The bridge to possible

Simplify User Experience

through Software defined Interconnect and Public cloud

Prashant Tripathi, Principal/Chief Architect Cisco SD-WAN & Multi-Cloud
@prashant_tri

Cisco Webex App

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with the speaker after the session

How

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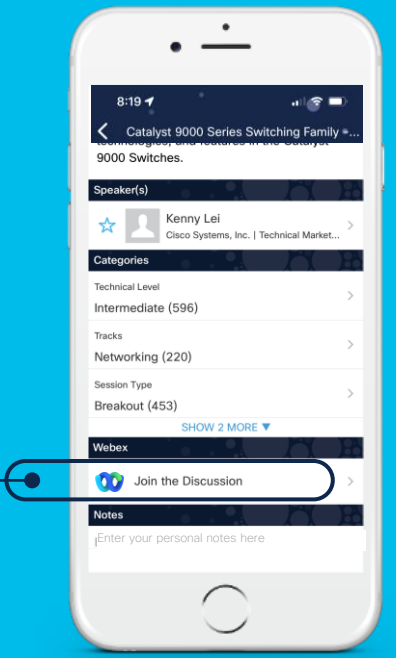
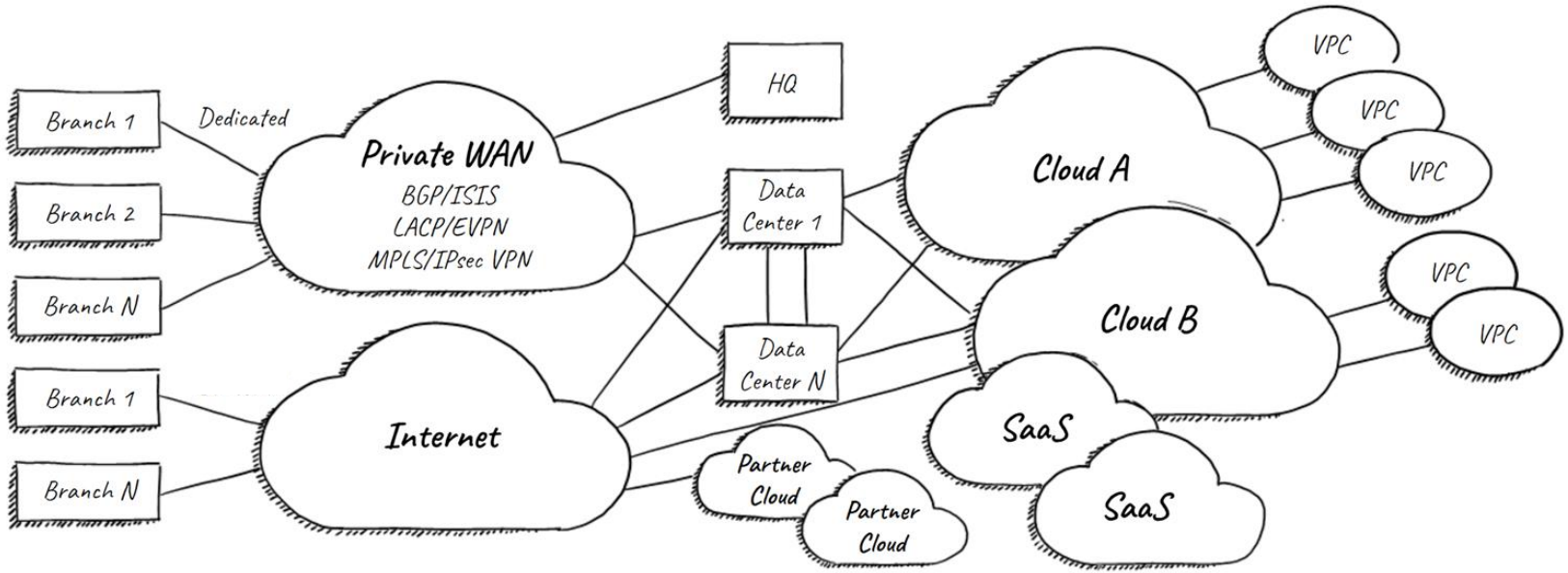
Webex spaces will be moderated until February 24, 2023.



Agenda

- Infrastructure transformation
- Normalizing operations across Multi-Cloud
- Direct Public cloud integration with AWS, Azure, GCP
- Software Defined Cloud Interconnect Integration
- Connectivity - Details
- Architectural Overview

Managing enterprise networks is increasingly complex



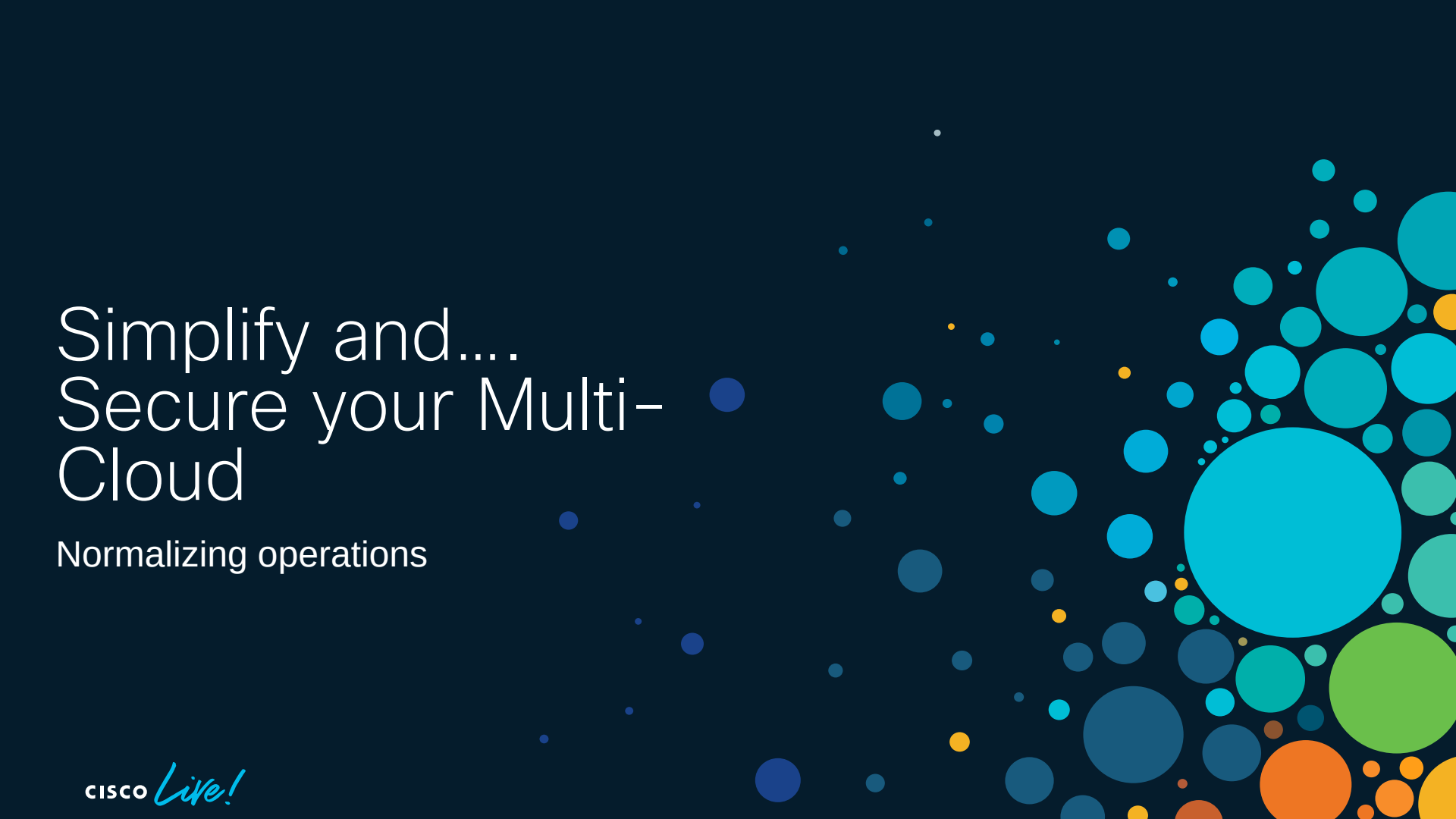
Months to build topology & capacity

Multiple control, data & management planes

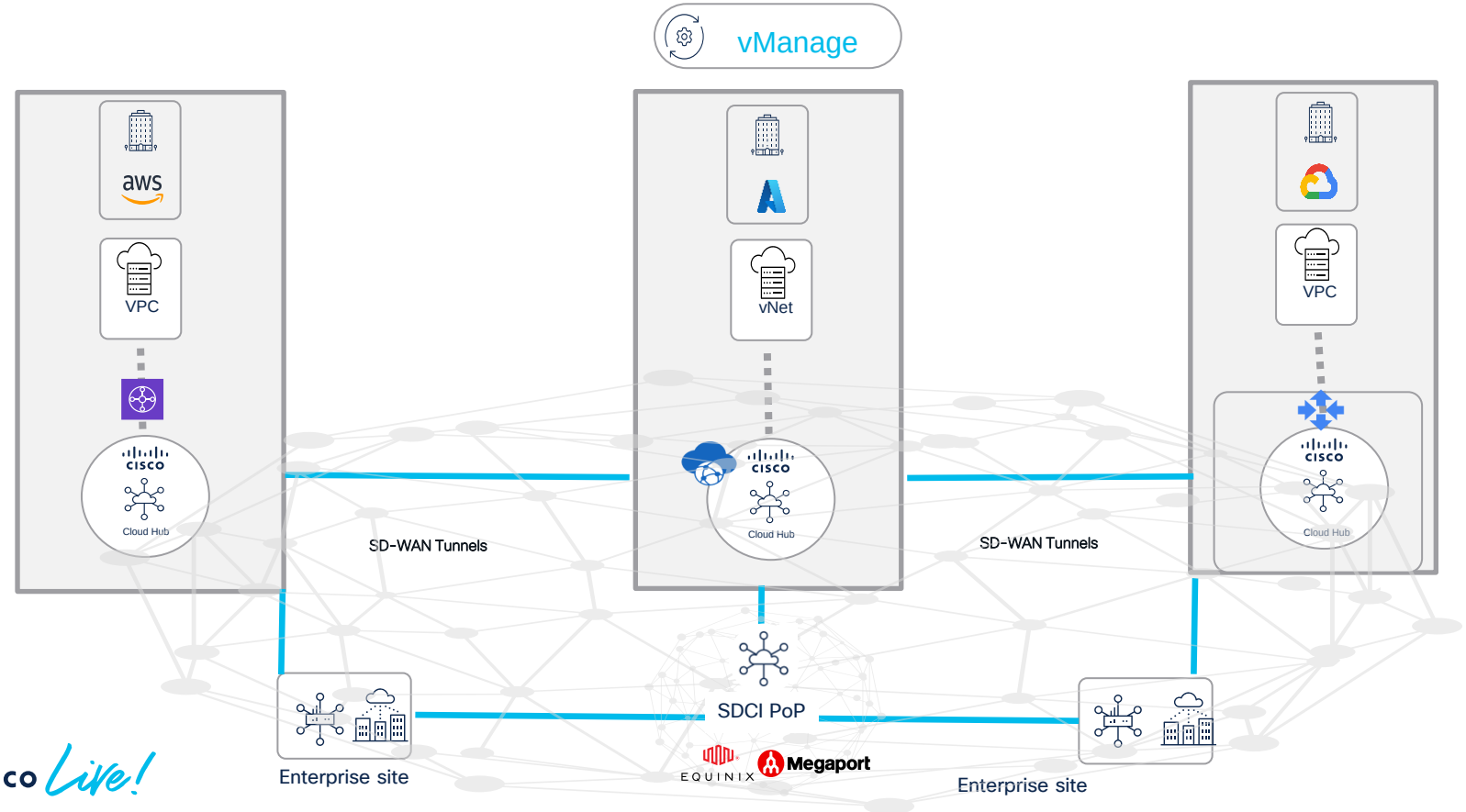
Complex hybrid & multi-cloud networks

Simplify and…. Secure your Multi-Cloud

Normalizing operations

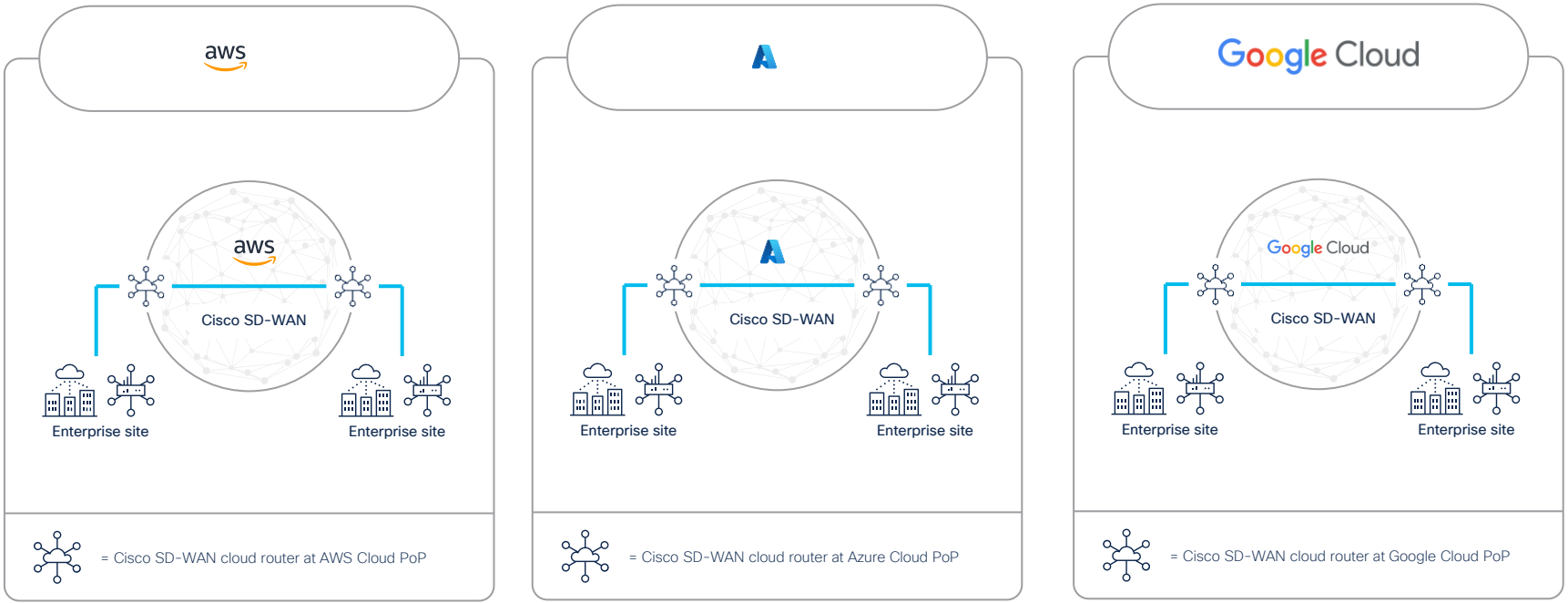


Unifying Multi-Cloud Connectivity



Cisco offers a choice of middle-mile partners

Integration with Cloud Service providers



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Cisco SD-WAN Multi-Cloud

Integrations & Use Cases

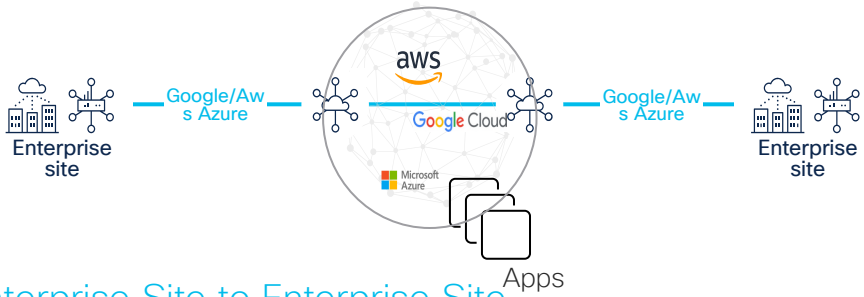
Cisco SD-WAN Cloud Hub- Use Cases

= Cisco SD-WAN virtual router hosted at Cloud Service Provider POP

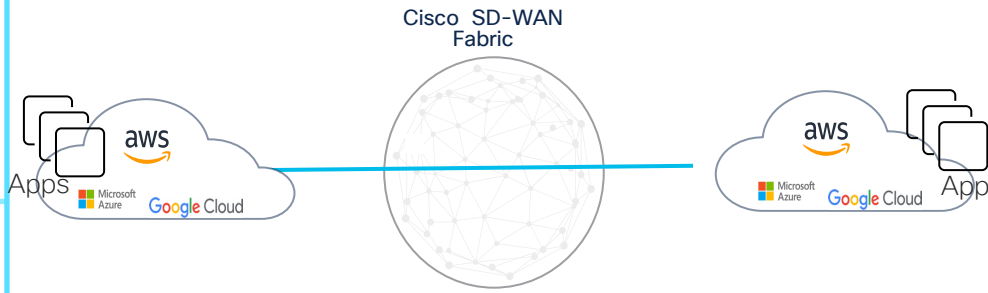
= Cisco SD-WAN router on-premises

Enterprise Site to Cloud

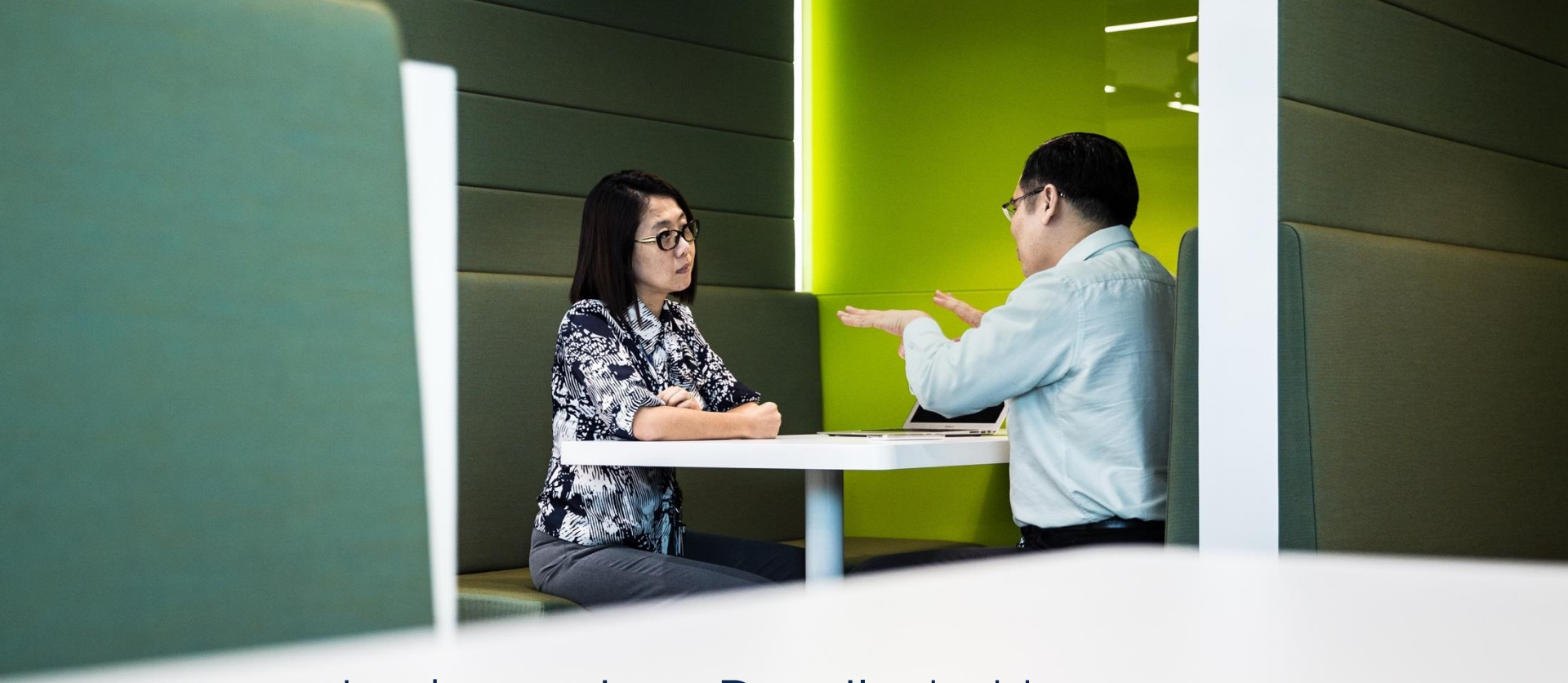
Enterprise Site to Enterprise Site



Cloud to Cloud



Cisco SD-WAN simplifying connectivity with fabric extension to cloud providers, it is building a programable site-to-cloud workloads, Region to Region, site-to-site and cloud to cloud connectivity using cloud providers backbone

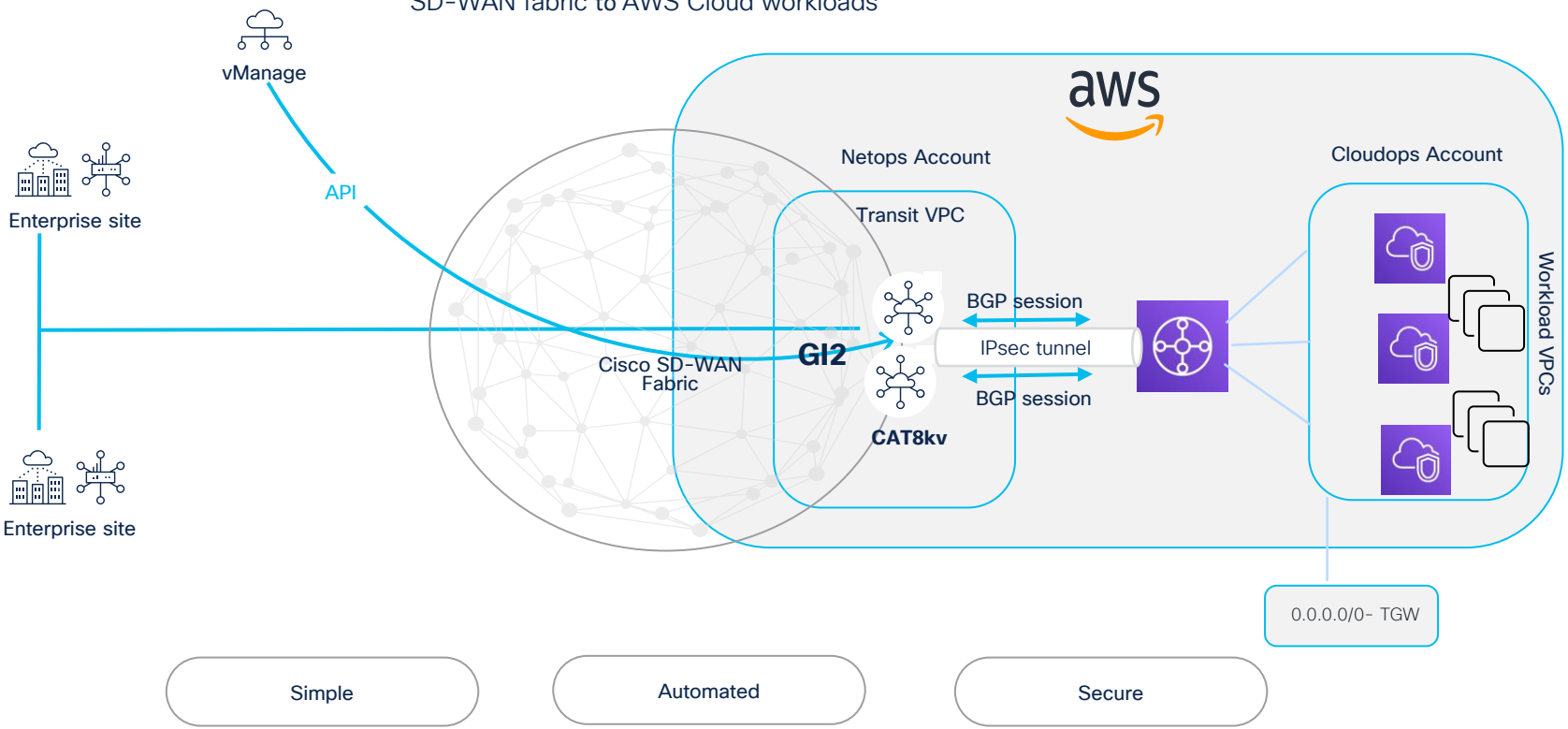


Let's get into Detailed- Use cases

Integration and connectivity to AWS

AWS - Site-to-Cloud

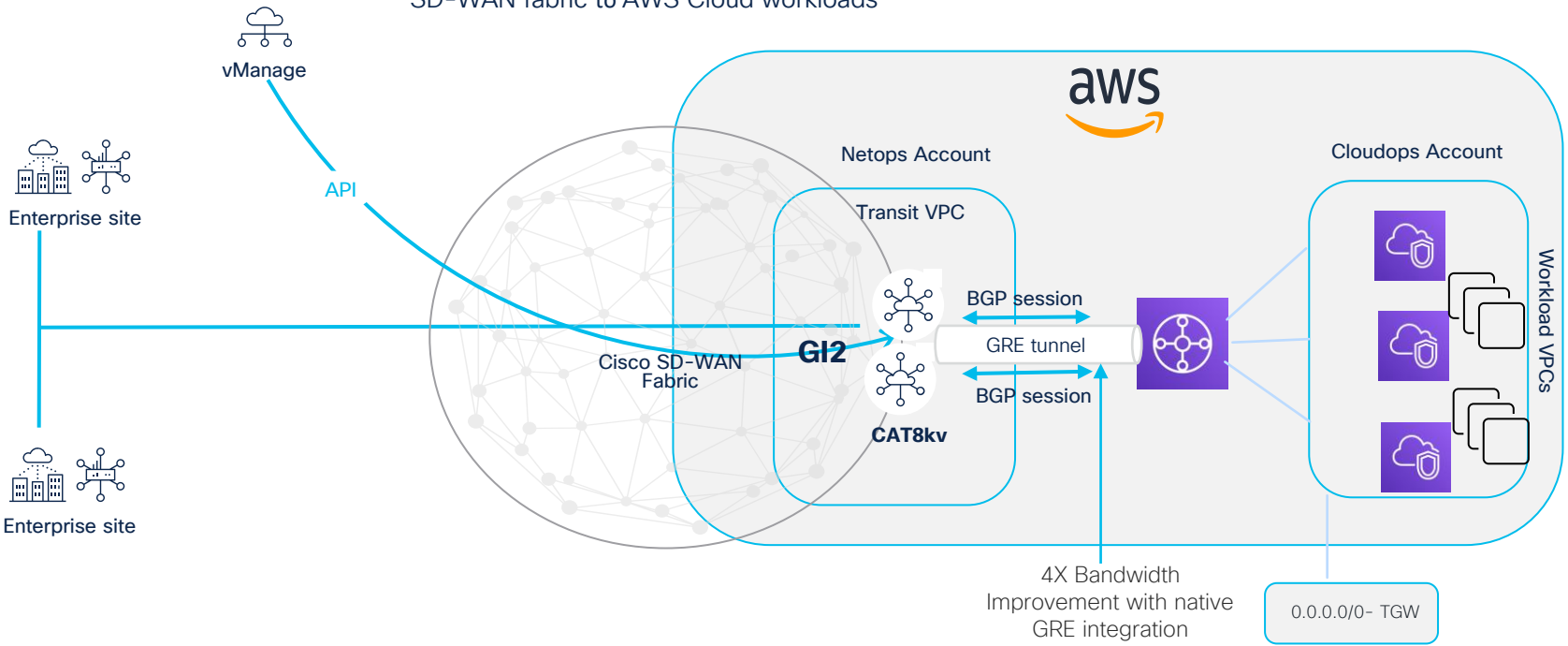
SD-WAN Native Integration using **Ike IPSEC** between Transit VPC and Transit Gateway



AWS - Site-to-Cloud

SD-WAN Native Integration using **GRE** between Transit VPC and Transit Gateway

SD-WAN fabric to AWS Cloud workloads



Simple

Automated

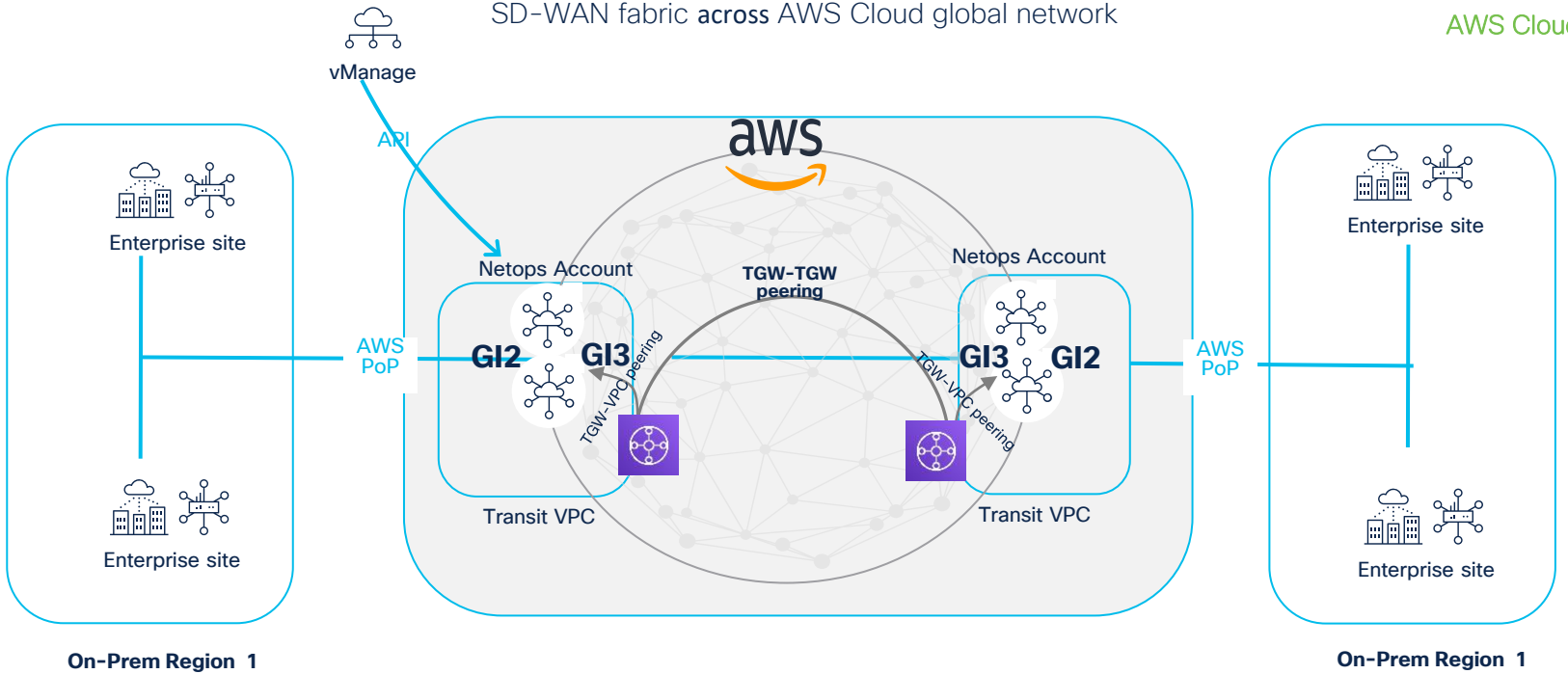
Secure

TGW-TGW peering to build Backbone. Control policy or Multi region Fabric required for traffic redirection

AWS - Site-to-Site

SD-WAN fabric **across** AWS Cloud global network

AWS Cloud WAN ?



On-demand

High performance

Global connectivity

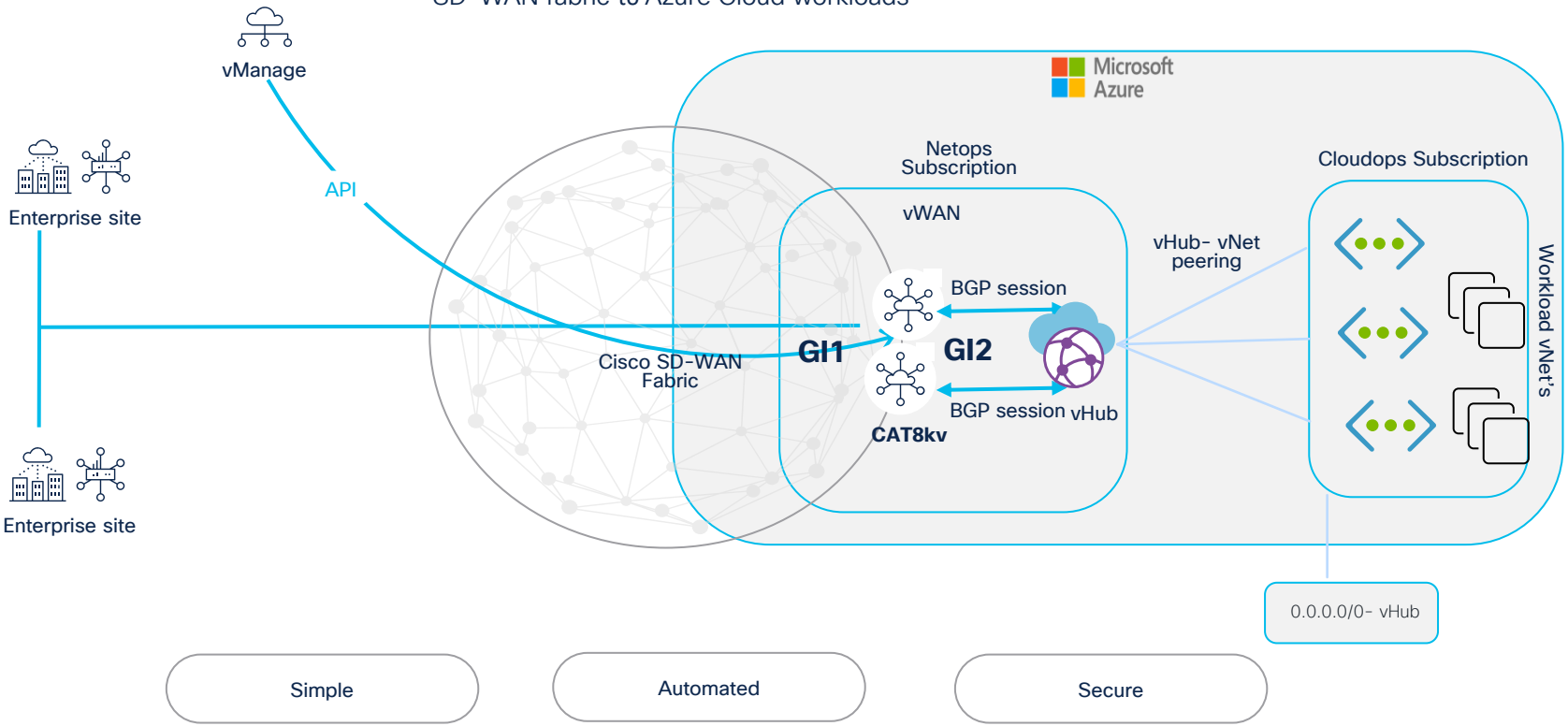
Google Cloud Router

Integration and connectivity to Azure Cloud

CAT8k Network virtual appliances are hosted in vhub, running BGP to vHub control plane to learn vNet mapping

Azure - Site-to-Cloud

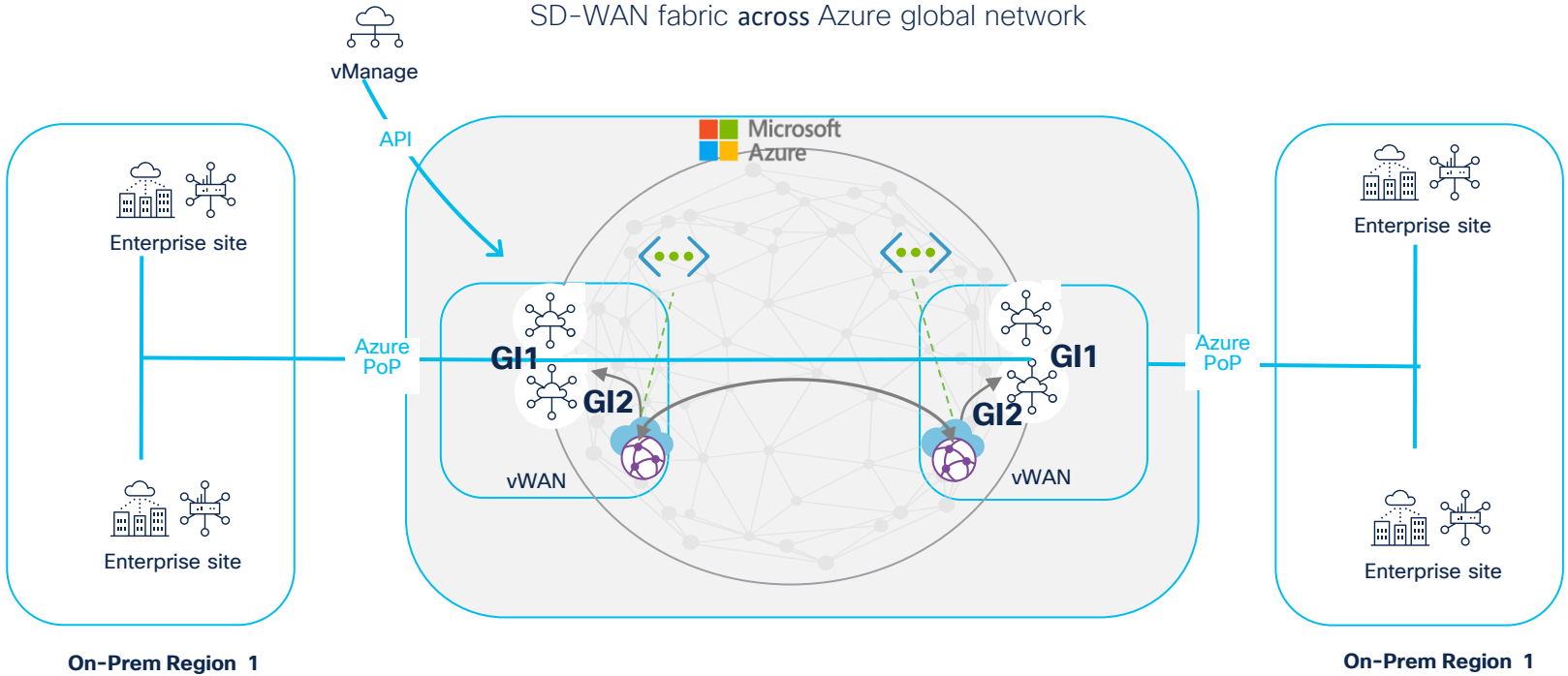
SD-WAN fabric to Azure Cloud workloads



SDWAN tunnels with Azure Public IPs on NVAs go through Azure Backbone, Azure vHub to vHub used for Intra-Vnet traffic. Control policy or Multi region Fabric required for traffic redirection

Azure - Site-to-Site

SD-WAN fabric **across** Azure global network



On-demand

High performance

Global connectivity

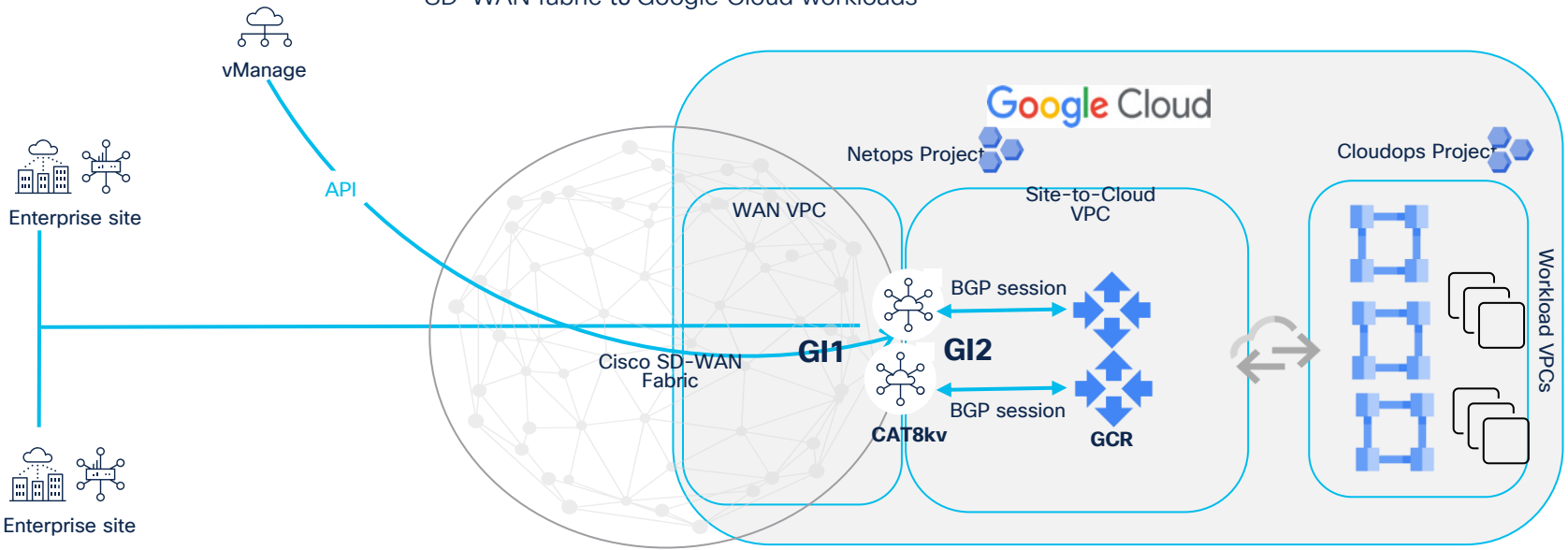
Google Cloud Router

Integration and connectivity to Google

Google Cloud - Site-to-Cloud

Cisco SD-WAN Cloud Hub will be hosted on Google cloud , it runs BGP from service vpn to Google cloud routers to learn and advertise routes

SD-WAN fabric to Google Cloud workloads



Simple

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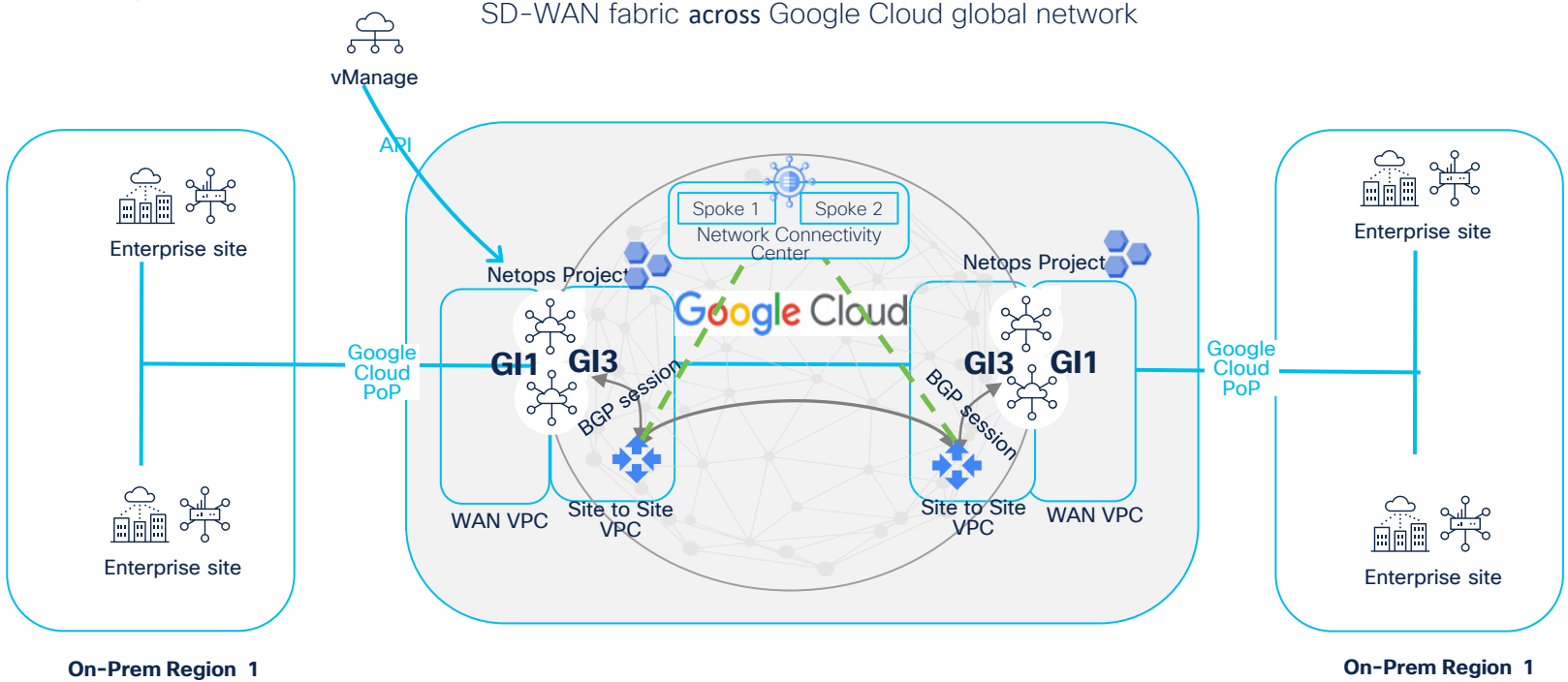
Google Cloud Router

SD-WAN will leverage cloud service provider's backbone (Google NCC) to extend SD-WAN fabric from any site to Site, Control policy or Multi region Fabric required for traffic redirection

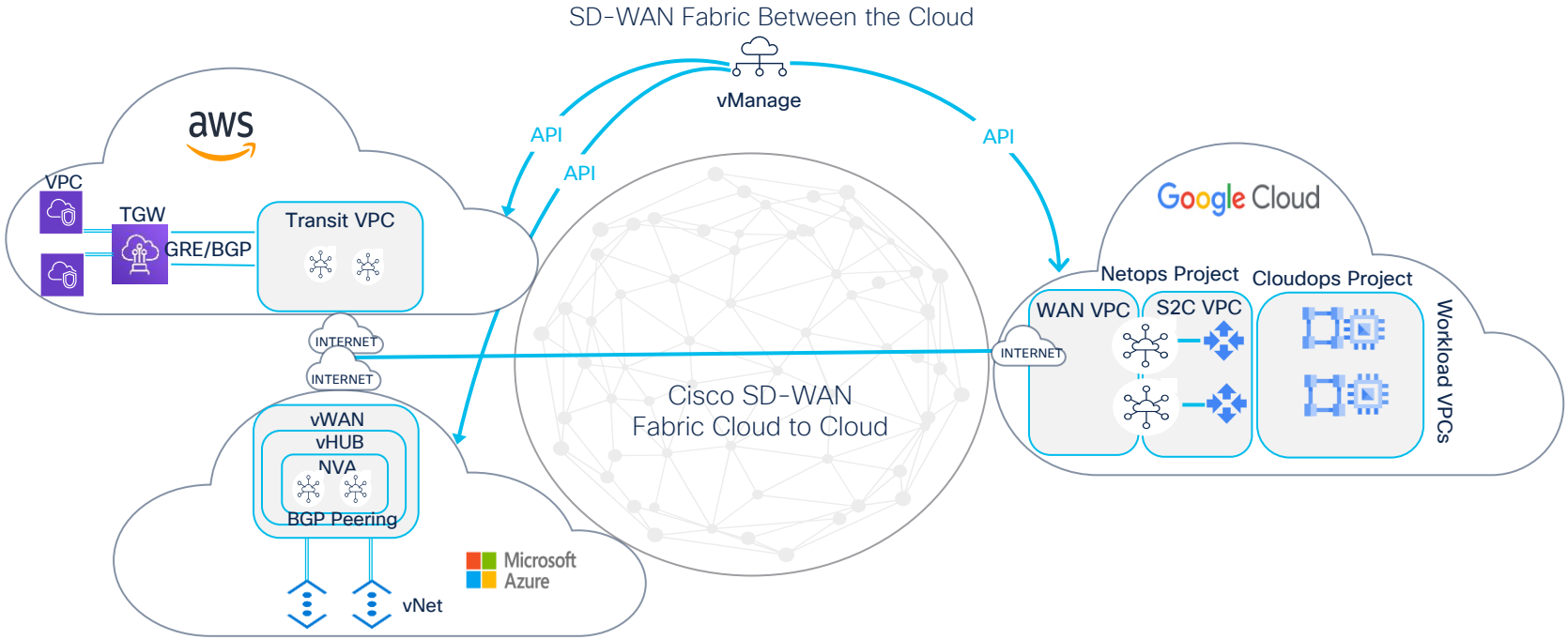
Google Cloud - Site-to-Site

SD-WAN fabric **across** Google Cloud global network



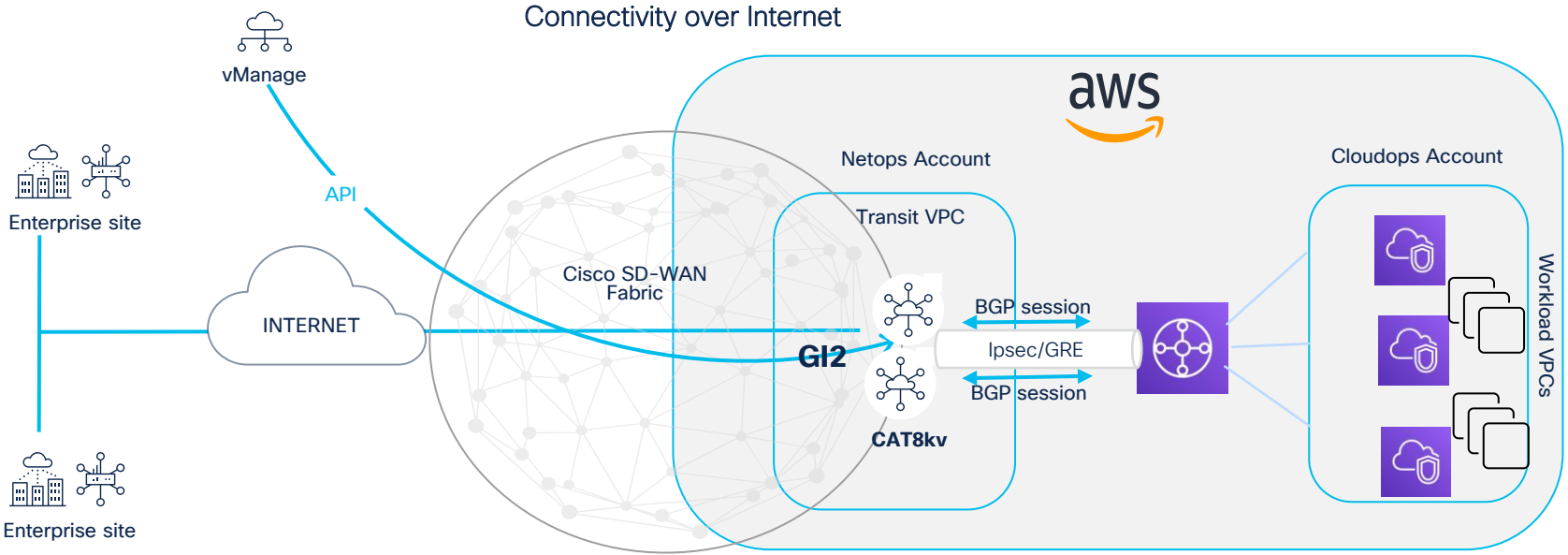
Cloud to Cloud Connectivity

Cloud to Cloud – Over Internet



Transport Connectivity options

Cisco SD-WAN Cloud Hub connectivity option: 1- AWS



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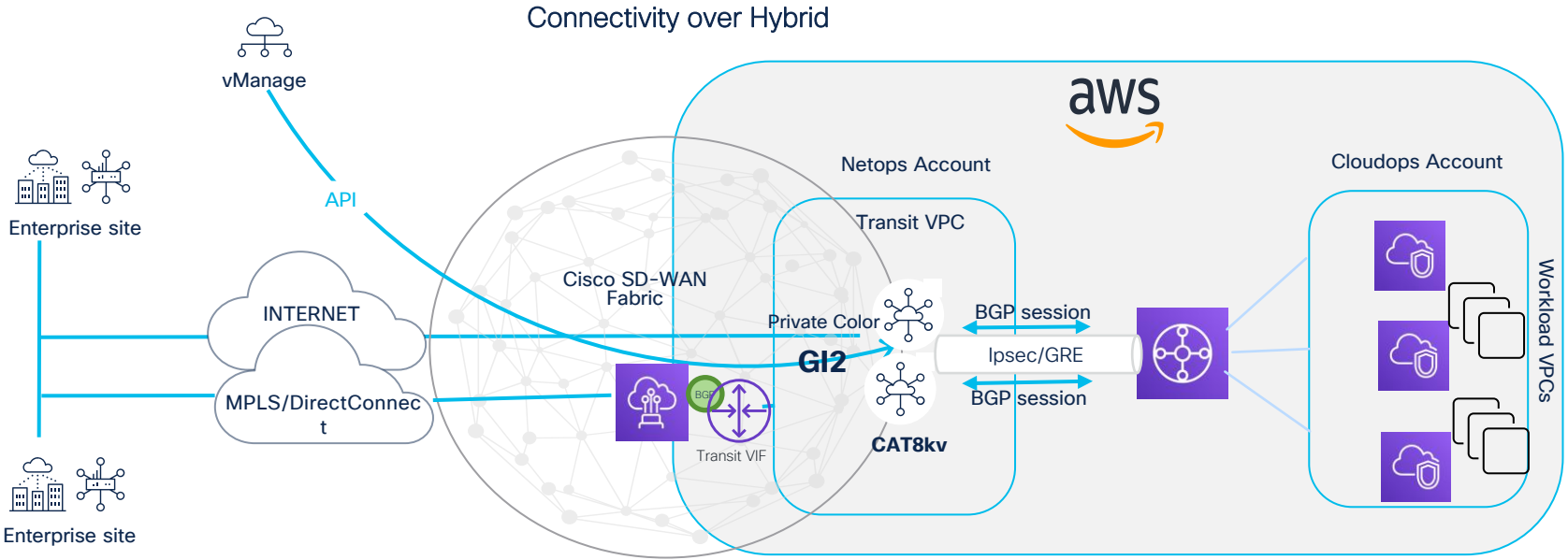
Cisco SD-WAN Cloud Hub connectivity option: 2 - AWS



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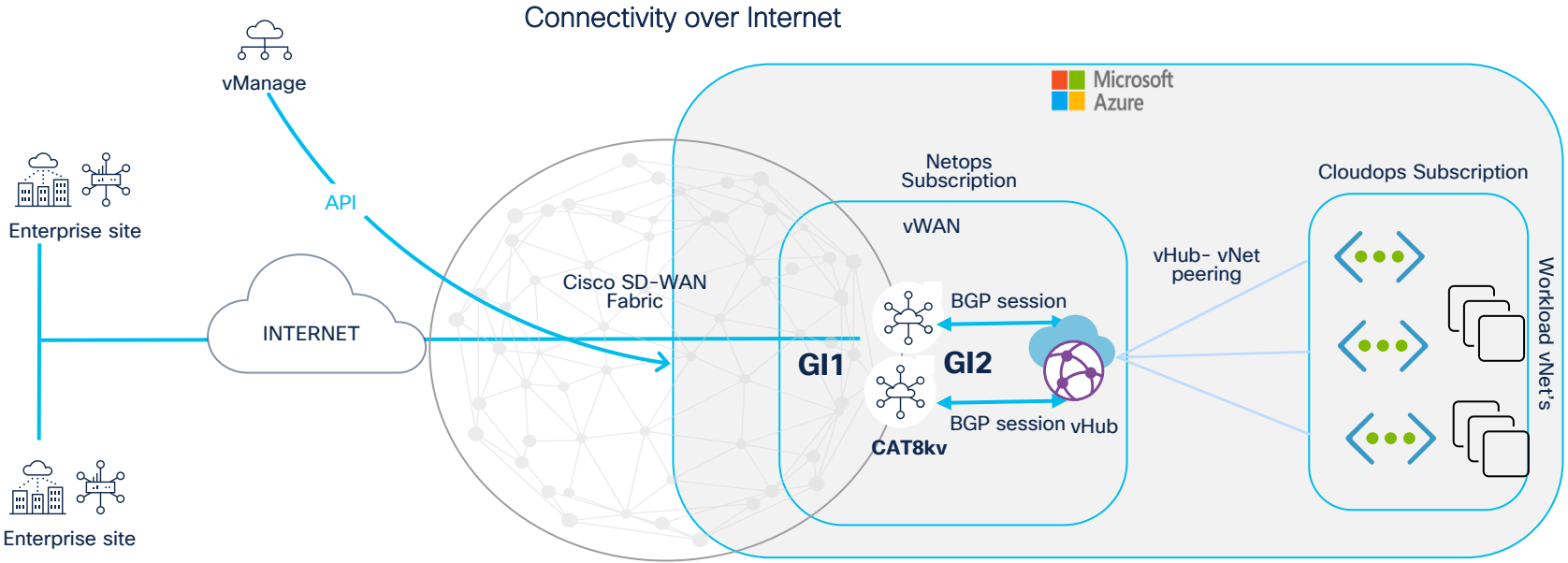
Cisco SD-WAN Cloud Hub connectivity option: 1- Azure



Simple

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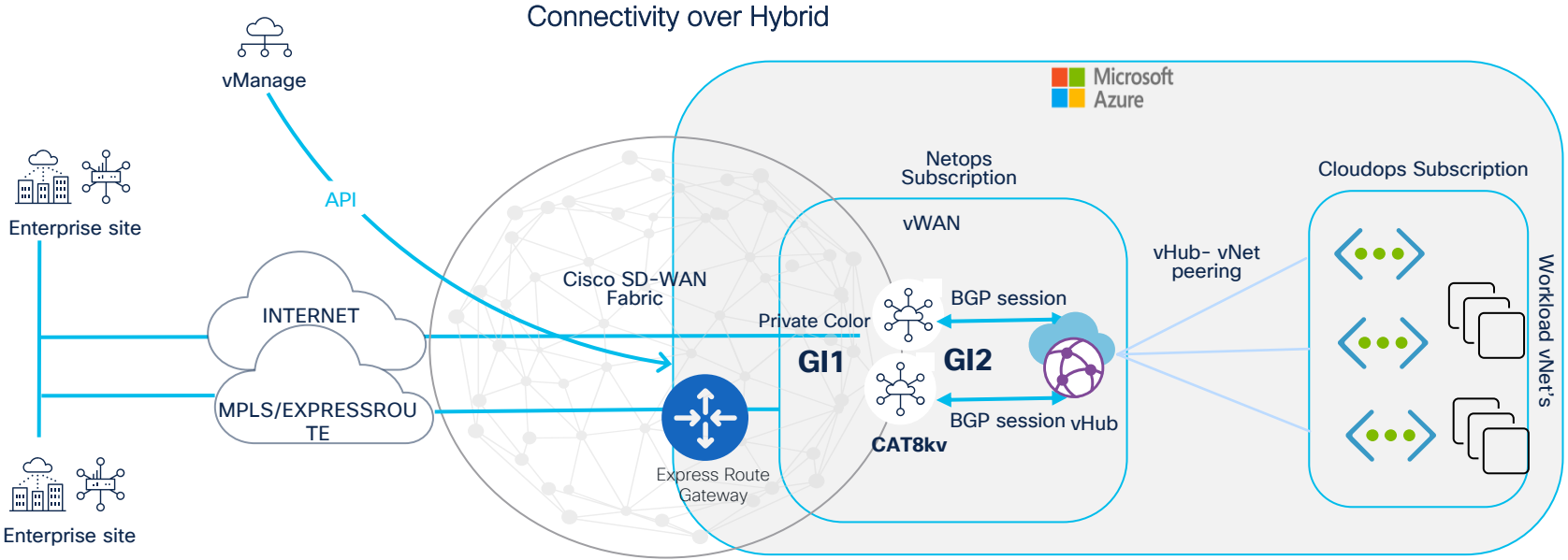
Cisco SD-WAN Cloud Hub connectivity option: 2 - Azure



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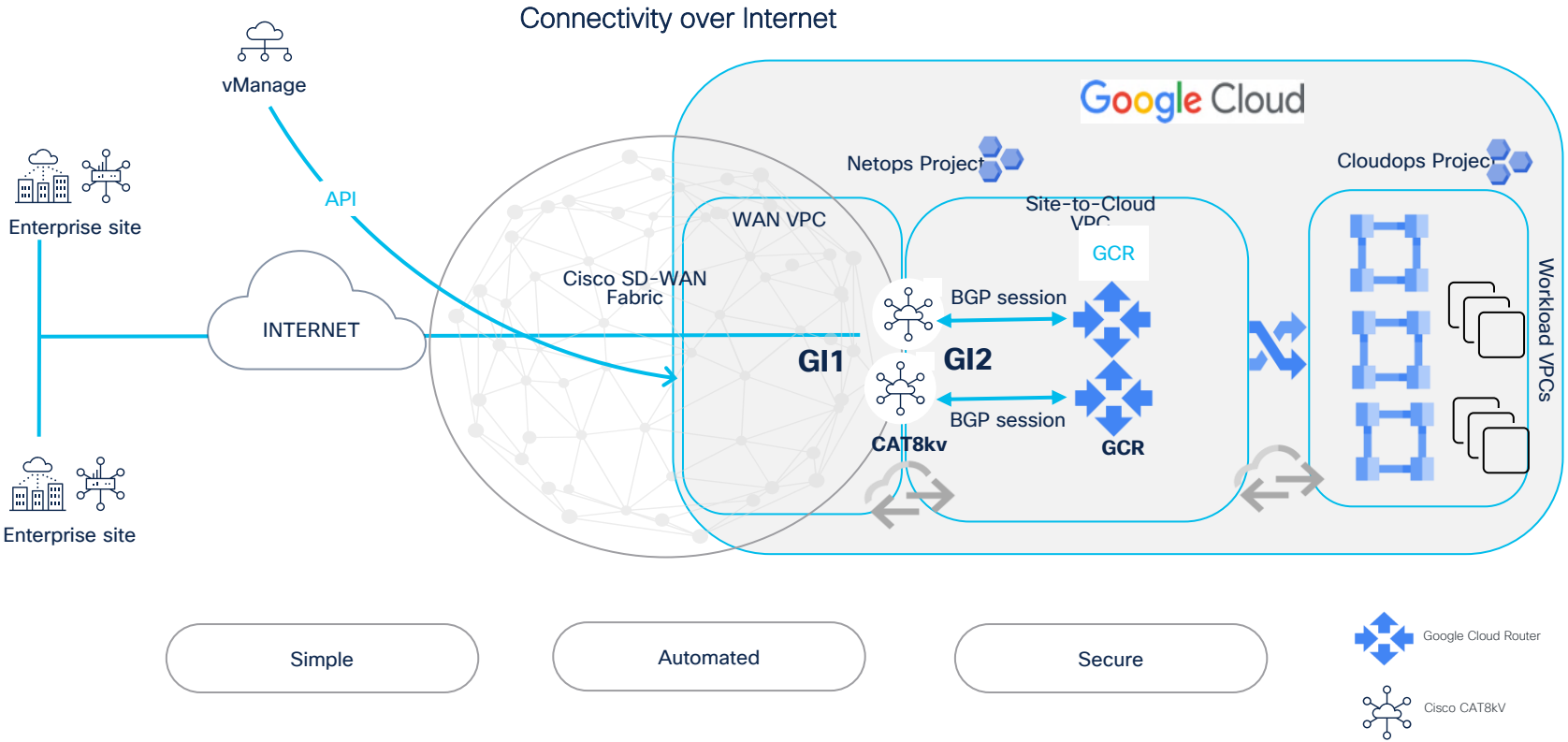
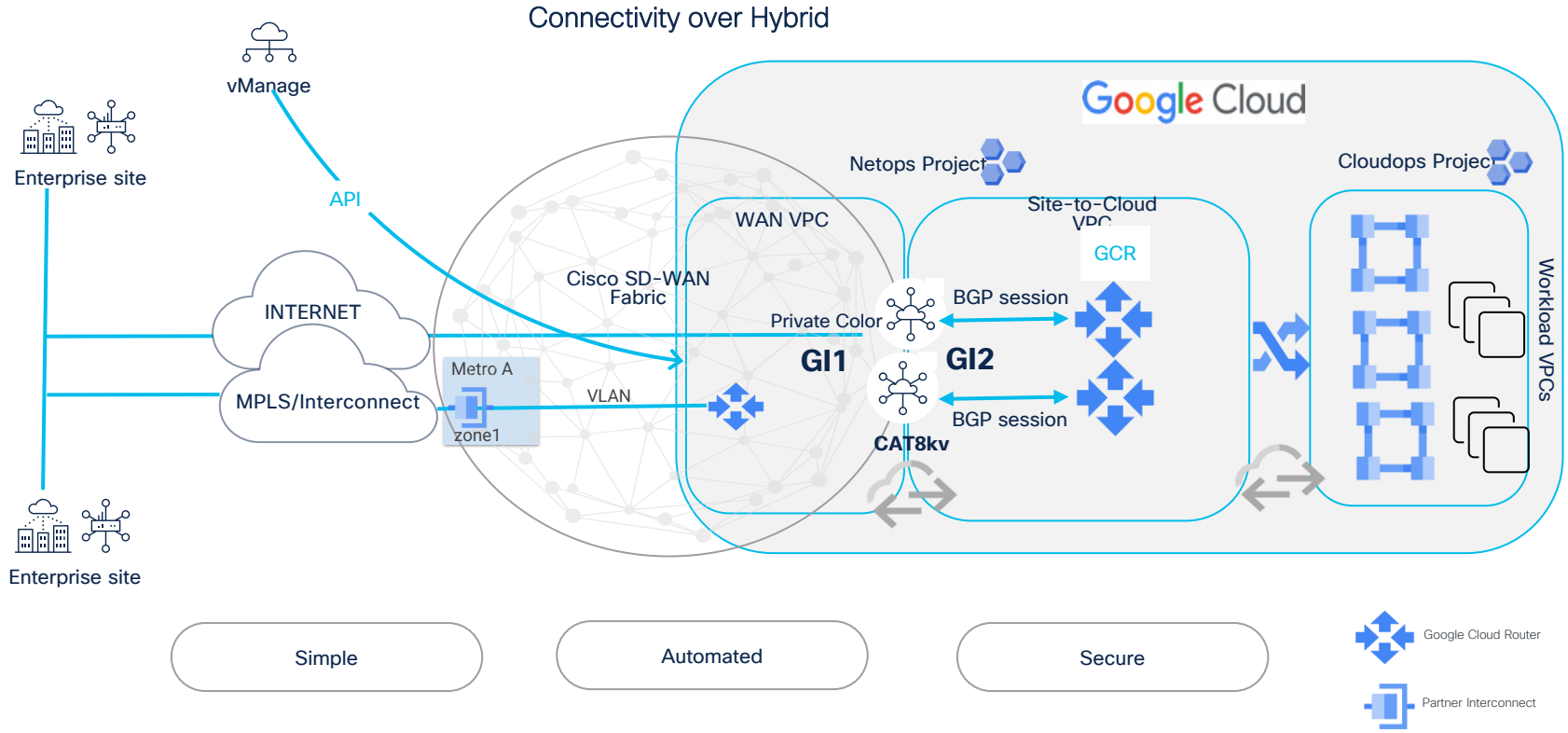
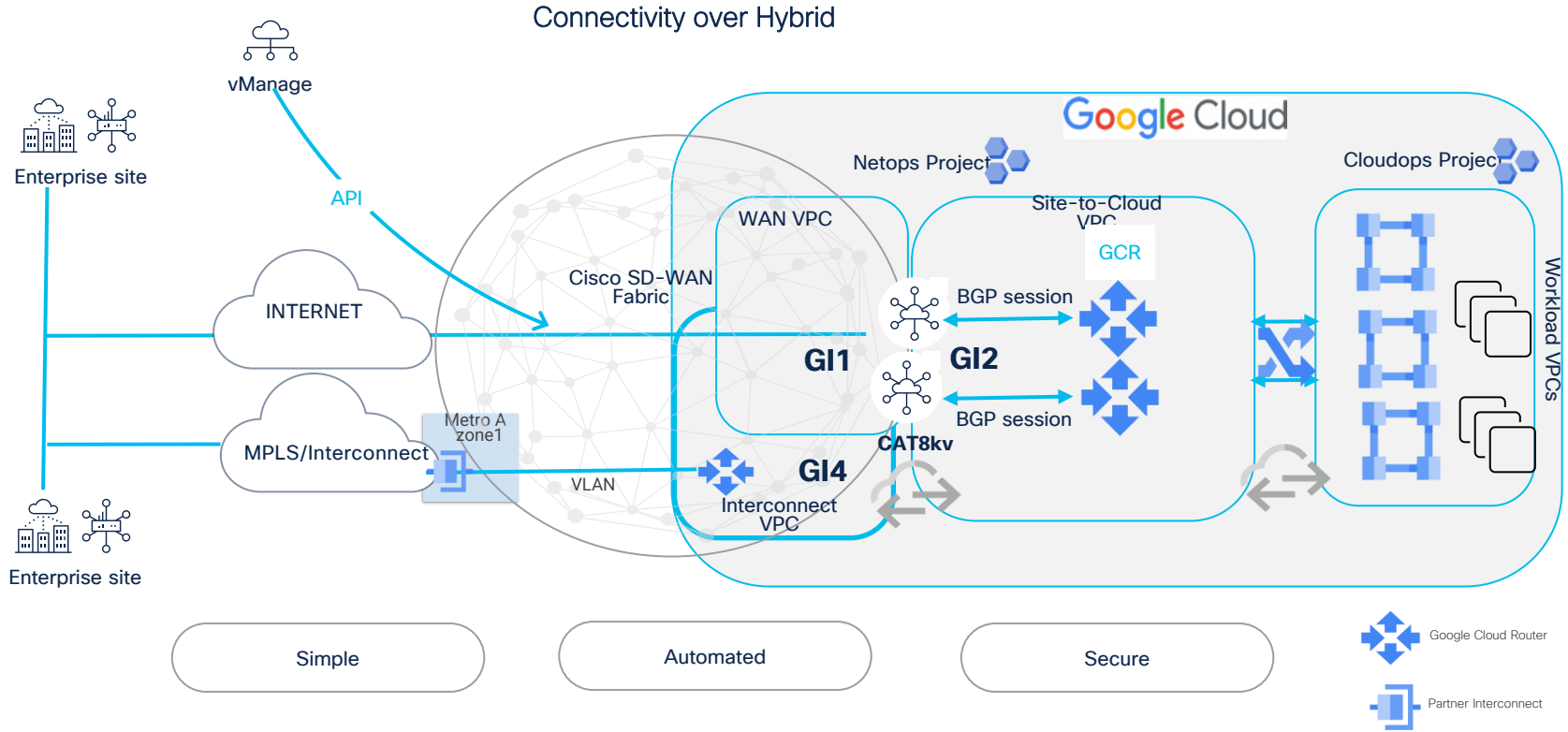
Cisco SD-WAN Cloud Hub connectivity option: 1-GCP



Cisco SD-WAN Cloud Hub connectivity option: 2- GCP

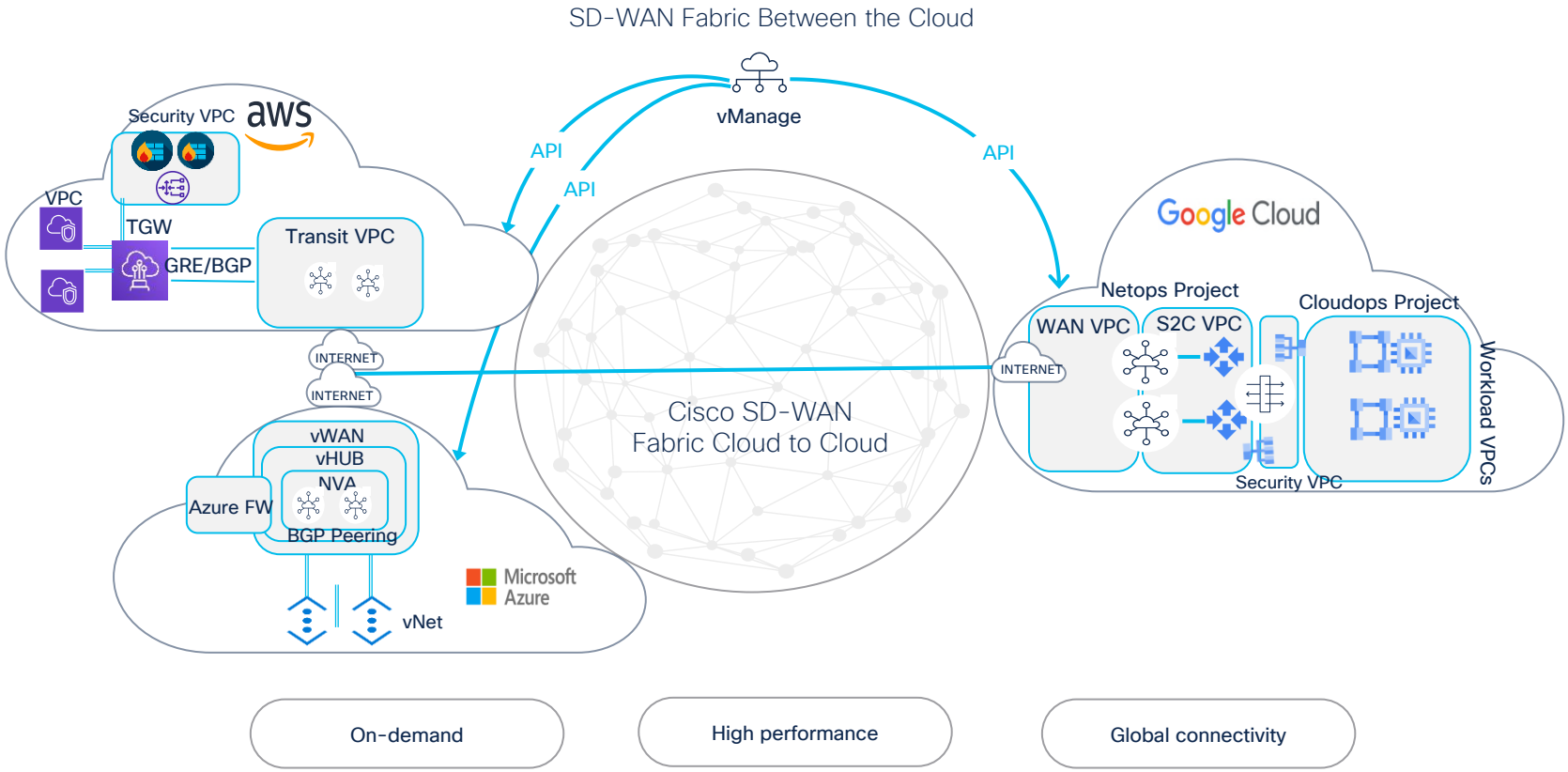


Cisco SD-WAN Cloud Hub connectivity option: 2



Simple Security Insertion

Security Stack Insertion in the Cloud



Simplify exchange point with programable Edge

Normalizing operations

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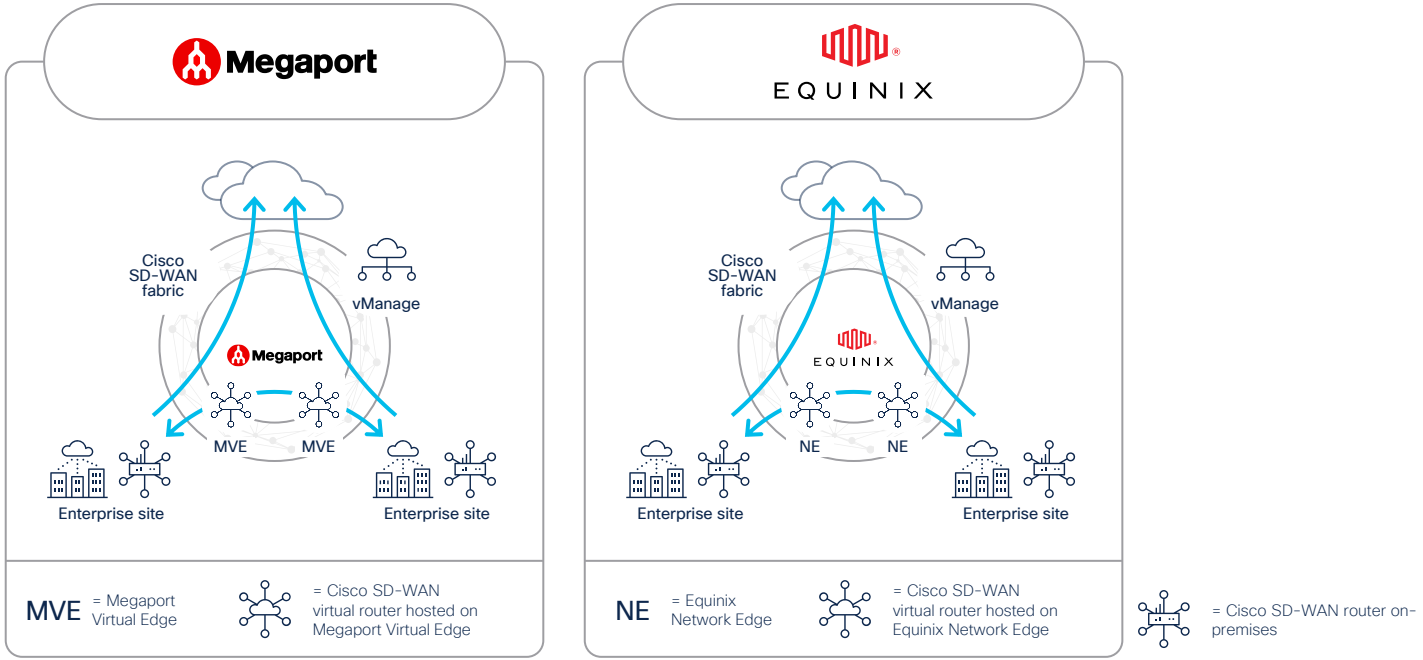
Cisco offers a choice of middle-mile partners

Integration with SDCI providers



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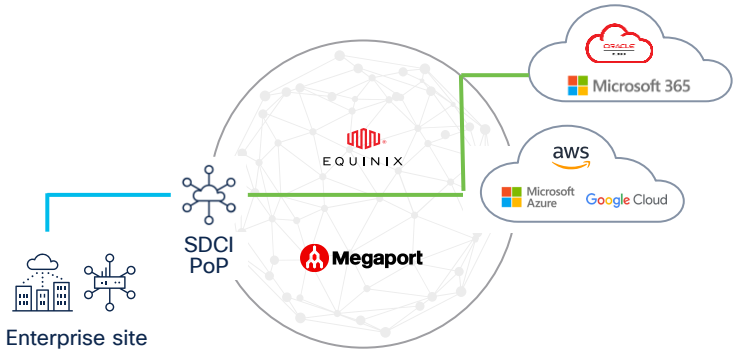
Use cases for On Demand Connectivity

Solution use cases with Cloud Interconnect Partners

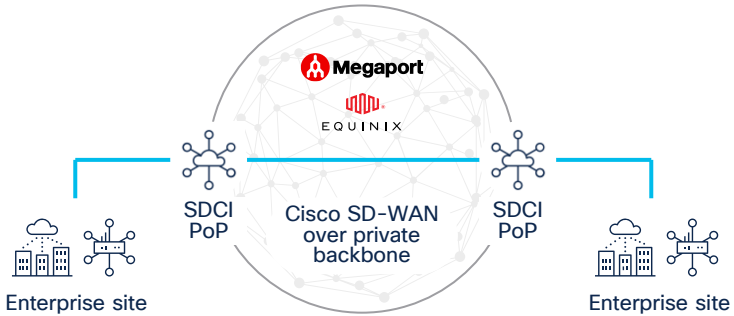
= Cisco SD-WAN router hosted at Megaport or Equinix

Site-to-multicloud



Simple | Automated | Secure

Site-to-site



On-demand | High performance | Global connectivity

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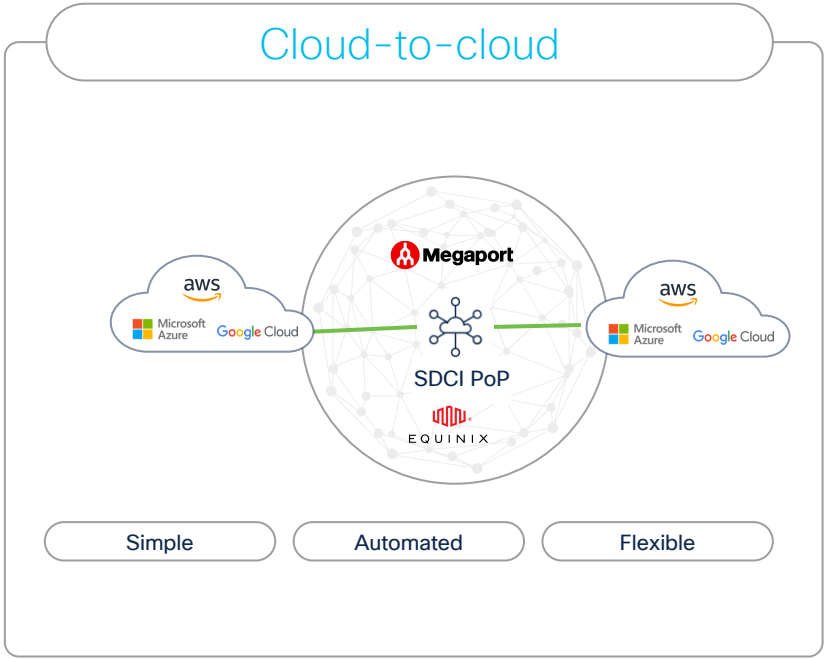
Solution use cases with Cloud Interconnect Partners



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Connectivity – Details

Site to AWS on-Demand Private connectivity

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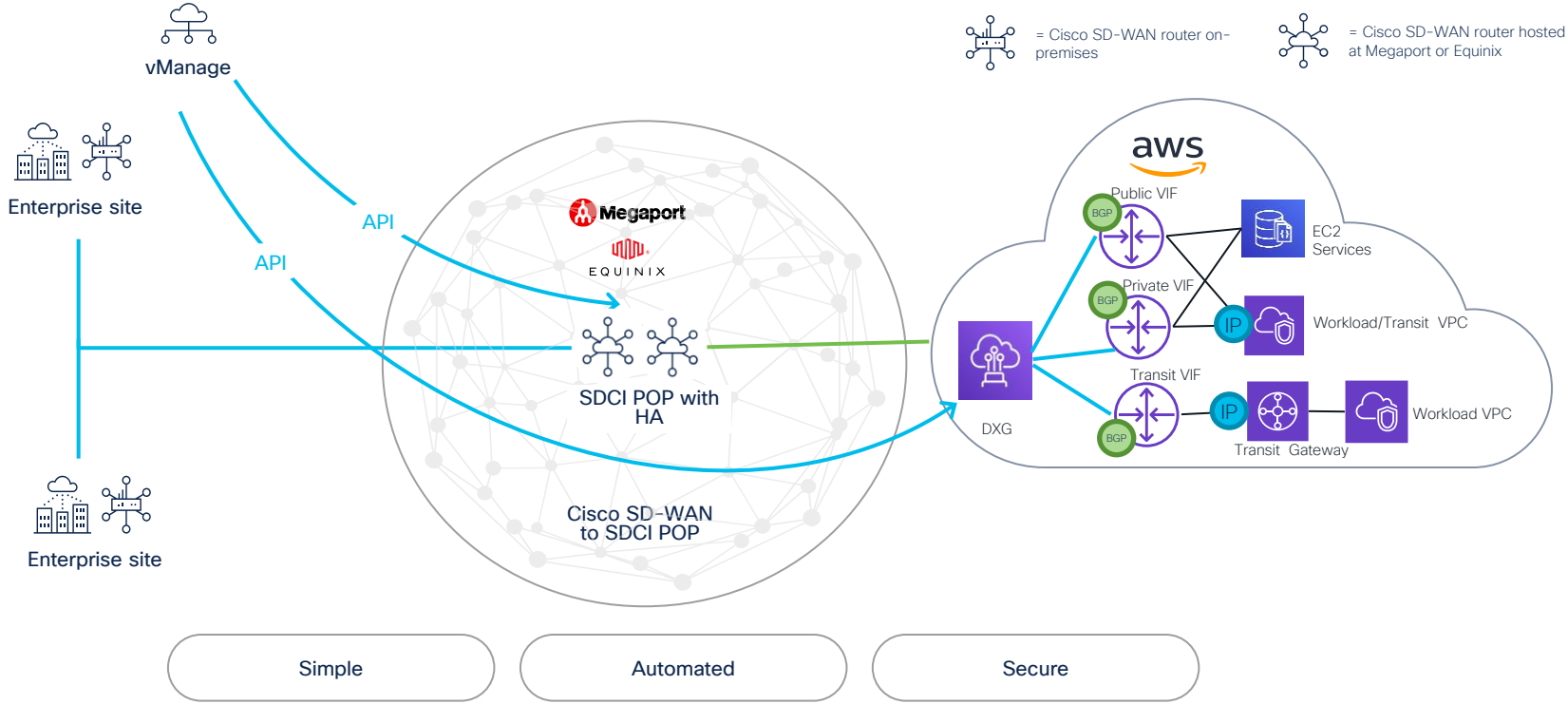
Cisco SD-WAN with SDCI – To AWS



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Site to Azure on-Demand Private connectivity

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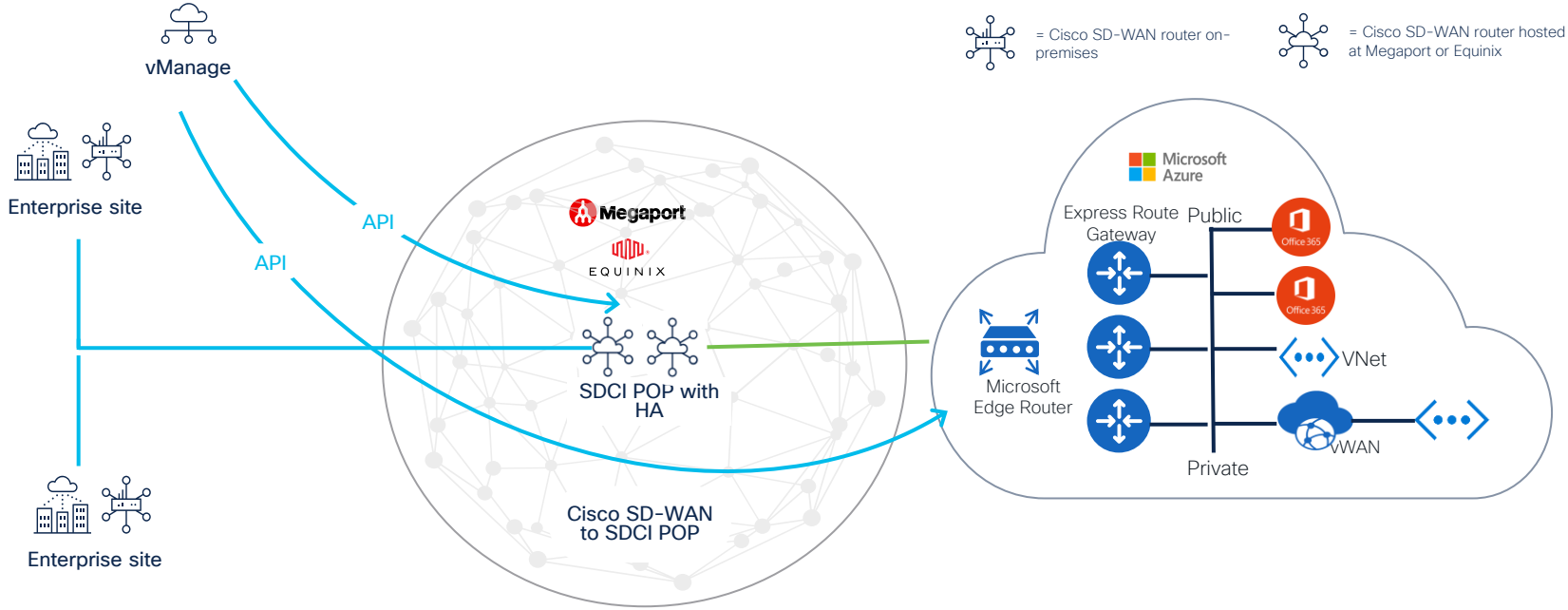

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Site to GCP on-Demand Private connectivity

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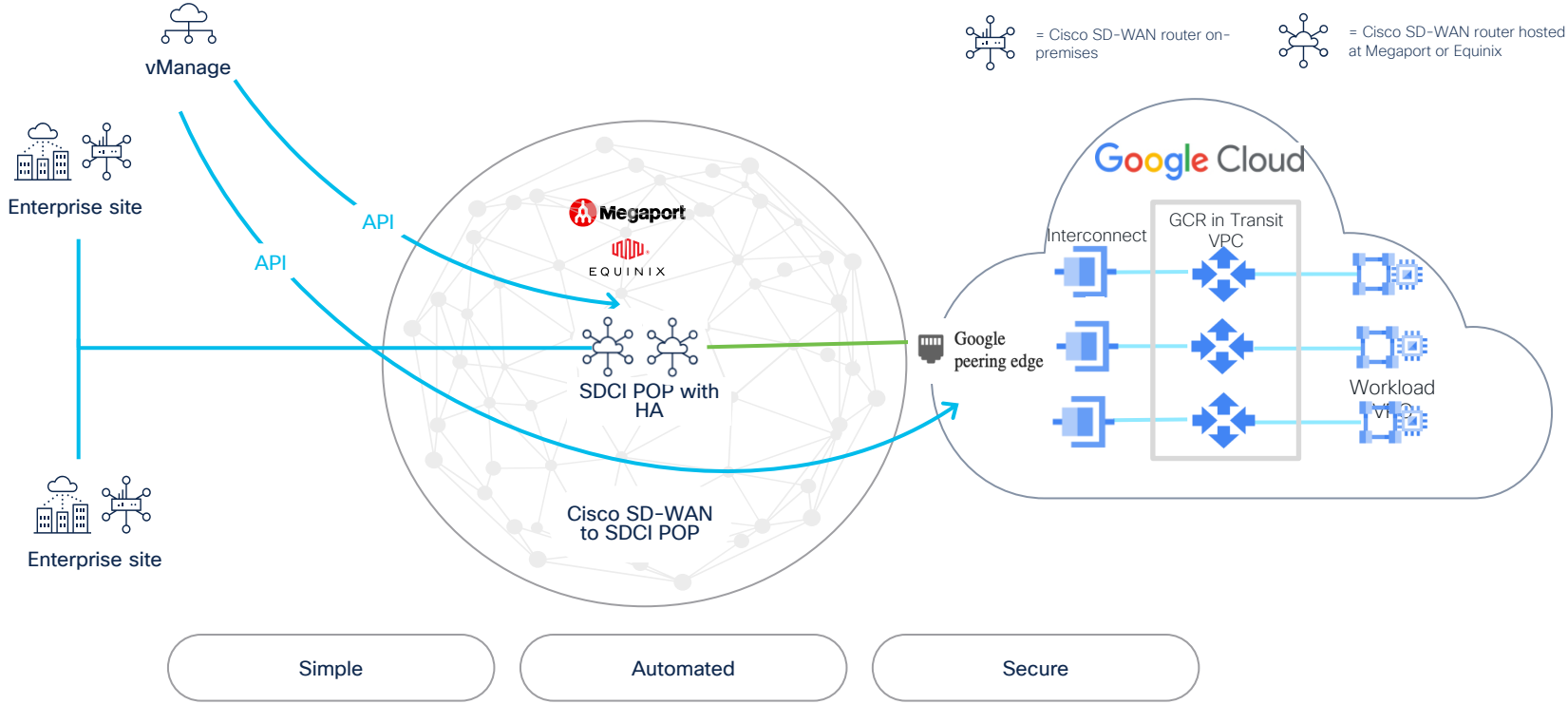
Cisco SD-WAN with SDCI – to Google Cloud



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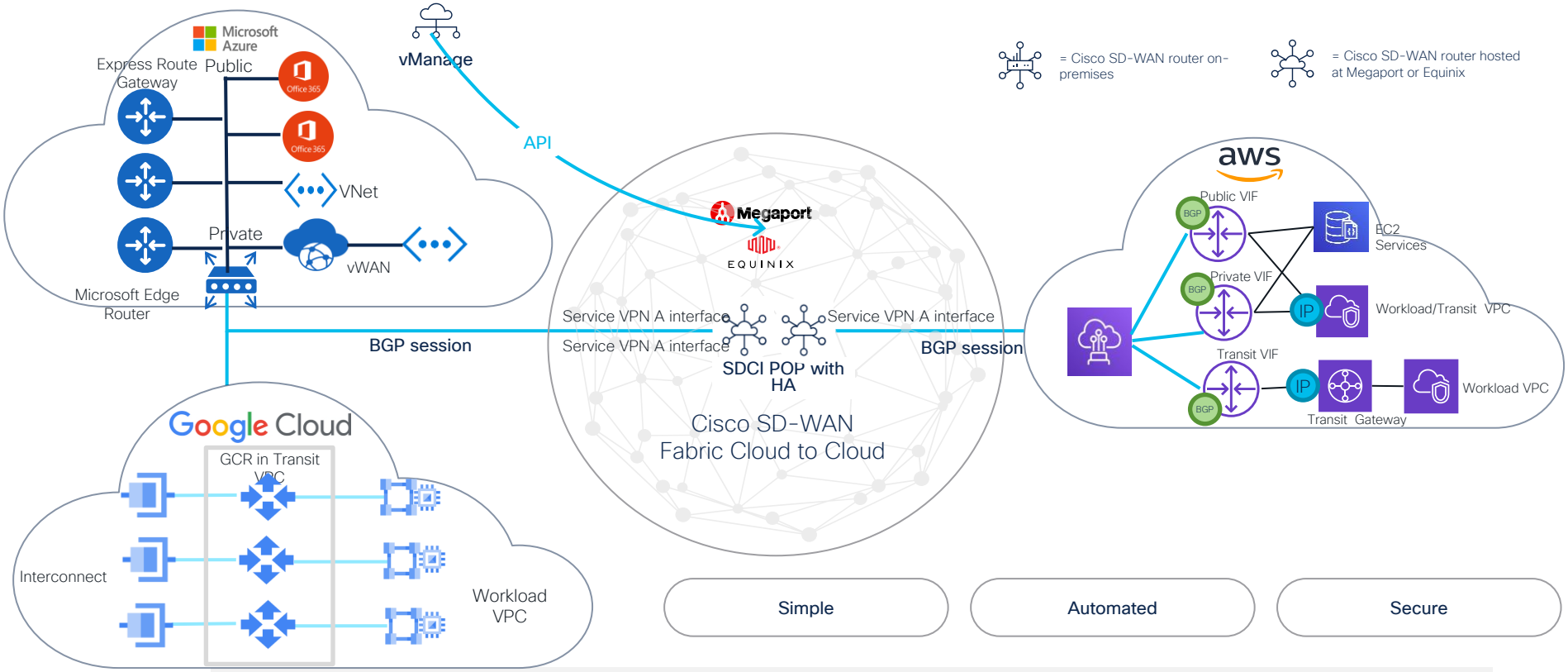
Site to Site – Private Backbone

Site to Site Connectivity

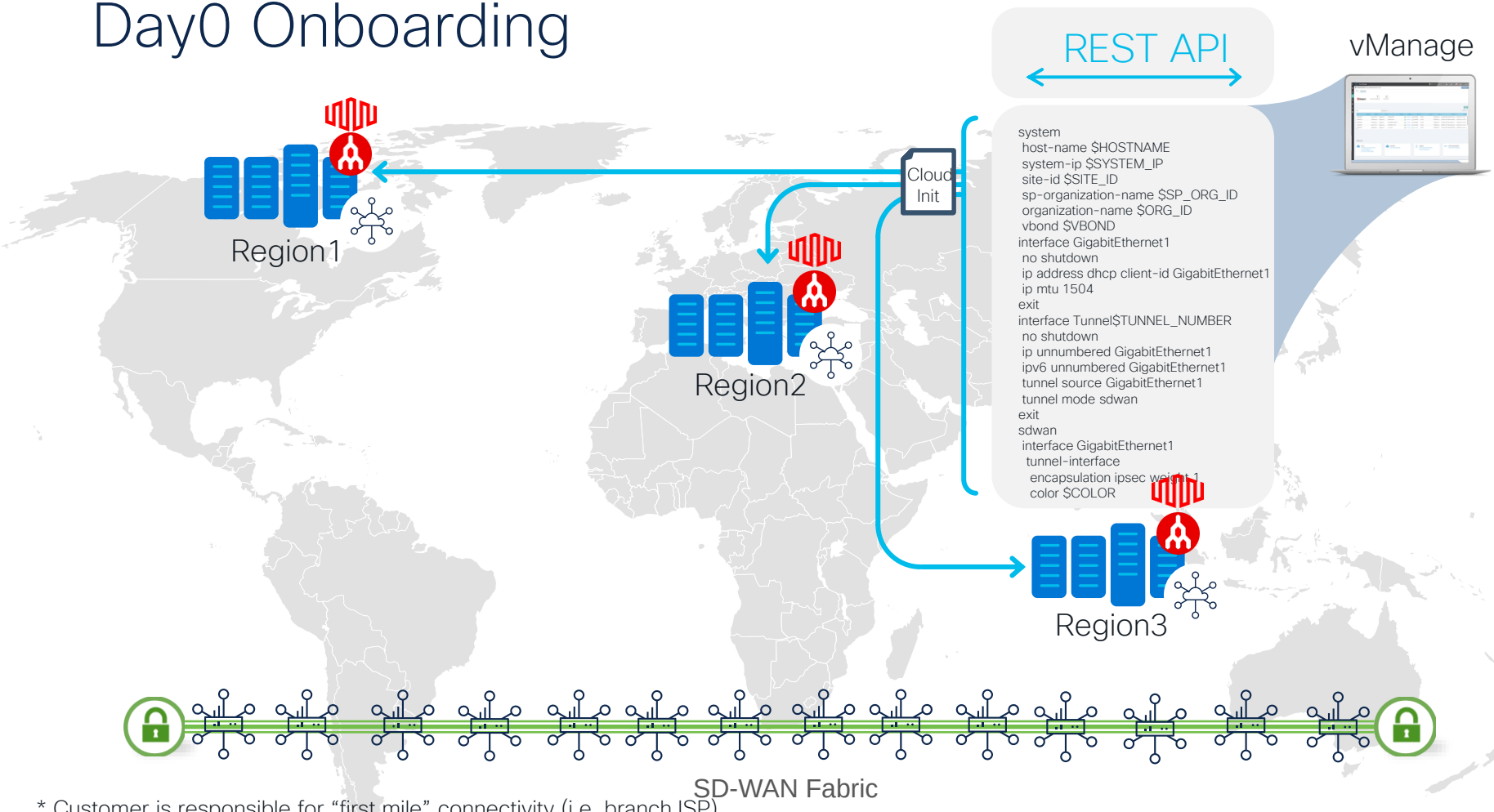
Cloud to Cloud

Cisco SD-WAN with SDCI – Cloud to Cloud



Architectural Overview/Day 0

Day0 Onboarding



* Customer is responsible for “first mile” connectivity (i.e. branch ISP)

Cloud Connection Configuration

Catalyst 8000v

```
interface GigabitEthernet1.$VLAN or interface
GigabitEthernet[4-23]
 no shutdown
 encapsulation dot1Q $VLAN
 ip address $IP_ADDRESS
 ip mtu 1500
exit
…
router bgp $BGP_LOCAL_AS
 bgp log-neighbor-changes
 neighbor $BGP_NEIGH remote-as $BGP_AS
 neighbor $BGP_NEIGH ebgp-multihop 1
 neighbor $BGP_NEIGH password $PASS
 address-family ipv4 unicast
  neighbor $BGP_NEIGH remote-as
$BGP_AS
  neighbor $BGP_NEIGH activate
  neighbor $BGP_NEIGH  send-community
both
  redistribute omp
  exit-address-family
…
omp
  address-family ipv4
   advertise bgp
```

New Interface Block:

- VLAN ID provided by Megaport
- IP Address is auto selected from pool or custom-defined within workflow

BGP Peering:

- Peering instantiated with AWS Direct Connect Gateway automatically, and Azure Express route gateway and GCP GCR.
- Peer address is custom-defined during workflow or as part of *Global Settings*
- Mutual redistribution (OMP to BGP and vice versa)

Backbone on Demand Configuration

Catalyst 8000v

```
interface GigabitEthernet1.$VLAN1 or [4-23]
 no shutdown
 encapsulation dot1Q $VLAN
 ip address $IP_ADDRESS
 ip mtu 1500
exit
interface Loopback1
 no shutdown
 ip address $IP_ADDRESS
 ip mtu 1500
interface Tunnel1
 no shutdown
 ip unnumbered Loopback1
 ipv6 unnumbered Loopback1
 tunnel source Loopback1
 tunnel mode sdwan
exit
ip route $PEER_LOOPBACK_IP
$PEER_PHYS_IP
sdwan
 interface Loopback1
  tunnel-interface
   color $COLOR
   max-control-connections 0
   vmanage-connection-preference 0
```

New Interface Block:

- VLAN ID provided by Megaport
- IP Address is auto-defined
- Represents L2 point-to-point connection to remote region

New TLOC Interface:

- Unbound Loopback
- New backbone connections to other regions create a new sub-interface, but utilize existing Loopback, Equinix uses device link
- IP Address is auto-defined
- Static route defined to establish connectivity to remote Loopbacks
- Color defined in *Global Settings*

Unified Connectivity Orchestrator – Cisco SD-WAN

Single pane of glass automation

Time to value (with fast deployment) full network stack automation
(automate overlay underlay via vManage)

Centralized control from a single unified view with real-time monitoring via vManage

Simplified connectivity to Cloud to provides decentralise access

Service-health based

Automate SD-WAN policy for custom applications in multi-cloud based on application profile

Improved application performance

SD-WAN path selection based on network and service telemetry data exchange

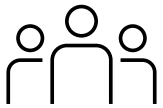
Secure multicloud networking

Consistent Security Policies – Secure segmentation and common policy framework across on-prem and cloud

Reduced network risks
(with private backbone connectivity)

Strong security posture
(end-to-end encryption and segmentation)

Continue your education



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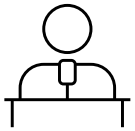
Walk-In Labs

Meet the Engineer
1:1 Meetings

Related sessions



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