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Mellanox ConnectX®-4 Lx Firmware Release Notes

Rev 14.16.0086

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Release Update History

Table 1 - Release Update History

Release	Date	Description
Rev 14.16.0086	April, 2016	Initial version of this firmware release.

1 Overview

These are the release notes for the ConnectX®-4 Lx adapters firmware Rev 14.16.0086. This firmware supports the following protocols:

- Ethernet - 1GigE, 10GigE, 25GigE, 40GigE, 50GigE
- PCI Express 3.0, supporting backwards compatibility for v2.0 and v1.1

1.1 Supported Devices

This firmware supports the devices and protocols listed in Table 2.

Table 2 - Supported PSIDs

Device Part Number	PSID	Device Name	FlexBoot	UEFI
MCX4121A-ACAT	MT_2420110034	ConnectX®-4 Lx EN network interface card; 25GbE dual-port SFP28; PCIe3.0 x8; ROHS R6	Yes	No

1.2 Supported Cables and Modules

Please refer to the LinkX™ Cables and Transceivers web page

(www.mellanox.com -> Products -> Cables and Transceivers) for the list of supported cables.

1.2.1 Validated and Supported 25GbE Cables

Table 3 - Validated and Supported 25GbE Cables

Speed	Cable OPN #	Description
25GB/S	MCP2M00-A001	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1m
25GB/S	MCP2M00-A002	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m
25GB/S	MCP2M00-A003	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 3m
25GB/S	MCP7F00-A002	Mellanox® Passive Copper Hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2m
25GB/S	MCP7F00-A003	Mellanox® Passive Copper Hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m

1.3 Tested Switches

1.3.1 Tested 100Gb/s/EDR Switches

Table 4 - Tested 10Gb/s/EDR Switches

Speed	Switch Family	OPN # / Name	Description
100Gb/s	Spectrum	SN2700-CS2R	32-port Non-blocking 100GbE Open Ethernet Spine Switch System

1.4 Tools, Switch Firmware and Driver Software

Firmware Rev 14.16.0086 is tested with the following tools, SwitchX® firmware, and driver software:

Table 5 - Tools, Switch Firmware and Driver Software

	Supported Version
MLNX_OFED	3.2-2.0.0.0
MLNX_EN (MLNX_OFED based code)	3.2-2.0.0.0
MFT	4.4.0
MLNX-OS	• Spectrum: 3.5.0530
Spectrum™ Firmware	13.0350.0410
Windows Inbox Drivers	• Windows Server 2016 (Beta)

1.5 Supported FlexBoot

Firmware Rev 14.16.0086 supports the following FlexBoot:

Table 6 - Supported FlexBoot

	Supported Version
FlexBoot	3.4.719

1.6 Revision Compatibility

Firmware Rev 14.16.0086 complies with the following programmer's reference manual:

- *Mellanox Adapters Programmer's Reference Manual (PRM), Rev 0.31 or later,* which has Command Interface Revision 0x5. The command interface revision can be retrieved by means of the QUERY_FW command and is indicated by the field *cmd_interface_rev.*

2 Changes and New Features in Rev 14.16.0086

Table 7 - Firmware Rev 14.16.0086 Changes and New Feature

Feature/Change	Description
VPD Read	Added v1, v3, v6 tags to VPD read only tag
OVS Offload	Mellanox Accelerated Switching And Packet Processing (ASAP^2) Direct technology allows to offload OVS by handling OVS data-plain in Mellanox ConnectX-4 / ConnectX-4 Lx NIC hardware (Mellanox Embedded Switch or eSwitch) while maintaining OVS control-plain unmodified. The current actions supported by ASAP^2 Direct include packet parsing and matching, forward, drop along with VLAN push/pop or VXLAN encap/decap and HW based packet/byte flow statistics.
VXLAN encap/decap	Virtual Extensible LAN (VXLAN) is a network virtualization technology that improves scalability problems associated with large cloud computing deployments. It tunnels Ethernet frames within Ethernet + IP + UDP frames. Mellanox implements VXLAN encapsulation and decapsulation in the hardware.

3 Known Issues

The following table describes known issues in this firmware release and possible workarounds.

Table 8 - Known Issues (Sheet 1 of 5)

Internal Ref.	Issue
-	**Description:** To raise links with platforms based on the following ICs, comply with the following firmware version requirements: • ConnectX®-3 - 2.32.5100 • SwitchX® - 9.2.7300 (or MLNX-OS 3.3.5006)
	WA: N/A
	Keywords: Interoperability
682518	**Description:** Interoperability issue between ConnectX-4 or ConnectX-4 Lx adapter cards and ConnectX-2 adapter card when trying to raise a 10GbE link.
	WA: N/A
	Keywords: Interoperability
-	**Description:** PCIe capability “Device S/N” returns false value.
	WA: N/A
	Keywords: PCI
-	**Description:** When the link is Gen2, entering or exiting L1 state may cause bad CRC or DLLP indication.
	WA: N/A
	Keywords: PCI
600534	**Description:** Configuration space power management capability `PME_EN` cannot be set.
	WA: N/A
	Keywords: PCI
-	**Description:** PF direct pass-through is not supported (since PF FLR is not supported)
	WA: N/A
	Keywords: PF direct pass-through
687113	**Description:** Some Port Control Register do not return to the default value after the last port owner host restarts the driver.
	WA: Reboot or reset the driver. `reboot / mlxfwreset`
	Keywords: PRM

Table 8 - Known Issues (Sheet 2 of 5)

Internal Ref.	Issue

-	**Description:** Older MFT versions (4.0.0 and 3.8.0) may indicate that the latest GA firmware is old or that it cannot be compared with the existing firmware.
	A message similar to the below will be displayed upon firmware upgrade stage:
	`# flint -d <mst device> -i <image> burn`
	
	`Current FW version on flash: 12.1100.6630`
	`New FW version: 12.0012.0572`
	
	`Note: The new FW version is not newer than the current FW version on flash.`
	
	`Do you want to continue ? (y/n) [n] : y`

	WA: Choose one of the options below to upgrade firmware: • Upgrade to the latest MFT version (4.1.0) • Type "y" after the note flint provides Run flint with the "-force" flag
	Keywords: Firmware Upgrade/MFT
591240	**Description:** Traffic that is loopbacked due to QP.force_loopback being equaled to 1, is steered to the PF.
	WA: N/A
	Keywords: Ethernet Network
594964	**Description:** A minimum of 200 LFM is required in order to cool the MCX4411A-ACAN adapter card.
	WA: N/A
	Keywords: Temperature
601485/ 599810	**Description:** mlxfwreset does not function properly in old MFT versions after upgrading the firmware image.
	WA: Upgrade MFT to the latest release or use `reboot/power cycle` after upgrading firmware.
	Keywords: Firmware Tool
-	**Description:** Windows Server 2016 Inbox driver cannot work with firmware v14.12.0780
	WA: Use WinOF-2 v1.20 out-of-box driver
	Keywords: Windows Inbox Drivers
-	**Description:** Flashing the firmware requires server reboot. Firmware cannot be flashed twice without server reboot after first flashing
	WA: Reboot the server after firmware flashing
	Keywords: Upgrading/Downgrading

Table 8 - Known Issues (Sheet 3 of 5)

Internal Ref.	Issue
655688	**Description:** When arming SRQ for limit event, the device might issue an event with `context_index=0`.
	WA: N/A
	Keywords: RoCE
-	**[For customers developing custom low level drivers]** **Description:** VFs internal FLR is not supported in PF teardown HCA command.
	WA: Before unloading the PF driver, PF driver must disable all its active VFs by performing the following: 1. Run the `disable_hca` command on all the `function_ids` 2. Wait until firmware returns all VFs allocated pages.
	Keywords: Virtualization, FLR
-	**[For customers developing custom low level drivers]** **Description:** `VNodeInfo and VPortGuidInfo virtualization Attributes MADs` are not supported.
	WA: N/A
	Keywords: Virtualization
-	**[For customers developing custom low level drivers]** **Description:** The value of `log_max_ra_res_qp` in `set_hca_cap` command should be the same in all functions.
	WA: N/A
	Keywords: Virtualization
-	**Description:** Function (PF/VF) TX port counters are not supported.
	WA: N/A
	Keywords: Virtualization
-	**Description:** PF driver must work with pages event queue.
	WA: N/A
	Keywords: Virtualization
596637	**Description:** SR-IOV Ethernet supports up to 18 VFs per port only.
	WA: N/A
	Keywords: Virtualization
597718	**Description:** Privileged Vport egress traffic is not blocked when Vport is not active
	WA: N/A
	Keywords: Virtualization

Table 8 - Known Issues (Sheet 4 of 5)

Internal Ref.	Issue
591240	**Description:** Any local (internal) loopbacked packet is counted by the Vport counters, although Vport counters should count only traffic that crosses the Vport.
	WA: N/A
	Keywords: Virtualization
597718	**Description:** Vport number in virtual trap might be reported incorrectly
	WA: N/A
	Keywords: Virtualization
689471	**Description:** Single FTE that catches both untagged and prio-tagged packets (by giving an FTE with match_value.vlan_tag = 0 and match_value.vid = 0) is currently not supported.
	WA: N/A
	Keywords: Ethernet Network
688670	**Description:** Configuring the SM with VL weight 0 on some VL, and running traffic on it, causes the driver to hang during unload.
	WA: Cold power-cycle the server
	Keywords: QoS
677359	**Description:** When Clause 74 Fire-Code FEC is active, and there are FC corrected errors, both the `FC_correctable` counter and the `FC_uncoreectable` counter are increment.
	WA: N/A
	Keywords: Clause 74 Fire-Code FEC, Counters
691387/ 691415	**Description:** In a Multihost setup, when running a single TCP stream, you might experience sub optimal throughput.
	WA: Use multiple streams to reach optimal results
	Keywords: Multihost setup, Performance, TCP stream
693832	**Description:** In a Multihost InfiniBand setup, Host#0 should be loaded first and unloaded last. Currently the device does not support `reboot/stop_driver/flr` on Host#0 while other hosts are active. Note: Host0 can be selected by changing the INI
	WA: N/A
	Keywords: Multihost InfiniBand

Table 8 - Known Issues (Sheet 5 of 5)

Internal Ref.	Issue
693832	**Description:** In an InfiniBand Multihost and SR-IOV setups, traffic should contain GRH (GID index), traffic without GRH will be forwarded to vport0 (“Host0”). OpenSM should be configured as follow (opensm.conf): • virt_enable should be 2 • Enable Qos: `qos TRUE`
	WA: N/A
	Keywords: Multihost setup
693832	**Description:** In a Multihost InfiniBand setup, only chassis reboot is supported
	WA: N/A
	Keywords: Multihost setup, chassis
691754	**Description:** `end_padding_mode` is required in `CREATE_QP` and not in `INIT_2_RTR` command as defined in the PRM
	WA: N/A
	Keywords: `end_padding_mode`, PRM
691490	**Description:** LR4 cable events are sent although the port is up
	WA: N/A
	Keywords: Management
748199	**Description:** In case of a steering rule in the e-sw FDB with encap action and an external port as destination, the transmitted multicast packet that matches this rule is sent to the wire and the loopback. Additionally, the locally looped back packet has an encap header as well.
	WA: N/A
	Keywords: FDB multicast local loopback packet
660148	**Description:** Using flow counters in the FDB Flow Table may result in vport counters clearing functionality issues (QUERY_VPORT_COUNTER.clear == 1).
	WA: N/A
	Keywords: FDB Flow Table
623125/ 660147	**Description:** Flow counter is supported only in case the FTE that does not include a flow_tag or has TIR as a destination.
	WA: N/A
	Keywords: Flow counter

4 Bug Fixes History

Table 9 lists the bugs fixed in this release.

Table 9 - Fixed Bugs List

Internal Ref.	Issue
691194	**Description:** In some cases, a Bit Error Rate is not optimal on 10G/40G links.
	Keywords: 10G/40G links, Bit Error Rate
	Discovered in Release: 14.14.1100
	Fixed in Release: 14.14.2036
689788	**Description:** Instability of Link Training Flow occurs during 100G Auto-Negotiation.
	Keywords: Link Training Flow, Auto-Negotiation
	Discovered in Release: 14.14.1100
	Fixed in Release: 14.14.2036
684496	**Description:** Fixed a rare issue which caused the command to hang when moved the QP to RESET and back to RTS.
	Keywords: QP, RTS
	Discovered in Release: 14.14.1100
	Fixed in Release: 14.14.2036
665089	**Description:** Improved RDMA READ bandwidth under packet lost scenario.
	Keywords: RDMA READ bandwidth
	Discovered in Release: 14.14.1100
	Fixed in Release: 14.14.2036
736195	**Description:** Added support for pnat = 1 in HCA `access_reg` command as required by the ibdiagnet tool.
	Keywords: `access_reg` command, ibdiagnet
	Discovered in Release: 14.14.1100
	Fixed in Release: 14.14.2036
696486	**Description:** Increased the steering hash tables static size from 128 to a maximum of 32K entries.
	Keywords: Steering hash tables static size
	Discovered in Release: 14.14.1100
	Fixed in Release: 14.14.2036

Table 9 - Fixed Bugs List

Internal Ref.	Issue
691649	**Description:** Prevented miscalculation of module temperature when using 100Gb/s cables (OPN: MFA1A00-Cxxx for 100GbE).
	Keywords: 100Gb/s cables
	Discovered in Release: 14.14.1100
	Fixed in Release: 14.14.2036
693446	**Description:** Reduced one hop for Unicast RX steering, steering pipes balancing.
	Keywords: Ethernet Steering performance
	Discovered in Release: 14.14.1100
	Fixed in Release: 14.14.2036
690614	**Description:** Non-volatile configuration of Port Type `TLV` more than 50 times might cause system hang.
	Keywords: Non-volatile configuration, Port Type `TLV`
	Discovered in Release: 14.14.1100
	Fixed in Release: 14.14.2036
691043	**Description:** Enabled RoCE IPv4 Multicast. This prevents MCG command from failing when an IPv4 is mapped to an IPv6 address.
	Keywords: RoCE IPv4 Multicast
	Discovered in Release: 14.14.1100
	Fixed in Release: 14.14.2036
649696	**Description:** If the PF driver or the tool (e.g. ethtool) use PAOS DOWN command (e.g. by ifconfig down or ip link set down), loopback traffic is blocked for all functions on this port (PF<->VFs / VF<->VF) In Multihost loopback, the traffic will be blocked once the firmware receives the PAOS down command from all PFs. However, the loopback traffic will not be blocked when the port is down due to the physical link (for example: cable plugged out, switch port down).
	Keywords: Multihost loopback
	Discovered in Release: 14.14.1100
	Fixed in Release: 14.14.2036
659307	**Description:** Fixed a 25G and 50G link issue when Clause 91 RS FEC was active.
	Keywords: 25G and 50G link, Clause 91 RS FEC
	Discovered in Release: 14.12.1100
	Fixed in Release: 14.14.1100

Table 9 - Fixed Bugs List

Internal Ref.	Issue
676877	**Description:** Added a missing invalidation of eSwitch cache upon FLR which caused the upcoming driver load to either fail or not to be able to transmit.
	Keywords: Packet Transmit, FLR
	Discovered in Release: 14.12.1240
	Fixed in Release: 14.14.1100
670185	**Description:** Fixed a UEFI IPv6 PXE boot failure on ConnectX-4 Lx 25GE OCP card.
	Keywords: UEFI, OCP card
	Discovered in Release: 14.12.1240
	Fixed in Release: 14.14.1100
668221	**Description:** Fixed an issue which prevented Vport counters from counting local loopback packets. Packets now are filter by the self-loopback prevention.
	Keywords: Vport, local loopback packets
	Discovered in Release: 14.12.1240
	Fixed in Release: 14.14.1100
667288	**Description:** Reported INTx as unsupported to allow PFs Passthrough on PowerKVM.
	Keywords: Passthrough, PowerKVM
	Discovered in Release: 14.12.1100
	Fixed in Release: 14.14.1100
596637	**Description:** SR-IOV Ethernet supports up to 18 VFs per port only.
	Keywords: Virtualization
	Discovered in Release: 14.12.1240
	Fixed in Release: 14.14.1100
591240	**Description:** Fixed and incident what allowed local (internal) loopbacked packets to be counted by the Vport counters, although Vport counters should count only traffic that crosses the Vport.
	Keywords: Virtualization
	Discovered in Release: 14.12.1240
	Fixed in Release: 14.14.1100

Table 9 - Fixed Bugs List

Internal Ref.	Issue
664558	**Description:** Fixed an issue preventing driver loading or TX traffic sending upon reboot, after ungraceful driver unload.
	Keywords: Driver Load
	Discovered in Release: 14.12.1240
	Fixed in Release: 14.14.1100
657680	**Description:** Fixed casting of BMC MAC before steering API.
	Keywords: BMC, Steering API
	Discovered in Release: 14.12.1240
	Fixed in Release: 14.14.1100
614403	**Description:** Fixed the PCI write flow to take into consideration the PCI MTU. This fix eliminates the need for NOPs in the flow, which resulted from PPC larger PCI MTU. The single queue limitation for READ is due to a hardware limitation of the number of READ request in a given time.
	Keywords: PCI MTU
	Discovered in Release: 14.12.1100
	Fixed in Release: 14.14.1100
630327	**Description:** Fixed a case that caused FlexBoot to not work as expected with systems that run with "large bar" enabled (Above 4G Decoding) over Connect-IB or ConnectX-4 HCAs.
	Keywords: FlexBoot, 4G Decoding
	Discovered in Release: 14.12.1100
	Fixed in Release: 14.14.1100
629563	**Description:** Fixed an over-subscription on the RX buffer when Flow Control was not enabled which caused the RX pipe to hang.
	Keywords: Flow Control
	Discovered in Release: 14.12.0780
	Fixed in Release: 14.12.1240

5 Firmware Changes and New Feature History

Table 10 - Firmware Changes and New Feature History

Firmware Version	Description
14.14.2036	• **Scatter FCS in RQ:** Enables software to scatter or strip FCS in RQ. • **Bug Fixes:** See Section 4, "Bug Fixes History", on page 15

14.14.1100	• **CQE Time Stamping:** Keeps track of the creation of a packet. A time-stamping service supports assertions of proof that a datum existed before a particular time.
	• **Priority Flow Control (PFC):** Applies pause functionality to specific classes of traffic on the Ethernet link.
	• **RDMA retransmission counters:** Custom port counters provide the user a clear indication about RDMA send/receive statistics and errors.
	• **Link Layer Discovery Protocol (LLDP):** The Link Layer Discovery Protocol (LLDP) is a vendor-neutral Link Layer protocol in the Internet Protocol Suite used by network devices for advertising their identity, capabilities, and neighbors on a IEEE 802 LAN. The protocol is formally defined in IEEE 802.1AB.
	• **1GbE Link Speed:** ConnectX-4 Lx adapters now support 1Gb/s Ethernet connectivity in addition to 10GigE, 25GigE, 40GigE, 50GigE
	• **Flow Steering Counters:** Provides a clear indication of Flow Steering statistics and errors.
	• **WQE Inline Header:** The minimal amount of packet headers inlined in the WQE's Eth Segment.
	• **table-miss Flow:** A flow table may include a table-miss flow entry, which renders all Match Fields wildcards. If a packet does not match a flow entry in a flow table, this is a table miss. The behavior on a table miss depends on the table configuration. A table-miss flow entry in the flow table may specify how to process unmatched packets.
	• **Strided WQE User Space:** Striding RQ is a receive queue comprised by work queue elements (i.e. WQEs), where multiple packets of LRO segments (i.e. message) are written to the same WQE.
	• **SR-IOV (EN eSwitch & RoCE):** Single Root IO Virtualization (SR-IOV) is a technology that allows a physical PCIe device to present itself multiple times through the PCIe bus.
	• **Vector Calculation/Erasure Coding Offload:** Uses the HCA for offloading erasure coding calculations.
	• **Firmware Image Time Stamping for Multihost Environment:** Enables the administrator to add a timestamp to the firmware they want to upgrade to avoid situations where one host tries to upgrade the firmware and another tries to downgrade; which may lead to two or more unnecessary server reboots.
	For further information, please refer to MFT User Manual.
	• **Link params modification via access registers:** The change includes the following:
	  • Changed port configuration which required link re-training (such as speed)
	  • PAOS down
	  • PAOS up
	This change, will cause the link to toggle and new configurations to take effect.
	• **Checksum Calculation on Image/Device:** Flint utility allows performing an MD5 checksum on the non-persistent sections of the firmware image.
	For further information, please refer to MFT User Manual.

14.12.1240	• See Section 4, "Bug Fixes History", on page 15

Table 10 - Firmware Changes and New Feature History

Firmware Version	Description
14.12.1100	• Reduced the port link-up time when negotiating according to Clause 73 (DME)

14.12.0780	• Large Receive Offload (LRO)
	• Large Send Offload (LSO)
	• Receive Side Scaling (RSS)
	• Global Pause
	• RoCEv1.0/RoCEv2.0
	• Flow Steering
	• Sniffer Ethernet
	• Rate Limiter (at Beta level)
	• Multi packet WQE
	• Enhanced Transmission Selection standard (ETS)
	• Explicit Congestion Notification (ECN)
	• Priority Flow Control (PFC)
	• PCIe Function Level Reset (FLR)
	• Power Management L2/L3 flow support
	• Strided SRQ
	• Self Loopback support
	• Transport Domain support
	• CQ2EQ remapping
	• Added support for the following commands:
	  • `MODIFY/QUERY_ESW_VPORT_CONTEXT`
	  • `QUERY/MODIFY_CONG_STATUS`
	  • `QUERY/MODIFY_CONG_PARAMS`
	  • `QUERY_CONG_STATISTICS`
	  • `ADD/DELETE_VXLAN_UDP_DPORT`
	• VXLAN/NVGRE Stateless offload
	In this release, this feature is supported through Windows ONLY
	• SR-IOV EN (at Beta level)
	• CQE zipping
	• Dynamically Connected (DC) transport
	• Wake-on-Lane/Standby
	• FlexBoot/UEFI support
	• Non-Volatile Configuration (NVConfig). For the complete list, please refer to Section 8, on page 28.

14.12.0780	• Enabled port management. Now one port can be set as Ethernet and one as InfiniBand.

6 FlexBoot Changes and New Features

For further information, please refer to FlexBoot Release Notes (www.mellanox.com > Software > InfiniBand/VPI Drivers > FlexBoot).

Table 11 - FlexBoot Changes and New Feature

Version	Description

3.4.719	• Added IPv6 support
	• Added x64 architecture support in ConnectX-4 and Connect-IB adapter cards
	• Removed support for the following SHELL CLI commands:
	  • 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
	• Synced the source with iPXE (upstream sync)

3.4.650	• Added support for .mrom images larger than 128kB • Added support for ConnectX-4 EN and ConnectX-4 Lx EN • Synced the source with iPXE (upstream sync) • Moved to flat real mode when calling INT 1a,b101 to avoid BIOSes issues • Added support for detecting Spanning Tree Protocol non-forwarding ports (RSTP/ MSTP)

6.1 FlexBoot Known Issues

Table 12 - FlexBoot Known Issues

Internal Ref.	Issue
-	**Description:** Several BIOS vendors have limited boot-vector space and may not display FlexBoot in their boot menu.
	WA: 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.
	WA: N/A
	Keywords: BIOS
-	**Description:** Only EBX,ESI,DS,ES registers can be saved in Boot Entry.
	WA: 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.
	WA: Follow the instructions described in the FlexBoot UM for the proper iSCSI boot/ install
	Keywords: BIOS
673114	**Description:** FlexBoot banner might not be shown in some BIOSes.
	WA: 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).
	WA: N/A
	Keywords: PXE Boot
-	**Description:** In ConnectX-4, the PXE boot time measurement over TFTP Ethernet is 3:40 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.
	WA: N/A
	Keywords: PXE Boot
-	**Description:** PXE boot after iSCSI boot with static configuration is currently not supported.
	WA: N/A
	Keywords: PXE Boot

Table 12 - FlexBoot Known Issues

Internal Ref.	Issue
-	**Description:** Boot over VLAN with IB port is currently not supported.
	WA: 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.
	WA: N/A
	Keywords: PXE Boot
-	**Description:** Chain-loading gPXE stack may result in undesirable behavior.
	WA: 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.
	WA: 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.
	WA: N/A
	Keywords: PXE Boot
-	**Description:** iSCSI over IB is not tested.
	WA: N/A
	Keywords: iSCSI
-	**Description:** iSCSI over DCB is not supported.
	WA: 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.
	WA: N/A
	Keywords: iSCSI

Table 12 - FlexBoot Known Issues

Internal Ref.	Issue
-	**Description:** Boot retries is currently not functional when booting from iSCSI.
	WA: N/A
	Keywords: iSCSI
655800	**Description:** IPv6 is not supported.
	WA: N/A
	Keywords: iSCSI
-	**Description:** Boot menu is displayed as READ ONLY if the HCA card does not support flash configuration.
	WA: N/A
	Keywords: User Interface
-	**Description:** FlexBoot Boot Menu will not be visible in serial output.
	WA: N/A
	Keywords: User Interface
-	**Description:** FlexBoot Boot Menu will not be shown in ConnectX-4 if the physical port is IB.
	WA: N/A
	Keywords: User Interface
-	**Description:** FlexBoot Boot Menu will not be shown in ConnectX-4 and ConnectX-4 Lx if the physical port is IB
	WA: N/A
	Keywords: User Interface
-	**Description:** Large Receive Offload (LRO) and iSCSI may not interoperate due to a bug in current Linux kernel distributions.
	WA: 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:** Flexboot supports only 2K MTU.
	WA: N/A
	Keywords: Networking

Table 12 - FlexBoot Known Issues

Internal Ref.	Issue
-	**Description:** 56Gb/s is currently not supported.
	WA: N/A
	Keywords: Link Speed
-	**Description:** Blink LEDs are currently not supported.
	WA: N/A
	Keywords: LED
-	**Description:** Setting the number of Virtual Functions higher than the machine's memory capability may cause memory issues and system instability.
	WA: N/A
	Keywords: Virtualization
-	**Description:** SLAM, FTP, HTTPS and SRP are currently not supported.
	WA: N/A
	Keywords: Protocols
-	**Description:** Occasionally, using the Spanning Tree Protocol (STP) in the switches may cause packet drops and boot failure in the system.
	WA: Enable the "edgemode" if disabled on the switch, or use either portfast or edgemode functionality on the switch ports connected to the NICs.
	Keywords: Protocols
-	**Description:** FCoE, BCV are not supported.
	WA: N/A
	Keywords: Protocols
655800	**Description:** IPv6 can only run if a RADVD service is running in the network.
	WA: N/A
	Keywords: Protocols
-	**Description:** IPv6 over IB is not supported.
	WA: N/A
	Keywords: Protocols
655800	**Description:** IPv6 over WDS is not supported.
	WA: N/A
	Keywords: Protocols

Table 12 - FlexBoot Known Issues

Internal Ref.	Issue
655800	**Description:** Enabling IPv6 first and then IPv4 is currently not supported.
	WA: N/A
	Keywords: Protocols
656001	**Description:** Booting from WDS and Windows DHCP server when only Option 66 is enabled (without Option 67), is not supported.
	WA: N/A
	Keywords: DHCP
691148	**Description:** When connecting a pre-configured port with VLAN to an IB fabric, the port runs as Ethernet port with the VLAN tag.
	WA: Disable VLAN in the boot menu before connecting the Ethernet port to the Infini-Band fabric.
	Keywords: VLAN, Port Management
737512	**Description:** If the client gets "PXE boot menu" when contacting the DHCP, it will PXE boot first regardless of the boot priority.
	WA: N/A
	Keywords: ISCSI, DHCP

7 Unsupported Features and Commands

7.1 Unsupported Features

The following advanced feature are unsupported in the current firmware version:

- Service types not supported:
  - SyncUMR
  - Mellanox transport
  - PTP
  - RAW IPv6
  - PTP (IEEE 1588)
- INT-A not supported for EQs only MSI-X
- PCI VPD write flow (RO flow supported)
- Streaming Receive Queue (STRQ) and collapsed CQ
- Precise clock synchronization over the network (IEEE 1588)
- Data integrity validation of control structures
- SM is not supported on VFs
- DC is not supported in: SR-IOV, and RoCE

7.2 Unsupported Commands

- QUERY_MAD_DEMUX
- SET_MAD_DEMUX
- PAGE_FAULT_RESUME
- ACTIVATE_TRACER
- DEACTIVATE_TRACER
- ACCESS_REG_SPACE
- ACCESS_REG_SPACE_DWORD
- ACTIVATE/DEACTIVATE_TRACER
- QUERY/MODIFY_SCHED_QUEUE
- CREATE_RQ - MEMORY_RQ_RMP

8 Supported Non-Volatile Configurations

Table 13 - Per-physical Port Settings

Name	Parameter Index
VPI settings	0x12
RoCE CC	0x107
RoCE CC ECN	0x108

Table 14 - Global Settings

Name	Parameter Index
PCI settings	0x80
PCI setting capabilities	0x81
TPT settings	0x82
TPT capabilities	0x83
Option ROM ini	0x100
Option ROM capabilities	0x101

Table 15 - Per host/function Settings

Name	Parameter Index
Wake-on-LAN	0x10
External Port	0x192