



NVIDIA ConnectX-6 DE Adapter Cards Firmware Release Notes v22.39.4082 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

Version	Date	Description
22.39.4082	December 2024	Initial release of this Release Notes version.

Overview

Firmware which is added at the time of manufacturing, is used to run user programs on the device and can be thought of as the software that allows hardware to run. Embedded firmware is used to control the functions of various hardware devices and systems, much like a computer's operating system (OS) controls the function of software applications. Firmware may be written into read-only memory (ROM), erasable programmable read-only memory (EPROM) or flash memory.

Firmware Download

Please visit the [firmware webpage](#).

Document Revision History

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

Firmware Compatible Products

The chapter contains the following sections:

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

- InfiniBand - SDR, QDR, FDR, EDR, HDR100, HDR
- PCI Express 4.0, supporting backwards compatibility for v3.0, v2.0 and v1.1

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

Note

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

Note

Please make sure to use a PCIe slot that can supply the required power to the ConnectX-6 DE 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
900-9X0BC-001H-ST1	MCX683105A N-HDAT	MT_00000 00903	Nvidia ConnectX-6 DE InfiniBand adapter, HDR, single-port QSFP, PCIe 4.0 x16, No Crypto, 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 DE Firmware	22.39.4082 / 22.39.3560 / 22.39.3004
MLNX_OFED	23.10-4.0.9.1 / 23.10-3.2.2.0 / 23.10-2.1.3.1 Note: For the list of the supported Operating Systems, please refer to the driver's Release Notes.
MLNX_EN (MLNX_OFED based code)	23.10-4.0.9.1 / 23.10-3.2.2.0 / 23.10-2.1.3.1 Note: For the list of the supported Operating Systems, please refer to the driver's Release Notes.
WinOF-2	23.10.51000 / 23.10.50000 / 23.7.50000 Note: For the list of the supported Operating Systems, please refer to the driver's Release Notes.
MFT	4.26.1-18 / 4.26.1-6 / 4.26.1 Note: For the list of the supported Operating Systems, please refer to the driver's Release Notes.
mstflint	4.26.1-18 / 4.26.1-6 / 4.26.1 Note: For the list of the supported Operating Systems, please refer to the driver's Release Notes.
FlexBoot	3.7.300
UEFI	14.32.17
MLNX-OS	3.10.5002 onwards
Cumulus	5.4 onwards
NVIDIA Quantum Firmware	27.2012.1010 onwards

	Supported Version
SwitchX-IB 2 Firmware	15.2010.5108 onwards
SwitchX-IB Firmware	11.2008.3328 onwards

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
22.39.4082	
General	Stability improvements.

Unsupported Features and Commands

Unsupported Features

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

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

Unsupported Commands

- QUERY_MAD_DEMUX
- SET_MAD_DEMUX

- CREATE_RQ - MEMORY_RQ_RMP
- MODIFY_LAG_ASYNC_EVENT

Bug Fixes in this Firmware Version

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

Internal Ref.	Issue
4149411	Description: Fixed an issue that prevented the SFF module from accessing the EEPROM data when removing the CMIS module and inserting the SFF module instead of it.
	Keywords: EEPROM, SFF, CMIS
	Discovered in Version: 22.39.3560
	Fixed in Release: 22.39.4082
4161454	Description: Fixed a rare case that caused traffic to stop as it could not be recovered when the emulation doorbell did not function properly.
	Keywords: Emulation doorbell
	Discovered in Version: 22.39.3560
	Fixed in Release: 22.39.4082
4039634	Description: Fixed an issue that caused traffic failure when modifying the <code>VIRTIO_NET_F_MRG_RXBUF</code> bit for the VDPA device during traffic.
	Keywords: VDPA, MRG_RXBUF
	Discovered in Version: 22.39.3560
	Fixed in Release: 22.39.4082
4149510	Description: Fixed an issue that resulted in setup crash when <code>create_sq</code> used invalid mbox. Now the invalid mbox is replaced with a valid DB.
	Keywords: mbox
	Discovered in Version: 22.39.3560
	Fixed in Release: 22.39.4082

Internal Ref.	Issue
414939 3	Description: Added address validation in MLNX OEM CMD 0x0032 (get debug info) to be 4-bytes aligned.
	Keywords: Address validation, 0x0032
	Discovered in Version: 22.39.3560
	Fixed in Release: 22.39.4082

Known Issues

VF Network Function Limitations in SRIOV Legacy Mode

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

VF Network Function Limitations in Switchdev Mode

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

VF+SF Network Function Limitations in Switchdev Mode

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

Known Issues

ConnectX-6 DE has the same feature set and limitations as ConnectX-6 adapter card. For the list of ConnectX-6 Known Issues, please go to <https://docs.nvidia.com/networking/category/connectx6fw>.

The below are limitations related to ConnectX-6 DE only.

Internal Ref.	Issue
3525865	<p>Description: Unexpected system behavior might be observed if the driver is loaded while reset is in progress.</p> <p>Workaround: N/A</p> <p>Keywords: Sync 1 reset, firmware reset</p>

Internal Ref.	Issue
	Discovered in Version: 22.39.1002
3457472	Description: Disabling the Relaxed Ordered (RO) capability (relaxed_ordering_read_pci_enabled=0) using the vhca_resource_manager is currently not functional.
	Workaround: N/A
	Keywords: Relaxed Ordered
	Discovered in Version: 22.37.1014
2878841	Description: Firmware rollback fails for the signature retransmit flow if the QPN field is configured in the mkey (as it only allows the given QP to use this Mkey) as the firmware rollback flow relies on an internal QP that uses the mkey.
	Workaround: N/A
	Keywords: Signature retransmit flow
	Discovered in Version: 22.37.1014
3329109	Description: MFS1S50-H003E cable supports only HDR rate when used as a split cable.
	Workaround: N/A
	Keywords: HDR, split cable, MFS1S50-H003E
	Discovered in Version: 22.36.1010
2745023	Description: RDMA statistics for sent packets are not updated when RoCE traffic is running in a loopback on the same uplink.
	Workaround: N/A
	Keywords: RoCE
	Discovered in Version: 22.35.2302
3200779	Description: Changing dynamic PCIe link width is not supported.
	Workaround: N/A
	Keywords: PCIe
	Discovered in Version: 20.34.1002
-	Description: A wrong device ID is presented When running the “dev_id” command for ConnectX-6 DE. The device ID shown is the ConnectX-6 Dx instead.

Internal Ref.	Issue
	<p>Workaround: To be able to identify the ConnectX-6 DE ID, run one of the commands below:</p> <ul style="list-style-type: none"> • mlxfwmanager • mlxvpd (or mlxburn -vpd) <p>Keywords: Device ID</p> <p>Discovered in Version: 22.32.2306</p>
2850003	<p>Description: Occasionally, when rising a logical link, the link recovery counter is increase by 1.</p> <p>Workaround: N/A</p> <p>Keywords: Link recovery counter</p> <p>Discovered in Version: 22.32.2306</p>

PreBoot Drivers (FlexBoot/UEFI)

FlexBoot Changes and New Features

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

UEFI Changes and Major New Features

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

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

Note

NVIDIA does not support InfiniBand cables or modules not qualified or approved by NVIDIA.

HDR / 200GbE Cables

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
HDR	N/A	980-9I86N-00H003*	MCA1J00-H003E*	NVIDIA Active Copper cable, IB HDR, up to 200Gb/s, QSFP56, 3m, yellow pulltab	EOL [MP]
HDR	N/A	980-9I86O-00H004*	MCA1J00-H004E*	NVIDIA Active Copper cable, IB HDR, up to 200Gb/s, QSFP56, 4m, yellow pulltab	EOL [MP]
HDR	N/A	980-9I86P-00H005	MCA1J00-H005E	NVIDIA Active Copper cable, IB HDR, up to 200Gb/s, QSFP56, 5m, yellow pulltab	EOL [Prototype]
HDR	N/A	980-9I977-00H003*	MCA7J50-H003R*	NVIDIA Active copper hybrid cable, IB HDR 200Gb/s to 2xHDR100 100Gb/s, QSFP56 to 2xQSFP56, 3m, colored	EOL [MP]
HDR	N/A	980-9I978-00H004*	MCA7J50-H004R*	NVIDIA Active copper hybrid cable, IB HDR 200Gb/s to 2xHDR100 100Gb/s, QSFP56 to 2xQSFP56, 4m, colored	EOL [MP]
HDR	N/A	980-9I979-00H005	MCA7J50-H005R	NVIDIA Active copper hybrid cable, IB HDR 200Gb/s to 2xHDR100 100Gb/s, QSFP56 to 2xQSFP56, 5m, colored	EOL [Prototype]
HDR	200GE	980-9I548-00H001	MCP1650-H001E30	Nvidia Passive Copper cable, up to 200Gbps, QSFP56 to QSFP56, 1m	HVM
HDR	200GE	980-9I549-00H002	MCP1650-H002E26	Nvidia Passive Copper cable, up to 200Gbps, QSFP56 to QSFP56, 2m	HVM
HDR	200GE	980-9I54A-00H00A	MCP1650-H00AE30	Nvidia Passive Copper cable, up to 200Gbps, QSFP56 to QSFP56, 0.5m	HVM
HDR	200GE	980-9I54B-00H01A	MCP1650-H01AE30	Nvidia Passive Copper cable, up to 200Gbps, QSFP56 to QSFP56, 1.5 m	HVM

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
HDR	200GE	980-9I39E-00H001	MCP7H50-H001R30	Nvidia Passive copper splitter cable, 200Gbps to 2x100Gbps, QSFP56 to 2xQSFP56, 1m	HVM
HDR	200GE	980-9I99F-00H002	MCP7H50-H002R26	Nvidia Passive copper splitter cable, 200Gbps to 2x100Gbps, QSFP56 to 2xQSFP56, 2m	HVM
HDR	200GE	980-9I98G-00H01A	MCP7H50-H01AR30	Nvidia Passive copper splitter cable, 200Gbps to 2x100Gbps, QSFP56 to 2xQSFP56, 1.5m	HVM
HDR	200GE	980-9I46K-00H001	MCP7Y60-H001	NVIDIA passive copper splitter cable, 400(2x200)Gbps to 2x200Gbps, OSFP to 2xQSFP56, 1m, fin to flat	MP
HDR	200GE	980-9I46L-00H002	MCP7Y60-H002	NVIDIA passive copper splitter cable, 400(2x200)Gbps to 2x200Gbps, OSFP to 2xQSFP56, 2m, fin to flat	MP
HDR	200GE	980-9I93M-00H01A	MCP7Y60-H01A	NVIDIA passive copper splitter cable, 400(2x200)Gbps to 2x200Gbps, OSFP to 2xQSFP56, 1.5m, fin to flat	MP
HDR	200GE	980-9I93N-00H001	MCP7Y70-H001	NVIDIA passive copper splitter cable, 400(2x200)Gbps to 4x100Gbps, OSFP to 4xQSFP56, 1m, fin to flat	MP
HDR	200GE	980-9I93O-00H002	MCP7Y70-H002	NVIDIA passive copper splitter cable, 400(2x200)Gbps to 4x100Gbps, OSFP to 4xQSFP56, 2m, fin to flat	MP
HDR	200GE	980-9I47P-00H01A	MCP7Y70-H01A	NVIDIA passive copper splitter cable, 400(2x200)Gbps to 4x100Gbps, OSFP to 4xQSFP56, 1.5m, fin to flat	MP
HDR	N/A	980-9I123-00H003	MFS1S00-H003-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 3m	EOL [P-Rel]
HDR	N/A	980-9I124-	MFS1S00-H003E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 3m	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
		00H003			
HDR	200GE	980-9I457-00H003	MFS1S00-H003V	Nvidia active optical cable, up to 200Gbps , QSFP56 to QSFP56, 3m	MP
HDR	N/A	980-9I449-00H005	MFS1S00-H005-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 5m	EOL [P-Rel]
HDR	N/A	980-9I45A-00H005	MFS1S00-H005E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 5m	EOL [HVM]
HDR	200GE	980-9I45D-00H005	MFS1S00-H005V	Nvidia active optical cable, up to 200Gbps , QSFP56 to QSFP56, 5m	MP
HDR	N/A	980-9I44F-00H010	MFS1S00-H010-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 10m	EOL [P-Rel]
HDR	N/A	980-9I45G-00H010	MFS1S00-H010E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 10m	EOL [HVM]
HDR	200GE	980-9I45J-00H010	MFS1S00-H010V	Nvidia active optical cable, up to 200Gbps , QSFP56 to QSFP56, 10m	MP
HDR	N/A	980-9I44L-00H015	MFS1S00-H015-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 15m	EOL [P-Rel]
HDR	N/A	980-9I45M-00H015	MFS1S00-H015E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 15m	EOL [HVM]
HDR	200GE	980-9I45O-00H015	MFS1S00-H015V	Nvidia active optical cable, up to 200Gbps , QSFP56 to QSFP56, 15m	MP
HDR	N/A	980-9I44Q-00H020	MFS1S00-H020-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 20m	EOL [P-Rel]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
HDR	N/A	980-9I45R-00H020	MFS1S00-H020E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 20m	EOL [HVM]
HDR	200GE	980-9I45T-00H020	MFS1S00-H020V	Nvidia active optical cable, up to 200Gbps , QSFP56 to QSFP56, 20m	MP
HDR	N/A	980-9I45X-00H030	MFS1S00-H030-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 30m	EOL [P-Rel]
HDR	N/A	980-9I45Y-00H030	MFS1S00-H030E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 30m	EOL [HVM]
HDR	200GE	980-9I440-00H030	MFS1S00-H030V	Nvidia active optical cable, up to 200Gbps , QSFP56 to QSFP56, 30m	MP
HDR	N/A	980-9I455-00H050	MFS1S00-H050E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 50m	EOL [HVM]
HDR	200GE	980-9I447-00H050	MFS1S00-H050V	Nvidia active optical cable, up to 200Gbps , QSFP56 to QSFP56, 50m	MP
HDR	N/A	980-9I44G-00H100	MFS1S00-H100E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 100m	EOL [HVM]
HDR	200GE	980-9I44H-00H100	MFS1S00-H100V	Nvidia active optical cable, up to 200Gbps , QSFP56 to QSFP56, 100m	MP
HDR	N/A	980-9I44I-00H130	MFS1S00-H130E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 130m	EOL [HVM]
HDR	200GE	980-9I44K-00H130	MFS1S00-H130V	Nvidia active optical cable, up to 200Gbps , QSFP56 to QSFP56, 130m	MP
HDR	N/A	980-9I45L-	MFS1S00-H150E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab,	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
		00H150		150m	
HDR	200GE	980-9I44N-00H150	MFS1S00-H150V	Nvidia active optical cable, up to 200Gbps , QSFP56 to QSFP56, 150m	MP
HDR	N/A	980-9I450-00H200	MFS1S00-H200E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 200m	EOL [EVT]
HDR	N/A	980-9I452-00H003	MFS1S50-H003E	NVIDIA active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56 , LSZH, 3m	EOL [HVM]
HDR	200GE	980-9I445-00H003	MFS1S50-H003V	Nvidia active optical splitter cable, 200Gbps to 2x100Gbps , QSFP56 to 2x QSFP56, 3m	HVM
HDR	N/A	980-9I956-00H005	MFS1S50-H005E	NVIDIA active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56 , LSZH, 5m	EOL [HVM]
HDR	200GE	980-9I969-00H005	MFS1S50-H005V	Nvidia active optical splitter cable, 200Gbps to 2x100Gbps , QSFP56 to 2x QSFP56, 5m	HVM
HDR	N/A	980-9I95A-00H010	MFS1S50-H010E	NVIDIA active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56 , LSZH, 10m	EOL [HVM]
HDR	200GE	980-9I96D-00H010	MFS1S50-H010V	Nvidia active optical splitter cable, 200Gbps to 2x100Gbps , QSFP56 to 2x QSFP56, 10m	HVM
HDR	N/A	980-9I95E-00H015	MFS1S50-H015E	NVIDIA active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56 , LSZH, 15m	EOL [HVM]
HDR	200GE	980-9I96H-00H015	MFS1S50-H015V	Nvidia active optical splitter cable, 200Gbps to 2x100Gbps , QSFP56 to 2x QSFP56, 15m	HVM
HDR	N/A	980-9I95I-00H020	MFS1S50-H020E	NVIDIA active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56 , LSZH, 20m	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
HDR	200GE	980-9196L-00H020	MFS1S50-H020V	Nvidia active optical splitter cable, 200Gbps to 2x100Gbps , QSFP56 to 2x QSFP56, 20m	HVM
HDR	N/A	980-9195M-00H030	MFS1S50-H030E	NVIDIA active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56 , LSZH, 30m	EOL [HVM]
HDR	200GE	980-9196P-00H030	MFS1S50-H030V	Nvidia active optical splitter cable, 200Gbps to 2x100Gbps , QSFP56 to 2x QSFP56, 30m	HVM
HDR	200GE	980-9195S-00H040	MFS1S50-H040V	Nvidia active optical splitter cable, 200Gbps to 2x100Gbps , QSFP56 to 2x QSFP56, 40m	Prototype
HDR	200GE	980-9195T-00H050	MFS1S50-H050V	Nvidia active optical splitter cable, 200Gbps to 2x100Gbps , QSFP56 to 2x QSFP56, 50m	Prototype
HDR	N/A	980-9195Z-00H003	MFS1S90-H003E	NVIDIA active fiber splitter cable, IB HDR, 2x200Gb/s to 2x200Gb/s, 2xQSFP56 to 2xQSFP56 , LSZH, 3m	EOL [HVM]
HDR	N/A	980-91960-00H005	MFS1S90-H005E	NVIDIA active fiber splitter cable, IB HDR, 2x200Gb/s to 2x200Gb/s, 2xQSFP56 to 2xQSFP56 , LSZH, 5m	EOL [HVM]
HDR	N/A	980-91961-00H010	MFS1S90-H010E	NVIDIA active fiber splitter cable, IB HDR, 2x200Gb/s to 2x200Gb/s, 2xQSFP56 to 2xQSFP56 , LSZH, 10m	LTB [HVM]
HDR	N/A	980-91962-00H015	MFS1S90-H015E	NVIDIA active fiber splitter cable, IB HDR, 2x200Gb/s to 2x200Gb/s, 2xQSFP56 to 2xQSFP56 , LSZH, 15m	EOL [HVM]
HDR	N/A	980-91423-00H020	MFS1S90-H020E	NVIDIA active fiber splitter cable, IB HDR, 2x200Gb/s to 2x200Gb/s, 2xQSFP56 to 2xQSFP56 , LSZH, 20m	LTB [HVM]
HDR	N/A	980-91424-00H030	MFS1S90-H030E	NVIDIA active fiber splitter cable, IB HDR, 2x200Gb/s to 2x200Gb/s, 2xQSFP56 to 2xQSFP56 , LSZH, 30m	EOL [HVM]
HDR	N/A	980-9117S-	MMA1T00-HS	NVIDIA transceiver, HDR, QSFP56, MPO, 850nm, SR4, up to 100m	HVM

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
		00HS00			

Note

* These cables were approved for switch-to-switch connectivity. For switch-to-host connectivity there may be some issues. See Known Issue 1959529 in the Known Issues section.

Note

HDR links raise with RS_FEC.

EDR / 100GbEs Cables

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
EDR	100GE	980-9I62P-00C001	MCP160 0-E001	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1m 30AWG	EOL [HVM]
EDR	N/A	980-9I62Q-00E001	MCP160 0-E001E30	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 1m, Black, 30AWG	HVM
EDR	100GE	980-9I62S-00C002	MCP160 0-E002	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2m 28AWG	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
EDR	N/A	980-9I62T-00E002	MCP160 0-E002E26	NVIDIA® Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 2m, Black, 26AWG	Preliminary
EDR	N/A	980-9I62U-00E002	MCP160 0-E002E30	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 2m, Black, 30AWG	HVM
EDR	100GE	980-9I62V-00C003	MCP160 0-E003	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m 26AWG	EOL [HVM]
EDR	N/A	980-9I62W-00E003	MCP160 0-E003E26	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 3m, Black, 26AWG	HVM
EDR	N/A	980-9I62Y-00E004	MCP160 0-E004E26	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 4m, Black, 26AWG	EOL [HVM]
EDR	N/A	980-9I62Z-00E005	MCP160 0-E005E26	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 5m, Black, 26AWG	HVM
EDR	N/A	980-9I620-00E00A	MCP160 0-E00A	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 0.5m 30AWG	EOL [HVM]
EDR	N/A	980-9I621-00E00A	MCP160 0-E00AE30	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 0.5m, Black, 30AWG	EOL [HVM]
EDR	N/A	980-9I622-00E00B	MCP160 0-E00BE30	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 0.75m, Black, 30AWG	EOL [HVM] [HIBERN/AT E]
EDR	100GE	980-9I623-00C01A	MCP160 0-E01A	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1.5m 30AWG	EOL [HVM]
EDR	N/A	980-9I624-00E01A	MCP160 0-E01AE30	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 1.5m, Black, 30AWG	HVM
EDR	N/A	980-9I625-	MCP160 0-	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 1.25m,	EOL [HVM] [HIBERN/AT

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
		00E01C	E01BE30	Black, 30AWG	E]
EDR	100GE	980-9I626-00C02A	MCP1600-E02A	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 2.5m 26AWG	EOL [HVM]
EDR	N/A	980-9I627-00E02A	MCP1600-E02AE26	NVIDIA Passive Copper cable, IB EDR, up to 100Gb/s, QSFP28, 2.5m, Black, 26AWG	HVM
EDR	N/A	980-9I13D-00E001	MFA1A00-E001	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1m	HVM
EDR	N/A	980-9I13F-00E003	MFA1A00-E003	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m	HVM
EDR	N/A	980-9I13J-00E005	MFA1A00-E005	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 5m	HVM
EDR	N/A	980-9I13M-00E007	MFA1A00-E007	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 7m	LTB [HVM]
EDR	N/A	980-9I13O-00E010	MFA1A00-E010	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 10m	HVM
EDR	N/A	980-9I13S-00E015	MFA1A00-E015	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 15m	HVM
EDR	N/A	980-9I13V-00E020	MFA1A00-E020	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 20m	HVM
EDR	N/A	980-9I13Y-00E030	MFA1A00-E030	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 30m	HVM
EDR	N/A	980-9I133-00E050	MFA1A00-E050	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 50m	HVM

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
EDR	N/A	980-9I135-00E100	MFA1A00-E100	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 100m	LTB [HVM]
EDR	N/A	980-9I17L-00E000	MMA1B00-E100	NVIDIA transceiver, IB EDR, up to 100Gb/s, QSFP28, MPO, 850nm, SR4, up to 100m	HVM

i Note

EDR links raise with RS-FEC.

FDR Cables

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy OPN	Description	LifeCycle Phase
FDR	56GE	980-9I679-00L004	MC2207126-004	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 4m	EOL [HVM]
FDR	56GE	980-9I67A-00L003	MC2207128-003	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 3m	EOL [HVM]
FDR	56GE	980-9I67C-00L02A	MC2207128-0A2	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 2.5m	EOL [MP]
FDR	56GE	980-9I67D-00L001	MC2207130-001	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 1m	EOL [HVM]
FDR	56GE	980-9I67E-	MC2207130-002	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 2m	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy OPN	Description	LifeCycle Phase
		00L002			
FDR	56GE	980-9I67F-00L00A	MC2207 130-00A	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 0.5m	EOL [HVM]
FDR	56GE	980-9I67G-00L01A	MC2207 130-0A1	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, 1.5m	EOL [HVM]
FDR	56GE	980-9I15U-00L003	MC2207 31V-003	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 3m	EOL [HVM]
FDR	56GE	980-9I15V-00L005	MC2207 31V-005	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 5m	EOL [HVM]
FDR	56GE	980-9I15W-00L010	MC2207 31V-010	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 10m	EOL [HVM]
FDR	56GE	980-9I15X-00L015	MC2207 31V-015	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 15m	EOL [HVM]
FDR	56GE	980-9I15Y-00L020	MC2207 31V-020	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 20m	EOL [HVM]
FDR	56GE	980-9I15Z-00L025	MC2207 31V-025	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 25m	EOL [HVM]
FDR	56GE	980-9I150-00L030	MC2207 31V-030	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 30m	EOL [HVM]
FDR	56GE	980-9I151-00L040	MC2207 31V-040	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 40m	EOL [HVM] [HIBERN/ATE]
FDR	56GE	980-9I152-00L050	MC2207 31V-050	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 50m	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy OPN	Description	LifeCycle Phase
FDR	56GE	980-9I153-00L075	MC2207 31V-075	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 75m	EOL [HVM]
FDR	56GE	980-9I154-00L100	MC2207 31V-100	NVIDIA active fiber cable, VPI, up to 56Gb/s, QSFP, 100m	EOL [HVM]
FDR	56GE	980-9I675-00L001	MCP170 L-F001	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 1m	EOL [P-Rel]
FDR	56GE	980-9I676-00L002	MCP170 L-F002	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 2m	EOL [P-Rel]
FDR	56GE	980-9I677-00L003	MCP170 L-F003	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 3m	EOL [P-Rel] [HIBERN/ATE]
FDR	56GE	980-9I678-00L00A	MCP170 L-F00A	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 0.5m	EOL [P-Rel]
FDR	56GE	980-9I679-00L01A	MCP170 L-F01A	NVIDIA passive copper cable, VPI, up to 56Gb/s, QSFP, LSZH, 1.5m	EOL [P-Rel] [HIBERN/ATE]
FDR	N/A	980-9I17M-00FS00	MMA1B0 0-F030D	NVIDIA transceiver, FDR, QSFP+, MPO, 850nm, SR4, up to 30m, DDMI	LTB [HVM]

FDR10 Cables

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
FDR10	40GE	980-9I66U-00B004	MC2206 128-004	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 4m	EOL [HVM] [HIBERN/ATE]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
FDR10	40GE	980-9I66V-00B005	MC2206 128-005	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 5m	EOL [HVM]
FDR10	40GE	980-9I66W-00B001	MC2206 130-001	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 1m	EOL [HVM]
FDR10	40GE	980-9I66X-00B002	MC2206 130-002	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 2m	EOL [HVM]
FDR10	40GE	980-9I66Y-00B003	MC2206 130-003	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 3m	EOL [HVM]
FDR10	40GE	980-9I66Z-00B00A	MC2206 130-00A	NVIDIA passive copper cable, VPI, up to 40Gb/s, QSFP, 0.5m	EOL [HVM]
FDR10	N/A	980-9I140-00T003	MC2206 310-003	NVIDIA active fiber cable, IB QDR/FDR10, 40Gb/s, QSFP, 3m	EOL [HVM]
FDR10	N/A	980-9I141-00T005	MC2206 310-005	NVIDIA active fiber cable, IB QDR/FDR10, 40Gb/s, QSFP, 5m	EOL [HVM]
FDR10	N/A	980-9I142-00T010	MC2206 310-010	NVIDIA active fiber cable, IB QDR/FDR10, 40Gb/s, QSFP, 10m	EOL [HVM]
FDR10	N/A	980-9I143-00T015	MC2206 310-015	NVIDIA active fiber cable, IB QDR/FDR10, 40Gb/s, QSFP, 15m	EOL [HVM]
FDR10	N/A	980-9I144-00T020	MC2206 310-020	NVIDIA active fiber cable, IB QDR/FDR10, 40Gb/s, QSFP, 20m	EOL [HVM]
FDR10	N/A	980-9I145-00T030	MC2206 310-030	NVIDIA active fiber cable, IB QDR/FDR10, 40Gb/s, QSFP, 30m	EOL [HVM]
FDR10	N/A	980-9I147-	MC2206 310-050	NVIDIA active fiber cable, IB QDR/FDR10, 40Gb/s, QSFP, 50m	EOL [HVM]

IB Data Rate	Eth Data Rate	NVIDIA P/N	Legacy P/N	Description	LifeCycle Phase
		00T050			
FDR10	N/A	980-91148-00T100	MC2206 310-100	NVIDIA active fiber cable, IB QDR/FDR10, 40Gb/s, QSFP, 100m	EOL [HVM]
FDR10	40GE	980-91170-00BM00	MC2210 411-SR4E	NVIDIA optical module, 40Gb/s, QSFP, MPO, 850nm, up to 300m	EOL [HVM]
FDR10	N/A	980-91210-00TR00	MC2210 511-LR4	NVIDIA optical module, 40Gb/s, QSFP, LC-LC, 1310nm, LR4 up to 10km	EOL [MP]

Tested Switches

HDR / 200Gb/s Switches

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

EDR / 100Gb/s Switches

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

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

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
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
22.39.3560	
General	Stability improvements.

Feature/Change	Description
22.39.3004	
General	Stability improvements.

Feature/Change	Description
22.39.2048	
Bug Fixes	See <i>Bug Fixes in this Firmware Version</i> section.

Feature/Change	Description
22.39.1002	
Expansion ROM	Added a caching mechanism to improved expansion ROM performance and to avoid any slow boot occurrences when loading the expansion ROM driver.

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

Feature/Change	Description
22.38.1900	
QKEY Mitigation in the Kernel	<p>QKEY creation with the MSB set is available now for non-privileged users as well.</p> <p>To allow non-privileged users to create QKEY with MSB set, the below new module parameter was added to ib_uverbs module:</p> <ul style="list-style-type: none"> • Module Parameter: <code>enforce_qkey_check</code> • Description: Force QKEY MSB check for non-privileged user on UD QP creation • Default: 0 (disabled) <p>Note: In this release, this module parameter is disabled by default to ensure backward compatibility and give customers the opportunity to update their applications accordingly. In the upcoming release, it will be enabled by default, and later on deprecated.</p>

Feature/Change	Description
22.38.1002	
INT Packets	Added support for forwarding INT packets to the user application for monitoring purposes by matching the BTH acknowledge request bit (bth_a).
IPsec CPS Bulk Allocation	Improved the IPsec CPS by using bulk allocation. For cases in which <code>log_obj_range == 0</code> , single IPSEC object will be allocated and initialized as before keeping backward compatibility. For better performance, it is recommended to work with IPsec bulk allocation and to initialize IPsec ASO context not via the firmware but via the hardware using ASO WQE.
QKEY Mitigation in the Kernel	Non-privileged users are now blocked by default from setting controlled/privileged QKEYs (QKEY with MSB set).
Bug Fixes	See <i>Bug Fixes in this Firmware Version</i> section.

Feature/Change	Description
22.37.1014	
Mergeable Buffer	Added mergeable buffer support (VIRTIO_NET_F_MRG_RXBUF in virtio spec) for VDPA kernel mode to improve performance in case of large MTU such as 9K. The feature is disabled by default and must be manually enabled while creating or modifying the virtio device. Note: For best performance, it is NOT recommended to enable the feature if the VDPA MTU is set to the default value (1500).
Monitoring Cloud Guest RoCE Statistics on Cloud Provider	This new capability enables the VM to track and limit its Vport's activity. This is done using the new q_counters counter which enables aggregation of other Vport's from PF GVMI.
Linux Bridge Offload	Added a flow rule that enables offloading of multicast traffic by broadcasting it to multi-Flow-Table in FDB.
PCC Algorithms	Enables a smooth and statically switch between PCC algorithms. In addition, the user can now switch between PCC algorithms while running traffic.
PCC Firmware Trace	Added support for running PCC firmware trace without saving and sending the DB strings to the tool with the following changes:

Feature/Change	Description
	<ul style="list-style-type: none"> Added new string section to the user PCC image creation tool Added the new PCC DB strings to MTRC access registers output On the tool's part: added support to reading the string.db using the MTRC access registers
Hardware Steering: Bulk Allocation	Added support for 32 actions in the header modify pattern using bulk allocation.
InfiniBand Congestion Control - RTT Response Service Level	<p>The software can explicitly set the SL of an RTT response packet, instead of it being taken from the RTT request packet's SL.</p> <p>The RTT response packet SL may be set/queried via the <code>CONGESTION_CONTROL_HCA_NP_PARAMETER</code> MAD.</p>
Bug Fixes	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
3887760	Description: Fixed an issue that caused Completion Timeout to mistakenly be treated as Advisory Non-Fatal error. Now Completion Timeout is treated as uncorrectable error.
	Keywords: Completion Timeout, Advisory Non-Fatal error
	Discovered in Version: 22.39.3004
	Fixed in Release: 22.39.3560

Internal Ref.	Issue
3813817	Description: Fixed an issue that result in no traffic after live migration resume of vDPA when using DOCA version 2.6.0 onwards.
	Keywords: nvconfig, ETS
	Discovered in Version: 22.39.3004
	Fixed in Release: 22.39.3560
3679806	Description: Added the TX_SCHEDULER_FWS_REACTIVITY nvconfig flag to solved an mlnx_qos ETS settings issue.
	Keywords: nvconfig, ETS
	Discovered in Version: 22.39.3004
	Fixed in Release: 22.39.3560

Internal Ref.	Issue
3669258	Description: Fixed a rare issue that prevented changes in mlxconfig from taking effect upon warm reboot.
	Keywords: mlxconfig
	Discovered in Version: 22.38.1002
	Fixed in Release: 22.39.2048
3666583	Description: Fixed a risk condition that occurred due to the descriptor length dynamic change in the new kernel version upon firmware termination of the WQE segment on a WQE when the "SUSPEND VIRTQ with Mergeable Buffer" capability was set.
	Keywords: vDPA
	Discovered in Version: 22.38.1002
	Fixed in Release: 22.39.2048

Internal Ref.	Issue
3606330	Description: 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.

Internal Ref.	Issue
	Keywords: TCP IPv4 flows
	Discovered in Version: 22.38.1002
	Fixed in Release: 22.39.1002
3602169	Description: Added a locking mechanism to protect the firmware from a race condition between insertion and deletion of the same rule in parallel. Such behavior occasionally resulted in firmware accessing a memory that has already been released, thus causing IOMMU / translation error. Note: This fix will not impact insertion rate for tables owned by SW steering.
	Keywords: Firmware steering
	Discovered in Version: 22.38.1002
	Fixed in Release: 22.39.1002
3612682	Description: Enabled live migration for virtio with mergeable buffer.
	Keywords: Virtio, Mergeable buffer, Live migration
	Discovered in Version: 22.38.1002
	Fixed in Release: 22.39.1002
3571251	Description: Fixed an issue that resulted in migration data corruption when running parallel <code>save_vhca_state/load_vhca_state</code> commands on the same PF.
	Keywords: VF live migration
	Discovered in Version: 22.38.1002
	Fixed in Release: 22.39.1002

Internal Ref.	Issue
3365411	Description: Fixed a link failure that occurred due to a wrong 'is_inphi_cable' indication.
	Keywords: Link failure
	Discovered in Version: 22.37.1014
	Fixed in Release: 22.38.1002

Internal Ref.	Issue
3311600	Description: Enabled "Link Maintenance" for 25G speed per lane to avoid a margin degradation due to a temperature drift.
	Keywords: Link Maintenance
	Discovered in Version: 22.37.1014
	Fixed in Release: 22.38.1002
3461684	Description: Fixed an issue in the steering definers used in LAG with IPv6 packets.
	Keywords: Steering, LAG
	Discovered in Version: 22.37.1014
	Fixed in Release: 22.38.1002
3331179	Description: Improved token calculation.
	Keywords: Token calculation
	Discovered in Version: 22.37.1014
	Fixed in Release: 22.38.1002
3491841	Description: Fixed a firmware assert that occurred when tried to verify if the module supported "swap".
	Keywords: Firmware assert
	Discovered in Version: 22.37.1014
	Fixed in Release: 22.38.1002

Internal Ref.	Issue
3317361	Description: Added a safety mechanism to prevent the link from to getting stuck when receiving bad tuning results. In this case, the linkup flow is restarted and the mechanism retries to raise the link.
	Keywords: Tuning
	Discovered in Version: 22.36.1010
	Fixed in Release: 22.37.1014
3337386	Description: Improved rate limit token re-distribution algorithm.
	Keywords: Rate limit

Internal Ref.	Issue
	Discovered in Version: 22.36.1010
	Fixed in Release: 22.37.1014
333738 6	Description: Improved non-consumed bandwidth re-distribution.
	Keywords: Bandwidth
	Discovered in Version: 22.36.1010
	Fixed in Release: 22.37.1014
339587 8	Description: Fixed an issue that resulted in no ping in NODNIC VF when VLAN stripping was enabled.
	Keywords: NODNIC VF, VLAN
	Discovered in Version: 22.36.1010
	Fixed in Release: 22.37.1014
335242 3	Description: Fixed an issue that caused vDPA application initialization to fail due to virtual queue creation failure. The failure comes with the <code>"0x8f7a: ring address translate failed"</code> assert which indicates incorrect permission supplied by QEMU for virtual ring memory.
	Keywords: virtio memory region
	Discovered in Version: 22.36.1010
	Fixed in Release: 22.37.1014
332784 7	Description: CNP received, handled, and ignored counters in the hardware counters cannot work after moving to Programmable Congestion Control mode.
	Keywords: CNP, Programmable Congestion Control
	Discovered in Version: 22.36.1010
	Fixed in Release: 22.37.1014

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