



Installing the Cisco VSG

This chapter contains the following sections:

- [Information About the Cisco VSG, page 1](#)
- [Prerequisites for Installing the Cisco VSG Software, page 3](#)
- [Obtaining the Cisco VSG Software, page 3](#)
- [Installing the Cisco VSG Software, page 3](#)
- [Configuring Initial Settings, page 8](#)
- [Verifying the Cisco VSG Configuration, page 11](#)
- [Where to Go Next, page 12](#)

Information About the Cisco VSG

This section describes how to install and complete the basic configuration of the Cisco VSG for Cisco Nexus 1000v Series switch software.

- [Host and VM Requirements, on page 1](#)
- [Cisco VSG and Supported Cisco Nexus 1000V Series Device Terminology, on page 2](#)

Host and VM Requirements

The Cisco VSG has the following requirements:

- Microsoft SCVMM SP1
- Virtual Machine (VM)
 - 64-bit VM is required.
 - 1 processor
 - 2 GB RAM
 - 3 NICs

- Minimum 2 GB hard disk with LSI Logic Parallel adapter (default)
- Minimum CPU speed of 1 GHz

Cisco VSG and Supported Cisco Nexus 1000V Series Device Terminology

The following table lists the terminology is used in the Cisco VSG implementation.

Term	Description
Logical Switch	Logical switch that spans one or more servers. It is controlled by one VSM instance.
NIC	Network interface card.
Server hosting SCVMM	Service that acts as a central administrator for Microsoft Hyper-V hosts that are connected on a network. The server directs actions on the VMs and the VM hosts .
Virtual Ethernet Module (VEM)	Part of the Cisco Nexus 1000V Series switch that switches data traffic. It runs on a Microsoft Hyper-V host. Up to 64 VEMs are controlled by one VSM. All the VEMs that form a switch domain should be in the same virtual data center as defined by the Hyper-V Server.
Virtual Machine (VM)	Virtualized x86 PC environment in which a guest operating system and associated application software can run. Multiple VMs can operate on the same host system concurrently.
vPath	Component in the Cisco Nexus 1000V Series switch with a VEM that directs the appropriate traffic to the Cisco VSG for policy evaluation. It also acts as fast path and can short circuit part of the traffic without sending it to the Cisco VSG.
Virtual Security Gateway (VSG)	Cisco software that secures virtual networks and provides firewall functions in virtual environments using the Cisco Nexus 1000V Series switch by providing network segmentation.
Virtual Supervisor Module (VSM)	Control software for the Cisco Nexus 1000V Series distributed virtual device that runs on a virtual machine (VM) and is based on Cisco NX-OS.
SCVMM	System Center Virtual Machine Manager Connect remotely to Hyper-V server. It is the primary interface for creating, managing, and monitoring VMs, their resources, and their hosts. It also provides console access to VMs.

Prerequisites for Installing the Cisco VSG Software

The following components must be installed and configured:

- On the Cisco Nexus 1000V Series switch, configure a HA VLAN on the switch uplink port. (The VLAN does not need to be the system VLAN.)
- On the Cisco Nexus 1000V Series switch, configure two port profiles for the Cisco VSG: one for the service VLAN and the other for the HA VLAN. (You will be configuring the Cisco VSG IP address on the Cisco VSG so that the Cisco Nexus 1000V Series switch can communicate with it.)

Details about configuring VLANs and port profiles on the Cisco Nexus 1000V Series switch are available in the Cisco Nexus 1000V Series switch documentation.

Obtaining the Cisco VSG Software

You can obtain the Cisco VSG software files at this URL:

<http://www.cisco.com/en/US/products/ps11208/index.html>

Installing the Cisco VSG Software

You can install the Cisco VSG software on a VM by using an ISO image file from the CD.

Installing the Cisco VSG Software from an ISO File

Before You Begin

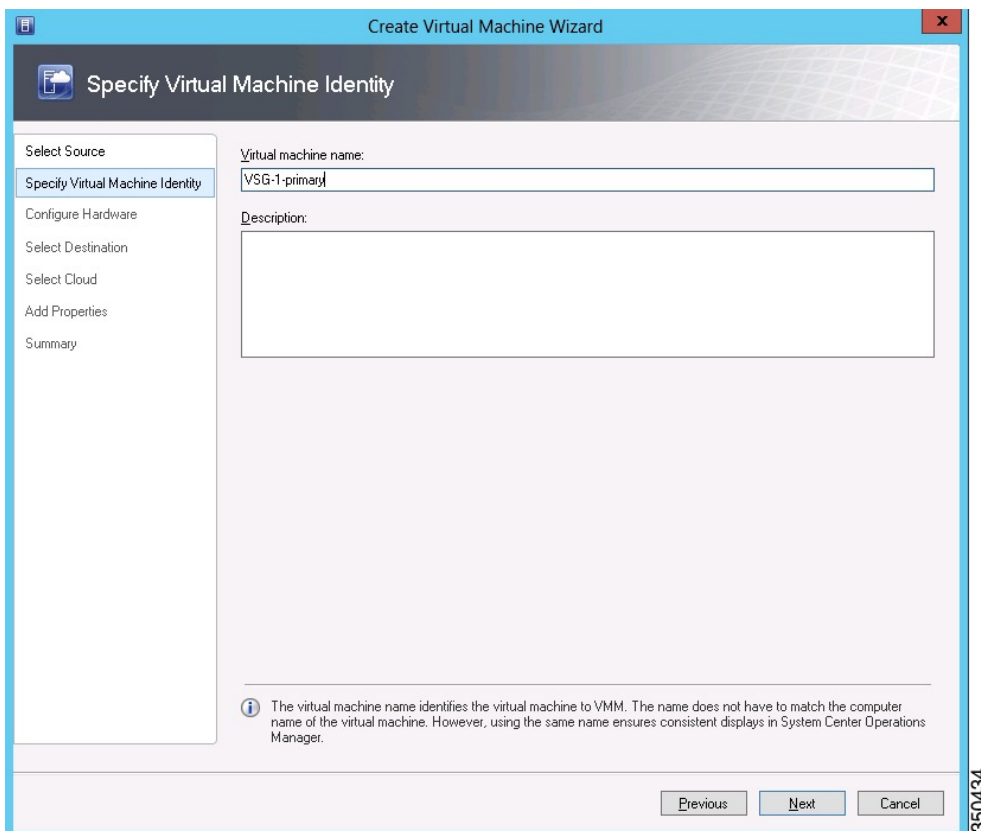
Make sure that you know the following:

- Microsoft SCVMM SP1 is installed.
- Download the Cisco VSG ISO image and upload it to the server (C:\ProgramData\Virtual Machine Manager Library Files\ISO). Refresh the library server under the Library tab.
- The Cisco VSG-Data port profile: VSG-Data
- The Cisco VSG-ha port profile: VSG-ha
- The HA ID
- The IP/subnet mask/gateway information for the Cisco VSG
- The admin password
- 2 GB RAM and 2 GB hard disk space are available
- The Cisco VNMC IP address
- The shared secret password

- The IP connectivity between Cisco VSG and Cisco VNMC is okay.
- The Cisco VSG VNM-PA image name (vsghv-pa.2.1.1a.bin) is available.

- Step 1** Launch SCVMM.
- Step 2** In the **VMs and Services** tab, click **Create Virtual Machine**.
- Step 3** In the Create Virtual Machine Wizard, in the **Select Source** screen, check **Create the new virtual machine with a blank virtual hard disk** radio button and click **Next**.
- Step 4** In the **Specify Virtual Machine Identity** screen, enter the name for the Cisco VSG in the **Virtual machine name** field and click **Next**.

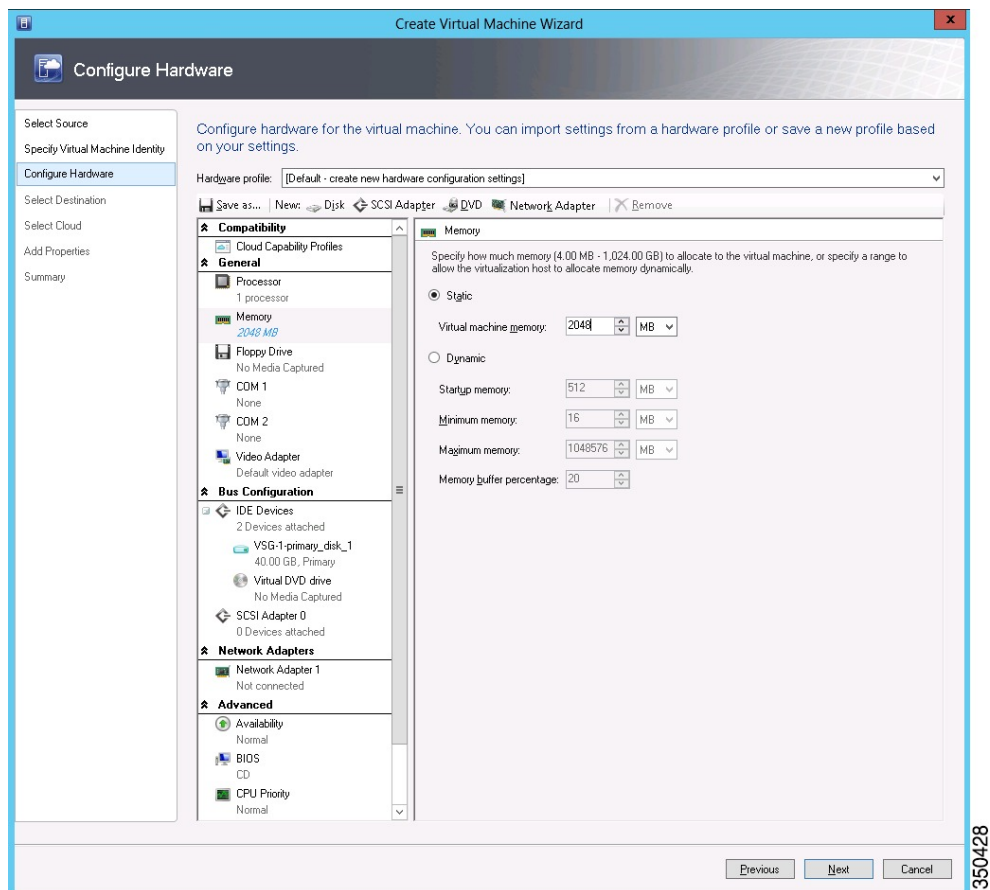
Figure 1: Create Virtual Machine Wizard - Specify Virtual Machine Identity



- Step 5** In the **Configure Hardware** section, do the following:

- a) Under **General**, select **Memory**, select the **Static** option, and enter 2048 MB in the **Virtual machine memory** field.

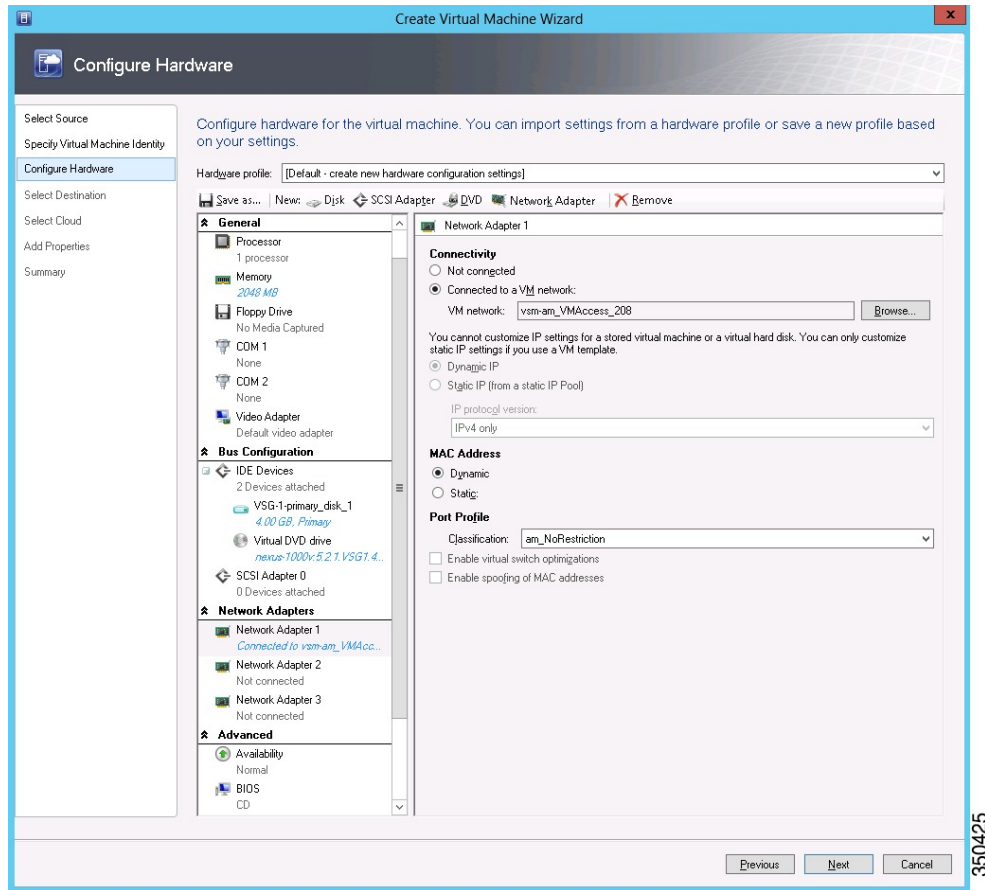
Figure 2: Create Virtual Machine Wizard - Configure Hardware



- b) Under **Bus Configuration**, select the primary disk and enter 2 in the Size (GB) field.
- c) Select the virtual DVD Drive, select **Existing ISO image file** radio button and browse for the VSG ISO within the SCVMM Library.
- d) Select the **Network Adapter** drop-down near the top of the Create Virtual Machine Wizard and create two new Network Adapters (not Legacy).

- Under the **Network Adapters** section, select **Network Adapter 1**, then select **Connected to a VM network** and browse for the appropriate network corresponding to the network segment for the VSG's data interface.

Figure 3: Create Virtual Machine Wizard - Configure Hardware



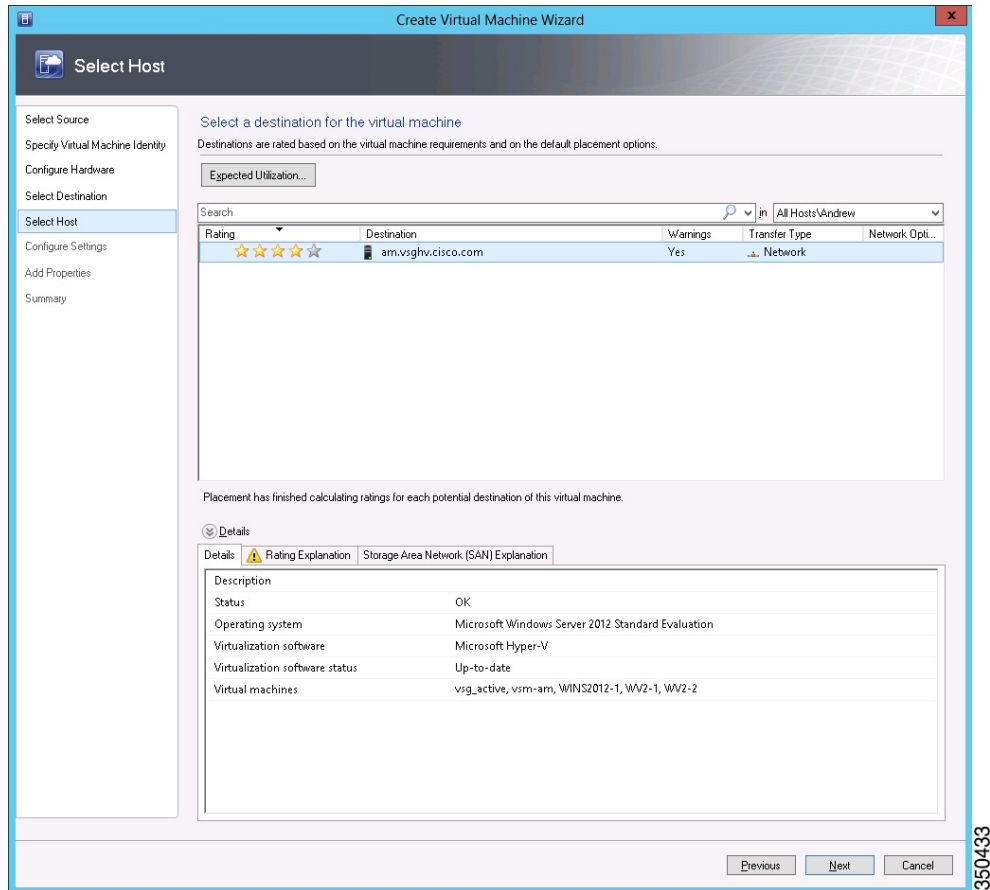
- From the **Classification** Drop-down, select the port-profile corresponding to the VSG's data interface.

Note Repeat the step d to create network adapters for service and HA.

Step 6 In the **Select Destination** section, choose **Place the virtual machine in a host** and select the host group on which you want to store the VSG from the drop-down and click **Next**.

Step 7 In the **Select Host** section, select the host you wish to place the VSG on and click **Next**.

Figure 4: Create Virtual Machine Wizard - Select Host



- Step 8** In the **Configure Settings** section, review the virtual machine settings to ensure they are correct and click **Next**.
- Step 9** (Optional) In the **Add Properties** section, select **Other Linux (64-bit) from the Operating System** drop-down, then click **Next**.
- Step 10** In the **Summary** section, click **Create**.
- Step 11** Launch the Microsoft Hyper-V Manager on the server hosting the VSG.
- Step 12** In the left pane, select the server that hosts the VSG instance you created.
- Step 13** Under **Virtual Machines**, select the VSG you created.
- Step 14** Under **Actions**, click **Settings** to open the **Settings** dialog-box.
- Step 15** Select the first interface for the VSG instance and select **Advanced Features**.
- Step 16** Under **MAC address**, select **Enable MAC address spoofing**.
- Step 17** Click **OK**.
- Step 18** Close the Microsoft Hyper-V Manager to return to the SCVMM interface.
- Step 19** After MAC spoofing is configured and the VSG is successfully installed, select the VSG in the **VMs and Services** tab and click **Power On**.
- Step 20** Connect to the VSG using **Connect or View -> Connect via Console**.
-

Configuring Initial Settings

This section describes how to configure the initial settings on the Cisco VSG and configure a standby Cisco VSG with its initial settings. For configuring a standby Cisco VSG, see [Configuring Initial Settings on a Secondary Cisco VSG, on page 11](#) section.

You can connect to a VSG VM console through the SCVMM user interface by right-clicking a VM instance and connecting to it.

-
- Step 1** Navigate to the **Console** tab in the VM.
Cisco Nexus 1000V Series switch opens the **Console** window and boots the Cisco VSG software.
- Step 2** At the Enter the password for "admin" prompt, enter the password for the admin account and press **Enter**.
- Step 3** At the prompt, confirm the admin password and press **Enter**.
- Step 4** At the Enter HA role[standalone/primary/secondary] prompt, enter the HA role you want to use and press **Enter**.
This can be one of the following:
- standalone
 - primary
 - secondary
- Step 5** At the Enter the ha id(1-1024) prompt, enter the HA ID for the pair and press **Enter**.
- Note** If you entered secondary in the earlier step, the HA ID for this system must be the same as the HA ID for the primary system.

- Step 6** If you want to perform basic system configuration, at the `Would you like to enter the basic configuration dialog (yes/no)` prompt, enter **yes** and press **Enter**, then complete the following steps.
- a) At the `Create another login account (yes/no) [n]` prompt, do one of the following:
 - To create a second login account, enter **yes** and press **Enter**.
 - Press **Enter**.
 - b) (Optional) At the `Configure read-only SNMP community string (yes/no) [n]` prompt, do one of the following:
 - To create an SNMP community string, enter **yes** and press **Enter**.
 - Press **Enter**.
 - c) At the `Enter the Virtual Security Gateway (VSG) name` prompt, enter **VSG-demo** and press **Enter**.
- Step 7** At the `Continue with Out-of-band (mgmt0) management configuration? (yes/no) [y]:` prompt, enter **yes** and press **Enter**.
- Step 8** At the `Mgmt IPv4 address:` prompt, enter **10.10.10.11** and press **Enter**.
- Step 9** At the `Mgmt IPv4 netmask` prompt, enter **255.255.255.0** and press **Enter**.
- Step 10** At the `Configure the default gateway? (yes/no) [y]` prompt, enter **yes** and press **Enter**.
- Step 11** At the `Enable the telnet service? (yes/no) [y]:` prompt, enter **no** and press **Enter**.
- Step 12** At the `Configure the ntp server? (yes/no) [n]` prompt, enter **NTP server** information and press **Enter**. The following configuration will be applied:
- ```
Interface mgmt0
ip address 10.10.10.11 255.255.255.0
no shutdown
vrf context management
ip route 0.0.0.0/10.10.11.1
no telnet server enable
ssh key rsa 768 force
ssh server enable
feature http-server
ha-pair id 25
```
- Step 13** At the `Would you like to edit the configuration? (yes/no) [n]` prompt, enter **n** and press **Enter**.
- Step 14** At the `Use this configuration and save it? (yes/no) [y]:` prompt, enter **y** and press **Enter**.
- Step 15** At the `VSG login` prompt, enter the name of the admin account you want to use and press **Enter**. The default account name is `admin`.
- Step 16** At the `Password` prompt, enter the name of the password for the admin account and press **Enter**. You are now at the Cisco VSG node.

## On the VSG, Configuring the Cisco VNMC Policy Agent

Once the Cisco VNMC is installed, you must register the VSG with the Cisco VNMC.




---

**Note** Cisco VSG is supported as VSB on Nexus Cloud Services platform only.

---

### Before You Begin

Make sure that you know the following:

- The Cisco VNMC policy-agent image is available on the VSG (for example, vsghv-pa.2.1.1a.bin)




---

**Note** The string **vsghv-pa** must appear in the image name as highlighted.

---

- The IP address of the Cisco VNMC
- The shared secret password you defined during the Cisco VNMC installation
- That IP connectivity between the VSG and the Cisco VNMC is working




---

**Note** If you upgrade your VSG, you must also copy the latest Cisco VSG policy agent image. This image is available in the Cisco VNMC image bundle to boot from a flash drive and to complete registration with the Cisco VNMC.

---




---

**Note** VSG clock should be synchronized with the VNMC clock.

---

### Step 1

On the VSG, enter the following commands:

```
vsg# configure terminal
vsg(config)# vnm-policy-agent
vsg(config-vnm-policy-agent)# registration-ip 10.193.75.95
vsg(config-vnm-policy-agent)# shared-secret Example_Secret123
vsg(config-vnm-policy-agent)# policy-agent-image vsghv-pa.2.1.1a.bin
vsg(config-vnm-policy-agent)# exit
vsg(config)# copy running-config startup-config
vsg(config)# exit
```

### Step 2

Check the status of the VNM policy agent configuration to verify that you have installed the Cisco VNMC correctly and it is reachable by entering the **show vnm-pa status** command. This example shows that the Cisco VNMC is reachable and the installation is correct:

```
vsg# show vnm-pa status
VNM Policy-Agent status is - Installed Successfully. Version 2.1(1a)-vsg
vsg#
```

The VSG is now registered with the Cisco VNMC.

---

This example shows that the Cisco VNMC is unreachable or an incorrect IP is configured:

```
vsg# show vnm-pa status
VNM Policy-Agent status is - Installation Failure
VNMC not reachable.
vsg#
```

This example shows that the VNM policy-agent is not configured or installed:

```
vsg# show vnm-pa status
VNM Policy-Agent status is - Not Installed
```

## Configuring Initial Settings on a Secondary Cisco VSG

You can configure a standby Cisco VSG by logging in to the Cisco VSG you have identified as secondary and using the following procedure to configure a secondary Cisco VSG with its initial settings.

- 
- Step 1** Navigate to the **Console** tab in the VM.  
Cisco Nexus 1000V Series switch opens the **Console** window and boots the Cisco VSG software.
- Step 2** At the Enter the password for "admin" prompt, enter the password for the admin account and press **Enter**.
- Step 3** At the prompt, confirm the admin password and press **Enter**.
- Step 4** At the Enter HA role[standalone/primary/secondary] prompt, enter the secondary HA role and press **Enter**.
- Step 5** At the Enter the ha id(1-1024) prompt, enter **25** for the HA pair id and press **Enter**.  
**Note** The HA ID uniquely identifies the two Cisco VSGs in an HA pair. If you are configuring Cisco VSGs in an HA pair, make sure that the ID number you provide is identical to the other Cisco VSG in the pair.
- Step 6** At the VSG login prompt, enter the name of the admin account you want to use and press **Enter**.  
The default account name is admin.
- Step 7** At the Password prompt, enter the name of the password for the admin account and press **Enter**.  
You are now at the Cisco VSG node.
- 

## Verifying the Cisco VSG Configuration

To display the Cisco VSG configuration, perform one of the tasks:

| Command              | Purpose                                          |
|----------------------|--------------------------------------------------|
| show interface brief | Displays brief status and interface information. |

This example shows how to verify the Cisco VSG configurations:

```
vsg# show interface brief

Port VRF Status IP Address Speed MTU

mgmt0 -- up 10.193.77.217 1000 1500
```

## Where to Go Next

After installing and completing the initial configuration of the Cisco VSG, you can configure firewall policies on the Cisco VSG through the Cisco VNMC.