



NVIDIA ConnectX-6 Lx Adapter Cards Firmware Release Notes v26.39.1002

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Release Notes Update History

| Version | Date | Description |
|------------|-------------------|---|
| 26.39.1002 | November 07, 2023 | 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 the [firmware webpage](#).

Document Revision History

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

Firmware Compatible Products

The chapter contains the following sections:

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

- Ethernet - 1GbE, 10GbE, 25GbE, 50GbE
- 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.



When connecting an NVIDIA-to-NVIDIA adapter card in ETH PAM4 speeds, Auto-Neg should always be enabled.

Supported Devices

This firmware supports the devices and protocols listed below:

| NVIDIA SKU | Legacy OPN | PSID | Device Name |
|--------------------|------------------|---------------|---|
| 900-9X662-0053-ST1 | MCX631102AN-ADA | MT_0000000531 | ConnectX-6 Lx EN adapter card; 25GbE ; Dual-port SFP28; PCIe 4.0 x8; No Crypto |
| 900-9X662-0083-ST0 | MCX631102AC-ADA | MT_0000000532 | ConnectX-6 Lx EN adapter card; 25GbE ; Dual-port SFP28; PCIe 4.0 x8; Crypto and Secure Boot |
| 900-9X662-0063-ST0 | MCX631102AE-ADAT | MT_0000000545 | ConnectX-6 Lx EN adapter card; 25GbE; Dual-port SFP28; PCIe 4.0 x8; Crypto; No Secure Boot |
| 900-9X625-0053-SB0 | MCX631432AN-ADA | MT_0000000546 | ConnectX-6 Lx EN adapter card; 25GbE OCP3.0; With Host management ; Dual-port SFP28; PCIe 4.0 x8; No Crypto; Thumbscrew (Pull Tab) Bracket |
| 900-9X625-0083-SB0 | MCX631432AC-ADA | MT_0000000547 | ConnectX-6 Lx EN adapter card; 25GbE OCP3.0; With Host management ; Dual-port SFP28; PCIe 4.0 x8; Crypto and Secure Boot; Thumbscrew (Pull Tab) Bracket |
| 900-9X659-0015-SB1 | MCX631435AN-GDAB | MT_0000000548 | ConnectX-6 Lx EN adapter card; 50GbE; OCP3.0; With Host management ; Single-port QSFP28; PCIe 4.0 x8; No Crypto; Thumbscrew (Pull Tab) Bracket |
| 900-9X659-0045-SB0 | MCX631435AC-GDAB | MT_0000000549 | ConnectX-6 Lx EN adapter card; 50GbE; OCP3.0; With Host management ; Single-port QSFP28; PCIe 4.0 x8; Crypto and Secure Boot; Thumbscrew (Pull Tab) Bracket |
| 900-9X659-0025-SB0 | MCX631435AE-GDAB | MT_0000000550 | ConnectX-6 Lx EN adapter card; 50GbE; OCP3.0; With Host management ; Single-port QSFP28; PCIe 4.0 x8; Crypto; No Secure Boot; Thumbscrew (Pull Tab) Bracket |

| NVIDIA SKU | Legacy OPN | PSID | Device Name |
|--------------------|------------------|---------------|---|
| 900-9X625-0073-SB1 | MCX631432AS-ADA | MT_0000000551 | ConnectX-6 Lx EN adapter card; 25GbE OCP3.0; With Host management ; Dual-port SFP28; PCIe 4.0 x8; Secure Boot; No Crypto; Internal Lock Bracket |
| 900-9X625-0063-SB0 | MCX631432AE-ADAB | MT_0000000552 | ConnectX-6 Lx EN adapter card; 25GbE OCP3.0; With Host management ; Dual-port SFP28; PCIe 4.0 x8; Crypto; No Secure Boot; Thumbscrew (Pull Tab) Bracket |
| 900-9X662-0073-ST0 | MCX631102AS-ADA | MT_0000000575 | ConnectX-6 Lx EN adapter card; 25GbE; Dual-port SFP28; PCIe 4.0 x8; Secure Boot; No Crypto; |
| 900-9X601-0025-ST0 | MCX631105AE-GDAT | MT_0000000587 | ConnectX-6 Lx EN adapter card; 50GbE ; Single-port QSFP28; PCIe 4.0 x8; Crypto; No Secure Boot; Tall Bracket |
| 900-9X601-0015-SQ0 | MCX631105AN-GDAT | MT_0000000589 | ConnectX-6 Lx EN adapter card; 50GbE ; Single-port QSFP28; PCIe 4.0 x8; No Crypto; Tall Bracket |
| 900-9X601-0045-ST0 | MCX631105AC-GDAT | MT_0000000590 | ConnectX-6 Lx EN adapter card; 50GbE ; Single-port QSFP28; PCIe 4.0 x8; Crypto and Secure Boot; Tall Bracket |

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 Lx Firmware | 26.39.1002 / 26.38.1900 / 26.37.1014 |
| MLNX_OFED | 23.10-0.5.5.0 / 23.07-0.5.1.2 / 23.07-0.5.0.0 Note: For the list of the supported Operating Systems, please refer to the driver's Release Notes. |
| MLNX_EN (MLNX_OFED based code) | 23.10-0.5.5.0 / 23.07-0.5.1.2 / 23.07-0.5.0.0 Note: For the list of the supported Operating Systems, please refer to the driver's Release Notes. |
| WinOF-2 | 23.10.50000 / 23.7.50000 / 23.4.50010 Note: For the list of the supported Operating Systems, please refer to the driver's Release Notes. |
| MFT | 4.26.0 / 4.25.0 / 4.24.0 Note: For the list of the supported Operating Systems, please refer to the driver's Release Notes. |
| mstflint | 4.26.0 / 4.25.0 / 4.24.0 Note: For the list of the supported Operating Systems, please refer to the driver's Release Notes. |
| FlexBoot | 3.7.201 |
| UEFI | 14.32.12 |
| Cumulus | 5.4 onwards |

Validated and Supported Cables and Modules

Cables Lifecycle Legend

| Lifecycle Phase | Definition |
|-----------------|--------------------|
| EOL | End of Life |
| LTB | Last Time Buy |
| HVM | GA level |
| MP | GA level |
| P-Rel | GA level |
| Preliminary | Engineering Sample |
| Prototype | Engineering Sample |

200GbE Cables

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy P/N | Description | LifeCycle Phase |
|--------------|---------------|------------------|-----------------|---|-----------------|
| N/A | 200GE | 980-9154C-00V001 | MCP1650-V001E30 | NVIDIA Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 1m, black pulltab, 30AWG | LTB [HVM] |
| N/A | 200GE | 980-9154D-00V002 | MCP1650-V002E26 | NVIDIA Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 2m, black pulltab, 26AWG | LTB [HVM] |
| N/A | 200GE | 980-9154H-00V00A | MCP1650-V00AE30 | NVIDIA Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 0.5m, black pulltab, 30AWG | LTB [HVM] |
| N/A | 200GE | 980-9154I-00V01A | MCP1650-V01AE30 | NVIDIA Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 1.5m, black pulltab, 30AWG | LTB [HVM] |
| N/A | 200GE | 980-9154L-00V02A | MCP1650-V02AE26 | NVIDIA Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 2.5m, black pulltab, 26AWG | LTB [HVM] |
| N/A | 200GE | 980-9198H-00V001 | MCP7H50-V001R30 | NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 1m, 30AWG | LTB [HVM] |
| N/A | 200GE | 980-9198I-00V002 | MCP7H50-V002R26 | NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 2m, 26AWG | LTB [HVM] |

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy P/N | Description | LifeCycle Phase |
|--------------|---------------|------------------|-----------------|---|-----------------|
| N/A | 200GE | 980-9198J-00V003 | MCP7H50-V003R26 | NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 3m, 26AWG | EOL [HVM] |
| N/A | 200GE | 980-9198K-00V01A | MCP7H50-V01AR30 | NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 1.5m, 30AWG | EOL [HVM] |
| N/A | 200GE | 980-9198M-00V02A | MCP7H50-V02AR26 | NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 2.5m, 26AWG | LTB [HVM] |
| N/A | 200GE | 980-91A3X-00V001 | MCP7H70-V001R30 | NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 1m, 30AWG | EOL [P-Rel] |
| N/A | 200GE | 980-91A3Y-00V002 | MCP7H70-V002R26 | NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 2m, 26AWG | EOL [P-Rel] |
| N/A | 200GE | 980-9143Z-00V003 | MCP7H70-V003R26 | NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 3m, 26AWG | EOL [P-Rel] |
| N/A | 200GE | 980-91430-00V01A | MCP7H70-V01AR30 | NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 1.5m, 30AWG | EOL [P-Rel] |
| N/A | 200GE | 980-91431-00V02A | MCP7H70-V02AR26 | NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 2.5m, 26AWG | EOL [P-Rel] |

100GbE Cables

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy P/N | Description | LifeCycle Phase |
|--------------|---------------|------------------|------------------|--|-----------------|
| N/A | 100GE | 980-91620-00C001 | MCP1600-C001E30N | NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 1m, Black, 30AWG, CA-N | HVM |

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy P/N | Description | LifeCycle Phase |
|--------------|---------------|------------------|------------------|---|-----------------|
| N/A | 100GE | 980-9162V-00C002 | MCP1600-C002E30N | NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 2m, Black, 30AWG, CA-N | HVM |
| N/A | 100GE | 980-9162Z-00C003 | MCP1600-C003E26N | NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 3m, Black, 26AWG, CA-N | EOL [HVM] |
| N/A | 100GE | 980-91620-00C003 | MCP1600-C003E30L | NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 3m, Black, 30AWG, CA-L | HVM |
| N/A | 100GE | 980-91627-00C00A | MCP1600-C00AE30N | NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 0.5m, Black, 30AWG, CA-N | EOL [HVM] |
| N/A | 100GE | 980-9162C-00C01A | MCP1600-C01AE30N | NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 1.5m, Black, 30AWG, CA-N | HVM |
| N/A | 100GE | 980-9162I-00C02A | MCP1600-C02AE30L | NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 2.5m, Black, 30AWG, CA-L | HVM |
| EDR | 100GE | 980-9162P-00C001 | MCP1600-E001 | NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1m 30AWG | EOL [HVM] |
| EDR | 100GE | 980-9162S-00C002 | MCP1600-E002 | NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2m 28AWG | EOL [HVM] |
| EDR | 100GE | 980-9162V-00C003 | MCP1600-E003 | NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m 26AWG | EOL [HVM] |
| EDR | 100GE | 980-91623-00C01A | MCP1600-E01A | NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1.5m 30AWG | EOL [HVM] |
| EDR | 100GE | 980-91626-00C02A | MCP1600-E02A | NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2.5m 26AWG | EOL [HVM] |
| N/A | 100GE | 980-91645-00C001 | MCP7F00-A001R | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs, 1m, 30AWG | EOL [HVM] |
| N/A | 100GE | 980-91486-00C001 | MCP7F00-A001R30N | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 1m, Colored, 30AWG, CA-N | LTB [HVM] |


| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy P/N | Description | LifeCycle Phase |
|--------------|---------------|------------------|------------------|---|-----------------|
| N/A | 100GE | 980-9148A-00C002 | MCP7F00-A002R | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs, 2m, 30AWG | EOL [HVM] |
| N/A | 100GE | 980-9148B-00C002 | MCP7F00-A002R30N | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2m, Colored, 30AWG, CA-N | LTB [HVM] |
| N/A | 100GE | 980-9148G-00C003 | MCP7F00-A003R26N | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m, Colored, 26AWG, CA-N | EOL [HVM] |
| N/A | 100GE | 980-9148H-00C003 | MCP7F00-A003R30L | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m, Colored, 30AWG, CA-L | LTB [HVM] |
| N/A | 100GE | 980-9148J-00C005 | MCP7F00-A005R26L | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 5m, Colored, 26AWG, CA-L | LTB [HVM] |
| N/A | 100GE | 980-9148M-00C01A | MCP7F00-A01AR | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs, 1.5m, 30AWG | EOL [HVM] |
| N/A | 100GE | 980-9148N-00C01A | MCP7F00-A01AR30N | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 1.5m, Colored, 30AWG, CA-N | LTB [HVM] |
| N/A | 100GE | 980-9148S-00C02A | MCP7F00-A02AR26N | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, Colored, 26AWG, CA-N | EOL [HVM] |
| N/A | 100GE | 980-9148T-00C02A | MCP7F00-A02AR30L | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, Colored, 30AWG, CA-L | LTB [HVM] |
| N/A | 100GE | 980-9148U-00C02A | MCP7F00-A02ARLZ | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, LSZH, Colored, 28AWG | EOL [P-Rel] |

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy P/N | Description | LifeCycle Phase |
|--------------|---------------|------------------|------------------|--|-----------------|
| N/A | 100GE | 980-9148X-00C03A | MCP7F00-A03AR26L | NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3.5m, Colored, 26AWG, CA-L | EOL [HVM] |
| N/A | 100GE | 980-9161C-00C005 | MCP7H00-G00000 | NVIDIA® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 5m, Colored, 26AWG, CA-L | Preliminary |
| N/A | 100GE | 980-9161D-00C001 | MCP7H00-G00101 | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 1m, 30AWG | EOL [HVM] |
| N/A | 100GE | 980-9199F-00C001 | MCP7H00-G001R | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 1m, 30AWG | EOL [HVM] |
| N/A | 100GE | 980-9199G-00C001 | MCP7H00-G001R30N | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 1m, Colored, 30AWG, CA-N | LTB [HVM] |
| N/A | 100GE | 980-9199J-00C002 | MCP7H00-G002R | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 2m, 30AWG | EOL [HVM] |
| N/A | 100GE | 980-9199K-00C002 | MCP7H00-G002R26N | NVIDIA® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2m, Colored, 26AWG, CA-N | Preliminary |
| N/A | 100GE | 980-9199L-00C002 | MCP7H00-G002R30N | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2m, Colored, 30AWG, CA-N | LTB [HVM] |
| N/A | 100GE | 980-9199O-00C003 | MCP7H00-G003R | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 3m, 28AWG | EOL [HVM] |
| N/A | 100GE | 980-9199Q-00C003 | MCP7H00-G003R26N | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 3m, Colored, 26AWG, CA-N | EOL [HVM] |
| N/A | 100GE | 980-9139R-00C003 | MCP7H00-G003R30L | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 3m, Colored, 30AWG, CA-L | LTB [HVM] |

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy P/N | Description | LifeCycle Phase |
|--------------|---------------|------------------|------------------|--|-----------------|
| N/A | 100GE | 980-9199S-00C004 | MCP7H00-G004R26L | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 4m, Colored, 26AWG, CA-L | EOL [HVM] |
| N/A | 100GE | 980-9199W-00C01A | MCP7H00-G01AR | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 1.5m, 30AWG | EOL [HVM] |
| N/A | 100GE | 980-9199X-00C01A | MCP7H00-G01AR30N | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 1.5m, Colored, 30AWG, CA-N | LTB [HVM] |
| N/A | 100GE | 980-91992-00C02A | MCP7H00-G02AR | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 2.5m, 30AWG | EOL [HVM] |
| N/A | 100GE | 980-91994-00C02A | MCP7H00-G02AR26N | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2.5m, Colored, 26AWG, CA-N | EOL [HVM] |
| N/A | 100GE | 980-91395-00C02A | MCP7H00-G02AR30L | NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2.5m, Colored, 30AWG, CA-L | LTB [HVM] |
| N/A | 100GE | 980-9113S-00C003 | MFA1A00-C003 | NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 3m | HVM |
| N/A | 100GE | 980-9113X-00C005 | MFA1A00-C005 | NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 5m | HVM |
| N/A | 100GE | 980-91134-00C010 | MFA1A00-C010 | NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 10m | HVM |
| N/A | 100GE | 980-9113A-00C015 | MFA1A00-C015 | NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 15m | HVM |
| N/A | 100GE | 980-9113F-00C020 | MFA1A00-C020 | NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 20m | HVM |
| N/A | 100GE | 980-9113N-00C030 | MFA1A00-C030 | NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 30m | HVM |
| N/A | 100GE | 980-91130-00C050 | MFA1A00-C050 | NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 50m | HVM |

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy P/N | Description | LifeCycle Phase |
|--------------|---------------|------------------|--------------|---|-----------------|
| N/A | 100GE | 980-9113B-00C100 | MFA1A00-C100 | NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 100m | LTB [HVM] |
| N/A | 100GE | 980-9137H-00C003 | MFA7A20-C003 | NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 3m | EOL [HVM] |
| N/A | 100GE | 980-9137I-00C005 | MFA7A20-C005 | NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 5m | EOL [HVM] |
| N/A | 100GE | 980-9140J-00C010 | MFA7A20-C010 | NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 10m | EOL [HVM] |
| N/A | 100GE | 980-9140K-00C020 | MFA7A20-C020 | NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 20m | EOL [HVM] |
| N/A | 100GE | 980-9140L-00C002 | MFA7A20-C02A | NVIDIA® active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 2.5m | Preliminary |
| N/A | 100GE | 980-9140M-00C003 | MFA7A20-C03A | NVIDIA® active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 3.5m | Preliminary |
| N/A | 100GE | 980-9140N-00C003 | MFA7A50-C003 | NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m | EOL [HVM] |
| N/A | 100GE | 980-9140O-00C005 | MFA7A50-C005 | NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 5m | EOL [HVM] |
| N/A | 100GE | 980-9149P-00C010 | MFA7A50-C010 | NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 10m | EOL [HVM] |
| N/A | 100GE | 980-9149Q-00C015 | MFA7A50-C015 | NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 15m | EOL [HVM] |
| N/A | 100GE | 980-9149R-00C020 | MFA7A50-C020 | NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 20m | EOL [HVM] |
| N/A | 100GE | 980-9149S-00C030 | MFA7A50-C030 | NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 30m | EOL [HVM] |

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy P/N | Description | LifeCycle Phase |
|--------------|---------------|------------------|---------------|---|-----------------|
| N/A | 100GE | 980-91149-00CS00 | MMA1B00-C100D | NVIDIA transceiver, 100GbE, QSFP28, MPO, 850nm, SR4, up to 100m, DDMI | HVM |

 The spilt cables cables above can be used as split cables when ConnectX-6 Lx adapter card in on the split side.

25GbE Cables

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy OPN | Description | LifeCycle Phase |
|--------------|---------------|------------------|------------------|--|-----------------|
| N/A | 25GE | 980-9178I-00A00 | MAM1Q00A-QSA28 | NVIDIA cable module, ETH 25GbE, 100Gb/s to 25Gb/s, QSFP28 to SFP28 | HVM |
| N/A | 25GE | 980-9163J-00A001 | MCP2M00-A001 | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1m, 30AWG | EOL [HVM] |
| N/A | 25GE | 980-9163L-00A001 | MCP2M00-A001E30N | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1m, Black, 30AWG, CA-N | LTB [HVM] |
| N/A | 25GE | 980-9163M-00A002 | MCP2M00-A002 | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m, 30AWG | EOL [HVM] |
| N/A | 25GE | 980-9163N-00A002 | MCP2M00-A002E26N | NVIDIA® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m, Black, 26AWG, CA-N | Preliminary |
| N/A | 25GE | 980-9163O-00A002 | MCP2M00-A002E30N | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m, Black, 30AWG, CA-N | LTB [HVM] |
| N/A | 25GE | 980-9163R-00A003 | MCP2M00-A003E26N | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 3m, Black, 26AWG, CA-N | EOL [HVM] |
| N/A | 25GE | 980-9163S-00A003 | MCP2M00-A003E30L | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 3m, Black, 30AWG, CA-L | LTB [HVM] |
| N/A | 25GE | 980-9163T-00A004 | MCP2M00-A004E26L | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 4m, Black, 26AWG, CA-L | EOL [HVM] |
| N/A | 25GE | 980-9163V-00A005 | MCP2M00-A005E26L | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 5m, Black, 26AWG, CA-L | LTB [HVM] |

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy OPN | Description | LifeCycle Phase |
|--------------|---------------|------------------|------------------|---|-----------------|
| N/A | 25GE | 980-9I63W-00A00A | MCP2M00-A00A | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 0.5m, 30AWG | EOL [HVM] |
| N/A | 25GE | 980-9I63X-00A00A | MCP2M00-A00AE30N | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 0.5m, Black, 30AWG, CA-N | EOL [HVM] |
| N/A | 25GE | 980-9I63Z-00A01A | MCP2M00-A01AE30N | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1.5m, Black, 30AWG, CA-N | LTB [HVM] |
| N/A | 25GE | 980-9I631-00A02A | MCP2M00-A02AE26N | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2.5m, Black, 26AWG, CA-N | EOL [HVM] |
| N/A | 25GE | 980-9I632-00A02A | MCP2M00-A02AE30L | NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2.5m, Black, 30AWG, CA-L | LTB [HVM] |
| N/A | 25GE | 980-9IA1T-00A003 | MFA2P10-A003 | NVIDIA active optical cable 25GbE, SFP28, 3m | EOL [HVM] |
| N/A | 25GE | 980-9I53W-00A005 | MFA2P10-A005 | NVIDIA active optical cable 25GbE, SFP28, 5m | EOL [HVM] |
| N/A | 25GE | 980-9I53Z-00A007 | MFA2P10-A007 | NVIDIA active optical cable 25GbE, SFP28, 7m | EOL [HVM] |
| N/A | 25GE | 980-9I532-00A010 | MFA2P10-A010 | NVIDIA active optical cable 25GbE, SFP28, 10m | EOL [HVM] |
| N/A | 25GE | 980-9I535-00A015 | MFA2P10-A015 | NVIDIA active optical cable 25GbE, SFP28, 15m | EOL [HVM] |
| N/A | 25GE | 980-9I536-00A020 | MFA2P10-A020 | NVIDIA active optical cable 25GbE, SFP28, 20m | EOL [HVM] |
| N/A | 25GE | 980-9I539-00A030 | MFA2P10-A030 | NVIDIA active optical cable 25GbE, SFP28, 30m | EOL [HVM] |
| N/A | 25GE | 980-9I53A-00A050 | MFA2P10-A050 | NVIDIA active optical cable 25GbE, SFP28, 50m | EOL [HVM] |
| N/A | 25GE | 980-9I094-00AR00 | MMA2L20-AR | NVIDIA optical transceiver, 25GbE, 25Gb/s, SFP28, LC-LC, 1310nm, LR up to 10km | MP |
| N/A | 25GE | 980-9I595-00AM00 | MMA2P00-AS | NVIDIA transceiver, 25GbE, SFP28, LC-LC, 850nm, SR | HVM |
| N/A | 25GE | 980-9I34B-00AS00 | MMA2P00-AS-SP | NVIDIA transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, up to 100m, single package | EOL [HVM] |
| N/A | 25GE | 980-9I34D-00AS00 | MMA2P00-AS_FF | NVIDIA transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, up to 100m | EOL [HVM] |

10GbE Cables

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy OPN | Description | LifeCycle Phase |
|--------------|---------------|------------------|---------------|---|---------------------------|
| N/A | 10GE | 980-9171G-00J000 | MAM1Q00A-QSA | NVIDIA cable module, ETH 10GbE, 40Gb/s to 10Gb/s, QSFP to SFP+ | HVM |
| N/A | 10GE | 980-9165P-00J005 | MC2309124-005 | NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 5m | EOL [P-Rel] |
| N/A | 10GE | 980-9165Q-00J007 | MC2309124-007 | NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 7m | EOL [P-Rel] |
| N/A | 10GE | 980-9165R-00J001 | MC2309130-001 | NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 1m | EOL [HVM] |
| N/A | 10GE | 980-9165S-00J002 | MC2309130-002 | NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 2m | EOL [HVM] |
| N/A | 10GE | 980-9165T-00J003 | MC2309130-003 | NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 3m | EOL [HVM] |
| N/A | 10GE | 980-9165U-00J00A | MC2309130-00A | NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 0.5m | EOL [HVM] [HIBERN/ATE] |
| N/A | 10GE | 980-91682-00J004 | MC3309124-004 | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 4m | EOL [HVM] |
| N/A | 10GE | 980-91683-00J005 | MC3309124-005 | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 5m | EOL [HVM] |
| N/A | 10GE | 980-91684-00J006 | MC3309124-006 | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 6m | EOL [HVM] |
| N/A | 10GE | 980-91685-00J007 | MC3309124-007 | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 7m | EOL [HVM] |
| N/A | 10GE | 980-91686-00J001 | MC3309130-001 | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m | EOL [HVM] |
| N/A | 10GE | 980-91688-00J002 | MC3309130-002 | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m | EOL [HVM] |
| N/A | 10GE | 980-9168B-00J003 | MC3309130-003 | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m | EOL [HVM] |
| N/A | 10GE | 980-9168F-00J00A | MC3309130-00A | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 0.5m | EOL [HVM] |

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy OPN | Description | LifeCycle Phase |
|--------------|---------------|------------------------|-------------------|--|---------------------------|
| N/A | 10GE | 980-9168G-00J01 A | MC3309130-0A 1 | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1.5m | EOL [HVM] |
| N/A | 10GE | 980-9168H-00J02 A | MC3309130-0A 2 | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2.5m | EOL [HVM] |
| N/A | 10GE | 980-9168A-00J00 1 | MCP2100- X001B | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m, Blue Pulltab, Connector Label | EOL [HVM] [HIBERN/ATE] |
| N/A | 10GE | 980-9168B-00J00 2 | MCP2100- X002B | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m, Blue Pulltab, Connector Label | EOL [HVM] [HIBERN/ATE] |
| N/A | 10GE | 980-9168C-00J00 3 | MCP2100- X003B | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m, Blue Pulltab, Connector Label | EOL [HVM] |
| N/A | 10GE | 980-9168E-00J00 1 | MCP2104- X001B | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m, Black Pulltab, Connector Label | EOL [HVM] [HIBERN/ATE] |
| N/A | 10GE | 980-9168F-00J00 2 | MCP2104- X002B | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m, Black Pulltab, Connector Label | EOL [HVM] |
| N/A | 10GE | 980-9168G-00J00 3 | MCP2104- X003B | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m, Black Pulltab, Connector Label | EOL [HVM] |
| N/A | 10GE | 980-9168H-00J01 A | MCP2104- X01AB | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1.5m, Black Pulltab, Connector Label | EOL [HVM] |
| N/A | 10GE | 980-9168I-00J02 A | MCP2104- X02AB | NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2.5m, Black Pulltab, Connector Label | EOL [HVM] |
| N/A | 10GE | 930-90000-0000 -343 | MFM1T02A-LR | NVIDIA SFP+ optical module for 10GBASE-LR | HVM |
| N/A | 10GE | MFM1T02A-LR-F | MFM1T02A-LR- F | NVIDIA optical module, ETH 10GbE, 10Gb/s, SFP+, LC-LC, 1310nm, LR up to 10km | HVM |
| N/A | 10GE | 930-90000-0000 -409 | MFM1T02A-SR | NVIDIA SFP+ optical module for 10GBASE-SR | HVM |
| N/A | 10GE | MFM1T02A-SR-F | MFM1T02A-SR- F | NVIDIA optical module, ETH 10GbE, 10Gb/s, SFP+, LC-LC, 850nm, SR up to 300m | HVM |

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy OPN | Description | LifeCycle Phase |
|--------------|---------------|---------------|---------------|---|-----------------|
| N/A | 10GE | MFM1T02A-SR-P | MFM1T02A-SR-P | NVIDIA optical module, ETH 10GbE, 10Gb/s, SFP+, LC-LC, 850nm, SR up to 300m | HVM |

1GbE Cables

| IB Data Rate | Eth Data Rate | NVIDIA P/N | Legacy OPN | Description | LifeCycle Phase |
|--------------|---------------|------------------|--------------|--|-----------------|
| N/A | 1GE | 980-91270-00IM00 | MC3208011-SX | NVIDIA Optical module, ETH 1GbE, 1Gb/s, SFP, LC-LC, SX 850nm, up to 500m | EOL [P-Rel] |
| N/A | 1GE | 980-91251-00IS00 | MC3208411-T | NVIDIA module, ETH 1GbE, 1Gb/s, SFP, Base-T, up to 100m | HVM |

Supported 3rd Party Cables and Modules

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

| Speed | Cable OPN | Description |
|-------|----------------|--|
| 10GbE | SFP-H10GB-CU3M | Cisco 3-m 10G SFP+ Twinax cable assembly, passive |
| 10GbE | SFP-H10GB-CU5M | Cisco 5-m 10G SFP+ Twinax cable assembly, passive |
| 10GbE | DM7053 | 10G-Base-T MethodElec modules |
| 25GbE | FTLF8536P4BCL | TRANSCEIVER 25GBE SFP SR |
| 25GbE | LTF8507-PC07 | HISENSE ACTIVE FIBER CABLE, 25GBE |
| 25GbE | SFP-H25G-CU3M | CISCO 25GBASE-CR1 COPPER CABLE 3-METER NDCCGJ-C403 |

Tested Switches

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 |
| 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 |

10/40GbE Switches

| Speed | Switch Silicon | OPN # / Name | Description | Vendor |
|-------|----------------|--------------|------------------------------|--------|
| 10GbE | N/A | 5548UP | 32x 10GbE SFP+ Switch System | Cisco |

| Speed | Switch Silicon | OPN # / Name | Description | Vendor |
|----------|----------------|--------------|--|---------|
| 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 |


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.


Changes and New Features

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.

Changes and New Feature in this Firmware Version

| Feature/Change | Description |
|--|--|
| 26.39.1002 | |
| Expansion ROM | Added a caching mechanism to improved expansion ROM performance and to avoid any slow boot occurrences when loading the expansion ROM driver. |
| Live Migration Support for Image Size above 4GB | Added support for image size above 4GB when performing a live migration by splitting the image to chunks. |
| Crypto Algorithms | Extended the role-based authentication to cover all crypto algorithms. Now the TLS, IPsec, MACsec, GCM, mem2mem, and NISP work when <code>nv_crypto_conf.crypto_policy = CRYPTO_POLICY_FIPS_LEVEL_2</code> , meaning all cryptographic engines can also work in wrapped mode and not only in plaintext mode. |
| Programmable Congestion Control | Programmable Congestion Control is now the default CC mechanism. ZTR_RTTCC is the default CC algorithm when ECE is enabled and the CC algorithm negotiation succeeds, otherwise PCC DCQCN will be used. |
| Reserved mkey | Added new support for reserved mkey index range. When enabled, a range of mkey indexes is reserved for mkey by name use. |
| Bug Fixes | See <i>Bug Fixes in this Firmware Version</i> section. |

Unsupported Features and Commands

Unsupported Features

The following advanced features 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

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

| Internal Ref. | Issue |
|-------------------------------------|---|
| 3628848 | Description: Updated the number of channels (ports) that are displayed in the iLO from 1 to 2 (num_channels_per_pkg=2) for dual port adapter cards. |
| | Keywords: Number of channels (ports) |
| | Discovered in Version: 26.38.1002 |
| | Fixed in Release: 26.39.1002 |
| 3602169 | Description: Added a locking mechanism to protect the firmware from a race condition between insertion and deletion of the same rule in parallel. Such behavior occasionally resulted in firmware accessing a memory that has already been released, thus causing IOMMU / translation error. |
| | Note: This fix will not impact insertion rate for tables owned by SW steering. |
| | Keywords: Firmware steering |
| | Discovered in Version: 26.38.1002 |
| Fixed in Release: 26.39.1002 | |
| 3571251 | Description: Fixed an issue that resulted in migration data corruption when running parallel save_vhca_state/load_vhca_state commands on the same PF. |
| | Keywords: VF live migration |
| | Discovered in Version: 26.38.1002 |
| | Fixed in Release: 26.39.1002 |

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"> • 127 VF per PF (254 functions) • 512 PF+VF+SF per PF (1024 functions) | <ul style="list-style-type: none"> • 127 VF (127 functions) • 512 PF+VF+SF per PF (512 functions) |

Known Issues

| Internal Ref. | Issue |
|---------------|---|
| 3464393 | Description: PhyLess Reset is currently not supported. |
| | Workaround: N/A |
| | Keywords: PhyLess Reset |
| | Discovered in Version: 26.39.1002 |
| 3525865 | Description: Unexpected system behavior might be observed if the driver is loaded while reset is in progress. |
| | Workaround: N/A |
| | Keywords: Sync 1 reset, firmware reset |
| | Discovered in Version: 26.39.1002 |
| 3457472 | Description: Disabling the Relaxed Ordered (RO) capability (relaxed_ordering_read_pci_enabled=0) using the vhca_resource_manager is currently not functional. |
| | Workaround: N/A |
| | Keywords: Relaxed Ordered |
| | Discovered in Version: 26.37.1014 |
| 3444395 | Description: Assert 0x8ced would happen when using MEMIC and VDPA features together. |
| | Workaround: N/A |
| | Keywords: vDPA, MEMIC, assert |
| | Discovered in Version: 26.37.1014 |
| 2878841 | Description: Firmware rollback fails for the signature retransmit flow if the QPN field is configured in the mkey (as it only allows the given QP to use this Mkey) as the firmware rollback flow relies on an internal QP that uses the mkey. |
| | Workaround: N/A |
| | Keywords: Signature retransmit flow |
| | Discovered in Version: 26.37.1014 |

| Internal Ref. | Issue |
|---------------|--|
| 3267506 | Description: CRC is included in the traffic byte counters as a port byte counter. |
| | Workaround: N/A |
| | Keywords: Counters, CRC |
| | Discovered in Version: 26.35.2000 |
| 3200779 | Description: Changing dynamic PCIe link width is not supported. |
| | Workaround: N/A |
| | Keywords: PCIe |
| | Discovered in Version: 26.34.1002 |
| 2169950 | Description: When decapsulation on a packet occurs, the FCS indication is not calculated correctly. |
| | Workaround: N/A |
| | Keywords: FCS |
| | Discovered in Version: 26.34.1002 |
| 3141072 | Description: The "max_shaper_rate" configuration query via QEEC mlxreg returns a value translated to hardware granularity. |
| | Workaround: N/A |
| | Keywords: RX Rate-Limiter, Multi-host |
| | Discovered in Version: 26.34.1002 |
| 2870970 | Description: GTP encapsulation (flex parser profile 3) is limited to the NIC domain. Encapsulating in the FDB domain will render a 0-size length in GTP header. |
| | Workaround: N/A |
| | Keywords: GTP encapsulation |
| | Discovered in Version: 26.34.1002 |
| 2866931 | Description: When the host powers up directly into the standby mode, the adapter may not handle WOL packets. |
| | Workaround: N/A |
| | Keywords: WOL packets |
| | Discovered in Version: 26.32.1010 |
| 2864238 | Description: VPD cannot be accessed after firmware upgrade or reset when the following sequence is performed: <ul style="list-style-type: none"> 1. Upgrade to a new firmware and perform a cold reboot 2. Downgrade to an old firmware 3. Run fwreset 4. Upgrade to a new firmware 5. Run fwreset |
| | Workaround: Run the upgrade or reset sequence as follow: <ul style="list-style-type: none"> 1. Upgrade to a new firmware and perform a cold reboot 2. Downgrade to an old firmware 3. Run fwreset 4. Upgrade to a new firmware 5. Perform a cold reboot |
| | Keywords: VDP |
| | Discovered in Version: 26.32.1010 |
| | |
| 2780349 | Description: As a result of having a single LED per port, features such as the Blinking Detection can work only when in low speed mode. |
| | Workaround: N/A |

| Internal Ref. | Issue |
|---------------|---|
| | <p>Keywords: LED, port, Blinking Detection</p> <p>Discovered in Version: 26.32.1010</p> |
| 2834990 | <p>Description: On rare occasions, when toggling both sides of the link, the link may not rise.</p> <p>Workaround: Toggle the port to free it.</p> <p>Keywords: Port toggling, link</p> <p>Discovered in Version: 26.31.1014</p> |
| 2667681 | <p>Description: As the Connection Tracking (CT) is not moved to SW state after receiving a TCP RST packet, any packet that matches the windows even after the RST is marked as a valid packets.</p> <p>Workaround: N/A</p> <p>Keywords: Connection Tracking</p> <p>Discovered in Version: 26.31.1014</p> |
| 2378593 | <p>Description: 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>Workaround: Use full reset flow for firmware upgrade/downgrade.</p> <p>Keywords: Sub 1sec firmware update</p> <p>Discovered in Version: 26.29.1016</p> |
| 2213356 | <p>Description: The following are the Steering Dump limitations:</p> <ul style="list-style-type: none"> • Supported only on ConnectX-5 adapter cards • Requires passing the version (FW/Stelib/MFT) and device type to stelib • Re-format is not supported • Advanced multi-port feature is not supported - LAG/ROCE_AFFILIATION/MPFS_LB/ESW_LB (only traffic vhca <-> wire) • Packet types supported: <ul style="list-style-type: none"> • Layer 2 Eth • Layer 3 IPv4/Ipv6/Grh • Layer 4 TCP/UDP/Bth/GreV0/GreV1 • Tunneling VXLAN/Geneve/GREv0/Mpls • FlexParser protocols are not supported (e.g AliVxlan/VxlanGpe etc..). • Compiles only on x86 <p>Workaround: N/A</p> <p>Keywords: Steering Bump</p> <p>Discovered in Version: 26.29.1016</p> |
| 2365322 | <p>Description: 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>Workaround: To prevent such a case, configure at least one of the following QoS attributes of a leaf: max_average_bw or bw_share</p> <p>Keywords: QoS</p> <p>Discovered in Version: 26.29.1016</p> |
| 2201468 | <p>Description: Running multiple resets ("mlxfwreset --sync=1") simultaneously is not functioning properly,</p> <p>Workaround: Wait a few seconds until you run "mlxfwreset --sync=0".</p> <p>Keywords: mlxfwreset, reset-sync, reset, sync</p> <p>Discovered in Version: 26.28.1002</p> |

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_DESCRIPTOR | | |
| | HOST_CHAINING_TOTAL_BUFFER_SIZE | | |
| NV_FLEX_PARS_CONF | FLEX_PARSER_PROFILE_ENABLE | | 0xe |
| | FLEX_IPV4_OVER_VXLAN_PORT | | |
| NV_ROCE_1_5_CONF | ROCE_NEXT_PROTOCOL | | 0x10 |
| NV_INTERNAL_RESOURCE_CONF | ESWITCH_HAIRPIN_DESCRIPTOR | | 0x13 |
| | ESWITCH_HAIRPIN_TOTAL_BUFFER_SIZE | | |
| NV_GLOBAL_PCI_CONF | NON_PREFETCHABLE_PF_BAR | | 0x80 |
| | NUM_OF_VFS | | |
| | SRIOV_EN | | |
| | PF_LOG_BAR_SIZE | | |
| | VF_LOG_BAR_SIZE | | |
| | NUM_PF_MSIX | | |
| | NUM_VF_MSIX | | |
| NV_TPT_CONF | INT_LOG_MAX_PAYLOAD_SIZE | | 0x82 |
| NV_POWER_CONF | SW_RECOVERY_ON_ERRORS | 0x88 | |
| | RESET_WITH_HOST_ON_ERRORS | | |
| | ADVANCED_POWER_SETTINGS | | |
| NV_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_outstanding_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 | | |

| Configuration | mlxconfig Parameter Name | Class | TLV ID |
|-----------------------|-------------------------------|-------------------|--------|
| 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_PPIO | | |
| CNP_DSCP | | | |
| NV_LLDP_NB_CONF | LLDP_NB_DCBX | | 0x10a |
| | LLDP_NB_RX_MODE | | |
| | LLDP_NB_TX_MODE | | |
| NV_LLDP_NB_DCBX | DCBX_IEEE | | 0x18e |
| | DCBX_CEE | | |
| | DCBX_WILLING | | |
| NV_KEEP_LINK_UP | KEEP_ETH_LINK_UP | | 0x190 |
| | KEEP_IB_LINK_UP | | |
| | KEEP_LINK_UP_ON_BOOT | | |
| | KEEP_LINK_UP_ON_STANDBY | | |
| NV_QOS_CONF | NUM_OF_VL | | 0x192 |
| | NUM_OF_TC | | |
| | NUM_OF_PFC | | |
| NV_MPFS_CONF | DUP_MAC_ACTION | | 0x196 |
| | SRIOV_IB_ROUTING_MODE | | |
| | IB_ROUTING_MODE | | |
| NV_HCA_CONF | PCI_WR_ORDERING | HOST-FUNCTION (3) | 0x112 |
| | MULTI_PORT_VHCA_EN | | |
| NV_EXTERNAL_PORT_CTRL | PORT_OWNER | | 0x192 |
| | ALLOW_RD_COUNTERS | | |
| | RENEG_ON_CHANGE | | |

| Configuration | mlxconfig Parameter Name | Class | TLV ID |
|-------------------------|--------------------------|----------|--------|
| | 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 | | |

Release Notes History

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 |
|--------------------------------------|---|
| 26.38.1900 | |
| QKEY Mitigation in the Kernel | <p>QKEY creation with the MSB set is available now for non-privileged users as well.</p> <p>To allow non-privileged users to create QKEY with MSB set, the below new module parameter was added to <code>ib_uverbs</code> module:</p> <ul style="list-style-type: none">• Module Parameter: <code>enforce_qkey_check</code>• Description: Force QKEY MSB check for non-privileged user on UD QP creation• Default: 0 (disabled) <p>Note: In this release, this module parameter is disabled by default to ensure backward compatibility and give customers the opportunity to update their applications accordingly. In the upcoming release, it will be enabled by default, and later on deprecated.</p> |

| Feature/Change | Description |
|--------------------------------------|--|
| 26.38.1002 | |
| INT Packets | Added support for forwarding INT packets to the user application for monitoring purposes by matching the BTH acknowledge request bit (<code>bth_a</code>). |
| QKEY Mitigation in the Kernel | Non-privileged users are now blocked by default from setting controlled/privileged QKEYs (QKEY with MSB set). |
| Bug Fixes | See <i>Bug Fixes in this Firmware Version</i> section. |

| Feature/Change | Description |
|---|---|
| 26.37.1014 | |
| Monitoring Cloud Guest RoCE Statistics on Cloud Provider | This new capability enables the VM to track and limit its Vport's activity. This is done using the new <code>q_counters</code> counter which enables aggregation of other Vport's from PF GVMI. |
| Linux Bridge Offload | Added a flow rule that enables offloading of multicast traffic by broadcasting it to multi-Flow-Table in FDB. |
| PCC Algorithms | Enables a smooth and statically switch between PCC algorithms. In addition, the user can now switch between PCC algorithms while running traffic. |
| Hardware Steering: Bulk Allocation | Added support for 32 actions in the header modify pattern using bulk allocation. |
| Bug Fixes | See <i>Bug Fixes in this Firmware Version</i> section. |

| Feature/Change | Description |
|-------------------|---|
| 26.36.1010 | |
| NVconfig | Enabled provisioning of the OEM public key that is used for OEM NVconfig file signature verification. |
| Bug Fixes | See <i>Bug Fixes in this Firmware Version</i> section. |

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 Release Notes in <https://docs.mellanox.com/category/adapterfw>.

| Internal Ref. | Issue |
|---------------|--|
| 3365411 | Description: Fixed a link failure that occurred due to a wrong 'is_inphi_cable' indication. |
| | Keywords: Link failure |
| | Discovered in Version: 26.37.1014 |
| | Fixed in Release: 26.38.1002 |
| 3331179 | Description: Improved token calculation. |
| | Keywords: Token calculation |
| | Discovered in Version: 26.37.1014 |
| | Fixed in Release: 26.38.1002 |
| 3491841 | Description: Fixed a firmware assert that occurred when tried to verify if the module supported "swap". |
| | Keywords: Firmware assert |
| | Discovered in Version: 26.37.1014 |
| | Fixed in Release: 26.38.1002 |

| Internal Ref. | Issue |
|---------------|---|
| 3434928 | Description: Modified the RDE behavior to return an error if the chassis ID subtype is AgentId, or Port ID subtype is ChassisComp. |
| | Keywords: RDE |
| | Discovered in Version: 26.36.1010 |
| | Fixed in Release: 26.37.1014 |
| 3438177 | Description: Enabled VF LAG hash mode. The LAG_RESOURCE_ALLOCATION mlxconfig field is now modifiable. |
| | Keywords: VF LAG |
| | Discovered in Version: 26.36.1010 |
| | Fixed in Release: 26.37.1014 |

| Internal Ref. | Issue |
|---------------|---|
| 2797986 | <p>Description: Fixed an issue that prevented the adapter card from handling WoL packets when the host powered up directly into the standby mode.</p> <p>Keywords: WoL packets</p> <p>Discovered in Version: 26.36.1010</p> <p>Fixed in Release: 26.37.1014</p> |
| 3327847 | <p>Description: CNP received, handled, and ignored counters in the hardware counters cannot work after moving to Programmable Congestion Control mode.</p> <p>Keywords: CNP, Programmable Congestion Control</p> <p>Discovered in Version: 26.36.1010</p> <p>Fixed in Release: 26.37.1014</p> |

| Internal Ref. | Issue |
|---------------|---|
| 3239340 | <p>Description: Aligned RDE behavior to DSP0266 v1.15.0 table 23.</p> <p>Keywords: RDE</p> <p>Discovered in Version: 26.35.1012</p> <p>Fixed in Release: 26.36.1010</p> |

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|-------------|---------------|--|
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| MLNX_OFED | 23.10-0.5.5.0 | <ul style="list-style-type: none">• License• 3rd Part Notice |
| MFT FreeBSD | 4.26.0 | <ul style="list-style-type: none">• License• 3rd Party Notice |
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