	PRIMERGY RX2520 M4	V5.0.0.12 R1.15.0 for D3384-A1x

## 2 Changes and New Features in Rev 3.5.403

**Table 6 - Changes and New Features**

Category	Description
<b>Enable/Disable FlexBoot in EXPROM via mlxconfig</b>	<p>Added PXE support to additional ConnectX-4/ConnectX-4 Lx/ConnectX-5 adapter cards.<sup>a</sup></p> <p>Enabling/Disabling FlexBoot in ConnectX-4/ConnectX-4 Lx/ConnectX-5 in EXPROM is done via mlxconfig.</p> <p>The default value is:</p> <ul style="list-style-type: none"> <li>• FLEXBOOT enable</li> </ul> <p><b>Note:</b> The value above can be set only in adapter cards that support this capability.</p> <p>For further information on how to enable/disable UEFI, refer to section <i>Enabling/Disabling FlexBoot/UEFI in EXPROM via mlxconfig</i> in the Mellanox PreBoot Drivers (FlexBoot &amp; UEFI) User Manual.</p>
<b>VLAN Priority</b>	Set the default VLAN priority to 0.
<b>Link Aggregation Control Protocol (LACP)</b>	LACP support is disabled by default. It can be enabled via mlxconfig.

- a. Please note, not all cards are compiled with FlexBoot. For the full list of the OPNs compiled with FlexBoot, please refer to the firmware Release Notes



### 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 (Sheet 1 of 7)**

Internal Ref.	Description
1295727	<b>Description:</b> In Secure Host mode, the Ctrl + B option will be “read only”, changes will not be applied and may cause unknown behavior.
	<b>WA:</b> N/A
	<b>Keywords:</b> Secure Host mode, Ctrl + B option
	<b>Discovered in Version:</b> 3.5.403
1066544	<b>Description:</b> Chain-loading boot-loaders that works with interrupts fails to boot on multi-host adapter cards.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> Chain-loading, boot
	<b>Discovered in Version:</b> 3.5.403
1149467	<b>Description:</b> Chain-loading "ipxe.pxe" and "undionly.kpxe" over InfiniBand is currently not supported when using DHCP client identification based on InfiniBand 32-bit Prefix+GUID (as with FlexBoot).
	<b>Workaround:</b> N/A
	<b>Keywords:</b> FlexBoot, chainload, InfiniBand, undionly.kpxe, ipxe.pxe
	<b>Discovered in Version:</b> 3.5.305
841198	<b>Description:</b> FlexBoot fails to boot when the following occurs: <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>
	<b>Workaround:</b> N/A
	<b>Keywords:</b> PXE boot, iSCSI
843377/849223	<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.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> Physical MAC, Boot menu

**Table 7 - Known Issues (Sheet 2 of 7)**

Internal Ref.	Description
656001	<b>Description:</b> Booting from WDS and Windows DHCP server when only Option 66 is enabled (without Option 67), is not supported.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> DHCP
776057	<b>Description:</b> Citrix PVS boot is not supported.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> Citrix PVS boot
689460	<b>Description:</b> FlexBoot uses system UUID to generate the client DUID-UUID as per RFC 6355, the data conveyed with DHCPv6 Code 1 (Option ID).
	<b>Workaround:</b> N/A
	<b>Keywords:</b> DUID-UUID
928217	<b>Description:</b> Installing ESXi 6.5/6.0 on iSCSI target is currently not supported.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> ESXi 6.5/6.0, iSCSI target
689460	<b>Description:</b> 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).
	<b>Workaround:</b> 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:00:00:00:00:00:02:00:00:02:c9:00:&lt;Port-GUID&gt; ; hardware ethernet &lt;Port-MAC&gt; ; fixed-address &lt;IPoIB Address&gt; ; filename "ipxe.pxe" ; if exists user-class and option user-class = "iPXE" { filename "pxelinux.0" ; } } </pre>
	<b>Keywords:</b> undionly.kpxe or ipxe.pxe

**Table 7 - Known Issues (Sheet 3 of 7)**

Internal Ref.	Description
928217	<p><b>Description:</b> Due to interoperability issue between the ESXi installer and the lpxelinux bootloader, when trying to install ESXi 6.5 on iSCSI target using lpxelinux.0 as a boot-loader, a PSOD occurs.</p> <p><b>Workaround:</b> Use FlexBoot (or iPXE) to load mboot.c32 directly instead of pxelinux.0 using the script below:</p> <pre data-bbox="472 562 1291 674">#!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.  <b>Note:</b> iPXE does not need an absolute path, however, mboot.c32 requires it.</p> <p><b>Keywords:</b> mboot.c32, PSOD,</p>
976878	<p><b>Description:</b> When using bootloader grub2 to boot WDS, if the WDS boot fails, an RSOD might appear.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Bootloader grub2, WDS, RSOD</p>
1072419	<p><b>Description:</b> 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.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Bootloader grub2, WDS, RSOD</p>
-	<p><b>Description:</b> Several BIOS vendors have limited boot-vector space and may not display FlexBoot in their boot menu.</p> <p><b>Workaround:</b> Disable the embedded NIC boot agent in BIOS</p> <p><b>Keywords:</b> BIOS</p>
-	<p><b>Description:</b> In several BIOS, the server might hang during FlexBoot booting due to wrong configuration of the PMM.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> BIOS</p>
-	<p><b>Description:</b> Only EBX, ESI, DS, ES registers can be saved in Boot Entry.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> BIOS</p>

**Table 7 - Known Issues (Sheet 4 of 7)**

Internal Ref.	Description
-	<p><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.</p> <p><b>Workaround:</b> Follow the instructions described in the FlexBoot UM for the proper iSCSI boot/install</p> <p><b>Keywords:</b> BIOS</p>
673114/821899	<p><b>Description:</b> FlexBoot banner might not be shown in some BIOSes.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> BIOS</p>
-	<p><b>Description:</b> In some cases, PXE boot will not work if the client was given only the file-name without next-server (siaddr).</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> PXE Boot</p>
-	<p><b>Description:</b> PXE boot after iSCSI boot with static configuration is currently not supported.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> PXE Boot</p>
-	<p><b>Description:</b> Boot over VLAN with IB port is currently not supported.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> PXE Boot</p>
-	<p><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.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> PXE Boot</p>
-	<p><b>Description:</b> Chain-loading gPXE stack is not supported.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> PXE Boot</p>
647143	<p><b>Description:</b> Executing a partial boot loop while only downloading the NBP and selecting localboot is unsupported and may cause undefined behavior.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> PXE Boot</p>

**Table 7 - Known Issues (Sheet 5 of 7)**

Internal Ref.	Description
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>Workaround:</b> N/A
	<b>Keywords:</b> PXE Boot
-	<b>Description:</b> iSCSI over IB is not tested.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> iSCSI
-	<b>Description:</b> iSCSI over DCB is not supported.
	<b>Workaround:</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>Workaround:</b> N/A
	<b>Keywords:</b> iSCSI
-	<b>Description:</b> Boot retries is currently not functional when booting from iSCSI.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> iSCSI
655800	<b>Description:</b> iSCSI over IPv6 is not supported.
	<b>Workaround:</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>Workaround:</b> N/A
	<b>Keywords:</b> User Interface
-	<b>Description:</b> FlexBoot Boot Menu will not be visible in serial output.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> User Interface

**Table 7 - Known Issues (Sheet 6 of 7)**

Internal Ref.	Description
-	<p><b>Description:</b> Large Receive Offload (LRO) and iSCSI may not interoperate due to a bug in current Linux kernel distributions.</p> <p><b>Workaround:</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).</p> <p><b>Keywords:</b> Networking</p>
-	<p><b>Description:</b> 56Gb/s is currently not supported.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Link Speed</p>
-	<p><b>Description:</b> Setting the number of Virtual Functions higher than the machine's memory capability may cause memory issues and system instability.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Virtualization</p>
-	<p><b>Description:</b> SLAM, FTP, HTTPS and SRP are currently not supported.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Protocols</p>
-	<p><b>Description:</b> Occasionally, using the Spanning Tree Protocol (STP) in the switches may cause packet drops and boot failure in the system.</p> <p><b>Workaround:</b> 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><b>Keywords:</b> Protocols</p>
-	<p><b>Description:</b> FCoE, BCV are not supported.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Protocols</p>
655800	<p><b>Description:</b> IPv6 can only run if a RADVD service is running in the network.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Protocols</p>
-	<p><b>Description:</b> IPv6 over IB is not supported.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Protocols</p>

**Table 7 - Known Issues (Sheet 7 of 7)**

Internal Ref.	Description
655800	<b>Description:</b> Enabling IPv6 first and then IPv4 is currently not supported.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> Protocols

## 4 Bug Fixes History

**Table 8 - Fixed Bugs List**

Internal Ref.	Description
1157875	<b>Description:</b> Pressing any of the arrow keys during boot might cause the boot process to be aborted.
	<b>Keywords:</b> Abort boot, arrows, FlexBoot
	<b>Discovered in Release:</b> 3.5.305
	<b>Fixed in Release:</b> 3.5.403
1113560	<b>Description:</b> Fixed an issue that prevented the first iSCSI target parameters to be reset to their default values.
	<b>Keywords:</b> iSCSI target
	<b>Discovered in Release:</b> 3.5.110
	<b>Fixed in Release:</b> 3.5.305
-	<b>Description:</b> FlexBoot supports only 2K MTU.
	<b>Keywords:</b> Networking
	<b>Discovered in Release:</b> 3.4.903
	<b>Fixed in Release:</b> 3.5.210
843209	<b>Description:</b> Fixed an 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.
	<b>Keywords:</b> Link up, Ports
	<b>Discovered in Release:</b> 3.4.903
	<b>Fixed in Release:</b> 3.5.109
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



**Table 8 - Fixed Bugs List**

Internal Ref.	Description
792432	<p><b>Description:</b> Booting PXE using Grub2.X over HP G9/G8 servers results in system hang.</p> <p><b>Keywords:</b> PXE boot, Grub2.X, HP G9/G8</p> <p><b>Discovered in Release:</b> 3.4.719</p> <p><b>Fixed in Release:</b> 3.4.903</p>
690792	<p><b>Description:</b> If the PMM fails to allocate memory, the system hangs since FlexBoot cannot load from the expansion ROM.</p> <p><b>Keywords:</b> PMM, expansion ROM</p> <p><b>Discovered in Release:</b> 3.4.719</p> <p><b>Fixed in Release:</b> 3.4.812</p>
697291	<p><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.</p> <p><b>Keywords:</b> PXE Boot</p> <p><b>Discovered in Release:</b> 3.4.719</p> <p><b>Fixed in Release:</b> 3.4.812</p>
689068	<p><b>Description:</b> In hybrid BIOSes, if the BIOS loads legacy driver without closing the UEFI driver, the legacy driver fails to load.</p> <p><b>Keywords:</b> BIOS, legacy mode</p> <p><b>Discovered in Release:</b> 3.4.719</p> <p><b>Fixed in Release:</b> 3.4.812</p>
634794	<p><b>Description:</b> Enabled 'boot_pci_busdevfn' initialization when booting from UNDI loader.</p> <p><b>Keywords:</b> UNDI loader</p> <p><b>Discovered in Release:</b> 3.4.650</p> <p><b>Fixed in Release:</b> 3.4.719</p>
-	<p><b>Description:</b> Removed the instruction that enabled write-protected section modifications after POST.</p> <p><b>Keywords:</b> PXE Boot</p> <p><b>Discovered in Release:</b> 3.4.650</p> <p><b>Fixed in Release:</b> 3.4.719</p>

## 5 Changes and New Feature History

**Table 9 - Changes and New Feature History**

Release	Changes
<b>Rev. 3.5.305</b>	
<b>PXE Boot</b>	Added ESC option as an abort key during PXE boot process.
<b>FlexBoot Link Aggregation Control Protocol (LACP)</b>	Added the ability to enable/disable FlexBoot LACP via mlxconfig.
<b>Upstream sync</b>	Synced the source with iPXE (upstream sync)
<b>Rev. 3.5.210</b>	
<b>Promiscuous VLAN mode</b>	Added support for promiscuous VLAN mode.
<b>MTU</b>	<b>[InfiniBand]</b> Added support for configurable MTU.
<b>Expansion ROM version</b>	Enabled expansion ROM ( <code>exp_rom</code> ) version exposition according to the new specification (e.g. expose ARCH in flint tool).
<b>FlexBoot UI</b>	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 Flex-Boot menu
<b>Upstream sync</b>	Synced the source with iPXE (upstream sync)
<b>Rev. 3.5.110</b>	
<b>Networking</b>	Ethernet only: The MTU value is set to 1500 upon driver's bring up.
<b>Rev. 3.5.109</b>	
<b>FlexBoot UI</b>	Added support for "Undi network wait timeout" Enhanced FlexBoot/firmware debug capability using Flexboot UI
<b>Performance</b>	Performance enhancements in Ethernet mode
<b>Upstream sync</b>	Synced the source with iPXE (upstream sync)
<b>Rev. 3.4.903</b>	
<b>iSCSI re-imaging</b>	Enables the user to install a new image on active iSCSI target
<b>FlexBoot UI</b>	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
<b>Bootimg</b>	Enabled booting with non-default Pkey in ConnectX-4 when the physical port is IB
<b>Link Status</b>	Removed link status line printout at boot time
<b>Boot Menu</b>	Changed the Bus:Device:Function format in boot menu, from <code>PCI-Bus:Dev.Func</code> to <code>0000:Bus:Dev.Func</code>

**Table 9 - Changes and New Feature History**

Release	Changes
Upstream sync	Synced the source with iPXE (upstream sync)
<b>Rev. 3.4.812</b>	
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. <b>Note:</b> 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)
<b>Rev. 3.4.719</b>	
IPv6	Added IPv6 support
x64 Architecture	Added x64 architecture support in ConnectX-4 and Connect-IB adapter cards
SHELL CLI	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> For further information, please refer to: <a href="http://ipxe.org/cmd">http://ipxe.org/cmd</a>
Upstream sync	Synced the source with iPXE (upstream sync)
<b>Rev. 3.4.650</b>	
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)