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# **Mellanox ConnectX®-3/ConnectX®-3 Pro Poll-Mode Driver Release Notes**

Rev 1.7-8\_2.8.4

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# 1 DPDK Poll-Mode Driver (PMD) Overview

librte\_pmd\_mlx4 is the DPDK Poll-Mode Driver (PMD) for Mellanox ConnectX®-3 / ConnectX®-3 Pro Ethernet adapters. This driver is based on libibverbs and currently supports:

- Hardware TX and RX checksum offloading
- Scattering/gathering RX/TX packets
- Multiple RX (with RSS/RCA) and TX queues
- Multiple MAC addresses
- VLAN filtering
- Link state information
- Software counters/statistics
- Start/stop/close operations
- Multiple physical ports host adapter
- DPDK 1.7 and 1.8 from dpdk.org <<http://dpdk.org/>>

## 1.1 System Requirements

**Table 1: System Requirements**

Specification	Value
Network Adapter Cards	Mellanox ConnectX®-3 and ConnectX®-3 Pro network adapter card. (This must be configured to work in ETH mode.)
Firmware	2.34.5000
Driver Stack	MLNX_OFED-3.0-x.x.x
Operating Systems and Kernels	All OSs supported by MLNX_OFED
# CPU	Minimum 4 CPUs for VM
Minimum memory requirements	16 GB RAM
Transport	Ethernet
CPU Arch	x86 Power8

## 2 Changes and Major New Features

**Table 2: Changes and Major New Features**

Release	Changes
Rev 1.7-8_2.8.4	<ul style="list-style-type: none"> <li>• Added support for               <ul style="list-style-type: none"> <li>• MLNX_OFED 3.0-x.x.x</li> <li>• ESX 5.5</li> </ul> </li> <li>• Performance improvements</li> <li>• Added support for VXLAN TX and RX checksums offloading</li> <li>• Optimized steering mode, removed the previous limitations</li> <li>• Updated the configuration script</li> <li>• Bug fixes (see section <a href="#">Bug Fixes</a>)</li> </ul>
Rev 2.7.4	<ul style="list-style-type: none"> <li>• Added support for:               <ul style="list-style-type: none"> <li>• DPDK 1.8</li> <li>• MLNX_OFED 2.4-1.0.0</li> </ul> </li> <li>• Performance improvements for:               <ul style="list-style-type: none"> <li>• RX and TX</li> <li>• SR-IOV with RECV INLINE and optimized steering mode</li> </ul> </li> <li>• Added support for TX and RX checksum offloading</li> <li>• VXLAN traffic is received and steered between PMD's RSS queues</li> <li>• Removed support for DPDK 1.6</li> <li>• Bug fixes (see section <a href="#">Bug Fixes</a>)</li> </ul>
Rev 2.6.9	<ul style="list-style-type: none"> <li>• Added support for MLNX_OFED 2.3-2.0.0</li> <li>• Changed compilation instructions. For further information, please refer to the Quick Start Guide.</li> <li>• Bug fixes (see section <a href="#">Bug Fixes</a>)</li> </ul>
Rev 2.6.8	<ul style="list-style-type: none"> <li>• Added support for:               <ul style="list-style-type: none"> <li>• DPDK 1.7</li> <li>• MLNX_OFED 2.3-X-X-X</li> </ul> </li> <li>• Power8 (with DPDK 1.6) Performance improvements for:               <ul style="list-style-type: none"> <li>• Promiscuous mode</li> <li>• RSS</li> <li>• TX</li> </ul> </li> <li>• Added support for sending large packets (8192 &lt; packet size &lt; 16384)</li> <li>• Added auto detection of Virtual Function (VF) devices – removed the need to use MLX4_NO_SRIOV=1 for bare metal environment</li> <li>• Added 4 new functions to device capabilities :               <ul style="list-style-type: none"> <li>• <code>mtu_get</code> &amp; <code>mtu_set</code></li> <li>• <code>flow_ctrl_get</code>, &amp; <code>flow_ctrl_set</code></li> </ul> </li> <li>• Added bring up kernel interface during initialization stage</li> <li>• Added support for Multicast Promiscuous mode on SR-IOV environment</li> <li>• Added new option to compilation script: <code>-t &lt;RTE_TARGET&gt;</code></li> </ul>

Release	Changes
	<ul style="list-style-type: none"><li>• Added new options to configuration script: -p &lt;PAGE SIZE&gt;, -n &lt;HUGE PAGES NUM&gt;</li><li>• Removed support for:<ul style="list-style-type: none"><li>• VMware</li><li>• DPDK version &lt; 1.6</li></ul></li><li>• Bug Fixes (see section <a href="#">Bug Fixes</a>)</li></ul>
Rev 2.5	<ul style="list-style-type: none"><li>• Added support for VMware SR-IOV with PMD for DPDK running in guest VM</li><li>• Added support for DPDK 1.5 and 1.6 from dpdk.org</li><li>• Performance improvements</li><li>• Bug fixes (see section <a href="#">Bug Fixes</a>)</li></ul>
Rev 2.0	<ul style="list-style-type: none"><li>• Added support for KVM SR-IOV with PMD for DPDK running in guest VM</li><li>• Added support for Multiple NICs on the same host</li><li>• Bug fixes (see section <a href="#">Bug Fixes</a>)</li></ul>
Rev 1.5	<ul style="list-style-type: none"><li>• Added support for Multi cores</li><li>• Added support for RSS</li><li>• Added support for ConnectX®-3 Pro</li></ul>
Rev 1.0	<ul style="list-style-type: none"><li>• Added support for Single core</li><li>• Added support for ConnectX®-3</li></ul>

### 3 Known Issues

The following table describes known issues in Mellanox PMD, and existing workarounds.

**Table 3: PMD Known Issues**

Subject	Description	Workaround
InfiniBand	Mellanox PMD does not support InfiniBand.	N/A
The Primary and Secondary multi process model	The Primary and Secondary multi process model is currently not supported	Use multithreaded model instead of multi process
Hardware checksum offloading on VMware ESX 5.5 VM	Hardware checksum offloading is not supported in VMware VM	N/A
Hardware checksum offloading on ConnectX-3	Hardware checksum offloading is not supported in ConnectX-3	Use ConnectX3-Pro if hardware checksum offloading is needed
VXLAN hardware checksum offloading	VXLAN hardware checksum offloading is supported only if the used kernel supports it	Future release
L4 checksum report with hardware checksum offloading	When the packet does not include TCP/UDP header and the hardware checksum offloading is enabled, L4 checksum will be reported as bad	Future release
RSS	RSS hash key and options cannot be modified.	N/A
Hardware counters	Hardware counters are not implemented.	N/A
Promiscuous and SR-IOV	Promiscuous mode does not work when SR-IOV is enabled.	N/A
Promiscuous and SR-IOV	In testpmd: Although promiscuous mode fails in SR-IOV, it still shows as enabled This is DPDK implementation bug.	N/A
Multicast Promiscuous mode and SR-IOV	Virtual Machines (VM) with enabled Multicast Promiscuous mode do not receive the multicast traffic that other VMs on the same hypervisor are registered to.	N/A
VLAN filtering	VLAN filtering is supported only with non-optimized steering mode.	Run ./configure_mlx4_pmd.sh -s #NUMA node -v
Number of configured RSS queues must be power of 2	Number of configured RSS queues must be power of 2.	Use only power of 2 RSS queues
libibverbs warning	The following warning appears when running DPDK application with ConnectX-3 PMD libibverbs: Warning: couldn't open config directory '/usr/local/etc/libibverbs.d'	Ignore this warning



## 4 Bug Fixes

The following table describes the bug fixes of Mellanox PMD.

**Table 4: PMD Bug Fixes**

Subject	Description	Found in	Fixed in
Memory corruption when fork() is used in the application	Fixed an unpredicted behavior due to “cow” mechanism when an application used fork() or system call that was not related to the networking.	2.7.4	1.7-8_2.8.4
1Gb/s port’s link reported as 10Gb/s	Fixed a wrong speed reporting when a 10Gb/s port was set as 1Gb/s (10Gb/s instead of 1Gb/s)	2.7.4	1.7-8_2.8.4
Multiple RX VLAN filters	Although multiple RX VLAN filters can be configured, only the first one functioned properly.	2.5	1.7-8_2.8.4
rte_eth_dev_flow_ctrl_set cannot be used to disable flow ctrl	When trying to disable flow ctrl using rte_eth_dev_flow_ctrl_set it is always set to on	2.6.8	2.7.4
RX VLAN filters	RX VLAN filters do not function with PMD 2.6.8	2.5	2.7.4
Kernel crush with RSS application	Kernel crush might occur when a DPDK application which uses multiple queues (RSS) is shut down, (kill -9 or ^C)	2.6.9	2.7.4
ibv_register failures and local protection errors	When using function <code>rte_mempool_xmem_create(.., void *vaddr, ...)</code> to allocate mempool, if <code>vaddr != NULL</code> , mpool struct and data blocks were separated causing <code>ibv_reg_mr</code> failure and bad completion status on send and receive messages.	2.6.8	2.6.9
Memory corruptions	Fixed memory corruptions errors that happened after queues reconfiguration	2.5	2.6.8
Ubuntu	Fixed compilation on Ubuntu	2.5	2.6.8
VST mode on SR-IOV	Fixed VST mode with DPDK on SR-IOV	2.5	2.6.8
Performance	Occasionally, performance decreasing might occur in native systems.	2.0	2.5
Mismatch between PMD ConnectX® ports’ MAC and the actual MAC.	Occasionally, the ConnectX® ports’ MACs used by the PMD are not the actual ConnectX® MACs.	1.5	2.5