Mellanox Quantum™ Firmware Release Notes

Rev 27.2000.1400

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Document Update History

Table 1 - Release Update History

Revision	Date	Description
Rev 27.2000.1400	May 30, 2019	Initial release of this firmware version. This version introduces Changes and New Features (see Section 2, "Changes and New Features," on page 8)

1 Introduction

These are the release notes for the Mellanox Quantum™ firmware, Rev 27.2000.1400. This firmware complements the Mellanox Quantum™ switch with a set of advanced features, allowing easy and remote management of the switch.

This firmware supports the following protocols:

- InfiniBand - SDR, EDR, HDR

1.1 Supported Switch Systems

This firmware supports the devices listed in Table 2. For the most updated list of switches supported, visit the Firmware Download pages on Mellanox.com.

Table 2 - Supported Switch Systems

Model Number	Description
MQM8790	Mellanox Quantum ™ 40-port Non-blocking Externally Managed HDR 200Gb/s InfiniBand Smart Switch

1.2 Firmware Interoperability

This firmware version has been validated to work against platforms with the following firmware and software versions.

Table 3 - Firmware Interoperability

HCA/Switch	Firmware Version
Switch-IB	11.2000.1142
Switch-IB 2	15.2000.1142
ConnectX®-6	20.25.2002
ConnectX®-5 Ex	16.25.x000
ConnectX®-5	16.25.x000
ConnectX®-4	12.25.x000
ConnectX®-3 Pro	2.42.5000
ConnectX®-3	2.42.5000
Connect-IB®	10.16.1200
MFT	4.12.0

Note: The minimal required ConnectX-6 firmware version is 20.25.1532.

1.3 Supported Cables

1.3.1 Validated and Supported EDR Cables

Table 4 - Validated and Supported EDR Cables

Speed	Cable OPN #	Description
EDR	MCP1600-E001	Mellanox Passive Copper Cable VPI 100GB/S QSFP LSZH 1M
EDR	MCP1600-E002	Mellanox Passive Copper Cable VPI 100GB/S QSFP LSZH 2M
EDR	MCP1600-E00A	Mellanox Passive Copper Cable VPI 100GB/S QSFP LSZH 0.5M
EDR	MFA1A00-E010	Mellanox Active Fiber Cable, VPI, up to 100Gb/s, QSFP, 10m
EDR	MFA1A00-E015	Mellanox Active Fiber Cable, VPI, up to 100Gb/s, QSFP, 15m
EDR	MCP1OPT-E002	Mellanox® Passive Copper cable, VPI, up to 100Gb/s, QSFP, LSZH, 2m

Note: EDR links raise with RS_FEC.

1.3.2 Validated and Supported HDR Cables

Table 5 - Validated and Supported HDR Cables

Speed	OPN # / Name	Description
HDR	MCP1650-H001E30	Mellanox® Passive Copper cable, IB HDR, up to 200Gb/s, QSFP28, PVC, 1m, white pultab, 30AWG
HDR	MCP1650-H002E26	Mellanox Passive Copper Cable, IB HDR, up to 200GB/S, QSFP56, LSZH, 2M, black pultab, 26AWG
HDR	MCP1650-H00AE30	Mellanox Passive Copper Cable, IB HDR, up to 200GB/S, QSFP56, LSZH, 0.5M, black pultab, 30AWG
HDR	MCP7H50-H001R30	Mellanox® Passive Copper hybrid cable, IB HDR 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56, LSZH, colored pulltabs, 1m, 30AWG
HDR	MFS1S00-H003E	Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 3m
HDR	MFS1S00-H005E	Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 5m
HDR	MFS1S00-H010E	Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 10m
HDR	MFS1S00-H100E	Mellanox® active fiber cable, IB HDR, up to 200Gb/s, QSFP56, LSZH, black pulltab, 100m
HDR	MFS1S50-H0xxE	Mellanox® active fiber splitter cable, IB HDR, 200Gb/s to 2x100Gb/s, QSFP56 to 2xQSFP56 , LSZH, up to 30m
HDR	MFS1S90-H003E	Mellanox® active fiber splitter cable, IB HDR, 2x200Gb/s to 2x200Gb/s, 2xQSFP56 to 2xQSFP56, LSZH, 3m

Note: HDR links raise with RS_FEC.

1.3.3 Supported Link Speed

The table below lists the current supported link speed.

Table 6 - Supported Link Speed

Speed	Cable	Cable Length	Limitations
SDR	Optical	Up to 100M	
	Copper	Up to 2M	
QDR	Not Supported		
FDR	Not Supported		
EDR	Optical	Up to 100M	**Note:** HDR optical cables support only HDR speed. Thus, when mask is configured to HDR, the link is not raised when connecting to EDR devices.
	Copper	Up to 3M	
HDR	Optical	Up to 100M	**Note:** HDR link up time may take 6 minutes or more (up to 20 minutes).
	Copper	Up to 2M	

1.4 Firmware Upgrade

Firmware upgrade may be performed directly from any previous version to this version. To upgrade firmware, please refer to the Mellanox Firmware Tools (MFT) package at:

http://www.mellanox.com/page/management_tools

1.5 PRM Revision Compatibility

Firmware Rev 27.2000.1400 complies with the Mellanox Switches Programmer's Reference Manual (PRM), Rev 1.40 or later.

2 Changes and New Features

Table 7 - Changes and New Features

Category	Description
Release 27.2000.1400	
Link Speed	HDR speed rate is at GA level.
Cables	Added support for Break-Out Cable auto-sensing.

3   Known Issues

The following sections describe known issues in this firmware release and possible workarounds.

Table 8 - Known Issues

Internal Ref.	Issue
1778837	**Description:** When using a copper splitter cable up to 2m length in HDR100 mode, traffic may drop.
	Workaround: N/A
	Keywords: Cable, HDR100
1774870	**Description:** Link flapping and packet loss during High/Low temperature changes.
	Workaround: N/A
	Keywords: Link
1761271	**Description:** Link is down while connecting a ConnectX-5/ConnectX-6 adapter cards to a Quantum switch system while using a CWDM4 AOM cable.
	Workaround: N/A
	Keywords: Modules/Cables
1563590	**Description:** LR4 modules are currently not supported.
	Workaround: N/A
	Keywords: Modules/Cables
1718734/ 1723236/ 1718645/1710631	**Description:** On rare occasions, HDR link may not raise properly when using optical cables.
	Workaround: Toggling the link will solve the issue.
	Keywords: HDR link
1698990	**Description:** HDR link up time when using optical cables may take 6 minutes or more (up to 20 minutes).
	Workaround: N/A
	Keywords: HDR, optical cables, link up times
-	**Description:** The supported length of HDR copper cables is currently up to 2M.
	Workaround: N/A
	Keywords: HDR cables
-	**Description:** In some cases, the Raw BER may be high (e.g. 10e-6). The Effective BER (after FEC) is expected to be low (e.g. 10e-14 or lower), however, occasionally it may be higher.
	Workaround: N/A
	Keywords: Cables
-	**Description:** Splitter Optics: both split ports must be opened at the same HDR rate speed.
	Workaround: N/A
	Keywords: Break-Out cables
-	**Description:** HDR optical cables support only HDR speed.
	Workaround: N/A
	Keywords: Link Speed, cables

Table 8 - Known Issues

Internal Ref.	Issue
-	**Description:** On rare occasions, port 21 may not link up.
	Workaround: N/A
	Keywords: Link up
-	**Description:** The following features are currently not supported on Mellanox Quantum™ based systems: • Mellanox Scalable Hierarchical Aggregation and Reduction Protocol (SHARP)™ • IB Router • Congestion Control • Voltage reading via MVCR
	Workaround: N/A
	Keywords: Mellanox Quantum
-	**Description:** When using Mellanox AOC cables longer than 50m use one VL to achieve full wire speed.
	Workaround: N/A
	Keywords: Cables
955641	**Description:** VL_HIGH_LIMIT is not affecting the VL arbiter as expected.
	Workaround: Arbitration table should be set using only the low priority VL arbitration table.
	Keywords: VL Arbitration
1249608	**Description:** Configuring weight "0" for VL, results in unexpected behavior.
	Workaround: Arbitration table should be configured with weights other than "0".
	Keywords: VL Arbitration
-	**Description:** Module info page in Diagnostics Data VS-MAD is not supported
	Workaround: N/A
	Keywords: Diagnostics Data VS-MAD

4   Bug Fixes History

Table 9 lists the bugs fixed in this release.

Table 9 - Bug Fixes History

Internal Ref.	Issues
1534459	**Description:** When working with 8 VLs, TP does not function due to buffers' configuration.
	Keywords: VLs, latency, performance
	Discovered in Version: 27.2000.1100
	Fixed in Release: 27.2000.1400
1605587	**Description:** Fixed an issue that cause the green port LED to blink in the same frequency regardless of the link speed rate set.
	Keywords: Port LED
	Discovered in Version: 27.1910.0618
	Fixed in Release: 27.2000.1142
1598550	**Description:** Fixed an issue that prevented the port from being split when the request (command) was sent from the NV config tool.
	Keywords: Split Port
	Discovered in Version: 27.1910.0618
	Fixed in Release: 27.1910.0620

5 Firmware Changes and New Features History

Table 10 - Firmware Changes and New Features History

Category	Description
Release 27.2000.1142	
Link Speed	HDR link stability enhancements. **Note:** HDR is at beta level.
Release 27.2000.1012	
Link Speed	HDR speed rate is currently at Beta level.
Release 27.2000.1004	
Link Speed	Stability improvements for HDR link.
Subnet Manager (Adaptive Routing)	Added support for Adaptive Routing. Adaptive routing (AR) allows optimizing data traffic flow. The InfiniBand protocol uses multiple paths between any two points. Thus, when unexpected traffic patterns cause some paths to be overloaded, AR can automatically move traffic to less congested paths according to the current temporal state of the network.
Adaptive Routing	Added support for Private Linear Forwarding Tables (PLFT). This capability helps SM to optimize traffic.
Release 27.1930.0016	
Link speed	Added support for EDR rate speed. **Note:** For MLNX-OS software version (3.7.1074) to properly work, you must use Quantum unmanaged firmware v27.1930.0016 and above, and ConnectX-6 firmware v20.99.6044 and above.
Release 27.1930.0012	
Cables	Added support for Copper cables up to 2m at HDR speed.
	Added support for Optic cables up to 100m at HDR speed.
	Added support for break-out cables for both copper and optics, at HDR speed.
Release 27.1920.0016	
Link Speed	HDR link rise time optimizations.
Release 27.1920.0012	
Power Consumption	Improved Quantum switch based system' power consumption.
Release 27.1920.0008	
Link Speed	**[Alpha Quality]** Added support for HDR speed when using optical cables to connect between switches (switch to switch connection).
Release 27.1920.000	
Link Speed	**[Alpha Quality]** Added support for 3 & 10 meter optical cables when in loopback mode at HDR link speed on the front end (edge) ports only.
	[Alpha Quality] Added support for 1 & 15 meter HDR copper cables when connected to a ConnectX-6 adapter cards at EDR link speed.
Release 27.1910.0	
Bug Fixes	See Section 4, "Bug Fixes History," on page 11

Table 10 - Firmware Changes and New Features History

Category	Description
Release 27.1910.0618	
General	This is the initial GA firmware version for Mellanox Quantum™ 40-port Non-blocking Externally Managed HDR 200Gb/s InfiniBand Smart Switch (MQM8790). **Note:** This firmware version supports SDR and EDR speeds only.
Split Port	Enables the user to split a single physical quad-lane QSFP port into 2 dual-lane ports using the break-out cable.