
Configuring VRRP

The Virtual Router Redundancy Protocol (VRRP) provides redundant gateway service for switches and other IP end stations. In the Viptela software, you configure VRRP on an interface, and typically on a subinterface, within a VPN.

For a VRRP interface to operate, its physical interface must be configured in VPN 0:

```
vEdge(config-vpn-0) # interface ge-slot/port
vEdge(config-interface-ge) # no shutdown
```

For each VRRP interface (or subinterface), you assign an IP address and you place that interface in a VRRP group.

```
vEdge(config-vpn) # interface ge-slot/port.subinterface
vEdge(config-interface-ge) # ip address prefix/length
vEdge(config-interface-ge) # vrrp group-number
```

The group number identifies the virtual router. In a typical VRRP topology, two physical routers are configured to act as a single virtual router, so you configure the same group number on interfaces on both these routers.

For each virtual router ID, you must configure an IP address:

```
vEdge(config-vrrp) # ipv4 ip-address
```

Within each VRRP group, the vEdge router with the higher priority value is elected as master. By default, each virtual router IP address has a default master election priority of 100, so the router with the higher IP address is elected master. You can modify the priority value, setting it to a value from 1 through 254:

```
vEdge(config-vrrp) # priority number
```

The VRRP master periodically sends advertisement messages, indicating that it is still operating. If slave routers miss three consecutive VRRP advertisements, they assume that the master is down and elect a new master. By default, these messages are sent every second. You can change the VRRP advertisement time to be a value from 1 through 3600 seconds:

```
vEdge(config-vrrp) # timer seconds
```

By default, VRRP uses the state of the interface on which it is running to determine which vEdge router is the master virtual router. This interface is on the service (LAN) side of the vEdge router. When the interface for the master goes down, a new VRRP master virtual router is elected based on the VRRP priority value. Because VRRP runs on a LAN interface, if a vEdge router loses all its WAN control connections, the LAN interface still indicates that it is up even though the router is functionally unable to participate in VRRP. To take WAN side connectivity into account for VRRP, you can configure one of the following:

- Track the Overlay Management Protocol (OMP) session running on the WAN connection when determining the VRRP master virtual router:

```
vEdge(config-vrrp) # track-omp
```

If all OMP sessions are lost on the master VRRP router, VRRP elects a new default gateway from among all the gateways that have one or more active OMP sessions even if the gateway chosen has a lower VRRP priority than the



current master. With this option, VRRP failover occurs once the OMP state changes from up to down, which occurs when the OMP hold timer expires. (The default OMP hold timer interval is 60 seconds.) Until the hold timer expires and a new VRRP master is elected, all overlay traffic is dropped. When the OMP session recovers, the local VRRP interface claims itself as master even before it learns and installs OMP routes from the vSmart controllers. Until the routers are learned, traffic is also dropped.

- Track both the OMP session and a list of remote prefixes. *list-name* is the name of a prefix list configured with the **policy lists prefix-list** command on the vEdge router:

```
vEdge(config-vrrp)# track-prefix-list list-name
```

If all OMP sessions are lost, VRRP failover occurs as described for the **track-omp** option. In addition, if reachability to all the prefixes in the list is lost, VRRP failover occurs immediately, without waiting for the OMP hold timer to expire, thus minimizing the amount of overlay traffic is dropped while the vEdge routers determine the VRRP master.

As discussed above, the IEEE 802.1Q protocol adds 4 bytes to each packet's length. Hence, for packets to be transmitted, either increase the MTU size on the physical interface in VPN 0 (the default MTU is 1500 bytes) or decrease the MTU size on the VRRP interface. See the example configuration output below.

Here is an example of configuring VRRP on redundant physical interfaces. For subinterface 2, vEdge1 is configured to act as the master, and for subinterface 3, vEdge2 acts as the master.

```
vEdge1# show running-config vpn 1
vpn 1
 interface ge0/6.2
  ip address 10.2.2.3/24
  mtu 1496
  no shutdown
  vrrp 2
   ipv4 10.2.2.1
   track-prefix-list vrrp-prefix-list1
  !
 interface ge0/6.3
  ip address 10.2.3.5/24
  mtu 1496
  shutdown
  vrrp 3
   ipv4 10.2.3.11
   track-prefix-list vrrp-prefix-list1
  !
!
!

vEdge2# show running-config vpn 1
vpn 1
 interface ge0/1.2
  ip address 10.2.2.4/24
  mtu 1496
  no shutdown
  vrrp 2
   ipv4 10.2.2.2
   track-prefix-list vrrp-prefix-list2
  !
 interface ge0/1.3
  ip address 10.2.3.6/24
  mtu 1496
  no shutdown
  vrrp 3
   ipv4 10.2.3.12
   track-prefix-list vrrp-prefix-list2
  !
!
!

vEdge1# show interface vpn 1
```



TCP			IF	IF								
MSS	VPN	RX	ADMIN	OPER	ENCAP	PORT	SPEED					
UPTIME	INTERFACE	IP ADDRESS	TX	STATUS	STATUS	TYPE	TYPE	MTU	HWADDR	MBPS	DUPLEX	ADJUST
		PACKETS	PACKETS									
1	ge0/6.2	10.2.2.3/24	Up	Up	vlan	service	1496	00:0c:29:ab:b7:94	10	full	0	
0:00:05:52	0	357										
1	ge0/6.3	10.2.3.5/24	Down	Down	vlan	service	1496	00:0c:29:ab:b7:94	-	-	0	-
	0	0										

vEdge1# [show vrrp interfaces](#)

MASTER				TRACK		PREFIX		VRRP		OMP		ADVERTISEMENT		
DOWN		GROUP	VIRTUAL		PREFIX		LIST	VRRP		OMP	ADVERTISEMENT			
VPN	IF NAME	ID	IP	VIRTUAL MAC		PRIORITY	STATE	STATE	TIMER	TIMER	LAST STATE			
CHANGE	TIME	LIST	STATE											

1	ge0/6.2	2	10.2.2.1	00:0c:29:ab:b7:94	100	master	down	1	3	2015-05-				
01T20:09:37+00:00	-	-	-	-	-	-	-	-	-	-				
	ge0/6.3	3	10.2.3.11	00:00:00:00:00:00	100	init	down	1	3	0000-00-				
00T00:00:00+00:00	-	-	-	-	-	-	-	-	-	-				

In the following example, Router-1 is the VRRP master, because it has a higher priority value than Router 2:

Router-1# **show running-config vpn 1**

```
vpn 1
!
interface ge0/1.15
ip address 10.10.1.2/24
mtu 1496
no shutdown
vrrp 15
priority 110
track-omp
ipv4 10.20.23.1
!
```

Router-1# **show vrrp vpn 1**

MASTER				GROUP		TRACK		PREFIX		VRRP		OMP		ADVERTISEMENT	
DOWN	IF	NAME	ID	VIRTUAL	IP	PREFIX	LIST								
VPN	STATE	CHANGE	TIME	LIST	STATE	VIRTUAL	MAC	PRIORITY	STATE	STATE	TIMER	TIMER	LAST		

1	ge0/1.1	1	10.20.22.1	00:0c:bd:08:79:a4	100	backup	up	1	3	2016-					
01-13T03:10:55+00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	ge0/1.5	5	10.20.22.193	00:0c:bd:08:79:a4	100	backup	up	1	3	2016-					
01-13T03:10:55+00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	ge0/1.10	10	10.20.22.225	00:0c:bd:08:79:a4	100	backup	up	1	3	2016-					
01-13T03:10:55+00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	ge0/1.15	15	10.20.23.1	00:0c:bd:08:79:a4	110	master	up	1	3	2016-					
01-13T03:10:56+00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	ge0/1.20	20	10.20.24.1	00:0c:bd:08:79:a4	100	backup	up	1	3	2016-					
01-13T03:10:56+00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	ge0/1.25	25	10.20.25.1	00:0c:bd:08:79:a4	110	master	up	1	3	2016-					
01-13T03:10:56+00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	ge0/1.30	30	10.20.25.129	00:0c:bd:08:79:a4	100	backup	up	1	3	2016-					
01-13T03:10:56+00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Router-1# **show vrrp vpn 1 interfaces ge0/1.15 groups 15**

MASTER GROUP DOWN					TRACK PREFIX	VRRP	OMP	ADVERTISEMENT			
ID	VIRTUAL IP	VIRTUAL MAC	PREFIX LIST	PRIORITY	STATE	STATE	TIMER	TIMER	LAST STATE CHANGE		
TIME	LIST	STATE									

1	10.20.33.1	00:0c:bd:08:79:a4	110		master	up	1	3	2016-01-13T03:10:56+		
00:00	-	-									

Router-2# **show running-config vpn 1**



https://sdwan-docs.cisco.com/Product_Documentation/Software_Features/SD-WAN_Release_17.1/02System_and_Interface...

Created on: Sat, 22 May 2021 22:41:38 GMT

Generated by: Anonymous

```

vpn 1
!
interface ge0/1.15
ip address 10.10.1.3/24
mtu 1496
no shutdown
vrrp 15
track-omp
ipv4 10.20.23.1
!
!
!

```

Router-2# show vrrp vpn 1 interfaces groups

MASTER	GROUP	TRACK	PREFIX		VRRP	OMP	ADVERTISEMENT			
DOWN			PREFIX	LIST						
IF NAME	ID	VIRTUAL IP	VIRTUAL MAC	PRIORITY	STATE	STATE	TIMER	TIMER	LAST STATE	
CHANGE TIME	LIST	STATE								
ge0/1.1	1	10.20.32.1	00:0c:bd:08:2b:a5	110	master	up	1	3	2016-01-	
13T00:22:15+00:00	-	-	-	-	-	-	-	-	-	-
ge0/1.5	5	10.20.32.193	00:0c:bd:08:2b:a5	110	master	up	1	3	2016-01-	
13T00:22:15+00:00	-	-	-	-	-	-	-	-	-	-
ge0/1.10	10	10.20.32.225	00:0c:bd:08:2b:a5	110	master	up	1	3	2016-01-	
13T00:22:15+00:00	-	-	-	-	-	-	-	-	-	-
ge0/1.15	15	10.20.33.1	00:0c:bd:08:2b:a5	100	backup	up	1	3	2016-01-	
13T03:10:56+00:00	-	-	-	-	-	-	-	-	-	-
ge0/1.20	20	10.20.34.1	00:0c:bd:08:2b:a5	110	master	up	1	3	2016-01-	
13T00:22:16+00:00	-	-	-	-	-	-	-	-	-	-
ge0/1.25	25	10.20.35.1	00:0c:bd:08:2b:a5	100	backup	up	1	3	2016-01-	
13T03:10:56+00:00	-	-	-	-	-	-	-	-	-	-
ge0/1.30	30	10.20.35.129	00:0c:bd:08:2b:a5	100	master	up	1	3	2016-01-	
13T00:22:16+00:00	-	-	-	-	-	-	-	-	-	-

Router-2# show vrrp vpn 100 interfaces groups 15

MASTER	GROUP	TRACK	PREFIX		VRRP	OMP	ADVERTISEMENT			
DOWN			PREFIX	LIST						
IF NAME	ID	VIRTUAL IP	VIRTUAL MAC	PRIORITY	STATE	STATE	TIMER	TIMER	LAST STATE	
CHANGE TIME	LIST	STATE								
ge0/0.15	15	10.20.33.1	00:0c:bd:08:2b:a5	100	backup	up	1	3	2016-01-	
13T03:10:56+00:00	-	-	-	-	-	-	-	-	-	-

Additional Information

[Configuring Cellular Interfaces](#)

[Configuring DHCP](#)

[Configuring Network Interfaces](#)

[Configuring PPPoE](#)

[Configuring WLAN Interfaces](#)



https://sdwan-docs.cisco.com/Product_Documentation/Software_Features/SD-WAN_Release_17.1/02System_and_Interface...

Created on: Sat, 22 May 2021 22:41:38 GMT

Generated by: Anonymous