



Mellanox WinOF for Windows Installation Guide

Rev 2.00 GA

© Copyright 2008. Mellanox Technologies, Inc. All Rights Reserved.

Mellanox, ConnectX, InfiniBlast, InfiniBridge, InfiniHost, InfiniRISC, InfiniScale, and InfiniPCI are registered trademarks of Mellanox Technologies, Ltd. Virtual Protocol Interconnect is a trademark of Mellanox Technologies, Ltd.

Mellanox WinOF for Windows Installation Guide

Document Number: 2956

Mellanox Technologies, Inc.
350 Oakmead Parkway
Sunnyvale, CA 94086
U.S.A.
www.mellanox.com

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

Mellanox Technologies Ltd
P.O. Box 586 Hermon-Building
Yokneam 20692
Israel

Tel: +972-4-909-7200
Fax: +972-4-959-3245

1 Overview

This document describes how to install and test **Mellanox WinOF for Windows** on a single host machine with Mellanox InfiniBand hardware installed. The document includes the following sections:

- This overview
- [“Web Page and Documentation” \(page 3\)](#)
- [“Hardware and Software Requirements” \(page 3\)](#)
- [“Identifying Mellanox HCAs on Your Machine” \(page 4\)](#)
- [“Downloading Mellanox WinOF” \(page 6\)](#)
- [“Installing Mellanox WinOF” \(page 6\)](#)
- [“Installation Results” \(page 17\)](#)
- [“Assigning IP to IPoB Adapters After Installation” \(page 18\)](#)
- [“Modifying Configuration After Installation” \(page 21\)](#)
- [“Updating Firmware After Installation” \(page 22\)](#)
- [“Uninstalling Mellanox WinOF” \(page 24\)](#)

2 Web Page and Documentation

Please visit the Mellanox WinOF Web page at http://www.mellanox.com/products/MLNX_WinOF.php to download the package and to reference documentation such as release notes, user manuals, FAQ, troubleshooting, and archive. After installing Mellanox WinOF (see [“Installing Mellanox WinOF”](#) below), you will find release notes and user manuals under “Program Files\Mellanox\MLNX_WinOF\Documentation”.

3 Hardware and Software Requirements

3.1 Hardware Requirements

Required Disk Space for Installation

- 100MB

Platforms

Any computer system with an x86 or x64 CPU architecture, and with a PCI adapter card based on one of the following Mellanox Technologies’ InfiniBand HCA devices:

- ConnectX® (firmware: fw-25408 v2.5.000 or later)
- InfiniHost® III Ex (firmware: fw-25218 v5.3.000 or later for Mem-Free cards, and fw-25208 v4.8.200 or later for cards with memory)
- InfiniHost® III Lx (firmware: fw-25204 v1.2.000 or later)
- InfiniHost® (firmware: fw-23108 v3.5.000 or later)

Note: For the list of supported architecture platforms, please refer to the *Mellanox WinOF for Windows Release Notes* file under the “Documentation” folder.

3.2 Software Requirements

Installer Privileges

The installation requires administrator privileges on the target machine.

Operating Systems

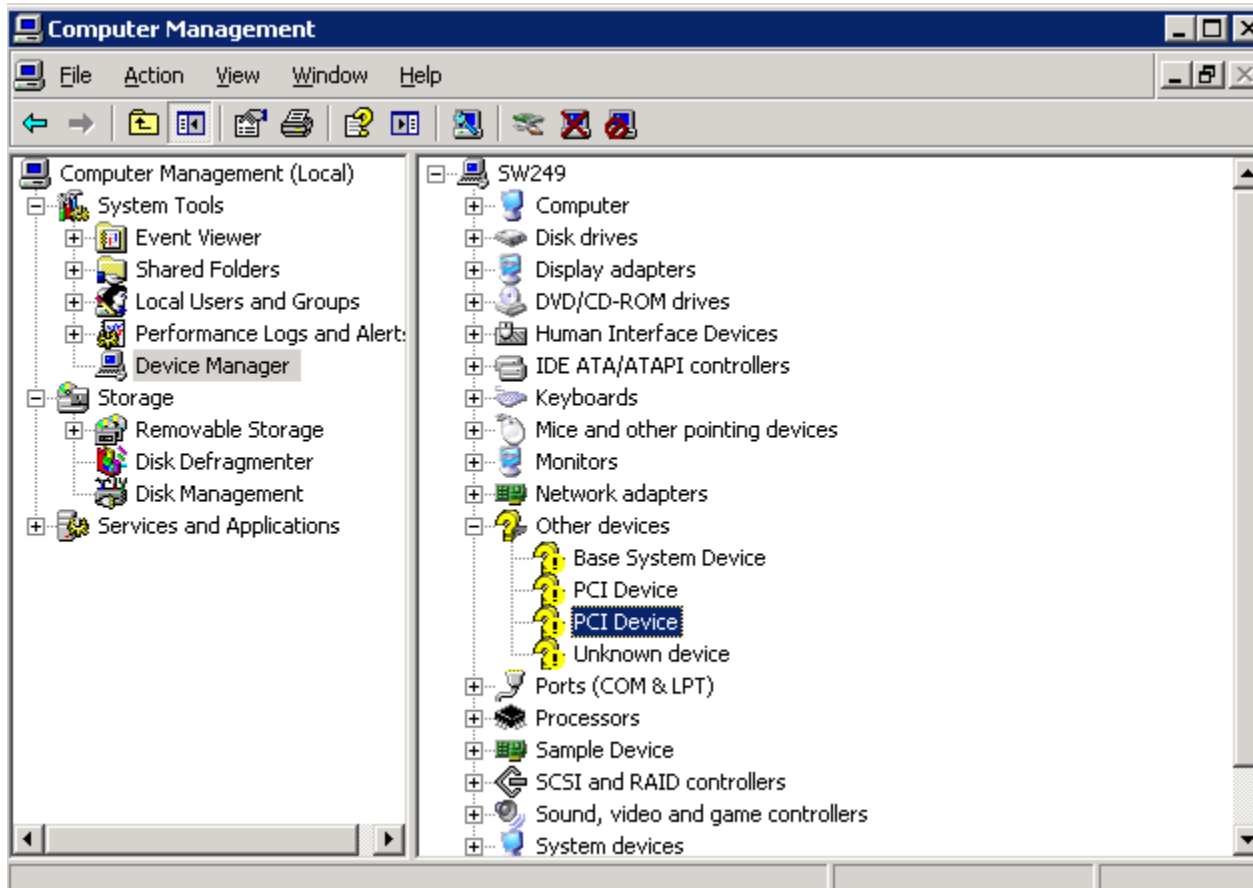
- Windows XP
- Windows Server 2003
- Windows Server 2008

Note: For the list of supported operating system distributions and kernels, please refer to the *Mellanox WinOF for Windows Release Notes* file under the “Documentation” folder.

4 Identifying Mellanox HCAs on Your Machine

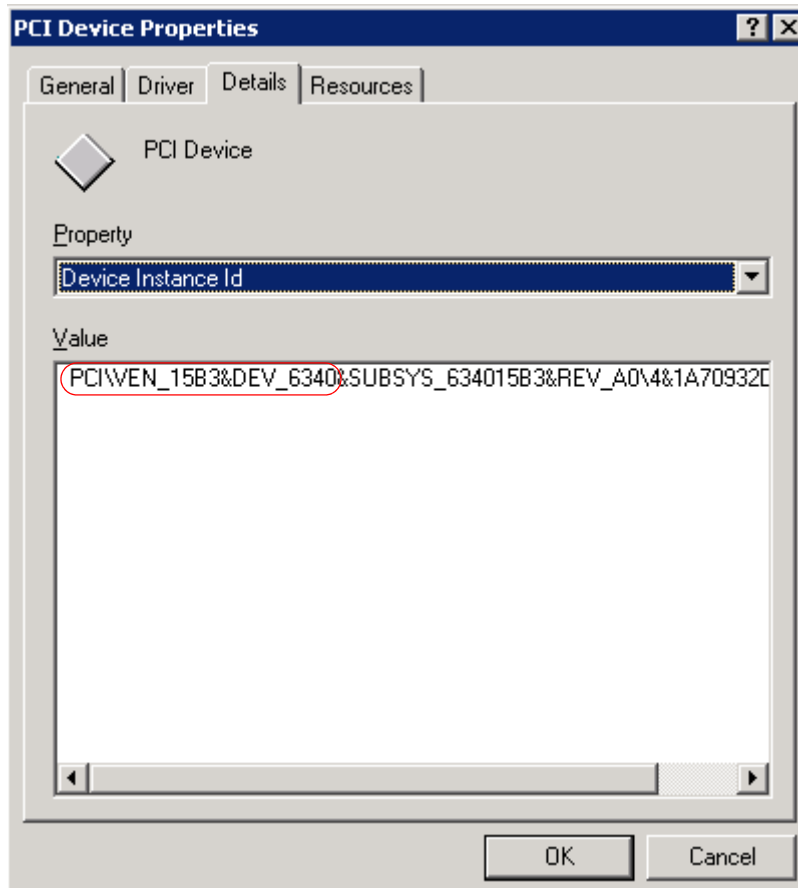
Step 1. Check the Device Manager display for PCI devices. If the device driver has not been installed, check under Other Devices.

Note: If you cannot find any PCI device, make sure that the HCA card(s) is correctly installed in the PCI slot. If no PCI device is identified after your check, try installing the HCA card into a different PCI slot.



Step 2. Select a PCI Device entry, right-click and select Properties to display the PCI Device Properties window.

Step 3. Click the Details tab and select Device Instance ID from the Property pull-down menu.



Step 4. 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_6340": VEN is equal to 0x15B3 – this is the Vendor ID of Mellanox Technologies; and DEV is equal to 6340 – this is a valid Mellanox Technologies PCI Device ID.

Note: 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 5. If the PCI device does not have a Mellanox HCA ID, return to [Step 2](#) to check another device.

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

5 Downloading Mellanox WinOF

Download the appropriate MSI to your host from the Mellanox WinOF Web page at http://www.mellanox.com/products/MLNX_WinOF.php.

The MSI's name has the format `MLNX_WinOF_<arch>_<version>.msi`, where *arch* can be either x86 or x64.

6 Installing Mellanox WinOF

This sections provides instructions for two types of installation:

- “Attended Installation” on page 6
An attended installation is an installation procedure that requires frequent user intervention.
- “Unattended Installation” on page 11
An unattended installation is an automated installation procedure that requires no user intervention.
- “WDS Installation” on page 12
A WDS installation is intended for Windows HPC Server 2008 clusters.

6.1 Attended Installation

Note: The installation requires administrator privileges on the target machine.

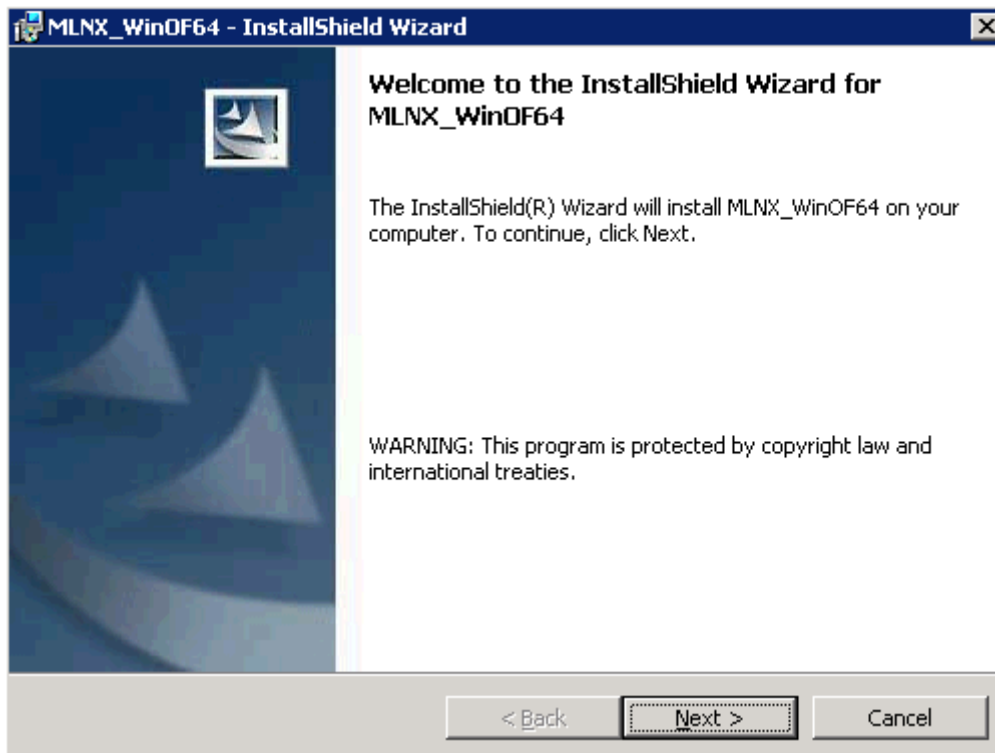
For operating systems *other* than Windows 2008, double click the MSI and follow the GUI instructions to install Mellanox WinOF.

For Windows 2008, install the MSI by opening a CMD console (click Start-->Run and enter 'cmd') and entering the following command:

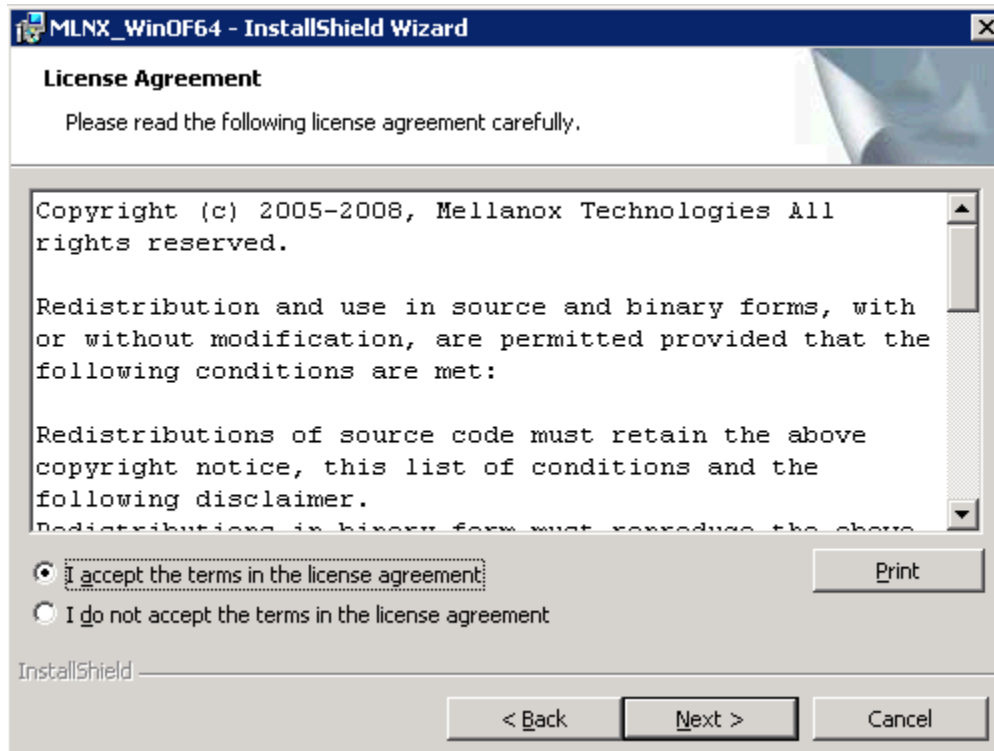
```
> msixec.exe /i MLNX_WinOF_<arch>_<version>.msi
```

The following is an example of a Mellanox WinOF x64 installation session.

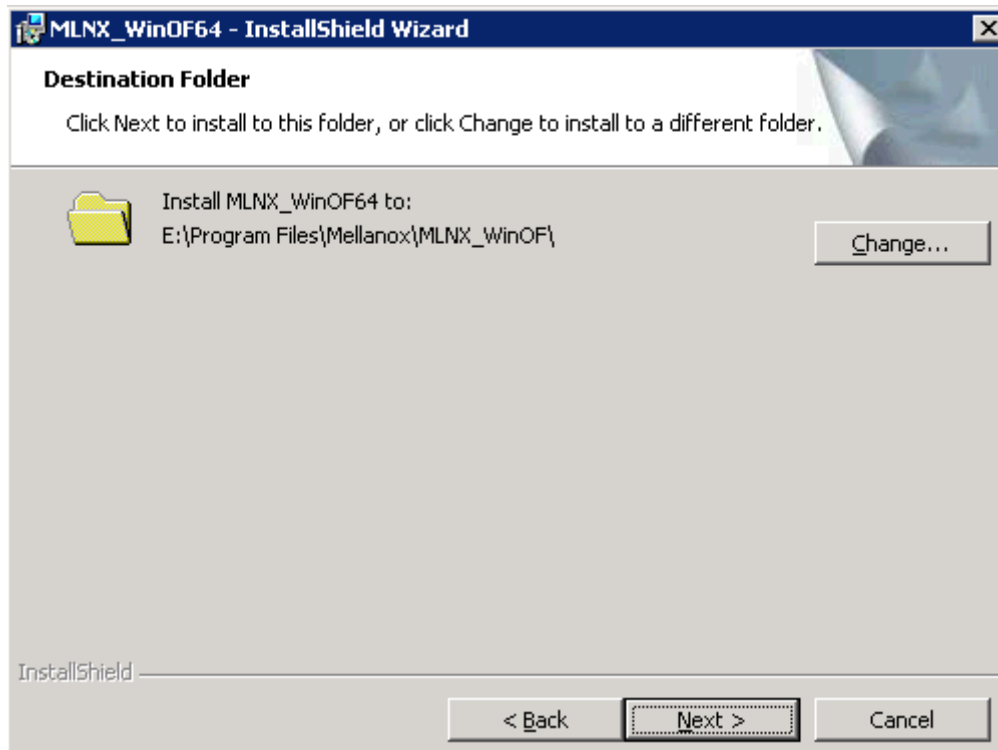
Step 1. Click Next in the Welcome screen.



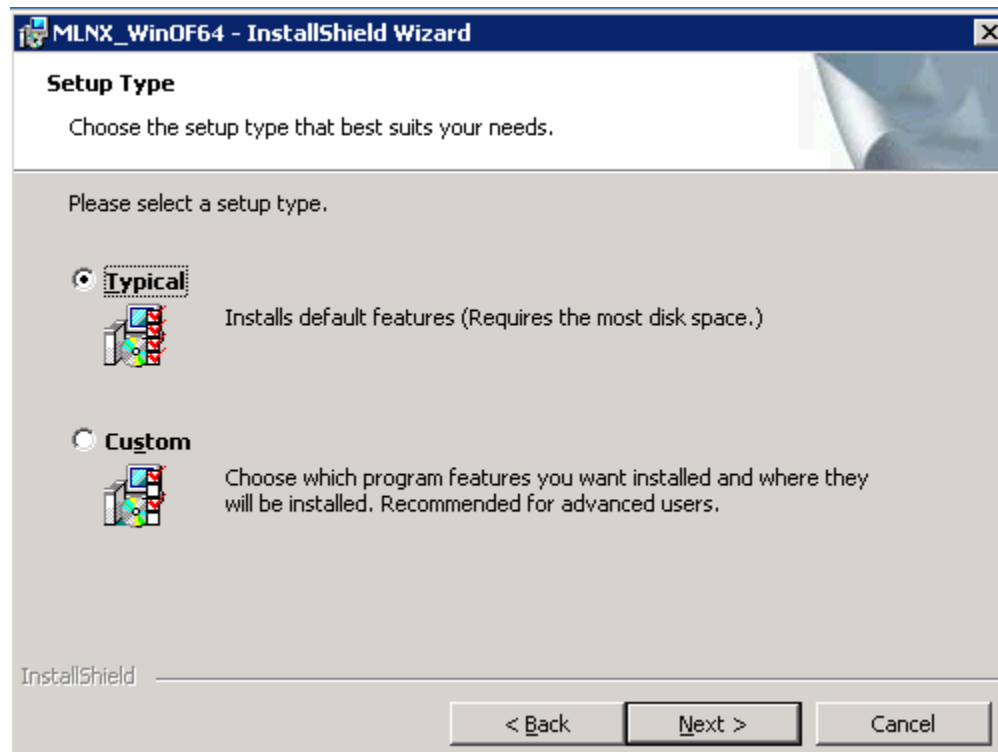
Step 2. Select the "accept" radio button and click Next.



Step 3. Select the destination folder for Mellanox WinOF and click Next.

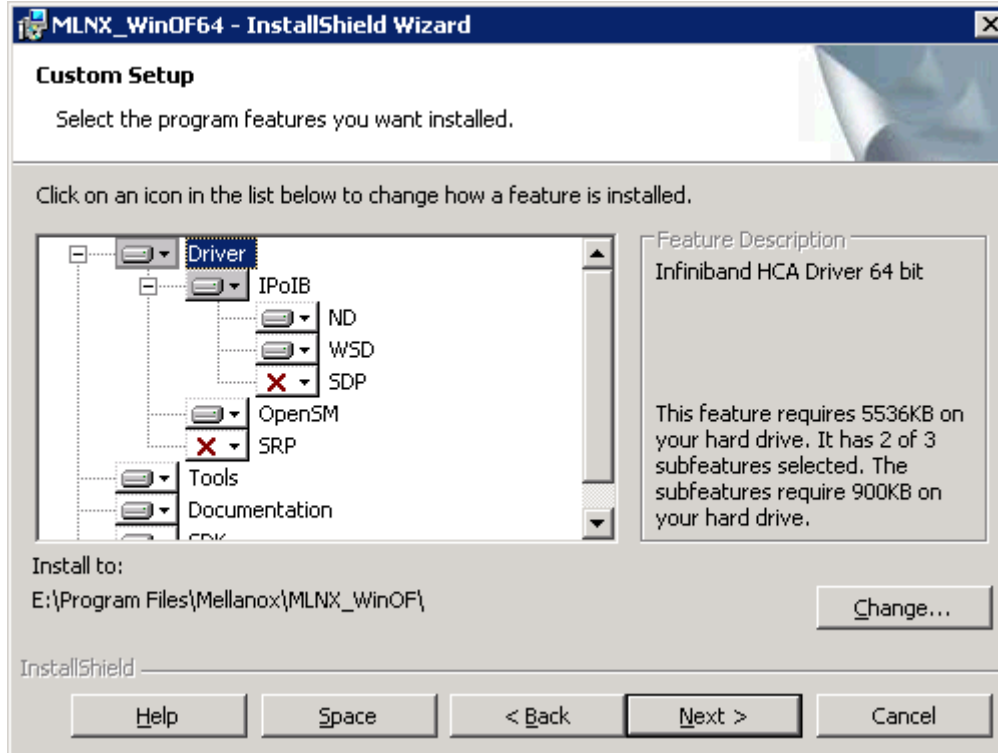


Step 4. Select the type of installation: Typical or Custom.



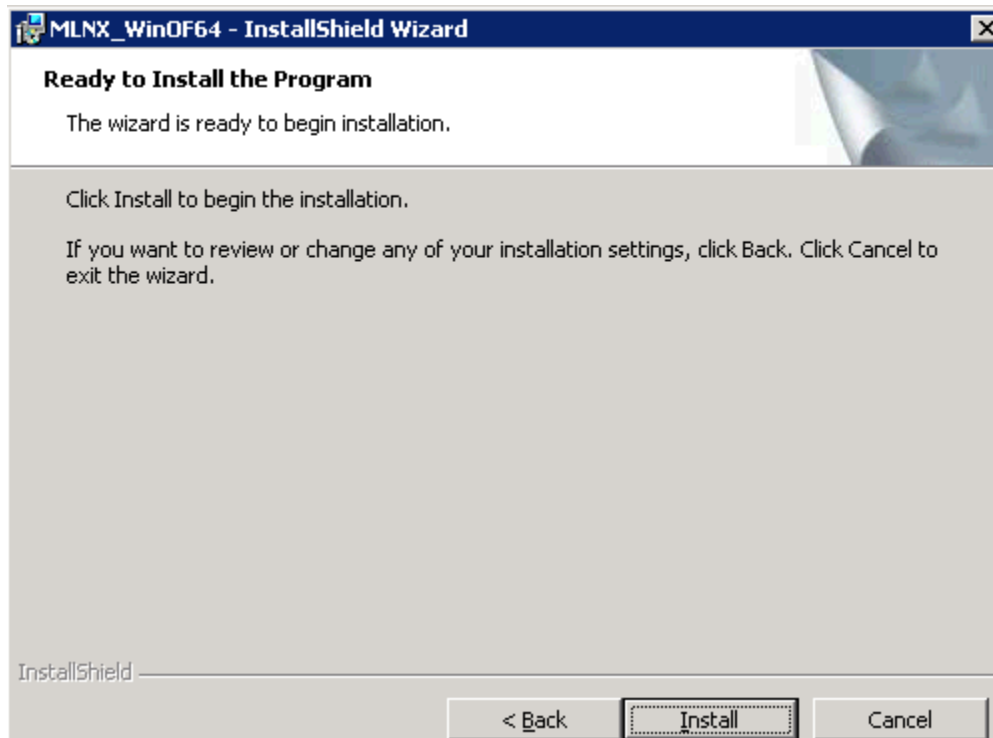
If you select Typical, click Next and advance to the next step.

If you select Custom, click Next and you will get the screen below. To install/remove a component, left-click the component and enable/disable it for installation.



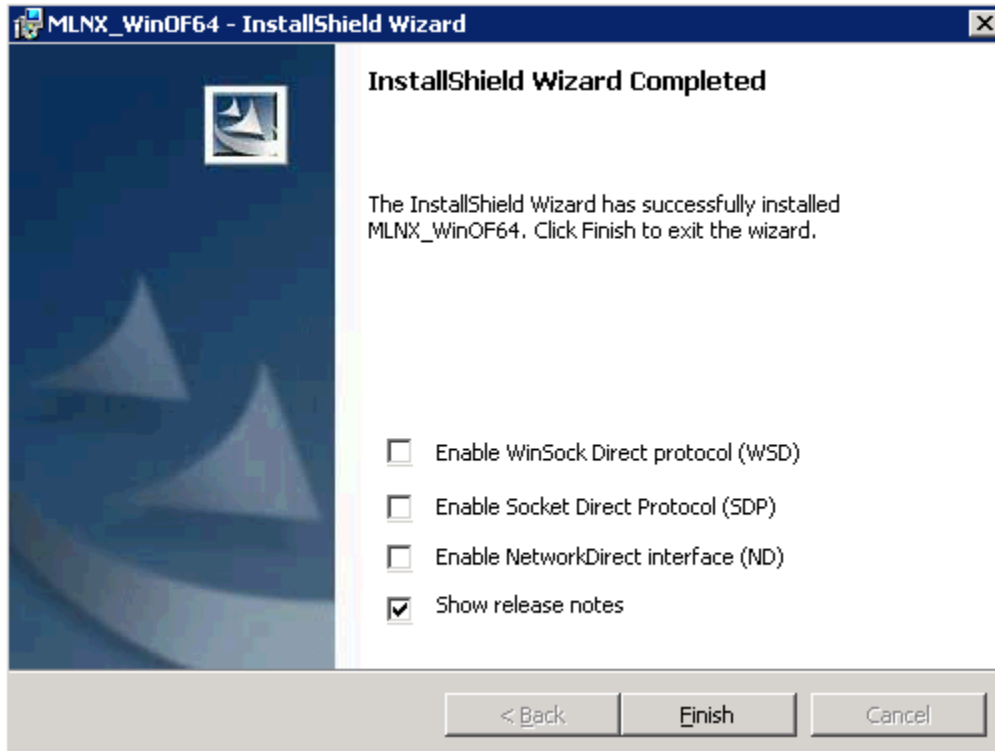
To continue, click Next and advance to the next step.

Step 5. To install the chosen components, click Install.



Step 6. In the following window, enable the components you need (if any). To complete the installation, click Finish. (See the figure below.)

Note: 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 – see the file MLNX_WinOF_README.txt.



6.2 Unattended Installation

Note: The installation requires administrator privileges on the target machine.

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

```
> msisexec.exe /i MLNX_WinOF_<arch>_<version>.msi /qn [Parameter]
```

where **Parameter** is:

ADDLOCAL Provides the list of components (separated by commas) to install. Available components are: Driver, IPoIB, ND, WSD, SDP, OpenSM, SRP, Tools, Docs, and SDK. You can also provide ADDLOCAL=ALL to install all components.

Note: If you do not provide the ADDLOCAL parameter, the script will install the following list of default components: Driver, IPoIB, ND, WSD, OpenSM, Tools, Docs, and SDK.

WSDENABLE Enable WSD by adding the parameter WSDENABLE=1. (The installation procedure installs WSD but does not enable it.)

NDENABLE Enable ND by adding the parameter NDENABLE=1. (The installation procedure installs ND as part of the IPoIB component but does not enable it.)

Note: For all command options, enter 'msiexec.exe /?'.

Usage Examples

- The following command installs MLNX_WinOF in the default configuration:


```
> msiexec /i MLNX_WinOF_x86_<ver>.msi /qn
```
- The following command installs MLNX_WinOF with all the available components:


```
> msiexec /i MLNX_WinOF_x86_<ver>.msi /qn ADDLOCAL=ALL
```
- The following command installs MLNX_WinOF with the default components plus SRP:

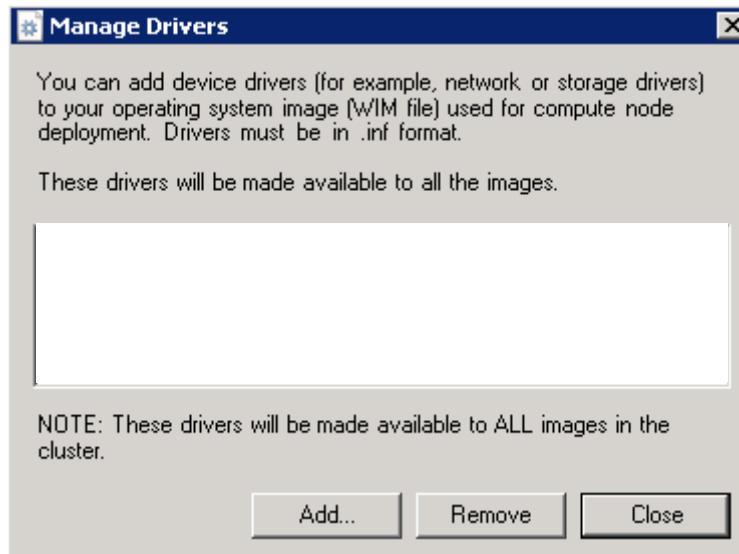

```
> msiexec /i MLNX_WinOF_x86_<ver>.msi /qn \
  ADDLOCAL=Driver,IPoIB,ND,WSD,OpenSM,SRP,Tools,Docs,SDK
```
- The following command installs MLNX_WinOF in the default configuration and enables WSD:


```
> msiexec /i MLNX_WinOF_x86_<ver>.msi /qn WSDENABLE=1
```

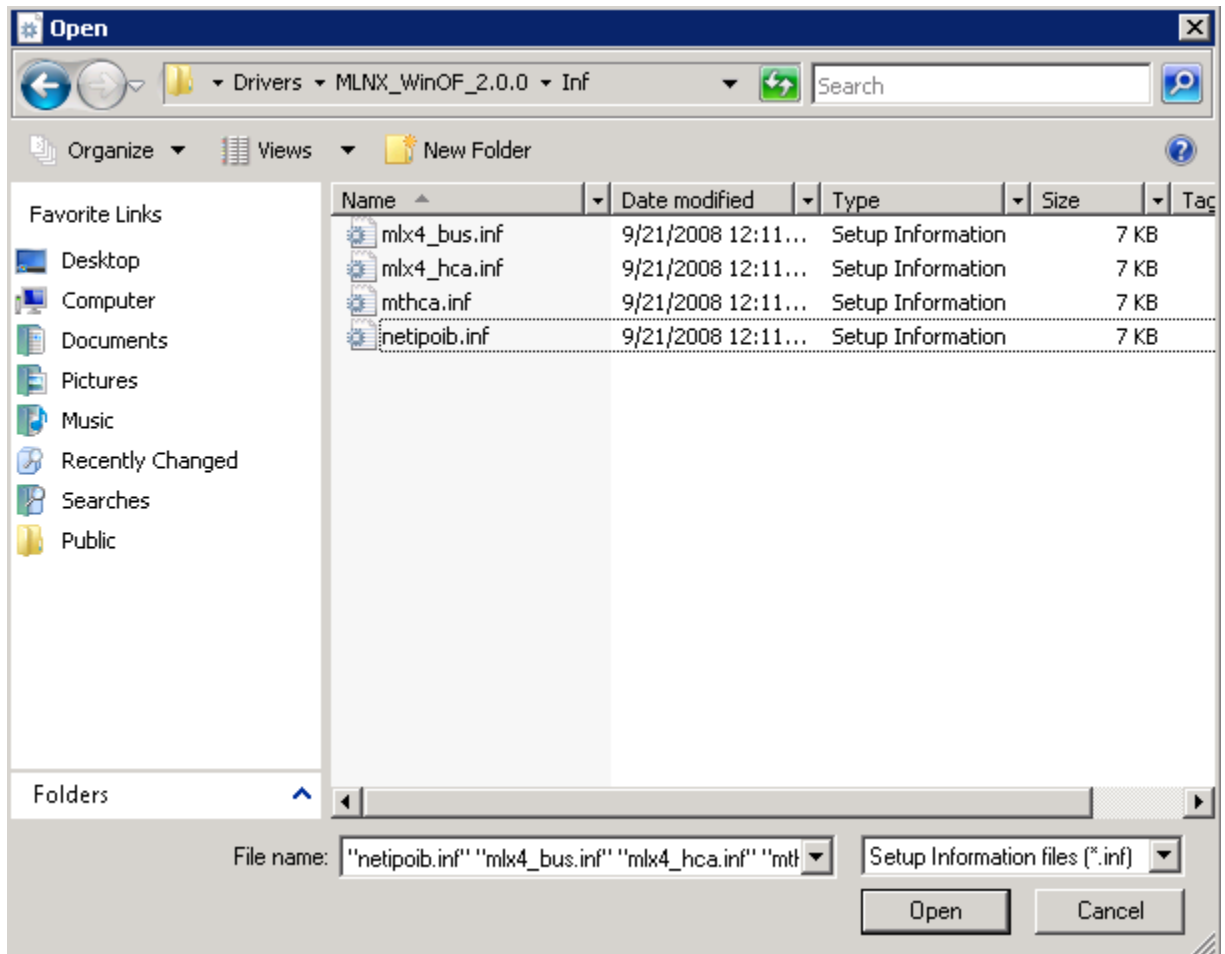
6.3 WDS Installation

To perform a WDS installation for a Windows HPC Server 2008 cluster, follow the steps below.

- Step 1. Extract the package Mellanox_WinOF_x64_<ver>_INF.zip to a directory in the head node.
- Step 2. On the head node, click start--> All Programs --> Microsoft HPC Pack --> HPC Cluster Manager. Select Configuration in the navigation pane and then select To-do List. Next, Click "Manage drivers" and the following dialog will be displayed.



Step 3. Click “Add” and navigate in the Open dialog to the directory chosen in [Step 1](#). Then go to the INF directory.

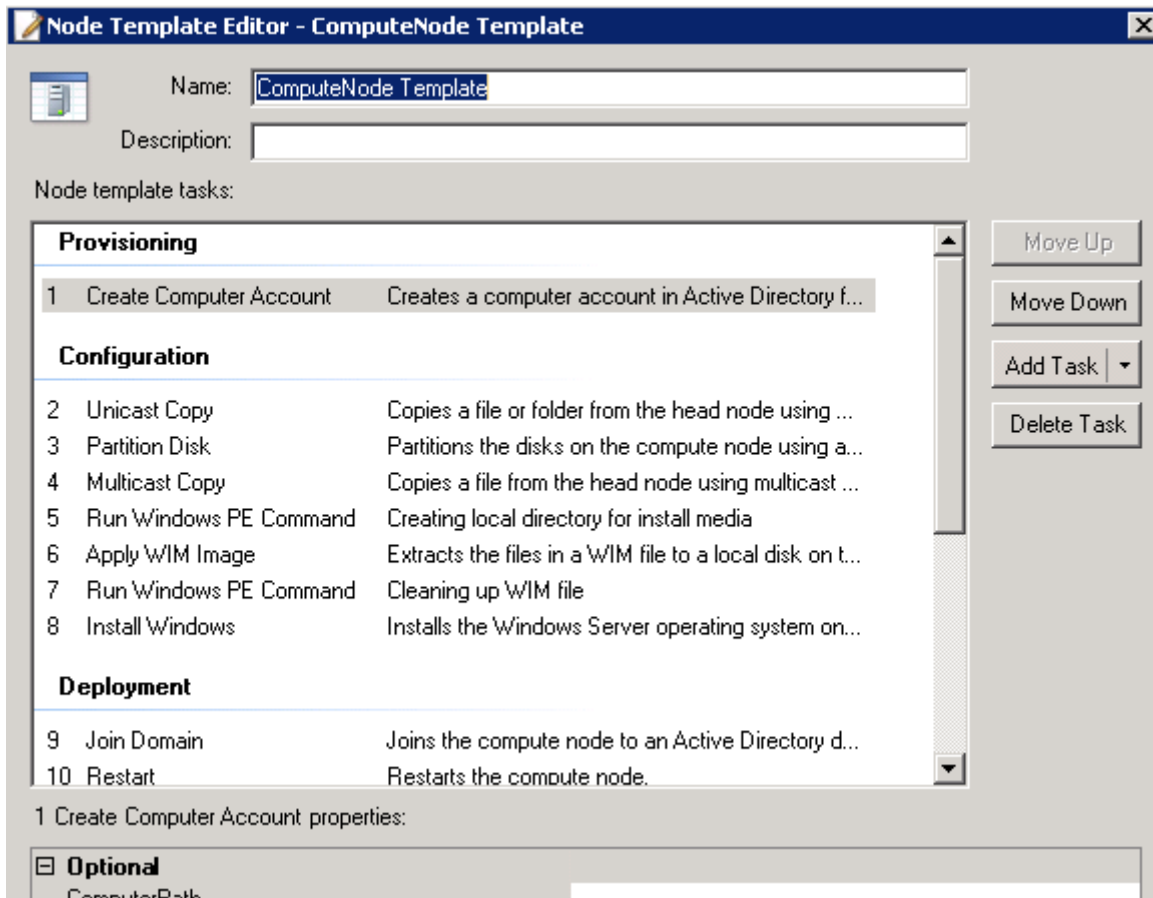


Step 4. Select the listed INF files and click “Open” to add the files.

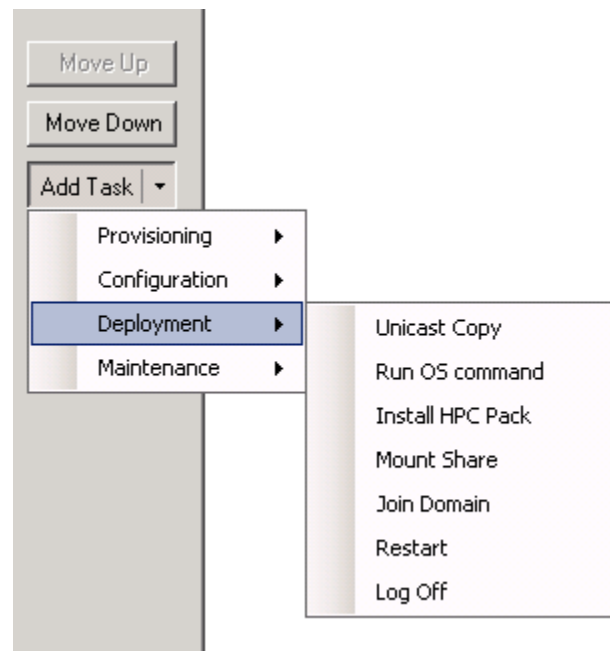
Step 5. Click Close in “Manage drivers” dialog.

Step 6. To enable ND perform the following steps. Otherwise, skip to the next step.

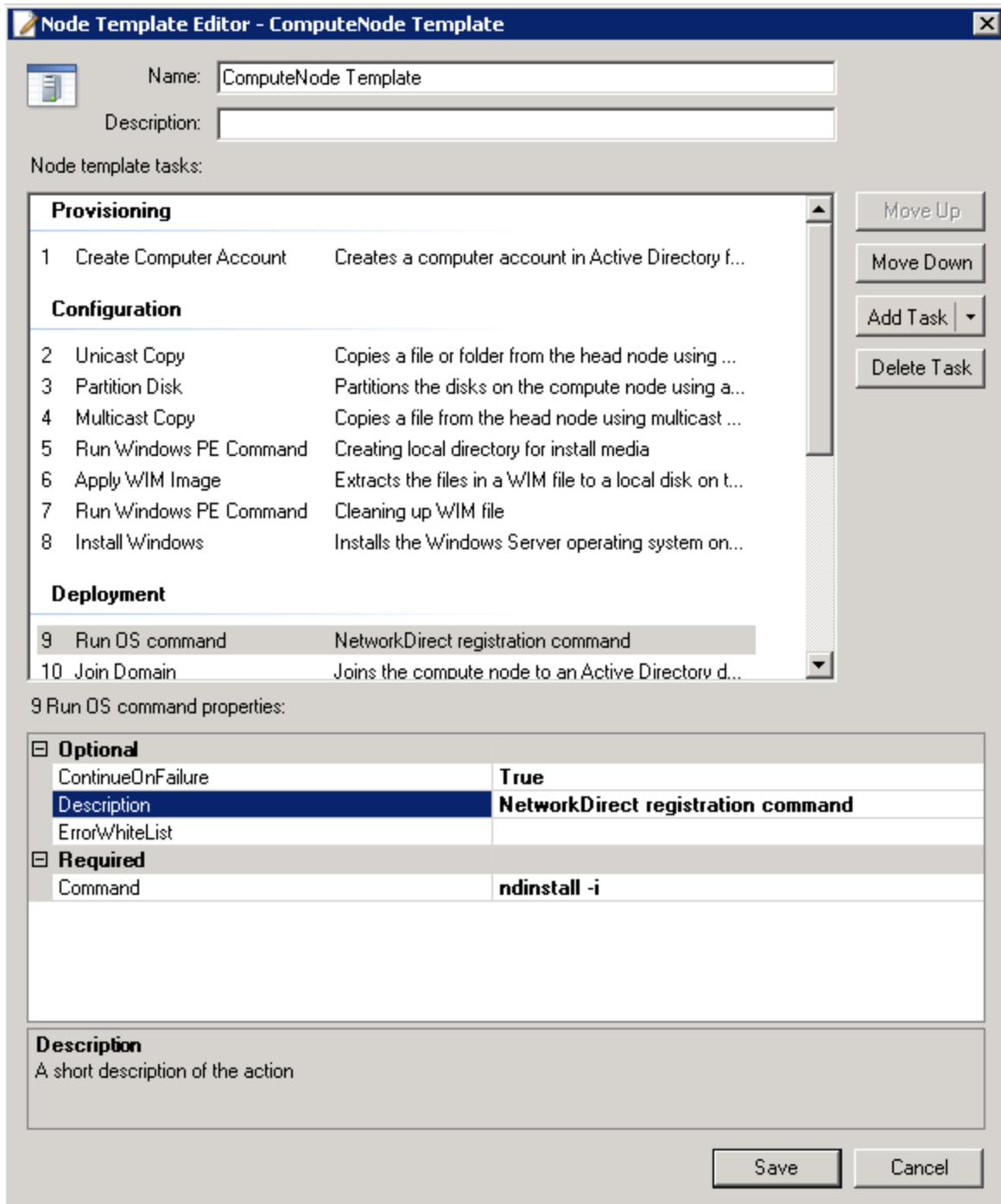
- a. Select Node Templates in the Configuration pane.
- b. Right click on the desired Node Template and select “edit”. An editor window is displayed (see below).



c. Click Add Task --> Deployment --> Run OS command.

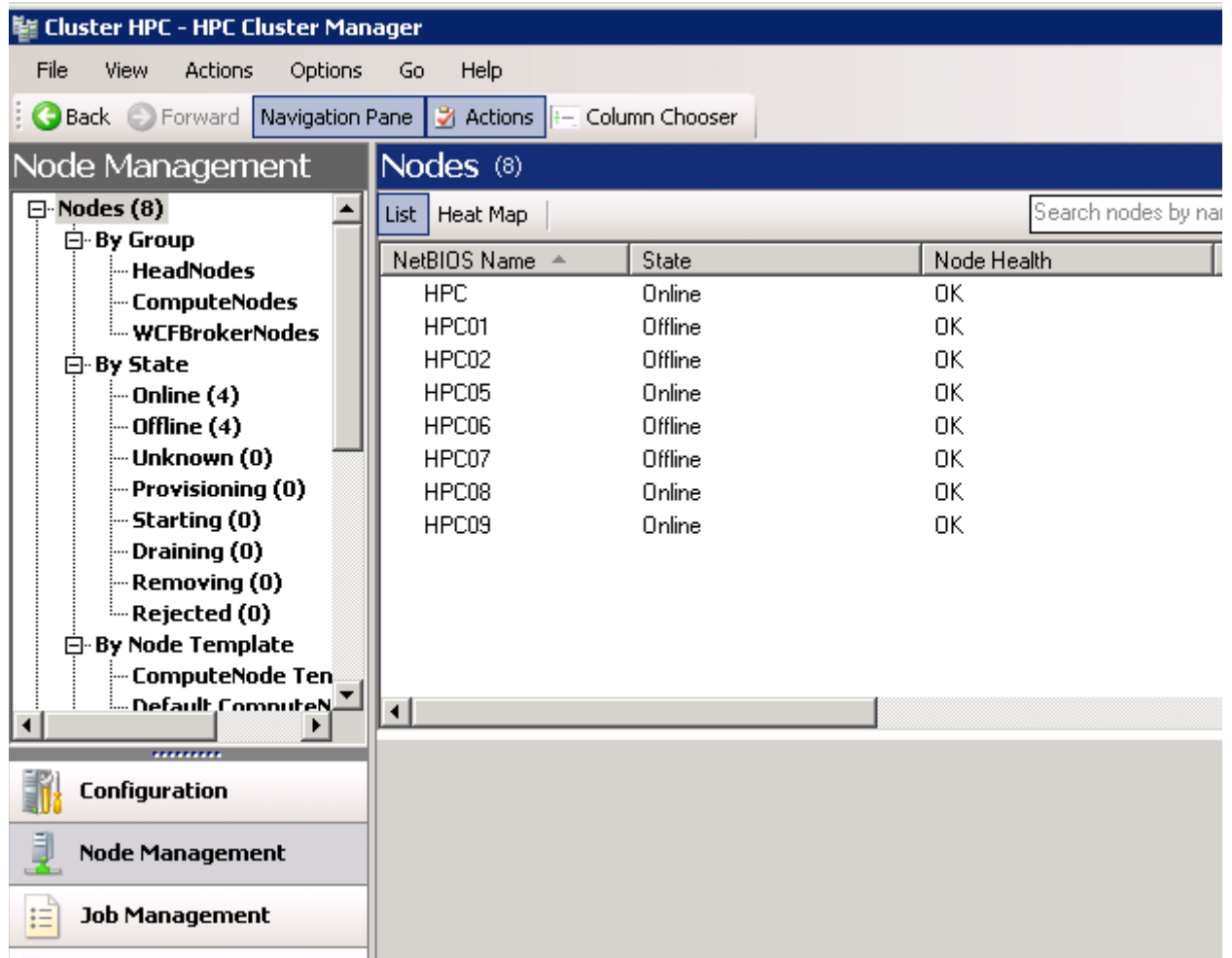


- d. Locate the new Run OS command listed under the Deployment section in the editor. Next, select in the Optional pane ContinueOnFailure to be True and enter the following text in the Description field: “NetworkDirect registration command”.
- e. In the Required pane of the editor, enter the following text in the Command field: “ndinstall -i”.

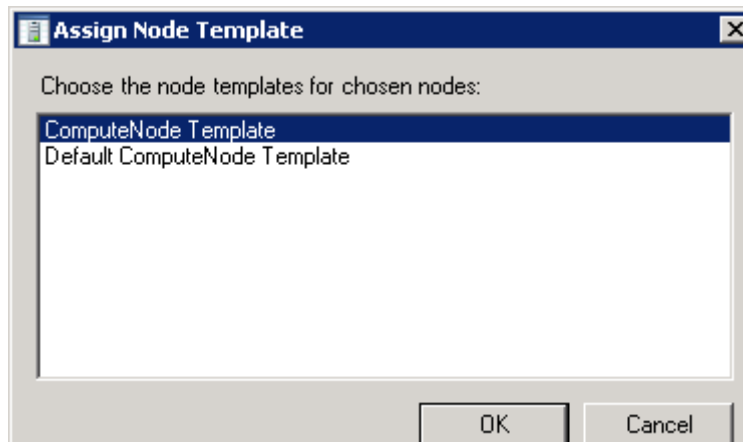


- f. Click Save. The editor window will close.

Step 7. Select “Node Management” in the navigation pane of HPC Cluster Manager.



Step 8. Right-click the desired node and select “Assign Node Template”. The following dialog will be displayed.

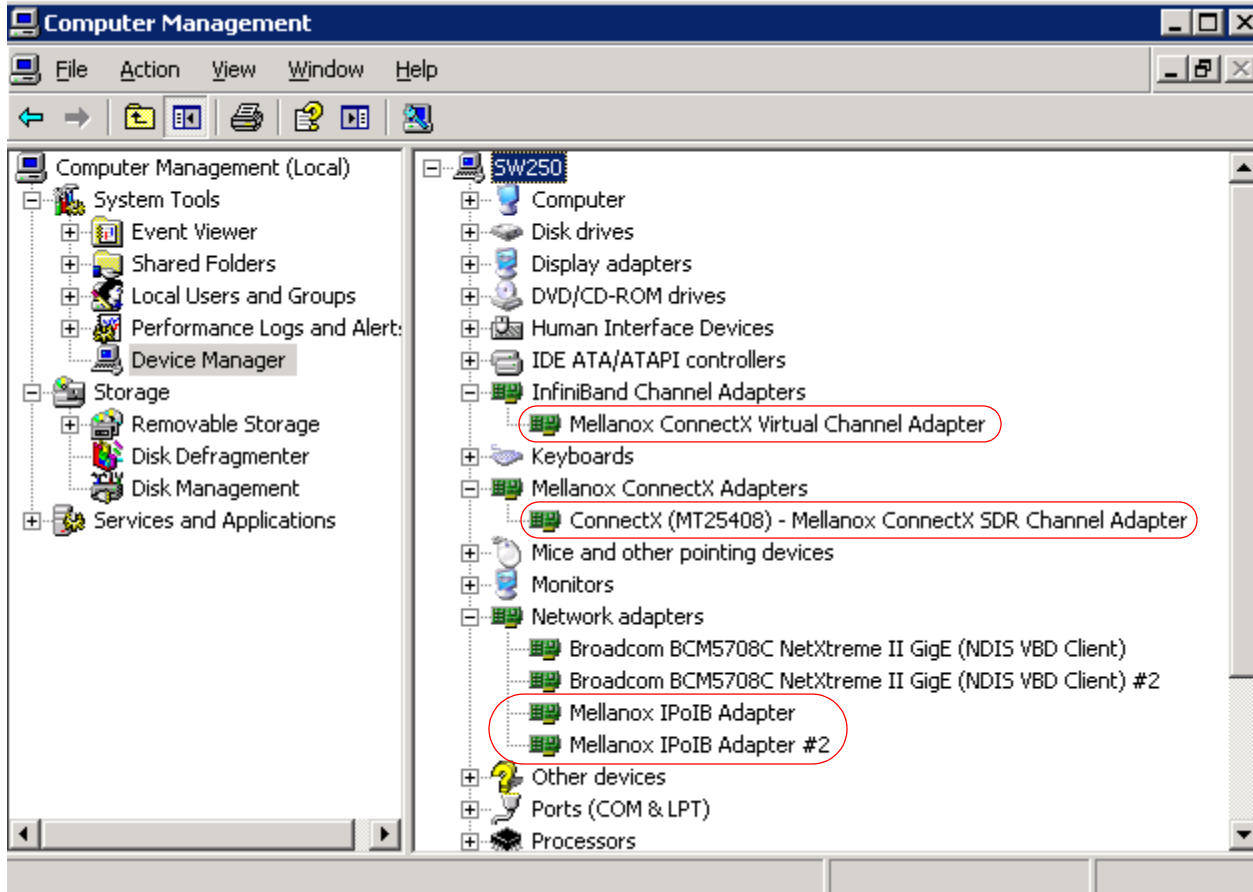


Step 9. Select the correct node template and click OK to start MLNX_WinOF installation on the node.

7 Installation Results

Hardware

Displaying the Device Manager will show the Mellanox HCA devices, the Mellanox InfiniBand fabric, and an IPoIB (network) device for each InfiniBand port.



Software

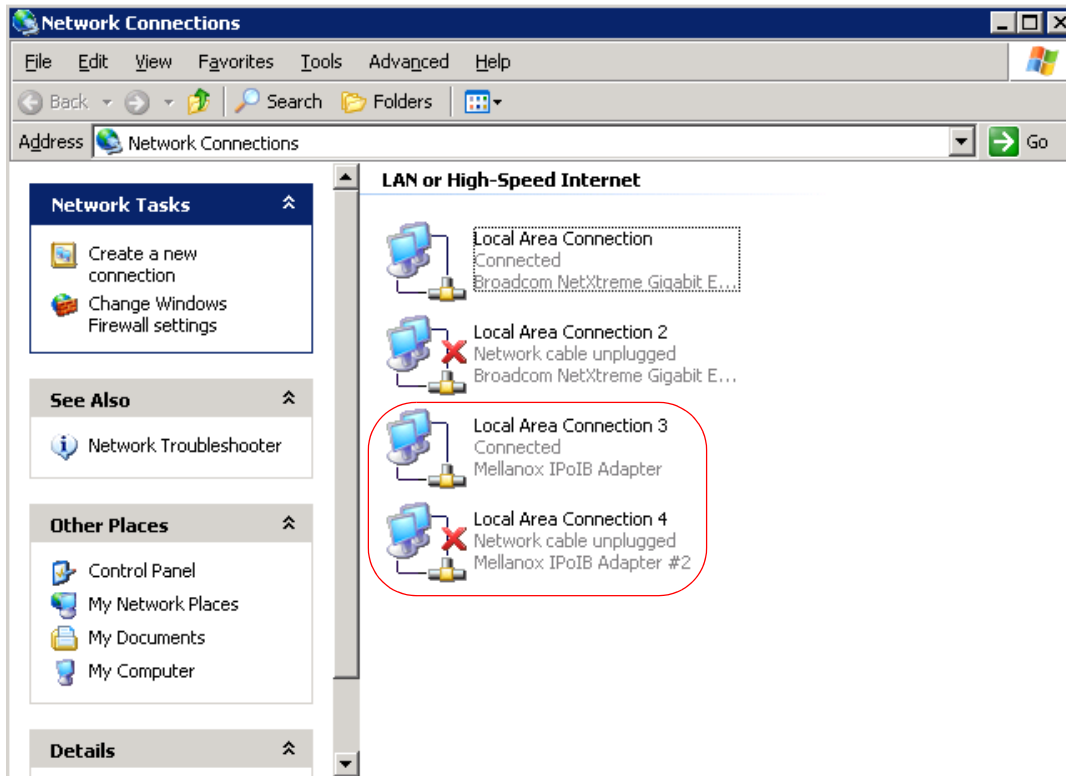
- The MLNX_WinOF package is installed under the directory selected in [Step 3](#) of [Section 6.1](#).
- OpenSM is installed as a disabled Windows service. To enable it, enter at the command line:
> `sc start opensm`

8 Assigning IP to IPoIB Adapters After Installation

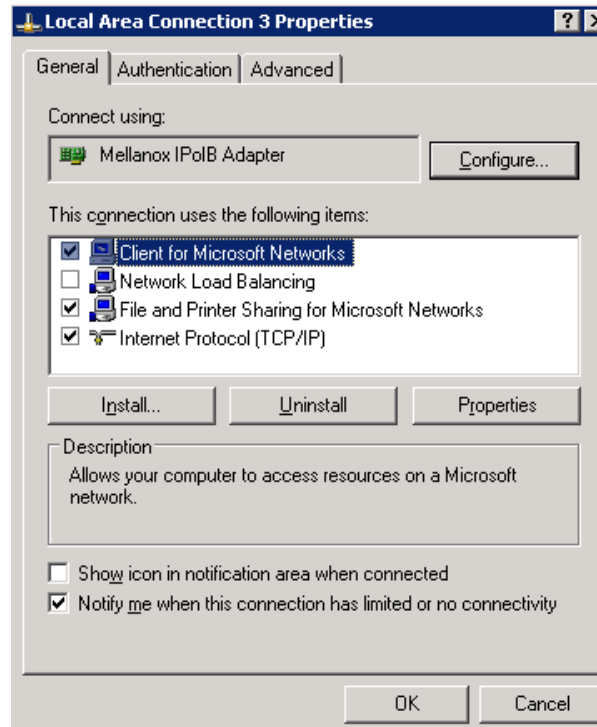
By default, your machine is configured to obtain an *automatic* IP address via a DHCP server. In some cases, the DHCP server may require the MAC address of the network adapter installed in your machine. To obtain the MAC address, open a CMD console and enter the command 'ipconfig /all' ; the MAC address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

To assign a *static* IP addresses to an IPoIB adapter after installation, perform the following steps:

Step 1. Open the Network Connections window. Locate Local Area Connections named Mellanox IPoIB Adapter <#>. Each InfiniBand port has one IPoIB Adapter.

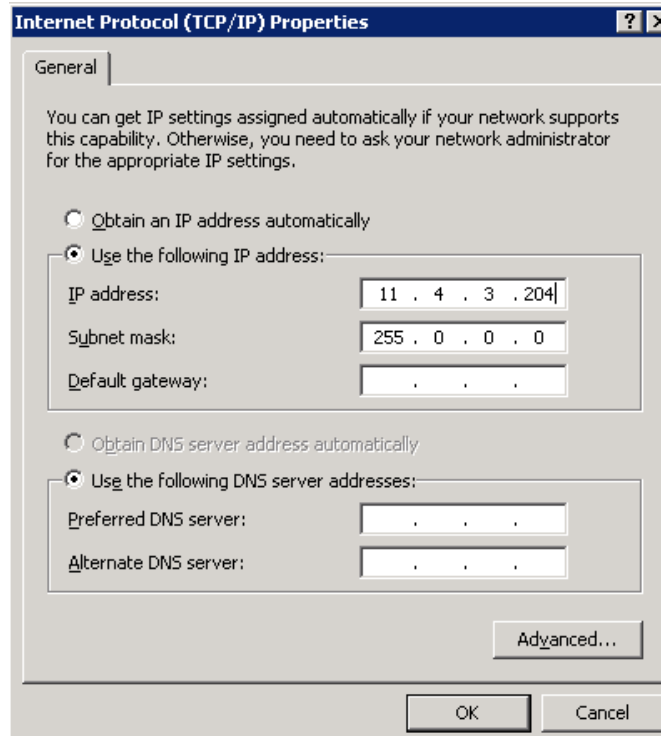


Step 2. Right-click a Mellanox Local Area Connection and left-click Properties.



Step 3. Select Internet Protocol (TCP/IP) 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 3:

    Connection-specific DNS Suffix  . :
    IP Address . . . . . : 11.4.3.204
    Subnet Mask . . . . . : 255.0.0.0
    Default Gateway . . . . . :
...

```

9 Modifying Configuration After Installation

9.1 Modifying Mellanox HCA Configuration

To modify HCA configuration after installation, perform the following steps:

- a. Open the Registry editor by clicking Start->Run and entering 'regedit'.
- b. In the navigation pane, expand HKEY_LOCAL_MACHINE->SYSTEM->CurrentControlSet->Services.
- c. Expand (in the navigation pane) the HCA driver service entry:
 - 'mtcha' for the InfiniHost family
 - 'mlx4_hca' and 'mlx4_bus' for the ConnectX family
- d. Click the Parameters entry in the expanded driver service entry to display HCA parameters.
- e. Double click the desired HCA parameter and modify it. Repeat this step for all the parameters you wish to modify.
- f. Close the Registry editor after completing all modifications.
- g. Open Device Manager and expand the correct InfiniBand Channel Adapters entry (i.e., the adapter with modified parameters).
- h. Right click the expanded HCA entry and left-click Disable. This disables the device.
- i. Right click the expanded HCA entry and left-click Enable. This re-enables the device.

Note: For the changes to take effect, you must disable and re-enable the HCA (steps *h* and *i* above).

9.2 Modifying IPoIB Configuration

To modify the IPoIB configuration after installation, perform the following steps:

- a. Open Device Manager and expand Network Adapters in the device display pane.
- b. Right-click the Mellanox IPoIB Adapter entry and left-click Properties.
- c. Click the Advanced tab and modify the desired properties.

Note: The IPoIB network interface is automatically restarted once you finish modifying IPoIB parameters.

Note: You need to restart `opensm` after modifying IPoIB configuration.

10 Updating Firmware After Installation

The following steps describe how to burn new firmware downloaded from Mellanox Technologies' Web pages under http://www.mellanox.com/support/firmware_download.php.

Step 1. Install the firmware tools package, MFT for Windows (WinMFT), on your machine. You can download it from http://www.mellanox.com/products/management_tools.php. Please check also the documentation on the same Web page.

Step 2. Open a CMD console. (Click Start-->Run and enter 'cmd'.)

Step 3. Start mst.

```
> st start mst

SERVICE_NAME: mst
        TYPE               : 1  KERNEL_DRIVER
        STATE                : 4  RUNNING
                                (STOPPABLE, NOT_PAUSABLE, IGNORES_SHUTDOWN)
        WIN32_EXIT_CODE       : 0  (0x0)
        SERVICE_EXIT_CODE   : 0  (0x0)
        CHECKPOINT          : 0x0
        WAIT_HINT            : 0x0
        PID                 : 0
        FLAGS                 :
```

Step 4. Identify your target InfiniBand device for firmware update.

a. Get the list of InfiniBand device names on your machine.

```
> mst status

Found 2 devices:
    mt25418_pciconf0
    mt25418_pci_cr0
```

b. Your InfiniBand device is the one with the postfix “_pci_cr0”. In the example listed above, this will be mt25418_pci_cr0. Use the string “mtXXXXX” to identify the device type by checking the Web page <http://pci-ids.ucw.cz/read/PC/15b3>. In the example above, mtXXXXX=mt25418, and the device is a ConnectX IB.

c. Now go to the Mellanox firmware download page at:

http://www.mellanox.com/support/firmware_download.php.

d. Go to the correct firmware download page according to the device type identified in step (b) above.

e. Run 'vstat' to obtain the PSID of your HCA card. The PSID is a unique identifier for the HCA card.

Step 5. Using the PSID obtained in [Step 4\(e\)](#), download the appropriate firmware binary image (*.bin.zip) and unzip it.

Step 6. Burn the firmware image using the **flint** utility (part of your installed WinMFT).

Note: Make sure that you burn the correct binary image to your HCA card. Burning the wrong image may cause severe firmware corruption. Please review [Step 4](#) and [Step 5](#) above.

```
> flint -d mt25418_pci_cr0 -image <image>.bin burn
```

Note: You may need to run 'unzip' on the downloaded firmware image prior to the burn operation.

Step 7. Reboot your machine after the firmware burning is completed.

11 Uninstalling Mellanox WinOF

Attended Uninstall

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

- a. Click Start->Programs->Mellanox->MLNX_WinOF->Uninstall MLNX_WinOF
- b. Click Start->Control Panel-> Add Remove Programs-> MLNX_WinOF-> Remove

Unattended Uninstall

To uninstall MLNX_WinOF in unattended mode, open a CMD console and perform *one* of the following procedures:

- a. If the MSI that was used to install MLNX_WinOF is available on your machine, enter the following command:

```
> msixec.exe /x MLNX_WinOF_<arch>_<version>.msi /qn /forcerestart
```

- b. Obtain the MLNX_WinOF GUID (product code) by left-clicking Start->Programs->Mellanox->MLNX_WinOF.

Now right-click on Uninstall MLNX_WinOF and select Properties, then copy the GUID from the “Target entry. The GUID is the hexadecimal string that appears after ‘/x’. To uninstall the MSI, enter the following command:

```
> msixec.exe /x <GUID> /qn /forcerestart
```

Note: The ‘/forcerestart’ parameter forces the machine to restart after uninstalling the MLNX_WinOF MSI. This is recommended action for a complete uninstall procedure.

Note: For all command options, enter ‘msixec.exe /?’.