C H A P T E R 3

Configuring the Domain

This chapter describes how to configure the Cisco Nexus 1000V domain, including creating the domain, assigning VLANs, configuring Layer 3 Control, and so forth.

This chapter includes the following topics:

Information About the Domain

You must create a domain name for Cisco Nexus 1000V and then add control and packet VLANs for communication and management. This process is part of the initial setup of the a Cisco Nexus 1000V when installing the software. If you need to create a domain later, you can do so using the **setup** command or the procedures described in this chapter.

About Layer 3 Control

Layer 3 control, or IP connectivity, is supported between the VSM and VEM for control and packet traffic. With Layer 3 control, a VSM can be Layer 3 accessible and control hosts that reside in a separate Layer 2 network. All hosts controlled by a VSM, however, must still reside in the same Layer 2 network. Since a VSM cannot control a host that is outside of the Layer 2 network it controls, the host on which it resides must be controlled by another VSM.

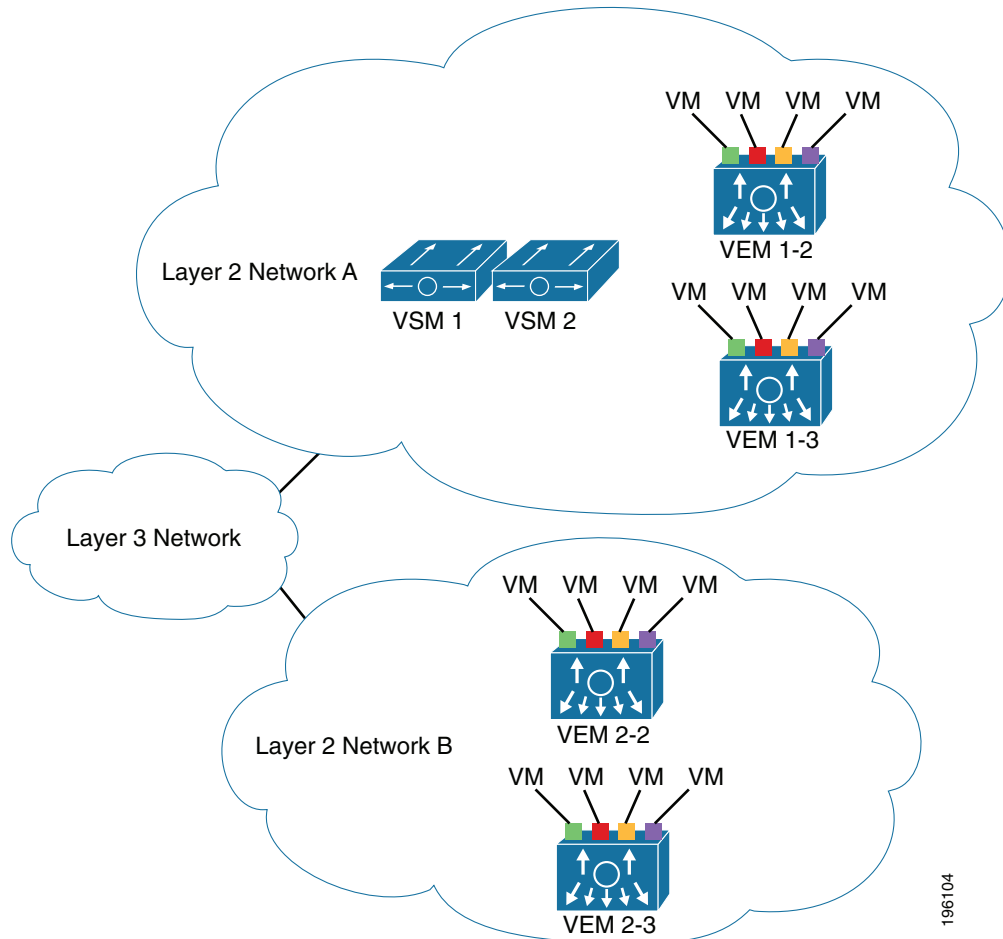To implement Layer 3 control, you must make the following configurations:

- Configure the VSM domain transport mode as Layer 3.

  For more information, see the "Changing to Layer 3 Transport" procedure on page 3-6

- Configure a port profile using the "Creating a Port Profile for Layer 3 Control" procedure on page 3-9.

- Create an VMware kernel NIC interface on each host and apply the Layer 3 control port profile to it. For more information, see your VMware documentation.

Figure 3-1 illustrates the following example of Layer 3 control.

- VSM0 controls VEM_0_1.
- VEM_0_1, in turn, hosts VSM1 and VSM2.
- VSM1 and VSM2 control VEMs in other Layer 2 networks.

Figure 3-1   Example of Layer 3 Control IP Connectivity

Guidelines and Limitations

The VSM domain has the following configuration guidelines and limitations:

- UDP 4785 is required for Layer 3 communication between the VSM and VEM. If you have a firewall in your network, and are configuring Layer 3 control, then make sure UDP 4785 is open on your upstream switch or firewall device. For more information, see the documentation for your upstream switch or firewall device.
- In a Layer 2 network, you can switch between the Layer 2 and Layer 3 transport modes, but when you do so, the modules may be out of service briefly.
- The capability attribute (Layer 3 control) cannot be inherited from the port profile.
- Different hosts can use different VLANs for Layer 3 control.

- A port profile used for Layer 3 control must be an access port profile. It cannot be a trunk port profile.

- We recommend that if you are using the VMware kernel NIC for Layer 3 Control, you do not use it for any other purpose. For example, do not also use the Layer 3 Control VMware kernel NIC for VMotion or NFS mount.

- Control VLANs, packet VLANs, and management VLANs must be configured as regular VLANs and not as private VLANs.

- If you have a firewall in your network, ensure that TCP ports 80 and 443 are open for traffic destined to the vCenter Server and TCP port 80 is open for traffic destined to the Cisco Nexus 1000V Virtual Supervisor Module (VSM).

Default Settings

Table 3-1 lists the default settings in the domain configuration.

Table 3-1   Domain Defaults

Parameter	Default
Control VLAN (svs-domain)	VLAN 1
Packet VLAN (svs-domain)	VLAN 1
VMware port group name (port-profile)	The name of the port profile
SVS mode (svs-domain)	Layer 2
Switchport mode (port-profile)	Access
State (port-profile)	Disabled
State (VLAN)	Active
Shut state (VLAN)	No shutdown

Configuring the Domain

This section includes the following procedures:

Creating a Domain

Use this procedure to create a domain name for the Cisco Nexus 1000V that identifies the VSM and VEMs; and then add control and packet VLANs for communication and management. This process is part of the initial setup of the Cisco Nexus 1000V when installing the software. If you need to create a domain after initial setup, you can do so using this procedure.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- If two or more VSMs share the same control and/or packet VLAN, the domain helps identify the VEMs managed by each VSM.
- You are logged in to the CLI in EXEC mode.
- You must have a unique domain ID for this Cisco Nexus 1000V instance.
- You must identify the VLANs to be used for control and packet traffic.
- We recommend using one VLAN for control traffic and a different VLAN for packet traffic.
- We recommend using a distinct VLAN for each instances of Cisco Nexus 1000V (different domains)
- The **svs mode** command in the SVS Domain Configuration mode is not used and has no effect on a configuration.
- For information about changing a domain ID after adding a second VSM see the *Cisco Nexus 1000V High Availability and Redundancy Configuration Guide, Release 4.2(1)SV1(4).*

SUMMARY STEPS

1. **config t**
2. **svs-domain**
3. **domain id** *domain-id*
4. **control vlan** *vlan-id*
5. **packet vlan** *vlan-id*
6. **exit**
7. **show svs domain**
8. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose

Step 1	`config t`
	
	Example:
	`n1000v# config t`
	`n1000v(config)#`
		Places you into CLI Global Configuration mode.

Step 2	`svs-domain`
	
	Example:
	`n1000v(config)# svs-domain`
	`n1000v(config-svs-domain)#`
		Places you into the SVS Domain Configuration mode.

	Command	Purpose

Step 3	`domain id number`
	
	Example:
	`n1000v(config-svs-domain)# domain id 100`
	`n1000v(config-svs-domain)#`
		Creates the domain ID for this Cisco Nexus 1000V instance.

Step 4	`control vlan number`
	
	Example:
	`n1000v(config-svs-domain)# control vlan 190`
	`n1000v(config-vlan)#`
		Assigns the control VLAN for this domain.

Step 5	`packet vlan number`
	
	Example:
	`n1000v(config-vlan)# packet vlan 191`
	`n1000v(config-vlan)#`
		Assigns the packet VLAN for this domain.

Step 6	`show svs domain`
	
	Example:
	`n1000v(config-vlan)# show svs domain`
		Displays the domain configuration.

Step 7	`exit`
	
	Example:
	`n1000v(config-vlan)# exit`
	`n1000v(config)#`
		Returns you to CLI Global Configuration mode.

Step 8	`copy running-config startup-config`
	
	Example:
	`n1000v(config)# copy running-config startup-config`
		(Optional) Copies the running configuration to the startup configuration.

```
Example:
n1000v# config t
n1000v(config)# svs-domain
n1000v(config-svs-domain)# domain id 100
n1000v(config-svs-domain)# control vlan 190
n1000v(config-svs-domain)# packet vlan 191
n1000v(config-vlan)# exit

n1000v (config)# show svs domain
SVS domain config:
  Domain id:    100
  Control vlan: 190
  Packet vlan:  191
  L2/L3 Aipc mode: L2
  L2/L3 Aipc interface: mgmt0
  Status: Config push to VC successful.

n1000v(config)#
n1000v(config)# copy run start
[#####################################] 100%
n1000v(config)#
```

Changing to Layer 3 Transport

Use this procedure to change the transport mode from Layer 2 to Layer 3 for the VSM domain control and packet traffic.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- You are logged in to the CLI in EXEC mode.
- This procedure requires you to disable the control and packet VLANs. You cannot change to Layer 3 Control before disabling the control and packet VLANs.
- You have already configured the Layer 3 interface (mgmt 0 or control 0) and assigned an IP address
- When control 0 is used for Layer 3 transport, proxy-arp must be enabled on the control 0 VLAN gateway router.

  For information about configuring an interface, see the *Cisco Nexus 1000V Interface Configuration Guide, Release 4.2(1)SV1(4)*.

SUMMARY STEPS

1. **show svs domain**
2. **config t**
3. **svs-domain**
4. **no control vlan**
5. **no packet vlan**
6. **show svs domain**
7. **svs mode L3 interface { mgmt0 | control0 }**
8. **show svs domain**
9. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose

Step 1	**show svs domain**
	
	Example:
	`n1000v(config)# show svs domain`
	`SVS domain config:`
	`  Domain id:    100`
	`  Control vlan: 100`
	`  Packet vlan:  101`
	`  L2/L3 Control mode: L2`
	`  L3 control interface:  NA`
	`  Status: Config push to VC successful.`
		Displays the existing domain configuration, including control and packet VLAN IDs.

Step 2	**config t**
	
	Example:
	`n1000v# config t`
	`n1000v(config)#`
		Places you in the CLI Global Configuration mode.

	Command	Purpose

Step 3	**svs-domain**
	
	Example:
	`n1000v(config)# svs-domain`
	`n1000v(config-svs-domain)#`
		Places you in the CLI SVS Domain Configuration mode.

Step 4	**no packet vlan**
	
	Example:
	`n1000v(config-svs-domain)# no packet vlan`
	`n1000v(config-svs-domain)#`
		Removes the packet VLAN configuration.

Step 5	**no control vlan**
	
	Example:
	`n1000v(config-svs-domain)# no control vlan`
	`n1000v(config-svs-domain)#`
		Removes the control VLAN configuration.

Step 6	**show svs domain**
	
	Example:
	`n1000v(config)# show svs domain`
	`SVS domain config:`
	`  Domain id:    100`
	`  Control vlan: 1`
	`  Packet vlan:  1`
	`  L2/L3 Control mode: L2`
	`  L2/L3 Control interface: NA`
	`  Status: Config push to VC successful.`
	`switch(config-svs-domain)#`
		Displays the existing domain configuration, with the default control and packet VLAN IDs.

Step 7	**svs mode L3 interface { mgmt0 | control0 }**
	
	Example:
	`n1000v(config-svs-domain)# svs mode l3`
	`interface mgmt0`
	`n000v(config-svs-domain)#`
		Configures Layer 3 transport mode for the VSM domain.
		
		If configuring Layer 3 transport, then you must designate which interface to use; and the interface must already have an IP address configured.
		
		This example shows how to configure Layer 3 transport over the management 0 interface.

Step 8	**show svs domain**
	
	Example:
	`SVS domain config:`
	`  Domain id:    100`
	`  Control vlan: 1`
	`  Packet vlan:  1`
	`  L2/L3 Control mode: L3`
	`  L3 control interface: mgmt0`
	`  Status: Config push to VC successful.`
	`n1000v(config-svs-domain)#`
		(Optional) Displays the new Layer 3 control mode configuration for this VSM domain.

Step 9	**copy running-config startup-config**
	
	Example:
	`n1000v(config-svs-domain)# copy`
	`running-config startup-config`
	`[#####################################]`
	`100%`
	`n1000v(config-svs-domain)#`
		(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Changing to Layer 2 Transport

Use this procedure to change the transport mode to Layer 2 for the VSM domain control and packet traffic. The transport mode is Layer 2 by default, but if it is changed, you can use this procedure to configure it again as Layer 2.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- You are logged in to the CLI in EXEC mode.

- This procedure requires you to configure a control VLAN and a packet VLAN. You cannot configure these VLANs if the VSM domain capability is Layer 3 Control. You will first change the capability to Layer 3 Control, and then configure the control VLAN and packet VLAN.

SUMMARY STEPS

1. **show svs domain**
2. **config t**
3. **svs-domain**
4. **svs mode L2**
5. **show svs domain**
6. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose

Step 1	**show svs domain**
	
	Example:
	`SVS domain config:`
	`  Domain id:    100`
	`  Control vlan: 1`
	`  Packet vlan:  1`
	`  L2/L3 Control mode: L3`
	`  L3 control interface: mgmt0`
	`  Status: Config push to VC successful.`
	`n1000v(config-svs-domain)#`
		Displays the existing domain configuration, including control and packet VLAN IDs and the Layer 3 interface configuration.

Step 2	**config t**
	
	Example:
	`n1000v# config t`
	`n1000v(config)#`
		Places you in the CLI Global Configuration mode.

Step 3	**svs-domain**
	
	Example:
	`n1000v(config)# svs-domain`
	`n1000v(config-svs-domain)#`
		Places you in the CLI SVS Domain Configuration mode.

		Command	Purpose

Step 4		**svs mode L2**
		
		Example:
		`n1000v(config-svs-domain)# svs mode l2`
		`n000v(config-svs-domain)#`
			Configures Layer 2 transport mode for the VSM domain.

Step 5		**control vlan** *vlanID* **Example:** `n1000v(config-svs-domain)# control vlan 100`	Configures the specified VLAN ID as the control VLAN for the VSM domain.
Step 6		**packet vlan** *vlanID* **Example:** `n1000v(config-svs-domain)# packet vlan 101`	Configures the specified VLAN ID as the packet VLAN for the VSM domain.

Step 7		**show svs domain**
		
		Example:
		`SVS domain config:`
		`  Domain id:    100`
		`  Control vlan: 100`
		`  Packet vlan:  101`
		`  L2/L3 Control mode: L2`
		`  L3 control interface: NA`
		`  Status: Config push to VC successful.`
		`n1000v(config-svs-domain)#`
			(Optional) Displays the new Layer 2 control mode configuration for this VSM domain.

Step 8		**copy running-config startup-config**
		
		Example:
		`n1000v(config-svs-domain)# copy`
		`running-config startup-config`
		`[#######################################]`
		`100%`
		`n1000v(config-svs-domain)#`
			(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Creating a Port Profile for Layer 3 Control

Use this procedure to allow the VSM and VEM to communicate over IP for control and packet traffic.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- You are logged in to the CLI in EXEC mode.
- The transport mode for the VSM domain has already been configured as Layer 3. For more information, see the "Changing to Layer 2 Transport" procedure on page 3-8.
- All VEMs must belong to the same Layer 2 domain.
- The VEM VM kernel NIC must connect to this Layer 3 control port profile when adding the host to the Cisco Nexus 1000V DVS.
- Only one VM kernel NIC can be assigned to this Layer 3 control port profile per host.
- You know the VLAN ID for the VLAN you are adding to this Layer 3 control port profile.
  - The VLAN must already be created on the Cisco Nexus 1000V.
  - The VLAN assigned to this Layer 3 control port profile must be a system VLAN.

- One of the uplink ports must already have this VLAN in its system VLAN range.

- The port profile must be an access port profile. It cannot be a trunk port profile. This procedure includes steps to configure the port profile as an access port profile.

- More than one port profile can be configured as **capability L3 control**.

- Different hosts can use different VLANs for Layer 3 control.

SUMMARY STEPS

1. **config t**

2. **port-profile** *name*

3. **capability l3control**

4. **vmware port-group** [*name*]

5. **switchport mode access**

6. **switchport access vlan** *vlanID*

7. **no shutdown**

8. **system vlan** *vlanID*

9. **state enabled**

10. (Optional) **show port-profile name** *prof-name*

11. (Optional) **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose

Step 1	**config t**
	
	Example:
	`n1000v# config t`
	`n1000v(config)#`
		Places you in the CLI Global Configuration mode.

Step 2	**port-profile** *name*
	
	Example:
	`n1000v(config)# port-profile`
	`l3control-150`
	`n1000v(config-port-prof)#`
		Creates a port profile and places you into Port Profile Configuration mode for the named port profile.
		
		The port profile name can be up to 80 characters and must be unique for each port profile on the Cisco Nexus 1000V.

Step 3	**capability l3control**
	
	Example:
	`n1000v(config-port-prof)# capability`
	`l3control`
	`n1000v(config-port-prof)#`
		Allows the port to be used for IP connectivity.
		
		In vCenter Server, the Layer 3 control port profile must be selected and assigned to the VM kernel NIC physical port.

	Command	Purpose

Step 4	**vmware port-group** [*name*]
	
	Example:
	`n1000v(config-port-prof)# vmware`
	`port-group`
	`n1000v(config-port-prof)#`
		Designates the port-profile as a VMware port group.
		
		The port profile is mapped to a VMware port group of the same name. When a vCenter Server connection is established, the port group created in Cisco Nexus 1000V is then distributed to the virtual switch on the vCenter Server.
		
		name: Port group name. If you do not specify a name, then the port group name will be the same as the port profile name. If you want to map the port profile to a different port group name, use the alternate name.

Step 5	**switchport mode access**]
	
	Example:
	`n1000v(config-port-prof)# switchport`
	`mode access`
	`n1000v(config-port-prof)#`
		Designates that the interfaces are switch access ports (the default).

Step 6	**switchport access vlan** *vlanID*
	
	Example:
	`n1000v(config-port-prof)# switchport`
	`access vlan 150`
	`n1000v(config-port-prof)#`
		Assigns the system VLAN ID to the access port for this Layer 3 control port profile.

Step 7	**no shutdown**
	
	Example:
	`n1000v(config-port-prof)# no shutdown`
	`n1000v(config-port-prof)#`
		Administratively enables all ports in the profile.

Step 8	**system vlan** *vlanID*
	
	Example:
	`n1000v(config-port-prof)# system vlan`
	`150`
	`n1000v(config-port-prof)#`
		Adds the system VLAN to this Layer 3 control port profile.
		
		This ensures that, when the host is added for the first time or rebooted later, the VEM will be able to reach the VSM. One of the uplink ports must have this VLAN in its system VLAN range.

Step 9	**state enabled**
	
	Example:
	`n1000v(config-port-prof)# state enabled`
	`n1000v(config-port-prof)#`
		Enables the Layer 3 control port profile.
		
		The configuration for this port profile is applied to the assigned ports, and the port group is created in the VMware vSwitch on the vCenter Server.

	Command	Purpose

Step 10	**show port-profile name** *name*
	
	Example:
	`n1000v(config-port-prof)# show`
	`port-profile name l3control-150`
	`port-profile l3control-150`
	  `description:`
	  `type: vethernet`
	  `status: enabled`
	  `capability l3control: yes`
	  `pinning control-vlan: 8`
	  `pinning packet-vlan: 8`
	  `system vlans: 150`
	  `port-group: l3control-150`
	  `max ports: 32`
	  `inherit:`
	  `config attributes:`
	    `switchport mode access`
	    `switchport access vlan 150`
	    `no shutdown`
	  `evaluated config attributes:`
	    `switchport mode access`
	    `switchport access vlan 150`
	    `no shutdown`
	  `assigned interfaces:`
	
	`n1000v(config-port-prof)#`
		(Optional) Displays the current configuration for the port profile.

Step 11	**copy running-config startup-config**
	
	Example:
	`n1000v(config-port-prof)# copy`
	`running-config startup-config`
		(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Creating a Control VLAN

Use this procedure to add a control VLAN to the domain.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- You are logged in to the CLI in EXEC mode.

- If Layer 3 Control is configured on your VSM, you can not create a control VLAN. You must first disable Layer 3 Control.

- You have already configured and enabled the required switched virtual interface (SVI) using the document, *Cisco Nexus 1000V Interface Configuration Guide, Release 4.2(1)SV1(4)* The SVI is also called the VLAN interface and provides communication between VLANs.

- You are familiar with how VLANs are numbered. For more information, see the document, *Cisco Nexus 1000V Layer 2 Switching Configuration Guide, Release 4.2(1)SV1(4).*

- Newly-created VLANs remain unused until Layer 2 ports are assigned to them.

SUMMARY STEPS

1. **config t**

2. **vlan** *vlan-id*

3. **name** *vlan-name*

4. **state** *vlan-state*

5. **exit**

6. **show vlan id** *vlan-id*

7. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose

Step 1	`config t`
	
	Example:
	`n1000v# config t`
	`n1000v(config)#`
		Places you into CLI Global Configuration mode.

Step 2	`vlan 30`
	
	Example:
	`n1000v(config)# vlan 30`
	`n1000v(config-vlan)#`
		Creates VLAN ID 30 for control traffic and places you into CLI VLAN Configuration mode.
		
		Note If you enter a VLAN ID that is assigned to an internally allocated VLAN, the CLI returns an error message.

Step 3	`name cp_control`
	
	Example:
	`n1000v(config-vlan)# name cp_control`
	`n1000v(config-vlan)#`
		Adds the descriptive name, cp_control, to this VLAN.

Step 4	`state active`
	
	Example:
	`n1000v(config-vlan)# state active`
	`n1000v(config-vlan)#`
		Changes the operational state of the VLAN to active.

Step 5	`show vlan id 30`
	
	Example:
	`n1000v(config-vlan)# show vlan id 30`
		Displays the configuration for VLAN ID 30.

Step 6	`copy running-config startup-config`
	
	Example:
	`n1000v(config-vlan)# copy running-config`
	`startup-config`
		(Optional) Copies the running configuration to the startup configuration.

```
Example:
n1000v# config t
n1000v(config)# vlan 30
n1000v(config-vlan)# name cp_control
n1000v(config-vlan)# state active
n1000v(config)# show vlan id 30

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
30   cp_control                       active

VLAN Type MTU
---- -----
```

```
5    enet 1500


Remote SPAN VLAN
----------------
Disabled


Primary  Secondary  Type            Ports
-------  ---------  --------------- -------------------------------------------


n1000v(config)# copy run start
[#####################################] 100%
n1000v(config)#
```

Creating a Packet VLAN

Use this procedure to add the packet VLAN to the domain.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- You are logged in to the CLI in EXEC mode.
- You have already configured and enabled the required switched virtual interface (SVI) using the document, *Cisco Nexus 1000V Interface Configuration Guide, Release 4.2(1)SV1(4).* The SVI is also called the VLAN interface and provides communication between VLANs.
- You are familiar with how VLANs are numbered. For more information, see the document, *Cisco Nexus 1000V Layer 2 Switching Configuration Guide, Release 4.2(1)SV1(4).*
- Newly-created VLANs remain unused until Layer 2 ports are assigned to them.

SUMMARY STEPS

1. **config t**
2. **vlan** *vlan-id*
3. **name** *vlan-name*
4. **state** *vlan-state*
5. **exit**
6. **show vlan id** *vlan-id*
7. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** n1000v# config t n1000v(config)#	Places you into CLI Global Configuration mode.
Step 2	**vlan** *31* **Example:** n1000v(config)# vlan 31 n1000v(config-vlan)#	Creates VLAN ID 31 for packet traffic and places you into CLI VLAN Configuration mode. **Note** If you enter a VLAN ID that is assigned to an internally allocated VLAN, the CLI returns an error message.
Step 3	**name** *cp_packet* **Example:** n1000v(config-vlan)# name cp_packet n1000v(config-vlan)#	Adds the descriptive name, cp_packet, to this VLAN.
Step 4	**state** *active* **Example:** n1000v(config-vlan)# state active n1000v(config-vlan)#	Changes the operational state of the VLAN to active.
Step 5	**show vlan id** *31* **Example:** n1000v(config-vlan)# show vlan id 30	Displays the configuration for VLAN ID 31.
Step 6	**exit** **Example:** n1000v(config-vlan)# exit n1000v(config)#	Returns you to CLI Global Configuration mode.
Step 7	**copy running-config startup-config** **Example:** n1000v(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

```
Example:
n1000v# config t
n1000v(config)# vlan 31
n1000v(config-vlan)# name cp_packet
n1000v(config-vlan)# state active
n1000v(config-vlan)# exit
n1000v(config)# show vlan id 31

VLAN Name                             Status     Ports
---- -------------------------------- --------- -------------------------------
31   cp_packet                        active

VLAN Type MTU
---- -----
5    enet 1500

Remote SPAN VLAN
----------------
```

```
      Disabled

      Primary  Secondary  Type           Ports
      -------  ---------  -------------- -------------------------------------------

      n1000v(config)# copy run start
      [#####################################] 100%
      n1000v(config)#
```

Feature History for the VSM Domain

This section provides the VSM domain feature release history.

Feature Name	Releases	Feature Information
Layer 3 Control	4.0(4)SV1(2)	Added the following information: • About Layer 3 Control, page 3-1 • Guidelines and Limitations, page 3-2 • Changing to Layer 2 Transport, page 3-8 • Changing to Layer 3 Transport, page 3-6 • Creating a Port Profile for Layer 3 Control, page 3-9
VSM Domain	4.0(4)SV1(1)	This feature was introduced.