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Mellanox ConnectX®-3 Firmware Release Notes

Rev 2.31.5050
Last Updated: 24 June, 2014

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1 Overview

These are the release notes for the ConnectX®-3 adapters firmware Rev 2.31.5050. 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 Devices

This firmware supports the devices and protocols listed in [Table 1](#). For the most updated list of adapter cards supported, visit the firmware download pages via <http://www.mellanox.com>.



Please contact your Mellanox local FAE for firmware updates to pre-production cards not on this list.

Table 1 - Supported PSIDs (Sheet 1 of 2)

Device Part Number	PSID	Device Name	Supported Protocols
MCX311A-XCAT	MT_1170110023	ConnectX®-3 EN network interface card, 10GbE, single-port SFP+, PCIe3.0 x4 8GT/s, tall bracket, RoHS R6	Ethernet
MCX312A-XCAT	MT_1050110023	ConnectX®-3 EN network interface card, 10GbE, dual-port SFP+, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	Ethernet
	MT_1050120023		
MCX312A-XCBT	MT_1080110023	ConnectX®-3 EN network interface card, 10GbE, dual-port SFP+, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	Ethernet
	MT_1080120023		
MCX312B-XCBT	MT_1200110023	ConnectX®-3 EN network interface card, 10GbE, dual-port SFP+, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	Ethernet
	MT_1200210023		
MCX313A-BCAT	MT_1110110023	ConnectX®-3 EN network interface card, 40GbE, single-port QSFP, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	Ethernet
	MT_1110120023		
MCX313A-BCBT	MT_1060110023	ConnectX®-3 EN network interface card, 40/56GbE, single-port QSFP, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	Ethernet
	MT_1060140023		

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 1 - Supported PSIDs (Sheet 2 of 2)

Device Part Number	PSID	Device Name	Supported Protocols
MCX314A-BCAT	MT_1020110023	ConnectX®-3 EN network interface card, 40GbE, dual-port QSFP, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	Ethernet
	MT_1020120023		
MCX314A-BCBT	MT_1090110023	ConnectX®-3 EN network interface card, 40/56GbE, dual-port QSFP, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	Ethernet
MCX353A-FCAT	MT_1060110019	ConnectX®-3 VPI adapter card, single-port QSFP, FDR IB (56Gb/s) and 40GbE, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	InfiniBand/ Ethernet/VPI
	MT_1060120019		
MCX353A-FCBT	MT_1100110019	ConnectX®-3 VPI adapter card, single-port QSFP, FDR IB (56Gb/s) and 40/56GbE, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	InfiniBand/ Ethernet/VPI
	MT_1100120019		
MCX353A-QCAT	MT_1120110018	ConnectX®-3 VPI adapter card, single-port QSFP, QDR IB (40Gb/s) and 10GbE, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	InfiniBand/ Ethernet/VPI
	MT_1120120018		
MCX353A-TCAT	MT_1060110028	ConnectX®-3 VPI adapter card, single-port QSFP, FDR10 IB (40Gb/s) and 10GbE, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	InfiniBand/ Ethernet/VPI
	MT_1060120028		
MCX353A-TCBT	MT_1100110028	ConnectX®-3 VPI adapter card, single-port QSFP, FDR10 IB (40Gb/s) and 10GbE, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	InfiniBand/ Ethernet/VPI
MCX354A-FCAT	MT_1020110019	ConnectX®-3 VPI adapter card, dual-port QSFP, FDR IB (56Gb/s) and 40GbE, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	InfiniBand/ Ethernet/VPI
	MT_1020120019		
MCX354A-FCBT	MT_1090110019	ConnectX®-3 VPI adapter card, dual-port QSFP, FDR IB (56Gb/s) and 40/56GbE, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	InfiniBand/ Ethernet/VPI
	MT_1090120019		
MCX354A-QCBT	MT_1090110018	ConnectX®-3 VPI adapter card, dual-port QSFP, QDR IB (40Gb/s) and 10GbE, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	InfiniBand/ Ethernet/VPI
MCX354A-TCAT	MT_1020110028	ConnectX®-3 VPI adapter card, dual-port QSFP, FDR10 IB (40Gb/s) and 10GbE, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	InfiniBand/ Ethernet/VPI
	MT_1020120028		
MCX354A-TCBT	MT_1090110028	ConnectX®-3 VPI adapter card, dual-port QSFP, QDR IB (40Gb/s) and 10GbE, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6	InfiniBand/ Ethernet/VPI

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 Tested Cables and Modules

Table 2 - Tested Cables and Modules (Sheet 1 of 6)

Speed	OPN #	Description	Vendor
DDR	MC1204128-005	MT PASSIVE COPPER CABLE 4X CX4 TO QSFP 20GB/S 28AWG 5M	Mellanox
DDR	MC1204130-001	MT PASSIVE COPPER CABLE 4X CX4 TO QSFP 20GB/S 30AWG 1M	Mellanox
DDR	MC1204130-003	MT PASSIVE COPPER CABLE 4X CX4 TO QSFP 20GB/S 30AWG 3M	Mellanox
SDR	MC1104130-001	MT PASSIVE COPPER CABLE 4X CX4 20GB/S 30AWG 1M	Mellanox
SDR	MC1104130-003	MT PASSIVE COPPER CABLE 4X CX4 20GB/S 30AWG 3M	Mellanox
QDR	MC2206310-300	MT ACTIVE FIBER CABLE 4X QSFP 40GB/S 200M	Mellanox
QDR	MC2206125-007	MT PASSIVE COPPER CABLE 4X QSFP 40GB/S 25AWG 7M	Mellanox
QDR	MC2206126-006	MT PASSIVE COPPER CABLE 4X QSFP 40GB/S 26AWG 6M	Mellanox
QDR	MC2206230-010	MT ACTIVE COPPER CABLE IB QDR 40GB/S QSFP 10M	Mellanox
QDR/FDR10	MC2206310-030	MT ACTIVE FIBER CABLE 4X QSFP 40GB/S 30M	Mellanox
QDR / FDR10	MC2206310-100	MT ACTIVE FIBER CABLE 4X QSFP 40GB/S 100M	Mellanox
QDR / FDR10/ 40GE	MFS4R12CB-100	MT ACTIVE FIBER CABLE IB QDR/ FDR10 40GB/S QSFP 100M	Mellanox
QDR / FDR10	MC2206128-005	MT PASSIVE COPPER CABLE 4X QSFP 40GB/S 28AWG 5M	Mellanox
QDR / FDR10	MC2206130-003	MT PASSIVE COPPER CABLE 4X QSFP 40GB/S 30AWG 3M	Mellanox
QDR / FDR10	MC2206130-00A	MT PASSIVE COPPER CABLE 4X QSFP 40GB/S 30AWG 0.5M	Mellanox

Table 2 - Tested Cables and Modules (Sheet 2 of 6)

Speed	OPN #	Description	Vendor
QDR / FDR10 (on SwitchX only)	MC2210511-LR4 - F	Mellanox Optical Module 40Gb/S QSFP LC-LC 1310NM LR4. Up To 10KM	Mellanox
QDR / FDR10/ 40GE	MC2210411-SR4 -T	Mellanox Optical Module 40Gb/S QSFP LC-LC 850NM LR4. Up To 100M	Mellanox
QDR / FDR10/ 40GE	MC2210411-SR4 -F	Mellanox Optical Module 40Gb/S QSFP LC-LC 850NM LR4. Up To 100M	Mellanox
40GE	MC2210126-004	MT PASSIVE COPPER CABLE 4X QSFP 40GE 26AWG 4M	Mellanox
40GE	MC2210126-005	MT PASSIVE COPPER CABLE 4X QSFP 40GE 26AWG 5M	Mellanox
40GE	MC2210128-003	MT PASSIVE COPPER CABLE 4X QSFP 40GE 28AWG 3M	Mellanox
40GE	MC2210130-001	MT PASSIVE COPPER CABLE 4X QSFP 40GE 30AWG 1M	Mellanox
40GE	MC2210310-30-E	Mellanox® active fiber cable, ETH 40GbE, 40Gb/s, QSFP	Mellanox
40GE	MC2210310-100-E	Mellanox® active fiber cable, ETH 40GbE, 40Gb/s, QSFP	Mellanox
40GE->10GE	MC2609125-005	MT PASSIVE COPPER CABLE QSFP TO 4 SFP+ 10GB/S 26AWG 5M	Mellanox
40GE->10GE	MC2609130-001	MT PASSIVE COPPER CABLE QSFP TO 4 SFP+ 10GB/S 30AWG 1M	Mellanox
40GE->10GE	MC2609130-003	MT PASSIVE COPPER CABLE QSFP TO 4 SFP+ 10GB/S 30AWG 3M	Mellanox
40GE->10GE	MC6709309-050	MT PASSIVE OPTICAL CABLE MULTI- MODE SPLITTER MPO TO 8XLC 50 METER	Mellanox
10GE	MC2309124-006	MT PASSIVE COPPER CABLE 1X SFP+ TO QSFP 10GB/S 24AWG 7M	Mellanox
10GE	MC2309124-007	MT PASSIVE COPPER CABLE 1X SFP+ TO QSFP 10GB/S 24AWG 7M	Mellanox

Table 2 - Tested Cables and Modules (Sheet 3 of 6)

Speed	OPN #	Description	Vendor
10GE	MC2309130-00A	MT PASSIVE COPPER CABLE 1X SFP+ TO QSFP 10GB/S 30AWG 0.5M	Mellanox
10GE	MC2309130-003	MT PASSIVE COPPER CABLE 1X SFP+ TO QSFP 10GB/S 30AWG 3M	Mellanox
10GE	MC3309130-00A	MT PASSIVE COPPER CABLE 1X SFP+ 10GB/S 30AWG 0.5M	Mellanox
10GE	MC3309124-005	MT PASSIVE COPPER CABLE 1X SFP+ 10GB/S 24AWG 5M	Mellanox
10GE	MC3309130-003	MT PASSIVE COPPER CABLE 1X SFP+ 10GB/S 30AWG 3M	Mellanox
10GE	MC3309124-007	MT PASSIVE COPPER CABLE 1X SFP+ 10GB/S 24AWG 7M	Mellanox
10GE	MFM1T02A-LR	MELLANOX OPTICAL MODULE ETH 10GBE 10GB/S SFP+ LC-LC 1310NM LR UP TO 10KM	Mellanox
10GE	MFM1T02A-SR	MT OPTICAL MODULE ETH 10GBE 10GB/S SFP+ LC-LC 850NM SR UP TO 300M	Mellanox
1GE	MC3208011-SX	MELLANOX OPTICAL MODULE ETH 1GBE 1GB/S SFP LC-LC SX 850NM UP TO 500M	Mellanox
1GE	MC3208411-T	MELLANOX MODULE ETH 1GBE 1GB/S SFP BASE-T UP TO 100M	Mellanox
10GE	MAM1Q00A-QSA	MELLANOX QSFP TO SFP+ ADAPTER	Mellanox
FDR; 56G VPI	MC2207130-00A	MT PASSIVE COPPER CABLE 4X QSFP 56GB/S 30AWG 0.5M	Volex - (Taipan)
FDR; 56G VPI	MC2207130-002	MT PASSIVE COPPER CABLE 4X QSFP 56GB/S 30AWG 2M	Volex - (Taipan)
FDR; 56G VPI	MC2207128-003	MT PASSIVE COPPER CABLE 4X QSFP 56GB/S 28AWG 3M	Volex - (Taipan)
FDR; 56G VPI	MC2207126-004*	MT PASSIVE COPPER CABLE 4X QSFP 56GB/S 28AWG 4M	Volex - (Taipan)
FDR; 56 VPI	MC2207312-003	MT ACTIVE FIBER CABLE VPI IB FDR (56GB/S) AND ETH 40GBE QSFP 3M	Volex - (Taipan)
FDR; 56G VPI	MC2207310-030-E	MT ACTIVE FIBER CABLE 4X QSFP 56GB/S 30M	Mellanox (Emcore)

Table 2 - Tested Cables and Modules (Sheet 4 of 6)

Speed	OPN #	Description	Vendor
FDR; 56G VPI	MC2207312-100	MT ACTIVE FIBER CABLE 4X QSFP 56GB/S 100M	Mellanox (Molex)
FDR; 56G VPI	MC2207310-100-E	MT ACTIVE FIBER CABLE 4X QSFP 56GB/S 100M	Mellanox (Emcore)
FDR; 56G VPI	MC2207310-030-F	MT ACTIVE FIBER CABLE 4X QSFP 56GB/S 30M	Mellanox (Finisar)
FDR; 56G VPI	MC2207310-100-F	MT ACTIVE FIBER CABLE 4X QSFP 56GB/S 100M	Mellanox (Finisar)
10GE	Cisco SFP-H10GB-CU1M	Cisco SFP+ cable	Cisco
FDR	MC220731V-010	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 10m	Mellanox
FDR	MC220731V-100	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 100m	Mellanox
10GE	Cisco SFP-H10GB-CU3M	Cisco SFP+ cable	Cisco
10GE	Cisco SFP-H10GB-CU5M	Cisco SFP+ cable	Cisco
40GE	QSFP-H40G-CU1M	Cisco QSFP 40GbE cable	Cisco
40GE	QSFP-H40G-CU3M	Cisco QSFP 40GbE cable	Cisco
40GE	QSFP-H40G-CU5M	Cisco QSFP 40GbE cable	Cisco
40GE->10GE	MC2309124-007	QSFP-4SFP10G	Cisco
40GE->10GE	MC2309124-007	QSFP-4SFP10G	Cisco
10GE	CAB-SFP-SFP-1M	passive copper cable, SFP+, 10 Gb/s, 1m	Arista
10GE	CAB-SFP-SFP-2M	passive copper cable, SFP+, 10 Gb/s, 2m	Arista
10GE	CAB-SFP-SFP-3M	passive copper cable, SFP+, 10 Gb/s, 3m	Arista
10GE	CAB-SFP-SFP-5M	passive copper cable, SFP+, 10 Gb/s, 5m	Arista
40GE	40GbE QSFP+ to QSFP	QSFP+ copper cable 3M	Arista
40GE	40GbE QSFP+ to QSFP	QSFP+ copper cable 5M	Arista
10GE	QFX-SFP-DAC-1M	SFP+ 10 Gigabit Ethernet Direct Attach Copper (twinax copper cable) 1 m	Juniper

Table 2 - Tested Cables and Modules (Sheet 5 of 6)

Speed	OPN #	Description	Vendor
10GE	QFX-SFP-DAC-3M	SFP+ 10 Gigabit Ethernet Direct Attach Copper (twinax copper cable) 3 m	Juniper
10GE	QFX-SFP-DAC-5M	SFP+ 10 Gigabit Ethernet Direct Attach Copper (twinax copper cable) 5 m	Juniper
40GE	90Y9425-N28500A	IBM-Amphenol SFP+ 1m	IBM
40GE	46K6184-L36836B	IBM-Amphenol SFP+ 5m	IBM
40GE	46K6183-L36836B	IBM-Amphenol SFP+ 3m	IBM
40GE	44X1371-N31295E	IBM-Amphenol SFP+ 7m	IBM
40GE	00D5802-N13445C	IBM-Amphenol QSFP+ 1m	IBM
40GE	JG325A	HP X140 40G QSFP+ MPO SR4 Transceiver	HP
40GE	JG326A	HP X240 40G QSFP+ QSFP+ 1m DAC Cable	HP
40GE	JG327A	HP X240 40G QSFP+ QSFP+ 3m DAC Cable	HP
40GE	JG328A	HP X240 40G QSFP+ QSFP+ 5m DAC Cable	HP
10GE	J9281B	HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	HP
10GE	J9283B	HP X242 10G SFP+ SFP+ 3m DAC Cable	HP
10GE	J9285B	HP X242 10G SFP+ SFP+ 7m DAC Cable	HP
10GE	JD096B	HP X240 10G SFP+ SFP+ 1.2m DAC Cable	HP
10GE	JD095B	HP X240 10G SFP+ SFP+ 0.65m DAC Cable	HP
10GE	JD097B	HP X240 10G SFP+ SFP+ 3m DAD Cable	HP
10GE	487649-B21	HP BLc SFP+ .5m 10GbE Copper Cable	HP
10GE	487652-B21	HP BLc SFP+ 1m 10GbE Copper Cable	HP
10GE	487655-B21	HP BLc SFP+ 3m 10GbE Copper Cable	HP
10GE	537963-B21	HP BLc SFP+ 5m 10GbE Copper Cable	HP
10GE	487658-B21	HP BLc SFP+ 7m 10GbE Copper Cable	HP

Table 2 - Tested Cables and Modules (Sheet 6 of 6)

Speed	OPN #	Description	Vendor
10GE	AP784A	HP 3m C-series Passive Copper SFP+ Cable	HP
10GE	AP785A	HP 5m C-series Passive Copper SFP+ Cable	HP
10GE	AP818A	HP 1m B-series Active Copper SFP+ Cable	HP
10GE	AP819A	HP 3m B-series Active Copper SFP+ Cable	HP
1GB	453151-B21	HP BLc VC 1Gb SX SFP Opt Kit	HP
1GB	453154-B21	HP BLc VC 1Gb RJ-45 SFP Opt Kit	HP
10GE	455883-B21	HP BLc 10Gb SR SFP+ Opt	HP
10GE	455886-B21	HP BLc 10Gb LR SFP+ Opt	HP
10GE	J9150A	HP X132 10G SFP+ LC SR Transceiver	HP
10GE	J9151A	HP X132 10G SFP+ LC LR Transceiver	HP

1.3 Tested Switches

Table 3 - Tested Switches (Sheet 1 of 3)

Speed	OPN # /Name	Description
IB SDR	F-X430060	24-port SDR-Switch
IB DDR	F-X430044	24-port DDR-Switch
IB DDR	Qlogic 9024, DDR	24-port DDR-Switch
IB QDR	QLogic 12300	36-Port 40Gb QDR Infiniband Switch, Management Module, Dual Power
IB QDR	Mellanox 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
IB QDR	Mellanox 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
IB QDR	Mellanox QDR-Switch 4036	InfiniScale® IV QDR Mellanox Grid Director 4036 36-Port QDR InfiniBand Switch - Part ID: VLT-30011
IB FDR	Mellanox 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
IB FDR10	Mellanox 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
40Gb/s	Mellanox MSX1036B-1BFR	SwitchX™ based 36-port QSFP 40GigE 1U Ethernet
10Gb/s	Mellanox MSX1016X-1BFR	SwitchX™ based 64-port SFP+ 10GigE, 1U Ethernet switch
10/40Gb/s	Mellanox MSX1024B-1BFS	SwitchX®-2 based 48-port SFP+ 10GbE, 12 port QSFP 40GbE, 1U Ethernet switch
10/40Gb/s	Force 10 S4810P-AC	48-port 10Gb/40Gb Switch
10/40Gb/s	Cisco 3064	48-port 10Gb/40Gb Switch
10/40Gb/s	Arista 7050Q	16-port 40Gb Switch
10/40Gb/s	Arista 7050S	48-port 10Gb/40Gb Switch
10Gb/s	Fujitsu 10GbE (XAUI)	Ethernet Switch 24 ports, 20xCX4 and 4xQSFP

Table 3 - Tested Switches (Sheet 2 of 3)

Speed	OPN # /Name	Description
10Gb/s	HP ProCurve 6600-24XG	24-port 10GbE switch
10Gb/s	Cisco 5548	Cisco 10GB ETH switch
10/40Gb/s	IBM G8264	IBM 10/40GB ETH switch
40GbE	Cisco 3016	Cisco 40GB ETH switch
40GbE	IBM G8316	IBM 40GB RackSwitch G8316
10Gb/s	Juniper EX2500	Juniper 10GB ETH switch
10Gb/s	Juniper EX4550	Juniper 10GB ETH switch
10/40Gb/s	Juniper EX3500	Juniper 10/40GB ETH switch
1/10Gb/s	Summit X650	Extreme 10GB ETH switch
10Gb/s	Brocade 8000	Brocade 10GB ETH switch
10/40Gb/s	HP ASF5900	HP 10GB ETH switch
1Gb/s	HP 2810-24G.	HP 1GB ETH switch
IB FDR	M4001F	SwitchX® 56Gb/s 16+16 port InfiniBand switch blade for the Dell M1000e Blade System
IB FDR10	M4001T	SwitchX® 40Gb/s 16+16 port InfiniBand switch blade for the Dell M1000e Blade System
IB QDR	M3601Q	40Gb/s 16+16 port InfiniBand switch blade for the Dell M1000e Blade System
IB DDR	M2401G	Infiniscale III 24-Port 20Gb/s InfiniBand Switch for Dell M1000E Blade System
40GbE	689638-B21	Mellanox SX1018HP Enet Switch 40G Ethernet
10GbE	516733-B21	HP ProCurve 6120XG 10GbE Ethernet Blade Switch
10GbE	538113-B21	HP 10GbE Pass-Through Module (PTM)
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
IB FDR	648311-B21	HP BLc 4X FDR IB Switch
IB QDR	489184-B21	HP BLc 4X QDR IB Switch

Table 3 - Tested Switches (Sheet 3 of 3)

Speed	OPN # /Name	Description
IB DDR	410398-B21	HP BLc 4X DDR IB Switch
40GbE	90Y3477	IBM Flex System EN6131 40Gb Ethernet Switch
IB FDR	90Y3452	IBM Flex System IB6131 Infiniband Switch
10GbE	B22	IBM B22 10 Gigabit Scalable Switch Module
10GbE	EN4093	IBM PureFlex System Fabric EN4093 10 Gigabit Scalable Switch Module
10GbE	6125XLG	Ethernet Blade Switch
10GbE	0PNDP6	10Gb KR pass through module
10GbE	B22	Dell Cisco B22 Blade IO Modules
10GbE	Dell Force10 MXL	Dell Force10 MXL Blade IO Modules

1.4 Tools, Switch Firmware and Driver Software

Firmware Rev 2.31.5050 is tested with the following tools, SwitchX® firmware, and driver software:

- Driver versions:
 - MLNX-OFED 2.2-1.0.1 and higher
 - MLNX_EN 2.0-3.0.0 and higher
 - WinOF 4.70 and higher
- MFT: 3.6.0 and higher
- PXE version 3.4.225 and higher

1.5 Revision Compatibility

Firmware Rev 2.31.5050 complies with the following programmer's reference manual:

- *ConnectX Programmer's Reference Manual (PRM), Rev 1.51 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) 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 Supported Features

2.1 Firmware Rev 2.31.5050 Changes and New Feature

Table 4 - Firmware Rev 2.31.5050 Changes and New Feature

Category	Description
MAD	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
INI	Added Exponential Backoff Timer support. It is enabled via the <code>rtm_ini</code> parameter. The default value is 0
Flow Steering (DMFS)	Added VLAN steering to Device Managed Flow Steering (DMFS)
Non-Volatile configuration tool	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 ACCEES_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
Management protocols	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	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.
	PCIe power optimizations for 8X/4X links
Side Band protocols	SMBUS optimizations
Physical and Virtual Functions reset flows	Added new Physical and Virtual Functions reset flows support
PXE support	Added support for 64Bit BIOS mode

Table 4 - Firmware Rev 2.31.5050 Changes and New Feature

Category	Description
PRM	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.

3 Known Issues

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

Table 5 - Known Issues

Index	Issue	Description	Workaround	Scheduled Release (fix)
1.	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.	Future Release
2.	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 <code>ibstat</code>). 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).	N/A
3.	SBR assertion	SBR should be asserted for a minimum of 50 milliseconds for the ConnectX-3 adapters	N/A	N/A
4.	PCIe	On Pilot1 SL230, PCIe link occasionally does not come up at Gen3 speed	Production SL230 should be used for PCIe Gen3 operation	N/A
5.	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 <code>"do_sense=false"</code> parameter in the [IB_TAB] in the INI of the VPI card	N/A
6.	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	Future Release
7.	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	Future Release

Table 5 - Known Issues

Index	Issue	Description	Workaround	Scheduled Release (fix)
8.	DMFS maximum number of QPs	When in DMFS mode, the maximum number of QPs per MCG is 22	If additional QPs are needed, use the former steering mode (read/write_MGM)	Future Release
9.	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'	Future Release
10.	MC2210411-SR4 module with Cable Info MAD	Cable Info MAD reports a wrong cable info when using the MC2210411-SR4 module	N/A	Future Release
11.	PCIe failure on temperature shock 10C/min	Gen2 failure at temperature sweep up to 10C/min (for MT27518A1-FDIR-BV only).	N/A	Future Release
12.	PCIe Gen2 link	PCIe Gen2 link unstable at temperature sweep of 10C/min for MT27518A1-FDIR-BV	N/A	Future Release
13.	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	Future Release
14.	Bloom filter	Bloom filter is currently not supported.	N/A	Future Release
15.	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	Future Release
16.	DMFS steering mode with IB in Linux	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	Future Release

Table 5 - Known Issues

Index	Issue	Description	Workaround	Scheduled Release (fix)
17.	VPD read-only fields	VPD read-only fields are writable.	Do not write to read-only fields if you wish to preserve them	Future Release

4 Bug Fixes History

Table 6 lists the bugs fixed in this release.

Table 6 - Fixed Bugs List

Index	Issue	Description	Discovered in Release	Fixed in Release
1.	NC-SI	Fixed wrong channel value in the SELECT/DESELECT PACKAGE commands	2.30.8000	2.31.5050
2.		Fixed an issue caused response packet to include 4 extra bytes	2.30.8000	2.31.5050
3.		Fixed wrong reason code value returned when using Set Link command with unsupported speed.	2.30.8000	2.31.5050
4.		Added protection from bad MAC address given by BMC	2.30.8000	2.31.5050
5.	False Link Indication	Fixed an issue causing the device to report false link up when no cable is connected.	2.30.8000	2.31.5050
6.	PCIe	Removed false TX pulse after PERST_ deassertion	2.30.8000	2.31.5050
7.		Fixed FLR capability bit inconsistency when SR-IOV is enabled.	2.30.3200	2.31.5050
8.		Fixed an issue with the device not reporting PCIe related errors.	2.30.8000	2.31.5050
9.	SDR instead of DDR ConnectX-3 to SX6036	When a link is configured to DDR in a setup of ConnectX-3 to SX6036, SDR link is established instead.	2.30.8000	2.31.5050
10.	VXLAN	VXLAN used the wrong default UDP port. the UDP port number was changed to 4789.	2.30.8000	2.31.5050
11.		Fixed wrong setting of the UDP destination port for VXLAN.	2.30.8000	2.31.5050
12.	Flow Steering	Fixed an internal error caused when moving to the DMS mode with IPMI/NC-SI enabled.	2.30.8000	2.31.5050
13.	FDR speed degradation with 0.5m cables	In a back-to-back setup of FDR cards connected with a 0.5m FDR cable, a link may be established as FDR10 instead of FDR.	2.30.3200	2.31.5050
14.	PCI interrupt	Fixed issues related to working with PCI legacy interrupts.	2.30.8000	2.31.5050
15.	TCP/UDP Checksum	Fixed wrong checksum calculation for short packets which were padded by the software.	2.30.8000	2.31.5050

Table 6 - Fixed Bugs List

Index	Issue	Description	Discovered in Release	Fixed in Release
16.	MFT tool deadlock	Reading PCIe configuration space after using the MFT flint tool caused the device to crash.	2.10.0000	2.31.5050
17.	Side band packet loss	Fixed occasional packet loss over IPMI	2.30.8000	2.31.5050
18.	Eye opening MAD	Fixed wrong values reported in the Eye opening MAD.	2.30.8000	2.31.5050
19.	PCIe Link width	Fixed occasional link width degrades during link negotiation and link transitions from L1 state.	2.30.8000	2.31.5050
20.	PCIe signal detect	Fixed adjust signal detect thresholds	2.30.8000	2.31.5050
21.	Error counters	PortExtendedSpeedsCounters MAD counters were mistakenly increased while LLR was active	2.30.8000	2.31.5050
22.	PCIe Gen3 Equalization	Lane reversal was not considered when configured TX parameters	2.30.8000	2.31.5050
23.	Reset On LAN (ROL)	Fixed ROL factory MAC usage when a FlexBoot address was given.	2.30.8000	2.31.5050
24.	Flow Control	Fixed Pause frames factory MAC usage when a FlexBoot address was given.	2.30.3200	2.31.5050
25.	WOL/ROL	The device did not different between WOL/ROL packets.	2.30.8000	2.31.5050
26.	PortInfo MAD	Fixed a set of extended fields in PortInfo MAD which did not function.	2.10.0000	2.31.5050
27.	LLR cell size	Adjusted LLR cell size according to the MLPN negotiation of ib_128b_llr	2.30.8000	2.31.5050
28.	Link max speed	The max speed restriction was active in full power mode instead of standby mode only.	2.30.8000	2.31.5050
29.	InfiniBand Automatic Path Migration	The InfiniBand Path migration did not work with GRH. http://webdev01:8080/commit/ConnectX.git/a9c37ee4c31038f2c1179d4d9e79c9337e0ab5c7	2.10.0000	2.31.5050
30.	Packet steering	Reading MGM after writing it returned wrong members count.	2.30.8000	2.31.5050
31.	RSS QP context	Fixed corruption of the RSS hash key given by the driver.	2.30.8000	2.31.5050
32.	10Gb/s QoS	Fixed QoS rate limit BW offset.	2.30.3200	2.31.5050

Table 6 - Fixed Bugs List

Index	Issue	Description	Discovered in Release	Fixed in Release
33.	ExtendedPortInfo MAD	Fixed FDR10 speed_en reporting.	2.30.8000	2.31.5050
34.	Management link	Fixed long management link com loss.	2.30.8000	2.31.5050
35.	PRM Query_Port Command	The command results reported both link types active at the same time.	2.30.3200	2.31.5050
36.	Link not raising	Fixed collision between forcing phy type and port sensing.	2.30.8000	2.31.5050
37.	Core clock reporting	Fixed a wrong core clock freq reporting in QUERY_HCA command.	2.30.3200	2.31.5050
38.	56GbE link issues	Fixeds occasional link failure when 56GbE is enabled	2.30.8000	2.31.5050
39.	RX calibration	Fixed max eye margins to be per protocol.	2.30.8000	2.31.5050
40.	VPI symbol errors	perfquery reported wrong error symbol on ConnectX [®] -3 VPI mode: IB, ETH.	2.30.8000	2.31.5050
41.	Symbol error on ConnectX-3 dual-port QDR with MC2207312-030 AOCs	On ConnectX-3 dual-port QDR and FDR/FDR10 switch setups, symbol errors may occur with MC2207312-030 AOCs.	2.30.8000	2.31.5050
42.	Symbol error on Falcon QDR against FDR switches with MC2207126-004 copper cables	Symbol errors occur on ConnectX-3 dual-port QDR connected to FDR switches with MC2207126-004 copper cables.	2.30.8000	2.31.5050
43.	PCIe correctable errors in speed change	When PCIe Gen3 is enabled, temporary correctable errors might occur when changing speed between PCIe Gen1 and PCIe Gen2.	2.10.0000	2.30.8000
44.	Incompatibility between Device managed Flow steering and NC-SI	Device managed Flow steering and NC-SI cannot be enabled simultaneously.	2.11.0500	2.30.8000
45.	40GbE is not supported in Auto-Sensing	Auto-Sensing is not supported with 40GbE connections in VPI cards	2.10.0000	2.30.8000
46.	InfiniBand port_rcv_pkts counter	InfiniBand port_rcv_pkts counter over counts when LLR is enabled on the port. The port_rcv_pkts counter continues to count packets even when no traffic is received.	2.10.0000	2.30.8000

Table 6 - Fixed Bugs List

Index	Issue	Description	Discovered in Release	Fixed in Release
47.	PXE	PXE is currently not supported in 40GbE in VPI cards	2.10.0000	2.30.8000
48.		PXE is currently not supported in QSFP to SFP+ hybrid cable	2.10.0000	2.30.8000
49.	sense_port failure	Ethernet cards failed to work with MLNX_OFED unless the do_sense was disabled in the INI	RH6.4 driver	MLNX_OFED 2.0-3.0.0
50.	Link errors	BER of 10^{-11} with 7M copper SFP+ 10GbE cable against Arista switch	2.30.3200	2.30.8000
51.	Linkup Failure vs SwitchX®-2 based switch	Port failed to link up in 10GbE if it was previously linked up in 40GbE vs. SwitchX®-2 based switch	2.30.3200	2.30.8000
52.	NC-SI 40GbE reporting	Added 40GbE reporting in get_link_status NC-SI command	2.30.3000	2.30.8000
53.	Packets drop in receive when DMFS enabled	Steering entries overlapping caused packets to drop in the receive due to wrong hash size calculation of QP hash folding.	2.30.3000	2.30.8000
54.	PCIe speed degrade	Occasionally, PCIe speed degraded during speed change test	2.30.3000	2.30.8000
55.	Link failure vs Cisco	Device failed to raise the link against Cisco b-22 Blade switch	2.30.3000	2.30.8000
56.	False RX drops indication	Fixed an issue causing RX drop counters to falsely increase when using MLNX_OFED 2.0.-3.0.0	2.30.3000	2.30.8000
57.	NC-SI wrong command info	Wrong port information provided in get link status command.	2.30.3000	2.30.8000
58.	Port interfaces stay down	After firmware upgrade, the device failed to raise port interface.	2.30.3000	2.30.8000
59.	SR-IOV guest failure	Guest VM failed to execute firmware commands operations and crashed.	2.30.3000	2.30.8000
60.	ConnectX®-3 Pro: MCG write timeout	PRM WRITE_MCG command caused the device to hang.	2.30.3000	2.30.8000
61.	ConnectX®-3 Pro: Driver start failure	Driver could not start when NIC was configured for NC-SI SNP.	2.30.3000	2.30.8000
62.	SR-IOV command timeouts	Guest MSIX vectors were not assigned properly.	2.30.3000	2.30.8000

Table 6 - Fixed Bugs List

Index	Issue	Description	Discovered in Release	Fixed in Release
63.	PCIe speed degrade/link down	Occasionally, the PCIe link experienced speed degrading or link falling in driver restart/reboot	2.30.3000	2.30.8000
64.	QP Sniffer issue	Fixed a hash fold issue for sniffer QPs	2.30.3000	2.30.8000
65.	Long link up time	A long link up time is experienced in the HCA connected to a 10GbE cable against the MSX1012 switch	2.30.3000	2.30.8000
66.	PCIe TS parity bit	In recovery.EQLZ state TSs used incorrect parity bit calculation	2.30.3000	2.30.8000
67.	PRM Init_port failure	Init port command may fail on a system with NC-SI	2.30.3000	2.30.8000
68.	PortInfo MAD link width support	Wrong link_width_support is reported occasionally in PORT_INFO MAD	2.30.3000	2.30.8000
69.	Wrong Virtual Function completer ID	In SR-IOV a wrong completer ID is added in some of the VF completion packets	2.30.3000	2.30.8000
70.	PCIe PML1 failures	Fixed occasional failures upon entering and exiting L1 state in PCIe Gen1 & 2 speeds	2.30.3000	2.30.8000
71.	IB: APM failures in ConnectX-3 Pro	Occasional FSM transition timeouts are seen on APM requests	2.30.3000	2.30.8000
72.	ipmitool OOB commands	On rare occasions, ipmitool OOB commands failed upon send payload.	2.30.3000	2.30.8000
73.	Sideband communication	On rare occasions, after stress of power cycles, side-band communication might disconnect.	2.30.3000	2.30.8000
74.	Expansion ROM partition	Expansion ROM partition not found	2.30.3000	2.30.8000
75.	AC power cycle issue	In certain servers, AC power cycle may cause BMC connectivity loss.	2.30.3000	2.30.8000
76.	PXE issue	Occasionally, during DC cycle stress, failure occurred in PXE due to race condition	2.30.3000	2.30.8000
77.	SMBUS communication	SMBUS communication lost during AC/DC cycle	2.30.3000	2.30.8000
78.	MTU configuration	Temporal wrong MTU configuration during initialization may cause Serial over LAN disconnection	2.30.3000	2.30.8000

Table 6 - Fixed Bugs List

Index	Issue	Description	Discovered in Release	Fixed in Release
79.	IPMI connectivity	IPMI OOB communication lost during stress	2.30.3000	2.30.8000
80.	iperf stress test	Packet drops during iperf stress w/ different MSS	2.30.3000	2.30.8000
81.	Loss of connection to BMC upon firmware upgrade	Upgrading from firmware v2.10.3898 may cause loss of connection to BMC.	2.30.3000	2.30.8000
82.	Running rmmmod may cause unexpected behavior	Removing the mlx4_en driver using the "rmmmod" command, may cause unexpected behavior	2.30.3000	2.30.8000
83.	IPMI connectivity	On rare occasions, after stress of BMC cold reset, link failure might occur	2.30.3000	2.30.8000
84.	Flexboot 3.4.100-UEFI-4.0.410 BIOS menu	Enter the BIOS menu while using Flex-Boot 3.4.100- UEFI-4.0.410 may cause the server to stop responding (hang)	2.30.3000	2.30.8000
85.	ROL failure	ROL failure after disassembling the driver on the SUT	2.30.3000	2.30.8000
86.	IPMI link failure	IPMI link failure after disabling the WoL or disassembling the driver	2.30.3000	2.30.8000
87.	WoL and RoL issues	WoL and RoL issues caused when the IPMI is disabled	2.30.3000	2.30.8000
88.	A link flapping issue	Alignment marker arrival can no longer drop the link.	2.30.3000	2.30.8000
89.	IPMI - SOL traffic performance improvement	SOL with multiple data streams occasionally hang	2.30.3000	2.30.8000
90.	RoCE	RoCE does not function properly after running "ethtool ethX"	2.30.3000	2.30.8000
91.	PCI link errors	PCI link errors false indication. Cleared errors during PCIe link retraining	2.30.3000	2.30.8000
92.	PCIe speed change	Fixed a false indication for incoming PCIe speed change request	2.30.3000	2.30.8000
93.	No NC-SI after PXE teardown	Management transport was not supported, after PXE driver teardown (unload). Fixed the flow to issue software reset, after the driver was stopped	2.30.3000	2.30.8000

Table 6 - Fixed Bugs List

Index	Issue	Description	Discovered in Release	Fixed in Release
94.	Ports PLL calibration issue	PLL calibration were affected by operating point configuration	2.30.3000	2.30.8000
95.	Cable Info MAD issue	Wrong cable info was received when using the MC2210411-SR4 module	2.30.3000	2.30.8000
96.	Revision ID	Updated the Revision ID of Node Info and General Info MADs to reflect HW Rev ID instead of 0	2.30.3000	2.30.8000
97.	Port Error counters reset	Port error counters were not cleared upon XAUI/SGMII link up	2.30.3000	2.30.8000
98.	RDMA retransmission on ConnectX®-3 Pro	RDMA retransmission failed in specific scenario of receiving NAKs on ConnectX®-3 Pro due to bad static configuration	2.30.3000	2.30.8000
99.	NMI on PCIe Gen2 server	Fixed a PCIe Gen2 firmware flow to prevent NMI during hibernation on PCIe Gen2 server	2.30.3000	2.30.8000
100.	Access to closed resources	Fixed a possible access to unmapped resource memory	2.30.3000	2.30.8000
101.	Slow link establishment in NC-SI	Slow link establishment in NC-SI caused due to slow cable reading in boot	2.30.3000	2.30.8000
102.	PCIe speed change	Occasionally, a failure occurred in speed when changing to Gen2	2.30.3000	2.30.8000
103.	PXE teardown issue	PXE might halt during teardown	2.30.3000	2.30.8000
104.	InfiniBand loopback	InfiniBand loopback was blocked during link negotiation on the same port	2.11.0500	2.30.8000
105.	Voltage scaling	Fixed process voltage scaling issue	2.30.3000	2.30.8000
106.	DMA address 0x0	Fixed a possible read access to DMA address 0x0	2.11.0500	2.30.8000
107.	cqe issue	Fixed miss cqe issue due to interrupt moderation	2.11.0500	2.30.8000
108.	Cable reading issue	Fixed a rare cable reading issue upon cable insertion	2.30.3000	2.30.8000
109.	Linkup issue	Fixed a linkup issue against MSX60XX FDR switch	2.30.3000	2.30.8000
110.	LLR Vendor Specific MAD	LLR Dropped cell counter reported CSN error	2.11.0500	2.30.8000

Table 6 - Fixed Bugs List

Index	Issue	Description	Discovered in Release	Fixed in Release
111.	PXE boot failure	On rare occasions, PXE boot fails due to a firmware issue interfering with the PXE load from the card's flash. Upon failure, the following message is received: "Payload inaccessible - cannot continue"	2.30.3000	2.30.8000
112.	MLNX_OFED v2.0-2.0.3 reports ETH RX errors	MLNX_OFED v2.0-2.0.3 reported RX errors when the driver operated in the ETH only mode.	MLNX_OFED v2.0.2.0.3	2.30.3200
113.	SR-IOV guest communication channel error	Under certain conditions, SR-IOV guest experienced request timeouts and got stuck.	2.11.0500	2.30.3200
114.	No NC-SI after PXE teardown	Management transport was not supported, after PXE driver teardown (unload). Fixed the flow to issue software reset, after the driver was stopped.	2.11.0500	2.30.3000
115.	Revision ID	Updated the Revision ID of Node Info and General Info MADs to reflect hardware Rev ID instead of 0	2.11.0500	2.30.3000
116.	Ports PLL calibration issue	PLL calibration were affected by operating point configuration	2.11.0500	2.30.3000
117.	Port Error counters reset	Port error counters were not cleared upon XAUI/SGMII link up	2.11.0500	2.30.3000
118.	Receiver SerDes tuning	Enhanced the receiver SerDes tuning for 10GE, to support specific 10GbE QSFP to SFP+ splitter cables	2.11.0500	2.30.3000
119.	Access to closed resources	Fixed a possible access to unmapped resource memory	2.11.0500	2.30.3000
120.	Slow link establishment in NC-SI	Slow link establishment in NC-SI caused due to slow cable reading in boot	2.11.0500	2.30.3000
121.	PCIe speed change	Occasionally, a failure occurred in speed when changing to Gen2	2.11.0500	2.30.3000
122.	PXE teardown issue	PXE might halt during teardown	2.11.0500	2.30.3000
123.	InfiniBand loopback	InfiniBand loopback was blocked during link negotiation on the same port	2.11.0500	2.30.3000
124.	Voltage scaling	Fixed process voltage scaling issue	2.11.0500	2.30.3000
125.	DMA address 0x0	Fixed a possible read access to DMA address 0x0	2.11.0500	2.30.3000

Table 6 - Fixed Bugs List

Index	Issue	Description	Discovered in Release	Fixed in Release
126.	cqe issue	Fixed miss cqe issue due to interrupt moderation	2.11.0500	2.30.3000
127.	Cable reading issue	Fixed a rare cable reading issue upon cable insertion	2.11.0500	2.30.3000
128.	PXE boot failure	On rare occasions, PXE boot fails due to a firmware issue interfering with the PXE load from the card's flash. Upon failure, the following message is received: "Payload inaccessible - cannot continue"	2.11.0500	2.30.3000
129.	Momentarily packet drop on one port while the other port goes down	When the same VLAN is configured for both ports and one port goes down, the second port may suffer a momentarily packet drop	2.11.0500	2.30.3000
130.	Advanced Error Reporting	Fixes to Advanced Error Reporting according to the PTC (PCIe compliancy) Test failures	2.11.0500	2.30.3000
131.	10GbE link remains down after changing to a 40GbE link	When changing link connection between 40Gbe to 10Gbe, the port might stay down until the next driver restart.	2.11.0500	2.30.3000
132.	Race in PCIe L1 flow	The device may enter an L1 power state before completing an incoming configuration request if it arrived before the power state change ack for Root Complex	2.11.0500	2.30.3000
133.	Wrong link speed after several cable re-insertions	During repeated cable reinsertion, the link may raise in a lower speed than expected/	2.11.0500	2.30.3000
134.	Changing port protocol from ETH to IB requires driver restart	Bad configuration of <code>ib_protocol</code> when setting the port to InfiniBand after exchanging it from Ethernet/RoCE on the same port	2.11.0500	2.30.3000
135.	Rare NMI error on HP servers when using PXE	On rare occasions, an NMI error is received when stopping PXE boot in the middle of an action on HP servers	2.11.0500	2.30.3000
136.	Race in PCI configuration handling	The system was unresponsive when a race between PCI configuration cycles handling in hardware and firmware occurred.	2.11.0500	2.30.3000
137.	RoCE breaks IPv6 traffic	IPv6 packets dropped while RoCE was enabled	2.11.0500	2.30.3000

Table 6 - Fixed Bugs List

Index	Issue	Description	Discovered in Release	Fixed in Release
138.	Link reset, HCA to SwitchX®	On rare link reset occasions, an HCA to SwitchX® link may remain in ARM state after SwitchX reboot, and not reach the Active state.	2.11.0500	2.30.3000
139.	40GbE switches link down upon repeated insertion and removing of cables	When repeatedly plugging out and plugging in cables to/from a 40GbE switch, the link remains down.	2.10.0800	2.11.0500
140.	FDR/QDR vs DDR switch	The link is raised as SDR rather than DDR	2.10.0800	2.11.0500
141.	0.5M, 1M Copper FDR cable support	0.5M, 1M Copper FDR cables (Paralink11, Paralink14) are not supported in back to back connection.	2.10.0800	2.11.0500
142.	Changing FDR cables from Fiber to Copper	Changing FDR cables from Fiber to Copper and vice versa might cause link speed degradation from FDR to FDR10 or FDR10 to QDR.	2.10.0800	2.11.0500
143.	Changing 40GbE connection	Changing 40GbE connection from back to back to a switch port and vice versa might cause the link to stay down in the ConnectX®-3 side.	2.10.0800	2.11.0500
144.	SDR vs QDR switch	InfiniBand link vs QDR switch rises as DDR or SDR	2.10.0800	2.11.0500
145.	QDR link up time	On rare occasions, the QDR link up time between an FDR card and a QDR device was up to 4 minutes	2.10.0800	2.11.0500
146.	QDR Link stability	QDR Link stability between ConnectX®-3 and InfiniScale® IV	2.10.0800	2.11.0500
147.	Signal integrity issues	Signal integrity issues in all speeds	2.10.0800	2.11.0500
148.	PCI correctable error	Fixed bad PCI reporting	2.10.0800	2.11.0500
149.	RoCE re-transmission	Not re-transmitting from the beginning of the message but from PSN NAK.	2.10.0800	2.11.0500
150.	RoCE	R-RoCE ignored SMAC check	2.10.0800	2.11.0500
151.	Function Level Reset (FLR)	FLR to PPF in SRIOV	2.10.0800	2.11.0500
152.		FLR in no-driver mode	2.10.0800	2.11.0500
153.	SR-IOV	Comchannel bug fix	2.10.0800	2.11.0500

Table 6 - Fixed Bugs List

Index	Issue	Description	Discovered in Release	Fixed in Release
154.	40GbE performance	40GbE full wire speed was not reached with former cards configuration for MCX314 and MCX313 40GbE cards. Fix: Increased core frequency to support 40GbE full wire speed. This change requires 1V input. Affected cards: MCX313A-BCB, MCX314A-BCB	2.10.0700	2.10.0800
155.		The ConnectX® card was not receiving frames with minimum IPG when configured to 40GbE. Fix: Updated firmware configuration. Affected cards: All cards capable of 40GbE speed	2.10.0700	2.10.0800
156.	GUIDs for RoCE	Ethernet only cards did not have GUIDs flashed on the device. This caused RoCE to fail once two or more cards were active on the same machine. Fix: The firmware generates the GUIDs from the flashed MACs for ETH only cards. Affected cards: All ETH only cards.	2.10.0700	2.10.0800
157.	40GbE signal integrity	Signal integrity improved in 40GbE speed.	2.10.0000	2.10.0700
158.				
159.	PCIe Gen3 receiver sensitivity due to BIOS changes	Due to BIOS changes required by latest Intel guidelines for PCIe Gen3, a sensitivity in PCIe eye_centering algorithm caused link degradation on some platforms.	2.10.0600	2.10.0620
160.	FDR, FDR10, 10GbE XFI/SFI signal integrity	Signal integrity improved for the following speeds: FDR, FDR10, 10GbE XFI/SFI.	2.10.0000	2.10.0600
161.				
162.	VDD_MODE GPIO changed after reset	In boards with VDD_MODE GPIO, the GPIO was dropped after reset hence, causing voltage to be reduced to 0.9v. Fix: The GPIO in boards with VDD_MODE GPIO is no longer dropped across resets.	2.10.0000	2.10.0600
163.	PCIe configuration type1 requests were dropped after a PCIe hot reset	After a PCIe hot reset, PCIe configuration type1 requests were dropped instead of being replied as unsupported. Fix: A proper notification is sent every time PCIe configuration type1 requests are dropped.	2.10.0000	2.10.0600

5 Firmware Changes and New Feature History

Table 7 - Firmware Changes and New Feature History

Firmware Version	Description
Rev 2.30.8000	<ul style="list-style-type: none"> • DMFS 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. 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. • Added support for 40GbE in WoL and pre-OS driver modes To enable this, add/change the following flags in the INI file in the IB and HCA tabs respectively: <ul style="list-style-type: none"> • restrict_max_eth_standby_speed = NO_RESTRICTION • slow_clock_enable = 0 • Bug fixes - see “Bug Fixes History” on page 22
2.30.3200	<ul style="list-style-type: none"> • Added support for FDR AOC MC2207312-XXX • Bug Fixes, see “Bug Fixes History” on page 22

Table 7 - Firmware Changes and New Feature History

Firmware Version	Description
2.30.3000	<ul style="list-style-type: none"> • Added support for the UPDATE_QP PRM command • Added support for resetting the modified MAC addresses in the standby mode by the MOD_STAT_CFG 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 • mlxconfig tool in not supported in this release • RDMA/RoCE read retransmission improvement • PFC thresholds improvements • PCI speed_change flow improvement • Added support for DIAG_RPRT per port • Added PCIe Polling Compliance mode • RoCE default configuration fixes: <ul style="list-style-type: none"> • ethertype now updated per port at SET_PORT • The default value of rroce.ip_next_protocol is 0xfe • Increased the number of extended interface counters (max_if_cnt_extended) to 0x80, as reported in QUERY_DEV_CAP PRM command • Improved link parallel detection calibration of 40GbE • Added support for PFC counters in DUMP_ETH_STAT PRM command • Fixed wrong reporting of RSS context in QUERY_FW of RSS QP • Added Sniffer QP support on Port#1 • Device managed Flow Steering performance enhancements • Disabled "pkt.dmac==qp.mac" for RoCE/RoCE over IP • Added missing loopback blocking for device managed Flow Steering • Fixed SET_PORT.mac_table 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 • Added support for "reset upon parity error" • 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 7 - 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 22
2.10.0800	<ul style="list-style-type: none"> • Bug fixes - see “Bug Fixes History” on page 22
2.10.0700	<ul style="list-style-type: none"> • Bug fixes - see “Bug Fixes History” on page 22
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

Appendix A: Flexboot Changes and New Features

Table 8 - 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

Table 8 - FlexBoot Changes and New Feature

Version	Description
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
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.