通過點選將AWS Direct Connect配置為使用SD-WAN的傳輸

目錄

簡介

本文檔介紹如何使用Amazon Web Services(AWS)Direct Connect作為軟體定義的廣域網(SD-WAN)傳輸。

背景資訊

AWS Direct Connect作為Cisco SD-WAN的另一種傳輸方式的主要優勢是能夠使用SD-WAN策略，包括

AWS Direct Connect。

在AWS上運行工作負載的企業使用者使用AWS Direct Connect進行資料中心或中心連線。同時，公共Internet連線也非常常見於資料中心，並用作與其他地點的SD-WAN連線的基礎。本文檔介紹如何使用AWS Direct Connect作為Cisco SD-WAN的基礎。使用者可以建立SD-WAN應用感知策略，通過Direct Connect路由關鍵應用，並通過公共網際網路重新路由，以防出現違反服務級別協定(SLA)的情況。

問題

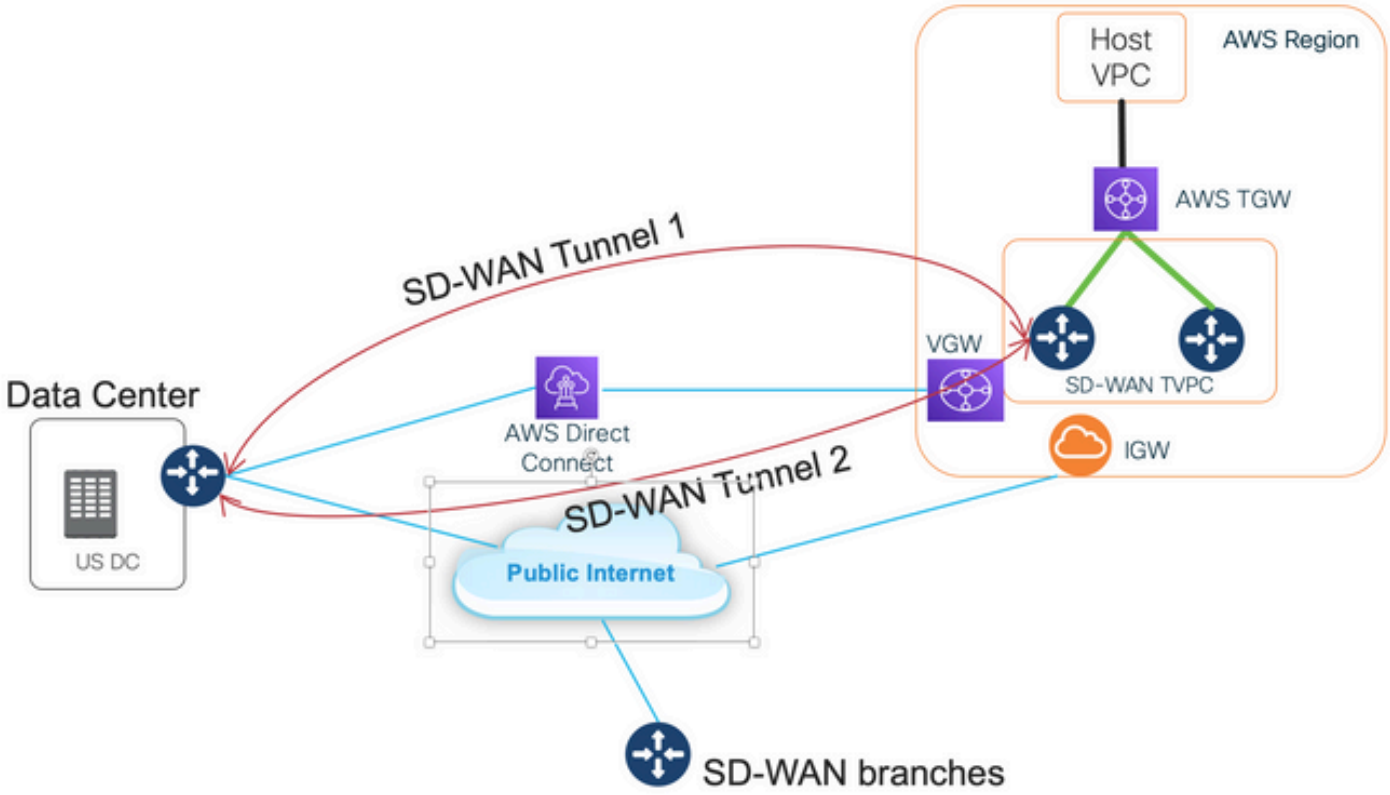
AWS Direct Connect不提供本地SD-WAN功能。企業SD-WAN使用者提出的典型問題包括：

- 是否可以使用AWS Direct Connect作為Cisco SD-WAN的基礎？
- 如何將AWS Direct Connect與Cisco SD-WAN互連？
- 如何建立可恢復、安全且可擴展的解決方案？

解決方案

設計概述

關鍵設計點是資料中心通過AWS Direct Connect連線到SD-WAN Transit Virtual Private Cloud(VPC)中的虛擬網關(VGW)，如下圖所示。

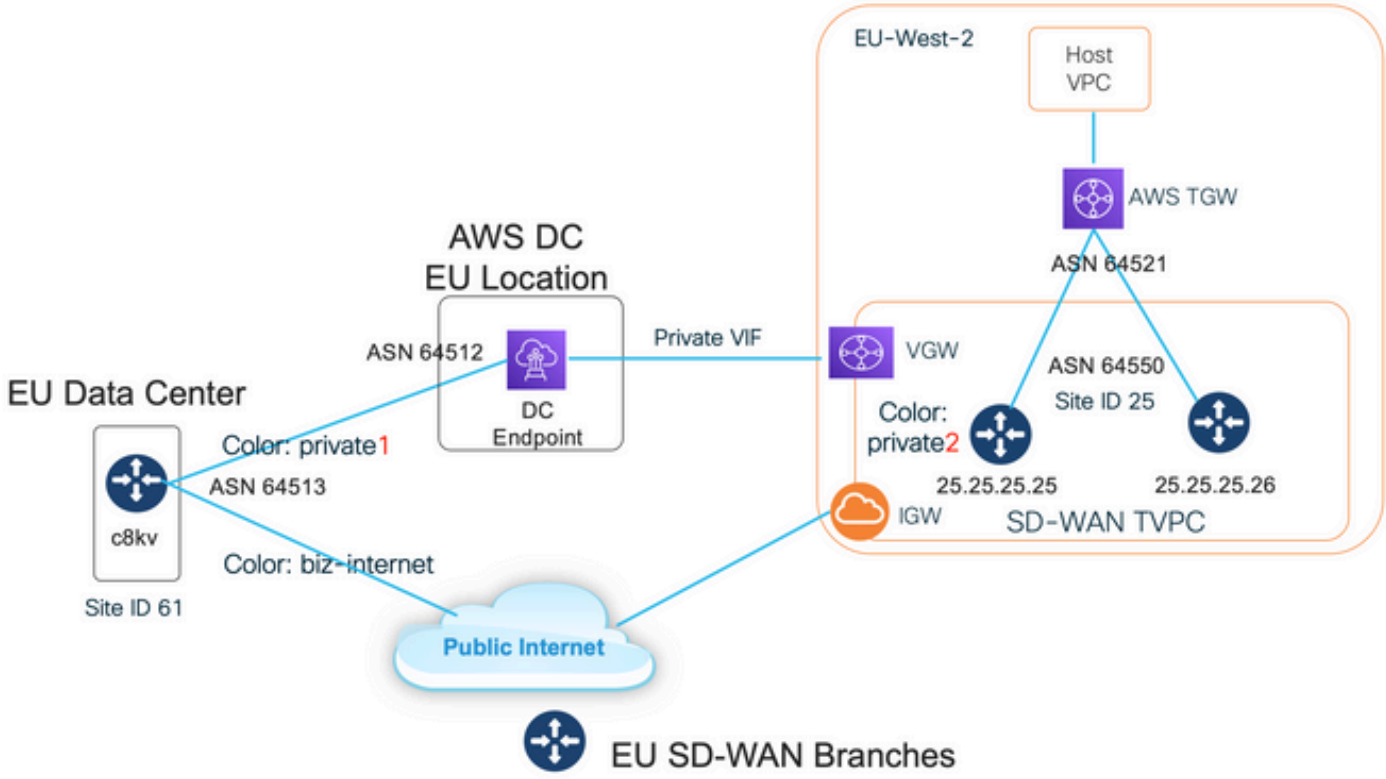


此解決方案的優勢包括：

- 完全自動：適用於多雲自動化的Cisco Cloud onRamp可用於部署帶有兩個SD-WAN路由器和新AWS傳輸網關(TGW)的SD-WAN傳輸VPC。主機VPC可以作為Cloud onRamp的一部分被發現，只需點選一下即可對映到SD-WAN網路。
- 使用Direct Connect的完整SD-WAN:AWS Direct Connect只是另一個SD-WAN傳輸。所有SD-WAN功能（如應用感知策略、加密等）均可在使用AWS Direct Connect的SD-WAN隧道上本地使用。
- 推薦的設計避免了AWS對AWS Direct Connect(20/100)字首數量的限制。

解決方案詳細資訊

此圖顯示一個AWS區域和資料中心通過Direct Connect連線到SD-WAN傳輸VPC中的VGW(color private1)以及公共網際網路(color biz-internet)的連線。請注意，AWS SD-WAN c8kv路由器使用SD-WAN color private2進行Internet連線。



步驟1.準備

確保Cisco vManage定義了活動的AWS帳戶，並且正確配置了Cloud onRamp全域性設定。

另請在vManage中定義互聯合作夥伴帳戶。在此部落格中，Megaport用作互連合作夥伴，因此您可以定義相應的帳戶和全域性設定。

步驟2.資料中心SD-WAN路由器配置

Interface GigabitEthernet1用於與彩色企業Internet的公共Internet連線，Interface GigabitEthernet1.1352用於與彩色企業1的AWS Direct Connect。

請注意，AWS SD-WAN路由器具有**private color private2**，用於網際網路連線以及通過Direct connect連線。 SD-WAN隧道通過網際網路形成，具有公有IP地址；SD-WAN隧道通過直接連線電路建立（具有相同介面），具有私有IP地址到DC/站點。這意味著，資料中心路由器（業務網際網路顏色）通過具有公共IP地址的Internet和通過專用IP的專用顏色建立與AWS SD-WAN路由器（private2顏色）的連線。

有關SD-WAN顏色的通用資訊：

傳輸定位器(TLOC)指由SD-WAN路由器連線到底層網路的WAN傳輸(VPN 0)介面。每個TLOC通過SD-WAN路由器的系統IP地址、WAN介面的顏色以及傳輸封裝（GRE或IPsec）的組合進行唯一標識。Cisco Overlay Management Protocol(OMP)用於在SD-WAN路由器之間分發TLOC（也稱為TLOC路由）、SD-WAN重疊字首（也稱為OMP路由）和其他資訊。SD-WAN路由器知道如何通過TLOC路由相互連線並建立IPsec VPN隧道。

SD-WAN路由器和/或控制器（vManage、vSmart或vBond）可以位於網路中的網路地址轉換(NAT)裝置之後。當SD-WAN路由器對vBond控制器進行身份驗證時，vBond控制器在交換時得知SD-WAN路由器的專用IP地址/埠號以及公共IP地址/埠號設定。vBond控制器充當NAT(STUN)伺服器的會話遍歷實用程式，並允許SD-WAN路由器發現其WAN傳輸介面的對映和/或轉換IP地址和埠

號。

在SD-WAN路由器上，每個WAN傳輸都與一個公共和私有IP地址對相關聯。私有IP地址被視為前NAT地址。這是分配給SD-WAN路由器的WAN介面的IP地址。雖然這被視為私有IP地址，但此IP地址可以是公開可路由IP地址空間的一部分，也可以是IETF RFC 1918非公開可路由IP地址空間的一部分。公有IP地址被視為後NAT地址。當SD-WAN路由器最初與vBond伺服器進行通訊和身份驗證時，vBond伺服器會檢測到這種情況。公有IP地址也可以是公開可路由IP地址空間的一部分，也可以是IETF RFC 1918非公開可路由IP地址空間的一部分。在沒有NAT的情況下，SD-WAN傳輸介面的公有IP地址和私有IP地址相同。

TLOC顏色是靜態定義的關鍵字，用於標識每個SD-WAN路由器上的各個WAN傳輸。給定SD-WAN路由器上的每個WAN傳輸都必須具有唯一的顏色。顏色還用於標識單個WAN傳輸是公共傳輸還是專用傳輸。城域乙太網、Mpls和private1、private2、private3、private4、private5和private6顏色被視為專用顏色。它們用於私有網路或沒有NAT的位置。顏色為3g、biz-internet、藍色、銅色、custom1、custom2、custom3、default、gold、green、lte、public-internet、red和silver被視為公共顏色。它們旨在用於公共網路或具有廣域網傳輸介面的公共IP地址的地方（本地或通過NAT）。

當私有或公有IP地址通過控制平面和資料平面通訊時，顏色指示其用途。當兩個SD-WAN路由器嘗試相互通訊時，它們都使用帶有專用顏色的WAN傳輸介面，並且兩端都嘗試連線到遠端路由器的專用IP地址。如果一端或兩端使用公共顏色，則兩端都會嘗試連線到遠端路由器的公共IP地址。當兩台裝置的Site ID相同時，則是一個例外。如果站點ID相同，但顏色為公用，則使用私有IP地址進行通訊。對於嘗試與位於同一站點的vManage或vSmart控制器通訊的SD-WAN路由器，可能會發生這種情況。請注意，預設情況下，SD-WAN路由器在擁有相同的站點ID時不會在彼此之間建立IPsec VPN隧道。

```
interface GigabitEthernet1 ip address dhcp client-id GigabitEthernet1 ip dhcp client default-
router distance 1 mtu 1500 ! interface GigabitEthernet1.1352 encapsulation dot1Q 1352 ip address
198.18.0.5 255.255.255.252 ip mtu 1496 ! interface Tunnel1 ip unnumbered GigabitEthernet1 tunnel
source GigabitEthernet1 tunnel mode sdwan ! interface Tunnel1352001 ip unnumbered
GigabitEthernet1.1352 tunnel source GigabitEthernet1.1352 tunnel mode sdwan ! ! sdwan interface
GigabitEthernet1 tunnel-interface encapsulation ipsec weight 1 color biz-internet allow-service
all ! ! interface GigabitEthernet1.1352 tunnel-interface encapsulation ipsec weight 1 color
private1 max-control-connections 0 allow-service all ! ! system system-ip 61.61.61.61 site-id 61
... ! DC-MP-CGW1#sh ip int bri GigabitEthernet1 162.43.145.3 YES DHCP up up
GigabitEthernet1.1352 198.18.0.5 YES other up up ... Tunnel1 162.43.145.3 YES TFTP up up
Tunnel1352001 198.18.0.5 YES TFTP up up DC-MP-CGW1# DC-MP-CGW1#sh sdwan bfd sessions | i
25.25.25.25 25.25.25.25 25 down biz-internet private1 162.43.145.3 10.211.1.89 12367 ipsec 7
1000 NA 0 25.25.25.25 25 up biz-internet private2 162.43.145.3 18.168.222.153 12387 ipsec 7 1000
10 0:09:34:05 0 25.25.25.25 25 up private1 private2 198.18.0.5 10.211.1.56 12387 ipsec 7 1000 10
0:09:33:17 0 25.25.25.25 25 down private1 private1 198.18.0.5 10.211.1.89 12367 ipsec 7 1000 NA
0 DC-MP-CGW1#
```

資料中心SD-WAN路由器上用於AWS Direct Connect的邊界網關協定(BGP)配置：

```
router bgp 64513 neighbor 198.18.0.6 remote-as 64512 neighbor 198.18.0.6 description hosted-
connection neighbor 198.18.0.6 password
```

資料中心SD-WAN路由器從SD-WAN傳輸VPC獲取IP字首10.211.1.0/24。它使用IP地址為198.18.0.6的AWS Direct Connect路由器作為下一跳 — 請參閱以下第7行：

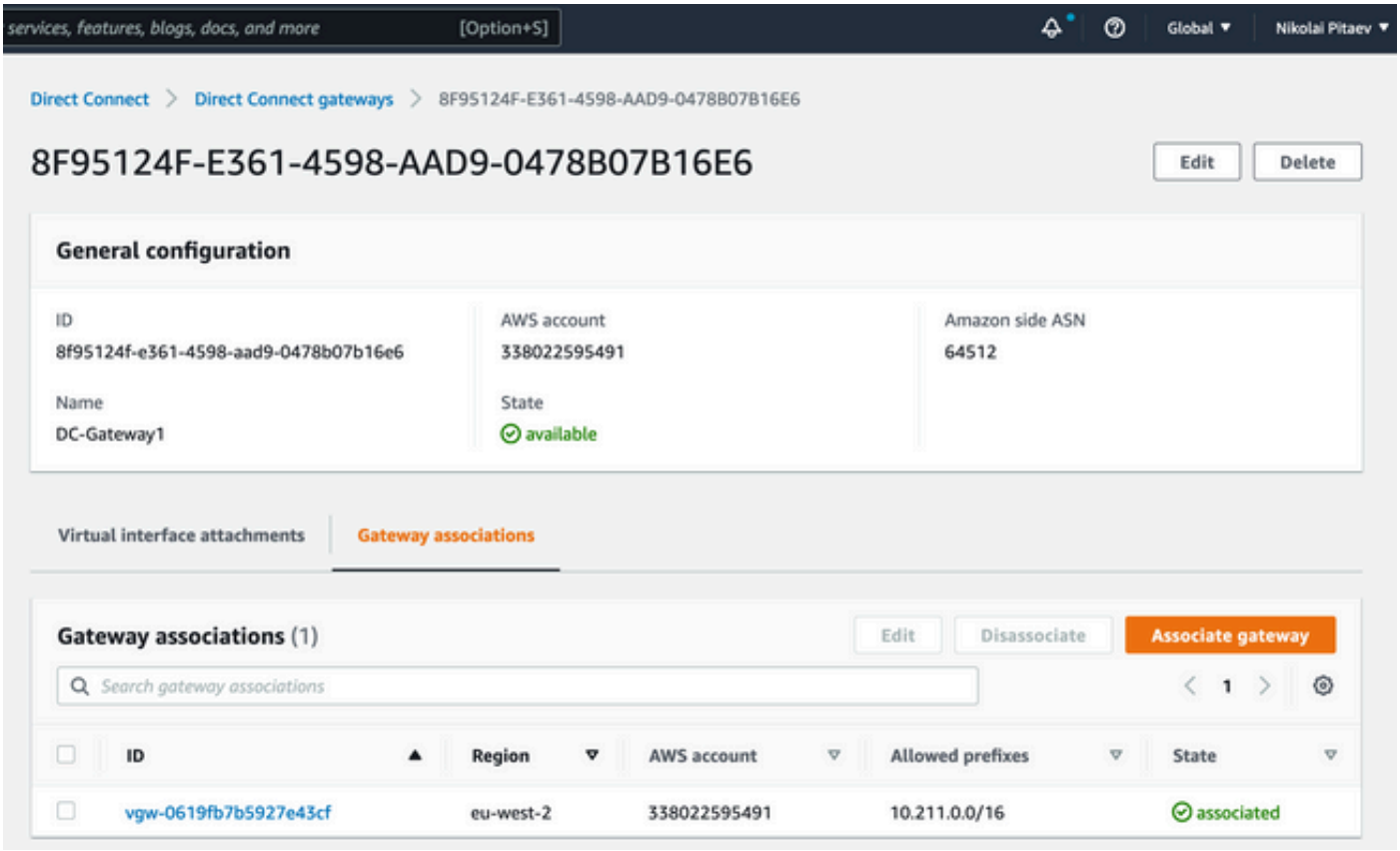
```
DC-MP-CGW1#sh ip ro ... Gateway of last resort is 162.43.145.2 to network 0.0.0.0 S* 0.0.0.0/0
[1/0] via 162.43.145.2 10.0.0.0/24 is subnetted, 1 subnets B 10.211.1.0 [20/0] via 198.18.0.6,
09:15:27 162.43.0.0/16 is variably subnetted, 2 subnets, 2 masks C 162.43.145.2/31 is directly
connected, GigabitEthernet1 L 162.43.145.3/32 is directly connected, GigabitEthernet1
198.18.0.0/24 is variably subnetted, 2 subnets, 2 masks C 198.18.0.4/30 is directly connected,
GigabitEthernet1.1352 L 198.18.0.5/32 is directly connected, GigabitEthernet1.1352 DC-MP-CGW1#s
```

步驟3.AWS TVPC SD-WAN路由器配置

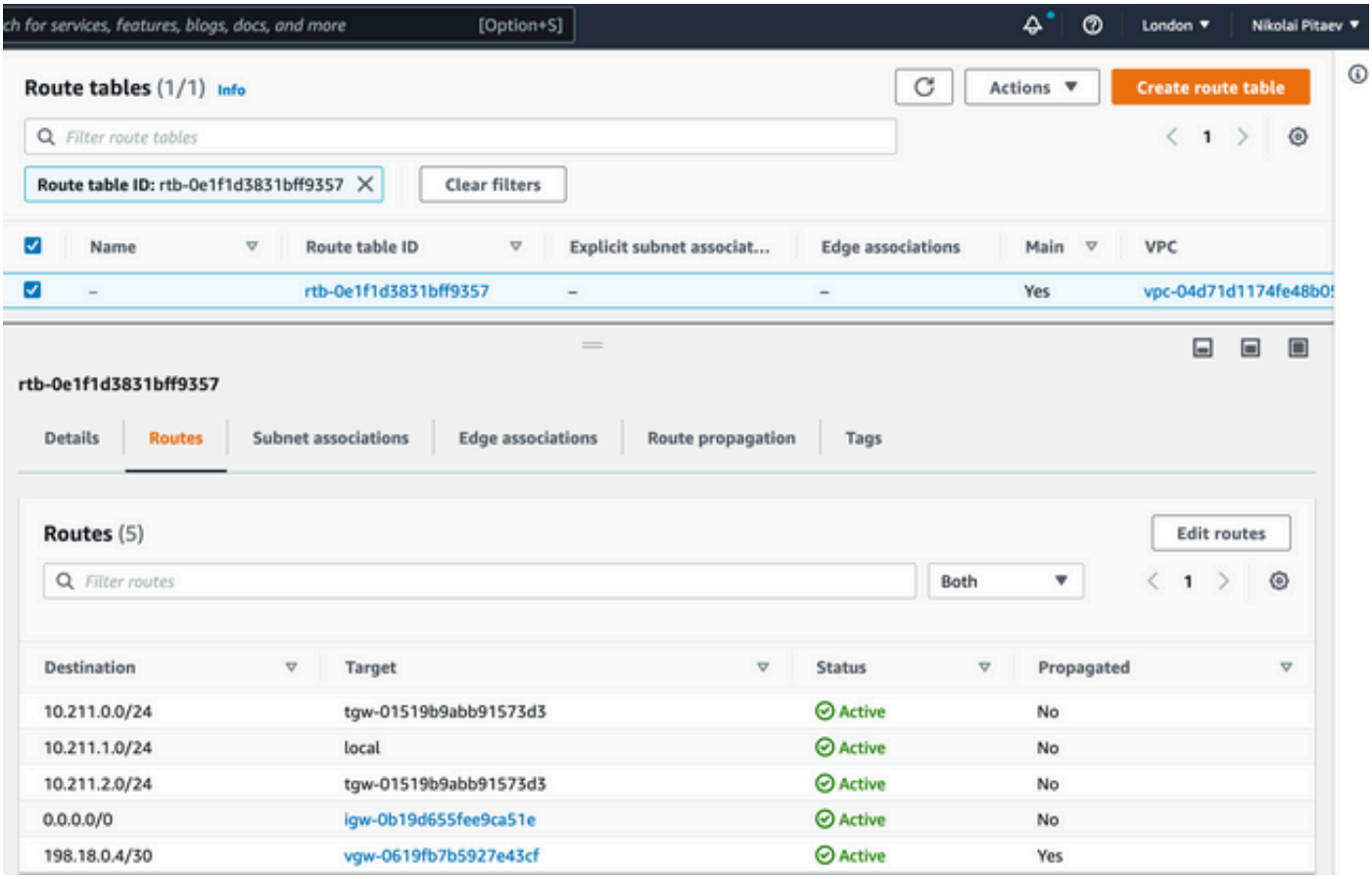
AWS Transit VPC中的兩台SD-WAN路由器都是使用Cloud onRamp建立的，用於使用預設vManage模板實現多雲自動化。兩台c8kv路由器都使用private2顏色進行公共Internet連線。

步驟4.AWS Direct Connect配置

必須在AWS控制檯中建立VGW並將其與SD-WAN傳輸VPC相關聯，或將其與任何雲自動化工具相關聯。同一VGW必須與直接連線關聯，如下圖所示。請注意**allowed prefixes**下的SD-WAN TVPC字首10.211.0.0/16。



必須在SD-WAN傳輸VPC的AWS路由表中啟用VGW的路由傳播 — 請參見本圖中的198.18.0.4/30的最後一個路由。路由傳播將DC TLOC通告回傳輸VPC路由表。



show sdwan bfd sessions CLI的輸出來自傳輸VPC中的c8kv SD-WAN路由器之一，並顯示兩個SD-WAN隧道：

1. 第一個隧道（參見第5行）通過Internet從AWS TVPC中的c8kv傳輸到資料中心：color private2 > biz-internet。注意目的IP地址 — 它是資料中心路由器的公共IP地址192.0.2.0 — 請參閱上一節中的路由器配置。
2. 第二個隧道（參見第6行）通過AWS Direct Connect：從彩色private2到private1，以198.18.0.5作為目標IP地址。

```
DC-AWS-EU-CGW1#sh sdwan bfd sessions | i 61 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 ----------------------------------------------------------------------------------
----------------------------------------------------------------------------------------------
----------------------------- 61.61.61.61 61 up private2 biz-internet 10.211.1.56 162.43.145.3
12347 ipsec 7 1000 06:05:13 0 61.61.61.61 61 up private2 private1 10.211.1.56 198.18.0.5 12367
ipsec 7 1000 06:04:26 0 DC-AWS-EU-CGW1#
```

Shared Services VPC和AWS GWLB中的防火牆安全性

一個非常常見的要求是檢查東 — 西和北 — 南流量。通常，不同主機VPC和/或SD-WAN VPN之間的任何流量都要接受防火牆檢查。虛擬防火牆在Shared Services VPC中運行，負載均衡可以通過AWS網關負載均衡器(GWLB)實施。

所描述的設計在集中式檢查下非常有效 — 請參閱。

概念驗證設定

這些映像用於為概念驗證(PoC)建立測試設定：

- vManage:192.0.2.1R。此工程映像無實際需要，它也必須與20.6配合使用
- 適用於AWS和Megaport的c8kv（直接連線/資料中心模擬）：17.4或17.5
- 使用Megaport模擬了AWS Direct Connect

與SDCI提供商巨型埠或Equinix直接連線

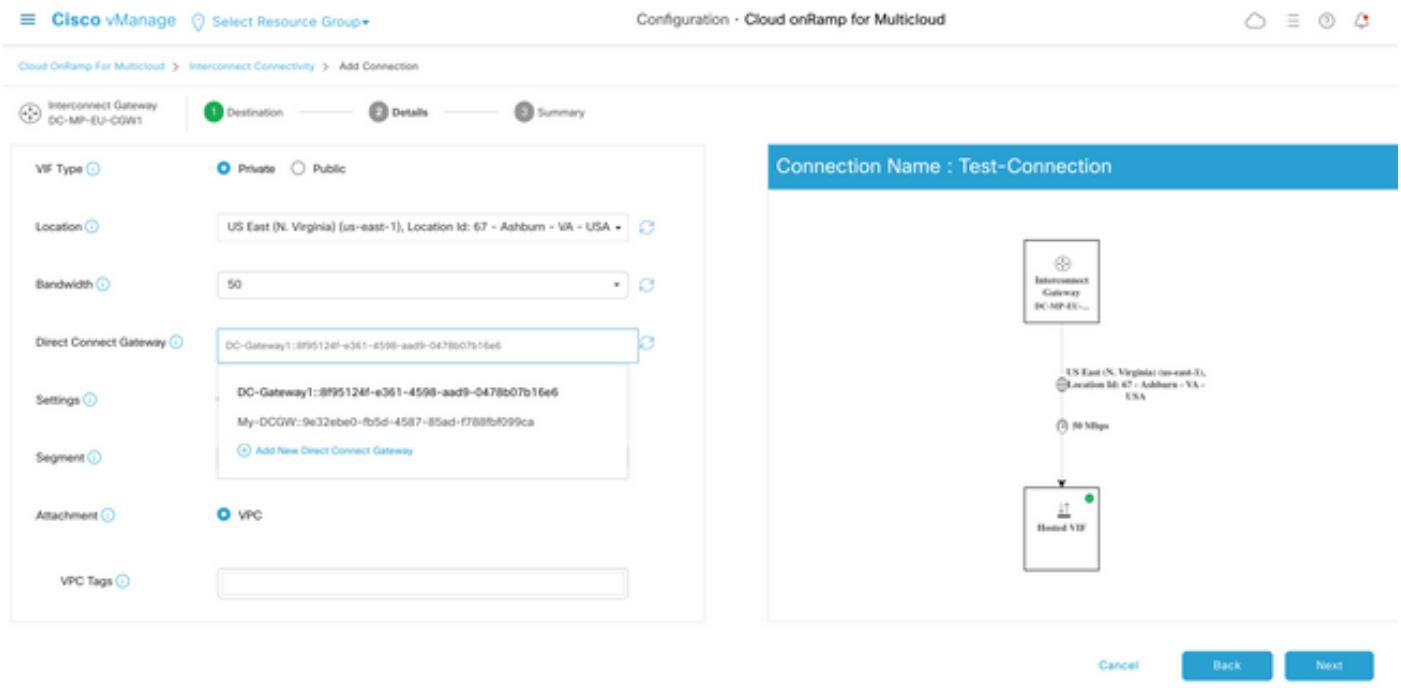
在實驗室環境中獲得真正的AWS Direct Connect並不容易。通常，它需要AWS Direct Connect合作夥伴，這成本高昂且需要花費時間。

但是，如果您擁有Megaport或Equinix帳戶，則可以在幾分鐘內使用Cisco Cloud onRamp for Multicloud automation建立AWS Direct Connect網關！

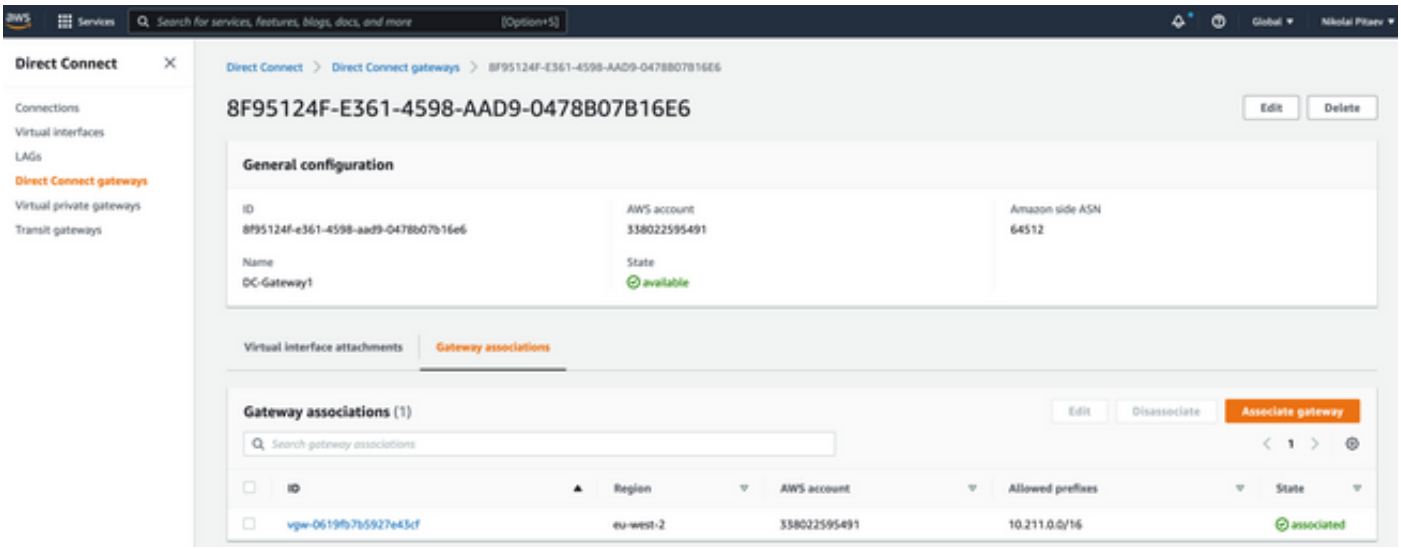
如果您已經在vManage中配置了軟體定義的資料中心互聯(SDCI)和AWS憑證，此處是關鍵步驟的摘要：

1. 如果您尚未擁有兩個在AWS上充當傳輸VPC中的雲網關的c8kv，請使用適用於AWS的多雲工作流程的Cloud onRamp(CoR)，並使用帶有任何私有顏色的預設AWS CoR路由器模板在所需的AWS區域建立它。
2. 在vManage中，導航到CoR for Multicloud Interconnect配置，並在所需的SDCI區域使用預設SDCI提供商路由器模板建立網際網路關(c8kv)。
3. 在vManage中的CoR Multicloud Interconnect Configuration頁面中，建立具有專用虛擬介面(VIF)的新連線型別Cloud。執行此配置工作流程時，您可以選擇建立新的AWS Direct Connect Gateway並將主機VPC連線到該網關。因此，請確保此步驟具有一個「虛擬」主機VPC。
4. 對於步驟2中建立的新c8kv。從vManage配置模式切換到CLI模式，並將隧道從服務端移動到VPN0（刪除vrf forwarding語句）。驗證BGP連線並確保您在BGP配置中具有network語句：network 198.18.0.4 mask 255.255.252。請參閱資料中心和所連線的AWS路由器的完整路由器配置。
5. 在AWS管理控制檯中，選擇適當的VGW（或建立一個新的VGW），並在AWS路由表設定中啟用路由傳播。此外，請確保您已在Direct Connect部分中配置了**Allowed prefixes** — 請參閱本章後面的映像。

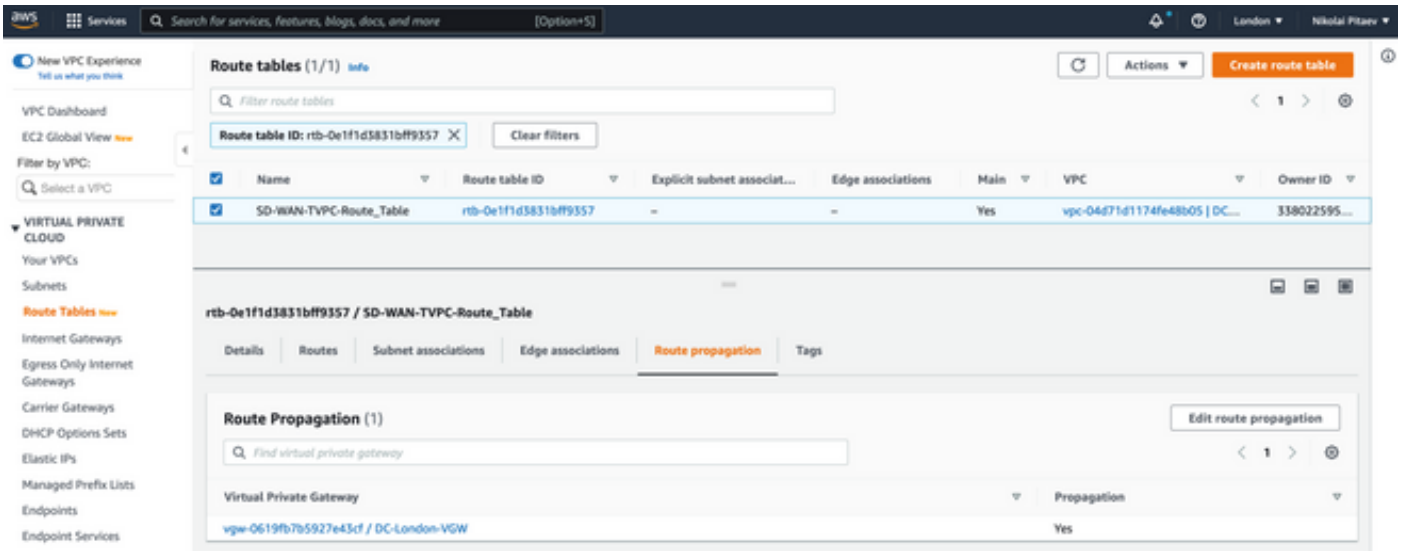
此圖說明了步驟3中的直接連線建立過程：



最後，您將在AWS管理控制檯中看到一個新的Direct Connect網關，如下所示。請注意允許的字首欄位，其中包含傳輸SD-WAN VPC的CIDR塊。



仔細檢查SD-WAN傳輸VPC的路由表。必須已啟用右VGW的傳播，如下圖所示。



請參考本節內容，瞭解路由器的完整配置和show輸出。

```
DC-MP-CGW1#sh sdwan running-config
system
location "14 Coriander Avenue, London, -E14 2AA, United Kingdom"
gps-location latitude 51.51155
gps-location longitude -0.002916
system-ip 192.0.2.2
overlay-id 1
site-id 61
port-offset 1
control-session-pps 300
admin-tech-on-failure
sp-organization-name MC-Demo-npitaev
organization-name MC-Demo-npitaev
port-hop
track-transport
track-default-gateway
console-baud-rate 19200
no on-demand enable
```

```
on-demand idle-timeout 10
vbond 192.0.2.3 port 12346
!
service tcp-keepalives-in
service tcp-keepalives-out
no service tcp-small-servers
no service udp-small-servers
hostname DC-MP-CGW1
username admin privilege 15 secret 9
$9$3V6L3V6L2VUI2k$ysPnXOdg8RLj9KgMdmfHdSHkdaMmiHzGaUpcqH6pfTo
vrf definition 10
rd 1:10
address-family ipv4
route-target export 64513:10
route-target import 64513:10
exit-address-family
!
address-family ipv6
exit-address-family
!
!
ip arp proxy disable
no ip finger
no ip rcmd rcp-enable
no ip rcmd rsh-enable
no ip dhcp use class
ip bootp server
no ip source-route
no ip http server
no ip http secure-server
ip nat settings central-policy
cdp run
interface GigabitEthernet1
no shutdown
arp timeout 1200
ip address dhcp client-id GigabitEthernet1
no ip redirects
ip dhcp client default-router distance 1
ip mtu 1500
load-interval 30
mtu 1500
speed 10000
no negotiation auto
exit
interface GigabitEthernet1.1352
no shutdown
encapsulation dot1Q 1352
ip address 198.18.0.5 255.255.255.252
no ip redirects
ip mtu 1496
exit
interface Loopback100
no shutdown
vrf forwarding 10
ip address 192.168.7.7 255.255.255.255
exit
interface Tunnel1
no shutdown
ip unnumbered GigabitEthernet1
no ip redirects
ipv6 unnumbered GigabitEthernet1
no ipv6 redirects
tunnel source GigabitEthernet1
tunnel mode sdwan
```

```
exit
interface Tunnel1352001
no shutdown
ip unnumbered GigabitEthernet1.1352
ipv6 unnumbered GigabitEthernet1.1352
tunnel source GigabitEthernet1.1352
tunnel mode sdwan
exit
clock timezone UTC 0 0
logging persistent size 104857600 filesize 10485760
no logging monitor
logging buffered 512000
logging console
aaa authentication login default local
aaa authorization exec default local
aaa server radius dynamic-author
!
router bgp 64513
neighbor 198.18.0.6 remote-as 64512
neighbor 198.18.0.6 description hosted-connection
neighbor 198.18.0.6 password 7 072A02687E243C2A4545322B2A0B12077E1961123F
address-family ipv4 unicast
neighbor 198.18.0.6 activate
neighbor 198.18.0.6 send-community both
network 198.18.0.4 mask 255.255.255.252
exit-address-family
!
!
snmp-server ifindex persist
line aux 0
stopbits 1
!
line con 0
speed 19200
stopbits 1
!
line vty 0 4
transport input ssh
!
line vty 5 80
transport input ssh
!
lldp run
nat64 translation timeout tcp 3600
nat64 translation timeout udp 300
sdwan
interface GigabitEthernet1
tunnel-interface
encapsulation ipsec weight 1
no border
color biz-internet
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
allow-service all
no allow-service bgp
allow-service dhcp
allow-service dns
```

```
allow-service icmp
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 GigabitEthernet1.1352
tunnel-interface
encapsulation ipsec weight 1
color private1
max-control-connections 0
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
appqoe
no tcpopt enable
no dreopt enable
!
omp
no shutdown
send-path-limit 4
ecmp-limit 4
graceful-restart
no as-dot-notation
timers
holdtime 60
advertisement-interval 1
graceful-restart-timer 43200
eor-timer 300
exit
address-family ipv4
advertise bgp
advertise connected
advertise static
!
address-family ipv6
advertise bgp
advertise connected
advertise static
!
!
!
licensing config enable false
licensing config privacy hostname false
licensing config privacy version false
licensing config utility utility-enable false
bfd color lte
```

```
hello-interval 1000
no pmtu-discovery
multiplier 1
!
bfd default-dscp 48
bfd app-route multiplier 2
bfd app-route poll-interval 123400
security
ipsec
rekey 86400
replay-window 512
!
!
sslproxy
no enable
rsa-key-modulus 2048
certificate-lifetime 730
eckey-type P256
ca-tp-label PROXY-SIGNING-CA
settings expired-certificate drop
settings untrusted-certificate drop
settings unknown-status drop
settings certificate-revocation-check none
settings unsupported-protocol-versions drop
settings unsupported-cipher-suites drop
settings failure-mode close
settings minimum-tls-ver TLSv1
dual-side optimization enable
!

DC-MP-CGW1#
DC-MP-CGW1#
DC-MP-CGW1#
DC-MP-CGW1#
DC-MP-CGW1#sh run
Building configuration...

Current configuration : 4679 bytes
!
! Last configuration change at 18:06:53 UTC Fri Dec 10 2021 by admin
!
version 17.6
service tcp-keepalives-in
service tcp-keepalives-out
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
! Call-home is enabled by Smart-Licensing.
service call-home
platform qfp utilization monitor load 80
no platform punt-keepalive disable-kernel-core
platform console virtual
!
hostname DC-MP-CGW1
!
boot-start-marker
boot-end-marker
!
!
vrf definition 10
rd 1:10
!
address-family ipv4
route-target export 64513:10
```

```
route-target import 64513:10
exit-address-family
!
address-family ipv6
exit-address-family
!
vrf definition 65528
!
address-family ipv4
exit-address-family
!
logging buffered 512000
logging persistent size 104857600 filesize 10485760
no logging monitor
!
aaa new-model
!
!
aaa authentication login default local
aaa authorization exec default local
!
!
!
!
!
aaa server radius dynamic-author
!
aaa session-id common
fhrp version vrrp v3
ip arp proxy disable
!
!
!
!
!
!
!
ip bootp server
no ip dhcp use class
!
!
!
no login on-success log
ipv6 unicast-routing
!
!
!
!
!
!
!
subscriber templating
!
!
!
!
!
!
!
multilink bundle-name authenticated
!
!
!
!
```

```
!
!
!
!
!
crypto pki trustpoint TP-self-signed-1684160503
enrollment selfsigned
subject-name cn=IOS-Self-Signed-Certificate-1684160503
revocation-check none
rsakeypair TP-self-signed-1684160503
!
crypto pki trustpoint SLA-TrustPoint
enrollment pkcs12
revocation-check crl
!
!
crypto pki certificate chain TP-self-signed-1684160503
crypto pki certificate chain SLA-TrustPoint
!
!
!
!
!
!
!
!
license udi pid C8000V sn 9FTTYDEBR7O
license boot level network-premier+dna-premier
diagnostic bootup level minimal
memory free low-watermark processor 202832
!
!
spanning-tree extend system-id
!
username admin privilege 15 secret 9
$9$3V6L3V6L2VUI2k$ysPnXOdg8RLj9KgMdmfHdSHkdaMmiHzGaUpcqH6pfTo
!
redundancy
!
!
!
!
no crypto ikev2 diagnose error
!
!
lldp run
cdp run
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
```

```
!
!
!
interface Loopback100
vrf forwarding 10
ip address 192.168.7.7 255.255.255.255
!
interface Loopback65528
vrf forwarding 65528
ip address 192.168.1.1 255.255.255.255
!
interface Tunnel1
ip unnumbered GigabitEthernet1
no ip redirects
ipv6 unnumbered GigabitEthernet1
no ipv6 redirects
tunnel source GigabitEthernet1
tunnel mode sdwan
!
interface Tunnel1352001
ip unnumbered GigabitEthernet1.1352
ipv6 unnumbered GigabitEthernet1.1352
tunnel source GigabitEthernet1.1352
tunnel mode sdwan
!
interface GigabitEthernet1
ip dhcp client default-router distance 1
ip address dhcp client-id GigabitEthernet1
no ip redirects
load-interval 30
speed 10000
no negotiation auto
arp timeout 1200
!
interface GigabitEthernet1.1352
encapsulation dot1Q 1352
ip address 198.18.0.5 255.255.255.252
no ip redirects
ip mtu 1496
arp timeout 1200
!
router omp
!
router bgp 64513
bgp log-neighbor-changes
neighbor 198.18.0.6 remote-as 64512
neighbor 198.18.0.6 description hosted-connection
neighbor 198.18.0.6 password 7 072A02687E243C2A4545322B2A0B12077E1961123F
!
address-family ipv4
network 198.18.0.4 mask 255.255.255.252
neighbor 198.18.0.6 activate
neighbor 198.18.0.6 send-community both
exit-address-family
!
ip forward-protocol nd
no ip http server
no ip http secure-server
!
ip nat settings central-policy
ip nat route vrf 65528 0.0.0.0 0.0.0.0 global
no ip nat service H225
no ip nat service ras
no ip nat service rtsp udp
```

```
no ip nat service rtsp tcp
no ip nat service netbios-ns tcp
no ip nat service netbios-ns udp
no ip nat service netbios-ssn
no ip nat service netbios-dgm
no ip nat service ldap
no ip nat service sunrpc udp
no ip nat service sunrpc tcp
no ip nat service msrpc tcp
no ip nat service tftp
no ip nat service rcmd
no ip nat service pptp
no ip ftp passive
ip scp server enable
!
!
!
!
!
!
!
!
control-plane
!
!
mgcp behavior rsip-range tgcp-only
mgcp behavior comedia-role none
mgcp behavior comedia-check-media-src disable
mgcp behavior comedia-sdp-force disable
!
mgcp profile default
!
!
!
!
!
!
line con 0
stopbits 1
speed 19200
line aux 0
line vty 0 4
transport input ssh
line vty 5 80
transport input ssh
!
nat64 translation timeout udp 300
nat64 translation timeout tcp 3600
call-home
! If contact email address in call-home is configured as sch-smart-licensing@cisco.com
! the email address configured in Cisco Smart License Portal will be used as contact email
address to send SCH notifications.
contact-email-addr sch-smart-licensing@cisco.com
profile "CiscoTAC-1"
active
destination transport-method http
!
!
!
!
!
!
netconf-yang
netconf-yang feature candidate-datastore
```

```
end

DC-MP-CGW1#
DC-MP-CGW1#
DC-MP-CGW1#sh ip ro
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
H - NHRP, G - NHRP registered, g - NHRP registration summary
o - ODR, P - periodic downloaded static route, l - LISP
a - application route
+ - replicated route, % - next hop override, p - overrides from PfR
&- replicated local route overrides by connected

Gateway of last resort is 192.0.2.4 to network 0.0.0.0

S* 0.0.0.0/0 [1/0] via 192.0.2.4
10.0.0.0/24 is subnetted, 1 subnets
B 10.211.1.0 [20/0] via 198.18.0.6, 3d07h
192.0.2.5/16 is variably subnetted, 2 subnets, 2 masks
C 192.0.2.4/31 is directly connected, GigabitEthernet1
L 192.0.2.0/32 is directly connected, GigabitEthernet1
198.18.0.0/24 is variably subnetted, 2 subnets, 2 masks
C 198.18.0.4/30 is directly connected, GigabitEthernet1.1352
L 198.18.0.5/32 is directly connected, GigabitEthernet1.1352
DC-MP-CGW1#
DC-MP-CGW1#
DC-MP-CGW1#sh sdw
DC-MP-CGW1#sh sdwan bfd sess
DC-MP-CGW1#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
-----------------------------------------------------------------------------------------------
-----------------------------------------------------------------------------------------------
------------------
192.0.2.6 64 up biz-internet private2 192.0.2.0 192.0.2.7 12387 ipsec 7 1000 10 3:06:56:39 0
192.0.2.8 65 down biz-internet private1 192.0.2.0 10.211.0.68 12367 ipsec 7 1000 NA 0
192.0.2.9 65 down biz-internet private1 192.0.2.0 10.211.0.180 12367 ipsec 7 1000 NA 0
192.0.2.10 25 down biz-internet private1 192.0.2.0 10.211.1.89 12367 ipsec 7 1000 NA 0
192.0.2.11 25 down biz-internet private1 192.0.2.0 10.211.1.184 12367 ipsec 7 1000 NA 0
192.0.2.6 64 down biz-internet private1 192.0.2.0 10.211.2.76 12367 ipsec 7 1000 NA 0
192.0.2.24 64 down biz-internet private1 192.0.2.0 10.211.2.176 12367 ipsec 7 1000 NA 0
10.11.1.11 11 up biz-internet public-internet 192.0.2.0 192.0.2.13 12386 ipsec 7 1000 10
3:07:48:35 0
10.12.1.11 12 up biz-internet public-internet 192.0.2.0 192.0.2.14 12386 ipsec 7 1000 10
2:08:51:12 1
192.0.2.10 25 up biz-internet private2 192.0.2.0 192.0.2.15 12387 ipsec 7 1000 10 3:06:56:35 0
192.0.2.24 64 up biz-internet private2 192.0.2.0 192.0.2.16 12387 ipsec 7 1000 10 3:06:56:40 0
192.0.2.11 25 up biz-internet private2 192.0.2.0 192.0.2.17 12387 ipsec 7 1000 10 3:06:56:35 0
10.103.1.11 103 up biz-internet default 192.0.2.0 192.0.2.18 12346 ipsec 7 1000 10 3:07:48:35 0
10.103.1.12 103 up biz-internet default 192.0.2.0 192.0.2.19 12346 ipsec 7 1000 10 3:07:48:35 0
192.0.2.9 65 up biz-internet public-internet 192.0.2.0 192.0.2.20 12347 ipsec 7 1000 10
3:07:48:35 0
192.0.2.8 65 up biz-internet public-internet 192.0.2.0 192.0.2.21 12347 ipsec 7 1000 10
3:07:48:35 0
192.0.2.8 65 down private1 private1 198.18.0.5 10.211.0.68 12367 ipsec 7 1000 NA 0
192.0.2.9 65 down private1 private1 198.18.0.5 10.211.0.180 12367 ipsec 7 1000 NA 0
192.0.2.10 25 up private1 private2 198.18.0.5 10.211.1.56 12387 ipsec 7 1000 10 3:06:55:47 0
192.0.2.10 25 down private1 private1 198.18.0.5 10.211.1.89 12367 ipsec 7 1000 NA 0
```

```
192.0.2.11 25 up private1 private2 198.18.0.5 10.211.1.155 12387 ipsec 7 1000 10 0:15:27:22 1
192.0.2.11 25 down private1 private1 198.18.0.5 10.211.1.184 12367 ipsec 7 1000 NA 0
192.0.2.6 64 down private1 private2 198.18.0.5 10.211.2.41 12387 ipsec 7 1000 NA 0
192.0.2.6 64 down private1 private1 198.18.0.5 10.211.2.76 12367 ipsec 7 1000 NA 0
192.0.2.24 64 down private1 private2 198.18.0.5 10.211.2.154 12387 ipsec 7 1000 NA 0
192.0.2.24 64 down private1 private1 198.18.0.5 10.211.2.176 12367 ipsec 7 1000 NA 0
10.11.1.11 11 down private1 public-internet 198.18.0.5 192.0.2.13 12386 ipsec 7 1000 NA 0
10.12.1.11 12 down private1 public-internet 198.18.0.5 192.0.2.14 12386 ipsec 7 1000 NA 0
10.103.1.11 103 down private1 default 198.18.0.5 192.0.2.18 12346 ipsec 7 1000 NA 0
10.103.1.12 103 down private1 default 198.18.0.5 192.0.2.19 12346 ipsec 7 1000 NA 0
192.0.2.9 65 down private1 public-internet 198.18.0.5 192.0.2.20 12347 ipsec 7 1000 NA 0
192.0.2.8 65 down private1 public-internet 198.18.0.5 192.0.2.21 12347 ipsec 7 1000 NA 0

DC-MP-CGW1#
DC-MP-CGW1#
DC-MP-CGW1#sh ver
Cisco IOS® XE Software, Version 17.06.01a
Cisco IOS Software [Bengaluru], Virtual XE Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Version
17.6.1a, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2021 by Cisco Systems, Inc.
Compiled Sat 21-Aug-21 03:20 by mcpre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documentation or "License Notice" file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.


ROM: IOS-XE ROMMON

DC-MP-CGW1 uptime is 3 days, 7 hours, 51 minutes
Uptime for this control processor is 3 days, 7 hours, 53 minutes
System returned to ROM by reload
System image file is "bootflash:packages.conf"
Last reload reason: factory-reset




This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.


Technology Package License Information:
Controller-managed
```

```
The current throughput level is 250000 kbps


Smart Licensing Status: Registration Not Applicable/Not Applicable

cisco C8000V (VXE) processor (revision VXE) with 2028465K/3075K bytes of memory.
Processor board ID 9FTTYDEBR7O
Router operating mode: Controller-Managed
1 Gigabit Ethernet interface
32768K bytes of non-volatile configuration memory.
3965112K bytes of physical memory.
11526144K bytes of virtual hard disk at bootflash:.

Configuration register is 0x2102

DC-MP-CGW1#

DC-AWS-EU-CGW1#sh sdwan running-config
system
location "Europe (London)"
gps-location latitude 51.507321
gps-location longitude 0.127647
system-ip 192.0.2.10
overlay-id 1
site-id 25
port-offset 1
control-session-pps 300
admin-tech-on-failure
sp-organization-name MC-Demo-npitaev
organization-name MC-Demo-npitaev
port-hop
track-transport
track-default-gateway
console-baud-rate 19200
no on-demand enable
on-demand idle-timeout 10
vbond 192.0.2.3 port 12346
!
service tcp-keepalives-in
service tcp-keepalives-out
no service tcp-small-servers
no service udp-small-servers
hostname DC-AWS-EU-CGW1
username admin privilege 15 secret 9
$9$3V6L3V6L2VUI2k$ysPnXOdg8RLj9KgMdmfHdSHkdaMmiHzGaUpcqH6pfTo
vrf definition 10
rd 1:10
address-family ipv4
route-target export 64550:10
route-target import 64550:10
exit-address-family
!
address-family ipv6
exit-address-family
!
!
vrf definition Mgmt-intf
description Management
rd 1:512
address-family ipv4
route-target export 64550:512
route-target import 64550:512
```

```
exit-address-family
!
address-family ipv6
exit-address-family
!
!
ip arp proxy disable
no ip finger
no ip rcmd rcp-enable
no ip rcmd rsh-enable
ip as-path access-list 15 permit ^645[2-4][0-9]$
ip as-path access-list 25 permit .*
no ip dhcp use class
ip route 10.211.0.0 255.255.255.0 10.211.1.65
ip route 10.211.2.0 255.255.255.0 10.211.1.65
ip bootp server
no ip source-route
no ip http server
no ip http secure-server
ip nat settings central-policy
cdp run
interface GigabitEthernet1
no shutdown
arp timeout 1200
vrf forwarding Mgmt-intf
ip address dhcp client-id GigabitEthernet1
no ip redirects
ip dhcp client default-router distance 1
ip mtu 1500
load-interval 30
mtu 1500
negotiation auto
exit
interface GigabitEthernet2
no shutdown
arp timeout 1200
ip address dhcp client-id GigabitEthernet2
no ip redirects
ip dhcp client default-router distance 1
ip mtu 1500
load-interval 30
mtu 1500
negotiation auto
exit
interface GigabitEthernet3
no shutdown
arp timeout 1200
ip address dhcp client-id GigabitEthernet3
no ip redirects
ip dhcp client default-router distance 20
ip mtu 1500
load-interval 30
mtu 1500
exit
interface Tunnel2
no shutdown
ip unnumbered GigabitEthernet2
no ip redirects
ipv6 unnumbered GigabitEthernet2
no ipv6 redirects
tunnel source GigabitEthernet2
tunnel mode sdwan
exit
interface Tunnel3
```

```
no shutdown
ip unnumbered GigabitEthernet3
no ip redirects
ipv6 unnumbered GigabitEthernet3
no ipv6 redirects
tunnel source GigabitEthernet3
tunnel mode sdwan
exit
interface Tunnel100001
no shutdown
vrf forwarding 10
ip address 169.254.0.22 255.255.255.252
ip mtu 1500
tunnel source 10.211.1.56
tunnel destination 192.0.2.22
tunnel mode ipsec ipv4
tunnel path-mtu-discovery
tunnel protection ipsec profile if-ipsec1-ipsec-profile
exit
interface Tunnel100002
no shutdown
vrf forwarding 10
ip address 169.254.0.26 255.255.255.252
ip mtu 1500
tunnel source 10.211.1.56
tunnel destination 192.0.2.23
tunnel mode ipsec ipv4
tunnel path-mtu-discovery
tunnel protection ipsec profile if-ipsec2-ipsec-profile
exit
route-map AWS_TGW_CSR_ROUTE_POLICY deny 1
match as-path 15
!
route-map AWS_TGW_CSR_ROUTE_POLICY permit 11
match as-path 25
!
route-map AWS_TGW_CSR_ROUTE_POLICY deny 65535
!
clock timezone UTC 0 0
logging persistent size 104857600 filesize 10485760
no logging monitor
logging console
aaa authentication login default local
aaa authorization exec default local
aaa server radius dynamic-author
port 1700
!
crypto ipsec transform-set if-ipsec1-ikev1-transform esp-aes 256 esp-sha-hmac
mode tunnel
!
crypto ipsec transform-set if-ipsec2-ikev1-transform esp-aes 256 esp-sha-hmac
mode tunnel
!
crypto ipsec profile if-ipsec1-ipsec-profile
set isakmp-profile if-ipsec1-ikev1-isakmp-profile
set pfs group2
set transform-set if-ipsec1-ikev1-transform
set security-association lifetime kilobytes disable
set security-association lifetime seconds 3600
set security-association replay window-size 512
!
crypto ipsec profile if-ipsec2-ipsec-profile
set isakmp-profile if-ipsec2-ikev1-isakmp-profile
set pfs group2
```

```
set transform-set if-ipsec2-ikev1-transform
set security-association lifetime kilobytes disable
set security-association lifetime seconds 3600
set security-association replay window-size 512
!
crypto keyring if-ipsec1-ikev1-keyring
pre-shared-key address 192.0.2.22 key qOWzTrRGM95OOa8j35VT7eQRMmzgHCEq
!
crypto keyring if-ipsec2-ikev1-keyring
pre-shared-key address 192.0.2.23 key E4cayBdglWSBUaaDi1ukyngzbUzUP8Hp
!
crypto isakmp aggressive-mode disable
crypto isakmp keepalive 10 3 on-demand
crypto isakmp policy 1
authentication pre-share
encryption aes 128
group 2
hash sha
lifetime 28800
!
crypto isakmp policy 2
authentication pre-share
encryption aes 128
group 2
hash sha
lifetime 28800
!
crypto isakmp profile if-ipsec1-ikev1-isakmp-profile
keyring if-ipsec1-ikev1-keyring
match identity address 192.0.2.22 255.255.255.255
!
crypto isakmp profile if-ipsec2-ikev1-isakmp-profile
keyring if-ipsec2-ikev1-keyring
match identity address 192.0.2.23 255.255.255.255
!
router bgp 64550
bgp log-neighbor-changes
address-family ipv4 unicast vrf 10
distance bgp 20 200 20
maximum-paths eibgp 2
neighbor 169.254.0.21 remote-as 64521
neighbor 169.254.0.21 activate
neighbor 169.254.0.21 ebgp-multihop 255
neighbor 169.254.0.21 route-map AWS_TGW_CSR_ROUTE_POLICY out
neighbor 169.254.0.21 send-community both
neighbor 169.254.0.25 remote-as 64521
neighbor 169.254.0.25 activate
neighbor 169.254.0.25 ebgp-multihop 255
neighbor 169.254.0.25 route-map AWS_TGW_CSR_ROUTE_POLICY out
neighbor 169.254.0.25 send-community both
propagate-aspath
redistribute omp
exit-address-family
!
timers bgp 60 180
!
snmp-server ifindex persist
line aux 0
stopbits 1
!
line con 0
login authentication default
speed 19200
stopbits 1
```

```
!
line vty 0 4
login authentication default
transport input ssh
!
line vty 5 80
login authentication default
transport input ssh
!
lldp run
nat64 translation timeout tcp 3600
nat64 translation timeout udp 300
sdwan
interface GigabitEthernet2
tunnel-interface
encapsulation ipsec weight 1
no border
color private2
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
allow-service all
no allow-service bgp
allow-service dhcp
allow-service dns
allow-service icmp
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 GigabitEthernet3
tunnel-interface
encapsulation ipsec weight 1
no border
color private1
no last-resort-circuit
no low-bandwidth-link
max-control-connections 0
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
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
appqoe
no tcpopt enable
!
omp
no shutdown
send-path-limit 4
ecmp-limit 4
graceful-restart
no as-dot-notation
timers
holdtime 60
advertisement-interval 1
graceful-restart-timer 43200
eor-timer 300
exit
address-family ipv4
advertise bgp
advertise connected
advertise static
!
address-family ipv6
advertise bgp
advertise connected
advertise static
!
!
!
licensing config enable false
licensing config privacy hostname false
licensing config privacy version false
licensing config utility utility-enable false
bfd color lte
hello-interval 1000
no pmtu-discovery
multiplier 1
!
bfd default-dscp 48
bfd app-route multiplier 2
bfd app-route poll-interval 123400
security
ipsec
rekey 86400
replay-window 512
authentication-type ah-sha1-hmac sha1-hmac
!
!
sslproxy
no enable
rsa-key-modulus 2048
certificate-lifetime 730
eckey-type P256
ca-tp-label PROXY-SIGNING-CA
settings expired-certificate drop
settings untrusted-certificate drop
settings unknown-status drop
settings certificate-revocation-check none
```

```
settings unsupported-protocol-versions drop
settings unsupported-cipher-suites drop
settings failure-mode close
settings minimum-tls-ver TLSv1
!
policy
no app-visibility
no app-visibility-ipv6
no flow-visibility
no flow-visibility-ipv6
no implicit-acl-logging
log-frequency 1000
!

DC-AWS-EU-CGW1#
DC-AWS-EU-CGW1#
DC-AWS-EU-CGW1#sh run
DC-AWS-EU-CGW1#sh running-config
Building configuration...

Current configuration : 11607 bytes
!
! Last configuration change at 18:26:47 UTC Fri Dec 10 2021 by NETCONF
!
version 17.4
service tcp-keepalives-in
service tcp-keepalives-out
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
! Call-home is enabled by Smart-Licensing.
service call-home
platform qfp utilization monitor load 80
no platform punt-keepalive disable-kernel-core
platform console virtual
!
hostname DC-AWS-EU-CGW1
!
boot-start-marker
boot-end-marker
!
!
vrf definition 10
rd 1:10
!
address-family ipv4
route-target export 64550:10
route-target import 64550:10
exit-address-family
!
address-family ipv6
exit-address-family
!
vrf definition 65528
!
address-family ipv4
exit-address-family
!
vrf definition Mgmt-intf
description Management
rd 1:512
!
address-family ipv4
route-target export 64550:512
```

```
route-target import 64550:512
exit-address-family
!
address-family ipv6
exit-address-family
!
logging buffered 512000
logging persistent size 104857600 filesize 10485760
no logging rate-limit
no logging monitor
!
aaa new-model
!
!
aaa authentication login default local
aaa authorization exec default local
!
!
!
!
!
aaa server radius dynamic-author
!
aaa session-id common
fhrp version vrrp v3
ip arp proxy disable
!
!
!
!
!
!
!
ip bootp server
no ip dhcp use class
!
!
!
no login on-success log
ipv6 unicast-routing
!
!
!
!
!
!
!
subscriber templating
!
!
!
!
!
!
!
multilink bundle-name authenticated
!
!
!
!
!
!
!
!
```

```
!
crypto pki trustpoint TP-self-signed-1070810043
enrollment selfsigned
subject-name cn=IOS-Self-Signed-Certificate-1070810043
revocation-check none
rsakeypair TP-self-signed-1070810043
!
crypto pki trustpoint SLA-TrustPoint
enrollment pkcs12
revocation-check crl
!
!
crypto pki certificate chain TP-self-signed-1070810043
certificate self-signed 01
30820330 30820218 A0030201 02020101 300D0609 2A864886 F70D0101 05050030
31312F30 2D060355 04031326 494F532D 53656C66 2D536967 6E65642D 43657274
69666963 6174652D 31303730 38313030 3433301E 170D3231 31323130 30303339
34325A17 0D333131 32313030 30333934 325A3031 312F302D 06035504 03132649
4F532D53 656C662D 5369676E 65642D43 65727469 66696361 74652D31 30373038
31303034 33308201 22300D06 092A8648 86F70D01 01010500 0382010F 00308201
0A028201 0100AC49 2292437D CC1AB211 204B33F2 9AE40F1B A41355FA 9832FD65
69C4FDCD 57AEE5A1 5D30B8A8 F62C842E 487D9AD4 EF2E5F55 4C26D746 EA381D42
C4F259DA 19CFDE22 76582EAD 1C878CE7 B596E439 94EF0023 D0B0A1EC C79D582C
43DC3116 350675F7 6B42B33F DF500EF0 323ECFBD A0FBD612 8ABFD343 96C8BB40
330697C0 4BB5DE18 39DB9203 C5132855 5FE5C0C6 80635F69 9DA90B4F 578F7861
81F5AD28 C1732F99 CCE788FB 0F8EA20A 29E2A57B 6879AAE9 9CAAF05C 9F6D95FD
F114EA04 5ADE11C7 C8C93379 3FA8CA0F 5E3ADEFE 61197C3E DBC20084 2F0B1BF9
9A1CFC95 730AAE31 CACE6EE8 D0DABFE1 B995B6C0 0C072343 CA115DC4 5A802A21
256C3291 22370203 010001A3 53305130 0F060355 1D130101 FF040530 030101FF
301F0603 551D2304 18301680 149E76BD 12EAD2B9 9F58797A 7A93625C 7ABB6953
C4301D06 03551D0E 04160414 9E76BD12 EAD2B99F 58797A7A 93625C7A BB6953C4
300D0609 2A864886 F70D0101 05050003 82010100 12D28F08 C5367501 E131A43F
A102433E 9E2C22AA 403FEAAE 311CEC4D 37353098 C9EAF160 C46C95C1 61073D63
B41F9191 2567CA23 C069E365 96DC55CD 368D9E1D 7A9B39B9 060BB27E AB456414
3DDEB3B9 1398C49B 570839FA BB090B72 5D51E6FE 8250A8D0 299DCD04 22168D8A
9EF3F9DF 58A9C3FC 1DB848FA 32089028 A88AA158 52E05BBF EA13129F C902E11F
96D23BDA EFEC8521 F8566815 ED2D703F 2B7E64B8 53A9799B 93DFF82D 7713A7A3
4FF271E8 B438678E 2A1706CE F9EE665C 40B9C1B5 7AC51491 B3327948 4B432168
2F2F46D2 E8B14961 69976E15 95A07771 756AF6AA F090B4DD BE41A10E C22A6611
008A2D16 C7751721 CF90413A 29019B95 DC7704EA
quit
crypto pki certificate chain SLA-TrustPoint
certificate ca 01
30820321 30820209 A0030201 02020101 300D0609 2A864886 F70D0101 0B050030
32310E30 0C060355 040A1305 43697363 6F312030 1E060355 04031317 43697363
6F204C69 63656E73 696E6720 526F6F74 20434130 1E170D31 33303533 30313934
3834375A 170D3338 30353330 31393438 34375A30 32310E30 0C060355 040A1305
43697363 6F312030 1E060355 04031317 43697363 6F204C69 63656E73 696E6720
526F6F74 20434130 82012230 0D06092A 864886F7 0D010101 05000382 010F0030
82010A02 82010100 A6BCBD96 131E05F7 145EA72C 2CD686E6 17222EA1 F1EFF64D
CBB4C798 212AA147 C655D8D7 9471380D 8711441E 1AAF071A 9CAE6388 8A38E520
1C394D78 462EF239 C659F715 B98C0A59 5BBB5CBD 0CFEBEA3 700A8BF7 D8F256EE
4AA4E80D DB6FD1C9 60B1FD18 FFC69C96 6FA68957 A2617DE7 104FDC5F EA2956AC
7390A3EB 2B5436AD C847A2C5 DAB553EB 69A9A535 58E9F3E3 C0BD23CF 58BD7188
68E69491 20F320E7 948E71D7 AE3BCC84 F10684C7 4BC8E00F 539BA42B 42C68BB7
C7479096 B4CB2D62 EA2F505D C7B062A4 6811D95B E8250FC4 5D5D5FB8 8F27D191
C55F0D76 61F9A4CD 3D992327 A8BB03BD 4E6D7069 7CBADF8B DF5F4368 95135E44
DFC7C6CF 04DD7FD1 02030100 01A34230 40300E06 03551D0F 0101FF04 04030201
06300F06 03551D13 0101FF04 05300301 01FF301D 0603551D 0E041604 1449DC85
4B3D31E5 1B3E6A17 606AF333 3D3B4C73 E8300D06 092A8648 86F70D01 010B0500
03820101 00507F24 D3932A66 86025D9F E838AE5C 6D4DF6B0 49631C78 240DA905
604EDCDE FF4FED2B 77FC460E CD636FDB DD44681E 3A5673AB 9093D3B1 6C9E3D8B
D98987BF E40CBD9E 1AECA0C2 2189BB5C 8FA85686 CD98B646 5575B146 8DFC66A8
467A3DF4 4D565700 6ADF0F0D CF835015 3C04FF7C 21E878AC 11BA9CD2 55A9232C
```

```
7CA7B7E6 C1AF74F6 152E99B7 B1FCF9BB E973DE7F 5BDDEB86 C71E3B49 1765308B
5FB0DA06 B92AFE7F 494E8A9E 07B85737 F3A58BE1 1A48A229 C37C1E69 39F08678
80DDCD16 D6BACECA EEBC7CF9 8428787B 35202CDC 60E4616A B623CDBD 230E3AFB
418616A9 4093E049 4D10AB75 27E86F73 932E35B5 8862FDAE 0275156F 719BB2F0
D697DF7F 28
quit
!
!
!
!
!
!
!
!
license udi pid C8000V sn 9SAQCJXHS8G
license boot level network-premier+dna-premier
diagnostic bootup level minimal
memory free low-watermark processor 226459
!
!
spanning-tree extend system-id
!
username admin privilege 15 secret 9
$9$3V6L3V6L2VUI2k$ysPnXOdg8RLj9KgMdmfHdSHkdaMmiHzGaUpcqH6pfTo
!
redundancy
!
!
!
!
no crypto ikev2 diagnose error
!
!
lldp run
cdp run
!
!
crypto keyring if-ipsec1-ikev1-keyring
pre-shared-key address 192.0.2.22 key qOWzTrRGM95OOa8j35VT7eQRMmzgHCEq
crypto keyring if-ipsec2-ikev1-keyring
pre-shared-key address 192.0.2.23 key E4cayBdglWSBUaaDi1ukyngzbUzUP8Hp
!
!
!
!
!
!
!
crypto isakmp policy 1
encryption aes
authentication pre-share
group 2
lifetime 28800
!
crypto isakmp policy 2
encryption aes
authentication pre-share
group 2
lifetime 28800
crypto isakmp keepalive 10 3
crypto isakmp aggressive-mode disable
crypto isakmp profile if-ipsec1-ikev1-isakmp-profile
keyring if-ipsec1-ikev1-keyring
match identity address 192.0.2.22 255.255.255.255
```

```
crypto isakmp profile if-ipsec2-ikev1-isakmp-profile
keyring if-ipsec2-ikev1-keyring
match identity address 192.0.2.23 255.255.255.255
!
!
crypto ipsec transform-set if-ipsec1-ikev1-transform esp-aes 256 esp-sha-hmac
mode tunnel
crypto ipsec transform-set if-ipsec2-ikev1-transform esp-aes 256 esp-sha-hmac
mode tunnel
!
!
crypto ipsec profile if-ipsec1-ipsec-profile
set security-association lifetime kilobytes disable
set security-association replay window-size 512
set transform-set if-ipsec1-ikev1-transform
set pfs group2
set isakmp-profile if-ipsec1-ikev1-isakmp-profile
!
crypto ipsec profile if-ipsec2-ipsec-profile
set security-association lifetime kilobytes disable
set security-association replay window-size 512
set transform-set if-ipsec2-ikev1-transform
set pfs group2
set isakmp-profile if-ipsec2-ikev1-isakmp-profile
!
!
!
!
!
!
!
!
!
interface Loopback65528
vrf forwarding 65528
ip address 192.168.1.1 255.255.255.255
!
interface Tunnel2
ip unnumbered GigabitEthernet2
no ip redirects
ipv6 unnumbered GigabitEthernet2
no ipv6 redirects
tunnel source GigabitEthernet2
tunnel mode sdwan
!
interface Tunnel3
ip unnumbered GigabitEthernet3
no ip redirects
ipv6 unnumbered GigabitEthernet3
no ipv6 redirects
tunnel source GigabitEthernet3
tunnel mode sdwan
!
interface Tunnel100001
vrf forwarding 10
ip address 169.254.0.22 255.255.255.252
ip mtu 1500
tunnel source 10.211.1.56
tunnel mode ipsec ipv4
tunnel destination 192.0.2.22
tunnel path-mtu-discovery
tunnel protection ipsec profile if-ipsec1-ipsec-profile
!
interface Tunnel100002
```

```
vrf forwarding 10
ip address 169.254.0.26 255.255.255.252
ip mtu 1500
tunnel source 10.211.1.56
tunnel mode ipsec ipv4
tunnel destination 192.0.2.23
tunnel path-mtu-discovery
tunnel protection ipsec profile if-ipsec2-ipsec-profile
!
interface GigabitEthernet1
vrf forwarding Mgmt-intf
ip dhcp client default-router distance 1
ip address dhcp client-id GigabitEthernet1
no ip redirects
load-interval 30
negotiation auto
arp timeout 1200
!
interface GigabitEthernet2
ip dhcp client default-router distance 1
ip address dhcp client-id GigabitEthernet2
no ip redirects
load-interval 30
negotiation auto
arp timeout 1200
!
interface GigabitEthernet3
ip dhcp client default-router distance 20
ip address dhcp client-id GigabitEthernet3
no ip redirects
load-interval 30
speed 1000
no negotiation auto
arp timeout 1200
!
router omp
!
router bgp 64550
bgp log-neighbor-changes
!
address-family ipv4 vrf 10
redistribute omp
propagate-aspath
neighbor 169.254.0.21 remote-as 64521
neighbor 169.254.0.21 ebgp-multihop 255
neighbor 169.254.0.21 activate
neighbor 169.254.0.21 send-community both
neighbor 169.254.0.21 route-map AWS_TGW_CSR_ROUTE_POLICY out
neighbor 169.254.0.25 remote-as 64521
neighbor 169.254.0.25 ebgp-multihop 255
neighbor 169.254.0.25 activate
neighbor 169.254.0.25 send-community both
neighbor 169.254.0.25 route-map AWS_TGW_CSR_ROUTE_POLICY out
maximum-paths eibgp 2
distance bgp 20 200 20
exit-address-family
!
ip forward-protocol nd
no ip http server
no ip http secure-server
!
ip as-path access-list 15 permit ^645[2-4][0-9]$
ip as-path access-list 25 permit .*
ip nat settings central-policy
```

```
ip nat route vrf 65528 0.0.0.0 0.0.0.0 global
no ip nat service H225
no ip nat service ras
no ip nat service rtsp udp
no ip nat service rtsp tcp
no ip nat service netbios-ns tcp
no ip nat service netbios-ns udp
no ip nat service netbios-ssn
no ip nat service netbios-dgm
no ip nat service ldap
no ip nat service sunrpc udp
no ip nat service sunrpc tcp
no ip nat service msrpc tcp
no ip nat service tftp
no ip nat service rcmd
no ip nat service pptp
no ip ftp passive
ip route 10.211.0.0 255.255.255.0 10.211.1.65
ip route 10.211.2.0 255.255.255.0 10.211.1.65
ip scp server enable
!
!
!
route-map AWS_TGW_CSR_ROUTE_POLICY deny 1
match as-path 15
!
route-map AWS_TGW_CSR_ROUTE_POLICY permit 11
match as-path 25
!
route-map AWS_TGW_CSR_ROUTE_POLICY deny 65535
!
!
!
!
!
!
control-plane
!
!
mgcp behavior rsip-range tgcp-only
mgcp behavior comedia-role none
mgcp behavior comedia-check-media-src disable
mgcp behavior comedia-sdp-force disable
!
mgcp profile default
!
!
!
!
!
!
line con 0
stopbits 1
speed 19200
line aux 0
line vty 0 4
transport input ssh
line vty 5 80
transport input ssh
!
nat64 translation timeout udp 300
nat64 translation timeout tcp 3600
call-home
! If contact email address in call-home is configured as sch-smart-licensing@cisco.com
```

```
! the email address configured in Cisco Smart License Portal will be used as contact email
address to send SCH notifications.
contact-email-addr sch-smart-licensing@cisco.com
profile "CiscoTAC-1"
active
destination transport-method http
!
!
!
!
!
!
netconf-yang
netconf-yang feature candidate-datastore
end

DC-AWS-EU-CGW1#
DC-AWS-EU-CGW1#
DC-AWS-EU-CGW1#sh ip ro
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
H - NHRP, G - NHRP registered, g - NHRP registration summary
o - ODR, P - periodic downloaded static route, l - LISP
a - application route
+ - replicated route, % - next hop override, p - overrides from PfR
&- replicated local route overrides by connected

Gateway of last resort is 10.211.1.33 to network 0.0.0.0

S* 0.0.0.0/0 [1/0] via 10.211.1.33
10.0.0.0/8 is variably subnetted, 6 subnets, 3 masks
S 10.211.0.0/24 [1/0] via 10.211.1.65
C 10.211.1.32/27 is directly connected, GigabitEthernet2
L 10.211.1.56/32 is directly connected, GigabitEthernet2
C 10.211.1.64/27 is directly connected, GigabitEthernet3
L 10.211.1.89/32 is directly connected, GigabitEthernet3
S 10.211.2.0/24 [1/0] via 10.211.1.65
DC-AWS-EU-CGW1#
DC-AWS-EU-CGW1#sh ip ro vrf 10

Routing Table: 10
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
H - NHRP, G - NHRP registered, g - NHRP registration summary
o - ODR, P - periodic downloaded static route, l - LISP
a - application route
+ - replicated route, % - next hop override, p - overrides from PfR
&- replicated local route overrides by connected

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 9 subnets, 3 masks
m 10.11.3.0/24 [251/0] via 10.11.1.11, 3d07h, Sdwan-system-intf
m 10.12.3.0/24 [251/0] via 10.12.1.11, 3d07h, Sdwan-system-intf
```

```
m 10.12.10.11/32 [251/0] via 10.12.1.11, 3d07h, Sdwan-system-intf
B 10.25.0.0/16 [20/100] via 169.254.0.25, 3d14h
[20/100] via 169.254.0.21, 3d14h
m 10.64.0.0/16 [251/0] via 192.0.2.24, 3d07h, Sdwan-system-intf
[251/0] via 192.0.2.6, 3d07h, Sdwan-system-intf
m 10.103.0.0/16 [251/0] via 10.103.1.11, 3d07h, Sdwan-system-intf
m 10.111.0.0/16 [251/0] via 10.103.1.11, 3d07h, Sdwan-system-intf
m 10.112.0.0/16 [251/0] via 10.103.1.11, 3d07h, Sdwan-system-intf
m 10.131.0.0/16 [251/0] via 192.0.2.9, 15:30:32, Sdwan-system-intf
[251/0] via 192.0.2.8, 15:30:32, Sdwan-system-intf
169.254.0.0/16 is variably subnetted, 13 subnets, 3 masks
m 169.254.0.4/30 [251/0] via 192.0.2.8, 2d18h, Sdwan-system-intf
m 169.254.0.8/30 [251/0] via 192.0.2.8, 3d07h, Sdwan-system-intf
m 169.254.0.12/30 [251/0] via 192.0.2.9, 15:30:32, Sdwan-system-intf
m 169.254.0.16/30 [251/0] via 192.0.2.9, 15:30:32, Sdwan-system-intf
C 169.254.0.20/30 is directly connected, Tunnel100001
L 169.254.0.22/32 is directly connected, Tunnel100001
C 169.254.0.24/30 is directly connected, Tunnel100002
L 169.254.0.26/32 is directly connected, Tunnel100002
m 169.254.0.36/30 [251/0] via 192.0.2.6, 3d07h, Sdwan-system-intf
m 169.254.0.40/30 [251/0] via 192.0.2.6, 3d07h, Sdwan-system-intf
m 169.254.0.44/30 [251/0] via 192.0.2.24, 3d07h, Sdwan-system-intf
m 169.254.0.48/30 [251/0] via 192.0.2.24, 3d07h, Sdwan-system-intf
m 169.254.10.0/29 [251/0] via 10.103.1.11, 3d07h, Sdwan-system-intf
192.168.7.0/32 is subnetted, 1 subnets
m 192.168.7.7 [251/0] via 192.0.2.2, 3d06h, Sdwan-system-intf
DC-AWS-EU-CGW1#
DC-AWS-EU-CGW1#
DC-AWS-EU-CGW1#sh sdwa
DC-AWS-EU-CGW1#sh sdwan bfd
DC-AWS-EU-CGW1#sh sdwan bfd sess
DC-AWS-EU-CGW1#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
------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------
------------------
192.0.2.8 65 up private2 private1 10.211.1.56 10.211.0.68 12367 ipsec 7 1000 07:00:18 0
192.0.2.9 65 up private2 private1 10.211.1.56 10.211.0.180 12367 ipsec 7 1000 07:00:17 0
192.0.2.6 64 up private2 private2 10.211.1.56 10.211.2.41 12387 ipsec 7 1000 07:00:18 0
192.0.2.6 64 up private2 private1 10.211.1.56 10.211.2.76 12367 ipsec 7 1000 07:00:18 0
192.0.2.24 64 up private2 private2 10.211.1.56 10.211.2.154 12387 ipsec 7 1000 15:30:40 1
192.0.2.24 64 up private2 private1 10.211.1.56 10.211.2.176 12367 ipsec 7 1000 07:00:18 0
10.11.1.11 11 up private2 public-internet 10.211.1.56 192.0.2.13 12386 ipsec 7 1000 07:00:17 0
10.12.1.11 12 up private2 public-internet 10.211.1.56 192.0.2.14 12386 ipsec 7 1000 07:00:17 0
10.103.1.11 103 up private2 default 10.211.1.56 192.0.2.18 12346 ipsec 7 1000 07:00:18 0
10.103.1.12 103 up private2 default 10.211.1.56 192.0.2.19 12346 ipsec 7 1000 07:00:17 0
192.0.2.9 65 up private2 public-internet 10.211.1.56 192.0.2.20 12347 ipsec 7 1000 15:30:41 1
192.0.2.8 65 up private2 public-internet 10.211.1.56 192.0.2.21 12347 ipsec 7 1000 07:00:18 0
192.0.2.2 61 up private2 biz-internet 10.211.1.56 192.0.2.0 12347 ipsec 7 1000 07:00:18 0
192.0.2.2 61 up private2 private1 10.211.1.56 198.18.0.5 12367 ipsec 7 1000 06:59:31 0
192.0.2.8 65 up private1 private1 10.211.1.89 10.211.0.68 12367 ipsec 7 1000 22:50:11 2
192.0.2.9 65 up private1 private1 10.211.1.89 10.211.0.180 12367 ipsec 7 1000 22:50:16 2
192.0.2.6 64 up private1 private2 10.211.1.89 10.211.2.41 12387 ipsec 7 1000 07:00:22 0
192.0.2.6 64 up private1 private1 10.211.1.89 10.211.2.76 12367 ipsec 7 1000 22:50:01 2
192.0.2.24 64 up private1 private2 10.211.1.89 10.211.2.154 12387 ipsec 7 1000 07:00:23 0
192.0.2.24 64 up private1 private1 10.211.1.89 10.211.2.176 12367 ipsec 7 1000 22:50:10 2
10.11.1.11 11 down private1 public-internet 10.211.1.89 192.0.2.13 12386 ipsec 7 1000 NA 0
10.12.1.11 12 down private1 public-internet 10.211.1.89 192.0.2.14 12386 ipsec 7 1000 NA 0
10.103.1.11 103 down private1 default 10.211.1.89 192.0.2.18 12346 ipsec 7 1000 NA 0
10.103.1.12 103 down private1 default 10.211.1.89 192.0.2.19 12346 ipsec 7 1000 NA 0
192.0.2.9 65 down private1 public-internet 10.211.1.89 192.0.2.20 12347 ipsec 7 1000 NA 0
192.0.2.8 65 down private1 public-internet 10.211.1.89 192.0.2.21 12347 ipsec 7 1000 NA 0
```

```
192.0.2.2 61 down private1 biz-internet 10.211.1.89 192.0.2.0 12347 ipsec 7 1000 NA 0
192.0.2.2 61 down private1 private1 10.211.1.89 198.18.0.5 12367 ipsec 7 1000 NA 0

DC-AWS-EU-CGW1#
DC-AWS-EU-CGW1#
DC-AWS-EU-CGW1#sh ver
Cisco IOS XE Software, Version 17.04.01a
Cisco IOS Software [Bengaluru], Virtual XE Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Version
17.4.1a, RELEASE SOFTWARE (fc4)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2020 by Cisco Systems, Inc.
Compiled Fri 18-Dec-20 05:01 by mcpre


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licensed under the GNU General Public License ("GPL") Version 2.0. The
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with ABSOLUTELY NO WARRANTY. You can redistribute and/or modify such
GPL code under the terms of GPL Version 2.0. For more details, see the
documentation or "License Notice" file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.


ROM: IOS-XE ROMMON

DC-AWS-EU-CGW1 uptime is 4 days, 47 minutes
Uptime for this control processor is 4 days, 49 minutes
System returned to ROM by reload
System image file is "bootflash:packages.conf"
Last reload reason: Unknown reason




This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.


Technology Package License Information:
Controller-managed

The current throughput level is 250000 kbps


Smart Licensing Status: Registration Not Applicable/Not Applicable

cisco C8000V (VXE) processor (revision VXE) with 2264734K/3075K bytes of memory.
Processor board ID 9SAQCJXHS8G
Router operating mode: Controller-Managed
3 Gigabit Ethernet interfaces
```

```
32768K bytes of non-volatile configuration memory.
7784912K bytes of physical memory.
11526144K bytes of virtual hard disk at bootflash:.

Configuration register is 0x2102

DC-AWS-EU-CGW1#
```

關於此翻譯

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