



# **NVIDIA ConnectX-6 Dx Adapter Cards Firmware Release Notes v22.35.4506 LTS**

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## Info

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.

## Release Notes Update History

| Revision   | Date              | Description  |
|------------|-------------------|--|
| 22.35.4506 | December 31, 2024 | Initial release of this Release Notes version, This version introduces <a href="#">Bug Fixes</a> . |

## 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](#).

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# Firmware Compatible Products

The chapter contains the following sections:

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

- 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.

## Note

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

## 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 |
|--------------------|-------------------|--------------|---|-------------------|-------------------|-------------------|-------------------------------|
| 900-9X658-0016-MB0 | MCX623435M-N-CDAB | MT_000000326 | ConnectX-6 Dx EN adapter card; 100GbE for OCP 3.0; with Multi-Host and host management; Single-port QSFP56; PCIe 3.0/4.0 x16; Internal Lock | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AP-0053-ST0 | MCX623102A-N-ADAT | MT_000000355 | ConnectX-6 Dx EN adapter card; 25GbE; Dual-port SFP28; PCIe 4.0/3.0 x16   | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X661-0053-SQ0 | MCX621102A-N-ADAT | MT_000000356 | ConnectX-6 Dx EN adapter card; 25GbE; Dual-port SFP28; PCIe 4.0/3.0 x8  | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AG-0056-ST1 | MCX623106A-N-CDAT | MT_000000359 | ConnectX-6 Dx EN adapter card; 100GbE; Dual-port QSFP56; PCIe 4.0/3.0 x16;  | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X658-0086-SB0 | MCX623436A-C-CDAB | MT_000000394 | ConnectX-6 Dx EN adapter card; 100GbE; OCP3.0; With Host management; Dual-port QSFP56; PCIe 4.0 x16; Crypto and Secure Boot;                | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X671-0016-SN0 | MCX623405A-N-CDAN | MT_000000396 | ConnectX-6 Dx EN adapter card; 100GbE OCP2.0; With Host management; Type 2; Single-port QSFP56; PCIe 4.0 x16; No Crypto                     | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |

| NVIDIA SKU         | Legacy OPN        | PSID         | Device Name   | FlexBoot          | UEFI x86          | UEFI ARM          | Enable/disable exprom Feature |
|--------------------|-------------------|--------------|---|-------------------|-------------------|-------------------|-------------------------------|
| 900-9X671-0018-SN0 | MCX623405A N-VDAN | MT_000000602 | ConnectX®-6 Dx EN adapter card, 200GbE OCP2.0, With Host management, Type 2, Single-port QSFP56, PCIe 4.0 x16, No Crypto, No Bracket  | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X661-0083-ST1 | MCX621102A C-ADAT | MT_000000430 | ConnectX-6 Dx EN adapter card; 25GbE; Dual-port SFP28; PCIe 4.0 x8; Crypto and Secure Boot  | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AG-0016-ST0 | MCX623105A N-CDAT | MT_000000434 | ConnectX-6 Dx EN adapter card; 100GbE; Single-port QSFP56; PCIe 4.0 x16; No Crypto  | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AG-0086-ST0 | MCX623106A C-CDAT | MT_000000436 | ConnectX-6 Dx EN adapter card; 100GbE; Dual-port QSFP56; PCIe 4.0 x16; Crypto and Secure Boot   | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AG-0076-ST0 | MCX623106AS -CDAT | MT_000000437 | ConnectX-6 Dx EN adapter card; 100GbE; Dual-port QSFP56; PCIe 4.0 x16; Secure Boot; No Crypto   | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X671-0046-SN0 | MCX623405A C-CDAN | MT_000000459 | ConnectX-6 Dx EN adapter card; 100GbE OCP2.0; With Host management ; Type 2; Single-port QSFP56; PCIe 4.0 x16; Crypto and Secure Boot | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |

| NVIDIA SKU         | Legacy OPN        | PSID         | Device Name  | FlexBoot          | UEFI x86          | UEFI ARM          | Enable/disable exprom Feature |
|--------------------|-------------------|--------------|--|-------------------|-------------------|-------------------|-------------------------------|
| 900-9X6AP-0083-ST0 | MCX623102A-C-ADAT | MT_000000460 | ConnectX-6 Dx EN adapter card; 25GbE; Dual-port SFP28; PCIe 4.0 x16; Crypto and Secure Boot                                    | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X658-0076-SIO | MCX623436AS-CDAI  | MT_000000471 | ConnectX-6 Dx EN adapter card; 100GbE; OCP3.0; With Host management ; Dual-port QSFP56; PCIe 4.0 x16; Secure Boot; No Crypto   | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AG-0018-ST0 | MCX623105A-N-VDAT | MT_000000362 | ConnectX-6 Dx EN adapter card; 200GbE; Single-port QSFP56; PCIe 4.0 x16; No Crypto   | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AG-0048-ST0 | MCX623105A-C-VDAT | MT_000000442 | ConnectX-6 Dx EN adapter card; 200GbE; Single-port QSFP56; PCIe 4.0 x16; Crypto and Secure Boot                                | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X658-0018-SB0 | MCX623435A-N-VDAB | MT_000000512 | ConnectX-6 Dx EN adapter card; 200GbE; OCP3.0; With Host management; Single-port QSFP56; PCIe 4.0 x16; No Crypto;              | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X658-0038-SIO | MCX623435AS-VDAI  | MT_000000458 | ConnectX-6 Dx EN adapter card; 200GbE; OCP3.0; With Host management ; Single-port QSFP56; PCIe 4.0 x16; Secure Boot; No Crypto | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X658-         | MCX623435A        | MT_000000000 | ConnectX-6 Dx EN adapter card; 200GbE;   | Present           | Present           | Present           | Exists                        |

| NVIDIA SKU                      | Legacy OPN         | PSID         | Device Name  | FlexBoot          | UEFI x86          | UEFI ARM          | Enable/disable exprom Feature |
|---------------------------------|--------------------|--------------|--|-------------------|-------------------|-------------------|-------------------------------|
| 0048-SB0                        | C-VDAB             | 457          | OCP3.0; With Host management ; Single-port QSFP56; PCIe 4.0 x16; Crypto and Secure Boot                                    | (Enabled)         | (Enabled)         | (Enabled)         |                               |
| 900-9X6AG-0038-ST0              | MCX62 3105AS-VDAT  | MT_000000435 | ConnectX-6 Dx EN adapter card; 200GbE; Single-port QSFP56; PCIe 4.0 x16; Secure Boot; No Crypto                            | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AP-0085-ST0              | MCX62 3102A C-GDAT | MT_000000432 | ConnectX-6 Dx EN adapter card; 50GbE; Dual-port SFP56; PCIe 4.0 x16; Crypto and Secure Boot                                | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AP-0075-ST0              | MCX62 3102AS-GDAT  | MT_000000433 | ConnectX-6 Dx EN adapter card; 50GbE; Dual-port SFP56; PCIe 4.0 x16; Secure Boot; No Crypto                                | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AP-0055-ST1              | MCX62 3102A N-GDAT | MT_000000353 | ConnectX-6 Dx EN adapter card; 50GbE; Dual-port SFP56; PCIe 4.0/3.0 x16  | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X658-0056-SB1              | MCX62 3436A N-CDAB | MT_000000327 | ConnectX-6 Dx EN adapter card; 100GbE for OCP 3.0; with host management; Dual-port QSFP56; PCIe 3.0/4.0 x16; Internal Lock | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X624-0055-SIO / 900-9X624- | MCX62 3432A N-GDA  | MT_000000325 | ConnectX-6 Dx EN adapter card; 50GbE for OCP 3.0; with host management; Dual-port SFP56; PCIe                              | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exist                         |



| NVIDIA SKU                              | Legacy OPN         | PSID            | Device Name   | FlexBoot          | UEFI x86          | UEFI ARM          | Enable/disable exprom Feature |
|---|--------------------|-----------------|---|-------------------|-------------------|-------------------|-------------------------------|
| 0055-SB0                                |                    |                 | 3.0/4.0 x16; Internal Lock  |                   |                   |                   |                               |
| 900-9X6AP-0065-ST0                      | MCX62 3102AE -GDAT | MT_00 00000 529 | ConnectX-6 Dx EN adapter card; 50GbE; Dual-port SFP56; PCIe 4.0 x16; Crypto; No Secure Boot                               | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exist                         |
| 900-9X6AG-0028-ST0                      | MCX62 3105AE -VDAT | MT_00 00000 530 | ConnectX-6 Dx EN adapter card; 200GbE; Single-port QSFP56; PCIe 4.0 x16; Crypto; No Secure Boot                           | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exist                         |
| 900-9X6AG-0066-ST0                      | MCX62 3106AE -CDAT | MT_00 00000 528 | ConnectX-6 Dx EN adapter card; 100GbE; Dual-port QSFP56; PCIe 4.0 x16; Crypto; No Secure Boot                             | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exist                         |
| 900-9X624-0075-SIO                      | MCX62 3432AS -GDAI | MT_00 00000 472 | ConnectX-6 Dx EN adapter card; 50GbE OCP3.0; With Host management ; Dual-port SFP56; PCIe 4.0 x16; Secure Boot; No Crypto | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exist                         |
| 900-9X661-0063-ST0                      | MCX62 1102AE -ADAT | MT_00 00000 536 | ConnectX-6 Dx EN adapter card; 25GbE ; Dual-port SFP28; PCIe 4.0 x8; Crypto; No Secure Boot;                              | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exist                         |
| 900-9X624-0053-SIO / 900-9X624-0003-SB0 | MCX62 3432A N-ADA  | MT_00 00000 357 | ConnectX-6 Dx EN adapter card; 25GbE for OCP 3.0; with host management; Dual-port SFP28; PCIe 3.0/4.0 x16                 | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exist                         |

| NVIDIA SKU         | Legacy OPN        | PSID         | Device Name  | FlexBoot          | UEFI x86          | UEFI ARM          | Enable/disable exprom Feature |
|--------------------|-------------------|--------------|--|-------------------|-------------------|-------------------|-------------------------------|
| 900-9X624-0083-SB0 | MCX623432A-C-ADAB | MT_000000440 | ConnectX-6 Dx EN adapter card; 25GbE OCP3.0; With Host management; Dual-port SFP28; PCIe 4.0 x16; Crypto and Secure Boot;                                | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exist                         |
| 900-9X624-0085-SB0 | MCX623432A-C-GDAB | MT_000000393 | ConnectX-6 Dx EN adapter card; 50GbE OCP3.0; With Host management; Dual-port SFP56; PCIe 4.0 x16; Crypto and Secure Boot;                                | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exist                         |
| 900-9X658-0066-SB0 | MCX623436AE-CDAB  | MT_000000456 | ConnectX-6 Dx EN adapter card; 100GbE; OCP3.0; With Host management ; Dual-port QSFP56; PCIe 4.0 x16; Crypto; No Secure Boot                             | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X624-0063-SB0 | MCX623432AE-ADAB  | MT_000000455 | ConnectX-6 Dx EN adapter card; 25GbE OCP3.0; With Host management ; Dual-port SFP28; PCIe 4.0 x16; Crypto; No Secure Boot                                | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X675-0046-MB0 | MCX623439M-C-CDAB | MT_000000652 | ConnectX-6 Dx EN adapter card; 100GbE OCP3.0; With Host management ; Single-port DSFP; Multi Host or Socket Direct; PCIe 4.0 x16; Crypto and Secure Boot | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |

| NVIDIA SKU         | Legacy OPN        | PSID         | Device Name   | FlexBoot          | UEFI x86          | UEFI ARM          | Enable/disable exprom Feature |
|--------------------|-------------------|--------------|---|-------------------|-------------------|-------------------|-------------------------------|
| 900-9X624-0073-SB0 | MCX623432AS-ADAB  | MT_000000759 | ConnectX-6 Dx EN adapter card; 25GbE OCP3.0; With Host management ; Dual-port SFP28; PCIe 4.0 x16; Secure Boot; No Crypto   | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AP-0073-ST0 | MCX623102AS-ADAT  | MT_000000760 | ConnectX-6 Dx EN adapter card; 25GbE; Dual-port SFP28; PCIe 4.0 x16; Secure Boot; No Crypto   | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X658-0076-MB0 | MCX623436M S-CDAB | MT_000000773 | ConnectX-6 Dx EN adapter card; 100GbE; OCP3.0; With Host management ; Dual-port QSFP56; Multi Host or Socket Direct;PCIe 4.0 x16; Secure Boot; No Crypto; Thumbscrew (Pull Tab) Bracket | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X658-0056-MB0 | MCX623436M N-CDAB | MT_000000771 | ConnectX-6 Dx EN adapter card; 100GbE; OCP3.0; With Host management ; Dual-port QSFP56; Multi Host or Socket Direct;PCIe 4.0 x16; No Crypto; Thumbscrew (Pull Tab) Bracket              | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X675-0076-MB0 | MCX623430M S-CDAB | MT_000000774 | ConnectX-6 Dx EN adapter card; 100GbE OCP3.0; With Host management ; Dual-port DSFP; Multi Host or Socket Direct;PCIe 4.0 x16; Secure Boot;   | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |

| NVIDIA SKU                              | Legacy OPN         | PSID            | Device Name  | FlexBoot          | UEFI x86          | UEFI ARM          | Enable/disable exprom Feature |
|---|--------------------|-----------------|--|-------------------|-------------------|-------------------|-------------------------------|
|   |                    |                 | No Crypto; Thumbscrew (Pull Tab) Bracket   |                   |                   |                   |                               |
| 900-9X658-0018-MB1 / 900-9X658-0018-MIO | MCX62 3435M N-VDA  | MT_00 00000 358 | ConnectX-6 Dx EN adapter card; 200GbE for OCP 3.0; with Multi Host and host management; Single-port QSFP56; PCIe 4.0 x16       | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X658-0016-SB0                      | MCX62 3435A N-CDAB | MT_00 00000 694 | ConnectX-6 Dx EN adapter card; 100GbE; OCP3.0; With Host management ; Single-port QSFP56; PCIe 4.0 x16; No Crypto              | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AG-0046-ST0                      | MCX62 3105A C-CDAT | MT_00 00000 709 | ConnectX-6 Dx EN adapter card; 100GbE; Single-port QSFP56; PCIe 4.0 x16; Crypto and Secure Boot                                | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X658-0046-SB0 / 900-9X658-0046-SIO | MCX62 3435A C-CDA  | MT_00 00000 695 | ConnectX-6 Dx EN adapter card; 100GbE; OCP3.0; With Host management ; Single-port QSFP56; PCIe 4.0 x16; Crypto and Secure Boot | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AG-0026-ST0                      | MCX62 3105AE -CDAT | MT_00 00000 710 | ConnectX-6 Dx EN adapter card; 100GbE; Single-port QSFP56; PCIe 4.0 x16; Crypto; No Secure Boot                                | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X658-                              | MCX62 3435AE       | MT_00 00000     | ConnectX-6 Dx EN adapter card; 100GbE;   | Present           | Present           | Present           | Exists                        |

| NVIDIA SKU         | Legacy OPN       | PSID         | Device Name  | FlexBoot          | UEFI x86          | UEFI ARM          | Enable/disable exprom Feature |
|--------------------|------------------|--------------|--|-------------------|-------------------|-------------------|-------------------------------|
| 0026-SB0           | -CDAB            | 696          | OCP3.0; With Host management ; Single-port QSFP56; PCIe 4.0 x16; Crypto; No Secure Boot  | (Enabled)         | (Enabled)         | (Enabled)         |                               |
| 900-9X624-0053-MB0 | MCX623432MN-ADAB | MT_000000808 | ConnectX-6 Dx EN adapter card; 25GbE OCP3.0; With Host management ; Dual-port SFP56; Multi Host or Socket Direct; PCIe 4.0 x16; No Crypto  | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X663-0083-SQ0 | MCX621202AC-ADAT | MT_000000846 | ConnectX-6 Dx EN adapter card; 25GbE; With active cooling; Dual-port SFP28; PCIe 4.0 x8; Crypto and Secure Boot                            | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X663-0073-SQ0 | MCX621202AS-ADAT | MT_000000845 | ConnectX-6 Dx EN adapter card; 25GbE; With active cooling; Dual-port SFP28; PCIe 4.0 x8; Secure Boot; No Crypto                            | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AK-0086-SQ0 | MCX623106TC-CDAT | MT_000000761 | ConnectX-6 Dx EN adapter card; 100GbE; Dual-port QSFP56; Enhanced-SyncE & PTP GM support; PPS In/Out; PCIe 4.0 x16; Crypto and Secure Boot | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |
| 900-9X6AK-0086-SQ1 | MCX623106GC-CDAT | MT_000000762 | ConnectX-6 Dx EN adapter card; 100GbE; Dual-port QSFP56; Enhanced-SyncE & PTP GM support and GNSS; PPS Out ; PCIe 4.0 x16;                 | Present (Enabled) | Present (Enabled) | Present (Enabled) | Exists                        |

| NVIDIA SKU | Legacy OPN | PSID | Device Name            | FlexBoot | UEFI x86 | UEFI ARM | Enable/disable exprom Feature |
|------------|------------|------|------------------------|----------|----------|----------|-------------------------------|
|            |            |      | Crypto and Secure Boot |          |          |          |                               |

## 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 Dx Firmware         | 22.35.4506 / 22.35.4030 / 22.35.3502   |
| MLNX_OFED                      | 5.8-6.0.4.2 / 5.8-5.1.1.2 / 5.8-4.1.5.0<br><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) | 5.8-6.0.4.2 / 5.8-5.1.1.2 / 5.8-4.1.5.0<br><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<br><b>Note:</b> For the list of the supported Operating Systems, please refer to the driver's Release Notes.    |
| MFT                            | 4.22.1-5xx / 4.22.1-417 / 4.22.1-406<br><b>Note:</b> For the list of the supported Operating Systems, please refer to the driver's Release Notes.    |
| FlexBoot                       | 3.6.902<br><b>Note:</b> Please be aware that not all firmware binaries contain FlexBoot or UEFI, support may vary between cards.                     |
| UEFI                           | 14.29.15<br><b>Note:</b> Please be aware that not all firmware binaries contain FlexBoot or UEFI, support may vary between cards.                    |
| Cumulus                        | 5.4 onwards  |

## Supported Cables and Modules

## 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                      |
| 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     |

| Speed | Cable OPN       | Description  |
|-------|-----------------|--|
| 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                                   |
| 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 |



| Speed | Cable OPN     | Description  |
|-------|---------------|--|
| 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 |

## 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             |
| 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             |

| Speed  | Cable OPN        | Description   |
|--------|------------------|---|
| 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    |

| Speed  | Cable OPN        | Description  |
|--------|------------------|--|
| 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     |
| 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    |

| Speed  | Cable OPN        | Description  |
|--------|------------------|--|
| 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  |
| 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                             |

| Speed  | Cable OPN       | Description   |
|--------|-----------------|---|
| 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<br><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  |

| Speed  | Cable OPN       | Description   |
|--------|-----------------|---|
| 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      |
| 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                          |

## Validated and Supported 56GbE Cables

### Note

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   |

| Speed | Cable OPN     | Description  |
|-------|---------------|--|
| 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                  |
| 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 |

| Speed | Cable OPN     | Description  |
|-------|---------------|--|
| 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         |

## 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 |



| Speed | Cable OPN      | Description   |
|-------|----------------|---|
| 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    |
| 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 |

| Speed | Cable OPN     | Description   |
|-------|---------------|---|
| 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  |
| 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  |

| Speed | Cable OPN     | Description   |
|-------|---------------|---|
| 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 |

## Validated and Supported 25GbE Cables

### Note

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 |

| Speed | Cable OPN        | Description   |
|-------|------------------|---|
| 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 |
| 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                   |

| Speed | Cable OPN        | Description  |
|-------|------------------|--|
| 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 |

## 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 |
| 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-    | NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to          |

| Speed | Cable OPN     | Description  |
|-------|---------------|--|
| E     | 00A           | 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 |

| Speed | Cable OPN     | Description  |
|-------|---------------|--|
| 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 |

## 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                  |

## Supported 3rd Party Cables and Modules

| Speed  | Cable OPN     | Description  |
|--------|---------------|--|
| 400GbE | RTXM500-910   | 400G QSFP-DD-2x200G QSFP56 AOC (rev:10)  |
| 400GbE | RTXM500-905   | 400G QSFP-DD-2x200G QSFP56 AOC (rev:c0)  |
| 400GbE | DME8811-EC07  | 400Gb/s to 200Gb/s QSFP-DD to 2xQSFP56 AOC (rev:12)                                    |
| 400GbE | FCBN950QE1C05 | 400G-2x200G split 5M AOC cables (400G QSFP-DD breaking out to 2x 200G QSFP56) (rev:A0) |

| Speed   | Cable OPN         | Description                                 |
|---------|-------------------|---|
| 200 GbE | AB-QS200GYO Ca05  | QSFP56 to 2x100G QSFP56 AOC                 |
| 100 GbE | DMM8211-DCxx      | Hisense DMM8211-DCxx 100G DSFP AOC (rev:16) |
| 100 GbE | ATRP-Bxxx         | HGTECH ATRP-Bxxx 100G DSFP AOC (rev:14)     |
| 100 GbE | RTXM520-1xx       | WTD RTXM520-1xx 100G DSFP AOC (rev:20)      |
| 100 GbE | FTLC1151 RDPL     | TRANSCIEVER 100GBE QSFP LR4                 |
| 100 GbE | FCBN425Q E1C10-C1 | AOC 100GBE QSFP 1M                          |
| 100 GbE | FTLC9152 RGPL     | 100G 100M QSFP28 SWDM4 OPT TRANS            |
| 100 GbE | QSFP28-LR4-AJ     | CISCO-PRE 100G AOM                          |
| 100 GbE | DMM8211-DC07      | Hisense DSFP AOC 7m                         |
| 100 GbE | DMM8211-DC10      | Hisense DSFP AOC 10m                        |
| 100 GbE | ATRP-B007         | Hgtech DSFP AOCs 7m                         |
| 100 GbE | ATRP-B010         | Hgtech DSFP AOCs 10m                        |
| 100 GbE | RTXM520-107       | Accelink DSFP AOCs 7m                       |
| 100 GbE | RTXM520-110       | Accelink DSFP AOCs 10m                      |
| 100 GbE | C-PD2FNM0 10-N00  | Innolight DSFP AOCs 10m                     |
| 100     | DQF8503-          | Hisense QSFP28 AOCs 7m                      |



| Speed   | Cable OPN       | Description  |
|---------|-----------------|--|
| GbE     | 4C07            |  |
| 100 GbE | DQF8503-4C10    | Hisense QSFP28 AOCs 10m  |
| 100 GbE | ATRQ-A007       | Hgtech QSFP28 AOCs 7m  |
| 100 GbE | ATRQ-A010       | Hgtech QSFP28 AOCs 10m   |
| 100 GbE | RTXM420-007     | Accelink QSFP28 AOCs 7m  |
| 100 GbE | RTXM420-010     | Accelink QSFP28 AOCs 10m   |
| 50GbE   | FTLF8556 D1BCW  | Finisar 10/25/50GbE SR multimode SFP56 Transceiver, 10GBASE-SR/25GBASE-SR/50GBASE-SR, 850nm, VCSEL, 0°C to 70°C, LC, 100m/400m |
| 40GbE   | QSFP-40G-SR-BD  | Cisco 40GBASE-SR-BiDi, duplex MMF  |
| 25GbE   | LTF8507-PC05    | Hisense SFP28 AOCs 5m  |
| 25GbE   | LTF8507-PC07    | Hisense SFP28 AOCs 7m  |
| 25GbE   | ATRS-2005       | Hgtech SFP28 AOCs 5m   |
| 25GbE   | ATRS-2007       | Hgtech SFP28 AOCs 7m   |
| 25GbE   | RTXM330-005     | Accelink SFP28 AOCs 5m   |
| 25GbE   | RTXM330-007     | Accelink SFP28 AOCs 7m   |
| 25GbE   | FCBG125S D1C05M | Finisar SFP28 AOCs 5m  |
| 25GbE   | FCBG125S D1C10M | Finisar SFP28 AOCs 7m  |

| Speed | Cable OPN         | Description  |
|-------|-------------------|--|
| 25GbE | FTLF8536 P4BCL    | TRANSCEIVER 25GBE SFP SR   |
| 1GbE  | FTLF8519 P3BNL-IB | Fibre Optic Transmitters, Receivers, Transceivers GigE 1x/2x FC, 2.128 Gb/s trnscvr, 550m  |
| 1GbE  | FTLF1318 P3BTL-IB | Fibre Optic Transmitters, Receivers, Transceivers 1310nmFP GigE 1x LC 1.25Gb/s trnscvr10km |

## Tested Switches

### Tested 400GbE Switches

| Speed  | Switch Silicon | OPN # / Name | Description                             | Vendor   |
|--------|----------------|--------------|---|----------|
| 400GbE | N/A            | Wedge 400    | Wedge 400-48X 400GbE Data Center Switch | Facebook |

### Tested 200GbE Switches

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

### Tested 100GbE Switches

| Speed  | Switch Silicon | OPN # / Name | Description   | Vendor |
|--------|----------------|--------------|---|--------|
| 100GbE | Spectrum-3     | MSN4600-XXXX | 64-port Non-blocking 100GbE Open Ethernet Switch System | NVIDIA |
| 100GbE | Spectrum-      | MSN3700C     | 32-port Non-blocking 100GbE Open                        | NVIDIA |

| Speed   | Switch Silicon | OPN # / Name   | Description  | Vendor      |
|---------|----------------|----------------|--|-------------|
| E       | 2              | -XXXX          | Ethernet Switch System   |             |
| 100Gb E | Spectrum-2     | MSN3420-XXXX   | 48 SFP + 12 QSFP ports Non-blocking 100GbE Open Ethernet Switch System   | NVIDIA      |
| 100Gb E | Spectrum       | MSN2700-XXXX   | 32-port Non-blocking 100GbE Open Ethernet Switch System                  | NVIDIA      |
| 100Gb E | N/A            | QFX5200-32C-32 | 32-port 100GbE Ethernet Switch System                                    | Juniper     |
| 100Gb E | N/A            | 7060CX-32S     | 32-port 100GbE Ethernet Switch System                                    | Arista      |
| 100Gb E | N/A            | 3232C          | 32-port 100GbE Ethernet Switch System                                    | Cisco       |
| 100Gb E | N/A            | N9K-C9236C     | 36-port 100GbE Ethernet Switch System                                    | Cisco       |
| 100Gb E | N/A            | 93180YC-EX     | 48-port 25GbE + 6-port 100GbE Ethernet Switch System                     | Cisco       |
| 100Gb E | N/A            | S6820-56HF     | H3C S6850-56HF L3 Ethernet Switch with 48 SFP28 Ports and 8 QSFP28 Ports | H3C         |
| 100Gb E | N/A            | BMS T7032-IX7  | 32 QSFP28 ports support for 10/25/40/50/100GbE                           | Quanta Mesh |
| 100Gb E | N/A            | CE8860EI       | Huawei 02350NBS CE8860-EI-B-B0A CE8860EI Bundle                          | Huawei      |
| 100Gb E | N/A            | Wedge 100      | Wedge 100-32X 100GbE Data Center Switch                                  | Facebook    |

## 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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# Changes and New Features

## Important Notes

### **Note**

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

### **Note**

It is recommended to enable the "above 4G decoding" BIOS setting for features that require a large amount of PCIe resources (e.g., SR-IOV with numerous VFs, PCIe Emulated Switch, Large BAR Requests).

### **Note**

**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.

### **Info**

To generate PLDM packages for firmware updates, users must install and use the MFT version that corresponds with the respective firmware release.

| Feature/Change    | Description  |
|-------------------|--|
| <b>22.35.4506</b> |  |
| <b>Bug Fixes</b>  | See <i>Bug Fixes in this Firmware Version</i> section. |

## Unsupported Features and Commands

### Unsupported Features

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

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

### Unsupported Commands

- QUERY\_MAD\_DEMUX
- SET\_MAD\_DEMUX

- CREATE\_RQ - MEMORY\_RQ\_RMP
- MODIFY\_LAG\_ASYNC\_EVENT

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# Bug Fixes in this Firmware Version

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

| Internal Ref. | Issue   |
|---------------|---|
| 4161453       | <b>Description:</b> Fixed a rare case that cause traffic to stop as it is failed to be recovered when the emulation doorbell did not function properly. |
|               | <b>Keywords:</b> Emulation doorbell   |
|               | <b>Discovered in Version:</b> 22.35.4030  |
|               | <b>Fixed in Release:</b> 22.35.4506   |
| 4149511       | <b>Description:</b> Fixed an issue that resulted in setup crash when create_sq used invalid mbox. Now the invalid mbox is replaced with a valid DB.     |
|               | <b>Keywords:</b> mbox   |
|               | <b>Discovered in Version:</b> 22.35.4030  |
|               | <b>Fixed in Release:</b> 22.35.4506   |
| 4149392       | <b>Description:</b> Added address validation in MLNX OEM CMD 0x0032 (get debug info) to be 4-bytes aligned.   |
|               | <b>Keywords:</b> Address validation, 0x0032   |
|               | <b>Discovered in Version:</b> 22.35.4030  |
|               | <b>Fixed in Release:</b> 22.35.4506   |

# 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  | RM Tickets Status   |
|---------------|--|---|
| 3525865       | <b>Description:</b> Unexpected system behavior might be observed if the driver is loaded while reset is in progress. | <b>[ConnectX FW Core - Design] BS #3525865: Won't fix [Host FW - 44.1000 GA Release (Jan25 GA)]</b> |
|               | <b>Workaround:</b> N/A   |   |
|               | <b>Keywords:</b> Sync 1 reset, firmware reset  |   |
|               | <b>Discovered in Version:</b> 22.35.3006   |   |
| 3463527       | <b>Description:</b> PhyLess Reset is currently not supported.  | <b>[ConnectX FW PHY - Design] BS #3463527: Won't fix [Host FW -</b>                                 |



| Internal Ref. | Issue   | RM Tickets Status  |
|---------------|---|--|
|               |   | <b>Oct22 LTS-U4 35.3500 (Dec23)]</b>   |
|               | <b>Workaround:</b> N/A  |  |
|               | <b>Keywords:</b> PhyLess Reset  |  |
|               | <b>Discovered in Version:</b> 22.35.3006  |  |
| 2745023       | <b>Description:</b> RDMA statistics for sent packets are not updated when RoCE traffic is running in a loopback on the same uplink. | <b>[ConnectX FW Core - Design] BS #2745023: Fixed [Host FW - 37.1000 GA Release]</b>               |
|               | <b>Workaround:</b> N/A  |  |
|               | <b>Keywords:</b> RoCE   |  |
|               | <b>Discovered in Version:</b> 22.35.2302  |  |
| 3266807       | <b>Description:</b> PMA loop-back is not supported on PAM4 speeds.  | <b>[ConnectX FW PHY - Design] BS #3266807: Closed [Host FW - Oct22 LTS-U1 35.2000 (Nov22)]</b>     |
|               | <b>Workaround:</b> N/A  |  |
|               | <b>Keywords:</b> Counters, CRC  |  |
|               | <b>Discovered in Version:</b> 22.35.2302  |  |
| 3267506       | <b>Description:</b> CRC is included in the traffic byte counters as a port byte counter.  | <b>[ConnectX FW Core - Design] BS #3267506: Won't fix [Host FW - Oct22 LTS-U1 35.2000 (Nov22)]</b> |
|               | <b>Workaround:</b> N/A  |  |
|               | <b>Keywords:</b> Counters, CRC  |  |
|               | <b>Discovered in Version:</b> 22.35.2302  |  |
| 3235397       | <b>Description:</b> PCC force mode does not work if the link is raised after disabling DCQCN with PPCC.                             | <b>[ConnectX FW Core - Design] BS #3235397: Closed [Host FW - 35.1000 GA Release]</b>              |
|               | <b>Workaround:</b> N/A  |  |

| Internal Ref. | Issue   | RM Tickets Status   |
|---------------|---|---|
|               | <b>Keywords:</b> PCC  |   |
|               | <b>Discovered in Version:</b> 22.35.1012  |   |
| 3200779       | <b>Description:</b> Changing dynamic PCIe link width is not supported.  | <b>[ConnectX FW PCI - Design] BS #3200779: Closed (Rejected) [Host FW - 35.1000 GA Release]</b> |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> PCIe   |   |
|               | <b>Discovered in Version:</b> 22.34.1002  |   |
| 3033910       | <b>Description:</b> BAR misses caused by a memory write/read actions are not reported in the AER and the device status.           | <b>[ConnectX FW PCI - Design] BS #3033910: Won't fix [Host FW - 34.4000 MUR1 Release]</b>       |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> BAR miss, AER  |   |
|               | <b>Discovered in Version:</b> 22.34.1002  |   |
| 2169950       | <b>Description:</b> When decapsulation on a packet occurs, the FCS indication is not calculated correctly.                        | <b>[ConnectX FW Core - Design] BS #2169950: Closed [Host FW - 27.6000: MUR Release]</b>         |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> FCS  |   |
|               | <b>Discovered in Version:</b> 22.34.1002  |   |
| 3141072       | <b>Description:</b> The "max_shaper_rate" configuration query via QEEC mlxreg returns a value translated to hardware granularity. | <b>[ConnectX FW Core - Design] BS #3141072: Won't fix [Host FW - 34.1000 GA Release]</b>        |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> RX Rate-Limiter, Multi-host  |   |
|               | <b>Discovered in Version:</b> 22.34.1002  |   |
| 3106146       | <b>Description:</b> Live migration of MPV affiliated function pair is not supported when port                                     | <b>[ConnectX FW Core - Design] BS #3106146:</b>   |

| Internal Ref. | Issue   | RM Tickets Status   |
|---------------|---|---|
|               | numbers are changed. Each function should stay on the same port number as before migration.   | <b>Closed [Host FW - 34.1000 GA Release]</b>  |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> MPV live migration   |   |
|               | <b>Discovered in Version:</b> 22.34.1002  |   |
| 2870970       | <b>Description:</b> 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.                              | <b>[ConnectX FW Core - Design] BS #2870970: Fixed [future release]</b>                  |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> GTP encapsulation  |   |
|               | <b>Discovered in Version:</b> 22.34.1002  |   |
| 2937445       | <b>Description:</b> A long linkup time can be seen 1/5 toggles when raising link in autoneg flow in ConnectX-6 Dx vs Ixia in 200G_4x.   | <b>[ConnectX FW PHY - Design] BS #2937445: Closed [Host FW - 35.1000 GA Release]</b>    |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> AN, port toggling, Ixia  |   |
|               | <b>Discovered in Version:</b> 22.33.1048  |   |
| 2850003       | <b>Description:</b> Occasionally, when rising a logical link, the link recovery counter is increase by 1.   | <b>[ConnectX FW PHY - Design] BS #2850003: Won't fix [Host FW - 33.1000 GA Release]</b> |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> Link recovery counter  |   |
|               | <b>Discovered in Version:</b> 22.33.1048  |   |
| 2825403       | <b>Description:</b> When connecting NVIDIA Spectrum-3 devices and ConnectX-6 Dx devices with DAC MCP7F80-W002R26 while splitting to 8x with 50GbE per lane in force mode, effective BER may appear. | <b>[FW Eth PHY - Design] BS #2825403: Closed [4.5.2200/2010.2200 (MUR Apr22)]</b>       |
|               | <b>Workaround:</b> N/A  |   |

| Internal Ref. | Issue   | RM Tickets Status   |
|---------------|---|---|
|               | <b>Keywords:</b> NVIDIA Spectrum-3, Cables, Split   |   |
|               | <b>Discovered in Version:</b> 22.32.2004  |   |
| 2866931       | <b>Description:</b> When the host powers up directly into the standby mode, the adapter may not handle WOL packets.   | <b>[ConnectX FW System Mng - Design] BS #2866931: Closed [Host FW - 32.1000 GA Release]</b> |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> WOL packets  |   |
|               | <b>Discovered in Version:</b> 22.32.1010  |   |
| 2864238       | <b>Description:</b> VPD cannot be accessed after firmware upgrade or reset when the following sequence is performed:<br><br><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>[ConnectX FW Core - Design] BS #2864238: Won't fix [TBD]</b>                             |
|               | <b>Workaround:</b> Run the upgrade or reset sequence as follow:<br><br><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> 22.32.1010  |   |
| 2863674       | <b>Description:</b> Host management magic packet is not supported in Socket-Direct adapter cards' single PF per Numa mode.  | <b>[ConnectX FW Core - Design] BS #2863674: Closed [Host FW - 32.2000 MUR1 Release]</b>     |

| Internal Ref.     | Issue  | RM Tickets Status   |
|-------------------|--|---|
|                   | <b>Workaround:</b> N/A   |   |
|                   | <b>Keywords:</b> Socket-Direct, single PF per Numa, host management, magic packet  |   |
|                   | <b>Discovered in Version:</b> 22.32.1010   |   |
| 2836032           | <b>Description:</b> When using SW steering mlx5dv_dr API to create rules containing encapsulation actions in MLNX_OFED v5.5-1.x.x.x, the user should upgrade firmware to the latest version. Otherwise, the maximum number of encapsulation actions that can be created will be limited to only 16K, and degradation for the rule insertion rate is expected compared to MLNX_OFED v5.4-x.x.x.x. | <b>[ConnectX FW - Core] ST #2836032: Closed</b>   |
|                   | <b>Workaround:</b> N/A   |   |
|                   | <b>Keywords:</b> Encapsulation rules insertion rate, firmware upgrade, MLNX_OFED   |   |
|                   | <b>Discovered in Version:</b> 22.32.1010   |   |
| 2756866 / 2740651 | <b>Description:</b> On rare occasions, following fast linkup (toggle link from the NIC side) a few effective errors might be seen in the first 20 seconds.   | <b>[ConnectX FW Serdes - Design] BS #2756866: Won't fix [Host FW - 33.4000 MUR1 Release] / [ConnectX FW Serdes - Design] BS #2740651: Closed [Host FW - 33.1000 GA Release]</b> |
|                   | <b>Workaround:</b> Perform link maintenance to fix it so additional errors will not be seen afterwards.  |   |
|                   | <b>Keywords:</b> Link toggle, effective errors   |   |
|                   | <b>Discovered in Version:</b> 22.31.2006   |   |
| -                 | <b>Description:</b> Downgrading to an older firmware version that does not support the new flash type is not supported. Doing so will result in burning process failure and unknown errors will be received.   |   |

| Internal Ref. | Issue   | RM Tickets Status   |
|---------------|---|---|
|               | The errors will be more informative in the next tools' version.   |   |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> Burning tools, firmware downgrading, flash type  |   |
|               | <b>Discovered in Version:</b> 22.31.2006  |   |
| 2667681       | <b>Description:</b> 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. | <b>[ConnectX FW Core - Design] BS #2667681: Won't fix [Host FW - 31.1000 GA Release]</b>        |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> Connection Tracking  |   |
|               | <b>Discovered in Version:</b> 22.31.1014  |   |
| 2607158       | <b>Description:</b> When using more than 512 MSIX per function, the CPU PCIe Completion Timeout Value needs to be set to a value of 200us or higher.  | <b>[ConnectX FW PCI - Design] BS #2607158: Closed [Host FW - 31.1000 GA Release]</b>            |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> Extended MSIX, Asymmetrical MSIX configuration, PF_NUM_PF_MSIX_VALID, PF_NUM_PF_MSIX   |   |
|               | <b>Discovered in Version:</b> 22.31.1014  |   |
| 2577966       | <b>Description:</b> Fast linkup is not supported when connecting to an Ixia switch.   | <b>[ConnectX FW PHY - Design] BS #2577966: Closed (External) [Host FW - 30.1000 GA Release]</b> |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> Fast linkup  |   |
|               | <b>Discovered in Version:</b> 22.30.1004  |   |
| 2446583       | <b>Description:</b> On rare occasions, when both network devices are NVIDIA, PAM4 link will raise with several effective errors. These  | <b>[ConnectX FW - Serdes] BS #2446583: Closed</b>   |

| Internal Ref. | Issue  | RM Tickets Status   |
|---------------|--|---|
|               | errors will not affect traffic once the link is up.  | <b>[Host FW - 33.1000 GA Release]</b>   |
|               | <b>Workaround:</b> Clear counters once the link is up  |   |
|               | <b>Keywords:</b> Effective errors  |   |
|               | <b>Discovered in Version:</b> 22.29.2002   |   |
| 2371060       | <b>Description:</b> When Emulated PCIe Switch is enabled, and the OS does resource reallocation, the OS boot process might halt.   | <b>[ConnectX FW PCI - Design] BS #2371060: Closed (Rejected) [Host FW - 30.1000 GA Release]</b> |
|               | <b>Workaround:</b> N/A   |   |
|               | <b>Keywords:</b> Emulated PCIe Switch  |   |
|               | <b>Discovered in Version:</b> 22.29.1016   |   |
| 2297201       | <b>Description:</b> Unable to complete migration when virtio device is in high traffic load (20/20 MPPS) as although vDPA hardware offload solution can support higher speed than the software solution, it needs to enable QEMU auto-converge to complete migration. For further information see: <a href="https://wiki.qemu.org/Features/AutoconvergeLiveMigration">https://wiki.qemu.org/Features/AutoconvergeLiveMigration</a> | <b>[ConnectX FW Core - Design] BS #2297201: Won't fix [Host FW - 29.1000 GA Release]</b>        |
|               | <b>Workaround:</b> Turn auto-converge on by adding <code>"--auto-converge"</code> .<br>For example:<br><pre>virsh migrate --verbose --live --persistent gen-1-vrt-295-005-CentOS-7.4 qemu+ssh://gen-1-vrt-295/system --unsafe --auto-converge</pre>  |   |
|               | <b>Keywords:</b> virtio, vDPA, live migration  |   |
|               | <b>Discovered in Version:</b> 22.29.1016   |   |
| 2378593       | <b>Description:</b> Sub 1sec firmware update (fast reset flow) is not supported when updating from previous releases to the current one.   | <b>[ConnectX FW PCI - Design] BS #2378593:</b>  |

| Internal Ref.     | Issue   | RM Tickets Status  |
|-------------------|---|--|
|                   | Doing so may cause network disconnection events.  | <b>Closed [Host FW - 29.1000 GA Release]</b>   |
|                   | <b>Workaround:</b> Use full reset flow for firmware upgrade/downgrade.  |  |
|                   | <b>Keywords:</b> Sub 1sec firmware update   |  |
|                   | <b>Discovered in Version:</b> 22.29.1016  |  |
| 2384965           | <b>Description:</b> Eye-opening can cause effective errors on the port.   | <b>[ConnectX FW PHY - Design] BS #2384965: Closed [Host FW - 33.1000 GA Release]</b>   |
|                   | <b>Workaround:</b> N/A  |  |
|                   | <b>Keywords:</b> Eye-opening  |  |
|                   | <b>Discovered in Version:</b> 22.29.1016  |  |
| 2384849 / 2373640 | <b>Description:</b> Phyless Reset functionality is not supported when updating firmware from v22.28.4000 (and below) to v22.29.1016 and higher.   | <b>[ConnectX FW - Serdes] T #2384849: Closed / [ConnectX FW - Serdes] BS #2373640: Won't fix [Host FW - 29.2000: MUR1 Release]</b> |
|                   | <b>Workaround:</b> N/A  |  |
|                   | <b>Keywords:</b> Phyless Reset  |  |
|                   | <b>Discovered in Version:</b> 22.29.1016  |  |
| 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> </ul> </li> </ul> | <b>[ConnectX FW - Core] F #2213356: Closed [Host FW - 29.1000 GA Release]</b>  |



| Internal Ref. | Issue  | RM Tickets Status  |
|---------------|--|--|
|               | <ul style="list-style-type: none"> <li>◦ Layer 3 IPv4/Ipv6/Grh</li> <li>◦ Layer 4<br/>TCP/UDP/Bth/GreV0/GreV1</li> <li>◦ Tunneling<br/>VXLAN/Geneve/GREv0/Mpls</li> <li>• FlexParser protocols are not supported (e.g AliVxlan/VxlanGpe etc..).</li> <li>• Compiles only on x86</li> </ul> |  |
|               | <b>Workaround:</b> N/A   |  |
|               | <b>Keywords:</b> Steering Bump   |  |
|               | <b>Discovered in Version:</b> 22.29.1016   |  |
| 2365322       | <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.   | <b>[ConnectX FW Core - Design] BS #2365322: Closed [Host FW - 33.1000 GA Release]</b>            |
|               | <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>  |  |
|               | <b>Keywords:</b> QoS   |  |
|               | <b>Discovered in Version:</b> 22.29.1016   |  |
| 2201468       | <b>Description:</b> Running multiple resets ("mlxfwreset --sync=1") simultaneously is not functioning properly,  | <b>[ConnectX FW Core - Design] BS #2201468: Closed (Rejected) [Host FW - 30.1000 GA Release]</b> |
|               | <b>Workaround:</b> Wait a few seconds until you run "mlxfwreset --sync=0".   |  |
|               | <b>Keywords:</b> mlxfwreset, reset-sync, reset, sync   |  |
|               | <b>Discovered in Version:</b> 22.28.1002   |  |
| 2089277       | <b>Description:</b> The CRC is being removed despite using the keep_crc flag, and the byte   | <b>[ConnectX FW Core - Design] BS #2089277:</b>  |

| Internal Ref. | Issue   | RM Tickets Status   |
|---------------|---|---|
|               | count of the packet are counted without the CRC.  | <b>Won't fix [28.1000: GA Release]</b>  |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> Decapsulated packets   |   |
|               | <b>Discovered in Version:</b> 22.27.6008  |   |
| 2149437       | <b>Description:</b> When the SLTP configuration is wrongly set, the “Bad status” explanation will not be presented (only error indication) to the user.   | <b>[MFT] BS #2149437: Won't fix [MFT 4.18 - November 2021 release]</b>                  |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> SLTP configuration   |   |
|               | <b>Discovered in Version:</b> 22.27.6008  |   |
| 1895917       | <b>Description:</b> On Dual-Port devices, and only after Rx buffer modification, resetting all Physical Functions over one port (through reboot / driver restart / FLR), while there are active Physical Functions over the second port (which caused the Rx buffer changes), will cause the Rx buffer default values to be restored, although not expected by the active Physical Function on the second port. | <b>[Check - DCI-D [Griffin] M #1985917: New]</b>  |
|               | <b>Workaround:</b> <ul style="list-style-type: none"> <li>• Re-apply the changes</li> <li>• Reset the functions from both ports together (driver restart / FLRs / reboot)</li> <li>• Power cycle or reset the firmware</li> </ul>   |   |
|               | <b>Keywords:</b> VoQ, Shared Buffer, Rx Buffer, PFCC, PBMC, PPTB, SBCM, SBPM, SBPR, Rx buffer modifications   |   |
|               | <b>Discovered in Version:</b> 22.27.2008  |   |
| 2120378       | <b>Description:</b> Phyless Reset is not supported when using PAM4 mode.  | <b>[ConnectX FW PHY - Design] BS #2120378: Won't fix [Host FW - 31.1000 GA Release]</b> |

| Internal Ref. | Issue  | RM Tickets Status   |
|---------------|--|---|
|               | <b>Workaround:</b> N/A   |   |
|               | <b>Keywords:</b> Phyllless, PAM4 mode, 200GbE  |   |
|               | <b>Discovered in Version:</b> 22.27.2008   |   |
| 2071210       | <b>Description:</b> mlxconfig query for the BOOT_INTERRUPT_DIS TLV shows a wrong value in the "current value" field. | <b>[ConnectX FW System Mng - Design] BS #2071210: Closed (Rejected) [28.1000: GA Release]</b>     |
|               | <b>Workaround:</b> Use "next boot" indication to see the right value.  |   |
|               | <b>Keywords:</b> mlxconfig   |   |
|               | <b>Discovered in Version:</b> 22.27.1016   |   |
| 2063038       | <b>Description:</b> PRBS is not functional when using Wedge switch.  | <b>[ConnectX FW PHY - Design] BS #2063038: Closed (Rejected) [Host FW - 27.6000: MUR Release]</b> |
|               | <b>Workaround:</b> N/A   |   |
|               | <b>Keywords:</b> PRBS  |   |
|               | <b>Discovered in Version:</b> 22.27.1016   |   |
| 1796936       | <b>Description:</b> 200GbE Optical cables in Auto-Negotiation mode work only in 200GbE speed.                        | <b>[MKT. IB FW - unmanaged switches] FR #1796936: Committed [2020 - Rel2]</b>                     |
|               | <b>Workaround:</b> N/A   |   |
|               | <b>Keywords:</b> Cables  |   |
|               | <b>Discovered in Version:</b> 22.27.1016   |   |
| 2038821       | <b>Description:</b> When running MH TCP, few packets are dropped every second due to no Receive WQEs.                | <b>[Networking Performance ] BS #2038821: Won't fix</b>   |
|               | <b>Workaround:</b> Use 4K RX queue size:<br><code>ethtool -G &lt;intf&gt; rx 4096</code>                             |   |

| Internal Ref. | Issue   | RM Tickets Status   |
|---------------|---|---|
|               | <b>Keywords:</b> Performance, MH, WQE   |   |
|               | <b>Discovered in Version:</b> 22.27.1016  |   |
| -             | <b>Description:</b> After programing firmware in LF, power-cycle must be recovered. |   |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> LF   |   |
|               | <b>Discovered in Version:</b> 22.27.1016  |   |
| 2029716       | <b>Description:</b> Software Reset does not work on ConnectX-6 Dx adapter cards.    | <b>[ConnectX FW PCI - Design] BS #2029716: Won't fix [Host FW - 29.1000 GA Release]</b> |
|               | <b>Workaround:</b> N/A  |   |
|               | <b>Keywords:</b> Software Reset   |   |
|               | <b>Discovered in Version:</b> 22.27.1016  |   |

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# 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_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       |            |        |

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

| Configuration   | mlxconfig Parameter Name   | Class | TLV ID |
|-----------------|----------------------------|-------|--------|
|                 | RPG_MIN_DEC_FAC            |       |        |
|                 | RPG_MIN_RATE               |       |        |
|                 | RATE_TO_SET_ON_FIRST_CNP   |       |        |
|                 | DCE_TCP_G                  |       |        |
|                 | DCE_TCP_RTT                |       |        |
|                 | RATE_REDUCE_MONITOR_PERIOD |       |        |
|                 | INITIAL_ALPHA_VALUE        |       |        |
|                 | MIN_TIME_BETWEEN_CNPS      |       |        |
|                 | CNP_802P_PRIO              |       |        |
|                 | CNP_DSCP                   |       |        |
| NV_LLDP_NB_CONF | LLDP_NB_DCBX               |       | 0x10a  |
|                 | LLDP_NB_RX_MODE            |       |        |
|                 | LLDP_NB_TX_MODE            |       |        |
| NV_LLDP_NB_DCBX | DCBX_IEEE                  |       | 0x18e  |
|                 | DCBX_CEE                   |       |        |
|                 | DCBX_WILLING               |       |        |
| NV_KEEP_LINK_UP | KEEP_ETH_LINK_UP           |       | 0x190  |
|                 | KEEP_IB_LINK_UP            |       |        |
|                 | KEEP_LINK_UP_ON_BOOT       |       |        |
|                 | KEEP_LINK_UP_ON_STANDBY    |       |        |
| NV_QOS_CONF     | NUM_OF_VL                  |       | 0x192  |
|                 | NUM_OF_TC                  |       |        |
|                 | NUM_OF_PFC                 |       |        |
| NV_MPFS_CONF    | DUP_MAC_ACTION             |       | 0x196  |
|                 | SRIOV_IB_ROUTING_MODE      |       |        |
|                 | IB_ROUTING_MODE            |       |        |



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

# Release Notes History

## Changes and New Feature History

### Note

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>22.35.4030</b> |  |
| <b>Bug Fixes</b>  | See <i>Bug Fixes in this Firmware Version</i> section. |

| Feature/Change                                 | Description   |
|--|---|
| <b>22.35.3502</b>                              |   |
| <b>PCC Algorithm</b>                           | Enables the users to collect more information from NP to RP for PCC algorithm. To achieve this, the NP ingress bytes information was added to the RTT response packet sent from the NP side.  |
| <b>HPCC: Support per-IP and per-QP Methods</b> | Enables the user to configure the PCC algorithm shaper coalescing mode using nvconfig to select CC algorithm shaper coalescing for IB and ROCE.<br>The new parameters are <code>IB_CC_SHAPER_COALESCE</code> and <code>ROCE_CC_SHAPER_COALESCE</code> . |
| <b>Bug Fixes</b>                               | See <i>Bug Fixes in this Firmware Version</i> section.  |

| Feature/Change    | Description |
|-------------------|-------------|
| <b>22.35.3006</b> |             |

| Feature/Change                                 | Description   |
|--|---|
| <b>PCC Algorithm</b>                           | Enables the users to collect more information from NP to RP for PCC algorithm. To achieve this, the NP ingress bytes information was added to the RTT response packet sent from the NP side.  |
| <b>HPCC: Support per-IP and per-QP Methods</b> | Enables the user to configure the PCC algorithm shaper coalescing mode using nvconfig to select CC algorithm shaper coalescing for IB and ROCE.<br>The new parameters are <code>IB_CC_SHAPER_COALESCE</code> and <code>ROCE_CC_SHAPER_COALESCE</code> . |
| <b>Bug Fixes</b>                               | See <i>Bug Fixes in this Firmware Version</i> section.  |

| Feature/Change    | Description  |
|-------------------|--|
| <b>22.35.2302</b> |  |
| <b>Bug Fixes</b>  | See <i>Bug Fixes in this Firmware Version</i> section. |

| Feature/Change                                 | Description   |
|--|---|
| <b>22.35.2000</b>                              |   |
| <b>PCC Algorithm</b>                           | Enables the users to collect more information from NP to RP for PCC algorithm. To achieve this, the NP ingress bytes information was added to the RTT response packet sent from the NP side.  |
| <b>HPCC: Support per-IP and per-QP Methods</b> | Enables the user to configure the PCC algorithm shaper coalescing mode using nvconfig to select CC algorithm shaper coalescing for IB and ROCE.<br>The new parameters are <code>IB_CC_SHAPER_COALESCE</code> and <code>ROCE_CC_SHAPER_COALESCE</code> . |
| <b>Bug Fixes</b>                               | See <i>Bug Fixes in this Firmware Version</i> section.  |

| Feature/Change            | Description  |
|---------------------------|--|
| <b>22.35.1012</b>         |  |
| <b>HPCC, Programmable</b> | HPCC related configurations in is now supported via the mlxconfig utility. |

| Feature/Change                                | Description  |
|---|--|
| <b>Congestion Control</b>                     |  |
| <b>UDP</b>                                    | Added support for copy modify header steering action to/from the UDP field.  |
| <b>Range based Lookup</b>                     | Added support for range based lookup. This new capability is available using the following new PRM command:<br>GENERATE WQE which receives GTA WQE, the command supports "match on range" and num_hash_definer=[1,2] and num_match_ste=[1,2].<br>For further information, refer to section "RTC Object Format" in the PRM. |
| <b>RoCE based VM Migration</b>                | Added support for RoCE based VM migration.   |
| <b>Resource Dump</b>                          | Added the following resource dump segments: <ul style="list-style-type: none"> <li>• SEG_HW_STE_FULL that includes dump to STE and all its dependencies</li> <li>• SEG_FW_STE_FULL that include dump to FW_STE and to HW_STE_FULL in range</li> </ul>  |
| <b>Striding WQE - Headroom and Tail-room</b>  | As the software requires additional space before and after a packet is scattered for its processing for stridden RQ, the hardware will allocate the required room while scattering packets to spare a copy.  |
| <b>Connections per Second (CPS)</b>           | Improved security offload's Connections per Second (CPS) rate using the general object DEK (PSP TLS etc).  |
| <b>VF Migration Flow</b>                      | Added support for pre-copy commands in VF migration flow in order to reduce the migration downtime.  |
| <b>VF Migration Flow</b>                      | Optimized performance to support full VF migration flow.   |
| <b>VirtIO vDPA Performance Virtualization</b> | Increased the VirtIO hardware offload message rate to 20/20 MPPS for 256 virtual devices by optimizing the datapath application code.  |
| <b>RoCE: Adaptive Timer</b>                   | Enabled ADP timer to allow the user to configure RC or DC qp_timeout values lower than 16.   |

| Feature/Change                               | Description  |
|--|--|
| <b>QoS Priority Trust Default State</b>      | <p>QoS priority trust default state can now be changed using the new nvconfig below:</p> <ul style="list-style-type: none"> <li>• QOS_TRUST_STATE_P1</li> <li>• QOS_TRUST_STATE_P2</li> </ul> <p>The values that can be used to set the default state are:</p> <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> section.   |
| <b>22.34.4000</b>                            |  |
| <b>Bug Fixes</b>                             | See <a href="#">Bug Fixes</a> section.   |
| <b>22.34.1002</b>                            |  |
| <b>LLDP Properties Implementation on RDE</b> | Added LLDPEnable, LLDPTransmit and LLDPReceive properties to the RDE Port schema implementation.   |
| <b>PPS Offset</b>                            | Added a 22 nanosecond of propagation delay to the cable delay of the PPS signal when using PPS out.  |
| <b>Programmable CC, PPCC, MAD, IBCC</b>      | Added support for PPCC register with bulk operations, MAD for algorithm configuration and tunable parameters.  |
| <b>Programmable Counters</b>                 | Added support for programmable counters for PCC via PPCC register and MAD.   |
| <b>RX Rate-limit in Multi-Host</b>           | Added support for RX multi-host rate limit using an enabler script.  |
| <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> section.   |
| <b>22.33.1048</b>                            |  |

| Feature/Change                                       | Description   |
|--|---|
| <b>200Gb/s Throughput on Crypto Capable Devices</b>  | Enabled 200Gb/s out-of-the-box throughput on crypto capable devices.<br><b>Note:</b> If any crypto offloads is in use, 200Gb/s throughput can be achieved only after the next firmware reset  |
| <b>VF Migration</b>                                  | Added support for VF migration. The hypervisor can now suspend its VF, meaning from that point the VF cannot perform action such as send/receive traffic or run any command. In this firmware version only the suspend resume mode is supported (on the same VM).   |
| <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>NV Configurations via the Relevant Reset Flow</b> | Added <code>pci_rescan_needed</code> field to the MFRL access register to indicate whether a PCI rescan is needed based on the NV configurations issued by the software.<br><b>Note:</b> If the Keep Link Up NV configuration is changed, phyless reset will be blocked.  |
| <b>Precision Time Protocol (PTP)</b>                 | Added Precision Time Protocol (PTP) support.<br>In this version, the support includes: <ul style="list-style-type: none"> <li>• 16 PTP SQs only</li> <li>• only 2 ports</li> <li>• only RT clock mode</li> </ul> In this version, the following are not supported: <ul style="list-style-type: none"> <li>• PTP packet drop</li> <li>• PTP SQ on VF</li> </ul> <b>Note:</b> All PTP SQs must be closed before operating LFWP (life fw patch). |
| <b>Resource Dump Support for HW Steering</b>         | Added support for HW Steering objects dump via resource dump interface.<br>This support includes: STC, RTC, STE, modify argument, and modify pattern.   |
| <b>VF Migration</b>                                  | Added support for VF migration.   |
| <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.  |

| Feature/Change                          | Description  |
|---|--|
| <b>Steering Definer</b>                 | Added support for creating a steering definer with a dword selector using <code>create_match_definer_object</code> and the "SELECT" format.  |
| <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>HW Steering: WQE Insertion Rules</b> | <p><b>[Beta]</b> Added HW Steering support for the following:</p> <ul style="list-style-type: none"> <li>• set, add and copy inline STC action</li> <li>• set and copy actions for several fields using modify_pattern object and inline stc modify action</li> <li>• FDB mode in HW steering using FDB_RX and FDB_TX flow table types</li> <li>• ASO flow meter action via STC</li> <li>• flow counter query using ASO WQE</li> <li>• allocation of large bulks for the objects: STE, ASO flow meter and modify argument</li> <li>• jumbo match RTC</li> <li>• count action in STC</li> </ul> |
| <b>Holdover Mode</b>                    | Added support for holdover mode to comply to SyncE specifications (EEC compliance) to limit the maximum phase transient response upon link loss.   |
| <b>SyncE Enhancements</b>               | Added support for noise filtering to comply to the SyncE specifications requirements.  |
| <b>vDPA: Performance</b>                | Optimized the performance of virtio including: throughput, QoS, and accuracy of min/max bandwidth when virtio works with the QoS settings.   |
| <b>vDPA: virtio-net Full Emulation</b>  | This new capability reduces the switchover time of creating a virtq from scratch during live migration, by creating the virtq beforehand on the target server. When switchover happens, the pre-created virtq will be used and modified with necessary parameters.   |
| <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.   |

| Feature/Change  | Description  |
|---|--|
| <b>NetworkPort Schema Replacement</b>                           | Replaced the deprecated NetworkPort schema with Port schema in NIC RDE implementation.   |
| <b>Firmware Steering</b>  | Enabled the option to modify the <code>ip_ecn</code> field in the packet header in firmware steering.  |
| <b>ZTRCC</b>  | Added support for advanced ZTR_RTTCC algorithm based on the Programmable CC platform to achieve better congestion control without dependency on the switch ECN marking.  |
| <b>Dynamic Completion Event Moderation for vDPA</b>             | DIM is used to tune moderation parameter dynamically using an <code>mlxreg</code> command.<br>To disable this capability, run:<br><pre>mlxreg -d /dev/mst/mt41686_pciconf0 --reg_id 0xc00d --reg_len 0x8 -s "0x4.1:1=0x0"</pre>  |
| <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>using 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>Dynamic Flex Parser over a VF</b>                            | Added support for creating a dynamic flex parser on untrusted function, and changed the flex parser cap for untrusted function to the following: <ul style="list-style-type: none"> <li>• maximum flex parser node = 2</li> <li>• maximum dw sample = 4</li> </ul>   |
| <b>SNAPI: Comm-Channel</b>                                      | Added support for SNAPI (comm-channel) connection while running on raw ETH link.   |
| <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 <code>CREATE_DEK PRM</code> command. To comply with the requirements specified in FIPS publication, all the created DEKs must be wrapped.<br>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 |



| Feature/Change   | Description  |
|--|--|
|  | cleartext.   |
| <b>ICM Direct Access by the Software to write/modify the DEK Objects</b> | <p><b>[Beta]</b> This new capability enables the software to directly access ICM and write/modify the DEK objects. Such change improves the DEK object update rate by re-using DEK object instead of creating a new one.</p> <p>In addition, added the following:</p> <ul style="list-style-type: none"> <li>• New for DEK object: <code>bulk allocation, modify_dek cmd</code>, and new mode <code>- sw_wrapped</code>.</li> <li>• New general object <code>INT_KEK</code></li> </ul> |
| <b>Bug Fixes</b>   | See <a href="#">Bug Fixes</a> section.   |

## Bug Fixes History

### Note

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   |
|---------------|---|
| 3887759       | <b>Description:</b> Fixed an issue that caused Completion Timeout to mistakenly be treated as Advisory Non-Fatal error. Now Completion Timeout is treated as uncorrectable error. |
|               | <b>Keywords:</b> Completion Timeout, Advisory Non-Fatal error   |
|               | <b>Discovered in Version:</b> 22.35.3006  |
|               | <b>Fixed in Release:</b> 22.35.4030   |
| 3812331       | <b>Description:</b> Fixed an issue in PDDR that resulted in raw EEPROM reads returning all zeros while unplugging the cable.  |
|               | <b>Keywords:</b> Cables, PDDR   |

| Internal Ref. | Issue   |
|---------------|---|
|               | <b>Discovered in Version:</b> 22.35.3006  |
|               | <b>Fixed in Release:</b> 22.35.4030   |
| 3679805       | <b>Description:</b> Added the TX_SCHEDULER_FWS_REACTIVITY nvconfig flag to solved an mlnx_qos ETS settings issue. |
|               | <b>Keywords:</b> nvconfig, ETS  |
|               | <b>Discovered in Version:</b> 22.35.3006  |
|               | <b>Fixed in Release:</b> 22.35.4030   |

| Internal Ref. | Issue  |
|---------------|--|
| 3650735       | <b>Description:</b> Fixed a wrong configuration for speed application in DSFP modules.   |
|               | <b>Keywords:</b> DSFP modules  |
|               | <b>Discovered in Version:</b> 22.35.2000   |
|               | <b>Fixed in Release:</b> 22.35.3502  |
| 3498482       | <b>Description:</b> Fixed a single QP performance issue over Socket-Direct setups.   |
|               | <b>Keywords:</b> Socket-Direct   |
|               | <b>Discovered in Version:</b> 22.35.2000   |
|               | <b>Fixed in Release:</b> 22.35.3502  |
| 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> 22.35.2000   |
|               | <b>Fixed in Release:</b> 22.35.3502  |

| Internal Ref. | Issue  |
|---------------|--|
| 330813<br>2   | <b>Description:</b> Improved physical layer performance by modifying transmitter parameters that caused link up time issues when connected to few optical cable vendors. |

|               |  |
|---------------|--|
| Internal Ref. | Issue  |
|               | <b>Keywords:</b> Optical cables, performance |
|               | <b>Discovered in Version:</b> 22.35.1012     |
|               | <b>Fixed in Release:</b> 22.35.2302          |

|               |   |
|---------------|---|
| 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> 22.35.1012  |
|               | <b>Fixed in Release:</b> 22.35.2000   |
| 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> 22.35.1012  |
|               | <b>Fixed in Release:</b> 22.35.2000   |
| 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> 22.35.1012  |
|               | <b>Fixed in Release:</b> 22.35.2000   |
| 3218394       | <b>Description:</b> Fixed pre-copy issues that occurred when in live migration.   |
|               | <b>Keywords:</b> Live migration, pre-copy   |
|               | <b>Discovered in Version:</b> 22.35.1012  |
|               | <b>Fixed in Release:</b> 22.35.2000   |

| Internal Ref. | Issue   |
|---------------|---|
| 3177699       | <b>Description:</b> Improved both TP1a compliance and Physical-layer performance. TX and PLL settings were changed to comply with IEEE 802.3bs TP1a and improved link margins.  |
|               | <b>Keywords:</b> Performance  |
|               | <b>Discovered in Version:</b> 22.34.1002  |
|               | <b>Fixed in Release:</b> 22.35.1012   |
| 3227873       | <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. |
|               | <b>Keywords:</b> RDE (Redfish) PATCH operation  |
|               | <b>Discovered in Version:</b> 22.34.1002  |
|               | <b>Fixed in Release:</b> 22.35.1012   |
| 3172302       | <b>Description:</b> Fixed an issue that caused the commands sent by the MLNX_OFED driver to the NIC to fail when loading the VirtIO driver.   |
|               | <b>Keywords:</b> vDPA, virtio-net full emulation  |
|               | <b>Discovered in Version:</b> 22.34.1002  |
|               | <b>Fixed in Release:</b> 22.35.1012   |
| 3180138       | <b>Description:</b> Enabled the firmware to distribute loopback QPs/SQs between all LAG ports during the initial distribution in steering LAG.  |
|               | <b>Keywords:</b> Loopback QPs/SQs   |
|               | <b>Discovered in Version:</b> 22.34.1002  |
|               | <b>Fixed in Release:</b> 22.35.1012   |
| 3056546       | <b>Description:</b> Fixed an issue that due to a firmware limitation, enabling tx_port_ts resulted in syndrome 0x5d2974.  |
|               | <b>Keywords:</b> tx_port_ts   |
|               | <b>Discovered in Version:</b> 22.34.1002  |
|               | <b>Fixed in Release:</b> 22.35.1012   |

| Internal Ref. | Issue   |
|---------------|---|
| 3184625       | <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. |
|               | <b>Keywords:</b> PLDM AEN event receiver media  |
|               | <b>Discovered in Version:</b> 22.34.1002  |
|               | <b>Fixed in Release:</b> 22.35.1012   |
| 3194359       | <b>Description:</b> Fixed PCIe SKP OS generation interval for Gen1 and Gen2.  |
|               | <b>Keywords:</b> PCIe SKP   |
|               | <b>Discovered in Version:</b> 22.34.1002  |
|               | <b>Fixed in Release:</b> 22.35.1012   |
| 3110378       | <b>Description:</b> CPU handling synchronization requires separation (run ptp4l with taskset -c [cpu #] prefix) while running heavy traffic.  |
|               | <b>Keywords:</b> CPU allocation, PTP synchronization  |
|               | <b>Discovered in Version:</b> 22.34.1002  |
|               | <b>Fixed in Release:</b> 22.35.1012   |
| 3177570       | <b>Description:</b> Changed the Tx setting for optics HDR to improve compliance margins.  |
|               | <b>Keywords:</b> Tx setting, HDR, compliance margins  |
|               | <b>Discovered in Version:</b> 22.33.1048  |
|               | <b>Fixed in Release:</b> 22.35.1012   |

| Internal Ref. | Issue   |
|---------------|---|
| 3143683       | <b>Description:</b> Fixed a race over a context which resulted in performance degradation when configured the virtual QoS before bringing the VMs up. |
|               | <b>Keywords:</b> Performance, QoS, VMs, race  |
|               | <b>Discovered in Version:</b> 22.33.1048  |
|               | <b>Fixed in Release:</b> 22.34.4000   |
| 3102126       | <b>Description:</b> Fixed an issue that caused the NIC to access the host memory when in idle mode.   |

|               |  |
|---------------|--|
| Internal Ref. | Issue  |
|               | <b>Keywords:</b> Idle mode, memory access  |
|               | <b>Discovered in Version:</b> 22.33.1048   |
|               | <b>Fixed in Release:</b> 22.34.4000  |
| 3145335       | <b>Description:</b> Fixed an issue that caused a fatal assert when the hypervisor was configured with more than 128 VFs per PF when the VF_NODNIC_ENABLE=true. |
|               | <b>Keywords:</b> Hypervisor, VFs, PF, assert   |
|               | <b>Discovered in Version:</b> 22.33.1048   |
|               | <b>Fixed in Release:</b> 22.34.4000  |

|               |  |
|---------------|--|
| Internal Ref. | Issue  |
| 3021669       | <b>Description:</b> Added a new NVconfig parameter "MULTI_PCI_RESOURCE_SHARE" to support modes that allow choosing the utilization of the card's resources on each host in Socket-Direct / Multi host setup. |
|               | <b>Keywords:</b> Performance   |
|               | <b>Discovered in Version:</b> 22.33.1048   |
|               | <b>Fixed in Release:</b> 22.34.1002  |
| 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> 22.30.1004   |
|               | <b>Fixed in Release:</b> 22.34.1002  |
| 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> 22.33.1048   |
|               | <b>Fixed in Release:</b> 22.34.1002  |

| Internal Ref. | Issue  |
|---------------|--|
| 3113812       | <b>Description:</b> Fixed an issue that caused the <code>destroy_match_definer</code> object command to fail after dumping it using <code>resource_dump</code> . |
|               | <b>Keywords:</b> Match definer, Resource dump  |
|               | <b>Discovered in Version:</b> 22.33.1048   |
|               | <b>Fixed in Release:</b> 22.34.1002  |
| 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> 22.33.1048   |
|               | <b>Fixed in Release:</b> 22.34.1002  |
| 3039007       | <b>Description:</b> Enabled Multi-Host RX Rate-limiter configuration via the QEEC <code>mlxreg</code> and the <code>max_shaper_rate</code> field.                |
|               | <b>Keywords:</b> RX Rate-Limiter, Multi-host   |
|               | <b>Discovered in Version:</b> 22.33.1048   |
|               | <b>Fixed in Release:</b> 22.34.1002  |

| Internal Ref. | Issue  |
|---------------|--|
| 2785026       | <b>Description:</b> Fixed a rare case that caused the QP not to receive a completion.  |
|               | <b>Keywords:</b> QP  |
|               | <b>Discovered in Version:</b> 22.32.1010   |
|               | <b>Fixed in Release:</b> 22.33.1048  |
| 2899540       | <b>Description:</b> Resolved vDPA traffic unbalance issue in active-backup VF LAG mode.  |
|               | <b>Keywords:</b> VDPA, LAG   |
|               | <b>Discovered in Version:</b> 22.32.1010   |
|               | <b>Fixed in Release:</b> 22.33.1048  |
| 2802943       | <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 |

| Internal Ref. | Issue   |
|---------------|---|
|               | was not controlled thus causing SLD detection not to function properly.<br><b>Keywords:</b> SLD detection, Surprise Down Error Reporting Capable<br><b>Discovered in Version:</b> 22.32.1010<br><b>Fixed in Release:</b> 22.33.1048   |
| 2900228       | <b>Description:</b> Fixed an issue that occurred after powering off DC in Multi-Host system which resulted in OOB connection to the BMC getting lost (and fatal error appeared) due to a firmware bug in the PCIe flush flow. The issue was fixed by increasing the flush time and not waiting for PCIe credits to return to default values.<br><b>Keywords:</b> PCIe LTSSM, surprise power down<br><b>Discovered in Version:</b> 22.32.1010<br><b>Fixed in Release:</b> 22.33.1048 |
| 2373274       | <b>Description:</b> Fixed a rare HW/FW timing race of serdes' power-up sequence.<br><b>Keywords:</b> Power consumption<br><b>Discovered in Version:</b> 22.32.1010<br><b>Fixed in Release:</b> 22.33.1048   |
| 2513453       | <b>Description:</b> Fixed rare lanes skew issue that caused CPU to timeout in Rec.idle.<br><b>Keywords:</b> PCIe<br><b>Discovered in Version:</b> 22.32.1010<br><b>Fixed in Release:</b> 22.33.1048   |
| 2903895       | <b>Description:</b> Fixed an issue that resulted in temporary packet drops while changing PTP/FCS configuration when the links were up.<br><b>Keywords:</b> PTP/FCS configuration, packet drops<br><b>Discovered in Version:</b> 22.32.1010<br><b>Fixed in Release:</b> 22.33.1048  |
| 2932436       | <b>Description:</b> Optimized the virtio data path to reach line speed for Tx bandwidth.<br><b>Keywords:</b> VDPA, virtio full emulation<br><b>Discovered in Version:</b> 22.32.1010  |



| Internal Ref. | Issue  |
|---------------|--|
|               | <b>Fixed in Release:</b> 22.33.1048  |
| 2979683       | <b>Description:</b> Fixed an issue that resulted in notification indicator mistakenly being reported as FATAL thus, raising false indication.                                  |
|               | <b>Keywords:</b> FATAL error indication  |
|               | <b>Discovered in Version:</b> 22.32.1010   |
|               | <b>Fixed in Release:</b> 22.33.1048  |
| 2951894       | <b>Description:</b> Fixed bad cache invalidations of destroyed QPs.  |
|               | <b>Keywords:</b> destroy_qp  |
|               | <b>Discovered in Version:</b> 22.32.1010   |
|               | <b>Fixed in Release:</b> 22.33.1048  |
| 2907707       | <b>Description:</b> Fixed a configuration issue which flipped the MSB of Partition Key field in CNP packets and led to P_KEY mismatch between CNP packets and regular packets. |
|               | <b>Keywords:</b> Partition Key, PKEY, CNP, ECN   |
|               | <b>Discovered in Version:</b> 22.32.1010   |
|               | <b>Fixed in Release:</b> 22.33.1048  |
| 2788388       | <b>Description:</b> Fixed an issue that resulted in wrong port calibration due to incorrect mapping of the port during initialization stage.                                   |
|               | <b>Keywords:</b> Port mapping  |
|               | <b>Discovered in Version:</b> 22.32.1010   |
|               | <b>Fixed in Release:</b> 22.33.1048  |

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