



Mellanox Connect-IB[®] Firmware (fw-ConnectIB) Release Notes

Rev 10.16.1058

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Release Update History

Table 1 - Release Update History

| Release | Date | Description |
|----------------|-------------------|--|
| Rev 10.16.1058 | November 15, 2016 | Initial version of this firmware version |

1 Overview

These are the release notes for the Connect-IB® adapters firmware, fw-ConnectIB Rev 10.16.1058. 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 2.

Table 2 - Supported PSIDs

| Device Part Number | PSID | Device Name | FlexBoot | UEFI |
|--------------------|---------------|--|----------|------|
| MCB191A-FCAT | MT_1230110019 | Connect-IB® Host Channel Adapter, single-port QSFP, FDR 56Gb/s, PCIe3.0 x8, tall bracket, RoHS R6 | No | No |
| MCB193A-FCAT | MT_1220110019 | Connect-IB® Host Channel Adapter, single-port QSFP, FDR 56Gb/s, PCIe3.0 x16, tall bracket, RoHS R6 | No | No |

1.2 Supported Cables and Modules

Please refer to the LinkX™ Cables and Transceivers web page

(www.mellanox.com -> Products -> Cables and Transceivers) for the list of supported cables.

1.2.1 Validated and Supported DDR/SDR Cables

Table 3 - Validated and Supported DDR/SDR Cables

| Speed | Cable OPN # | Description |
|-------|---------------|---|
| DDR | MC1204128-005 | MELLANOX PASSIVE COPPER HYBRID CABLE IB DDR 20GB/S QSFP TO CX4 5M |
| DDR | MC1204130-001 | MELLANOX PASSIVE COPPER HYBRID CABLE IB DDR 20GB/S QSFP TO CX4 1M |
| DDR | MC1204130-002 | MELLANOX PASSIVE COPPER HYBRID CABLE IB DDR 20GB/S QSFP TO CX4 2M |
| DDR | MC1204130-003 | MELLANOX PASSIVE COPPER HYBRID CABLE IB DDR 20GB/S QSFP TO CX4 3M |

1.2.2 Validated and Supported QDR/FDR10 Cables

Table 4 - Validated and Supported QDR/FDR10 Cable

| Speed | Cable OPN # | Description |
|-------|---------------|--|
| FDR10 | MC2206128-004 | MELLANOX PASSIVE COPPER CABLE VPI UP TO 40GB/S QSFP 4M |

Table 4 - Validated and Supported QDR/FDR10 Cable

| Speed | Cable OPN # | Description |
|-------|-----------------|---|
| FDR10 | MC2206128-005 | MELLANOX PASSIVE COPPER CABLE VPI UP TO 40GB/S QSFP 5M |
| FDR10 | MC2206130-001 | MELLANOX PASSIVE COPPER CABLE VPI UP TO 40GB/S QSFP 1M |
| FDR10 | MC2206130-002 | MELLANOX PASSIVE COPPER CABLE VPI UP TO 40GB/S QSFP 2M |
| FDR10 | MC2206130-003 | MELLANOX PASSIVE COPPER CABLE VPI UP TO 40GB/S QSFP 3M |
| FDR10 | MC2206130-00A | MELLANOX PASSIVE COPPER CABLE VPI UP TO 40GB/S QSFP 0.5M |
| FDR10 | MC2206310-300-L | MELLANOX ACTIVE FIBER CABLE IB QDR/FDR10 40GB/S QSFP 300M |
| FDR10 | MC2206310-XXX-F | MELLANOX ACTIVE FIBER CABLE IB QDR/FDR10 40GB/S QSFP from 3M up to 100M |
| FDR10 | MC2206310-XXX-T | MELLANOX ACTIVE FIBER CABLE IB QDR/FDR10 40GB/S QSFP from 3M up to 100M |
| FDR10 | MC2210411-SR4 | MELLANOX OPTICAL MODULE 40GB/S QSFP MPO 850NM UP TO 100M |
| FDR10 | MC2210411-SR4E | MELLANOX OPTICAL MODULE 40GB/S QSFP MPO 850NM UP TO 300M |
| FDR10 | MFS4R12CB-XXX | MELLANOX ACTIVE FIBER CABLE VPI UP TO 40GB/S QSFP from 3M up to 100M |
| 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 |

1.2.3 Validated and Supported FDR Cables

Table 5 - Validated and Supported FDR Cables

| Speed | Cable OPN # | Description |
|-------|---------------|--|
| FDR | MC2207126-004 | MELLANOX PASSIVE COPPER CABLE 4X QSFP 56GB/S 28AWG 4M |
| FDR | MC2207128-003 | MELLANOX PASSIVE COPPER CABLE 4X QSFP 56GB/S 28AWG 3M |
| FDR | MC2207128-0A2 | MELLANOX PASSIVE COPPER CABLE VPI UP TO 56GB/S QSFP 2.5M |
| FDR | MC2207130-001 | MELLANOX PASSIVE COPPER CABLE VPI UP TO 56GB/S QSFP 1M |

Table 5 - Validated and Supported FDR Cables

| Speed | Cable OPN # | Description |
|--------------|-----------------|---|
| FDR | MC2207130-002 | MELLANOX MELLANOXPASSIVE COPPER CABLE 4X QSFP 56GB/S 30AWG 2M |
| FDR | MC2207130-00A | MELLANOX PASSIVE COPPER CABLE 4X QSFP 56GB/S 30AWG 0.5M |
| FDR | MC2207130-0A1 | MELLANOX PASSIVE COPPER CABLE VPI UP TO 56GB/S QSFP 1.5M |
| FDR | MC2207310-030 | MELLANOX ACTIVE FIBER CABLE 4X QSFP 56GB/S 30M |
| FDR | MC2207310-100) | MELLANOX ACTIVE FIBER CABLE 4X QSFP 56GB/S 100M |
| FDR | MC2207310-XXX-E | MELLANOX ACTIVE FIBER CABLE VPI UP TO 56GB/S QSFP from 3M up to 100M |
| FDR | MC2207310-XXX-T | MELLANOX ACTIVE FIBER CABLE VPI UP TO 56GB/S QSFP from 3M up to 100M |
| FDR | MC2207312-003 | MELLANOX ACTIVE FIBER CABLE VPI IB FDR (56GB/S) AND ETH 40GBE QSFP 3M |
| FDR | MC2207312-050 | MELLANOX ACTIVE FIBER CABLE VPI UP TO 56GB/S QSFP from 3M up to 300M |
| FDR | MC2207312-100 | MELLANOX ACTIVE FIBER CABLE 4X QSFP 56GB/S 100M |
| FDR | MC220731V-003 | Mellanox Active Fiber IB QSFP 3M |
| FDR | MC220731V-100 | Mellanox Active Fiber IB QSFP 100M |
| FDR | MC2207411-SR4L | MELLANOX OPTICAL MODULE IB FDR 56GB/S QSFP MPO 850NM UP TO 30M |
| EMC FDR QSFP | 038-004-066-01 | EMC FDR QSFP+ to QSFP+ copper cable 2M |
| EMC FDR QSFP | 038-004-067-01 | EMC FDR QSFP+ to QSFP+ copper cable 3M |
| EMC FDR QSFP | 038-900-027-01 | EMC FDR QSFP+ to QSFP+ copper cable 5M |
| EMC FDR QSFP | 038-900-030-01 | EMC FDR QSFP+ to QSFP+ copper cable 8M |

1.2.4 Validated and Supported EDR Cables

Table 6 - Validated and Supported EDR Cables

| Speed | Cable OPN # | Description |
|---------|----------------|---|
| 100GB/S | MMA1B00-C100 | Mellanox® transceiver, 100GbE, QSFP28, MPO, 850nm, up to 100m |
| 100GB/S | MCP1600-C00A | MELLANOX PASSIVE COPPER CABLE ETH 100GBE 100GBS QSFP LSZH 0.5M |
| 100GB/S | MCP1600-C001 | MELLANOX PASSIVE COPPER CABLE ETH 100GBE 100GBS QSFP LSZH 1M |
| 100GB/S | MCP1600-C002 | MELLANOX PASSIVE COPPER CABLE ETH 100GBE 100GBS QSFP LSZH 2M |
| 100GB/S | MCP1600-C003 | MELLANOX PASSIVE COPPER CABLE ETH 100GBE 100GBS QSFP LSZH 3M |
| 100GB/S | MFA1A00-CXXX-M | Mellanox® active fiber cable, ETH 100GbE, 100Gb/s, QSFP, LSZH, up to 100m |
| 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-E003 | MELLANOX PASSIVE COPPER CABLE VPI 100GB/S QSFP LSZH 3M |
| EDR | MCP1600-E00A | MELLANOX PASSIVE COPPER CABLE VPI 100GB/S QSFP LSZH 0.5M |
| EDR | MFA1A00-E003 | MELLANOX active fiber cable, VPI, up to 100Gb/s, QSFP, 3m |
| EDR | MFA1A00-E005 | MELLANOX ACTIVE FIBER CABLE VPI UP TO 100GB/S QSFP 5M |
| EDR | MFA1A00-E050 | MELLANOX active fiber cable, VPI, up to 100Gb/s, QSFP, 50m |
| EDR | MFA1A00-E100 | MELLANOX ACTIVE FIBER CABLE VPI UP TO 100GB/S QSFP 100M |
| EDR | MFS1200-EXXX | Mellanox® active fiber cable, IB EDR, up to 100Gb/s, QSFP, LSZH, up to 100m |

1.3 Tested Switches

1.3.1 Tested QDR/FDR10 Switches

Table 7 - Tested QDR/FDR10 Switches

| Speed | Switch Family | OPN # / Name | Description |
|-------|---------------|--------------|--------------------------------|
| QDR | N/A | 489184-B21 | HP BLc 4X QDR IB Switch Module |

Table 7 - Tested QDR/FDR10 Switches

| Speed | Switch Family | OPN # / Name | Description |
|-------|-----------------|--------------|---|
| QDR | N/A | QLogic 12300 | 36-Port 40Gb QDR Infiniband Switch, Management Module, Dual Power |
| QDR | InfiniScale® IV | IS5025Q-1SFC | 36-port 40Gb/s InfiniBand Switch Systems |
| QDR | InfiniScale® IV | Switch 4036 | Grid Director™ 4036E |
| FDR10 | SwitchX® | SX6025T-1SFR | 36-port 56Gb/s InfiniBand/VPI Switch Systems |

1.3.2 Tested FDR Switches

Table 8 - Tested FDR Switches

| Speed | Switch Family | OPN # / Name | Description |
|-------|---------------|--------------|--|
| FDR | N/A | 648312-B21 | HP BLc 4X FDR IB Switch Module |
| FDR | N/A | 648311-B21 | HP BLc 4X FDR IB Managed Switch Module |
| FDR | SwitchX® | SX6036F-1BFR | 36-port 56Gb/s InfiniBand/VPI Switch Systems |
| FDR | SwitchX® | SX6018F-1SFR | 18-port 56Gb/s InfiniBand/VPI Switch Systems |

1.3.3 Tested EDR Switches

Table 9 - Tested EDR Switches

| Speed | Switch Family | OPN # / Name | Description |
|-------|---------------|--------------|---|
| EDR | Switch-IB | SB7790-EB2F | 36-port EDR 100Gb/s InfiniBand Switch Systems |

1.4 Tools, Switch Firmware and Driver Software

Firmware Rev 10.16.1058 is tested with the following tools and driver software:

Table 10 - Tools, Switch Firmware and Driver Software

| | Supported Version |
|------------------------------|--|
| MLNX_OFED | 3.3-1.0.0.0 |
| MFT | 4.5.0 |
| MLNX-OS | <ul style="list-style-type: none"> SwitchX: 3.5.1002 Switch-IB: 3.5.1000 |
| SwitchX®/SwitchX®-2 Firmware | 9.3.7240 |
| SwitchX-IB™ Firmware | 11.0350.0394 |
| SwitchX-IB 2 Firmware | 15.0400.0064 |
| InfiniScale® IV Firmware | 7.4.3000 |

Table 10 - Tools, Switch Firmware and Driver Software

| | Supported Version |
|---------------------|--|
| Linux Inbox Drivers | <ul style="list-style-type: none"> • RHEL5.9 • RHEL5.10 • RHEL5.11 • RHEL5.12 • RHEL6.0 • RHEL6.1 • RHEL6.2 • RHEL6.3 • RHEL6.4 • RHEL6.5 • RHEL6.6 • RHEL7.0 • RHEL7.1 • Ubuntu 12.04 • Ubuntu 14.04 • SLES11.2 • SLES11.3 • SLES12.0 |

1.5 Revision Compatibility

Firmware fw-ConnectIB Rev 10.16.1058 complies with the following programmer’s reference manual:

- *Mellanox Adapters Programmer’s Reference Manual (PRM), Rev 0.31 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 Changes and New Features in Rev 10.16.1058

Table 11 - Changes and New Feature

| Feature/Change | Description |
|----------------|--|
| Bug Fixes | See Section 4, “Bug Fixes History,” on page 17 |

3 Known Issues

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

Table 12 - Known Issues (Sheet 1 of 4)

| Internal Ref. | Description |
|---------------|--|
| - | Description: Setting the port to ‘sleep’ state is not supported. |
| | WA: N/A |
| | Keywords: MADs |
| - | Description: Link width x1 might get Replay Timer Timeout, on speed change. |
| | WA: N/A |
| | Keywords: PCIe |
| - | Description: L1 power state enter requests are ignored by the device. |
| | WA: N/A |
| | Keywords: PCIe |
| - | [For customers developing custom low level drivers] Description: The device does not recover if the requested number of pages are not supplied during device initialization. |
| | WA: N/A |
| | Keywords: Device Initialization |
| - | Description: On rare occasions, SL to VL modification with functioning QPs results in traffic hangs. |
| | WA: Configure SL2VL during SM initialization |
| | Keywords: Quality of Service |
| - | Description: Vport transmit packets are not blocked if vport policy is Down. |
| | WA: N/A |
| | Keywords: Virtualization |
| - | Description: DC transport is not supported when SR-IOV is enabled. |
| | WA: N/A |
| | Keywords: DC transport |
| 563626 | Description: ibstat reports the link speed as FDR instead of FDR10. |
| | WA: N/A |
| | Keywords: Link |
| 600765 | Description: mlxconfig tool displays some Ethernet only configuration such as RoCE status. |
| | WA: N/A |
| | Keywords: PF direct pass-through |

Table 12 - Known Issues (Sheet 2 of 4)

| Internal Ref. | Description |
|---------------|--|
| - | Description: PF direct pass-through is not supported (since PF FLR is not supported) |
| | WA: N/A |
| | Keywords: PF direct pass-through |
| 687113 | Description: Some Port Control Register do not return to the default value after the last port owner host restarts the driver. |
| | WA: Reboot or reset the driver. reboot / mlxfwreset |
| | Keywords: PRM |
| - | <p>Description: Older MFT versions (4.0.0 and 3.8.0) may indicate that the latest GA firmware is old or that it cannot be compared with the existing firmware. A message similar to the below will be displayed upon firmware upgrade stage:</p> <pre># flint -d <mst device> -i <image> burn</pre> <p>Current FW version on flash: 12.1100.6630 New FW version: 12.0012.0572</p> <p>Note: The new FW version is not newer than the current FW version on flash.</p> <p>Do you want to continue ? (y/n) [n] : y</p> |
| | <p>WA: Choose one of the options below to upgrade firmware:</p> <ul style="list-style-type: none"> • Upgrade to the latest MFT version (4.1.0) • Type "y" after the note flint provides <p>Run flint with the "-force" flag</p> |
| | Keywords: Firmware Upgrade/MFT |
| - | Description: Flashing the firmware requires server reboot. Firmware cannot be flashed twice without server reboot after first flashing |
| | WA: Reboot the server after firmware flashing |
| | Keywords: Upgrading/Downgrading |
| - | [For customers developing custom low level drivers] Description: VFs internal FLR is not supported in PF teardown HCA command. |
| | <p>WA: Before unloading the PF driver, PF driver must disable all its active VFs by performing the following:</p> <ol style="list-style-type: none"> 1. Run the disable_hca command on all the function_ids 2. Wait until firmware returns all VFs allocated pages. |
| | Keywords: Virtualization, FLR |
| - | [For customers developing custom low level drivers] Description: VPortGuidInfo virtualization Attributes MADs are not supported. |
| | WA: N/A |
| | Keywords: Virtualization |

Table 12 - Known Issues (Sheet 3 of 4)

| Internal Ref. | Description |
|---------------|---|
| - | Description: Function (PF/VF) TX port counters are not supported. |
| | WA: N/A |
| | Keywords: Virtualization |
| - | Description: PF driver must work with pages event queue. |
| | WA: N/A |
| | Keywords: Virtualization |
| 688670 | Description: Configuring the SM with VL weight 0 on some VL, and running traffic on it, causes the driver to hang during unload. |
| | WA: Cold power-cycle the server |
| | Keywords: QoS |
| 597718 | Description: Privileged Vport egress traffic is not blocked when Vport is not active. |
| | WA: N/A |
| | Keywords: Virtualization |
| 680719 | Description: When all SLs are mapped to non-VL0, the firmware might hang. |
| | WA: Fix the SL configuration and power cycle the system. |
| | Keywords: Virtualization |
| 693832 | Description: In an SR-IOV setup, traffic should contain GRH (GID index), traffic without GRH will be forwarded to vport0 (“Host0”). OpenSM should be configured as follow (opensm.conf): <ul style="list-style-type: none"> • virt_enable should be 2 • Enable Qos: <code>qos TRUE</code> |
| | WA: N/A |
| | Keywords: SR-IOV |
| 691754 | Description: end_padding_mode is required in CREATE_QP and not in INIT_2_RTR command as defined in the PRM |
| | WA: N/A |
| | Keywords: end_padding_mode, PRM |
| 747967 | Description: Burning in firmware on the same device in parallel from multiple interfaces (e.g. PCIe and MTUSB) is not supported. |
| | WA: N/A |
| | Keywords: PCIe, MTUSB, burning in parallel |
| 690890 | Description: Updating a non-volatile configuration of port type TLV more than 50 times might cause system to hang. |
| | WA: Run <code>mlxconfig reset</code> after every 50 consecutive updates of port type TLV. |
| | Keywords: Non-volatile configuration, TLV |

Table 12 - Known Issues (Sheet 4 of 4)

| Internal Ref. | Description |
|---------------|--|
| 776830 | Description: Performing warm reboot during firmware image burning for VPI/IB devices configured with IB port protocol, might cause the device to disappear from the PCIe. |
| | WA: Cold reboot the device instead |
| | Keywords: Warm/cold reboot |

4 Bug Fixes History

Table 13 lists the bugs fixed in this release.

Table 13 - Fixed Bugs List

| # | Category | Description | Discovered in Release | Fixed in Release |
|-----|-----------------------------|--|-----------------------|------------------|
| 1. | SR-IOV | #866181: Fixed an issue which caused system fail when enabled SR-IOV | 10.14.2036 | 10.16.1058 |
| 2. | SRQ limit event | #787039: Fixed a rare issue which caused the RX to hang when triggered the SRQ limit event. | 10.12.1100 | 10.16.1058 |
| 3. | RX traffic | #801374: Fixed an issue which occasionally caused the RX traffic to hang in DC when received a PCI error on WQE fetch. | 10.16.1006 | 10.16.1058 |
| 4. | mlxconfig configuration | #785128: Fixed an issue which caused the mlxconfig configuration of VF_LOG_BAR_SIZE to be ignored and to be set to 5 (32MB). | 10.16.1006 | 10.16.1058 |
| 5. | EEH error | #846520: Fixed an EEH error from PCI which caused firmware to hang. | 10.16.1006 | 10.16.1058 |
| 6. | VL, SM | #689503: Fixed an issues which occasionally caused the driver to hang during unload on some VLs when configuring the SM with a VL weight 0 and running traffic on it. | 10.16.1006 | 10.16.1058 |
| 7. | DC transport | #882234: Fixed a rare case which caused an assert reported to the driver when the DC transport was enabled in the following cases: retransmission occurred and the RX received the same packet twice | 10.16.1006 | 10.16.1058 |
| 8. | VF vports/VF GUIDs | #897449: Fixed an issue which caused the HCA to hang when enabled /disabled the VFs vports when the VFs GUIDs configuration were overloaded in the steering table. | 10.16.1006 | 10.16.1058 |
| 9. | Physical Port TLVs | #780651: Fixed an issue causing single port devices to query and write Physical Port TLVs to Port 2. | 10.14.2036 | 10.16.1006 |
| 10. | qkey/pkey violation counter | #687096: Fixed an issue which caused the device to hang when resetting qkey/pkey violation counter via port_info mad. | 10.14.1100 | 10.14.2036 |
| 11. | RDMA READ bandwidth | #665089: Improved RDMA READ bandwidth under packet lost scenario. | 10.14.1100 | 10.14.2036 |

Table 13 - Fixed Bugs List

| # | Category | Description | Discovered in Release | Fixed in Release |
|-----|--------------------|--|-----------------------|------------------|
| 12. | Multihost loopback | #649696/690681: If the PF driver or the tool (e.g. ethtool) use PAOS DOWN command (e.g. by ifconfig down or ip link set down), loopback traffic is blocked for all functions on this port (PF<->VFs / VF<->VF) In Multihost loopback, the traffic will be blocked once the firmware receives the PAOS down command from all PFs. However, the loopback traffic will not be blocked when the port is down due to the physical link (for example: cable plugged out, switch port down). | 10.14.1100 | 10.14.2036 |
| 13. | QP permission | #667224: Fixed an issue which prevented QP permission for reserve lkey to be passed to the memop machine. | 10.12.0780 | 10.14.1100 |
| 14. | DC transport | #660719: Fixed a MLX QP SL mismatch handling which occurred when the SL in the WQE was different than the SL in the QP. | 10.12.0780 | 10.14.1100 |
| 15. | | #660939: Fixed wrongly implementation of SM SL2VL configuration. | 10.12.0780 | 10.14.1100 |
| 16. | | #660708: Fixed a DC re-connect flow which in some cases sent bad completion. | 10.12.0780 | 10.14.1100 |
| 17. | | #557979: Fixed a DC performance issue; separated DCRs SQ from the DCI SQs. | 10.12.0780 | 10.14.1100 |
| 18. | MADs | #631226: Fixed an issue causing the firmware to hang when running ibdiagnet. The received DiagData MAD included the following values: <ul style="list-style-type: none"> • Clear_all = 1 • PageNum = 0 • Port_select = 0 To prevent the firmware from hanging, a port check was added to Set() as well. | 10.12.0780 | 10.14.1100 |
| 19. | Diagnostic Tools | #552462: Fixed an issue which caused hardware fatal error when running ibdump. | 12.0100.6440 | 10.12.0780 |
| 20. | Port Link | Fixed an FDR10 incorrect speed indication reported due to the usage of a translation function from the hardware speed to the PRM speed twice. | 12.0100.6440 | 10.12.0780 |
| 21. | Phy Management | #592712: Fixed a Phy manager PCS event handling when the port's next state was disable. | 12.1100.6630 | 10.12.0780 |
| 22. | MADs | #561387: Fixed an issue that caused invalid data returned by EyeOpening MAD. | 12.0100.6440 | 10.12.0780 |

Table 13 - Fixed Bugs List

| # | Category | Description | Discovered in Release | Fixed in Release |
|-----|-------------------------------|---|-----------------------|------------------|
| 23. | Virtualization | #552227: Reduced the VF ICM footprint for VFs. | 10.0100.6440 | 10.1100.6630 |
| 24. | Miscellaneous | #515812: Increased the number of regular memory region from 2 ²¹ to 2 ²² . | 10.10.5052 | 10.0100.6440 |
| 25. | DC transport | #517702: Fixed health buffer false alarm "irisc stuck" indication when using DC transport. | 10.10.5020 | 10.10.5054 |
| 26. | | #422852/518173: Fixed rare unexpected completion with error on DC QPs. | 10.10.5020 | 10.10.5054 |
| 27. | Link Speed | #500090/493611: On rare occasions, after PXE boot, the port speed came up as SDR instead of a higher speed. | 10.10.5020 | 10.10.5054 |
| 28. | Thermal sensors | #501903: On very rare occasions, firmware wrongly reported board over-temperature warning. | 10.10.5020 | 10.10.5054 |
| 29. | DCT | destroy-DCT command handling may experience delays while the DCT port is down. | 10.10.4064 | 10.10.5020 |
| 30. | MAD | Fixed an issue causing diagnostic counters VS-MAD page offset to start at a wrong address. | 10.10.4020 | 10.10.5020 |
| 31. | DC transport | Fixed stability issue in the event of no-local-DC-resources | 10.10.4020 | 10.10.4064 |
| 32. | | Fixed improper handling of multiple DCT errors | 10.10.4050 | 10.10.4064 |
| 33. | | Fixed bad handling of DC RNR state | 10.10.4050 | 10.10.4064 |
| 34. | DC transport | Reduced DCT destroy firmware handling time | 10.10.4020 | 10.10.4050 |
| 35. | Ports | Fixed link flapping issue which occurred when LLR was active. | 10.10.3000 | 10.10.4050 |
| 36. | PCIe class code of the device | Deprecated code 0x0c0600 was changed to 0x020700 (InfiniBand network adapter) | 10.10.3000 | 10.10.4020 |
| 37. | Atomic support | Atomic response endianness is always a big endian | 10.10.1000 | 10.10.3000 |

Table 13 - Fixed Bugs List

| # | Category | Description | Discovered in Release | Fixed in Release |
|-----|--------------------------|---|-----------------------|------------------|
| 38. | Miscellaneous | [Documentation fix in PRM v2.01, no changes to the firmware code.] 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"> • link down=0x1 • link up=0x4 • link initialized=0x5 • lid change=0x6 • PKEY change=0x7 • GUID change=0x8 • client reregister=0x9 | 10.10.1000 | 10.10.3000 |
| 39. | InfiniBand Transport | Alternate Path Migration (APM) triggers only a single affiliated asynchronous error event in the case of a path migration failure. | 10.10.2000 | 10.10.3000 |
| 40. | | Using a <code>min_rnr_nak</code> value of 0x5 will cause failures when creating reliable connection (RC) QPs. | 10.10.2000 | 10.10.3000 |
| 41. | DC | On rare occasions DC Initiator completions might be lost. | 10.10.2000 | 10.10.3000 |
| 42. | Data Integrity Signature | The following signature rules are not supported (Numbering based on "signature rules table" in PRM): <ul style="list-style-type: none"> • Rule #12: T10 DIF • Rule #13: T10 DIF CS • Rule #14 T10 DIF CS | 10.10.2000 | 10.10.3000 |
| 43. | Quality of Service | VL arbitration configuration does not ensure minimum bandwidth for VL as configured. | 10.10.1000 | 10.10.2000 |
| 44. | False alarm report | On very rare occasions, a false firmware "hanged" report is printed in the dmesg. | 10.10.1000 | 10.10.2000 |
| 45. | CQ buffer resize | CQ buffer resize not supported | 10.10.1000 | 10.10.2000 |
| 46. | 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 Firmware Changes and New Feature History

Table 14 - Firmware Changes and New Feature History

| Firmware Version | Description |
|------------------|---|
| 10.16.1006 | <ul style="list-style-type: none"> • 64 VFs per port: Increased the number of VFs from 32 to 64 per PF. Note: When increasing the number of VFs, the following limitations must be taken into consideration: <ul style="list-style-type: none"> • <code>server_total_bar_size >= (num_pfs)*(2log_pf_uar_bar_size + 2log_vf_uar_bar_size*total_vfs)</code> • <code>server_total_msix >= (num_pfs)*(num_pf_msix + num_vfs_msix*total_vfs)</code> • Bug Fixes: See Section 4, “Bug Fixes History,” on page 17 |
| 10.14.2026 | <ul style="list-style-type: none"> • Bug Fixes: See Section 4, “Bug Fixes History,” on page 17 |
| 10.14.1100 | <ul style="list-style-type: none"> • CQE Time Stamping: Keeps track of the creation of a packet. A time-stamping service supports assertions of proof that a datum existed before a particular time. • RDMA retransmission counters: Custom port counters provide the user a clear indication about RDMA send/receive statistics and errors. • Link params modification via access registers: The change includes the following: <ul style="list-style-type: none"> • Changed port configuration which required link re-training (such as speed) • PAOS down • PAOS up This change, will cause the link to toggle and new configurations to take effect. • Checksum Calculation on Image/Device: Flint utility allows performing an MD5 checksum on the non-persistent sections of the firmware image. For further information, please refer to MFT User Manual. |
| 10.12.1100 | <ul style="list-style-type: none"> • Improved robustness during negotiation of Clause 73 (DME) |
| 10.12.0780 | <ul style="list-style-type: none"> • Dynamically Connected (DC) transport • Non-Volatile Configuration (NVConfig). For the complete list, please refer to Section 7, “Supported Non-Volatile Configurations,” on page 25. |
| 10.1100.6330 | <ul style="list-style-type: none"> • Added support for SR-IOV • Added support for MADs Virtualization Attributes according to “<code>ib_virt_annex_v17</code>” • Updated Virtualization command set according to the new PRM. • Enabled SR-IOV, NUM_VFS and INT_LOG_MAX_PAYLOAD_SIZE configuration via the <code>mlxconfig</code> tool |

Table 14 - Firmware Changes and New Feature History

| Firmware Version | Description |
|------------------|---|
| 10.0100.6440 | <ul style="list-style-type: none"> • T10 DIF pipeline Data Integrity Signature off-loading - Beta level • Automatic Path Migration • Congestion Control • Programmable Port/Node GUID • Thermal monitoring and protection • Port LEDs indications • Physical Port Counter - Beta level • Q Counter - Beta level • V port commands • Config space address in MAD management class 0x09 |
| 10.10.5054 | <ul style="list-style-type: none"> • Enabled firmware burning (using mstflint) when the driver is down. • Bug Fixes (See Section 4, “Bug Fixes History,” on page 17.) |
| 10.10.5020 | <ul style="list-style-type: none"> • Added support for EDR cables (up to FDR speeds). • Added additional InfiniBand spec optional counters • Improved resource allocation for absolute-priority VL's (when VL-high-limit is set to 255 in SM) to reduce latency of high priority traffic. • Bug Fixes See Section 4, “Bug Fixes History,” on page 17. |
| 10.10.4064 | <ul style="list-style-type: none"> • Bug Fixes (see Section 4, “Bug Fixes History,” on page 17) |
| 10.10.4050 | <ul style="list-style-type: none"> • Suspend to RAM (S3) support • Diagnostic counters vendor-specific MAD support, as defined by VS-MAD spec version 1.2 • Bug Fixes (see Section 4, “Bug Fixes History,” on page 17) |
| 10.10.4020 | <ul style="list-style-type: none"> • On Demand Paging (ODP) Memory can now be used without pinning memory beforehand. Supported transports are UD and RC • ODP support is GA for RC RDMA-write, RC send, and UD send. Beta level for • RDMA-read/atomics • Enhanced Atomic Operations to include all PRM atomic operations of 32 bytes or below • Dynamically Connected (DC) transport improvements |
| 10.10.3000 | <ul style="list-style-type: none"> • Dynamically Connected (DC) transport (at GA level) • Enabled Atomic Operations. For further information, please refer to the PRM section “Atomic Capabilities” • Added sniffer QP support (Note: Sniffer QP is currently not available in MLNX_OFED v2.2-1.0.0 or the MFT tools package) • Increased the maximum number of InfiniBand partitions to 0x1000 |

Table 14 - Firmware Changes and New Feature History

| Firmware Version | Description |
|------------------|--|
| 10.10.2000 | <ul style="list-style-type: none"> • Dynamically Connected (DC) transport (at Beta level) • CORE-Direct® <ul style="list-style-type: none"> • Provides Collective Off-loading in HCA • Frees CPU to perform computation in parallel with collective operations • T10 DIF Data Integrity Signature off-loading • 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 |
| 10.10.1000 | <ul style="list-style-type: none"> • 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 |

6 Unsupported Features and Commands

6.1 Unsupported Features

The following advanced feature as described in Connect-IB® PRM Rev 2.01 are unsupported in the current firmware version:

- Service types not supported:
 - SyncUMR
 - Mellanox transport
 - PTP
 - RAW IPv6
 - PTP (ieee 1588)
- Connect-IB® currently supports only a single physical function model
- 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
- PCIe Function Level Reset (FLR)
- SM is not supported on VFs

6.2 Unsupported Commands

- QUERY_MAD_DEMUX
- SET_MAD_DEMUX
- PAGE_FAULT_RESUME
- ACTIVATE_TRACER
- DEACTIVATE_TRACER

7 Supported Non-Volatile Configurations

Table 15 - Global Settings

| Name | Parameter Index |
|--------------------------|-----------------|
| PCI settings | 0x80 |
| PCI setting capabilities | 0x81 |
| TPT settings | 0x82 |
| TPT capabilities | 0x83 |
| Option ROM ini | 0x100 |
| Option ROM capabilities | 0x101 |