

Nexus 1000V Switch for Microsoft Hyper-V Configuration

This section describes how to configure the Nexus 1000V Switch for Microsoft Hyper-V in a VMDC solution.

- VSM CLI Configuration
- SCVMM Configuration

Figure 3-1 compares the SCVMM and Nexus 1000V Switch for Microsoft Hyper-V terminology that will be referenced in each section.

The reader should be familiar with these terms to better understand the role of each object as it pertains to the entire configuration and how each relates to SCVMM and the Nexus 1000V Switch for Microsoft Hyper-V.

SCVMM Terminology	Cisco Nexus 1000V Terminology
Logical Networks	Logical Networks
Network Sites	Network Segment Pools
VM Network Definitions	Network Segments
IP-Pools	IP-Pools & IP-Pool Templates
Port-Classifications	Port-profiles

Figure 3-1 SCVMM and Nexus 1000V Switch for Microsoft Hyper-V Terminology

Network and Tenants Under Test

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Three private tenants and one public tenant logical networks were created.

Six **network segment pools** were created, three public (T1, T2, T3) and three private (PT1, PT2, PT3). The three public network segment pools were configured as members of the public tenant logical network; the three private network segment pools were each configured as an individual member of a the three private tenant logical networks.

Only one **network segment** per public network segment pool was created. Two network segments per private network segment pool were created.

The **IP pool templates** and **port-profiles** are described in the IP Pool templates and Port-profiles sections later in the doc.

The configuration looks like this:

```
logical network PublicTenants
   network segment pool T1
      network segment T1-NetworkSegment101
   network segment pool T2
      network segment T2-NetworkSegment102
   network segment pool T3
      network segment T3-NetworkSegment103
logical network PrivateTenant1
   network segment pool PT1
      network segment PT1-NetworkSegment2013
      network segment PT1-NetworkSegment2014
logical network PrivateTenant3
   network segment pool PT2
      network segment PT2-NetworkSegment2023
      network segment PT2-NetworkSegment2024
logical network PrivateTenant3
   network segment pool PT3
      network segment PT3-NetworkSegment2033
      network segment PT3-NetworkSegment2034
```

Refer to Cisco Nexus 1000V for Microsoft Hyper-V Network Segmentation Manager Configuration Guide for more information about Microsoft networking concepts, command details, and implementation.

Refer to Cisco Nexus 1000V for Microsoft Hyper-V Release Notes, Release 5.2(1)SM1(5.1) for new features and caveats.

Nexus 1000V Switch for Microsoft Hyper-V VSM CLI Configuration

This section describes how to configure the Nexus 1000V with Hyper-V using the Network Segmentation Manager (NSM) CLI on the VSM.

Step 1 Create Logical Networks.

A logical network (for example, internet, intranet, DMZ) is a connectivity abstraction that models separate networks managed by an enterprise. Logical network abstraction hides VLANs and IP subnets from users (VM network administrators, the tenant administrators, and the server administrators), except for the fabric administrator managing the physical fabric.

In other words, a logical network is composed of one or more network segment pools and each network segment pool is a group of VLANS, IP subnets, or VLAN/IP subnet pairs.

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The following logical networks configuration shows three private tenants and one public tenant.

nsm logical network PublicTenants nsm logical network PrivateTentant1 nsm logical network PrivateTentant2 nsm logical network PrivateTentant3

Step 2 Create Network Segments Pools.

A network segment is associated with a unique broadcast domain and facilitates the availability of the network resources to a VM. SCVMM uses the VM networks and the VM subnets to provide the isolated virtual machine networks.

When a Nexus 1000V manages the virtual network, the VMM administrator creates the VM networks that use external isolation. To create external isolation, the network administrator creates network segments on the Nexus 1000V and provisions the isolated networks using VLANs and private VLANs.

Note

In Nexus 1000V for Microsoft Hyper-V, a VLAN is not created to define a bridge domain. Instead, a network segment is created on the VSM. Creating a network segment triggers VLAN auto-creation.

The following configuration shows network segment pools.

nsm network segment pool T1 nsm network segment pool T2 nsm network segment pool T3 nsm network segment pool PT1 nsm network segment pool PT3

Step 3 Add each Network Segment Pool to the Logical Network.

The T1, T2, and T3 segment pools are members of the same public tenant logical network. The PT1, PT2, and PT3 segment pools are members of unique logical networks.

The following configuration shows mapping for network segment pools into logical networks.

```
nsm network segment pool T1
member-of logical network PublicTenants
nsm network segment pool T2
member-of logical network PublicTenants
nsm network segment pool T3
member-of logical network PublicTenants
nsm network segment pool PT1
member-of logical network PrivateTentant1
nsm network segment pool PT2
member-of logical network PrivateTentant2
nsm network segment pool PT3
member-of logical network PrivateTentant3
```

Step 4 Create IP Pool Templates.

Server administrators can manage IP addresses for the virtual environment using IP pool templates. You can use the IP pool templates to assign a range of IP addresses to hosts and VMs in the Microsoft SCVMM-managed environment. When creating an IP pool template for a VM network, you can define a range of IP addresses for VMs managed by SCVMM.

The following configurations shows IP pool templates that were created.

```
nsm ip pool template PT1-VL2013-IP-Pool
    ip address 200.1.3.2 200.1.3.250
    network 200.1.3.0 255.255.255.0
    default-router 200.1.3.253
nsm ip pool template PT1-VL2014-IP-Pool
    ip address 200.1.4.2 200.1.4.250
    network 200.1.4.0 255.255.255.0
    default-router 200.1.4.253
nsm ip pool template PT2-VL2023-IP-Pool
```

```
ip address 200.2.3.2 200.2.3.250
  network 200.2.3.0 255.255.255.0
  default-router 200.2.3.253
nsm ip pool template PT2-VL2024-IP-Pool
 ip address 200.2.4.2 200.2.4.250
  network 200.2.4.0 255.255.255.0
  default-router 200.2.4.253
nsm ip pool template PT3-VL2033-IP-Pool
  ip address 200.3.3.2 200.3.3.250
  network 200.3.3.0 255.255.255.0
  default-router 200.3.3.253
nsm ip pool template PT3-VL2034-IP-Pool
  ip address 200.3.4.2 200.3.4.250
  network 200.3.4.0 255.255.255.0
  default-router 200.3.4.253
nsm ip pool template T1-VL101-IP-Pool
 ip address 10.101.1.2 10.101.1.250
  network 10.101.1.0 255.255.255.0
  default-router 10.101.1.253
nsm ip pool template T2-VL102-IP-Pool
 ip address 10.102.1.2 10.102.1.250
 network 10.102.1.0 255.255.255.0
  default-router 10.102.1.253
nsm ip pool template T3-VL103-IP-Pool
  ip address 10.103.1.2 10.103.1.250
```

```
network 10.103.1.0 255.255.255.0
default-router 10.103.1.253
```

Step 5 Create Network Segments.

Configure each network segment to be a member of the previously configured network segment pools. Configure each network segment as an access port with an access VLAN. Import the previously configured IP pool for each network segment. Publish each network segment.

The Step 9VM Network Creation, page 3-36 commands are added automatically and appear later in this section when configuring VM networks in SCVMM.

VM networks enable the SCVMM administrator to create an isolated virtual Layer 3 (L3) network. Each VM network can have multiple VM subnets (virtual L2 domain). Microsoft SCVMM 2012 supports VLAN-backed and network virtualization (NVGRE)-backed VM networks. The Nexus 1000V supports VLAN-backed VM networks only.

The following configuration shows network segments that were created.

```
nsm network segment T1-NetworkSegment101
 member-of network segment pool T1
  switchport access vlan 101
 ip pool import template T1-VL101-IP-Pool
 publish network segment
  switchport mode access
nsm network segment T2-NetworkSegment102
 member-of network segment pool T2
 switchport access vlan 102
 ip pool import template T2-VL102-IP-Pool
 publish network segment
  switchport mode access
nsm network segment T3-NetworkSegment103
 member-of network segment pool T3
  switchport access vlan 103
  ip pool import template T3-VL103-IP-Pool
 publish network segment
```

switchport mode access

```
nsm network segment PT1-NetworkSegment2013
 member-of vmnetwork PT1-NetworkSegment2013
 member-of network segment pool PT1
  switchport access vlan 2013
  ip pool import template PT1-VL2013-IP-Pool
  publish network segment
  switchport mode access
nsm network segment PT1-NetworkSegment2014
 member-of network segment pool PT1
 switchport access vlan 2014
  ip pool import template PT1-VL2014-IP-Pool
 publish network segment
  switchport mode access
nsm network segment PT2-NetworkSegment2023
  member-of network segment pool PT2
  switchport access vlan 2023
  ip pool import template PT2-VL2023-IP-Pool
 publish network segment
  switchport mode access
nsm network segment PT2-NetworkSegment2024
 member-of network segment pool PT2
  switchport access vlan 2024
  ip pool import template PT2-VL2024-IP-Pool
  publish network segment
  switchport mode access
nsm network segment PT3-NetworkSegment2033
 member-of network segment pool PT3
  switchport access vlan 2033
  ip pool import template PT3-VL2033-IP-Pool
  publish network segment
  switchport mode access
nsm network segment PT3-NetworkSegment2034
 member-of network segment pool PT3
  switchport access vlan 2034
  ip pool import template PT3-VL2034-IP-Pool
  publish network segment
  switchport mode access
```

Step 6 Create Port profiles.

Unlike the Nexus 1000V for ESX, in which a port profile identifies both network policy and network isolation (VLAN), SCVMM networking decouples this information into a VM network and the port classification. When the Nexus 1000V is used with Hyper-V, the network administrator creates network segments to isolate networks. The SCVMM server administrator uses network segments in the resulting VM networks. The network administrator defines creates port profiles to define port policy. The server administrator uses port profiles to create a port classification.

To deploy a VM to the virtual access layer, choose the port classification, VM network, and the VM subnet. When a VM is deployed, a port profile is dynamically created on the Nexus 1000V for each unique combination of port classification, VM network, and VM subnet. All other VMs deployed with the same policy to this network reuse the dynamic port profile, which is a combination of network isolation and network policy.

Note The generated profile should be neither modified nor inherited in other port profiles.

When a port-attach notification is received, the port profile globally unique identifier (GUID) and network segment GUID are generated. A GUID provides a unique reference for the port profile and the network segment.

When a GUID is generated, a new port profile, combining the port profile and the VLAN, is created on the VSM. This auto-created port-profile is inherited on the interface. If more than one port uses the same combination of port profile and network segment, the port profile is shared. Port profiles are dynamically created during the interface attach process.

The following configuration shows port-profiles that were created.

```
port-profile type vethernet T1-PortProfile
 no shutdown
  state enabled
 publish port-profile
port-profile type vethernet T2-PortProfile
 no shutdown
 state enabled
 publish port-profile
port-profile type vethernet T3-PortProfile
 no shutdown
 state enabled
 publish port-profile
port-profile type vethernet PT1-PortProfile
 no shutdown
 state enabled
 publish port-profile
port-profile type vethernet PT2-PortProfile
 no shutdown
 state enabled
 publish port-profile
port-profile type vethernet PT3-PortProfile
 no shutdown
  state enabled
 publish port-profile
```

Step 7 Create Uplink Port Profile and Network Uplink.

An uplink port profile is essentially a template that defines a list of network segment pools to be associated with any (physical) network adapters to which the uplink port profile is applied. An uplink port profile enables you to specify protocols and port policy for the uplink adapter, using an Ethernet port profile to be specified.

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The following configuration shows uplink port-profiles.

```
port-profile type ethernet UplinkPortProfile
channel-group auto mode on mac-pinning
no shutdown
max-ports 512
state enabled
nsm network uplink UCS-Uplink
import port-profile UplinkPortProfile
allow network segment pool T1
allow network segment pool T2
allow network segment pool T3
allow network segment pool PT1
allow network segment pool PT2
allow network segment pool PT2
allow network segment pool PT3
publish network uplink
```

<u>Note</u>

When a new segment is created and tied to an existing network segment pool in the list under the network uplink, VLANs are inherited in the NSM created profile as shown.

The following configuration shows an Ethernet UCS-Uplink port-profile.

```
port-profile type ethernet UCS-Uplink
inherit port-profile UplinkPortProfile
switchport mode trunk
switchport trunk allowed vlan 101-103,2013-2014,2023-2024,2033-2034
no shutdown
max-ports 512
description NSM created profile. Do not delete.
state enabled
```

```
<u>Note</u>
```

The Switchport allow vlan add command is not needed.

Nexus 1000V Part 2: SCVMM Configuration

This section provides guidance on how to create the N1000V logical switch (VSM and VEMs) in Hyper-V through SCVMM.

Step 1 Download Cisco Nexus 1000V Package.

The Nexus 1000V for Hyper-V package (zip file) is available at the download URL location provided with the software. Complete the following steps to download the package.

Download the Cisco Nexus 1000V for Microsoft Hyper-V package for Microsoft System Center Virtual Machine Manager (SCVMM) 2012. The package contains the following files:

- Virtual Supervisor Module (VSM) ISO (n1000vh-dk9.5.2.1.SM1.5.1.iso)
- Virtual Ethernet Module (VEM) MSI package (Nexus1000V-VEM-5.2.1.SM1.5.1.msi)
- Cisco VSEM Provider MSI package (Nexus1000V-VSEMProvider-5.2.1.SM1.5.1.msi)
- Cisco SCVMM VM Template (Cisco Nexus1000V VSM Template)
- Cisco Installer App (Cisco.Nexus1000VInstaller.UI.exe)
- **Step 2** Install the Virtual Switch Extension Manager Provider.

To establish communication between SCVMM and the Nexus 1000V VSM, the Virtual Switch Extension Manager (VSEM) provider must be installed on the SCVMM server.

a. Run the Cisco VSEM Provider MSI package (Nexus1000V-VSEMProvider-5.2.1.SM1.5.1.msi) that comes with the Nexus 1000V Package.

Follow the link to where the MSI was downloaded and double-click MSI to run it.

b. Follow the prompts as shown in Figure 3-2, Figure 3-3, and Figure 3-4 until the install is complete.

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Figure 3-2 Run the MSI Installer

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Figure 3-3 Read and Accept the License Agreement



Figure 3-4 Select Finish when the Installer completes

Step 3 Verify that VSEM Provider is installed properly.

Go to Settings > Configuration Providers. Confirm that Cisco Systems Nexus 1000V is listed as a Configuration Provider.

Home							^ 😢
Create Console Add-in Import Backup	PRO PRO						
Settings <	Configuration Providers (2)						
🔄 General		1					٩
4 🔮 Security	Name	Status	Туре 👻	Version	Publisher	Manufacturer	Model
🥵 User Roles	Oisco Systems Nexus 1000V	Active	Virtual Switc		Cisco Syste	Cisco Syste	Nexus 1000V
🛃 Run As Accounts	Ø Microsoft Network Load Balancing (NLB)	Active	Load balancer	3.1.6011.0	System Cent	Microsoft	Network Loa
Servicing Windows Configuration Providers System Center Settings Console Add-ins							
	Cisco Systems Nexus 1000V						~
	Description: Provider for Cisco Systems Nexus 1000V	Virtual Switch Ext	ension Manager				
	 Cisco Systems Nexus 1000V 						
w VMs and Services							
Fabric							
📕 Library							
Jobs							
Settings							

Figure 3-5 Cisco VSEM Provider installed

Step 4 Copy VEM MSI to SCVMM repository.

The VEM is an MSI file that must be placed in the following location on the SCVMM server: ALLUSERSPROFILE%\Switch Extension Drivers, for example, C:\ProgramData\Switch Extension Drivers. SCVMM uses the MSI file during the Add host operation to install VEM code on the host.



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Do not install VEM code on the SCVMM server; only copy the file to the specified location.

Step 5 Add VSEM (Connect SCVMM to VSM).

The following procedures add the VSEM that was just installed. This step is required to connect SCVMM to the VSM in Hyper-V.

In these steps, the login account and the MGMT IP address configured in the VSM are needed to establish the communication between SCVMM and the VSM. Once the VSEM is added, the configuration that was created in the CLI of the VSM can be pulled in the SCVMM.

a. Right-click Switch Extension Manager and select Virtual Switch Extension Manager...

I I •	Home									
+ Create	Add Resources •	Overview	Resources	약 Services 한 Virtual Machines 현 Hosts	Window	View Dependent Resources Dependencies	Refresh	Remove	Properties	
Fabric	Add			Virtual Switch Extensi			Ketresh	Kemove	Properties	
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1	vCenter Servers									
1	VMM Server									
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Figure 3-6 Add VSEM

b. Add the Connection string and select Run As Account.

10.0.72.101 is the IP address of the VSM created on the Nexus 1110x. The created account uses the login credentials required to log in to VSM.

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-	Add Virt	ual Switch Extension Manager Wizard	x
👫 General			4
General Host Groups Summary	Select a manufactu	on settings for the extension manager to add rer, model, and configuration provider for the extension manager. Enter the nd credentials to be used. Cisco Systems, Inc. Nexus 1000V Cisco Systems Nexus 1000V http://10.0.72.101 VSM-Admin	•
		Previous Next Cance	

Figure 3-7 Add VSEM Wizard

Refer to Installing Cisco Nexus 1000v for Microsoft Hyper-V for more information about creating a **Run As Account**.

c. Verify that no additional configuration, such as proxy, is required.

Open a browser and test the connection to the VSM. Browse to http://<VSM IP Address>. Output similar to Figure 3-5 should be seen:



Figure 3-8 Browse to VSM

d. Select the host group to which the VSEM is available.

3	Add Virtual Switch Extension Manager Wizard
👫 Host Grou	ps
General	Host groups that can use this virtual switch extension manager
Host Groups	The virtual switch extension manager will be available to the following host groups.
Summary	All Hosts
	Previous Cancel

Figure 3-9 Add VSEM Wizard All Hosts

e. Confirm the VSEM settings and click Finish.

Figure 3-10	Add VSEM Wizard Confirm Settings
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9	Add Virtual Switch Extension Manager Wizard	×
💐 Summary		
General Host Groups	Confirm the settings	View Script
Summary	Manufacturer: Cisco Systems, Inc. Model: Nexus 1000V Configuration provider: Cisco Systems Nexus 1000V Connection string: http://10.0.72.101 RunAs Account: VSM-Admin Host groups: All Hosts	
	Previous	Cancel

f. Verify that Virtual Switch Extension Manager is installed.

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Create	Add Resources •	Overview	Part and	Hosts	Window	View Dependent Resources	Refresh	Remove	Properti	25	
	Add		5	Show		Dependencies	Refresh	Remove	Propertie	25	
Fabric			•	Virtual Switch Extension	on Manage	ers (1)					
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	All Hosts			Name					0	Connection string	
	Library Servers			🔣 Cisco Nexus 1000	V Chassis v	version 5.2(1)SM1(5.1)	- V2-Hyper	V-VSM-P1	ł	ttp://10.0.72.101	
1	PXE Servers										
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Figure 3-11 Verify VSEM is installed

Step 6 Create Logical Switch in SCVMM.

After VSEM is added (Step 5), do the following:

- 1. Create a logical switch on VMM using VSEM.
- 2. Define extensions and port profiles for the logical switch.
- 3. Create classifications containing the native port profile and a port profile for each extension.
 - a. Right-click Logical Switch and select Create Logical Switch.

Home								^ 🔞
Create Logical Network	Create gical Switch	Add Resources •	Overview Fabric Resources		Window	View Dependent Resources	Remove	Properties
Create		Add	Sh	DW.		Dependencies	Remove	Properties
Fabric	Logical Switches (0]						
4 👰 Servers	*							٩
All Hosts	Name							
鷭 Library Servers			There	are no items to show in	this view			
PXE Servers								
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F VMM Server	E							
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The Logical Networks								
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WMs and Services								
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Figure 3-12 Create Logical Switch

b. Read the text and click **Next**.

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Figure 3-13 Create Logical Switch Getting Started

c. Name the logical switch.

In this case, the hostname of the VSM was used. Use defaults for SR-IOV.

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Figure 3-14 Create Logical Switch Name

 d. Check the previously configured VSEM (V2-HyperV-VSM-P1) and click Next. The VSEM has the following attributes: Extension type: Forwarding Extension Manager: Cisco Nexus 1000V Chassis Only one virtual switch extension can be selected.



Figure 3-15 Create Logical Switch Select VSEM

e. Select Team in the uplink mode field and click Add to add the uplink port profile.

Note The mode should always be **Team**, whether using a single uplink or multiple uplinks.

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TTT WOR	ate IP Pool	Create Logical Switch Wizard
Create Logical Cr Network	*	Create Logical Switch Wizard Properties
Fabric	👫 Uplink	
A M Servers	Getting Started	Specify the uplink port profiles that are part of this logical switch
Library Servers	General	The uplink port profiles configured here are available for use on hosts where an instance of this switch is created.
📬 PXE Servers 👔 Update Server	Extensions	
🔋 vCenter Server	Uplink	Uplink mode: Team Uplink port profiles:
 Networking 	Virtual Port	Uplink Port Profile Host Groups Network Sites Marked For Deleti Add
🖷 Logical Netwo	Summary	Hedit
MAC Address		Remove
📰 VIP Templates 🖳 Switch Extensi		
Logical Switch		
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Figure 3-16 Create Logical Switch Select Add Uplink

f. Select the uplink port profile and click OK.

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Home Home	A A A A A A A A A A A A A A A A A A A	^ @
Create Logical	Create Logical Switch Wizard	we Properties
Fabric Uplink	Add Uplink Port Profile	
All Hosts Getting Started Library Servers General PXE Servers Extensions	Select a port profile tch The port profile selected here will be available for use by the host physical adapter that connect to this logical switch. stance of this switch is	م
Update Server	Port profile: UCS-Uplink	
vcenter Server VMM Server Virtual Port Virtual Port MAC Address MAC Address MAC Address MAC Address Mac Load Balancer Switch Extensi Mac Logical Switch Mac Native Port Pr Port Classificat VMs and Servic Fabric	Summary Host groups: All Hosts Network sites: PT1, PT2, PT3, T1, T2, T3 OK Cancel	
🚟 Library	Previous Next Cancel	
Jobs		
Settings		

Figure 3-17 Add Uplink Port Profile

g. Confirm the uplink port profile settings and click Next.

By default, the host group **All Hosts** is created in Hyper-V. The network sites PT1, PT2, PT3, T1, T2 and T3 were created during Nexus 1000V CLI configuration.

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Create Logical Cr Network	ate IP Pool	Create Logical Switch Wizard	ve Properties
Fabric	Getting Started General Extensions Uplink Virtual Port Summary	Specify the uplink port profiles that are part of this logical switch The uplink port profiles configured here are available for use on hosts where an instance of this switch is created. Uplink mode: Team Uplink port profile: Uplink Port Profile Host Groups Network Sites M UCS-Uplink All Hosts PT1, PT2, PT3, T1, T2, T3 False Edit Remove	β
 Library Jobs Settings 		Previous Next Cancel	

Figure 3-18 Create Logical Switch Note Host Groups and the Network site

h. Specify the Port Classifications and click Next.

Port Classifications must be created in SCVMM and linked to port-profiles created in the VSM. The port-profiles were created previously in the "Nexus 1000V Switch for Microsoft Hyper-V VSM CLI Configuration" section on page 3-2; one port classification per port profile was created. When adding VMs to the logical switch, the port classification and VM network are selected when configuring network adapters (see VM Deployment).

Refer to Creating Logical Switch in SCVMM in Installing Cisco Nexus 1000V for Microsoft Hyper-V for additional guidance for creating port classifications.

ALC: MARKED	ate IP Pool	* 🔶 💽	Services		
Create Logical	2	Create Logical St	witch Wizard	×	we Properties
	👫 Virtual Port				we Properties
Fabric Fabric Fabric Fabric Fabri	Getting Started	Specify the port classifications		-	م
PXE Servers	Extensions	virtual machines.	,		
VCenter Server	Uplink	Virtual ports:	Default Marked For Deletion	Add	
VMM Server	Virtual Port	Port Classification PT1-PortProfile	False False		
🔺 📥 Networking	Summary	PT2-PortProfile	False False	Edit	
า ท ี่ฯ Logical Netwo		PT3-PortProfile	False False	Remove	
MAC Address		T1-PortProfile	False False		
🔡 Load Balancen 🗷 VIP Templates		T2-PortProfile	False False	Set Default	
Switch Extensi		T3-PortProfile	False False	Clear Default	
R Logical Switch					
Native Port Pre					
📲 Port Classificat					
w VMs and Servic					
Pabric Fabric					
🧮 Library			Previous	Next Cancel	
jobs					
Settings					
-	*				

Figure 3-19 Create Logical Switch Specify the Port Classifications

i. In the Summary panel, confirm the settings and click Finish to create the logical switch.

Figure 3-20 Create Logical Switch Specify Confirm Settings

TTT Cr	ate IP Pool 🦉	Create Lo	gical Switch Wizard	2	×	ove	Properties
Fabric	👫 Summary				AT I	ive	Properties
All Hosts	Getting Started General	Confirm the settings			View Script		,
PXE Servers	Extensions Uplink	Name: Description:	V2-HyperV-VSM-P1				
 VCenter Server VMM Server Networking 	Virtual Port	Single Root I/O Virtualization Switch uplink mode: Virtual switch extensions:	n: Disabled Team V2-HyperV-VSM-P1				
ग्तै। Logical Netwo MAC Address	Summary	Uplink port profile sets: Virtual port profile sets:	1 6				
🔛 Load Balancen 🐷 VIP Templates 👪 Switch Extensi						ŀ	
Logical Switch Native Port Pro Port Classificat							
Whs and Servic							
Fabric				Previous	inish Cancel		
Jobs						*****	
Settings							

ſ

j. Manually refresh the VSEM.

After the Nexus 1000V logical switch is created, manually refresh VSEM to force the updates to appear in SCVMM.

III ▼	Home								^ (0
* Create	Add Resources •	Overview	Resources Hosts	 PowerShell Jobs PRO 	View Dependent Resources	Refresh	Remove	Properties		
Fabric	Add		Show Virtual Switch Extension Manag	Window	Dependencies	Refresh	Remove	Properties		-
	NVE SELVEL2		Virtual Switch Extension Manag							P
1	Update Server						0		/	-
	vCenter Servers		Name Cisco Nexus 1000V Chassis v	version 5 2/1\SM1/9	5 1) - V2-HuperV-VSM	_D1		nection string		
	VMM Server			ersion J.2(1)Sivi 1(J	5.1) - V2-HyperV-V3W	- 1	nup	// 10.0.72.101		
100 C	etworking									
	Logical Network									
100 C	MAC Address Po	ools								
	Load Balancers VIP Templates									
_	Switch Extension	n Mana								
	Logical Switches		E							
	Native Port Prof		l							_
	Port Classification	ons	Cisco Nexus 1000V Chassis ver	sion 5.2(1)SM1(5.1)) - V2-HyperV-VSM-P	1				*
1	Gateways		Extension manager information	n						
🕨 🥫 St	orage				ion 5.2(1)SM1(5.1) -					
			V2-HyperV-V		101 3.2(1)3141(3.1) -					
🔯 VI	Ms and Service	s								
🔮 Fa	abric									
📕 li	ibrary									
ja 🗄	obs									
🗹 Se	ettings									
	Step 7	Ad	d VEMs (Hosts) to the	e Nexus 100)0V.					Jane

Figure 3-21 Manual Refresh of the VSEM

a. Right-click All Hosts and select Add Hyper-V Hosts and Clusters..

*	+	e 🔢		0	¢		0	0	6	7			
Create	Add Resources *	Overview Fabric Resource	Compliance	Scan Re	emediate	Compliance Properties	Update Agent	Reassociate		dow			
Create	Add	Show			Complian	ce		Agent					
Fabric		۹ ا	losts (0)										
A 👥 Serv	/ers	<u>-</u> [م
🚞 Al	I Hosts 🙀	Create Service		1	IS T	Role	J	lob Status	-	CPU Average	Available Me	- 0	erating System
	brary Serve	Create Service Create Virtual Mach	ine				There are i	no items to sho	nv in ti	nis view			
_	(E Servers pdate Serve	Add Hyper-V Hosts	and Clusters		1								
	Center Serve	Add Citrix XenServe	er Hosts and Clu	sters	1								
_	MM Server	Add VMware ESX H	osts and Cluste	15									
🔺 📥 Net	working	Create Host Group											
n h r Lo	ogical Netw 👛	Move											
🌉 M	AC Addres: 🗼	View Networking											
	oad Balance 🗙	Delete											
	P Template	Properties											Ŷ
	ogical Switches												
	ative Port Profile	5											
📑 Po	ort Classifications	÷											
🗽 VM	s and Services												
🔛 Fab	ric												
🧮 Libi	rary												
📋 Job	s												
🔽 Set	tings												

Figure 3-22 Add Hyper-V Hosts

b. Select the appropriate computer location and click Next.

All hosts in the test bed were in a trusted Active Directory domain.

Figure 3-23 Add Hyper-V Hosts Windows Computer Location



c. Click Browse to see a list of Run As Accounts.

I



Figure 3-24 Add Hyper-V Hosts Specify Credentials

d. Select the Run As account created during the Hyper-V install.

The account is different than the **Run As account** used to install VSEM. The scymmadmin account was created in Active Directory and is a domain administrator account for the local domain.

See the "Microsoft Windows Server 2012 Installation" section on page 2-6 for more information about the scymmadmin account.

¥ 🔶	e	👘 O 🧍		0 0 0		-
Create Add Resources	*		Add Resource	Wizard	x	
Create Add	~					
Fabric	🗧 Credenti		Select a Run As	Account	× //////	
All Hosts	Resource location	Select a Run As acc	ount			 Operating Sy
Library Servers	Credentials			ام	II the Hyper-V role and	Operating s
PXE Servers	P:	Name	Description	User Role		
눩 Update Server	Discovery scope	NT AUTHORITY\System				
📱 vCenter Server	Target resources	NT AUTHORITY\LocalS				
i VMM Server	Host settings	NT AUTHORITY\Netwo			Browse	
A 📥 Networking	Summary	VSM-Admin		Administrator		
1 Logical Netwo	Summary	Administrator		Administrator		
🚟 MAC Address		scvmmadmin		Administrator		
🕍 Load Balancer						
🗷 VIP Templates					ator on the host	
👪 Switch Extensi					e host as well as for d manually, then they	
🐺 Logical Switch					dded, the VMM service	
Native Port Pr				Create Run As Account	any future access to it.	
🖷 Port Classificat				Create Null AS Account		
w VMs and Servic				Ok Cancel],	
Pabric Fabric						
🧮 Library				Previous	Next Cancel	
📋 Jobs					ALL	
Settings						
Juli Julings						

Figure 3-25 Add Hyper-V Hosts Select Run As Account

e. Enter the hostname of each host to add as a VEM and click Next.

* +	F 🚺 🔮 O	
Create Add • Resources	9	Add Resource Wizard
Create Add	\$	
Fabric	🗧 Discovery scope	
A Preservers	Credentials Search for comp	search scope for virtual machine host candidates vertice by whole or partial names, FQDNs, and IP addresses. Alternatively, you may vertice Directory query to discover the desired computers.
PXE Servers Update Server	Discovery scope	dows Server computers by names
VCenter Server	Terrent encourses	ctive Directory query to search for Windows Server computers
VMM Server	Host settings	
 Networking th Logical Netwo 		uter names of the hosts or host candidates that you want VMM to manage. Each must be on a separate line.
MAC Address Load Balancer VIP Templates Switch Extensi R Logical Switch	v2-c1b3-p1 v2-c1b4-p1 v2-c2b1-p1 v2-c2b2-p1	
Port Classificat	se 10	fication rver1 .o.1.1 01:110:1e:3f8ffcfe44:23
🧮 Library		Previous Next Cancel
📋 Jobs		
Settings		

Figure 3-26 Add Hyper-V Hosts Enter Hostnames

f. After hosts are discovered, select each host to add and click Next.

* 4	e 🔝	🖗 🔾 🛉 🎫	0.0		п
Create Add • Resource		Add Resou	rce Wizard	X	
Create Add					
Fabric	Target res	sources			
Servers Servers All Hosts Library Servers	Resource location ers Credentials	Select the computers that ye	ou want to add as hosts		₽ ♥ Operating System
PXE Servers	Discovery scope	Discovered computers:	0	11	
🍺 Update Ser	ver	Computer Name V2-c2b1-p1.vmdc.net	Operating System Windows Server 2012 Datacenter	Hypervisor Hyper-V	
🗎 vCenter Ser		v2-c1b3-p1.vmdc.net	Windows Server 2012 Datacenter	Hyper-V	
🚏 VMM Serve	r Host settings	v2-c1b4-p1.vmdc.net	Windows Server 2012 Datacenter	Hyper-V	
🔺 📥 Networking	Summary	V2-c2b2-p1.vmdc.net	Windows Server 2012 Datacenter	Hyper-V	
vity Logical Net					
🦉 MAC Addre					
🔛 Load Baland					
📰 VIP Templa					
Switch Exte					
🐺 Logical Swit					
Port Classifi					
Port classifi					
🗽 VMs and Ser	vic				
Pabric		Select all Refresh S	top		
🧮 Library			Previous	Next Cancel	
📋 Jobs				122,	
Settings					
	-				

Figure 3-27 Add Hyper-V Hosts Select the Hosts

g. Assign hosts to a host groups.

Leave Reassociate this host with the VMM environment unchecked and click Next.

Figure 3-28 Add Hyper-V Hosts Assign the Host Group



h. Enable Live Migration and click Next.

ſ



Figure 3-29 Add Hyper-V Hosts Enable Live Migration

i. Confirm the Settings and click Finish.

Create Add Resources	Add Resource Wizard	X	
Create Add Summary			
Image: Servers Resource location All Hosts Credentials Ibrary Servers Credentials Ibrary Servers Discovery scope Ibrary Market Target resources Ibrary VMM Server Host settings VMM Server Host settings Migration Settings Summary Ibrary Servers Summary Ibrary Servers Summary	Confirm the settings Mesource type: Hyper-V capable Windows Servers Resource location: Trusted Windows computer Discovery credentials: scommadmin Discovery scope: Computer name based discovery Mesource discovery A computers are selected to manage Host settings: Host group: All Hosts	View Script	م Operating System
EabricLibrary	Previous	Cancel	
 ☐ Jobs ✓ Settings 			

Figure 3-30 Add Hyper-V Hosts Confirm Settings

j. Verify All Hosts are seen in the All Hosts group.

Create Add Overview	Fabric sources	Compliance		iate Compliance Properties	Update Reassociate Agent	Window		
Lreate Add		osts (4)	Lom	pliance	Agent			
99 Servers	-	55(5 (4)						<u>ر</u>
All Hosts			Host Status	- Role	Job Status	· CPU Average	Available Me	1
	1	ame v2-c1b4-p1.vr		Host	Completed	2 %	182.28 GB	 Operating System Microsoft Windo.
v2-c1b3-p1 v2-c1b4-p1				Host	Completed	2 %	182.52 GB	Microsoft Windo.
v2-c2b1-p1	1			Host	Completed	0 %	0 KB	Microsoft Windo.
v2-c2b2-p1				Host	Completed	4%	182.58 GB	Microsoft Windo.
vCenter Servers								
VMM Server Networking Mc Address Pools Coal Balancers VIP Templates								
VMM Server Networking MaC Address Pools VIP Templates VMs and Services								
VMM Server Networking MAC Address Pools VIP Templates VMs and Services Fabric	•							
VMM Server Networking MaC Address Pools VIP Templates VMs and Services								

Figure 3-31 Add Hyper-V Hosts Verify All Hosts

Step 8 Add Each Host to Logical switch.

a. Right-click the host to be added and select Properties.

Create	Add	Ov	erview Fabrie	c Compliance	Scan Remed	liate Compliance	Update Reassociate	Window		
Create	Resources * Add		Resource		Com	Properties	Ágent Agent	•		
bric	AUG				Com	pnance	Agent			
				Hosts (1)						
👬 Sen			<u> </u>							
4 🗎 A				Name	Host Status	* Role	Job Status	 CPU Average 	Available Me	 Operating System
	v2-c1b3-p1	2	Create Service	38	h OK	Host	Completed	0 %	0 KB	Microsoft Windo
	v2-c1b4-p1		Create Virtual I	Machine						
	v2-c2b1-p1	-	Refresh		-					
	v2-c2b2-p1		Refresh Virtual	Mashiasa						
	brary Servers		Shut Down	wachines						
-	XE Servers	_	Restart							
_	pdate Server		Reset							
_	Center Servers		Power On							
- V	MM Server		Power Off							
	working		View Status							
vin Le	ogical Network	-	Start Maintena	nce Mode						
) M	IAC Address Po		Stop Maintena							
🔛 Lo	oad Balancers		Run Script Con							
2 V	IP Templates		Move to Host (
w VM	ls and Services	-	Remove Cluste	er Node						
📔 Fab		۹.	Connect via RE)P						
rau	ліс		View Networki	ng						
🧮 Lib	rary	-	Remove	-	-					
📋 Job	5		Properties		1					
Set	tings				-					
	-									

b. Add New Logical Switch.

Γ

In the Host Properties > Virtual Switches window, select New Virtual Switch and New Logical Switch to add the host to the Nexus 1000V.

As seen in Figure 3-33, a standard External switch was already created for management. In Hyper-V, multiple switches can exist on the host.

* 🔶	e	👘 🔿 🔶 🗑	0	of 🛛 🖉	
Create Add Resources	8	v2-c1b3-p1.v	mdc.net Properties	X	
Create Add Fabric ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ↓ ∨2< ↓ ∨2< ↓ ↓ ↓ ∨2< ↓ ↓ ↓ ↓ ↓ ∨2< ↓ ↓ ↓ ∨2< ↓ ↓ ↓ ∨2< ↓ ↓ ↓ ∨2< ↓ ↓	Reserves Storage Virtual Switches Migration Settings Placement	New Virtual Switch New Logical Switch New StardSard Switch New StardSard Switch Cisco VIC Ethernet Interfa External	ime: escription: • External Network adapter:	Cisco VIC Ethernet Interface - Virtual Switcl Cisco VIC Ethernet Interface Cisco VIC Ethernet Interface - Virtual Switch ess using VLAN: 0	P Operating System Microsoft Windo
🔛 Fabric	View Script	1		OK Cancel	
📋 Jobs					
✓ Settings					

Figure 3-33 Host Properties New Logical Switch

c. Add physical adapters to the logical switch team.

There are two adapters, VIC Ethernet interface 3 and VIC Ethernet interface 4 that will be used on each host. Add these to the logical switch.

ate Add Resources		v2-c1b3-p1.v	mdc.net Properties		
eate Add	General	🖕 New Virtual Switch 👅 Ne	ew Virtual Network Adapter 🗙 Delete		
Servers	Status	Cisco VIC Ethernet Interfa External	Logical switch: V2-HyperV-VSM-P1	•	
All Hosts	Hardware	Cisco VIC Ethernet Interfa External	The logical switch supports teaming which more than one physical adapter they will w single uplink.	Operating Microsoft	
🖉 v2-c1b4-p1	Host Access	💐 V2-HyperV-VSM-P1	Physical adapters:		
🛛 v2-c2b1-p1	100 100 10 B d	Logical Switch	Adapter Uplink	Port Proi Add	
🛛 v2-c2b2-p1	Virtual Machine Paths			Jplink Remove	
Library Servers	Reserves		Cisco VIC Ethernet Interface		
PXE Servers			Cisco VIC Ethernet Interface #2		
Update Server	Storage		Cisco VIC Ethernet Interface #3 Cisco VIC Ethernet Interface #4		
VCenter Server	Virtual Switches		Cisco vie calenter interface 14		
PVMM Server	Virtual Switches				
 Networking 	Migration Settings				
http://www.com/com/com/com/com/com/com/com/com/com/					
🛎 MAC Address	Placement				
🖄 Load Balancer	Servicing Windows				
VIP Templates	servicing windows				
VMs and Servic	Custom Properties		4	*	
Pabric					
Pabric					_
Library	View Script			OK Cancel	
Jobs			-		

Figure 3-34 Host Properties Add Physical Adapter 1

Add the second physical adapter 2 and hit OK.

Create Add I V2-c	1b3-p1.vmdc.net Properties
Create Add	h 🜉 New Virtual Network Adapter 🗙 Delete
▲ 햎 Servers Status	Logical switch: V2-HyperV-VSM-P1
▲ All Hosts Hardware	Interfa The logical switch supports teaming which means if you connect more than one physical adapter they will work together as a single uplink. Microsoft Windo
v2-c1b4-p1 Host Access V2-HyperV-VSM-F Logical Switch	
v2-c2b1-p1 v2-c2b2-p1 Virtual Machine Paths	Adapter Uplink Port Prof Add
Library Servers Reserves	Cisco VIC Ethernet Interfa V UCS-Uplink Cenove Cisco VIC Ethernet Interfa V UCS-Uplink Cenove Cisco VIC Ethernet Interface
Update Server Storage	Cisco VIC Ethernet Interface #2 Cisco VIC Ethernet Interface #3
VMM Server Virtual Switches	Cisco VIC Ethernet Interface #4
Migration Settings	~
MAC Address Placement	
Malancen VIP Templates Servicing Windows	
WMs and Servic Custom Properties	۰ <u>۱۱</u> ۲
2 Fabric	
🗮 Library View Script	OK Cancel
📋 Jobs	111 111
✓ Settings	

Figure 3-35 Host Properties Add Physical Adapter 2

d. Click OK to continue to add host to the logical switch.

Γ

reate Add Resources	V2-c1b3-p1.vmdc.net Properties									
reate Add	General	new Virtual Switch 💓 New	ew Virtual Network.	Adapter 🗙 Delete						
👥 Servers 🗀 All Hosts	Status Hardware	Cisco VIC Ethernet Interfa External Sicso VIC Ethernet Interfa		V2-HyperV-VSM-P1 supports teaming whi hysical adapter they wi			• Operat			
v2-c1b3-p1 v2-c1b4-p1 v2-c2b1-p1	Host Access	External W V2-HyperV-VSM-P1 Logical Switch	single uplink. Physical adapters Adapter		nk Port Prof	Add	Micros			
🗿 v2-c2b2-p1	Virtual Machine Paths	Virtual M	achine Manager		X 1	Remove				
 Library Servers PXE Servers Update Server vCenter Server 	Reserves Storage	While Virtual Machine Manage temporarily lose network con on other network operations	nectivity. This may							
F VMM Server	Virtual Switches	Do you want to continue?								
-	Migration Settings									
H Logical Netwo MAC Address Load Balancer	Placement			OK Cance						
nt Logical Netwo MAC Address Load Balancen WIP Templates					· ,					
H Logical Netwo MAC Address Load Balancer VIP Templates VMs and Servic	Placement Servicing Windows									
Hungical Netwo MAC Address MAC Address Library	Placement Servicing Windows					Cancel				
MAC Address Load Balancer VIP Templates VMs and Servic Fabric	Placement Servicing Windows Custom Properties				,	Cancel				

Figure 3-36 Host Properties Continue to Add Host to Logical Switch

e. Verify that the VEM is installed on the VSM.

Figure 3-37 shows the output seen on the VSM when the VEM is added to the Logical switch.



	Ports	SM-P1(conf Module-Ty	îg-net-seg≀# sho`mod ∦pe	Model		Status						
1 2 4 5 6	0 288	Virtual S Virtual N Virtual N	Supervisor Module Supervisor Module Ethernet Module Ethernet Module Ethernet Module	Nexus1000V Nexus1000V NA NA NA		active * ha-standby ok ok ok						
Mod	Su		Ны									
1 2 4 5 6	5.2(1) 5.2(1) 5.2(1)	SM1(5.1) SM1(5.1) SM1(5.1) SM1(5.1) SM1(5.1) SM1(5.1)	0.0 0.0 Windows Server 2012 Windows Server 2012 Windows Server 2012	- Datacenter (6.2.920	0, 6,30)						
Mod	MAC-Ad	dress(es)		Serial-Num								
1 2 4 5 6	00-19-0 02-00-0 02-00-0	07-6c-5a-4 0c-00-04-0 0c-00-05-0	a8 to 00-19-07-6c-62-a8 a8 to 00-19-07-6c-62-a8 00 to 02-00-0c-00-04-80 00 to 02-00-0c-00-05-80 00 to 02-00-0c-00-06-80	NA								
Mod	Server	-IP	Server-UUID		Server	-Name						
1 2 4 5 6	10.0.7 10.0.7 10.0.6 10.0.6 10.0.6	2,101 5,4 5,1	NA NA 627C87AB-FABE-E211-0025 627C87AB-FABE-E211-0025 627C87AB-FABE-E211-0025	-B59102200001	V2-C2E	1-P1						
V2-H V2-H V2-H	yperV-V yperV-V yperV-V	SM-P1(cont SM-P1(cont	ion Pig-net-seg)# Pig-net-seg)# 2013 Jun 10 V2-HyperV-VSM-P1 %VEM_MG				R-2-VEM_MGR_	DETECTED:	Host V2-	C1B3-P1	detected	as ≋odule 3
			îig-net-seg)# Îig-net-seg)# ▋									

f. After all hosts were added to the logical switch, they are seen as VEMs in the VSM. Execute **show module** on the VSM to verify these hosts are seen as VEMs.

Mod	Ports Modu	le-Type		Model	Status
1 2 3 4 5 6	0 Virt 288 Virt 288 Virt 288 Virt 288 Virt	ual Supe ual Ethe ual Ethe ual Ethe	ervisor Module ervisor Module ernet Module ernet Module ernet Module ernet Module	Nexus1000V Nexus1000V NA NA NA	active * ha-standby ok ok ok ok
d	S⊎		Hu		
lod	00-19-07-6c 02-00-0c-00 02-00-0c-00 02-00-0c-00	.1) .1) .1) .1) .1) .1) (es) -5a-a8 (-5a-a8 (-03-00 (-04-00 (-05-00 (0.0 0.0 Windows Server 201 Windows Server 201 Windows Server 201 Windows Server 201 0.00-19-07-6c-62-a8 0.00-19-07-6c-62-a8 0.02-00-00-00-35-80 0.02-00-00-00-00-35 0.02-00-00-00-00-580	2 - Datacenter 2 - Datacenter 2 - Datacenter Serial-Num NA NA NA NA NA NA	(6.2.9200, 6.30) (6.2.9200, 6.30)
1od	Server-IP	Se	erver-UUID		Server-Name
L 28 1	10.0.72.101 10.0.72.101 10.0.65.3 10.0.65.4 10.0.65.1 10.0.65.2	NI 63 63		25-B59102200004 25-B59102200001	NA NA V2-C1B3-P1 V2-C1B4-P1 V2-C2B1-P1 V2-C2B2-P1

Figure 3-38 All Host Added as a VEM

g. Verify interfaces are added to Logical Switch.

Because each host has two Cisco VIC Ethernet interfaces, two Ethernet interfaces per host are seen, along the port-channel interfaces.

These are:

```
Eth3/1
Eth3/2
Eth4/1
Eth4/2
Eth5/1
Eth5/2
Eth6/1
Eth6/2
```

Po1 Po2 Po3

Po4

ſ

These interfaces and port-channels can get verified by executing **show interface brief** on the VSM:

Port VRF		Stat	us IP	Address		Speed	MTU
mgmt0		цр	10.	0,72,101		1000	1500
Ethernet Interface	VLAN	Туре	Mode	Status	Reason	Speed	Port Ch #
Eth3/1	1	eth	trunk	up	none	10G	1
Eth3/2	1				none	10G	
Eth4/1	1				none	10G	122334
Eth4/2	1				none	10G	2
Eth5/1	1		trunk		none	10G	3
Eth5/2	1				none	10G	3
Eth6/1	1	eth	trunk		none	10G	
Eth6/2	1	eth	trunk	чр	none	10G	4
Port-channel Interface	VLAN	Туре	Mode	Status	Reason	Speed	Protoco
Po1	1	eth	trunk	up	none	a-10G((D) none
Po2	1		trunk		none	a-10G	
Po3	1		trunk		none		(D) none
Po4	1	eth	trunk	up	none	a-10G((D) none
F04							

Figure 3-39 Show Interface Brief

Step 9 VM Network Creation.

After the Nexus 1000V Switch for Microsoft Hyper-V Logical switch has been installed, the VM Networks can get created.

a. Verify the Logical Networks created on the N1000V are seen in Hyper-V.

reate Logical Network	te Log	Create Create	Add Resources •	Overview Fa	bric ources		Window	Resources		Properties
Create			Add		Show			Dependenc	ies Remove	Properties
bric	۲	Logical Networks a	nd IP Pools (6)							
M Servers	*									,
All Hosts		Name		Subnet	Begin Address	End Addr	ess /	Available Add	Available Add	Available Add.
🖉 v2-c1b3-p1		vitr Cisco VIC Ett	nernet							
🖉 v2-c1b4-p1		Thr Cisco VIC Et	nernet							
🖉 v2-c2b1-p1		vitr PrivateTenta	nt1							
🖉 v2-c2b2-p1	=	mar PrivateTenta	nt2							
🎇 Library Servers		why PrivateTenta	nt3							
PXE Servers		why PublicTenant	ts							
📄 Update Server										
VCenter Servers										
i VMM Server										
Networking										
The Logical Networks										
🗯 MAC Address Pools										
🔛 Load Balancers										
🚟 VIP Templates 🛛 🔓	+									
Why and Services										
Pabric										
🧮 Library										
📋 Jobs										
✓– Settings										
	-									

Figure 3-40 Logical Networks

b. Right-click VM Network and select Create VM Network.

Home Folder	<u>*</u> 4		1 1	.d.				^
ate Create Virtual Create Create Host		sign Overview	VMs Services		Window			
vice Machine - Cloud Group Create		oud	Show	Networks	window			
	VM Networks an		511011					
Jenants								
Clouds	Name		•		Subne		Available Addresses	
VM Networks		thernet Interface -						
🚨 Create VN	1 Network	thernet Interface #	2 - Virtual Switch	1				
Storage								
All Hosts								
🚺 v2-c1b3-p1								
v2-c1b4-p1								
📲 v2-c2b1-p1								
🕴 v2-c2b1-p1								
📲 v2-c2b1-p1								
🖉 v2-c2b1-p1								
📲 v2-c2b1-p1								
🕴 v2-c2b1-p1								
🕴 v2-c2b1-p1								
v2-c2b1-p1 ₽ v2-c2b2-p1								
🖉 v2-c2b1-p1								
 v2-c2b1-p1 v2-c2b2-p1 vMs and Services 								
 v2-c2b1-p1 v2-c2b2-p1 v4-c2b2-p1 v4-c2b2-p1 								
 v2-c2b1-p1 v2-c2b2-p1 v4/s and Services Fabric 								

Figure 3-41 Create VM Network

c. Create the VM network name and select the logical network.

🖪 Administrator - י	vmi-scvmm2.vmdc.net - V	rtual Machine Manager	_ 0 X
Home	Folder		^ @
24	🏝 📑 🏝	a 🕼 🕑 🏥 🎕 🔔 🕡	
Create Create Virtua Service Machine *	急.	Create VM Network Wizard	
VMs and Services	🄔 Name		
Clouds	Name	Specify a name and description for the VM network	ddresses
VM Networks	Isolation	Name: T1-VL101	
Storage	Summary	Description:	
 All Hosts v2-c1b3-p1 v2-c1b4-p1 v2-c2b1-p1 v2-c2b2-p1 		Logical network: PublicTenants	
w VMs and Servic			
🧓 Fabric			
🧮 Library		Previous Vext Cancel	~
📋 Jobs			
Settings			
_	-		

Figure 3-42 Create VM Network Name

d. Select the network segment.

Γ

Administrator -	vmi-scvmm2.vmdc.net - V	'irtual Machine Manager	_	ō	x
Home	Folder				^ 🕜
*	🍐 📑 🏦				
Create Create Virtua	<u>a.</u>	Create VM Network Wizard	1		
Service Machine *					
VMs and Services	🎿 Isolation				
🗱 Tenants					٩
Clouds	Name	Configure the isolation for this VM network, or select automatic to have it	ddresses		
VM Networks	Isolation	configured for you			
	Summary	O Automatic			
Storage		Specify an externally supplied VM network			
 All Hosts v2-c1b3-p1 		External VM network User defined T1-NetworkSegreent101			
v2-c1b4-p1		T2-NetworkSegment102			
v2-c2b1-p1		T3-NetworkSegment103			
₿ v2-c2b2-p1					
-					
WMs and Servio					
🗓 Fabric					
🧮 Library		Previous Next Cancel			~
jobs					
Settings					
	-				
	2 🔒 2 2	E	æ 🔥	12:11	РМ
e. Co	onfirm the VM	network settings.			

Figure 3-43 Select Network Segment



f. Follow the same steps to create the remaining VM Networks.

Home Folder				^
Assign Cloud Cloud	Ms Services VM Networks Show Window			
Is and Services	 VM Networks and IP Pools (12) 			
ổ Tenants				
Clouds	Name	Subnet	Available Addresses	
	Lisco VIC Ethernet Interface #2 - Virtual Switch	I		
🚣 VM Networks	🚢 New Virtual Switch0			
길 Storage	🗆 🚢 PT1-VL2013			
All Hosts		200.1.3.0/24	247	
V2-Cluster	🖂 📥 PT1-VL2014			
v2-c1b3-p1	WI PT1-VL2014-IP-Pool	200.1.4.0/24	249	
🛛 v2-c1b4-p1	□ 🚣 PT2-VL2023			
🕴 v2-c2b1-p1	W PT2-VL2023-IP-Pool	200.2.3.0/24	249	
🕴 v2-c2b2-p1	🖂 📥 PT2-VL2024			
v2-c2b3-p1	WI PT2-VL2024-IP-Pool	200.2.4.0/24	249	
	🖃 🚢 PT3-VL2033			
	T3-VL2033-IP-Pool	200.3.3.0/24	249	
	🖂 🚣 PT3-VL2034			
VMs and Services	T3-VL2034-IP-Pool	200.3.4.0/24	249	
Vivis and Services	_ ⊡ 🚢 T1-VL101			
🤪 Fabric	T1-VL101-IP-Pool	10.101.1.0/24	249	
Library	□ 🚢 T2-VL102			
	T2-VL102-IP-Pool	10.102.1.0/24	249	
Jobs	🖂 📥 T3-VL103			
Settings	T3-VL103-IP-Pool	10.103.1.0/24	249	

Figure 3-45 All VM Networks

g. Verify the network segment are now a "member-of" the correct VM Networks. This line of the configuration is automatically added to the CLI as noted Step 5Create Network Segments., page 3-4.

```
nsm network segment T1-NetworkSegment101
member-of vmnetwork T1-NetworkSegment101
member-of network segment pool T1
switchport access vlan 101
ip pool import template T1-VL101-IP-Pool
publish network segment
switchport mode access
```

At this point, the logical switch, including VSM and VEMs, is installed. VMs can now be added to the logical switch.

Deployment Guidelines

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1. Manually refresh the VSEM. Hyper-V performs a periodic refresh every 30 minutes; changes in the Nexus 1000V are not automatically updated in Hyper-V. Manually refresh the VSEM to force updates to show up in SCVMM.

2. Manually remove NetSwitchTeam. If a host is deleted from SCVMM, NetSwitchTeam is not removed from the host.

If hosts are removed and added again, the hosts is not added to the logical switch because NetSwitchTeam still exists on the hosts.

This error is seen in the Jobs section:

Error (25238)

Creating the adapter team failed with error An internal error has occurred trying to contact the v2-c1b4-p1.vmdc.net server.

WinRM: URL: [http://v2-c1b4-p1.vmdc.net:5985], Verb: [GET], Resource: [http://schemas.microsoft.com/wbem/wsman/1/wmi/root/scvmm/ErrorInfo?ID=1001]

Check that WS-Management service is installed and running on server v2-c1b4-p1.vmdc.net. For more information use the command "winrm helpmsg hresult". If v2-c1b4-p1.vmdc.net is a host/library/update server or a PXE server role then ensure that VMM agent is installed and running. Recommended Action

ensure the team is functioning correctly and retry the operation

To clear this condition, open Windows PowerShell and do the following:

```
PS C:\Users\Administrator.VMDC> Get-NetSwitchTeam *
Name : V2-HyperV-VSM-P12b352411-1eff-4e95-bc84-9f0fb5a339a4
Members : {Ethernet 5, Ethernet 4}
```

PS C:\Users\Administrator.VMDC> Get-NetSwitchTeam | Remove-NetSwitchTeam

After the obsolete NetSwitchTeam is removed, the host can be added to the Logical switch.

3. Verify that hosts ports show up in VSM. In UCSM, each host had two MGMT and two DATA vNICs. The DATA vNICs were used for NetSwitchTeam. On one or two occasions, when a host was added to the Nexus 1000V logical switch, only one interface showed up in the VSM for that VEM, even though both interfaces were selected. The procedure to add the host to the Nexus 1000V had to be repeated, and the interface that did not show up had to be added to the newly created Nexus 1000V connection.

This can be verified by logging into the VSM and looking at the output **from show interface brief**. Look for the VEM and the ports. A **show port-channel summary** should shows those ports added to the port-channel.

- 4. Close and reopen SCVMM. On occasion, odd behavior was seen, such as hosts not responding to messages. Connecting to hosts using Remote Desktop Protocol (RDP) showed that the hosts were in the correct state. Closing and reopening the SCVMM app cleared this state. This is most likely a winrm issue that needs further investigation when it happens again.
- 5. Create a Gold Template for SCVMM. After three to four weeks, SCVMM became unstable. A new SCVMM was created, and a Gold Template was generated from that VM, in case the instability recurs.
- **6.** Refer to Cisco Nexus 1000V for Microsoft Hyper-V Installation Guide, Release 5.2(1)SM1(5.1) for information about creating the Nexus 1000V logical switch in Hyper-V SCVMM.

Adding VMs to Nexus V Switch for Hyper-V Logical Switch

This section shows the process for adding Virtual Machines to the Nexus 1000V Switch for Microsoft Hyper-V Logical switch.

Step 1 Go to the **VM Properties** page.

Right-click the VM and select Properties.

Step 2 Select Hardware Configuration and select the adapter to add to the logical switch.

There are two adapters in the test VMs. One connects to the Microsoft external switch for Management and the other connects to the Nexus 1000V.

Step 3 Select the VM network.

On the network adapter properties page, click **Browse** to see a list of available VM networks.

Home	Folder Host	Virtual Machine				^ 🔞
🔆 🚺	🕼 🎧 Power Off 🎧 Re	set 🔒 Migrate St	torage 🛛 👫		🔶 🖌 📼	-
Create Shut	•	PT1-\	vSTC1-VL2013 Prop	oerties	x	
→ Down						
Create	General			🗟 DVD 🛯 Network Adapt		5
VMs and Services	Status	I	Select a VM Networ	'k 📃	×	
🥵 Tenants	Status	Select a VM Network	,		^	P
Clouds	Hardware Configuration					C. S. O
VM Networks	Checkpoints			ام		V A C
				Owner	Browse	V A C
📴 Storage	Custom Properties	Name E Cisco VIC Ethernet Int	Description	VMDC\Administrator *		V A C
🔺 🚞 All Hosts		PT1-VL2013		VMDC\Administrator		V A C
4 👹 V2-Cluster	Settings	PT1-VL2013		VMDC\Administrator		V A C
🕌 v2-c1b3-pʻ	Actions	PT1-VL2014 PT2-VL2023			=	
🕴 v2-c1b4-p1		PT2-VL2025		VMDC\Administrator = VMDC\Administrator		
🕴 v2-c2b1-p1	Servicing Windows	PT3-VL2024		VMDC\Administrator		
🕴 v2-c2b2-p1	Dependencies	PT3-VL2033		VMDC\Administrator		
🕴 v2-c2b3-p1	Dependencies	T1-VL101		VMDC\Administrator		
	Validation Errors	T2-VL102		VMDC\Administrator		~
		12-1102				
	Access		Create VM	Network Clear selection	~	Â
🔯 VMs and Serv				OK Cancel		of virtual
₿, ² Fabric	38434			Cinter		=
	HEELEN SS					
🚍 Library	View Script				OK Cancel	
📋 Jobs						
Settings	Go to rela	ted object	Storage (1 disks	a	Daily performance (CPU)	
		2-c1b3-p1.vmdc.net	Total storage (20.	ne te contra de la	2	Average .
	HOSE VI	- cros privilidence	Total Storage (ED.			Xi Xi

Figure 3-46 Select a VM Network

Step 4 Select the classification.

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After selecting the VM network, click the Classification drop-down and select the classification profile.



Figure 3-47 Select Classification

Step 5 After selecting the classification, click **OK**.

Step 6 Verify the Virtual Machine has been deployed by issuing a "show interface virtual" from the CLI of the VSM:

V2-HyperV-VSM-P1# show interface virtual

Port	Adapter	Owner	Moo	d Host
Veth1	Net Adapter	PT1-vSTC1-VL2013	3	V2-C1B3-P1
Veth2	Net Adapter	PT1-vSTC1-VL2014	3	V2-C1B3-P1
Veth3	Net Adapter	PT3-vSTC1-VL2033	3	V2-C1B3-P1
Veth4	Net Adapter	T1-vSTC1-VL101	3	V2-C1B3-P1
Veth5	Net Adapter	PT2-vSTC1-VL2023	4	V2-C1B4-P1
Veth6	Net Adapter	PT2-vSTC1-VL2024	4	V2-C1B4-P1
Veth7	Net Adapter	PT3-vSTC1-VL2034	4	V2-C1B4-P1
Veth8	Net Adapter	T2-vSTC1-VL102	4	V2-C1B4-P1
Veth9	Net Adapter	PT1-vSTC2-VL2013	5	V2-C2B1-P1
Veth10	Net Adapter	PT1-vSTC2-VL2014	5	V2-C2B1-P1
Veth11	Net Adapter	PT3-vSTC2-VL2033	5	V2-C2B1-P1
Veth12	Net Adapter	T3-vSTC1-VL103	5	V2-C2B1-P1
Veth13	Net Adapter	PT2-vSTC2-VL2023	6	V2-C2B2-P1
Veth14	Net Adapter	PT2-vSTC2-VL2024	6	V2-C2B2-P1
Veth15	Net Adapter	PT3-vSTC2-VL2034	6	V2-C2B2-P1
Veth16	Net Adapter	LM-Windows Server 2012 -0	1	4 V2-C1B4-P1
Veth17	Net Adapter	LM-Win2008-02	4	V2-C1B4-P1

Deployment Guidelines

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- 1. Select the correct interfaces when adding network adapters. In UCSM, each host has two MGMT and two DATA vNICs. From the Windows OS perspective, four VIC interfaces are presented. Ensure that the correct interfaces are selected when adding the hosts to virtual switches. Check the MAC addresses.
- **2.** Refer to **Connecting VMs to Logical Switch** in Cisco Nexus 1000v for Microsoft Hyper-V Installation Guide, Release 5.2(1)SM1(5.1) for more information.

