



Forward Error Correction

Table 1: Feature History

Feature Name	Release Information	Description
Forward Error Correction	Cisco IOS XE SD-WAN Release 16.11.x	Feature introduced. FEC is a mechanism to recover lost packets on a link by sending extra “parity” packets for every group of 4 packets.
IPv6 support for Forward Error Correction	Cisco IOS XE Catalyst SD-WAN Release 17.15.1a	IPv6 support for Forward Error Correction is added.

Forward Error Correction (FEC) is a mechanism to recover lost packets on a link by sending extra “parity” packets for every group of 4 packets. As long as the receiver receives a subset of packets in the group (at-least N-1) and the parity packet, up to a single lost packet in the group can be recovered. FEC is supported on Cisco IOS XE Catalyst SD-WAN devices.



Note We recommend Cisco IOS XE Release 17.6.3 as the minimum release when using FEC.



Note Monitoring FEC through Cisco SD-WAN Manager is not supported.

Supported Traffic

Cisco IOS XE Catalyst SD-WAN Devices support forward error correction for the following traffic types:

From Cisco IOS XE Catalyst SD-WAN Release 16.12.1b:

IPv4 traffic over IPv4 tunnel

From Cisco IOS XE Catalyst SD-WAN Release 17.15.1a:

- IPv4 traffic over IPv6 tunnel
- IPv6 traffic over IPv4 tunnel
- IPv6 traffic over IPv6 tunnel

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Supported Devices for Forward Error Correction

The forward error correction is supported on all the Cisco IOS XE Catalyst SD-WAN devices.

Configure forward error correction for a policy

Procedure

- Step 1** From the Cisco SD-WAN Manager menu, choose **Configuration > Policies**.
- Step 2** Click **Centralized Policy** and then click **Add Policy**.
- Step 3** Click **Next**.
- Step 4** Click **Next** again and then click **Configure Traffic Rules**.
- Step 5** Click **Traffic Data**, and from the **Add Policy** drop-down list, choose **Create New**.
- Step 6** Click **Sequence Type**.
- Step 7** From the **Add Data Policy** pop-up menu, choose **QoS**.
- Step 8** Click **Sequence Rule**.
- Step 9** In the **Applications/Application Family List**, choose one or more applications or lists.
- Step 10** Click **Accept**.
- Step 11** Click **Actions** and click **Loss Correction**.
- Step 12** In the **Actions** area, choose one of the following:
- **FEC Adaptive**: Only send FEC information when the loss detected by the system exceeds the packet loss threshold.
 - **FEC Always**: Always send FEC information with every transmission.
 - **Packet Duplication** check box: Duplicates packets through secondary links to reduce packet loss if one link goes down.
- Step 13** Click **Save Match and Actions**.
- Step 14** Click **Save Data Policy**.
- Step 15** Click **Next** and take these actions to create a centralized policy:
- a) Enter a **Name** and a **Description**.
 - b) Select **Traffic Data Policy**.
 - c) Choose VPNs and a site list for the policy.
 - d) Save the policy.
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Monitor Forward Error Correction Status Using the CLI

Use the **show sdwan tunnel statistics fec** command to verify the FEC status on a Cisco IOS XE Catalyst SD-WAN device:

```
Device# show sdwan tunnel statistics fec
tunnel stats ipsec 192.0.2.1 203.0.113.1 12346 12366
fec-rx-data-pkts      0
fec-rx-parity-pkts   0
fec-tx-data-pkts     0
fec-tx-parity-pkts   0
fec-reconstruct-pkts 0
fec-capable          true
fec-dynamic          false
tunnel stats ipsec 192.0.2.1 203.0.113.1 12346 12346
fec-rx-data-pkts     122314
fec-rx-parity-pkts   30578
fec-tx-data-pkts     125868
fec-tx-parity-pkts   31467
fec-reconstruct-pkts 3
fec-capable          true
fec-dynamic          false
```

The following table describes the FEC counters related to the output shown in the **show sdwan tunnel statistics fec** command:

Name of Counter	Description
fec-rx-data-pkts	Displays the number of data packets received by the device.
fec-rx-parity-pkts	Displays the number of parity packets received by the device.
fec-tx-data-pkts	Displays the number of data packets sent by the device.
fec-tx-parity-pkts	Displays the number of parity packets sent by the device.
fec-reconstruct-pkts	Displays the number of received packets reconstructed by the device.

