



VRRP Interface Tracking



Note To achieve simplification and consistency, the Cisco SD-WAN solution has been rebranded as Cisco Catalyst SD-WAN. In addition, from Cisco IOS XE SD-WAN Release 17.12.1a and Cisco Catalyst SD-WAN Release 20.12.1, the following component changes are applicable: **Cisco vManage** to **Cisco Catalyst SD-WAN Manager**, **Cisco vAnalytics** to **Cisco Catalyst SD-WAN Analytics**, **Cisco vBond** to **Cisco Catalyst SD-WAN Validator**, **Cisco vSmart** to **Cisco Catalyst SD-WAN Controller**, and **Cisco Controllers** to **Cisco Catalyst SD-WAN Control Components**. See the latest Release Notes for a comprehensive list of all the component brand name changes. While we transition to the new names, some inconsistencies might be present in the documentation set because of a phased approach to the user interface updates of the software product.

Table 1: Feature History

Feature Name	Release Information	Description
VRRP Interface Tracking for Cisco IOS XE Catalyst SD-WAN Devices	Cisco IOS XE Catalyst SD-WAN Release 17.7.1a Cisco vManage Release 20.7.1	This feature enables VRRP to set the edge as active or standby based on the WAN Interface or SIG tracker events and increase the TLOC preference value on a new VRRP active to ensure traffic symmetry, for Cisco IOS XE Catalyst SD-WAN Devices. Starting this release, you can configure VRRP interface tracking through Cisco SD-WAN Manager feature template and CLI template on Cisco IOS XE Catalyst SD-WAN Devices.

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Information About VRRP Interface Tracking

The Virtual Router Redundancy Protocol (VRRP) is a LAN-side protocol that provides redundant gateway service for switches and other IP end stations. In Cisco IOS XE Catalyst SD-WAN devices, you can configure VRRP on interfaces and subinterfaces using Cisco SD-WAN Manager templates and CLI add-on templates.

For more information, see [Configuring VRRP](#).

Restrictions and Limitations

- VRRP is only supported with service-side VPNs. If you are using subinterfaces, configure VRRP physical interfaces in VPN 0.
- VRRP tracking is enabled on either a physical uplink interface or a logical tunnel interface (IPSEC or GRE or both).
- The VRRP Tracking feature does not support IP prefix as an object.
- You can use the same tracker under multiple VRRP groups or VPNs.
- You cannot use the same track object to track multiple interfaces.
- You can group a maximum of 16 track objects under a list track object.
- You cannot configure **tloc-change** and **increase-preference** on more than one VRRP group.

VRRP Tracking Use Cases

The VRRP state is determined based on the tunnel link status. If the tunnel or interface is down on the primary VRRP, then the traffic is directed to the secondary VRRP. The secondary VRRP router in the LAN segment becomes primary VRRP to provide gateway for the service-side traffic.

Zscaler Tunnel Use Case 1—Primary VRRP, Single Internet Provider

The primary and secondary Zscaler tunnels are connected through a single internet provider to the primary VRRP. The primary and secondary VRRP routers are connected through using TLOC extension. In this scenario, the VRRP state transition occurs if the primary and secondary tunnels go down on primary VRRP. The predetermined priority value decrements when the tracking object is down, which triggers the VRRP state transition. To avoid asymmetric routing, VRRP notifies this change to the Overlay through OMP.

Zscaler Tunnel Use Case 2—VRRP Routers in TLOC Extension, Dual Internet Providers

The primary and secondary VRRP routers are configured in TLOC extension high availability mode. The primary and secondary Zscaler tunnels are directly connected with primary and secondary VRRP routers, respectively, using dual internet providers. In this scenario too, the VRRP state transition occurs if the primary and secondary tunnels go down on primary VRRP. The predetermined priority value decrements when the

tracking object is down, which triggers the VRRP state transition. VRRP notifies this change to the Overlay through OMP.

TLOC Preference

Transport Locators (TLOCs) connect an OMP route to a physical location. A TLOC is directly reachable using an entry in the routing table of the physical network, or represented by a prefix beyond a NAT device.

In Cisco IOS XE Catalyst SD-WAN devices, the TLOC change increase preference value increases based on the configured value. You can configure the TLOC change increase preference value on both the active and the backup nodes.

Workflow to Configure VRRP Tracking

1. Configure an object tracker. For more information, see [Configure an Object Tracker, on page 3](#).
2. Configure VRRP for a VPN Interface template and associate the object tracker with the template. For more information, see [Configure VRRP for a VPN Interface Template and Associate Interface Object Tracker, on page 4](#).

Configure an Object Tracker

Use the **Cisco System** template to configure an object tracker.

1. From the Cisco SD-WAN Manager menu, choose **Configuration > Templates**.
2. Click **Feature Templates**.



Note In Cisco vManage Release 20.7.x and earlier releases, **Feature Templates** is titled **Feature**.

3. Navigate to the **Cisco System** template for the device.



Note To create a **System** template, see [Create System Template](#)

4. Click **Tracker** and choose **New Object Tracker** to configure the tracker parameters.

Table 2: Tracker Parameters

Field	Description
Tracker Type	Choose Interface or SIG to configure the object tracker.
Object ID	Enter the object ID number.
Interface	Choose global or device-specific tracker interface name.

5. Click **Add**.
6. Optionally, to create a tracker group, click **Tracker**, and click **Tracker Groups > New Object Tracker Groups** to configure the tracker parameters.



Note Ensure that you have created two trackers to create a track group.

Table 3: Object Tracker Group Parameters

Field	Description
Group Tracker ID	Enter the name of the tracker group.
Tracker ID	Enter the name of the object tracker that you want to group.
Criteria	Choose AND or OR explicitly. OR ensures that the transport interface status is reported as active if either one of the associated trackers of the tracker group reports that the route is active. If you choose AND operation, the transport interface status is reported as active if both the associated trackers of the tracker group report that the route is active.



Note Provide information in all the mandatory fields before you save the template.

7. Click **Add**.
8. Click **Save**.

Configure VRRP for a VPN Interface Template and Associate Interface Object Tracker

To configure VRRP for a **Cisco VPN** template, do the following:

1. From the Cisco SD-WAN Manager menu, choose **Configuration > Templates**.
2. Click **Feature Templates**.



Note In Cisco vManage Release 20.7.x and earlier releases, **Feature Templates** is titled **Feature**.

3. Navigate to the **Cisco VPN Interface Ethernet** template for the device.



Note For information about creating a new **Cisco VPN Interface Ethernet** template, see [Configure VPN Ethernet Interface](#).

4. Click **VRRP** and choose **IPv4**.
5. Click **New VRRP** to create a new VRRP or edit the existing VRRP and configure the following parameters:

Parameter Name	Description
TLOC Preference Change	(Optional) Choose On or Off to set whether the TLOC preference can be changed or not.
TLOC Preference Change Value	(Optional) Enter the TLOC preference change. Range: 1 to 4294967295.

6. Click the **Add Tracking Object** link, and in the **Tracking Object** dialog box that is displayed, click **Add Tracking Object**.
7. In the **Tracker ID** field, enter the Interface Object ID or Object Group Tracker ID.
8. From the **Action** drop-down list, choose **Decrement** and enter the **Decrement Value** as 1. Cisco vEdge Devices supports decrement value of 1.
Or
Choose **Shutdown**.
9. Click **Add**.
10. Click **Add** to save the VRRP details.
11. Click **Save**.

Configure VRRP Tracking Using CLI Templates

You can configure VRRP tracking using the CLI add-on feature templates and CLI device templates. For more information, see [CLI Templates](#).

VRRP Object Tracking Using CLI

Interface Object Tracking using CLI

Use the following configuration to add an interface to a track list using Cisco SD-WAN Manager device CLI template:

```
Device(config)# track <object-id1> interface <interface-type-number> [line-protocol]
Device(config-tracker)# exit
Device(config)# track < object-id2> interface <interface-type-number> [line-protocol]
Device(config-tracker)# exit
Device(config)# track <group-object-id> list boolean [and | Or]
```

```

Device(config-tracker)# object <object-id1>
Device(config-tracker)# object <object-id2>
Device(config-tracker)# exit
Device(config)# interface GigabitEthernet2

Device(config-if)# vrf forwarding <vrf-number>

Device(config-if)# ipv4 address <ip-address> <subnet-mask>
Device(config-if)# negotiation auto
Device(config-if)# vrrp <vrrp-number> address-family ipv4
Device(config-if-vrrp)# address <ipv4-address> [primary | secondary]
Device(config-if-vrrp)# track <object-id> [decrement <dec-value> | shutdown]
Device(config-if-vrrp)# tloc-change increase-preference <value>
Device(config-if-vrrp)# exit

```

SIG Container Tracking

The following example shows how to configure a track list and tracking for SIG containers using the Cisco SD-WAN Manager device CLI template.



Note In Cisco IOS XE Catalyst SD-WAN Release 17.7.1a SIG Object Tracking, you can only set *global* as the variable for Service Name.

SIG Object Tracking Using CLI

```

Device(config)# track <object-id1> service global

Device(config-tracker)# exit
Device(config)# track <object-id2> service global
Device(config-tracker)# exit
Device(config)# track <group-object-id> list boolean [and | Or]
Device(config-tracker)# object <object-id1>
Device(config-tracker)# object <object-id2>
Device(config-tracker)# exit

Device(config)# interface GigabitEthernet2

Device(config-if)# vrf forwarding <vrf-number>

Device(config-if)# ip address <ip-address> <subnet-mask>
Device(config-if)# negotiation auto
Device(config-if)# vrrp <vrrp-number> address-family ipv4
Device(config-if-vrrp)# address <ipv4-address> [primary | secondary]
Device(config-if-vrrp)# track <object-id> [decrement <dec-value> | shutdown]
Device(config-if-vrrp)# tloc-change increase-preference <value>
Device(config-if-vrrp)#exit

```

Configuration Example for VRRP Object Tracking Using CLI

Interface Object Tracking Using CLI

```
config-transaction
  track 100 interface Tunnel123 line-protocol
  exit
  track 200 interface GigabitEthernet5 line-protocol
  exit
track 400 list boolean and
  object 100
  object 200
  exit

interface GigabitEthernet2
  vrf forwarding 1
  ip address 10.10.1.1 255.255.255.0
  negotiation auto
vrrp 1 address-family ipv4
  address 10.10.1.10 primary
  track 400 decrement 10
  tloc-change increase-preference 333
  exit
```

Configuration Examples for SIG Object Tracking

SIG Object Tracking Using CLI

```
config-transaction
  track 1 service global
  exit
  exit
  track 2 service global
track 3 list boolean and
  object 1
  object 2
  exit

interface GigabitEthernet2
  vrf forwarding 1
  ip address 10.10.1.1 255.255.255.0
  negotiation auto
vrrp 1 address-family ipv4
  address 10.10.1.10 primary
  track 3 decrement 10
  tloc-change increase-preference 333
  exit
```

Monitor VRRP Configuration

To view information about VRRP configuration:

1. From the Cisco SD-WAN Manager menu, choose **Monitor** > **Devices**.

Cisco vManage Release 20.6.x and earlier: From the Cisco SD-WAN Manager menu, choose **Monitor > Network**.

2. Choose a device from the list of devices.
3. Click **Real Time**.
4. From the **Device Options** drop-down list, choose **VRRP Information**.



Note You can view the status of the VRRP configuration in **Track State**.

Verify VRRP Tracking

Device# **show vrrp**

The following is a sample output for the **show vrrp** command:

```
GigabitEthernet2 - Group 1 - Address-Family IPv4
  State is MASTER
  State duration 37 mins 52.978 secs
  Virtual IP address is 10.10.1.10
  Virtual MAC address is 0000.5E00.0101
  Advertisement interval is 1000 msec
  Preemption enabled
  Priority is 100
  State change reason is VRRP_TRACK_UP
Tloc preference configured, value 333
Track object 400 state UP decrement 10
  Master Router is 10.10.1.1 (local), priority is 100
  Master Advertisement interval is 1000 msec (expires in 607 msec)
  Master Down interval is unknown
  FLAGS: 1/1
```

Device# **show track brief**

The following is a sample output for the **show track brief** command:

Track	Type	Instance	Parameter	State	Last Change
100	interface	Tunnel123	line-protocol	Up	00:12:48
200	interface	GigabitEthernet5	line-protocol	Up	00:49:57
400	list		boolean	Up	00:12:47

Device# **show track list**

The following is a sample output for the **show track list** command:

```
Track 400
  List boolean and
  Boolean AND is Up
    6 changes, last change 00:12:58
    object 100 Up
    object 200 Up
  Tracked by:
    VRRPv3 GigabitEthernet2 IPv4 group 1
```

Device# **show track list brief**

The following is a sample output for the **show track brief** command:

Track	Type	Instance	Parameter	State	Last Change
400	list		boolean	Up	00:13:02

