Installing the Cisco VSG

This chapter contains the following sections:

Information About the Cisco VSG

This section describes how to install and complete the basic configuration of the Cisco VSG for VMware vSphere software.

Host and VM Requirements

The Cisco VSG has the following requirements:

- ESXi platform running VMware software release 5.x and requiring a minimum of 4 GB RAM to host a Cisco VSG VM.

- Virtual Machine (VM)
  - 32-bit VM is required and "Other 2.6.x (32-bit) Linux" is a recommended VM type.
  - 2 processors (1 processor is optional.)
  - 2-GB RAM
  - 3 NICs (1 of type VMXNET3 and 2 of type E1000)
  - Minimum of 3 GB of SCSI hard disk with LSI Logic Parallel adapter (default)
  - Minimum CPU speed of 1 GHz

- There is no dependency on the VM hardware version, so the VM hardware version can be upgraded if required.

Cisco VSG and Supported Cisco Nexus 1000VE Series Device Terminology

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

Term	Description
Distributed Virtual Switch (DVS)	Logical switch that spans one or more VMware ESX servers. It is controlled by one VSM instance.
ESXi	Virtualization platform used to create the virtual machines as a set of configuration and disk files.
NIC	Network interface card.
Open Virtual Appliance or Application (OVA) file	Package that contains the following files used to describe a virtual machine and saved in a single archive using .TAR packaging: • Descriptor file (.OVF) • Manifest (.MF) and certificate files (optional)
Open Virtual Machine Format (OVF)	Platform-independent method of packaging and distributing Virtual Machines (VMs).
vCenter Server	Service that acts as a central administrator for VMware ESXi hosts that are connected on a network. vCenter Server directs actions on the VMs and the VM hosts.
Virtual Service Engine (VSE)	Part of the Cisco Nexus 1000VE Series switch that switches data traffic. It runs on a ESX/ESXi host. Up to 64 VSEs are controlled by one VSM. All the VSEs that form a switch domain should be in the same virtual data center as defined by the VMware vCenter 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.
VMotion	Practice of migrating virtual machines live from server to server. (The Cisco VSGs cannot be moved by VMotion.)
vPath	Component in the Cisco Nexus 1000VE Series switch with a VSE 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 1000VE Series switch by providing network segmentation.

Term	Description
Virtual Supervisor Module (VSM)	Control software for the Cisco Nexus 1000VE Series distributed virtual device that runs on a virtual machine (VM) and is based on Cisco NX-OS.

Prerequisites for Installing the Cisco VSG Software

The following components must be installed and configured:

- On the Cisco Nexus 1000VE Series switch, configure two VLANs, a service VLAN, and an HA VLAN on the switch uplink ports. (The VLAN does not need to be the system VLAN.)

- On the Cisco Nexus 1000VE 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 1000VE Series switch can communicate with it.)

Details about configuring VLANs and port profiles on the Cisco Nexus 1000VE Series switch are available in the Cisco Nexus 1000VE 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/ps13095/index.html

Installing the Cisco VSG Software

You can install the Cisco VSG software on a VM by using an open virtual appliance (OVA) file or an ISO image file from the CD. Depending upon the type of file that you are installing, use one of the installation methods described in the following topics

Installing the Cisco VSG Software from an OVA File

To install the Cisco VSG software from an OVA file, obtain the OVA file and either install it directly from the URL or copy the file to the local disk from where you connect to the vCenter Server.

Before you begin

- Specify a name for the new Cisco VSG that is unique within the inventory folder and has up to 80 characters.

- Know the name of the host where the Cisco VSG will be installed in the inventory folder.

- Know the name of the datastore in which the VM files will be stored.

- Know the names of the network port profiles used for the VM.

- Know the Cisco VSG IP address.

- Know the mode in which you will be installing the Cisco VSG:

  - Standalone

  - HA Primary

  - HA Secondary

  - Manual Installation

Step 1	Choose the host on which to deploy the Cisco VSG VM.
Step 2	Choose **File** > **Deploy OVF Template**.
Step 3	In the **Deploy OVF Template—Source** window, do the following:
	a) Browse to the path to the Cisco VSG OVA file in the **Deploy from a file or URL** field.
	b) Click **Next**. The **Deploy OVF Template—OVF Template Details** window opens.
Step 4	In the **Deploy OVF Template—OVF Template Details** window, review the product information including the size of the file and the VM disk and then click **Next**.
Step 5	In the **Deploy OVF Template—End User License Agreement** window, click **Accept** after reviewing the end user license agreement, and then click **Next**.
Step 6	In the **Deploy OVF Template—Name and Location** window, do the following:
	a) In the **Name** field, enter a name for the Cisco VSG that is unique within the inventory folder and has up to 80 characters.
	b) In the **Inventory Location** pane, choose the location that you would like to use for hosting the Cisco VSG.
	c) Click **Next**.
Step 7	In the **Deploy OVF Template—Deployment Configuration** window, do the following:
	a) From the **Configuration** drop-down list, choose **Standalone**.
	b) Click **Next**.

Note The Standalone Installation for this document is an example in this publication. If you chose Manual Installation mode, you would choose the default values for the following steps. In Standalone mode, be sure to fill in all the fields indicated (they will be indicated on the GUI with red type).

Step 8	In the **Disk Format** dialog box, choose the radio button for the selected format and click **Next**.
Step 9	In the **Host or Cluster** window, choose the host where the Cisco VSG will be installed, and then click **Next**.
Step 10	From the **Select a datastore** field in which to store the VM files pane, choose your datastore, and then click **Next**.
Step 11	Click the drop-down arrows for Data (Service), Management, and HA to associate port profiles, and then click **Next**.
Step 12	In the **Deploy OVF Template—Properties** window, do the following:
	a) In the **HaId** field, enter the high-availability identification number for a Cisco VSG pair (value from 1 through 4095).
	b) In the **Password** field, enter a password that contains at least one uppercase letter, one lowercase letter, and one number.

c) In the **ManagementIpV4** field, enter the IP address for the Cisco VSG.

d) In the **ManagementIpV4 Subnet** field, enter the subnet mask.

e) In the **Gateway** field, enter the gateway name.

f) In the **VnmcIpV4** field, enter the IP address of the Cisco PNSC.

g) In the **SharedSecret** field, enter the shared secret password defined during the Cisco PNSC installation.

h) In the **ImageName** field, enter the VSG VNM-PA image name (nsc-vsgpa.2.1.3i.bin).

i) Click **Next**.

Note　　In the following step, make sure that red text messages do not appear before you click **Next**. If you do not want to enter valid information in the red-indicated fields, use null values to fill those fields. If those fields are left empty or filled with invalid null values, the application does not power on. Ignore the Cisco PNSC Restore fields.

Step 13　In the **Ready to Complete** window, review the deployment settings information.

Note　　Review the IP/mask/gateway information carefully because any discrepancies might cause the VM to have bootup issues.

Step 14　Click **Finish**. The **Deploying Nexus 1000VSG** dialog box opens.

The progress bar in the **Deploying Nexus 1000VSG** dialog box shows how much of the deployment task is completed before the Cisco PNSC is deployed.

Step 15　Wait and click **Close** after the progress indicator shows that the deployment is completed successfully.

Step 16　Power on the Cisco VSG VM.

Step 17　If you chose the Standalone mode for installation earlier, you now see the Cisco VSG login prompt. Log in with your Cisco VSG administration password. You may now proceed with configuring the Cisco Virtual Security Gateway. For details, see the *Cisco Virtual Security Gateway for VMware vSphere Configuration Guide*.

Step 18　If you chose the manual installation in the Configuration field earlier, see to configure the initial settings on the Cisco VSG.

Note　　If you are installing high availability (HA), you must configure the software on the primary Cisco VSG before installing the software on the secondary Cisco VSG.

Installing the Cisco VSG Software from an ISO File

You can install the Cisco VSG from an ISO file.

Before you begin

- Specify a name for the new Cisco VSG that is unique within the inventory folder and has up to 80 characters.

- Know the name of the host where the Cisco VSG will be installed in the inventory folder.

- Know the name of the datastore in which the VM files will be stored.

- Know the names of the network port profiles used for the VM.

- Know the Cisco VSG IP address.

Step 1   Upload the Cisco Virtual Security Gateway ISO image to the vCenter datastore.

Step 2   From the data center in the vSphere Client menu, choose your ESXi host where you want to install the Cisco VSG and choose **New Virtual Machine**.

For VM requirements, see the Host and VM Requirements, on page 1.

For detailed information about how to create a VM, see the VMware documentation.

Step 3   In the **Create New Virtual Machine** dialog box, do the following:

a)   Click **Custom** to create a virtual machine.
b)   Click **Next**.

Step 4   In the **Create New Virtual Machine** dialog box, do the following:

a)   In the **Name** field, add a name for the Cisco VSG.

The Cisco VSG name must be a unique name within the inventory folder and should be up to 80 characters.

b)   In the **Inventory Location** field, choose your data center and click **Next**.

Step 5   In the **Datastore** dialog box, choose your datastore from the **Select a datastore** and then click **Next**.

Step 6   In the **Virtual Machine Version** dialog box, click the **Virtual Machine Version**.

Note   Keep the selected virtual machine version.

Step 7   In the **Guest Operating System** dialog box, do the following:

a)   Click the **Linux** radio button.
b)   In the **Version** field, choose **Other 2.6x Linux (32-bit)** from the drop-down list and click **Next**.

Step 8   In the **CPUs** dialog box, choose 1 socket with 2 cores or 2 sockets each with one core, and then click **Next**.

By default, the Cisco VSG virtual machine deployed with OVA has only one1 vCPU. You can choose 2 vCPUs. For an older version of the ESX hosts, you can directly select the number of vCPUs.

Step 9   In the **Memory** dialog box, choose **2 GB** memory size, and then click **Next**.

Step 10   In the **Create Network Connectors** dialog box, do the following:

a)   In the **How many NICs do you want to connect?** field, choose **3** from the drop-down list.
b)   In the Network area, choose **service**, **management**, and **HA** port profiles in that sequence for the NIC 1, NIC 2, and NIC 3 from the drop-down list. Choose **VMXNET3** for the adapter type for NIC 1. Choose **E1000** for the adapter type for NIC 2 and NIC 3.

Step 11   Click **Next**. The **SCSI Controller** dialog box opens.

The radio button for the default SCSI controller is chosen.

Step 12   Click **Next**. The **Select a Disk** dialog box opens.

The radio button for the default disk is chosen.

Step 13   Click **Next**. The **Create a Disk** dialog box opens.

The default virtual disk size and policy is chosen.

Step 14   Click **Next**. The **Advanced Options** dialog box opens.

The default options are chosen.

Step 15   Click **Next**. The **Ready to Complete** dialog box opens.

Step 16   Review your settings in the **Settings for the new virtual machine** area.

Step 17   Check the **Edit the virtual machine before completion** check box and click **Continue** to open a dialog box with the device details.

Step 18   In the Work pane, choose your **New CD/DVD (adding)** in the **Hardware** area.

Step 19   Click **Datastore ISO File**, and select your ISO file from the drop-down list.

Step 20   In the work pane, check the **Connect at power on** check box and click **Finish**.The **Summary tab** window opens.

The **Create virtual machine status** completes.

Step 21   From the **vSphere Client** menu, choose your recently installed VM.

Step 22   In the work pane, click **Power on the virtual machine**.

Step 23   Click the **Console** tab to view the VM console. Wait for the Install Virtual Firewall and bring up the new image to boot.

See the Configuring Initial Settings section to configure the initial settings on the Cisco VSG.

Note   To allocate additional RAM, right-click the **VM** icon to power off the VM and then choose **Power** > **Power Off** from the dialog box. After the VM is powered down, edit the configuration settings on the VM for controlling memory resources.

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 Standby Cisco VSG, on page 9 section.

When you power on the Cisco VSG for the first time, depending on which mode you used to install your Cisco VSG, you might be prompted to log in to the Cisco VSG to configure initial settings at the console on your vSphere Client. For details about installing Cisco VSG, see Installing the Cisco VSG Software, on page 3 in this chapter.

Before you begin

The following table determines if you must configure the initial settings as described in this section.

Your Cisco Virtual Security Gateway Software Installation Method	Do You Need to Proceed with "Configuring Initial Settings"?
Installing an OVA file and choosing Manually Configure Nexus 1000 VSG in the configuration field during installation.	Yes. Proceed with configuring initial settings described in this section.
Installing an OVA file and choosing any of the options other than the manual method in the configuration field during installation.	No. You have already configured the initial settings during the OVA file installation.

Your Cisco Virtual Security Gateway Software Installation Method	Do You Need to Proceed with "Configuring Initial Settings"?
Installing an ISO file.	Yes. Proceed with configuring initial settings described in this section.

Step 1 Navigate to the **Console** tab in the VM.

Cisco Nexus 1000VE 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(1-4095)` 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 `Enable the telnet service? (yes/no)[y]:` prompt, enter **no**.

Step 13   At the `Configure the ntp server? (yes/no)[n]` prompt, enter **no** 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
no feature http-server
ha-pair id 25
```

Step 14   At the `Would you like to edit the configuration? (yes/no)[n]` prompt, enter **n** and press **Enter**.

Step 15   At the `Use this configuration and save it? (yes/no)[y]:` prompt, enter **y** and press **Enter**.

Step 16   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 17   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.

Configuring Initial Settings on a Standby Cisco VSG

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

Step 1   Navigate to the **Console** tab in the VM.

Cisco Nexus 1000VE 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(1-4095)` 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.
show vsg	Displays the Cisco VSG and system-related 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


vsg# show vsg
Model: VSG
HA ID: 3437
VSG software version: 5.2(1)VSG2(2.2) build [5.2(1)VSG2(2.2)]
PNSC IP: 10.193.75.73
```

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 PNSC.