




**NVIDIA ConnectX-6 Adapter Cards  
Firmware Release Notes v20.35.3502  
LTS**

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 This is a long-term support (LTS) release. LTS is the practice of maintaining a software product for an extended period of time (up to three years) to help increase product stability. LTS releases include bug fixes and security patches.

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# 1 Release Notes Update History

Revision	Date	Description
20.35.3502	December 31, 2023	Initial release of this Release Notes version, This version introduces <a href="#">Bug Fixes</a> .

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## 2 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.

### 2.1 Firmware Download

Please visit the [firmware webpage](#).

### 2.2 Document Revision History

A list of the changes made to this document are provided in [Document Revision History](#).

## 3 Firmware Compatible Products

The chapter contains the following sections:

These are the release notes for the NVIDIA® ConnectX®-6 adapters firmware. This firmware supports the following protocols:

- InfiniBand - SDR, QDR, FDR, EDR, HDR100, HDR
- Ethernet - 1GbE, 10GbE, 25GbE, 40GbE, 50GbE<sup>1</sup>, 100GbE<sup>1</sup>, 200GbE<sup>2</sup>
- PCI Express 4.0, supporting backwards compatibility for v3.0, v2.0 and v1.1

<sup>1</sup>. Speed that supports both NRZ and PAM4 modes in Force mode and Auto-Negotiation mode.

<sup>2</sup>. Speed that supports PAM4 mode only.



The minimal required NVIDIA 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.

### 3.1 Supported Devices

This firmware supports the devices and protocols listed below:

NVIDIA SKU	Legacy OPN	PSID	Device Name	FlexBoot	UEFI x86	UEFI ARM	Enable / disable exprom Feature
900-9X603-0056-DT0	MCX65310 6A-EFAT	MT_0000000 219	ConnectX-6 VPI adapter card; 100Gb/s (HDR100; EDR IB and 100GbE); dual-port QSFP56; PCIe3.0/4.0 2x8 in a row	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X6AF-0016-ST1	MCX65310 5A-ECAT	MT_0000000 222	ConnectX-6 VPI adapter card; 100Gb/s (HDR100; EDR IB and 100GbE); single-port QSFP56; PCIe3.0 x16; tall bracket; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X6AF-0018-MT2 / 900-9X6AF-0018-SS0	MCX65310 5A-HDAT / MCX653105A-HDAL	MT_0000000 223	ConnectX-6 VPI adapter card; HDR IB (200Gb/s) and 200GbE; single-port QSFP56; PCIe4.0 x16; tall bracket; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists

NVIDIA SKU	Legacy OPN	PSID	Device Name	FlexBoot	UEFI x86	UEFI ARM	Enable / disable exprom Feature
900-9X6AF-0056-MT1	MCX653106A-ECAT	MT_0000000224	ConnectX-6 VPI adapter card; H100Gb/s (HDR100; EDR IB and 100GbE); dual-port QSFP56; PCIe3.0 x16; tall bracket; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X6AF-0058-ST1 / 900-9X6AF-0058-SS0	MCX653106A-HDAT / MCX653106A-HDAL	MT_0000000225	ConnectX-6 VPI adapter card; HDR IB (200Gb/s) and 200GbE; dual-port QSFP56; PCIe4.0 x16; tall bracket; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X6B4-0018-DT2	MCX654105A-HCAT	MT_0000000226	ConnectX-6 VPI adapter card; HDR IB (200Gb/s) and 200GbE; single-port QSFP56; Socket Direct 2x PCIe3.0 x16; tall bracket; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X6B4-0056-DT0	MCX654106A-ECAT	MT_0000000227	ConnectX-6 VPI adapter card; 100Gb/s (HDR100; EDR InfiniBand and 100GbE); dual-port QSFP56; Socket Direct 2x PCIe3.0 x16; tall bracket; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X6B4-0058-DT0	MCX654106A-HCAT	MT_0000000228	ConnectX-6 VPI adapter card; HDR IB (200Gb/s) and 200GbE; dual-port QSFP56; Socket Direct 2x PCIe3.0 x16; tall bracket; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X603-0016-DT0	MCX653105A-EFAT	MT_0000000237	ConnectX-6 VPI adapter card; 100Gb/s (HDR100; EDR IB and 100GbE); single-port QSFP56; PCIe3.0/4.0 Socket Direct 2x8 in a row; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X628-0016-ST0	MCX651105A-EDAT	MT_0000000473	ConnectX®-6 VPI adapter card, 100Gb/s (HDR100, EDR IB and 100GbE, single-port QSFP56, PCIe4.0 x8, tall bracket	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X657-0018-SI0 / 900-9X657-0018-SE0	MCX653435A-HDAI / MCX653435A-HDAE	MT_0000000296	ConnectX®-6 VPI adapter card, 200Gb/s (HDR IB and 200GbE) for OCP 3.0, with host management, Single-port QSFP56, PCIe4.0 x16, Internal Lock	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists



NVIDIA SKU	Legacy OPN	PSID	Device Name	FlexBoot	UEFI x86	UEFI ARM	Enable / disable exprom Feature
900-9X657-0058-SI2 / 900-9X657-0058-SB0	MCX65343 6A-HDAI / MCX653436A-HDAB	MT_0000000 297	ConnectX®-6 VPI adapter card, 200Gb/s (HDR IB and 200GbE) for OCP 3.0, with host management, Dual-port QSFP56, PCIe4.0 x16, Internal Lock	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X657-0016-SI0	MCX65343 5A-EDAI	MT_0000000 295	ConnectX®-6 VPI adapter card, 100Gb/s (HDR100, EDR IB and 100GbE) for OCP 3.0, with host management, Single-port QSFP56, PCIe 3.0/4.0 x16, Internal Lock	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X657-0018-MI0	MCX65343 5M-HDAI	MT_0000000 601	ConnectX-6 VPI adapter card; 200Gb/s (HDR IB and 200GbE) for OCP 3.0; with host management; Single-port QSFP56; Multi Host or Socket Direct; PCIe4.0 x16; Internal Lock	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X6AF-0058-MT1	MCX61310 6A-VDAT	MT_0000000 236	ConnectX-6 EN adapter card; 200GbE; dual-port QSFP56; PCIe4.0 x16; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X657-0008-SI0	MCX61343 6A-VDAI	MT_0000000 294	ConnectX-6 EN adapter card; 200GbE for OCP 3.0; with host management; Dual-port QSFP56; PCIe 4.0 x16; Internal Lock	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X6B4-0058-DT1	MCX61410 6A-VCAT	MT_0000000 221	ConnectX-6 EN adapter card; 200GbE; dual-port QSFP56; Socket Direct 2x PCIe3.0 x16; tall bracket; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X6B4-0056-DT1	MCX61410 6A-CCAT	MT_0000000 220	ConnectX-6 EN adapter card; 100GbE; dual-port QSFP56; Socket Direct 2x PCIe3.0 x16; tall bracket; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X6B4-0018-DT1	MCX61410 5A-VCAT	MT_0000000 284	ConnectX-6 EN adapter card kit; 200GbE; single-port QSFP56; Socket Direct 2x PCIe3.0 x16	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists
900-9X6AF-0018-MT1	MCX61310 5A-VDAT	MT_0000000 234	ConnectX-6 EN adapter card; 200GbE; single-port QSFP56; PCIe4.0 x16; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists

NVIDIA SKU	Legacy OPN	PSID	Device Name	FlexBoot	UEFI x86	UEFI ARM	Enable / disable exprom Feature
900-9X6AF-0056-ST0	MCX613106A-CCAT	MT_0000000235	ConnectX-6 EN adapter card; 100GbE; dual-port QSFP56; PCIe3.0 x16; ROHS R6	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists

## 3.2 Driver Software, Tools and Switch Firmware

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
ConnectX-6 Firmware	20.35.3502 / 20.35.3006 / 20.35.2000
MLNX_OFED	5.8-4.0.8.0 / 5.8-3.0.7.0 / 5.8-2.0.3.0 <b>Note:</b> For the list of the supported Operating Systems, please refer to the driver's Release Notes.
MLNX_EN (MLNX_OFED based code)	5.8-4.0.8.0 / 5.8-3.0.7.0 / 5.8-2.0.3.0 <b>Note:</b> For the list of the supported Operating Systems, please refer to the driver's Release Notes.
WinOF-2	3.10.52010 / 3.10.51000 / 3.10.50000 <b>Note:</b> For the list of the supported Operating Systems, please refer to the driver's Release Notes.
MFT	4.22.1-406 / 4.22.1-307 / 4.22.1 <b>Note:</b> For the list of the supported Operating Systems, please refer to the driver's Release Notes.
FlexBoot	3.6.902 <b>Note:</b> Please be aware that not all firmware binaries contain FlexBoot or UEFI, support may vary between cards.
UEFI	14.29.15 <b>Note:</b> Please be aware that not all firmware binaries contain FlexBoot or UEFI, support may vary between cards.
MLNX-OS	3.10.5002 onwards
Cumulus	5.4 onwards
NVIDIA Quantum Firmware	27.2010.5108 onwards
SwitchX-IB Firmware	11.2008.2102 onwards
SwitchX-IB 2 Firmware	15.2008.2102 onwards

## 3.3 Supported Cables and Modules

### 3.3.1 Switch and HCAs InfiniBand Cable Connectivity Matrix

NVIDIA Quantum™ based switches and NVIDIA® 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 NVIDIA Quantum based switches, ConnectX-6 HCA, and the cables.

### 3.3.2 Switch-to-Switch Connectivity

Switch	Switch	Cable					
		H cable DAC	H cable AOC	HDR DAC	HDR AOC	EDR DAC/AOC	FDR DAC/AOC
NVIDIA Quantum™	NVIDIA Quantum	No such cable	HDR100	HDR	HDR	EDR	N/A
NVIDIA Quantum	NVIDIA® Switch-IB®/ Switch-IB 2	N/A	N/A	EDR	N/A	EDR	N/A
NVIDIA Quantum	NVIDIA® SWITCHX®-2	N/A	N/A	N/A	N/A	N/A	FDR


### 3.3.3 HCA-to-Switch Connectivity Matrix

Adapter	Switch		Cable						
			Y cable DAC/AOC	HDR DAC	HDR AOC	HDR100 DAC/AOC (Copper Cables Only)	EDR DAC	EDR AOC	FDR DAC/AOC
ConnectX-6 200Gb/s	NVIDIA Quantum-2	NDR Switch	N/A	2 × HDR	2 × HDR	4 × HDR100	N/A	N/A	N/A
ConnectX-6 100Gb/s	NVIDIA Quantum-2		N/A	2 × EDR	N/A	4 × HDR100	N/A	N/A	N/A
ConnectX-4/ ConnectX-5	NVIDIA Quantum-2		N/A	2 × EDR	N/A	N/A	N/A	N/A	N/A
ConnectX-6 200Gb/s	NVIDIA Quantum	HDR Switch	HDR100	HDR	HDR	N/A	EDR	EDR	N/A
ConnectX-6 100Gb/s	NVIDIA Quantum		HDR100	EDR	EDR	N/A	EDR	EDR	N/A
ConnectX-4/ ConnectX-5	NVIDIA Quantum		N/A	EDR	N/A	N/A	EDR	EDR	FDR
ConnectX-3/ ConnectX-3 Pro	NVIDIA Quantum		N/A	N/A	N/A	N/A	N/A	FDR <sup>a</sup>	FDR <sup>a</sup>
ConnectX-6	Switch-IB/ Switch-IB 2	EDR Switch	N/A	EDR	N/A	N/A	EDR	EDR	N/A
ConnectX-6	SWITCHX-2	FDR Switch	N/A	N/A	N/A	N/A	N/A	N/A	FDR

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

#### 3.3.3.1 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 LINK_TYPE_P2=1/2
```

where:

- LINK\_TYPE\_P1 - sets the configuring protocol for port 1
- LINK\_TYPE\_P2 - sets the configuring protocol for port 2
- (1/2) - values used for the different protocols:
  - 1 - for InfiniBand
  - 2 - for Ethernet

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.

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

Speed	Cable OPN #	Description
HDR	MCP1650-H001E30	NVIDIA Passive Copper cable, IB HDR, up to 200Gb/s, QSFP28, PVC, 1m, white pultab, 30AWG
HDR	MCP1650-H002E26	NVIDIA Passive Copper cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, 2M, black pultab, 26AWG
HDR	MCP1650-H00AE30	NVIDIA Passive Copper cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, 0.5M, black pultab, 30AWG
HDR	MCP7H50-H001R30	NVIDIA Passive Copper Hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored pulltabs, 1m, 30AWG
HDR	MCP7H50-H01AR30	NVIDIA Passive Copper Hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored, 1.5m, 30AWG
HDR	MCP7H50-H002R26	NVIDIA Passive Copper Hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored, 2m, 26AWG
HDR	MFS1S00-H003E	NVIDIA Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 3m
HDR	MFS1S00-H005E	NVIDIA Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 5m
HDR	MFS1S00-H010E	NVIDIA Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 10m
HDR	MFS1S00-H100E	NVIDIA Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 100m
HDR	MFS1S50-H0xxE	NVIDIA Active Fiber Splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, up to 30m
HDR	MFS1S90-H003E	NVIDIA Active Fiber Splitter cable, IB HDR, 2x200Gb/s to 2x200Gb/s, 2xQSFP56 to 2xQSFP56, LSZH, 3m
HDR	MCA7J50-H003R*	NVIDIA Active Copper Hybrid cable, IB HDR 200Gb/s to 2xHDR100 100Gb/s, QSFP56 to 2xQSFP56, 3m, colored
HDR	MCA7J50-H004R*	NVIDIA Active Copper Hybrid cable, IB HDR 200Gb/s to 2xHDR100 100Gb/s, QSFP56 to 2xQSFP56, 4m, colored
HDR	MCA1J00-H003E*	NVIDIA Active Copper cable, IB HDR, up to 200Gb/s, QSFP56, 3m, yellow pulltab
HDR	MCA1J00-H004E*	NVIDIA Active Copper cable, IB HDR, up to 200Gb/s, QSFP56, 4m, yellow pulltab
HDR	MMA1T00-HS	NVIDIA transceiver, HDR, QSFP56, MPO, 850nm, SR4, up to 100m
HDR	MFS1S00-H130E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 130m

Speed	Cable OPN #	Description
HDR	MFS1S00-H003-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 3m
HDR	MFS1S00-H005-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 5m
HDR	MFS1S00-H010-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 10m
HDR	MFS1S00-H015-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 15m
HDR	MFS1S00-H020-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 20m
HDR	MFS1S00-H030-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 30m
HDR	MCP7Y60-H001	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 1m
HDR	MCP7Y60-H002	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 2m
HDR	MCP7Y60-H01A	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 1.5m
HDR	MCP7Y70-H001	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 4x100Gb/s, OSFP to 4xQSFP56, 1m
HDR	MCP7Y70-H002	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 4x100Gb/s, OSFP to 4xQSFP56, 2m
HDR	MCP7Y70-H01A	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 4x100Gb/s, OSFP to 4xQSFP56, 1.5m
HDR	MFA7U10-H003	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 3m
HDR	MFA7U10-H005	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 5m
HDR	MFA7U10-H010	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 10m
HDR	MFA7U10-H015	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 15m
HDR	MFA7U10-H020	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 20m
HDR	MFA7U10-H030	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 30m
HDR	MFA7U10-H050	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 50m



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](#))

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

Speed	Cable OPN	Description
EDR	MCP1600-E001	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1m 30AWG
EDR	MCP1600-E001E30	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 1m, Black, 30AWG
EDR	MCP1600-E002	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2m 28AWG
EDR	MCP1600-E002E30	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 2m, Black, 30AWG
EDR	MCP1600-E003	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m 26AWG
EDR	MCP1600-E003E26	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 3m, Black, 26AWG
EDR	MCP1600-E004E26	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 4m, Black, 26AWG
EDR	MCP1600-E005E26	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 5m, Black, 26AWG
EDR	MCP1600-E00A	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 0.5m 30AWG
EDR	MCP1600-E00AE30	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 0.5m, Black, 30AWG
EDR	MCP1600-E00BE30	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 0.75m, Black, 30AWG
EDR	MCP1600-E01A	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1.5m 30AWG
EDR	MCP1600-E01AE30	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 1.5m, Black, 30AWG
EDR	MCP1600-E01BE30	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 1.25m, Black, 30AWG
EDR	MCP1600-E02A	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2.5m 26AWG
EDR	MCP1600-E02AE26	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 2.5m, Black, 26AWG
EDR	MFA1A00-E001	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1m
EDR	MFA1A00-E003	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m
EDR	MFA1A00-E005	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 5m
EDR	MFA1A00-E010	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 10m
EDR	MFA1A00-E015	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 15m
EDR	MFA1A00-E020	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 20m
EDR	MFA1A00-E030	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 30m
EDR	MFA1A00-E050	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 50m



Speed	Cable OPN	Description
EDR	MFA1A00-E100	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 100m
EDR	MMA1B00-E100	NVIDIA transceiver, IB EDR, up to 100Gb/s, QSFP28, MPO, 850nm, SR4, up to 100m
EDR	MFA1A00-E003-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m
EDR	MFA1A00-E005-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 5m
EDR	MFA1A00-E010-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 10m
EDR	MFA1A00-E015-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 15m
EDR	MFA1A00-E020-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 20m
EDR	MFA1A00-E030-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 30m
EDR	MMA1L30-CM	NVIDIA optical module, 100Gb/s, QSFP28, LC-LC, 1310nm, CWDM4, up to 2km
EDR	MMS1C10-CM	NVIDIA active optical module, 100Gb/s, QSFP, MPO, 1310nm, PSM4, up to 500m

 EDR links raise with RS-FEC.

### 3.3.6 Validated and Supported FDR Cables

Speed	Cable OPN	Description
FDR	MC2207128-003	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 3m
FDR	MC2207130-002	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 2m
FDR	MC220731V-005	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 5m
FDR	MC220731V-030	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 30m

### 3.3.7 Validated and Supported 200GbE Cables

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

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

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

### 3.3.8 Validated and Supported 100GbE Cables

Speed	Cable OPN	Description
100GbE	MCP1600-C001	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 1m 30AWG
100GbE	MCP1600-C001E30N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 1m, Black, 30AWG, CA-N
100GbE	MCP1600-C002	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 2m 30AWG
100GbE	MCP1600-C002E30N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 2m, Black, 30AWG, CA-N
100GbE	MCP1600-C003	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 3m 28AWG
100GbE	MCP1600-C003E26N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 3m, Black, 26AWG, CA-N
100GbE	MCP1600-C003E30L	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 3m, Black, 30AWG, CA-L
100GbE	MCP1600-C005E26L	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 5m, Black, 26AWG, CA-L
100GbE	MCP1600-C00A	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 0.5m 30AWG


Speed	Cable OPN	Description
100GbE	MCP1600-C00AE30N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 0.5m, Black, 30AWG, CA-N
100GbE	MCP1600-C00BE30N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 0.75m, Black, 30AWG, CA-N
100GbE	MCP1600-C01A	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 1.5m 30AWG
100GbE	MCP1600-C01AE30N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 1.5m, Black, 30AWG, CA-N
100GbE	MCP1600-C02A	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 2.5m 30AWG
100GbE	MCP1600-C02AE26N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 2.5m, Black, 26AWG, CA-N
100GbE	MCP1600-C02AE30L	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 2.5m, Black, 30AWG, CA-L
100GbE	MCP1600-C03A	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP, PVC, 3.5m 26AWG
100GbE	MCP1600-E001	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1m 30AWG
100GbE	MCP1600-E002	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2m 28AWG
100GbE	MCP1600-E003	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m 26AWG
100GbE	MCP1600-E01A	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1.5m 30AWG
100GbE	MCP1600-E02A	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2.5m 26AWG
100GbE	MCP7F00-A001R	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs, 1m, 30AWG
100GbE	MCP7F00-A001R30N	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 1m, Colored, 30AWG, CA-N
100GbE	MCP7F00-A002R	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs, 2m, 30AWG
100GbE	MCP7F00-A002R30N	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2m, Colored, 30AWG, CA-N
100GbE	MCP7F00-A003R26N	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m, Colored, 26AWG, CA-N
100GbE	MCP7F00-A003R30L	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m, Colored, 30AWG, CA-L
100GbE	MCP7F00-A005R26L	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 5m, Colored, 26AWG, CA-L
100GbE	MCP7F00-A01AR	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs, 1.5m, 30AWG
100GbE	MCP7F00-A01AR30N	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 1.5m, Colored, 30AWG, CA-N

Speed	Cable OPN	Description
100GbE	MCP7F00-A02AR26N	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, Colored, 26AWG, CA-N
100GbE	MCP7F00-A02AR30L	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, Colored, 30AWG, CA-L
100GbE	MCP7F00-A02ARLZ	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, LSZH, Colored, 28AWG
100GbE	MCP7F00-A03AR26L	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3.5m, Colored, 26AWG, CA-L
100GbE	MCP7H00-G001	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 1m, 30AWG
100GbE	MCP7H00-G001R	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 1m, 30AWG
100GbE	MCP7H00-G001R30N	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 1m, Colored, 30AWG, CA-N
100GbE	MCP7H00-G002R	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 2m, 30AWG
100GbE	MCP7H00-G002R30N	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2m, Colored, 30AWG, CA-N
100GbE	MCP7H00-G003R	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 3m, 28AWG
100GbE	MCP7H00-G003R26N	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 3m, Colored, 26AWG, CA-N
100GbE	MCP7H00-G003R30L	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 3m, Colored, 30AWG, CA-L
100GbE	MCP7H00-G004R26L	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 4m, Colored, 26AWG, CA-L
100GbE	MCP7H00-G01AR	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 1.5m, 30AWG
100GbE	MCP7H00-G01AR30N	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 1.5m, Colored, 30AWG, CA-N
100GbE	MCP7H00-G02AR	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 2.5m, 30AWG
100GbE	MCP7H00-G02AR26N	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2.5m, Colored, 26AWG, CA-N
100GbE	MCP7H00-G02AR30L	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2.5m, Colored, 30AWG, CA-L
100GbE	MFA1A00-C003	NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 3m
100GbE	MFA1A00-C005	NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 5m
100GbE	MFA1A00-C010	NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 10m
100GbE	MFA1A00-C015	NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 15m
100GbE	MFA1A00-C020	NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 20m
100GbE	MFA1A00-C030	NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 30m
100GbE	MFA1A00-C050	NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 50m

Speed	Cable OPN	Description
100GbE	MFA1A00-C100	NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 100m
100GbE	MFA7A20-C003	NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 3m
100GbE	MFA7A20-C005	NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 5m
100GbE	MFA7A20-C010	NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 10m
100GbE	MFA7A20-C020	NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 20m
100GbE	MFA7A50-C003	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m
100GbE	MFA7A50-C005	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 5m
100GbE	MFA7A50-C010	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 10m
100GbE	MFA7A50-C015	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 15m
100GbE	MFA7A50-C020	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 20m
100GbE	MFA7A50-C030	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 30m
100GbE	MMA1B00-C100D	NVIDIA transceiver, 100GbE, QSFP28, MPO, 850nm, SR4, up to 100m, DDMI
100GbE	MMA1L10-CR	NVIDIA optical transceiver, 100GbE, QSFP28, LC-LC, 1310nm, LR4 up to 10km <b>Note:</b> Only revision A2 and above.
100GbE	MFA1A00-C001-TG	NVIDIA customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 1m
100GbE	MFA1A00-C002-TG	NVIDIA customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP28, LSZH, 2m
100GbE	MFA1A00-C003-TG	NVIDIA customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 3m
100GbE	MFA1A00-C005-TG	NVIDIA customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 5m
100GbE	MFA1A00-C007-TG	NVIDIA customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP28, LSZH, 7m
100GbE	MFA1A00-C010-TG	NVIDIA customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 10m
100GbE	MFA1A00-C015-TG	NVIDIA customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 15m
100GbE	MFA1A00-C020-TG	NVIDIA customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 20m
100GbE	MFA1A00-C030-TG	NVIDIA customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 30m
100GbE	MFA1A00-C050-TG	NVIDIA customized active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 50m

Speed	Cable OPN	Description
100GbE	MMA1L30-CM	NVIDIA optical module, 100GbE, 100Gb/s, QSFP28, LC-LC, 1310nm, CWDM4, up to 2km
100GbE	MMS1C10-CM	NVIDIA active optical module, 100Gb/s, QSFP, MPO, 1310nm, PSM4, up to 500m
100GbE	MMS1V70-CM	NVIDIA transceiver, 100GbE, QSFP28, LC-LC, 1310nm, DR1

### 3.3.9 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	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 4m
56GE	MC2207128-003	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 3m
56GE	MC2207128-0A2	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 2.5m
56GE	MC2207130-001	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 1m
56GE	MC2207130-002	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 2m
56GE	MC2207130-00A	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 0.5m
56GE	MC2207130-0A1	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 1.5m
56GE	MC220731V-003	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 3m
56GE	MC220731V-005	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 5m
56GE	MC220731V-010	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 10m
56GE	MC220731V-015	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 15m
56GE	MC220731V-020	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 20m
56GE	MC220731V-025	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 25m
56GE	MC220731V-030	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 30m
56GE	MC220731V-040	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 40m
56GE	MC220731V-050	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 50m

Speed	Cable OPN	Description
56GE	MC220731V-075	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 75m
56GE	MC220731V-100	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 100m
56GE	MCP1700-F001C	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 1m, Red Pulltab
56GE	MCP1700-F001D	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 1m, Yellow Pulltab
56GE	MCP1700-F002C	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 2m, Red Pulltab
56GE	MCP1700-F002D	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 2m, Yellow Pulltab
56GE	MCP1700-F003C	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 3m, Red Pulltab
56GE	MCP1700-F003D	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 3m, Yellow Pulltab
56GE	MCP170L-F001	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 1m
56GE	MCP170L-F002	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 2m
56GE	MCP170L-F003	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 3m
56GE	MCP170L-F00A	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 0.5m
56GE	MCP170L-F01A	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 1.5m

### 3.3.10 Validated and Supported 40GbE Cables

Speed	Cable OPN	Description
40GE	MC2206128-004	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 4m
40GE	MC2206128-005	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 5m
40GE	MC2206130-001	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 1m
40GE	MC2206130-002	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 2m
40GE	MC2206130-003	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 3m
40GE	MC2206130-00A	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 0.5m
40GE	MC2210126-004	NVIDIA passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 4m



Speed	Cable OPN	Description
40GE	MC2210126-005	NVIDIA passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 5m
40GE	MC2210128-003	NVIDIA passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 3m
40GE	MC2210130-001	NVIDIA passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 1m
40GE	MC2210130-002	NVIDIA passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 2m
40GE	MC2210310-003	NVIDIA active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 3m
40GE	MC2210310-005	NVIDIA active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 5m
40GE	MC2210310-010	NVIDIA active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 10m
40GE	MC2210310-015	NVIDIA active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 15m
40GE	MC2210310-020	NVIDIA active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 20m
40GE	MC2210310-030	NVIDIA active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 30m
40GE	MC2210310-050	NVIDIA active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 50m
40GE	MC2210310-100	NVIDIA active fiber cable, ETH 40GbE, 40Gb/s, QSFP, 100m
40GE	MC2210411-SR4E	NVIDIA optical module, 40Gb/s, QSFP, MPO, 850nm, up to 300m
40GE	MC2609125-005	NVIDIA passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 5m
40GE	MC2609130-001	NVIDIA passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 1m
40GE	MC2609130-003	NVIDIA passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 3m
40GE	MCP1700-B001E	NVIDIA passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 1m, Black Pulltab
40GE	MCP1700-B002E	NVIDIA passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 2m, Black Pulltab
40GE	MCP1700-B003E	NVIDIA passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 3m, Black Pulltab
40GE	MCP1700-B01AE	NVIDIA passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 1.5m, Black Pulltab
40GE	MCP1700-B02AE	NVIDIA passive copper cable, ETH 40GbE, 40Gb/s, QSFP, 2.5m, Black Pulltab
40GE	MMA1B00-B150D	NVIDIA transceiver, 40GbE, QSFP+, MPO, 850nm, SR4, up to 150m, DDMI
40GE	MCP7900-X01AA	NVIDIA passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 1.5m, Blue Pulltab, customized label

Speed	Cable OPN	Description
40GE	MCP7904-X002A	NVIDIA passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 2m, Black Pulltab, customized label
40GE	MCP7904-X003A	NVIDIA passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 3m, Black Pulltab, customized label
40GE	MCP7904-X01AA	NVIDIA passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 1.5m, Black Pulltab, customized label
40GE	MCP7904-X02AA	NVIDIA passive copper hybrid cable, ETH 40GbE to 4x10GbE, QSFP to 4xSFP+, 2.5m, Black Pulltab, customized label
40GE	MC2210511-LR4	NVIDIA Optical Module 40Gb/s FDR 10 QSFP LC-LC 1310nm LR4 up to 10km
40GE	MC6709309-005	NVIDIA passive fiber hybrid cable, MPO to 8xLC, 5m
40GE	MC6709309-010	NVIDIA passive fiber hybrid cable, MPO to 8xLC, 10m
40GE	MC6709309-020	NVIDIA passive fiber hybrid cable, MPO to 8xLC, 20m
40GE	MC6709309-030	NVIDIA passive fiber hybrid cable, MPO to 8xLC, 30m

### 3.3.11 Validated and Supported 25GbE Cables

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

Speed	Cable OPN	Description
25GbE	MAM1Q00A-QSA28	NVIDIA cable module, ETH 25GbE, 100Gb/s to 25Gb/s, QSFP28 to SFP28
25GbE	MCP2M00-A001	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1m, 30AWG
25GbE	MCP2M00-A001E30N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1m, Black, 30AWG, CA-N
25GbE	MCP2M00-A002	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m, 30AWG
25GbE	MCP2M00-A002E30N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m, Black, 30AWG, CA-N
25GbE	MCP2M00-A003E26N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 3m, Black, 26AWG, CA-N
25GbE	MCP2M00-A003E30L	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 3m, Black, 30AWG, CA-L
25GbE	MCP2M00-A004E26L	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 4m, Black, 26AWG, CA-L
25GbE	MCP2M00-A005E26L	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 5m, Black, 26AWG, CA-L
25GbE	MCP2M00-A00A	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 0.5m, 30AWG
25GbE	MCP2M00-A00AE30N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 0.5m, Black, 30AWG, CA-N

Speed	Cable OPN	Description
25GbE	MCP2M00-A01AE30N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1.5m, Black, 30AWG, CA-N
25GbE	MCP2M00-A02AE26N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2.5m, Black, 26AWG, CA-N
25GbE	MCP2M00-A02AE30L	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2.5m, Black, 30AWG, CA-L
25GbE	MFA2P10-A003	NVIDIA active optical cable 25GbE, SFP28, 3m
25GbE	MFA2P10-A005	NVIDIA active optical cable 25GbE, SFP28, 5m
25GbE	MFA2P10-A007	NVIDIA active optical cable 25GbE, SFP28, 7m
25GbE	MFA2P10-A010	NVIDIA active optical cable 25GbE, SFP28, 10m
25GbE	MFA2P10-A015	NVIDIA active optical cable 25GbE, SFP28, 15m
25GbE	MFA2P10-A020	NVIDIA active optical cable 25GbE, SFP28, 20m
25GbE	MFA2P10-A030	NVIDIA active optical cable 25GbE, SFP28, 30m
25GbE	MFA2P10-A050	NVIDIA active optical cable 25GbE, SFP28, 50m
25GbE	MMA2P00-AS	NVIDIA transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, up to 100m
25GbE	SFP25G-AOC10M-TG	NVIDIA customized active optical cable 25GbE, SFP28, 10m, Aqua
25GbE	SFP25G-AOC30M-TG	NVIDIA customized active optical cable 25GbE, SFP28, 30m, Aqua
25GbE	SFP25G-AOC07M-TG	NVIDIA customized active optical cable 25GbE, SFP28, 7m, Aqua
25GbE	SFP25G-AOC05M-TG	NVIDIA customized active optical cable 25GbE, SFP28, 5m, Aqua
25GbE	SFP25G-AOC03M-TG	NVIDIA customized active optical cable 25GbE, SFP28, 3m, Aqua
25GbE	SFP25G-AOC20M-TG	NVIDIA customized active optical cable 25GbE, SFP28, 20m, Aqua
25GbE	MMA2P00-AS_FF	NVIDIA transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, up to 100m
25GbE	MMA2P00-AS-SP	NVIDIA transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, up to 100m, single package
25GbE	MMA2L20-AR	NVIDIA optical transceiver, 25GbE, 25Gb/s, SFP28, LC-LC, 1310nm, LR up to 10km

### 3.3.12 Validated and Supported 10GbE Cables

Speed	Cable OPN	Description
10GE	MFM1T02A-LR	NVIDIA SFP+ optical module for 10GBASE-LR
10GE	MFM1T02A-SR	NVIDIA SFP+ optical module for 10GBASE-SR
10GE	MAM1Q00A-QSA	NVIDIA cable module, ETH 10GbE, 40Gb/s to 10Gb/s, QSFP to SFP+
10GE	MC2309124-005	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 5m
10GE	MC2309124-007	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 7m
10GE	MC2309130-001	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 1m

Speed	Cable OPN	Description
10GE	MC2309130-002	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 2m
10GE	MC2309130-003	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 3m
10GE	MC2309130-00A	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 0.5m
10GE	MC3309124-004	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 4m
10GE	MC3309124-005	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 5m
10GE	MC3309124-006	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 6m
10GE	MC3309124-007	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 7m
10GE	MC3309130-001	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m
10GE	MC3309130-002	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m
10GE	MC3309130-003	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m
10GE	MC3309130-00A	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 0.5m
10GE	MC3309130-0A1	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1.5m
10GE	MC3309130-0A2	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2.5m
10GE	MCP2100-X001B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m, Blue Pulltab, Connector Label
10GE	MCP2100-X002B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m, Blue Pulltab, Connector Label
10GE	MCP2100-X003B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m, Blue Pulltab, Connector Label
10GE	MCP2101-X001B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m, Green Pulltab, Connector Label
10GE	MCP2104-X001B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m, Black Pulltab, Connector Label
10GE	MCP2104-X002B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m, Black Pulltab, Connector Label
10GE	MCP2104-X003B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m, Black Pulltab, Connector Label
10GE	MCP2104-X01AB	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1.5m, Black Pulltab, Connector Label
10GE	MCP2104-X02AB	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2.5m, Black Pulltab, Connector Label

### 3.3.13 Validated and Supported 1GbE Cables

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

### 3.4 Supported 3rd Party Cables and Modules

Speed	Cable OPN	Description
10GbE	FTLX8571D3BCL-ME	10gb SFP 850nm Optic Transceiver
10GbE	SP7051-HP	HP-MethodElec. 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	QSFP-40G-SR-BD	Cisco 40GBASE-SR-BiDi, duplex MMF
100GbE	1AT-3Q4M01XX-12A	O-NET QSFP28 100G Active cable/module
100GbE	AQPMANQ4EDMA0784	QSFP28 100G SMF 500m Transceiver
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

### 3.5 Tested Switches

### 3.5.1 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	NVIDIA
HDR	Quantum	MQM8790-xxx	40-port Unmanaged, Non-blocking HDR 200Gb/s InfiniBand Smart Switch	NVIDIA

### 3.5.2 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	NVIDIA
EDR	Switch-IB	MSB7700-XXX	36-port Managed EDR 100Gb/s InfiniBand Switch Systems	NVIDIA
EDR	Switch-IB 2	MSB7800-XXX	36-port Managed EDR 100Gb/s InfiniBand Switch Systems	NVIDIA

### 3.5.3 Tested 200GbE Switches

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

### 3.5.4 Tested 100GbE Switches

Speed	Switch Silicon	OPN # / Name	Description	Vendor
100GbE	Spectrum-3	MSN4600-XXXX	64-port Non-blocking 100GbE Open Ethernet Switch System	NVIDIA
100GbE	Spectrum-2	MSN3700C-XXXX	32-port Non-blocking 100GbE Open Ethernet Switch System	NVIDIA
100GbE	Spectrum-2	MSN3420-XXXX	48 SFP + 12 QSFP ports Non-blocking 100GbE Open Ethernet Switch System	NVIDIA
100GbE	Spectrum	MSN2410-XXXX	48-port 25GbE + 8-port 100GbE Open Ethernet Switch System	NVIDIA
100GbE	Spectrum	MSN2700-XXXX	32-port Non-blocking 100GbE Open Ethernet Switch System	NVIDIA
100GbE	N/A	QFX5200-32C-32	32-port 100GbE Ethernet Switch System	Juniper

Speed	Switch Silicon	OPN # / Name	Description	Vendor
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

### 3.5.5 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
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

## 3.6 PRM Revision Compatibility

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

- 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.




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## 4 Changes and New Features


### 4.1 Important Notes

 SR-IOV - Virtual Functions (VF) per Port - The maximum Virtual Functions (VF) per port is 127. For further information, see [Known Issues](#).

 It is recommended to enable the “above 4G decoding” BIOS setting for features that require large amount of PCIe resources.

Such features are: SR-IOV with numerous VFs, PCIe Emulated Switch, and Large BAR Requests.

 Security Hardening Enhancements: This release contains important reliability improvements and security hardening enhancements. NVIDIA recommends upgrading your devices' firmware to this release to improve the devices' firmware security and reliability.

 When upgrading or changing the configuration on multi-host adapter cards, for the changes to take effect, PCIe restart must be simultaneously sent 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.

### 4.2 Changes and New Feature in this Firmware Version

Feature/Change	Description
<b>20.35.3502</b>	
<b>Bug Fixes</b>	See Bug Fixes in this Firmware Version section.

### 4.3 Unsupported Features and Commands

#### 4.3.1 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

### 4.3.2 Unsupported Commands

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

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## 5 Bug Fixes in this Firmware Version

For a list of old Bug Fixes, please see [Bug Fixes History](#).

Internal Ref.	Issue
3673153	<b>Description:</b> Modified the TCP IPv4 flows so that the steering TIR rx_hash_symmetric field is now valid only when both the SRC and DST fields are not set to zero.
	<b>Keywords:</b> TCP IPv4 flows
	<b>Discovered in Version:</b> 20.35.2000
	<b>Fixed in Release:</b> 20.35.3502

## 6 Known Issues

### VF Network Function Limitations in SRIOV Legacy Mode

Dual Port Device	Single Port Device
127 VF per PF (254 functions)	127

### VF Network Function Limitations in Switchdev Mode

Dual Port Device	Single Port Device
127 VF per PF (254 functions)	127

### VF+SF Network Function Limitations in Switchdev Mode

Dual Port Device	Single Port Device
<ul style="list-style-type: none"> <li>• 127 VF per PF (254 functions)</li> <li>• 512 PF+VF+SF per PF (1024 functions)</li> </ul>	<ul style="list-style-type: none"> <li>• 127 VF (127 functions)</li> <li>• 512 PF+VF+SF per PF (512 functions)</li> </ul>

### Known Issues

Internal Ref.	Issue
3525865	<b>Description:</b> Unexpected system behavior might be observed if the driver is loaded while reset is in progress.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> Sync 1 reset, firmware reset
	<b>Discovered in Version:</b> 20.35.3006
3261861	<b>Description:</b> Connecting an HDR device to an NDR device with Optical cables longer than 30m causes degradation in the bandwidth.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> HDR-to-NDR, cables
	<b>Discovered in Version:</b> 20.35.1012
3209624	<b>Description:</b> To configure Adaptive Routing in RoCE through ROCE_ACCL access register or through cmdif mlxconfig, ROCE_ADAPTIVE_ROUTING_EN nvconfig parameter must be set.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> Adaptive Routing in RoCE
	<b>Discovered in Version:</b> 20.34.1002
3200779	<b>Description:</b> Changing dynamic PCIe link width is not supported.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> PCIe
	<b>Discovered in Version:</b> 20.34.1002
3030570	<b>Description:</b> “crypto policy” access registry can be modified only by the INI file.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> AES_XTS

Internal Ref.	Issue
2793880	<b>Discovered in Version:</b> 20.33.1048
	<b>Description:</b> Checksum is not calculated correctly in IPoIP packet with LSO.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> IPoIP, LSO, checksum
2864238	<b>Description:</b> VPD cannot be accessed after firmware upgrade or reset when the following sequence is performed: <ol style="list-style-type: none"> <li>1. Upgrade to a new firmware and perform a cold reboot</li> <li>2. Downgrade to an old firmware</li> <li>3. Run fwreset</li> <li>4. Upgrade to a new firmware</li> <li>5. Run fwreset</li> </ol>
	<b>Workaround:</b> Run the upgrade or reset sequence as follow: <ol style="list-style-type: none"> <li>1. Upgrade to a new firmware and perform a cold reboot</li> <li>2. Downgrade to an old firmware</li> <li>3. Run fwreset</li> <li>4. Upgrade to a new firmware</li> <li>5. <b><u>Perform a cold reboot</u></b></li> </ol>
	<b>Keywords:</b> VDP
	<b>Discovered in Version:</b> 20.32.1010
	2616755
<b>Workaround:</b> N/A	
<b>Keywords:</b> Steering, IPoIB	
<b>Discovered in Version:</b> 20.32.1010	
2582094	<b>Description:</b> When performing a stress toggle test vs. IXIA, the IXIA side is not ready for few seconds.
	<b>Workaround:</b> Wait for 1 sec between running the down and up commands.
	<b>Keywords:</b> Auto-negotiation.
	<b>Discovered in Version:</b> 20.31.1014
2446583	<b>Description:</b> On rare occasions, when both network devices are NVIDIA, PAM4 link will raise with several effective errors. These errors will not affect traffic once the link is up.
	<b>Workaround:</b> Clear counters once the link is up
	<b>Keywords:</b> Effective errors
	<b>Discovered in Version:</b> 20.29.2002
SF 933911	<b>Description:</b> PXE boot will not function if the adapter card is connected to a NVIDIA Quantum™ based switch over an HDR active optical cable.
	<b>Workaround:</b> Set KEEP_LINK_UP_ON_BOOT configuration to enable via mlxconfig. For further information please contact Support.
	<b>Keywords:</b> IB, Link Speed , Link Down, SDR , optical cable
	<b>Discovered in Version:</b> 20.30.1004

Internal Ref.	Issue
2378593	<p><b>Description:</b> Sub 1sec firmware update (fast reset flow) is not supported when updating from previous releases to the current one. Doing so may cause network disconnection events.</p> <p><b>Workaround:</b> Use full reset flow for firmware upgrade/downgrade.</p> <p><b>Keywords:</b> Sub 1sec firmware update</p> <p><b>Discovered in Version:</b> 20.29.1016</p>
2213356	<p><b>Description:</b> The following are the Steering Dump limitations:</p> <ul style="list-style-type: none"> <li>• Supported only on ConnectX-5 adapter cards</li> <li>• Requires passing the version (FW/Stelib/MFT) and device type to stelib</li> <li>• Re-format is not supported</li> <li>• Advanced multi-port feature is not supported - LAG/ROCE_AFFILIATION/MPFS_LB/ESW_LB (only traffic vhca &lt;-&gt; wire)</li> <li>• Packet types supported: <ul style="list-style-type: none"> <li>• Layer 2 Eth</li> <li>• Layer 3 IPv4/Ipv6/Grh</li> <li>• Layer 4 TCP/UDP/Bth/GreV0/GreV1</li> <li>• Tunneling VXLAN/Geneve/GREv0/Mpls</li> </ul> </li> <li>• FlexParser protocols are not supported (e.g AliVxlan/VxlanGpe etc..).</li> <li>• Compiles only on x86</li> </ul> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Steering Bump</p> <p><b>Discovered in Version:</b> 20.29.1016</p>
2365322	<p><b>Description:</b> When configuring adapter card's Level Scheduling, a QoS tree leaf (QUEUE_GROUP) configured with default rate_limit and default bw_share, may not obey the QoS restrictions imposed by any of the leaf's ancestors.</p> <p><b>Workaround:</b> To prevent such a case, configure at least one of the following QoS attributes of a leaf: <code>max_average_bw</code> or <code>bw_share</code></p> <p><b>Keywords:</b> QoS</p> <p><b>Discovered in Version:</b> 20.29.1016</p>
2239632	<p><b>Description:</b> EDR linkup time might take up to 50sec when using HDR optical cable.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Cables, EDR</p> <p><b>Discovered in Version:</b> 20.28.1002</p>
2145881	<p><b>Description:</b> FDR link is unstable when using an FDR cable in ports: #27-#34.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> FDR, cables</p> <p><b>Discovered in Version:</b> 20.27.6008</p>
2149437	<p><b>Description:</b> When the SLTP configuration is wrongly set, the "Bad status" explanation will not be presented (only error indication) to the user.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> SLTP configuration</p> <p><b>Discovered in Version:</b> 20.27.6008</p>

Internal Ref.	Issue
2071210	<p><b>Description:</b> mlxconfig query for the BOOT_INTERRUPT_DIS TLV shows a wrong value in the "current value" field.</p> <p><b>Workaround:</b> Use "next boot" indication to see the right value.</p> <p><b>Keywords:</b> mlxconfig</p> <p><b>Discovered in Version:</b> 20.27.1016</p>
1796936	<p><b>Description:</b> 200GbE Optical cables in Auto-Negotiation mode work only in 200GbE speed.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Cables</p> <p><b>Discovered in Version:</b> 20.27.1016</p>
1959529	<p><b>Description:</b> 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.</p> <p><b>Workaround:</b> Toggle the Active Copper or Optics cables as the switch performs a reset.</p> <p><b>Keywords:</b> Cables, BER</p> <p><b>Discovered in Version:</b> 20.27.1016</p>
1959529	<p><b>Description:</b> 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.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Cables</p> <p><b>Discovered in Version:</b> 20.27.1016</p>
1997329	<p><b>Description:</b> Downgrading from firmware v20.26.4012 to firmware v20.26.1040 and lower is not supported on Windows OSes using the mlxfwmanager tool.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> mlxfwmanager, firmware downgrade</p> <p><b>Discovered in Version:</b> 20.26.4012</p>
1930619	<p><b>Description:</b> PF_BAR2 and ATS cannot be enabled together, i.e. when PF_BAR2 is enabled, ATS cannot be enabled too.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> ATS, SF, BAR2, Multi GVMI</p> <p><b>Discovered in Version:</b> 20.26.1040</p>
-	<p><b>Description:</b> 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.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> mlxconfig, flash tool, ext_synd 0x8d1d</p> <p><b>Discovered in Version:</b> 20.26.1040</p>
1796936	<p><b>Description:</b> HDR split cables support only HDR speed.</p> <p><b>Workaround:</b> N/A</p>

Internal Ref.	Issue
	<p><b>Keywords:</b> Link Speed, cables, Break-Out cables</p> <p><b>Discovered in Version:</b> 20.26.1040</p>
1750460 / 2063991	<p><b>Description:</b> BER issues might occur when using ConnectX-6 adapter cards in 100GbE link speed, and connecting with and 3rd party switch systems.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> BER, 100GbE, Spectrum-2</p> <p><b>Discovered in Version:</b> 20.26.1040</p>
1918749	<p><b>Description:</b> mlxlink tool displays a wrong speed when using ETH cables on ConnectX-6 adapter cards.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> mlxlink</p> <p><b>Discovered in Version:</b> 20.26.1040</p>
1901198	<p><b>Description:</b> Firmware is not loaded on Multi-Host setups after reboot.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Firmware load, Multi-Host</p> <p><b>Discovered in Version:</b> 20.26.1040</p>
1842278	<p><b>Description:</b> DC LAG can function only in case there is a single PF per port without any active VFs.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> DC LAG</p> <p><b>Discovered in Version:</b> 20.26.1040</p>
1796628	<p><b>Description:</b> Due to performance considerations, unicast loopback traffic will go through the NIC SX tables, and multicast loopback traffic will skip the NIC SX tables.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Performance, unicast loopback traffic, multicast loopback traffic</p> <p><b>Discovered in Version:</b> 20.26.1040</p>
1797493	<p><b>Description:</b> Firmware asserts may occur when setting the PF_BAR2_SIZE value higher than the maximum supported size.</p> <p><b>Workaround:</b> Configure within limits (NIC PF_BAR_SIZE &lt;= 4).</p> <p><b>Keywords:</b> Multi-GVMI, Sub-Function, SFs, BAR2</p> <p><b>Discovered in Version:</b> 20.26.1040</p>
-	<p><b>Description:</b> Coherent Accelerator Processor Interface (CAPI) in ConnectX-6 firmware v20.25.7020 and above has low test coverage, however, it has no known issues.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> CAPI</p> <p><b>Discovered in Version:</b> 20.25.7020</p>
-	<p><b>Description:</b> HDR optical cables and Split cables support only HDR speed.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Link Speed, cables, Break-Out cables</p>



Internal Ref.	Issue
1755286	<p><b>Discovered in Version:</b> 20.25.6000</p> <p><b>Description:</b> Port speed may change to SDR spontaneously, without a clear reason.</p> <p><b>Workaround:</b> Keep the "keep_ib_link_up" bit at 0 in NVconfig to make sure the port is raised with the correct speed.</p> <p><b>Keywords:</b> SDR, port speed</p> <p><b>Discovered in Version:</b> 20.25.2006</p>
1774135	<p><b>Description:</b> PXE boot is not functional when connecting a splitter cable to the host.</p> <p><b>Workaround:</b> Update the SM as follow:</p> <ul style="list-style-type: none"> <li>• MLNX_OFED SM: <ul style="list-style-type: none"> <li>• Set the default partition in the SM partitions.conf file as shown in the example below: Default=0x7fff,ipoib,rate=5:ALL=full; <b>Note:</b> "rate" must be set to "5" regardless to the other flags values.</li> </ul> </li> <li>• MLNX-OS SM: Run the following CLI commands:  <pre>no ib sm ib partition Default rate 5 ib sm</pre> </li> <li>• UFM SM: Use REST API to change default partition rate: PUT https://&lt;some IP&gt;/ufmRest/resources/networks/management <pre>{ "qos_parameters": { "rate_limit": 900 } }</pre> <p>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;</p> </li> </ul> <p><b>Keywords:</b> PXE boot, splitter cable</p> <p><b>Discovered in Version:</b> 20.25.2006</p>
1768814/1772474	<p><b>Description:</b> Due to hardware limitation, REG_C cannot be passed over loopback when the FDB action is forwarded to multiple destinations.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Connection-Tracking</p> <p><b>Discovered in Version:</b> 20.25.2006</p>
1770736	<p><b>Description:</b> When a PF or ECPF with many VFs (SR-IOV), and/or SFs (Multi-GVMI) triggers an FLR, PCIe completion timeout might occur.</p> <p><b>Workaround:</b> Increase the PCIe completion timeout.</p> <p><b>Keywords:</b> Multi-GVMI, SR-IOV, Sub-Function, Virtual Function, PF FLR</p> <p><b>Discovered in Version:</b> 20.25.2006</p>
1716334	<p><b>Description:</b> When mlxconfig.PF_BAR2_EN is enabled, configuring more than 255 PCI functions will raise an assert.</p>

Internal Ref.	Issue
	<p><b>Workaround:</b> 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.:</p> <ul style="list-style-type: none"> <li>• Smart NICs: 2 External Host PFs, 2 ARM ECPFs, 125 VFs per PF.</li> <li>• Non-smart NICs: 2 External Host PFs, 126 VFs per PF</li> </ul> <p><b>Keywords:</b> Multi-GVMI, PF_BAR2_EN, Sub-Functions, SR-IOV, VFs</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
1699214	<p><b>Description:</b> NODNIC VF is partially tested. It is fully tested only in ConnectX-5 adapter cards.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> NODNIC VF</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
1699214	<p><b>Description:</b> NODNIC VF is partially tested. It is fully tested only in ConnectX-5 adapter cards.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> NODNIC VF</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
-	<p><b>Description:</b> The supported length of HDR copper cables is currently up to 2M.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> HDR cables</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
-	<p><b>Description:</b> In Ethernet mode, at 10/40GbE speeds, only NO-FEC in Force mode is supported. Other user configurations are overridden.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Ethernet, 10GbE, 40GbE, RS-FEC</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
1574876	<p><b>Description:</b> DC RoCE LAG is functional only if the router posts VRRP address as the source MAC.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> DC RoCE LAG</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
1498399	<p><b>Description:</b> If the XRC switches between SRQ/RMPs while there is an outstanding ODP on the responder XRC QP, a CQE with an error might be generated (that is not a PFAULT abort).</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> XRC SRQ/RMP ODP</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
-	<p><b>Description:</b> In some cases, the power consumption might be 10% higher than what is stated in the adapter cards User Manual.</p> <p><b>Workaround:</b> Power consumption will be aligned with the User Manual statement in the next release</p>

Internal Ref.	Issue
	<p><b>Keywords:</b> Power consumption</p> <p><b>Discovered in Version:</b> 20.25.1500 [Beta]</p>
1546492	<p><b>Description:</b> Executing the update_lid command while the IB port sniffer utility is active can stop the utility.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> IB Sniffer</p> <p><b>Discovered in Version:</b> 20.25.1500 [Beta]</p>
1537898	<p><b>Description:</b> Initializing a function while the IB port sniffer utility is active can stop the utility.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> IB Sniffer</p> <p><b>Discovered in Version:</b> 20.25.1500 [Beta]</p>
1414290	<p><b>Description:</b> When getting an inline scatter CQE on IB striding RQ, the stride index in the CQE will be zero.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Scatter CQE</p> <p><b>Discovered in Version:</b> 20.25.1500 [Beta]</p>
1332714/1345824	<p><b>Description:</b> The maximum “read” size of MTRC_STDB is limited to 272 Bytes.</p> <p><b>Workaround:</b> Set the MTRC_STDB.read_size to the maximum value of 0x110=272 Bytes</p> <p><b>Keywords:</b> Access register, MTRC_STDB, tracer to dmesg, fwtrace to dmesg</p> <p><b>Discovered in Version:</b> 20.25.1500 [Beta]</p>
1408994	<p><b>Description:</b> FTE with both forward (FWD) and encapsulation (ENCAP) actions is not supported in the SX NIC Flow Table.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> SX NIC Flow Table</p> <p><b>Discovered in Version:</b> 20.25.1500 [Beta]</p>
1027553	<p><b>Description:</b> While using e-switch vport sVLAN stripping, the RX steering values on the sVLAN might not be accurate.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> e-sw vport sVLAN stripping, RX steering</p> <p><b>Discovered in Version:</b> 20.25.1500 [Beta]</p>
1799917	<p><b>Description:</b> Untagged CVLAN packets in the Steering Flow Tables do not match the sVLAN tagged packets.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Steering Flow Tables, CVLAN/sVLAN packets</p> <p><b>Discovered in Version:</b> .20.25.1500 [Beta]</p>
1277762	<p><b>Description:</b> 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.</p> <p><b>Workaround:</b> N/A</p>

Internal Ref.	Issue
	<p><b>Keywords:</b> Ethernet multicast loopback packet</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
1306342	<p><b>Description:</b> Signature-accessing WQEs sent locally to the NVMeF target QPs that encounter signature errors, will not send a SIGERR CQE.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Signature-accessing WQEs, NVMeF target</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
1168594	<p><b>Description:</b> RoCE Dual Port Mode (a.k.a Multi-Port vHCA: MPV) is not supported in Multi-Host setups.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Multi-Port vHCA, Multi-Host</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
1072337	<p><b>Description:</b> If a packet is modified in e-sw flow steering, the SX sniffer Flow Table (of the VF) will see the sniffed packet after the modification.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> SX sniffer Flow Table</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
1171013	<p><b>Description:</b> Signature Handover Operations is not supported when FPP (Function-Per-Port) mode is disabled.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Signature Handover Operations, FPP</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>
1059975	<p><b>Description:</b> NVMeF limitation:</p> <ul style="list-style-type: none"> <li>• Transaction size - up to 128KB per IO (non-inline)</li> <li>• Support up to 16K connections</li> <li>• Support single namespace per drive</li> <li>• Staging buffer size must be at least 16MB in order to allow SRQ size of 64 entries</li> </ul> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> NVMeF</p> <p><b>Discovered in Version:</b> 20.25.1500 <b>[Beta]</b></p>

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## 7 PreBoot Drivers (FlexBoot/UEFI)

### 7.1 FlexBoot Changes and New Features

For further information, please refer to the [FlexBoot Release Notes](#).

### 7.2 UEFI Changes and Major New Features

For further information, please refer to the [UEFI Release Notes](#).

## 8 Supported Non-Volatile Configurations

Configuration	mlxconfig Parameter Name	Class	TLV ID
NV_MEMIC_CONF	MEMIC_BAR_SIZE	GLOBAL (0)	0x6
	MEMIC_SIZE_LIMIT		
NV_HOST_CHAINING_CONF	HOST_CHAINING_MODE		0x8
	HOST_CHAINING_DESCRIPTOR		
	HOST_CHAINING_TOTAL_BUFFER_SIZE		
NV_FLEX_PARS_CONF	FLEX_PARSER_PROFILE_ENABLE		0xe
	FLEX_IPV4_OVER_VXLAN_PORT		
NV_ROCE_1_5_CONF	ROCE_NEXT_PROTOCOL		0x10
NV_INTERNAL_RESOURCE_CONF	ESWITCH_HAIRPIN_DESCRIPTOR		0x13
	ESWITCH_HAIRPIN_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	
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	

Configuration	mlxconfig Parameter Name	Class	TLV ID
	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			
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	

Configuration	mlxconfig Parameter Name	Class	TLV ID
	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
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		



## 9 Release Notes History

### 9.1 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
<b>20.35.3006</b>	
<b>Bug Fixes</b>	See Bug Fixes in this Firmware Version section.

Feature/Change	Description
<b>20.35.2000</b>	
<b>Bug Fixes</b>	See Bug Fixes in this Firmware Version section.

Feature/Change	Description
<b>20.35.1012</b>	
<b>UDP</b>	Added support for copy modify header steering action to/from the UDP field.
<b>RoCE: Adaptive Timer</b>	Enabled ADP timer to allow the user to configure RC or DC qp_timeout values lower than 16.
<b>QoS Priority Trust Default State</b>	QoS priority trust default state can now be changed using the new nvconfig below: <ul style="list-style-type: none"> <li>QOS_TRUST_STATE_P1</li> <li>QOS_TRUST_STATE_P2</li> </ul> The values that can be used to set the default state are: <ul style="list-style-type: none"> <li>TRUST_PORT</li> <li>TRUST_PCP</li> <li>TRUST_DSCP</li> <li>TRUST_DSCP_PCP</li> </ul>
<b>Bug Fixes</b>	See <a href="#">Bug Fixes</a> .
<b>20.34.1002</b>	
<b>LLDP Properties Implementation on RDE</b>	Added LLDPEnable, LLDPTransmit and LLDPReceive properties to the RDE Port schema implementation.
<b>Queue Counters Allocation</b>	This new capability allows privileged users to allocate queue counters. In this new feature the get_max_qp_cnt_cur_cap() returns a valid value when the UID is with UCTX_CAP_INTERNAL_DEVICE_RESOURCES , otherwise it returns 0.
<b>Bug Fixes</b>	See <a href="#">Bug Fixes</a> .
<b>20.33.1048</b>	
<b>NV Configurations via the Relevant Reset Flow</b>	Added pci_rescan_needed field to the MFRL access register to indicate whether a PCI rescan is needed based on the NV configurations issued by the software. <b>Note:</b> If the Keep Link Up NV configuration is changed, phyless reset will be blocked.

<b>MADs</b>	Added a new MAD of class SMP that has the attributes <code>hierarchy_Info</code> as defined in the IB Specification and is used to query the hierarchy information stored on the node and the physical port.
<b>ICM Pages</b>	Added a new register ( <code>vhca_icm_ctrl_access_reg</code> ) to enable querying and limiting the ICM pages in use.
<b>XRQ QP Errors Enhancements</b>	Enhanced the XRQ QP error information provided to the user in case QP goes into an error state. In such case, QUERY_QP will provide information on the syndrome type and which side caused the error.
<b>ibstat</b>	Updated the ibstat status reported when the phy link is down. Now <code>QUERY_VPORT_STATE.max_tx_speed</code> of UPLINK will not be reported as 0 anymore.
<b>NetworkPort Schema Replacement</b>	Replaced the deprecated NetworkPort schema with Port schema in NIC RDE implementation.
<b>SMPs</b>	Disabled the option to send SMPs from unauthorized hosts.
<b>Firmware Steering</b>	Enabled the option to modify the <code>ip_ecn</code> field in the packet header in firmware steering.
<b>SW Steering Cache</b>	Modified the TX or RX cache invalidation behavior. TX or RX cache invalidation now does not occur automatically but only when the software performs the sync operation using the <code>sync_steering</code> command.
<b>Mega Allocations in Bulk Allocator Mechanism</b>	Modified the maximum bulk size per single allocation from <code>"log_table_size - log_num_unisizes"</code> , to allocate any range size, to remove limitations that HWS objects such as counters and modify arguments might encounter.
<b>Changing all the Crypto Features to Wrapped or Cleartext</b>	Crypto features can be in either wrapped or unwrapped mode. Meaning, the key can be wrapped or in plaintext when running the CREATE_DEK PRM command. To comply with the requirements specified in FIPS publication, all the created DEKs must be wrapped. This feature adds new <code>NV_CONFIG</code> per device to control this mode, and enables the user to change all the crypto features to wrapped or cleartext.
<b>Bug Fixes</b>	See <a href="#">Bug Fixes</a> .

### 9.1.1 Customer-Affecting Changes

Feature/Change	Description
<b>20.27.1016</b>	
<b>Link Protocol</b>	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.

## 9.2 Bug Fixes History



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

Internal Ref.	Issue
3333959	<b>Description:</b> Enabled ACS for single port cards.
	<b>Keywords:</b> ACS
	<b>Discovered in Version:</b> 20.35.2000
	<b>Fixed in Release:</b> 20.35.3006
3491989	<b>Description:</b> Fixed an issue that caused the virtio-blk traffic to get stuck when working on vDPA over VFE mode.
	<b>Keywords:</b> virtio-blk, virtio full emulation, vDPA
	<b>Discovered in Version:</b> 20.35.2000
	<b>Fixed in Release:</b> 20.35.3006
3331009	<b>Description:</b> Added vPort counters after creating the LAG demux table to count kernel packets reaching all the PFs participating in the LAG.
	<b>Keywords:</b> LAG, counters, vPort
	<b>Discovered in Version:</b> 20.35.2000
	<b>Fixed in Release:</b> 20.35.3006
3496450	<b>Description:</b> Implemented a health check for the valid module to verify that a port swap does not happen on modules greater than 1.
	<b>Keywords:</b> Health check
	<b>Discovered in Version:</b> 20.35.1012
	<b>Fixed in Release:</b> 20.35.3006

Internal Ref.	Issue
3217896	<b>Description:</b> Fixed RDE PATCH operation status code reported in case the property is "read-only".
	<b>Keywords:</b> RDE
	<b>Discovered in Version:</b> 20.35.1012
	<b>Fixed in Release:</b> 20.35.2000
3241357	<b>Description:</b> Fixed an issue in MCTP-over-PCIe, where the VDM message with the type Route-to-Root Complex, the target ID was not set as 0x0.
	<b>Keywords:</b> MCTP-over-PCIe, VDM message
	<b>Discovered in Version:</b> 20.35.1012
	<b>Fixed in Release:</b> 20.35.2000
3215393	<b>Description:</b> Fixed an issue that caused the virtual QoS mechanism to stop traffic from reaching the full line rate of 200GbE on each direction when LAG was enabled.
	<b>Keywords:</b> Virtual QoS mechanism, 200GbE, LAG
	<b>Discovered in Version:</b> 20.35.1012
	<b>Fixed in Release:</b> 20.35.2000

Internal Ref.	Issue
3227873	<p><b>Description:</b> Fixed an issue that caused RDE (Redfish) PATCH operation to LLDPTransmit properties "ManagementAddressIPv4", "ManagementAddressIPv6" and "ManagementAddressMAC" to be applied only in the first attempt but failed in the next.</p> <p><b>Keywords:</b> RDE (Redfish) PATCH operation</p> <p><b>Discovered in Version:</b> 20.34.1002</p> <p><b>Fixed in Release:</b> 20.35.1012</p>
3163578	<p><b>Description:</b> Fixed an issue that caused the RXT E2E inflight to hang.</p> <p><b>Keywords:</b> RXT E2E inflight</p> <p><b>Discovered in Version:</b> 20.34.1002</p> <p><b>Fixed in Release:</b> 20.35.1012</p>
3126528	<p><b>Description:</b> RDMA partition is now reported only if NIC+RDMA mode is enabled.</p> <p><b>Keywords:</b> RDMA partition</p> <p><b>Discovered in Version:</b> 20.34.1002</p> <p><b>Fixed in Release:</b> 20.35.1012</p>
3184625	<p><b>Description:</b> Fixed an issue that caused PLDM AEN event receiver media to be changed unexpectedly and destination BDF to be overridden with garbage when some PLDM packet were received from the SMBus layer.</p> <p><b>Keywords:</b> PLDM AEN event receiver media</p> <p><b>Discovered in Version:</b> 20.34.1002</p> <p><b>Fixed in Release:</b> 20.35.1012</p>
3210116	<p><b>Description:</b> Fixed a wrong address issue for XRQ Event Backend Controller Px Syndrome event in multi-host system during FLR.</p> <p><b>Keywords:</b> XRQ Event Backend Controller Px Syndrome</p> <p><b>Discovered in Version:</b> 20.34.1002</p> <p><b>Fixed in Release:</b> 20.35.1012</p>
3194359	<p><b>Description:</b> Fixed PCIe SKP OS generation interval for Gen1 and Gen2.</p> <p><b>Keywords:</b> PCIe SKP</p> <p><b>Discovered in Version:</b> 20.34.1002</p> <p><b>Fixed in Release:</b> 20.35.1012</p>
3147648	<p><b>Description:</b> Fixed an issue that prevented InfiniBand L2 QP from receiving RDMA traffic.</p> <p><b>Keywords:</b> RDMA traffic</p> <p><b>Discovered in Version:</b> 20.34.1002</p> <p><b>Fixed in Release:</b> 20.35.1012</p>
2824427	<p><b>Description:</b> Running with a debug firmware reduces security as if token was applied.</p> <p><b>Keywords:</b> Debug Firmware</p> <p><b>Discovered in Version:</b> 20.33.1048</p> <p><b>Fixed in Release:</b> 20.35.1012</p>

Internal Ref.	Issue
3134894	<b>Description:</b> Fixed an issue where <code>set_flow_table_entry</code> failed when <code>aso_flow_meter</code> action was used.
	<b>Keywords:</b> ASO Flow Meter, FW Steering
	<b>Discovered in Version:</b> 20.30.1004
	<b>Fixed in Release:</b> 20.34.1002
3059379	<b>Description:</b> Added "Command Unsupported" response code in cases when running the MCTP control command "Get Vendor Defined Messages Supported", and there were no supported VDMs.
	<b>Keywords:</b> MCTP control command
	<b>Discovered in Version:</b> 20.30.1004
	<b>Fixed in Release:</b> 20.34.1002
2994292	<b>Description:</b> Fixed a race condition occurred between the duplicate read and QP commands (2RST, 2ERR and Destroy) in the signature that caused the command to hang.
	<b>Keywords:</b> Race condition
	<b>Discovered in Version:</b> 20.30.1004
	<b>Fixed in Release:</b> 20.34.1002
2862173	<b>Description:</b> Added support for InfiniBand MAD packets capturing in RX RDMA Steering table.
	<b>Keywords:</b> MAD, Steering
	<b>Discovered in Version:</b> 20.33.1048
	<b>Fixed in Release:</b> 20.34.1002
2665773	<b>Description:</b> Added 50 Usec delay during PML1 exit to avoid any PCIe replay timer timeout.
	<b>Keywords:</b> PCIe, PML1
	<b>Discovered in Version:</b> 20.33.1048
	<b>Fixed in Release:</b> 20.34.1002
3023847	<b>Description:</b> Enabled sending and receiving traffic with a different LID than the host LID in MetroX applications.
	<b>Keywords:</b> MetroX, LID based
	<b>Discovered in Version:</b> 20.33.1048
	<b>Fixed in Release:</b> 20.34.1002

Internal Ref.	Issue
2435442	<b>Description:</b> RDMA write may experience performance degradation when working with Adaptive Routing and DCT half-handshake mode.
	<b>Keywords:</b> DC, DCT, AR
	<b>Discovered in Version:</b> 20.32.1010
	<b>Fixed in Release:</b> 20.33.1048

Internal Ref.	Issue
2858666	<p><b>Description:</b> Fixed an issue that ignored the default value of TX_SCHEDULER_BURST when its value in the ini was different than "0" .</p> <p><b>Keywords:</b> TX_SCHEDULER_BURST, NVCONFIG</p> <p><b>Discovered in Version:</b> 20.32.1010</p> <p><b>Fixed in Release:</b> 20.33.1048</p>
2802943	<p><b>Description:</b> Implemented SLD detection code. Surprise Down Error Reporting Capable value was changed from 1 to 0 in boards where the downstream perst was not controlled thus causing SLD detection not to function properly.</p> <p><b>Keywords:</b> SLD detection, Surprise Down Error Reporting Capable</p> <p><b>Discovered in Version:</b> 20.32.1010</p> <p><b>Fixed in Release:</b> 20.33.1048</p>
2513453	<p><b>Description:</b> Fixed rare lanes skew issue that caused CPU to timeout in Rec.idle.</p> <p><b>Keywords:</b> PCIe</p> <p><b>Discovered in Version:</b> 20.32.1010</p> <p><b>Fixed in Release:</b> 20.33.1048</p>
2850198	<p><b>Description:</b> Fixed RDMA_WRITE traffic performance degradation that occurred when working with DC on Adaptive Routing network.</p> <p><b>Keywords:</b> Performance, DC, AR</p> <p><b>Discovered in Version:</b> 20.32.1010</p> <p><b>Fixed in Release:</b> 20.33.1048</p>
2951894	<p><b>Description:</b> Fixed bad cache invalidations of destroyed QPs.</p> <p><b>Keywords:</b> destroy_qp</p> <p><b>Discovered in Version:</b> 20.32.1010</p> <p><b>Fixed in Release:</b> 20.33.1048</p>
2801850	<p><b>Description:</b> Fixed a rare case where asserts and ext_synd appeared in dmesg after performing driver restart.</p> <p><b>Keywords:</b> Driver restart</p> <p><b>Discovered in Version:</b> 20.32.1010</p> <p><b>Fixed in Release:</b> 20.33.1048</p>
2822046	<p><b>Description:</b> Fixed an issue related to host isolation on multi-host systems.</p> <p><b>Keywords:</b> Multi-host systems, isolation</p> <p><b>Discovered in Version:</b> 20.32.1010</p> <p><b>Fixed in Release:</b> 20.33.1048</p>
2860409	<p><b>Description:</b> Enabled delay drop for hairpin packets. If a hairpin QP is created with delay_drop_en enabled, the feature will be enabled across all GVMs, based on the delay drop status.</p> <p><b>Keywords:</b> Hairpin delay drop</p> <p><b>Discovered in Version:</b> 20.32.1010</p>

Internal Ref.	Issue
	Fixed in Release: 20.33.1048

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