NVIDIA Mellanox ConnectX-6 Adapter Cards Firmware Release Notes v20.28.4512

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Release Notes Update History

Revision	Date	Description
20.28.4512	February 05, 2021	Initial release of this Release Notes version, This version introduces Changes and New Features and 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®-6 adapters firmware Rev 20.28.4512. This firmware supports the following protocols:

- InfiniBand - SDR, FDR, EDR, HDR
- Ethernet - 1GbE, 10GbE, 25GbE, 40GbE, 50GbE[1], 100GbE[1], 200GbE[2]
- PCI Express 4.0, supporting backwards compatibility for v3.0, v2.0 and v1.1

[1]. Speed that supports both NRZ and PAM4 modes in Force mode and Auto-Negotiation mode.

[2]. Speed that supports PAM4 mode only.

⚠ The minimal required Mellanox Quantum firmware version is 27.2000.1260

⚠ Please make sure to use a PCIe slot that can supply the required power to the ConnectX-6 adapter card as stated in section Specifications in the adapter card's User Manual.

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.

Switch and HCAs InfiniBand 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
FDR	56Gb/s	4 lanes of 14Gb/s

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

Switch to Switch Connectivity

Switch	Switch	Cable						
		H cable DAC	H cable AOC	HDR DAC	HDR AOC	EDR DAC	EDR AOC	FDR DAC
Mellanox Quantum	Mellanox Quantum	No such cable	HDR100	HDR	HDR	EDR	EDR	N/A
Switch-IB / Switch-IB 2	Mellanox Quantum	N/A	N/A	EDR	N/A	EDR	EDR	N/A
SwitchX-2	Mellanox Quantum	N/A	N/A	N/A	N/A	N/A	N/A	FDR
SwitchX-2	Switch-IB / Switch-IB 2	N/A	N/A	N/A	N/A	N/A	N/A	FDR

Connectivity Matrix

Adapter	Switch		Cable							
			Y cable DAC	Y cable AOC	HDR DAC	HDR AOC	EDR DAC	EDR AOC	FDR DAC	FDR AOC
ConnectX-6 200Gb/s	Mellanox Quantum	HDR Switch	HDR100	HDR100	HDR	HDR	EDR	EDR	N/A	N/A
ConnectX-6 100Gb/s	Mellanox Quantum		HDR100	HDR100	EDR	EDR	EDR	EDR	N/A	N/A
ConnectX-4 / ConnectX-5	Mellanox Quantum		N/A	N/A	EDR	N/A	EDR	EDR	FDR	FDR
ConnectX-3 / ConnectX-3 Pro	Mellanox Quantum		N/A	N/A	N/A	N/A	N/A	FDR[a]	FDR[a]	FDR[a]
ConnectX-6	Switch-IB / Switch-IB 2	EDR Switch	N/A	N/A	EDR	N/A	EDR	EDR	N/A	N/A

Adapter	Switch		Cable							
			Y cable DAC	Y cable AOC	HDR DAC	HDR AOC	EDR DAC	EDR AOC	FDR DAC	FDR AOC
ConnectX-4 / ConnectX-5	Switch-IB / Switch-IB 2		N/A	N/A	EDR	N/A	EDR	EDR	N/A	N/A
ConnectX-3/ ConnectX-3 Pro	Switch-IB / Switch-IB 2		N/A	N/A	N/A	N/A	FDR	N/A	FDR	FDR
ConnectX-6	SwitchX-2	FDR Switch	N/A	N/A	N/A	N/A	N/A	N/A	FDR	FDR
ConnectX-4 / ConnectX-5	SwitchX-2		N/A	N/A	N/A	N/A	N/A	N/A	FDR	FDR
ConnectX-3 / ConnectX-3 Pro	SwitchX-2		N/A	N/A	N/A	N/A	N/A	N/A	FDR	FDR

a. Connectivity between Mellanox Quantum and ConnectX-3 is not supported when using ports #27-34.

VPI Protocol Support

ConnectX-6 VPI supports having one port as InfiniBand and the second port as Ethernet according to the following matrix of combinations.

FDR is not supported in VPI mode.

This section provides details on the following tests:

To set the right configuration, run:

```
mlxconfig -d <mst device> s LINK_TYPE_P1=1/2
```

Legend:

	Configuration Combination Support
V	Supported
X	Not supported

Port #1	InfiniBand
Port #2	Ethernet

	Port #2 - Ethernet							
	200GbE/50GbE		100GbE/25GbE		40GbE/10GbE		1GbE	
Port #1 - InfiniBand	**#1**	**#2**	**#1**	**#2**	**#1**	**#2**	**#1**	**#2**
HDR / HDR100	V	V	V	V	V	X	V	V
EDR	V	V	V	V	V	X	V	V
FDR*	X	V	X	V	X	X	X	V
QDR/SDR	V	V	V	V	V	X	V	V

* FDR is not supported in VPI mode.

Port #2	InfiniBand
Port #1	Ethernet

	Port #2 - InfiniBand							
	HDR/HDR100		EDR		FDR*		QDR	
Port #1 – Ethernet	**#1**	**#2**	**#1**	**#2**	**#1**	**#2**	**#1**	**#2**
200GbE/50GbE	V	V	V	X	V	X	V	V
100GbE/25GbE	V	V	V	X	V	X	V	V
40GbE/10GbE	V	V	V	X	V	X	V	V
1GbE	V	V	V	X	V	X	V	V

* FDR is not supported in VPI mode.

Validated and Supported FDR Cables

Speed	Cable OPN	Description
FDR	MC2207128-003	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 3m
FDR	MC2207130-002	Mellanox® passive copper cable, VPI, up to 56Gb/s, QSFP, 2m
FDR	MC220731V-005	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 5m

Speed	Cable OPN	Description
FDR	MC220731V-030	Mellanox® active fiber cable, VPI, up to 56Gb/s, QSFP, 30m

Validated and Supported EDR / 100Gb/s Cables

Speed	Cable OPN	Description
EDR	MCP1600-E001	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1m 30AWG
EDR	MCP1600-E001E30	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 1m, Black, 30AWG
EDR	MCP1600-E002	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2m 28AWG
EDR	MCP1600-E002E30	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 2m, Black, 30AWG
EDR	MCP1600-E003	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m 26AWG
EDR	MCP1600-E003E26	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 3m, Black, 26AWG
EDR	MCP1600-E004E26	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 4m, Black, 26AWG
EDR	MCP1600-E005E26	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 5m, Black, 26AWG
EDR	MCP1600-E00A	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 0.5m 30AWG
EDR	MCP1600-E00AE30	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 0.5m, Black, 30AWG
EDR	MCP1600-E00BE30	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 0.75m, Black, 30AWG
EDR	MCP1600-E01A	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1.5m 30AWG
EDR	MCP1600-E01AE30	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 1.5m, Black, 30AWG
EDR	MCP1600-E01BE30	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 1.25m, Black, 30AWG
EDR	MCP1600-E02A	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2.5m 26AWG
EDR	MCP1600-E02AE26	Mellanox® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 2.5m, Black, 26AWG
EDR	MFA1A00-E001	Mellanox® active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1m
EDR	MFA1A00-E003	Mellanox® active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m
EDR	MFA1A00-E005	Mellanox® active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 5m
EDR	MFA1A00-E010	Mellanox® active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 10m
EDR	MFA1A00-E015	Mellanox® active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 15m
EDR	MFA1A00-E020	Mellanox® active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 20m
EDR	MFA1A00-E030	Mellanox® active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 30m

Speed	Cable OPN	Description
EDR	MFA1A00-E050	Mellanox® active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 50m
EDR	MFA1A00-E100	Mellanox® active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 100m
EDR	MMA1B00-E100	Mellanox® transceiver, IB EDR, up to 100Gb/s, QSFP28, MPO, 850nm, SR4, up to 100m
EDR	MFA1A00-E003-TG	Mellanox® customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m
EDR	MFA1A00-E005-TG	Mellanox® customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 5m
EDR	MFA1A00-E010-TG	Mellanox® customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 10m
EDR	MFA1A00-E015-TG	Mellanox® customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 15m
EDR	MFA1A00-E020-TG	Mellanox® customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 20m
EDR	MFA1A00-E030-TG	Mellanox® customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 30m
EDR	MMS1C10-CM	Mellanox® active optical module, 100Gb/s, QSFP, MPO, 1310nm, PSM4, up to 500m

⚠ EDR links raise with RS-FEC.

Validated and Supported HDR / 200Gb/s Cables

Speed	Cable OPN #	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	MCP7H50-H001R30	Mellanox® Passive Copper Hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored pulltabs, 1m, 30AWG
HDR	MCP7H50-H01AR30	Mellanox® Passive Copper Hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored, 1.5m, 30AWG
HDR	MCP7H50-H002R26	Mellanox® Passive Copper Hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored, 2m, 26AWG
HDR	MFS1S00-H003E	Mellanox® Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 3m

Speed	Cable OPN #	Description
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-H100E	Mellanox® Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 100m
HDR	MFS1S00-H130E	Mellanox® Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 130m
HDR	MFS1S00-H150E	Mellanox® Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 150m
HDR	MFS1S50-H0xxE	Mellanox® Active Fiber Splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, up to 30m
HDR	MFS1S90-H003E	Mellanox® Active Fiber Splitter cable, IB HDR, 2x200Gb/s to 2x200Gb/s, 2xQSFP56 to 2xQSFP56, LSZH, 3m
HDR	MFS1S00-V0xxE	Mellanox® Active Fiber cable, 200GbE, 200Gb/s, QSFP56, LSZH, black pulltab, up to 100m
HDR	MCA7J50-H003R*	Mellanox® Active Copper Hybrid cable, IB HDR 200Gb/s to 2xHDR100 100Gb/s, QSFP56 to 2xQSFP56, 3m, colored
HDR	MCA7J50-H004R*	Mellanox® Active Copper Hybrid cable, IB HDR 200Gb/s to 2xHDR100 100Gb/s, QSFP56 to 2xQSFP56, 4m, colored
HDR	MCA7J50-H005R*	Mellanox® Active Copper Hybrid cable, IB HDR 200Gb/s to 2xHDR100 100Gb/s, QSFP56 to 2xQSFP56, 5m, colored
HDR	MCA1J00-H003E*	Mellanox® Active Copper cable, IB HDR, up to 200Gb/s, QSFP56, 3m, yellow pulltab
HDR	MCA1J00-H004E*	Mellanox® Active Copper cable, IB HDR, up to 200Gb/s, QSFP56, 4m, yellow pulltab
HDR	MCA1J00-H005E*	Mellanox® Active Copper cable, IB HDR, up to 200Gb/s, QSFP56, 5m, yellow pulltab
HDR	MMA1T00-HS	Mellanox® transceiver, HDR, QSFP56, MPO, 850nm, SR4, up to 100m
HDR	MCP7H50-H003R26	Mellanox® passive copper hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored, 3m, 26AWG

⚠ HDR links raise with RS_FEC.

⚠ *These cables were approved for switch-to-switch connectivity. For switch-to-host connectivity there may be some issues. See Known Issue 2073222/1959529 (see Known Issues)

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
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

Speed	Cable OPN	Description
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
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

Speed	Cable OPN	Description
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
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
25GE	SFP25G-AOC10M-TG	Mellanox customized active optical cable 25GbE, SFP28, 10m, Aqua
25GE	SFP25G-AOC30M-TG	Mellanox customized active optical cable 25GbE, SFP28, 30m, Aqua
25GE	SFP25G-AOC07M-TG	Mellanox customized active optical cable 25GbE, SFP28, 7m, Aqua
25GE	SFP25G-AOC05M-TG	Mellanox customized active optical cable 25GbE, SFP28, 5m, Aqua
25GE	SFP25G-AOC03M-TG	Mellanox customized active optical cable 25GbE, SFP28, 3m, Aqua
25GE	SFP25G-AOC20M-TG	Mellanox customized active optical cable 25GbE, SFP28, 20m, Aqua
25GE	MMA2P00-ASHT	Mellanox transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, 85c, up to 100m
25GE	MMA2P00-AS_FF	Mellanox transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, up to 100m
25GE	MMA2P00-AS-SP	Mellanox transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, up to 100m, single package

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

Speed	Cable OPN	Description
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
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

Speed	Cable OPN	Description
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
40GE	MCP7900-X01AA	Mellanox®passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 1.5m, Blue Pulltab, customized label
40GE	MCP7904-X002A	Mellanox®passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 2m, Black Pulltab, customized label
40GE	MCP7904-X003A	Mellanox®passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 3m, Black Pulltab, customized label
40GE	MCP7904-X01AA	Mellanox®passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 1.5m, Black Pulltab, customized label
40GE	MCP7904-X02AA	Mellanox®passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 2.5m, Black Pulltab, customized label
40GE	MC2210511-LR4	Optical Module 40Gb/s FDR 10 QSFP LC-LC 1310nm LR4 up to 10km

Validated and Supported 56GbE Cables

⚠ The 56GbE cables are used to raise 40GbE link speed as the 56GbE speed is not supported.

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	MCP1600-C001	Mellanox® Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 1m 30AWG
100GE	MCP1600-C001E30N	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 1m, Black, 30AWG, CA-N
100GE	MCP1600-C002	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 2m 30AWG
100GE	MCP1600-C002E30N	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 2m, Black, 30AWG, CA-N
100GE	MCP1600-C003	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 3m 28AWG
100GE	MCP1600-C003E26N	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 3m, Black, 26AWG, CA-N
100GE	MCP1600-C003E30L	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 3m, Black, 30AWG, CA-L
100GE	MCP1600-C005E26L	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 5m, Black, 26AWG, CA-L
100GE	MCP1600-C00A	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 0.5m 30AWG
100GE	MCP1600-C00AE30N	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 0.5m, Black, 30AWG, CA-N
100GE	MCP1600-C00BE30N	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 0.75m, Black, 30AWG, CA-N
100GE	MCP1600-C01A	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 1.5m 30AWG
100GE	MCP1600-C01AE30N	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 1.5m, Black, 30AWG, CA-N
100GE	MCP1600-C02A	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 2.5m 30AWG
100GE	MCP1600-C02AE26N	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 2.5m, Black, 26AWG, CA-N
100GE	MCP1600-C02AE30L	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28,2.5m, Black, 30AWG, CA-L
100GE	MCP1600-C03A	Mellanox Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 3.5m 26AWG
100GE	MCP1600-E001	Mellanox Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1m 30AWG
100GE	MCP1600-E002	Mellanox Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2m 28AWG
100GE	MCP1600-E003	Mellanox Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m 26AWG

Speed	Cable OPN	Description
100GE	MCP1600-E01A	Mellanox Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1.5m 30AWG
100GE	MCP1600-E02A	Mellanox Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2.5m 26AWG
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
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

Speed	Cable OPN	Description
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	MFA1A00-C003	Mellanox active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 3m
100GE	MFA1A00-C005	Mellanox active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 5m
100GE	MFA1A00-C010	Mellanox active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 10m
100GE	MFA1A00-C015	Mellanox active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 15m
100GE	MFA1A00-C020	Mellanox active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 20m
100GE	MFA1A00-C030	Mellanox active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 30m
100GE	MFA1A00-C050	Mellanox active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 50m
100GE	MFA1A00-C100	Mellanox active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 100m
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
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

Speed	Cable OPN	Description
100GE	MMA1B00-C100D	Mellanox transceiver, 100GbE, QSFP28, MPO, 850nm, SR4, up to 100m, DDMI
100GbE	MMA1L10-CR	Mellanox optical transceiver, 100GbE, QSFP28, LC-LC, 1310nm, LR4 up to 10km **Note:** Only revision A2 and above.
100GE	MFA1A00-C001-TG	Mellanox customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 1m
100GE	MFA1A00-C002-TG	Mellanox customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP28, LSZH, 2m
100GE	MFA1A00-C003-TG	Mellanox customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 3m
100GE	MFA1A00-C005-TG	Mellanox customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 5m
100GE	MFA1A00-C007-TG	Mellanox customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP28, LSZH, 7m
100GE	MFA1A00-C010-TG	Mellanox customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 10m
100GE	MFA1A00-C015-TG	Mellanox customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 15m
100GE	MFA1A00-C020-TG	Mellanox customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 20m
100GE	MFA1A00-C030-TG	Mellanox customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 30m
100GE	MFA1A00-C050-TG	Mellanox customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 50m
100GE	MMA1L30-CM	Mellanox® optical module, 100GbE, 100Gb/s, QSFP28, LC-LC, 1310nm, CWDM4, up to 2km
100GE	MMS1C10-CM	Mellanox® active optical module, 100Gb/s, QSFP, MPO, 1310nm, PSM4, up to 500m

Validated and Supported 200GbE Cables

Speed	Cable OPN	Description
200GE	MCP1650-V001E30	Mellanox® Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 1m, black pulltab, 30AWG
200GE	MCP1650-V002E26	Mellanox® Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 2m, black pulltab, 26AWG
200GE	MCP1650-V002E26_FF	Mellanox® Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 2m, black pulltab, 26AWG
200GE	MCP1650-V003E26	Mellanox® Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 3m, black pulltab, 26AWG

Speed	Cable OPN	Description
200GE	MCP1650-V00AE30	Mellanox® Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 0.5m, black pulltab, 30AWG
200GE	MCP1650-V01AE30	Mellanox® Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 1.5m, black pulltab, 30AWG
200GE	MCP1650-V02AE26	Mellanox® Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 2.5m, black pulltab, 26AWG
200GE	MCP7H50-V001R30	Mellanox® passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 1m, 30AWG
200GE	MCP7H50-V002R26	Mellanox® passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 2m, 26AWG
200GE	MCP7H50-V003R26	Mellanox® passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 3m, 26AWG
200GE	MCP7H50-V01AR30	Mellanox® passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 1.5m, 30AWG
200GE	MCP7H50-V02AR26	Mellanox® passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 2.5m, 26AWG
200GE	MCP7H70-V001R30	Mellanox® passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 1m, 30AWG
200GE	MCP7H70-V002R26	Mellanox® passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 2m, 26AWG
200GE	MCP7H70-V003R26	Mellanox® passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4x4SFP56, colored, 3m, 26AWG
200GE	MCP7H70-V01AR30	Mellanox® passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 1.5m, 30AWG
200GE	MCP7H70-V02AR26	Mellanox® passive copper hybrid cable, 200GbE 200Gb/s to4x50Gb/s, QSFP56 to 4xSFP56, colored, 2.5m, 26AWG
200GE	MFS1S00-V003E	Mellanox® active fiber cable, 200GbE, 200Gb/s, QSFP56, LSZH, black pulltab, 3m
200GE	MFS1S00-V005E	Mellanox® active fiber cable, 200GbE, 200Gb/s, QSFP56, LSZH, black pulltab, 5m
200GE	MFS1S00-V010E	Mellanox® active fiber cable, 200GbE, 200Gb/s, QSFP56, LSZH, black pulltab, 10m
200GE	MFS1S00-V015E	Mellanox® active fiber cable, 200GbE, 200Gb/s, QSFP56, LSZH, black pulltab, 15m
200GE	MFS1S00-V020E	Mellanox® active fiber cable, 200GbE, 200Gb/s, QSFP56, LSZH, black pulltab, 20m
200GE	MFS1S00-V030E	Mellanox® active fiber cable, 200GbE, 200Gb/s, QSFP56, LSZH, black pulltab, 30m

Speed	Cable OPN	Description
200GE	MFS1S00-V050E	Mellanox® active fiber cable, 200GbE, 200Gb/s, QSFP56, LSZH, black pulltab, 50m
200GE	MFS1S00-V100E	Mellanox® active fiber cable, 200GbE, 200Gb/s, QSFP56, LSZH, black pulltab, 100m
200GE	MCP1650-V00AE30	Mellanox® Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 0.5m, black pulltab, 30AWG
200GE	MMA1T00-VS	Mellanox® transceiver, 200GbE, up to 200Gb/s, QSFP56, MPO, 850nm, SR4, up to 100m
200GE	MFS1S50-V003E	Mellanox® active fiber splitter cable, 200GbE, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, black pulltab, 3m
200GE	MFS1S50-V005E	Mellanox® active fiber splitter cable, 200GbE, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, black pulltab, 5m
200GE	MFS1S50-V010E	Mellanox® active fiber splitter cable, 200GbE, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, black pulltab, 10m
200GE	MFS1S50-V015E	Mellanox® active fiber splitter cable, 200GbE, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, black pulltab, 15m
200GE	MFS1S50-V020E	Mellanox® active fiber splitter cable, 200GbE, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, black pulltab, 20m
200GE	MFS1S50-V030E	Mellanox® active fiber splitter cable, 200GbE, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, black pulltab, 30m

Supported 3rd Party Cables and Modules

Speed	Cable OPN	Description
10GbE	FTLX8571D3BCL-ME	10gb SFP 850nm Optic Transceiver
10GbE	SP7051-HP	HP-MethodeElec. 10GbE AOM
40GbE	2231254-2	Cisco 3m 40GbE copper
40GbE	AFBR-7QER15Z-CS1	Cisco 40GbE 15m AOC
40GbE	BN-QS-SP-CBL-5M	PASSIVE COPPER SPLITTER CABLE ETH 40GBE TO 4X10GBE 5M
40GbE	NDCCGJ-C402	15m (49ft) Avago AFBR-7QER15Z Compatible 40G QSFP+ Active Optical Cable
40GbE	7TCDN	DELL TRANSCEIVER 40GbE QSFP+ SR
100GbE	1AT-3Q4M01XX-12A	O-NET QSFP28 100G Active cable/module
100GbE	AQPMANQ4EDMA0784	QSFP28 100G SMF 500m Transceiver

Speed	Cable OPN	Description
100GbE	CAB-Q-Q-100G-3M	Passive 3 meter, QSFP+ to QSFP+ QSFP100 TWINAX 103.125Gbps-CR4
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	FTLC1151RDPL	TRANSCIEVER 100GBE QSFP LR4
100GbE	FTLC9152RGPL	100G 100M QSFP28 SWDM4 OPT TRANS
100GbE	FTLC9555REPM3-E6	100m Parallel MMF 100GQSFP28Optical Transceiver
100GbE	NDAAFJ-C102	SF-NDAAFJ100G-005M
100GbE	QSFP-100G-AOC30M	30m (98ft) Cisco QSFP-100G-AOC30M Compatible 100G QSFP28 Active Optical Cable
100GbE	QSFP28-LR4-AJ	CISCO-PRE 100GbE LR4 QSFP28 Transceiver Module
100GbE	SFBR-89BDDZ-CS2	CISCO-PRE 100G AOM BiDi
100GbE	SQF1002L4LNC101P	Cisco-SUMITOMO 100GbE AOM

Tested Switches

Tested HDR / 200Gb/s Switches

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

Tested EDR / 100Gb/s Switches

Speed	Switch Silicon	OPN # / Name	Description	Vendor
EDR	Switch-IB	MSB7790-XXX	36-port Unmanaged EDR 100Gb/s InfiniBand Switch Systems	Mellanox
EDR	Switch-IB	MSB7700-XXX	36-port Managed EDR 100Gb/s InfiniBand Switch Systems	Mellanox

Speed	Switch Silicon	OPN # / Name	Description	Vendor
EDR	Switch-IB 2	MSB7800-XXX	36-port Managed EDR 100Gb/s InfiniBand Switch Systems	Mellanox

Tested 100GbE Switches

Speed	Switch Silicon	OPN # / Name	Description	Vendor
100GbE	Spectrum-3	MSN4600-XXXX	64-port Non-blocking 100GbE Open Ethernet Switch System	Mellanox
100GbE	Spectrum-2	MSN3700C-XXXX	32-port Non-blocking 100GbE Open Ethernet Switch System	Mellanox
100GbE	Spectrum-2	MSN3420-XXXX	48 SFP + 12 QSFP ports Non-blocking 100GbE Open Ethernet Switch System	Mellanox
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	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
100GbE	N/A	T7032-IX7	32-port 100GbE Ethernet Switch System	Quanta

Tested 200GbE Switches

Speed	Switch Silicon	OPN # / Name	Description	Vendor
200GbE	Spectrum	MSN3700-XXXX	32 QSFP56 ports, 200GbE Open Ethernet Switch System	Mellanox

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	5.2-1.0.4.0 / 5.1-2.5.8.0 / 5.1-0.6.6.0
MLNX_EN (MLNX_OFED based code)	5.2-1.0.4.0 / 5.1-2.5.8.0 / 5.1-0.6.6.0
WinOF-2	2.50.50000 / 2.40.50000 / 2.30
MFT	4.15.1 / 4.15.0 / 4.14.0-105
MLNX-OS	3.9.0900 onwards
ConnectX-6 Firmware	20.28.4512 / 20.28.2006 / 20.28.1002
Quantum™ Firmware	27.2008.1604 / 27.2008.1300
Linux Inbox Drivers	RHEL 7.7, 7.8, 7.9 / RHEL 8.1, 8.2, 8.3 / SLES 12 SP3 / SLES 15 SP2
Windows Inbox Drivers	Windows 2019 / Windows 2016 / Windows 2012 R2

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	3.6.203

Expansion ROM	Supported Version
UEFI	14.22.15

PRM Revision Compatibility

This firmware version complies with the following Programmer's Reference Manual:

- Mellanox Adapters Programmer's Reference Manual (PRM), Rev 0.53 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.

When upgrading or changing configuration on multi-host adapter cards, for the changes to take effect, PCIe restart must be simultaneously send from both hosts (servers).

To do so, perform the following:

1. Shut down the server with the auxiliary card.
2. Shut down the server with the primary card.
3. Bring back the server with the primary card.
4. Bring back the server with the auxiliary card.

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
20.28.4512	
PAM4	PAM4 link performance improvement.
NC-SI	Added NC-SI support for Get_Partition_Info command.
NIC Port	Added the option to shutdown the NIC port from the OS using the driver.
SerDes Lane Receive Eye Diagram (SLRD)	Improved Eye Diagram measuring algorithm.
Ethernet wqe_too_small Mode	Added a new counter per vPort that counts the number of packets that reached the Ethernet RQ but cannot fit into the WQE due to their large size. Additionally, we added the option to control if such packet will cause "CQE with Error" or "CQE_MOCK".
Access Registries	`ignore_flow_level` is now enabled by the TRUST LEVEL access registry.
Pause Frames from VFs	**[Beta]** Enabled the capability to allow Virtual Functions to send Pause Frames packets.

Feature/Change	Description
20.28.4512	
Counters	Added support for the cq_overrun counter. The counter represents the number of times CQs enter an error state due to overflow that occur when the device tries to post a CQE into a full CQ buffer.
Bug Fixes	See *Bug Fixes in this Firmware Version* section.

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

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
2366137 / 2288126	**Description:** Resolved Dell LTSSM test issues.
	Keywords: LTSSM
	Discovered in Version: 20.28.1002
	Fixed in Release: 20.28.4512
2321713	**Description:** Fixed an issue that caused caused the device to go to dead IRISC as one of the firmware semaphores could not be released when a speed change or port state change was triggered.
	Keywords: IRISC, firmware semaphore,
	Discovered in Version: 20.28.1002
	Fixed in Release: 20.28.4512
2200443	**Description:** On very rare occasions, a raw BER of 10e-12 might be experienced.
	Keywords: Raw BER
	Discovered in Version: 20.28.1002
	Fixed in Release: 20.28.4512
2244412	**Description:** ConnectX-6 Lx does not support phyless reset.
	Keywords: Phyless reset
	Discovered in Version: 20.28.1002
	Fixed in Release: 20.28.4512

Known Issues

For a list of older versions' Known Issues that are not listed in this chapter, please refer to the relevant firmware versions Release Notes in https://docs.mellanox.com/category/adapterfw.

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	127	64	64	127	127

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	127	127	127

Known Issues

Internal Ref.	Issue
2330700	**Description:** Effective BER may be observed when connecting to SN3700 switch system which can impact the link up time to be up to 97sec.
	Workaround: N/A
	Keywords: Effective BER
	Discovered in Version: 20.28.4512
2239632	**Description:** EDR linkup time might take up to 50sec when using HDR optical cable.
	Workaround: N/A
	Keywords: Cables, EDR
	Discovered in Version: 20.28.1002

Internal Ref.	Issue
2199939	**Description:** High linkup time may be experienced when connecting to an H3C switch using 25GbE\50GbE\100GbE link speeds.
	Workaround: N/A
	Keywords: Linkup time, switch
	Discovered in Version: 20.28.1002
2145881	**Description:** FDR link is unstable when using an FDR cable in ports: #27-#34.
	Workaround: N/A
	Keywords: FDR, cables
	Discovered in Version: 20.27.6008
2149437	**Description:** When the SLTP configuration is wrongly set, the "Bad status" explanation will not be presented (only error indication) to the user.
	Workaround: N/A
	Keywords: SLTP configuration
	Discovered in Version: 20.27.6008
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: 20.27.1016
1796936	**Description:** 200GbE Optical cables in Auto-Negotiation mode work only in 200GbE speed.
	Workaround: N/A
	Keywords: Cables
	Discovered in Version: 20.27.1016
1959529	**Description:** When HDR Active Copper cables are used between Quantum switches, or between Quantum switch and ConnectX-6 HCA, the counter indicating 'Link Down' may have a value other than zero, after the first time the cable is connected. As this may happened only at the first time, it is recommend to clear the counters after the cluster is brought up.
	Workaround: Toggle the Active Copper or Optics cables as the switch performs a reset.
	Keywords: Cables, BER
	Discovered in Version: 20.27.1016

Internal Ref.	Issue
2057653	**Description:** quota_exceeded_command and invalid_command counters do not function properly. In this firmware version, the quota_exceeded_command counter's value always remains 0, whereas the invalid_command counter increases only for some Ethernet commands failure events.
	Workaround: N/A
	Keywords: quota_exceeded_command, invalid_command, vnic_env counters
	Discovered in Version: 20.27.1016
1959529	**Description:** Occasionally (up to 15% of connections), the link will go down when using ACC cables P/N: MCA1J00-H003E, MCA1J00-H004E and when connecting a Quantum switch to a Quantum switch.
	Workaround: N/A
	Keywords: Cables
	Discovered in Version: 20.27.1016
1997329	**Description:** Downgrading from firmware v20.26.4012 to firmware v20.26.1040 and lower is not supported on Windows OSes using the mlxfwmanager tool.
	Workaround: N/A
	Keywords: mlxfwmanager, firmware downgrade
	Discovered in Version: 20.26.4012
1930619	**Description:** PF_BAR2 and ATS cannot be enabled together, i.e. when PF_BAR2 is enabled, ATS cannot be enabled too.
	Workaround: N/A
	Keywords: ATS, SF, BAR2, Multi GVMI
	Discovered in Version: 20.26.1040
-	**Description:** In rare cases, following a server powerup, a fatal error (device's health compromised) message might appear with ext_synd 0x8d1d. The error will be accompanied by a failure to use mlxconfig and in some cases flash burning tools.
	Workaround: N/A
	Keywords: mlxconfig, flash tool, ext_synd 0x8d1d
	Discovered in Version: 20.26.1040
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

Internal Ref.	Issue
	Keywords: Hardware arbitration, OCP3.0
	Discovered in Version: 20.26.1040
1796936	**Description:** HDR split cables support only HDR speed.
	Workaround: N/A
	Keywords: Link Speed, cables, Break-Out cables
	Discovered in Version: 20.26.1040
1911160	**Description:** When in loopback mode, the link is not raised when using Cisco 10GbE AOM.
	Workaround: N/A
	Keywords: Loopback mode, link up
	Discovered in Version: 20.26.1040
1733559	**Description:** The effective BER of ~ 1E-7 is expected when using ConnectX-6 adapter cards in 50GbE (PAM4) link speed and connecting to a Spectrum-2 SN3700 switch systems using copper split cable (100-->2x50).
	Workaround: N/A
	Keywords: BER, 50GbE, Spectrum-2
	Discovered in Version: 20.26.1040
1750460 / 2063991	**Description:** BER issues might occur when using ConnectX-6 adapter cards in 100GbE link speed, and connecting with and 3rd party switch systems.
	Workaround: N/A
	Keywords: BER, 100GbE, Spectrum-2
	Discovered in Version: 20.26.1040
1906389	**Description:** When using 100GbE link speed and connecting to a Cisco9000 switch, the link might take up to 2 min to raise.
	Workaround: N/A
	Keywords: Link speed
	Discovered in Version: 20.26.1040
1918749	**Description:** mlxlink tool displays a wrong speed when using ETH cables on ConnectX-6 adapter cards.
	Workaround: N/A

Internal Ref.	Issue
	Keywords: mlxlink
	Discovered in Version: 20.26.1040
1901198	**Description:** Firmware is not loaded on Multi-Host setups after reboot.
	Workaround: N/A
	Keywords: Firmware load, Multi-Host
	Discovered in Version: 20.26.1040
1842278	**Description:** DC LAG can function only in case there is a single PF per port without any active VFs.
	Workaround: N/A
	Keywords: DC LAG
	Discovered in Version: 20.26.1040
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: 20.26.1040
1797493	**Description:** Firmware asserts may occur when setting the PF_BAR2_SIZE value higher than the maximum supported size (maximum PF_BAR2_SIZE is 4 for .
	Workaround: Configure within limits (NIC PF_BAR_SIZE <= 4).
	Keywords: Multi-GVMI, Sub-Function, SFs, BAR2
	Discovered in Version: 20.26.1040
-	**Description:** Coherent Accelerator Processor Interface (CAPI) in ConnectX-6 firmware v20.25.7020 and above has low test coverage, however, it has no known issues.
	Workaround: N/A
	Keywords: CAPI
	Discovered in Version: 20.25.7020
1563590	**Description:** LR4 modules are currently not supported.
	Workaround: N/A
	Keywords: Modules/Cables

Internal Ref.	Issue
	Discovered in Version: 20.25.6000
-	**Description:** HDR optical cables and Split cables support only HDR speed.
	Workaround: N/A
	Keywords: Link Speed, cables, Break-Out cables
	Discovered in Version: 20.25.6000
1755286	**Description:** Port speed may change to SDR spontaneously, without a clear reason.
	Workaround: Keep the "keep_ib_link_up" bit at 0 in NVconfig to make sure the port is raised with the correct speed.
	Keywords: SDR, port speed
	Discovered in Version: 20.25.2006
1778616	**Description:** If the flash memory is not cleared, link_maintenance can be wrongly disabled by the NV configuration.
	Workaround: N/A
	Keywords: Flash memory
	Discovered in Version: 20.25.2006
1774135	**Description:** PXE boot is not functional when connecting a splitter cable to the host.

Internal Ref.	Issue

	Workaround: Update the SM as follow:
	• MLNX_OFED SM:
	  • Set the default partition in the SM partitions.conf file as shown in the example below:
	Default=0x7fff,ipoib,rate=5:ALL=full;
	Note: "rate" must be set to "5" regardless to the other flags values.
	• MLNX-OS SM:
	Run the following CLI commands:
	`no ib sm`
	`ib partition Default rate 5 ib sm`
	• UFM SM:
	Use REST API to change default partition rate:
	PUT https://<some IP>/ufmRest/resources/networks/management
	`{`
	`"qos_parameters": { "rate_limit": 900`
	`}`
	`}`
	As a result, /opt/ufm/files/conf/opensm/partitions.conf will include the following line:
	management=0x7fff,ipoib, sl=0,rate=5, defmember=full : ALL, ALL_SWITCHES=full,SELF=full;

	Keywords: PXE boot, splitter cable
	Discovered in Version: 20.25.2006
1762142	**Description:** PF / ECPF FLR does not clear all its dependent sub-functions. QUERY_ESW_FUNCTIONS and ALLOC/DEALLOC_SF commands might fail / show allocated SFs after PF FLR.
	Workaround: Perform a graceful shutdown, and not an FLR.
	Keywords: Multi-GVMI, SF, Sub-Functions, FLR
	Discovered in Version: 20.25.2006
1768814/1772474	**Description:** Due to hardware limitation, REG_C cannot be passed over loopback when the FDB action is forwarded to multiple destinations.
	Workaround: N/A
	Keywords: Connection-Tracking
	Discovered in Version: 20.25.2006
1770736	**Description:** When a PF or ECPF with many VFs (SR-IOV), and/or SFs (Multi-GVMI) triggers an FLR, PCIe completion timeout might occur.

Internal Ref.	Issue
	Workaround: Increase the PCIe completion timeout.
	Keywords: Multi-GVMI, SR-IOV, Sub-Function, Virtual Function, PF FLR
	Discovered in Version: 20.25.2006
1774890	**Description:** If ConnectX-6 adapter card is connected to a Quantum based switch over an HDR fiber optic cable, the SDR speed will not function. This limitation causes PXE not to function when performing: • PXE boot, as PXE traffic utilizes SDR speed • PXE boot over IB, when using either an optic cable or a copper splitter
	Workaround: N/A
	Keywords: PXE, Quantum, SDR, EDR, HDR, cables
	Discovered in Version: 20.25.2006
1716334	**Description:** When mlxconfig.PF_BAR2_EN is enabled, configuring more than 255 PCI functions will raise an assert.
	Workaround: When working with BAR2, configure SR-IOV to align to the 255 PCI functions limitation. mlxconfig.NUM_OF_VFS controls the number of configured SR-IOV VFs. e.g.: • Smart NICs: 2 External Host PFs, 2 ARM ECPFs, 125 VFs per PF. • Non-smart NICs: 2 External Host PFs, 126 VFs per PF
	Keywords: Multi-GVMI, PF_BAR2_EN, Sub-Functions, SR-IOV, VFs
	Discovered in Version: 20.25.1500 **[Beta]**
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: 20.25.1500 **[Beta]**
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: 20.25.1500 **[Beta]**
-	**Description:** The supported length of HDR copper cables is currently up to 2M.
	Workaround: N/A
	Keywords: HDR cables

Internal Ref.	Issue
	Discovered in Version: 20.25.1500 **[Beta]**
-	**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: 20.25.1500 **[Beta]**
1574876	**Description:** DC RoCE LAG is functional only if the router posts VRRP address as the source MAC.
	Workaround: N/A
	Keywords: DC RoCE LAG
	Discovered in Version: 20.25.1500 **[Beta]**
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: 20.25.1500 **[Beta]**
-	**Description:** In some cases, the power consumption might be 10% higher than what is stated in the adapter cards User Manual.
	Workaround: Power consumption will be aligned with the User Manual statement in the next release
	Keywords: Power consumption
	Discovered in Version: 20.25.1500 **[Beta]**
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: 20.25.1500 **[Beta]**
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

Internal Ref.	Issue
	Discovered in Version: 20.25.1500 **[Beta]**
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: 20.25.1500 **[Beta]**
1414290	**Description:** When getting an inline scatter CQE on IB striding RQ, the stride index in the CQE will be zero.
	Workaround: N/A
	Keywords: Scatter CQE
	Discovered in Version: 20.25.1500 **[Beta]**
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: 20.25.1500 **[Beta]**
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: 20.25.1500 **[Beta]**
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: 20.25.1500 **[Beta]**
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: .20.25.1500 **[Beta]**

Internal Ref.	Issue
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: 20.25.1500 **[Beta]**
1306342	**Description:** Signature-accessing WQEs sent locally to the NVMeF target QPs that encounter signature errors, will not send a SIGERR CQE.
	Workaround: N/A
	Keywords: Signature-accessing WQEs, NVMeF target
	Discovered in Version: 20.25.1500 **[Beta]**
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: 20.25.1500 **[Beta]**
1072337	**Description:** 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.
	Workaround: N/A
	Keywords: SX sniffer Flow Table
	Discovered in Version: 20.25.1500 **[Beta]**
1171013	**Description:** Signature Handover Operations is not supported when FPP (Function-Per-Port) mode is disabled.
	Workaround: N/A
	Keywords: Signature Handover Operations, FPP
	Discovered in Version: 20.25.1500 **[Beta]**
1059975	**Description:** NVMeF limitation: • Transaction size - up to 128KB per IO (non-inline) • Support up to 16K connections • Support single namespace per drive • Staging buffer size must be at least 16MB in order to allow SRQ size of 64 entries
	Workaround: N/A

Internal Ref.	Issue
	Keywords: NVMeF
	Discovered in Version: 20.25.1500 **[Beta]**

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_GLOBAL_MASK	ece_disable_mask		0x116

Configuration	mlxconfig Parameter Name	Class	TLV ID
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		
	log_max_outstandng_wqe		
	NV_config.sr_enable (ConnectX-6 Dx and above)		
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		

Configuration	mlxconfig Parameter Name	Class	TLV ID
	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		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

Configuration	mlxconfig Parameter Name	Class	TLV ID
	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		

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
20.28.2006	
Sub Function (SF) BAR Size	Increased the minimum Sub Function (SF) BAR size from 128KB to 256KB. Due to the larger SF BAR size, for the same PF BAR2 size, which can be queried/modified by LOG_PF_BAR2_SIZE NV config, the firmware will support half of the SFs. To maintain the same amount of supported SFs, software needs to increase the LOG_PF_BAR2_SIZE NV config value by 1.
AES-XTS	AES_XTS is used to perform all disk encryption/decryption related flows in the NIC and reduce cost and overheads of the related FIPS certification.
GPUDirect in Virtualized Environment	Enabled a direct access to ATS from the NIC to GPU buffers using PCIe peer-to-peer transactions. To enable this capability, the "p2p_ordering_mode" parameter was added to the NV_PCI_CONF configuration. **Note:** When SECURE_ALL or SECURE_TRUST is configured, ATS and RO must be set identically. When SECURE_NONE is configured, ATS and RO may be set independently as the current firmware behavior allows.
Non-Volatile Configurations	Added a new Non-Volatile Configuration parameter to control VL15 buffer size (VL15_BUFFER_SIZE). **Note:** VL15 buffer size enlargement will decrease all other VLs buffers size.
NC-SI	Added a new NC-SI command (get_device_id) to report a unique device identifier.
NC-SI	Added new NC-SI commands (`get_lldp_nb, set_lldp_nb`) to query the current status of LLDP and to enable/disable it.
ROCE ACCL	Split the SlowRestart ROCE_ACCL into the following: • `slow-restart` – used to reduce rate on retransmission events • `slow-restart-after-idle` – used to reduce rate before first transmission after >1s without transmitting
ROCE ACCL	Enabled TX PSN window size configuration using LOG_TX_PSN_WINDOW NVconfig parameter. **Note:** Due to hardware limitations, `max log_tx_psn_win` value can be set 9.
Bug Fixes	See Bug Fixes.
20.28.2006	
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Bug Fixes	See Bug Fixes.
20.28.1002	
EDR Link in ConnectX-6 100Gb/s cards	EDR link speed is now supported when using ConnectX-6 100Gb/s HCA and connecting with HDR optical cables.
NC-SI 1.2 New Commands	Implemented the following new commands from NS-SI 1.2 specification: • Get IB Link Status • Get IB Statistics • Get PF Assignment
NC-SI	Added support for Virtual node GUID, and set & get address through the NC-SI commands.
Error Injection Port Level	Added the ability to inject iCRC/vCRC port level error using Port Transmit Error Register (PTER).
In-Node Sync	Added support for in-node sync.

IPoIB Virtualization Updates	Added the following IPoIB Virtualization updates:
	• Support for SX RDMA Flow Table type in IB port
	• Support for modifying header action in IB port
	• Support for new hairpin mode:
	  • IB-to-IB
	  • Eth-to-IB
	  • IB-to-Eth

MPFS Forwarding Packets Behavior	This new feature defines the forwarding behavior in MPFS for packets arriving from the network (uplink) with destination MAC address that does not appear in the MPFS FDB. The new feature is configured by a new NV configuration (UNKNOWN_UPLINK_MAC_FLOOD) which when enabled, floods all local MPFS ports with these packets, otherwise drops these packets.
Hardware Tag Matching	Increased the maximum XRQ number to 512.
Non-Volatile Configurations (NVCONFIG)	Added the following new mlxconfig parameters to the Non-Volatile Configurations section. • `log_max_outstandng_wqe` • `ece_disable_mask`
Bug Fixes	See Bug Fixes.
20.27.6008	
PAM4 Link Speeds when Using 400GbE/200GbE	The following are the minimal software/firmware versions that support PAM4 link speeds when connected using Mellanox NIC to Mellanox Switch and Mellanox NIC to 3rd Party Switches: • Mellanox Spectrum-3: 30.2007.1142 • Mellanox Spectrum-2: 29.2007.1142 • Switch SDK: 4.4.0920 • Mellanox Onyx: 3.9.0830-038 • SONiC/SAI: 201911 • ConnectX-6: 20.27.2008* *Note: NICs with this firmware version support Mellanox-to-Mellanox connectivity with PAM4 link speeds
Cables	Enabled KP4RS FEC on Active Fiber cables (OPN: MFS1S00-V0xxE).
Cables	Disabled PLR on Active Fiber cables.
Link Speed	Added support FDR protocol.
SHARP Streaming Aggregation Tree (SAT)	SHARP SAT is at GA level.
SHARP Streaming Aggregation Tree (SAT)	Enabled updating End-to-End (E2E) credit packets instantly.
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.
20.27.2008	
Ethernet Connectivity	Added support for PAM4 at Beta level.
Ethernet Connectivity	Added support for Auto Detect NRZ vs PAM4 and speed detect when connected using Mellanox NIC to Mellanox Switch and Mellanox NIC to 3rd Party Switches.

20.27.1016	
Customer-Affecting Changes	See Customer-Affecting Changes.
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.
Auto-Negotiation (AN) Mode	100GbE link speed is supported in Auto-Negotiation Mode. For limitations related to this speed and mode, see issue 2094355 in Known Issues.
Force Mode	200GbE link speed is supported in Force Mode. For limitations related to this speed and mode, see issue 2094355 in Known Issues.
Hardware Offloaded Rules (Resource Dump)	Added support for dumping hardware steering entries (raw data) using the resource dump API.
PTYS Register	Added a new field in the PTYS register (max_port_rate).
Relaxed Ordering Read	**[Beta]** Added support for relaxed ordering read when using the create_mkey flag. **Note:** This capability is not supported when using Multi-Host cards and when in PCIe-Switch mode.
DCQCN Congestion Control	Added support for DCQCN Congestion Control to ConnectX-6 InfiniBand adapter cards to improve application performance in case of congestion in the network.
Bug Fixes	See Bug Fixes.
Rev. 20.26.4012	
Mellanox Scalable Hierarchical Aggregation and Reduction Protocol (SHARP)™	SHARP v1 is at GA level, whereas SHARP v2 is at Beta level.
Resource Dump	Extracts and prints data segments generated by the firmware.

Lossless Hairpin QP	Hairpin QP buffer is now available in Flow Control. Host Chaining now supports full fairness between several devices.
Bug Fixes	See Bug Fixes History.
Rev. 20.26.1040	
Link Speed	**[Alpha]** Added support for 200GbE link speed only when in Force mode (non-Auto-Negotiation).
Link Down Reasoning	Added support for Link Down Reasoning.
Physical Layer Retransmission (PLR)	Added support to the Physical Layer Retransmission (PLR) functionality for HDR speed.
Cables	Removed PLR from active cables longer than 30m.
Address Translation Service (ATS)	Added Address Translation Service (ATS) support for MKEY and UMEM.
VPD	Added support for exposing the VPD on the VF.
Hairpin Drop Counter	Added support for Hairpin Drop Counter.
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.
Software Managed Steering Tables	Added support for creating software managed steering tables in eSwitch/FDB.
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.

Customer-Affecting Changes

Feature/ Change	Description
20.27.1016	
Link Protocol	Due to in a change in link protocol in 100GbE and 200GbE adapter cards (from PAM4 to NRZ), the link may not come up on certain configurations. For limitations related to this change, see issue 2094355.

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
2215104	**Description:** Updated the following Mellanox OEM NC-SI commands to fix an issue that caused the "Port swap" capability not to function properly: • Get Temperature • Get Module Serial Data • Set Module Serial Data
	Keywords: Port swap
	Discovered in Version: 20.28.1002
	Fixed in Release: 20.28.2006
2080917	**Description:** Fixed and issue that resulted in driver startup failure when working in pass-through mode and dual port devices.
	Keywords: Pass-through mode, dual port devices
	Discovered in Version: 20.28.1002
	Fixed in Release: 20.28.2006
2073222	**Description:** In rare cases, HDR active copper cable link up time might be higher than expected (up to 2 minutes).
	Keywords: Cables
	Discovered in Version: 20.27.1016
	Fixed in Release: 20.28.1002
2149674	**Description:** Fixed an issue that caused packets to get stuck when the Rate Limiter was enabled.
	Keywords: Rate Limiter
	Discovered in Version: 20.27.6008
	Fixed in Release: 20.28.1002
2197232	**Description:** Active SHARP SAT QPs (QP with packet-based e2e credits) can break the live-FW-patch flow and result in firmware getting stuck.
	Keywords: SHARP SAT QPs
	Discovered in Version: 20.27.6008
	Fixed in Release: 20.28.1002

Internal Ref.	Issue
2113608	**Description:** Fixed an issue that prevented a QP with ATS buffer from being using by the NVMF offload.
	Keywords: ATS, NVMF offload
	Discovered in Version: 20.27.6008
	Fixed in Release: 20.28.1002
1916284	**Description:** Fixed a sensitivity case in ConnectX-6 adapter cards which use the TPS53622 controller to generate the ConnectX-6 Vcore and 1.8V rails. The sensitivity was only following card power cycle, and caused a low percentage of the cards to occasionally not power-up the Vcore after power cycle. The new firmware resolves this sensitivity by updating the TPS53622 regulator settings in case they were not updated already.
	Keywords: TPS53622 controller, Vcore and 1.8V rails
	Discovered in Version: 20.27.2008
	Fixed in Release: 20.27.6008
2108543	**Description:** Enabled Bar configuration bytewise by applying the write_en bitmask.
	Keywords: Bytewise BAR Programming
	Discovered in Version: 20.27.2008
	Fixed in Release: 20.27.6008
2119975	**Description:** Fixed low PXE performance while using the VSC to trigger the send_ring_doorbells.
	Keywords: NODNIC, DOORBELL
	Discovered in Version: 20.27.2008
	Fixed in Release: 20.27.6008
2119135	**Description:** Fixed an issue that cause fragmented IP packets to drop.
	Keywords: Fragmented IP packet
	Discovered in Version: 20.27.2008
	Fixed in Release: 20.27.6008
2089242	**Description:** Firmware burning after PHY-less reset is expected to be significantly slow.
	Keywords: PHY-less Reset
	Discovered in Version: 20.27.1016
	Fixed in Release: 20.27.6008

Internal Ref.	Issue
2169365	**Description:** Fixed an issue that caused PortCounters.PortRcvErr / PPCNT.infiniband_counters.PortRcvErr not to report port icrc errors.
	Keywords: InfiniBand, ICRC, PortRcvErr, PortCounters
	Discovered in Version: 20.27.1016
	Fixed in Release: 20.27.6008
2172827	**Description:** Fixed an issue that caused PortXmitWait HW counter to count when not expected due to an inaccuracy in the counter.
	Keywords: PortCounters MAD, PPCNT IB counters, PortXmitWait
	Discovered in Version: 20.27.2008
	Fixed in Release: 20.27.6008
1761271	**Description:** CWDM4 AOM cable is currently not supported.
	Keywords: Modules/Cables
	Discovered in Version: 20.26.1040
	Fixed in Release: 20.27.2008
1917123	**Description:** 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.
	Keywords: Link up
	Discovered in Version: 20.26.1040
	Fixed in Release: 20.27.2008
1960048	**Description:** Occasionally, the link is not raised when working with split 2 X 100 mode with Optical cables.
	Keywords: Cables
	Discovered in Version: 20.27.1016
	Fixed in Release: 20.27.2008
2083691	**Description:** Fixed an issue that prevented the load of the correct PCIe Tx parameters when the speed was changed after the PCIe link was disabled.
	Keywords: PCIe
	Discovered in Version: 20.27.1016
	Fixed in Release: 20.27.2008

Internal Ref.	Issue
2107103	**Description:** Fixed an issue that prevented the desched_threshold field from working properly.
	Keywords: DCQCN
	Discovered in Version: 20.27.1016
	Fixed in Release: 20.27.2008
2101810	**Description:** Fixed an issue that caused the "roce_adp_retrans" counter to present the values of the "local_ack_timeout_err" counter.
	Keywords: RoCE, lossy, q_counter
	Discovered in Version: 20.27.1016
	Fixed in Release: 20.27.2008
2063264	**Description:** If Relaxed Ordering is disabled by running the "setpci" command, it will not be functional even after re-enabling it by running the "setpci" command again.
	Keywords: PCI Relaxed Ordering
	Discovered in Version: 20.27.1016
	Fixed in Release: 20.27.2008
2090029	**Description:** Updated the RoCE Tx CNP's BECN value to be 1.
	Keywords: RoCE, CNP
	Discovered in Version: 20.27.1016
	Fixed in Release: 20.27.2008
2068784	**Description:** Aligned the User Memory page to 2, e.g., the user should use 8k aligned (like 0, 8k, 16k etc., instead of 0, 4k, 12k etc.).
	Keywords: User Memory page
	Discovered in Version: 20.27.1016
	Fixed in Release: 20.27.2008
2094355	**Description:** NRZ and PAM4 Limitations in 100GbE adapter cards: • The default configuration is NRZ speeds in Auto-Neg mode • PAM4 speeds should be set manually (using the MFT tool – mlxlink) • PAM4 speeds should be configured as single speeds: 50G_1x or 100G_2x • 200G_4x optical cables (including 200G_4x splitter cable) will raise link only after manual configuration of PAM4 speeds (50G_1x or 100G_2x)
	Keywords: NRZ, PAM4, 100GbE, cables
	Discovered in Version: 20.27.1016

Internal Ref.	Issue
	Fixed in Release: 20.27.2008
2094355	**Description:** NRZ and PAM4 Limitations in 200GbE adapter cards: • The default configuration is 200G_x4 in Force mode • NRZ speeds should be set manually. Configuration can include multiple NRZ speeds (using the MFT tool – mlxlink) • PAM4 speeds should be configured as single speeds: 50G_1x or 100G_2x or 200G_4x
	Keywords: NRZ, PAM4, 200GbE, cables
	Discovered in Version: 20.27.1016
	Fixed in Release: 20.27.2008
-	**Description:** In Ethernet mode, at 25/50/100GbE speeds, only RS-FEC in Force mode is supported. Other user configurations are overridden.
	Keywords: Ethernet, 25GbE, 50GbE, 100GbE, RS-FEC
	Discovered in Version: 20.25.1500 **[Beta]**
	Fixed in Release: 20.27.2008
1950268	**Description:** Fixed an issue that caused the adapter card to get stuck in "polling" state after resetting/power cycling the card.
	Keywords: Auto-negotiation, HCA
	Discovered in Version: 20.26.1040
	Fixed in Release: 20.27.1016
2076388	**Description:** Fixed a PCIe PLL varactor calibration logic to address potential silicon variations.
	Keywords: PCIe PLL varactor calibration
	Discovered in Version: 20.26.1040
	Fixed in Release: 20.27.1016
1949324	**Description:** Fixed an issue that caused the ZTR counters query to always return 0.
	Keywords: ZTR counters
	Discovered in Version: 20.26.4012
	Fixed in Release: 20.27.1016
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

Internal Ref.	Issue
	Discovered in Version: 20.26.4012
	Fixed in Release: 20.27.1016
1996141	**Description:** Fixed an issue that resulted in error report messages being discarded due to the “error report" filter not functioning properly.
	Keywords: NVMe error log
	Discovered in Version: 20.26.4012
	Fixed in Release: 20.27.1016
2045815	**Description:** Fixed redundant page consumption in the init_hca.
	Keywords: init_hca, pages
	Discovered in Version: 20.26.4012
	Fixed in Release: 20.27.1016
2036930	**Description:** Degradation in throughput might be experienced when using HDR100 links with cables lengths of 10m-30m.
	Workaround: N/A
	Keywords: Cables, Bandwidth
	Discovered in Version: 20.26.4012
1912117	**Description:** The sw_reset option is not supported when ATS is enabled.
	Keywords: ATS, sw_reset
	Discovered in Version: 20.26.1040
	Fixed in Release: 20.27.1016
1980208	**Description:** Fixed ATS functionality issues.
	Keywords: ATS
	Discovered in Version: 20.26.1040
	Fixed in Release: 20.27.1016
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: 20.26.1040
	Fixed in Release: 20.27.1016

Internal Ref.	Issue
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: 20.25.1020
	Fixed in Release: 20.27.1016
1899133	**Description:** Fixed an issue that prevented PCI link from being established when the firmware was corrupted.
	Keywords: PCI link
	Discovered in Version: 20.26.1040
	Fixed in Release: 20.27.1016
1950134	**Description:** Fixed an issue that triggered a FW assert and resulted in a wrong deallocation of a resource when Packet Pacing was enabled, and a QP was being destroyed.
	Keywords: Packet Pacing, FW assert
	Discovered in Version: 20.26.1040
	Fixed in Release: 20.27.1016
1887922	**Description:** There is a configuration limitation when using a ConnectX-6 VPI card and one port is set in EN mode and the other port in IB mode. • **Working Configuration:** When Port 1 is configured as ETH and Port 2 as IB, link can be established on both ports when using either DAC or AOC cables • **Limitation Configuration:** If Port 1 is configured as IB and Port 2 as ETH, there will be no link established on Port 2
	Keywords: Eth, IB, port
	Discovered in Version: 20.26.1040
	Fixed in Release: 20.27.1016
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.
	Keywords: FLR, teardown
	Discovered in Version: 20.26.1040
	Fixed in Release: 20.27.1016
1892507	**Description:** Fixed a performance issue that occured when CAPI was enabled in the NVConfig.
	Keywords: NVConfig, CAPI, performance
	Discovered in Version: 20.25.7020
	Fixed in Release: 20.26.4012

Internal Ref.	Issue
1752009	**Description:** 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.
	Keywords: Multi-GVMI, SR-IOV
	Discovered in Version: 20.25.2006
	Fixed in Release: 20.26.4012
1946509	**Description:** Fixed an issue that slowed the firmware flows when executing many destroy XRQ commands on an XRQ that supported DC transport service.
	Keywords: DC XRQ slowness
	Discovered in Version: 20.26.1040
	Fixed in Release: 20.26.4012
1718734	**Description:** Upon temperature changes, HDR link can potentially go down due to a temperature change higher than 6 degrees Celsius.
	Keywords: HDR link
	Discovered in Version: 20.25.1500 **[Beta]**
	Fixed in Release: 20.26.1040
1891441	**Description:** 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): *mlx5_core 0000:a1:00.0: Firmware over 120000 MS in pre-initializing state, aborting.*
	Keywords: Pre-initializing state, driver restart
	Discovered in Version: 20.25.7020
	Fixed in Release: 20.26.1040
1859715	**Description:** 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.
	Keywords: Cables
	Discovered in Version: 20.25.7020
	Fixed in Release: 20.26.1040
1803791	**Description:** 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.
	Keywords: PCIe Error Notification
	Discovered in Version: 20.25.6000

Internal Ref.	Issue
	Fixed in Release: 20.26.1040
182411	**Description:** Renamed the GMP Mellanox Vendor Specific External Capability mask enum from IsDiagnosticCountersSupported to IsDiagnosticDataSupported.
	Keywords: GMP Mellanox Vendor Specific External Capability mask DiagnosticData
	Discovered in Version: 20.25.6000
	Fixed in Release: 20.26.1040

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