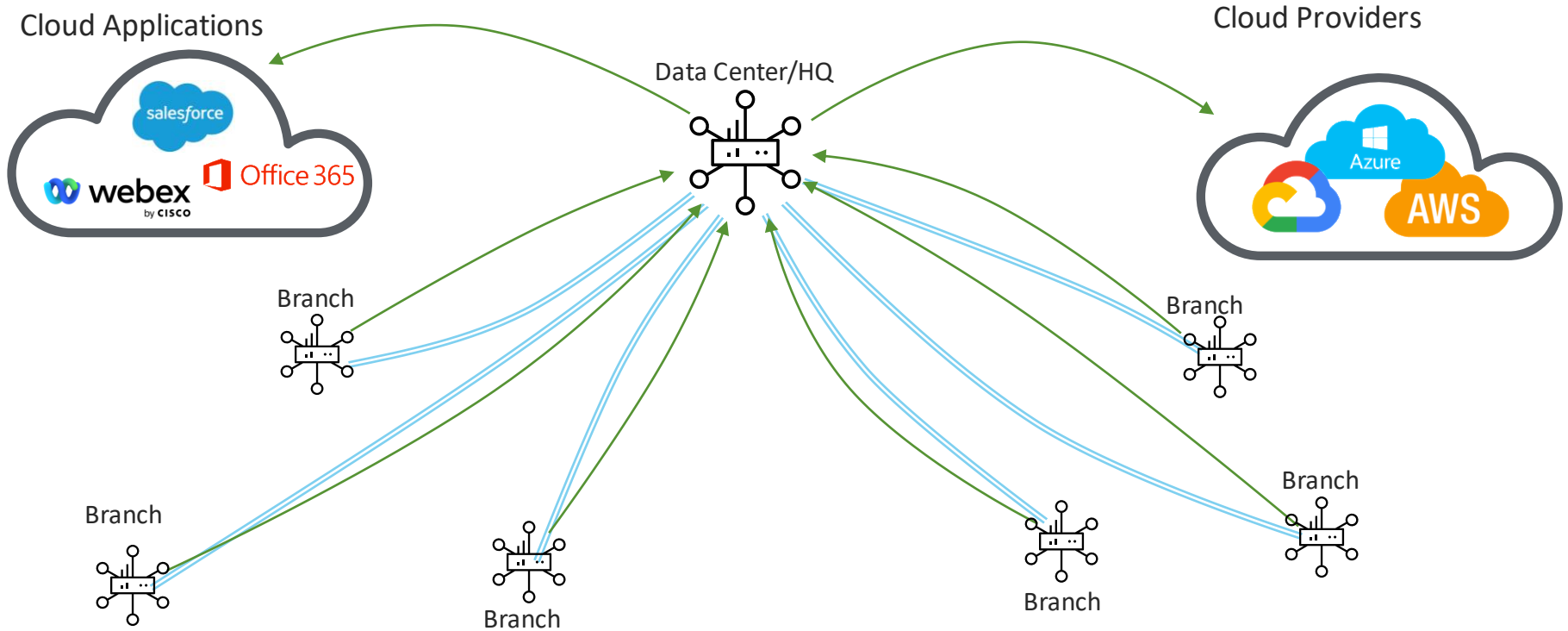CISCO *Connect* Brasil

ALL IN

Agenda

- Introduction

- Solution Architecture

- Security

- Multi-Cloud and SaaS

- Analytics & Assurance

The Hardware Based WAN of Yesterday

Doesn't Keep up with the Needs of Today

Cloud Applications

Cloud Providers

Data Center/HQ

Branch

Branch

Branch

Branch

Branch

Branch

SD-WAN Recap

Any Deployment

Management & Analytics

On-premise | Cloud | Multi-tenant

Automation | Network Insights | Machine Learning | AI

Open | Programmable | Scalable

Any Service

- Multicloud Optimization
- Multi-Layer Security
- Analytics
- Voice
- Multi-Domain IBN Policy

Any Transport

- Satellite
- Internet
- MPLS
- 5G/ LTE
- SDCI*

Any Location

- Branch
- Colocation
- Cloud
- Remote Work

* Software Defined Cloud Interconnect

CISCO *Connect* Brasil

Recap: where we are taking Cisco SD-WAN next

Summary of Basic SD-WAN Capabilities

- Circuit Load Balancing
- Direct Internet Access
- Centralized Management & Orchestration
- Circuit Cost Savings

+

Security

- Holistic security solutions that evolve with customer's overtime
- Granular segmentation w/ Identity
- Cisco and 3rd party support

Multi Cloud

- Network & Security Services in partnership with Cloud/SaaS, Telco/SP
- End-to-End automation with policy control and observability
- Pluggable API Framework

Analytics & Assurance

- End-to-end visibility from the user to cloud
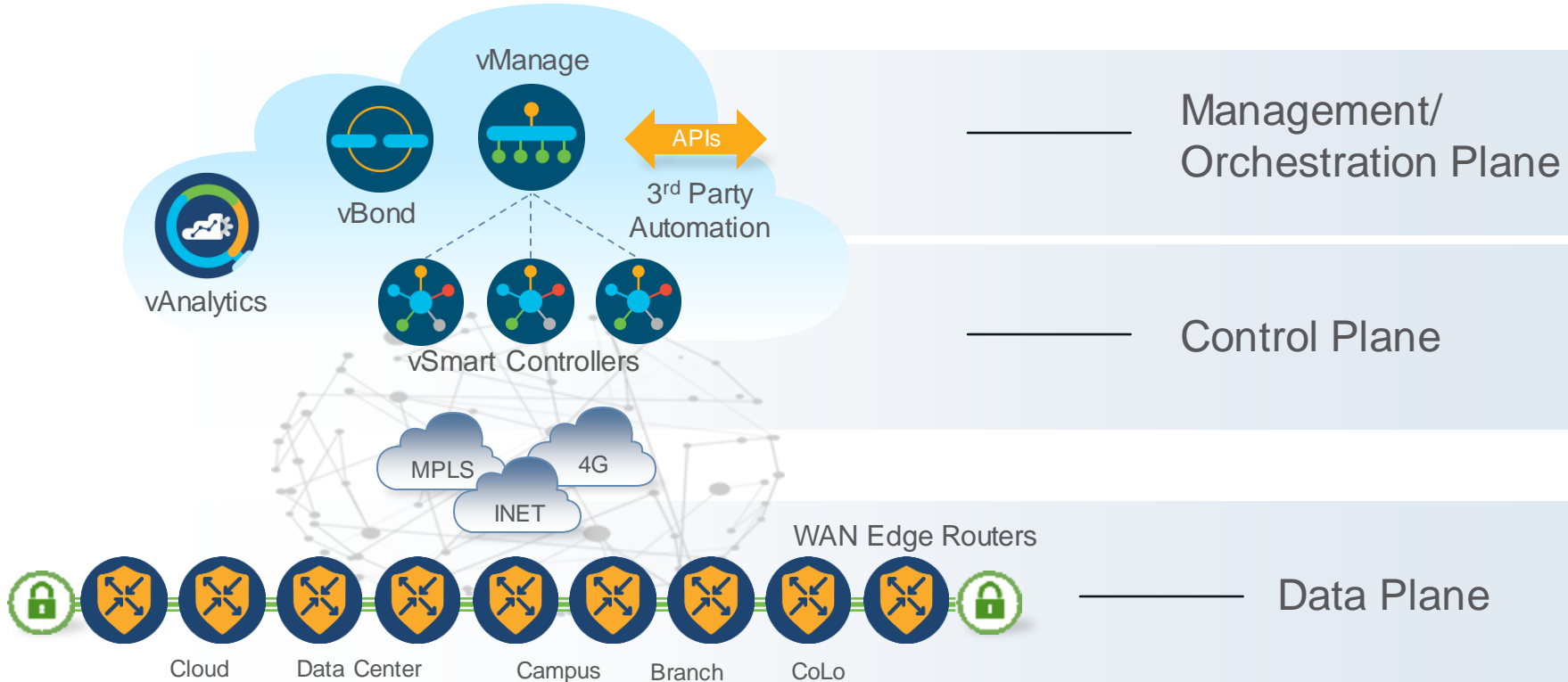- AI/ML to deliver service assurance and self-healing resiliency

Flexible consumption and deployment

Enhanced User Experience
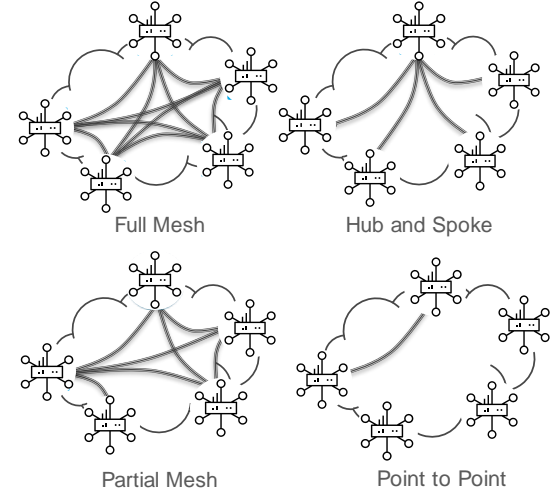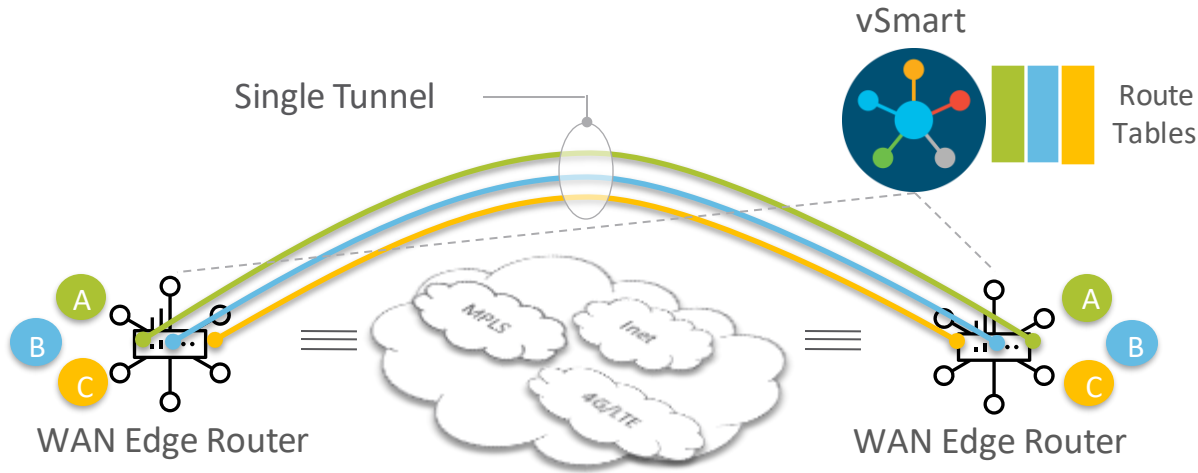
Solution
Architecture

Cisco SD-WAN Solution Overview

Applying SDN Principles Onto The Wide Area Network

vManage

APIs

3rd Party Automation

vBond

vAnalytics

vSmart Controllers

MPLS   4G

INET

WAN Edge Routers

Cloud   Data Center   Campus   Branch   CoLo

Management/ Orchestration Plane

Control Plane

Data Plane

Security

End-to-End Segmentation with Multi-Topology

Single Tunnel

vSmart

Route Tables

A
B
C

WAN Edge Router

MPLS

Inet

4G/LTE

A
B
C

WAN Edge Router

Full Mesh

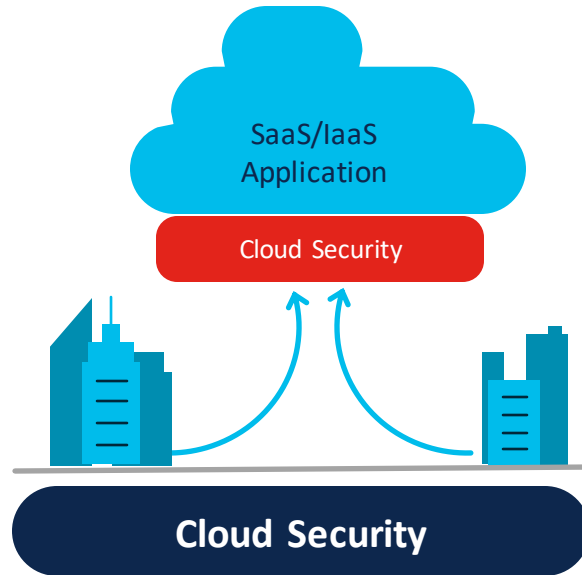Hub and Spoke

Partial Mesh

Point to Point

Segment connectivity across the SD-WAN fabric without reliance on underlay transport

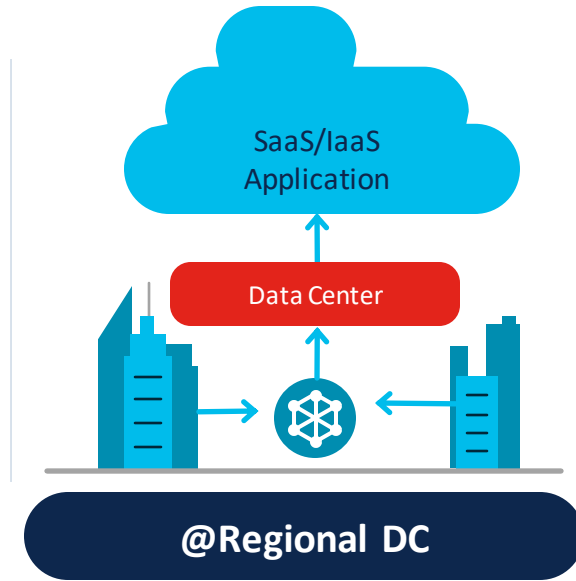WAN Edge routers maintain per-VPN routing table for complete control plane separation

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Relevant Security Models. Driving towards SASE

On-Prem Security

SaaS/IaaS Application
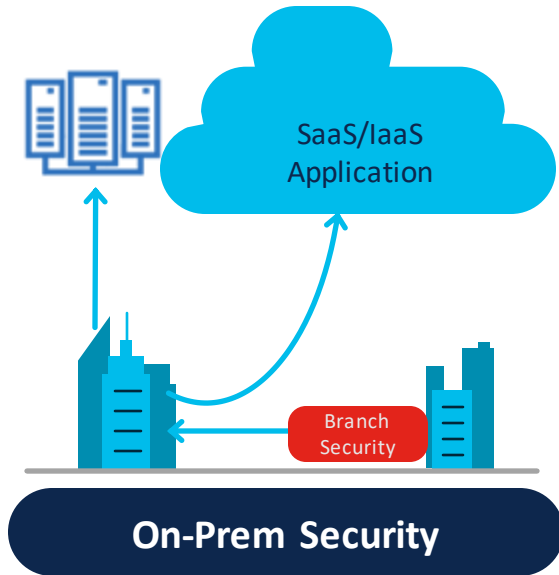
Branch Security

Thick branch with Routing and Security

Cloud Security

SaaS/IaaS Application

Cloud Security

Thin branch with security in the cloud

@Regional DC

SaaS/IaaS Application

Data Center

Security Services at Regional DC

Security consistent across on-prem and cloud

Enterprise Firewall
Layer 3 to 7 apps classified; geofiltering

Intrusion Protection System
Most widely deployed IPS engine in the world

URL-Filtering
Web reputation score using 82+ web categories

Advanced Malware Protection
With File Reputation and Sandboxing

TLS/SSL Proxy
Detect Threats in Encrypted Traffic

Integrated Security

Cisco
SD-WAN

Secure web gateway

Cloud-delivered firewall

Cloud access security broker (CASB)

DNS-layer security

Interactive threat intel

Cisco Umbrella

Cisco SD-WAN

Cisco SD-WAN + Umbrella (SASE)

Multi-Cloud and SaaS

Key problems we solve here

Automating Networking
S2C, S2S, C2C

Application Experience
WebEx, MS Teams,
GCP Service Directory,
Mid-mile Optimization

Simplifying Operations
Audit, Scale UP/Down,

Monitoring

CISCO Connect Brasil

SaaS Optimization

Data Center

Corporate Software

Branch/Campus

Users

SD-WAN Fabric

Colocation Provider

Cisco SD-WAN

Cloud Security Provider
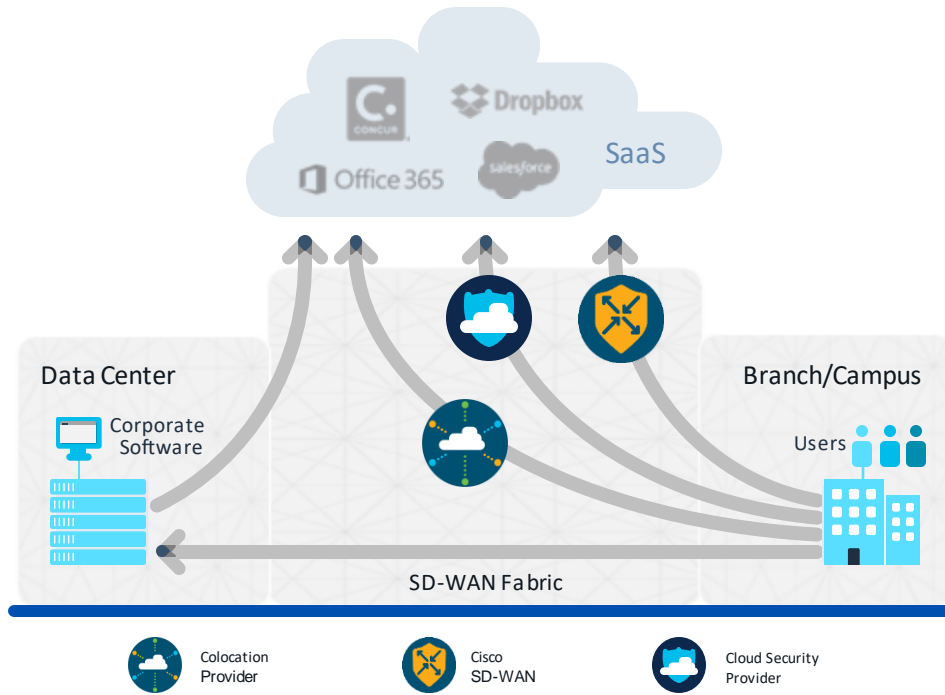
Optimization via Multipath

Up to 40% faster Office 365 Performance

Increased reliability and utilization of best path for SaaS applications

Cloud OnRamp for SaaS

SaaS Optimization Challenges

- What path to use for SaaS app?
  - (1) Direct Internet Access
  - (2) Regional Breakout
  - (3) Data Center Backhaul

- Which path is having better SLA for a given SaaS app, How to get performance visibility for each path?

- When specific path is having performance issues, How to automatically steer traffic ?
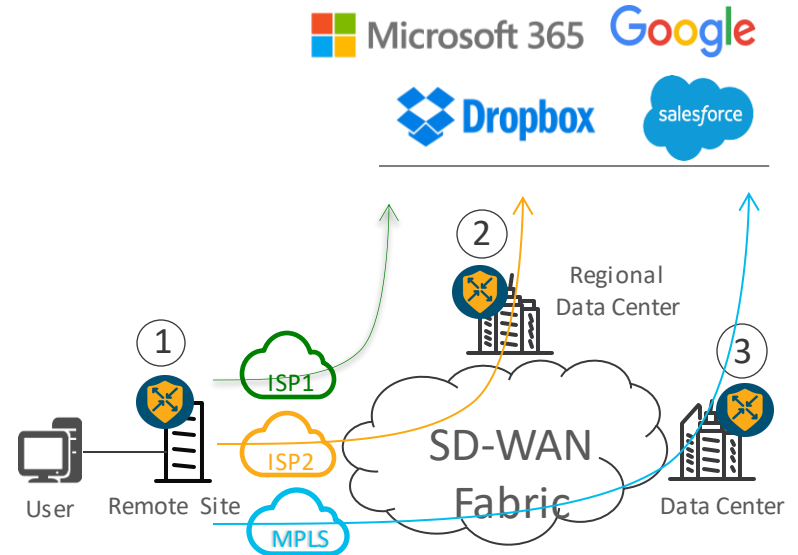
Cloud OnRamp for Microsoft 365

Improving the user experience

Use case

- How to optimize only certain M365 categories?

- How to gain M365 telemetry view to gain insights into application performance?

- When a specific path is having performance issues, how to automatically re-route traffic?
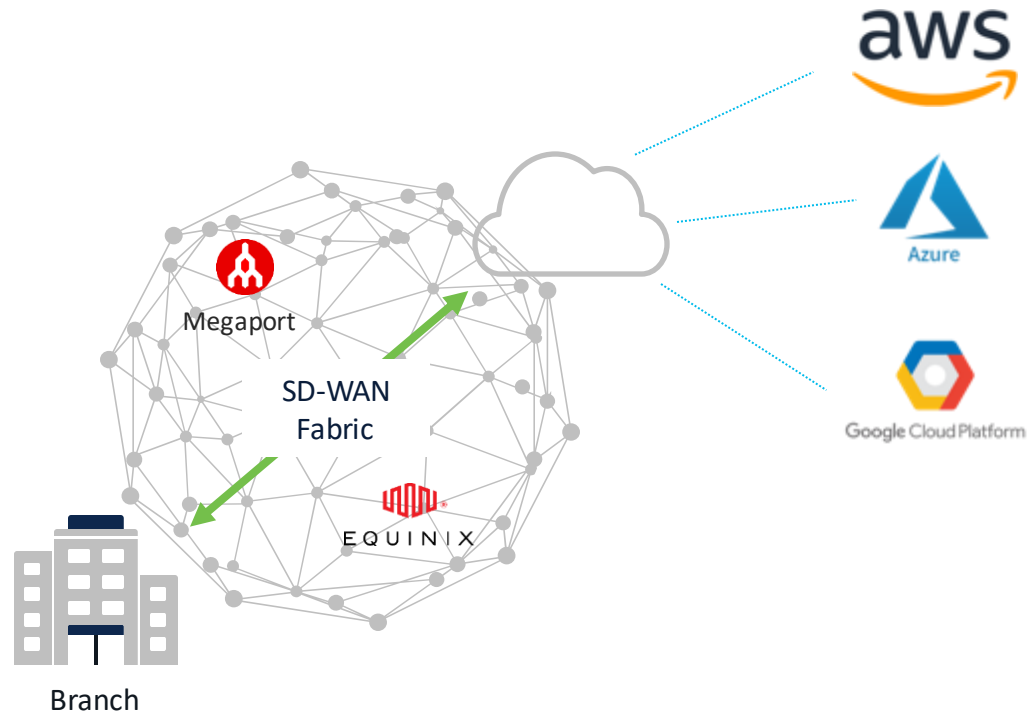
Features

- Dynamic URL/IP Categorization.

- Microsoft Informed Routing.

CISCO *Connect* Brasil
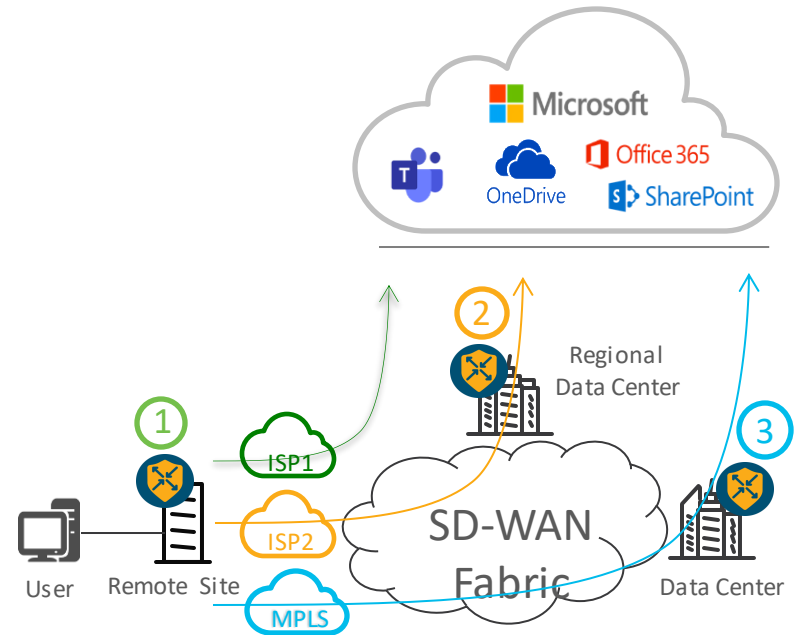
SD-WAN Cloud On-Ramp for Secure Multi-Cloud

Leading Cloud Networking Integrations

Automation
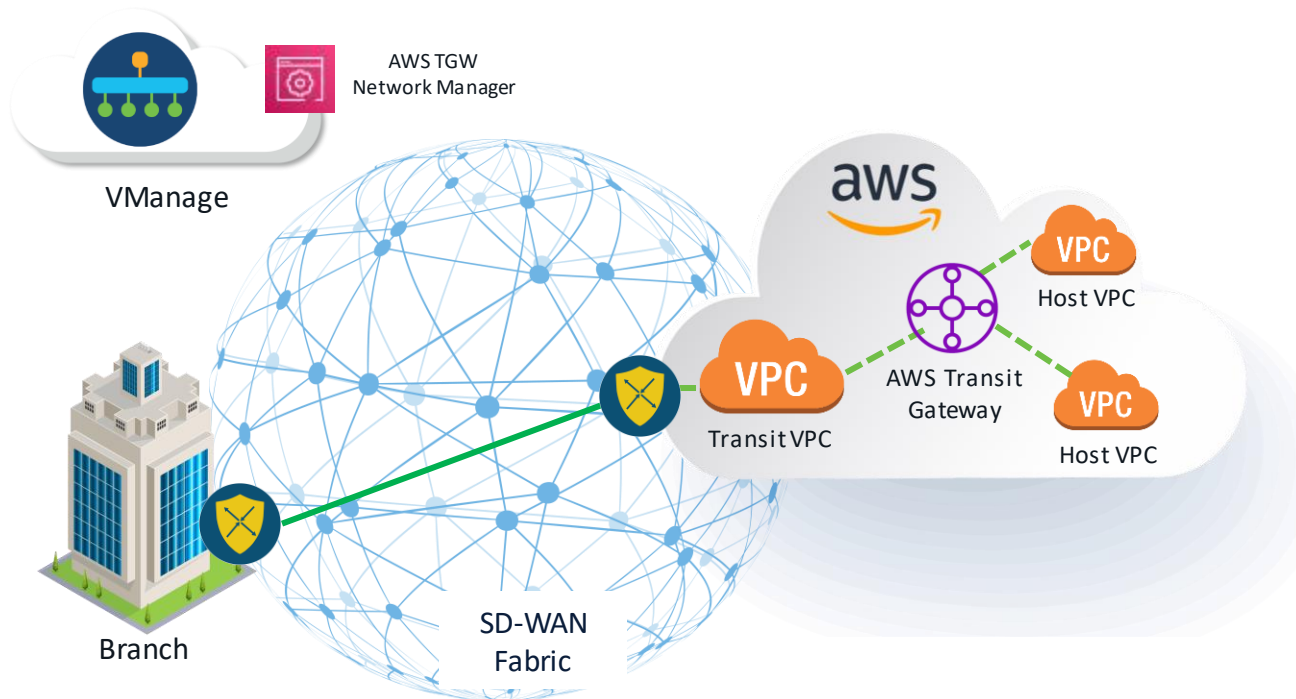Create new paths to the cloud with the SD-WAN fabric.

Ease of Management
Gain end-to-end visibility for traffic workloads.

Security/Policy
Network segmentation across branch and cloud workloads.

Cloud OnRamp Multi-Cloud with AWS

Automation
Automated site to AWS cloud connectivity including Transit Gateway orchestration using Cisco SD-WAN vManage.

Ease of Management
Policy exchange between vManage and AWS TGW. Visibility into inter-regional network telemetry.

Security/Policy
Network segmentation across branch and cloud workloads.

Cisco SD-WAN integration with Microsoft vWAN
Native integration of SD-WAN endpoint inside Azure Virtual WAN
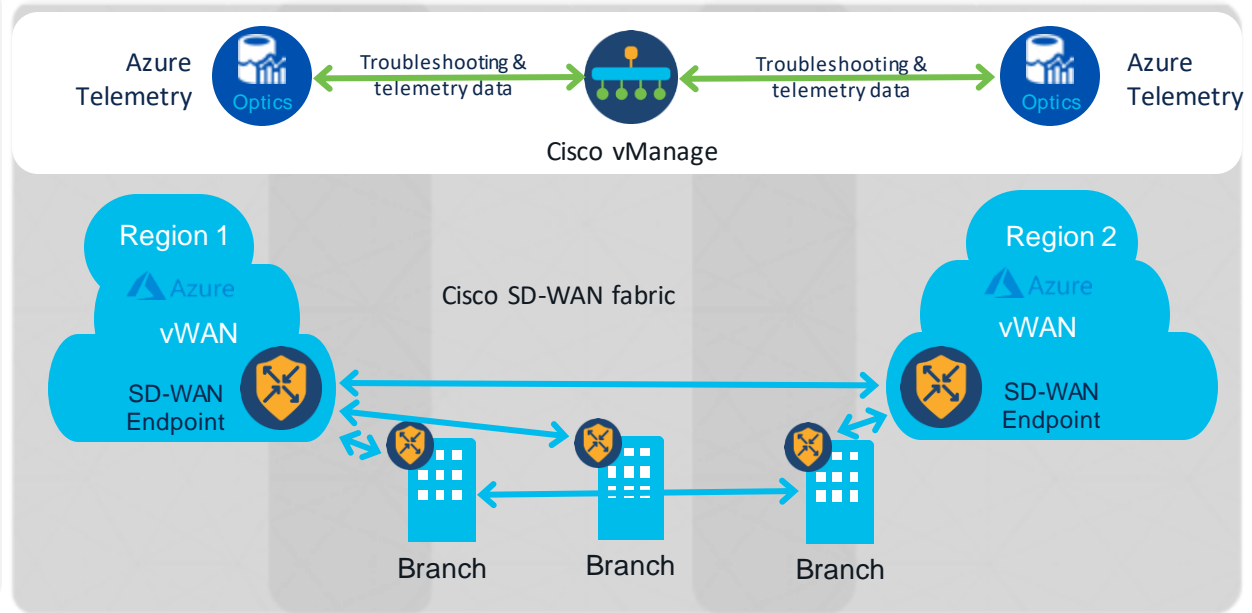
Automation
Automatically connect to resource in vWAN Hub, including Express Route and VPN gateways

Ease of Management
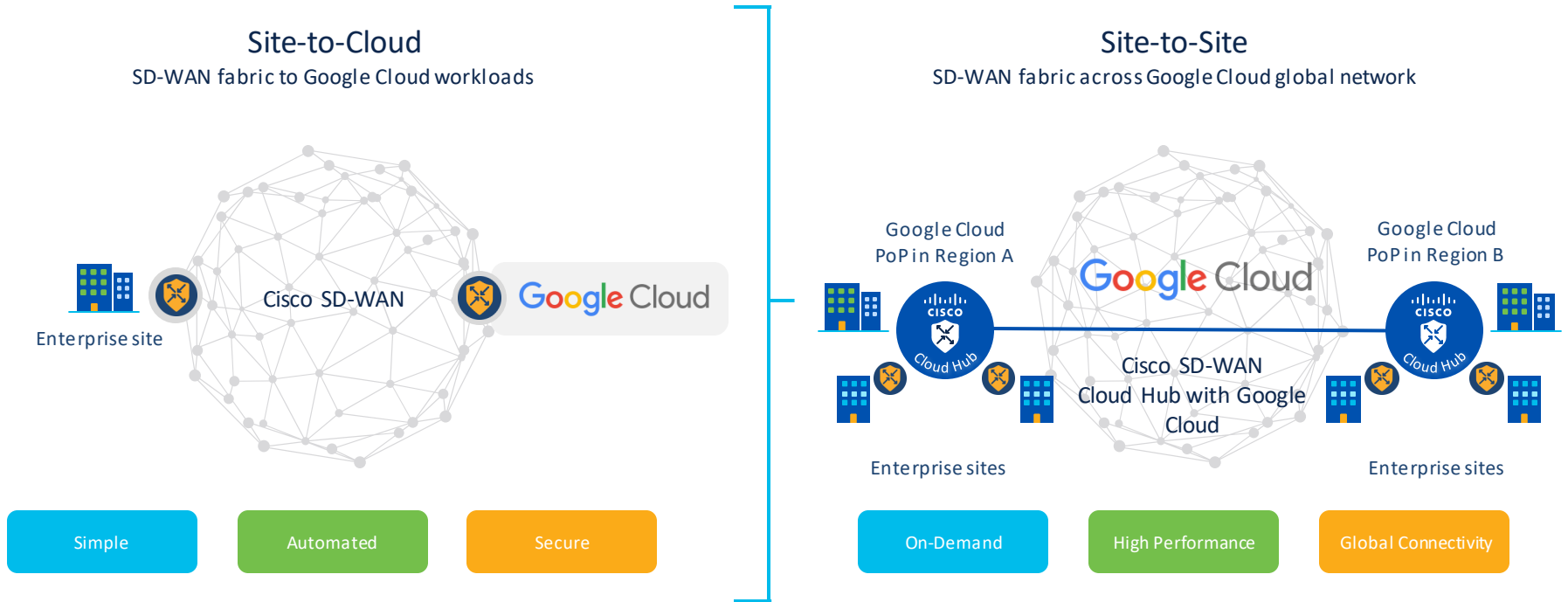Leverage Azure managed service vWAN Hub to simplify cloud deployment

Security/Policy
Create policies in vManage and push them to vWAN Hub

Azure Telemetry — Optics

Troubleshooting & telemetry data

Cisco vManage

Troubleshooting & telemetry data

Optics — Azure Telemetry

Region 1
Azure
vWAN
SD-WAN Endpoint

Cisco SD-WAN fabric

Region 2
Azure
vWAN
SD-WAN Endpoint

Branch

Branch

Branch

Automation, Visibility and Segmentation

Cisco SD-WAN Cloud Hub with Google Cloud

Site-to-Cloud
SD-WAN fabric to Google Cloud workloads

Enterprise site

Cisco SD-WAN

Google Cloud

| Simple | Automated | Secure |

Site-to-Site
SD-WAN fabric across Google Cloud global network

Google Cloud
PoP in Region A

Google Cloud
PoP in Region B

Cisco SD-WAN
Cloud Hub with Google
Cloud

Enterprise sites

Enterprise sites

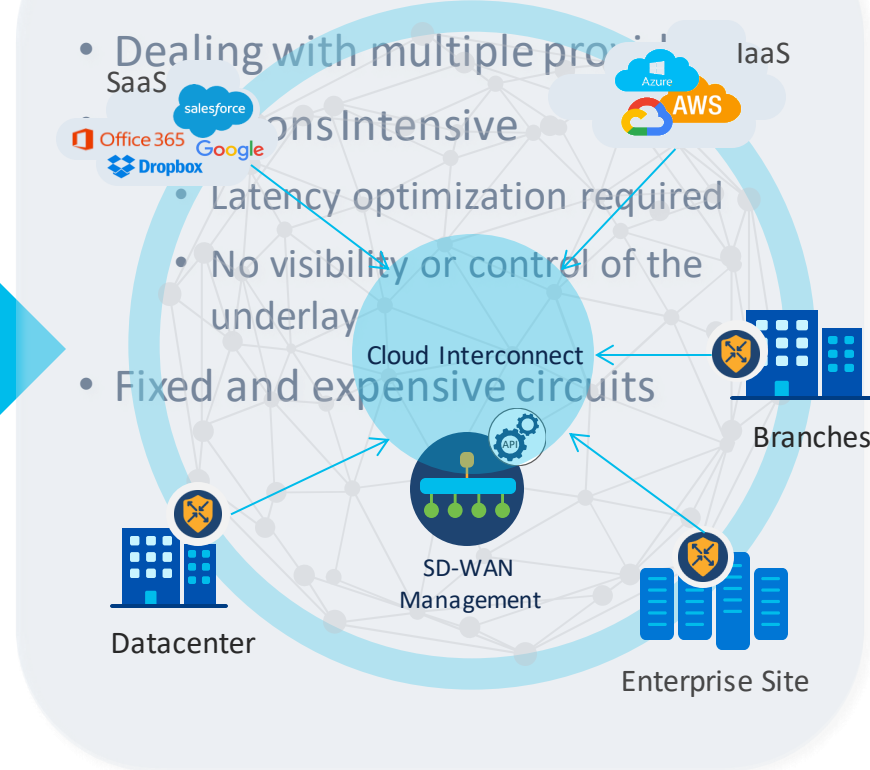| On-Demand | High Performance | Global Connectivity |

First SD-WAN vendor integrating with Google Network Connectivity Center

Transforming the Network with Cisco SD-WAN Cloud Interconnect

**Static Networks stitched by Multiple Providers**

SaaS

IaaS

Service Provider A

Service Provider B

Branches

Datacenter

Service Provider C

Enterprise Site
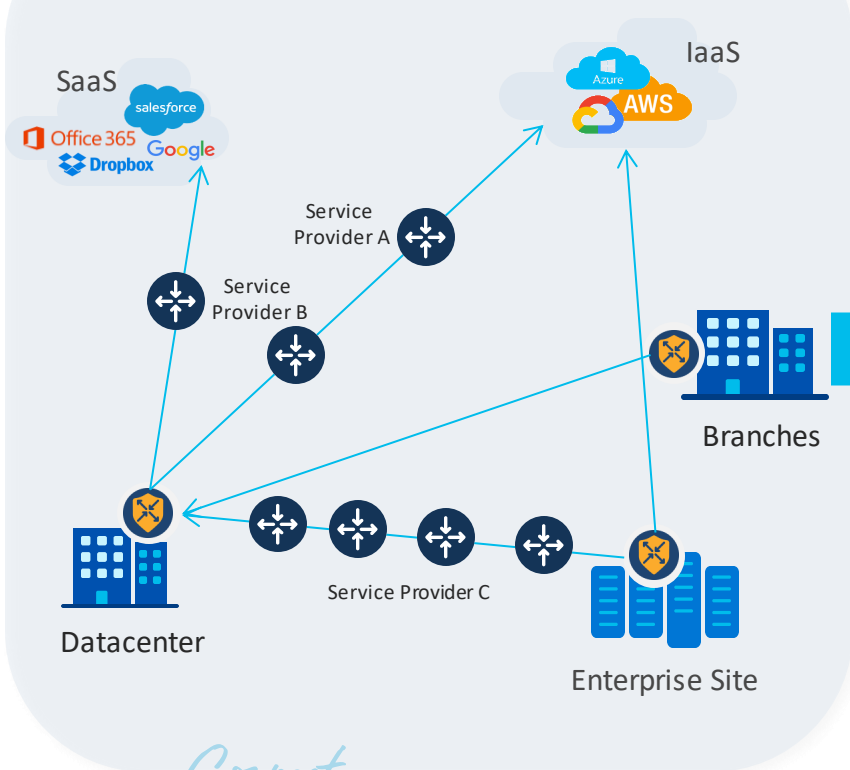
Dynamic, Programmatic Private Backbone

- Dealing with multiple providers
- Operations Intensive
  - Latency optimization required
  - No visibility or control of the underlay
- Fixed and expensive circuits

SaaS

IaaS

Cloud Interconnect

SD-WAN Management

Datacenter

Branches

Enterprise Site

Cisco SD-WAN Cloud Interconnect with Megaport & Equinix
BYO SDCI - Site to Cloud and Site to Site
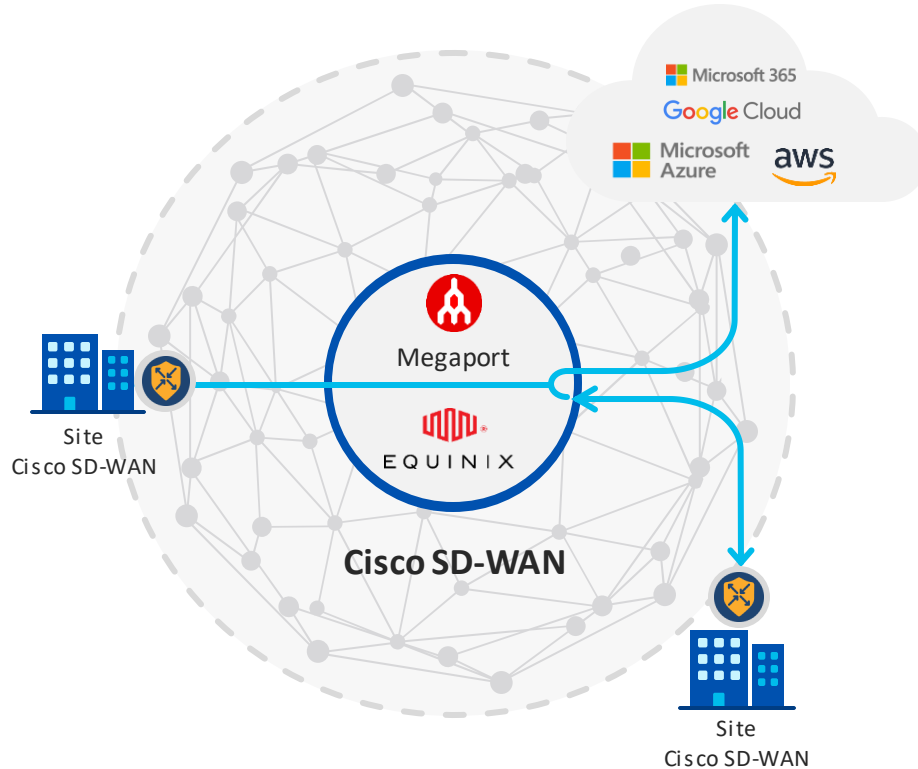
On-demand Connectivity
Reduce time from months to minutes for multi-cloud connectivity

Highly Available Backbone
Worldwide connections: 20+ countries, 5 continents, 100's of data centers, up to 99.999% availability

Single Management
Automate the connections through vManage
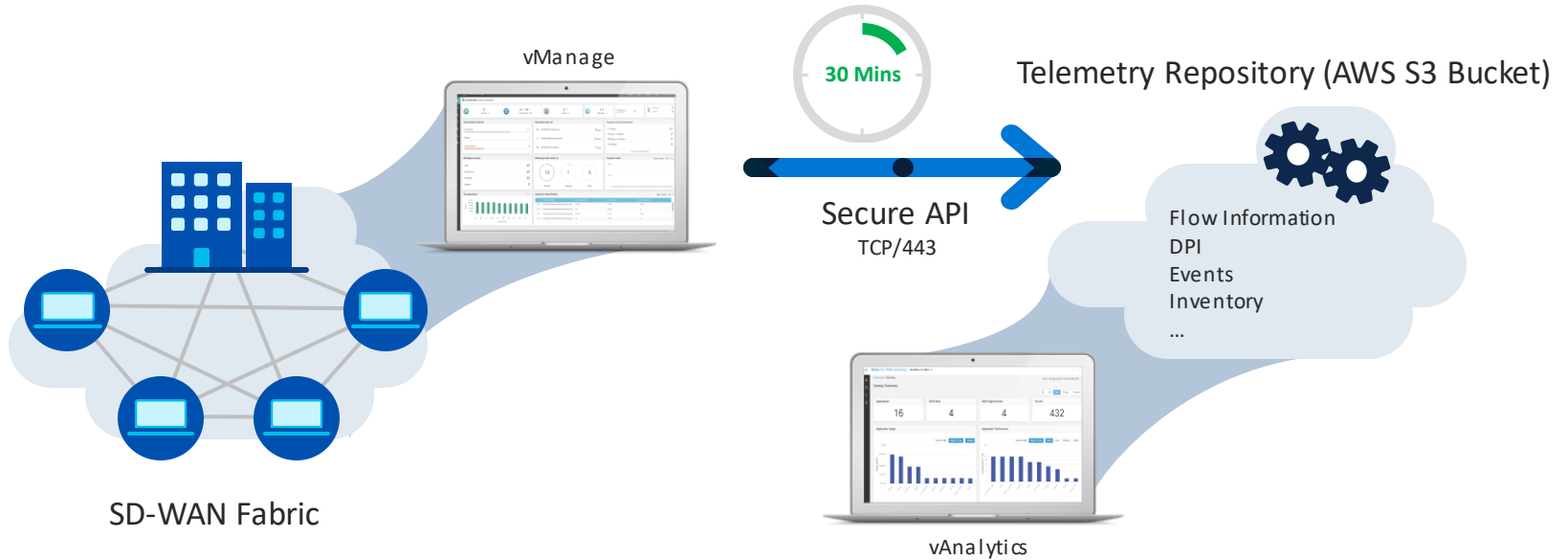
Latency Optimized
Remove congestion risk by sending packets through a private backbone

SD-WAN Fabric with Programmable Cloud Interconnects

Analytics & Assurance
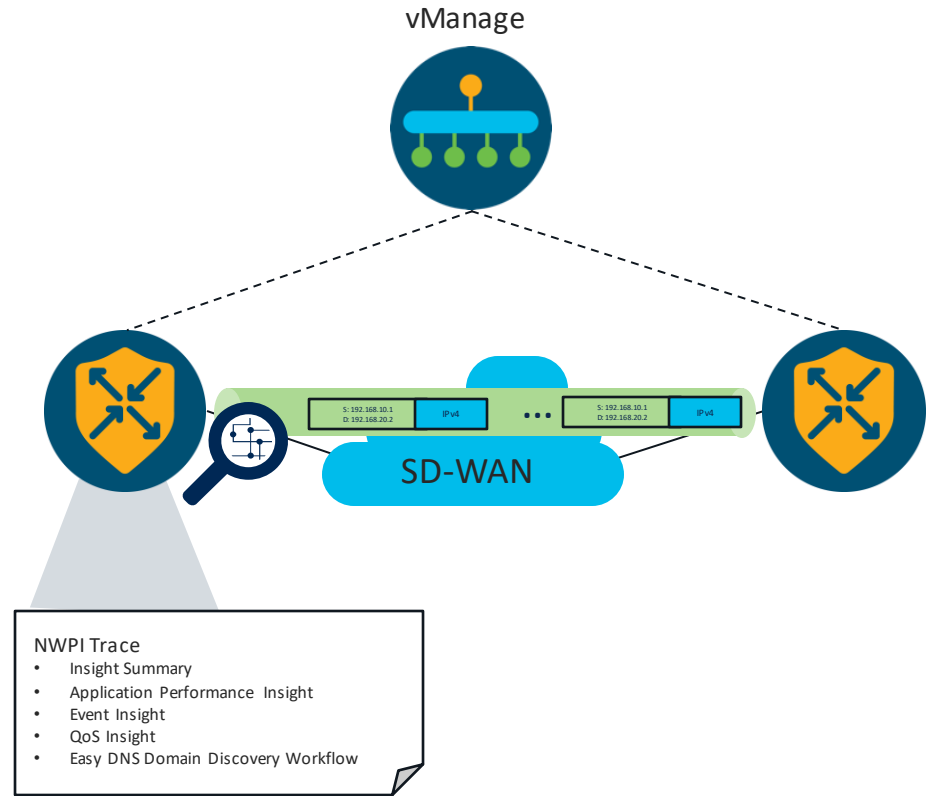
Management and Analytics Architecture

vManage

30 Mins

Telemetry Repository (AWS S3 Bucket)

Secure API
TCP/443

Flow Information
DPI
Events
Inventory
…

SD-WAN Fabric

vAnalytics

On-Prem or Cloud-Hosted SD-WAN (vManage)

Cloud-Hosted Analytics

Network Wide Path Insight (NWPI)

vManage

NWPI provides network wide insights and helps to validate policy design and insights for various application performance issues.
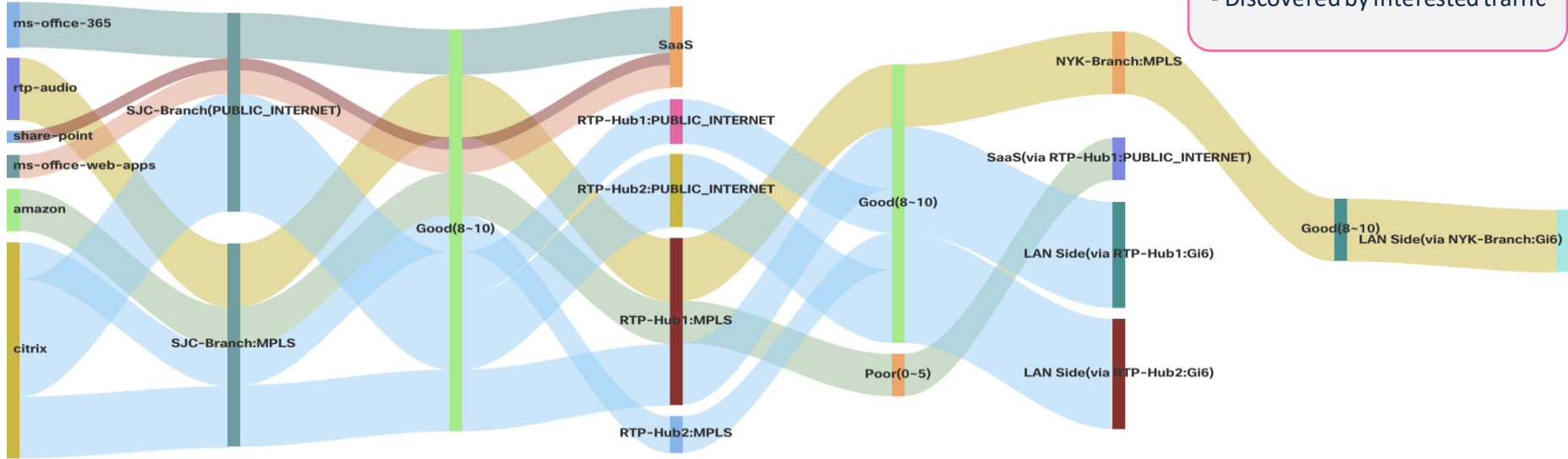
SD-WAN

S: 192.168.10.1
D: 192.168.20.2   IPv4

S: 192.168.10.1
D: 192.168.20.2   IPv4

NWPI Trace
- Insight Summary
- Application Performance Insight
- Event Insight
- QoS Insight
- Easy DNS Domain Discovery Workflow

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APP Performance in SD-WAN MultiPath Environment

Upstream Applications Path & Performance (packet)

Site Topology

MPLS   LTE   PUBLIC-INTERNET

"GigabitEthernet3"   "GigabitEthernet2"   "GigabitEthernet1"

CSR1000v
IP: 1.1.1.5

CSRSD-WAN-1

Payment Proces...   Local Internet...   Corporate Users   Physical Secur...
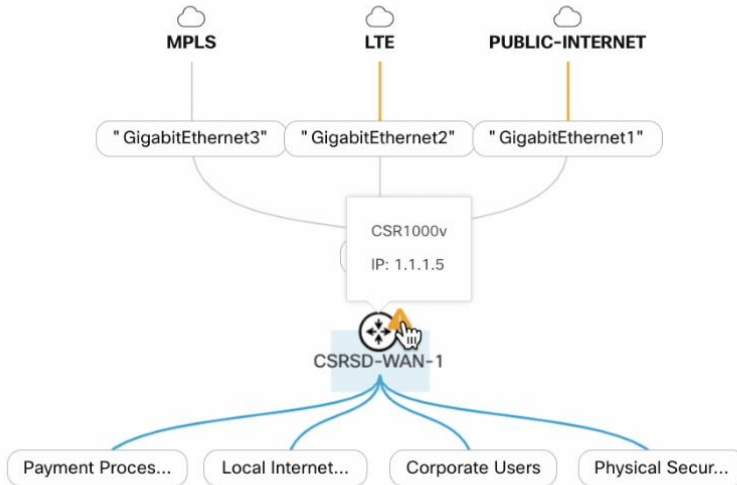
View 4 VPNs Details

CSRSD-WAN-1   ×

Hostname	CSRSD-WAN-1
Device Model	CSR1000v
Site ID	100
System IP	1.1.1.5
Health	⚠ Fair
Reachability	↑ Up
vSmart Control	3/3
BFD	3/12
Up Since	Jul 13, 2022 10:03 PM
CPU Load	12.96%
Memory Utilization	41.1%
Configuration Group	Site100_CG

Device 360

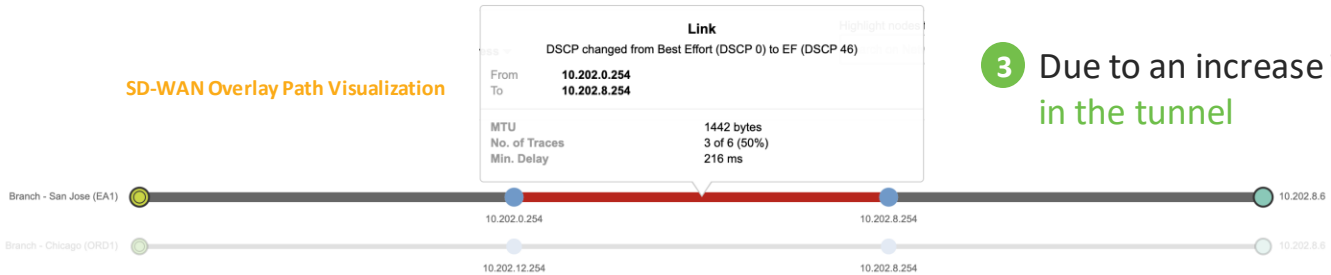# Multi-layer Correlation and Monitoring

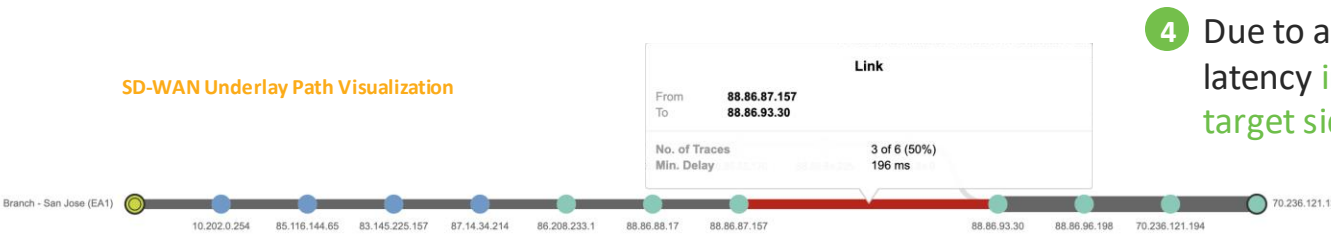When service degradation occurs, quickly identify where the problem is.
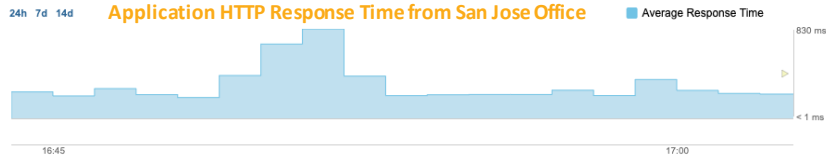
1 Increase in the service response time

2 Due to an increase in network latency

3 Due to an increase in network latency in the tunnel

4 Due to an increase in network latency in a specific link on the target side of the underlay network

Collect Performance Data from Every Perspective

Enterprise Agents
- ✓ Deploy it in your office or data center.
- ✓ Test services in your DC, cloud or SaaS services.
- ✓ Test through Umbrella, SD-WAN or over the Internet.
- ✓ Deploy it on your Cisco devices (Cat 9K, Cat 8K, ISR 4K), or as a VM, Docker container, Linux package, Intel NUC or Raspberry Pi 2 appliance.
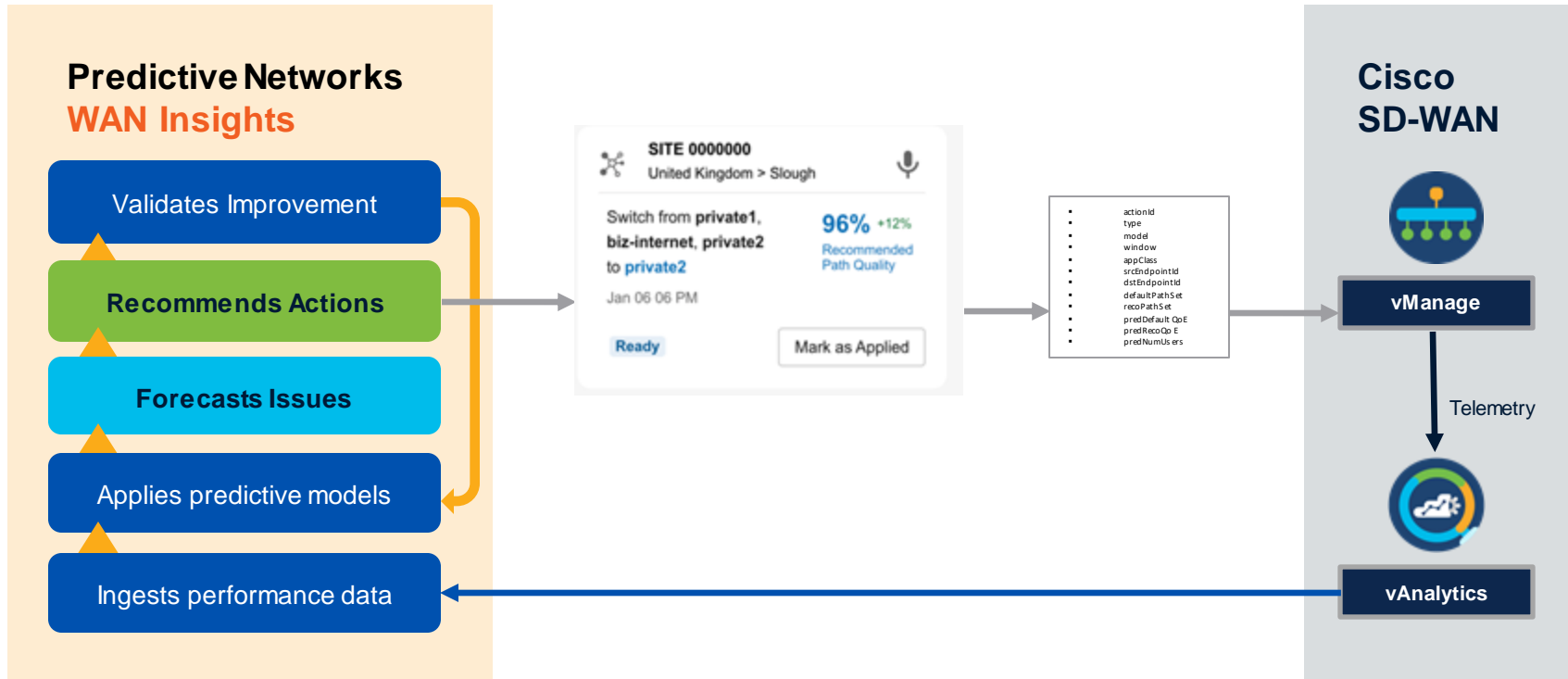
Cloud Agents
- ✓ Globally distributed agents installed and managed by Cisco ThousandEyes in 200+ cities.
- ✓ Use them as a reference points to understand how the performance your employees are experiencing compares to performance of SaaS and other public cloud services from the public Internet.
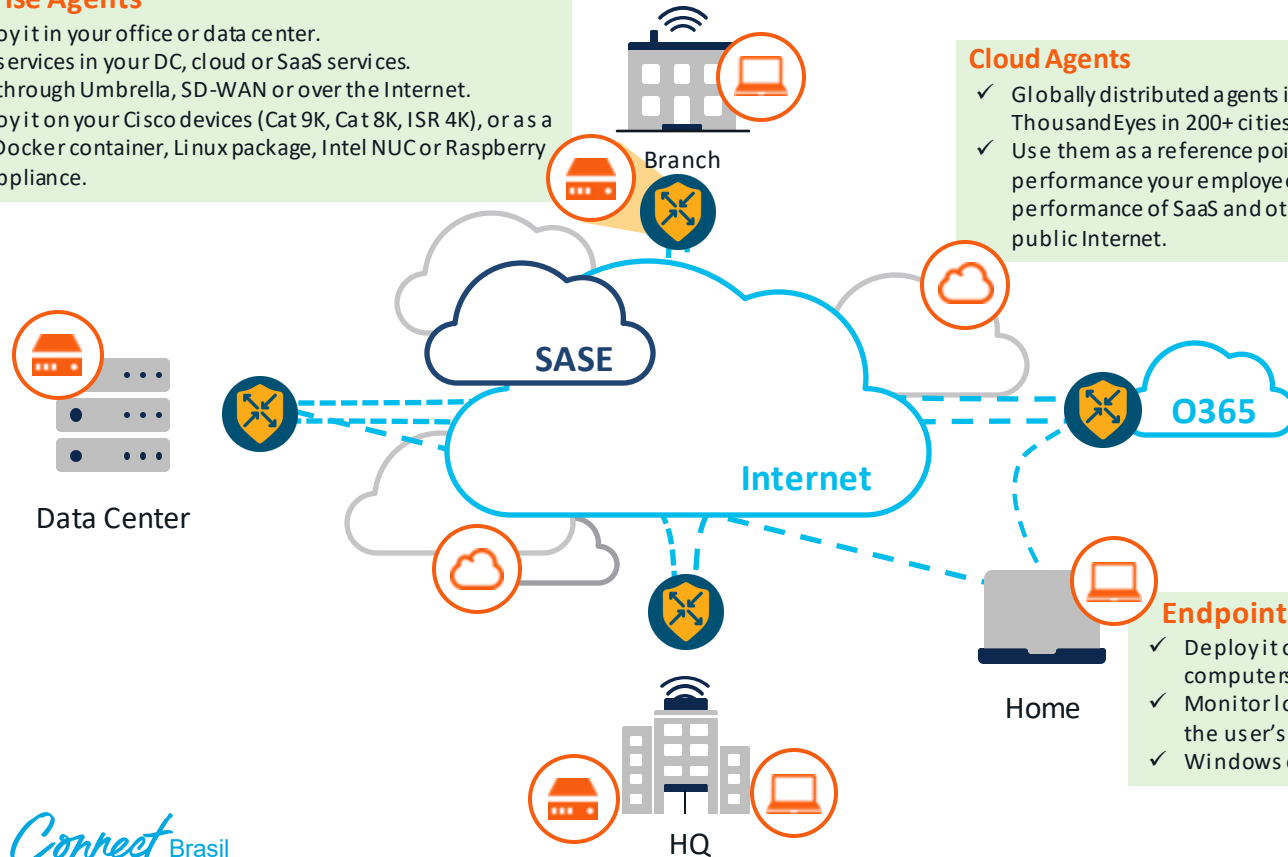
Endpoint Agents
- ✓ Deploy it on your employee's desktop & laptop computers.
- ✓ Monitor local network conditions regardless of the user's location (office, work-from-home).
- ✓ Windows or Mac

Branch

SASE

Internet

O365

Data Center

Home

HQ

cisco *Connect* Brasil

Predictive Networks – WAN Insights

Thank you