



Configuring Microsoft SCVMM

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About Microsoft SCVMM Dependencies

Refer to the following Microsoft SCVMM dependencies for installing Microsoft SCVMM:

- Active Directory (AD) Services (2008 or 2012)
The AD Domain Controller should have the following services:
 - AD DNS
 - AD DHCP (optional)
- MSSQL 2008 (and later versions) database for SCVMM data store

- SQL command line utilities
- Windows Assessment and Deployment Kit (ADK 8.0)

**Note**

If you see the error message `Error while enabling Windows feature: Netfx3`, enter the following command as an administrator: `C:\> dism /online /enable-feature /featurename:netfx3 /all /source:d:\sources\sxs`, where `d:\sources\sxs` is the Windows installation folder that is mapped to your machine on the D drive.

Installing Cisco Provider Plugin in SCVMM

The Cisco provider plugin pulls the networking objects from the Cisco UCSM into Microsoft SCVMM. Complete the following steps to install the Cisco provider plugin on Microsoft SCVMM:

Before You Begin

Verify that the SCVMM server is in the same domain as the host, the host has an eNIC driver, and enable the administrator account.

**Note**

See the Microsoft documentation for the prerequisites on bringing up the SCVMM server: <http://technet.microsoft.com/en-us/library/gg610617.aspx>

Procedure

- Step 1** Install the Cisco UCSM Network Service provider package, for example, `CiscoProviderUCSMInstaller_1.1.14` on Microsoft SCVMM from your local drive. The installers are located in the `Installers` directory in the ISO image, for example, `ucs-bxxx-drivers\Windows\Installers\Cisco`. When the installation is complete, the `Cisco UCSM Network Service Provider Package Setup` window appears.
- Step 2** Click **Finish** to exit the setup wizard.

Creating a Network Service Instance

After you install the Cisco UCSM plugin, you can launch the SCVMM GUI and add a Network Service instance in the Microsoft SCVMM GUI.

Procedure

- Step 1** In the Microsoft SCVMM GUI, click **Fabric**.
- Step 2** This step is different for System Center 2012 R2 and System Center 2012 SP1 virtual machines.

- For System Center 2012 R2 and above, under **Networking**, right-click **Network Service** and choose **Add Network Service**.
- For System Center 2012 SP1, under **Networking**, right-click **Switch Extensions Manager** and choose **Add Virtual Switch Extension**.

The **Add Network Service** window appears. Enter the connection settings.

- Step 3** In the **Name** tab in the left pane, enter the **Name** and **Description** for the Network Service.
- Step 4** In the **Manufacturer** and **Model** tab in the left pane, choose the following from the drop-down list: Cisco Systems, Inc in the **Manufacturer** field.
- **Manufacturer** - for example, Cisco Systems Inc.
 - **Model** - for example, Cisco UCSM
- Step 5** In the **Credentials** tab, select **Run-As-account** from the browse list. Look for the account to access Cisco UCSM.
- If the account does not appear in the list, click **create-run-as-account**. To create an account, enter a Name and Description for the new **run-as-account**. In addition, put in the user name and password to access Cisco UCS Manager.
 - Check the **validate domain credentials** and click **Finish**. The account is displayed in the **Select a Run as Account** window.
 - Select the account to access Cisco UCS Manager.
- Step 6** For the **Connection String** field in the left pane, enter the IP address of the Cisco UCSM , for example, 10.2.2.2.
- Step 7** The **Certificates** in the left pane does not require user input.
- Step 8** For **Gather Information** in the left pane, click **Scan Provider** and verify the retrieved information from UCS Manager .
- Step 9** For the **Host Group** in the left pane, choose the host groups that can use the Network Service.
- Step 10** For the **Summary** in the left pane, confirm the settings, review the script, and click **Finish**.
- Step 11** Check the status of the operation in the Jobs window. Once the task is complete, the Cisco UCSM is added to the Network Service.
- Step 12** In the SCVMM GUI, choose the Cisco UCSM and click **Refresh**.
The networking objects are pulled from the Cisco UCSM into SCVMM. Only one Cisco UCSM per SCVMM is supported.

Note Known Issue: Refreshing the Network Service in SCVMM might result in errors that are harmless. You will see the following error: **Error (2606) Unable to perform the job because one or more of the selected objects are locked by another job.**

We do not recommend that you make changes to one or more network segments; Microsoft does not support these changes. We also recommend that you do not make any changes to one or more fabric networks, network sites, or the fabric network tree.

Creating a Logical Switch in SCVMM

A logical switch contains the configuration information that controls the behavior of the virtual switches across hosts in your data center.

Procedure

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- Step 1** Right click the Microsoft SCVMM instance and select **Create Logical Switch** option. The **Create Logical Switch Wizard** window appears.
 - Step 2** In the **General** tab, enter a name of the logical switch.
 - Step 3** (Optional) In the **Description** field, enter the description of the logical switch.
 - Step 4** Click **OK**.
 - Step 5** Click **Next**.
 - Step 6** In the **Settings** tab, select the minimum bandwidth mode from the drop down menu. Check the box to enable SR-IOV for the logical switch.
 - Step 7** In the **Extensions** tab, uncheck the **Microsoft Windows Filter** check box because the filtering extension is not allowed with the forwarding extension. This is a Microsoft restriction.
 - Step 8** Choose the **Virtual Switch Extensions** that you want to use with the logical switch. Choose the logical switch as the forwarding extension. This object is pulled from the Cisco UCSM.
 - Step 9** Click **Next**.
 - Step 10** In the **Virtual Port** tab, click **Add**. The **Add Virtual Port** window appears. Select the appropriate port classification from the drop down menu. Or create a new port classification.
If you created a port profile client earlier for the logical switch, you will see the name of the logical switch. When you check to select the logical switch, the port profile defined earlier will appear in the drop down menu. Check the box to include Hyper-V virtual network adapter port profile in this virtual port. Click browse to select the virtual network adapter port profile from the pre-defined list. If the list does not contain the right virtual network adapter port profile, you can create one by clicking the Create button. Provide the appropriate offload settings, security settings, and bandwidth setting.
 - Step 11** In the **Uplink** tab, click **New Uplink Port Profile**. The **Add Uplink Port Profile** window appears.
 - Step 12** Choose the **Uplink Port Profile**. Click **New Virtual Network Adapter** to configure the network adapter settings in connectivity, VLAN ID, IP address configuration, and port profile classification.
 - Step 13** Click **OK**.
 - Step 14** Click **Next**.
 - Step 15** In the **Port Classification** field, click **Browse** and choose the default SR-IOV port profile.
 - Step 16** Choose the logical switch and the associated port profile.
 - Step 17** Choose **Include a virtual network adapter port profile in this virtual port**.
 - Step 18** Choose the SR-IOV profile as the native virtual network adapter port profile.
 - Step 19** Click **OK**.
The SR-IOV port profile is displayed in the **Virtual Port** tab.
 - Step 20** Click **Next**.
 - Step 21** In the left pane, click the **Summary** tab and confirm the settings.
 - Step 22** Click **Finish**.
The logical switch, the uplink port profile, and the port classification are displayed in the SCVMM GUI.
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(Optional) Applying IP Pools for the VMs

You can apply the IP pools for the VMs. This step is optional.

Procedure

- Step 1** Click **Library** in the Microsoft SCVMM GUI, select **VM Templates** under **Templates** menu.
 - Step 2** Right-click **Create VM Template**.
The **Create VM Template Wizard** window appears in the Microsoft SCVMM GUI.
 - Step 3** Click **Browse** and select a source for the new VM template.
 - Step 4** Click **OK**.
 - Step 5** In the **VM Template Name** field, enter the VM template name.
 - Step 6** (Optional) In the **Description** field, enter the VM template description.
 - Step 7** Click **Next**.
Follow the prompts in the wizard to create the VM template.
 - Step 8** Use the template as a source to install the VM.
When you select a host and review virtual machine settings on a specific network adapter, the Cisco UCSM configuration specific to the logical network is pulled into SCVMM. You can apply IP pools for the VMs by using the template.
- Note** For more information about how to configure IP pools, see the Microsoft SCVMM documentation.
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Creating a VM Network in SCVMM

You can configure the settings for the VM network.

Procedure

- Step 1** Click **VMs and Services** in the Microsoft SCVMM GUI.
- Step 2** Right-click **VM Networks** and select **Create VM Network**.
The **Create VM Network Wizard** window appears in the Microsoft SCVMM GUI.
- Step 3** In the **Name** tab, specify the name of the VM network.
- Step 4** In the **Isolation** tab, specify the name of the network manager for the VM network.
- Step 5** (Optional) In the **Description** tab, specify the description of the VM network.
- Step 6** Choose the logical network from the drop-down list.
The logical network is the fabric network that is created on the Cisco UCSM side.
- Step 7** Click **Next**.

The system displays the VM network that is created for the fabric network on the Cisco UCSM side.

Step 8 In the **Isolation** tab, specify the isolation for the VM network.

Step 9 Click **Next**.

Step 10 Configure the settings for the VM network in the **Settings** tab.

Step 11 Click **Finish**.

The VM network is displayed in the Microsoft SCVMM GUI.

Note If you have a VM network, you can point it only to one network segment. If you have any offline VMs and they use a particular VM network, do not change the association of the VM networks. You can change the association only when the VMs are deleted.

Installing the Host Server Operating System

Before You Begin

For detailed information about installing Windows Server 2012 or Windows Server 2012 R2 with Hyper-V, see the Microsoft Windows Server 2012 or Microsoft Windows Server 2012 R2 documentation.

Procedure

Step 1 Install Windows Server 2012 or Windows Server 2012 R2 with Hyper-V on the host server.

Step 2 Open the Windows Server Manager.

What to Do Next

Install the Cisco drivers and utilities.

Obtaining the Cisco Drivers and Utilities for VM-FEX for Hyper-V

Procedure

Step 1 From the Cisco support site, download the Cisco UCS B-Series Blade Server Software Bundle ISO file. The Cisco UCS B-Series Blade Server Software Bundle contains drivers, installation utilities, and the Cisco UCS Provider Plugin for VM-FEX for Hyper-V.

Step 2 In the Cisco UCS Manager KVM settings, mount the software bundle ISO file as virtual media for access from your servers.

Step 3 From the host server, open the `CSCO_VIO_INSTALLER_version` directory in the ISO file. Insert the release version number for *version* in the directory name. For example, the directory name is `CSCO_VIO_INSTALLER_2.4.22` for Release 2.2(1).

Step 4 Open and read the `readme.txt` file for the latest information about installing and configuring VM-FEX for Hyper-V.

Installing the PF Driver and VM-FEX Switch Driver

Perform this task on the host server to install the Cisco VIO drivers and utilities.

**Note**

The Cisco VM-FEX switch driver is installed by SCVMM when the SRIOV-enabled switches are created on the host.

Before You Begin

The Cisco UCS B-Series Blade Server Software Bundle ISO file must be mounted on the server.

Procedure

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- Step 1** In Powershell on the host server, open 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.
Insert the release version number for *version* in the command name. For example, the command name is `CSCO_VIO_INSTALLER_64_2.4.22.MSI` for release 2.2(1).
- Step 3** Choose **Typical** or **Custom** installation. If you choose **Typical** installation, it installs eNIC and fNIC drivers. If you choose **Custom** installation, complete steps 4 through 9.
- Step 4** If necessary, expand **VIO drivers** to display the driver list.
- Step 5** Click **VIC iSCSI dump** and choose **Entire feature will be unavailable**.
Caution The installation might fail if the iSCSI driver are not deselected.
- Step 6** Click **VIC VM-FEX Forwarding Extension** and choose **Entire feature will be unavailable**.
Caution The installation might fail if the VIC VM-FEX forwarding extension driver are not deselected. The VIC VM-FEX forwarding extension is deployed from SCVMM 2012 as part of the logical switch deployment.
- Step 7** Click **VIC Teaming** and choose **Entire feature will be unavailable**.
- Step 8** Click **VIC Management** and choose **Entire feature will be unavailable**.
- Step 9** Click **Next** and follow the instructions to install the drivers.
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Attaching a Hyper-V Host to Microsoft SCVMM

Before You Begin

- Install the operating system.
- Update the driver.
- Move the host to the same domain as the SCVMM.

- Disable the firewall.

**Tip**

Cisco recommends that you install Hyper-V before adding the host to SCVMM. If you do not install Hyper-V before adding the host to SCVMM, a light version of Hyper-V, without a GUI, is installed.

Procedure

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- Step 1** In Microsoft SCVMM GUI, click **VMs and Services** in the bottom-left pane and then click **All Hosts**.
- Step 2** Right-click and choose **Add Hyper-V Hosts and Clusters**.
- Step 3** In the **Credentials** tab, provide the **Run as Account** details.
Note Enter domain administrator credentials in this tab.
- Step 4** Click **Next**.
- Step 5** In the **Discovery Scope** tab, add the hostname in the **Computer Name** pane. The system discovers the host.
- Step 6** In the **Target Resources** tab, choose the host and click **Next**.
 If the Hyper-V role is not enabled on any of the selected servers, SCVMM enables the role on these servers as part of the Add Host process, that results in a restart of the server. If any of the servers have a pending restart, they are also restarted.
- Step 7** Click **OK** to continue.
- Step 8** In the **Host Settings** tab, assign the selected host to a host group.
- Step 9** Click **Next**.
- Step 10** In the **Migration Settings** tab, choose the live storage migration settings and click **Next**. The default value for live storage migration is 2.
- Step 11** Click **Finish**.
 The virtual machine host is added in the Microsoft SCVMM GUI. After the host is added to Microsoft SCVMM, verify that a connection is established between the SCVMM and the host. While attaching a host, use the management interface. After the host is added, a warning message indicates that multipath I/O is not enabled for known storage arrays on the specified host. This is a known issue with Microsoft. The recommended action is that if you want to provision the storage using SCVMM, you must enable multipath I/O for storage arrays that are being used on the host by adding the multipath I/O feature.
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Enabling SRIOV in SCVMM Failover Cluster

Before You Begin

- All network interfaces on nodes in the cluster must have the same configuration (name, uplink VLANs and so on)
- The virtual switch must be a logical switch that can be provisioned on all Hyper-V nodes in the cluster.

Procedure

- Step 1** Bring up two nodes with latest eNIC driver version.
 - Step 2** Create a cluster with these two nodes.
 - Step 3** Install SQL on a standalone node, which is not part of the cluster.
 - Step 4** Install SCVMM on the first node in the cluster. The Microsoft documentation, <https://technet.microsoft.com/en-us/library/gg610678.aspx> provides detailed information about this.
 - Step 5** Install SCVMM on the other node in the cluster. The Microsoft documentation, <https://technet.microsoft.com/en-us/library/hh411279.aspx> provides detailed information about this.
 - Step 6** Install the Cisco Provider Plugin on the first and second node. Please note that there is no need to bring down any node in the cluster while installing the Cisco Provider Plugin.
 - Step 7** Launch SCVMM and add a Hyper-V host.
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Viewing the Host-side Configuration in Windows Server 2012

Following these guidelines for reviewing the host-side configuration in Windows Server 2012:

- Add the host to the domain. Verify that the domain host account has the administrator rights for adding a host to the domain.
- The Cisco eNIC driver for Windows Server 2012 has the following guidelines:
 - Note that the Cisco eNIC driver is an interface that facilitates communication between supported operating systems and Cisco UCS Virtual Interface Cards.
 - Make sure that the same driver is used for the hypervisor and VM.
- Configure the SR-IOV dynamic connection policy on the adapter in the service profile.
- Make sure that the Hyper-V role is enabled when the host is added to SCVMM.
- Make sure that the forwarding extension driver is installed on the host when the logical switch is created in SCVMM.

Deploying the Logical Switch to the Hyper-V Host

After you add a host to SCVMM, you must create a logical switch and attach it to that host. While attaching the host, it installs the extension drivers from SCVMM on the host.

Before You Begin

Make sure that the data path interfaces are enabled for the Logical Switch and refresh the host.

Procedure

- Step 1** In the Microsoft SCVMM GUI, in the **Host** tab, click **Properties**.
The **Properties** window for the selected host is displayed.
- Step 2** Click the **Hardware** tab.
The available interfaces (network adapters) are displayed in the pane.
- Step 3** Choose the management interface to display the details of the interface.
The interfaces are attached to various logical switches.
- Step 4** Choose the interface that is not associated with any of the logical network connectivity to attach it to the logical switch.
- Step 5** Click the **Virtual Switches** tab.
- Step 6** Click **New Virtual Switch** and select the **New Logical Switch** option.
- Step 7** Select the logical switch from the drop-down list in the **Logical Switch** field.
- Step 8** In the **Physical Adapters** panel, select the first physical adapter.
When you select the logical switch, the uplink port profile is automatically selected for the logical switch. When you have multiple uplink port profiles, you can select one uplink port profile for the logical switch during the logical switch creation process.
- Step 9** Click **OK**.
If the same interface is used by multiple switches, a message window indicates that while SCVMM applies the changes, the host might temporarily lose the connectivity. This event might have an adverse effect on other network operations in progress.
- Step 10** Click **OK**.
The logical switch is now attached to the Hyper-V host.
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Creating a VM in SCVMM

You can create a VM in SCVMM and attach the logical switch and the VM network to the VM vNICs.

Procedure

- Step 1** Right-click the host in the Microsoft SCVMM GUI and choose **Create Virtual Machine**. The **Create Virtual Machine Wizard** window appears.
- Step 2** Create a Virtual Machine (VM) and follow the hardware configuration steps.
Note There are multiple ways to configure the VMs. For more information, see the Microsoft documentation.
- Step 3** In the **Configure Hardware** tab, choose a network adapter for the VM.
- Step 4** In the **Connectivity** panel on the right side, click **Browse** in the **Connected to a VM network** field and choose a VM network that you created earlier.
- Step 5** Click **OK**.
- Step 6** Choose the MAC address type in the **MAC Address** field.
The MAC address can be **Dynamic** or **Static**.
Note Use the Microsoft recommended settings for the MAC address pool.

- Step 7** In the **Port Profile** field, choose the port classification as **SR-IOV**.
- Step 8** Click **Next**.
- Step 9** In the **Select Destination** tab, choose **Place the virtual machine on a host** and choose the **Destination** as **All Hosts**.
- Step 10** Click **Next**.
The destination host is highlighted.
- Step 11** Click **Next**.
- Step 12** In the **Configure Settings** tab, review the virtual machine settings and click **Next**.
- Step 13** In the **Add Properties** tab, review the settings and click **Next**.
- Step 14** In the **Summary** tab, confirm the settings and check the **Start the virtual machine after deploying it** check box.
- Step 15** Click **Create**.
The VM network is created and it is displayed in the GUI. A warning message indicates that the system cannot set bandwidth setting on the virtual adapter for the SR-IOV switch. The recommended action is to check the native virtual port profile, correct the issue, and try again.
- Step 16** Choose the VM in the GUI and click **Properties**.
- Step 17** Verify the configured properties of the VM.
- Step 18** After the VM is up, install the virtual function (VF) driver on the VM.
Use the same `CSCO_VIO_INSTALLER_64` msi file that was used in [Installing the PF Driver and VM-FEX Switch Driver, on page 7](#). For example, the command name is `CSCO_VIO_INSTALLER_64_2.4.22.MSI` for release 2.2(1).
- Step 19** Choose **Typical** or **Custom** installation. If you choose **Custom** installation, install 'Cisco VIC VMNic Ethernet' and 'VIC Ethernet Utility'.
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Verifying VM vNICs in Cisco UCSM GUI

You can verify the VM creation status in the Cisco UCSM GUI.

Procedure

- Step 1** In the **Navigation** pane, click **VM**.
- Step 2** Expand the **All** node.
- Step 3** Expand **Virtual Machines** and verify that the VM is displayed in the GUI. In the **General** tab, verify the properties of the vNIC fields. You can verify the **Name**, **MAC address**, **Profile Name**, **VMND Name**, and **Status of the vNIC** fields.
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