



Mellanox SwitchX® Firmware Release Notes

Rev 9.3.4000

Last Modified: May 22, 2015

NOTE:

THIS HARDWARE, SOFTWARE OR TEST SUITE PRODUCT (“PRODUCT(S)”) AND ITS RELATED DOCUMENTATION ARE PROVIDED BY MELLANOX TECHNOLOGIES “AS-IS” WITH ALL FAULTS OF ANY KIND AND SOLELY FOR THE PURPOSE OF AIDING THE CUSTOMER IN TESTING APPLICATIONS THAT USE THE PRODUCTS IN DESIGNATED SOLUTIONS. THE CUSTOMER'S MANUFACTURING TEST ENVIRONMENT HAS NOT MET THE STANDARDS SET BY MELLANOX TECHNOLOGIES TO FULLY QUALIFY THE PRODUCT(S) AND/OR THE SYSTEM USING IT. THEREFORE, MELLANOX TECHNOLOGIES CANNOT AND DOES NOT GUARANTEE OR WARRANT THAT THE PRODUCTS WILL OPERATE WITH THE HIGHEST QUALITY. ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT ARE DISCLAIMED. IN NO EVENT SHALL MELLANOX BE LIABLE TO CUSTOMER OR ANY THIRD PARTIES FOR ANY DIRECT, INDIRECT, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES OF ANY KIND (INCLUDING, BUT NOT LIMITED TO, PAYMENT FOR PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY FROM THE USE OF THE PRODUCT(S) AND RELATED DOCUMENTATION EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.



Mellanox Technologies
 350 Oakmead Parkway Suite 100
 Sunnyvale, CA 94085
 U.S.A.
www.mellanox.com
 Tel: (408) 970-3400
 Fax: (408) 970-3403

Mellanox Technologies, Ltd.
 Hakidma 26
 Ofer Industrial Park
 Yokneam 2069200
 Israel
www.mellanox.com
 Tel: +972 (0)74 723 7200
 Fax: +972 (0)4 959 3245

© Copyright 2015. Mellanox Technologies. All Rights Reserved.

Mellanox®, Mellanox logo, BridgeX®, ConnectX®, Connect-IB®, CoolBox®, CORE-Direct®, GPUDirect®, InfiniBridge®, InfiniHost®, InfiniScale®, Kotura®, Kotura logo, MetroX®, MLNX-OS®, PhyX®, ScalableHPC®, SwitchX®, TestX®, UFM®, Virtual Protocol Interconnect®, Voltaire® and Voltaire logo are registered trademarks of Mellanox Technologies, Ltd.

ExtendX™, FabricIT™, FPGADirect™, HPC-X™, Mellanox Care™, Mellanox CloudX™, Mellanox Open Ethernet™, Mellanox PeerDirect™, Mellanox Virtual Modular Switch™, MetroDX™, NVMeDirect™, Switch-EN™, Switch-IB™, Unbreakable-Link™ are trademarks of Mellanox Technologies, Ltd.

All other trademarks are property of their respective owners.

Table of Contents

Table of Contents	3
Chapter 1 Overview	4
1.1 Supported Systems in 9.3.4000	4
1.2 Supported Cables and Modules	4
1.3 Revision Compatibility	4
Chapter 2 Changes and Major New Features	5
2.1 Changes in Rev 9.3.4000 from Rev 9.3.2000	5
2.2 Changes in Rev 9.3.2000 from Rev 9.3.1200	5
2.3 Changes in Rev 9.3.1200 from Rev 9.3.0000	5
2.4 Changes in Rev 9.3.0000 from Rev 9.2.8000	5
2.5 Changes in Rev 9.2.8000 from Rev 9.2.6100	5
2.6 Changes in Rev 9.2.6100 from Rev 9.2.4002	5
2.7 Changes in Rev 9.2.4002 from Rev 9.2.3000	5
2.8 Changes in Rev 9.2.3000 from Rev 9.2.0000	6
2.9 Changes in Rev 9.2.0000 from Rev 9.1.7000	6
2.10 Changes in Rev 9.1.7000 from Rev 9.1.5000	6
2.11 Changes in Rev 9.1.5000 from Rev 9.1.3000	6
2.12 Changes in Rev 9.1.3000 from Rev 9.1.2000	7
2.13 Changes in Rev 9.1.2000 from Rev 9.1.0000	7
2.14 New Features and Changes in Rev 9.1.0000	7
Chapter 3 Known Issues	8
Chapter 4 Bug Fixes History	9

1 Overview

These are the release notes for the SwitchX® and SwitchX-2 firmware, 9.3.4000. This firmware complements the SwitchX silicon architecture with a set of advanced features, allowing easy and remote management of the switch.



Firmware 9.3.4000 is compatible with MFT tools v2.7.1 and above. Using older versions of MFT tools causes failure during image creation.

1.1 Supported Systems in 9.3.4000

This firmware supports the devices and protocols listed in Table 1. For the most updated list of switches supported, visit the firmware download pages via <http://www.mellanox.com>.

Table 1 - Supported PSIDs

Device Part Number	PSID	Device Description
MSX6015F-xxxS	MT_1260110020	SwitchX®-2 based FDR InfiniBand Switch, 18 QSFP ports, externally managed
MSX6015T-xxxS	MT_1260110029	SwitchX®-2 based FDR10 InfiniBand Switch, 18 QSFP ports, externally managed
MSX6025F-xxxR	MT_1010210021	SwitchX® based FDR InfiniBand Switch; 36 QSFP; externally managed
MSX6025F-xxxS	MT_1010310021	SwitchX®-2 based FDR InfiniBand Switch; 36 QSFP; externally managed
MSX6025T-xxxR	MT_1010210026	SwitchX® based FDR10 InfiniBand Switch; 36 QSFP; externally managed
MSX6025T-xxxS	MT_1010310026	SwitchX®-2 based FDR10 InfiniBand Switch; 36 QSFP; externally managed
MSX6005F-xxxS	MT_1260110021	SwitchX®-2 based FDR InfiniBand Switch; 12 QSFP ports.
MSX6005T-xxxS	MT_1260110026	SwitchX®-2 based FDR10 InfiniBand Switch; 12 QSFP ports.

1.2 Supported Cables and Modules

Please refer to the interconnect overview page on the Mellanox website:

http://www.mellanox.com/page/cables?mtag=cable_overview

1.3 Revision Compatibility

Firmware 9.3.4000 complies with the following programmer's reference manual:

- *SwitchX® Programmer's Reference Manual (PRM), Rev 1.05* or later

2 Changes and Major New Features

2.1 Changes in Rev 9.3.4000 from Rev 9.3.2000

- Added support for fan-out-of-range event (FORE) according to PRM section “FORE – Fan Out of Range Event”
- Added LLR max retransmission rate as specified in Vendor Specific MAD V1.1, Table 110 – PortLLRStatistics MAD Description

2.2 Changes in Rev 9.3.2000 from Rev 9.3.1200

- Lowered the externally managed switches default fan speed from 80% to 60%
- Added congestion control attribute “PORT_VL_XMIT_TIME_CONG” according to 3.23 CounterGroupInfo in Vendor Specific MADs version 1.1
- Added support for adaptive routing per L4 transport layer

2.3 Changes in Rev 9.3.1200 from Rev 9.3.0000

- Added GA support for MFA1A00-Exxx EDR 100Gb/s AOCs over SwitchX® based systems

2.4 Changes in Rev 9.3.0000 from Rev 9.2.8000

- Added support for SX6710 and SX1710 switch systems
- Added support for timestamp in mirrored packages
- Added support for MCP1600-E001/MCP1600-E002 EDR cables
- Added support for FDR 2.5m (MC2207128-0A2)

2.5 Changes in Rev 9.2.8000 from Rev 9.2.6100

- Added power optimizations when ports are disabled
- Added TuneX support
- Bug fixes

2.6 Changes in Rev 9.2.6100 from Rev 9.2.4002

- Added LLR capability indication as part of extended port info MAD according to Vendor Specific MADs document version 1.1
- 3rd party FDR cables are allowed to raise link at FDR (56Gb/s)
- Added support for fan and power supply monitor MAD according to section 2.12 in Vendor Specific MADs document version 1.1 and section 2.17 in Mellanox PRM version 1.0
- Improved FDR systems link-up time after reboot

2.7 Changes in Rev 9.2.4002 from Rev 9.2.3000

- Added support for 12-port SX6005 switch system

- Added ability to Set Node Description according to errata proposal #9109
- Updated SMP and GMP CapabilityMask as appear in VS Mad Specification document version 0.56
- Added support for temperature sensor MAD according to section 2.12 in Vendor Specific MADs document version 1.1 and section 2.17 in Mellanox PRM version 1.0
- Added support for voltage sensor MAD
- Added a port disable power-saving feature
- Added support for reading VPD from flash (supported with systems coming out of factory with FW 9.2.4002 or higher only)
- Added support for alternate source of the following fiber cable P/Ns: MC2207310-XXX-F-A2, MC2210310-XXX-F-A2, MC2206310-XXX-F-A2 (See PCN MLNX-15-838)
- Added support for the MC2207312-XXX 56Bgb/s active fiber cables.
- Added support for MC2207310-XXX-F-A2, MC2207310-XXX-F-A2, MC2206310-XXX-F-A2 active fiber cables
- Added support for MC2207411-SR4 56Gb/s active optical module

2.8 Changes in Rev 9.2.3000 from Rev 9.2.0000

- Improved FDR and FDR10 link stability
- Port mirroring bug fixes
- Added best-effort mirroring capability
- Fixing FDR10 switch link issue discovered in 9.2.0000

2.9 Changes in Rev 9.2.0000 from Rev 9.1.7000

- Added support for SwitchX®-2 SX6015
- Added support for Congestion Control Class
- Added support for InfiniBand multi-swid
- Enabled MultiCastFDBTop=0xBFFF to discard MC traffic
- Added a new INI field for the NodeInfo and DeviceID parameters

2.10 Changes in Rev 9.1.7000 from Rev 9.1.5000

- Enabled LLR by default
- Added Mellanox Proprietary Link negotiation (MLPN) support
- Added support for MC2207312-XXX FDR optical cables up to 300m
- Added support for SwitchX®-2 based FDR and FDR10 edge switch systems
- Improved Eye Opener Machine

2.11 Changes in Rev 9.1.5000 from Rev 9.1.3000

- Added InfiniBand Port Mirroring support
- Reduced port PLLs jitter

- Enabled Gradient Decent (GDS) in MSX6025T and MSX6025F systems
- Added optimize SL2VL support
- Improved link negotiation process

2.12 Changes in Rev 9.1.3000 from Rev 9.1.2000

- Link negotiation protocols improvements

2.13 Changes in Rev 9.1.2000 from Rev 9.1.0000

- Added PKEY enforcement on external ports

2.14 New Features and Changes in Rev 9.1.0000

- InfiniBand switch supported speed:
 - FDR v1.3
 - FDR10 - Mellanox Technologies propriety
 - QDR/DDR/SDR v1.2.1
- 36 FDR (56Gb/s) ports in a 1U switch
- FDR10 supports 20% more bandwidth over QDR using the same cables/connectors

3 Known Issues

Table 2 describes known issues in this firmware release and possible workarounds.

Table 2 - Known Issues

Index	Category	Description	Workaround
1.	Counters	The SampleCounter mechanism is not supported.	N/A
2.	Counters	Resetting the counters of port receive packets and port receive unicast packets using “Performance class MAD” or the VL15 received packets and data counters using Mellanox Vendor Specific MAD resets all of the above counters.	N/A
3.	Network Interfaces	FDR link may raise as FDR10 when plugged in near an FDR10 cable.	N/A
4.	Network Interfaces	Link width negotiation is not supported.	N/A
5.	Network Interfaces	Link up negotiation may take up to 70 seconds.	N/A
6.	Network Interfaces	DDR link may rise with errors or at SDR speed when connecting to ConnectX®-3 version 2.30.3000 or earlier, Connect-IB™ version 10.10.1000 or earlier, or previous releases of SwitchX®.	N/A
7.	Switch Capabilities	QDR capabilities at the INI must be enabled when working in FDR mode.	N/A
8.	General	Downgrading to firmware version 9.2.0000 requires power cycling the switch for the firmware to load.	N/A
9.	Cables	Loopback modules are not supported and do not link up.	N/A

4 Bug Fixes History

Table 3 lists the bugs fixed in this release.

Table 3 - Bug Fixes History

Index	Category	Description	Discovered in Release	Fixed in Release
1.	Adaptive routing	Fixed case of traffic loss between node pairs	9.3.2000	9.3.4000
2.	pLFT	When activating private linear forwarding table (pLFT), last port was not mapped to 0 by default	9.3.2000	9.3.4000
3.	IB spec	MLID limit at 0xFDE8 instead of 0xFE00	9.3.2000	9.3.4000
4.	Latency	Reduced forwarding latency when Skip symbols were lost	9.3.2000	9.3.4000
5.	Links	Fixed fast FDR mechanism issue	9.3.2000	9.3.4000
6.	Latency	Fixed latency issues in SX65xx switch systems	9.3.2000	9.3.4000
7.	LEDs	Unexpected LED behavior once a LED Vendor Specific MAD configures any port LED to a blinking mode.	9.3.0000	9.3.2000
8.	Links	Fix for parts going down randomly.	9.3.0000	9.3.2000
9.	Chassis Management	Fix fan error indication when changing AC modules.	9.3.0000	9.3.2000
10.	Cables	Fix for supporting SFP+ cables in force FDR10 mode.	9.2.8000	9.3.0000
11.	VS MADs	Fix MSGI register to return data with little Endian instead of big Endian.	9.2.8000	9.3.0000
12.	Counters	Congestion control supported counters in the Sample counters option mask is missing.	9.2.8000	9.3.0000
13.	Counters	PortRcvPkts counter is miscalculated when LLR is enabled.	9.2.8000	9.3.0000
14.	Counters	Port receive packets and port receive unicast packets counters may show incorrect values when port is down.	9.2.4002	9.2.8000
15.	Health	Fixed temperature sensing MAD.	9.2.6000	9.2.8000
16.	Network Interfaces	Ports may stay at INIT state after power-cycle.	9.2.6000	9.2.6100
17.	IB Spec	Fixed Neighbor MTU default size to be 256, as defined in IB SPEC.	9.2.4002	9.2.6000
18.	IB Spec	Set operation in MADs PortXmitWaitVL and PortXmitWaitVLExtended does not function properly when setting VL15.	9.2.4002	9.2.6000

Table 3 - Bug Fixes History

Index	Category	Description	Discovered in Release	Fixed in Release
19.	IB Spec	Wrong behavior of trap 128 when physical link is moving to “down”.	9.2.3000	9.2.4002
20.	Links	Link may have stability issues after closing a port.	9.2.3000	9.2.4002
21.	Links	Cables limited only to QDR may not rise links at all.	9.2.3000	9.2.4002
22.	LLR	Rate counters are not reset upon request.	9.2.3000	9.2.4002
23.	Cables	Cable insertion internal interrupts may be lost in rare cases resulting in the link not rising.	9.2.3000	9.2.4002
24.	Remote IB Mirroring	Packet always sent with vl=0.	9.2.0000	9.2.3000
25.	Remote IB Mirroring	Mirrored packets sent from the switch are corrupted if their size is bigger than 64 bytes.	9.2.0000	9.2.3000
26.	Port Mirroring	Truncation does not properly crop the packet.	9.2.0000	9.2.3000
27.	Cables	Link issues when working with Finisar (non-Mellanox) non-FDR AOC cables.	9.2.0000	9.2.3000
28.	Links	FDR10 switch fails to raise links when several links are disconnected at the remote side.	9.2.0000	9.2.3000
29.	Traps	SwitchX® does not send Congestion Control traps.	9.2.0000	9.2.3000
30.	Routing	SL2VL mapping issue which may render the SwitchX® unresponsive.	9.1.7000	9.2.0000
31.	Traps	Trap257 and Trap258 are not supported.	9.1.7000	9.2.0000
32.	Counters	Performance counters option mask corrupted.	9.1.7000	9.2.0000
33.	Counters	Wrong behavior of PortRcvDataSL & PortXmit-DataSL counters.	9.1.7000	9.2.0000
34.	LLR	Wrong behavior of PortUnicastRcvPkts counter when LLR is active.	9.1.7000	9.2.0000
35.	Network Interfaces	The link up is raised as SDR or is not raised when connected to the Qlogic switch.	9.1.7000	9.2.0000
36.	FRU LEDs	On all externally managed 1U switches, FRU LEDs remain OFF after boot.	9.1.5000	9.1.7000
37.	Cables	Fixed support for MFS4R12CB-XXX FDR10 optical cables up to 100m.	9.1.5000	9.1.7000
38.	Cables	When repeatedly plugging out and plugging in cables, the cable might not be recognized, causing the links to remain down.	9.1.2000	9.1.3000

Table 3 - Bug Fixes History

Index	Category	Description	Discovered in Release	Fixed in Release
39.	Cables	FDR10 cable P/N MFS4R12CB-XX is supported in ports 9-36 only.	9.1.0000	9.1.2000
40.	Network Interfaces	The link is raised as SDR.	9.1.0000	9.1.2000
41.	Network Interfaces	InfiniBand link vs FDR device rises as DDR.	9.1.0000	9.1.2000
42.	Network Interfaces	When sending PortInfo MAD to an Active port using the POLLING command, the link might rise as SDR.	9.1.0000	9.1.2000