



# Configuring Network Segmentation Manager

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This chapter contains the following sections:

- [Information About Network Segmentation Manager, page 1](#)

## Information About Network Segmentation Manager

### Prerequisites

Network Segmentation Manager has the following prerequisites:

- You have installed the Cisco Nexus 1000V software and configured the VSM using the *Cisco Nexus 1000V for Microsoft Hyper-V Installation and Upgrade Guide*.

### Guidelines and Limitations

The network segmentation manager feature has the following configuration guidelines and limitations:

- The **network-segmentation-manager** feature is enabled on the VSM by default. Verify the output of the **show feature** command on the VSM to make sure that the **network-segmentation-manager** feature is enabled by default.
- Microsoft SCVMM should be able to communicate with the Cisco Nexus 1000V using HTTP.
- The **http-server** feature is enabled by default on the Cisco Nexus 1000V to allow web service communication.
- To modify the association of a published network segment to a network segment pool, you must delete and re-create the network segment with the new association. This rule is applicable for the network segment pool, the network uplink, and the virtual port-profiles.

# Building Network Infrastructure for Microsoft SCVMM

## Creating a Logical Network

You can create a logical network for the host connectivity using the following steps:

### SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **nsm logical network** <name>
3. (Optional) switch(config-logical-net)# **description** <description >
4. (Optional) switch(config-logical-net)# **no** description
5. switch(config-logical-net)# **end**
6. switch(config-logical-net)# **exit**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>nsm logical network</b> <name>	Creates a logical network.
<b>Step 3</b>	switch(config-logical-net)# <b>description</b> <description > >	(Optional) Configures the description for the logical network. The maximum size of the characters is 256.
<b>Step 4</b>	switch(config-logical-net)# <b>no</b> description	(Optional) Negates a command or sets its defaults.
<b>Step 5</b>	switch(config-logical-net)# <b>end</b>	Navigates to the execution mode.
<b>Step 6</b>	switch(config-logical-net)# <b>exit</b>	Exits the logical network.

This example shows how to create a logical network named IntranetSFO. Use the **show nsm logical network name** <name> command to display the configuration details of the logical network.

```
switch# configure terminal
switch(config)# nsm logical network IntranetSFO
switch(config-logical-net)# description Network for external Internet connectivity
switch(config-logical-net)# exit

switch(config)# show nsm logical network name IntranetSFO
Name: IntranetSFO
Description: Network for external Internet connectivity
```

## Creating a Network Segment Pool

You can create a network segment pool for the host connectivity using the following steps:

### SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)#**nsm network segment pool** <name>
3. switch(config-net-seg-pool)#**member-of logical network** name
4. (Optional) switch(config-net-seg-pool)#**no** [intraportcom | member-of]
5. (Optional) switch(config-net-seg-pool)#**this config**
6. switch(config-net-seg-pool)# **end**
7. switch(config-net-seg-pool)# **exit**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>nsm network segment pool</b> <name>	Configures the name of the network segment pool. The maximum size of the characters is 64.
<b>Step 3</b>	switch(config-net-seg-pool)# <b>member-of logical network</b> name	Configures a logical network for the network segment pool.
<b>Step 4</b>	switch(config-net-seg-pool)# <b>no</b> [intraportcom   member-of]	(Optional) Negates a command or sets its defaults.
<b>Step 5</b>	switch(config-net-seg-pool)# <b>this config</b>	(Optional) Shows the running configuration for the current object (mode's instance).
<b>Step 6</b>	switch(config-net-seg-pool)# <b>end</b>	Goes to the configuration mode.
<b>Step 7</b>	switch(config-net-seg-pool)# <b>exit</b>	Exits the configuration mode.

This example shows how to configure a network segment pool named IntranetSJ. Use the **show nsm network segment pool name** <name> to view the configuration.

```
switch# configure terminal
switch(config)# nsm network segment pool IntranetSJ
switch(config-net-seg-pool)# member-of logical network IntranetSFO
switch(config-net-seg-pool)# exit

switch(config)# show nsm network segment pool name IntranetSJ
Name: IntranetSJ
  GUID: 5e4cb505-3255-4ef8-8480-685904fc9685
  Logical network Name: IntranetSFO
  Intra Port Communication: Disabled
  Publish-name: IntranetSJ
```

## Creating an IP Pool Template

You can create an IP pool template using the following steps:

### SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)#**nsm ip pool template** <name>
3. switch(config-ip-pool-template)#**ip** [address | reserved]
4. switch(config-ip-pool-template)#**network** <A.B.C.D> <a.b.c.d>
5. (Optional) switch(config-ip-pool-template)#**default-router** <A.B.C.D>
6. (Optional) switch(config-ip-pool-template)#**description**
7. (Optional) switch(config-ip-pool-template)#**dhcp**
8. (Optional) switch(config-ip-pool-template)#**dns-server** <A.B.C.D>
9. (Optional) switch(config-ip-pool-template)#**dns-suffix**
10. (Optional) switch(config-ip-pool-template)#**netbios-name-server** <A.B.C.D>
11. (Optional) switch(config-ip-pool-template)#**netbt**
12. (Optional) switch(config-ip-pool-template)#**no** <description>
13. switch(config-ip-pool-template)#**end**
14. switch(config-ip-pool-template)#**exit**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>nsm ip pool template</b> <name>	Configures the name of the NSM IP pool template. The maximum size of the characters is 64.
<b>Step 3</b>	switch(config-ip-pool-template)# <b>ip</b> [address   reserved]	Configures an IP address or a reserved IP address for the IP pool template.  <b>Note</b> You cannot configure the IP address range starting with an IP address x.x.x.0 or x.x.x.1. The range of the IP address should start with an IP address x.x.x.2 and onwards.  <b>Note</b> You can modify the IP pool range after the IP pool is part of the network segment. Use the <b>ip address</b> command under nsm ip pool template to specify the new ip pool range.
<b>Step 4</b>	switch(config-ip-pool-template)# <b>network</b> <A.B.C.D> <a.b.c.d>	Configures the network address range for the IP pool template, where <A.B.C.D> is the range of the IP address and <a.b.c.d> is the subnet.

	Command or Action	Purpose
Step 5	switch(config-ip-pool-template)# <b>default-router</b> <A.B.C.D>	(Optional) Configures a gateway for the IP pool template.
Step 6	switch(config-ip-pool-template)# <b>description</b>	(Optional) Configures the description of the IP pool template.
Step 7	switch(config-ip-pool-template)# <b>dhcp</b>	(Optional) Configures DHCP support of the IP pool template. <b>Note</b> This command is not supported for the current release.
Step 8	switch(config-ip-pool-template)# <b>dns-server</b> <A.B.C.D>	(Optional) Configures the DNS server IP address of the IP pool template.
Step 9	switch(config-ip-pool-template)# <b>dns-suffix</b>	(Optional) Configures DNS suffix for the IP pool template.
Step 10	switch(config-ip-pool-template)# <b>netbios-name-server</b> <A.B.C.D>	(Optional) Configures the IP address of the netbios name server for the IP pool template.
Step 11	switch(config-ip-pool-template)# <b>netbt</b>	(Optional) Enables netbios over TCP/IP for the IP pool template.
Step 12	switch(config-ip-pool-template)# <b>no</b> <description>	(Optional) Negates a command or sets its defaults.
Step 13	switch(config-ip-pool-template)# <b>end</b>	Goes to the execution mode.
Step 14	switch(config-ip-pool-template)# <b>exit</b>	Exits the logical network.

The following example displays how to create an IP pool template named *pool10*. Add a description and configure a range of the IP address, subnet mask, and gateway for the IP pool template using the commands in the example. Use the **show nsm ip pool template name** <name> command to view the configuration.

```
switch# configure terminal
switch(config)# nsm ip pool template pool10
switch(config-ip-pool-template)# description pool
switch(config-ip-pool-template)# ip address 172.16.10.7 172.16.10.100
switch(config-ip-pool-template)# network 172.16.10.10 255.255.255.0
switch(config-ip-pool-template)# exit

switch(config)# show nsm ip pool template name pool10
Name: pool10
Description: pool
IP-address-range: 172.16.10.7-172.16.10.100
Network: 172.16.10.10
Subnet mask: 255.255.255.0
Default router:
Netbios: Disabled
DHCP: Disabled
Reserved-ip-list:
Netbios-name-server-list:
DNS-server-list:
```

```

DNS-suffix-list:
switch(config)# show nsm ip pool template usage network segment
Ip-pool: pool10
VMNetworkA
switch(config)#
//Modify the IP pool range
switch(config)# nsm ip pool template pool10
switch(config-ip-pool-template)# ip address 172.16.10.7 172.16.10.150
switch(config)# show nsm ip pool template name pool10
Name: pool10
Description: pool
IP-address-range: 172.16.10.7-172.16.10.150
Network: 172.16.10.10
Subnet mask: 255.255.255.0
Default router:
Netbios: Disabled
DHCP: Disabled
Reserved-ip-list:
Netbios-name-server-list:
DNS-server-list:
DNS-suffix-list:

```

## Creating a Network Segment

You can create a network segment for the VM connectivity using the following steps:

### SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)#**nsm network segment** <name>
3. (Optional) switch(config-net-seg)#**description** <name>
4. switch(config-net-seg)# **ip pool import template** <template-name>
5. switch(config-net-seg)#**member-of network segment pool** <name>
6. (Optional) switch(config-net-seg)#**no** [description | ip | network | publish | switchport | system ]
7. switch(config-net-seg)#**switchport** [ access | private-vlan ]
8. (Optional) switch(config-net-seg)#**system network segment**
9. switch(config-net-seg)#**publish network segment** <name>
10. switch(config-net-seg)#**end**
11. switch(config-net-seg)#**exit**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>nsm network segment</b> <name>	Creates a network segment.
<b>Step 3</b>	switch(config-net-seg)# <b>description</b> <name>	(Optional) Enters the description of the network segment.
<b>Step 4</b>	switch(config-net-seg)# <b>ip pool import template</b> <template-name>	Import an IP pool template. <b>Note</b> You can modify the IP pool range after the IP pool is part of the network segment.

	Command or Action	Purpose
<b>Step 5</b>	switch(config-net-seg)# <b>member-of network segment pool</b> <name>	Configures a network segment pool for the VM network segment pool.
<b>Step 6</b>	switch(config-net-seg)# <b>no</b> [description   ip   network   publish   switchport   system ]	(Optional) Negates a command or sets its defaults.
<b>Step 7</b>	switch(config-net-seg)# <b>switchport</b> [ access   private-vlan ]	Configures the switchport mode as <b>access</b> or <b>private-vlan</b> for the network segment pool. The default mode is access.
<b>Step 8</b>	switch(config-net-seg)# <b>system network segment</b>	(Optional) Configures the segment as a system segment.
<b>Step 9</b>	switch(config-net-seg)# <b>publish network segment</b> <name>	Publishes the VM network segment to SCVMM. The name option is used to publish the segment with a different name. The default published name is same as the segment name.
<b>Step 10</b>	switch(config-net-seg)# <b>end</b>	Goes to the configuration mode.
<b>Step 11</b>	switch(config-net-seg)# <b>exit</b>	Exits the configuration.

The following example shows how to configure a network segment named VMNetworkA. Configure the switchport mode as access and associate a network segment pool named IntranetSJ to the network segment. Use the **show nsm network segment name** <name>, **show nsm network segment brief**, and **show nsm network segment virtual usage** commands to view the network segment configuration.

```
switch# configure terminal
switch(config)# nsm network segment VMNetworkA
switch(config-net-seg)# switchport access vlan 100
switch(config-net-seg)# member-of network segment pool IntranetSJ
switch(config-net-seg)# ip pool import template pool10
switch(config-net-seg)# publish network segment VMNetworkA
switch(config-net-seg)# end
```

```
switch(config)# show nsm network segment name VMNetworkA
Name: VMNetworkA
  VM Network Name: VMNetworkA
  VM Network GUID: 584d510b-0eba-485d-9262-a78c0a1fcfe3
  Description:
  GUID: 68f827e8-247d-4f3d-bebf-73d14d0a613a
  Network segment pool: IntranetSJ
  Vlan: 100
  System Network Segment: FALSE
  ip pool template: pool10
  ip pool template GUID: fb05d8b0-724d-478b-a550-bf75f0a646ad
  Publish-name: VMNetworkA
```

```
switch(config)# show nsm network segment brief
```

```
-----
Network segment           Mode           VLAN           Pub           Sys
-----
VMNetworkA                access        100             1             0
-----
Total           Total Pub     Total Sys
-----
1                1             0
-----
```

```
switch(config)# show nsm network segment virtual usage
```

```
-----
Network segment      Port Profile                                     Port      Owner
-----
VMNetworkA          dynpp_34417837-ae75-4360-87e8-3c33d9f59370_
                    3fb0ef6f-2b0e-47c8-b226-2da2dbc1bbe2          Veth2     ABC_VM_02
                                                            Veth3     ABC_VM_03

net-seg-101         dynpp_34417837-ae75-4360-87e8-3c33d9f59370_
                    60b14436-6cc6-45df-8071-082b2e2e5652          Veth1     XYZ_VM_01
```

## Creating an Ethernet Port Profile

Ethernet port profiles define a template that can be applied on physical Ethernet (uplink) ports on Hyper-V hosts. Unlike Virtual Ethernet profiles which are published to SCVMM, Ethernet port profiles are not published to SCVMM. Instead, Ethernet port profiles are imported by the uplink-network that is defined on the Cisco Nexus 1000V VSM.



### Note

The auto-generated profile will have all the contents derived from the uplink network and it should not be modified.

Complete the following steps to configure an Ethernet port profile:

### Before You Begin

- Log in to the CLI in EXEC mode.
- You know whether the ports need to be initialized with system settings.
- You have identified the characteristics needed for this port profile.

## SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile type ethernet name**
3. (Optional) switch(config-port-prof)# **channel-group auto mode on [mac-pinning |sub-group ]**
4. switch(config-port-prof)# **no shutdown**
5. switch(config-port-prof)# **state enabled**

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>port-profile type ethernet name</b>	Enters the port profile configuration mode for the named Ethernet port profile. If the port profile does not already exist, it is created using the following characteristics:



	Command or Action	Purpose
		<ul style="list-style-type: none"> <li>• <b>name</b>—Port profile name that can be up to 80 characters and must be unique for each port profile.</li> <li>• <b>type</b>—(Optional) Specifies the port profile type can be Ethernet or vEthernet. Once configured, the type cannot be changed. The default is the vEthernet type.</li> </ul> <p>Defining a port profile type as Ethernet allows the port profile to be used for physical (Ethernet) ports.</p> <p><b>Note</b> If a port profile is configured as an Ethernet type, it cannot be used to configure the virtual ports.</p>
<b>Step 3</b>	switch(config-port-prof)# <b>channel-group auto mode on</b> [ <i>mac-pinning</i>   <i>sub-group</i> ]	(Optional) Configure the ports and channels in the port profile using a mac-pinning or sub-group mode.  <b>Note</b> This command can be used only for the Ethernet ports.
<b>Step 4</b>	switch(config-port-prof)# <b>no shutdown</b>	Enables all ports in the port profile.
<b>Step 5</b>	switch(config-port-prof)# <b>state enabled</b>	Enables the operational state of the port profile.

The following example shows how to create an Ethernet port profile named UplinkNoPortChannel. Use the **show port-profile name UplinkNoPortChannel** and **show running-config port-profile UplinkNoPortChannel** commands to view the port profile configuration.

```
switch# configure terminal
switch(config)# port-profile type ethernet UplinkNoPortChannel
switch(config-port-prof)# no shutdown
switch(config-port-prof)# state enabled
switch(config-port-prof)# end

switch(config)# show port-profile name UplinkNoPortChannel
port-profile UplinkNoPortChannel
type: Ethernet
description:
status: enabled
max-ports: 512
min-ports: 1
inherit:
config attributes:
no shutdown
evaluated config attributes:
no shutdown
assigned interfaces:
port-group:
system vlans: none
capability l3control: no
capability iscsi-multipath: no
capability vxlan: no
capability l3-vn-service: no
port-profile role: none
port-binding: static

switch(config)# show running-config port-profile UplinkNoPortChannel
!Command: show running-config port-profile UplinkNoPortChannel
!Time: Fri Feb 15 12:56:33 2013
```

```

version 5.2(1)SM1(5.1)
port-profile type ethernet UplinkNoPortChannel
no shutdown
guid 38b1aff5-5fc4-4086-87d5-1a19fb3fde60
max-ports 512
state enabled

switch(config)#

```

## Creating a vEthernet Port Profile

Complete the following steps to configure a vEthernet port profile:

### Before You Begin

- Log in to the CLI in EXEC mode.
- You know whether the ports need to be initialized with system settings.
- You have identified the characteristics needed for this port profile.

### SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile type vethernet name**
3. switch(config-port-prof)# **no shutdown**
4. switch(config-port-prof)# **state enabled**
5. switch(config-port-prof)# **publish port-profile name**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>port-profile type vethernet name</b>	Enters the port profile configuration mode for the named vEthernet port profile.
<b>Step 3</b>	switch(config-port-prof)# <b>no shutdown</b>	Enables all ports in the port profile.
<b>Step 4</b>	switch(config-port-prof)# <b>state enabled</b>	Enables the operational state of the port profile.
<b>Step 5</b>	switch(config-port-prof)# <b>publish port-profile name</b>	Changes the published name to the Microsoft SCVMM.

This example shows how to create a vEthernet port profile:

```

switch# configure terminal
switch(config)# port-profile type vethernet AllAccess1
switch(config-port-prof)# no shutdown
switch(config-port-prof)# state enabled
switch(config-port-prof)# publish port-profile
switch(config-port-prof)# show port-profile name AllAccess1
port-profile AllAccess1

```

```

type: Vethernet
description:
status: enabled
max-ports: 32
min-ports: 1
inherit:
config attributes:
  no shutdown
evaluated config attributes:
  no shutdown
assigned interfaces:
port-group: AllAccess1
system vlans: none
capability l3control: no
capability iscsi-multipath: no
capability vxlan: no
capability l3-vn-service: no
port-profile role: none
port-binding: static
switch(config-port-prof)#

switch(config)# show running-config port-profile AllAccess1
!Command: show running-config port-profile AllAccess1
!Time: Wed Feb 13 14:38:38 2013

version 5.2(1)SM1(5.1)
port-profile type vethernet AllAccess1
  no shutdown
  guid f7adc9ea-19c0-4e96-995c-04c6dfd85112
  publish port-profile
  state enabled

switch(config)#

```

## Configuring an Uplink Network

The uplink network is a combination of an Ethernet port profile and one or more network segment pools. When applied to the physical adapter on a server, the uplink network defines the policy and the VLANs that are allowed on the physical adapter.




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**Note** The **switchport mode trunk** and **switch port mode private-vlan trunk** commands are not supported under the **nsm network uplink** command.

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**Note** For an uplink network mode **access** functionality, create an uplink network with **trunk** mode and allow a native VLAN to achieve the same result.

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Complete the following steps to configure an uplink network:

## SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)#**nsm network uplink** <name>
3. (Optional) switch(config-uplink-net)#**allow network segment pool** <name>
4. (Optional) switch(config-uplink-net)#**import port-profile** name
5. (Optional) switch(config-uplink-net)#**native network segment** <name>
6. switch(config-uplink-net)#**system network uplink**
7. switch(config-uplink-net)#**publish network uplink** <name>

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>nsm network uplink</b> <name>	Configures the uplink network.
<b>Step 3</b>	switch(config-uplink-net)# <b>allow network segment pool</b> <name>	(Optional) Configures the allowed network segment pools. <b>Note</b> For more than one network segment pools, repeat the same command with more than one name for the pool.
<b>Step 4</b>	switch(config-uplink-net)# <b>import port-profile</b> name	(Optional) Imports the Ethernet port profile that gives the policy for the uplink.
<b>Step 5</b>	switch(config-uplink-net)# <b>native network segment</b> <name>	(Optional) Configures the network segment to be a native network segment. <b>Note</b> The VLAN of the network segment must be defined in order to be defined as a native network segment.
<b>Step 6</b>	switch(config-uplink-net)# <b>system network uplink</b>	Enables system VLAN on the network uplinks.
<b>Step 7</b>	switch(config-uplink-net)# <b>publish network uplink</b> <name>	Publishes the uplink network to the Microsoft SCVMM. Adding the name of the network uplink, for example, the variable <name> in the command is optional. When the network uplink is published to Microsoft SCVMM, it is published as an uplink port profile.

The following example shows how to create a new uplink network named NexusUplink, how to import a port profile named UplinkNoPortChannel that gives the policy for the uplink, how to associate the uplink network to a network segment pool, and publish the uplink network. Use the **show nsm network uplink name <name>** command to view the network uplink configuration.

```
switch(config)# configure terminal
switch(config)# nsm network uplink NexusUplink
switch(config-uplink-net)# allow network segment pool IntranetSJ
switch(config-uplink-net)# import port-profile UplinkNoPortChannel
switch(config-uplink-net)# native network segment VMNetworkA
switch(config-uplink-net)# system network uplink
switch(config-uplink-net)# publish network uplink NexusUplink
```

```

switch(config-uplink-net)# exit

switch# show nsm network uplink name NexusUplink
uplink network: NexusUplink
  Publish-name: NexusUplink
  import port-profile: UplinkNoPortChannel
  network segment pool:
    IntranetSJ
  System Uplink-Network: TRUE
  Native network segment: VMNetworkA
  port-profile config:
    switchport mode private-vlan trunk promiscuous
    switchport private-vlan trunk allowed vlan 100,200
    switchport private-vlan trunk native vlan 101

```

```
switch# show nsm network uplink brief
```

```

-----
network uplink                Pub      Sys
-----
NexusUplink                   1        1
-----
Total          Total Pub    Total Sys
-----
1              1          1

```

## Workflows in Microsoft SCVMM

### Configuring a Network Uplink in Access Mode

You can create the network segments with VLANs that are carried by a network uplink:

#### SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **nsm logical network** <name>
3. switch(config-logical-net)# **description** <name>
4. switch(config-logical-net)# **exit**
5. switch(config)# **nsm network segment pool** <name>
6. switch(config-net-seg-pool)# **member-of logical network** <name>
7. switch(config-net-seg-pool)# **exit**
8. switch(config)# **nsm network segment** <name>
9. switch(config-net-seg)# **switchport access vlan** <number>
10. switch(config-net-seg)# **member-of network segment pool** <name>
11. switch(config-net-seg)# **ip pool import template** <name>
12. switch(config-net-seg)# **publish network segment** <name>
13. switch(config-net-seg)# **exit**
14. switch(config)# **nsm network uplink** <name>
15. switch(config-uplink-net)# **allow network segment pool** <name>
16. switch(config-uplink-net)# **native network segment** <name>
17. switch(config-uplink-net)# **import port-profile** <name>
18. switch(config-uplink-net)# **publish network uplink**

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>nsm logical network</b> <name>	Creates a logical network with a given name.
<b>Step 3</b>	switch(config-logical-net)# <b>description</b> <name>	Describes the logical network.
<b>Step 4</b>	switch(config-logical-net)# <b>exit</b>	Exits the configuration.
<b>Step 5</b>	switch(config)# <b>nsm network segment pool</b> <name>	Creates a network segment pool with a given name.
<b>Step 6</b>	switch(config-net-seg-pool)# <b>member-of logical network</b> <name>	Associates the logical network to the network segment pool.
<b>Step 7</b>	switch(config-net-seg-pool)# <b>exit</b>	Exits the configuration.
<b>Step 8</b>	switch(config)# <b>nsm network segment</b> <name>	Creates a network segment with a given name.
<b>Step 9</b>	switch(config-net-seg)# <b>switchport access vlan</b> <number>	Sets the VLAN ID for the segment. It automatically creates a VLAN if it does not exist.
<b>Step 10</b>	switch(config-net-seg)# <b>member-of network segment pool</b> <name>	Associates the network segment to the network segment pool.
<b>Step 11</b>	switch(config-net-seg)# <b>ip pool import template</b> <name>	Associates the IP pool template to the network segment.
<b>Step 12</b>	switch(config-net-seg)# <b>publish network segment</b> <name>	Publishes the network segment to the Microsoft SCVMM. Adding a name of the network segment, for example, the variable <name> in the command is optional.
<b>Step 13</b>	switch(config-net-seg)# <b>exit</b>	Exits the configuration.
<b>Step 14</b>	switch(config)# <b>nsm network uplink</b> <name>	Creates a network uplink object.
<b>Step 15</b>	switch(config-uplink-net)# <b>allow network segment pool</b> <name>	Associates the network uplink object with network segment pool that is carrying one or more segments.
<b>Step 16</b>	switch(config-uplink-net)# <b>native network segment</b> <name>	Declares a network segment to be native.
<b>Step 17</b>	switch(config-uplink-net)# <b>import port-profile</b> <name>	Inherits the profile that you created.
<b>Step 18</b>	switch(config-uplink-net)# <b>publish network uplink</b>	Publishes the network uplink to the Microsoft SCVMM.

Refer to the following example to create the network segments with VLANs that are carried by an uplink, associate each network segment to a network segment pool, create an uplink network named trunk with the

required network segment pool under it, and publish the uplink network to the Microsoft SCVMM. Use the **show run port-profile <name>** command to view the configuration.

```

switch(config)# nsm logical network IntranetSFO
switch(config-logical-net)# description network for host connectivity
switch(config-logical-net)# exit

switch(config)# nsm network segment pool IntranetSJ
switch(config-net-seg-pool)# member-of logical network IntranetSFO
switch(config-net-seg-pool)# exit

switch(config)# nsm network segment VMNetworkB
switch(config-net-seg)# switchport access vlan 100
switch(config-net-seg)# member-of network segment pool IntranetSJ
switch(config-net-seg)# ip pool import template pool10
switch(config-net-seg)# publish network segment VMNetworkB
switch(config-net-seg)# exit

switch(config-uplink-net)# nsm network uplink NexusUplink
switch(config-uplink-net)# allow network segment pool IntranetSJ
switch(config-uplink-net)# native network segment VMNetworkB
switch(config-uplink-net)# import port-profile UplinkNoPortChannel
switch(config-uplink-net)# publish network uplink
switch(config-net-seg)# end

switch# show nsm network segment name VMNetworkB
Name: VMNetworkB
  VM Network Name: VMNetworkB
  VM Network GUID: 3248a6f9-30ca-4cc5-b925-ef0bf6994b75
  Description:
  GUID: 65a6d0de-c666-448b-a912-60cc960f11cc
  Network segment pool: IntranetSJ
  Vlan: 100
  System Network Segment: FALSE
  ip pool template: pool10
  ip pool template GUID: 3ea151c8-ab80-47b1-8491-88a5fb651fe7
  Publish-name: VMNetworkB

switch# show nsm network segment pool name IntranetSJ
Name: IntranetSJ
  GUID: 39362fa4-7ae2-47ee-8f64-1f8ecceda867
  Logical network Name: IntranetSFO
  Intra Port Communication: Disabled
  Publish-name: IntranetSJ

switch# show nsm network uplink name NexusUplink
uplink network: NexusUplink
  Publish-name: NexusUplink
  import port-profile: UplinkNoPortChannel
  network segment pool:
    IntranetSJ
  System Uplink-Network: TRUE
  Switchport mode override: auto
  Native network segment: VMNetworkB
  port-profile config:
    switchport mode trunk
    switchport trunk allowed vlan 100
    switchport trunk native vlan 100

switch# show nsm logical network name IntranetSFO
Name: IntranetSFO
  Description: Intranet network

switch(config)# show run port-profile UplinkNoPortChannel

!Command: show running-config port-profile UplinkNoPortChannel
!Time: Sun Apr 28 14:08:50 2013

version 5.2(1)SM1(5.1)
port-profile type ethernet UplinkNoPortChannel
  guid d7ebe0d0-9152-4415-815d-36ec25deece6
  max-ports 512

```

## Configuring Uplink Profile in Port-Channel Mode

You can configure an uplink profile in port-channel mode:

### SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)#**nsm logical network** <name>
3. switch(config-log-net)# **description** <name>
4. switch(config-log-net)#**exit**
5. switch(config)#**nsm network segment pool** <name>
6. switch(config-net-seg-pool)#**member-of logical network** <name>
7. switch(config-net-seg-pool)#**exit**
8. switch(config)#**nsm network segment** <name>
9. switch(config-net-seg)#**switchport access vlan** <number>
10. switch(config-net-seg)#**member-of network segment pool** <name>
11. switch(config-net-seg)# **publish network segment** <name>
12. switch(config-net-seg)# **exit**
13. switch(config)# **port-profile type ethernet** <name>
14. switch(config-port-prof)#**channel-group auto mode on**
15. switch(config-port-prof)#**state enabled**
16. switch(config-port-prof)#**no shut**
17. switch(config-net-seg)# **exit**
18. switch(config)#**nsm network uplink** <name>
19. switch(config-uplink-net)# **allow network segment pool** <name>
20. switch(config-uplink-net)#**import port-profile** <name>
21. switch(config-uplink-net)#**publish network uplink** <name>

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>nsm logical network</b> <name>	Enters a name for the logical network.
<b>Step 3</b>	switch(config-log-net)# <b>description</b> <name>	Describes the logical network.
<b>Step 4</b>	switch(config-log-net)# <b>exit</b>	Exits the configuration.
<b>Step 5</b>	switch(config)# <b>nsm network segment pool</b> <name>	Enters a name for the network segment pool.
<b>Step 6</b>	switch(config-net-seg-pool)# <b>member-of logical network</b> <name>	Associates the logical network to the network segment pool.



	Command or Action	Purpose
Step 7	switch(config-net-seg-pool)#exit	Exits the configuration.
Step 8	switch(config)#nsm network segment <name>	Creates a network segment.
Step 9	switch(config-net-seg)#switchport access vlan <number>	Creates a network segment for access VLAN that is carried by an uplink.
Step 10	switch(config-net-seg)#member-of network segment pool <name>	Associates the network segment to the network segment pool.
Step 11	switch(config-net-seg)# publish network segment <name>	Publishes the network segment to the Microsoft SCVMM.
Step 12	switch(config-net-seg)# exit	Exits the configuration.
Step 13	switch(config)# port-profile type ethernet <name>	Enters a name for the Ethernet port profile.
Step 14	switch(config-port-prof)#channel-group auto mode on	Creates a classification profile carrying the channel-group command.
Step 15	switch(config-port-prof)#state enabled	Configure the state as enabled.
Step 16	switch(config-port-prof)#no shut	Configure no shutdown command.
Step 17	switch(config-net-seg)# exit	Exits the configuration.
Step 18	switch(config)#nsm network uplink <name>	Creates a network uplink object.
Step 19	switch(config-uplink-net)# allow network segment pool <name>	Associates the network uplink object with the network segment pool.
Step 20	switch(config-uplink-net)#import port-profile <name>	Imports the port profile.
Step 21	switch(config-uplink-net)#publish network uplink <name>	Publishes the network uplink object to the Microsoft SCVMM. The name parameter is optional and it can be used to change the name with which the uplink object is published. By default, the uplink is published with the uplink object name.

Use the following example to create a network uplink named NexusUplink in port-channel mode. Use the **show nsm network uplink name <name>** command to view the configuration.

```
switch# configure terminal
switch(config)# port-profile type ethernet UplinkNoPortChannel
switch(config-port-prof)# channel-group auto mode on
switch(config-port-prof)# state enabled
switch(config-port-prof)# no shutdown
switch(config-port-prof)# exit

switch(config)# nsm network uplink NexusUplink
switch(config-uplink-net)# allow network segment pool IntranetSJ
switch(config-uplink-net)# import port-profile UplinkNoPortChannel
switch(config-uplink-net)# publish network uplink NexusUplink
```

```

switch(config-uplink-net)# exit

switch(config)# show nsm network uplink name NexusUplink

uplink network: NexusUplink
Publish-name: NexusUplink
import port-profile: UplinkNoPortChannel
network segment pool:
  IntranetSJ
System Uplink-Network: TRUE
Native network segment:
port-profile config:
  switchport mode trunk
  switchport trunk allowed vlan 100
  switchport trunk native vlan 100

```

## Configuring a vEthernet Profile with Features

You can configure a vEthernet profile with features:

### SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile type vethernet <name>**
3. switch(config-port-prof)# **service-policy input <name>**
4. switch(config-port-prof)# **ip port access-group <name> in**
5. switch(config-port-prof)# **publish port-profile**
6. switch(config-port-prof)# **state enabled**
7. switch(config-port-prof)# **no shut**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>port-profile type vethernet &lt;name&gt;</b>	Creates a vEthernet port profile with a given name.
<b>Step 3</b>	switch(config-port-prof)# <b>service-policy input &lt;name&gt;</b>	Attaches a QoS policy to the port profile.
<b>Step 4</b>	switch(config-port-prof)# <b>ip port access-group &lt;name&gt; in</b>	Attaches an ACL policy to the port profile.
<b>Step 5</b>	switch(config-port-prof)# <b>publish port-profile</b>	Publishes the port profile to the Microsoft SCVMM. Associates both the network segment and the profile to a vEthernet interface on the Microsoft SCVMM.
<b>Step 6</b>	switch(config-port-prof)# <b>state enabled</b>	Enables the port profile for the server administrator usage.
<b>Step 7</b>	switch(config-port-prof)# <b>no shut</b>	Configures the no shutdown command.

See the following example to configure a service policy on the vEthernet port profile named ACL\_POLICY. Use the **show run port-profile ACL\_policy** command to view the configured policy on the port profile.

```
switch# config t
switch(config)# port-profile type vethernet ACL_policy
switch(config-port-prof)# service-policy input policy1
switch(config-port-prof)# ip port access-group acl-test in
switch(config-port-prof)# publish port-profile
switch(config-port-prof)# state enabled
switch(config-port-prof)# no shut
switch(config-port-prof)# end

switch(config)# show run port-profile ACL_policy
!Command: show running-config port-profile ACL_POLICY
!Time: Sun Feb 24 20:33:56 2013

version 5.2(1)SM1(5.1)
port-profile type vethernet ACL_POLICY
  service-policy input policy1
  ip port access-group acl-test in
  no shutdown
  guid be85760a-e01d-4417-b7a7-6cf5ffb83423
  publish port-profile
  state enabled
```

For more information on configuring port profiles, see *Cisco Nexus 1000V for Microsoft Hyper-V Port Profile Configuration Guide*.

## Configuring System VLAN

You can configure a system VLAN after completing the following steps:

### SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)#**nsm logical network** <name>
3. switch(config-logical-net)# **description** <name>
4. switch(config-logical-net)#**exit**
5. switch(config)#**nsm network segment pool** <name>
6. switch(config-net-seg-pool)#**member-of logical network** <name>
7. switch(config-net-seg-pool)#**exit**
8. switch(config)#**nsm network segment** name
9. switch(config-net-seg)#**switchport access vlan** <number>
10. switch(config-net-seg)#**allow network segment pool** <name>
11. switch(config-net-seg)#**system network segment**
12. switch(config-net-seg)# **publish network segment**
13. switch(config-net-seg)# **exit**
14. switch(config)#**nsm network uplink** <name>
15. switch(config-uplink-net)#**allow network segment pool** <name>
16. switch(config-uplink-net)#**system network uplink**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# <b>configure terminal</b>	Enters global configuration mode.
Step 2	switch(config)# <b>nsm logical network</b> <name>	Enters a name for the logical network.
Step 3	switch(config-logical-net)# <b>description</b> <name>	Describes the logical network.
Step 4	switch(config-logical-net)# <b>exit</b>	Exits the configuration.
Step 5	switch(config)# <b>nsm network segment pool</b> <name>	Enters a name for the network segment pool.
Step 6	switch(config-net-seg-pool)# <b>member-of logical network</b> <name>	Associates the logical network to the network segment pool.
Step 7	switch(config-net-seg-pool)# <b>exit</b>	Exits the configuration.
Step 8	switch(config)# <b>nsm network segment</b> name	Creates a network segment.
Step 9	switch(config-net-seg)# <b>switchport access vlan</b> <number>	Creates a network segment with access VLAN that will be carried by an uplink.
Step 10	switch(config-net-seg)# <b>allow network segment pool</b> <name>	Associates the network segment to the network segment pool.
Step 11	switch(config-net-seg)# <b>system network segment</b>	Enables system VLANs.
Step 12	switch(config-net-seg)# <b>publish network segment</b>	Publishes the network segment to the Microsoft SCVMM.
Step 13	switch(config-net-seg)# <b>exit</b>	Exits the configuration.
Step 14	switch(config)# <b>nsm network uplink</b> <name>	Creates a network uplink object. System VLANs on the uplink port profile are enabled by creating an uplink network object with a network segment pool carrying the system network segments.
Step 15	switch(config-uplink-net)# <b>allow network segment pool</b> <name>	Associates the network uplink object with network segment pool.
Step 16	switch(config-uplink-net)# <b>system network uplink</b>	Enables the system VLANs on the uplink object.

See the following example to create a network segment with access VLAN that will be carried by a network uplink named Channel. Use the **show nsm network uplink name** <name> command to view the system VLAN configuration.

```
switch(config)# configure terminal
switch(config)# nsm logical network IntranetSFO
switch(config-logical-net)# description network for host connectivity
switchM(config-logical-net)# exit

switch(config)# nsm network segment pool IntranetSJ
switch(config-net-seg-pool)# member-of logical network IntranetSFO
switch(config-net-seg-pool)# exit
```

```
switch(config)# nsm network segment VMNetworkB
switch(config-net-seg)# switchport access vlan 101
switch(config-net-seg)# network segment pool IntranetSJ
switch(config-net-seg)# system network segment
switch(config-net-seg)# publish network segment
switch(config-net-seg)# exit

switch(config)# nsm network uplink Channel
switch(config-uplink-net)# allow network segment pool IntranetSJ
switch(config-uplink-net)# publish network uplink

switch(config-uplink-net)# show nsm network uplink name Channel
uplink-network: Channel
  Publish-name: Channel
  import port-profile: uplink_network_default_policy
  network-segment-pool:
    IntranetSJ
  port-profile config:
    switchport mode trunk
    switchport trunk allowed vlan 101

switch(config)# show run port-profile Channel
!Command: show running-config port-profile channel
!Time: Mon Feb 25 10:02:43 2013

version 5.2(1)SM1(5.1)
port-profile type ethernet channel
  inherit port-profile uplink_network_default_policy
  switchport mode trunk
  guid 6fe46002-5a4d-4d6f-949c-12eb41ee7ae3
  max-ports 512
  description NSM created profile. Do not delete.
  system vlan 101
  state enabled
```

## Configuring PVLAN on vEthernet and Ethernet Interfaces

You can configure a PVLAN on vEthernet and Ethernet interfaces:

## SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)#**feature private-vlan**
3. switch(config)#**nsm logical network** <name>
4. switch(config-logical-net)#**description** <description>
5. switch(config-logical-net)#**exit**
6. switch(config)#**nsm network segment pool** <name>
7. switch(config-net-seg-pool)#**member-of logical network** <name>
8. switch(config-net-seg-pool)#**exit**
9. switch(config)#**nsm network segment** <name>
10. switch(config-net-seg)#**member-of network segment pool** <name>
11. switch(config-net-seg)#**switchport mode private-vlan primary**
12. switch(config-net-seg)#**switchport private-vlan primary** "primary vlan"
13. switch(config-net-seg)#**exit**
14. switch(config)#**nsm network segment** <name>
15. switch(config-net-seg)#**member-of network segment pool** <name>
16. switch(config-net-seg)#**switchport mode private-vlan host** [ *isolated* | *community* | *promiscuous* ]
17. switch(config-net-seg)#**switchport private-vlan host association** "primary vlan" "secondary vlan"  
OR **switchport private-vlan mapping** "primary vlan" "list of secondary vlan"
18. switch(config-net-seg)#**publish network segment**
19. switch(config-net-seg)#**exit**
20. switch(config)#**nsm network uplink** name
21. switch(config-uplink-net)#**allow network segment pool** <name>
22. switch(config-uplink-net)# **publish network uplink**

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>feature private-vlan</b>	Enables the PVLAN feature on the VSM.
<b>Step 3</b>	switch(config)# <b>nsm logical network</b> <name>	Enters a name for the logical network.
<b>Step 4</b>	switch(config-logical-net)# <b>description</b> <description>	Describes the logical network.
<b>Step 5</b>	switch(config-logical-net)# <b>exit</b>	Exits the configuration.
<b>Step 6</b>	switch(config)# <b>nsm network segment pool</b> <name>	Enters a name for the network segment pool.
<b>Step 7</b>	switch(config-net-seg-pool)# <b>member-of logical network</b> <name>	Associates the logical network to the network segment pool.

	Command or Action	Purpose
Step 8	switch(config-net-seg-pool)#exit	Exits the configuration.
Step 9	switch(config)#nsm network segment <name>	Creates a network segment.
Step 10	switch(config-net-seg)#member-of network segment pool <name>	Associates the network segment to the network segment pool.
Step 11	switch(config-net-seg)#switchport mode private-vlan primary	Configures the network segment to be type private-vlan primary.  <b>Note</b> Make sure that <b>feature private vlan</b> is enabled on the VSM.
Step 12	switch(config-net-seg)#switchport private-vlan primary "primary vlan"	Sets primary VLAN on a network segment. The primary VLAN segment is used as an anchor segment for creating the secondary VLAN segment.
Step 13	switch(config-net-seg)#exit	Exits the configuration.
Step 14	switch(config)#nsm network segment <name>	Configures a secondary VLAN.
Step 15	switch(config-net-seg)#member-of network segment pool <name>	Associates the network segment to the network segment pool which was used in step 10.
Step 16	switch(config-net-seg)#switchport mode private-vlan host [ isolated   community   promiscuous ]	Create a network segment for secondary VLAN with the port mode as <b>private-vlan host</b> and configure the PVLAN mapping.  <b>Note</b> The host mode can be <b>isolated</b> or <b>community</b> or <b>promiscuous</b> .
Step 17	switch(config-net-seg)#switchport private-vlan host association "primary vlan" "secondary vlan" OR switchport private-vlan mapping "primary vlan" "list of secondary vlan"	The host association is used for creating a private-vlan host segment in either isolated or community mode. The mapping option is used for creating the private-vlan host segment in promiscuous mode.
Step 18	switch(config-net-seg)#publish network segment	Publishes the secondary network segments to the Microsoft SCVMM. The vEthernet interfaces can be attached to these segments on the Microsoft SCVMM.
Step 19	switch(config-net-seg)#exit	Exits the configuration.
Step 20	switch(config)#nsm network uplink name	Creates a network uplink with the network segment pool that carries the primary and secondary VLAN network segments.
Step 21	switch(config-uplink-net)#allow network segment pool <name>	Associates the network uplink with the network segment pool.
Step 22	switch(config-uplink-net)# publish network uplink	Publishes the network segments and the network uplinks to the Microsoft SCVMM.

Use the following example to configure the network segments as primary and secondary PVLANS that will be carried by an uplink network named Channel. Use the **show feature | inc private-vlan** command to verify that the PVLAN feature is enabled. Use the **show vlan private-vlan** command to verify PVLAN mappings.

```
switch# configure terminal
switch(config)# feature private vlan
switch# show feature | inc private-vlan
      private-vlan 1 enabled

switch(config)# nsm logical network IntranetSFO
switch(config-logical-net)# description network for host connectivity
switch(config-logical-net)# exit

switch(config)# nsm network segment pool IntranetSJ
switch(config-net-seg-pool)#member-of logical network IntranetSFO
switch(config-net-seg-pool)#exit

switch(config)# nsm network segment Pvlan_Primary_Segment
switch(config-net-seg)# member-of network segment pool IntranetSJ
switch(config-net-seg)# switchport mode private-vlan primary
switch(config-net-seg)# switchport private-vlan primary 100
switch(config-net-seg)# exit

switch(config)# nsm network segment VMNetworkB
switch(config-net-seg)# member-of network segment pool IntranetSJ
switch(config-net-seg)# switchport mode private-vlan host community
switch(config-net-seg)# switchport private-vlan host-association 100 200
switch(config-net-seg)# publish network segment
switch(config-net-seg)# exit

switch(config)# nsm network uplink Channel
switch(config-uplink-net)# allow network segment pool IntranetSJ
switch(config-uplink-net)# publish network uplink
switch(config-uplink-net)# exit

switch# show vlan private-vlan
Primary Secondary Type                Ports
-----
101      200      primary          Po1, Po3, Po5, Po7, Po9, Po11
400      402      community        Po1, Po3, Po5, Po7, Po9, Po11
```

## Configuring Secondary PVLAN Mode

You can change the secondary PVLAN mode from community to isolated and vice versa:

### SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)#**nsm network segment sec -2169**
3. switch(config-net-seg)#**no switch port private host-association**
4. switch(config-net-seg)#**switchport mode private-vlan host isolated**
5. switch(config-net-seg)#**switchport private-vlan host-association 2167 2169**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# <b>configure terminal</b>	Enters global configuration mode.



	Command or Action	Purpose
Step 2	switch(config)#nsm network segment <i>sec -2169</i>	Creates a network segment.
Step 3	switch(config-net-seg)#no switch port private host-association	
Step 4	switch(config-net-seg)#switchport mode private-vlan host isolated	.
Step 5	switch(config-net-seg)#switchport private-vlan host-association <i>2167 2169</i>	

Here sec-2169 is originally a community network segment as follows:

```
Name: sec-2169
VM Network Name: sec-2169
VM Network GUID: 188a9da2-3685-4dfd-b42e-14594256ee37
Description:
GUID: 45fbeb2c-9c51-497f-94e4-43b922bb412e
Network segment pool: hyperv
Mode: switchport mode private-vlan host community.
Vlan: 0
PVLAN Host-Association: primary {2167} secondary {2169}
System Network Segment: FALSE
ip pool template: ip-pool
ip pool template GUID: 420a9b02-d4eb-42da-ba42-9dfc699ddcff
Publish-name: sec169
```

## Feature History for Network Segmentation Manager

This table includes only the updates for those releases that have resulted in additions or changes to the feature.

Feature Name	Release	Feature Information
Network Segmentation Manager	5.2(1)SK1(2.1)	Introduced the Network Segmentation Manager (NSM) feature.

