



WinOF VPI for Windows **Installation Guide**

Rev 3.0.0

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Document Revision History

Table 1 - Document Revision History

Document Revision	Date	Changes
Rev 3.0.0	February 08, 2012	• Removed section Port Protocol Configuration • Removed section Advanced Configuration for InfiniBand Driver • Removed section Advanced Configuration for Ethernet Driver • Added section 4, “Extracting Files without Running Installation,” on page 11 • Added section 7.1, “OpenSM Activation,” on page 21 • Added section 9, “Assigning Port IP After Installation,” on page 23

1 About this Manual

1.1 Scope

This document describes how to install and test MLNX_VPI for Windows on a single host machine with Mellanox hardware installed.

1.2 Intended Audience

This manual is intended for network administrators who are responsible for installing and configuring Mellanox WinOF VPI package.

1.3 Related Documentation

The following table lists the documents referenced in this *Installation Guide*.

Table 2 - Reference Documents

Document Name	Description
MLNX VPI Windows User Manual	Elaborates on the configuration, management and maintenance of the software and hardware of VPI (InfiniBand, Ethernet) adapter cards.
MLNX VPI Windows Installation Guide	This document
MLNX VPI Windows Release Notes	Elaborates of New Features and Major Changes as well as known issues and fixed bugs for Ethernet and IB drivers

All of these documents can be found on the Mellanox website:

<http://www.mellanox.com> --> Products--> InfiniBand & VPI Software/Drivers --> MLNX_VPI_Windows.

2 Introduction

This User Manual addresses the Mellanox WinOF VPI driver Rev 3.0.0 package distributed for Windows Server 2008 (x86 and x64), Windows Server 2008 R2 (x64) and Windows 7 (x86 and x64).

Mellanox WinOF VPI is composed of several software modules that contain an InfiniBand and Ethernet driver. The Mellanox WinOF VPI driver supports Infiniband and 10GB Ethernet ports. The port type is determined upon boot based on card's capability and user setting.

2.1 Hardware and Software Requirements

2.1.1 Hardware Requirements

- Required Disk Space for Installation
 - 100 MB

2.1.2 Firmware Requirements

Mellanox WinOF VPI Rev 3.0.0 supports the following Mellanox network adapter cards:

- IB
 - ConnectX®-2 EN IB SDR/DDR/QDR (fw-25408 Rev 2.9.1000)
- VPI / Ethernet
 - ConnectX® / ConnectX®-2 / ConnectX® EN / IB SDR/DDR/QDR (fw-25408 Rev 2.9.1000)
 - ConnectX®-3 FDR/SDR/QDR (fw-25408 Rev 2.10.0000 and higher)

2.1.3 Software Requirements

- Operating Systems
 - Windows 7 (32 and 64 bits)
 - Windows Server 2008 (32 and 64 bits)
 - Windows Server 2008-R2 (64 bits only)



The Operating Systems above must run with administrator privileges.

3 Identifying Mellanox Adapters on Your Machine

Step 1 Open Device Manager. Click Start -> select Computer -> right click and select Manage.

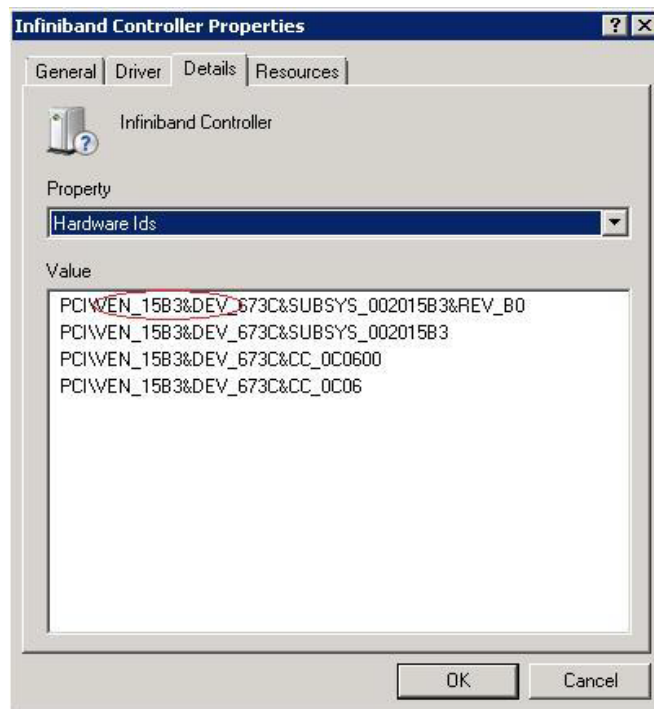
Step 2. Check the Device Manager under “Other devices” -> select “InfiniBand Controller” or “Unknown Devices”.

- If the NIC is Ethernet only, under “Other devices” in the Device Manager you see “Ethernet Controller”.
- If you cannot find the device, click Action --> Scan for hardware changes. If no devices are detected, check that the network adapter card(s) is correctly installed in the PCI slot or try installing the adapter card into a different PCI slot.



Step 3. Select the required device (InfiniBand Controller/Ethernet Controller/Unknown Device), right-click and select Properties to display the device’s Properties window.

Step 4. Click the Details tab and select Hardware Ids from the Properties pull-down menu.



Step 5. In the Value display box, check the fields VEN and DEV (fields are separated by '&'). In the display example above, notice the sub-string "PCI\VEN_15B3&DEV_6368": VEN is equal to 0x15B3.



The list of Mellanox Technologies PCI Device IDs can be found in the PCI ID repository at <http://pci-ids.ucw.cz/read/PC/15b3>.

Step 6. If the PCI device does not have a Mellanox adapter ID, return to Step 3 to check another device.



If you cannot find any Mellanox adapter device listed as a PCI device, make sure that the adapter card(s) is correctly installed in the adapter PCI slot. If the adapter device remains unidentified, try installing the adapter card into a different PCI slot.

4 Downloading MLNX_VPI

Follow these steps to download the appropriate .exe to your machine.

Step 1 Verify the machine architecture.

1. Open a CMD console (Click start-->Run and enter CMD).
2. Enter the following command:

```
> echo %PROCESSOR_ARCHITECTURE%
```

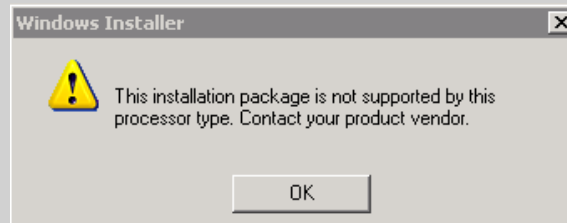
- On an x86 (32-bit) machine, the output will be "x86".
- On an x64 (64-bit) machine, the output will be "AMD64".

Step 2. Go to the MLNX_VPI for Windows Web page at <http://www.mellanox.com> --> Products --> Software/Drivers --> InfiniBand & VPI SW/Drivers --> Windows SW/Drivers

Step 3. Download the appropriate .exe according to the architecture of your machine (see Step 1). The .exe's name is in the following format MLNX_WinOF_VPI-3_0_0_<arch>.exe, where *arch* can be either x86 or x64.



If you download and attempt to install the incorrect .exe, the installation wizard will not allow it. For example, if you try to install a 64-bit .exe on a 32-bit machine, the wizard will display the following (or a similar) error message:



5 Extracting Files without Running Installation

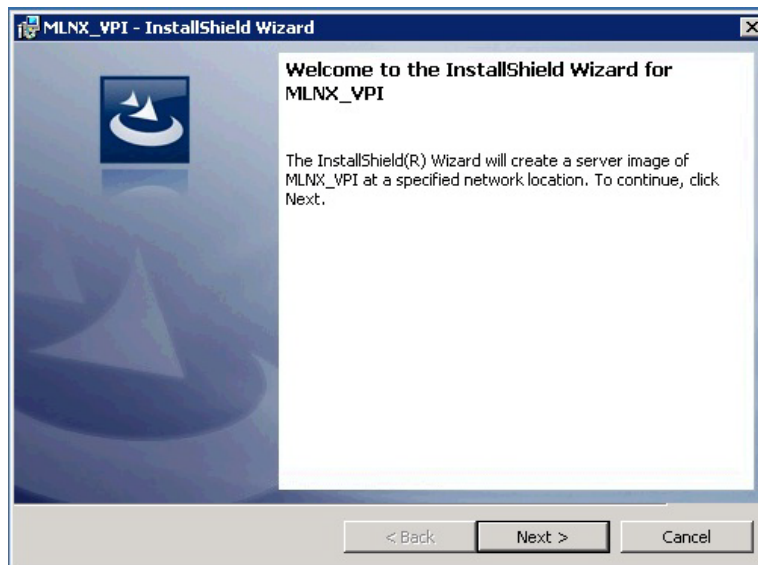
Follow these steps to extract the files without running installation.

Step 1 Open a CMD console (Click start-->Run and enter CMD).

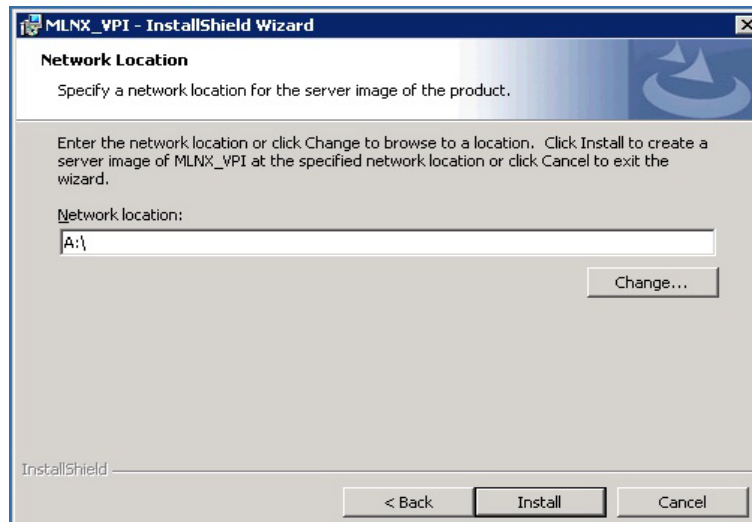
Step 2. Enter the following command:

```
> MLNX_WinOF_VPI-3_0_0_<arch>.exe /a
```

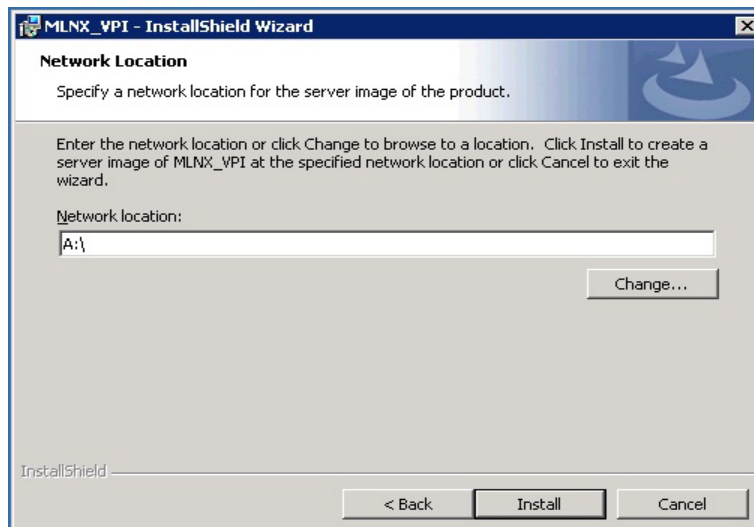
Step 3. Click Next to create a server image:



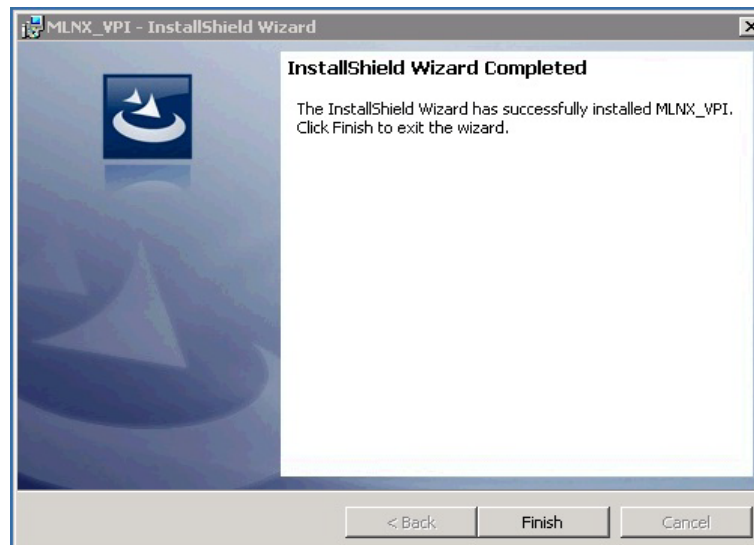
Step 4. Click Change and specify the location in which the files are extracted:



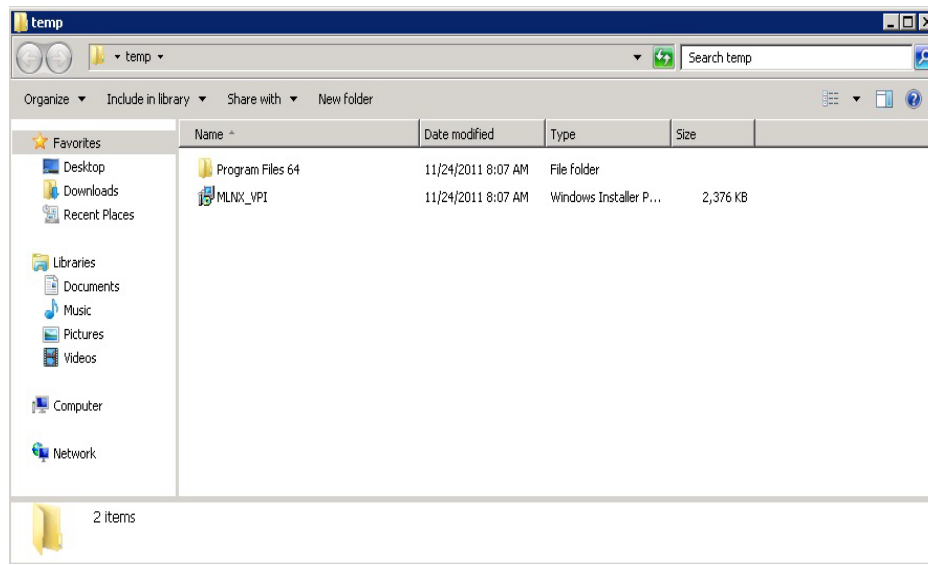
Step 5. Click Install to extract the files:



Step 6. Click Finish to close the wizard:



Step 7. Go to the chosen location and search for the extracted files:



6 Installing MLNX_VPI

This sections provides instructions for two types of installation:

- “Attended Installation”
An installation procedure that requires frequent user intervention.
- “Unattended Installation”
An automated installation procedure that requires no user intervention.



Both the Attended and the Unattended installation require administrator privileges on the machine.

6.1 Attended Installation

The following is an example of a MLNX_VPI x64 installation session.

Step 1 Double click the .exe and follow the GUI instructions to install MLNX_VPI.

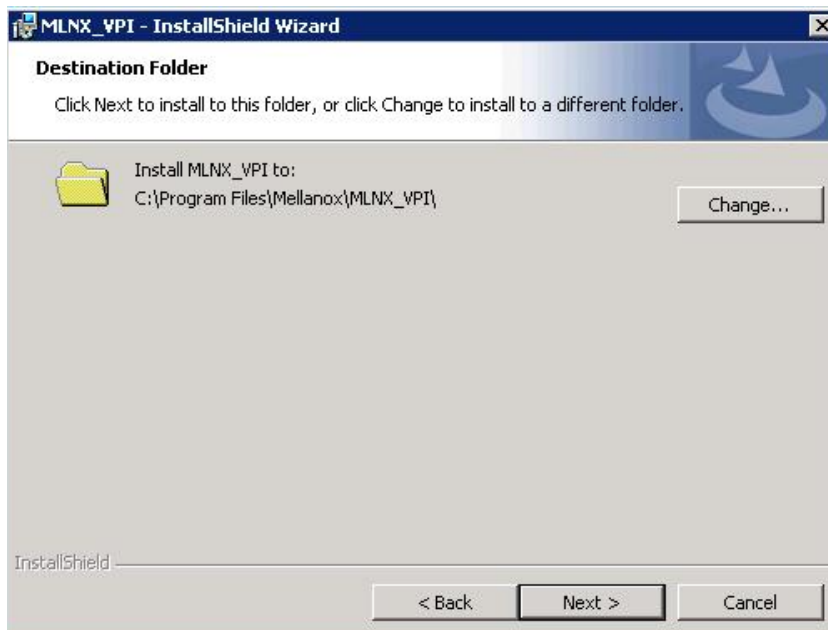
Step 2. Click Next in the Welcome screen.



Step 3. Select “I accept the terms in the license agreement” and click Next.



Step 4. Choose the destination folder for the installation.



Step 5. Configure your system for maximum 10GigE performance by checking the maximum performance box.

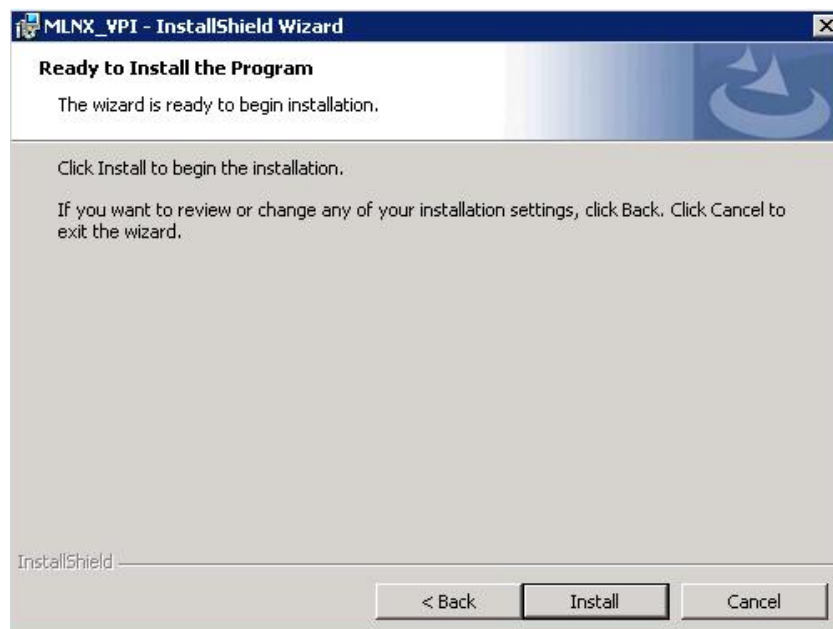


If you check the maximum performance box (see figure below), you will need to reboot your system at the end of installation.



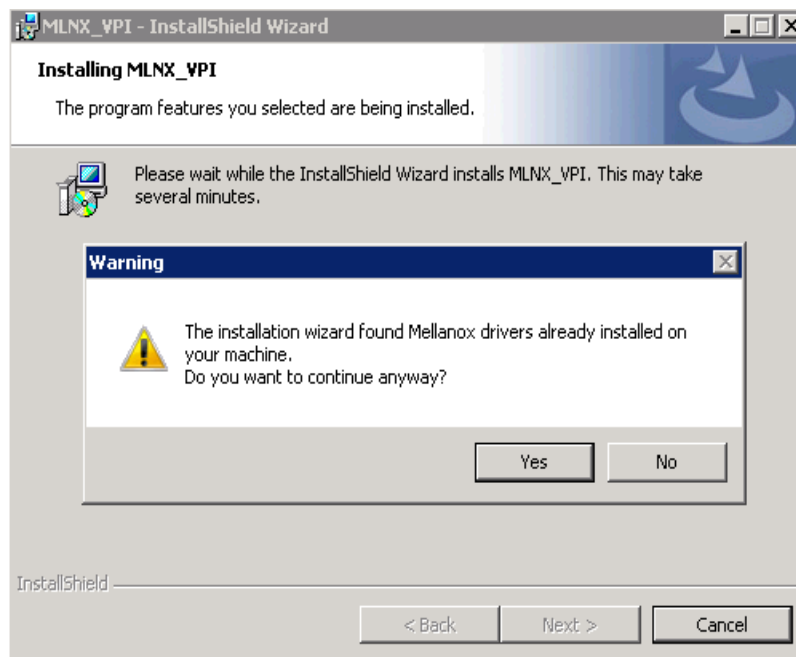
Step 6. Click Next to continue to the next performance dialog.

Step 7. To install the package components, click Install.



Step 8. In case of a previously installed Mellanox drivers on your machine, the .exe installer will promote the message below.

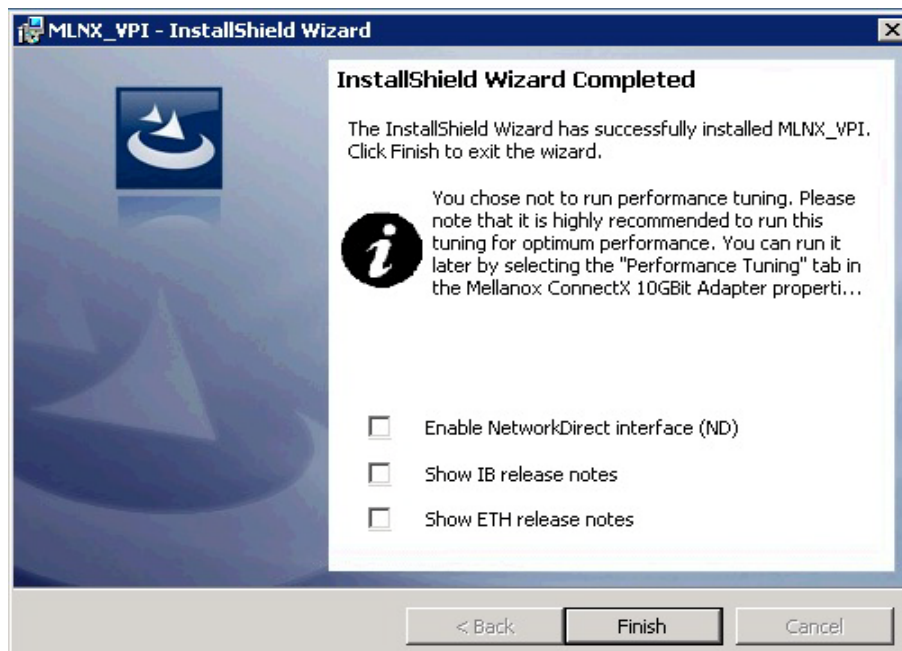
If you press "Yes", the installer will replace the old drivers with the new ones.



Step 9. In the following window, enable the required components (if any). To complete the installation, click Finish.



Even if you do not enable any of the displayed components in this step, you will be able to enable components after the installation completes. For further information, please refer to section “Port Protocol Configuration” in the User Manual.



6.2 Unattended Installation

To perform a silent/unattended installation, open a CMD console (click Start->Run and enter 'cmd') and enter the following command:

```
> MLNX_WinOF_VPI-3_0_0_<arch>.exe /S /v/qn
```



For all command options, enter 'MLNX_WinOF_VPI-3_0_0_<arch>.exe /?'.

7 Upgrading MLNX_VPI

If you have an older MLNX_VPI package already installed in your machine, to upgrade it you can run the new MLNX_VPI package and it will automatically upgrade your current version by fully uninstalling your previous product and install the new package instead.

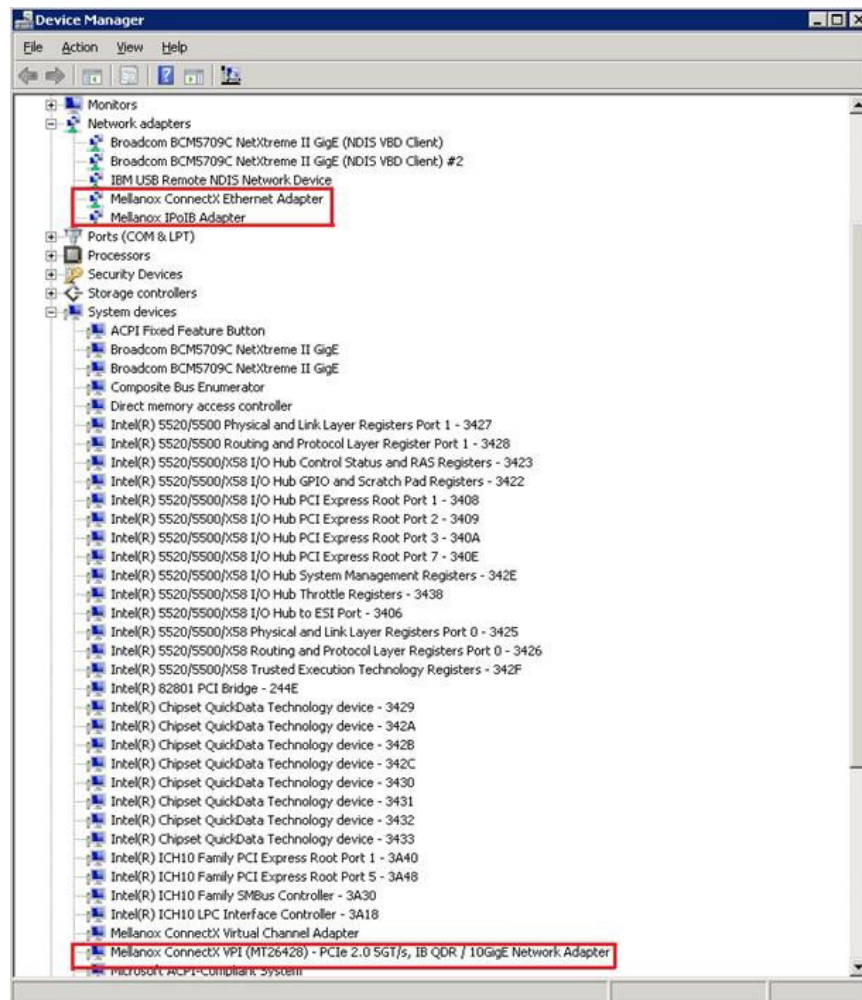


The upgrade removes all existing network interfaces. If you use static IP address, VLAN, LBFO or the interface is used by Hyper-V, you need to reconfigure your driver after the upgrade.

8 Installation Results

The installed MLNX_VPI for Windows package is located under the directory selected in Step 4 of Section 6.1. (The default installation folder is Program Files\Mellanox\MLNX_VPI.)

Upon installation completion, additional network adapters are added to the Device Manager and can be displayed when opening it. To see the Mellanox network adapters devices, and the Ethernet or iPoIB network device (depending on the used card) for each port, display the Device Manager and expand “System devices” and “Network adapters”.



8.1 OpenSM Activation

OpenSM is a service required by managed networks in InfiniBand environments, and must be activated in one of the machines running on the subnet, otherwise the interface link will not come up. If the cards are connected to a managed network, there is no need to run OpenSM. Only one OpenSM should run per subnet.

In Ethernet interfaces, running OpenSM is not required.

OpenSM is embedded in the MLNX_VPI for Windows package and installed as a disabled Windows service.

To enable it, after installing the WinOF package, enter at the command line:

```
> sc start opensm
```

For further information, please refer to the “OpenSM - Subnet Manager” chapter in the User Manual.

9 Uninstalling MLNX_VPI

9.1 Attended Uninstall

To uninstall MLNX_VPI on a single node, perform one of the following options:

1. Click Start-> Control Panel-> Programs and Features-> MLNX_VPI-> Remove. (NOTE: This requires elevated administrator privileges – see [Section 7, “ConnectX®-3 FDR/SDR/QDR \(fw-25408 Rev 2.10.0000 and higher\),”](#) on page 6 for details.)
2. Double click the .exe and follow the instructions of the install wizard.
3. Click Start-> All Programs-> Mellanox Technologies-> MLNX_VPI-> Uninstall MLNX_VPI.

9.2 Unattended Uninstall

To uninstall MLNX_VPI in unattended mode, perform the following:

Step 1 Open a CMD console

Step 2. Enter the following command:

```
> MLNX_WinOF_VPI-3_0_0_<arch>.exe /X /S /V/qn
```



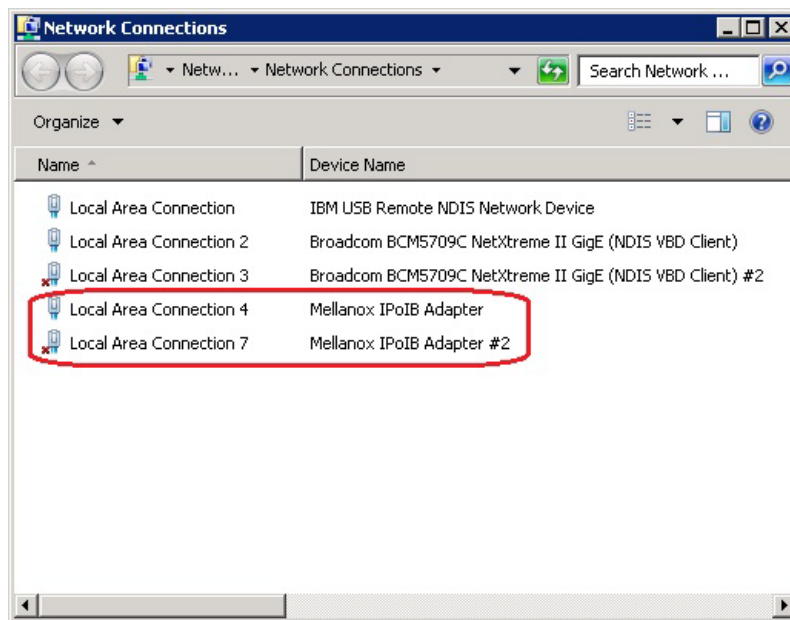
For all command options, enter 'MLNX_WinOF_VPI-3_0_0_<arch>.exe /?'.

10 Assigning Port IP After Installation

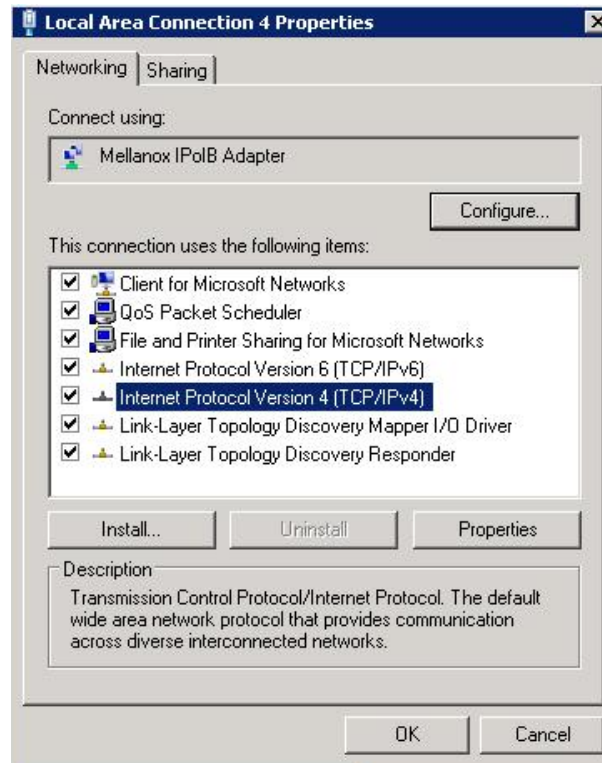
By default, your machine is configured to obtain an automatic IP address via a DHCP server. In some cases, the DHCP server may require the MAC address of the network adapter installed in your machine. To obtain the MAC address, open a CMD console and enter the command 'ipconfig /all' ; the MAC address is displayed as "Physical Address".

Configuring a static IP is the same for both IPoIB and Ethernet adaptors. To assign a static IP addresses to a network port after installation, perform the following steps:

- Step 1** Open the Network Connections window. Locate Local Area Connections with Mellanox devices.

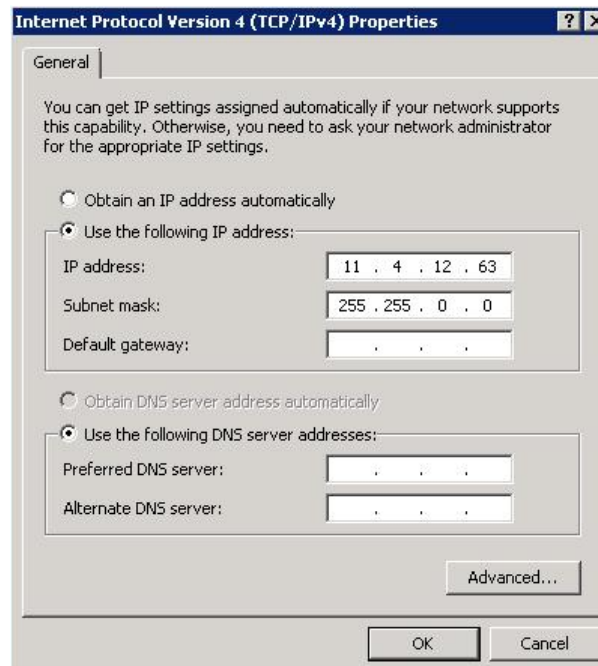


Step 2. Right-click a Mellanox Local Area Connection and left-click Properties.



Step 3. Select Internet Protocol Version 4 (TCP/IPv4) from the scroll list and click Properties.

- Step 4.** Select the “Use the following IP address:” radio button and enter the desired IP information. Click OK when you are done.



- Step 5.** Close the Local Area Connection dialog.

- Step 6.** Verify the IP configuration by running ‘ipconfig’ from a CMD console.

```
> ipconfig
...
Ethernet adapter Local Area Connection 4:

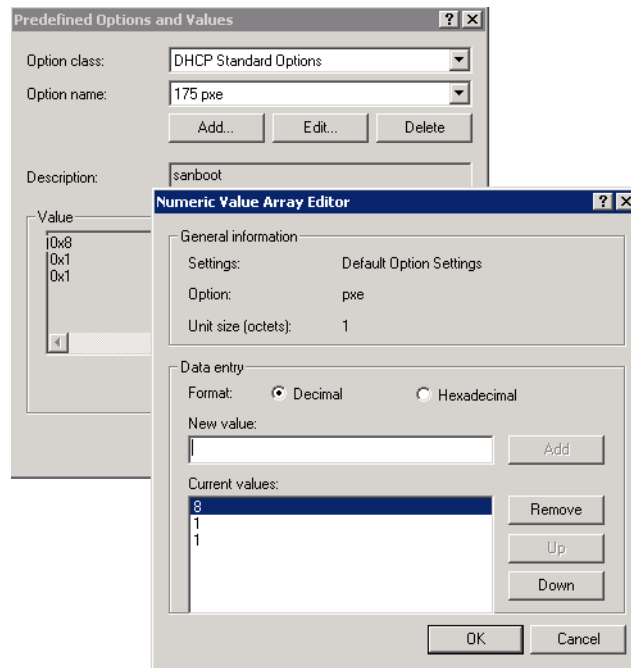
    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 11.4.12.63
    Subnet Mask . . . . . : 255.255.0.0
    Default Gateway . . . . . : 
    ...
```

11 Booting Windows from an iSCSI Target

11.1 Configuring the Target Machine

To configure target machine, perform the following steps:

1. Install Mellanox VPI drivers
2. Install an iSCSI Target software e.g StartWind
3. Select the desired port for the iSCSI deployment
4. Assign static IP address (e.g. 11.4.12.65)
5. Add DHCP role and bind it to the iSCSI deployment port
6. (Recommended) Add DHCP options:
 - a. Go to DHCP console (Administrative tools -> DHCP) and right click Scope Options
 1. Choose Configure Options
 2. Check the 017 Root Path option
 3. Enter your root-path in the String value field
Assuming the target IP is: 11.4.12.65
Target Name: iqn:2011-01:iscsiboot
The root path should be: iscsi:11.4.12.65:::iqn:2011-01:iscsiboot
 - b. Go to DHCP console (Administrative tools -> DHCP) and right click your IP protocol (IPv4/IPv6)
 1. Choose Set Predefined Options
 2. Click Add
 3. Fill in the Option Type as follow:
Option Name: pxe
Code: 175
Description: sanboot
Select Array
 4. Click OK
 5. Choose Edit Array
 6. Remove the existing number and add 1, 1, 8. After each number click Add
 7. Click OK



8. Go to Scope Options and choose Configure Options

9. Select Add Option 175



This method is fully supported for Ethernet drivers, Windows 2008 and Windows 2008-R2 but not supported for IPoIB in Windows VPI Rev 3.0.0.

11.2 Configuring the Client Machine

1. Prior to configuring your client, verify the following:
 - a. The card is burned with the correct Mellanox FlexBoot version
For Ethernet you need to burn the card (if the machine is connected back to back to target) with Ethernet FlexBoot. Otherwise use the VPI FlexBoot
 - b. The Mellanox card is burned with the correct FW for your system
2. Change BIOS settings and change boot order to:
 - MLNX NIC
 - CD-ROM
3. Unplug the machine's Hard Disk
4. Prepare the drivers' package and copy it into a USB
 - a. For Ethernet make sure you have
 - Mlx4_bus driver package
 - Mlx4eth6 driver package

Go to www.mellanox.com > Products > Adapter IB/VPI SW > Windows SW/Drivers to download drivers.

- b. For IPoIB make sure you have
 - Mlx4_bus driver package
 - Mlx4_hca driver package
 - IPoIB driver package

11.3 Installing iSCSI

1. Insert the setup CD-ROM and reboot
2. While the BIOS starts booting from the Mellanox FlexBoot, press CTRL-B¹
3. A dos prompt is opened.
4. Run "DHCP net0" in case of port#1 or "DHCP net1 in case of port#2
5. Run "Sanboot \${root-path}"
6. The first time the machine tries to connect and boot from the iSCSI disk it fails and the following message is displayed: "not an executable image (0x2e852001)". The message can be safely ignored as the machines has successfully been connected to the target, just the disk is yet unbootable.
7. Run "Exit"
8. The windows install process will start from the CD-ROM
9. Press "Install Now" to start the windows installation.
10. Choose the desired windows server
11. Press Custom
12. Click Load Driver and supply the driver package (according to ETH or IB). For Ethernet driver, perform the following:
 - a. Click Load Driver
 - b. Click Browse
 - c. Go to the directory with the file mlx4_bus.inf and select it.
 - d. Click Next
 - e. Click Load Driver
 - f. Click Browse
 - g. Go to the directory with the mlx4eth6.inf, and select it. (An adapter card called "Mellanox ConnectX 10Gb Ethernet Adapter" should be displayed

1. Once the machine reaches the state "POST" (after BIOS execution), the user will be prompted to press CTRL-B to invoke Mellanox FlexBoot CLI. On some BIOSs invoking the CLI may not work properly. This may occur if not all BIOS parameters have been configured at the time of invoking the CLI. Skip invoking CLI at the POST stage. Instead, invoke CLI after FlexBoot starts booting (you will be prompted to enter CTRL-B).

13. Choose the new disk: "disk 1 unallocated space 11.7G"

14. Click Next

For more information please refer to:

[http://technet.microsoft.com/en-us/library/ee619733\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/ee619733(WS.10).aspx)

For more details on how to boot from a SAN using a Mellanox adapter card, please refer to:

<http://www.etherboot.org/wiki/sanboot>.