



Installing the Cisco Nexus 1000V VSM

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Installing VSM using the RHEL-OSP-Installer

Procedure

- Step 1** Launch the RHEL-OSP Installer graphical user interface (GUI).
- Step 2** From the **Red Hat Enterprise Linux OpenStack Platform Installer** window, choose **OpenStack Installer > Deployments**.
- Step 3** From the **OpenStack Deployments** window, click an existing deployment. Alternatively, you can create a new deployment. For information on creating a new deployment, see [Creating a New OpenStack Deployment](#).
- Step 4** From the **Red Hat Enterprise Linux OpenStack Platform Installer** window, choose **Configure > Puppet Classes**.
- Step 5** In the **Search** field, enter `n1kv_vsm`.
- Step 6** Click the `n1k_vsm` class name. The **Edit Puppet Class** pane opens.
- Step 7** In the **Puppet Class** tab, in the Host Group field, choose `base_RedHat/<Deployment name>/Generic RHEL7`.
- Step 8** Click the **Smart Class Parameter** tab.
- Step 9** In the **Smart Class Parameter** pane, click the required parameters. See table below.
Note Configure optional parameters as required by your network topology.
- Step 10** For each parameter, check the **Override** checkbox and configure the appropriate default value.

Table 1: n1kv_vsm Parameters

Parameter Name	Description
n1kv_source	The location of the Cisco Nexus 1000V VSM ISO/RPM package.
n1kv_version	The version of the Cisco Nexus1000V VSM.
phy_gateway	Default gateway for the management network.
phy_if_bridge	Physical interface that will be moved to the bridge for management traffic.
vsm_admin_passwd	Password of the administrative user for the Cisco Nexus 1000V VSM.
vsm_domain_id	Domain ID of the Cisco Nexus1000V VSM.
vsm_mgmt_gateway	IP address of the default gateway for the management interface of the Cisco Nexus1000V VSM.
vsm_mgmt_ip	IP of the management interface on the Cisco Nexus1000 VSM.
vsm_mgmt_netmask	IP netmask of the management interface of the Cisco Nexus1000V VSM.
vsm_role	Role (standalone/primary/secondary) of the Cisco Nexus1000V VSM.

Step 11 Click **Submit**.

Installing a VSM as a VM on a Physical Server

Installing the VSM

The Virtual Supervisor Module (VSM) can be installed in stand-alone or high-availability (HA) mode. Although we highly recommend high availability mode, it is not mandatory. This procedure covers installation for both stand-alone and HA modes.

If you are installing VSMs in HA mode, deploy the first VSM (including setting up the initial configuration), then repeat step 4 to create the second VSM and proceed with setting up the initial configuration. See [Setting Up the Initial Configuration of the VSM, on page 5](#).

Before You Begin

Make sure that you have RHEL7 physical servers for VSM active and standby hosts, as recommended. (See [Topology with OpenStack in Standalone Mode](#) and [Topology with OpenStack in High-Availability Mode](#).)

Make sure that the Cisco Yum repository has been set up correctly. For information, see [Setting Up the Cisco Yum Repository](#).

Make sure the servers in the provisioning network have connectivity to the RHEL7 physical sever where the VSM is installed as a VM.

Procedure

Step 1 Download the VSM image from the Cisco yum repository.

Note You can also download the image from [Cisco.com](#)

```
yum install nexus-1000v-iso
```

The VSM image is downloaded to /opt/cisco/vsm/.

Step 2 Run the OVS and create an OVS bridge.

```
ovs-vsctl add-br bridge-name
```

Note If you do not already have the OVS package, it is available in rhel-7-server-openstack-5.0-rpms. To install it, enter the following command:

```
yum install -y openvswitch
```

Step 3 Customize the VSM domain XML file according to your setup. Use the following table as a guide:

Parameter	Variable Example	Description
Domain name	<name>vsm</name>	Domain name of the VSM VM.
UUID	<uuid>85badf15-1234-4819-1234-8c3d50641375</uuid>	A universally unique identifier (UUID) of the VM.
RAM	<memory unit='KiB'>4096000</memory> <currentMemory unit='KiB'>4096000</currentMemory>	RAM allocated to the VSM VM. A minimum of 4-GB RAM is required for a VSM. Make sure both the memory unit and currentMemory unit variables are set to 4 GB.
vCPU	<vcpu placement='static'>2</vcpu>	Virtual CPUs allocated to the VSM VM. A minimum of 2 vCPUs is required.

Parameter	Variable Example	Description
Source file location of the disk	<source file='/var/lib/libvirt/images/vsm.img />	Source file location of the VM hard disk drive that you created.
Source file location of CDROM	<source file=' /opt/cisco/vsm/n1000v-dk9.5.2.1.SK3.2.2a-1.iso'/> Note The file name is based on the software release number, hence the above example will differ based on the release number.	Source file location of the VSM ISO image. Note The image is located at /opt/cisco/vsm/.
Interface-related parameters	<mac address='0e:1f:1f:1f:45:2e'/>	Unique identifier of a network interface. The VSM requires three initial interfaces. Make sure that all MAC address are unique among all of the VMs.
	<source bridge='vsm-br'/>	The bridge name that you created when you created the OVS bridge and brought up the VM.
	<parameters interfaceid='14054688-1444-46db-b981-0aba3172b956'/>	Universally unique identifier (UUID) of the interface. Make sure that all interface IDs are unique among all of the VMs.

Step 4 Deploy the VSM as a VM on a server using above xml file. If the RHEL-OSP Installer is also a VM on a bare metal server, the VSM can be deployed on the same server as the RHEL-OSP Installer VM.

- a) Create a hard disk for the VM.

```
qemu-img create DIR_path/vsm.img 10G
```

Example:

```
# qemu-img create /var/lib/libvirt/images/vsm.img 10G
```

- b) Define and start the VSM VM.

```
virsh define xml_name
virsh start domain_name
```

Example:

```
# virsh define vsm.xml
virsh start vsm
```

- c) If the domain VSM fails to start and permission denied errors occur, determine whether the enforcing mode is set to enforcing or permissive:

```
getenforce
```

- d) If the `Enforcing` message is returned, set the enforcement to permissive by entering the following command:

```
setenforce 0
```
 - e) Repeat step b.
-

What to Do Next

Proceed to [Setting Up the Initial Configuration of the VSM](#), on page 5.

Setting Up the Initial Configuration of the VSM

Before you can use your VSM, you must configure some initial information on it. You can accept most of the default configuration. However, you must configure some required parameters.

Procedure

- Step 1** Log in to the VSM.
 - a) At the `login` prompt, enter the admin login.
 - b) At the `password` prompt, enter the admin password
- Step 2** Create a default port profile named `default-pp` by entering the following commands:

```
configure terminal
port-profile type vethernet default-pp
no shutdown
state enabled
publish port-profile
copy running-config startup-config
```

- Step 3** Create a port profile named `uplink` by entering the following commands:

```
configure terminal
port-profile type ethernet uplink
switchport mode trunk
switchport trunk allowed starting_vlan-ending_vlan
no shutdown
state enabled
publish port-profile
copy running-config startup-config
```

- Step 4** Define the VLAN range to be used:

```
configure terminal
vlan starting_vlan-ending_vlan
copy running-config startup-config
```

Installing a VSM on a Cloud Services Platform

Information About Installing a VSM on the Cisco Nexus Cloud Services Platform

If you choose to install a Virtual Supervisor Module (VSM) on the Cisco Nexus Cloud Services Platform, you must install all primary and secondary VSMs on the Cisco Nexus Cloud Services Platform. You cannot install any other VSMs as a VM.

Installing a VSM on the Cisco Nexus Cloud Services Platform

Before You Begin

Copy the VSM ISO or OVA file to the bootflash:repository/ of the Cisco Nexus Cloud Services Platform.

Procedure

Step 1 Create a virtual service blade.

```
switch(config)# show virtual-service-blade summary
```

Name	HA-Role	HA-Status	Status	Location
vsm-1	PRIMARY	NONE	VSBL NOT PRESENT	PRIMARY
vsm-1	SECONDARY	NONE	VSBL NOT PRESENT	SECONDARY

```
switch(config)# virtual-service-blade vsm-1
switch(config-vsb-config)# virtual-service-blade-type new nexus-1000v-dk9.5.2.1.SK3.1.2.iso

switch(config-vsb-config)# show virtual-service-blade summary
```

Name	HA-Role	HA-Status	Status	Location
vsm-1	PRIMARY	NONE	VSBL NOT PRESENT	PRIMARY
vsm-1	SECONDARY	NONE	VSBL NOT PRESENT	SECONDARY

```
switch(config-vsb-config)#
```

Step 2 Configure the control, packet, and management interface VLANs for static and flexible topologies.

```
switch(config-vsb-config)# interface management vlan 100
switch(config-vsb-config)# interface control vlan 101
switch(config-vsb-config)# interface packet vlan 101
```

Step 3 Configure two vCPUs and the size of the RAM to 4 GB for the VSM.

```
switch(config-vsb-config)# ramsize 4096
```

```
switch(config-vs-b-config)# numcpu 2
```

If desired, you can verify these settings with the following command:

```
switch(config-vs-b-config)# show virtual-service-blade name vsm-1
```

Step 4 Configure the Cisco Nexus 1000V for KVM on the Cisco Nexus Cloud Services Platform.

```
switch(config-vs-b-config)# enable
Enter vsb image: [nexus-1000v.4.2.1.SV2.2.1.iso]
Enter domain id[1-1023]: 127
Management IP version [V4/V6]: [V4]
Enter Management IP address: 192.0.2.79
Enter Management subnet mask: 255.255.255.0
IPv4 address of the default gateway: 192.0.2.1
Enter HostName: n1000v
Enter the password for 'admin': password
Note: VSB installation is in progress, please use show virtual-service-blade commands to
check the installation status.
switch(config-vs-b-config)#
```

Step 5 Display the primary and secondary VSM status.

```
switch(config-vs-b-config)# show virtual-service-blade summary
```

```
-----
Name           HA-Role      HA-Status    Status                               Location
-----
vsm-1          PRIMARY      NONE         VSB POWER ON IN PROGRESS           PRIMARY
vsm-1          SECONDARY    ACTIVE       VSB POWERED ON                     SECONDARY
```

Step 6 Log in to the VSM.

```
switch(config)# virtual-service-blade vsm-1
switch(config-vs-b-config)# login virtual-service-blade vsm-1
Telnet escape character is '^\'
Trying 192.0.2.18...
Connected to 192.0.2.18.
Escape character is '^\'

Nexus 1000v Switch
n1000v login: admin
Password:
Cisco Nexus operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
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The copyrights to certain works contained in this software are
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license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
```

```
switch#
```

Step 7 Enable the following features in the VSM to ensure that OpenStack can configure the networks appropriately:

- http-server
- network-segmentation-manager
- segmentation

What to Do Next

- Collect the information required for the `site.pp` file, as described in [VSM-Related Configuration](#).
- Create the build server, as described in [Creating the Build Server](#).

Configuring Multiple VSM Support

- The neutron plugin retrieves the policy profile information from all available VSMs. The policy profile reconciliation displays profiles that are common to all available VSMs. You must ensure that the policy profile table supports more than one VSM.
- The NIKV plugin dispatches the network creation and port creation requests to all available VSMs.
- The VM creation can be localized by creating host aggregates, where each aggregate is mapped to one VSM.

Before You Begin

Configuring multiple VSM support has the following prerequisites:

- Ensure that the port profiles are configured over all the VSMs with the same UUID.
- If one of the VSM is down or returns an error, the operation is rolled back.
- When the configuration is successful, all stale entries on the VSM are deleted.
- Make sure that the VEMs are up and running.

Procedure

- Step 1** Configure the IP addresses of the VSMs in the Neutron service.
- a) Launch the RHEL-OSP Installer graphical user interface (GUI).
 - b) From the **Red Hat Enterprise Linux OpenStack Platform Installer** window, choose **OpenStack Installer > Deployments**.
 - c) Choose **OS Deployment > Advanced Configuration**.
 - d) Click **Edit** to navigate to the neutron option in the Services list.

- e) In the **Neutron Service Configuration** screen, edit the **N1kv vsm ip** field to enter the comma separated VSM IP addresses, and then click **Apply**.

Step 2 Configure the VEM puppet class to support multiple VSMs.

- a) Choose **Configure > Puppet Class**.
 - b) Enter `n1kv_vem` in the Search field and click **Search**.
 - c) Choose the `neutron::agents::n1kv_vem` class name and click the **Smart Class Parameter** tab.
 - d) In the **Smart Class Parameter** pane, modify the following parameters:
 - The `n1kv vsm domain id` field with match criteria for individual nodes carrying VSM and the corresponding unique domain ID per VSM.
 - The `n1kv vsm ip` field with the match criteria for all individual nodes carrying the VSM and the corresponding unique IP address per VSM.
 - e) Check the **Override** check box and then click **Submit**.

Note If you want to bring up the VSM using RHEL-OSP6, edit the `n1k_vsm` puppet class with the match criteria that overrides the corresponding fields:
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