



Mellanox ConnectX-4 NATIVE ESXi Driver for VMware vSphere 5.5/6.0 Release Notes

Rev 4.15.6.22/4.5.6.22

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Release Update History

Table 1 - Release Update History

Release	Date	Description
Rev 4.15.6.22/4.5.6.22	November 22, 2016	Updated Section 1, "Overview" , on page 6. Added a note related to the supported uplink speeds.
	September, 2016	Initial release of this MLNX-NATIVE-ESXi-ConnectX-4 version

1 Overview

These are the release notes of Mellanox ConnectX-4 NATIVE ESXi Driver for VMware vSphere 5.5/6.0. Mellanox ConnectX-4 NATIVE ESXi Driver for VMware vSphere 5.5/6.0 supports the following uplinks to servers

Table 2 - Supported Uplinks to Servers

Version	OS	Uplink Speed
4.5.6.22	ESXi 5.5 U1	10/40GbE
4.5.16.22	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-ConnectX-4 Package

The MLNX-NATIVE-ESX-ConnectX-4 driver package is distributed as an offline bundle (.zip file) and contains:

- **ESXi 5.5:**
MLNX-NATIVE-ESX-ConnectX-4-4.5.6.22-10EM-550.0.0.1391871.zip - Hypervisor bundle for ESXi 5.5 contains the following kernel modules:
 - nmlx5_core (Mellanox Technologies Ethernet driver)
- **ESXi 6.0:**
MLNX-NATIVE-ESX-ConnectX-4-4.5.16.22-10EM-600.0.0.2768847.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-ConnectX-4 Rev 4.15.6.22/4.5.6.22 supports the following Mellanox Ethernet HCA:

Table 3 - Supported HCAs Firmware Versions

HCAs	Recommended Firmware Rev.
ConnectX-4	12.17.1010
ConnectX-4 Lx	14.17.1010

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	Windows Server 2012 R2
		CentOS 7.2
		RedHat 6.5
		RedHat 6.6
		RedHat 7.0
		RedHat 7.1
		RedHat 7.2
		SLES 11.3
Paravirtualized	ConnectX-4/ConnectX-4 Lx	Windows Server 2012 R2
		CentOS 7.2
		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 4.15.6.22/4.5.6.22

Table 5 - Changes and New Features

Feature/Change	Description
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> ”.

3 Known Issues

The following is a list of general limitations and known issues of the various components of this MLNX-NATIVE-ESX-ConnectX-4 release.

Table 6 - Known Issues

Internal Ref.	Description
-	<p>Description: This driver support Ethernet cards only, VPI cards can be configured as Ethernet only mode when burning the firmware. For further information on firmware burning, please refer to the MFT User Manual. (www.mellanox.com > Products > Software > InfiniBand/VPI Drivers > Firmware Tools)</p> <p>WA: N/A</p> <p>Keywords: Protocols, InfiniBand, Ethernet</p>
-	<p>Description: Multicast and IPv6 traffic might be unstable over SR-IOV.</p> <p>WA: N/A</p> <p>Keywords: SR-IOV, IPv6, Multicast</p>
656416	<p>Description: Reboot is required after any SR-IOV configuration change.</p> <p>WA: N/A</p> <p>Keywords: SR-IOV</p>
653679	<p>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).</p> <p>WA: N/A</p> <p>Keywords: VFs</p>
641252	<p>Description: Driver specific statistics are not supported in ESXi 5.5.</p> <p>WA: N/A</p> <p>Keywords: ESXi 5.5, Statistics</p>
778371	<p>Description: Wake-on-LAN does not notify when invalid parameters are provided.</p> <p>WA: N/A</p> <p>Keywords: WoL</p>
778572	<p>Description: Nested ESXi might not function properly.</p> <p>WA: N/A</p> <p>Keywords: Nested ESXi</p>
765008	<p>Description: Device RSS fails to hash traffic to sufficient RX rings with Broadcast traffic.</p> <p>WA: N/A</p> <p>Keywords: RSS, RX rings</p>

Table 6 - Known Issues

Internal Ref.	Description
852883	Description: In stress condition ‘Watchdog’ may appear, leading to uplink going up and down.
	WA: N/A
	Keywords: uplink, watchdog
850886	Description: Call trace might occur after running VGT with heavy traffic.
	WA: N/A
	Keywords: VGT, heavy traffic
698142/637104	Description: Traffic loss of large packets might occur after MTU change.
	WA: Reboot the driver
	Keywords: MTU, Traffic loss
846359	Description: The adapter card might get stuck in Down state after setting the ring size to 8192.
	WA: N/A
	Keywords: Ring size
775668	Description: VMs can get Call Trace during MTU change upon heavy traffic.
	WA: N/A
	Keywords: VM, MTU, heavy traffic
776274	Description: Occasionally, reloading the driver might result in Purple Screen of Death (PSOD).
	WA: N/A
	Keywords: Driver reload
784293	Description: VGT traffic over VXLAN interfaces is currently not supported.
	WA: N/A
	Keywords: VGT traffic, VXLAN
862168	Description: VMs with SR-IOV cannot be powered on when running low on available vectors.
	WA: 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.
	WA: N/A
	Keywords: VM, SR-IOV, VLAN trunk
685558	Description: There is no traffic between PV and SR-IOV VF connected to different ports on the same HCA.
	WA: N/A
	Keywords: PV, SR-IOV VF, HCA

Table 6 - Known Issues

Internal Ref.	Description
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.
	WA: 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".
	WA: N/A
	Keywords: DRSS, NetQ RSS

4 Bug Fixes History

Table 7 lists the bugs fixed in this release.

Table 7 - Fixed Bugs List

Internal Ref.	Description
745415	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>esxconfig-nics -l</code> list. This can occur if no MSI-X resources are available to enable loading all interfaces.
	Keywords: ESXi 5.5, port interfaces, MSI-X
	Discovered in Release: 4.15.4.1000/4.5.2.1000
	Fixed in Release: 4.15.6.22/4.5.6.22
689573	Description: When SR-IOV is enabled and the <code>max_vfs</code> is not equal to 0, new filters are not applied.
	Keywords: SR-IOV, filters
	Discovered in Release: 4.15.4.1000/4.5.2.1000
	Fixed in Release: 4.15.6.22/4.5.6.22
781255	Description: Added a new module parameter to <code>nmlx5_core</code> "supported_num_ports" to support up to "8" ConnectX-4 Lx ports.
	Keywords: Ports, module param
	Discovered in Release: 4.15.4.1000/4.5.2.1000
	Fixed in Release: 4.15.5.10/4.5.5.10
760021	Description: Fixed an issue which prevented the driver from loading on machines with 64 or more CPU cores.
	Keywords: MSI-X
	Discovered in Release: 4.15.4.1000/4.5.2.1000
	Fixed in Release: 4.15.4.1100/4.5.4.1100

5 Change Log History

Table 8 - Change Log History

Feature/Change	Description
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	SR-IOV: Added SR-IOV support for ESXi 5.5
Bug Fixes	See Section 4, “Bug Fixes History”, on page 12
Rev. 4.15.4.1100/4.5.2.1100	
Bug Fixes	See Section 4, “Bug Fixes History”, on page 12
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.
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