



# **NVIDIA ConnectX-6 Lx Adapter Cards Firmware Release Notes v26.42.1000**

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## Release Notes Update History

Version	Date	Description
26.42.1000	August 14, 2024	Initial release of this Release Notes version, This version introduces <a href="#">Changes and New Features</a> and <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 Lx adapters firmware. This firmware supports the following protocols:

- Ethernet - 1GbE, 10GbE, 25GbE, 50GbE
- PCI Express 4.0, supporting backwards compatibility for v3.0, v2.0 and v1.1

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

## Note

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

## Supported Devices

This firmware supports the devices and protocols listed below:

NVIDIA SKU	Legacy OPN	PSID	Device Name
900-9X662-0053-ST1	MCX631 102AN- ADA	MT_00 00000 531	ConnectX-6 Lx EN adapter card; 25GbE ; Dual-port SFP28; PCIe 4.0 x8; No Crypto

NVIDIA SKU	Legacy OPN	PSID	Device Name
900-9X662-0083-ST0	MCX631 102AC-ADA	MT_00 00000 532	ConnectX-6 Lx EN adapter card; 25GbE ; Dual-port SFP28; PCIe 4.0 x8; Crypto and Secure Boot
900-9X662-0063-ST0	MCX631 102AE-ADAT	MT_00 00000 545	ConnectX-6 Lx EN adapter card; 25GbE; Dual-port SFP28; PCIe 4.0 x8; Crypto; No Secure Boot
900-9X625-0053-SB0	MCX631 432AN-ADA	MT_00 00000 546	ConnectX-6 Lx EN adapter card; 25GbE OCP3.0; With Host management ; Dual-port SFP28; PCIe 4.0 x8; No Crypto; Thumbscrew (Pull Tab) Bracket
900-9X625-0083-SB0	MCX631 432AC-ADA	MT_00 00000 547	ConnectX-6 Lx EN adapter card; 25GbE OCP3.0; With Host management ; Dual-port SFP28; PCIe 4.0 x8; Crypto and Secure Boot; Thumbscrew (Pull Tab) Bracket
900-9X659-0015-SB1	MCX631 435AN-GDAB	MT_00 00000 548	ConnectX-6 Lx EN adapter card; 50GbE; OCP3.0; With Host management ; Single-port QSFP28; PCIe 4.0 x8; No Crypto; Thumbscrew (Pull Tab) Bracket
900-9X659-0045-SB0	MCX631 435AC-GDAB	MT_00 00000 549	ConnectX-6 Lx EN adapter card; 50GbE; OCP3.0; With Host management ; Single-port QSFP28; PCIe 4.0 x8; Crypto and Secure Boot; Thumbscrew (Pull Tab) Bracket
900-9X659-0025-SB0	MCX631 435AE-GDAB	MT_00 00000 550	ConnectX-6 Lx EN adapter card; 50GbE; OCP3.0; With Host management ; Single-port QSFP28; PCIe 4.0 x8; Crypto; No Secure Boot; Thumbscrew (Pull Tab) Bracket
900-9X625-0073-SB1	MCX631 432AS-ADA	MT_00 00000 551	ConnectX-6 Lx EN adapter card; 25GbE OCP3.0; With Host management ; Dual-port SFP28; PCIe 4.0 x8; Secure Boot; No Crypto; Internal Lock Bracket
900-9X625-	MCX631 432AE-	MT_00 00000	ConnectX-6 Lx EN adapter card; 25GbE OCP3.0; With Host management ; Dual-port SFP28; PCIe 4.0 x8; Crypto; No

NVIDIA SKU	Legacy OPN	PSID	Device Name
0063-SB0	ADAB	552	Secure Boot; Thumbscrew (Pull Tab) Bracket
900-9X662-0073-ST0	MCX631 102AS- ADA	MT_00 00000 575	ConnectX-6 Lx EN adapter card; 25GbE; Dual-port SFP28; PCIe 4.0 x8; Secure Boot; No Crypto;
900-9X601-0025-ST0	MCX631 105AE- GDAT	MT_00 00000 587	ConnectX-6 Lx EN adapter card; 50GbE ; Single-port QSFP28; PCIe 4.0 x8; Crypto; No Secure Boot; Tall Bracket
900-9X601-0015-SQ0	MCX631 105AN- GDAT	MT_00 00000 589	ConnectX-6 Lx EN adapter card; 50GbE ; Single-port QSFP28; PCIe 4.0 x8; No Crypto; Tall Bracket
900-9X601-0045-ST0	MCX631 105AC- GDAT	MT_00 00000 590	ConnectX-6 Lx EN adapter card; 50GbE ; Single-port QSFP28; PCIe 4.0 x8; Crypto and Secure Boot; Tall Bracket

## Driver Software, Tools and Switch Firmware

The following are the drivers' software, tools, switch/HCA firmware versions tested that you can upgrade from or downgrade to when using this firmware version:

	Supported Version
ConnectX-6 Lx Firmware	26.42.1000 / 26.41.1000 / 26.40.1000
MLNX_OFED / DOCA-HOST	24.07-0.6.1.0 / 24.04-0.6.6.0 / 24.01-0.3.3.1 <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)	24.07-0.6.1.0 / 24.04-0.6.6.0 / 24.01-0.3.3.1 <b>Note:</b> For the list of the supported Operating Systems, please refer to the driver's Release Notes.

	Supported Version
WinOF-2	24.7.50000 / 24.4.50000 / 24.1.50000 <b>Note:</b> For the list of the supported Operating Systems, please refer to the driver's Release Notes.
MFT	4.29.0-131 / 4.28.0-92 / 4.27.0 <b>Note:</b> For the list of the supported Operating Systems, please refer to the driver's Release Notes.
mstflint	4.29.0-131 / 4.28.0-92 / 4.27.0 <b>Note:</b> For the list of the supported Operating Systems, please refer to the driver's Release Notes.
FlexBoot	3.7.500
UEFI	14.35.15
Cumulus	5.4 onwards

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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.



Feature/Change	Description
<b>26.42.1000</b>	
<b>Memory Slow Release</b>	Added a new command interface "Memory slow release" to enable/disable holding memory pages for a defined period of time. Once the timer expires, the firmware will return the pages to the driver.
<b>Kernel Lockdown</b>	Added support for MVTs register via a miscellaneous driver using the access_register PRM command.
<b>Bug Fixes</b>	See <i>Bug Fixes in this Firmware Version</i> section.

## Unsupported Features and Commands

### Unsupported Features

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

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

### Unsupported Commands

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

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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
398553 5	<b>Description:</b> Fixed an issue that caused RDE PortMetrics property Transceivers.SupplyVoltage to be reflected in incorrect units of 100uV instead of V.
	<b>Keywords:</b> RDE
	<b>Discovered in Version:</b> 26.41.1000
	<b>Fixed in Release:</b> 26.42.1000
393874 4	<b>Description:</b> Prevented HCA_CAP from allowing rogue drivers to create more EQs than the number allowed in the HCA_CAP.max_num_eqs.
	<b>Keywords:</b> HCA_CAP
	<b>Discovered in Version:</b> 26.41.1000
	<b>Fixed in Release:</b> 26.42.1000
349157 5	<b>Description:</b> Fixed an issue that resulted in the "time_since_last_clear" counter showing wrong indications.
	<b>Keywords:</b> Counters
	<b>Discovered in Version:</b> 26.41.1000
	<b>Fixed in Release:</b> 26.42.1000
385943 9	<b>Description:</b> Removed the logical port rate limiter to prevent the internal loopback traffic from exceeding the physical port network link speed when using the esw scheduling feature.
	<b>Keywords:</b> Logical port rate limiter

Internal Ref.	Issue
	<b>Discovered in Version:</b> 26.41.1000
	<b>Fixed in Release:</b> 26.42.1000

# 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
2169 950	<b>Description:</b> When decapsulation on a packet occurs, the FCS indication is not calculated correctly.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> FCS
	<b>Discovered in Version:</b> 26.42.1000
3464 393	<b>Description:</b> PhyLess Reset is currently not supported.
	<b>Workaround:</b> N/A

Internal Ref.	Issue
	<b>Keywords:</b> PhyLess Reset
	<b>Discovered in Version:</b> 26.39.1002
3525 865	<b>Description:</b> Unexpected system behavior might be observed if the driver is loaded while reset is in progress.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> Sync 1 reset, firmware reset
	<b>Discovered in Version:</b> 26.39.1002
3457 472	<b>Description:</b> Disabling the Relaxed Ordered (RO) capability (relaxed_ordering_read_pci_enabled=0) using the vhca_resource_manager is currently not functional.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> Relaxed Ordered
	<b>Discovered in Version:</b> 26.37.1014
3444 395	<b>Description:</b> Assert 0x8ced would happen when using MEMIC and VDPA features together.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> vDPA, MEMIC, assert
	<b>Discovered in Version:</b> 26.37.1014
2878 841	<b>Description:</b> Firmware rollback fails for the signature retransmit flow if the QPN field is configured in the mkey (as it only allows the given QP to use this Mkey) as the firmware rollback flow relies on an internal QP that uses the mkey.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> Signature retransmit flow
	<b>Discovered in Version:</b> 26.37.1014
3267 506	<b>Description:</b> CRC is included in the traffic byte counters as a port byte counter.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> Counters, CRC

Internal Ref.	Issue
	<b>Discovered in Version:</b> 26.35.2000
3200 779	<b>Description:</b> Changing dynamic PCIe link width is not supported.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> PCIe
	<b>Discovered in Version:</b> 26.34.1002
3141 072	<b>Description:</b> The "max_shaper_rate" configuration query via QEEC mlxreg returns a value translated to hardware granularity.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> RX Rate-Limiter, Multi-host
	<b>Discovered in Version:</b> 26.34.1002
2870 970	<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>Workaround:</b> N/A
	<b>Keywords:</b> GTP encapsulation
	<b>Discovered in Version:</b> 26.34.1002
2866 931	<b>Description:</b> When the host powers up directly into the standby mode, the adapter may not handle WOL packets.
	<b>Workaround:</b> N/A
	<b>Keywords:</b> WOL packets
	<b>Discovered in Version:</b> 26.32.1010

Internal Ref.	Issue
	<p><b>Description:</b> VPD cannot be accessed after firmware upgrade or reset when the following sequence is performed:</p> <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>
2864 238	<p><b>Workaround:</b> Run the upgrade or reset sequence as follow:</p> <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> <p><b>Keywords:</b> VDP</p> <p><b>Discovered in Version:</b> 26.32.1010</p>
2780 349	<p><b>Description:</b> As a result of having a single LED per port, features such as the Blinking Detection can work only when in low speed mode.</p> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> LED, port, Blinking Detection</p> <p><b>Discovered in Version:</b> 26.32.1010</p>
2834 990	<p><b>Description:</b> On rare occasions, when toggling both sides of the link, the link may not rise.</p> <p><b>Workaround:</b> Toggle the port to free it.</p> <p><b>Keywords:</b> Port toggling, link</p> <p><b>Discovered in Version:</b> 26.31.1014</p>
2667 681	<p><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.</p>



Internal Ref.	Issue
	<p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Connection Tracking</p> <p><b>Discovered in Version:</b> 26.31.1014</p>
2378 593	<p><b>Description:</b> Sub 1sec firmware update (fast reset flow) is not supported when updating from previous releases to the current one. Doing so may cause network disconnection events.</p> <p><b>Workaround:</b> Use full reset flow for firmware upgrade/downgrade.</p> <p><b>Keywords:</b> Sub 1sec firmware update</p> <p><b>Discovered in Version:</b> 26.29.1016</p>
2213 356	<p><b>Description:</b> The following are the Steering Dump limitations:</p> <ul style="list-style-type: none"> <li>• Supported only on ConnectX-5 adapter cards</li> <li>• Requires passing the version (FW/Stelib/MFT) and device type to stelib</li> <li>• Re-format is not supported</li> <li>• Advanced multi-port feature is not supported – LAG/ROCE_AFFILIATION/MPFS_LB/ESW_LB (only traffic vhca &lt;-&gt; wire)</li> <li>• Packet types supported: <ul style="list-style-type: none"> <li>◦ Layer 2 Eth</li> <li>◦ Layer 3 IPv4/Ipv6/Grh</li> <li>◦ Layer 4 TCP/UDP/Bth/GreV0/GreV1</li> <li>◦ Tunneling VXLAN/Geneve/GREv0/Mpls</li> </ul> </li> <li>• FlexParser protocols are not supported (e.g AliVxlan/VxlanGpe etc..).</li> <li>• Compiles only on x86</li> </ul> <p><b>Workaround:</b> N/A</p> <p><b>Keywords:</b> Steering Bump</p> <p><b>Discovered in Version:</b> 26.29.1016</p>
2365 322	<p><b>Description:</b> When configuring adapter card's Level Scheduling, a QoS tree leaf (QUEUE_GROUP) configured with default rate_limit and default bw_share, may not obey the QoS restrictions imposed by any of the leaf's ancestors.</p>

Internal Ref.	Issue
	<p><b>Workaround:</b> To prevent such a case, configure at least one of the following QoS attributes of a leaf: max_average_bw or bw_share</p> <p><b>Keywords:</b> QoS</p> <p><b>Discovered in Version:</b> 26.29.1016</p>
2201468	<p><b>Description:</b> Running multiple resets ("mlxfwreset --sync=1") simultaneously is not functioning properly,</p> <p><b>Workaround:</b> Wait a few seconds until you run "mlxfwreset --sync=0".</p> <p><b>Keywords:</b> mlxfwreset, reset-sync, reset, sync</p> <p><b>Discovered in Version:</b> 26.28.1002</p>

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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](#).

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# Validated and Supported Cables and Switches

## Validated and Supported Cables and Modules

### Cables Lifecycle Legend

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

## 200GbE Cables

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
N/A	200GE	980-9I54C-00V001	MCP1650-V001E30	NVIDIA Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 1m, black pulltab, 30AWG	LTB [HVM]
N/A	200GE	980-9I54D-	MCP1650-	NVIDIA Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 2m, black pulltab,	LTB [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
		00V002	V002E26	26AWG	
N/A	200GE	980-9I54H-00V00A	MCP1650-V00AE30	NVIDIA Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 0.5m, black pulltab, 30AWG	LTB [HVM]
N/A	200GE	980-9I54I-00V01A	MCP1650-V01AE30	NVIDIA Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 1.5m, black pulltab, 30AWG	LTB [HVM]
N/A	200GE	980-9I54L-00V02A	MCP1650-V02AE26	NVIDIA Passive Copper cable, 200GbE, 200Gb/s, QSFP56, LSZH, 2.5m, black pulltab, 26AWG	LTB [HVM]
N/A	200GE	980-9I98H-00V001	MCP7H50-V001R30	NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 1m, 30AWG	LTB [HVM]
N/A	200GE	980-9I98I-00V002	MCP7H50-V002R26	NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 2m, 26AWG	LTB [HVM]
N/A	200GE	980-9I98J-00V003	MCP7H50-V003R26	NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 3m, 26AWG	EOL [HVM]
N/A	200GE	980-9I98K-00V01A	MCP7H50-V01AR30	NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 1.5m, 30AWG	EOL [HVM]
N/A	200GE	980-9I98M-00V02A	MCP7H50-V02AR26	NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, colored, 2.5m, 26AWG	LTB [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
N/A	200GE	980-9IA3X-00V001	MCP7H70-V001R30	NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 1m, 30AWG	EOL [P-Rel]
N/A	200GE	980-9IA3Y-00V002	MCP7H70-V002R26	NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 2m, 26AWG	EOL [P-Rel]
N/A	200GE	980-9IA4Z-00V003	MCP7H70-V003R26	NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4x4SFP56, colored, 3m, 26AWG	EOL [P-Rel]
N/A	200GE	980-9IA430-00V01A	MCP7H70-V01AR30	NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 1.5m, 30AWG	EOL [P-Rel]
N/A	200GE	980-9IA431-00V02A	MCP7H70-V02AR26	NVIDIA passive copper hybrid cable, 200GbE 200Gb/s to 4x50Gb/s, QSFP56 to 4xSFP56, colored, 2.5m, 26AWG	EOL [P-Rel]

## 100GbE Cables

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
N/A	100GE	980-9I620-00C001	MCP1600-C001E30N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 1m, Black, 30AWG, CA-N	HVM

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
N/A	100GE	980-9162V-00C002	MCP1600-C002E30N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 2m, Black, 30AWG, CA-N	HVM
N/A	100GE	980-9162Z-00C003	MCP1600-C003E26N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 3m, Black, 26AWG, CA-N	EOL [HVM]
N/A	100GE	980-91620-00C003	MCP1600-C003E30L	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 3m, Black, 30AWG, CA-L	HVM
N/A	100GE	980-91627-00C00A	MCP1600-C00AE30N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 0.5m, Black, 30AWG, CA-N	EOL [HVM]
N/A	100GE	980-9162C-00C01A	MCP1600-C01AE30N	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 1.5m, Black, 30AWG, CA-N	HVM
N/A	100GE	980-9162I-00C02A	MCP1600-C02AE30L	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 2.5m, Black, 30AWG, CA-L	HVM
EDR	100GE	980-9162P-00C001	MCP1600-E001	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1m 30AWG	EOL [HVM]
EDR	100GE	980-9162S-00C002	MCP1600-E002	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2m 28AWG	EOL [HVM]
EDR	100GE	980-9162V-00C003	MCP1600-E003	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m 26AWG	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
EDR	100GE	980-91623-00C01A	MCP1600-E01A	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1.5m 30AWG	EOL [HVM]
EDR	100GE	980-91626-00C02A	MCP1600-E02A	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2.5m 26AWG	EOL [HVM]
N/A	100GE	980-91645-00C001	MCP7F00-A001R	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs, 1m, 30AWG	EOL [HVM]
N/A	100GE	980-91486-00C001	MCP7F00-A001R30N	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 1m, Colored, 30AWG, CA-N	LTB [HVM]
N/A	100GE	980-9148A-00C002	MCP7F00-A002R	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs, 2m, 30AWG	EOL [HVM]
N/A	100GE	980-9148B-00C002	MCP7F00-A002R30N	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2m, Colored, 30AWG, CA-N	LTB [HVM]
N/A	100GE	980-9148G-00C003	MCP7F00-A003R26N	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m, Colored, 26AWG, CA-N	EOL [HVM]
N/A	100GE	980-9148H-00C003	MCP7F00-A003R30L	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m, Colored, 30AWG, CA-L	LTB [HVM]
N/A	100GE	980-9148J-00C005	MCP7F00-A005R26L	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 5m, Colored, 26AWG, CA-L	LTB [HVM]



IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	Life Cycle Phase
N/A	100GE	980-9148M-00C01A	MCP7F00-A01AR	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, colored pulltabs, 1.5m, 30AWG	EOL [HVM]
N/A	100GE	980-9148N-00C01A	MCP7F00-A01AR30N	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 1.5m, Colored, 30AWG, CA-N	LTB [HVM]
N/A	100GE	980-9148S-00C02A	MCP7F00-A02AR26N	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, Colored, 26AWG, CA-N	EOL [HVM]
N/A	100GE	980-9148T-00C02A	MCP7F00-A02AR30L	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, Colored, 30AWG, CA-L	LTB [HVM]
N/A	100GE	980-9148U-00C02A	MCP7F00-A02ARLZ	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 2.5m, LSZH, Colored, 28AWG	EOL [P-Rel]
N/A	100GE	980-9148X-00C03A	MCP7F00-A03AR26L	NVIDIA passive copper hybrid cable, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3.5m, Colored, 26AWG, CA-L	EOL [HVM]
N/A	100GE	980-9161C-00C005	MCP7H00-G00000	NVIDIA® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 5m, Colored, 26AWG, CA-L	Preliminary
N/A	100GE	980-9161D-00C001	MCP7H00-G001	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 1m, 30AWG	EOL [HVM]
N/A	100GE	980-9199F-00C001	MCP7H00-G001R	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 1m, 30AWG	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	Life Cycle Phase
N/A	100GE	980-9199G-00C001	MCP7H00-G001R30N	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 1m, Colored, 30AWG, CA-N	LTB [HVM]
N/A	100GE	980-9199J-00C002	MCP7H00-G002R	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 2m, 30AWG	EOL [HVM]
N/A	100GE	980-9199K-00C002	MCP7H00-G002R26N	NVIDIA® passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2m, Colored, 26AWG, CA-N	Preliminary
N/A	100GE	980-9199L-00C002	MCP7H00-G002R30N	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 2m, Colored, 30AWG, CA-N	LTB [HVM]
N/A	100GE	980-9199O-00C003	MCP7H00-G003R	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 3m, 28AWG	EOL [HVM]
N/A	100GE	980-9199Q-00C003	MCP7H00-G003R26N	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 3m, Colored, 26AWG, CA-N	EOL [HVM]
N/A	100GE	980-9139R-00C003	MCP7H00-G003R30L	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 3m, Colored, 30AWG, CA-L	LTB [HVM]
N/A	100GE	980-9199S-00C004	MCP7H00-G004R26L	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, 4m, Colored, 26AWG, CA-L	EOL [HVM]
N/A	100GE	980-9199W-00C01A	MCP7H00-G01AR	NVIDIA passive copper hybrid cable, ETH 100Gb/s to 2x50Gb/s, QSFP28 to 2xQSFP28, colored pulltabs, 1.5m, 30AWG	EOL [HVM]

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

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
		00C030			
N/A	100GE	980-91130-00C050	MFA1A00-C050	NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 50m	HVM
N/A	100GE	980-9113B-00C100	MFA1A00-C100	NVIDIA active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, 100m	LTB [HVM]
N/A	100GE	980-9137H-00C003	MFA7A20-C003	NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 3m	EOL [HVM]
N/A	100GE	980-9137I-00C005	MFA7A20-C005	NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 5m	EOL [HVM]
N/A	100GE	980-9140J-00C010	MFA7A20-C010	NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 10m	EOL [HVM]
N/A	100GE	980-9140K-00C020	MFA7A20-C020	NVIDIA active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 20m	EOL [HVM]
N/A	100GE	980-9140L-00C002	MFA7A20-C02A	NVIDIA® active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 2.5m	Preliminary
N/A	100GE	980-9140M-00C003	MFA7A20-C03A	NVIDIA® active fiber hybrid solution, ETH 100GbE to 2x50GbE, QSFP28 to 2xQSFP28, 3.5m	Preliminary
N/A	100GE	980-9140N-00C003	MFA7A50-C003	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 3m	EOL [HVM]
N/A	100GE	980-9140O-00C005	MFA7A50-C005	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 5m	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
N/A	100GE	980-9149P-00C010	MFA7A50-C010	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 10m	EOL [HVM]
N/A	100GE	980-9149Q-00C015	MFA7A50-C015	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 15m	EOL [HVM]
N/A	100GE	980-9149R-00C020	MFA7A50-C020	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 20m	EOL [HVM]
N/A	100GE	980-9149S-00C030	MFA7A50-C030	NVIDIA active fiber hybrid solution, ETH 100GbE to 4x25GbE, QSFP28 to 4xSFP28, 30m	EOL [HVM]
N/A	100GE	980-91149-00CS00	MMA1B00-C100D	NVIDIA transceiver, 100GbE, QSFP28, MPO, 850nm, SR4, up to 100m, DDMI	HVM
N/A	100GE	980-91625-00C005	MCP1600-C005E26L	NVIDIA Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 5m, Black, 26AWG, CA-L	HVM

**(i) Note**

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

## 25GbE Cables

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy OPN	Description	LifeCycle Phase
N/A	25GE	980-91781-00A000	MAM1Q00 A-QSA28	NVIDIA cable module, ETH 25GbE, 100Gb/s to 25Gb/s, QSFP28 to SFP28	HVM
N/A	25GE	980-9163J-00A001	MCP2M00 -A001	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1m, 30AWG	EOL [HVM]
N/A	25GE	980-9163L-00A001	MCP2M00 - A001E30N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1m, Black, 30AWG, CA-N	LTB [HVM]
N/A	25GE	980-9163M-00A002	MCP2M00 -A002	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m, 30AWG	EOL [HVM]
N/A	25GE	980-9163N-00A002	MCP2M00 - A002E26N	NVIDIA® Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m, Black, 26AWG, CA-N	Preliminary
N/A	25GE	980-9163O-00A002	MCP2M00 - A002E30N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2m, Black, 30AWG, CA-N	LTB [HVM]
N/A	25GE	980-9163R-00A003	MCP2M00 - A003E26N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 3m, Black, 26AWG, CA-N	EOL [HVM]
N/A	25GE	980-9163S-00A003	MCP2M00 -A003E30L	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 3m, Black, 30AWG, CA-L	LTB [HVM]
N/A	25GE	980-9163T-00A004	MCP2M00 -A004E26L	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 4m, Black, 26AWG, CA-L	EOL [HVM]
N/A	25GE	980-9163V-00A005	MCP2M00 -A005E26L	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 5m, Black, 26AWG, CA-L	LTB [HVM]
N/A	25GE	980-9163W-	MCP2M00 -A00A	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 0.5m, 30AWG	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy OPN	Description	LifeCycle Phase
		00A00A			
N/A	25GE	980-9163X-00A00A	MCP2M00 - A00AE30N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 0.5m, Black, 30AWG, CA-N	EOL [HVM]
N/A	25GE	980-9163Z-00A01A	MCP2M00 - A01AE30N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 1.5m, Black, 30AWG, CA-N	LTB [HVM]
N/A	25GE	980-91631-00A02A	MCP2M00 - A02AE26N	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2.5m, Black, 26AWG, CA-N	EOL [HVM]
N/A	25GE	980-91632-00A02A	MCP2M00 -A02AE30L	NVIDIA Passive Copper cable, ETH, up to 25Gb/s, SFP28, 2.5m, Black, 30AWG, CA-L	LTB [HVM]
N/A	25GE	980-91A1T-00A003	MFA2P10-A003	NVIDIA active optical cable 25GbE, SFP28, 3m	EOL [HVM]
N/A	25GE	980-9153W-00A005	MFA2P10-A005	NVIDIA active optical cable 25GbE, SFP28, 5m	EOL [HVM]
N/A	25GE	980-9153Z-00A007	MFA2P10-A007	NVIDIA active optical cable 25GbE, SFP28, 7m	EOL [HVM]
N/A	25GE	980-91532-00A010	MFA2P10-A010	NVIDIA active optical cable 25GbE, SFP28, 10m	EOL [HVM]
N/A	25GE	980-91535-00A015	MFA2P10-A015	NVIDIA active optical cable 25GbE, SFP28, 15m	EOL [HVM]
N/A	25GE	980-91536-00A020	MFA2P10-A020	NVIDIA active optical cable 25GbE, SFP28, 20m	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy OPN	Description	LifeCycle Phase
N/A	25GE	980-91539-00A030	MFA2P10-A030	NVIDIA active optical cable 25GbE, SFP28, 30m	EOL [HVM]
N/A	25GE	980-9153A-00A050	MFA2P10-A050	NVIDIA active optical cable 25GbE, SFP28, 50m	EOL [HVM]
N/A	25GE	980-91094-00AR00	MMA2L20-AR	NVIDIA optical transceiver, 25GbE, 25Gb/s, SFP28, LC-LC, 1310nm, LR up to 10km	MP
N/A	25GE	980-91595-00AM00	MMA2P00-AS	NVIDIA transceiver, 25GbE, SFP28, LC-LC, 850nm, SR	HVM
N/A	25GE	980-9134B-00AS00	MMA2P00-AS-SP	NVIDIA transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, up to 100m, single package	EOL [HVM]
N/A	25GE	980-9134D-00AS00	MMA2P00-AS_FF	NVIDIA transceiver, 25GbE, SFP28, LC-LC, 850nm, SR, up to 100m	EOL [HVM]

## 10GbE Cables

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy OPN	Description	LifeCycle Phase
N/A	10GE	980-9171G-00J000	MAM1Q00A-QSA	NVIDIA cable module, ETH 10GbE, 40Gb/s to 10Gb/s, QSFP to SFP+	HVM
N/A	10GE	980-9165P-00J005	MC2309124-005	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 5m	EOL [P-Rel]



IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy OPN	Description	LifeCycle Phase
N/A	10GE	980-9165Q-00J007	MC230 9124-007	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 7m	EOL [P-Rel]
N/A	10GE	980-9165R-00J001	MC230 9130-001	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 1m	EOL [HVM]
N/A	10GE	980-9165S-00J002	MC230 9130-002	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 2m	EOL [HVM]
N/A	10GE	980-9165T-00J003	MC230 9130-003	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 3m	EOL [HVM]
N/A	10GE	980-9165U-00J00A	MC230 9130-00A	NVIDIA passive copper hybrid cable, ETH 10GbE, 10Gb/s, QSFP to SFP+, 0.5m	EOL [HVM] [HIBERN/ATE]
N/A	10GE	980-91682-00J004	MC330 9124-004	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 4m	EOL [HVM]
N/A	10GE	980-91683-00J005	MC330 9124-005	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 5m	EOL [HVM]
N/A	10GE	980-91684-00J006	MC330 9124-006	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 6m	EOL [HVM]
N/A	10GE	980-91685-00J007	MC330 9124-007	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 7m	EOL [HVM]
N/A	10GE	980-91686-00J001	MC330 9130-001	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m	EOL [HVM]
N/A	10GE	980-91688-	MC330 9130-	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy OPN	Description	LifeCycle Phase
		00J002	002		
N/A	10GE	980-9168B-00J003	MC330 9130-003	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m	EOL [HVM]
N/A	10GE	980-9168F-00J00A	MC330 9130-00A	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 0.5m	EOL [HVM]
N/A	10GE	980-9168G-00J01A	MC330 9130-0A1	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1.5m	EOL [HVM]
N/A	10GE	980-9168H-00J02A	MC330 9130-0A2	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2.5m	EOL [HVM]
N/A	10GE	980-9168B-00J002	MCP21 00-X002B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m, Blue Pulltab, Connector Label	EOL [HVM] [HIBERN/ATE]
N/A	10GE	980-9168C-00J003	MCP21 00-X003B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m, Blue Pulltab, Connector Label	EOL [HVM]
N/A	10GE	980-9168E-00J001	MCP21 04-X001B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1m, Black Pulltab, Connector Label	EOL [HVM] [HIBERN/ATE]
N/A	10GE	980-9168F-00J002	MCP21 04-X002B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2m, Black Pulltab, Connector Label	EOL [HVM]
N/A	10GE	980-9168G-00J003	MCP21 04-X003B	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 3m, Black Pulltab, Connector Label	EOL [HVM]
N/A	10GE	980-9168H-00J01A	MCP21 04-X01AB	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 1.5m, Black Pulltab, Connector Label	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy OPN	Description	LifeCycle Phase
N/A	10GE	980-91681-00J02A	MCP2104-X02AB	NVIDIA passive copper cable, ETH 10GbE, 10Gb/s, SFP+, 2.5m, Black Pulltab, Connector Label	EOL [HVM]
N/A	10GE	930-90000-0000-343	MFM1T02A-LR	NVIDIA SFP+ optical module for 10GBASE-LR	HVM
N/A	10GE	MFM1T02A-LR-F	MFM1T02A-LR-F	NVIDIA optical module, ETH 10GbE, 10Gb/s, SFP+, LC-LC, 1310nm, LR up to 10km	HVM
N/A	10GE	930-90000-0000-409	MFM1T02A-SR	NVIDIA SFP+ optical module for 10GBASE-SR	HVM
N/A	10GE	MFM1T02A-SR-F	MFM1T02A-SR-F	NVIDIA optical module, ETH 10GbE, 10Gb/s, SFP+, LC-LC, 850nm, SR up to 300m	HVM
N/A	10GE	MFM1T02A-SR-P	MFM1T02A-SR-P	NVIDIA optical module, ETH 10GbE, 10Gb/s, SFP+, LC-LC, 850nm, SR up to 300m	HVM

## 1GbE Cables

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

## Supported 3rd Party Cables and Modules

Speed	Cable OPN	Description
1GbE	FCLF8521P2BTL	Finisar 1G Base-T module
10GbE	74752-9096	Dell Active DAC SFP+, Cisco PN SFP-H10GB-CU5M, Molex PN 74752-9096
10GbE	74752-9096 (SFP-H10GB-SU5M)	Cisco-Molex INC Active DAC SFP+ 5m
10GbE	74752-9521	CISCO-MOLEX SFP28/SFP+ 10G Passive copper cable
10GbE	74752-9521 (SFP-H10GB-CU5M)	Cisco 10GBASE SFP+ modules
10GbE	BN-QS-SP-CBL-5M	40G QSFP+ to 4xSFP+ DAC Breakout Direct Attach Cable 5m
10GbE	BN-QS-SP-CBL-5M	40G QSFP+ to 4xSFP+ DAC Breakout Direct Attach Cable 5m
10GbE	CAB-SFP-SFP-1M	Arista 10GBASE-CR SFP+ Cable 1 Meter
10GbE	CAB-SFP-SFP-1M	Arista Compatible 10G SFP+ Passive Cable 1m
10GbE	CAB-SFP-SFP-3M	Arista 10GBASE-CR SFP+ Cable 3 Meter
10GbE	CAB-SFP-SFP-5M	Arista 10GBASE-CR SFP+ Cable 5 Meter
10GbE	CAB-SFP-SFP-5M	Arista Compatible 10G SFP+ Passive Cable 5m
10GbE	FTLX1471D3BCL-ME	10GBASE-LR SFP+ 1310nm 10km DOM Transceiver Module

Speed	Cable OPN	Description
10GbE	FTLX8570D3BCL-C2	Cisco FET-10G 10-2566-02 FTLX8570D3BCL-C2 10Gbps Fabric Extender SFP+ Module
10GbE	FTLX8571D3BCL-ME	10gb SFP 850nm Optic Transceiver
10GbE	L45593-D178-B50	QSFP-4SFP10G-CU5M
10GbE	SFP-10G-SR	Cisco 10GBASE-SR SFP+ transceiver module for MMF, 850-nm wavelength, LC duplex connector
10GbE	SFP-10GB-SR	Cisco SFP+ 10GB SR optic module
10GbE	SFP-H10GB-CU1M	Cisco 1-m 10G SFP+ Twinax cable assembly, passive
10GbE	SFP-H10GB-CU3M	Cisco 3-m 10G SFP+ Twinax cable assembly, passive
10GbE	SFP-H10GB-CU5M	Cisco 5-m 10G SFP+ Twinax cable assembly, passive
10GbE	DM7053	10G-Base-T MethodElec modules
25GbE	FTLF8536P4BCL	TRANSCEIVER 25GBE SFP SR
25GbE	LTF8507-PC07	HISENSE ACTIVE FIBER CABLE, 25GBE
25GbE	SFP-H25G-CU3M	CISCO 25GBASE-CR1 COPPER CABLE 3-METER NDCCGJ-C403

## Tested Switches

### 100GbE Switches

Speed	Switch Silicon	OPN # / Name	Description	Vendor
100GbE	Spectrum-3	MSN4600-XXXX	64-port Non-blocking 100GbE Open Ethernet Switch System	NVIDIA
100GbE	Spectrum-2	MSN3700C-XXXX	32-port Non-blocking 100GbE Open Ethernet Switch System	NVIDIA
100GbE	Spectrum-2	MSN3420-XXXX	48 SFP + 12 QSFP ports Non-blocking 100GbE Open Ethernet Switch System	NVIDIA
100GbE	Spectrum	MSN2410-XXXX	48-port 25GbE + 8-port 100GbE Open Ethernet Switch System	NVIDIA
100GbE	Spectrum	MSN2700-XXXX	32-port Non-blocking 100GbE Open Ethernet Switch System	NVIDIA
100GbE	N/A	QFX5200-32C-32	32-port 100GbE Ethernet Switch System	Juniper
100GbE	N/A	S6820-56HF	48 SFP+ + 8 QSFP Ports 100GbE Switch Ethernet	H3C
100GbE	N/A	CE6860-1-48S8CQ-EI	Huawei 100GbE Ethernet switch	Huawei
100GbE	N/A	7060CX-32S	32-port 100GbE Ethernet Switch System	Arista
100GbE	N/A	3232C	32-port 100GbE Ethernet Switch System	Cisco
100GbE	N/A	N9K-C9236C	36-port 100GbE Ethernet Switch System	Cisco
100GbE	N/A	93180YC-EX	48-port 25GbE + 6-port 100GbE Ethernet Switch System	Cisco
100GbE	N/A	T7032-IX7	32-port 100GbE Ethernet Switch System	Quanta

## 10/40GbE Switches

Speed	Switch Silicon	OPN # / Name	Description	Vendor
10GbE	N/A	5548UP	32x 10GbE SFP+ Switch System	Cisco
10/40GbE	N/A	7050Q	16 x 40GbE QSFP+ Switch System	Arista
10/40GbE	N/A	7050S	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Arista
10/40GbE	N/A	G8264	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Lenovo
10/40GbE	N/A	QFX3500	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Juniper
10/40GbE	N/A	S4810P-AC	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Force10
10/40GbE	N/A	3064	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Cisco
10/40GbE	N/A	8164F	48x 10GbE SFP+ and 2 x 40GbE QSFP+ Switch System	Dell
10/40GbE	N/A	S5000	48x 10GbE SFP+ and 4 x 40GbE QSFP+ Switch System	Dell
10/40GbE	N/A	3132Q	4x 10GbE SFP+ and 32 x 40GbE QSFP+ Switch System	Cisco
40GbE	N/A	7050QX	32x 40GbE QSFP+ Switch System	Arista
40GbE	N/A	G8316	16x 40GbE QSFP+ Switch System	Lenovo
40GbE	N/A	S6000	32x 40GbE QSFP+ Switch System	Dell

## PRM Revision Compatibility

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

- Adapters Programmer's Reference Manual (PRM), Rev 0.53 or later, which has Command Interface Revision 0x5. The command interface revision can be retrieved

by means of the QUERY\_FW command and is indicated by the field cmd\_interface\_rev.



# 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

Configuration	mlxconfig Parameter Name	Class	TLV ID
NV_POWER_CONF	SW_RECOVERY_ON_ERRORS		0x88
	RESET_WITH_HOST_ON_ERRORS		
	ADVANCED_POWER_SETTINGS		
NV_GLOBAL_MASK	ece_disable_mask		0x116
NV_SW_OFFLOAD_CONFIG	CQE_COMPRESSION		0x10a
	IP_OVER_VXLAN_EN		
	PCI_ATOMIC_MODE		
	LRO_LOG_TIMEOUT0		
	LRO_LOG_TIMEOUT1		
	LRO_LOG_TIMEOUT2		
	LRO_LOG_TIMEOUT3		
	log_max_outstanding_wqe		
NV_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		

Configuration	mlxconfig Parameter Name	Class	TLV ID
	RPG_MAX_RATE		
	RPG_AI_RATE		
	RPG_HAI_RATE		
	RPG_GD		
	RPG_MIN_DEC_FAC		
	RPG_MIN_RATE		
	RATE_TO_SET_ON_FIRST_CNP		
	DCE_TCP_G		
	DCE_TCP_RTT		
	RATE_REDUCE_MONITOR_PERIOD		
	INITIAL_ALPHA_VALUE		
	MIN_TIME_BETWEEN_CNPS		
	CNP_802P_PRIO		
	CNP_DSCP		
NV_LLDP_NB_CONF	LLDP_NB_DCBX		0x10 a
	LLDP_NB_RX_MODE		
	LLDP_NB_TX_MODE		
NV_LLDP_NB_DCBX	DCBX_IEEE		0x18 e
	DCBX_CEE		
	DCBX_WILLING		
NV_KEEP_LINK_UP	KEEP_ETH_LINK_UP		0x19 0
	KEEP_IB_LINK_UP		
	KEEP_LINK_UP_ON_BOOT		
	KEEP_LINK_UP_ON_STANDBY		
NV_QOS_CONF	NUM_OF_VL		0x19 2

Configuration	mlxconfig Parameter Name	Class	TLV ID
	NUM_OF_TC		
	NUM_OF_PFC		
NV_MPFS_CONF	DUP_MAC_ACTION		0x196
	SRIOV_IB_ROUTING_MODE		
	IB_ROUTING_MODE		
NV_HCA_CONF	PCI_WR_ORDERING		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	HOST-FUNCTION (3)	0x196
NV_ROM_UEFI_DEBUG_LEVEL	BOOT_DBG_LOG		0x206
	UEFI_LOGS		6
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

Configuration	mlxconfig Parameter Name	Class	TLV ID
	SAFE_MODE_ENABLE		

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# 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>26.41.1000</b>	
<b>TRNG FIPS Compliance</b>	Implemented Deterministic Random Bit Generator (DRBG) algorithm on top of firmware TRNG (the source for raw data input) in accordance with NIST SP800-90A.
<b>vDPA Live Migration</b>	Added support for vDPA virtual queue state change from suspend to ready, and discrete mkey for descriptor. vDPA Live Migration uses these two new capabilities to reduce downtime since vq can go back to ready state for traffic and descriptor-only-mkey can help reduce mkey mapping time.
<b>NVConfig</b>	Added a new NVConfig option to copy AR bit from the BTH header to the DHCP header.
<b>Steering</b>	Added the option provide field's offset and length in Steering add_action option.
<b>Steering Match</b>	Added support for steering match on packet l4_type through FTG/FTE.
<b>Flex Parser Merge Mechanism</b>	Extended Flex Parser merge mechanism to support hardware capabilities.

Feature/Change	Description
<b>Flex Parser</b>	Enabled the option to disable the native parser when the parse graph node is configured with the same conditions.
<b>Flex Parser</b>	Added support for father/son headers parsing.
<b>LRO</b>	Added support for tunnel_offload in LRO.
<b>Bug Fixes</b>	See <i>Bug Fixes in this Firmware Version</i> section.

Feature/Change	Description
<b>26.40.1000</b>	
<b>ACL</b>	Added support for egress ACL to the uplink by adding a new bit to the Set Flow Table Entry: allow_fdb_uplink_hairpin.
<b>Bug Fixes</b>	See <i>Bug Fixes in this Firmware Version</i> section.

Feature/Change	Description
<b>26.39.2048</b>	
<b>Bug Fixes</b>	See <i>Bug Fixes in this Firmware Version</i> section.

Feature/Change	Description
<b>26.39.1002</b>	
<b>Expansion ROM</b>	Added a caching mechanism to improved expansion ROM performance and to avoid any slow boot occurrences when loading the expansion ROM driver.
<b>Live Migration Support for Image Size above 4GB</b>	Added support for image size above 4GB when performing a live migration by splitting the image to chunks.
<b>Crypto Algorithms</b>	Extended the role-based authentication to cover all crypto algorithms. Now the TLS, IPsec, MACsec, GCM, mem2mem, and NISP work when <code>nv_crypto_conf.crypto_policy = CRYPTO_POLICY_FIPS_LEVEL_2</code> , meaning all cryptographic engines can also work in wrapped mode and not only in plaintext mode.

Feature/Change	Description
<b>Programmable Congestion Control</b>	Programmable Congestion Control is now the default CC mechanism. ZTR_RTTCC is the default CC algorithm when ECE is enabled and the CC algorithm negotiation succeeds, otherwise PCC DCQCN will be used.
<b>Reserved mkey</b>	Added new support for reserved mkey index range. When enabled, a range of mkey indexes is reserved for mkey by name use.
<b>Bug Fixes</b>	See <i>Bug Fixes in this Firmware Version</i> section.

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

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



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

## Bug Fixes History

### Note

This section includes history of bug fixes of 3 major releases back. For older releases history, please refer to the relevant firmware versions Release Notes in <https://docs.mellanox.com/category/adapterfw>.

Internal Ref.	Issue
355583 2	<b>Description:</b> Fixed an issue that caused traffic failure when modifying the VIRTIO_NET_F_MRG_RXBUF bit for the VDPA device during traffic.
	<b>Keywords:</b> VDPA, MRG_RXBUF
	<b>Discovered in Version:</b> 26.39.1002
	<b>Fixed in Release:</b> 26.41.1000
377110 0	<b>Description:</b> Fixed an issue that resulted in the second mkey index returning even if it was not set in the creation of the virtio q when querying virtio q object.
	<b>Keywords:</b> VDPA, virtio, query object
	<b>Discovered in Version:</b> 26.39.2048
	<b>Fixed in Release:</b> 26.41.1000
369177 4	<b>Description:</b> Fixed an issue that resulted in traffic loss after performing Live Migration with virtio vq "frozen-ready" feature.
	<b>Note:</b> When the traffic load is high, and the vq frozen-ready cap is on, traffic loss might still be experienced after modifying the vq from suspend to ready mode.

Internal Ref.	Issue
	<b>Keywords:</b> VDPA, live migration, virtio, resume
	<b>Discovered in Version:</b> 26.39.1002
	<b>Fixed in Release:</b> 26.41.1000

Internal Ref.	Issue
3708035	<b>Description:</b> Fixed an issue with Selective-Repeat configuration which occasionally caused retransmission to wait for timeout instead of out-of-sequence NACK.
	<b>Keywords:</b> RoCE, SR
	<b>Discovered in Version:</b> 26.38.1002
	<b>Fixed in Release:</b> 26.40.1000
3695219	<b>Description:</b> Enabled the lowest minimum rate for SW DCQCN to enable congestion control to hold a larger amount of QPs without pauses or drops.
	<b>Keywords:</b> Congestion control, PCC, DCQCN
	<b>Discovered in Version:</b> 26.38.1002
	<b>Fixed in Release:</b> 26.40.1000

Internal Ref.	Issue
3669258	<b>Description:</b> Fixed a rare issue that prevented changes in mlxconfig from taking effect upon warm reboot.
	<b>Keywords:</b> mlxconfig
	<b>Discovered in Version:</b> 26.38.1002
	<b>Fixed in Release:</b> 26.39.2048

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

Internal Ref.	Issue
3365411	<b>Description:</b> Fixed a link failure that occurred due to a wrong 'is_inphi_cable' indication.
	<b>Keywords:</b> Link failure
	<b>Discovered in Version:</b> 26.37.1014
	<b>Fixed in Release:</b> 26.38.1002
3331179	<b>Description:</b> Improved token calculation.
	<b>Keywords:</b> Token calculation

Internal Ref.	Issue
	<b>Discovered in Version:</b> 26.37.1014
	<b>Fixed in Release:</b> 26.38.1002
349184 1	<b>Description:</b> Fixed a firmware assert that occurred when tried to verify if the module supported "swap".
	<b>Keywords:</b> Firmware assert
	<b>Discovered in Version:</b> 26.37.1014
	<b>Fixed in Release:</b> 26.38.1002

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# Legal Notices and 3rd Party Licenses

The following are the drivers' software, tools and HCA firmware legal notices and 3rd party licenses.

Product	Version	Legal Notices and 3rd Party Licenses
Firmware	xx.42.1000	<ul style="list-style-type: none"><li>• <a href="#">HCA Firmware EULA</a></li><li>• <a href="#">3rd Party Unify Notice</a></li><li>• <a href="#">License</a></li></ul>
MLNX_OFED	24.07-0.6.1.0	<ul style="list-style-type: none"><li>• <a href="#">License</a></li><li>• <a href="#">3rd Part Notice</a></li></ul>
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