NVIDIA ConnectX-6 DE Adapter Cards Firmware Release Notes v22.35.3502 LTS

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

1 Release Notes Update History

Revision	Date	Description
22.35.3502	December 31, 2023	Initial release of this Release Notes version, This version introduces Bug Fixes.

2 Overview

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

2.1 Firmware Download

Please visit the firmware webpage.

2.2 Document Revision History

A list of the changes made to this document are provided in Document Revision History.

3 Firmware Compatible Products

The chapter contains the following sections:

These are the release notes for the NVIDIA® ConnectX®-6 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.

> ⚠ 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.

3.1 Supported Devices

This firmware supports the devices and protocols listed below:

NVIDIA SKU	Legacy OPN	PSID	Device Name	FlexBoot	UEFI x86	UEFI ARM	Enable/ disable exprom Feature
900-9X0BC-001H-ST1	MCX683105AN-HDAT	MT_0000000903	Nvidia ConnectX-6 DE InfiniBand adapter, HDR, single-port QSFP, PCIe 4.0 x16, No Crypto, Tall Bracket	Present (Enabled)	Present (Enabled)	Present (Enabled)	Exists

3.2 Driver Software, Tools and Switch Firmware

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

	Supported Version
ConnectX-6 DE Firmware	22.35.3502 / 22.35.3006 / 22.35.2000
MLNX_OFED	5.8-4.0.8.0 / 5.8-3.0.7.0 / 5.8-2.0.3.0 **Note:** For the list of the supported Operating Systems, please refer to the driver's Release Notes.
MLNX_EN (MLNX_OFED based code)	5.8-4.0.8.0 / 5.8-3.0.7.0 / 5.8-2.0.3.0 **Note:** For the list of the supported Operating Systems, please refer to the driver's Release Notes.
WinOF-2	3.10.52010 / 3.10.51000 / 3.10.50000 **Note:** For the list of the supported Operating Systems, please refer to the driver's Release Notes.
MFT	4.22.1-406 / 4.22.1-307 / 4.22.1 **Note:** For the list of the supported Operating Systems, please refer to the driver's Release Notes.

	Supported Version
FlexBoot	3.6.902 **Note:** Please be aware that not all firmware binaries contain FlexBoot or UEFI, support may vary between cards.
UEFI	14.29.15 **Note:** Please be aware that not all firmware binaries contain FlexBoot or UEFI, support may vary between cards.
MLNX-OS	3.10.5002 onwards
Cumulus	5.4 onwards
NVIDIA Quantum Firmware	27.2010.5108 onwards
SwitchX-IB Firmware	11.2008.2102 onwards
SwitchX-IB 2 Firmware	15.2008.2102 onwards

3.3 Supported Cables and Modules

3.3.1 Validated and Supported HDR / 200Gb/s Cables

Speed	Cable OPN #	Description
HDR	MCP1650-H001E30	NVIDIA Passive Copper cable, IB HDR, up to 200Gb/s, QSFP28, PVC, 1m, white pultab, 30AWG
HDR	MCP1650-H002E26	NVIDIA Passive Copper cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, 2M, black pultab, 26AWG
HDR	MCP1650-H00AE30	NVIDIA Passive Copper cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, 0.5M, black pultab, 30AWG
HDR	MCP7H50-H001R30	NVIDIA Passive Copper Hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored pulltabs, 1m, 30AWG
HDR	MCP7H50-H01AR30	NVIDIA Passive Copper Hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored, 1.5m, 30AWG
HDR	MCP7H50-H002R26	NVIDIA Passive Copper Hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored, 2m, 26AWG
HDR	MFS1S00-H003E	NVIDIA Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 3m
HDR	MFS1S00-H005E	NVIDIA Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 5m
HDR	MFS1S00-H010E	NVIDIA Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 10m
HDR	MFS1S00-H100E	NVIDIA Active Fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 100m
HDR	MFS1S50-H0xxE	NVIDIA Active Fiber Splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, up to 30m
HDR	MFS1S90-H003E	NVIDIA Active Fiber Splitter cable, IB HDR, 2x200Gb/s to 2x200Gb/s, 2xQSFP56 to 2xQSFP56, LSZH, 3m

Speed	Cable OPN #	Description
HDR	MCA7J50-H003R*	NVIDIA Active Copper Hybrid cable, IB HDR 200Gb/s to 2xHDR100 100Gb/s, QSFP56 to 2xQSFP56, 3m, colored
HDR	MCA7J50-H004R*	NVIDIA Active Copper Hybrid cable, IB HDR 200Gb/s to 2xHDR100 100Gb/s, QSFP56 to 2xQSFP56, 4m, colored
HDR	MCA1J00-H003E*	NVIDIA Active Copper cable, IB HDR, up to 200Gb/s, QSFP56, 3m, yellow pulltab
HDR	MCA1J00-H004E*	NVIDIA Active Copper cable, IB HDR, up to 200Gb/s, QSFP56, 4m, yellow pulltab
HDR	MMA1T00-HS	NVIDIA transceiver, HDR, QSFP56, MPO, 850nm, SR4, up to 100m
HDR	MFS1S00-H130E	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 130m
HDR	MFS1S00-H003-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 3m
HDR	MFS1S00-H005-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 5m
HDR	MFS1S00-H010-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 10m
HDR	MFS1S00-H015-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 15m
HDR	MFS1S00-H020-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 20m
HDR	MFS1S00-H030-LL	NVIDIA active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, low latency, 30m
HDR	MCP7Y60-H001	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 1m
HDR	MCP7Y60-H002	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 2m
HDR	MCP7Y60-H01A	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 1.5m
HDR	MCP7Y70-H001	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 4x100Gb/s, OSFP to 4xQSFP56, 1m
HDR	MCP7Y70-H002	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 4x100Gb/s, OSFP to 4xQSFP56, 2m
HDR	MCP7Y70-H01A	NVIDIA passive copper splitter cable, IB twin port HDR 400Gb/s to 4x100Gb/s, OSFP to 4xQSFP56, 1.5m
HDR	MFA7U10-H003	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 3m
HDR	MFA7U10-H005	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 5m
HDR	MFA7U10-H010	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 10m
HDR	MFA7U10-H015	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 15m
HDR	MFA7U10-H020	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 20m

Speed	Cable OPN #	Description
HDR	MFA7U10-H030	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 30m
HDR	MFA7U10-H050	NVIDIA AOC splitter, IB twin port HDR, 400Gb/s to 2x200Gb/s, OSFP to 2xQSFP56, 50m

⚠ HDR links raise with RS_FEC.

⚠ *These cables were approved for switch-to-switch connectivity. For switch-to-host connectivity there may be some issues. See Known Issue 2073222/1959529 (see Known Issues)

3.3.2 Validated and Supported EDR / 100Gb/s Cables

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

Speed	Cable OPN	Description
EDR	MFA1A00-E001	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 1m
EDR	MFA1A00-E003	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m
EDR	MFA1A00-E005	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 5m
EDR	MFA1A00-E010	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 10m
EDR	MFA1A00-E015	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 15m
EDR	MFA1A00-E020	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 20m
EDR	MFA1A00-E030	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 30m
EDR	MFA1A00-E050	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 50m
EDR	MFA1A00-E100	NVIDIA active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 100m
EDR	MMA1B00-E100	NVIDIA transceiver, IB EDR, up to 100Gb/s, QSFP28, MPO, 850nm, SR4, up to 100m
EDR	MFA1A00-E003-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 3m
EDR	MFA1A00-E005-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 5m
EDR	MFA1A00-E010-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 10m
EDR	MFA1A00-E015-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 15m
EDR	MFA1A00-E020-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 20m
EDR	MFA1A00-E030-TG	NVIDIA customized active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, 30m
EDR	MMA1L30-CM	NVIDIA optical module, 100Gb/s, QSFP28, LC-LC, 1310nm, CWDM4, up to 2km
EDR	MMS1C10-CM	NVIDIA active optical module, 100Gb/s, QSFP, MPO, 1310nm, PSM4, up to 500m

⚠ EDR links raise with RS-FEC.

3.3.3 Validated and Supported FDR Cables

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

3.3.4 Validated and Supported 1GbE Cables

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

3.4 Tested Switches

3.5 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.

4 Changes and New Features

4.1 Important Notes

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

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

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

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

4.2 Changes and New Feature in this Firmware Version

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

4.3 Unsupported Features and Commands

4.3.1 Unsupported Features

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

- The following service types:
  - SyncUMR
  - Mellanox transport
  - RAW IPv6
- INT-A not supported for EQs only MSI-X

- PCI VPD write flow (RO flow supported)
- Streaming Receive Queue (STRQ) and collapsed CQ
- Subnet Manager (SM) on VFs
- RoCE LAG in Multi-Host/Socket-Direct

4.3.2 Unsupported Commands

- QUERY_MAD_DEMUX
- SET_MAD_DEMUX
- CREATE_RQ - MEMORY_RQ_RMP
- MODIFY_LAG_ASYNC_EVENT

5 Bug Fixes in this Firmware Version

For a list of old Bug Fixes, please see Bug Fixes History.

Internal Ref.	Issue
3673153	**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.
	Keywords: TCP IPv4 flows
	Discovered in Version: 22.35.3006
	Fixed in Release: 22.35.3502

6 Known Issues

VF Network Function Limitations in SRIOV Legacy Mode

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

VF Network Function Limitations in Switchdev Mode

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

VF+SF Network Function Limitations in Switchdev Mode

Dual Port Device	Single Port Device
• 127 VF per PF (254 functions) • 512 PF+VF+SF per PF (1024 functions)	• 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	**Description:** Unexpected system behavior might be observed if the driver is loaded while reset is in progress.
	Workaround: N/A
	Keywords: Sync 1 reset, firmware reset
	Discovered in Version: 22.35.3006
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
	Workaround: To be able to identify the ConnectX-6 DE ID, run one of the commands below: • mlxfwmanager • mlxvpd (or mlxburn -vpd)
	Keywords: Device ID
	Discovered in Version: 22.32.2306
2850003	**Description:** Occasionally, when rising a logical link, the link recovery counter is increase by 1.
	Workaround: N/A
	Keywords: Link recovery counter
	Discovered in Version: 22.32.2306

7 PreBoot Drivers (FlexBoot/UEFI)

7.1 FlexBoot Changes and New Features

For further information, please refer to the FlexBoot Release Notes.

7.2 UEFI Changes and Major New Features

For further information, please refer to the UEFI Release Notes.

8 Supported Non-Volatile Configurations

Configuration	mlxconfig Parameter Name	Class	TLV ID
NV_MEMIC_CONF	MEMIC_BAR_SIZE	GLOBAL (0)	0x6
	MEMIC_SIZE_LIMIT		
NV_HOST_CHAINING_CONF	HOST_CHAINING_MODE		0x8
	HOST_CHAINING_DESCRIPTORS		
	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_DESCRIPTORS		0x13
	ESWITCH_HAIRPIN_TOT_BUFFER_SIZE		
NV_GLOBAL_PCI_CONF	NON_PREFETCHABLE_PF_BAR		0x80
	NUM_OF_VFS		
	SRIOV_EN		
	PF_LOG_BAR_SIZE		
	VF_LOG_BAR_SIZE		
	NUM_PF_MSIX		
	NUM_VF_MSIX		
NV_TPT_CONF	INT_LOG_MAX_PAYLOAD_SIZE		0x82
NV_POWER_CONF	SW_RECOVERY_ON_ERRORS		0x88
	RESET_WITH_HOST_ON_ERRORS		
	ADVANCED_POWER_SETTINGS		
NV_GLOBAL_MASK	ece_disable_mask		0x116
NV_SW_OFFLOAD_CONFIG	CQE_COMPRESSION		0x10a
	IP_OVER_VXLAN_EN		
	PCI_ATOMIC_MODE		
	LRO_LOG_TIMEOUT0		
	LRO_LOG_TIMEOUT1		
	LRO_LOG_TIMEOUT2		
	LRO_LOG_TIMEOUT3		
	log_max_outstandng_wqe		
	NV_config.sr_enable (ConnectX-6 Dx and above)		
NV_IB_DC_CONF	LOG_DCR_HASH_TABLE_SIZE		0x190

Configuration	mlxconfig Parameter Name	Class	TLV ID
	DCR_LIFO_SIZE		
NV_VPI_LINK_TYPE	LINK_TYPE	PHYSICAL_PORT (2)	0x12
NV_ROCE_CC	ROCE_CC_PRIO_MASK		0x107
	ROCE_CC_ALGORITHM		
NV_ROCE_CC_ECN	CLAMP_TGT_RATE_AFTER_TIME_INC		0x108
	CLAMP_TGT_RATE		
	RPG_TIME_RESET		
	RPG_BYTE_RESET		
	RPG_THRESHOLD		
	RPG_MAX_RATE		
	RPG_AI_RATE		
	RPG_HAI_RATE		
	RPG_GD		
	RPG_MIN_DEC_FAC		
	RPG_MIN_RATE		
	RATE_TO_SET_ON_FIRST_CNP		
	DCE_TCP_G		
	DCE_TCP_RTT		
	RATE_REDUCE_MONITOR_PERIOD		
	INITIAL_ALPHA_VALUE		
	MIN_TIME_BETWEEN_CNPS		
	CNP_802P_PRIO		
	CNP_DSCP		
NV_LLDP_NB_CONF	LLDP_NB_DCBX		0x10a
	LLDP_NB_RX_MODE		
	LLDP_NB_TX_MODE		
NV_LLDP_NB_DCBX	DCBX_IEEE		0x18e
	DCBX_CEE		
	DCBX_WILLING		
NV_KEEP_LINK_UP	KEEP_ETH_LINK_UP		0x190
	KEEP_IB_LINK_UP		
	KEEP_LINK_UP_ON_BOOT		
	KEEP_LINK_UP_ON_STANDBY		
NV_QOS_CONF	NUM_OF_VL		0x192

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

9 Release Notes History

9.1 Changes and New Feature History

⚠ This section includes history of changes and new feature of 3 major releases back. For older releases history, please refer to the relevant firmware versions.

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22.35.3006	
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HPCC: Support per-IP and per-QP Methods	Enables the user to configure the PCC algorithm shaper coalescing mode using nvconfig to select CC algorithm shaper coalescing for IB and ROCE. The new parameters are `IB_CC_SHAPER_COALESCE` and `ROCE_CC_SHAPER_COALESCE`.
Bug Fixes	See *Bug Fixes in this Firmware Version* section.

Feature/Change	Description
22.35.2302	
Bug Fixes	See *Bug Fixes in this Firmware Version* section.

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

Feature/Change	Description
22.35.1012	
HPCC, Programmable Congestion Control	HPCC related configurations in is now supported via the mlxconfig utility.
UDP	Added support for copy modify header steering action to/from the UDP field.

Feature/Change	Description
22.35.1012	
Range based Lookup	Added support for range based lookup. This new capability is available using the following new PRM command: GENERATE WQE which receives GTA WQE, the command supports "match on range" and num_hash_definer=[1,2] and num_match_ste=[1,2]. For further information, refer to section "RTC Object Format" in the PRM.
RoCE based VM Migration	Added support for RoCE based VM migration.
Resource Dump	Added the following resource dump segments: • SEG_HW_STE_FULL that includes dump to STE and all its dependencies • SEG_FW_STE_FULL that include dump to FW_STE and to HW_STE_FULL in range
Striding WQE - Headroom and Tail-room	As the software requires additional space before and after a packet is scattered for its processing for stridden RQ, the hardware will allocate the required room while scattering packets to spare a copy.
Connections per Second (CPS)	Improved security offload's Connections per Second (CPS) rate using the general object DEK (PSP TLS etc).
VF Migration Flow	Added support for pre-copy commands in VF migration flow in order to reduce the migration downtime.
VF Migration Flow	Optimized performance to support full VF migration flow.
VirtIO vDPA Performance Virtualization	Increased the VirtIO hardware offload message rate to 20/20 MPPS for 256 virtual devices by optimizing the datapath application code.
RoCE: Adaptive Timer	Enabled ADP timer to allow the user to configure RC or DC qp_timeout values lower than 16.
QoS Priority Trust Default State	QoS priority trust default state can now be changed using the new nvconfig below: • QOS_TRUST_STATE_P1 • QOS_TRUST_STATE_P2 The values that can be used to set the default state are: • TRUST_PORT • TRUST_PCP • TRUST_DSCP • TRUST_DSCP_PCP
Bug Fixes	See *Bug Fixes in this Firmware Version* section.

Feature/Change	Description
22.32.2306	
Generic	This is the initial version of the ConnectX-6 DE firmware Release Notes. ConnectX-6 DE has the same feature set as ConnectX-6 adapter card.

9.2 Bug Fixes History

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

Internal Ref.	Issue
3308132	**Description:** Improved physical layer performance by modifying transmitter parameters that caused link up time issues when connected to few optical cable vendors.
	Keywords: Optical cables, performance
	Discovered in Version: 22.35.1012
	Fixed in Release: 22.35.2302

Internal Ref.	Issue
3217896	**Description:** Fixed RDE PATCH operation status code reported in case the property is "read-only".
	Keywords: RDE
	Discovered in Version: 22.35.1012
	Fixed in Release: 22.35.2000
3241357	**Description:** Fixed an issue in MCTP-over-PCIe, where the VDM message with the type Route-to-Root Complex, the target ID was not set as 0x0.
	Keywords: MCTP-over-PCIe, VDM message
	Discovered in Version: 22.35.1012
	Fixed in Release: 22.35.2000
3215393	**Description:** Fixed an issue that caused the virtual QoS mechanism to stop traffic from reaching the full line rate of 200GbE on each direction when LAG was enabled.
	Keywords: Virtual QoS mechanism, 200GbE, LAG
	Discovered in Version: 22.35.1012
	Fixed in Release: 22.35.2000
3218394	**Description:** Fixed pre-copy issues that occurred when in live migration.
	Keywords: Live migration, pre-copy
	Discovered in Version: 22.35.1012
	Fixed in Release: 22.35.2000

Internal Ref.	Issue
3177699	**Description:** Improved both TP1a compliance and Physical-layer performance. TX and PLL settings were changed to comply with IEEE 802.3bs TP1a and improved link margins.
	Keywords: Performance
	Discovered in Version: 22.34.1002
	Fixed in Release: 22.35.1012
3227873	**Description:** Fixed an issue that caused RDE (Redfish) PATCH operation to `LLDPTransmit` properties `"ManagementAddressIPv4", "ManagementAddressIPv6"` and `"ManagementAddressMAC"` to be applied only in the first attempt but failed in the next.
	Keywords: RDE (Redfish) PATCH operation

Internal Ref.	Issue
	Discovered in Version: 22.34.1002
	Fixed in Release: 22.35.1012
3172302	**Description:** Fixed an issue that caused the commands sent by the MLNX_OFED driver to the NIC to fail when loading the VirtIO driver.
	Keywords: vDPA, virtio-net full emulation
	Discovered in Version: 22.34.1002
	Fixed in Release: 22.35.1012
3180138	**Description:** Enabled the firmware to distribute loopback QPs/SQs between all LAG ports during the initial distribution in steering LAG.
	Keywords: Loopback QPs/SQs
	Discovered in Version: 22.34.1002
	Fixed in Release: 22.35.1012
3056546	**Description:** Fixed an issue that due to a firmware limitation, enabling tx_port_ts resulted in syndrome 0x5d2974.
	Keywords: tx_port_ts
	Discovered in Version: 22.34.1002
	Fixed in Release: 22.35.1012
3184625	**Description:** Fixed an issue that caused PLDM AEN event receiver media to be changed unexpectedly and destination BDF to be overridden with garbage when some PLDM packet were received from the SMBus layer.
	Keywords: PLDM AEN event receiver media
	Discovered in Version: 22.34.1002
	Fixed in Release: 22.35.1012
3194359	**Description:** Fixed PCIe SKP OS generation interval for Gen1 and Gen2.
	Keywords: PCIe SKP
	Discovered in Version: 22.34.1002
	Fixed in Release: 22.35.1012
3110378	**Description:** CPU handling synchronization requires separation (run ptp4l with taskset -c [cpu #] prefix) while running heavy traffic.
	Keywords: CPU allocation, PTP synchronization
	Discovered in Version: 22.34.1002
	Fixed in Release: 22.35.1012
3177570	**Description:** Changed the Tx setting for optics HDR to improve compliance margins.
	Keywords: Tx setting, HDR, compliance margins
	Discovered in Version: 22.33.1048
	Fixed in Release: 22.35.1012

Internal Ref.	Issue
2785026	**Description:** Fixed a rare case that caused the QP not to receive a completion.
	Keywords: QP
	Discovered in Version: 22.32.1010
	Fixed in Release: 22.33.1048
2899540	**Description:** Resolved vDPA traffic unbalance issue in active-backup VF LAG mode.
	Keywords: VDPA, LAG
	Discovered in Version: 22.32.1010
	Fixed in Release: 22.33.1048
2802943	**Description:** Implemented SLD detection code. Surprise Down Error Reporting Capable value was changed from 1 to 0 in boards where the downstream perst was not controlled thus causing SLD detection not to function properly.
	Keywords: SLD detection, Surprise Down Error Reporting Capable
	Discovered in Version: 22.32.1010
	Fixed in Release: 22.33.1048
2900228	**Description:** Fixed an issue that occured after powering off DC in Multi-Host system which resulted in OOB connection to the BMC getting lost (and fatal error appeared) due to a firmware bug in the PCIe flush flow. The issue was fixed by increasing the flush time and not waiting for PCIe credits to return to default values.
	Keywords: PCIe LTSSM, surprise power down
	Discovered in Version: 22.32.1010
	Fixed in Release: 22.33.1048
2373274	**Description:** Fixed a rare HW/FW timing race of serdes' power-up sequence.
	Keywords: Power consumption
	Discovered in Version: 22.32.1010
	Fixed in Release: 22.33.1048
2513453	**Description:** Fixed rare lanes skew issue that caused CPU to timeout in Rec.idle.
	Keywords: PCIe
	Discovered in Version: 22.32.1010
	Fixed in Release: 22.33.1048
2903895	**Description:** Fixed an issue that resulted in temporary packet drops while changing PTP/FCS configuration when the links were up.
	Keywords: PTP/FCS configuration, packet drops
	Discovered in Version: 22.32.1010
	Fixed in Release: 22.33.1048
2932436	**Description:** Optimized the virtio data path to reach line speed for Tx bandwidth.
	Keywords: VDPA, virtio full emulation
	Discovered in Version: 22.32.1010
	Fixed in Release: 22.33.1048

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

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