



Mellanox ConnectX-4/ConnectX-5 NATIVE ESXi Driver for VMware vSphere 6.0 Release Notes

Rev 4.15.12.12

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Table of Contents

Table of Contents	3
List Of Tables	4
Release Update History	5
Chapter 1 Overview	6
1.1 Content of MLNX-NATIVE-ESX Driver Package.....	6
1.2 Supported HCAs Firmware Versions.....	6
1.3 Tested Hypervisors in Paravirtualized and SR-IOV Environments	7
Chapter 2 Changes and New Features in Rev 4.15.12.12	8
Chapter 3 Known Issues	9
Chapter 4 Bug Fixes History	13
Chapter 5 Change Log History	14

List Of Tables

Table 1:	Release Update History	5
Table 2:	Supported Uplinks to Servers	6
Table 3:	Supported HCAs Firmware Versions	6
Table 4:	Tested Hypervisors in Paravirtualized and SR-IOV Environments	7
Table 5:	Changes and New Features	8
Table 6:	Known Issues	9
Table 7:	Fixed Bugs List	13
Table 8:	Change Log History	14

Release Update History

Table 1 - Release Update History

Release	Date	Description
Rev 4.15.12.12	January 14, 2018	Initial release of this MLNX-NATIVE-ESXi-ConnectX-4/ConnectX-4 Lx/ConnectX-5 driver version

1 Overview

These are the release notes of Mellanox ConnectX-4/ConnectX-5 NATIVE ESXi Driver for VMware vSphere 6.0. Mellanox ConnectX-4/ConnectX-5 NATIVE ESXi Driver for VMware vSphere 6.0 supports the following uplinks to servers

Table 2 - Supported Uplinks to Servers

Version	OS	Uplink Speed
4.15.12.12	ESXi 6.0, ESXi 6.0 U1	10/40GbE
	ESXi 6.0 U2	10/25/40/50GbE



ConnectX®-4 adapter card was tested at 100Gb with ESXi 6.0 and ESXi 6.5. However, VMware has certified and will report 100GbE from ESXi 6.5 onward.

1.1 Content of MLNX-NATIVE-ESX Driver Package

The MLNX-NATIVE-ESX driver package is distributed as an offline bundle (.zip file) and contains:

- **ESXi 6.0:**
MLNX-NATIVE-ESX-ConnectX-4-5_4.15.12.12-10EM-600.0.0.4598673.zip - Hypervisor bundle for ESXi 6.0 contains the following kernel modules:
 - nmlx5_core (Mellanox Technologies Ethernet driver)

1.2 Supported HCAs Firmware Versions

MLNX-NATIVE-ESX Rev 4.15.12.12 supports the following Mellanox Ethernet HCA:

Table 3 - Supported HCAs Firmware Versions

HCAs	Recommended Firmware Rev.
ConnectX-4	12.21.1000
ConnectX-4 Lx	14.21.1000
ConnectX-5	16.21.1000
ConnectX-5 Ex	16.21.1000

Please note that older firmware versions were not tested with this release.

For the latest firmware versions, visit:

- http://www.mellanox.com/page/vmware_matrix
- or
- <http://www.mellanox.com/supportdownloader/>

1.3 Tested Hypervisors in Paravirtualized and SR-IOV Environments

Table 4 - Tested Hypervisors in Paravirtualized and SR-IOV Environments

Tested Hypervisors	HCAs	Operating System
SR-IOV	ConnectX-4/ConnectX-4 Lx ConnectX-5/ConnectX-5 Ex	Windows Server 2012 R2
		RedHat 6.5
		RedHat 6.6
		RedHat 7.0
		RedHat 7.1
		RedHat 7.2
		SLES 11.3
Paravirtualized	ConnectX-4/ConnectX-4 Lx ConnectX-5/ConnectX-5 Ex	Windows Server 2012 R2
		RedHat 6.5
		RedHat 6.6
		RedHat 7.0
		RedHat 7.1
		RedHat 7.2
		SLES 11.3

2 Changes and New Features in Rev 4.15.12.12

Table 5 - Changes and New Features

Feature/Change	Description
SR-IOV max_vfs module parameter Type Modification	Changed the type of the SR-IOV max_vfs module parameter from a single integer value to an array of unsigned integers. For further information, refer to the User Manual.
Bug Fixes	See Section 4, “Bug Fixes History” , on page 13

3 Known Issues

The following is a list of general limitations and known issues of the various components of this MLNX-NATIVE-ESX release.

Table 6 - Known Issues (Sheet 1 of 4)

Internal Ref.	Description
1191657	Description: The maximum value of RSS must be lower than the number of CPU cores.
	Workaround: N/A
	Keywords: RSS
	Discovered in Version: 4.5.12.12
-	Description: The hardware can offload only up to 256B of headers.
	Workaround: N/A
	Keywords: Hardware offload
	Discovered in Version: 4.5.10.3/4.15.10.3
781277	Description: The "esxcli network sriovnic vf stats" command is not supported. When running this command on a vmknic, a failure message is displayed.
	Workaround: N/A
	Keywords: esxcli SR-IOV
	Discovered in Version: 4.5.10.3/4.15.10.3
685558	Description: There is no traffic between PV and SR-IOV VF connected to different ports on the same HCA.
	Workaround: N/A
	Keywords: PV, SR-IOV VF, HCA
858972	Description: Setting the "Allow Guest MTU Change" option in vSphere Client is currently not functional. Although guest MTU changes in SR-IOV are allowed, they do not affect the port's MTU and the guest's MTU remains the same as the PF MTU.
	Workaround: N/A
	Keywords: MTU, SR-IOV
870158	Description: Although 'drss' and 'rss' parameters are disabled by default, when querying the nmlx5_core module parameter the displayed default values of drss/drss are "4".
	Workaround: N/A
	Keywords: DRSS, NetQ RSS
939198	Description: VST mode in SR-IOV in ConnectX-5 is currently not functional.
	Workaround: N/A
	Keywords: VSNetQ RSS, encapsulated trafficT Mode, SR-IOV

Table 6 - Known Issues (Sheet 2 of 4)

Internal Ref.	Description
1043285	Description: While running <code>stress ipv6 all2all</code> traffic, the MTU is changed several times and PSOD is excepted #14 (page fault).
	Workaround: Reboot the driver
	Keywords: MTU, PSOD, Traffic
1031520	Description: When a guest is assigned an IB PCI passthru device or an IB VF, VMware Tools networking information for the guest may be incorrect. This affects how the guest networking information, such as interfaces and their IPs, is displayed in vCenter.
	Workaround: N/A
	Keywords: VMware Tools networking information
1064844	Description: <code>nmlxcli</code> tool is not supported on ESXi 5.5.
	Workaround: N/A
	Keywords: <code>nmlxcli</code> , ESXi 5.5
1064883	Description: Operations on <code>vmnics</code> which are in passthru mode are not supported.
	Workaround: N/A
	Keywords: <code>vmnics</code> , passthru mode
746100	Description: The <code>'esxcli mellanox uplink link info -u <vmnic_name>'</code> command reports the 'Auto negotiation' capability always as 'true'.
	Workaround: N/A
	Keywords: 'Auto negotiation' capability
1068621	Description: SMP MADs (<code>ibnetdiscover</code> , <code>sminfo</code> , <code>iblinkinfo</code> , <code>smpdump</code> , <code>ibqueryerr</code> , <code>ibdiagnet</code> and <code>smpquery</code>) are not supported on the VFs.
	Workaround: N/A
	Keywords: SMP MADs
-	Description: Multicast and IPv6 traffic might be unstable over SR-IOV.
	Workaround: N/A
	Keywords: SR-IOV, IPv6, Multicast
656416	Description: Reboot is required after any SR-IOV configuration change.
	Workaround: N/A
	Keywords: SR-IOV
653679	Description: Firmware VF configuration must be N+1 (while N is the required VF number). For example: If your configuration requires 10 VFs, the firmware must be set to support 16 VFs (ESXi Limitation).
	Workaround: N/A
	Keywords: VFs

Table 6 - Known Issues (Sheet 3 of 4)

Internal Ref.	Description
641252	Description: Driver specific statistics are not supported in ESXi 5.5.
	Workaround: N/A
	Keywords: ESXi 5.5, Statistics
778371	Description: Wake-on-LAN does not notify when invalid parameters are provided.
	Workaround: N/A
	Keywords: WoL
778572	Description: Nested ESXi might not function properly.
	Workaround: N/A
	Keywords: Nested ESXi
765008	Description: Device RSS fails to hash traffic to sufficient RX rings with Broadcast traffic.
	Workaround: N/A
	Keywords: RSS, RX rings
852883	Description: In stress condition ‘Watchdog’ may appear, leading to uplink going up and down.
	Workaround: N/A
	Keywords: uplink, watchdog
850886	Description: Call trace might occur after running VGT with heavy traffic.
	Workaround: N/A
	Keywords: VGT, heavy traffic
775668	Description: VMs can get Call Trace upon MTU change during heavy traffic.
	Workaround: N/A
	Keywords: VM, MTU, heavy traffic
776274	Description: Reloading the driver when the SR-IOV VFs are ON, will result in Purple Screen of Death (PSOD).
	Workaround: N/A
	Keywords: Driver reload
784293	Description: VGT traffic over VXLAN interfaces is currently not supported.
	Workaround: N/A
	Keywords: VGT traffic, VXLAN
846359	Description: The adapter card might get stuck in Down state after setting the ring size to 8192.
	Workaround: N/A
	Keywords: Ring size

Table 6 - Known Issues (Sheet 4 of 4)

Internal Ref.	Description
862168	Description: VMs with SR-IOV cannot be powered on when running low on available vectors.
	Workaround: N/A
	Keywords: VM, SR-IOV
777205	Description: Occasionally, untagged traffic can pass between VMs with SR-IOV enabled when portgroup is configured for VLAN trunk range.
	Workaround: N/A
	Keywords: VM, SR-IOV, VLAN trunk

4 Bug Fixes History

Table 7 lists the bugs fixed in this release.

Table 7 - Fixed Bugs List

Internal Ref.	Description
958154	<p>Description: NetQ RSS for encapsulated traffic is currently not supported. Encapsulated traffic (VXLAN/Geneve) directed to NetQ RSS queue will not be distributed through all queues' channels, thus will not utilize the RSS feature.</p> <p>Note: It is highly recommended to avoid requesting RSS for encapsulated interfaces, i.e. refrain from defining the following in the VM configuration file: <code><iface_name>.pnictFeatures=4</code></p> <p>Keywords: NetQ RSS, encapsulated traffic</p> <p>Discovered in Release: 4.15.8.8</p> <p>Fixed in Release: 4.15.12.12</p>
698142/637104	<p>Description: Traffic loss of large packets might occur after MTU change.</p> <p>Keywords: MTU, Traffic loss</p> <p>Discovered in Release: 4.15.6.22/4.5.6.22</p> <p>Fixed in Release: 4.15.10.3/4.5.10.3</p>
745415	<p>Description: In ESXi5.5 – when using a server with many ConnectX-4 / ConnectX-4 Lx ports, some of the interfaces do not show up in the <code>esxcfg-nics -l</code> list. This can occur if no MSI-X resources are available to enable loading all interfaces.</p> <p>Keywords: ESXi 5.5, port interfaces, MSI-X</p> <p>Discovered in Release: 4.15.4.1000/4.5.2.1000</p> <p>Fixed in Release: 4.15.6.22/4.5.6.22</p>
689573	<p>Description: When SR-IOV is enabled and the <code>max_vfs</code> is not equal to 0, new filters are not applied.</p> <p>Keywords: SR-IOV, filters</p> <p>Discovered in Release: 4.15.4.1000/4.5.2.1000</p> <p>Fixed in Release: 4.15.6.22/4.5.6.22</p>
781255	<p>Description: Added a new module parameter to <code>nmlx5_core</code> "supported_num_ports" to support up to "8" ConnectX-4 Lx ports.</p> <p>Keywords: Ports, module param</p> <p>Discovered in Release: 4.15.4.1000/4.5.2.1000</p> <p>Fixed in Release: 4.15.5.10/4.5.5.10</p>
760021	<p>Description: Fixed an issue which prevented the driver from loading on machines with 64 or more CPU cores.</p> <p>Keywords: MSI-X</p> <p>Discovered in Release: 4.15.4.1000/4.5.2.1000</p> <p>Fixed in Release: 4.15.4.1100/4.5.4.1100</p>

5 Change Log History

Table 8 - Change Log History (Sheet 1 of 2)

Feature/Change	Description
Rev. 4.15.10.3/4.5.10.3	
ESXi CLI	Added ESXi CLI support for ESXi 6.0
Adapter Cards	Added support for ConnectX-5/ConnectX-5 Ex adapter cards. Note: ConnectX-5/ConnectX-5 Ex cards are currently at beta level.
Rev. 4.15.6.22/4.5.6.22	
Set Link Speed	Enables you to set the link speed to a specific link speed supported by ESXi. For further information, see the User Manual section “ <i>Set Link Speed</i> ”.
Priority Flow Control (PFC)	Applies pause functionality to specific classes of traffic on the Ethernet link. For further information, see the User Manual section “ <i>Priority Flow Control (PFC)</i> ”.
NetQ RSS	Allows the user to configure multiple hardware queues backing up the single RX queue. NetQ RSS improves vMotion performance and multiple streams of IPv4/IPv6 TCP/UDP/IPSEC bandwidth over single interface between the Virtual Machines. For further information, see the User Manual section “ <i>NetQ RSS</i> ”.
Default Queue RSS (DRSS)	Allows the user to configure multiple hardware queues backing up the default RX queue. DRSS improves performance for large scale multicast traffic between hypervisors and Virtual Machines interfaces. For further information, see the User Manual section “ <i>Default Queue Receive Side Scaling (DRSS)</i> ”.
Bug Fixes	See Section 4, “Bug Fixes History”, on page 13
Rev. 4.15.5.10/4.5.5.10	
General	Added support for up to 8 ConnectX-4 Lx ports and up to 16 VFs. For further information, refer to the User Manual
SR-IOV	Added SR-IOV support for ESXi 5.5
Bug Fixes	See Section 4, “Bug Fixes History”, on page 13
Rev. 4.15.4.1100/4.5.2.1100	
Bug Fixes	See Section 4, “Bug Fixes History”, on page 13
Rev. 4.15.4.1000/4.5.2.1000	
RX/TX Ring Resize	Allows the network administrator to set new RX\TX ring buffer size.
Rev. 4.15.3.1008/4.5.1.1008	
VXLAN Hardware Stateless Offloads for ConnectX®-4	VXLAN hardware offload enables the traditional offloads to be performed on the encapsulated traffic.
SR-IOV (Beta level)	Single Root IO Virtualization (SR-IOV) is a technology that allows a physical PCIe device to present itself multiple times through the PCIe bus. Note: SR-IOV is currently supported in ESXi 6.0 only.

Table 8 - Change Log History (Sheet 2 of 2)

Feature/Change	Description
NetDump	Enables a host to transmit diagnostic information via the network to a remote netdump service, which stores it on disk. Network-based core-dump collection can be configured in addition to or instead of disk-based coredump collection.
NetQueue	NetQueue is a performance technology in VMware ESXi that significantly improves performance in 10 Gigabit Ethernet virtualized environments.
Wake-on-LAN	Allows a network administrator to remotely power on a system or to wake it up from sleep mode