



Configuring VLANs

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Information About VLANs

vEthernet interfaces that are assigned to specific VLANs are tagged with the VLAN when transmitted. A vEthernet interface that is not assigned to a specific VLAN, or assigned to VLAN 0, is transmitted as untagged on the physical NIC interfaces. When the VLAN is not specified, it is assumed to be 1.

The following table summarizes the actions taken on packets that are received by the Virtual Ethernet Module (VEM) based on VLAN tagging.

Table 1: VEM Action on VLAN Tagging

Port Type	Packet received	Action
Access	Tagged	The packet is dropped.
Access	Untagged	The VEM adds access VLAN to the packet.
Trunk	Tagged	No action is taken on the packet.
Trunk	Untagged	The VEM adds native VLAN tag to packet.

Guidelines and Limitations

In accordance with the IEEE 802.1Q standard, up to 128 VLANs are supported in Cisco Nexus 1000V and the valid range is 1-4094, and are organized in the following table:

Table 2: Cisco Nexus 1000V VLAN Numbering

VLANs Numbers	Range	Usage
1	Normal	Cisco Nexus 1000V default. You can use this VLAN, but you cannot modify or delete it.
2–1005	Normal	You can create, use, modify, and delete these VLANs.
1006-4094	Extended	<p>You can create, name, and use these VLANs. You cannot change the following parameters:</p> <ul style="list-style-type: none"> • State is always active. • VLAN is always enabled. You cannot shut down these VLANs. <p>The extended system ID is always automatically enabled.</p>
3968-4047 and 4094	Internally allocated	<p>You cannot use, create, delete, or modify these VLANs. You can display these VLANs.</p> <p>Cisco Nexus 1000V allocates these 80 VLANs, plus VLAN 4094, for features, like diagnostics, that use internal VLANs for their operation.</p>



Note For information about diagnostics, see the document, .

Default Settings

Table 3: Default VLAN Settings

Parameters	Default
VLAN assignment for all interfaces and all ports configured as switchports	VLAN 1
VLAN name	VLANxxxx where xxxx represent four numeric digits (including leading zeroes) equal to the VLAN ID number
Shut state	No shutdown
Operational state	Active
External switch tagging (EST)	Enabled
IGMP snooping	Enabled

Configuring a VLAN

Creating a VLAN

Use this procedure to do one of the following:

- Create a single VLAN that does not already exist.
- Create a range of VLANs that do not already exist.
- Delete an existing VLAN.



Note

All interfaces and all ports configured as switchports are in VLAN 1 by default.

Before You Begin

- You are logged in to the CLI in EXEC mode.
- VLAN characteristics are configured in the VLAN configuration mode.
- You are familiar with the VLAN numbering.
- Newly-created VLANs remain unused until Layer 2 ports are assigned to them.

- When you delete a specified VLAN, the ports associated to that VLAN are shut down and no traffic flows. When you delete a specified VLAN from a trunk port, only that VLAN is shut down and traffic continues to flow on all the other VLANs through the trunk port. However, the system retains all the VLAN-to-port mapping for that VLAN, and when you reenables, or re-creates, that specified VLAN, the system automatically reinstates all the original ports to that VLAN. Note that the static MAC addresses and aging time for that VLAN are not restored when the VLAN is reenables.

**Note**

Be aware that the Cisco NX-OS commands may differ from those used in Cisco IOS.

Procedure

	Command or Action	Purpose
Step 1	switch# configure terminal	Enters global configuration mode.
Step 2	switch(config)# show vlan	Displays the VLANs that already exist.
Step 3	switch(config)# { no } vlan { <i>vlan-id</i> <i>vlan-range</i> }	Creates or deletes, and saves in the running configuration, a VLAN or a range of VLANs. Note If you enter a VLAN ID that is assigned to an internally allocated VLAN, the system returns an error message. From the VLAN configuration mode, you can also create and delete VLANs.
Step 4	switch(config-vlan)# show vlan id <i>vlan-id</i>	(Optional) Displays the VLAN configuration.
Step 5	switch(config-vlan)# copy running-config startup-config	(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

In the following example VLAN 5 is created and you are automatically placed into the VLAN configuration mode for VLAN 5:

```
switch# configure terminal
switch(config)# vlan 5
switch(config-vlan)#
```

The following example shows the range, VLAN 15-20, being created. The VLANs in the range are activated, and you are automatically placed into VLAN configuration mode for VLANs 15-20.

**Note**

If you create a range of VLANs that includes an unusable VLAN, all VLANs in the range are created except those that are unusable; and Cisco Nexus 1000V returns a message listing the failed VLANs.

```
switch# configure terminal
switch(config)# vlan 15-20
switch(config-vlan)#
```

The following example shows VLAN 3967 being deleted, using the no form of the command:

```
switch# configure terminal
switch(config)# no vlan 3967
switch(config)#
```

Configuring VLAN Characteristics

Use this procedure to configure the following for a VLAN that has already been created:



Note

Commands entered in the VLAN configuration mode are immediately saved to the running configuration.

- Name the VLAN.
- The operational state (active, suspend) of the VLAN.
- The VLAN media type .
- Shut down switching on the VLAN.

Before You Begin

You are logged in to the CLI in EXEC mode.



Note

Some characteristics cannot be modified on some VLANs. For more information, see the VLAN numbering described in the [Guidelines and Limitations, on page 2](#) section.

Procedure

	Command or Action	Purpose
Step 1	switch# configure terminal	Enters global configuration mode.
Step 2	switch(config)# vlan { <i>vlan-id</i> <i>vlan-range</i> }	Enters VLAN configuration mode for the specified VLAN. Note If the VLAN does not already exist, the system creates it and then enters the VLAN configuration mode for that VLAN.
Step 3	switch(config-vlan)# name <i>vlan-name</i>	Adds a name to the VLAN of up to 32 alphanumeric characters. <ul style="list-style-type: none"> • You cannot change the name of VLAN1 nor the VLANs reserved for internal use. • The default name is VLANxxxx where xxxx represent four numeric digits (including leading zeroes) equal to the VLAN ID number.
Step 4	switch(config-vlan)# state { active suspend }	Changes the operational state of the VLAN and saves it in the running configuration. Allowable entries are:

	Command or Action	Purpose
		<ul style="list-style-type: none"> • Active (default) • Suspend <p>While the VLAN state is suspended, the ports associated with this VLAN are shut down, and that VLAN does not pass any traffic.</p> <p>Note You cannot suspend the state for the default VLAN or VLANs 1006 to 4094.</p>
Step 5	switch(config-vlan)# no shutdown	<p>Enables VLAN switching in the running configuration.</p> <p>Allowable entries are:</p> <ul style="list-style-type: none"> • no shutdown (default) • shutdown <p>Note You cannot shut down the default VLAN, VLAN1, or VLANs 1006 to 4094.</p>
Step 6	switch(config-vlan)# show vlan [id <i>vlan-id</i>]	(Optional) Displays the VLAN configuration.
Step 7	switch(config-vlan)# copy running-config startup-config	(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

```
n1000v# configure terminal
n1000v(config)# vlan 5
n1000v(config-vlan)# name accounting
n1000v(config-vlan)# state active
n1000v(config-vlan)# no shutdown
n1000v(config-vlan)# show vlan brief
```

Verifying the Configuration

Use one of the following commands to verify the configuration:

Command	Purpose
show running-config vlan <i>vlan-id</i>	Displays VLAN information in the running configuration.
show vlan [all-ports brief id <i>vlan-id</i> name <i>name</i> dot1q tag native]	Displays the specified VLAN information.
show vlan summary	Displays a summary of VLAN information.

Feature History for VLANs

Feature Name	Feature Name	Releases
VLANs	Release 5.2(1)IC1(1.1)	This feature was introduced

