



Mellanox Quantum™ Firmware Release Notes

Rev 27.2000.2306

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Document Update History

Table 1 - Release Update History

Revision	Date	Description
Rev 27.2000.2306	October 22, 2019	Initial release of this firmware version. This version introduces Bug Fixes (see Section 4, “Bug Fixes History,” on page 12)

1 Introduction

These are the release notes for the Mellanox Quantum™ firmware, Rev 27.2000.2306. 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,QDR, FDR 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
Quantum	27.2000.2306
Switch-IB	11.2000.2046
Switch-IB 2	15.2000.2046
ConnectX®-6	20.26.1040
ConnectX®-5 Ex	16.26.1040
ConnectX®-5	16.26.1040
ConnectX®-4	12.26.1040
ConnectX®-3 Pro	2.42.5000
ConnectX®-3	2.42.5000
Connect-IB®	10.16.1200
MFT	4.13.0



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

1.3 Supported Cables

1.3.1 Validated and Supported FDR Cables

Table 4 - Validated and Supported FDR Cables

Speed	Cable OPN #	Description
FDR	MC2207310-003	Mellanox® Active Fiber Cable, VPI, up to 56Gb/s, QSFP, 3m
FDR	MC2207310-010	Mellanox® Active Fiber Cable, VPI, up to 56Gb/s, QSFP, 10m
FDR	MC2207310-015	Mellanox® Active Fiber Cable, VPI, up to 56Gb/s, QSFP, 15m
FDR	MC2207310-100	Mellanox® Active Fiber Cable, VPI, up to 56Gb/s, QSFP, 100m

1.3.2 Validated and Supported EDR Cables

Table 5 - 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	MFA1A00-E100	Mellanox Active Fiber Cable, VPI, up to 100Gb/s, QSFP, 100m
EDR	MCP1OPT-E002	Mellanox® Passive Copper cable, VPI, up to 100Gb/s, QSFP, LSZH, 2m



Note: EDR links raise with RS_FEC.

1.3.3 Validated and Supported HDR Cables

Table 6 - 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

Table 6 - Validated and Supported HDR Cables

Speed	OPN # / Name	Description
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.

1.3.4 Supported Link Speed

The table below lists the current supported link speed.

Table 7 - Supported Link Speed

Speed	Cable	Cable Length	Limitations
SDR	Optical	Up to 100M	
	Copper	Up to 2M	
QDR	Optical	3/10/15/100M	Note: QDR speed is only supported when using FDR cables. See Table 4, “Validated and Supported FDR Cables,” on page 6.
FDR	Optical	3/10/15/100M	
EDR	Optical	Up to 100M	
	Copper	Up to 3M	
HDR	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 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 27.2000.2306 complies with the Mellanox Switches Programmer's Reference Manual (PRM), Rev 1.40 or later.

2 Changes and New Features

Table 8 - Changes and New Features

Category	Description
Release 27.2000.2306	
Cables	Bug Fixes (see Section 4, “Bug Fixes History,” on page 12)

3 Known Issues

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

Table 9 - Known Issues

Internal Ref.	Issue
1886809	Description: FDR speed in Quantum-base switches is supported only when using optical cables 10m\15m\30m and only on ports: #7, #9 - #30.
	Workaround: N/A
	Keywords: Cables, ports, speed
1713747	Description: When using splitter HDR optical cables, toggling the upper port causes the lower port to be toggled as well.
	Workaround: N/A
	Keywords: Cables, port toggling
1856717	Description: High BER may occur when connecting cables of type 0.5/1m DAC to an HDR speed.
	Workaround: N/A
	Keywords: Cables
1761271	Description: CWDM4 AOM cable is currently not supported on Quantum switch systems.
	Workaround: N/A
	Keywords: Modules/Cables
1563590	Description: LR4 modules are currently not supported.
	Workaround: N/A
	Keywords: Modules/Cables
-	Description: The supported length of HDR copper cables is currently up to 2M.
	Workaround: N/A
	Keywords: HDR cables
	Description: Although the effective BER (after FEC) is expected to meet our design targets (e.g. 10e-14 or lower), occasionally it may be higher.
	Workaround: N/A
	Keywords: Cables
-	Description: HDR optical cables and Split cables support only HDR speed.
	Workaround: N/A
	Keywords: Link Speed, cables, Break-Out cables
-	Description: The following features are currently not supported on Mellanox Quantum™ based systems: <ul style="list-style-type: none"> • IB Router • Congestion ControlVoltage 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

Table 9 - Known Issues

Internal Ref.	Issue
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 10 lists the bugs fixed in this release.

Table 10 - Bug Fixes History

Internal Ref.	Issues
1834740	Description: Fixed an issue that resulted in high BER when using optical module with module firmware older than 37.50.316.
	Keywords: Optical cables, BER, cables firmware
	Discovered in Version: 27.2000.2182
	Fixed in Release: 27.2000.2306
1899441	Description: Fixed an issue that caused the packets to be transmitted from a wrong output port due to a wrong configuration of the packet classification decision in the switch forwarding database cache key, that caused both AR eligible packets and AR ineligible packets to hit the same cache entry.
	Keywords: Switch forwarding, Adaptive Routing
	Discovered in Version: 27.2000.2046
	Fixed in Release: 27.2000.2182
1885460	Description: On rare occasions, and under high SHARP load, switch SHARP operation might get stuck.
	Keywords: SHARP
	Discovered in Version: 27.2000.2046
	Fixed in Release: 27.2000.2182
1859715	Description: The bandwidth on MFS1S00-H050E cables is 99G/s and on MFS1S00-H100E cables is 67Gb/s when connecting at HDR speed to an HDR switch.
	Keywords: Cables
	Discovered in Version: 27.2000.1886
	Fixed in Release: 27.2000.2046
1797452	Description: A port may hang while Link-Maintenance runs on it and the second port's link is toggled.
	Keywords: Link-Maintenance, port toggling
	Discovered in Version: 27.2000.1600
	Fixed in Release: 27.2000.1886
1698990	Description: HDR link up time when using optical cables may take 6 minutes or more (up to 20 minutes).
	Keywords: HDR, optical cables, link up times
	Discovered in Version: 27.2000.1100
	Fixed in Release: 27.2000.1886
1718734/ 1723236/ 1718645/ 1710631	Description: On rare occasions, HDR link may not raise properly when using optical cables.
	Keywords: HDR link
	Discovered in Version: 27.2000.1012
	Fixed in Release: 27.2000.1600
1774870	Description: Link flapping and packet loss during High/Low temperature changes.
	Keywords: Link
	Discovered in Version: 27.2000.1400
	Fixed in Release: 27.2000.1600

Table 10 - Bug Fixes History

Internal Ref.	Issues
1778837	Description: When using a copper splitter cable up to 2m length in HDR100 mode, traffic may drop.
	Keywords: Cable, HDR100
	Discovered in Version: 27.2000.1400
	Fixed in Release: 27.2000.1600
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 11 - Firmware Changes and New Features History

Category	Description
Release 27.2000.2182	
General	Bug Fixes (see Section 4, “Bug Fixes History,” on page 12)
Release 27.2000.2046	
Mellanox Scalable Hierarchical Aggregation and Reduction Protocol (SHARP) [™]	[Beta] Mellanox Scalable Hierarchical Aggregation and Reduction Protocol (SHARP) [™] technology improves the performance of MPI operations by offloading collective operations from the CPU to the switch network, and by eliminating the need to send data multiple times between endpoints.
Link Speed	Added QDR/FDR support in Quantum switch systems when using optical cables of up to 30m. Note: QDR speed is only supported when using the FDR cables. See Table 4, “Validated and Supported FDR Cables,” on page 6
Cables	Removed PLR from active cables longer than 30m.
Release 27.2000.1886	
Physical Layer Retransmission (PLR)	Added support to the Physical Layer Retransmission (PLR) functionality for HDR speed.
Link Speed	Link-up time improvements. The link up time is up to 60 sec
Release 27.2000.1600	
General	Bug Fixes (see Section 4, “Bug Fixes History,” on page 12)
Release 27.2000.1400	
Link Speed	HDR speed rate is at GA level.
Cables	Added support for Break-Out Cable auto-sensing.
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.

Table 11 - Firmware Changes and New Features History

Category	Description
Release 27.1930.0016	
Link speed	<p>Added support for EDR rate speed.</p> <p>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.</p>
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 12
Release 27.1910.0618	
General	<p>This is the initial GA firmware version for Mellanox Quantum™ 40-port Non-blocking Externally Managed HDR 200Gb/s InfiniBand Smart Switch (MQM8790).</p> <p>Note: This firmware version supports SDR and EDR speeds only.</p>
Split Port	Enables the user to split a single physical quad-lane QSFP port into 2 dual-lane ports using the break-out cable.