



How to configure Emulex Virtual Fabric Adapters in vNIC mode for VMware ESX 4.1

The application note will show a step-by-step process to configure and deploy the Emulex Virtual Fabric Adapter in vNIC mode with VMware ESX 4.1. What is vNIC mode? vNIC mode refers to having four vNICs per internal port on the card. Since we have a dual port adapter, we have a total of eight vNICs.

This Application Note complements the deployment guide [Deploying 8Gb/s Fibre Channel with IBM System X and VMware 4.1](#), part of the Emulex Solution Implementer's Series and posted on the [Implementer's Lab](#) website. This referenced deployment guide outlines the network setup in pNIC mode only, since vNIC mode was not supported when the solution was tested and the paper was published. For example, the deployment guide explains how to configure the LOMs for service console and then two 10GbE ports for the rest of the networking requirements, such as virtual machine traffic, vMotion and so on. This application note still uses the LOMs for service console, but the rest of the eight new network vNICs on the ESX host are listed in Table 1 below:

Table 1: Network vNICs

NICs	Description
4 ea.	Virtual Machine Network
2 ea.	VMware vMotion
2 ea.	VMware Fault Tolerance

In our original tests, the IBM x3850 X5 System x server was used with the IBM Virtual Fabric Adapter. When connected to a BNT G8124 rack-mount switch, the Virtual Fabric Adapter will, by default, enable the vNICs in the system's UEFI.

At a high level, the process is as follows:

1. Configure BNT rack-mount switch
 - a. Enable vNIC mode
 - b. Enable the vNICs and set the bandwidth
 - c. Create the vNIC groups
 - d. Save and Apply
2. Verify in the host UEFI that vNIC mode is enabled
3. Install the ESX OS
4. Download and install the latest Emulex Virtual Fabric Adapter driver to support ESX 4.1
5. Configure your vSwitches or distributed virtual switches in ESX



The process is outlined here with more detail:

1. Begin by configuring the IBM BNT RackSwitch G8124 10Gb switch.
2. Verify the firmware (ours was at 6.5.2.3) at IBM Fix Central (<http://www.933.ibm.com/support/fixcentral/>).
3. Login to the switch and enable the server ports. In our test environment we used ports 3 and 4.
4. Enable “vNIC Configuration” under Virtualization. Ensure you select the Configuration Tab!
5. Select Submit, and then select Apply. Nothing will happen or activate until you select Apply and receive no errors.



Figure 1: Configure the IBM BNT RackSwitch.

6. Next, configure the vNICs according to the server ports being used. Since we were using ports 3 and 4 off the switch, we enabled vNICs 3.1 - 3.4 and 4.1 - 4.4.
7. Set the bandwidth for each of the vNICs. We left it at the default of 25%, providing 2.5Gb bandwidth per vNIC.

Note

The bandwidth of the vNICs are managed by the BNT switch interface.

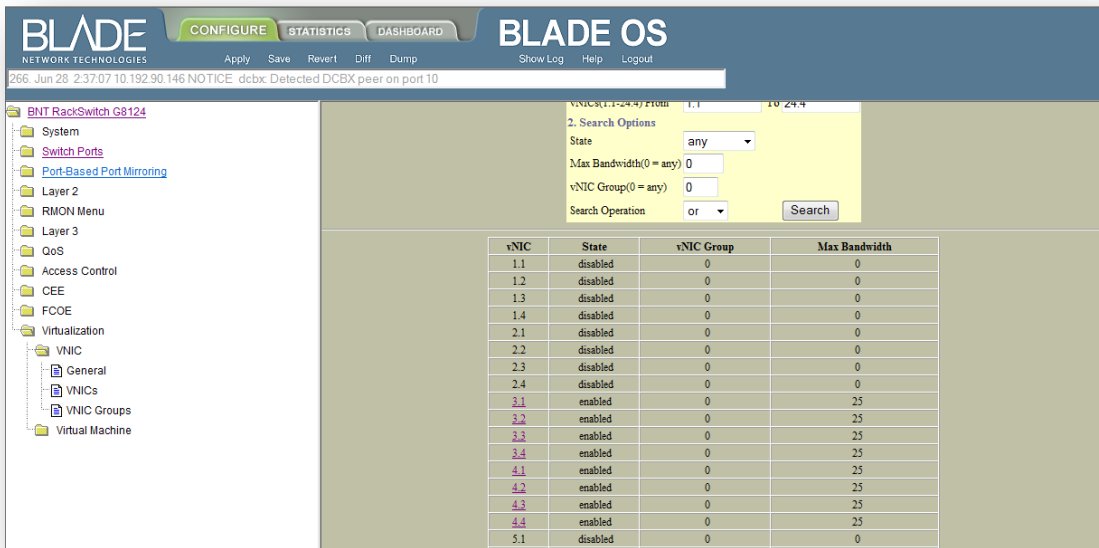


Figure 2: Set the bandwidth for each vNIC.

Once all the vNICs are enabled, the last step is to set the vNIC groups.

8. Enable the vNIC Group State and add the vNICs Available to vNICs in Group.

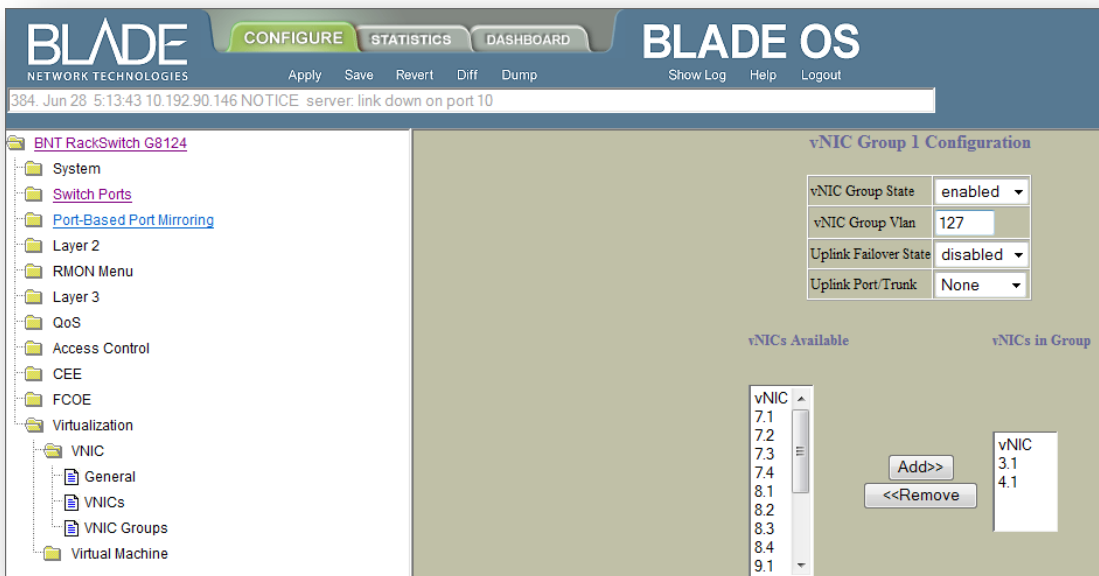


Figure 3: Enable the vNIC Group State



- Next, download the latest Ethernet Driver Kit from [VMware's download site](#). (The [Emulex](#) download site will redirect you to the VMware site).

Proceed to install VMware ESX 4.1:

- When installing ESX 4.1 for the first time, be sure to create a DVD from the ISO driver image you just downloaded.
- During the ESX install process you will be asked if you want to add 3rd party drivers. Select "Yes", then select the Add button.
- Remove the ESX 4.1 DVD and insert the driver CD to install the driver.
- If ESX 4.1 is already installed on your server, simply install the drivers and reboot the server.
- After the ESX host reboots, login with vSphere client to the vCenter Server. Select the host to see the network adapters from the Configuration tab. You will see all eight vNICs starting with vmnic 2 through vmnic 9 – as shown in Figure 4:

Device	Speed	Configured	Switch	MAC Address	Observed IP ranges	Wake on LAN
Broadcom Corporation Broadcom NetXtreme II BCM5709 1000Base-SX						
vmnic1	1000 Full	1000 Full	None	00:1a:64:76:00:09	10.192.90.1-10.192.90.254	Yes
vmnic0	1000 Full	1000 Full	vSwitch0	00:1a:64:76:00:08	10.192.90.1-10.192.90.254	Yes
ServerEngine Corporation OneConnect 10Gb NIC						
vmnic9	2500 Full	Negotiate	None	00:00:c9:9c:d0:db	None	No
vmnic8	2500 Full	Negotiate	None	00:00:c9:9c:d0:c7	None	No
vmnic7	2500 Full	Negotiate	None	00:00:c9:9c:d0:ca	None	No
vmnic6	2500 Full	Negotiate	None	00:00:c9:9c:d0:c6	None	No
vmnic5	2500 Full	Negotiate	None	00:00:c9:9c:d0:c9	None	No
vmnic4	2500 Full	Negotiate	None	00:00:c9:9c:d0:c5	None	No
vmnic3	2500 Full	Negotiate	None	00:00:c9:9c:d0:c8	None	No
vmnic2	2500 Full	Negotiate	None	00:00:c9:9c:d0:c4	None	No
vusb0	0 Half	Negotiate	vSwitchUSB0	02:21:5e:9a:43:9b	None	No

Figure 4: View of the network adapters

The outcome of the configuration for the vSwitches in our test environment using the Emulex Virtual Fabric Adapter in vNIC mode is shown in figure 5 below:

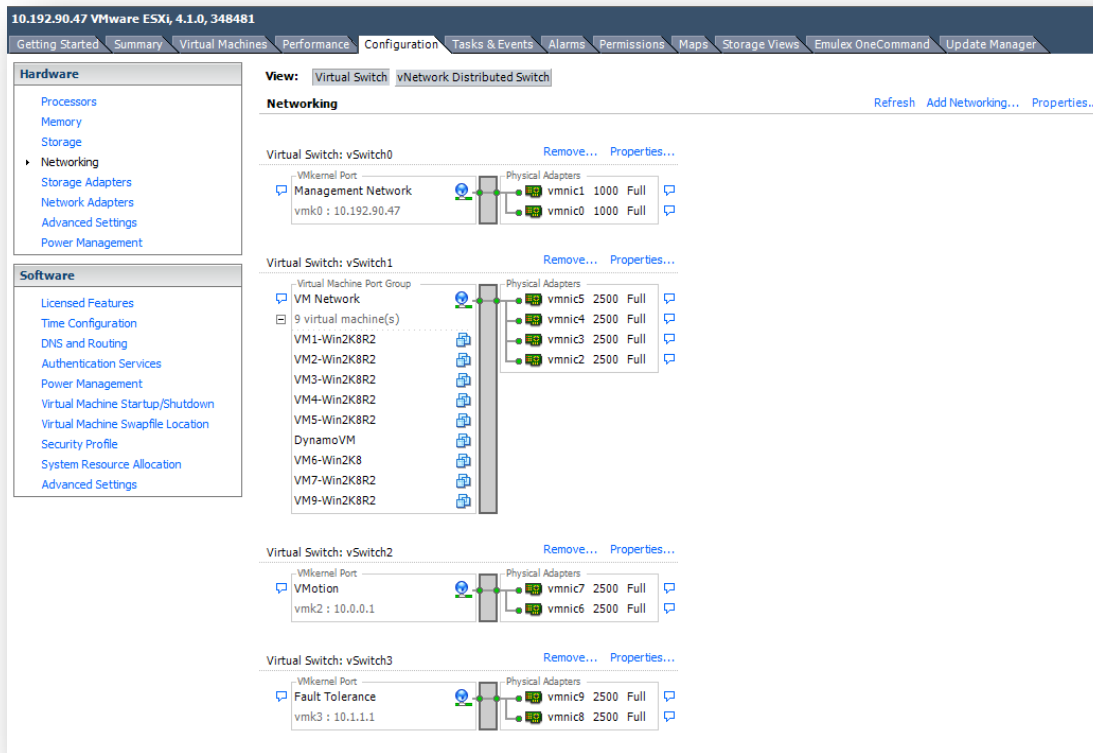


Figure 5: vSwitch Configuration

This all maps out with ESX as follows:

- vmnic 2 (3.1), vmnic 4 (3.2), vmnic 6 (3.3) and vmnic 8 (3.4) are vNICs from Port 0 of the IBM Virtual Fabric Adapter
- vmnic 3 (4.1), vmnic 5 (4.2), vmnic 7 (4.3), and vmnic 9 (4.4) are vNICs from Port 1 of the IBM Virtual Fabric Adapter



More information

Deployment Guide: Deploying 8Gb/s Fibre Channel with IBM System x and VMware vSphere

http://www.emulex.com/artifacts/da5335e2-0423-43cf-af58-3a3f5ad4ef0a/elx_sis_all_ibmsysx_8gb_vmware.pdf

The Implementer's Lab website

www.implementerslab.com

IBM-Emulex website

<http://www.emulex.com/ibm>

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