



Mellanox ConnectX-3 Pro Firmware Release Notes

Rev 2.40.7000



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Release Update History

Table 1 - Release Update History

| Release | Date | Description |
|---------------|----------------|--|
| Rev 2.40.7000 | March 30, 2017 | Initial version of this firmware release |

1 Overview

These are the release notes for the ConnectX-3 Pro adapters firmware Rev 2.40.7000. 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 2](#).

Table 2 - Supported PSIDs (Sheet 1 of 2)

| Device Part Number | PSID | Device Name | Compiled with FlexBoot | Compiled with UEFI ^a |
|--------------------|---------------|--|------------------------|---------------------------------|
| MCX311A-XCCT | MT_1480111023 | ConnectX®-3 Pro EN network interface card; 10GigE; single-port SFP+; PCIe3.0 x8 8GT/s; RoHS R6 | Yes | No |
| MCX312B-XCCT | MT_1200111023 | ConnectX®-3 Pro EN network interface card; 10GigE; dual-port SFP+; PCIe3.0 x8 8GT/s; RoHS R6 | Yes | No |
| MCX312C-XCCT | MT_2340111023 | ConnectX®-3 Pro EN network interface card, 10GbE, dual-port SFP+, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6 | Yes | No |
| MCX313A-BCCT | MT_1060111023 | ConnectX®-3 Pro EN network interface card, 40/56GbE, single-port QSFP, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6 | Yes | No |
| MCX314A-BCCT | MT_1090111023 | ConnectX®-3 Pro EN network interface card, 40/56GbE, dual-port QSFP, PCIe3.0 x8 8GT/s, tall bracket, RoHS R6 | Yes | No |
| MCX353A-FCCT | MT_1100111019 | ConnectX®-3 Pro VPI adapter card; single-port QSFP; FDR IB (56Gb/s) and 40GigE; PCIe3.0 x8 8GT/s | Yes | No |
| MCX354A-FCCT | MT_1090111019 | ConnectX®-3 Pro VPI adapter card; dual-port QSFP; FDR IB (56Gb/s) and 40GigE; PCIe3.0 x8 8GT/s; RoHS R6 | Yes | No |

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 - Supported PSIDs (Sheet 2 of 2)

| Device Part Number | PSID | Device Name | Compiled with FlexBoot | Compiled with UEFI ^a |
|--------------------|---------------|--|------------------------|---------------------------------|
| MCX341A-XCPN | MT_1270115023 | ConnectX®-3 Pro EN network interface card for OCP, 10GbE single-port SFP+, PCIe3.0 x8, no bracket, RoHS R6 | Yes | Yes |
| MCX341A-XCQN | MT_1270116023 | ConnectX®-3 Pro EN network interface card for OCP, 10GbE, with IPMI and NC-SI, single-port SFP+, PCIe3.0 x8, no bracket, RoHS R6 | Yes | Yes |
| MCX342A-XCPN | MT_1680115023 | ConnectX®-3 Pro EN network interface card for OCP, 10GbE dual-port SFP+, PCIe3.0 x8, no bracket, RoHS R6 | Yes | Yes |
| MCX342A-XCQN | MT_1680116023 | ConnectX®-3 Pro EN network interface card for OCP with IPMI and NC-SI, 10GbE dual-port SFP+, PCIe3.0 x8, no bracket, RoHS R6 | Yes | Yes |
| MCX345A-BCPN | MT_1740111023 | ConnectX®-3 Pro EN network interface card for OCP, 40GbE single-port QSFP, PCIe3.0 x8, no bracket, RoHS R6 | Yes | Yes |
| MCX345A-BCQN | MT_1740110023 | ConnectX®-3 Pro EN network interface card for OCP, 40GbE, with IPMI and NC-SI, single-port QSFP, PCIe3.0 x8, no bracket, RoHS R6 | Yes | Yes |
| MCX346A-BCPN | MT_1760111023 | ConnectX®-3 Pro EN network interface card for OCP, 40GbE dual-port QSFP, PCIe3.0 x8, no bracket, RoHS R6 | Yes | Yes |
| MCX346A-BCQN | MT_1760110023 | ConnectX®-3 Pro EN network interface card for OCP; 40GbE; dual-port QSFP; PCIe3.0 x8; IPMI and NC-SI support; R6 | Yes | Yes |
| MCX349A-XCCN | MT_2330111004 | ConnectX®-3 Pro EN network interface card, 10GBASE-T quad-port, PCIe 3.0 x8 8GT/s, RoHS R6 | Yes | No |
| | MT_2330110004 | | Yes | No |

a. If you need to compile your adapter card with an UEFI expansion ROM, please contact Mellanox Support (support@mellanox.com)

1.2 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.

1.2.1 Validated and Supported 1GbE/10GbE Cables

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

Table 3 - Validated and Supported 1GbE/10GbE Cables (Sheet 1 of 4)

| 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-CU1M | Cisco SFP+ cable |
| 10GbE | SFP-H10GB-CU3M | Cisco SFP+ cable |
| 10GbE | SFP-H10GB-CU5M | Cisco SFP+ cable |
| 10GbE | MC2309124-007 | QSFP-4SFP10G |
| 10GbE | SFP-10G-SR | CISCO 10GBASE-SR SFP Module |
| 10GbE | MC2309124-007 | QSFP-4SFP10G |
| 10GbE | 0NWGTV | 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 |

Table 3 - Validated and Supported 1GbE/10GbE Cables (Sheet 2 of 4)

| Speed | OPN # | Description |
|-------|------------|--|
| 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 |
| 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 |

Table 3 - Validated and Supported 1GbE/10GbE Cables (Sheet 3 of 4)

| Speed | OPN # | Description |
|-------|-----------------|---|
| 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 |
| 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 |

Table 3 - Validated and Supported 1GbE/10GbE Cables (Sheet 4 of 4)

| Speed | OPN # | Description |
|-------|---------------|--|
| 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 |
| 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 |

1.2.2 Validated and Supported 20GB/s Cables

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

Table 4 - Validated and Supported 20GB/s Cables (Sheet 1 of 2)

| Speed | OPN # | Description |
|-------|---------------|---|
| DDR | MC1204128-001 | Mellanox Passive Copper Hybrid Cable IB DDR 20GB/S QSFP TO CX4 1M |

Table 4 - Validated and Supported 20GB/s Cables (Sheet 2 of 2)

| Speed | OPN # | Description |
|-------|---------------|---|
| 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 |

1.2.3 Validated and Supported 40GbE Cables

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

Table 5 - 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-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 |
| 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 |

Table 5 - Validated and Supported 40GbE Cables (Sheet 2 of 2)

| Speed | OPN # | Description |
|-------|----------------|---|
| 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 |

1.2.4 Validated and Supported QDR/FDR10 Cables

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

Table 6 - Validated and Supported QDR/FDR10 Cables (Sheet 1 of 2)

| 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-E | Mellanox Active Fiber Cable IB QDR/FDR10 40GbE QSFP from 3M up to 100M |
| FDR10 | MC2206310-XXX-T | Mellanox Active Fiber Cable IB QDR/FDR10 40GbE QSFP from 3M up to 100M |
| FDR10 | MC2206310-XXX-F | 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 |

Table 6 - Validated and Supported QDR/FDR10 Cables (Sheet 2 of 2)

| Speed | OPN # | Description |
|-------|---------------|---|
| 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 |

1.2.5 Validated and Supported FDR Cables

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

Table 7 - Validated and Supported FDR Cables

| 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 |
| 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-E | Mellanox Active Fiber Cable VPI UP TO 56GB/S QSFP from 3M up to 100M |
| FDR | MC2207310-XXX-T | 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 |

1.3 Tested Switches

Table 8 - Tested Switches (Sheet 1 of 3)

| 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 | IBM G8264 | 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 |
| 100GbE | MSN2700-CS2R | Mellanox 32 Ports QSFP 100GE MNG Switch Eth W/ 2 Ps Standard Depth C2P Airflow |
| 10GbE | Brocade 8000 | Brocade 10GB ETH switch |
| 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) |

Table 8 - Tested Switches (Sheet 2 of 3)

| Speed | OPN # /Name | Description |
|-------|-----------------|---|
| 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 |
| 1Gb/s | 7024F | 1/10GbE switch |
| 1Gb/s | 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 |
| 40GbE | MSX1036B-1BFR | SwitchX™ based 36-port QSFP 40GigE 1U Ethernet |
| 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 | IBM G8316 | 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 | SRDFSH36F-1BF | SwitchX based FDR InfiniBand Switch; 36 QSFP; Managed |
| 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 |

Table 8 - Tested Switches (Sheet 3 of 3)

| Speed | OPN # /Name | Description |
|-------|-----------------|--|
| 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 |
| 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 | FDR-Switch system Orca MSX6506 |
| 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 | 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 |

1.4 Tools, Switch Firmware and Driver Software

Firmware Rev 2.40.7000 is tested with the following tools, SwitchX® firmware, and driver software:

Table 9 - Tools, Switch Firmware and Driver Software

| | Supported Version |
|--------------------------------|--|
| MLNX_OFED | 3.4-1.0.0.0/3.3-1.0.4.0 |
| MLNX_EN (MLNX_OFED based code) | 3.4-1.0.0.0/3.3-1.0.4.0 |
| WinOF | 5.22/5.10 |
| VMware | 2.4.0.0 3.15.5-5 |
| MFT | 4.5.0 |
| MLNX-OS | <ul style="list-style-type: none"> SwitchX: 3.6.1002 Switch-IB: 3.6.1002 |
| SwitchX/SwitchX-2 Firmware | 9.4.1100 |
| Switch-IB Firmware | 11.1200.0102 |
| 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 |

1.5 Supported FlexBoot, UEFI

Firmware Rev 2.40.7000 supports the following FlexBoot, UEFI version:

Table 10 - Supported FlexBoot, UEFI

| | Supported Version |
|----------|-------------------|
| FlexBoot | 3.4.746 |
| UEFI | 14.11.34 |

1.6 Revision Compatibility

Firmware Rev 2.40.7000 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`.

1.7 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 Firmware Rev 2.40.7000 Changes and New Features

Table 11 - Firmware Rev 2.40.7000 Changes and New Features

| Category | Description |
|-----------|---|
| Bug fixes | See Section 4, “Bug Fixes History” , on page 24 |

3 Known Issues

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

Table 12 - Known Issues

| Index | Issue | Description | Workaround |
|-------|--|---|---|
| 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. |
| 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 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). |
| 3. | SBR assertion | SBR should be asserted for a minimum of 50 milliseconds for the ConnectX-3 adapters | 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 |
| 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 "do_ - sense=false" parameter in the [IB_TAB] in the INI of the VPI card |
| 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 |
| 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 |
| 8. | 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' |
| 9. | MC2210411-SR4 module with Cable Info MAD | Cable Info MAD reports a wrong cable info when using the MC2210411-SR4 module | N/A |

Table 12 - Known Issues

| Index | Issue | Description | Workaround |
|-------|--|---|---|
| 10. | PCIe failure on temperature shock 10C/min | Gen2 failure at temperature sweep up to 10C/min (for MT27518A1-FDIR-BV only). | N/A |
| 11. | PCIe Gen2 link | PCIe Gen2 link unstable at temperature sweep of 10C/min for MT27518A1-FDIR-BV | N/A |
| 12. | Bloom filter | Bloom filter is currently not supported. | N/A |
| 13. | 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 |
| 14. | 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 |
| 15. | ConnectX®-3 Pro virtual function device ID | ConnectX®-3 Pro VF device ID is presented the same as ConnectX®-3 VF device ID due to driver limitations. | Use the physical function device ID to identify the device. |
| 16. | 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 |
| 17. | Increasing SymbolErrorCounter | When working in VPI mode with port1 FDR and port2 40G, error counters misbehave and increase rapidly | N/A |
| 18. | 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 |
| 19. | 128 Byte CQ/EQ stride | CQ and EQ cannot be configured to different stride sizes. | N/A |
| 20. | VPI port protocol change on a port with sideband 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. |
| 21. | Link Up time | RM#499419 Adapter card MCX349A-XCCN may experience longer linkup times of a few seconds with specific switches. | N/A |

Table 12 - Known Issues

| Index | Issue | Description | Workaround |
|-------|---------------------------|--|---|
| 22. | Port identification | RM#552282 Adapter card MCX349A-XCCN does not respond to ethtool “identify” command (ethtool -p/--identify). | N/A |
| 23. | RDP over IPv6 | RM #563136 RDP over IPv6 is currently not functional. | Set the default RoCE mode in the software to RoCE v2 (also when not using RoCE) |
| 24. | 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 |
| 25. | 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 |
| 26. | 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 |
| 27. | Port Link | RM#665186 56GbE link is not raised when using 100GbE optic cables. | N/A |
| 28. | 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 |
| 29. | ibdump | RM#832298 When running ibdump, loopback traffic is mirroring into the kernel driver. | N/A |

4 Bug Fixes History

Table 13 lists the bugs fixed in this release.

Table 13 - Fixed Bugs List

| Index | Issue | Description | Discovered in Release | Fixed in Release |
|-------|----------------------------|---|-----------------------|------------------|
| 1. | MAC address | RM#980151: Fixed an issue where a virtual MAC address which is configured by set_port (ifconfig), remained after driver restart | 2.40.5030 | 2.40.7000 |
| 2. | | 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 |
| 3. | 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 |
| 4. | Link Down | RM#939162: Fixed an issue which caused the firmware not to send link_down event to the driver when running the close_port command. | 2.40.5000 | 2.40.5030 |
| 5. | 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 |
| 6. | 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 |
| 7. | 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 |
| 8. | Counters | RM#877613: Fixed an incorrect report of the PortRcvDataVLExtended/PortXmitDataVLExtended counters by the firmware. | 2.35.5000 | 2.40.5000 |
| 9. | 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 |
| 10. | 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 |
| 11. | 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 |

Table 13 - Fixed Bugs List

| Index | Issue | Description | Discovered in Release | Fixed in Release |
|-------|--------------------------|--|-----------------------|------------------|
| 12. | 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 |
| 13. | ibdump | RM#832298: Fixed an issue where the ibdump got broken when running with loop-back traffic. | 2.36.5150 | 2.40.5000 |
| 14. | 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 |
| 15. | 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 |
| 16. | 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 |
| 17. | Comm Channel | RM#763946: Fixed a wrong timeout calculation in get_irpc_response | 2.36.5000 | 2.36.5150 |
| 18. | SR-IOV | RM#827921: Fixed an issue which caused the firmware to unconditionally set the subnet prefix in the gid0 mgid_Table to the default prefix, and not according to the configured subnet prefix. | 2.36.5000 | 2.36.5150 |
| 19. | ECN | RM#465451: Fixed a completion error issue when ECN was enabled. The ECN usage caused ordering errors in completion queues (CQ). | 2.33.5000 | 2.36.5000 |
| 20. | | RM#648800: Fixed the length calculation of UDP. The incorrect UDP length in the CNP packet caused miss-calculation of the ICRC. | 2.35.5100 | 2.36.5000 |
| 21. | Cable Info MAD | RM#636203: Fixed a wrong returned status in cable info MAD when the cable was not connected. | 2.35.5100 | 2.36.5000 |
| 22. | FLR device reset | RM#669201: Fixed failure instances when initiating FLR in the Physical Function. | 2.35.5100 | 2.36.5000 |

Table 13 - Fixed Bugs List

| Index | Issue | Description | Discovered in Release | Fixed in Release |
|-------|-----------------------------|---|-----------------------|------------------|
| 23. | High rate steering mode | RM#637490: Disabled High Rate Steering mode in the INI to enable its compatibility with NC-SI over VLAN. | 2.32.5100 | 2.36.5000 |
| 24. | RDP over IPv4 | RM#563136: Fixed a default hardware configuration issue which caused RDP over IPv4 traffic to be dropped. | 2.30.8000 | 2.35.5100 |
| 25. | SR-IOV security | RM#592507: Prevented a Virtual Function from injecting pause frames into the network. | 2.30.8000 | 2.35.5100 |
| 26. | PRM:SET_PORT.macc_table | RM#535924: Fixed a wrong hash index calculation during inbound traffic. | 2.33.5100 | 2.35.5100 |
| 27. | RDP over IPv4 | RM#563136: Fixed a default hardware configuration issue which caused RDP over IPv4 traffic to be dropped. | 2.30.8000 | 2.35.5100 |
| 28. | NC-SI | RM#592428: Fixed an issue causing MLNX_OEM command GET_TEMP to return a wrong value in the max_temp field | 2.34.5000 | 2.35.5100 |
| 29. | MTU exceptions | RM#556872: Fixed an issue which caused TX traffic to stop when the message MTU size was larger than QP.mtu. | 2.32.5100 | 2.35.5100 |
| 30. | NVCONFIG failure | RM#554066: Fixed an issue which caused NVCONFIG to fail when the number of sector was set to 1 and the sector was zeroed. | 2.34.5000 | 2.35.5100 |
| 31. | IB/RoCE retransmission | RM#551732: Fixed a race in handling a duplicated “read request from middle”. | 2.34.5000 | 2.35.5100 |
| 32. | IB traffic issues | RM#549153: Fixed an issue which caused lack of IB traffic on SR-IOV VPI. | 2.33.5000 | 2.35.5100 |
| 33. | NVRAM issues | RM#548168: Fixed an issue which caused NVRAM to get stuck when it filled non-valid information in TLV. | 2.34.5000 | 2.35.5100 |
| 34. | IB APM | RM#541877: Fixed an issue which caused an internal firmware error when APM changed the QPs port mapping. | 2.33.5100 | 2.35.5100 |
| 35. | QP alternate context error | RM#589609: Fixed an issue which caused a firmware internal error when handling QP alternative context. | 2.34.5000 | 2.35.5100 |
| 36. | Flow Control security issue | RM#431315: Fixed an issue which caused packet transmission to get stuck when the software tried to send pause frames with dmac equal to one of the device's MAC addresses. | 2.32.5100 | 2.35.5100 |

Table 13 - Fixed Bugs List

| Index | Issue | Description | Discovered in Release | Fixed in Release |
|-------|---------------------------------|--|-----------------------|------------------|
| 37. | Wrong temperature reporting | RM#577076 Wrong temperature reporting when server is in Auxiliary mode after Moonshot AC power cycle. | 2.34.5000 | 2.35.5100 |
| 38. | Link down on MCX-349A-XCCN | RM#441539 Fixed a link down issue with 100MbaseT speed. | 2.33.5100 | 2.34.5000 |
| 39. | Packet Ethertype | RM#434267 Fixed a mistakenly dropped ETH packet with ethertype 0x600 by the NIC. | 2.30.8000 | 2.34.5000 |
| 40. | Broadcast traffic lost | RM#536791 Fixed a case preventing broadcast traffic from arriving to their destination after detaching high priority broadcast rule on a port where NC-SI was enabled. | 2.33.5100 | 2.34.5000 |
| 41. | RSS QP update failure | Fixed a failure to update RSS QP in steering rules. | 2.33.5100 | 2.34.5000 |
| 42. | Low link speed | RM#516446 Fixed an issue where the port raised as SDR vs. InfiniScale IV QDR Switch | 2.33.5100 | 2.34.5000 |
| 43. | 40GbE Link down | RM#509713 Fixed a failure to read cable parameter which caused link failure on 40GbE dual port OCP devices. | 2.33.5100 | 2.34.5000 |
| 44. | RDMA read retransmission | RM#517941 Fixed a rare case of completion Error with Bad Opcode sequence status which occurred when retransmitting read requests. | 2.33.5100 | 2.34.5000 |
| 45. | VM QoS | RM#523786 Fixed a case where the actual bandwidth did not match the user settings in VM QoS. | 2.33.5100 | 2.34.5000 |
| 46. | Sideband communication loss | RM#517351 Fixed a case where on rare cases, communication to BMC was lost during driver initialization. | 2.33.5100 | 2.34.5000 |
| 47. | LED behavior | RM#492430 Fixed a wrong LED behavior when the driver is disabled in the following adapter cards: MCX346A-BCQN, MCX-345A-BCQN. | 2.33.5100 | 2.34.5000 |
| 48. | Link down on cable plugging | RM#510935 Fixed an issue with cable reading, which caused the link not to raise | 2.33.5100 | 2.34.5000 |
| 49. | PRM: EQN range | RM#501749 Set the maximum EQN number to 1024. | 2.30.8000 | 2.34.5000 |
| 50. | Vital Product Data read failure | RM#514720 Fixed a rare issue with VPD init flow which caused read failures. | 2.31.5050 | 2.34.5000 |

Table 13 - Fixed Bugs List

| Index | Issue | Description | Discovered in Release | Fixed in Release |
|-------|---------------------------------------|--|-----------------------|------------------|
| 51. | PRM: Statistic counters not reported | RM#519904 Fixed an issue with RX size counter not being reported. | 2.30.8000 | 2.34.5000 |
| 52. | RoCE/InfiniBand reliable connection | RM#486082 The first Read response was not treated as implicit ACK. | 2.30.8000 | 2.33.5100 |
| 53. | 40GbE Link up time | RM#461970 Reduced a long 40GbE link up time with Cisco Nexus3064 and Arista-7050S | 2.32.5100 | 2.33.5100 |
| 54. | Promiscuous mode | Fixed promiscuous mode compatibility with A0-DMFS steering. | 2.32.5100 | 2.33.5000 |
| 55. | | RM#433344 Fixed promiscuous mode compatibility when NC-SI is enabled and configured. | 2.32.5100 | 2.33.5000 |
| 56. | NC-SI OEM commands | RM#480037 Fixed sending/receiving OEM temp commands (set/get) with channel ID 0x1f failure. | 2.32.5100 | 2.33.5000 |
| 57. | Packet Drops | RM#463613 Fixed an issue which caused packets to drop on a port when changing the interface state of the other port. | 2.32.5100 | 2.33.5000 |
| 58. | Side Band Functionality | RM#462058 Fixed long management communication loss and SOL hang during reboot cycles. | 2.32.5100 | 2.33.5000 |
| 59. | | RM#408615 Fixed wrong processing of inbound traffic towards BMC which caused communication loss. | 2.32.5100 | 2.33.5000 |
| 60. | | RM#431178 Fixed management link loss upon closing port interface through the driver. | 2.32.5100 | 2.33.5000 |
| 61. | NC-SI on SFP+ Adapter Cards | RM#466306/468870 Fixed a false indication in firmware of an expander presence causing delay in EEPROM reading. | 2.32.5100 | 2.33.5000 |
| 62. | Port Links | RM#423472 Fixed an issue which caused a link down on a port when the cable was removed from the other port. | 2.32.5100 | 2.33.5000 |
| 63. | Inbound Packet Processing | RM#457685 Fixed a rare case where packet with length zero got stuck in hardware queues. | 2.32.5100 | 2.33.5000 |
| 64. | | RM#431123 Fixed an issue which caused InfiniBand congestion control packet (CNP) to hang in hardware. | 2.32.5100 | 2.33.5000 |
| 65. | Asynchronous Event Notification (AEN) | RM#418910 Fixed an issue which caused AEN to be sent after channel reset. | 2.32.5100 | 2.33.5000 |

Table 13 - Fixed Bugs List

| Index | Issue | Description | Discovered in Release | Fixed in Release |
|-------|---|---|-----------------------|------------------|
| 66. | Bandwidth Degradation with QoS | RM#409894 Fixed an issue which prevented the restoring of QoS setting to its default consequently causing bandwidth degradation. | 2.31.5050 | 2.33.5000 |
| 67. | Port Link Up Time | RM#409894 Fixed an occasional long link up time with 10GbE based devices. | 2.32.5100 | 2.33.5000 |
| 68. | SFP Cable Reading | RM#438000 Fixed an issue preventing cable readings from i2c slave address 0x51 | 2.32.5100 | 2.33.5000 |
| 69. | PCIe Gen3 Equalization | RM#429495 Fixed a wrong parity bit calculation when transmitting PCIe TS1 packets. | 2.32.5100 | 2.33.5000 |
| 70. | PCIe Power Management | RM#400184 Fixed a possible deadlock in PM turnoff request transmission and ack acceptance flow. | 2.32.5100 | 2.33.5000 |
| 71. | PCIe width Degrade | RM#414914 Fixed a rare case with alignments state machines which caused occasional width degradation. | 2.32.5100 | 2.33.5000 |
| 72. | Rate Limiters Hang with ECN/QCN Enabled | RM#397967 Fixed an issue where the transmit queues hanged while congestion control was enabled and operational (EQC/QCN) | 2.32.5100 | 2.33.5000 |
| 73. | Unexpected Completion Syndrome with Status 0x77 | RM#425700 Fixed an unexpected work completion syndrome with vendor syndrome 0x77 received when running RDMA SEN/WRITE traffic with retransmissions. | 2.30.8000 | 2.33.5000 |
| 74. | IB Spec MADs | RM#432155 Fixed an issue which caused <code>SetPortInfo</code> to return a good status when receiving invalid <code>LinkSpeedEnabled</code> value. | 2.32.5100 | 2.33.5000 |
| 75. | GPIO Mapping | RM#468870 Fixed an issue which caused dual port SFPP module cards to be automatically mapped with expander | 2.32.5100 | 2.33.5000 |
| 76. | Steering Mode | Fixed an issue where firmware overrides the steering mode that was chosen by the driver. | 2.32.5100 | 2.33.5000 |
| 77. | Port sensing | RM#463615 Fixed invalid return sensing results occurred when the link was up. | 2.32.5100 | 2.33.5000 |
| 78. | | RM#429579 Fixed an issue causing the sensing result to be delayed when cable was unplugged. | 2.32.5100 | 2.33.5000 |
| 79. | Wrong link type display | RM#417741 Fixed an issue causing the link type to be displayed as ETH when set to AUTO. | 2.32.5100 | 2.33.5000 |

Table 13 - Fixed Bugs List

| Index | Issue | Description | Discovered in Release | Fixed in Release |
|-------|---------------------------|---|-----------------------|------------------|
| 80. | WoL Functionality | RM#440027Fixed 2us glitch in Wake Up signal. | 2.32.5100 | 2.33.5000 |
| 81. | IBDump performance | Fixed performance degradation when running IBDump | 2.30.8000 | 2.32.5100 |
| 82. | PCIe link Disable/ Enable | RM#416928Occasionally, a link training timeout occurred in EQ phase0 during disable/enable test. | 2.31.5050 | 2.32.5100 |
| 83. | 40GbE QoS | Improved strict bandwidth mode functionality | 2.30.8000 | 2.32.5100 |
| 84. | Port Counters reporting | RM#417689/RM#417604Fixed an issue with the PortRcvPkts counter always displaying zero value. | 2.31.5050 | 2.32.5100 |
| 85. | GMP MADs in SecureHost | RM#418175Fixed an issue with processing GMP MADs with SET method in SecureHost mode. | 2.31.5050 | 2.32.5100 |
| 86. | NC-SI over IPv6 | RM#417195Fixed an issue causing a wrong usage of MCG size when configuring Global Multicast filter | 2.31.5050 | 2.32.5100 |
| 87. | NC SI link failure | RM#396165Disabling the first port occasionally causes second port TX failure. | 2.31.5050 | 2.32.5100 |
| 88. | 10GbE link failure | RM#389541Fixed a mismatch in links status reported. The adapter reports links as down while the switch perceives them as up | 2.31.5050 | 2.32.5100 |
| 89. | Link failure | RM#392288Fixed an occasional 40GbE link failure with SCM5 Switch blade | 2.31.5050 | 2.32.5100 |
| 90. | ExtPortInfo MAD | RM#392199Fixed a wrong FDR10 speed reporting in MAD | 2.31.5050 | 2.32.5100 |
| 91. | IB link failure | RM#397903Fixed an issue preventing theports to to rise up when set to FDR10 vs QDR | 2.31.5050 | 2.32.5100 |
| 92. | 40GbE link failure | RM#388327Fixed an occasional link failure vs Arista switch | 2.31.5050 | 2.32.5100 |
| 93. | RDMA Write retransmission | RM#412450Retransmission started from the first PSN of message instead of the last acknowledged PSN | 2.30.3200 | 2.32.5100 |
| 94. | Firmware burning | RM#401399Firmware hangs when receiving GeneralInfoMad during inline firmware burning | 2.30.3200 | 2.32.5100 |
| 95. | PCIe PML1 | RM#399366,387863L1 flow adjustments and threshold tuning | 2.31.5050 | 2.32.5100 |

Table 13 - Fixed Bugs List

| Index | Issue | Description | Discovered in Release | Fixed in Release |
|-------|------------------------|---|-----------------------|------------------|
| 96. | PCIe reset | RM#398004Fixed a rare hanging issue during PERST_ assertion | 2.31.5050 | 2.32.5100 |
| 97. | PCIe Gen3 EQ | RM#392933Wrong coefficients were reported during phase3 | 2.31.5050 | 2.32.5100 |
| 98. | Boot | Fixed an issue causing wrong behavior due to reset timing | 2.31.5050 | 2.32.5100 |
| 99. | VXLAN/NVGRE | RM#409948Fixed lack of steering options | 2.30.8000 | 2.32.5010 |
| 100. | SMBUS | RM#409011Fixed long timeout issues | 2.31.5050 | 2.32.5100 |
| 101. | NVRAM | RM#409998Fixed NVRAM write issues in driver-less mode | 2.31.5050 | 2.32.5100 |
| 102. | 40GbE Link support | RM#408020Fixed 40GbE link support in aux mode | 2.31.5050 | 2.32.5100 |
| 103. | NC-SI | RM#408414Dropped commands with non-existing channel ID | 2.31.5050 | 2.32.5100 |
| 104. | PRM PortInfo command | RM#394311/408483Fixed issues in extended speed reporting | 2.31.5050 | 2.32.5100 |
| 105. | Trap 257/8(IB) | RM#403705Fixed bad QP reporting in trap 257/8 | 2.30.8000 | 2.32.5100 |
| 106. | Bad Q_KEY errors | RM#402793Fixed an issue causing false bad q_key error messages | 2.30.8000 | 2.32.5100 |
| 107. | PFC | RM#404640Fixed Pause Frame opcode mismatch | 2.30.8000 | 2.32.5100 |
| 108. | Sideband Communication | RM#400883Fixed communication loss upon PCIe error detection | 2.31.5050 | 2.32.5100 |
| 109. | NC-SI | RM#348276Fixed wrong channel value in the SELECT/DESELECT PACKAGE commands | 2.30.8000 | 2.31.5050 |
| 110. | | RM#355833Fixed an issue caused response packet to include 4 extra bytes | 2.30.8000 | 2.31.5050 |
| 111. | | RM#352300Fixed wrong reason code value returned when using Set Link command with unsupported speed. | 2.30.8000 | 2.31.5050 |
| 112. | | RM#372909Added protection from bad MAC address given by BMC | 2.30.8000 | 2.31.5050 |
| 113. | 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 |

Table 13 - Fixed Bugs List

| Index | Issue | Description | Discovered in Release | Fixed in Release |
|-------|---|--|-----------------------|------------------|
| 114. | PCIe | RM#333854Removed false TX pulse after PERST_ de-assertion | 2.30.8000 | 2.31.5050 |
| 115. | | RM#347082Fixed FLR capability bit inconsistency when SR-IOV is enabled. | 2.30.8000 | 2.31.5050 |
| 116. | | RM#126811Fixed an issue with the device not reporting PCIe related errors. | 2.30.8000 | 2.31.5050 |
| 117. | SDR instead of DDR ConnectX-3 to SX6036 | RM#360360When 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 |
| 118. | VXLAN | VXLAN used the wrong default UDP port. the UDP port number was changed to 4789. | 2.30.8000 | 2.31.5050 |
| 119. | | RM#383099Fixed wrong setting of the UDP destination port for VXLAN. | 2.30.8000 | 2.31.5050 |
| 120. | Flow Steering | Fixed an internal error caused when moving to the DMS mode with IPMI/NC-SI enabled. | 2.30.8000 | 2.31.5050 |
| 121. | 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. | 2.30.8000 | 2.31.5050 |
| 122. | PCI interrupt | Fixed issues related to working with PCI legacy interrupts. | 2.30.8000 | 2.31.5050 |
| 123. | TCP/UDP Checksum | Fixed wrong checksum calculation for short packets which were padded by the software. | 2.30.8000 | 2.31.5050 |
| 124. | MFT tool deadlock | RM#371530Reading PCIe configuration space after using the MFT flint tool caused the device to crash. | 2.30.8000 | 2.31.5050 |
| 125. | Side band packet loss | RM#378750Fixed occasional packet loss over IPMI | 2.30.8000 | 2.31.5050 |
| 126. | Eye opening MAD | RM#378178Fixed wrong values reported in the Eye opening MAD. | 2.30.8000 | 2.31.5050 |
| 127. | PCIe Link width | RM#372794/383729Fixed occasional link width degrades during link negotiation and link transitions from L1 state. | 2.30.8000 | 2.31.5050 |
| 128. | PCIe signal detect | RM#372794Fixed adjust signal detect thresholds | 2.30.8000 | 2.31.5050 |
| 129. | Error counters | RM#354360PortExtendedSpeedsCounters MAD counters were mistakenly increased while LLR was active | 2.30.8000 | 2.31.5050 |
| 130. | PCIe Gen3 Equalization | RM#354125Lane reversal was not considered when configured TX parameters | 2.30.8000 | 2.31.5050 |

Table 13 - Fixed Bugs List

| Index | Issue | Description | Discovered in Release | Fixed in Release |
|-------|-------------------------------------|--|-----------------------|------------------|
| 131. | Reset On LAN (ROL) | RM#359319Fixed ROL factory MAC usage when a FlexBoot address was given. | 2.30.8000 | 2.31.5050 |
| 132. | Flow Control | RM#359354Fixed Pause frames factory MAC usage when a FlexBoot address was given. | 2.30.8000 | 2.31.5050 |
| 133. | WOL/ROL | RM#336331The device did not different between WOL/ROL packets. | 2.30.8000 | 2.31.5050 |
| 134. | PortInfo MAD | RM#13401Fixed a set of extended fields in PortInfo MAD which did not function. | 2.30.8000 | 2.31.5050 |
| 135. | LLR cell size | RM#342184Adjusted LLR cell size according to the MLPN negotiation of ib_128b_llr | 2.30.8000 | 2.31.5050 |
| 136. | Link max speed | RM#367756The max speed restriction was active in full power mode instead of standby mode only. | 2.30.8000 | 2.31.5050 |
| 137. | InfiniBand Automatic Path Migration | RM#362812The InfiniBand Path migration did not work with GRH. http://webdev01:8080/commit/ConnectX.git/a9c37ee4c31038f2c1179d4d9e79c9337e0ab5c7 | 2.30.8000 | 2.31.5050 |
| 138. | Packet steering | RM#362468Reading MGM after writing it returned wrong members count. | 2.30.8000 | 2.31.5050 |
| 139. | RSS QP context | RM#372480Fixed corruption of the RSS hash key given by the driver. | 2.30.8000 | 2.31.5050 |
| 140. | 10Gb/s QoS | RM#193130Fixed QoS rate limit bandwidth offset. | 2.30.8000 | 2.31.5050 |
| 141. | ExtendedPortInfo MAD | RM#365884Fixed FDR10 speed_en reporting. | 2.30.8000 | 2.31.5050 |
| 142. | Management link | RM#354487Fixed long management link com loss. | 2.30.8000 | 2.31.5050 |
| 143. | PRM Query_Port Command | RM#358772The command results reported both link types active at the same time. | 2.30.8000 | 2.31.5050 |
| 144. | Link not raising | RM#376157Fixed collision between forcing phy type and port sensing. | 2.30.8000 | 2.31.5050 |
| 145. | Core clock reporting | RM#372353Fixed a wrong core clock freq reporting in QUERY_HCA command. | 2.30.8000 | 2.31.5050 |
| 146. | 56GbE link issues | RM#379940Fixeds occasional link failure when 56GbE is enabled | 2.30.8000 | 2.31.5050 |
| 147. | RX calibration | RM#359331Fixed max eye margins to be per protocol. | 2.30.8000 | 2.31.5050 |

Table 13 - Fixed Bugs List

| Index | Issue | Description | Discovered in Release | Fixed in Release |
|-------|--|---|-----------------------|------------------|
| 148. | VPI symbol errors | RM#354443perfquery reported wrong error symbol on ConnectX [®] -3 VPI mode: IB, ETH. | 2.30.8000 | 2.31.5050 |
| 149. | Symbol error on ConnectX-3 Pro dual-port QDR with MC2207312-030 AOCs | RM#197609On ConnectX-3 Pro dual-port QDR and FDR/FDR10 switch setups, symbol errors may occur with MC2207312-030 AOCs. | 2.30.8000 | 2.31.5050 |
| 150. | Symbol error on Falcon QDR against FDR switches with MC2207126-004 copper cables | RM#197612Symbol errors occur on ConnectX-3 Pro dual-port QDR connected to FDR switches with MC2207126-004 copper cables. | 2.30.8000 | 2.31.5050 |
| 151. | 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). | 2.30.8000 | 2.31.5050 |
| 152. | 40GbE link up issue | On rare occasions, the adapter card may fail to link up when performing parallel detect to 40GbE. | 2.30.8000 | 2.30.8050 |
| 153. | Automatic Path Migration (APM) | Automatic Path Migration (APM) did not update the new MGIDs from the Alternate Path. | 2.30.8000 | 2.30.8050 |

5 Firmware Changes and New Feature History

Table 14 - Firmware Changes and New Feature History

| Firmware Version | Description |
|------------------|--|
| 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 24 |
| 2.40.5000 | <ul style="list-style-type: none"> • Link Down Counters: Added Ethernet Link down counter. • Bug fixes: See Section 4, "Bug Fixes History", on page 24 |
| 2.36.5150 | <ul style="list-style-type: none"> • Q-in-Q in VST Mode: Added support for VLAN insertion offload, and VLAN stripping for raw Ethernet frames, by controlling CV and SV bits in QPC. • Cables: Added support for Cisco 40G BD Module. See Table 5, "Validated and Supported 40GbE Cables," on page 12 • Bug fixes - see "Bug Fixes History" on page 24 |
| 2.36.5000 | <ul style="list-style-type: none"> • RM#578187Packet 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. • RM#669209Performance 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. |
| 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. |

Table 14 - Firmware Changes and New Feature History

| Firmware Version | Description |
|------------------|--|
| 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 "INIT2RTS_QP" 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 ACCESS_REG 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"> • Enabled ConnectX®-3 Pro to work in packet parsing mode to enable checksum calculation of non-TCP/UDP packets. • Bug fixes - see "Bug Fixes History" on page 24 |
| 2.33.5000 | <ul style="list-style-type: none"> • Enabled ConnectX-3 Pro to work in packet parsing mode to enable checksum calculation of non TCP/UDP packets. • 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 14 - 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 14 - 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. |
| 2.30.8050 | <ul style="list-style-type: none"> • Bug fixes - see “Bug Fixes History” on page 24 |
| 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> |

Table 14 - Firmware Changes and New Feature History

| Firmware Version | Description |
|-------------------|--|
| 2.30.8000 (cont.) | <ul style="list-style-type: none">• 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">• <code>restrict_max_eth_standby_speed = NO_RESTRICTION</code>• <code>slow_clock_enable = 0</code>• Bug fixes - see “Bug Fixes History” on page 24 |

6 Flexboot Changes and New Features

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

Table 15 - FlexBoot Changes and New Feature

| Version | Description |
|-------------|--|
| 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. |
| 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 • For further information, please refer to: http://ipxe.org/cmd |

Table 15 - FlexBoot Changes and New Feature

| Version | Description |
|-------------|--|
| 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 15 - 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 15 - 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 15 - 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 15 - 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 16 - 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 UEFI Changes and Major New Features

Table 17 - UEFI Changes and New Feature

| Version | Description |
|----------|--|
| 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 NumberVFSsupported value to 63 Deprecated BootOptionROM attribute |

7.1 UEFI Bug Fixes History

Table 18 - UEFI Bug Fixes History

| Version | Description |
|----------|---|
| 14.11.31 | <ul style="list-style-type: none"> RM#849659: Fixed an issue with the UEFI driver which caused the firmware to hang. |