

Configuring VRRP

This chapter describes how to configure the Virtual Router Redundancy Protocol (VRRP) on Cisco NX-OS switches.

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Information About VRRP

VRRP allows for transparent failover at the first-hop IP router, by configuring a group of routers to share a virtual IP address. VRRP selects a primary router in that group to handle all packets for the virtual IP address. The remaining routers are in standby and take over if the primary router fails.

VRRP Operation

A LAN client can determine which router should be the first hop to a particular remote destination by using a dynamic process or static configuration. Examples of dynamic router discovery are as follows:

- Proxy ARP—The client uses Address Resolution Protocol (ARP) to get the destination it wants to reach, and a router will respond to the ARP request with its own MAC address.
- Routing protocol—The client listens to dynamic routing protocol updates (for example, from Routing Information Protocol [RIP]) and forms its own routing table.
- ICMP Router Discovery Protocol (IRDP) client—The client runs an Internet Control Message Protocol (ICMP) router discovery client.

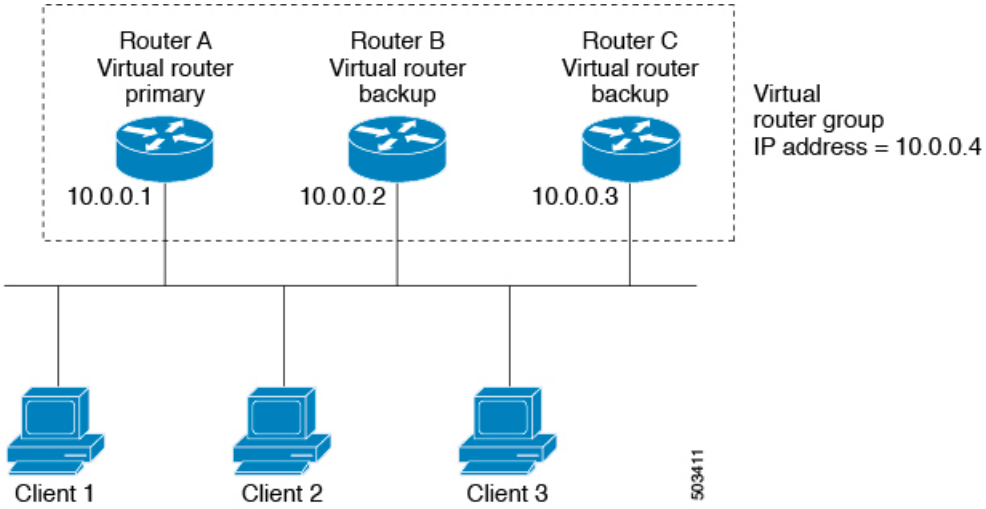
The disadvantage to dynamic discovery protocols is that they incur some configuration and processing overhead on the LAN client. Also, if a router fails, the process of switching to another router can be slow.

An alternative to dynamic discovery protocols is to statically configure a default router on the client. Although this approach simplifies client configuration and processing, it creates a single point of failure. If the default gateway fails, the LAN client is limited to communicating only on the local IP network segment and is cut off from the rest of the network.

VRRP can solve the static configuration problem by enabling a group of routers (a VRRP group) to share a single virtual IP address. You can then configure the LAN clients with the virtual IP address as their default gateway.

The following figure shows a basic VLAN topology. In this example, Routers A, B, and C form a VRRP group. The IP address of the group is the same address that was configured for the Ethernet interface of Router A (10.0.0.1).

Figure 1: Basic VRRP Topology



Because the virtual IP address uses the IP address of the physical Ethernet interface of Router A, Router A is the primary (also known as the IP address owner). As the primary, Router A owns the virtual IP address of the VRRP group router and forwards packets that are sent to this IP address. Clients 1—3 are configured with the default gateway IP address of 10.0.0.1.

Routers B and C function as backups. If the primary fails, the backup router with the highest priority becomes the primary and takes over the virtual IP address to provide uninterrupted service for the LAN hosts. When router A recovers, it becomes the router primary again. For more information, see the "VRRP Router Priority and Preemption" section.

Note Packets that are received on a routed port destined for the VRRP virtual IP address terminate on the local router, regardless of whether that router is the primary VRRP router or a backup VRRP router. This includes ping and telnet traffic. Packets received on a Layer 2 (VLAN) interface destined for the VRRP virtual IP address terminate on the primary router.

VRRP Benefits

The benefits of VRRP are as follows:

- Redundance—Enables you to configure multiple routers as the default gateway router, which reduces the possibility of a single point of failure in a network.
- Load Sharing—Allows traffic to and from LAN clients to be shared by multiple routers. The traffic load is shared more equitably among available routers.
- Multiple VRRP groups—Supports up to 255 VRRP groups on a router physical interface if the platform supports multiple MAC addresses. Multiple VRRP groups enable you to implement redundancy and load sharing in your LAN topology.
- Multiple IP Addresses—Allows you to manage multiple IP addresses, including secondary IP addresses. If you have multiple subnets that are configured on an Ethernet interface, you can configure VRRP on each subnet.
- Preemption—Enables you to preempt a backup router that has taken over for a failing primary with a higher priority backup router that has become available.
- Advertisement Protocol—Uses a dedicated Internet Assigned Numbers Authority (IANA) standard multicast address (224.0.0.18) for VRRP advertisements. This addressing scheme minimizes the number of routers that must service the multicasts and allows test equipment to accurately identify VRRP packets on a segment. IANA has assigned the IP protocol number 112 to VRRP.
- VRRP Tracking—Ensures that the best VRRP router is the primary for the group by altering VRRP priorities based on interface states.

Multiple VRRP Groups

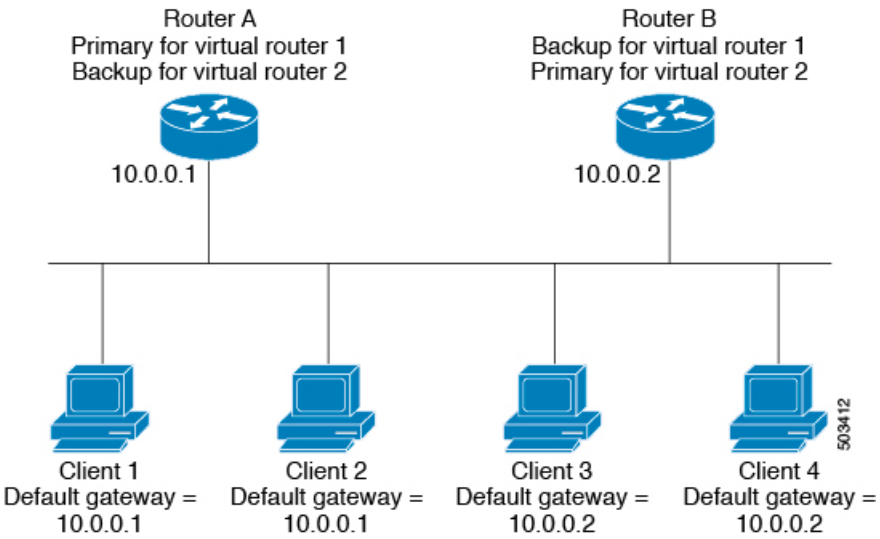
You can configure up to 255 VRRP groups on a physical interface. The actual number of VRRP groups that a router interface can support depends on the following factors:

- Router processing capability
- Router memory capability

In a topology where multiple VRRP groups are configured on a router interface, the interface can act as a primary for one VRRP group and as a backup for one or more other VRRP groups.

The following figure shows a LAN topology in which VRRP is configured so that Routers A and B share the traffic to and from clients 1—4. Routers A and B act as backups to each other if either router fails.

Figure 2: Load Sharing and Redundancy VRRP Topology



This topology contains two virtual IP addresses for two VRRP groups that overlap. For VRRP group 1, Router A is the owner of IP address 10.0.0.1 and is the primary. Router B is the backup to router A. Clients 1 and 2 are configured with the default gateway IP address of 10.0.0.1.

For VRRP group 2, Router B is the owner of IP address 10.0.0.2 and is the primary. Router A is the backup to router B. Clients 3 and 4 are configured with the default gateway IP address of 10.0.0.2.

VRRP Router Priority and Preemption

An important aspect of the VRRP redundancy scheme is the VRRP router priority because the priority determines the role that each VRRP router plays and what happens if the primary router fails.

If a VRRP router owns the virtual IP address and the IP address of the physical interface, this router functions as the primary. The priority of the primary is 255.

Priority also determines if a VRRP router functions as a backup router and the order of ascendancy to becoming a primary if the primary fails.

For example, if router A, the primary in a LAN topology fails, VRRP must determine if backups B or C should take over. If you configure router B with priority 101 and router C with the default priority of 100, VRRP selects router B to become the primary because it has the higher priority. If you configure routers B and C with the default priority of 100, VRRP selects the backup with the higher IP address to become the primary.

VRRP uses preemption to determine what happens after a VRRP backup router becomes the primary. With preemption enabled by default, VRRP switches to a backup if that backup comes online with a priority higher than the new primary. For example, if Router A is the primary and fails, VRRP selects Router B (next in order of priority). If Router C comes online with a higher priority than Router B, VRRP selects Router C as the new primary, although Router B has not failed.

If you disable preemption, VRRP will only switch if the original primary recovers or the new primary fails.

VRRP Advertisements

The VRRP primary sends VRRP advertisements to other VRRP routers in the same group. The advertisements communicate the priority and state of the primary. Cisco NX-OS encapsulates the VRRP advertisements in IP packets and sends them to the IP multicast address assigned to the VRRP group. Cisco NX-OS sends the advertisements once every second by default, but you can configure a different advertisement interval.

VRRP Authentication

VRRP supports the following authentication mechanisms:

- No authentication
- Plain text authentication

VRRP rejects packets in any of the following cases:

- The authentication schemes differ on the router and in the incoming packet.
- Text authentication strings differ on the router and in the incoming packet.

VRRP Tracking

VRRP supports the following two options for tracking:

- Native interface tracking— Tracks the state of an interface and uses that state to determine the priority of the VRRP router in a VRRP group. The tracked state is down if the interface is down or if the interface does not have a primary IP address.
- Object tracking—Tracks the state of a configured object and uses that state to determine the priority of the VRRP router in a VRRP group. See Configuring Object Tracking for more information on object tracking.

If the tracked state (interface or object) goes down, VRRP updates the priority based on what you configure the new priority to be for the tracked state. When the tracked state comes up, VRRP restores the original priority for the virtual router group.

For example, you may want to lower the priority of a VRRP group member if its uplink to the network goes down so another group member can take over as primary for the VRRP group. See the Configuring VRRP Interface State Tracking section for more information.



Note VRRP does not support Layer 2 interface tracking.

Virtualization Support

VRRP supports Virtual Routing and Forwarding instances (VRFs). By default, Cisco NX-OS places you in the default VRF unless you specifically configure another VRF.

If you change the VRF membership of an interface, Cisco NX-OS removes all Layer 3 configuration, including VRRP.

Guidelines and Limitations for VRRP

VRRP has the following configuration guidelines and limitations:

- You cannot configure VRRP on the management interface.
- When VRRP is enabled, you should replicate the VRRP configuration across switches in your network.
- We recommend that you do not configure more than one first-hop redundancy protocol on the same interface.
- You must configure an IP address for the interface that you configure VRRP on and enable that interface before VRRP becomes active.
- Cisco NX-OS removes all Layer 3 configurations on an interface when you change the interface VRF membership, port channel membership, or when you change the port mode to Layer 2.
- When you configure VRRP to track a Layer 2 interface, you must shut down the Layer 2 interface and reenable the interface to update the VRRP priority to reflect the state of the Layer 2 interface.

Default Settings for VRRP

Table below lists the default settings for VRRP parameters.

Table 1: Default VRRP Parameters

Parameters	Default
advertisement interval	1 seconds
authentication	no authentication
preemption	enabled
priority	100
VRRP feature	disabled

Configuring VRRP



Note If you are familiar with the Cisco IOS CLI, be aware that the Cisco NX-OS commands for this feature might differ from the Cisco IOS commands that you would use.

Enabling the VRRP Feature

You must globally enable the VRRP feature before you can configure and enable any VRRP groups.

To enable the VRRP feature, use the following command in global configuration mode:

Command	Purpose
feature vrrp **Example** : `switch(config)# feature vrrp`	Enables VRRP.

To disable the VRRP feature and remove all associated configuration, use the following command in global configuration mode:

Command	Purpose
no feature vrrp **Example** : `switch(config)# no feature vrrp`	Disables the VRRP feature.

Configuring VRRP Groups

You can create a VRRP group, assign the virtual IP address, and enable the group.

You can configure one virtual IPv4 address for a VRRP group. By default, the primary VRRP router drops the packets addressed directly to the virtual IP address because the VRRP primary is only intended as a next-hop router to forward packets. Some applications require that Cisco NX-OS accept packets that are addressed to the virtual router IP. Use the secondary option to the virtual IP address to accept these packets when the local router is the VRRP primary.

Once you have configured the VRRP group, you must explicitly enable the group before it becomes active.

Before you begin

Ensure that you configure an IP address on the interface (see the Configuring IPv4 Addressing section).

SUMMARY STEPS

1. **configure terminal**
2. **interface** *interface -type slot/port*
3. **no switchport**
4. **vrrp** *number*
5. **address** *ip-address* [**secondary**]
6. **no shutdown**
7. (Optional) **show vrrp**
8. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters configuration mode.

Step 2	**interface** *interface -type slot/port*
	Example:
	`switch(config)#`
	`switch(config-if)# interface ethernet 2/1`
		Enters interface configuration mode.

Step 3	**no switchport** **Example:** `switch(config-if)# no switchport`	Configures the interface as a Layer 3 routed interface.

Step 4	**vrrp** *number*
	Example:
	`switch(config-if)# vrrp 250`
	`switch(config-if-vrrp)#`
		Creates a virtual router group. The range is from 1—255.

Step 5	**address** *ip-address* [**secondary**] **Example:** `switch(config-if-vrrp)# address 192.0.2.8`	Configures the virtual IPv4 address for the specified VRRP group. This address should be in the same subnet as the IPv4 address of the interface. Use the **secondary** option only if applications require that VRRP routers accept the packets sent to the virtual router's IP address and deliver to applications.

Step 6	**no shutdown**
	Example:
	`switch(config-if-vrrp)# no shutdown`
	`switch(config-if-vrrp)#`
		Enables the VRRP group. Disabled by default.

Step 7	(Optional) **show vrrp** **Example:** `switch(config-if-vrrp)# show vrrp`	Displays VRRP information.
Step 8	(Optional) **copy running-config startup-config** **Example:** `switch(config-if-vrrp)# copy running-config startup-config`	Saves this configuration change.

Configuring VRRP Priority

The valid priority range for a virtual router is 1–254 (1 is the lowest priority and 254 is the highest). The default priority value for backups is 100. For switches whose interface IP address is the same as the primary virtual IP address (the primary), the default value is 255.

Before you begin

Ensure that you have enabled the VRRP feature (see the Configuring VRRP section).

Ensure that you have configured an IP address on the interface (see the Configuring IPv4 Addressing section.

SUMMARY STEPS

1. **configure terminal**
2. **interface** *interface -type slot/port*
3. **no switchport**
4. **vrrp** *number*
5. **shutdown**
6. **priority** *level* [**forwarding-threshold lower** *lower-value* **upper** *upper-value*]
7. **no shutdown**
8. (Optional) **show vrrp**
9. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters configuration mode.

Step 2	**interface** *interface -type slot/port*
	Example:
	`switch(config)#`
	`switch(config-if)# interface ethernet 2/1`
		Enters interface configuration mode.

Step 3	**no switchport** **Example:** `switch(config-if)# no switchport`	Configures the interface as a Layer 3 routed interface.

Step 4	**vrrp** *number*
	Example:
	`switch(config-if)# vrrp 250`
	`switch(config-if-vrrp)#`
		Creates a virtual router group. The range is 1–255.

	Command or Action	Purpose

Step 5	**shutdown**
	Example:
	`switch(config-if-vrrp)# shutdown`
	`switch(config-if-vrrp)#`
		Disables the VRRP group. Disabled by default.

Step 6	**priority** *level* [**forwarding-threshold lower** *lower-value* **upper** *upper-value*] **Example:** `switch(config-if-vrrp)# priority 60 forwarding-threshold lower 40 upper 50`	Sets the priority level used to select the active router in a VRRP group. The *level* range is 1–254. The default is 100 for backups and 255 for a primary that has an interface IP address equal to the virtual IP address.

Step 7	**no shutdown**
	Example:
	`switch(config-if-vrrp)# no shutdown`
	`switch(config-if-vrrp)#`
		Enables the VRRP group. Disabled by default.

Step 8	(Optional) **show vrrp** **Example:** `switch(config-if-vrrp)# show vrrp`	Displays VRRP information.
Step 9	(Optional) **copy running-config startup-config** **Example:** `switch(config-if-vrrp)# copy running-config startup-config`	Saves this configuration change.

Configuring VRRP Authentication

You can configure simple text authentication for a VRRP group.

Before you begin

Ensure that the authentication configuration is identical for all VRRP switches in the network.

Ensure that you have enabled the VRRP feature (see the Configuring VRRP section).

Ensure that you have configured an IP address on the interface (see the Configuring IPv4 Addressing section.

SUMMARY STEPS

1. **configure terminal**
2. **interface** *interface -type slot/port*
3. **no switchport**
4. **vrrp** *number*
5. **shutdown**
6. **authentication text** *password*
7. **no shutdown**
8. (Optional) **show vrrp**

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

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters configuration mode.

Step 2	**interface** *interface -type slot/port*
	Example:
	`switch(config)#`
	`switch(config-if)# interface ethernet 2/1`
		Enters interface configuration mode.

Step 3	**no switchport** **Example:** `switch(config-if)# no switchport`	Configures the interface as a Layer 3 routed interface.

Step 4	**vrrp** *number*
	Example:
	`switch(config-if)# vrrp 250`
	`switch(config-if-vrrp)#`
		Creates a virtual router group. The range is from 1 to 255.

Step 5	**shutdown**
	Example:
	`switch(config-if-vrrp)# shutdown`
	`switch(config-if-vrrp)#`
		Disables the VRRP group. Disabled by default.

Step 6	**authentication text** *password* **Example:** `switch(config-if-vrrp)# authentication text cisco123`	Assigns the simple text authentication option and specifies the keyname password. The keyname range is from 1 to 255 characters. We recommend that you use at least 16 characters. The text password is up to eight alphanumeric characters.

Step 7	**no shutdown**
	Example:
	`switch(config-if-vrrp)# no shutdown`
	`switch(config-if-vrrp)#`
		Enables the VRRP group. Disabled by default.

Step 8	(Optional) **show vrrp** **Example:** `switch(config-if-vrrp)# show vrrp`	Displays VRRP information.
Step 9	(Optional) **copy running-config startup-config** **Example:**	Saves this configuration change.

	Command or Action	Purpose
	`switch(config-if-vrrp)# copy running-config startup-config`	

Example

Configuring Time Intervals for Advertisement Packets

You can configure the time intervals for advertisement packets.

Before you begin

Ensure that you have enabled the VRRP feature (see the Configuring VRRP section).

Ensure that you have configured an IP address on the interface (see the Configuring IPv4 Addressing section.

SUMMARY STEPS

1. **configure terminal**
2. **interface** *interface -type slot/port*
3. **no switchport**
4. **vrrp** *number*
5. **shutdown**
6. **advertisement-interval** *seconds*
7. **no shutdown**
8. (Optional) **show vrrp**
9. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters configuration mode.

Step 2	**interface** *interface -type slot/port*
	Example:
	`switch(config)#`
	`switch(config-if)# interface ethernet 2/1`
		Enters interface configuration mode.

Step 3	**no switchport** **Example:** `switch(config-if)# no switchport`	Configures the interface as a Layer 3 routed interface.

	Command or Action	Purpose

Step 4	**vrrp** *number*
	Example:
	`switch(config-if)# vrrp 250`
	`switch(config-if-vrrp)#`
		Creates a virtual router group. The range is from 1 to 255.

Step 5	**shutdown**
	Example:
	`switch(config-if-vrrp)# shutdown`
	`switch(config-if-vrrp)#`
		Disables the VRRP group. Disabled by default.

Step 6	**advertisement-interval** *seconds* **Example:** `switch(config-if-vrrp)# advertisement-interval 15`	Sets the interval time in seconds between sending advertisement frames. The range is from 1 to 254. The default is 1 second.

Step 7	**no shutdown**
	Example:
	`switch(config-if-vrrp)# no shutdown`
	`switch(config-if-vrrp)#`
		Enables the VRRP group. Disabled by default.

Step 8	(Optional) **show vrrp** **Example:** `switch(config-if-vrrp)# show vrrp`	Displays VRRP information.
Step 9	(Optional) **copy running-config startup-config** **Example:** `switch(config-if-vrrp)# copy running-config startup-config`	Saves this configuration change.

Example

Disabling Preemption

You can disable preemption for a VRRP group member. If you disable preemption, a higher-priority backup router will not take over for a lower-priority primary router. Preemption is enabled by default.

Before you begin

Ensure that you have enabled the VRRP feature (see the Configuring VRRP section).

Ensure that you have configured an IP address on the interface (see the Configuring IPv4 Addressing section.

SUMMARY STEPS

1. **configure terminal**
2. **interface** *interface -type slot/port*

3. **no switchport**
4. **vrrp** *number*
5. **shutdown**
6. **no preempt**
7. **no shutdown**
8. (Optional) **show vrrp**
9. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters configuration mode.

Step 2	**interface** *interface -type slot/port*
	Example:
	`switch(config)#`
	`switch(config-if)# interface ethernet 2/1`
		Enters interface configuration mode.

Step 3	**no switchport** **Example:** `switch(config-if)# no switchport`	Configures the interface as a Layer 3 routed interface.

Step 4	**vrrp** *number*
	Example:
	`switch(config-if)# vrrp 250`
	`switch(config-if-vrrp)#`
		Creates a virtual router group. The range is 1–255.

Step 5	**shutdown**
	Example:
	`switch(config-if-vrrp)# shutdown`
	`switch(config-if-vrrp)#`
		Disables the VRRP group. Disabled by default.

Step 6	**no preempt** **Example:** `switch(config-if-vrrp)# no preempt`	Disables the preempt option and allows the primary to remain when a higher-priority backup appears.

Step 7	**no shutdown**
	Example:
	`switch(config-if-vrrp)# no shutdown`
	`switch(config-if-vrrp)#`
		Enables the VRRP group. Disabled by default.

	Command or Action	Purpose
Step 8	(Optional) **show vrrp** **Example:** `switch(config-if-vrrp)# show vrrp`	Displays VRRP information.
Step 9	(Optional) **copy running-config startup-config** **Example:** `switch(config-if-vrrp)# copy running-config startup-config`	Saves this configuration change.

Configuring VRRP Interface State Tracking

Interface state tracking changes the priority of the virtual router based on the state of another interface in the switch. When the tracked interface goes down or the IP address is removed, Cisco NX-OS assigns the tracking priority value to the virtual router. When the tracked interface comes up and an IP address is configured on this interface, Cisco NX-OS restores the configured priority to the virtual router (see the Configuring VRRP Priority section).

Note For interface state tracking to function, you must enable preemption on the interface.

Note VRRP does not support Layer 2 interface tracking.

Before you begin

Ensure that you have enabled the VRRP feature (see the Configuring VRRP section).

Ensure that you have configured an IP address on the interface (see the Configuring IPv4 Addressing section.

Be sure the virtual router is enabled (see the Configuring VRRP Groups section).

SUMMARY STEPS

1. **configure terminal**
2. **interface** *interface -type slot/port*
3. **no switchport**
4. **vrrp** *number*
5. **shutdown**
6. **track interface type** *number* **priority** *value*
7. **no shutdown**
8. (Optional) **show vrrp**
9. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters configuration mode.

Step 2	**interface** *interface -type slot/port*
	Example:
	`switch(config)#`
	`switch(config-if)# interface ethernet 2/1`
		Enters interface configuration mode.

Step 3	**no switchport** **Example:** `switch(config-if)# no switchport`	Configures the interface as a Layer 3 routed interface.

Step 4	**vrrp** *number*
	Example:
	`switch(config-if)# vrrp 250`
	`switch(config-if-vrrp)#`
		Creates a virtual router group. The range is from 1 to 255.

Step 5	**shutdown**
	Example:
	`switch(config-if-vrrp)# shutdown`
	`switch(config-if-vrrp)#`
		Disables the VRRP group. Disabled by default.

Step 6	**track interface type** *number* **priority** *value* **Example:** `switch(config-if-vrrp)# track interface ethernet 2/10 priority 254`	Enables interface priority tracking for a VRRP group. The priority range is from 1 to 254.

Step 7	**no shutdown**
	Example:
	`switch(config-if-vrrp)# no shutdown`
	`switch(config-if-vrrp)#`
		Enables the VRRP group. Disabled by default.

Step 8	(Optional) **show vrrp** **Example:** `switch(config-if-vrrp)# show vrrp`	Displays VRRP information.
Step 9	(Optional) **copy running-config startup-config** **Example:** `switch(config-if-vrrp)# copy running-config startup-config`	Saves this configuration change.

Verifying the VRRP Configuration

To display the VRRP configuration information, perform one of the following tasks:

Command	Purpose
show vrrp	Displays the VRRP status for all groups.
show vrrp vr group-number	Displays the VRRP status for a VRRP group.
show vrrp interface *interface-type port vr number*	Displays the virtual router configuration for an interface.

Displaying VRRP Statistics

To display VRRP statistics, use the following commands:

Command	Purpose
show vrrp statistics interface *interface-type port vr number*	Displays the virtual router information.
show vrrp statistics	Displays the VRRP statistics.

Use the **clear vrrp vr** command to clear the IPv4 VRRP statistics for a specified interface.

Configuration Examples for VRRP

In this example, Router A and Router B each belong to three VRRP groups. In the configuration, each group has the following properties:

- Group 1:
  - Virtual IP address is 10.1.0.10.
  - Router A will become the primary for this group with priority 120.
  - Advertising interval is 3 seconds.
  - Preemption is enabled.
- Group 5:
  - Router B will become the primary for this group with priority 200.
  - Advertising interval is 30 seconds.
  - Preemption is enabled.
- Group 100:
  - Router A will become the primary for this group first because it has a higher IP address (10.1.0.2).

- Advertising interval is the default 1 second.
- Preemption is disabled.

Router A

```
interface ethernet 1/0
no switchport

ip address 10.1.0.2/16
no shutdown
vrrp 1
priority 120
authentication text cisco
advertisement-interval 3
address 10.1.0.10
no shutdown
vrrp 5
priority 100
advertisement-interval 30
address 10.1.0.50
no shutdown
vrrp 100
no preempt
address 10.1.0.100
no shutdown
```

Router B

```
interface ethernet 1/0
no switchport

ip address 10.2.0.1/2
no shutdown
vrrp 1
priority 100
authentication text cisco
advertisement-interval 3
address 10.2.0.10
no shutdown

vrrp 5
priority 200
advertisement-interval 30
address 10.2.0.50
no shutdown
vrrp 100
no preempt
address 10.2.0.100
no shutdown
```

Additional References

For additional information related to implementing VRRP, see the following sections:

- Related Documents

Related Documents

Related Topic	Document Title
Configuring the Hot Standby Routing Protocol	Configuring HSRP
VRRP CLI commands	Cisco Nexus 3000 Series Command Reference