

# Mellanox ConnectX<sup>®</sup>-6 Firmware Release Notes

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Rev 20.26.1040

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## Release Update History

**Table 1 - Release Update History**

| Release        | Date               | Description                                                                                                                                                                                                                                             |
|----------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rev 20.26.1040 | November 11, 2019  | Added section <a href="#">Section 1.2.1, “Switch and HCAs Cable Connectivity Matrix”</a> , on page 8                                                                                                                                                    |
| Rev 20.26.1040 | September 29, 2019 | Initial version of this firmware release.<br>This version introduces New Features <a href="#">Section 2, “Changes and New Features in Rev 20.26.1040”</a> , on page 17 and Bug Fixes (see <a href="#">Section 4, “Bug Fixes History”</a> , on page 26). |

# 1 Overview

These are the release notes for the ConnectX®-6 adapters firmware Rev 20.26.1040.

This firmware supports the following protocols:

- InfiniBand - SDR, EDR, HDR
- Ethernet - 10GbE, 25GbE, 40GbE, 50GbE, 100GbE<sup>1</sup>, 200GbE (**Alpha**)
- PCI Express 4.0, supporting backwards compatibility for v3.0,v2.0 and v1.1



**Note:** Please note, PCI Express 4.0 is currently at Beta level in ConnectX-6.



**Note:** The minimal required Mellanox Quantum firmware version is 27.2000.1260



**Note:** Please make sure to use a PCIe slot that is capable of supplying the required power to the ConnectX-6 adapter card as stated in section *Specifications* in the adapter card's User Manual.

## 1.1 Supported Devices

This firmware supports the devices and protocols listed in [Table 2](#)

**Table 2 - Supported Devices (Sheet 1 of 2)**

| Device Part Number | PSID          | Device Name                                                                                                              | FlexBoot          | UEFI x86          | UEFI ARM          | Enable/disable exprom Feature |
|--------------------|---------------|--------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|-------------------------------|
| MCX653106A-EFAT    | MT_0000000219 | ConnectX-6 VPI adapter card; 100Gb/s (HDR100; EDR IB and 100GbE); dual-port QSFP56; PCIe3.0/4.0 2x8 in a row             | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| MCX653105A-ECAT    | MT_0000000222 | ConnectX-6 VPI adapter card; 100Gb/s (HDR100; EDR IB and 100GbE); single-port QSFP56; PCIe3.0 x16; tall bracket; ROHS R6 | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| MCX653105A-HDAT    | MT_0000000223 | ConnectX-6 VPI adapter card; HDR IB (200Gb/s) and 200GbE; single-port QSFP56; PCIe4.0 x16; tall bracket; ROHS R6         | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| MCX653106A-ECAT    | MT_0000000224 | ConnectX-6 VPI adapter card; H100Gb/s (HDR100; EDR IB and 100GbE); dual-port QSFP56; PCIe3.0 x16; tall bracket; ROHS R6  | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |

1. ConnectX-6 Ethernet adapter cards currently support only Force mode, Auto-Negotiation mode is not supported.

**Table 2 - Supported Devices (Sheet 2 of 2)**

| Device Part Number | PSID          | Device Name                                                                                                                                     | FlexBoot          | UEFI x86          | UEFI ARM          | Enable/disable exprom Feature |
|--------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|-------------------------------|
| MCX653106A-HDAT    | MT_0000000225 | ConnectX-6 VPI adapter card; HDR IB (200Gb/s) and 200GbE; dual-port QSFP56; PCIe4.0 x16; tall bracket; ROHS R6                                  | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| MCX654105A-HCAT    | MT_0000000226 | ConnectX-6 VPI adapter card; HDR IB (200Gb/s) and 200GbE; single-port QSFP56; Socket Direct 2x PCIe3.0 x16; tall bracket; ROHS R6               | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| MCX654106A-ECAT    | MT_0000000227 | ConnectX-6 VPI adapter card; 100Gb/s (HDR100; EDR InfiniBand and 100GbE); dual-port QSFP56; Socket Direct 2x PCIe3.0 x16; tall bracket; ROHS R6 | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| MCX654106A-HCAT    | MT_0000000228 | ConnectX-6 VPI adapter card; HDR IB (200Gb/s) and 200GbE; dual-port QSFP56; Socket Direct 2x PCIe3.0 x16; tall bracket; ROHS R6                 | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| MCX653105A-EFAT    | MT_0000000237 | ConnectX-6 VPI adapter card; 100Gb/s (HDR100; EDR IB and 100GbE); single-port QSFP56; PCIe3.0/4.0 Socket Direct 2x8 in a row; ROHS R6           | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |

## 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 Switch and HCAs Cable Connectivity Matrix

Mellanox Quantum™ based switches and ConnectX®-6 HCAs support HDR (PAM4, 50Gb/s per lane) and EDR (NRZ, 25Gb/s per lane) technologies.

As the ConnectX adapter cards are identified by their maximum supported throughput (e.g. ConnectX-6 VPI 100Gb/s card can support either 2-lanes of 50Gb/s or 4-lanes of 25Gb/s), the exact connectivity will be determined by the cable that is being used.

As a reference:

| Speed Mode | Speed Supported    | Number of Lanes Used |
|------------|--------------------|----------------------|
| HDR        | 200Gb/s InfiniBand | 4 lanes of 50Gb/s    |
| HDR100     | 100Gb/s InfiniBand | 2 lanes of 50Gb/s    |
| EDR        | 100Gb/s InfiniBand | 4 lanes of 25Gb/s    |

The following table presents the connectivity matrix, between Mellanox Quantum based switches, ConnectX-6 HCA, and the cables.

**Table 3 - Switch to Switch Connectivity**

| Switch           | Switch           | Cable         |               |         |               |         |         |
|------------------|------------------|---------------|---------------|---------|---------------|---------|---------|
|                  |                  | H cable DAC   | H cable AOC   | HDR DAC | HDR AOC       | EDR DAC | EDR AOC |
| Mellanox Quantum | Mellanox Quantum | No such cable | HDR100        | HDR     | HDR           | EDR     | EDR     |
| Switch-IB 2      | Mellanox Quantum | Not Supported | Not Supported | EDR     | Not supported | EDR     | EDR     |

**Table 4 - Adapter to Switch Connectivity**

| Adapter            | Switch           | Cable       |             |         |                  |         |         |
|--------------------|------------------|-------------|-------------|---------|------------------|---------|---------|
|                    |                  | Y cable DAC | Y cable AOC | HDR DAC | HDR AOC          | EDR DAC | EDR AOC |
| ConnectX-6 200Gb/s | Mellanox Quantum | HDR100      | HDR100      | HDR     | HDR              | EDR     | EDR     |
| ConnectX-6 100Gb/s | Mellanox Quantum | HDR100      | HDR100      | EDR     | EDR <sup>a</sup> | EDR     | EDR     |

a. This is currently not supported. For further information see Known Issues 1796936.

## 1.2.2 Validated and Supported 1GbE Cables

**Table 5 - Validated and Supported 1GbE Cables**

| Speed | Cable OPN #  | Description                                                |
|-------|--------------|------------------------------------------------------------|
| 1GB/S | MC3208011-SX | Mellanox Optical module, SX, 850nm                         |
| 1GB/S | MC3208411-T  | Mellanox® module, ETH 1GbE, 1Gb/s, SFP, Base-T, up to 100m |

## 1.2.3 Validated and Supported 10GbE Cables

**Table 6 - Validated and Supported 10GbE Cables**

| Speed | Cable OPN #      | Description                      |
|-------|------------------|----------------------------------|
| 10GbE | FTLX8571D3BCL-ME | 10gb SFP 850nm Optic Transceiver |
| 10GbE | SP7051-HP        | HP-MethodeElec. 10GbE AOM        |

## 1.2.4 Validated and Supported 25GbE Cables



The 25GbE cables can be supported in ConnectX-6 adapter cards only when connected to the MAM1Q00A-QSA28 module.

**Table 7 - Validated and Supported 25GbE Cables**

| Speed | Cable OPN #      | Description                                                                               |
|-------|------------------|-------------------------------------------------------------------------------------------|
| 25GbE | MCP2M00-A001     | Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1m                              |
| 25GbE | MCP2M00-A002     | Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m                              |
| 25GbE | MCP2M00-A003     | Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 3m                              |
| 25GbE | MCP2M00-A003AP   | Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 3m, 26AWG                       |
| 25GbE | MCP2M00-A005E26L | Mellanox Passive Copper Cable, ETH, up to 25GB/S, SFP28, 5M, black, 26AWG, CA-L           |
| 25GbE | MCP2M00-A00A     | Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 0.5m                            |
| 25GbE | MCP2M00-A01A     | Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1.5m                            |
| 25GbE | MCP2M00-A02A     | Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2.5m                            |
| 25GbE | MCP7F00-A001     | Mellanox Passive Copper Hybrid cable ETH 100GbE to 4X25GBS QSFP28 to 4XSFP28 1M           |
| 25GbE | MCP7F00-A002     | Mellanox Passive Copper Hybrid Cable ETH 100GbE TO 4X25GBS QSFP28 TO 4XSFP28 2M           |
| 25GbE | MCP7F00-A003     | Mellanox Passive Copper Hybrid Cable ETH 100GbE TO 4X25GBS QSFP28 TO 4XSFP28 3M           |
| 25GbE | MCP7F00-A003-AM  | Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3M 30AWG |
| 25GbE | MCP7F00-A005AM   | Mellanox Passive Copper Hybrid Cable ETH 100GbE TO 4X25GBS QSFP28 to 4XSFP28 5M           |
| 25GbE | MCP7F00-A01A     | Mellanox Passive Copper Hybrid Cable ETH 100GbE to 4X25GBS QSFP28 to 4XSFP28 1.5M         |
| 25GbE | MCP7F00-A02A     | Mellanox Passive Copper Hybrid Cable ETH 100GbE to 4X25GBS QSFP28 to 4XSFP28 2.5M         |
| 25GbE | MFA2P10-Axxx     | Mellanox® active optical cable 25GbE, SFP28, up to 50m                                    |
| 25GbE | MMA2L20-AR       | Mellanox® optical transceiver, 25GbE, 25Gb/s, SFP28, LC-LC, 1310nm, LR up to 10km         |
| 25GbE | MMA2P00-AS       | Mellanox® transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, up to 100m                         |

## 1.2.5 Validated and Supported 40GbE Cables

**Table 8 - Validated and Supported 40GbE Cables**

| Speed | Cable OPN #      | Description                                                             |
|-------|------------------|-------------------------------------------------------------------------|
| 40GbE | AFBR-7QER15Z-CS1 | Cisco 40GbE 15m AOC                                                     |
| 40GbE | 2231254-2        | Cisco 3m 40GbE copper                                                   |
| 40GbE | NDCCGJ-C402      | 15m (49ft) Avago AFBR-7QER15Z Compatible 40G QSFP+ Active Optical Cable |

## 1.2.6 Validated and Supported 50GbE Cables

**Table 9 - Validated and Supported 50GbE Cables**

| Speed | Cable OPN #  | Description                                                                            |
|-------|--------------|----------------------------------------------------------------------------------------|
| 50GbE | MCP7H00-G001 | Mellanox Passive Copper Hybrid Cable ETH 100GbE TO 2X50GBS QSFP28 TO 2XQSFP28 1M       |
| 50GbE | MCP7H00-G002 | Mellanox Passive Copper Hybrid Cable ETH 100GbE TO 2X50GBS QSFP28 TO 2XQSFP28 2M       |
| 50GbE | MCP7H00-G003 | Mellanox Passive Copper Hybrid Cable ETH 100GbE TO 2X50GBS QSFP28 TO 2XQSFP28 3M       |
| 50GbE | MFA7A20-C020 | Mellanox® active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 20m |

## 1.2.7 Validated and Supported 100GbE Cables

**Table 10 - Validated and Supported 100GbE Cables**

| Speed  | Cable OPN #       | Description                                                                                                              |
|--------|-------------------|--------------------------------------------------------------------------------------------------------------------------|
| 100GbE | CAB-Q-Q-100GbE-3M | Passive 3 meter , QSFP+ to QSFP+ QSFP100 TWINAX 103.125Gbps-CR4                                                          |
| 100GbE | FCBN425QE1C30-C1  | 100GbE Quadwire® QSFP28 Active Optical Cable 30M                                                                         |
| 100GbE | MCP1600-C001      | Mellanox Passive Copper Cable ETH 100GbE 100GBS QSFP LSZH 1M                                                             |
| 100GbE | MCP1600-C002      | Mellanox Passive Copper Cable ETH 100GbE 100GBS QSFP LSZH 2M                                                             |
| 100GbE | MCP1600-C003      | Mellanox Passive Copper Cable ETH 100GbE 100GBS QSFP LSZH 3M                                                             |
| 100GbE | MCP1600-C00A      | Mellanox Passive Copper Cable ETH 100GbE 100GBS QSFP LSZH 0.5M                                                           |
| 100GbE | MCP1600-C01A      | Mellanox® Passive Copper cable, ETH 100GbE, 100GbE, QSFP, LSZH, 1.5m                                                     |
| 100GbE | MCP1600-C02A      | Mellanox® Passive Copper cable, ETH 100GbE, 100GbE, QSFP, LSZH, 2.5m                                                     |
| 100GbE | MCP7F00-A005R26L  | Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 5m, Colored, 26AWG, CA-L                |
| 100GbE | MCP7H00-G005R26L  | Mellanox® passive copper hybrid cable, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 5m, Colored, 26AWG, CA-L               |
| 100GbE | MFA1A00-C003      | Mellanox® Active Fiber Cable, ETH 100GbE, 100GbE, QSFP, LSZH, 3m                                                         |
| 100GbE | MFA1A00-C005      | Mellanox® Active Fiber Cable, ETH 100GbE, 100GbE, QSFP, LSZH, 5m                                                         |
| 100GbE | MFA1A00-C010      | Mellanox® Active Fiber Cable, ETH 100GbE, 100GbE, QSFP, LSZH, 10m                                                        |
| 100GbE | MFA1A00-C015      | Mellanox® Active Fiber Cable, ETH 100GbE, 100GbE, QSFP, LSZH, 15m                                                        |
| 100GbE | MFA1A00-C020      | Mellanox® Active Fiber Cable, ETH 100GbE, 100GbE, QSFP, LSZH, 20m                                                        |
| 100GbE | MFA1A00-C030      | Mellanox® Active Fiber Cable, ETH 100GbE, 100GbE, QSFP, LSZH, 30m                                                        |
| 100GbE | MFA1A00-C050      | Mellanox® Active Fiber Cable, ETH 100GbE, 100GbE, QSFP, LSZH, 50m                                                        |
| 100GbE | MFA1A00-C100      | Mellanox® Active Fiber Cable, ETH 100GbE, 100GbE, QSFP, LSZH, 100m                                                       |
| 100GbE | MMA1L10-CR        | Mellanox® optical transceiver, 100GbE, QSFP28, LC-LC, 1310nm, LR4 up to 10km<br><b>Note:</b> Only revision A2 and above. |
| 100GbE | MMA1L30-CM        | Mellanox® optical module, 100GbE, 100Gb/s, QSFP28, LC-LC, 1310nm, CWDM4, up to 2km                                       |
| 100GbE | SQF1002L4LNC101P  | Cisco-SUMITOMO 100GbE AOM                                                                                                |
| 100GbE | FTLC9152RGPL      | 100G 100M QSFP28 SWDM4 OPT TRANS                                                                                         |

**Table 10 - Validated and Supported 100GbE Cables**

| Speed  | Cable OPN #      | Description                                                                   |
|--------|------------------|-------------------------------------------------------------------------------|
| 100GbE | NDAAFJ-C102      | SF-NDAAFJ100G-005M                                                            |
| 100GbE | QSFP28-LR4-AJ    | CISCO-PRE 100GbE LR4 QSFP28 Transceiver Module                                |
| 100GbE | CAB-Q-Q-100G-3M  | Passive 3 meter, QSFP+ to QSFP+ QSFP100 TWINAX 103.125Gbps-CR4                |
| 100GbE | QSFP-100G-AOC30M | 30m (98ft) Cisco QSFP-100G-AOC30M Compatible 100G QSFP28 Active Optical Cable |

## 1.2.8 Validated and Supported 200GbE Cables

**Table 11 - Validated and Supported 200GbE Cables**

| Speed  | Cable OPN #     | Description                                                                                                |
|--------|-----------------|------------------------------------------------------------------------------------------------------------|
| 200GbE | MCP1650-V001E30 | Mellanox® Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 1m, black pultab, 30AWG                     |
| 200GbE | MCP1650-V002E26 | Mellanox® Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 2m, black pultab, 26AWG                     |
| 200GbE | MCP1650-V00AE30 | Mellanox® Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 0.5m, black pultab, 30AWG                   |
| 200GbE | MCP7H50-V001R30 | Mellanox® Passive Copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 1m, 30AWG |
| 200GbE | MFS1S00-VXXXE   | Mellanox® Active Fiber cable, 200GbE, 200Gb/s, QSFP56, LSZH, black pulltab, up to 100m                     |
| 200GbE | MMA1T00-VS      | Mellanox® transceiver, 200GbE, up to 200Gb/s, QSFP56, MPO, 850nm, SR4, up to 100m                          |

## 1.2.9 Validated and Supported EDR / 100Gb/s Cables

**Table 13 - Validated and Supported EDR / 100Gb/s Cables**

| Speed | Cable OPN #  | Description                                                          |
|-------|--------------|----------------------------------------------------------------------|
| EDR   | MCP1600-E001 | Mellanox Passive Copper Cable VPI 100Gb/s QSFP LSZH 1M               |
| EDR   | MCP1600-E002 | Mellanox Passive Copper Cable VPI 100Gb/s QSFP LSZH 2M               |
| EDR   | MCP1600-E003 | Mellanox Passive Copper Cable VPI 100GB/S QSFP LSZH 3M               |
| EDR   | MCP1600-E00A | Mellanox Passive Copper Cable VPI 100Gb/s QSFP LSZH 0.5M             |
| EDR   | MCP1600-E01A | Mellanox® Passive Copper cable, VPI, up to 100Gb/s, QSFP, LSZH, 1.5m |
| EDR   | MCP1600-E02A | Mellanox® Passive Copper cable, VPI, up to 100Gb/s, QSFP, LSZH, 2.5m |
| EDR   | MCPIOPT-E002 | Mellanox® Passive Copper cable, VPI, up to 100Gb/s, QSFP, LSZH, 2m   |
| EDR   | MFA1A00-E005 | Mellanox Active Fiber Cable, VPI, up to 100Gb/s, QSFP, 5m            |
| EDR   | MFA1A00-E006 | Mellanox Active Fiber Cable, VPI, up to 100Gb/s, QSFP, 6m            |
| EDR   | MFA1A00-E010 | Mellanox Active Fiber Cable, VPI, up to 100Gb/s, QSFP, 10m           |
| EDR   | MFA1A00-E015 | Mellanox Active Fiber Cable, VPI, up to 100Gb/s, QSFP, 15m           |
| EDR   | MFA1A00-E020 | Mellanox Active Fiber Cable, VPI, up to 100Gb/s, QSFP, 20m           |

**Table 13 - Validated and Supported EDR / 100Gb/s Cables**

| Speed | Cable OPN #  | Description                                                                |
|-------|--------------|----------------------------------------------------------------------------|
| EDR   | MFA1A00-E030 | Mellanox Active Fiber Cable, VPI, up to 100Gb/s, QSFP, 30m                 |
| EDR   | MFA1A00-E050 | Mellanox Active Fiber Cable, VPI, up to 100Gb/s, QSFP, 50m                 |
| EDR   | MFA1A00-E100 | Mellanox Active Fiber Cable, VPI, up to 100Gb/s, QSFP, 100m                |
| EDR   | MMA1L30-CM   | Mellanox® optical module, 100Gb/s, QSFP28, LC-LC, 1310nm, CWDM4, up to 2km |
| EDR   | 3800486800   | AMPHENOL 3m EDR cable                                                      |
| EDR   | 3800486600   | Luxshare 2m EDR cable                                                      |



EDR links raise with RS-FEC.

## 1.2.10 Validated and Supported HDR / 200Gb/s Cables

**Table 14 - Validated and Supported HDR Cables**

| Speed | OPN # / Name    | Description                                                                                                        |
|-------|-----------------|--------------------------------------------------------------------------------------------------------------------|
| HDR   | MCP1650-H001E30 | Mellanox® Passive Copper cable, IB HDR, up to 200Gb/s, QSFP28, PVC, 1m, white pultab, 30AWG                        |
| HDR   | MCP1650-H002E26 | Mellanox Passive Copper Cable, IB HDR, up to 200GB/S, QSFP56, LSZH, 2M, black pultab, 26AWG                        |
| HDR   | MCP1650-H00AE30 | Mellanox Passive Copper Cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, 0.5M, black pultab, 30AWG                      |
| HDR   | MCP1650-H01AE30 | Mellanox® Passive Copper cable, IB HDR, up to 200Gb/s, QSFP28, PVC, 1.5m, white pultab, 30AWG                      |
| HDR   | MCP1650-H01AE30 | Mellanox Passive Copper Cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, 1.5M, black pultab, 30AWG                      |
| HDR   | MCP7H50-H001R30 | Mellanox® passive copper hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored, 1m, 30AWG   |
| HDR   | MCP7H50-H002R26 | Mellanox® passive copper hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored, 2m, 26AWG   |
| HDR   | MCP7H50-H003R26 | Mellanox® passive copper hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored, 3m, 26AWG   |
| HDR   | MCP7H50-H01AR30 | Mellanox® passive copper hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored, 1.5m, 30AWG |
| HDR   | MFS1S00-H003E   | Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 3m                               |
| HDR   | MFS1S00-H005E   | Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 5m                               |
| HDR   | MFS1S00-H010E   | Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 10m                              |
| HDR   | MFS1S00-H015E   | Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 15m                              |
| HDR   | MFS1S00-H020E   | Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 15m                              |

**Table 14 - Validated and Supported HDR Cables**

| Speed | OPN # / Name  | Description                                                                                        |
|-------|---------------|----------------------------------------------------------------------------------------------------|
| HDR   | MFS1S00-H030E | Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 15m              |
| HDR   | MFS1S00-H050E | Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 50m              |
| HDR   | MFS1S00-H100E | Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 100m             |
| HDR   | MFS1S50-H003E | Mellanox® active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, 3m  |
| HDR   | MFS1S50-H005E | Mellanox® active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, 5m  |
| HDR   | MFS1S50-H010E | Mellanox® active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, 10m |
| HDR   | MFS1S50-H015E | Mellanox® active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, 15m |
| HDR   | MFS1S50-H020E | Mellanox® active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, 20m |
| HDR   | MFS1S50-H030E | Mellanox® active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, 30m |
| HDR   | MMA1T00-HS    | Mellanox® transceiver, HDR, QSFP56, MPO, 850nm, SR4, up to 100m                                    |



HDR links raise with RS-FEC.

## 1.3 Tested Switches

### 1.3.1 Tested EDR / 100Gb/s Switches

**Table 15 - Tested EDR Switches**

| Speed | Switch Silicon | OPN # / Name | Description                                                      | Vendor   |
|-------|----------------|--------------|------------------------------------------------------------------|----------|
| EDR   | Switch-IB      | MSB7790-EB2F | 36-port EDR 100Gb/s InfiniBand Switch Systems                    | Mellanox |
| EDR   | Switch-IB 2    | MSB7800-ES2R | 36-port Non-blocking Managed EDR 100Gb/s InfiniBand Smart Switch | Mellanox |

### 1.3.2 Tested HDR / 200Gb/s Switches

**Table 16 - Tested HDR Switches**

| Speed | Switch Silicon | OPN # / Name | Description                                                         | Vendor   |
|-------|----------------|--------------|---------------------------------------------------------------------|----------|
| HDR   | Quantum        | MQM8700-HS2F | 40-port Non-blocking HDR 200Gb/s InfiniBand Smart Switch            | Mellanox |
| HDR   | Quantum        | MQM8790-HS2F | 40-port Unmanaged, Non-blocking HDR 200Gb/s InfiniBand Smart Switch | Mellanox |

## 1.4 Tools, Switch Firmware and Driver Software

The following are the drivers' software, tools, switch/HCA firmware versions tested that you can upgrade from or downgrade to when using firmware Rev 20.26.1040:

**Table 17 - Tools, Switch Firmware and Driver Software**

|                                | Supported Version                                                                                             |
|--------------------------------|---------------------------------------------------------------------------------------------------------------|
| MLNX_OFED                      | 4.7-x.0.0.0 / 4.6-1.0.1.1                                                                                     |
| MLNX_EN (MLNX_OFED based code) | 4.7-x.0.0.0 / 4.6-1.0.1.1                                                                                     |
| WinOF-2                        | 2.30 / 2.20                                                                                                   |
| MFT                            | 4.13.0 / 4.12.0                                                                                               |
| MLNX-OS                        | 3.8.2004                                                                                                      |
| ConnectX-6 Firmware            | 20.25.7020 / 20.25.6000                                                                                       |
| Quantum™ Firmware              | 27.2000.2046 / 27.2000.2162 (Embedded firmware version in MLNX-OS v3.8.2004)                                  |
| Linux Inbox Drivers            | <ul style="list-style-type: none"> <li>RH7.6</li> <li>Ubuntu 16.04.05</li> </ul>                              |
| Windows Inbox Drivers          | <ul style="list-style-type: none"> <li>Windows 2012</li> <li>Windows 2012 R2</li> <li>Windows 2016</li> </ul> |

## 1.5 Supported FlexBoot, UEFI

Firmware Rev 20.26.1040 supports the following FlexBoot:

**Table 18 - Supported FlexBoot, UEFI**

| Expansion ROM | Supported Version |
|---------------|-------------------|
| FlexBoot      | 3.5.803           |
| UEFI          | 14.19.14          |

## 1.6 Revision Compatibility

Firmware Rev 20.26.1040 complies with the following programmer's reference manual:

- *Mellanox Adapters Programmer's Reference Manual (PRM), Rev 0.47 or later*, which has Command Interface Revision 0x5. The command interface revision can be retrieved by means of the QUERY\_FW command and is indicated by the field *cmd\_interface\_rev*.

## 2 Changes and New Features in Rev 20.26.1040

**Table 19 - Changes and New Features in Rev 20.26.1040**

| Feature/Change                              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Rev. 20.26.1040</b>                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Link Speed</b>                           | [Alpha] Added support for 200GbE link speed only when in Force mode (non-Auto-Negotiation).                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Link Down Reasoning</b>                  | Added support for Link Down Reasoning.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Physical Layer Retransmission (PLR)</b>  | Added support to the Physical Layer Retransmission (PLR) functionality for HDR speed.                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Cables</b>                               | Removed PLR from active cables longer than 30m.                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Address Translation Service (ATS)</b>    | Added Address Translation Service (ATS) support for MKEY and UMEM.                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>VPD</b>                                  | Added support for exposing the VPD on the VF.                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hairpin Drop Counter</b>                 | Added support for Hairpin Drop Counter.                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>User Context Object (DEVX)</b>           | <p>This is a containerized sandbox per user, to access PRM command securely by using General Object commands, UMEM and UCTX contexts. The allowed functionalities of this capability depend on the user permissions.</p> <p>The following functionalities are still managed by the Kernel:</p> <ul style="list-style-type: none"> <li>• Resource cleaning</li> <li>• UCTX stamping</li> <li>• Blocking the physical address and IRQ from these UCTX</li> </ul> |
| <b>DEVX Support for Asynchronous Events</b> | Added support for reporting the supported affiliated and unaffiliated asynchronous events to DEVX users through the command interface.                                                                                                                                                                                                                                                                                                                         |
| <b>Software Managed Steering Tables</b>     | Added support for creating software managed steering tables in eSwitch/FDB.                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Security Hardening Enhancements</b>      | <p>This release contains important reliability improvements and security hardening enhancements.</p> <p>Mellanox recommends upgrading your device firmware to this release to improve the device firmware security and reliability.</p>                                                                                                                                                                                                                        |
| <b>Bug Fixes</b>                            | See <a href="#">Section 4, “Bug Fixes History”, on page 26</a>                                                                                                                                                                                                                                                                                                                                                                                                 |

### 3 Known Issues

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

**Table 20 - Ethernet Rate Limit per VF in InfiniBand Mode Limitations**

| Adapter Card | Dual Port Device |          | Single Port Device |          |
|--------------|------------------|----------|--------------------|----------|
|              | w/o LAG          |          | w/o LAG            |          |
|              | w/o QoS          | Full QoS | w/o QoS            | Full QoS |
| ConnectX-6   | 127              | 127      | 127                | 127      |

**Table 21 - Known Issues (Sheet 1 of 8)**

| Internal Ref. | Issue                                                                                                                                                                                                           |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1919403       | <b>Description:</b> Hardware arbitration is currently disabled in OCP3.0 cards. It will be supported on future releases for the same hardware.                                                                  |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                          |
|               | <b>Keywords:</b> Hardware arbitration, OCP3.0                                                                                                                                                                   |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                        |
| 1912117       | <b>Description:</b> The sw_reset option is not supported when ATS is enabled.                                                                                                                                   |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                          |
|               | <b>Keywords:</b> ATS, sw_reset                                                                                                                                                                                  |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                        |
| 1911160       | <b>Description:</b> When is in loopback mode, the link is not raised when using Cisco 10GbE AOM.                                                                                                                |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                          |
|               | <b>Keywords:</b> Loopback mode, link up                                                                                                                                                                         |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                        |
| 1733559       | <b>Description:</b> The effective BER of ~ 1E-7 is expected when using ConnectX-6 adapter cards in 50GbE link speed and connecting to a Spectrum-2 SN3700 switch systems using copper split cable (100-->2x50). |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                          |
|               | <b>Keywords:</b> BER, 50GbE, Spectrum-2                                                                                                                                                                         |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                        |
| 1750460       | <b>Description:</b> BER issues might occur when using ConnectX-6 adapter cards in 100GbE link speed, and connecting with and 3rd party switch systems.                                                          |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                          |
|               | <b>Keywords:</b> BER, 100GbE, Spectrum-2                                                                                                                                                                        |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                        |
| 1917123       | <b>Description:</b> Links between ConnectX-6 adapter cards and Spectrum-2 SN3700 switch systems do not go up when using Cisco BiDi module at 100GbE link speed.                                                 |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                          |
|               | <b>Keywords:</b> Link up                                                                                                                                                                                        |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                        |

**Table 21 - Known Issues (Sheet 2 of 8)**

| Internal Ref. | Issue                                                                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1887922       | <b>Description:</b> When using a ConnectX-6 VPI card, setting one port as ETH and the other as IB is not supported. If such configuration is applied, the ETH port will be down when the second port is configured as IB. |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                    |
|               | <b>Keywords:</b> Eth, IB, port                                                                                                                                                                                            |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                                  |
| 1906389       | <b>Description:</b> When using 100GbE link speed and connecting to a Cisco9000 switch, the link might take up to 2 min to raise.                                                                                          |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                    |
|               | <b>Keywords:</b> Link speed                                                                                                                                                                                               |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                                  |
| 1918749       | <b>Description:</b> mlxlink tool displays a wrong speed when using ETH cables on ConnectX-6 adapter cards.                                                                                                                |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                    |
|               | <b>Keywords:</b> mlxlink                                                                                                                                                                                                  |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                                  |
| 1901198       | <b>Description:</b> Firmware is not loaded on Multi-Host setups after reboot.                                                                                                                                             |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                    |
|               | <b>Keywords:</b> Firmware load, Multi-Host                                                                                                                                                                                |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                                  |
| 1842278       | <b>Description:</b> DC LAG can function only in case there is a single PF per port without any active VFs.                                                                                                                |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                    |
|               | <b>Keywords:</b> DC LAG                                                                                                                                                                                                   |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                                  |
| 1796628       | <b>Description:</b> Due to performance considerations, unicast loopback traffic will go through the NIC SX tables, and multicast loopback traffic will skip the NIC SX tables.                                            |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                    |
|               | <b>Keywords:</b> Performance, unicast loopback traffic, multicast loopback traffic                                                                                                                                        |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                                  |
| 1797493       | <b>Description:</b> Firmware asserts may occur when setting the PF_BAR2_SIZE value higher than the maximum supported size (maximum PF_BAR2_SIZE is 4 for .                                                                |
|               | <b>Workaround:</b> Configure within limits (NIC PF_BAR_SIZE <= 4).                                                                                                                                                        |
|               | <b>Keywords:</b> Multi-GVMI, Sub-Function, SFs, BAR2                                                                                                                                                                      |
|               | <b>Discovered in Version:</b> 20.26.1040                                                                                                                                                                                  |
| -             | <b>Description:</b> Coherent Accelerator Processor Interface (CAPI) in ConnectX-6 firmware v20.25.7020 and above has low test coverage, however, it has no known issues.                                                  |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                    |
|               | <b>Keywords:</b> CAPI                                                                                                                                                                                                     |
|               | <b>Discovered in Version:</b> 20.25.7020                                                                                                                                                                                  |

**Table 21 - Known Issues (Sheet 3 of 8)**

| Internal Ref. | Issue                                                                                                                                                                            |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1856717       | <b>Description:</b> High BER may occur when connecting cables of type 0.5/1m DAC to an HDR speed.                                                                                |
|               | <b>Workaround:</b> N/A                                                                                                                                                           |
|               | <b>Keywords:</b> Cables                                                                                                                                                          |
|               | <b>Discovered in Version:</b> 20.25.7020                                                                                                                                         |
| 1761271       | <b>Description:</b> CWDM4 AOM cable is currently not supported.                                                                                                                  |
|               | <b>Workaround:</b> N/A                                                                                                                                                           |
|               | <b>Keywords:</b> Modules/Cables                                                                                                                                                  |
|               | <b>Discovered in Version:</b> 20.26.10407020                                                                                                                                     |
| 1563590       | <b>Description:</b> LR4 modules are currently not supported.                                                                                                                     |
|               | <b>Workaround:</b> N/A                                                                                                                                                           |
|               | <b>Keywords:</b> Modules/Cables                                                                                                                                                  |
|               | <b>Discovered in Version:</b> 20.25.6000                                                                                                                                         |
| 1848091       | <b>Description:</b> Although the effective BER (after FEC) is expected to meet our design targets (e.g. 10e-14 or lower), occasionally it may be higher.                         |
|               | <b>Workaround:</b> N/A                                                                                                                                                           |
|               | <b>Keywords:</b> Cables                                                                                                                                                          |
|               | <b>Discovered in Version:</b> 20.25.6000                                                                                                                                         |
| 1796936       | <b>Description:</b> HDR optical cables and Split cables support only HDR speed.                                                                                                  |
|               | <b>Workaround:</b> N/A                                                                                                                                                           |
|               | <b>Keywords:</b> Link Speed, cables, Break-Out cables                                                                                                                            |
|               | <b>Discovered in Version:</b> 20.25.6000                                                                                                                                         |
| 1755286       | <b>Description:</b> Port speed may change to SDR spontaneously, without a clear reason.                                                                                          |
|               | <b>Workaround:</b> Keep the "keep_ib_link_up" bit at 0 in NVconfig to make sure the port is raised with the correct speed.                                                       |
|               | <b>Keywords:</b> SDR, port speed                                                                                                                                                 |
|               | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                         |
| 1778616       | <b>Description:</b> If the flash memory is not cleared, link_maintenance can be wrongly disabled by the NV configuration.                                                        |
|               | <b>Workaround:</b> N/A                                                                                                                                                           |
|               | <b>Keywords:</b> Flash memory                                                                                                                                                    |
|               | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                         |
| 1752009       | <b>Description:</b> When working with Multi-GVMI and SR-IOV, and with a high number of Virtual Functions and sub-functions, the driver start may fail for the VFs/sub-functions. |
|               | <b>Workaround:</b> Decrease the number of configured VFs or sub-functions using mlxconfig PF_BAR2_SIZE or NUM_OF_VFS.                                                            |
|               | <b>Keywords:</b> Multi-GVMI, SR-IOV                                                                                                                                              |
|               | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                         |

**Table 21 - Known Issues (Sheet 4 of 8)**

| Internal Ref.   | Issue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1774135         | <b>Description:</b> PXE boot is not functional when connecting a splitter cable to the host.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                 | <b>Workaround:</b> Update the SM as follow: <ul style="list-style-type: none"> <li>MLNX_OFED SM:               <ul style="list-style-type: none"> <li>Set the default partition in the SM partitions.conf file as shown in the example below:<br/>Default=0x7fff, ipoib, rate=5:ALL=full;<br/><b>Note:</b> "rate" must be set to "5" regardless to the other flags values.</li> </ul> </li> <li>MLNX-OS SM:<br/>Run the following CLI commands:<br/>no ib sm<br/>ib partition Default rate 5<br/>ib sm</li> <li>UFM SM:<br/>Use REST API to change default partition rate:<br/>PUT https://&lt;some IP&gt;/ufmRest/resources/networks/management<br/>{<br/>  "qos_parameters": {<br/>    "rate_limit": 900<br/>  }<br/>}<br/>As a result, /opt/ufm/files/conf/opensm/partitions.conf will include the following line:<br/>management=0x7fff, ipoib, sl=0, rate=5, defmember=full : ALL,<br/>ALL_SWITCHES=full, SELF=full;</li> </ul> |
|                 | <b>Keywords:</b> PXE boot, splitter cable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                 | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1762142         | <b>Description:</b> PF / ECPF FLR does not clear all its dependent sub-functions.<br>QUERY_ESW_FUNCTIONS and ALLOC/DEALLOC_SF commands might fail / show allocated SFs after PF FLR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                 | <b>Workaround:</b> Perform a graceful shutdown, and not an FLR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                 | <b>Keywords:</b> Multi-GVMI, SF, Sub-Functions, FLR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                 | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1768814/1772474 | <b>Description:</b> Due to hardware limitation, REG_C cannot be passed over loopback when the FDB action is forwarded to multiple destinations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                 | <b>Workaround:</b> N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                 | <b>Keywords:</b> Connection-Tracking                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                 | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1770736         | <b>Description:</b> When a PF or ECPF with many VFs (SR-IOV), and/or SFs (Multi-GVMI) triggers an FLR, PCIe completion timeout might occur.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                 | <b>Workaround:</b> Increase the PCIe completion timeout.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                 | <b>Keywords:</b> Multi-GVMI, SR-IOV, Sub-Function, Virtual Function, PF FLR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                 | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

**Table 21 - Known Issues (Sheet 5 of 8)**

| Internal Ref. | Issue                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1774890       | <b>Description:</b> If ConnectX-6 adapter card is connected to a Quantum based switch over an HDR fiber optic cable, EDR and SDR speeds will not function.<br>This limitation causes PXE not to function when performing: <ul style="list-style-type: none"> <li>PXE boot, as PXE traffic utilizes SDR speed</li> <li>PXE boot over IB, when using either an optic cable or a copper splitter</li> </ul> |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                                                                                                                                                                                                   |
|               | <b>Keywords:</b> PXE, Quantum, SDR, EDR, HDR, cables                                                                                                                                                                                                                                                                                                                                                     |
|               | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                                                                                                                                                                                                                                                 |
| 1716334       | <b>Description:</b> When mlxconfig.PF_BAR2_EN is enabled, configuring more than 255 PCI functions will raise an assert.                                                                                                                                                                                                                                                                                  |
|               | <b>Workaround:</b> When working with BAR2, configure SR-IOV to align to the 255 PCI functions limitation.<br>mlxconfig.NUM_OF_VFS controls the number of configured SR-IOV VFs. e.g.: <ul style="list-style-type: none"> <li>Smart NICs: 2 External Host PFs, 2 ARM ECPFs, 125 VFs per PF.</li> <li>Non-smart NICs: 2 External Host PFs, 126 VFs per PF</li> </ul>                                       |
|               | <b>Keywords:</b> Multi-GVMI, PF_BAR2_EN, Sub-Functions, SR-IOV, VFs                                                                                                                                                                                                                                                                                                                                      |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                                                                                                                                                          |
| 1699214       | <b>Description:</b> NODNIC VF is partially tested. It is fully tested only in ConnectX-5 adapter cards.                                                                                                                                                                                                                                                                                                  |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                                                                                                                                                                                                   |
|               | <b>Keywords:</b> NODNIC VF                                                                                                                                                                                                                                                                                                                                                                               |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                                                                                                                                                          |
| 1699214       | <b>Description:</b> NODNIC VF is partially tested. It is fully tested only in ConnectX-5 adapter cards.                                                                                                                                                                                                                                                                                                  |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                                                                                                                                                                                                   |
|               | <b>Keywords:</b> NODNIC VF                                                                                                                                                                                                                                                                                                                                                                               |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                                                                                                                                                          |
| -             | <b>Description:</b> The supported length of HDR copper cables is currently up to 2M.                                                                                                                                                                                                                                                                                                                     |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                                                                                                                                                                                                   |
|               | <b>Keywords:</b> HDR cables                                                                                                                                                                                                                                                                                                                                                                              |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                                                                                                                                                          |
| -             | <b>Description:</b> In Ethernet mode, at 25/50/100GbE speeds, only RS-FEC in Force mode is supported. Other user configurations are overridden.                                                                                                                                                                                                                                                          |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                                                                                                                                                                                                   |
|               | <b>Keywords:</b> Ethernet, 25GbE, 50GbE, 100GbE, RS-FEC                                                                                                                                                                                                                                                                                                                                                  |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                                                                                                                                                          |
| -             | <b>Description:</b> In Ethernet mode, at 10/40GbE speeds, only NO-FEC in Force mode is supported. Other user configurations are overridden.                                                                                                                                                                                                                                                              |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                                                                                                                                                                                                   |
|               | <b>Keywords:</b> Ethernet, 10GbE, 40GbE, RS-FEC                                                                                                                                                                                                                                                                                                                                                          |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                                                                                                                                                          |

**Table 21 - Known Issues (Sheet 6 of 8)**

| Internal Ref. | Issue                                                                                                                                                                                    |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1574876       | <b>Description:</b> DC RoCE LAG is functional only if the router posts VRRP address as the source MAC.                                                                                   |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> DC RoCE LAG                                                                                                                                                             |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1498399       | <b>Description:</b> If the XRC switches between SRQ/RMPs while there is an outstanding ODP on the responder XRC QP, a CQE with an error might be generated (that is not a PFAULT abort). |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> XRC SRQ/RMP ODP                                                                                                                                                         |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| -             | <b>Description:</b> In some cases, the power consumption might be 10% higher than what is stated in the adapter cards User Manual.                                                       |
|               | <b>Workaround:</b> Power consumption will be aligned with the User Manual statement in the next release                                                                                  |
|               | <b>Keywords:</b> Power consumption                                                                                                                                                       |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1546401       | <b>Description:</b> vport_tc and para_vport_tc are not supported in this version.                                                                                                        |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> SR-IOV vport_tc and para_vport_tc                                                                                                                                       |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1546492       | <b>Description:</b> Executing the update_lid command while the IB port sniffer utility is active can stop the utility.                                                                   |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> IB Sniffer                                                                                                                                                              |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1537898       | <b>Description:</b> Initializing a function while the IB port sniffer utility is active can stop the utility.                                                                            |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> IB Sniffer                                                                                                                                                              |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1414290       | <b>Description:</b> When getting an inline scatter CQE on IB striding RQ, the stride index in the CQE will be zero.                                                                      |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> Scatter CQE                                                                                                                                                             |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1332714       | <b>Description:</b> The maximum “read” size of MTRC_STDB is limited to 272 Bytes.                                                                                                        |
|               | <b>Workaround:</b> Set the MTRC_STDB.read_size to the maximum value of 0x110=272 Bytes                                                                                                   |
|               | <b>Keywords:</b> Access register, MTRC_STDB, tracer to dmesg, fwtrace to dmesg                                                                                                           |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1408994       | <b>Description:</b> FTE with both forward (FWD) and encapsulation (ENCAP) actions is not supported in the SX NIC Flow Table.                                                             |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> SX NIC Flow Table                                                                                                                                                       |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |

**Table 21 - Known Issues (Sheet 7 of 8)**

| Internal Ref. | Issue                                                                                                                                                                                    |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1027553       | <b>Description:</b> While using e-switch vport sVLAN stripping, the RX steering values on the sVLAN might not be accurate.                                                               |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> e-sw vport sVLAN stripping, RX steering                                                                                                                                 |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1799917       | <b>Description:</b> Untagged CVLAN packets in the Steering Flow Tables do not match the sVLAN tagged packets.                                                                            |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> Steering Flow Tables, CVLAN/sVLAN packets                                                                                                                               |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1277762       | <b>Description:</b> An Ethernet multicast loopback packet is not counted (even if it is not a local loopback packet) when running the <code>nic_receive_steering_discard</code> command. |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> Ethernet multicast loopback packet                                                                                                                                      |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1306342       | <b>Description:</b> Signature-accessing WQEs sent locally to the NVMeF target QPs that encounter signature errors, will not send a SIGERR CQE.                                           |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> Signature-accessing WQEs, NVMeF target                                                                                                                                  |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1168594       | <b>Description:</b> RoCE Dual Port Mode (a.k.a Multi-Port vHCA: MPV) is not supported in Multi-Host setups.                                                                              |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> Multi-Port vHCA, Multi-Host                                                                                                                                             |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1072337       | <b>Description:</b> If a packet is modified in e-sw flow steering, the SX sniffer Flow Table (of the VF) will see the sniffed packet after the modification.                             |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> SX sniffer Flow Table                                                                                                                                                   |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |
| 1171013       | <b>Description:</b> Signature Handover Operations is not supported when FPP (Function-Per-Port) mode is disabled.                                                                        |
|               | <b>Workaround:</b> N/A                                                                                                                                                                   |
|               | <b>Keywords:</b> Signature Handover Operations, FPP                                                                                                                                      |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                          |

**Table 21 - Known Issues (Sheet 8 of 8)**

| Internal Ref. | Issue                                                                                                                                                                                                                                                                                                                        |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1059975       | <b>Description:</b> NVMeF limitation: <ul style="list-style-type: none"><li>• Transaction size - up to 128KB per IO (non-inline)</li><li>• Support up to 16K connections</li><li>• Support single namespace per drive</li><li>• Staging buffer size must be at least 16MB in order to allow SRQ size of 64 entries</li></ul> |
|               | <b>Workaround:</b> N/A                                                                                                                                                                                                                                                                                                       |
|               | <b>Keywords:</b> NVMeF                                                                                                                                                                                                                                                                                                       |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                                                                              |

## 4 Bug Fixes History

Table 22 lists the bugs fixed in this release.

**Table 22 - Bug Fixes History**

| Internal Ref. | Issue                                                                                                                                                                                                                                                                                                                 |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1718734       | <b>Description:</b> Upon temperature changes, HDR link can potentially go down due to a temperature change higher than 6 degrees Celsius.                                                                                                                                                                             |
|               | <b>Keywords:</b> HDR link                                                                                                                                                                                                                                                                                             |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                                                                       |
|               | <b>Fixed in Release:</b> 20.26.1040                                                                                                                                                                                                                                                                                   |
| 1891441       | <b>Description:</b> Fixed a rare issue that resulted in firmware getting stuck with the below message in dmesg during driver restart or driver reboot, and under stress of QP timeouts (packet drops/network congestion): <i>mlx5_core 0000:a1:00:0: Firmware over 120000 MS in pre-initializing state, aborting.</i> |
|               | <b>Keywords:</b> Pre-initializing state, driver restart                                                                                                                                                                                                                                                               |
|               | <b>Discovered in Version:</b> 20.25.7020                                                                                                                                                                                                                                                                              |
|               | <b>Fixed in Release:</b> 20.26.1040                                                                                                                                                                                                                                                                                   |
| 1859715       | <b>Description:</b> The bandwidth on MFS1S00-H050E cables is 99G/s and on MFS1S00-H100E cables is 67Gb/s when connecting at HDR speed to an HDR switch.                                                                                                                                                               |
|               | <b>Keywords:</b> Cables                                                                                                                                                                                                                                                                                               |
|               | <b>Discovered in Version:</b> 20.25.7020                                                                                                                                                                                                                                                                              |
|               | <b>Fixed in Release:</b> 20.26.1040                                                                                                                                                                                                                                                                                   |
| 1803791       | <b>Description:</b> On rare occasions, when firmware coalesce Host stuck events occur, a async event might be delayed to be reported, and not be triggered until the next time the PCIe hangs on one of the hosts.                                                                                                    |
|               | <b>Keywords:</b> PCIe Error Notification                                                                                                                                                                                                                                                                              |
|               | <b>Discovered in Version:</b> 20.25.6000                                                                                                                                                                                                                                                                              |
|               | <b>Fixed in Release:</b> 20.26.1040                                                                                                                                                                                                                                                                                   |
| 182411        | <b>Description:</b> Renamed the GMP Mellanox Vendor Specific External Capability mask enum from <code>IsDiagnosticCountersSupported</code> to <code>IsDiagnosticDataSupported</code> .                                                                                                                                |
|               | <b>Keywords:</b> GMP Mellanox Vendor Specific External Capability mask DiagnosticData                                                                                                                                                                                                                                 |
|               | <b>Discovered in Version:</b> 20.25.6000                                                                                                                                                                                                                                                                              |
|               | <b>Fixed in Release:</b> 20.26.1040                                                                                                                                                                                                                                                                                   |
| 1698990       | <b>Description:</b> HDR link up time when using optical and copper cables may take 6 minutes or more (up to 20 minutes).                                                                                                                                                                                              |
|               | <b>Keywords:</b> HDR, optical cables, link up times                                                                                                                                                                                                                                                                   |
|               | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                                                                       |
|               | <b>Fixed in Release:</b> 20.25.7020                                                                                                                                                                                                                                                                                   |
| 1797452       | <b>Description:</b> A port may hang while Link-Maintenance runs on it and the second port's link is toggled.                                                                                                                                                                                                          |
|               | <b>Keywords:</b> Link-Maintenance, port toggling                                                                                                                                                                                                                                                                      |
|               | <b>Discovered in Version:</b> 20.25.6000                                                                                                                                                                                                                                                                              |
|               | <b>Fixed in Release:</b> 20.25.7020                                                                                                                                                                                                                                                                                   |

**Table 22 - Bug Fixes History**

| Internal Ref.                   | Issue                                                                                                                                                                                                                                                                        |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1790437                         | <b>Description:</b> Fixed an issue that prevented the firmware from resetting the port speed to its default speed HDR due to a TEARDOWN_HCA with open resources event that led to a bad state in firmware, where attributes were not reset to their default between drivers. |
|                                 | <b>Keywords:</b> TEARDOWN_HCA, Panic Teardown, FLR, SDR                                                                                                                                                                                                                      |
|                                 | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                                                                                                                     |
|                                 | <b>Fixed in Release:</b> 20.25.6000                                                                                                                                                                                                                                          |
| 1774870                         | <b>Description:</b> Link flapping and packet loss during High/Low temperature changes.                                                                                                                                                                                       |
|                                 | <b>Keywords:</b> Link                                                                                                                                                                                                                                                        |
|                                 | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                                                                                                                     |
|                                 | <b>Fixed in Release:</b> 20.25.6000                                                                                                                                                                                                                                          |
| 1778837                         | <b>Description:</b> When using a copper splitter cable up to 2m length in HDR100 mode, traffic may drop.                                                                                                                                                                     |
|                                 | <b>Keywords:</b> Cables, HDR100                                                                                                                                                                                                                                              |
|                                 | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                                                                                                                     |
|                                 | <b>Fixed in Release:</b> 20.25.6000                                                                                                                                                                                                                                          |
| 1723236/<br>1718645/<br>1710631 | <b>Description:</b> On rare occasions, HDR link may not raise properly due to temperature changes.                                                                                                                                                                           |
|                                 | <b>Keywords:</b> HDR link                                                                                                                                                                                                                                                    |
|                                 | <b>Discovered in Version:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                              |
|                                 | <b>Fixed in Release:</b> 20.25.6000                                                                                                                                                                                                                                          |
| 1775228                         | <b>Description:</b> In a rare scenario when the driver is executing the "2err" command and the QP is in SQ drain state, the firmware might post event of broken WQ instead of sending error CQEs on all the WQEs.                                                            |
|                                 | <b>Keywords:</b> QP, WQE, CQE                                                                                                                                                                                                                                                |
|                                 | <b>Discovered in Version:</b> 20.25.2006                                                                                                                                                                                                                                     |
|                                 | <b>Fixed in Release:</b> 20.25.6000                                                                                                                                                                                                                                          |
| 1771921                         | <b>Description:</b> Fixed an issue that prevented users with non-port owner privilege from using the read DCBX access registry key REGID_DCBX_APP/REGID_DCBX_PARAM.                                                                                                          |
|                                 | <b>Keywords:</b> DCBX                                                                                                                                                                                                                                                        |
|                                 | <b>Discovered in Version:</b> 20.24.4010 [Beta]                                                                                                                                                                                                                              |
|                                 | <b>Fixed in Release:</b> 20.25.2006                                                                                                                                                                                                                                          |
| 1707075                         | <b>Description:</b> When connected to a Switch-IB or Switch-IB 2 based switch system using HDR cables, link may become stuck during polling.                                                                                                                                 |
|                                 | <b>Keywords:</b> Switch-IB, Switch-IB2, Link, HDR Cable                                                                                                                                                                                                                      |
|                                 | <b>Discovered in Version:</b> 20.24.4010 [Beta]                                                                                                                                                                                                                              |
|                                 | <b>Fixed in Release:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                                   |
| 1608206                         | <b>Description:</b> Fixed an issue that resulted in out-of-order packet transmission due to an internal bypass race.                                                                                                                                                         |
|                                 | <b>Keywords:</b> Packet transmission                                                                                                                                                                                                                                         |
|                                 | <b>Discovered in Version:</b> 20.24.4010 [Beta]                                                                                                                                                                                                                              |
|                                 | <b>Fixed in Release:</b> 20.25.1500 [Beta]                                                                                                                                                                                                                                   |

**Table 22 - Bug Fixes History**

| Internal Ref. | Issue                                                                                                                                                                                           |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1615586       | <b>Description:</b> Fixed a rare issue that caused the QP to falsely transition into the error state as a result of handling duplicate read/atomic request followed by memory key invalidation. |
|               | <b>Keywords:</b> CQE                                                                                                                                                                            |
|               | <b>Discovered in Version:</b> 20.24.4010 [Beta]                                                                                                                                                 |
|               | <b>Fixed in Release:</b> 20.25.1500 [Beta]                                                                                                                                                      |

## 5 Firmware Changes and New Feature History

**Table 23 - Firmware Changes and New Feature History (Sheet 1 of 2)**

| Feature/Change                                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Rev. 20.25.7020</b>                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Physical Layer Retransmission (PLR)</b>              | Added support to the Physical Layer Retransmission (PLR) functionality for HDR speed.                                                                                                                                                                                                                                                                                                                                          |
| <b>Link Speed</b>                                       | Link-up time improvements. The link up time is up to 60 sec                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Bug Fixes</b>                                        | See <a href="#">Section 4, “Bug Fixes History”, on page 26</a>                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Rev. 20.25.6000</b>                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Software Managed Steering Tables</b>                 | Added support for creating software managed steering tables in eSwitch/FDB.                                                                                                                                                                                                                                                                                                                                                    |
| <b>Bug Fixes</b>                                        | See <a href="#">Section 4, “Bug Fixes History”, on page 26</a>                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Rev. 20.25.2006</b>                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>General</b>                                          | HDR speed rate is at GA level.                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Zero-Touch-RoCE Counters</b>                         | Zero-Touch-RoCE counters are now available to the user for debuggability purposes when using the Zero-Touch-RoCE feature.                                                                                                                                                                                                                                                                                                      |
| <b>Bug Fixes</b>                                        | See <a href="#">Section 4, “Bug Fixes History”, on page 26</a>                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Rev. 20.25.1500 [Beta]</b>                           |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>General</b>                                          | <p>This is the initial firmware version of Mellanox ConnectX-6 adapter cards at the following speed rates and development stages:</p> <ul style="list-style-type: none"> <li>When using it as <b>InfiniBand</b>, at HDR speed rate, <b>HDR is at Beta level</b></li> <li>When using it as <b>Ethernet</b>, at 100GbE speed rate, 100GbE works only in ‘Force mode’. <b>100GbE is at Alpha level</b></li> </ul>                 |
| <b>Immediate Responder Not Ready (RNR)</b>              | <p>The switch sends an RNR with T=0x1 when a limited packet is dropped. This might occur after a specific timer to prevent retransmission due to no response or when the buffer is released.</p> <p>Immediate Responder Not Ready (RNR) enables the hardware to re-send the packet immediately, to allow the senders to sync.</p>                                                                                              |
| <b>VSC Security</b>                                     | VSC security includes the mechanisms which will prevent a reasonable host from affecting other hosts from using VSC.                                                                                                                                                                                                                                                                                                           |
| <b>Extended Responder Not Ready (RNR)</b>               | Enabled Responder Not Ready (RNR) configuration. Now the number of RNRs can be set higher than 6 and lower than indefinite.                                                                                                                                                                                                                                                                                                    |
| <b>ODP support for SRQ &amp; XRC</b>                    | <p>Added support for send opcode operations targeting a SRQ/RMP with the receive WQEs using ODP memory. In case the receive WQE receives an ODP, the device will generate ODP notifications (EQE) and PFAULT will abort CQEs.</p> <p><b>Note:</b> It is recommended to prefetch the memory used by the receive WQEs to reduce ODP occurrence as these have significant latencies and will cause a performance degradation.</p> |
| <b>Auto-Sensing when using 25/10GbE Optical Modules</b> | This new capability accelerates the network to auto-sense the port speed and use it when using a 25/10GbE optical module. Meaning, if the used module is 25GbE but the port is a 10GbE port, the speed used for that network will be 10GbE.                                                                                                                                                                                    |
| <b>mlxconfig</b>                                        | Renamed the BOOT_RETRY_CNT1 parameter to BOOT_RETRY_CNT.                                                                                                                                                                                                                                                                                                                                                                       |

**Table 23 - Firmware Changes and New Feature History (Sheet 2 of 2)**

| Feature/Change                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Reduced Firmware Upgrade Time</b> | <p>Reduced firmware upgrade time using mlxfwreset tool to ~3 seconds. Using this capability requires enabling PARTIAL_RESET_EN in mlxconfig and using MFT version 4.12.0 and up. The “PARTIAL” refers to not resetting the port modules (which is not mandatory for firmware upgrades).</p> <p><b>Note:</b> Currently this capability only supports firmware upgrade and downgrades to firmware versions newer than XX.25.1020.</p> |
| <b>Bug Fixes</b>                     | See <a href="#">Section 4, “Bug Fixes History”</a> , on page 26                                                                                                                                                                                                                                                                                                                                                                     |

## 6 PreBoot Drivers (FlexBoot/UEFI)

### 6.1 FlexBoot Changes and New Features

For further information, please refer to FlexBoot Release Notes

<https://docs.mellanox.com> --> Software --> Firmware Management --> PreBoot Drivers (FlexBoot/UEFI)

### 6.2 UEFI Changes and Major New Features

For further information, please refer to UEFI Release Notes

<https://docs.mellanox.com> --> Software > Firmware Management --> PreBoot Drivers (FlexBoot/UEFI)

## 7 Unsupported Features and Commands

### 7.1 Unsupported Features

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

**Table 24 - Unsupported Features**

| Feature                                                                                                                                    | ConnectX-6 |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------|
| The following service types: <ul style="list-style-type: none"> <li>• SyncUMR</li> <li>• Mellanox transport</li> <li>• RAW IPv6</li> </ul> | No         |
| INT-A not supported for EQs only MSI-X                                                                                                     | No         |
| PCI VPD write flow (RO flow supported)                                                                                                     | No         |
| Streaming Receive Queue (STRQ) and collapsed CQ                                                                                            | No         |
| Subnet Manager (SM) on VFs                                                                                                                 | No         |
| RoCE LAG in Multi-Host/Socket-Direct                                                                                                       | No         |

### 7.2 Unsupported Commands

- QUERY\_MAD\_DEMUX
- SET\_MAD\_DEMUX
- CREATE\_RQ - MEMORY\_RQ\_RMP
- MODIFY\_LAG\_ASYNC\_EVENT

## 8 Supported Non-Volatile Configurations

**Table 25 - Supported Non-Volatile Configurations**

| Configuration             | mlxconfig Parameter Name          | Class             | TLV ID |
|---------------------------|-----------------------------------|-------------------|--------|
| NV_MEMIC_CONF             | MEMIC_BAR_SIZE                    | GLOBAL (0)        | 0x6    |
|                           | MEMIC_SIZE_LIMIT                  |                   |        |
| NV_HOST_CHAINING_CONF     | HOST_CHAINING_MODE                |                   | 0x8    |
|                           | HOST_CHAINING_DESCRIPTOR          |                   |        |
|                           | HOST_CHAINING_TOTAL_BUFFER_SIZE   |                   |        |
| NV_FLEX_PARS_CONF         | FLEX_PARSER_PROFILE_ENABLE        |                   | 0xe    |
|                           | FLEX_IPV4_OVER_VXLAN_PORT         |                   |        |
| NV_ROCE_1_5_CONF          | ROCE_NEXT_PROTOCOL                |                   | 0x10   |
| NV_INTERNAL_RESOURCE_CONF | ESWITCH_HAIRPIN_DESCRIPTOR        |                   | 0x13   |
|                           | ESWITCH_HAIRPIN_TOTAL_BUFFER_SIZE |                   |        |
| NV_GLOBAL_PCI_CONF        | NON_PREFETCHABLE_PF_BAR           |                   | 0x80   |
|                           | NUM_OF_VFS                        |                   |        |
|                           | SRIOV_EN                          |                   |        |
|                           | PF_LOG_BAR_SIZE                   |                   |        |
|                           | VF_LOG_BAR_SIZE                   |                   |        |
|                           | NUM_PF_MSIX                       |                   |        |
|                           | NUM_VF_MSIX                       |                   |        |
| NV_TPT_CONF               | INT_LOG_MAX_PAYLOAD_SIZE          |                   | 0x82   |
| NV_POWER_CONF             | SW_RECOVERY_ON_ERRORS             |                   | 0x88   |
|                           | RESET_WITH_HOST_ON_ERRORS         |                   |        |
|                           | ADVANCED_POWER_SETTINGS           |                   |        |
| NV_SW_OFFLOAD_CONFIG      | CQE_COMPRESSION                   |                   | 0x10a  |
|                           | IP_OVER_VXLAN_EN                  |                   |        |
|                           | PCI_ATOMIC_MODE                   |                   |        |
|                           | LRO_LOG_TIMEOUT0                  |                   |        |
|                           | LRO_LOG_TIMEOUT1                  |                   |        |
|                           | LRO_LOG_TIMEOUT2                  |                   |        |
|                           | LRO_LOG_TIMEOUT3                  |                   |        |
| NV_IB_DC_CONF             | LOG_DCR_HASH_TABLE_SIZE           |                   | 0x190  |
|                           | DCR_LIFO_SIZE                     |                   |        |
| NV_VPI_LINK_TYPE          | LINK_TYPE                         | PHYSICAL_PORT (2) | 0x12   |

**Table 25 - Supported Non-Volatile Configurations**

| Configuration   | mlxconfig Parameter Name      | Class             | TLV ID |
|-----------------|-------------------------------|-------------------|--------|
| NV_ROCE_CC      | ROCE_CC_PRIO_MASK             | PHYSICAL_PORT (2) | 0x107  |
|                 | ROCE_CC_ALGORITHM             |                   |        |
| NV_ROCE_CC_ECN  | CLAMP_TGT_RATE_AFTER_TIME_INC |                   | 0x108  |
|                 | CLAMP_TGT_RATE                |                   |        |
|                 | RPG_TIME_RESET                |                   |        |
|                 | RPG_BYTE_RESET                |                   |        |
|                 | RPG_THRESHOLD                 |                   |        |
|                 | RPG_MAX_RATE                  |                   |        |
|                 | RPG_AI_RATE                   |                   |        |
|                 | RPG_HAI_RATE                  |                   |        |
|                 | RPG_GD                        |                   |        |
|                 | RPG_MIN_DEC_FAC               |                   |        |
|                 | RPG_MIN_RATE                  |                   |        |
|                 | RATE_TO_SET_ON_FIRST_CNP      |                   |        |
|                 | DCE_TCP_G                     |                   |        |
|                 | DCE_TCP_RTT                   |                   |        |
|                 | RATE_REDUCE_MONITOR_PERIOD    |                   |        |
|                 | INITIAL_ALPHA_VALUE           |                   |        |
|                 | MIN_TIME_BETWEEN_CNPS         |                   |        |
|                 | CNP_802P_PRIO                 |                   |        |
|                 | CNP_DSCP                      |                   |        |
| NV_LLDP_NB_CONF | LLDP_NB_DCBX                  |                   | 0x10a  |
|                 | LLDP_NB_RX_MODE               |                   |        |
|                 | LLDP_NB_TX_MODE               |                   |        |
| NV_LLDP_NB_DCBX | DCBX_IEEE                     |                   | 0x18e  |
|                 | DCBX_CEE                      |                   |        |
|                 | DCBX_WILLING                  |                   |        |
| NV_KEEP_LINK_UP | KEEP_ETH_LINK_UP              |                   | 0x190  |
|                 | KEEP_IB_LINK_UP               |                   |        |
|                 | KEEP_LINK_UP_ON_BOOT          |                   |        |
|                 | KEEP_LINK_UP_ON_STANDBY       |                   |        |
| NV_QOS_CONF     | NUM_OF_VL                     |                   | 0x192  |
|                 | NUM_OF_TC                     |                   |        |
|                 | NUM_OF_PFC                    |                   |        |
| NV_MPFS_CONF    | DUP_MAC_ACTION                | PHYSICAL_PORT (2) | 0x196  |
|                 | SRIOV_IB_ROUTING_MODE         |                   |        |
|                 | IB_ROUTING_MODE               |                   |        |

**Table 25 - Supported Non-Volatile Configurations**

| Configuration           | mlxconfig Parameter Name | Class             | TLV ID |
|-------------------------|--------------------------|-------------------|--------|
| NV_HCA_CONF             | PCI_WR_ORDERING          | HOST-FUNCTION (3) | 0x112  |
|                         | MULTI_PORT_VHCA_EN       |                   |        |
| NV_EXTERNAL_PORT_CTRL   | PORT_OWNER               |                   | 0x192  |
|                         | ALLOW_RD_COUNTERS        |                   |        |
|                         | RENEG_ON_CHANGE          |                   |        |
|                         | TRACER_ENABLE            |                   |        |
| NV_ROM_BOOT_CONF2       | IP_VER                   |                   | 0x195  |
|                         | BOOT_UNDI_NETWORK_WAIT   |                   |        |
| NV_ROM_UEFI_CONF        | UEFI_HII_EN              |                   | 0x196  |
| NV_ROM_UEFI_DEBUG_LEVEL | BOOT_DBG_LOG             |                   | 0x206  |
|                         | UEFI_LOGS                |                   |        |
| NV_ROM_BOOT_CONF1       | BOOT_VLAN                |                   | 0x221  |
|                         | LEGACY_BOOT_PROTOCOL     |                   |        |
|                         | BOOT_RETRY_CNT           |                   |        |
|                         | BOOT_LACP_DIS            |                   |        |
|                         | BOOT_VLAN_EN             |                   |        |
| NV_ROM_IB_BOOT_CONF     | BOOT_PKEY                |                   | 0x222  |
| NV_PCI_CONF             | ADVANCED_PCI_SETTINGS    | HOST (7)          | 0x80   |
| SAFE_MODE_CONF          | SAFE_MODE_THRESHOLD      |                   | 0x82   |
|                         | SAFE_MODE_ENABLE         |                   |        |