# Mellanox ConnectX-4/ConnectX-5 NATIVE ESXi Driver for VMware vSphere 7.0 Release Notes

Rev. 4.19.70.1

NOTE:
THIS HARDWARE, SOFTWARE OR TEST SUITE PRODUCT (“PRODUCT(S)”) AND ITS RELATED DOCUMENTATION
ARE PROVIDED BY MELLANOX TECHNOLOGIES “AS-IS” WITH ALL FAULTS OF ANY KIND AND SOLELY FOR THE
PURPOSE OF AIDING THE CUSTOMER IN TESTING APPLICATIONS THAT USE THE PRODUCTS IN DESIGNATED
SOLUTIONS. THE CUSTOMER'S MANUFACTURING TEST ENVIRONMENT HAS NOT MET THE STANDARDS SET BY
MELLANOX TECHNOLOGIES TO FULLY QUALIFY THE PRODUCT(S) AND/OR THE SYSTEM USING IT. THEREFORE,
MELLANOX TECHNOLOGIES CANNOT AND DOES NOT GUARANTEE OR WARRANT THAT THE PRODUCTS WILL
OPERATE WITH THE HIGHEST QUALITY. ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED
TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT ARE DISCLAIMED. IN NO EVENT SHALL MELLANOX BE LIABLE TO CUSTOMER OR ANY
THIRD PARTIES FOR ANY DIRECT, INDIRECT, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES OF ANY
KIND (INCLUDING, BUT NOT LIMITED TO, PAYMENT FOR PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY FROM THE USE OF THE PRODUCT(S) AND RELATED DOCUMENTATION EVEN IF ADVISED OF
THE POSSIBILITY OF SUCH DAMAGE.

**Mellanox Technologies**

350 Oakmead Parkway Suite 100
Sunnyvale, CA 94085, U.S.A.
www.mellanox.com

Tel: (408) 970-3400
Fax: (408) 970-3403

# Table of Contents

**Release Notes Update History**

| Revision | Date | Description |
|----------|------|-------------|
| 4.19.70.1 | April 21, 2020 | Initial release of this Release Notes version. |

# 1 Overview

These are the release notes of Mellanox ConnectX-4/ConnectX-5 NATIVE ESXi Driver for VMware vSphere 7.0. Mellanox ConnectX-4/ConnectX-5 NATIVE ESXi Driver for VMware vSphere 7.0 supports the following uplinks to servers.

| Version | OS | Uplink Speed |
|---|---|---|
| 4.19.70.1 | ESXi 7.0 | 10/25/40/50/100GbE |

## Content of MLNX-NATIVE-ESX Driver Package

**ESXi 7.0:**

MLNX-NATIVE-ESX-ConnectX-4-5_4.19.70.1-1OEM.700.1.0.15525992.zip - Hypervisor bundle for ESXi 7.0 contains the following kernel modules:

- nmlx5_core
- nmlx5_rdma

## 1.1 Supported HCAs Firmware Versions

MLNX-NATIVE-ESX Rev 4.19.70.1 supports the following Mellanox Ethernet HCA and their corresponding firmware version:

| HCAs | Minimal Recommended Firmware Rev. |
|---|---|
| ConnectX-4 | 12.27.1016 |
| ConnectX-4 Lx | 14.27.1016 |
| ConnectX-5 / ConnectX-5 Ex | 16.27.2008 |
| ConnectX-6 | 20.27.2008 |
| ConnectX-6 Dx | 22.27.2008 |

For the latest firmware versions, visit: https://www.mellanox.com/support/firmware/firmware-downloads

## 1.2 Tested Hypervisors in Paravirtualized and SR-IOV Environments

| Tested Hypervisors | HCAs | Guest Operating System |
|---|---|---|
| SR-IOV | ConnectX-4<br><br>ConnectX-4 Lx<br><br>ConnectX-5/ConnectX-5 Ex<br><br>ConnectX-6<br><br>ConnectX-6 Dx | Windows Server 2016 DC<br><br>RedHat 8.0<br><br>RedHat 7.5<br><br>RedHat 7.3<br><br>RedHat 6.10<br><br>RedHat 6.3<br><br>SLES 12 SP4<br><br>SLES 12 SP3 |
| Paravirtualized[a] (Ethernet Only) | ConnectX-4<br><br>ConnectX-4 Lx<br><br>ConnectX-5/ConnectX-5 Ex<br><br>ConnectX-6<br><br>ConnectX-6 Dx | Windows Server 2016 DC<br>RedHat 8.0<br>RedHat 7.5<br>RedHat 7.3<br>RedHat 6.10<br>RedHat 6.3<br>SLES 12 SP4<br>SLES 12 SP3 |

a. Paravirtualized RDMA is supported only in Linux Operating Systems and in this release it was tested for RedHat 7.5 only.

# 2 Changes and New Features

| Feature/Change | Description |
|---|---|
| **4.19.70.1** | |
| Power Limitation | Disabled the option of shutting down the link due to power limitation. |
| Differentiated Services Code Point (DSCP) | Added support for trusting Differentiated Services Code Point (DSCP) and setting default value for RoCE traffic. |
| SR-IOV VF Counters | Added a new counter that enables the user to query per Virtual Function counters. |
| RX Counters | Added the RX out-of-buffer counter to indicate any lack of software receive buffers. |
| Data Center Bridging Capability Exchange (DCBx) | Added support for Data Center Bridging Capability Exchange (DCBx) protocol. DCBX works with LLDP to allow switches to exchange information about their Data Center Bridging (DCB) capabilities and configuration and automatically negotiate common Priority-Based Flow Control (PFC) parameters. |
| RoCE, RDMA | Added a module parameter to enforce specific RoCE version. |
| Enhanced Transmission Selection (ETS) | Added support for setting the minimal bandwidth guarantee for traffic classes (TCs). |
| SR-IOV | SR-IOV InfiniBand is at beta level. |

# 3 Known Issues

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

| Internal Ref. | Description |
|---|---|
| 2139652 | **Description:** SRI-OV is not supported while ENS is enabled. |
| | **Workaround:** N/A |
| | **Keywords:** SRI-OV, ENS |
| | **Discovered in Version:** 4.19.70.1 |
| 1712298 | **Description:** Live unload of the driver is not supported. Doing so may cause a PSOD if the max_vfs parameter is set. |
| | **Workaround:** N/A |
| | **Keywords:** Driver load |
| | **Discovered in Version:** 4.19.70.1 |
| 2120216 | **Description:** The maximum number of established active RDMA connections (QPs) is currently 5000. |
| | **Workaround:** N/A |
| | **Keywords:** QPs, RDMA |
| | **Discovered in Version:** 4.19.70.1 |
| 2125202 | **Description:** ENS is currently not supported in ConnectX-6 Dx adapter cards. |
| | **Workaround:** Use non ENS DVS for ConnectX-6 Dx cards. |
| | **Keywords:** ENS |
| | **Discovered in Version:** 4.19.70.1 |

| Internal Ref. | Description |
|---|---|
| 2130911 | **Description:** Setting ETS value to 0 may cause WQE timeout. |
| | **Workaround**: Set ETS value of 1 instead of 0. |
| | **Keywords:** ETS, QOS |
| | **Discovered in Version:** 4.19.70.1 |
| 746100 | **Description:** The 'esxcli mellanox uplink link info -u <vmnic_name>' command reports the 'Auto negotiation' capability always as 'true'. |
| | **Workaround**: N/A |
| | **Keywords:** 'Auto negotiation' capability |
| | **Discovered in Version:** 4.19.70.1 |
| 1068621 | **Description:** SMP MADs (ibnetdiscover, sminfo, iblinkinfo, smpdump, ibqueryerr, ibdiagnet and smpquery) are not supported on the VFs. |
| | **Workaround**: N/A |
| | **Keywords:** SMP MADs |
| | **Discovered in Version:** 4.19.70.1 |
| 1446060 | **Description:** Although the max_vfs module parameter range is "0-128", due to firmware limitations, the following are the supported VFs per single port devices: <br> • ConnectX-4 / ConnectX-5: up to 127 |
| | **Workaround**: N/A |
| | **Keywords:** SR-IOV, VFs per port |
| | **Discovered in Version:** 4.19.70.1 |