



Protocols in Cisco SD-WAN

This chapter discusses the protocols supported in Cisco SD-WAN.

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BFD

The BFD protocol, which detects link failures as part of the Cisco SD-WAN high availability solution, is enabled by default on all Cisco IOS XE SD-WAN devices and you cannot disable it.

The following procedure shows how to create a new BFD template and specify parameters.

1. In Cisco vManage, navigate to **Configuration > Templates**.
2. Click the **Feature** tab.
3. Click **Add Template**.
4. Choose a device from device list. Templates applicable to the device you choose are displayed in the right pane.
5. Select the **Cisco BFD** template.
6. Enter a name and description for your template.

When you first open a feature template, for each parameter that has a default value, the scope is set to Default (indicated by a check mark), and the default setting or value is shown. To change the default or to enter a value, click the scope drop-down to the left of the parameter field and choose one of the following: Global or Device Specific.

Configure BFD for Application-Aware Routing

To configure the BFD timers used by application-aware routing, click the **Basic Configuration** tab and configure the following parameters:

Table 1: Basic Configuration

Parameter Name	Description
Multiplier	Specify the value by which to multiply the poll interval, to set how often application-aware routing acts on the data plane tunnel statistics to figure out the loss and latency and to calculate new tunnels if the loss and latency times do not meet configured SLAs. <i>Range:</i> 1 through 6 <i>Default:</i> 6
Poll Interval	Specify how often BFD polls all data plane tunnels on a vEdge router to collect packet latency, loss, and other statistics used by application-aware routing. <i>Range:</i> 1 through 4,294,967,296 ($2^{32} - 1$) milliseconds <i>Default:</i> 600,000 milliseconds (10 minutes)

To save the feature template, click **Save**.

CLI equivalent:

```
bfd app-route
  multiplier number
  poll-interval milliseconds
```

Configure BFD on Transport Tunnels

To configure the BFD timers used on transport tunnels, click the **Color** tab. Next, click **Add New Color**, and configure the following parameters:

Table 2:

Parameter Name	Description
Color	From the drop-down, choose the color of the transport tunnel for data traffic moving between vEdge routers. The color identifies a specific WAN transport provider. <i>Values:</i> 3g, biz-internet, blue, bronze, custom1, custom2, custom3, default, gold, green, lte, metro-ethernet, mpls, private1 through private6, public-internet, red, silver. <i>Default:</i> default
Hello Interval	Specify how often BFD sends Hello packets on the transport tunnel. BFD uses these packets to detect the liveness of the tunnel connection and to detect faults on the tunnel. <i>Range:</i> 100 through 60000 milliseconds. <i>Default:</i> 1000 milliseconds (1 second)
Multiplier	Specify how many Hello packet intervals BFD waits before declaring that a tunnel has failed. BFD declares that the tunnel has failed when, during all these intervals, BFD has received no Hello packets on the tunnel. This interval is a multiplier of the Hello packet interval time. <i>Range:</i> 1 through 60. <i>Default:</i> 7 (for hardware vEdge routers), 20 (for vEdge Cloud software routers).
Path MTU Discovery	Click On to enable path MTU discovery for the transport tunnel, or Off to disable. When PMTU discovery is enabled, configuration change in interface MTU reflects immediately in tunnel-mtu and PMTU value is not configurable (it is triggered every 20 mins). Notifications are not sent to Cisco vManage for MTU change. When PMTU discovery is disabled, the expected tunnel MTU is 1472 bytes, but the effective tunnel MTU is 1468 bytes. <i>Default:</i> Enabled.

Parameter Name	Description
Add	Click Add to save the data traffic transport tunnel color.

To add another color, click **Add New Color**.

A table lists the transport tunnel colors.

To edit a color, click the Pencil icon. The Update Color popup is displayed. After you make the desired changes, click **Save Changes**.

To remove a color, click the trash icon to the right of the entry.

To save the feature template, click **Save**.

CLI equivalent:

```
bfd color color
  hello-interval milliseconds
  multiplier number
  pmtu-discovery
```

Other Supported Protocols

This topic lists all the other protocols supported in Cisco SD-WAN.

- DHCP Server: See the System and Interfaces guide for more information.
- BGP, OSPF, OMP: See the Unicast Overlay Routing chapter in this guide for more information.
- PIM, IGMP: See the Multicast Overlay Routing chapter in this guide for more information.

