

# How to install a device driver for Mellanox ConnectX-4 Ethernet card on Linux

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**Categories :** [Networking](#)

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**Question:** I installed a Mellanox ConnectX-4 Lx EN Ethernet card on my Linux server, but the NIC card is not recognized by the system. How can I install a driver for Mellanox ConnectX-4 NIC on [insert Linux distro]?

Mellanox provides a wide range of high-speed interconnection solutions including Gigabit Ethernet cards and InfiniBand adapter cards. ConnectX-4 EN is one of Mellanox' flagship Ethernet adapters offering 10/25/40/50/100GbE speed. To meet the stringent demand of today's data center interconnection environments, Mellanox ConnectX-4 provides a multitude of powerful features such as SR-IOV I/O virtualization, NVGRE/VxLAN hardware offload, RDMA over Converged Ethernet, Erasure Coding offload, etc.

As of today device drivers for Mellanox ConnectX product series are not part of Linux distributions. Therefore if you want to use a ConnectX card (e.g., ConnectX-4 Lx EN), you need to build and install the driver.

Fortunately, Mellanox does a pretty good job making sure that their NIC card is accessible on all major operating system platforms via up-to-date drivers.

Here is **how to compile and install Mellanox ConnectX-4 EN driver (mlx4\_en) on Linux**. Other Mellanox card drivers can be installed in a similar fashion.

## Preparation

Before building the Mellanox driver, first set up a necessary build environment by installing dependencies as follows.

### Install dependencies on Debian, Ubuntu or Linux Mint

```
$ sudo apt-get install debhelper autotools-dev dkms zlib1g-dev gcc make patch gcc-c++
```

### Install dependencies on CentOS, Fedora or Red Hat

```
$ sudo yum install gcc make patch gcc-c++ redhat-rpm-config rpm-build
```

## Install dependencies on OpenSUSE

```
$ sudo zypper install gcc make patch gcc-c++ kernel-syms
```

## Compile and Install Mellanox ConnectX-4 Driver

Download the latest device driver for Mellanox ConnectX-4 card from the [official website](#). The driver's tarball contains the device driver's source code as well as the latest NIC firmware.

### MLNX\_EN Download Center

**Current Versions** Archive Versions

Version (Current)	OS Distribution	OS Distribution Version	Architecture	Download Documentation
3.3-1.0.0.0	Ubuntu	Ubuntu 16.04	x86_64	<b>MLNX_EN Tarball</b> <a href="#">1.0.0.0.tgz</a> <b>Size:</b> 135M <b>MD5SUM:</b> f97c55594ed099  <b>Documentation:</b> <a href="#">Release Notes</a> <a href="#">User Manual</a>
	SLES	Ubuntu 15.10	PPC64le	
	RHEL/CentOS	Ubuntu 15.04		
	OEL	Ubuntu 14.10		
	Fedora	Ubuntu 14.04		
	Debian	Ubuntu 12.04		
	Citrix XenServer Host			

Extract the tarball, and run the installation script (`install.sh`) as root.

```
$ tar -xf mlnx-en-3.3-1.0.0.0.tgz
$ cd mlnx-en-3.3-1.0.0.0
$ sudo ./install.sh
```

The script builds the Mellanox NIC driver from the source, and installs it.

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```
$ sudo ./install.sh
Installing mlnx-en for Linux
Starting installation at Tue Jun 21 09:03:49 EDT 2016...
Remove currently installed mlnx-en package (y/n) [y] ? y
Removing mlnx-en package
Checking for Linux headers availability...
Verifying dependencies...
Building mlnx-en binary DEBs
Installing mlnx-en...
Building mstflint binary DEBs
Installing mstflint...
```

Once installation is completed, the script then queries the Mellanox NIC's firmware, and updates outdated firmware automatically.

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Finally, any previously installed `mlnx` module is unloaded and the new Mellanox NIC driver is loaded.

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```
-----
Found 1 device(s) requiring firmware update...

Device #1: Updating FW ... Done

Restart needed for updates to take effect.
Log File: /tmp/install-mlx_en.log.2671_fw_update.log
Please reboot your system for the changes to take effect.

    In order for newly installed mlx modules to load,
    previous modules must first be unloaded.
    Do you wish to reload the driver now? (y/n) [y] y
Reloading mlx modules
Unloading NIC driver:                [ OK ]
Loading NIC driver:                  [ OK ]
Installation finished successfully.
$
```

The installed NIC driver for Mellanox ConnectX-4 EN is named `mlx4_en`. Verify that it is successfully loaded as follows.

```
$ lsmod | grep mlx4
$ modinfo mlx4_en
```

```
$ lsmod | grep mlx4
mlx4_en                133152  0
vxlan                   37619  2 mlx4_en,mlx5_core
ptp                     18933  3 tg3,mlx4_en,mlx5_core
mlx4_core               344998  1 mlx4_en
mlx_compat              14239  3 mlx4_en,mlx4_core,mlx5_core
$
$ modinfo mlx4_en
filename:                /lib/modules/3.13.0-43-generic/updates/dkms/mlx4_en.ko
version:                 3.3-1.0.0.0 (31 May 2016)
license:                 Dual BSD/GPL
description:             Mellanox ConnectX HCA Ethernet driver
author:                  Liran Liss, Yevgeny Petrilin
srcversion:              EB61F9DE758F96FED977D30
depends:                  mlx4_core,mlx_compat,ptp,vxlan
vermagic:                3.13.0-43-generic SMP mod_unload modversions
parm:                    udp_rss:Enable RSS for incoming UDP traffic or disabled (0) (uint)
parm:                    pfctx:Priority based Flow Control policy on TX[7:0]. Per priority bit mask (uint)
parm:                    pfcrx:Priority based Flow Control policy on RX[7:0]. Per priority bit mask (uint)
parm:                    inline_thold:Threshold for using inline data (range: 17-104, default: 104) (uint)
$
```