Mellanox OFED for FreeBSD for ConnectX-4/ConnectX-5
Release Note

Rev 3.4.1
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# Release Update History

**Table 1 - Release Update History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rev 3.4.1</td>
<td>March 1, 2018</td>
<td>Initial release of this version</td>
</tr>
</tbody>
</table>
1 Introduction

These are the release notes for Mellanox Technologies' driver for FreeBSD Rev 3.4.1 driver kit for Mellanox ConnectX®-4, ConnectX®-4 Lx, ConnectX®-5, ConnectX®-5 Ex adapter cards supporting the following uplinks to servers:

<table>
<thead>
<tr>
<th>Uplink/HCAs</th>
<th>Driver Name</th>
<th>Uplink Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>ConnectX®-4</td>
<td>mlx5</td>
<td>• InfiniBand (at beta level): SDR, QDR, FDR, FDR10, EDR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, 50GigE, 56GigE(^a), and 100GigE</td>
</tr>
<tr>
<td>ConnectX®-4 Lx</td>
<td></td>
<td>• Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, and 50GigE</td>
</tr>
<tr>
<td>ConnectX®-5/</td>
<td></td>
<td>• InfiniBand (at beta level): SDR, QDR, FDR, FDR10, EDR</td>
</tr>
<tr>
<td>ConnectX®-5 Ex</td>
<td></td>
<td>• Ethernet: 1GigE, 10GigE, 25GigE, 40GigE, 50GigE, and 100GigE</td>
</tr>
</tbody>
</table>

\(^a\) 56 GbE is a Mellanox propriety link speed and can be achieved while connecting a Mellanox adapter cards to Mellanox SX10XX switch series or connecting a Mellanox adapter card to another Mellanox adapter card.

1.1 Supported Platforms and Operating Systems

The following are the supported OSs in Mellanox OFED for FreeBSD for ConnectX-4 Rev 3.4.1:

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>FreeBSD 12 Current (rev 329338)</td>
<td>AMD64/x86_64</td>
</tr>
</tbody>
</table>

1.2 Supported Adapters Firmware Versions

Mellanox OFED for FreeBSD Rev 3.4.1 supports the following Mellanox network adapter cards:

<table>
<thead>
<tr>
<th>Supported Adapters</th>
<th>Current Firmware Rev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ConnectX®-4</td>
<td>12.22.1002</td>
</tr>
<tr>
<td>ConnectX®-4 Lx</td>
<td>14.22.1002</td>
</tr>
<tr>
<td>ConnectX-5/ConnectX-5 Ex</td>
<td>16.22.1002</td>
</tr>
</tbody>
</table>
## Changes and New Features in Rev 3.4.1

**Table 3 - Changes and Fixes in Rev 3.4.1**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicit Congestion Notification (ECN)</td>
<td>Added support for ECN, which enables end-to-end congestion notifications between two end-points when a congestion occurs.</td>
</tr>
<tr>
<td>Rate Limiting</td>
<td>Added support for users to rate limit a specific Traffic Class.</td>
</tr>
<tr>
<td>Priority Flow Control (PFC)</td>
<td>Added the ability to apply pause functionality to specific classes of traffic on the Ethernet link. <strong>Note:</strong> Currently, only layer 2 PFC (PCP) is supported.</td>
</tr>
<tr>
<td>Rx Hardware Time-Stamping</td>
<td>Added support for adding high-quality hardware time-stamping on incoming packets.</td>
</tr>
<tr>
<td>Firmware Dump</td>
<td>Added the ability to dump hardware registered data upon demand.</td>
</tr>
</tbody>
</table>

For additional information on the new features, please refer to the User Manual.
3 Known Issues

The following is a list of general limitations and known issues of the various components of this Mellanox OFED for FreeBSD release.

**Table 4 - Known Issues**

<table>
<thead>
<tr>
<th>Internal Ref.</th>
<th>Description</th>
<th>Workaround</th>
<th>Keywords</th>
<th>Discovered in Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>1175757</td>
<td>Running RDMA CM with IPoIB is not supported.</td>
<td>N/A</td>
<td>RDMA CM, IPoIB</td>
<td>3.4.1</td>
</tr>
<tr>
<td>1227471</td>
<td>When loading and unloading linuxkpi module, the following error message will appear in the dmesg, indicating that a memory leak has occurred: &quot;Warning: memory type linux leaked memory on destroy (2 allocations, 64 bytes leaked). Warning: memory type linuxcurrent leaked memory on destroy (7 allocations, 896 bytes leaked).&quot;</td>
<td>N/A</td>
<td>linuxkpi</td>
<td>3.4.1</td>
</tr>
<tr>
<td>1243940</td>
<td>RDMA applications might hang when restarting the driver during traffic.</td>
<td>Send a termination signal for the application or make sure to stop the application before restarting the driver.</td>
<td>RDMA, driver restart</td>
<td>3.4.1</td>
</tr>
<tr>
<td>1258718</td>
<td>When working in RoCE mode using ConnectX-4 HCAs only, a bandwidth performance degradation occurs when sending/receiving a message of any size larger than 16K.</td>
<td>N/A</td>
<td>RoCE, performance, ConnectX-4</td>
<td>3.4.1</td>
</tr>
<tr>
<td>1273118</td>
<td>RDMA multicast traffic is not supported.</td>
<td>N/A</td>
<td>RDMA, multicast</td>
<td>3.4.1</td>
</tr>
</tbody>
</table>
### Table 4 - Known Issues

<table>
<thead>
<tr>
<th>Internal Ref.</th>
<th>Issue</th>
</tr>
</thead>
</table>
| 1297834       | **Description:** When running over VLAN, RDMA loopback traffic fails.  
**Workaround:** N/A  
**Keywords:** RDMA, loopback, VLAN  
**Discovered in Release:** 3.4.1 |
|               | **Description:** Kernel panic may occur when creating/destroying a VLAN in a loop during traffic.  
**Workaround:** N/A  
**Keywords:** VLAN |
|               | **Description:** The following error message may be printed to dmesg when using static configuration via rc.conf:  
"loopback_route: deletion failed"  
This is a kernel-related issue.  
**Workaround:** N/A  
**Keywords:** Static Configuration |
|               | **Description:** LAG creation and destruction may sometimes cause both interfaces to have the same MAC address.  
This is a kernel-related issue.  
**Workaround:** N/A  
**Keywords:** LAG |
|               | **Description:** Rapidly restarting the interface using netif start/stop may cause an infinite number of messages printing to dmesg:  
"mce0: a looped back NS message is detected during DAD for fe80:6::e61d:2dff:fe81:e974. Another DAD probes are being sent"  
**Workaround:** N/A  
**Keywords:** netif restart |
|               | **Description:** Choosing a wrong interface media type will cause a “no carrier” status and the physical port will not be active.  
**Workaround:** N/A  
**Keywords:** Media Type |
|               | **Description:** There is no TCP traffic when configuring MTU in the range of 72-100 bytes in ConnectX®-4 Lx.  
**Workaround:** N/A  
**Keywords:** MTU |
4 Bug Fixes

The table below lists the bugs fixed in this release.

*Table 5 - Bug Fixes*

<table>
<thead>
<tr>
<th>Internal Ref.</th>
<th>Issue</th>
</tr>
</thead>
</table>
| 765775        | **Description:** Suppressed EEPROM error message/s that used to be received when SFP cages were empty.  
**Keywords:** EEPROM, SFP  
**Discovered in Release:** 3.0.0  
**Fixed in Release:** 3.3.0 |
| 854565        | **Description:** Allowed setting software MTU size below the value of 1500.  
**Keywords:** MTU  
**Discovered in Release:** 3.0.0  
**Fixed in Release:** 3.3.0 |
# History of Changes and New Features

## Table 6 - History of Changes and New Features

<table>
<thead>
<tr>
<th>Release</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| 3.3.0   | Packet Pacing                   | Also known as “rate limit”, this feature is now supported at a GA level.  
**Note**: This feature is supported in firmware v12.17.1016 and above. |
| 3.0.0   | Hardware LRO                    | Added support for Large Receive Offload (LRO) in the hardware. It increases inbound throughput of high-bandwidth network connections by reducing CPU overhead.  
Hardware LRO is only supported in ConnectX®-4. |
|         | Completion Based Moderation     | Added the option to reset the timer for generating interrupts upon completion generation.                                                     |
|         | EEPROM Cable Reading            | Added support for EEPROM cable reading via ifconfig and sysctl. EEPROM is only supported in ConnectX®-4.                                         |
|         | Interface Name                  | Changed the interface name from mlx5en<X> to mce<X>.                                                                                      |