



CHAPTER 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, page 3-1](#)
- [Guidelines and Limitations, page 3-2](#)
- [Default Settings, page 3-3](#)
- [Configuring the Domain, page 3-3](#)
- [Feature History for the VSM Domain, page 3-16](#)

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 Virtual Supervisor Module (VSM) and the Virtual Ethernet Module (VEM) for control and packet traffic. In Layer 3 control mode, the VSM and VEM need to have Layer 3 connectivity between them. A VSM and VEM can exist in two different Layer 2 networks or two different subnets. The primary VSM and the secondary VSM require Layer 2 connectivity over the control VLAN for HA to function.

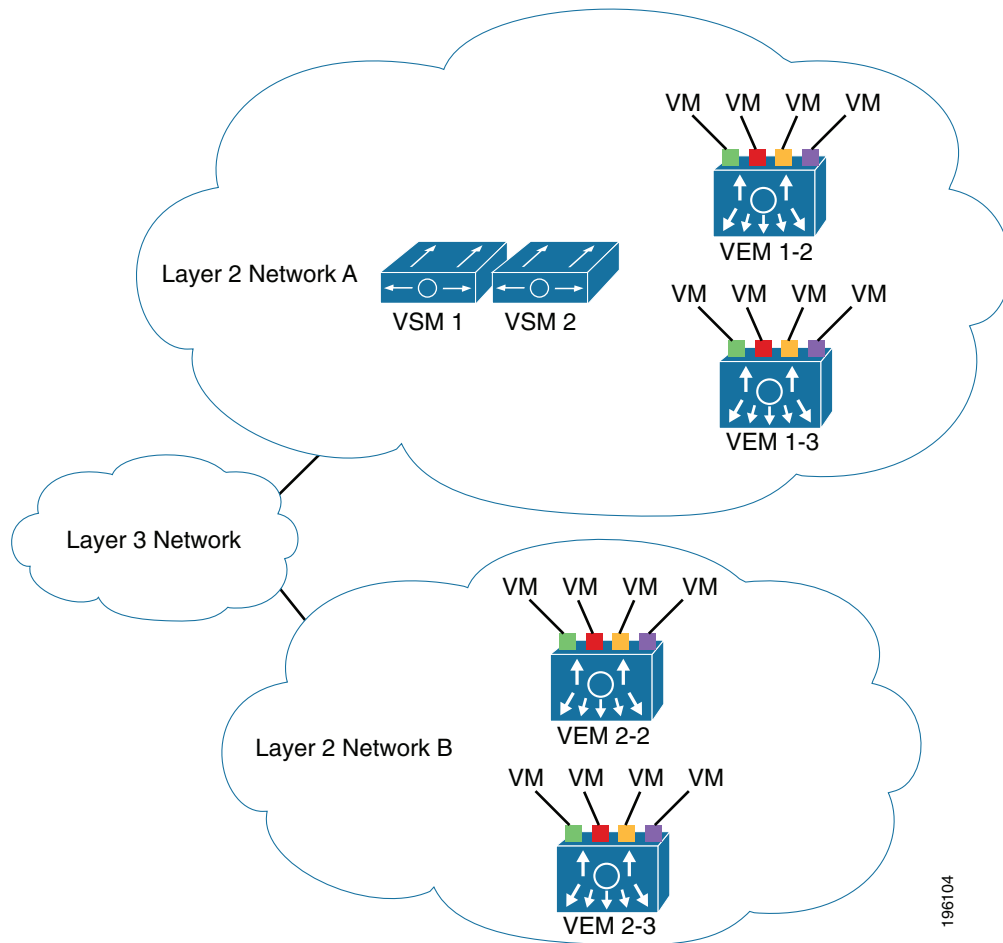
To implement Layer 3 control, you must make the following configurations:

- Configure the VSM domain transport mode as Layer 3.
- Configure a port profile.

In the following diagram, VSM 1 controls VEMs in Layer 2 Network A and VSM 2 controls VEMs in Layer2 Network B.

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Figure 3-1 Example of Layer 3 Control IP Connectivity



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Guidelines and Limitations

The VSM domain has the following configuration guidelines and limitations:

- UDP port 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 port 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.

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- 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.

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, page 3-4](#)
- [Changing to Layer 3 Transport, page 3-6](#)
- [Changing to Layer 2 Transport, page 3-8](#)
- [Creating a Port Profile for Layer 3 Control, page 3-10](#)
- [Creating a Control VLAN, page 3-12](#)
- [Creating a Packet VLAN, page 3-14](#)

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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)
- We recommend using the Layer 3 mode as the best practice for the SVS Domain.
- 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(5.1)*.

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 svcs domain**
8. **copy running-config startup-config**

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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.
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
```

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```
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(5.1)*.

SUMMARY STEPS

1. **show svcs domain**
2. **config t**
3. **svcs-domain**
4. **no control vlan**
5. **no packet vlan**
6. **show svcs domain**
7. **svcs mode L2 | svcs mode L3 interface { mgmt0 | control0 }**
8. **show svcs domain**
9. **copy running-config startup-config**

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DETAILED STEPS

	Command	Purpose
Step 1	show svcs domain Example: <pre>n1000v(config)# show svcs 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.</pre>	Displays the existing domain configuration, including control and packet VLAN IDs.
Step 2	config t Example: <pre>n1000v# config t n1000v(config)#</pre>	Places you in the CLI Global Configuration mode.
Step 3	svcs-domain Example: <pre>n1000v(config)# svcs-domain n1000v(config-svcs-domain)#</pre>	Places you in the CLI SVS Domain Configuration mode.
Step 4	no packet vlan Example: <pre>n1000v(config-svcs-domain)# no packet vlan n1000v(config-svcs-domain)#</pre>	Removes the packet VLAN configuration.
Step 5	no control vlan Example: <pre>n1000v(config-svcs-domain)# no control vlan n1000v(config-svcs-domain)#</pre>	Removes the control VLAN configuration.
Step 6	show svcs domain Example: <pre>n1000v(config)# show svcs 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-svcs-domain)#</pre>	Displays the existing domain configuration, with the default control and packet VLAN IDs.
Step 7	svcs mode L3 interface { mgmt0 control0 } Example: <pre>n1000v(config-svcs-domain)# svcs mode l3 interface mgmt0 n000v(config-svcs-domain)#</pre>	<p>Configures Layer 3 transport mode for the VSM domain.</p> <p>If configuring Layer 3 transport, then you must designate which interface to use; and the interface must already have an IP address configured.</p> <p>This example shows how to configure Layer 3 transport over the management 0 interface.</p>

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	Command	Purpose
Step 8	show svcs domain Example: <pre>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)#</pre>	(Optional) Displays the new Layer 3 control mode configuration for this VSM domain.
Step 9	copy running-config startup-config Example: <pre>n1000v(config-svs-domain)# copy running-config startup-config [#####] 100% n1000v(config-svs-domain)#</pre>	(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

- show svcs domain**
- config t**
- svcs-domain**
- svcs mode L2 | svcs mode L3 interface { mgmt0 | control0 }**
- show svcs domain**
- copy running-config startup-config**

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DETAILED STEPS

	Command	Purpose
Step 1	show svcs 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	svcs-domain Example: n1000v(config)# svcs-domain n1000v(config-svs-domain)#	Places you in the CLI SVS Domain Configuration mode.
Step 4	svcs mode L2 Example: n1000v(config-svs-domain)# svcs mode l2 n000v(config-svs-domain)#	Configures Layer 2 transport mode for the VSM domain.
Step 5	control vlan <i>vlanID</i> 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 <i>vlanID</i> Example: n1000v(config-svs-domain)# packet vlan 101	Configures the specified VLAN ID as the packet VLAN for the VSM domain.
Step 7	show svcs 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.

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

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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.
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.

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	Command	Purpose
Step 9	state enabled Example: <pre>n1000v(config-port-prof)# state enabled n1000v(config-port-prof)#</pre>	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.
Step 10	show port-profile name <i>name</i> Example: <pre>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)#</pre>	(Optional) Displays the current configuration for the port profile.
Step 11	copy running-config startup-config Example: <pre>n1000v(config-port-prof)# copy running-config startup-config</pre>	(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)SVI(5.1)* 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)SVI(5.1)*.
- Newly-created VLANs remain unused until Layer 2 ports are assigned to them.

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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	<code>config t</code> Example: n1000v# <code>config t</code> n1000v(config)#	Places you into CLI Global Configuration mode.
Step 2	<code>vlan 30</code> Example: n1000v(config)# <code>vlan 30</code> 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	<code>name cp_control</code> Example: n1000v(config-vlan)# <code>name cp_control</code> n1000v(config-vlan)#	Adds the descriptive name, <code>cp_control</code> , to this VLAN.
Step 4	<code>state active</code> Example: n1000v(config-vlan)# <code>state active</code> n1000v(config-vlan)#	Changes the operational state of the VLAN to active.
Step 5	<code>show vlan id 30</code> Example: n1000v(config-vlan)# <code>show vlan id 30</code>	Displays the configuration for VLAN ID 30.
Step 6	<code>copy running-config startup-config</code> Example: n1000v(config-vlan)# <code>copy running-config startup-config</code>	(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
-----
```

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```

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(5.1)*. 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(5.1)*.
- 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**

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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
-----

```

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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: <ul style="list-style-type: none"> • 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 3-10
VSM Domain	4.0(4)SV1(1)	This feature was introduced.