

How-to: NVIDIA ConnectX driver upgrade on VMware ESXi 6.7/7.0 and above.

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Introduction

This is a How To that shows how to install and test the NVIDIA ConnectX-5/ConnectX-6 NATIVE ESXi Driver for VMware vSphere ESXi 6.7/7.0 on single host, and perform basic initial configuration steps to enable the driver by using ESXi cli interface.

References

- [NVIDIA OFED \(MLNX_OFED\) ESXi Ethernet Driver](#)
- [How-to: Firmware update for NVIDIA ConnectX-5/6 adapter on VMware ESXi 6.5 and above.](#)
- [VMware vSphere Documentation](#)
- [vSphere Command-Line Interface Concepts and Examples](#)

Hardware and Software Requirements

1. A server platform with an adapter card based on one of the following NVIDIA **ConnectX®-4/5** PCI Express Adapter Cards (**Ethernet, VPI**) devices.
2. Installer Privileges: The installation requires **administrator privileges** on the target machine.
3. **Device ID**: For the latest list of device IDs, please visit NVIDIA website.
4. **Supported NICs / Firmware**: Recommended firmware versions you can find [here](#).

Driver Installation (CLI)

1. **Enable SSH Access to ESXi** server.
2. **Log into ESXi vSphere Command-Line Interface** with root permissions.
3. **Verify** that the host is equipped with **NVIDIA ConnectX (Mellanox) adapter**.

ESXi Console

```
~ lspci | grep Mellanox
```

```
0000:39:00.0 Ethernet controller: Mellanox Technologies ConnectX-6 Dx EN
NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AC-CDA) [vmnic0]
0000:39:00.1 Ethernet controller: Mellanox Technologies ConnectX-6 Dx EN
NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AC-CDA) [vmnic1]
```



Note: in this case, the Mellanox card is using vmnic0 and vmnic1.

4. **Verify the driver's version** was installed.

ESXi 7.0

Related Documents

- [How-to: Install NVIDIA Firmware Tools \(MFT\) on VMware ESXi 6.7 /7.0.](#)
- [RDG: RoCE accelerated Apache Spark 2.2 cluster deployment.](#)
- [RDG: RoCE accelerated vSphere 6.7 cluster deployment for ML and HPC workloads.](#)
- [RDG: VMware NSX-V hardware VTEPs in High-Availability mode on Spectrum switches running Cumulus Linux.](#)
- [How-to: Firmware update for NVIDIA ConnectX-5/6 adapter on VMware ESXi 6.5 and above.](#)
- [How-to: Change port type of NVIDIA ConnectX VPI adapter on VMware ESXi 6.x and above.](#)
- [How-to: NVIDIA ConnectX driver upgrade on VMware ESXi 6.7/7.0 and above.](#)
- [How-to: Configure NVIDIA network device in VMDirectPath I/O passthrough mode on VMware ESXi 6.x.](#)
- [How-to: Configure NVIDIA ConnectX-5/6 adapter in SR-IOV mode on VMware ESXi 6.7/7.0 and above.](#)
- [How-to: Configure RoCEv2 lossless fabric for VMware ESXi 6.5 and above.](#)
- [How-to: Configure NVIDIA GPU device in VMDirectPath I/O passthrough mode on VMware ESXi 6.x server.](#)
- [QSG: TRex in a few steps using Nvidia ConnectX adapters.](#)
- [QSG: Building Docker image with compiled Nvidia Network DPDK PMD.](#)
- [How-to: Configure PVRDMA in VMware vSphere 6.5/6.7.](#)
- [RDG: Kubernetes Cluster Deployment for ML and HPC Workloads with NVIDIA GPU Virtualization and VMware PVRDMA Technologies.](#)

ESXi Console

```
~ esxcli software vib list | grep nmlx
nmlx5-core          4.21.71.1-1OEM.702.0.0.17473468
MEL      VMwareCertified  2021-06-07
nmlx5-rdma          4.21.71.1-1OEM.702.0.0.17473468
MEL      VMwareCertified  2021-06-07
```

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ESXi Console

```
~ esxcli software vib list | grep nmlx

nmlx5-core 4.17.9.12-1vmw.670.0.0.8169922 VMW VMwareCertified 2018-04-25
nmlx5-rdma 4.17.9.12-1vmw.670.0.0.8169922 VMW VMwareCertified 2018-04-25
```

5. **Download** a latest Mellanox native ESXi **drivers** from [here](#).
6. **Unzip** the binary image (.zip file).
7. Use SCP or any other file transfer method to **copy the driver** to the required ESXi host.
8. **Place a Host in Maintenance Mode** the ESXi host.
9. **Install** the driver.

```
~ esxcli software vib install -d <path>/<bundle_file>
```

ESXi 7.0

ESXi Console

```
~ esxcli software vib install -d /tmp/Mellanox-nmlx5_4.21.71.101-1OEM.702.0.0.17630552.zip
```

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ESXi Console

```
~ esxcli software vib install -d /tmp/Mellanox-nmlx5_4.17.71.1-1OEM.670.0.0.8169922.zip
```

10. **Reboot** the server.

ESXi Console

```
~ reboot
```

11. **Verify** the **driver modules** was **installed and loaded** successfully.

ESXi Console

```
esxcli software vib list | grep nmlx
nmlx5-core                4.21.71.101-1OEM.702.0.0.17630552
MEL      VMwareCertified  2021-09-30
nmlx5-rdma                4.21.71.101-1OEM.702.0.0.17630552
MEL      VMwareCertified  2021-09-30
```

ESXi Console

```
~ esxcli system module list | grep nmlx5

nmlx5_core                true      true
nmlx5_rdma                true      true
```

12. Check physical network interface status.

ESXi Console

```
~ esxcli network nic list

Name      PCI Device   Driver      Admin Status  Link Status  Speed
Duplex    MAC Address  MTU  Description
-----
-----
vmnic0    0000:39:00.0 nmlx5_core Up            Up            100000
Full     0c:42:a1:24:04:ea 1500 Mellanox Technologies ConnectX-6 Dx EN
NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AC-CDA)
vmnic1    0000:39:00.1 nmlx5_core Up            Down          0
Half     0c:42:a1:24:04:eb 1500 Mellanox Technologies ConnectX-6 Dx EN
NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AC-CDA)
```

13. Exit Maintenance Mode the ESXi host.

Done!