Configuring the Hyper-V Virtual Machines

This chapter includes the following sections:

- Creating the VMs in Microsoft Hyper-V Manager, page 1
- Installing the VF Driver, page 2
- Managing the Port Profile, page 3

Creating the VMs in Microsoft Hyper-V Manager

This procedure creates a VM using the New Virtual Machine Wizard in the Microsoft Hyper-V Manager. For more information on creating and configuring a new VM, see the Microsoft Windows documentation. Perform this task for each VM in the Hyper-V cluster.

Before You Begin

In Microsoft Hyper-V Manager, create a virtual switch.

Procedure

Step 1 In the Actions frame of Microsoft Hyper-V Manager, click New.
Step 2 From the drop-down list, select Virtual Machine to launch the New Virtual Machine Wizard.
Step 3 In the New Virtual Machine Wizard, click Next to create a VM with a custom configuration.
Step 4 Complete the Specify Name and Location menu and click Next.
Step 5 Complete the Assign Memory menu and click Next.
Step 6 In the Configure Networking menu, select the virtual switch from the Connection drop-down list, and click Next.
Step 7 Click Next.
Step 8 Complete the Connect Virtual Hard Disk menu and click Next.
Step 9 View the Summary and click Finish.

Microsoft Hyper-V Manager displays a list of the VMs.
**Step 10** In the list of VMs, right-click the new VM and select **Settings**.
**Step 11** In the **Navigation** pane, click the **Processor** object and specify 4 virtual processors.
**Step 12** In the **Navigation** pane, expand the **Network Adapter** object and click **Hardware Acceleration**. The **Hardware Acceleration** pane appears.
**Step 13** Scroll to the bottom of the pane and check the check box for **Enable SR-IOV**.
**Step 14** Click **Apply**.
**Step 15** Click **OK**.
**Step 16** Open Powershell on the server and enter the following command: 
```
Set-VMNetworkAdapter -Name adapter-name -VMName vm-name -IovQueuePairsRequested rq-num
```

**Example:**
```
PS C:\> Set-VMNetworkAdapter -Name vmnic1 -VMName vm1 -IovQueuePairsRequested 4
```
This command increases performance. The parameters of the command are as follows:

- `adapter-name`—The name of the VM network adapter.
- `vm-name`—The name of the VM.
- `rq-num`—The number of queue pairs requested, which should be equal to or less than the number of receive queues in the Ethernet adapter policy and equal to or less than the number of virtual CPUs assigned to the VM.

**Step 17** Return to the Microsoft Hyper-V Manager session.
**Step 18** In the list of VMs, right-click the new VM and select **Connect**. A console session to the VM appears.
**Step 19** Click the green Start icon to start the VM.

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**What to Do Next**
Attach a port profile to the VM NIC.

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**Installing the VF Driver**

Perform this task on each VM to install the VF driver.

**Before You Begin**
The Cisco UCS B-Series Blade Server Software Bundle ISO file must be mounted on the server.
Procedure

Step 1  In Powershell on the VM, locate the CSCO_VIO_INSTALLER_version directory in the contents of the mounted ISO file.
Step 2  Run CSCO_VIO_INSTALLER_64_version.msi as administrator.
Step 3  Select Typical installation.
Step 4  Click Next and follow the instructions to install the drivers.

Managing the Port Profile

Two methods are available for attaching the port profile to the VM network adapters:

- You can use Cisco scripts with Microsoft Powershell.
- You can use the Cisco Port Profile Management Snap-in that is installed with the Cisco VM-FEX Utilities.

You can choose either method.

Using Microsoft PowerShell

Attaching the Port Profile with PowerShell

Perform this task on the Hyper-V host server.

After installing the Cisco VM-FEX Port Profile Utilities from the Cisco UCS B-Series Blade Server Software Bundle, you can find scripts for administering VM network adapters using Microsoft Windows PowerShell in the following directory:

C:\Program Files\Cisco Systems\VIO Software\Utilities\Ethernet Utilities\Vmfx Utilities\Scripts

Procedure

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> powershell</td>
<td>Launch PowerShell on the server.</td>
</tr>
<tr>
<td><strong>Example:</strong> C:&gt; powershell</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong> cd &quot;C:\Program Files\Cisco Systems\VIO Software\Utilities\Ethernet Utilities\Vmfx Utilities\Scripts&quot;</td>
<td>Changes the current directory to the directory that contains the PowerShell scripts.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
</tbody>
</table>
Purpose

Command or Action

PS C:\> cd "C:\Program Files\Cisco Systems\VIO Software\Utilities\Ethernet Utilities\Vmfex Utilities\Scripts"

Step 3 .\Backend.ps1

Example:
PS C:\> cd "C:\Program Files\Cisco Systems\VIO Software\Utilities\Ethernet Utilities\Vmfex Utilities\Scripts"

Step 4 .\Util.ps1

Example:
PS C:\> cd "C:\Program Files\Cisco Systems\VIO Software\Utilities\Ethernet Utilities\Vmfex Utilities\Scripts"

Step 5 cd \

Example:
PS C:\> cd \

Step 6 Add-CiscoVmfexSwitchToCluster "switch-name" "cluster-id" "cluster-name"

Example:
PS C:\> Add-CiscoVmfexSwitchToCluster "VSwitch_1" "87654321-0123-4567-abcdef-0123456789abcdef" "Cluster_1"

Step 7 Get-VM

Example:
PS C:\> Get-VM

Step 8 Get-VMNetworkAdapter -VMName vm-name | fl

Example:
PS C:\> Get-VMNetworkAdapter -VMName vm1 | fl

Purpose

Makes the scripts available in the current scope.

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Changes the current directory to the top level directory.

Attaches the virtual switch to the cluster. The parameters are as follows:

- **switch-name**—The virtual switch name you configured in the Virtual Switch Manager.
- **cluster-id**—The cluster ID that you configured when you created a cluster in Cisco UCS Manager.
- **cluster-name**—The cluster name that you configured in Cisco UCS Manager.

Displays a table of VMs. Note the VM Name in the first column.

Displays a list of network adapter properties for the VM. For the vm-name parameter, enter the VM name as it appears in the Name column of the VM table.
In the network adapter properties list, note the Id and VMId properties.

**Step 9**

```powershell
$ProfileId = "{"+[System.Guid]::NewGuid().toString()}"
```

Example:

```powershell
PS C:\> $ProfileId = "{"+[System.Guid]::NewGuid().toString()}"
```

**Step 10**

```powershell
Add-CiscoVmfnexPortProfile "vmid" $ProfileId "profile-name" "adapter-id"
```

Example:

```powershell
PS C:\> Add-CiscoVmfnexPortProfile "8be79fffd-0bf2-4a93-b9ee-81878755b469" $ProfileId "MyPortProfile_1" "Microsoft:0D8E0F40-C010-45C2-91E7-C3E21043FE83\17F95B37-2ACD-42AD-981C-AC4BDAC0B8BD"
```

**Step 11**

Perform steps 8 through 10 for each VM.

**What to Do Next**

Reboot the Hyper-V host and test the IP connectivity of the host.

**Detaching the Port Profile with PowerShell**

(Optional) To detach the port profile using PowerShell, perform this task on the Hyper-V host server.

**Procedure**

<table>
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<tr>
<td>powershell</td>
<td>Launch PowerShell on the server.</td>
</tr>
<tr>
<td>Delete-CiscoVmfexPortProfile &quot;vmid&quot; &quot;adapter-id&quot;</td>
<td>Deletes the VM network adapter from the port profile. The parameters are as follows:</td>
</tr>
</tbody>
</table>

Example:

```powershell
PS C:\> Delete-CiscoVmfexPortProfile "8be79fffd-0bf2-4a93-b9ee-81878755b469"
```
Using the Cisco Port Profile Management Snap-in

Attaching the Port Profile with the Port Profile Management Snap-in

Procedure

Step 1 On the server with the Port Profile Management Snap-in installed, double-click the desktop shortcut to launch the Cisco Vmfex Port-Profile Manager.

Step 2 In the Actions pane, click Add UCSM. The UCSM Login dialog box appears.

Step 3 In the UCSM Login dialog box, enter the IP Address, User Name, and Password for the Cisco UCS Manager (UCSM) system and click OK. The clusters and port profiles display in the center pane.

Step 4 In the Actions pane, click Add Host. The Connect to Hyper-V Server dialog box appears.

Step 5 In the Connect to Hyper-V Server dialog box, select Local Computer to add the current host or Another Computer to add a remote host.

Step 6 If you selected Another Computer, enter the Host Name/IP, User Name, and Password for the remote host. The Host Name must be in the same domain as the Hyper-V host. If you enter an IP address instead of a host name, you must execute the following command in Powershell on the Hyper-V host:

```powershell
Set-Item WSMan:\localhost\Client\TrustedHosts <remote host ip>
```

For example:

```powershell
Set-Item WSMan:\localhost\Client\TrustedHosts '192.0.20.1' -concatenate
```

Step 7 Click OK. The center pane displays the host verification results. Any virtual switches attached to the host are listed under the host name in the Navigation pane.

Step 8 To attach a virtual switch to a cluster, select Attach to Cluster under the switch name in the Actions pane.

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### Command or Action

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<tr>
<td>&quot;Microsoft:0D8E0F40-C010-45C2-91E7-C3E21043FE83/17F85D37-2ACD-42AD-981C-AC4BDAC0B8BD&quot;</td>
<td><em>adapter-id</em>—The Id property from the network adapter properties list.</td>
</tr>
<tr>
<td>Step 3 Remove-CiscoVmfexSwitchFromCluster &quot;switch-name&quot;</td>
<td>Removes the virtual switch from the cluster. The switch-name is the virtual switch name configured in the Virtual Switch Manager.</td>
</tr>
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### Using the Cisco Port Profile Management Snap-in

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Step 7 Click OK. The center pane displays the host verification results. Any virtual switches attached to the host are listed under the host name in the Navigation pane.

Step 8 To attach a virtual switch to a cluster, select Attach to Cluster under the switch name in the Actions pane.
The Select Cluster dialog box appears.

**Step 9**  
In the Select Cluster dialog box, select a cluster and click OK.  
The cluster name appears with the virtual switch name in the Navigation and Actions panes. If no cluster name appears, the switch belongs to the default cluster.

**Step 10**  
To attach the VM network adapters to a port profile, select one or more VM network adapters in the center pane and click Attach/Modify Port Profile under the selected items in the Actions pane.  
The Select Port Profile dialog box appears, displaying all port profiles in the virtual switch.

**Step 11**  
In the Select Port Profile dialog box, select a port profile and click OK.  
The port profile name appears with each VM network adapter in the Navigation pane.

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**What to Do Next**
Reboot the Hyper-V host and test the IP connectivity of the host.

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**Detaching the Port Profile with the Port Profile Management Snap-in**

**Procedure**

**Step 1**  
On the server with the Port Profile Management Snap-in installed, double-click the desktop shortcut to launch the Cisco Vmfex Port-Profile Manager.

**Step 2**  
To detach the VM network adapters from a port profile, select one or more VM network adapters in the center pane and click Detach Port Profile under the selected items in the Actions pane.

**Step 3**  
To detach the virtual switch from a cluster, select Detach from Cluster under the switch name in the Actions pane.  
The virtual switch cannot be detached from the cluster unless all VM network adapters under the switch are detached from their port profiles.