



Mellanox ConnectX-3 Firmware Release Notes

Rev 2.42.5032

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Release Update History

Table 1 - Release Update History

Release	Date	Description
Rev 2.42.5032	April 15, 2018	Initial version of this firmware release

1 Overview

These are the release notes for the ConnectX®-3 adapters firmware Rev 2.42.5032. This firmware supports the following protocols:

- InfiniBand – SDR, DDR, QDR, FDR10, FDR
- Ethernet - 1GigE, 10GigE, 40GigE and 56GigE¹
- PCI Express 3.0, supporting backwards compatibility for v2.0 and v1.1

1.1 Supported Cables and Modules

Please refer to the LinkX™ Cables and Transceivers web page (<http://www.mellanox.com/products/interconnect/cables-configurator.php>) for the list of supported cables.

1.1.1 Validated and Supported 1GbE/10GbE Cables

This firmware was tested with the 10GbE/1GbE cables and modules listed in the table below.

Table 2 - Validated and Supported 1GbE/10GbE Cables (Sheet 1 of 5)

Speed	OPN #	Description
NA	MAM1Q00A-QSA	MELLANOX QSFP TO SFP+ ADAPTER
1GbE	453151-B21	HP BLc VC 1Gb SX SFP Opt Kit
1GbE	453154-B21	HP BLc VC 1Gb RJ-45 SFP Opt Kit
1GbE	MC3208011-SX	MELLANOX OPTICAL MODULE ETH 1GBE 1GB/S SFP LC-LC SX 850NM UP TO 500M
1GbE	MC3208411-T	MELLANOX MODULE ETH 1GBE 1GB/S SFP BASE-T UP TO 100M
10GbE	CAB-SFP-SFP-1M	passive copper cable, SFP+, 10 Gb/s, 1m
10GbE	CAB-SFP-SFP-2M	passive copper cable, SFP+, 10 Gb/s, 2m
10GbE	CAB-SFP-SFP-3M	passive copper cable, SFP+, 10 Gb/s, 3m
10GbE	CAB-SFP-SFP-5M	passive copper cable, SFP+, 10 Gb/s, 5m
10GbE	XDL-TWX0101	Brocade passive copper cable, SFP+, 10 Gb/s, 1m
10GbE	XDL-TWX0301	Brocade passive copper cable, SFP+, 10 Gb/s, 3m
10GbE	XDL-TWX0501	Brocade passive copper cable, SFP+, 10 Gb/s, 5m
10GbE	SFP-H10GB-1M	Cisco SFP+ cable
10GbE	SFP-H10GB-3M	Cisco SFP+ cable
10GbE	SFP-H10GB-5M	Cisco SFP+ cable
10GbE	MC2309124-007	QSFP-4SFP10G

1. 56 GbE is a Mellanox propriety link speed and can be achieved while connecting a Mellanox adapter cards to Mellanox SX10XX switch series or connecting a Mellanox adapter card to another Mellanox adapter card.

Table 2 - Validated and Supported 1GbE/10GbE Cables (Sheet 2 of 5)

Speed	OPN #	Description
10GbE	SFP-10G-SR	CISCO 10GBASE-SR SFP Module
10GbE	MC2309124-007	QSFP-4SFP10G
10GbE	0NWTGV	SFP+ to SFP+ copper cable 1M
10GbE	0C4D08	SFP+ to SFP+ copper cable 1M
10GbE	0V250M	SFP+ to SFP+ copper cable 1M
10GbE	0NMMT9	SFP+ to SFP+ copper cable 1M
10GbE	053HVN	SFP+ to SFP+ copper cable 3M
10GbE	05CWK6	SFP+ to SFP+ copper cable 3M
10GbE	00F1VT9	SFP+ to SFP+ copper cable 3M
10GbE	00358VV	SFP+ to SFP+ copper cable 5M
10GbE	05CN56	SFP+ to SFP+ copper cable 5M
10GbE	0V492M	SFP+ to SFP+ copper cable 5M
10GbE	0W25W9	SFP+ to SFP+ copper cable 5M
10GbE	0J90VN	40GbE QSFP+ to QSFP+ copper cable 5M
10GbE	TCPM2	QSFP+ to 4xSFP+ copper cable 1M
10GbE	27GG5	QSFP+ to 4xSFP+ copper cable 3M
10GbE	P8T4W	QSFP+ to 4xSFP+ copper cable 5m
10GbE	0WTRD1	Dell 10Gb SR SFP+ Opt
10GbE	C4D08	Force 10passive copper cable, SFP+, 10 Gb/s, 1m
10GbE	53HVN	Force 10passive copper cable, SFP+, 10 Gb/s, 3m
10GbE	5CN56	Force 10passive copper cable, SFP+, 10 Gb/s, 5m
10GbE	J9281B	HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable
10GbE	J9283B	HP X242 10G SFP+ SFP+ 3m DAC Cable
10GbE	J9285B	HP X242 10G SFP+ SFP+ 7m DAC Cable
10GbE	JD096B	HP X240 10G SFP+ SFP+ 1.2m DAC Cable
10GbE	JD095B	HP X240 10G SFP+ SFP+ 0.65m DAC Cable
10GbE	JD097B	HP X240 10G SFP+ SFP+ 3m DAD Cable
10GbE	JD096C	HP X240 10G SFP+ SFP+ 1.2m DAC Cable
10GbE	JD095C	HP X240 10G SFP+ SFP+ 0.65m DAC Cable
10GbE	JD097C	HP X240 10G SFP+ SFP+ 3m DAD Cable
10GbE	487649-B21	HP BLc SFP+ .5m 10GbE Copper Cable
10GbE	487652-B21	HP BLc SFP+ 1m 10GbE Copper Cable
10GbE	487655-B21	HP BLc SFP+ 3m 10GbE Copper Cable
10GbE	537963-B21	HP BLc SFP+ 5m 10GbE Copper Cable

Table 2 - Validated and Supported 1GbE/10GbE Cables (Sheet 3 of 5)

Speed	OPN #	Description
10GbE	487658-B21	HP BLc SFP+ 7m 10GbE Copper Cable
10GbE	AP784A	HP 3m C-series Passive Copper SFP+ Cable
10GbE	AP785A	HP 5m C-series Passive Copper SFP+ Cable
10GbE	AP818A	HP 1m B-series Active Copper SFP+ Cable
10GbE	AP819A	HP 3m B-series Active Copper SFP+ Cable
10GbE	455883-B21	HP BLc 10Gb SR SFP+ Opt
10GbE	455886-B21	HP BLc 10Gb LR SFP+ Opt
10GbE	J9150A	HP X132 10G SFP+ LC SR Transceiver
10GbE	J9151A	HP X132 10G SFP+ LC LR Transceiver
10GbE	AJ839A	HP 50m Multi-mode OM3 LC/LC FC Cable
10GbE	AJ838A	HP 30m Multi-mode OM3 LC/LC FC Cable
10GbE	AJ837A	HP 15m Multi-mode OM3 LC/LC FC Cable
10GbE	AJ836A	HP 5m Multi-mode OM3 LC/LC FC Cable
10GbE	AJ834A	HP 1m Multi-mode OM3 LC/LC FC Cable
10GbE	AJ833A	HP 0.5m Multi-mode OM3 LC/LC FC Cable
10GbE	JG329A	HP X240 40G QSFP+ to 4x10G SFP+ 1m
10GbE	JG330A	HP X240 40G QSFP+ to 4x10G SFP+ 3m
10GbE	JG331A	HP X240 40G QSFP+ to 4x10G SFP+ 5m
10GbE	JD095C	HP X240 10G SFP+ SFP+ 0.65m DAC Cable
10GbE	90Y9425-N28500A	IBM-Amphenol SFP+ 1m
10GbE	46K6184-L36836B	IBM-Amphenol SFP+ 5m
10GbE	46K6183-L36836B	IBM-Amphenol SFP+ 3m
10GbE	44X1371-N31295E	IBM-Amphenol SFP+ 7m
10GbE	95Y1634-N31295E	IBM SFP+ to SFP+ copper cable 5M
10GbE	44x1368-N31295E	IBM SFP+ to SFP+ copper cable 0.5M
10GbE	46K6182-L36836B	IBM SFP+ to SFP+ copper cable 1M
10GbE	46K6183-L36836B	IBM SFP+ to SFP+ copper cable 3M
10GbE	46K6184-L36836B	IBM SFP+ to SFP+ copper cable 5M
10GbE	QFX-SFP-DAC-1M	SFP+ 10 Gigabit Ethernet Direct Attach Copper (twinax copper cable) 1 m
10GbE	QFX-SFP-DAC-3M	SFP+ 10 Gigabit Ethernet Direct Attach Copper (twinax copper cable) 3 m
10GbE	QFX-SFP-DAC-5M	SFP+ 10 Gigabit Ethernet Direct Attach Copper (twinax copper cable) 5 m
10GbE	740-021308	Juniper 10GE SFP+ module

Table 2 - Validated and Supported 1GbE/10GbE Cables (Sheet 4 of 5)

Speed	OPN #	Description
10GbE	MC2309124-004	Mellanox Passive Copper Cable ETH 10GBE 10GbE QSFP TO SFP+ 4M
10GbE	MC2309124-005	Mellanox Passive Copper Cable ETH 10GBE 10GbE QSFP TO SFP+ 5M
10GbE	MC2309124-006	Mellanox Passive Copper Cable ETH 10GBE 10GbE QSFP TO SFP+ 6M
10GbE	MC2309124-007	Mellanox Passive Copper Cable ETH 10GBE 10GbE QSFP TO SFP+ 7M
10GbE	MC2309130-001	Mellanox Passive Copper Cable ETH 10GBE 10GbE QSFP TO SFP+ 1M
10GbE	MC2309130-002	Mellanox Passive Copper Cable ETH 10GBE 10GbE QSFP TO SFP+ 2M
10GbE	MC2309130-003	Mellanox Passive Copper Cable ETH 10GBE 10GbE QSFP TO SFP+ 3M
10GbE	MC2309130-00A	Mellanox Passive Copper Cable ETH 10GBE 10GbE QSFP TO SFP+ 0.5M
10GbE	MC2609125-004	Mellanox Passive Copper Hybrid Cable ETH 40GBE TO 4X10GBE QSFP TO 4X SFP+ 4M
10GbE	MC2609125-005	Mellanox Passive Copper Hybrid Cable ETH 40GBE TO 4X10GBE QSFP TO 4X SFP+ 5M
10GbE	MC2609130-001	Mellanox Passive Copper Hybrid Cable ETH 40GBE TO 4X10GBE QSFP TO 4X SFP+ 1M
10GbE	MC2609130-002	Mellanox Passive Copper Hybrid Cable ETH 40GBE TO 4X10GBE QSFP TO 4X SFP+ 2M
10GbE	MC2609130-003	Mellanox Passive Copper Hybrid Cable ETH 40GBE TO 4X10GBE QSFP TO 4X SFP+ 3M
10GbE	MC2609130-0A1	Mellanox Passive Copper Hybrid Cable ETH 40GBE TO 4X10GBE QSFP TO 4X SFP+ 1.5M
10GbE	MC3309124-004	Mellanox Passive Copper Cable ETH 10GBE 10GbE SFP+ 4M
10GbE	MC3309124-005	Mellanox Passive Copper Cable ETH 10GBE 10GbE SFP+ 5M
10GbE	MC3309124-006	Mellanox Passive Copper Cable ETH 10GBE 10GbE SFP+ 6M
10GbE	MC3309124-007	Mellanox Passive Copper Cable ETH 10GBE 10GbE SFP+ 7M
10GbE	MC3309124-0A3	Mellanox Passive Copper Cable ETH 10GBE 10GbE SFP+ 3.5M
10GbE	MC3309130-001	Mellanox Passive Copper Cable ETH 10GBE 10GbE SFP+ 1M
10GbE	MC3309130-002	Mellanox Passive Copper Cable ETH 10GBE 10GbE SFP+ 2M
10GbE	MC3309130-003	Mellanox Passive Copper Cable ETH 10GBE 10GbE SFP+ 3M
10GbE	MC3309130-00A	Mellanox Passive Copper Cable ETH 10GBE 10GbE SFP+ 0.5M
10GbE	MC3309130-0A1	Mellanox Passive Copper Cable ETH 10GBE 10GbE SFP+ 1.5M

Table 2 - Validated and Supported 1GbE/10GbE Cables (Sheet 5 of 5)

Speed	OPN #	Description
10GbE	MC3309130-0A2	Mellanox Passive Copper Cable ETH 10GBE 10GbE SFP+ 2.5M
10GbE	MFM1T02A-LR	Mellanox optical module, 1310nm, LR up to 10km
10GbE	MFM1T02A-SR	Mellanox optical module, 850nm, SR up to 300m
10GbE	MC6709309-050	Passive Optical Cable Multimode Splitter MPO To 8xlc 50 Meter

1.1.2 Validated and Supported 20GB/s Cables

This firmware was tested with the 20GB/s cables and modules listed in the table below.

Table 3 - Validated and Supported 20GB/s Cables

Speed	OPN #	Description
DDR	MC1204128-001	Mellanox Passive Copper Hybrid Cable IB DDR 20GB/S QSFP TO CX4 1M
DDR	MC1204128-003	Mellanox Passive Copper Hybrid Cable IB DDR 20GB/S QSFP TO CX4 3M
DDR	MC1204128-005	Mellanox Passive Copper Hybrid Cable IB DDR 20GB/S QSFP TO CX4 5M
DDR	MC1204130-002	Mellanox Passive Copper Hybrid Cable IB DDR 20GB/S QSFP TO CX4 2M

1.1.3 Validated and Supported 40GbE Cables

This firmware was tested with the 40GbE cables and modules listed in the table below.

Table 4 - Validated and Supported 40GbE Cables (Sheet 1 of 2)

Speed	OPN #	Description
40GbE	40GbE QSFP+ to QSFP	QSFP+ copper cable 3M
40GbE	40GbE QSFP+ to QSFP	QSFP+ copper cable 5M
40GbE	QSFP-H40G-CU1M	Cisco QSFP 40GbE cable
40GbE	QSFP-H40G-CU3M	Cisco QSFP 40GbE cable
40GbE	QSFP-H40G-CU5M	Cisco QSFP 40GbE cable
40GbE	QSFP-H40G-AOC15M	Cisco 40G QSFP Active Optic Cable 15m
40GbE	QSFP-40G-SR4	Cisco 40G QSFP Module
40GbE	05NP8R	40GbE QSFP+ to QSFP+ copper cable 1M
40GbE	00FC6KV	40GbE QSFP+ to QSFP+ copper cable 3M
40GbE	0RF2MY	Dell 40GbB QSFP module
40GbE	10093084-200AHFLF	FCI QSFP 0.75m 40GbE cable

Table 4 - Validated and Supported 40GbE Cables (Sheet 2 of 2)

Speed	OPN #	Description
40GbE	10093084-2005HFLF	FCI QSFP 0.5m 40GbE cable
40GbE	10093084-2010HFLF	FCI QSFP 1m 40GbE cable
40GbE	NWGTV	Force 10passive copper cable, QSFP, 40 Gb/s, 1m
40GbE	V492M	Force 10passive copper cable, QSFP, 40 Gb/s, 5m
40GbE	GP-QSFP-40GE-1SR	Force10 - Dell 40GbB QSFP module
40GbE	JG325B	HP X140 40G QSFP+ MPO SR4 Transceiver
40GbE	JG325A	HP X140 40G QSFP+ MPO SR4 Transceiver
40GbE	JG326A	HP X240 40G QSFP+ QSFP+ 1m DAC Cable
40GbE	JG327A	HP X240 40G QSFP+ QSFP+ 3m DAC Cable
40GbE	JG328A	HP X240 40G QSFP+ QSFP+ 5m DAC Cable
40GbE	00D5802-N13445C	IBM 40GbE QSFP+ to QSFP+ copper cable 1M
40GbE	BN-QS-QS-CBL-3M	IBM 40GbE QSFP+ to QSFP+ copper cable 3M
40GbE	BN-QS-QS-CBL-5M	IBM 40GbE QSFP+ to QSFP+ copper cable 5M
40GbE	MC2210126-004	Mellanox Passive Copper Cable ETH 40GBE 40GbE QSFP 4M
40GbE	MC2210126-005	Mellanox Passive Copper Cable ETH 40GBE 40GbE QSFP 5M
40GbE	MC2210128-003	Mellanox Passive Copper Cable ETH 40GBE 40GbE QSFP 3M
40GbE	MC2210130-001	Mellanox Passive Copper Cable ETH 40GBE 40GbE QSFP 1M
40GbE	MC2210130-002	Mellanox Passive Copper Cable ETH 40GBE 40GbE QSFP 2M
40GbE	MC2210310-XXX	Mellanox Active Fiber Cable ETH 40GBE 40GbE QSFP from 3M up to 100M
40GbE	MC2210411-SR4L	Mellanox Optical Module 40GbE QSFP MPO 850NM UP TO 30M
40GbE	BN-CKM-QP-SR4	BN-CKM-QP-SR4 Blade 40GbB QSFP module
40GbE	QSFP-40G-SR-BD	Cisco 40G BD Module
40GbE	MC2210511-LR4	Mellanox® optical module, 40Gb/s, QSFP, LC-LC, 1310nm, LR4 up to 10km

1.1.4 Validated and Supported QDR/FDR10 Cables

This firmware was tested with the QDR/FDR10 cables and modules listed in the table below.

Table 5 - Validated and Supported QDR/FDR10 Cables

Speed	OPN #	Description
FDR10	MC2206128-004	Mellanox Passive Copper Cable VPI UP TO 40GbE QSFP 4M
FDR10	MC2206128-005	Mellanox Passive Copper Cable VPI UP TO 40GbE QSFP 5M
FDR10	MC2206130-001	Mellanox Passive Copper Cable VPI UP TO 40GbE QSFP 1M
FDR10	MC2206130-002	Mellanox Passive Copper Cable VPI UP TO 40GbE QSFP 2M
FDR10	MC2206130-003	Mellanox Passive Copper Cable VPI UP TO 40GbE QSFP 3M
FDR10	MC2206130-00A	Mellanox Passive Copper Cable VPI UP TO 40GbE QSFP 0.5M
FDR10	MC2206310-XXX	Mellanox Active Fiber Cable IB QDR/FDR10 40GbE QSFP from 3M up to 100M
FDR10	MC2206310-300-L	Mellanox Active Fiber Cable IB QDR/FDR10 40GbE QSFP 300M
FDR10	MC2210411-SR4	Mellanox Optical Module 40GbE QSFP MPO 850NM UP TO 100M
FDR10	MC2210411-SR4E	Mellanox Optical Module 40GbE QSFP MPO 850NM UP TO 300M
FDR10	MFS4R12CB-XXX	Mellanox Active Fiber Cable VPI UP TO 40GbE QSFP from 3M up to 100M
QDR	MC2206125-007	Mellanox Passive Copper Cable IB QDR 40GbE QSFP 7M
QDR	MC2206126-006	Mellanox Passive Copper Cable IB QDR 40GbE QSFP 6M

1.1.5 Validated and Supported FDR Cables

This firmware was tested with the FDR cables and modules listed in the table below.

Table 6 - Validated and Supported FDR Cables (Sheet 1 of 2)

Speed	OPN #	Description
FDR	038-004-066-01	EMC FDR QSFP+ to QSFP+ copper cable 2M
FDR	038-004-067-01	EMC FDR QSFP+ to QSFP+ copper cable 3M
FDR	038-900-027-01	EMC FDR QSFP+ to QSFP+ copper cable 5M
FDR	038-900-030-01	EMC FDR QSFP+ to QSFP+ copper cable 8M
FDR	038-004-236-01	FDR QSFP+ to QSFP+ copper cable 0.5m
FDR	038-004-065-01	EMC FDR QSFP+ to QSFP+ copper cable 1M
FDR	038-004-069-01	EMC FDR QSFP+ to QSFP+ copper cable 5M
FDR	MC2207126-004	Mellanox Passive Copper Cable VPI UP TO 56GB/S QSFP 4M
FDR	MC2207128-003	Mellanox Passive Copper Cable VPI UP TO 56GB/S QSFP 3M
FDR	MC2207128-0A2	Mellanox Passive Copper Cable VPI UP TO 56GB/S QSFP 2.5M

Table 6 - Validated and Supported FDR Cables (Sheet 2 of 2)

Speed	OPN #	Description
FDR	MC2207130-001	Mellanox Passive Copper Cable VPI UP TO 56GB/S QSFP 1M
FDR	MC2207130-002	Mellanox Passive Copper Cable VPI UP TO 56GB/S QSFP 2M
FDR	MC2207130-00A	Mellanox Passive Copper Cable VPI UP TO 56GB/S QSFP 0.5M
FDR	MC2207130-0A1	Mellanox Passive Copper Cable VPI UP TO 56GB/S QSFP 1.5M
FDR	MC2207310-XXX	Mellanox Active Fiber Cable VPI UP TO 56GB/S QSFP from 3M up to 100M
FDR	MC2207312-XXX	Mellanox Active Fiber Cable VPI UP TO 56GB/S QSFP from 3M up to 300M
FDR	MC220731V-XXX	Mellanox Active Fiber Cable VPI UP TO 56GB/S QSFP from 3M up to 100M
FDR	MC2207411-SR4L	Mellanox Optical Module IB FDR 56GB/S QSFP MPO 850NM UP TO 30M

1.2 Tested Switches

Table 7 - Tested Switches (Sheet 1 of 4)

Speed	OPN # /Name	Description
1/10GbE	Summit X650	Extreme 10GB ETH switch
10/40GbE	7050Q	16-port 40Gb Switch
10/40GbE	7050S	48-port 10Gb/40Gb Switch
10/40GbE	3064	48-port 10Gb/40Gb Switch
10/40GbE	S5000	10GbE switch
10/40GbE	S4810P-AC	48-port 10Gb/40Gb Switch
10/40GbE	ASF5900	HP 10GB ETH switch
10/40GbE	BNT (IBM) G8264	BNT (IBM) 10/40GB ETH switch
10/40GbE	Juniper EX3500	Juniper 10/40GB ETH switch
10/40GbE	MSX1024B-1BFS	SwitchX®-2 based 48-port SFP+ 10GbE, 12 port QSFP 40GbE, 1U Ethernet switch
10/40GbE	MSX1410-BB2F2	SwitchX®-2 based 10GbE/40GbE Switch, 1U Open Ethernet switch with MLNX-OS, 48 SFP+ ports, 12 QSFP+ ports, 2 power supplies (AC), x86 dual core, Short depth, P2C airflow, Rail Kit, RoHS6
100GbE	MSN2700-CS2R	Mellanox 32 Ports QSFP 100GE MNG Switch Eth W/ 2 Ps Standard Depth C2P Airflow
100GbE	C3232C	High-Density, 100 Gigabit Ethernet Switch
100GbE	7060CX	32-port 100Gb Switch
10GbE	Brocade 8000	Brocade 10GB ETH switch

Table 7 - Tested Switches (Sheet 2 of 4)

Speed	OPN # /Name	Description
10GbE	Nexus B22	Cisco Nexus B22 FEX Blade switch
10GbE	5548	Cisco 10GB ETH switch
10GbE	8024F	10GbE switch
10GbE	8132F	10GbE switch
10GbE	Force10 MXL	Dell Force10 MXL 10/40GbE Blade switch
10GbE	PTM	Dell 10GbE KR PTM
10GbE	8164F	10GbE switch
10GbE	Fujitsu 10GbE	Ethernet Switch 24 ports, 20xCX4 and 4xQSFP
10GbE	HP ProCurve 6600-24XG	24-port 10GbE switch
10GbE	Juniper EX2500	Juniper 10GB ETH switch
10GbE	Juniper EX4550	Juniper 10GB ETH switch
10GbE	MSX1016X-1BFR	SwitchX™ based 64-port SFP+ 10GigE, 1U Ethernet switch
10GbE	Nexus B22	Cisco Nexus B22 FEX Blade switch
10GbE	Force10 MXL	Dell Force10 MXL 10/40GbE Blade switch
10GbE	PTM	Dell 10GbE KR PTM
10GbE	516733-B21	HP ProCurve 6120XG 10GbE Ethernet Blade Switch
10GbE	6125XLG Blade Switch	HP 6125XLG 10/40G Ethernet Blade Switch
10GbE	538113-B21	HP 10GbE Pass-Through Module (PTM)
10GbE	B22	IBM B22 10 Gigabit Scalable Switch Module
10GbE	EN4093	IBM PureFlex System Fabric EN4093 10 Gigabit Scalable Switch Module
10GbE	Juniper QFX3500	Juniper 10GbE ETH switch
1GbE	7024F	1/10GbE switch
1GbE	2810-24G.	HP 1GB ETH switch
1GbE	3020X	Cisco Catalyst 3020X 1GbE switch blade
1GbE	3020	Cisco Catalyst 3020 1GbE switch blade
1GbE	438030-B21	HP 1GbE switch module - GbE2c Layer 2/3 Ethernet Blade Switch
1GbE	6120G	HP ProCurve 6120G/XG 1GbE switch blade
25GbE	93180YC-EX	Nexus 9300 with 48p 10/25G SFP+ and 6p 100G QSFP28
40GbE	MSX1036B-1BFR	SwitchX® based 36-port QSFP 40GigE 1U Ethernet Switch, 36 QSFP ports, 1 Power Supply, Short depth, Managed, PSU side to Connector side airflow, Rail Kit and RoHS6

Table 7 - Tested Switches (Sheet 3 of 4)

Speed	OPN # /Name	Description
40GbE	MSX1036B-1SFR	SwitchX® based 36-port QSFP 40GbE 1U Ethernet Switch, 36 QSFP ports, 1 PS, Standard depth, PSU side to Connector side airflow, Rail Kit and RoHS6
40GbE	7050QX	32-port 40Gb Switch
40GbE	3016	Cisco 40GB ETH switch
40GbE	3132Q	Cisco 40GB ETH switch
40GbE	S6000	32-port 40Gb Switch
40GbE	689638-B21	Mellanox SX1018HP Enet Switch 40G Ethernet
40GbE	BNT (IBM) G8316	BNT (IBM) 40GB RackSwitch G8316
40GbE	90Y3477	BM Flex System EN6131 40Gb Ethernet Switch
40GbE	JuniperQFX5100	Juniper40GB ETH switch
DDR	410398-B21	HP BLc 4X DDR IB Switch
DDR	Mellanox M2401G	InfiniScale III 24-Port 20Gb/s InfiniBand Switch for Dell M1000E Blade System
DDR	F-X430044	24-port DDR-Switch
DDR	9024	24-port DDR-Switch
DDR	F-X430044	DDR-Switch F-X430044
EDR	MSB7790-EB2F	Switch-IB(TM) based EDR InfiniBand Switch, 36 QSFP ports, non-blocking switching capacity of 7.2Tbps,
EDR	SB7700	Switch-IB(TM) based EDR InfiniBand Switch 36-port EDR 100Gb/s InfiniBand Switch
FDR	MSX6036F-1SFR	SwitchX based FDR InfiniBand Switch; 36 QSFP; Managed
FDR	MSX6036F-1BRS	SwitchX based FDR InfiniBand Switch; 36 QSFP; Managed
FDR	SRDFSH36F-1BF	SwitchX®-2 based FDR InfiniBand 1U Switch, 36 QSFP+ ports, 1 Power Supply (AC), PPC460, short depth, C2P airflow, Rail Kit, RoHS6
FDR	CA07156-0221	IB FDR switch Module 18 ports for BX900
FDR	775144-001	SwitchX-2 based 18-port QSFP FDR 1U unmanaged InfiniBand switch; R6; compatible to HP Apollo racks
FDR	648311-B21	HP BLc 4X FDR IB Switch
FDR	90Y3452	IBM Flex System IB6131 Infiniband Switch
FDR	MSX6710-FB2F2	SwitchX®-2 based FDR InfiniBand 1U Switch, 36 QSFP+ ports, 2 Power Supplies (AC), x86 dual core, short depth, P2C airflow, Rail Kit, RoHS6

Table 7 - Tested Switches (Sheet 4 of 4)

Speed	OPN # /Name	Description
FDR	MSX6036F-1BFR	SwitchX™ based FDR InfiniBand Switch, 36 QSFP ports, 1 Power Supply, Short depth, Managed, PSU side to Connector side airflow, Rail Kit and RoHS6
FDR	Mellanox M4001F	SwitchX® 56Gb/s 16+16 port InfiniBand switch blade for the Dell M1000e Blade System
FDR	SX6710	Mellanox 36-port FDR 56Gb/s InfiniBand Switch
FDR	MSX6506	108 port FDR capable modular chassis, includes 4 fans and 2 (N+N) power supplies, ROHS6 Non-blocking configuration needs all spines
FDR	MSX6018F-1SFR	SwitchX® based FDR InfiniBand Switch, 36 QSFP ports, 1 Power Supply, Standard depth, Managed, PSU side to Connector side airflow, Rail Kit and RoHS6
FDR10	MSX6025T-1SFR	SwitchX™ based FDR10 Infiniband Switch, 36 QSFP ports, 1 Power Supply, Standard depth, Unmanaged, PSU side to Connector side airflow, Rail Kit and RoHS6
FDR10	MSX6025T_BX	SwitchX™ based FDR-10 InfiniBand Switch; 36 QSFP; Unmanaged
FDR10	MSX6002TBR	SwitchX® based 36 port FDR-10 Spine for SX65xx Chassis Switch, ROHS6
FDR10	MSX6001TR	18 port FDR-10 Leaf for SX65xx Chassis Switch, ROHS6
FDR10	Mellanox M4001T	SwitchX® 40GbE 16+16 port InfiniBand switch blade for the Dell M1000e Blade System
QDR	CA07156-0201	IB QDR switch Module 18 ports for BX900
QDR	489184-B21	HP BLc 4X QDR IB Switch
QDR	MIS5025Q-1SFC	InfiniScale® IV QDR InfiniBand Switch, 36 QSFP ports, 1 Power Supply, Unmanaged, PSU side to connector side airflow, Standard depth, Rail Kit and RoHS5
QDR	MIS5024Q-1BFR	InfiniScale® IV QDR InfiniBand Switch, 36 QSFP ports, 1 power supply, Unmanaged, PSU side to Connector side airflow, no FRUs, with rack rails, Short Depth Form Factor
QDR	QDR-Switch 4036	InfiniScale® IV QDR Mellanox Grid Director 4036 36-Port QDR, InfiniBand Switch - Part ID: VLT-30011
QDR	Mellanox M3601Q	40GbE 16+16 port InfiniBand switch blade for the Dell M1000e Blade System
QDR	12300	36-Port 40Gb QDR Infiniband Switch, Management Module, Dual Power
QDR	MIS5030Q-2SFC	InfiniScale IV IS5030 36 ports QDR InfiniBand Switch
SDR	F-X430060	24-port SDR-Switch
SDR	F-X430060	SDR-Switch F-X430060

1.3 Tools, Switch Firmware and Driver Software

Firmware Rev 2.42.5032 is tested with the following tools, SwitchX® firmware, and driver software:

Table 8 - Tools, Switch Firmware and Driver Software

	Supported Version
MLNX_OFED	4.1-1.0.2.0/3.4-1.0.0.0
MLNX_EN (MLNX_OFED based code)	4.1-1.0.2.0/3.4-1.0.0.0
WinOF	5.35 FUR3/5.22
VMware	2.4.0 3.15.5.5 1.8.2.5
MFT	4.7.1
MLNX-OS	<ul style="list-style-type: none"> SwitchX: 3.6.4006 Switch-IB: 3.6.4006
SwitchX/SwitchX-2 Firmware	9.3.6000/9.4.2000
Switch-IB Firmware	11.1300.0126
InfiniScale 4 Firmware	7.4.3000
Linux Inbox Drivers	<ul style="list-style-type: none"> RH6.6 RH6.7 RH6.8 RH7.0 RH7.1 RH7.2 SLES11 SP3 SLES11 SP4 SLES12 SP0 SLES12 SP1 Fedora23 Ubuntu 14.04 Ubuntu 14.10 Ubuntu 15.04 Ubuntu 15.10 Ubuntu 16.04
Windows Inbox Driver	<ul style="list-style-type: none"> Windows Server 2012 Windows Server 2012 R2

1.4 Supported FlexBoot, UEFI and CLP

Firmware Rev 2.42.5032 supports the following FlexBoot, UEFI and CLP version:

Table 9 - Supported FlexBoot, UEFI and CLP

	Supported Version
FlexBoot	3.4.754

Table 9 - Supported FlexBoot, UEFI and CLP

	Supported Version
CLP	8025
UEFI	14.11.47

1.5 Revision Compatibility

Firmware Rev 2.42.5032 complies with the following programmer's reference manual:

- *Mellanox Adapters Programmer's Reference Manual (PRM), Rev 2.1 or later*, which has Command Interface Revision 0x3. The command interface revision can be retrieved by means of the QUERY_FW command and is indicated by the field `cmd_interface_rev`.

1.6 Firmware Burning Notes

- Firmware Family Version (FFV)

As of firmware v2.30.8000, all firmware images have the FFV field populated. The FFV value is identical to the firmware version but in a different format.

FFV format example:

```
FW version:      2.30.8000
FFV:             02.30.80.00
```

- Updating EXP_ROM

Updating only the EXP_ROM (FlexBoot/UEFI) for firmware images which contain FFV requires an additional MFT flag: `"-allow_rom_change"`

The following is an example for removing the EXP_ROM from the binary image using Flint (a Mellanox device located at PCI bus function 05:00.0):

```
$ flint -d 05:00.0 -allow_rom_change drom
```

2 Firmware Rev 2.42.5032 Changes and New Features

Table 10 - Firmware Rev 2.42.5032 Changes and New Features

Category	Description
FlexBoot	See Section 6, “Flexboot Changes and New Features” , on page 34
UEFI	See Section 8, “UEFI Changes and Major New Features” , on page 41

3 Known Issues

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

Table 11 - Known Issues

Index	Issue	Description	Workaround
1.	mlxconfig	RM#1119109: Enabling/disabling cq_timestamp using mlxconfig is not supported.	N/A.
2.	LEDs	RM#1121959: In a card with 2 separate LEDs scheme (a Phy LED and a logic LED) only the Phy LED will lit. Meaning, the orange LES will not be active while the ETH link is in an idle mode.	N/A.
3.	mlxconfig/SR-IOV	RM#976761: In SR-IOV setup, using mlxconfig when the PF is passed through to a VM requires a reboot of the Hypervisor.	N/A.
4.	Downgrade to previous GA requires server reboot.	Downgrading from v2.30.8000 or later to an earlier version than 2.30.8000 requires server reboot.	Reboot the server.
5.	GUID ConnectX®-3 Ethernet adapter cards	On ConnectX-3 Ethernet adapter cards, there is a mismatch between the GUID value returned by firmware management tools and that returned by fabric/driver utilities that read the GUID via device firmware (e.g., using ibstat). Mlxburn/flint return 0xffff as GUID while the utilities return a value derived from the MAC address. For all driver/firmware/software purposes, the latter value should be used.	N/A. Please use the GUID value returned by the fabric/driver utilities (not 0xffff).
6.	SBR assertion	SBR should be asserted for a minimum of 50 milliseconds for the ConnectX-3 adapters	N/A
7.	PCIe	On Pilot1 SL230, PCIe link occasionally does not come up at Gen3 speed	Production SL230 should be used for PCIe Gen3 operation
8.	Kernel panic in SR-IOV with RH6.3 Inbox driver and VPI cards	RH6.3 Inbox driver causes kernel panic when SR-IOV is enabled on VPI cards due to driver compatibility issue.	Set the "do_sense=false" parameter in the [IB_TAB] in the INI of the VPI card
9.	Side band Management compatibility with SR-IOV	In advanced steering mode, side band management connectivity may be lost when having more than 8 QP per mcg.	N/A
10.	SR-IOV disabled in the BIOS	When SR-IOV is disabled in the system BIOS, a PCI issue is noticed in Ubuntu v12.04.3 with Linux kernel v3.8 which affects NICs of several manufacturers including Mellanox's, preventing them from operating.	Enable SR-IOV in the BIOS

Table 11 - Known Issues

Index	Issue	Description	Workaround
11.	MFT locking of flash semaphore	MFT tools might leave the flash semaphore locked if the tool operation is forced stopped. The locked semaphore prevents the firmware from accessing the flash and causes firmware hang.	Clear the semaphore using MFT command: 'flint - clear_semaphore'
12.	MC2210411-SR4 module with Cable Info MAD	Cable Info MAD reports a wrong cable info when using the MC2210411-SR4 module	N/A
13.	PCIe failure on temperature shock 10C/min	Gen2 failure at temperature sweep up to 10C/min (for MT27518A1-FDIR-BV only).	N/A
14.	PCIe Gen2 link	PCIe Gen2 link unstable at temperature sweep of 10C/min for MT27518A1-FDIR-BV	N/A
15.	Changing from an LLR to non-LLR requires driver restart	Driver restart required when switching from InfiniBand FDR link with LLR enabled to InfiniBand link w/o LLR (for example: between SwitchX® and GD4036).	N/A
16.	Bloom filter	Bloom filter is currently not supported.	N/A
17.	Firmware downgrade	When downgrading from firmware v2.11.0000 and using MFT 3.0.0-3, the following message is displayed due to the mlxconfig tool: You are trying to override configurable FW by non-configurable FW. If you continue, old FW configurations will be cleared, do you want to continue ? (y/n) [n] : y You are trying to restore default configuration, do you want to continue ? (y/n) [n] : y	N/A
18.	DMFS steering mode with IB in Linux	RM#363520 DMFS should not be enabled when working with InfiniBand on MLNX_OFED-2.0.3	Upgrade to MLNX_OFED-2.1-x.x.x or later
19.	VPD read-only fields	RM#359417 VPD read-only fields are writable.	Do not write to read-only fields if you wish to preserve them
20.	Increasing SymbolErrorCounter	When working in VPI mode with port1 FDR and port2 40G, error counters misbehave and increase rapidly	N/A
21.	128 Byte CQ/EQ stride compatibility with sideband Management	Setting the device to 128Byte CQ/EQ stride will cause misbehavior of sideband management resulting in communication loss.	N/A
22.	128 Byte CQ/EQ stride	CQ and EQ cannot be configured to different stride sizes.	N/A

Table 11 - Known Issues

Index	Issue	Description	Workaround
23.	Firmware hangs when connected to a malfunctioned cable	On rare occasions, when the cable EEPROM or I2C malfunctions the device firmware might hang.	1. Remove the bad cable 2. Reboot the system.
24.	VPI port protocol change on a port with side-band Management	Changing port protocol from ETH to IB on port with NCSI/IPMI enabled while the port is connected to ETH switch is not supported.	1. Unplug the cable from the switch 2. Restart driver 3. Change the protocol via the appropriate tools.
25.	Link Up time	RM#499419 Adapter card MCX349A-XCCN may experience longer linkup times of a few seconds with specific switches.	N/A
26.	Port identification	RM#552282 Adapter card MCX349A-XCCN does not respond to ethtool “identify” command (ethtool -p/--identify).	N/A
27.	RDP over IPv6	RM #563136 RDP over IPv6 is currently not functional.	N/A
28.	Unicast/Multicast sniffer	RM#597477 Sniffer QP cannot be removed from the regular rule after adding the QP with insertion scheme equals to “push to that rule”	N/A
29.	Boot Entry Vector (BEV)	RM#631212 Since only a single Boot Entry Vector (BEV) per PCI Physical Function is supported, disabling the first port causes the second port to disappear as well.	N/A
30.	Cables	RM#669662 The NIC does not notify the driver of a link-down incident when a cable is unplugged from a NIC port with 56GbE port link.	N/A
31.	Port Link	RM#665186 56GbE link is not raised when using 100GbE optic cables.	N/A
32.	Server reboot	When working with MLNX_OFED v3.3-1.0.0.0, server reboot could get stuck due to a kernel panic in mlx4_en_get_drvinfo() that is called from asynchronous event handler.	N/A
33.	ibdump	RM#832298 When running ibdump, loopback traffic is mirroring into the kernel driver.	N/A

4 Bug Fixes History

Table 12 lists the bugs fixed in this release. For a list of old firmware Bug Fixes, please see ConnectX-3 Firmware Archived Bug Fixes file (http://www.mellanox.com/pdf/firmware/ConnectX3-Firmware_Archived_Bug_Fixes.pdf)

Table 12 - Fixed Bugs List (Sheet 1 of 3)

Index	Issue	Description	Discovered in Release	Fixed in Release
1.	PortRcvPkts counter	RM#1009607: Fixed an issue which prevented the PortRcvPkts counter from being cleared after resetting it.	2.40.5030	2.42.5000
2.	FLR, System Time Out, VFs	RM#999432: Fixed an issue which caused a system Time Out on the configuration cycle of the VFs when more than 10 Virtual Functions performed FLR and the completion Time Out value was configured to a range of less than 16 msec.	2.40.5030	2.42.5000
3.	mlxfwtop	RM#1034523: Fixed an issue that caused the server to hang and result in NMI when running “mlxfwtop -d mt4103_pci_cr0” while restarting the driver in parallel (from a different thread). In this case, the downstream bridge over the device reported completion timeout error.	2.40.5030	2.42.5000
4.	Flow steering, BMC	RM#659925: Fixed an issue in flow_steering where BMC could not receive a ping over IPV6 after running bmc_reboot.	2.40.7000	2.42.5000
5.	RX packet	RM#825412: Fixed an issue while closing the HCA, where RX packet caused bad access to resources that did not exist, and consequently caused the QPCGW or the irisc to get stuck.	2.32.5100	2.42.5000
6.	masterSMLID, LID	RM#1033071: Fixed an issue where the masterSMLID and the LID was either 0 or 0xFFFF when the port was neither active nor armed.	2.40.7000	2.42.5000
7.	ibdump	RM#1009736: Fixed an issue that prevented ibdump from capturing all MADs packets.	2.40.7000	2.42.5000
8.	Link Down	RM#1000626: Fixed an issue that prevented the link to go up after reboot.	2.40.5030	2.42.5000
9.	PCIe	RM#954259: Fixed a rare issue that cause the PCIe configuration cycle that arrived during the time of sw_reset to generate 2 completions.	2.36.5100	2.42.5000

Table 12 - Fixed Bugs List (Sheet 2 of 3)

Index	Issue	Description	Discovered in Release	Fixed in Release
10.	NC-SI	RM#908959: Fixed an issue that caused NC-SI not to work when adding the <code>disable_static_steering_ini</code> field in the ini file, due to memory allocation issue for this field in the scratchpad.	2.36.5100	2.42.5000
11.	MAC address	RM#980151: Fixed an issue where a virtual MAC address which is configured by <code>set_port</code> (ifconfig), remained after driver restart	2.40.5030	2.40.7000
12.		RM#913926: Fixed an issue where the two interfaces reported the same MAC address when bonding configuration was used.	2.40.5030	2.40.7000
13.	Driver Start	RM#890373: Fixed a race between the firmware and the hardware during driver start which blocked outbound completions.	2.40.5000	2.40.5030
14.	Link Down	RM#939162: Fixed an issue which caused the firmware not to send <code>link_down</code> event to the driver when running the <code>close_port</code> command.	2.40.5000	2.40.5030
15.	Auto Sense	RM#861646: Fixed an issue where in rare cases the Auto Sense failed to detect the right protocol.	2.35.5100	2.40.5000
16.	Signal Integrity	RM#780205: Fixed signal integrity issue when connecting a WCS ConnectX4 Mezz card to Pikes peak FPGA.	2.35.5100	2.40.5000
17.	DME pages	Added the option to transmit corrupted DME pages for a very short period of time at the beginning of the Auto-Negotiation flow.	2.36.5100	2.40.5000
18.	Counters	RM#877613: Fixed an incorrect report of the <code>PortRcvDataVLExtended/PortXmitDataVLExtended</code> counters by the firmware.	2.35.5000	2.40.5000
19.	Firmware's Packet Injector	RM#870787: Fixed a rare issue which caused firmware's packet injector to cut off packets when the TX was congested.	2.35.5100	2.40.5000
20.	TX requests	RM#702752: Fixed an issue that caused the response to TX requests to take up to 10 milli-seconds in IEEE clause 72 Link Training.	2.34.5000	2.40.5000

Table 12 - Fixed Bugs List (Sheet 3 of 3)

Index	Issue	Description	Discovered in Release	Fixed in Release
21.	ECN	RM#770454: Fixed a race between 2 irises which caused a QP to get stuck in burst control limit state	2.36.5150	2.40.5000
22.	CQE	RM#748455: When a QP was in error state, the firmware generated too many err CQEs at once, thus causing the cmdif responsiveness to be too slow. To prevent the above, the number of err CQEs was limited to 16 at a time.	2.36.5150	2.40.5000
23.	ibdump	RM#832298: Fixed an issue where the ibdump got broken when running with loop-back traffic.	2.36.5150	2.40.5000
24.	QP to Firmware ownership	RM#745727: Fixed an issue where the firmware took QP to firmware ownership and then released it to the hardware ownership without checking if another firmware flow owns the same QP.	2.36.5150	2.40.5000
25.	Cables	RM#806288: Fixed an issue which occurred after disconnecting cable which showed the link type as IB even if the link type of the port is ETH.	2.36.5150	2.40.5000
26.	HCA PoerXmitWait counter	RM#778739: Fixed an issue related to the HCA PoerXmitWait counter on port 2 (connected to port 2 on Switch-IB) where it started counting and reached 0xFF's regardless of connection to switch.	2.36.5150	2.40.5000

5 Firmware Changes and New Feature History

Table 13 - Firmware Changes and New Feature History

Firmware Version	Description
2.42.5000	<ul style="list-style-type: none"> • Packet Time-stamping: Added support for new TLV: CX3_GLOBAL_CONF to enable/disable timestamp on incoming packets through mlxconfig configuration. • MAC Configuration: Added support for user MAC configuration. • mstdump: Added support for automatically collecting mstdump before driver reset. • IRISC stuck watchdog: Added a mechanism to detect DEAD_IRISC (plastic) from TPT (iron) and raise an assert. • Debug ability: Improved the debug ability for command timeout cases • MTU size: Added a new field to "set port" command which notifies the firmware what is the user_mtu size. • Bug fixes: See Section 4, “Bug Fixes History”, on page 23
2.40.7000	<ul style="list-style-type: none"> • Bug Fixes: See Section 4, “Bug Fixes History”, on page 23
2.40.5030	<ul style="list-style-type: none"> • Temperature thresholds: Added temperature thresholds high/low default for MAD sensing and NCSI/IPMI OEM commands. • MTU Header Size: Added a new field to "set port" command which notifies the firmware what is the user_mtu size. • ifconfig: Added a protection mechanism which ensures the firmware drops packets which are received in internal QPs and disables the WQE producer fetching. • Bug Fixes: See Section 4, “Bug Fixes History”, on page 23
2.40.5000	<ul style="list-style-type: none"> • Bug fixes: See Section 4, “Bug Fixes History”, on page 23
2.36.5000	<ul style="list-style-type: none"> • Packet Steering: Enables steering packets to receive queues according to Ethertype matching (See PRM 2.1 for more information). • RX Arbiter: Adds support for additional rate values. • Performance counter for WQE fetch: Counters that count the number of repeated Send WQE cache lookups that resulted in a miss. • 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.

Table 13 - Firmware Changes and New Feature History

Firmware Version	Description
2.35.5100	<ul style="list-style-type: none"> • New performance and back-pressure counters command via PRM (For further information, please refer to the PRM) • Support for Multicast/Unicast sniffer rules (For further information, please refer to the PRM) • Support for VLAN in VLAN encapsulation (For further information, please refer to the PRM) • CQ creation offload by software • Support for rst2rts command • Invalidates a TLV during the firmware boot stage • A new counter for the <code>diag_rprt</code> PRM command to count packet drops due to no-receive buffer • Support for Ethernet TX lifetime cycle control (Head of Queue) • A new register (PPLR) that allows egress and external loopback control (For further information, please refer to the PRM) • A watchdog mechanism to track ingress traffic stalls to prevent flooding the network with Flow Control packets • Inspur LED scheme: A new LED scheme controlled by the INI which causes constant traffic LED indication even without traffic.
2.34.5000	<ul style="list-style-type: none"> • Added support for multiple RoCE modes (RoCE v1+v2) on the same port: RoCE mode is per connection now. • Added a new QP command <code>"INIT2RTS_QP"</code> to enhance QP connection readiness time. • Disabled FCS checks to support switches that replace FCS with Timestamp. • Added RX Port identification for direct rout packets. • Improved RDMA WRITE/SEND performance with retransmissions. • Enabled firmware burning/querying using the PRM <code>ACCESS_REG</code> command. • Added support for VAM. • Enabled bad cable EEPROM reporting to the driver. • Added support for Platform Level Data Model (PLDM) sideband protocol. • Added support for priority based A0-DMFS mode (For further information, please refer to the PRM). • Added support for Unicast/Multicast loopback disablement by the driver. (For further information, please refer to the PRM) • Removed the source IP from the hash calculation (For further information, please refer to the PRM) • Added support for Inline Receive mode up to 2KB.
2.33.5100	<ul style="list-style-type: none"> • Bug fixes - see "Bug Fixes History" on page 23

Table 13 - Firmware Changes and New Feature History

Firmware Version	Description
2.33.5000	<ul style="list-style-type: none"> • Bandwidth allocation support: Including maximum bandwidth and bandwidth share guarantee between VMs for InfiniBand and Ethernet. • Increased inbound traffic buffer capacity when the PFC on all priorities is enabled. • Added support for changing UAR BAR (PCI BAR 2) size. • Added support for cable sub-power class for Mellanox MFA1A00-EXXX and SMFA1A00-CXXX EDR cables. • Improvements in attachment/detachment flows' rules in both A0-DMFS and DMFS modes. • Added physical port forcing on specific QPs when virtual mapping is applied • Added support for dynamic enablement of LAG mode • Added support for vendor specific command to report the ports' MAC addresses. • Enabled 100Mb ability exposure and its enablement via an INI parameter. • Added support for SFP+ with 1GbE when the adapter card is enabled in the EEPROM. • Optimized the SideBand connectivity loss during driver initialization to minimum. • Added support for SMBUS ARP. • Enabled thermal reporting of TMP421 sensor in OCP cards. • RDMA Read retransmission optimizations to improve performance and ensure forward progress while packet drops occur. • Improved data path WQE prefetch algorithm.

Table 13 - Firmware Changes and New Feature History

Firmware Version	Description
2.32.5100	<ul style="list-style-type: none"> • Added support to query PTYS, PTOS registers through ACCESS_REG PRM command. • Added support for CLP access to NVRAM • Added support for more than 22 QPs per MCG in DMFS. • Added support for high rate steering mode (a.k.a Simplified Steering) • Added support for reading current hardware mode through the QUERY_PORT PRM command • Added CSUM mode reporting in QUERY_DEV_CAP command • Added additional configuration options for UPDATE_QP command • Added support for 128 Byte stride for CQ/EQ • Enabled module EEPROM access using command I/F • Reset Flow improvements and graceful handling of error caused by Virtual Functions • RX performance optimization for single port cards • Promiscuous mode performance improvements • Added support for Secure Host mode • Added Port protocol configuration option. • Added support for GPIO swap • 40GbE SI improvements • Added support for Temp Sensing Vendor specific MAD. • Added Temp Sensing NC-SI cmd. • Added support for AEN. • Added new command to report firmware revision. • Added support for QCN • Enabled the driver to use VXLAN offloads on TX side without Device Managed Flow Steering (DMFS) • Enabled non Mellanox cables to rise FDR10 link via new INI parameter. To unlock the cables run: <code>Fdr10_cable_stamping_override</code>
2.31.5050	<ul style="list-style-type: none"> • Added support for GeneralInfo SMP MAD • Updated capability mask in GeneralInfo SMP/GMP MAD • Added support for PortCountersVL MAD • Added support for PortSamplesControl/PortSamplesResults/PortSamplesExtended MADs • Added Exponential Backoff Timer support. It is enabled via the <code>rtm_ini</code> parameter. The default value is 0 • Added VLAN steering to Device Managed Flow Steering (DMFS) • Added support for Non-Volatile configuration of TLVs to set device attributes: <ul style="list-style-type: none"> • Query and set of configurations is available through PRM ACCESS_REG command • PRM ACCESS_REG command is now also supported through the <code>tools_hcr</code> command interface • Added support for MTF <code>mlxconfig</code> tool • Added IPv6 support for NC-SI and IPMI Pass-Through • Added support for the same unicast MAC simultaneously for both IPMI and NC-SI • PCIe power optimizations for 8X/4X links • SMBUS optimizations

Table 13 - Firmware Changes and New Feature History

Firmware Version	Description
2.31.5050 (cont.)	<ul style="list-style-type: none"> • Added enhancements for receiver equalization in Gen3: <ul style="list-style-type: none"> • Enhancements are enabled by the INI. The default value is disabled. Please contact Mellanox support if required to enable it. • Added new Physical and Virtual Functions reset flows support • Added support for 64Bit BIOS mode • Added IEEE802.3 CL73 autoneg support to the QUERY_PORT command. • Added factory MAC address reporting to the Query_Port command. • Added support for reverting virtual MAC configuration per port and restoring to factory MAC through MOD_STAT_CFG command. • Added support for inline TLV read through MOD_STAT_CFG command. • Added current MTU reporting to the QUERY_PORT command. • Added support query for additional MAC addresses per port (up to 7) through the QUERY_PORT command.
2.30.8000	<ul style="list-style-type: none"> • Initial GA release of ConnectX-3 Pro • RM# 175941UDP packets with zero checksum • RoCE v2 support, including CONFIG_DEV command support • Enabled SR-IOV by default on all Mellanox ConnectX-3 Pro cards with 8 virtual functions • RM #113295indiscard packets counter support in DUMP_ETH_STAT command • NVGRE support • VXLAN support • RM#326702 RM#349757, RM#193967DMFS and GRE steering: Rule insertion adjustments • Removed DIF support from reported capabilities in QUERY_DEV_CAP PRM command • Flow control by DSCP priority for IPv4 • DMFS improvements: Insertion scheme enforcement and block loopback for InfiniBand • Added I2C resiliency support • Support for NC-SI over MCTP over SMBus • Added a flash access interface for persistent (non-volatile) configuration support • Added port BW arbitration configuration through the CONFIG_DEV command • Added IP-in-IP TCP checksum offload support • PCI Express compliancy Tx and Rx adjustments • Removed software limitations that were required for the use of Mellanox-certified FDR InfiniBand cables with Mellanox FDR InfiniBand adapters and switches. Please refer to "Memo: FDR 56Gb/s InfiniBand Cables" that was released on Dec/2013. <p>Mellanox will offer an EXTENDED diagnostics support plan which will be available for mixed environments only and that will help identify issues they may encounter with the FDR installations.</p>
2.30.3200	<ul style="list-style-type: none"> • Added support for FDR AOC MC2207312-XXX • Bug Fixes, see “Bug Fixes History” on page 23

Table 13 - Firmware Changes and New Feature History

Firmware Version	Description
2.30.3000	<ul style="list-style-type: none"> • Improved EMI for the CaraCara mezzanine • Added support for the <code>UPDATE_QP PRM</code> command • Added support for resetting the modified MAC addresses in the standby mode by the <code>MOD_STAT_CFG</code> command • Added support for receiving TCP and UDP truncated packets of certain type • Added support for 56GbE in all devices supporting 40GbE <ul style="list-style-type: none"> • Establishing 56GbE link with SwitchX® requires 56GbE enablement on the switch • Establishing 56GbE link on back to back setup requires additions to the INI. • For further information, please contact Mellanox Support • <code>mlxconfig</code> tool is not supported in this release • RDMA/RoCE read retransmission improvement • PFC thresholds improvements • PCI speed_change flow improvement • Added support for <code>DIAG_RPRT</code> per port • Added PCIe Polling Compliance mode • RoCE default configuration fixes: <ul style="list-style-type: none"> • <code>ethertype</code> now updated per port at <code>SET_PORT</code> • The default value of <code>rroce.ip_next_protocol</code> is 0xfe • Increased the number of extended interface counters (<code>max_if_cnt_extended</code>) to 0x80, as reported in <code>QUERY_DEV_CAP PRM</code> command • Improved link parallel detection calibration of 40GbE • Added support for PFC counters in <code>DUMP_ETH_STAT PRM</code> command • Fixed wrong reporting of RSS context in <code>QUERY_FW</code> of RSS QP • Added Sniffer QP support on Port#1 • Device managed Flow Steering performance enhancements • Disabled <code>"pkt.dmac==qp.mac"</code> for RoCE/RoCE over IP • Added missing loopback blocking for device managed Flow Steering • Fixed <code>SET_PORT.mac_table</code> configuration issue which caused minor packet loss on Port A when working in bonding mode and closing Port B. • Fixed issues with NC-SI commands reason codes • Fixed the insertion of L4 head rule in device managed Flow Steering • Added to the INI for 10/40GbE parallel detect Serdes parameters • Disable SR-IOV settings in SystemZ Hawk 73Y9696 • Removed fatal buffer reporting of parity error after first power-on • Added support for <code>"reset upon parity error"</code> • Added support for 40Gb/s MC2210411-SR4 optical module • Fixed interoperability issue with the Intel 12300 switch using firmware version 6.1.0.1.11 • Improved QDR link stability when connected to InfiniScale® IV and SwitchX® switches

Table 13 - Firmware Changes and New Feature History

Firmware Version	Description
2.11.0500	<ul style="list-style-type: none"> • Added SR-IOV support • Added VPI auto-sensing support • Mellanox Link Property Negotiation (MLPN) • Enables ports to negotiate link properties between Mellanox devices. • The MLPN is activated by INI. • CR4 + KR4 • Auto-negotiation 40GBASE CR4 and KR4 as described in IEEE 802.3. • CR4 + KR4 is enabled by the INI. • 1GbE Clause37 • Auto-negotiation 1000BASE-X as described in IEEE 802.3 clause 37. • 1GbE Clause37 is enabled by default. • cable_info MAD extension for more I2C addressed • Enables different address for cable access through I2C. • cable_info MAD extension is enabled by the INI. • secure_host • smp firewall described in the PRM • Activated by the INI (active by default). • cq_2_eq mapping command • Modifies EQ by MODIFY_CQ command, described in the PRM • multi-function reserved lkey • Described in the PRM. • increase CQE timestamp to 48bit • Described in the PRM. • 56Gb Ethernet (proprietary) - Beta level • Activated by the INI (disabled by default). • mlxconfig - Beta level (requires MFT 3.0.0-3 or above) • Modifies the device cfg • FMR for SRIOV - Beta level • Described in the PRM. • Power reduction in PCI Gen3 • Fixed general_info MAD • “Bug Fixes History” on page 23
2.10.0800	<ul style="list-style-type: none"> • Bug fixes - see “Bug Fixes History” on page 23
2.10.0700	<ul style="list-style-type: none"> • Bug fixes - see “Bug Fixes History” on page 23

Table 13 - Firmware Changes and New Feature History

Firmware Version	Description
2.10.0000	<ul style="list-style-type: none"> • InfiniBand: <ul style="list-style-type: none"> • FDR • FDR10 • QDR • SDR • DDR • Ethernet: <ul style="list-style-type: none"> • 1GigE • 10GigE XAUI • 10GigE XFI/SFI • 40GigE • PCI Express 3.0, with backwards compatibility with v2.0 and v1.1 • Huge pages • ConnectX®-3 firmware includes all ConnectX®-2 cards supported features

6 Flexboot Changes and New Features

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

Table 14 - FlexBoot Changes and New Feature

Version	Description
Rev 3.4.754	<ul style="list-style-type: none"> • RM#1120282: Fixed the broken Blink LEDs feature in Flexboot configuration menu.
Rev 3.4.752	<ul style="list-style-type: none"> • Added support for Secure Firmware Update • Enabled booting Grub 2.02 over IB • Disabled SOL by default
Rev 3.4.746	<ul style="list-style-type: none"> • Added 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 • iSCSI re-imaging: enables the user to install a new image on active iSCSI target. • Removed link status line printout at boot time. • Deprecated the option "rom enable" bit. • Enabled interrupt support. • When Network Boot Program (NBP) uses UNDI, the user can configure the awaiting time (up to 30 seconds) that is needed to raise a link. • Set default banner timeout to 4. • Synced the source with iPXE (upstream sync).
Rev 3.4.740	<ul style="list-style-type: none"> • Enabled UDP interface usage after UNDI shutdown. • Fixed a BIOS issue in hybrid BIOSes which resulted in legacy driver load failure when the BIOS loaded legacy driver without closing the UEFI driver. • Fixed an issues causing the PXE to boot first regardless of the boot priority if the client received "PXE boot menu" when contacted the DHCP.

Table 14 - FlexBoot Changes and New Feature

Version	Description
Rev 3.4.718	<ul style="list-style-type: none"> • Added IPv6 support (Beta level) • 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 <p>For further information, please refer to: http://ipxe.org/cmd</p>
Rev 3.4.648	<ul style="list-style-type: none"> • Added support for .mrom images larger than 128kB • Added boot over IB with non-default PKey for ConnectX®-3, ConnectX®-3 Pro cards • Added support for ConnectX-4 and ConnectX-4 Lx • Synced the source with iPXE (upstream sync) • Moved to flat real mode when calling INT 1a,b101 to avoid BIOSes issues • Fixed chainloading undionly.kpxe over Connect-IB functionality • Fixed HTTP boot over IPoIB
Rev 3.4.521	<ul style="list-style-type: none"> • Added iSCSI CHAP and mutual CHAP configuration • Added the GRH size when allocating receive buffer for IPoIB • Updated VLAN netdevice's settings with all the trunk's iSCSI required settings • Updated the port event handling process • Enabled console output in Debug mode • Disabled the serial output • Disabled the banner in BEV execution • Disabled function 0x04 (in int21) when serial console is disabled • Preserved COM port settings • Fixed HTTP download over IPoIB • Fixed completion with error handling process

Table 14 - FlexBoot Changes and New Feature

Version	Description
Rev 3.4.460	<ul style="list-style-type: none"> • Boot Menu support: Added new FlexBoot GUI. The device can now be configured in the POST stage. • Non volatile memory read/write support • Configurable URI boot retry and delay between retries • Configurable iSCSI settings using DHCP/NVM • Added new interface in order to update the registered devices on the PXE stage • Enabled ConnectX Ethernet adapter cards family to work with interrupts • Enabled PXE to work in promiscuous VLAN mode (configurable through the INI) • Synced version with ipxe.org: Now the latest code in iPXE is used • Added boot priority capability: iSCSI vs PXE and fallback incase one fails • Updated the Proxy DHCP request method for non-existing option 54. ProxyDHCP request is sent to port 67 with broadcast IP address if the server identifier in option 54 is zero. Packets with source port different than BOOTPS_PORT and PXE_PORT are filtered by the PROXY • SHELL CLI is currently supported on ConnectX-3 and ConnectX-3 Pro adapter cards only • The server's IP address in DHCP server replies is now checked before checking the reply type. This will ignore NACK replies from servers which already were ignored by the client. In case of 2 DHCP servers in the same subnet, the client will eventually choose one of them, by sending the DHCP REQUEST with 'DHCP Server Identifier' (option 54) filled with the requested server's IP address. • Both the GUID and the MAC are printed on the screen when the port link layer is set as InfiniBand • PROXYDHCP and PXEBS settings are saved under netdevice settings • rootpath/filename/nextserver are now fetched from the netdevice settings • The cached DHCP packet are received only if working with the same net device. When pxelinux.0 receives the cached DHCP packet from the UNDI API, it constructs a new (fake) packet for the current net device. If the process is stopped and then restarted and booted from the next boot device which serves as the second port in the HCA, a new (fake) DHCP packet is not constructed. The previous packet which includes all the information of the first port (IP, MAC, Netmask, etc...) is used. If an old (fake) DHCP packet is discovered, its chaddr is compared to the chaddr in the pxe_netdev, if not similar, a new (fake) DHCP packet is created. • PXE shutdown is called if int22 with function 0x000C is called. • Changed DHCP discover timeouts to comply with PXE spec

Table 14 - FlexBoot Changes and New Feature

Version	Description
Rev 3.4.306	<ul style="list-style-type: none"> • Added validation script for the released ROMs • Added the option to always keep SAN hook to enable WIN install on iSCSI target • Added compilation flag around the flash readout. • Added URI Boot retry. Default retries = 0. • Added Unmap MPT command in teardown. • Added support for HII iSCSI configuration. • Added 64-bit PCI BAR support (Large bar). • Added the option added for running PXE with promiscuous VLAN. • Re-added COMBOOT image support by default. • Enabled pages-function handling in Connect-IB initialization stage to work according to the PRM. • Applied additional patches from ipxe.org • Updated the window even if ACK does not acknowledge new data. • Modified the error print to debug print. • Modified the printed string when initializing devices. • Modified the error print. Added additional information to make the output more user-friendly. • Changed the size of the domain name array to 0xfd. • Disabled the waiting period for link up on trunk-net-device when VLAN is enabled on port. • Removed unsupported EQ event in Connect-IB® • Fixed an issue for TLV with length 0. • Fixed an issue related to sync VLAN IRQ operation with trunk IRQ operation. • Fixed an issue which enabled a netdevice (VLAN) to open/close twice. • Fixed an issue which prevented the iSCSI initiator's name from being received from HII. • Fixed an issue related to dual port adapters; occasionally, booting from the second port resulted in TFTP download failure when the first port was already linked up with DHCP, and has received a TFTP address. • Fixed an issue which caused PXE boot failure when using a filename if iSCSI rootpath is set. • Fixed an issue which prevented the device to PXE boot from the 2nd port if first port was already downloaded. • Fixed compilation issue. • Fixed a broken VLAN issue. • Fixed a retry issue when the value is infinite.

Table 14 - FlexBoot Changes and New Feature

Version	Description
Rev 3.4.225	<ul style="list-style-type: none"> • Added additional information to the error print output • Added compilation flag around the flash readout • Added URI Boot retry. Default retries = 0 • Added Unmap MPT command in teardown • Added 64-bit PCI BAR support • Added an option for running PXE with promiscuous VLAN • Added support for HII iSCSI configuration • Enlarged the mailbox size to 4kb • Enlarged the number of WQE to 64 (from 4) • Enabled multiple DHCP offers to be received before proceeding to request state • Changed the size of the domain name array to 0xfd • Changed error print to debug print • Changed printed string when initializing devices • Kept the SAN connection permanently open to enable Windows install on iSCSI target even when the iSCSI target is empty • Re-added COMBOOT image support by default • Prevented a netdevice (VLAN) from opening/closing twice • Removed unsupported EQ event in Connect-IB® • Disabled the waiting time for link up on trunk net device when VLAN is enabled on a port • Fixed sync VLAN IRQ operation with trunk IRQ operation • Fixed iSCSI initiator's name retrieval from HII issue • Fixed an issue caused in dual port adapters, when the first port was already linked up with DHCP, and had received a TFTP address. Booting from the second port resulted in TFTP download failure. • Fixed retry issue when the value is infinite • Fixed a TLV with length 0 issue • Fixed a PXE boot failure issue occurred when using a filename when iSCSI rootpath is set • Fixed "Impossible to PXE boot from 2nd port if first port already downloaded." issue • Fixed compilation issue • Fixed broken VLAN support issues
Rev 3.4.151	<ul style="list-style-type: none"> • Enlarged the mailbox size to 4kb • Enlarged the number of WQE to 64 (from 4) • Enabled multiple DHCP offers to be received before proceeding to request state
Rev 3.4.146	<ul style="list-style-type: none"> • Fixed memory corruption issues • Modified TLV flash access • Added additional WQ
Rev 3.4.142	<ul style="list-style-type: none"> • Enabled firmware to handle the link state with the Subnet Manager • Updated the DHCP class code to NONE • Added flash access capability for reading software-to-software configurations • Enabled DHCP validation of MAC address and XID for a unique tuple • Improved randomness algorithm for DHCP XID

Table 14 - FlexBoot Changes and New Feature

Version	Description
Rev 3.4.112	<ul style="list-style-type: none"> • Broadcast responses for firewall support • Enabled request broadcast responses from DHCP server to support firewall.
Rev 3.4.100	<ul style="list-style-type: none"> • OCSD activation initiation change • Moved the OCSD activation initiation from the FlexBoot to the CLP code. This enables the OCSD activation to no longer be dependent on the FlexBoot being enabled in the servers's BIOS configuration. • Messages' improvement • Made the FlexBoot on-screen notification messages more informative and user friendly. • FlexBoot and CLP merge improvement • Improved the process of merging the FlexBoot and CLP codes together. • PXE and UFI merge capability • Added the ability to merge the PXE image with a UFI image. • Supported servers • Added FlexBoot support capabilities to several new non-HP servers. • Use of newer iPXE version • Moved to use a newer iPXE version as the basis for the Flexboot release. • Fixed "no more network devices" issues during Flexboot.

6.1 Flexboot Known Issues

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

Table 15 - Known Issues

Internal Ref.	Description
673114/821899	Description: FlexBoot banner might not be shown in some BIOSes.
	WA: N/A
	Keywords: BIOS
572684	Description: FlexBoot Boot Menu will not be visible in serial output.
	WA: N/A
	Keywords: User Interface
792432	Description: Booting PXE using Grub2.X over HP G9/G8 servers results in system hang.
	WA: N/A
	Keywords: PXE boot, Grub2.X, HP G9/G8

7 CLP Changes and New Features

Table 16 - CLP Changes and New Feature

Version	Description
Rev 8025	<ul style="list-style-type: none"> Fixed the following CLP v8024 issue: Occasionally, an un-initialized variable on systems supporting OCSD causes system reboot.
Rev 8024	<ul style="list-style-type: none"> 644161-B21/B22 NFF Mezz 40GbE enabling CLP fix specifically related to 40GbE enabling on NFF Mezz card 644161-B21/B22.
Rev 8023	<ul style="list-style-type: none"> CLP version display Changed the CLP version format to be autonomic and be presented separately from the FlexBoot PXE version. 40GbE addition to the FDR NFF Mezz card Added CLP configuration support of 40GbE mode to the FDR NFF Mezz card (this change is not related to the Watatic ALOM card). OCSD activation initiation change Moved the OCSD activation initiation from the FlexBoot to the CLP code. This enables the OCSD activation to no longer be dependent on the FlexBoot being enabled in the servers's BIOS configuration.

8 UEFI Changes and Major New Features

Table 17 - UEFI Changes and New Feature

Version	Description
14.11.47	<ul style="list-style-type: none"> • [ConnectX-3 Ethernet adapter cards only] Erased the "IB" option from the "Network Link Type" in UEFI (HII menu).
14.11.45	<ul style="list-style-type: none"> • Added default value 00:00:00:00:00:00 for the VirtualMacAddress attribute • NIC Partitioning Configuration Form is now deprecated.
14.11.34	<ul style="list-style-type: none"> • Changed the iSCSI IP strings minimum length from 7 to 0 in the UEFI menu
14.11.31	<ul style="list-style-type: none"> • Enabled booting with non default pKey in InfiniBand mode • Added boot to target configuration • Set the NumberVFSupported value to 63 • Deprecated BootOptionROM attribute
14.11.84	<ul style="list-style-type: none"> • Added UEFI with HII/UCM support and Agentless for the following cards: <ul style="list-style-type: none"> • MCX353A-FCBT 00W0037 IBM1100110019 • MCX354A-FCBT 00W0041 IBM1090110019 • MCX314A-BCBT 95Y3460 IBM1020110023 • MCX312A-XCBT 00W0053 IBM1080110023 • MCX311A-XCAT 00AE047 IBM1170110023 • Implemented GUIDed Ops for UCM version and mruntime • Support for UEFI Spec 2.5 • Changed the firmware version representation in HII to xx.xx.xxxx format • Removed the MAC address from HII form titles for Sally, Marcie and Violet adapters
14.8.43	<ul style="list-style-type: none"> • Added AARCH64 support for ConnectX-3/Pro • Added the ability to burn FW with different PSID (FMP) • Added HII Banner Message Timeout • Added Manual Link type configuration for VPI devices
14.7.28	<ul style="list-style-type: none"> • Added resilient behavior toward link detection during UNDI initialization • Bug fixes, 8.1 "UEFI Bug Fixes History," on page 41

8.1 UEFI Bug Fixes History

Table 18 - UEFI Bug Fixes History

Version	Description
14.11.45	<ul style="list-style-type: none"> • RM#1040270: Fixed an issue where the <code>ConnectFirstTgt</code> and <code>FirstTgtTcpPort</code> attributes were corrupted when reading them from the flash memory. • RM#1026373: Fixed an issue where SR-IOV Settings were not propagated properly when changing them from legacy mode.
14.11.31	<ul style="list-style-type: none"> • RM#849659: Fixed an issue with the UEFI driver which caused the firmware to hang.
14.11.84	<ul style="list-style-type: none"> • Updated the length of "Part Number" field in AIM to 7. • Fixed HII ExtractConfig to handle <ConfigHdr> without <BlkName>
14.7.28	<ul style="list-style-type: none"> • RM#537236: Removed HP attributes from UEFI