Emulex Drivers for Windows Server 2016 Technical Preview 3 Release Notes

Date: September 2015

Purpose and Contact Information

These release notes describe supported features, unsupported features, driver installation, updating firmware, configuration, and known issues for the Emulex® drivers for Windows Server 2016 Technical Preview 3.

Caution: The software is pre-release and is for evaluation and test use only; it is not intended for use in a production environment.

Note:

- Customer support is not available for this pre-release software, but Emulex welcomes your feedback. Email previewfeedback.pdl@avagotech.com if you have issues with the drivers, or if you have suggestions. Emails may not receive a response.
- If you are using an OCe14000 or OCm14000-series adapter in conjunction with the Windows Server 2016 Technical Preview driver, upgrade the firmware to the version available on the Windows Server 2016 page at www.emulex.com/downloads.
- The pre-release drivers are compatible with management applications from the version 10.6 software release, and are available on the Management tab of the Windows Server 2016 page at www.emulex.com/downloads.
- Refer to the *Emulex Drivers for Windows version 10.6 User Manual* on the Windows Server 2016 page at www.emulex.com/downloads.

Supported Hardware and Features

The Emulex driver for Windows Server 2016 Technical Preview 3 supports the following adapters and features.

Table 1 Supported Hardware and Supported Features

Adapter	Features
LPe16202 LPe16000-series OCe15000 LPe12000-series	FC driver only
OCe11100-series	All drivers (No advanced feature support)
OCe14000 and OCm14000	All drivers and advanced feature support including Host Mode RDMA, and VxLAN.
OCe14000B and OCm14000B	All drivers and advanced feature support including Host Mode RDMA, VxLAN, and Routable RoCE.

Note: You must install the firmware from www.emulex.com/downloads.

Unsupported Features

- Multi-channel (UMC, VNIC, Flex10, NPar) is not supported when using Host Mode RDMA, VxLAN or NVGRE.
- RDMA Mode 2 to vmNICs is not currently supported in this release.
- No performance analysis has been performed.
- Advanced configurations, such as teaming on Host Mode, have not been tested.
- Packet Direct is not supported in this version of the NIC driver.
- RDMA from within a VM is not supported.
- Simultaneous operation of NVGRE and VxLAN encapsulation over a single port is not supported.

Installing the Driver

For installation instructions, refer to Section 2, Installation, of the *Emulex Drivers Version 10.6 for Windows User Manual,* which is available at www.emulex.com/downloads.

Updating Adapter Firmware

You can use the OneConnect™ Flash Utility, the preferred method, or the OneCommand™ Manager application to update OneConnect adapter firmware.

To update adapter firmware using the OneConnect Flash Utility:

1. Locate the file "OneConnect-Flash-10.6.xxx.yy.iso", usually in the Firmware/Flash-ISO directory in the Emulex package, and burn a CD with this image, or mount it over the network (mounting over the network is easier).
2. Reboot the computer and select the image as the boot device.

   After the operating system loads, a prompt appears to confirm the firmware flash.
3. Flash the firmware and reboot the computer.

   Refer to the *Using the OneConnect™ Flash Utility to Update OneConnect Adapter Firmware* instructions available on the Emulex website for more information about the utility.

To update adapter firmware using the OneCommand Manager application GUI:

1. Install and start the the OneCommand Manager application.
2. Select **Batch>Download Firmware**.
3. From the "OneCommand Manager Batch Firmware Download dialog box, enter the firmware file path in the "Firmware File:" prompt, or select **Browse…** and navigate to the "oc14-10.6.xxx.yy.ufi" firmware image.
4. Click **Start Download**.

5. Reboot the computer after the download is finished.

   Refer to the *OneCommand Manager application version 10.6 User Manual*, or the *OneCommand Manager application Command Line Interface version 10.6 User Manual* available on the Windows Server 2016 page at www.emulex.com/downloads for more information about the application.

Configuration

Enabling the RoCE Profile

You can enable RoCE using the PXESelect utility or the OneCommand Manager application.

To enable RoCE using the PXESelect utility:

1. Press **<Ctrl+ P>** at the Emulex PXE Select splash screen as the server boots. A screen appears showing global options.
2. Press **<Tab>** to highlight Personality.
3. Select the **NIC+RoCE** personality and the **RoCE-2** profile.
4. Save the settings and follow the instructions to complete the process.

   Refer to the *Boot Version 10.6 for NIC, iSCSI, FCoE, and RoCE Protocols User Manual* available on the Emulex website for more information about the PXESelect utility.

To enable RoCE using the OneCommand Manager application GUI:

1. Start the OneCommand Manager application.
2. From the discovery-tree, select the adapter on which you want to enable RoCE.
3. Choose the **Adapter Configuration** tab.
4. Select the **Single personality** option.
5. For Personality, select **NIC+RoCE** from the menu.
6. For NIC+RoCE Configuration Type, select **RoCE-2**.
7. Click **Apply** and follow the on screen instructions to complete the process.

Verifying the RoCE Profile is Enabled

Verify that the RoCE profile is enabled by using the Network Interface Property page or a PowerShell script.

Using the Network Interface Property page:

Network Direct is enabled.

Using a PowerShell script:

Get-NetAdapterRDMA

Example:

```
C:\Users\Administrator> Get-NetAdapterRDMA
Name                      InterfaceDescription                    Enabled
----                      --------------------                    -------
```

```
15-analyzer-88     Emulex OneConnect OCe14102-UX-D 2-por... True16
Emulex OneConnect  OCe14102-UX-D 2-por...                  True
```

If the profile is correct and NetworkDirect is enabled, you should see active NetworkDirect listeners on IP addresses (port 445) assigned to the NICs.

Configuring Host Mode RDMA

To configure Host Mode RDMA:

1. Load the driver.
2. Using the Hyper-V Manager Virtual Switch Manager, create a new external virtual switch and attach it to the Emulex adapter.
3. Using either PowerShell or Virtual Switch Manager, assign any required VLAN IDs to the management operating system.

Note: You cannot configure or change a VLAN ID when the system is running.

4. From Device Manager of the host operating system, select the **Advanced** page of the Hyper-V Virtual Ethernet Adapter and enable Network Direct (RDMA).

Note: Network Direct (RDMA) is disabled by default.

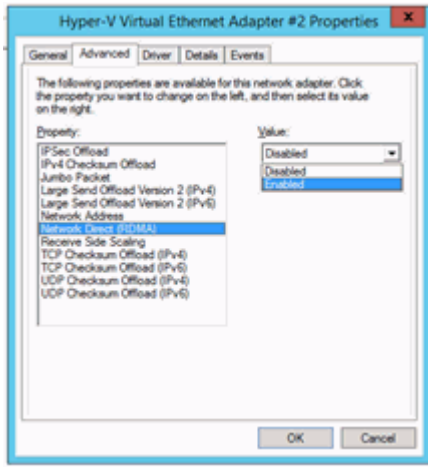

Figure 1 Network Direct (RDMA) Enabled

Configuring Routable RoCE

Routable RoCE is enabled by default. (Only supported on OCe14000B and OCm14000B adapters.)

To configure routable RoCE:

1. From the OneConnect Advanced tab, choose **RoCE Mode**.

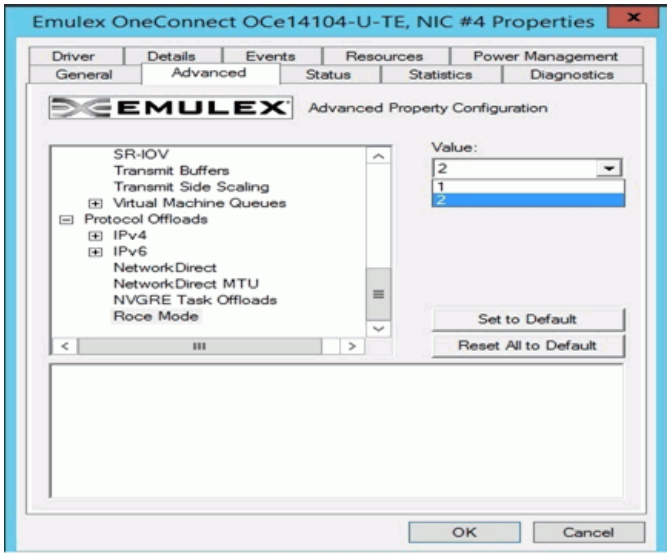

Figure 2 Routable RoCE Enabled (default)

2. From the **Value** menu, choose **2** for Routable RoCE (default setting) or **1** for Native RoCE.
3. Click **OK**.

Testing Routable RoCE (RoCE over UDP)

Emulex tested routable RoCE over the dedicated RoCE NICs (40G adapters) with two machines connected to one switch. Configure the switch port for routing and run traffic.

Check for UDP packets and make sure the tiny log reports routable requests and responses without error

Enabling or Disabling Encapsulated Task Offload and VxLAN UDP

You can enable or disable Encapsulated Task Offload and modify the VxLAN UDP destination port number using the OneConnect Advanced tab or by using Powershell commands.

Using the OneConnect Advanced Tab

To enable or disable Encapsulated Task Offload (Default is enabled), or modify the VxLAN UDP destination port number using the OneConnect Advanced tab:

1. From the OneConnect Advanced tab, select the **Encapsulated Task Offload** or **VxLAN** parameter.

2. Set the value to **Enabled** or **Disabled,** or enter a value for VxLAN UDP.

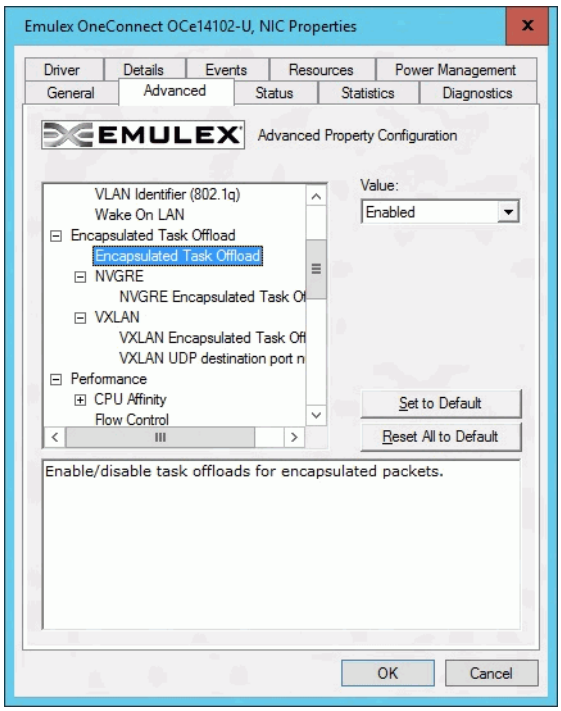

Figure 3 Encapsulated Task Offload (Enabled)

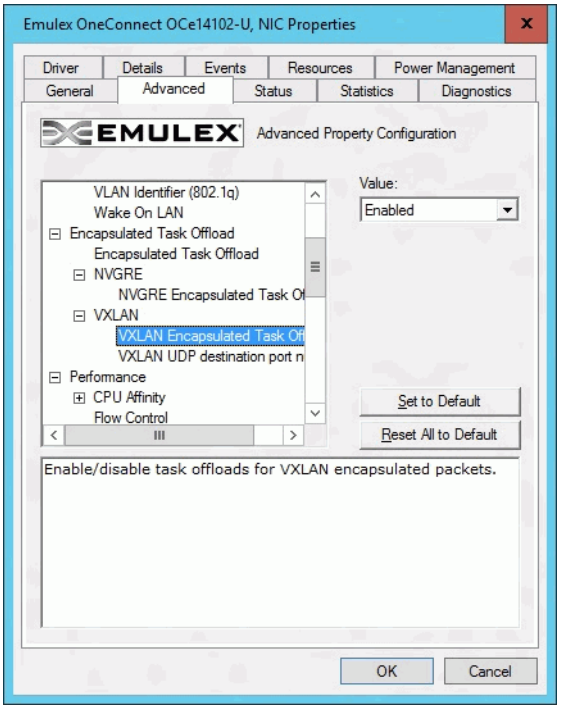

Figure 4 VXLAN Encapsulated Task Offload (Enabled)

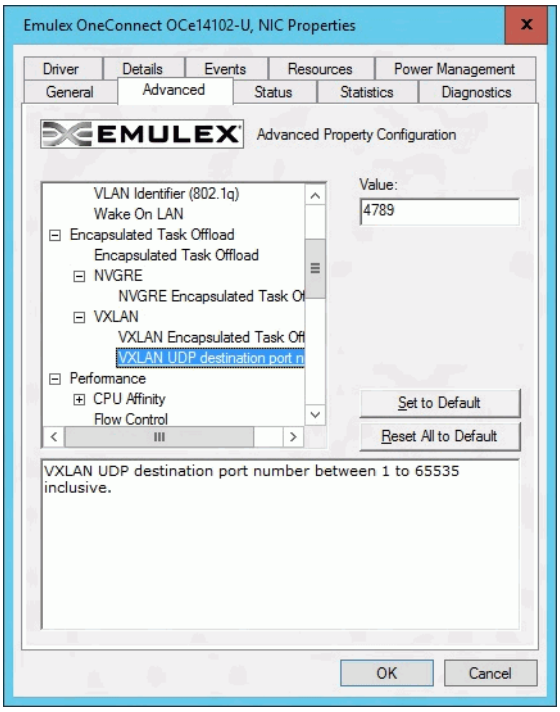

Figure 5 VXLAN UDP destination port number

3. Click **OK**.

Using Powershell Commands

Using Powershell you can set the values for EncapsulatedPacketTaskOffload, EncapsulatedPacketTaskOffloadVxlan, and VxlanUDPPortNumber subkeys.

For EncapsulatedPacketTaskOffload and EncapsulatedPacketTaskOffloadVxlan subkeys, a value of 0 disables the feature and a value of 1 enables the feature.

The VxlanUDPPortNumber subkey has a default value of 4789 and a value range of 1-65535.

Disable-NetAdapterEncapsulatedPacketTaskOffload,
Enable-NetAdapterEncapsulatedPacketTaskOffload,

Get-NetAdapterEncapsulatedPacketTaskOffload, and

Set-NetAdapterEncapsulatedPacketTaskOffload commands are also available.

Get-Help <cmdl> -full returns descriptions and help for the cmdlets.

Known Issues

Host RDMA and Routable RoCE Known Issues

1. **Some switches strip the VLAN tag from the incoming frame with VLAN ID 0 or VLAN ID 1 values and sends the frame out without the VLAN tag, and therefore without the VLAN priority.**

   Workaround

   When running NIC+RoCE personality, if PFC is enabled, always configure the interface with a VLAN and make sure the VLAN ID is greater than 1.

2. **Changing the VLAN ID for the management operating system while it is running using the Hyper-V Manager is not supported.**

   Workaround

   Assign the required VLAN ID to the management operating system when you create the virtual switch.

3. **After a driver reload (ND is disabled on a NIC + ROCE profile or any other non-ROCE profile), throughput via SMB is limited to the highest Link Speed available as shown by the Get-SmbClientNetworkInterface PowerShell command on the client system. This issue is only seen when RDMA is disabled on the adapter and SMB uses TCP.**

   Workaround

   Use one of the four options below.

   - Diable and enable the port of the required interface.
   - Some systems may require additional interfaces, such as Hyper-V hosts. SMB will check the interfaces to determine which can be used to connect the systems. If there are multiple connections, it will use them (RDMA or TCP). Multiple connections must all be configured the same (RDMA or TCP).
   - Reboot the system.