



# **Mellanox Connect-IB® Firmware (fw-ConnectIB) Release Notes**

Rev 10.10.2000

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# 1 Overview

These are the release notes for the Connect-IB® adapters firmware, fw-ConnectIB Rev 10.10.2000. This firmware supports the following protocols:

- InfiniBand - SDR, DDR, QDR, FDR10, FDR
- PCI Express 3.0, supporting backwards compatibility for v2.0 and v1.1

## 1.1 Supported Devices

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



Please contact your Mellanox local FAE for firmware updates to pre-production cards not on this list.

**Table 1 - Supported PSIDs**

Device Part Number	PSID	Device Name	Supported Protocols
MCB191A-FCAT	MT_1230110019	Connect-IB™ Host Channel Adapter, single-port QSFP, FDR 56Gb/s, PCIe3.0 x8, tall bracket, RoHS R6	InfiniBand
MCB192A-FCAT	MT_1240110019	Connect-IB™ Host Channel Adapter, dual-port QSFP, FDR 56Gb/s, PCIe3.0 x8, tall bracket, RoHS R6	InfiniBand
MCB193A-FCAT	MT_1220110019	Connect-IB™ Host Channel Adapter, single-port QSFP, FDR 56Gb/s, PCIe3.0 x16, tall bracket, RoHS R6	InfiniBand
MCB193A-FBAT	MT_1220110030	Connect-IB™ Host Channel Adapter; single-port QSFP; FDR 56Gb/s; PCIe2.0 x16; RoHS R6	InfiniBand
MCB194A-FCAT	MT_1210110019	Connect-IB™ Host Channel Adapter, dual-port QSFP, FDR 56Gb/s, PCIe3.0 x16, tall bracket, RoHS R6	InfiniBand

## 1.2 Supported Cables and Modules

Please refer to the Mellanox Products Approved Cable Lists document (Doc Nr. 3796) for the list of supported cables.

[http://www.mellanox.com/related-docs/user\\_manuals/Mellanox\\_approved\\_cables.pdf](http://www.mellanox.com/related-docs/user_manuals/Mellanox_approved_cables.pdf)

## 1.2.1 Tested Cables and Modules

**Table 2 - Tested Cables and Modules**

Speed	OPN #	Description
QDR	MC2206310-300	Mellanox ACTIVE FIBER CABLE 4X QSFP 40GB/S 200M
QDR	MC2206125-007	Mellanox PASSIVE COPPER CABLE 4X QSFP 40GB/S 25AWG 7M
QDR	MC2206126-006	Mellanox PASSIVE COPPER CABLE 4X QSFP 40GB/S 26AWG 6M
QDR/FDR10/40GE	MC2206310-030-T	Mellanox ACTIVE FIBER CABLE 4X QSFP 40GB/S 30M
QDR / FDR10/40G	MC2206310-100-T	Mellanox ACTIVE FIBER CABLE 4X QSFP 40GB/S 100M
QDR/FDR10/40GE	MC2206310-030-F	Mellanox ACTIVE FIBER CABLE 4X QSFP 40GB/S 30M
QDR / FDR10/40G	MC2206310-100-F	Mellanox ACTIVE FIBER CABLE 4X QSFP 40GB/S 100M
QDR / FDR10/ 40GE	MFS4R12CB-100	Mellanox ACTIVE FIBER CABLE IB QDR/FDR10 40GB/S QSFP 100M
QDR / FDR10	MC2206128-005	Mellanox PASSIVE COPPER CABLE 4X QSFP 40GB/S 28AWG 5M
QDR / FDR10	MC2206130-003	Mellanox PASSIVE COPPER CABLE 4X QSFP 40GB/S 30AWG 3M
QDR / FDR10	MC2206130-00A	Mellanox PASSIVE COPPER CABLE 4X QSFP 40GB/S 30AWG 0.5M
FDR10	MC2210511-LR4 - F	Mellanox Optical Module 40Gb/S QSFP LC-LC 1310NM LR4. Up To 10KM
QDR / FDR10/ 40GE	MC2210411-SR4 -T	Mellanox Optical Module 40Gb/S QSFP LC-LC 850NM LR4. Up To 100M
QDR / FDR10/ 40GE	MC2210411-SR4 -F	Mellanox Optical Module 40Gb/S QSFP LC-LC 850NM LR4. Up To 100M
FDR; 56G VPI	MC2207130-00A	Mellanox PASSIVE COPPER CABLE 4X QSFP 56GB/S 30AWG 0.5M
FDR; 56G VPI	MC2207130-002	Mellanox PASSIVE COPPER CABLE 4X QSFP 56GB/S 30AWG 2M
FDR; 56G VPI	MC2207128-003	Mellanox PASSIVE COPPER CABLE 4X QSFP 56GB/S 28AWG 3M
FDR; 56G VPI	MC2207126-004*	Mellanox PASSIVE COPPER CABLE 4X QSFP 56GB/S 28AWG 4M
FDR; 56 VPI	MC2207312-003	Mellanox ACTIVE FIBER CABLE VPI IB FDR (56GB/S) AND ETH 40GBE QSFP 3M
FDR; 56G VPI	MC2207310-030-E	Mellanox ACTIVE FIBER CABLE 4X QSFP 56GB/S 30M

**Table 2 - Tested Cables and Modules**

Speed	OPN #	Description
FDR; 56G VPI	MC2207312-100	Mellanox ACTIVE FIBER CABLE 4X QSFP 56GB/S 100M
FDR; 56G VPI	MC2207310-100-E	Mellanox ACTIVE FIBER CABLE 4X QSFP 56GB/S 100M
FDR; 56G VPI	MC2207310-030-F	Mellanox ACTIVE FIBER CABLE 4X QSFP 56GB/S 30M
FDR; 56G VPI	MC2207310-100-F	Mellanox ACTIVE FIBER CABLE 4X QSFP 56GB/S 100M
FDR; 56G VPI	MC2207411-SR4L-F	Mellanox® optical module, IB FDR 56GB/S, QSFP, MPO, 850nm, up to 30m

### 1.2.2 Tools and Driver Software

Firmware Rev 10.10.2000 is tested with the following tools and driver software:

- Driver versions:
  - MLNX-OFED 2.1-1.0.0 and higher
- MFT for Linux version: 3.5.0 and higher
- PXE version 4.4.106 and higher

### 1.3 Revision Compatibility

Firmware fw-ConnectIB Rev 10.10.2000 complies with the following programmer's reference manual:

- *ConnectIB Programmer's Reference Manual (PRM), Rev 1.91 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`.

## 2 Supported Features

### 2.1 Changes in Rev 10.10.2000 From Rev 10.10.1000

- Dynamically Connected (DC) transport (at Beta level)  
DC transport qualification tests are still ongoing
- CORE-Direct®
  - Provides Collective Off-loading in HCA
  - Frees CPU to perform computation in parallel with collective operations
- T10 DIF Data Integrity Signature off-loading<sup>1</sup>
- Removed software limitations that were required for the use of Mellanox-certified FDR InfiniBand cables with Mellanox FDR InfiniBand adapters and switches. Please refer to "Memo: FDR 56Gb/s InfiniBand Cables" that was released on Dec/2013.  
Mellanox will offer an EXTENDED diagnostics support plan which will be available for mixed environments only and that will help identify issues they may encounter with the FDR installations.
- User Memory Registration (UMR)
- InfiniBand Automatic Path Migration

### 2.2 New Features in Rev 10.10.1000

- Initial Release of Connect-IB™
- Port speed up to FDR
- PCI Express 3.0 x16, with backwards compatibility with v2.0 and v1.1
- Dynamically Connected (DC) transport at Alpha level

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1. For further information, please refer to MLNX\_OFED Release Notes.



### 3 Known Issues

The following table describes known issues in this firmware release and possible workarounds.

**Table 3 - Known Issues**

Index	Issue	Description	Workaround	Scheduled Release (fix)
1.	Upgrading/Downgrading	Flashing the firmware requires server reboot	Reboot the server after firmware flashing	Future Release
2.	MADs	Setting the port to 'sleep' state is not supported.	N/A	Future Release
3.	Atomic support	Extended Atomics over 32B are not supported. The limitation is outside InfiniBand spec which only supports 8B.	N/A	Future Release
4.		Atomic response endianness is always a big endian	Byte swap in application.	Future Release
5.	PCIe,	L1 power state enter requests are ignored by the device.	N/A	Future Release
6.		Link width x1 might get Replay Timer Timeout, on speed change.	N/A	Future Release
7.	Miscellaneous	<b>[For customers developing custom low level drivers]</b> The device does not recover if the requested number of pages are not supplied during device initialization.	N/A	Future Release
8.		<b>[For customers developing custom low level drivers]</b> Port asynchronous events documentation are different from the PRM. All port events have a type value of 0x9. The following subtype values are used for the following events: <ul style="list-style-type: none"> <li>• link down=0x1</li> <li>• link up=0x4</li> <li>• link initialized=0x5</li> <li>• lid change=0x6</li> <li>• PKEY change=0x7</li> <li>• GUID change=0x8</li> <li>• client reregister=0x9</li> </ul>	N/A	Future Release
9.	InfiniBand Transport	Alternate Path Migration (APM) triggers only a single affiliated asynchronous error event in the case of a path migration failure.	N/A	Future Release

**Table 3 - Known Issues**

Index	Issue	Description	Workaround	Scheduled Release (fix)
10.		Using a <code>min_rnr_nak</code> value of 0x5 will cause failures when creating reliable connection (RC) QPs.	Avoid using a <code>min_rnr_nak</code> value of 0x5 (offset 0x94 in SW QP context).	Future Release
11.	DC	On rare occasions DC Initiator completions might be lost.	N/A	Future Release
12.	Quality of Service	On rare occasions, SL to VL modification with functioning QPs results in traffic hangs.	Configure SL2VL during SM initialization	Future Release
13.	Data Integrity Signature	The following signature rules are not supported (Numbering based on "signature rules table" in PRM): <ul style="list-style-type: none"> <li>• Rule #12: T10 DIF</li> <li>• Rule #13: T10 DIF CS</li> <li>• Rule #14 T10 DIF CS</li> </ul>	N/A	Future Release

## 4 Bug Fixes History

Table 4 lists the bugs fixed in this release.

**Table 4 - Fixed Bugs List**

Issue	Description	Discovered in Release	Fixed in Release
Quality of Service	VL arbitration configuration does not ensure minimum bandwidth for VL as configured.	10.10.1000	10.10.2000
False alarm report	On very rare occasions, a false firmware “hanged” report is printed in the dmesg.	10.10.1000	10.10.2000
CQ buffer resize	CQ buffer resize not supported	10.10.1000	10.10.2000
Ports	When connecting to InfiniScale family switches and non-Mellanox InfiniBand switches DDR and QDR speeds may show line errors and in some cases might downgrade to SDR speed.	10.10.1000	10.10.2000

## 5 Unsupported Features and Commands

### 5.1 Unsupported Features

The following advanced feature as described in Connect-IB PRM Rev 1.91 are unsupported in the current firmware version:

- Sniffer QP and IB dump enablement
- Service types not supported:
  - SyncUMR
  - Mellanox transport
  - PTP
  - RAW IPv6
  - PTP (ieee 1588)
- Virtualization - SR-IOV and eSwitch. Connect-IB™ only supports a single physical function model at this time.
- On demand paging
- Fast path and latency sensitive traffic (QoS)
- INT-A not supported for EQs only MSI-X
- PCI VPD write flow (RO flow supported)
- Streaming receive queue (STRQ) and collapsed CQ
- Precise clock synchronization over the network (IEEE 1588)
- Data integrity validation of control structures

### 5.2 Unsupported Commands

- `CMDIF_OP_ATTACH_TO_SNIFFER`
- `CMDIF_OP_DETACH_FROM_SNIFFER`
- `QUERY_MAD_DEMUX`
- `SET_MAD_DEMUX`