

# Configure SD-WAN Edge Router for Inline Deployment

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## Introduction

This document describes how to configure Cisco SD-WAN Edge with MPLS transport to access Cisco SD-WAN controllers on Internet via inline DC WAN Edge.

## Prerequisites

### Requirements

Cisco recommends knowledge of these topics:

- Cisco Software-Defined Wide Area Network (SD-WAN)
- Routing

### Components Used

The information in this document is based on these software and hardware versions:

- Cisco vManage version 20.6.5.2
- Cisco WAN Edge router version 17.06.05

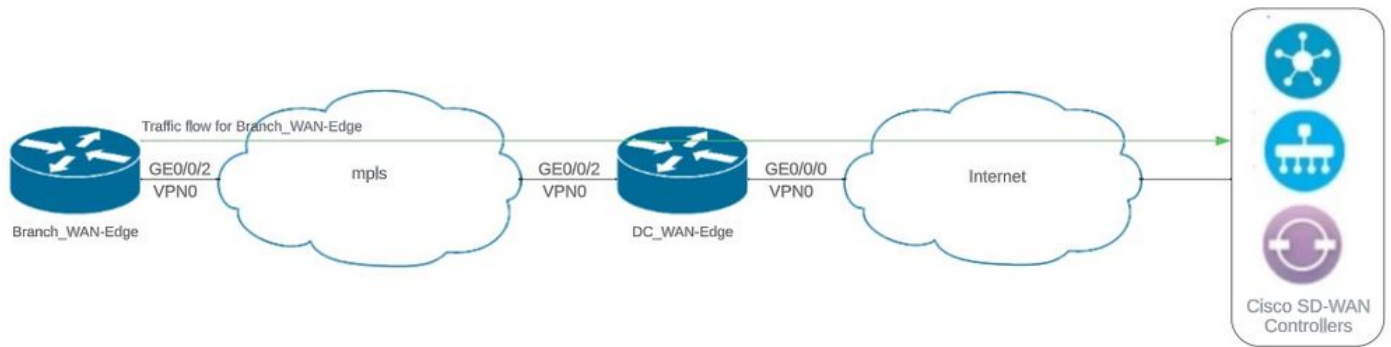
The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

## Background Information

In an Inline DC WAN Edge deployment, control traffic incoming from the MPLS need to reach SD-WAN Controllers on the Internet. Traffic can be routed between MPLS and Internet in VPN 0.

In this case, the tunnel configuration needs to be removed from the MPLS and Internet physical interfaces and placed on two separate loopback interfaces.

## Network Diagram



*Network Topology*

## Configurations

In this Deployment, the Branch WAN edge device needs to access controllers through DC WAN edge. In this scenario, an additional physical interface is added in VPN 0 on DC WAN edge and tunnels are moved from physical interface to loopback interface.

Moving the Tunnel from Physical interface to loopback interface allows the DC WAN Edge Router to act as transit for the traffic from DC WAN edge and Branch WAN edge Router. There must be connectivity between loopback IP addresses and controllers to form control and data plane.

This output captures DC WAN edge Interface configuration:

```
interface GigabitEthernet0/0/0
 ip address 10.201.186.175 255.255.255.224
 no shutdown
!
interface GigabitEthernet0/0/2
 description connection to Branch_WAN-Edge
 ip address 192.168.20.21 255.255.255.252
 no shutdown
!
interface Loopback1
 description wan_color_green
 ip address 192.168.20.2 255.255.255.255
 no shutdown
!
interface Loopback2
 description wan_color_custom2
 ip address 192.168.20.10 255.255.255.255
 no shutdown
!
```

Next output captures DC WAN edge tunnel configuration:

```
DC_WAN-Edge#sh sdwan running-config sdwan
sdwan
 interface Loopback1
```

```
tunnel-interface
 encapsulation ipsec weight 1
 no border
 color green
 no last-resort-circuit
 no low-bandwidth-link
 max-control-connections 1
 no vbond-as-stun-server
 vmanage-connection-preference 5
 port-hop
 carrier default
 nat-refresh-interval 5
 hello-interval 1000
 hello-tolerance 12
 no allow-service all
 no allow-service bgp
 allow-service dhcp
 allow-service dns
 allow-service icmp
 no allow-service sshd
 no allow-service netconf
 no allow-service ntp
 no allow-service ospf
 no allow-service stun
 allow-service https
 no allow-service snmp
 no allow-service bfd
 exit
exit
interface Loopback2
 tunnel-interface
 encapsulation ipsec weight 1
 no border
 color custom2 restrict
 no last-resort-circuit
 no low-bandwidth-link
 max-control-connections 1
 no vbond-as-stun-server
 vmanage-connection-preference 5
 port-hop
 carrier default
 nat-refresh-interval 5
 hello-interval 1000
 hello-tolerance 12
 no allow-service all
 no allow-service bgp
 allow-service dhcp
 allow-service dns
 allow-service icmp
 no allow-service sshd
 no allow-service netconf
 no allow-service ntp
 no allow-service ospf
 no allow-service stun
 allow-service https
 no allow-service snmp
 no allow-service bfd
 exit
exit
!
```

Next output captures Branch\_WAN-Edge tunnel configuration:

```
Branch_WAN-Edge#sh sdwan run sdwan
sdwan
interface GigabitEthernet0/0/2
 tunnel-interface
  encapsulation ipsec weight 1
  no border
  color custom2
  no last-resort-circuit
  no low-bandwidth-link
  no vbond-as-stun-server
  vmanage-connection-preference 5
  port-hop
  carrier default
  nat-refresh-interval 5
  hello-interval 1000
  hello-tolerance 12
  no allow-service all
  no allow-service bgp
  allow-service dhcp
  allow-service dns
  allow-service icmp
  no allow-service sshd
  no allow-service netconf
  no allow-service ntp
  no allow-service ospf
  no allow-service stun
  allow-service http
  no allow-service snmp
  no allow-service bfd
exit
exit
!
```

## Verification

Next output captures control plane connectivity for DC\_WAN-Edge.

```
DC_WAN-Edge#sh sdwan control connections
PEER PEER CONTROLLER
PEER PEER PEER SITE DOMAIN PEER PRIV PEER PUB GROUP
TYPE PROT SYSTEM IP ID ID PRIVATE IP PORT PUBLIC IP PORT ORGANIZATION LOCAL COLOR PROXY STATE UPTIME ID
-----
vsmart dtls 10.10.10.2 1 1 10.201.186.172 12346 10.201.186.172 12346 rch_sdwan_lab custom2 No up 0:00:00
vsmart dtls 10.10.10.2 1 1 10.201.186.172 12346 10.201.186.172 12346 rch_sdwan_lab green No up 0:00:00
vmanage dtls 10.10.10.1 1 0 10.201.186.171 12746 10.201.186.171 12746 rch_sdwan_lab green No up 0:00:00
```

Next output captures control plane connectivity for Branch\_WAN-Edge.

```
Branch_WAN-Edge#show sdwan control connections
```

```

PEER PEER CONTROLLER
PEER PEER PEER SITE DOMAIN PEER PRIV PEER PUB GROUP
TYPE PROT SYSTEM IP ID ID PRIVATE IP PORT PUBLIC IP PORT LOCAL COLOR PROXY STATE UPTIME ID
-----
vsmart dtls 10.10.10.2 1 1 10.201.186.172 12346 10.201.186.172 12346 custom2 No up 0:00:00:20 0
vmanage dtls 10.10.10.1 1 0 10.201.186.171 12346 10.201.186.171 12346 custom2 No up 0:00:00:22 0

```

Next output captures data plane connectivity for DC\_WAN-Edge. The local color green is forming BFD session with remote edge devices.

```

DC_WAN-Edge#sh sdwan bfd sessions
SOURCE TLOC REMOTE TLOC DST PUBLIC DST PUBLIC DETECT TX
SYSTEM IP SITE ID STATE COLOR COLOR SOURCE IP IP PORT ENCAP MULTIPLIER INTERVAL(msec) UPTIME TRANSITIONS
-----
10.10.10.60 60 up green biz-internet 192.168.20.2 10.201.186.167 12346 ipsec 7 1000 0:00:06:37 6
10.10.10.20 20 up green biz-internet 192.168.20.2 10.201.186.180 12346 ipsec 7 1000 0:00:06:37 6
10.10.10.5 5 up green default 192.168.20.2 10.201.186.181 12346 ipsec 7 1000 0:00:06:37 6
10.10.10.10 10 up green gold 192.168.20.2 10.201.186.182 12346 ipsec 7 1000 0:00:06:37 6

```

Next output captures data plane connectivity for Branch\_WAN-Edge. The local color custom2 is forming BFD session with remote edge devices.

```

Branch_WAN-Edge#sh sdwan bfd sessions
SOURCE TLOC REMOTE TLOC DST PUBLIC DST PUBLIC DETECT TX
SYSTEM IP SITE ID STATE COLOR COLOR SOURCE IP IP PORT ENCAP MULTIPLIER INTERVAL(msec) UPTIME TRANSITIONS
-----
10.10.10.5 5 up custom2 default 192.168.20.22 10.201.186.181 12346 ipsec 7 1000 0:00:07:37 2
10.10.10.10 10 up custom2 gold 192.168.20.22 10.201.186.182 12346 ipsec 7 1000 0:00:07:37 2
10.10.10.20 20 up custom2 biz-internet 192.168.20.22 10.201.186.180 12346 ipsec 7 1000 0:00:07:37 2
10.10.10.60 60 up custom2 biz-internet 192.168.20.22 10.201.186.167 12346 ipsec 7 1000 0:00:07:37 2

```

## Related Information

- [Cisco SD-WAN Design Guide](#)