NVIDIA Mellanox ConnectX-4 Lx Adapter Cards Firmware Release Notes v14.27.6122

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Release Notes Update History

Revision	Date	Description
14.27.6122	August 18, 2020	Initial release of this Release Notes version, This version introduces Bug Fixes.

Overview

Firmware which is added at the time of manufacturing, is used to run user programs on the device and can be thought of as the software that allows hardware to run. Embedded firmware is used to control the functions of various hardware devices and systems, much like a computer's operating system (OS) controls the function of software applications. Firmware may be written into read-only memory (ROM), erasable programmable read-only memory (EPROM) or flash memory.

Firmware Download

Please visit www.mellanox.com → Support & Education → Firmware Download

Document Revision History

A list of the changes made to this document are provided in Document Revision History.

Firmware Compatible Products

These are the release notes for the NVIDIA® Mellanox ConnectX®-4 Lx adapters firmware Rev 14.27.6122. This firmware supports the following protocols:

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

Supported Devices

This firmware supports the devices and protocols listed below:

Device Part Number	PSID	Device Name
0WCHFY	DEL0000000002	Mellanox ConnectX®-4 LX Dual Port 25 GbE KR Mezzanine Card
020NJD / 0MRT0D	DEL2420110034	Mellanox 25GBE 2P ConnectX-4 Lx Adapter
0R887V	DEL2810000034	MCX422A-ACAA ConnectX-4 Lx EN Dual Port SFP28; 25GbE for Dell rack NDC

Supported Mellanox 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.

Validated and Supported 1GbE Cables

Speed	Cable OPN	Description
1GE	MC3208011-SX	Mellanox® Optical module, ETH 1GbE, 1Gb/s, SFP, LC-LC, SX 850nm, up to 500m
1GE	MC3208411-T	Mellanox® module, ETH 1GbE, 1Gb/s, SFP, Base-T, up to 100m

Validated and Supported 10GbE Cables

Speed	Cable OPN	Description
10GE	MFM1T02A-LR	Mellanox® SFP+ optical module for 10GBASE-LR
10GE	MFM1T02A-SR	Mellanox® SFP+ optical module for 10GBASE-SR
10GE	MAM1Q00A-QSA	Mellanox® cable module, ETH 10GbE, 40Gb/s to 10Gb/s, QSFP to SFP+
10GE	MC2309124-005	Mellanox® passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 5m

Speed	Cable OPN	Description
10GE	MC2309124-007	Mellanox® passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 7m
10GE	MC2309130-001	Mellanox® passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 1m
10GE	MC2309130-002	Mellanox® passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 2m
10GE	MC2309130-003	Mellanox® passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 3m
10GE	MC2309130-00A	Mellanox® passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 0.5m
10GE	MC3309124-004	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 4m
10GE	MC3309124-005	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 5m
10GE	MC3309124-006	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 6m
10GE	MC3309124-007	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 7m
10GE	MC3309130-001	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m
10GE	MC3309130-002	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m
10GE	MC3309130-003	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m
10GE	MC3309130-00A	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 0.5m
10GE	MC3309130-0A1	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1.5m
10GE	MC3309130-0A2	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2.5m
10GE	MCP2100-X001B	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m, Blue Pulltab, Connector Label
10GE	MCP2100-X002B	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m, Blue Pulltab, Connector Label
10GE	MCP2100-X003B	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m, Blue Pulltab, Connector Label
10GE	MCP2101-X001B	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m, Green Pulltab, Connector Label
10GE	MCP2104-X001B	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m, Black Pulltab, Connector Label
10GE	MCP2104-X002B	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m, Black Pulltab, Connector Label
10GE	MCP2104-X003B	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m, Black Pulltab, Connector Label

Speed	Cable OPN	Description
10GE	MCP2104-X01AB	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1.5m, Black Pulltab, Connector Label
10GE	MCP2104-X02AB	Mellanox® passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2.5m, Black Pulltab, Connector Label

Validated and Supported 25GbE Cables

⚠ The 25GbE cables can be supported only when connected to the MAM1Q00A-QSA28 module.

Speed	Cable OPN	Description
25GE	MAM1Q00A-QSA28	Mellanox® cable module, ETH 25GbE, 100Gb/s to 25Gb/s, QSFP28 to SFP28
25GE	MCP2M00-A001	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1m, 30AWG
25GE	MCP2M00-A001E30N	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1m, Black, 30AWG, CA-N
25GE	MCP2M00-A002	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m, 30AWG
25GE	MCP2M00-A002E30N	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m, Black, 30AWG, CA-N
25GE	MCP2M00-A003E26N	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 3m, Black, 26AWG, CA-N
25GE	MCP2M00-A003E30L	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 3m, Black, 30AWG, CA-L
25GE	MCP2M00-A004E26L	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 4m, Black, 26AWG, CA-L
25GE	MCP2M00-A005E26L	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 5m, Black, 26AWG, CA-L
25GE	MCP2M00-A00A	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 0.5m, 30AWG
25GE	MCP2M00-A00AE30N	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 0.5m, Black, 30AWG, CA-N
25GE	MCP2M00-A01AE30N	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1.5m, Black, 30AWG, CA-N
25GE	MCP2M00-A02AE26N	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2.5m, Black, 26AWG, CA-N
25GE	MCP2M00-A02AE30L	Mellanox® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2.5m, Black, 30AWG, CA-L
25GE	MFA2P10-A003	Mellanox® active optical cable 25GbE, SFP28, 3m
25GE	MFA2P10-A005	Mellanox® active optical cable 25GbE, SFP28, 5m
25GE	MFA2P10-A007	Mellanox® active optical cable 25GbE, SFP28, 7m
25GE	MFA2P10-A010	Mellanox® active optical cable 25GbE, SFP28, 10m

Speed	Cable OPN	Description
25GE	MFA2P10-A015	Mellanox® active optical cable 25GbE, SFP28, 15m
25GE	MFA2P10-A020	Mellanox® active optical cable 25GbE, SFP28, 20m
25GE	MFA2P10-A030	Mellanox® active optical cable 25GbE, SFP28, 30m
25GE	MFA2P10-A050	Mellanox® active optical cable 25GbE, SFP28, 50m
25GE	MMA2P00-AS	Mellanox® transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, up to 100m

Validated and Supported 40GbE Cables

Speed	Cable OPN	Description
40GE	MC2206128-004	Mellanox® passive copper cable, VPI, up to 40Gb/s, QSFP, 4m
40GE	MC2206128-005	Mellanox® passive copper cable, VPI, up to 40Gb/s, QSFP, 5m
40GE	MC2206130-001	Mellanox® passive copper cable, VPI, up to 40Gb/s, QSFP, 1m
40GE	MC2206130-002	Mellanox® passive copper cable, VPI, up to 40Gb/s, QSFP, 2m
40GE	MC2206130-003	Mellanox® passive copper cable, VPI, up to 40Gb/s, QSFP, 3m
40GE	MC2206130-00A	Mellanox® passive copper cable, VPI, up to 40Gb/s, QSFP, 0.5m
40GE	MC2210126-004	Mellanox® passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 4m
40GE	MC2210126-005	Mellanox® passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 5m
40GE	MC2210128-003	Mellanox® passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 3m
40GE	MC2210130-001	Mellanox® passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 1m
40GE	MC2210130-002	Mellanox® passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 2m
40GE	MC2210310-003	Mellanox® active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 3m
40GE	MC2210310-005	Mellanox® active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 5m
40GE	MC2210310-010	Mellanox® active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 10m
40GE	MC2210310-015	Mellanox® active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 15m
40GE	MC2210310-020	Mellanox® active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 20m

Speed	Cable OPN	Description
40GE	MC2210310-030	Mellanox® active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 30m
40GE	MC2210310-050	Mellanox® active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 50m
40GE	MC2210310-100	Mellanox® active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 100m
40GE	MC2210411-SR4E	Mellanox® optical module, 40Gb/s, QSFP, MPO, 850nm, up to 300m
40GE	MC2609125-005	Mellanox® passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 5m
40GE	MC2609130-001	Mellanox® passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 1m
40GE	MC2609130-003	Mellanox® passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 3m
40GE	MCP1700-B001E	Mellanox® passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 1m, Black Pulltab
40GE	MCP1700-B002E	Mellanox® passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 2m, Black Pulltab
40GE	MCP1700-B003E	Mellanox® passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 3m, Black Pulltab
40GE	MCP1700-B01AE	Mellanox® passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 1.5m, Black Pulltab
40GE	MCP1700-B02AE	Mellanox® passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 2.5m, Black Pulltab
40GE	MMA1B00-B150D	Mellanox® transceiver, 40GbE, QSFP+, MPO, 850nm, SR4, up to 150m, DDMI

Validated and Supported 56GbE Cables

Speed	Cable OPN	Description
56GE	MC2207126-004	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 4m
56GE	MC2207128-003	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 3m
56GE	MC2207128-0A2	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 2.5m
56GE	MC2207130-001	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 1m
56GE	MC2207130-002	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 2m
56GE	MC2207130-00A	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 0.5m
56GE	MC2207130-0A1	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 1.5m

Speed	Cable OPN	Description
56GE	MC220731V-003	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 3m
56GE	MC220731V-005	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 5m
56GE	MC220731V-010	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 10m
56GE	MC220731V-015	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 15m
56GE	MC220731V-020	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 20m
56GE	MC220731V-025	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 25m
56GE	MC220731V-030	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 30m
56GE	MC220731V-040	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 40m
56GE	MC220731V-050	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 50m
56GE	MC220731V-075	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 75m
56GE	MC220731V-100	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 100m
56GE	MCP1700-F001C	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 1m, Red Pulltab
56GE	MCP1700-F001D	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 1m, Yellow Pulltab
56GE	MCP1700-F002C	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 2m, Red Pulltab
56GE	MCP1700-F002D	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 2m, Yellow Pulltab
56GE	MCP1700-F003C	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 3m, Red Pulltab
56GE	MCP1700-F003D	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 3m, Yellow Pulltab
56GE	MCP170L-F001	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 1m
56GE	MCP170L-F002	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 2m
56GE	MCP170L-F003	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 3m
56GE	MCP170L-F00A	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 0.5m
56GE	MCP170L-F01A	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 1.5m

Validated and Supported 100GbE Cables

Speed	Cable OPN	Description
100GE	MCP7F00-A001R	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs, 1m, 30AWG
100GE	MCP7F00-A001R30N	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 1m, Colored, 30AWG, CA-N
100GE	MCP7F00-A002R	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs, 2m, 30AWG
100GE	MCP7F00-A002R30N	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2m, Colored, 30AWG, CA-N
100GE	MCP7F00-A003R26N	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m, Colored, 26AWG, CA-N
100GE	MCP7F00-A003R30L	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m, Colored, 30AWG, CA-L
100GE	MCP7F00-A005R26L	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 5m, Colored, 26AWG, CA-L
100GE	MCP7F00-A01AR	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs,1.5m, 30AWG
100GE	MCP7F00-A01AR30N	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 1.5m, Colored, 30AWG, CA-N
100GE	MCP7F00-A02AR26N	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, Colored, 26AWG, CA-N
100GE	MCP7F00-A02AR30L	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, Colored, 30AWG, CA-L
100GE	MCP7F00-A02ARLZ	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, LSZH, Colored, 28AWG
100GE	MCP7F00-A03AR26L	Mellanox® passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3.5m, Colored, 26AWG, CA-L
100GE	MCP7H00-G001	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 1m, 30AWG
100GE	MCP7H00-G001R	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 1m, 30AWG
100GE	MCP7H00-G001R30N	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 1m, Colored, 30AWG, CA-N
100GE	MCP7H00-G002R	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 2m, 30AWG

Speed	Cable OPN	Description
100GE	MCP7H00-G002R30N	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2m, Colored, 30AWG, CA-N
100GE	MCP7H00-G003R	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 3m, 28AWG
100GE	MCP7H00-G003R26N	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 3m, Colored, 26AWG, CA-N
100GE	MCP7H00-G003R30L	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 3m, Colored, 30AWG, CA-L
100GE	MCP7H00-G004R26L	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 4m, Colored, 26AWG, CA-L
100GE	MCP7H00-G01AR	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 1.5m, 30AWG
100GE	MCP7H00-G01AR30N	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 1.5m, Colored, 30AWG, CA-N
100GE	MCP7H00-G02AR	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 2.5m, 30AWG
100GE	MCP7H00-G02AR26N	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2.5m, Colored, 26AWG, CA-N
100GE	MCP7H00-G02AR30L	Mellanox® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2.5m, Colored, 30AWG, CA-L
100GE	MFA7A20-C003	Mellanox® active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 3m
100GE	MFA7A20-C005	Mellanox® active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 5m
100GE	MFA7A20-C010	Mellanox® active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 10m
100GE	MFA7A20-C020	Mellanox® active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 20m
100GE	MFA7A50-C003	Mellanox® active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m
100GE	MFA7A50-C005	Mellanox® active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 5m
100GE	MFA7A50-C010	Mellanox® active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 10m
100GE	MFA7A50-C015	Mellanox® active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 15m

Speed	Cable OPN	Description
100GE	MFA7A50-C020	Mellanox® active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 20m
100GE	MFA7A50-C030	Mellanox® active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 30m

Supported 3rd Party Cables and Modules

Speed	Cable OPN	Description
10GbE	74752-9096	Dell Active DAC SFP+, Cisco PN SFP-H10GB-CU5M, Molex PN 74752-9096
10GbE	74752-9096 (SFP-H10GB-SU5M)	Cisco-Molex INC Active DAC SFP+ 5m
10GbE	74752-9521	CISCO-MOLEX SFP28/SFP+ 10G Passive copper cable
10GbE	74752-9521 (SFP-H10GB-CU5M)	Cisco 10GBASE SFP+ modules
10GbE	BN-QS-SP-CBL-5M	40G QSFP+ to 4xSFP+ DAC Breakout Direct Attach Cable 5m
10GbE	BN-QS-SP-CBL-5M	40G QSFP+ to 4xSFP+ DAC Breakout Direct Attach Cable 5m
10GbE	CAB-SFP-SFP-1M	Arista 10GBASE-CR SFP+ Cable 1 Meter
10GbE	CAB-SFP-SFP-1M	Arista Compatible 10G SFP+ Passive Cable 1m
10GbE	CAB-SFP-SFP-3M	Arista 10GBASE-CR SFP+ Cable 3 Meter
10GbE	CAB-SFP-SFP-5M	Arista 10GBASE-CR SFP+ Cable 5 Meter
10GbE	CAB-SFP-SFP-5M	Arista Compatible 10G SFP+ Passive Cable 5m
10GbE	FTLX1471D3BCL-ME	10GBASE-LR SFP+ 1310nm 10km DOM Transceiver Module
10GbE	FTLX1471D3BCL-ME	10GBASE-LR SFP+ 1310nm 10km DOM Transceiver Module
10GbE	FTLX8570D3BCL-C2	Cisco FET-10G 10-2566-02 FTLX8570D3BCL-C2 10Gbps Fabric Extender SFP+ Module
10GbE	FTLX8571D3BCL-ME	10gb SFP 850nm Optic Transceiver
10GbE	L45593-D178-B50	QSFP-4SFP10G-CU5M
10GbE	SFP-10G-SR	Cisco 10GBASE-SR SFP+ transceiver module for MMF, 850-nm wavelength, LC duplex connector
10GbE	SFP-H10GB-CU1M	Cisco 1-m 10G SFP+ Twinax cable assembly, passive
10GbE	SFP-H10GB-CU3M	Cisco 3-m 10G SFP+ Twinax cable assembly, passive
10GbE	SFP-H10GB-CU5M	Cisco 5-m 10G SFP+ Twinax cable assembly, passive
25GbE	FTLF8536P4BCL	TRANSCEIVER 25GBE SFP SR
25GbE	LTF8507-PC07	HISENSE ACTIVE FIBER CABLE, 25GBE

Speed	Cable OPN	Description
25GbE	SFP-H25G-CU3M	CISCO 25GBASE-CR1 COPPER CABLE 3-METER NDCCGJ-C403
40GbE	00D5811-N13445C	IBM Cable DAC 40GbE QSFP+ to QSFP+ Passive Copper 7m
40GbE	L45593-D108-D30	PASSIVE COPPER CABLE ETH 40GBE QSFP 3M
40GbE	L45593-D118-D10	QSFP-H40G-CU1M
40GbE	QSFP-40G-SR4	Cisco 40GBASE-SR4, 4 lanes, 850 nm MMF
40GbE	QSFP-40G-SR-BD	Cisco 40GBASE-SR-BiDi, duplex MMF
40GbE	QSFP-4SFP10G-CU5M	Cisco QSFP-4SFP10G-CU5M
40GbE	QSFP-H40G-ACU10M	Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 10-meter, active
40GbE	QSFP-H40G-AOC10M	Cisco 40GBase-AOC QSFP direct-attach Active Optical Cable, 10-meter
40GbE	QSFP-H40G-CU1M	Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 1-meter, passive
40GbE	QSFP-H40G-CU3M	Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 3-meter, passive
40GbE	QSFP-H40G-CU5M	Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 5-meter, passive
100GbE	10137498-2005LF	HPE 100GbE 2m copper cable
100GbE	10137498-2010LF	HPE 100GbE 4m copper cable
100GbE	CBL-00195-02	100GbE QSFP28 to QSFP28 copper cable 3M

Tested Switches

Tested 10/40GbE Switches

Speed	Switch Silicon	OPN # / Name	Description	Vendor
10GbE	N/A	5548UP	32x 10GbE SFP+ Switch System	Cisco
10/40GbE	N/A	7050Q	16 x 40GbE QSFP+ Switch System	Arista
10/40GbE	N/A	7050S	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Arista
10/40GbE	N/A	G8264	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Lenovo
10/40GbE	N/A	QFX3500	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Juniper

Speed	Switch Silicon	OPN # / Name	Description	Vendor
10/40GbE	N/A	S4810P-AC	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Force10
10/40GbE	N/A	3064	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Cisco
10/40GbE	N/A	8164F	48x 10GbE SFP+ and 2 x 40GbE QSFP+ Switch System	Dell
10/40GbE	N/A	S5000	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Dell
10/40GbE	N/A	3132Q	4x 10GbE SFP+ and 32 x 40GbE QSFP+ Switch System	Cisco
40GbE	N/A	7050QX	32x 40GbE QSFP+ Switch System	Arista
40GbE	N/A	G8316	16x 40GbE QSFP+ Switch System	Lenovo
40GbE	N/A	S6000	32x 40GbE QSFP+ Switch System	Dell

Tested 100GbE Switches

Speed	Switch Silicon	OPN # / Name	Description	Vendor
100GbE	Spectrum	MSN2410-XXXX	48-port 25GbE + 8-port 100GbE Open Ethernet Switch System	Mellanox
100GbE	Spectrum	MSN2700-XXXX	32-port Non-blocking 100GbE Open Ethernet Switch System	Mellanox
100GbE	Spectrum	MSN2740-XXXX	32-port Non-blocking 100GbE Open Ethernet Switch System	Mellanox
100GbE	N/A	QFX5200-32C-32	32-port 100GbE Ethernet Switch System	Juniper
100GbE	N/A	S6820-56HF	48 SFP+ + 8 QSFP Ports 100GbE Switch Ethernet	H3C
100GbE	N/A	CE6860-1-48S8CQ-EI	Huawei 100GbE Ethernet switch	Huawei
100GbE	N/A	7060CX-32S	32-port 100GbE Ethernet Switch System	Arista
100GbE	N/A	3232C	32-port 100GbE Ethernet Switch System	Cisco
100GbE	N/A	N9K-C9236C	36-port 100GbE Ethernet Switch System	Cisco
100GbE	N/A	93180YC-EX	48-port 25GbE + 6-port 100GbE Ethernet Switch System	Cisco

Speed	Switch Silicon	OPN # / Name	Description	Vendor
100GbE	N/A	T7032-IX7	32-port 100GbE Ethernet Switch System	Quanta

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 this firmware version:

	Supported Version
MLNX_OFED	5.0-1.0.0.0 / 4.7-3.2.9.0 / 4.7-1.0.0.1
MLNX_EN (MLNX_OFED based code)	5.0-1.0.0.0 / 4.7-3.2.9.0 / 4.7-1.0.0.1
WinOF-2	2.40.50000 / 2.30 / 2.20
MFT	4.14.0-105 / 4.13.3 / 4.13.0
MLNX-OS	3.8.2204
Onyx	3.8.2306
ConnectX-4 Lx Firmware	14.27.1016 / 14.26.1040 / 14.25.1020
ConnectX-4 Lx Firmware	14.26.1040 / 14.25.1020
Linux Inbox Drivers	• RH7.6 • Ubuntu 16.04.05
Windows Inbox Drivers	• Windows 2012 • Windows 2012 R2 • Windows 2016

Supported FlexBoot, UEFI

⚠ Please be aware that not all firmware binaries contain FlexBoot or UEFI, support may vary between cards. For further information see Supported Devices.

This firmware version is compiled with the following expansion ROMs and versions:

Expansion ROM	Supported Version
FlexBoot	3.5.901
UEFI	14.20.25

PRM Revision Compatibility

This firmware version 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.

Changes and New Features

Important Notes

- **Security Hardening Enhancements:** This release contains important reliability improvements and security hardening enhancements. Mellanox recommends upgrading your devices firmware to this release to improve the devices' firmware security and reliability.
- SR-IOV - Virtual Functions (VF) per Port - The maximum Virtual Functions (VF) per port is 127. For further information, see RoCE Limitations.

Changes and New Feature in this Firmware Version

Feature/Change	Description
14.27.6122	
Bug Fixes	See Bug Fixes.

Unsupported Features and Commands

Unsupported Features

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

- The following service types:
  - SyncUMR
  - Mellanox transport
  - RAW IPv6
- INT-A not supported for EQs only MSI-X
- PCI VPD write flow (RO flow supported)
- Streaming Receive Queue (STRQ) and collapsed CQ
- Subnet Manager (SM) on VFs
- RoCE LAG in Multi-Host/Socket-Direct
- DC in Multi-Host, SR-IOV, and Ethernet (RoCE)
- RoCE LAG for VFs
- Mutlihost Ethernet

Unsupported Commands

- QUERY_MAD_DEMUX
- SET_MAD_DEMUX
- CREATE_RQ - MEMORY_RQ_RMP
- MODIFY_LAG_ASYNC_EVENT

Bug Fixes in this Firmware Version

Bug Fixes History lists the bugs fixed in this release. For a list of old Bug Fixes, please see Bug Fixes History.

Internal Ref.	Issue
2247522	**Description:** Fixed a hardware arbitration issue that resulted in the card's unknown state during iDRAC communication.
	Keywords: iDRAC, hardware arbitration
	Discovered in Version: 14.27.6008
	Fixed in Release: 14.27.6122

Known Issues

> ⚠ This section includes history of known issues of 3 major releases back. For older releases history, please refer to the relevant firmware versions.

Ethernet Rate Limit per VF in RoCE Mode Limitations

Dual Port Device				Single Port Device	
w/o LAG (TOTAL_VFS>32)		With LAG (TOTAL_VFS<32)		w/o LAG	
w/o QoS	Full QoS	w/o QoS	Full QoS	w/o QoS	Full QoS
127	45	32	20	127	100

Ethernet Rate Limit per VF in InfiniBand Mode Limitations

Dual Port Device		Single Port Device	
w/o LAG		w/o LAG	
w/o QoS	Full QoS	w/o QoS	Full QoS
127	26	127	55

Known Issues

Internal Ref.	Issue
2071210	**Description:** mlxconfig query for the BOOT_INTERRUPT_DIS TLV shows a wrong value in the "current value" field.
	Workaround: Use "next boot" indication to see the right value.
	Keywords: mlxconfig
	Discovered in Version: 14.27.1016
1919403	**Description:** Hardware arbitration is currently disabled in OCP3.0 cards. It will be supported on future releases for the same hardware.
	Workaround: N/A
	Keywords: Hardware arbitration, OCP3.0
	Discovered in Version: 14.26.1040
1840289	**Description:** Since Packet Pacing enforce max_tc value is “1”, features that require multiple TCs will not be active when this mode is available.
	Workaround: N/A
	Keywords: Packet Pacing
	Discovered in Version: 14.26.1040

Internal Ref.	Issue
1796628	**Description:** Due to performance considerations, unicast loopback traffic will go through the NIC SX tables, and multicast loopback traffic will skip the NIC SX tables.
	Workaround: N/A
	Keywords: Performance, unicast loopback traffic, multicast loopback traffic
	Discovered in Version: 14.26.1040
1699214	**Description:** NODNIC VF is partially tested. It is fully tested only in ConnectX-5 adapter cards.
	Workaround: N/A
	Keywords: NODNIC VF
	Discovered in Version: 14.25.1020
1689186	**Description:** Changing priority to TC map during traffic might cause packet drops.
	Workaround: N/A
	Keywords: QoS
	Discovered in Version: 14.25.1020
1604699	**Description:** Ethernet RFC 2819 counter ether_stats_oversize_pkts and Ethernet IEEE 802.3 counter a_frame_too_long_errors share the same resource. Clearing each of them will affect the other.
	Workaround: N/A
	Keywords: Counters
	Discovered in Version: 14.25.1020
-	**Description:** In Ethernet mode, at 10/40GbE speeds, only NO-FEC in Force mode is supported. Other user configurations are overridden.
	Workaround: N/A
	Keywords: Ethernet, 10GbE, 40GbE, RS-FEC
	Discovered in Version: 14.25.1020
1498399	**Description:** 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).
	Workaround: N/A
	Keywords: XRC SRQ/RMP ODP
	Discovered in Version: 14.25.1020

Internal Ref.	Issue
1426283	**Description:** An mlxconfig configuration followed by the init 0 command might cause the HCA to remain in high power instead of entering the standby state. Such behavior will require a server reboot after running the mlxconfig tool.
	Workaround: N/A
	Keywords: mlxconfig
	Discovered in Version: 14.24.1000
1546401	**Description:** vport_tc and para_vport_tc are not supported in this version.
	Workaround: N/A
	Keywords: SR-IOV vport_tc and para_vport_tc
	Discovered in Version: 14.24.1000
1566930	**Description:** In case a faulty cable is inserted, (either power issue or I2C error), the traffic LED is turned OFF although it is expected to be ON. and the amber LED is blinking as expected.
	Workaround: N/A
	Keywords: Cables
	Discovered in Version: 14.24.1000
1546492	**Description:** Executing the update_lid command while the IB port sniffer utility is active can stop the utility.
	Workaround: N/A
	Keywords: IB Sniffer
	Discovered in Version: 14.24.1000
1537898	**Description:** Initializing a function while the IB port sniffer utility is active can stop the utility.
	Workaround: N/A
	Keywords: IB Sniffer
	Discovered in Version: 14.24.1000
1332714/1345824	**Description:** The maximum "read" size of MTRC_STDB is limited to 272 Bytes.
	Workaround: Set the MTRC_STDB.read_size to the maximum value of 0x110=272 Bytes
	Keywords: Access register, MTRC_STDB, tracer to dmesg, fwtrace to dmesg
	Discovered in Version: 14.23.1020

Internal Ref.	Issue
1408994	**Description:** FTE with both forward (FWD) and encapsulation (ENCAP) actions is not supported in the SX NIC Flow Table.
	Workaround: N/A
	Keywords: SX NIC Flow Table
	Discovered in Version: 14.23.1020
1350794	**Description:** Encapsulation / Decapsulation support in steering has the following limitations: • Encapsulation / Decapsulation can be open on the FDB only if all VFs are non active. • Encapsulation / Decapsulation supports single mode only: FDB / NIC. Opening tables of both types is not supported. • RoCE is supported only when no Encapsulation / Decapsulation is opened on the FDB. • Encapsulation / Decapsulation per device support: NIC FDB ConnectX-4 encap NO YES non-MH decap NO NO ConnectX-4 Lx encap NO YES non-MH decap NO YES ConnectX-5 encap YES YES decap YES YES
	Workaround: N/A
	Keywords: Steering Encapsulation / Decapsulation
	Discovered in Version: 14.23.1020
1027553	**Description:** While using e-switch vport sVLAN stripping, the RX steering values on the sVLAN might not be accurate.
	Workaround: N/A
	Keywords: e-sw vport sVLAN stripping, RX steering
	Discovered in Version: 14.24.1000
1799917	**Description:** Untagged CVLAN packets in the Steering Flow Tables do not match the SVLAN tagged packets.
	Workaround: N/A
	Keywords: Steering Flow Tables, CVLAN/SVLAN packets
	Discovered in Version: 14.23.1020

Internal Ref.	Issue
1355883	**Description:** Running the QUERY_VPORT_COUNTER command with clear bit results in discard counters being reset.
	Workaround: N/A
	Keywords: Discard counters
	Discovered in Version: 14.22.1002
1277762	**Description:** An Ethernet multicast loopback packet is not counted (even if it is not a local loopback packet) when running the nic_receive_steering_discard command.
	Workaround: N/A
	Keywords: Ethernet multicast loopback packet
	Discovered in Version: 14.22.1002
1047184	**Description:** RDMA resq_local_length_error and resp_remote_invalid_request counters do not function properly.
	Workaround: N/A
	Keywords: RDMA counters
	Discovered in Version: 14.21.1000
1168594	**Description:** RoCE Dual Port Mode (a.k.a Multi-Port vHCA: MPV) is not supported in Multi-Host setups.
	Workaround: N/A
	Keywords: Multi-Port vHCA, Multi-Host
	Discovered in Version: 14.21.1000

PreBoot Drivers (FlexBoot/UEFI)

FlexBoot Changes and New Features

For further information, please refer to the FlexBoot Release Notes.

UEFI Changes and Major New Features

For further information, please refer to the UEFI Release Notes.

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_DESCRIPTORS		
	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_DESCRIPTORS		0x13
	ESWITCH_HAIRPIN_TOT_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		

Configuration	mlxconfig Parameter Name	Class	TLV ID
	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
NV_ROCE_CC	ROCE_CC_PRIO_MASK		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		

Configuration	mlxconfig Parameter Name	Class	TLV ID
	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		0x196
	SRIOV_IB_ROUTING_MODE		
	IB_ROUTING_MODE		
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

Configuration	mlxconfig Parameter Name	Class	TLV ID
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		

Changes and New Feature History

⚠ This section includes history of changes and new feature of 3 major releases back. For older releases history, please refer to the relevant firmware versions.

Feature/Change	Description
14.27.6008	
Bug Fixes	See Bug Fixes.
14.27.4000	
Power Consumption	Added mlxconfig support for power reduction: • PCI CAP • AUTO_POWER_SAVE_LINK_DOWN
Resourcedump	Added the following segments, as appeared in the PRM, to the Resource Dump: • PRM_QUERY_QP • PRM_QUERY_CQ • PRM_QUERY_MKEY • QUERY_VNIC_ENV
Bug Fixes	See Bug Fixes.
14.27.2008	
Parallel VF init/Teardown Performance Optimization	Improved init_hca performance in Parallel Function initialization.
Bug Fixes	See Bug Fixes.
14.27.1016	
RoCE Selective Repeat	RoCE Selective Repeat introduces a new QP retransmission mode in RoCE: recovery from packet drop by resending the dropped packet and not only all the PSN window (Go-Back-N protocol), This new capability comes with the following limitations: • Selective repeat cannot be used with AR • Does not work with signature (T10-DIF) • Does not work with Tag Matching enabled
RedFish (RDE)	Allows BMC to query and control NIC over RedFish API (https://www.dmtf.org/standards/redfish). Currently, the NIC supports reading data and setting basic Ethernet and InfiniBand parameters.
ECMP with RoCE Traffic	Enables matching of source_vhca_port in the FDB flow for ECMP hardware offload on a single FDB.

Live Firmware Patch (LFWP)	Firmware can be patched with critical bugs fixes live with minimal serviceability impact. The patching can be down only within the same major branch.
Hardware Offloaded Rules (Resource Dump)	Added support for dumping hardware steering entries (raw data) using the resource dump API.
Link Down Counter	The `eth_link_down_counter` now counts logical link downs as well.
Bug Fixes	See Bug Fixes.
Rev. 14.26.4012	
Globally Disable RoCE through MST	Enables the user to globally disable RoCE on init by writing to the access register NCFG_REG.
Zero-Touch RoCE (ZTR) Slow Start	Enabled Zero-Touch RoCE (ZTR) slow start capability for responder flows.
Resource Dump	Extracts and prints data segments generated by the firmware.
Bug Fixes	See Bug Fixes History.
Rev. 14.26.2002	
Bug Fixes	This version included a bug fix for OPN MCX4621A-ACA. For further information see Bug Fixes History.
Rev. 14.26.1040	
ICMD and Diagnostic Counters	Enabled the firmware by using the ICMD commands to deal with diagnostic counters similar to cmdif. They can be called via the vsec space. The counters' values are returned only via the tracer. The ICMD Query Caps indicate support and expose the list of the supported counters.
User Context Object (DEVX)	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. The following functionalities are still managed by the Kernel: • Resource cleaning • UCTX stamping • Blocking the physical address and IRQ from these UCTX
DEVX Support for Asynchronous Events	Added support for reporting the supported affiliated and unaffiliated asynchronous events to DEVX users through the command interface.
Zero-Touch-RoCE Counters	Zero-Touch-RoCE counters are now available to the user for debuggability purposes when using the Zero-Touch-RoCE feature.
Security Hardening Enhancements	This release contains important reliability improvements and security hardening enhancements. Mellanox recommends upgrading your device firmware to this release to improve the device firmware security and reliability.
Bug Fixes	See Bug Fixes History.

Rev. 14.25.1020	
VSC Security	VSC security includes the mechanisms which will prevent a reasonable host from affecting other hosts from using VSC.
Zero Touch RoCE	Zero touch RoCE enables RoCE to operate on fabrics where no PFC nor ECN are configured. This makes RoCE configuration a breeze while still maintaining its superior high performance.
ODP support for SRQ & XRC	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. **Note:** 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.
Firmware Burning using DMA Pages	This new capability accelerates the firmware burning process by using Direct Memory Access (DMA) pages.
Auto-Sensing when using 25/10GbE Optical Modules	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.
Package ID	Enabled Package ID configuration using server strap according OCP 3.0.
DPDK UIO	This capability provides a solution for improving user space drivers development, generic user space IO device services.
mlxconfig	Renamed the BOOT_RETRY_CNT1 parameter to BOOT_RETRY_CNT.
Reduced Firmware Upgrade Time	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). **Note:** Currently this capability only supports firmware upgrade and downgrades to firmware versions newer than XX.25.1020.
Bug Fixes	See Bug Fixes History.
Rev. 14.24.1000	
Layer 3 Encapsulation	Added support for an additional layer (Layer 3) of packet processing at the hypervisor level that enables adding and removing protocol headers (e.g., the MAC address is removed during encapsulation, and added during decapsulation) for the encapsulated traffic.
e-switch Steering Rule	Enabled e-switch steering rule in the NIC without matching it with the Directional MACs (DMAC) protocol. Now the rule is only according to the MC/UC bit.

IB Sniffer Tool	The IB Sniffer utility provides the user the ability to capture the e- switch traffic directly to a hypervisor queue.
Transmission Histogram Counters	Added support for the transmission histogram counter set as part of the Ethernet extended group counters.
Events Generation by the Hardware upon Counter Incrementation	Enabled the hardware to generate an event upon counter incrementation, in order to reduce an overhead from the software from reading rarely updated counters such as error counters.
NODNIC Connectivity	Enables NOIDNIC connectivity to the network through the e-switch and not directly to the physical port.
QP and Mkey Values	Enabled setting the QP and the Mkey values by the software upon these resources creation.
PCIe Atomic	Enabled advanced PCIe atomic operations. The HCA will perform PCIe atomic operations as a requestor towards the host memory when receiving compatible atomic messages from the network, and according to the configuration of NV_SW_OFFLOAD_CONFIG pci_atomic_mode field and the PCI AtomicOp Requester Enable bit in the Device Control 2 register.
TIR Destination from the FDB	Enabled a single TIR destination from the FDB.
WRED	Changed the WRED default mode to OFF for Multi-Host adapter cards.
TX Steering Rule on in WQE Ethernet Segment	Added support for TX steering rule on flow_table_metadata in WQE Ethernet segment.
L3 Encapsulation/Decapsulation in the Reformat Context Allocation	Added L3 encapsulation/decapsulation support in the reformat context allocation. • L3 encapsulation removes L2 headers and adds generic L3 tunnel encapsulation. • L3 decapsulation removes the generic L3 tunnel decapsulation and L2 header.
Flow Steering Header Modification	Added support for flow steering header modification (header rewrite) for IPv4 TTL header for loopback traffic (VF-VF/VF-PF). **Note:** TTL modification for traffic from the network is currently not supported.
Teardown: Fast Mode	**[Developers only]** Moved the fast teardown HCA cap bit to offset 0x1c.4:1.
Virtual Functions/QoS	Enabled Virtual Functions to read QPDPM/QPDP/QPTS.
Message vs. Payload based flow control QP Configuration	Added support for requester QP packet based on E2E credits mode. The new flow control supports HCA-to-switch RDMA traffic packet-based End-2-End.
Multi PCI RDMA IB	This capability enables the user to expose two PCI/IB devices per network port.

Steering	Enabled a single TIR destination from the FDB. **Note:** TTL modification in the FDB for traffic from the network is currently not supported.
Bug Fixes	See Bug Fixes History.

Bug Fixes History

⚠ This section includes history of bug fixes of 3 major releases back. For older releases history, please refer to the relevant firmware versions.

Internal Ref.	Issue
2165169	**Description:** Added the option to use the unicast MAC from the NC-SI cmd Set MAC Address to establish OS to BMC passthrough.
	Keywords: OS to BMC passthrough
	Discovered in Version: 14.27.1016
	Fixed in Release: 14.27.6008
211746	**Description:** Fixed a firmware fatal assert that showed an IRISC HANG due to init_hca waiting on the timers flow lock release.
	Keywords: Firmware assert
	Discovered in Version: 14.27.1016
	Fixed in Release: 14.27.6008
1906153	**Description:** Fixed an issue that caused the sent packet to hang while the device entered FLR mode.
	Keywords: Driver fails to load; FLR stuck; packet hang
	Discovered in Version: 14.27.2008
	Fixed in Release: 14.27.4000
2108543	**Description:** Enabled Bar configuration bytewise by applying the write_en bitmask.
	Keywords: Bytewise BAR Programming
	Discovered in Version: 14.27.2008
	Fixed in Release: 14.27.4000
2126484	**Description:** Fixed a rare case where the the device hanged while running the sw reset flow under heavy stress and with many open resources.
	Keywords: sw reset
	Discovered in Version: 14.27.2008
	Fixed in Release: 14.27.4000

Internal Ref.	Issue
2119975	**Description:** Fixed low PXE performance while using the VSC to trigger the send_ring_doorbells.
	Keywords: NODNIC, DOORBELL
	Discovered in Version: 14.27.2008
	Fixed in Release: 14.27.4000
2135671	**Description:** Fixed an error that prevented the completions (CQ) from being completed due to a race condition in the firmware transport error handlers, and the error stressors, where the error stressors would hang the firmware transport error handler flow.
	Keywords: Error stressors; Transport flowl; driver timeout
	Discovered in Version: 14.27.2008
	Fixed in Release: 14.27.4000
2119135	**Description:** Fixed an issue that cause fragmented IP packets to drop.
	Keywords: Fragmented IP packet
	Discovered in Version: 14.27.2008
	Fixed in Release: 14.27.4000
2107103	**Description:** Fixed an issue that prevented the desched_threshold field from working properly.
	Keywords: DCQCN
	Discovered in Version: 14.27.1016
	Fixed in Release: Unable to render include or excerpt-include. Could not retrieve page.
2078455	**Description:** Fixed an issue that caused the device to perform DMA into memory already returned to the OS during the transition between the pre-boot driver to the OS driver.
	Keywords: Memory corruption
	Discovered in Version: 14.26.4012
	Fixed in Release: 14.27.1016
1949324	**Description:** Fixed an issue that caused the ZTR counters query to always return 0.
	Keywords: ZTR counters
	Discovered in Version: 14.26.4012
	Fixed in Release: 14.27.1016

Internal Ref.	Issue
1967171	**Description:** Fixed an issue that resulted in NC-SI bandwidth dropping to 20-40kBps with a high amount of package drops, in a network environment with high latency (over 110ms).
	Keywords: NC-SI bandwidth, high latency
	Discovered in Version: 14.26.4012
	Fixed in Release: 14.27.1016
2064453	**Description:** Fixed an issue that prevented the adapter card from going into the bypass mode when the BMC disabled the hardware arbitration.
	Keywords: BMC, hardware arbitration, bypass mode
	Discovered in Version: 14.26.4012
	Fixed in Release: 14.27.1016
2003634	**Description:** Fixed a performance degradation issue, and a high packet drop when SR-IOV was enabled and packets went through the FDB default behaviour.
	Keywords: SR-IOV, FDB, Packet drop
	Discovered in Version: 14.25.1020
	Fixed in Release: 14.27.1016
1938614	**Description:** Due to the string DB not being updated after Live-Patch, the tracer cannot function after Live-Patch.
	Keywords: Live-Patch, LFWP, mlxfwreset, strings
	Discovered in Version: 14.26.1040
	Fixed in Release: 14.27.1016
1993707	**Description:** Fixed a rare issue that caused other active functions to receive a malformed CQE during driver (PF or VF) unload or FLR flows.
	Keywords: Malformed CQE
	Discovered in Version: 14.25.1020
	Fixed in Release: 14.27.1016
2003563	**Description:** Fixed a rare issue that resulted in HCA hanging during an FLR flow while unloading the PreBoot driver.
	Keywords: FLR, PXE driver unload, HCA
	Discovered in Version: 14.25.1020
	Fixed in Release: 14.27.1016
1973826	**Description:** Fixed an issue that caused the firmware to hang when an FLR occurred at the same time as the teardown. As a result, the teardown flow took a lock, and never released it because it was being aborted by an FLR.

Internal Ref.	Issue
	Keywords: FLR, teardown
	Discovered in Version: 14.26.1040
	Fixed in Release: 14.27.1016
1995482	**Description:** Fixed an issue that resulted in dump file being corrupted when using resource dump to dump a WQ buffer with a size more than 2^16 bytes.
	Keywords: Resource Dump, resourcedump, mstresourcedump, WQ buffer
	Discovered in Version: 14.26.1040
	Fixed in Release: 14.26.4012
1955978	**Description:** Updated the firmware behavior to report PLDM version 1.1.0 regardless of whether Redfish is enabled or not.
	Keywords: PLDM, Redfish
	Discovered in Version: 14.26.1040
	Fixed in Release: 14.26.2002
1900730	**Description:** Enabled the option to prevent clock and capture CPLD GPIOs glitch upon firmware reset.
	Keywords: Thermal fault issue, mlxfwreset, firmware reset
	Discovered in Version: 14.26.1040
	Fixed in Release: 14.26.4012
1822787	**Description:** Fixed an issue that caused a function to misbehave when a PCIe TLP was set with a poisoned indication.
	Keywords: PCIe TLP
	Discovered in Version: 14.25.1020
	Fixed in Release: 14.26.1040
1801266	**Description:** Fixed a rare issue that resulted in "destroy mkey " command getting stuck when rebooting the hypervisor.
	Keywords: FLR
	Discovered in Version: 14.25.1020
	Fixed in Release: 14.26.1040
1753801	**Description:** In this release, the total firmware reset time is increased by 1 second.
	Keywords: Firmware reset
	Discovered in Version: 14.24.1020

Internal Ref.	Issue
	Fixed in Release: 14.25.6000
1771921	**Description:** 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.
	Keywords: DCBX
	Discovered in Version: 14.24.1000
	Fixed in Release: 14.25.1020
1615586	**Description:** 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.
	Keywords: CQE
	Discovered in Version: 14.24.1000
	Fixed in Release: 14.25.1020
1678824	**Description:** Fixed an issue that prevented the user to enable the port after disabling it in the VF NODNIC.
	Keywords: VF NODNIC
	Discovered in Version: 14.24.1000
	Fixed in Release: 14.25.1020
1606289	**Description:** Enlarged the number of modify fields to 16 to avoid IPv6 header rewrite failure.
	Keywords: IPv6 header rewrite
	Discovered in Version: 14.24.1000
	Fixed in Release: 14.25.1020
1627973	**Description:** Fixed an issue that prevented IB QP counters for Acks/Responses from working as a result the NACK/OOS counters showed as zero.
	Keywords: IB QP counters for Acks/Responses
	Discovered in Version: 14.24.1000
	Fixed in Release: 14.25.1020
1554104	**Description:** Set the stateless offloads cap to be permanently '1'.
	Keywords: Stateless offloads cap
	Discovered in Version: 14.24.1000
	Fixed in Release: 14.25.1020

Internal Ref.	Issue
1547318	**Description:** Fixed an issue that prevented the system from counting multicast/broadcast traffic on the ETH unicast vport counter when the driver did not specify the MAC address in the FTE match criteria of the Flow Table Entry in the eswitch's FDB table.
	Keywords: Multicast/broadcast traffic
	Discovered in Version: 14.23.1020
	Fixed in Release: 14.24.1000
1447157	**Description:** Fixed a standby deadlock that was caused when the PCIe reset arrived during traffic.
	Keywords: PCIe
	Discovered in Version: 14.23.1020
	Fixed in Release: 14.24.1000
1284452/1282926	**Description:** Fixed an issue that caused the mlxconfig tool to present all possible expansion ROM images, instead of presenting only the existing images.
	Keywords: mlxconfig
	Discovered in Version: 14.22.1002
	Fixed in Release: 14.24.1000
1487250	**Description:** Fixed an issue that prevented the SX error handling mechanism from clearing the counters when the max WQE's re-read attempts were completed successfully.
	Keywords: SX error handling mechanism, WQE, counters
	Discovered in Version: 14.23.1020
	Fixed in Release: 14.24.1000
1371032	**Description:** Fixed an issue related to the VF's EQ error that caused the health buffer to report to the host (PF) when the VF released the EQ buffer's memory before the EQ was destroyed.
	Keywords: EQ, health buffer
	Discovered in Version: 14.20.1010
	Fixed in Release: 14.24.1000
1424873	**Description:** Modifying VMQoS rate limiter parameters during traffic might cause transmission failure.
	Keywords: VMQoS, rate limiter
	Discovered in Version: 14.22.1002
	Fixed in Release: 14.24.1000

Internal Ref.	Issue
1475993	**Description:** Aligned the default tuning type in PHY TEST MODE to the device protocol.
	Keywords: PHY
	Discovered in Version: 14.23.1020
	Fixed in Release: 14.24.1000
1403211	**Description:** When a device is operating in Safe Mode state, and the user issues the mlxfwreset command, the device might fail to come-up correctly after the reset. **Note:** Do not run mlxfwreset when operating in a Safe Mode state.
	Keywords: mlxfwreset
	Discovered in Version: 14.23.1020
	Fixed in Release: 14.24.1000
1431772	**Description:** Fixed an issue that caused the max_qp_retry_freq_exceeded counter (including a CQE with error syndrome 0x97, and the QP moving to error state) to be activated only after exceeding the NIC Vport context max_qp_retry_limit, and not when reaching it.
	Keywords: max_qp_retry_freq_exceeded
	Discovered in Version: 14.22.1002
	Fixed in Release: 14.24.1000
1295606	**Description:** Fixed an issue related to PCIe "Surprise link down" event reporting capability.
	Keywords: PCIe
	Discovered in Version: 14.22.1002
	Fixed in Release: 14.24.1000
1434863	**Description:** Fixed an issue that resulted in the link partner experiencing false active linkup when plugging in a base-T cable to a closed port.
	Keywords: Interfaces
	Discovered in Version: 14.22.1002
	Fixed in Release: 14.24.1000
1424873	**Description:** Modifying VMQoS rate limiter parameters during traffic might cause transmission failure.
	Keywords: VMQoS, rate limiter
	Discovered in Version: 14.22.1002
	Fixed in Release: 14.24.1000

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