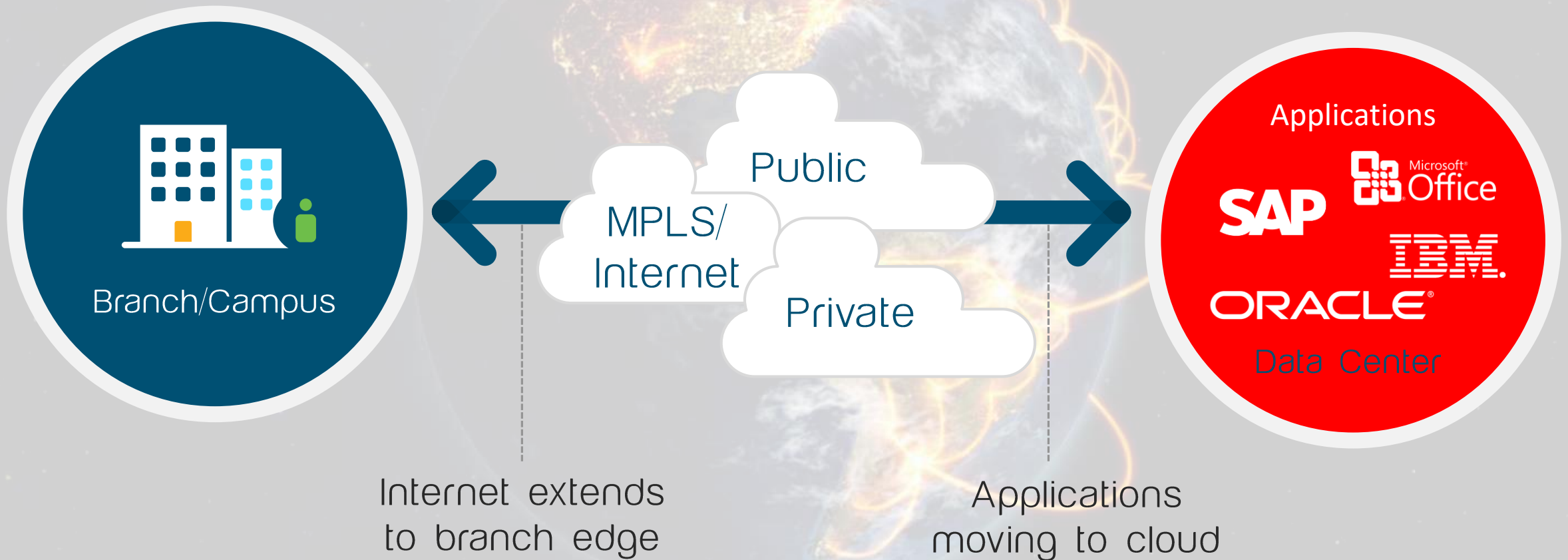


Cisco SD-WAN

Connect any user to any application without
compromise

Viptela Leads SD-WAN Transition in 2013




Primary Objective: More branch bandwidth and lower WAN costs

Today Applications are Moving to Multiple Clouds



"We enable and empower businesses and people to achieve more with less"

Internet Connectivity Becomes Business Critical

 Campus
X2-5

Branches X100+



 Mobile
Users
X1000s



 Microsoft Office

ORACLE **IBM**

SAP Cisco Webex

DC/Private Cloud

 salesforce

 CONCUR  Office 365

 Dropbox

SaaS

 aws

 Azure

 Google Cloud

IaaS

More users, things and applications, everywhere

To help, IT is deploying SD-WAN

2018 Analyst Definition*

- ✓ Branch router/CPE functionality
- ✓ Operate autonomously during loss of connection to controller
- ✓ Support Hub & Spoke, Partial/Full Mesh
- ✓ Centralized management: Inventory, visibility, reporting, Management, config changes, SW upgrades via GUI
- ✓ Zero-touch configuration
- ✓ VPN (AES 256-bit encryption)
- ✓ Direct Internet Access
- ✓ Dynamic traffic steering based on business or application policy
- ✓ Support for traffic shaping and QoS
- ✓ >100 well-known application profiles included + custom template capabilities
- ✓ Self-serve granular configuration changes



Summary of Basic SD-WAN Capabilities

- **Circuit Load Balancing**
- **Direct Internet Access**
- **Centralized Management & Orchestration**
- **Lower Circuit Costs**

Introducing Cisco SD-WAN

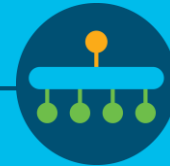
Summary of Basic SD-WAN Capabilities*

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



Cisco SD-WAN extended capabilities

Multi-layered Security



Security & Segmentation



Analytics & Visibility

Application Optimization



Voice Optimization



SaaS/IaaS Optimization



App Aware Dynamic Routing

Enterprise Scale



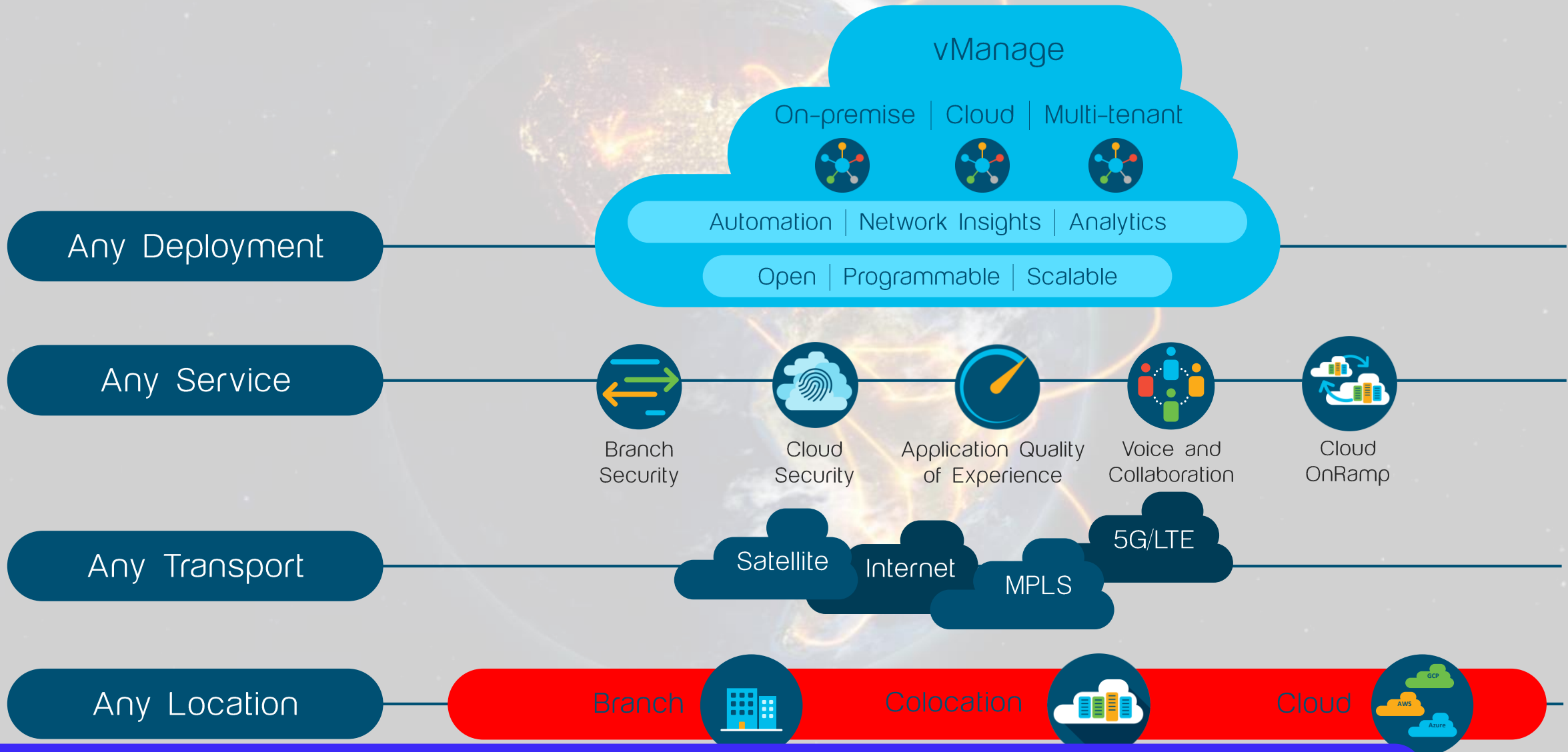
Open and Programmable



Multi-Tenant/
Multi-Domain

"We enable and empower businesses and people to achieve more with less"

Secure Cloud Scale SD-WAN Architecture



"We enable and empower businesses and people to achieve more with less"

Benefits of Cisco SD-WAN

Predictable app
experience



Support for evolving
business application
strategy

Cloud OnRamp for IaaS,
SaaS and Colocation

Right security, right place



Secure segmentation across
entire network stack

Full edge security stack from
branch to cloud and
colocations

Enterprise grade,
simplified



Intent-based networking
with multi-domain policy

Proven deployments to
over 10,000+ sites

One user interface for Security and SD-WAN across branch, cloud, and co-location

Business Value of Cisco SD-WAN



38%



58%



94%



Lower five-year cost
of WAN operations



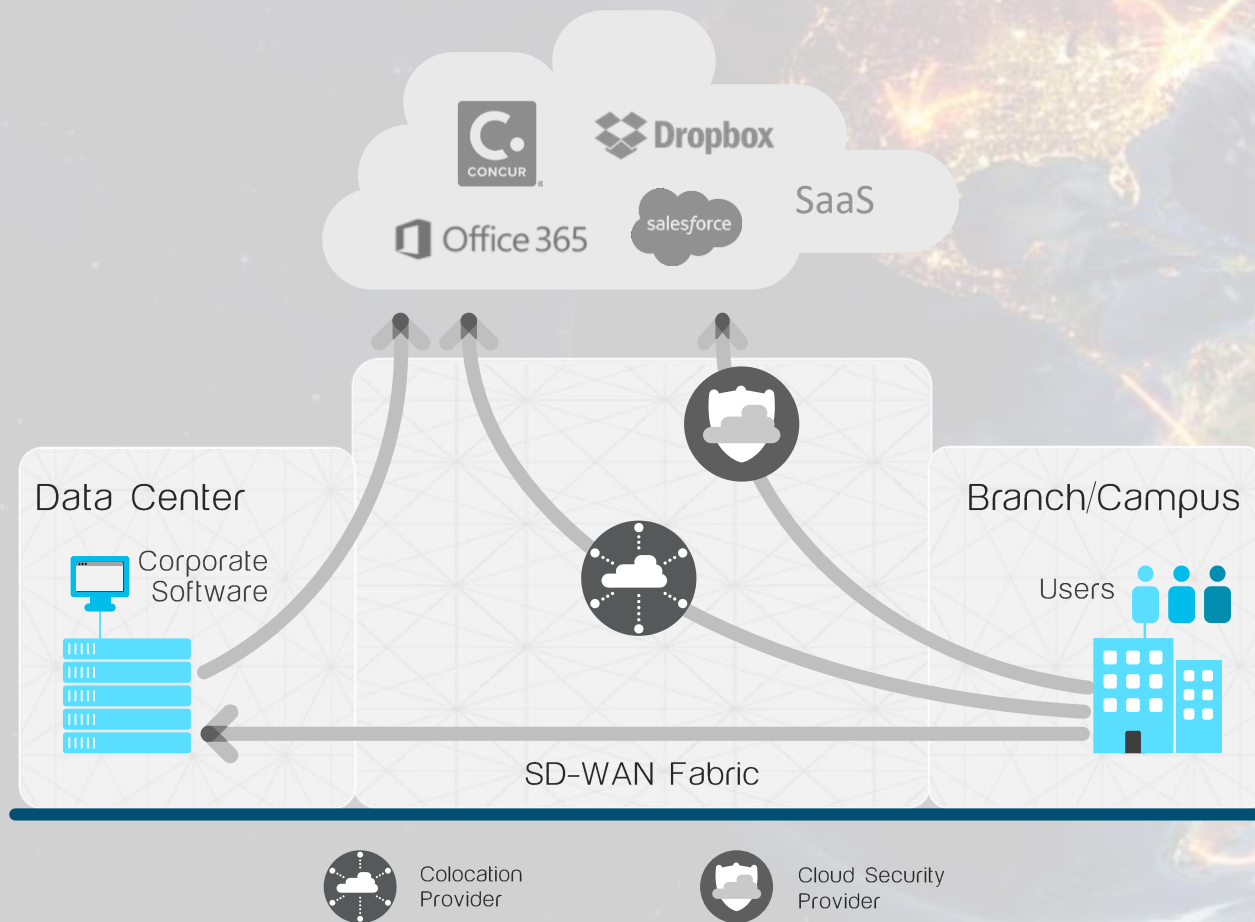
Faster to implement policy/
configuration changes



Less unplanned
downtime

\$14.98M increased revenue per organization

Why Backhauling Impacts Application Performance

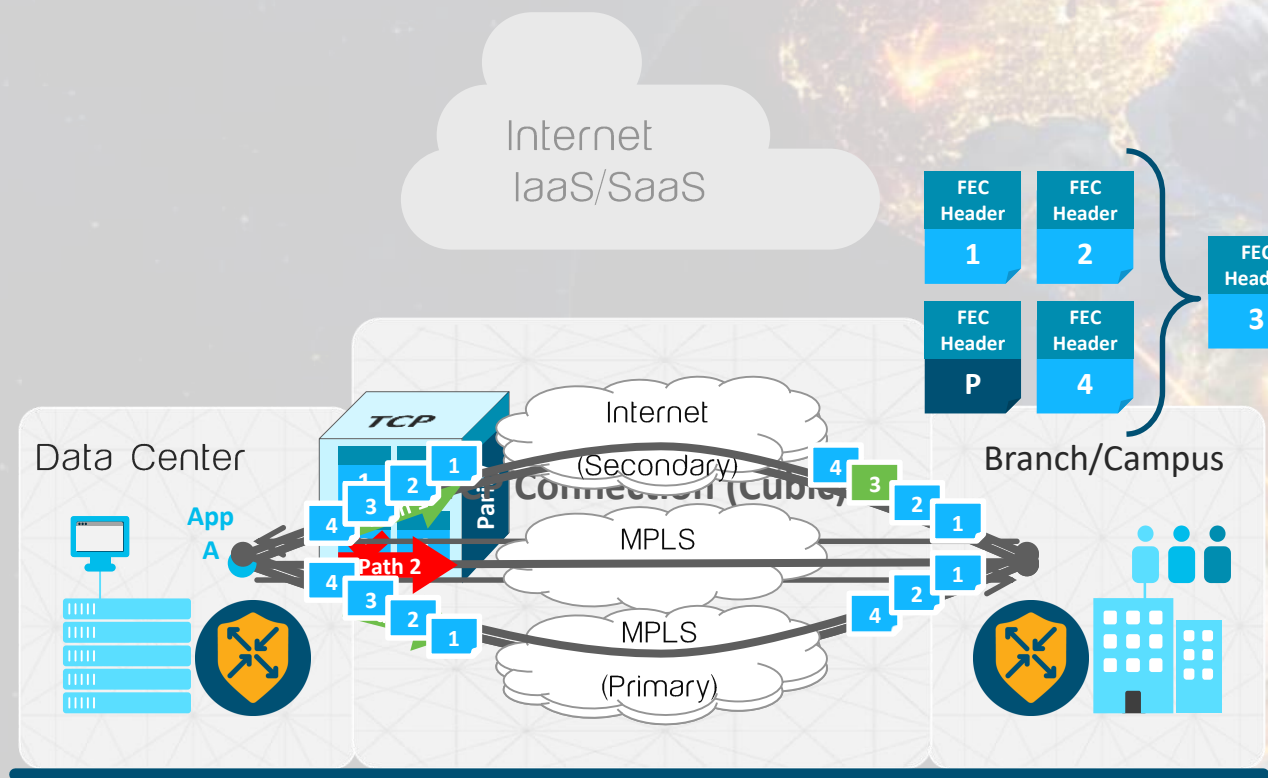


Single Path to Internet

- Datacenter
- Colocation provider
- Cloud security provider

A single path for all mission critical business applications

Improving Application Experience



Capabilities

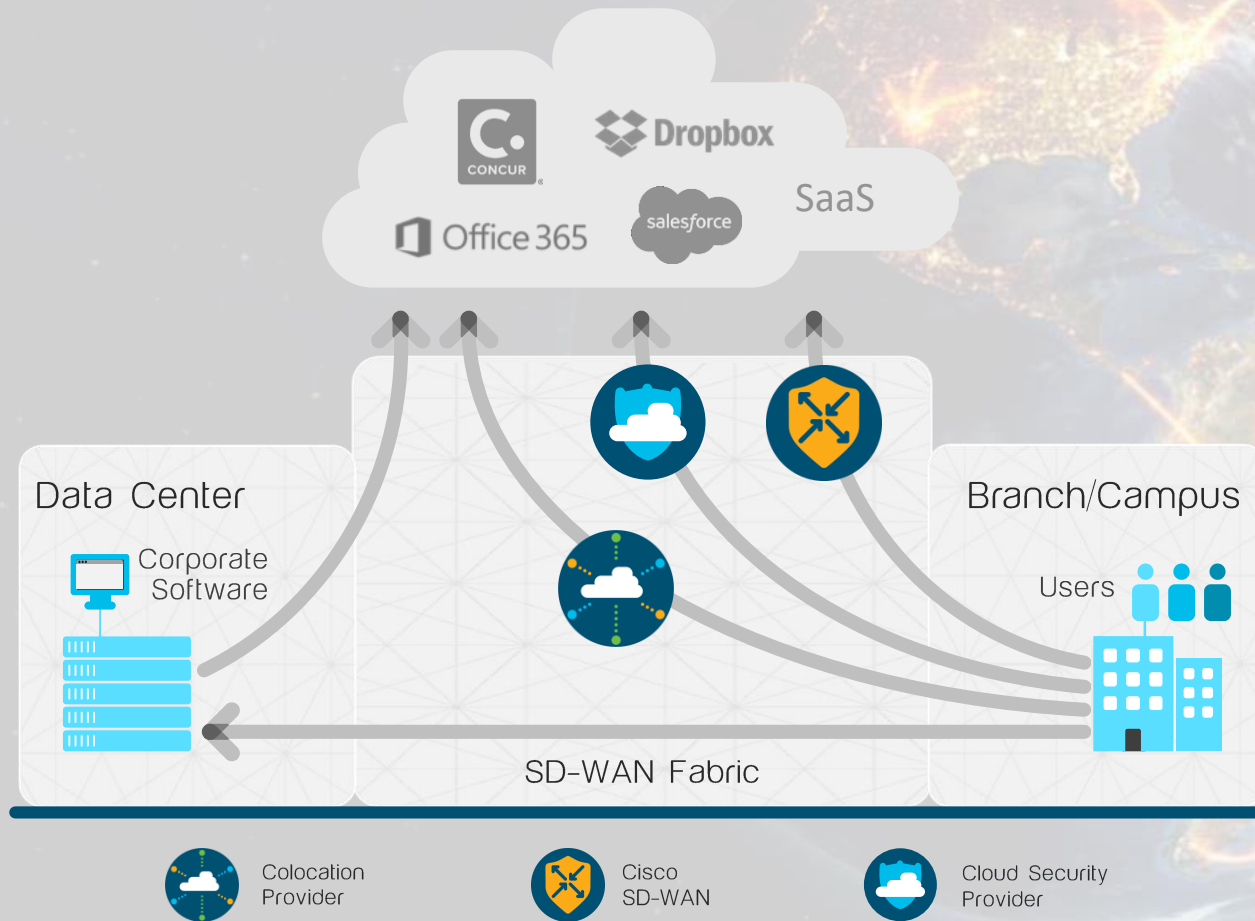
- Application SLA
- TCP Optimization
- Forward Error Correction
- Pack Duplication

App Aware Routing Policy
App A path must have
latency <150ms & loss <2%

Path1: 10ms, 0% loss
Path2: 200ms, 3% loss
Path3: 140ms, 1% loss

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SaaS Optimization

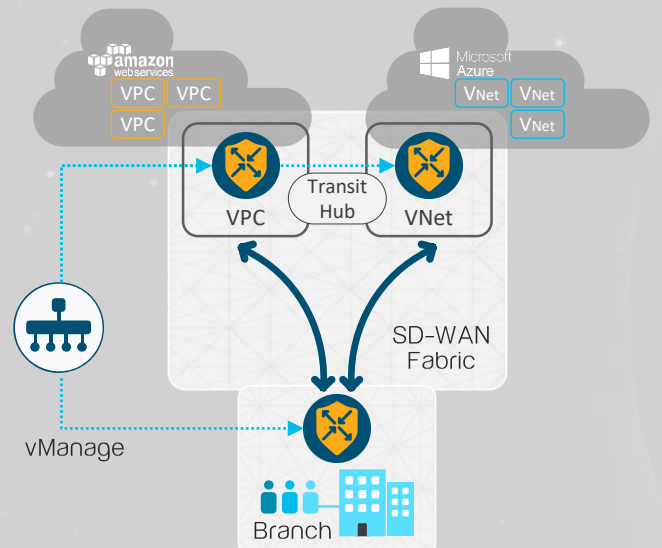


Optimization via Multipath

Up to 40% faster
Office 365
Performance

Increased reliability and utilization of best path for SaaS applications

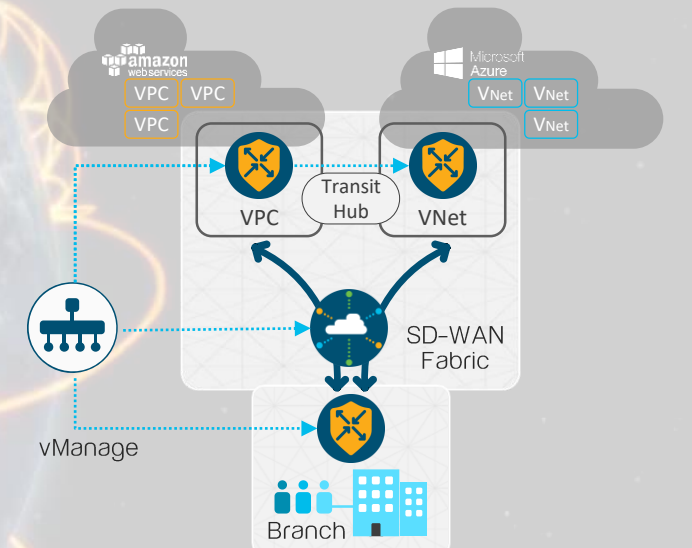
Extended SD-WAN to IaaS



Internet connection to IaaS cloud

Cloud onRamp to IaaS

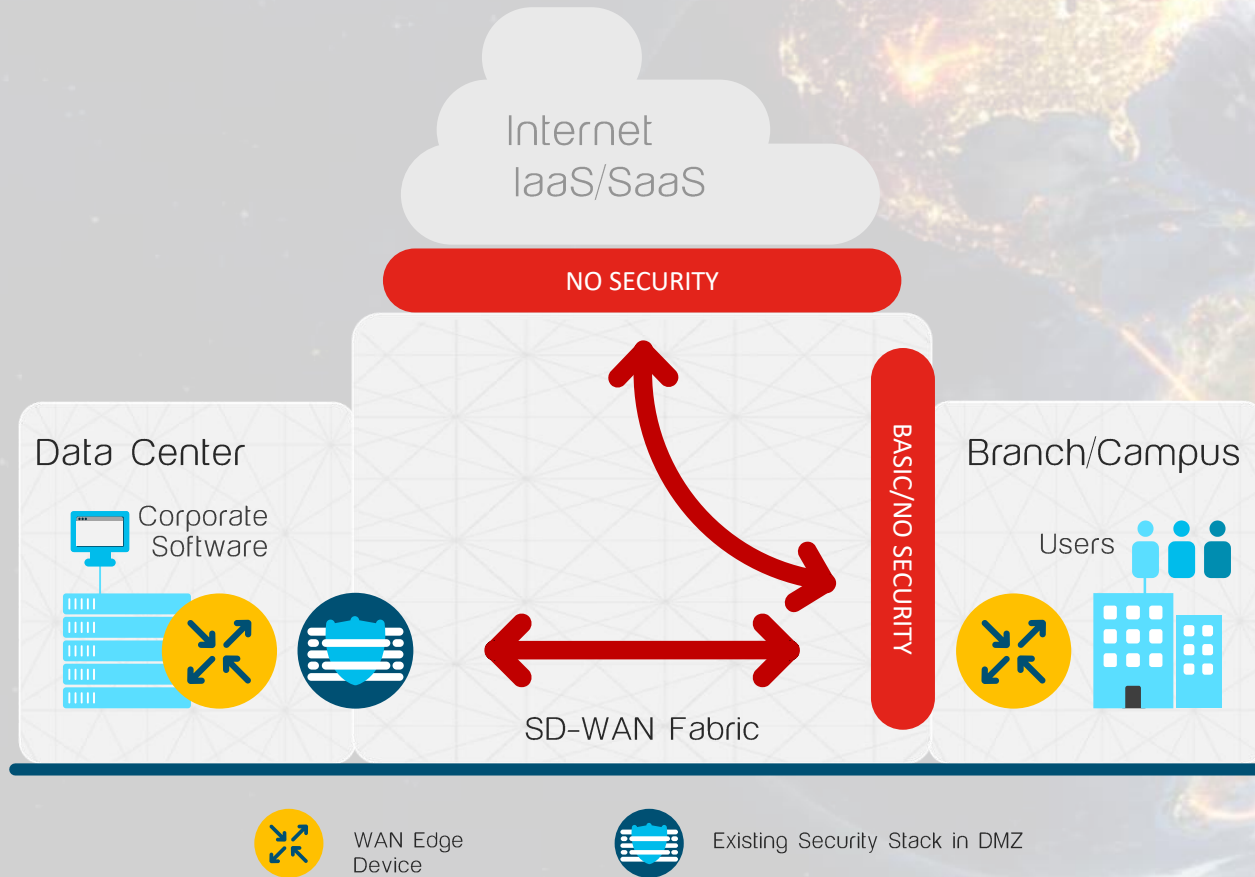
- Cisco WAN Edges deployed in a Transit Hub, acting as virtual aggregation routers
- Partial extension of SD-WAN Fabric
- Automated deployment process with vManage



Connect to IaaS cloud via co-location

"We enable and empower businesses and people to achieve more with less"

How SD-WAN exposes new security challenges



Internal & External Threats

External

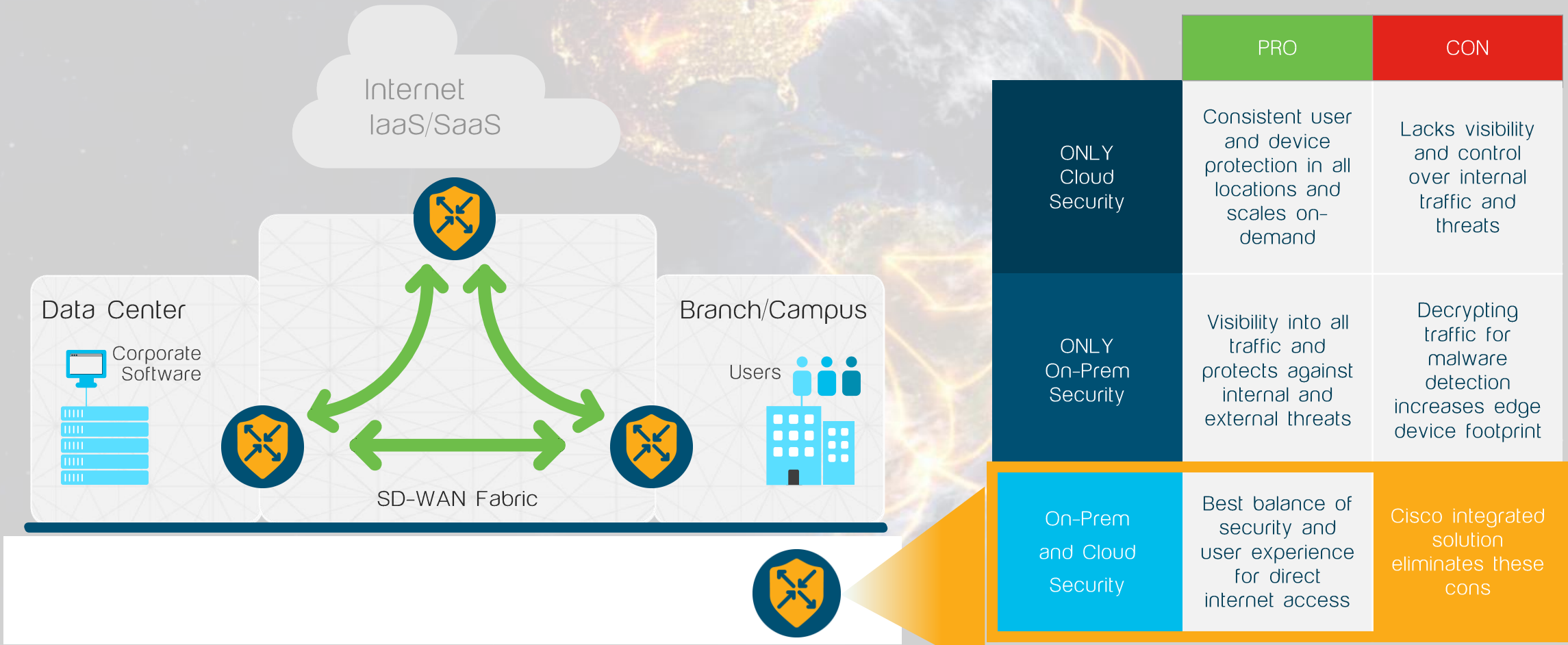
- Exposure to malware & phishing due to direct internet and cloud access
- Data breaches
- Guest access liability

Internal

- Untrusted access (malicious insider)
- Compliance (PCI, HIPPA, GDPR)
- Lateral movements (breach propagation)

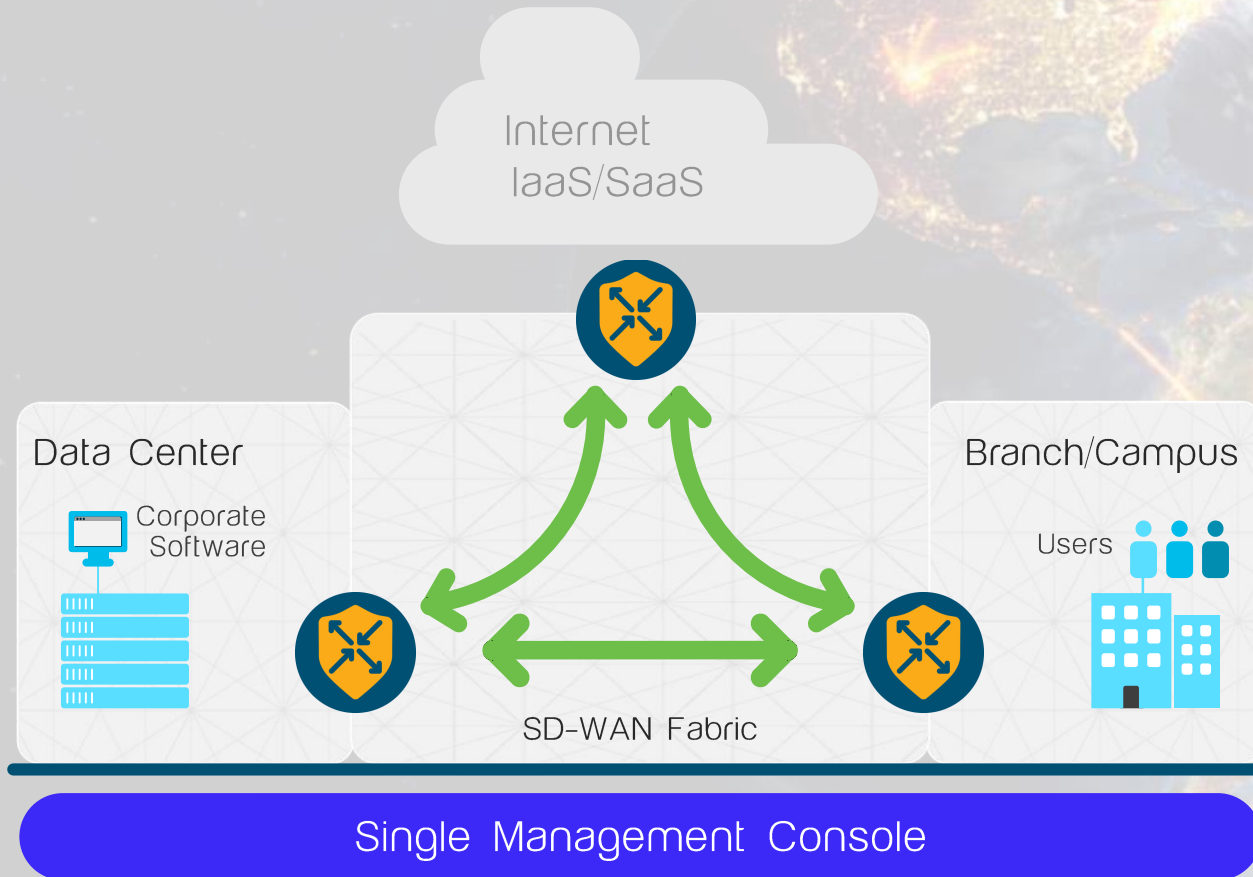
"We enable and empower businesses and people to achieve more with less"

Benefits with integrated security everywhere



“We enable and empower businesses and people to achieve more with less”

Deploying Cisco SD-WAN Security



Full Edge Security Stack

On-Prem Security

Mitigate Internal & External Threats



Cloud Security

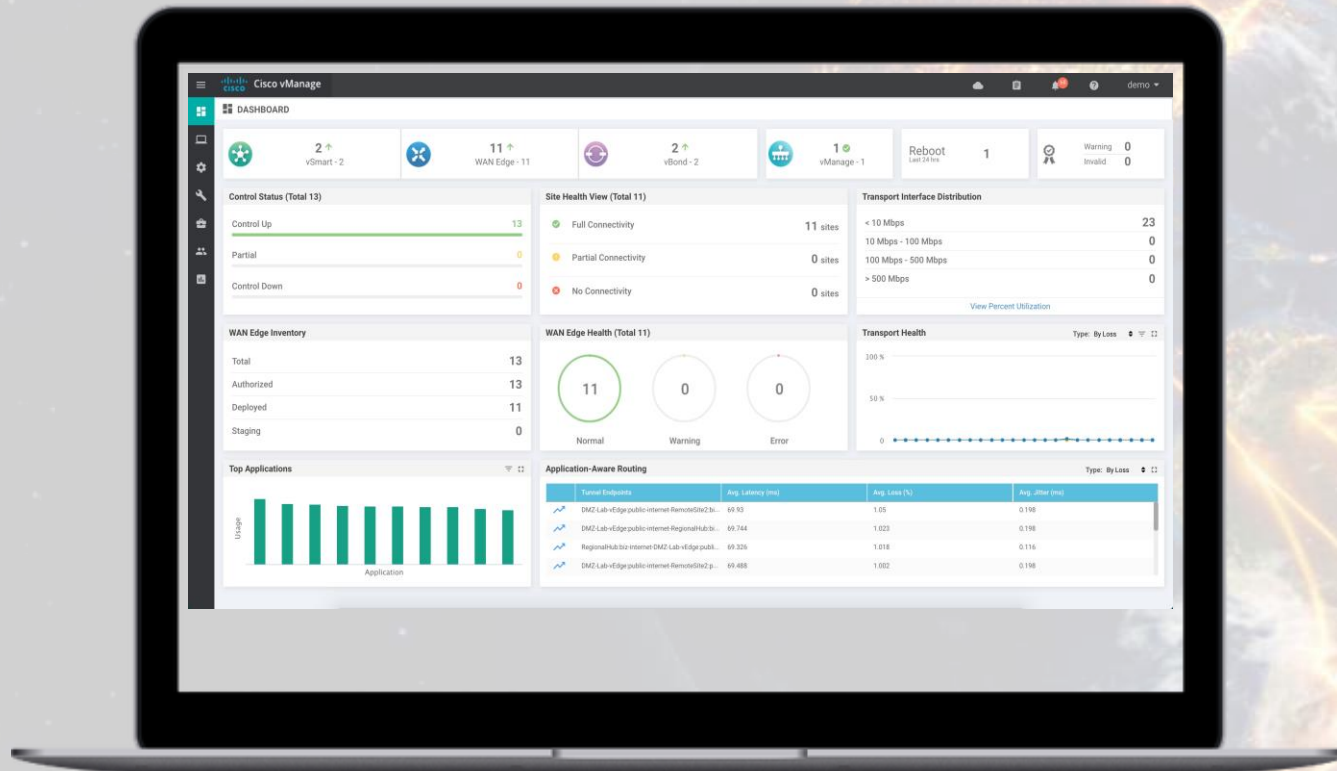
Mitigate External Threats at Scale

- Enterprise firewall and intrusion prevention embedded for internal threats plus URL filtering and malware sandboxing for external threats
- End-to-end segmentation to stop breach propagation, enforce regulatory compliance, and promote network (and application) layer security
- Zero-trust authentication and full payload encryption between edge routers
- Integrated connectivity and cloud-delivered security with 100% business uptime
- Secure Internet Gateway protects users and devices and protects data sent to and from the cloud

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SD-WAN Management

Cisco vManage

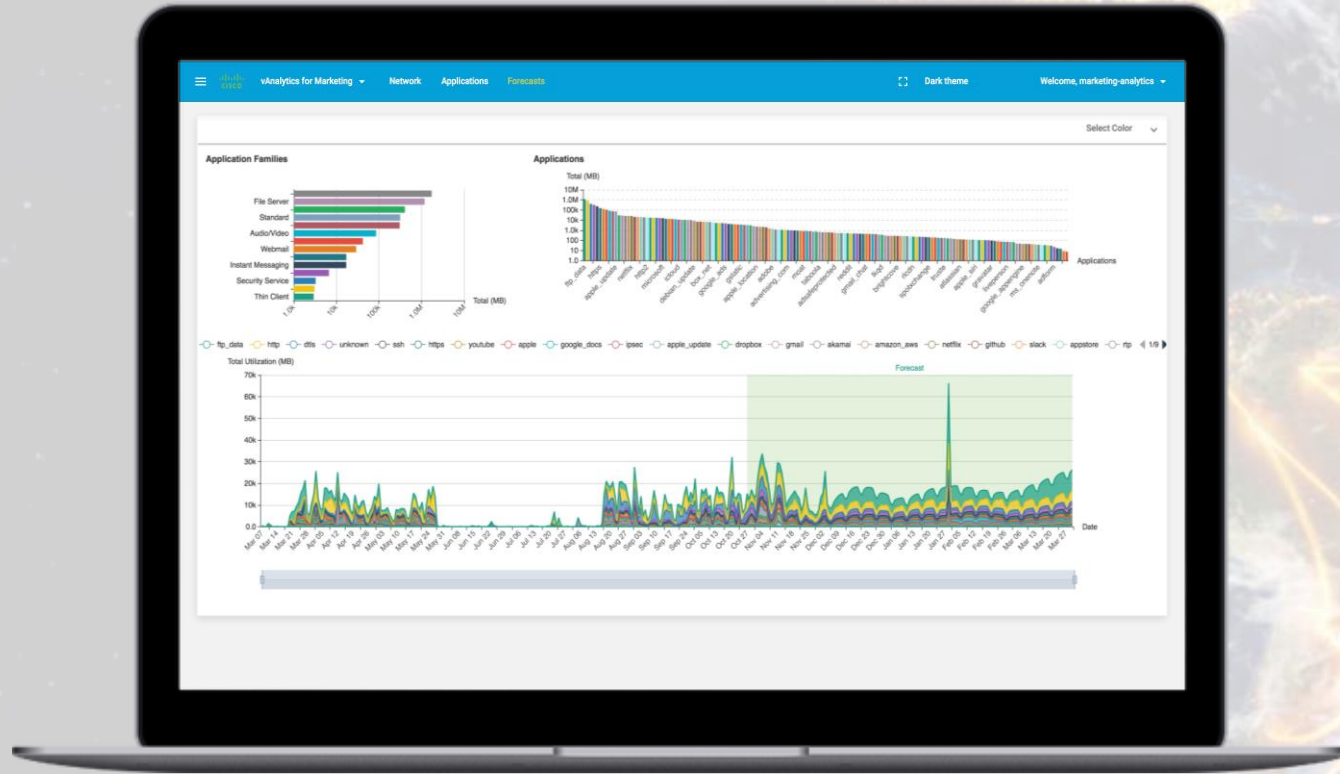


Single Monitoring Dashboard

- Configuration: OnRamp, Security, Devices, Policies, Templates
- Lifecycle management
- Role based access/
Multi-tenant

One management dashboard for branch, co-location, cloud and Security

SD-WAN Analytics



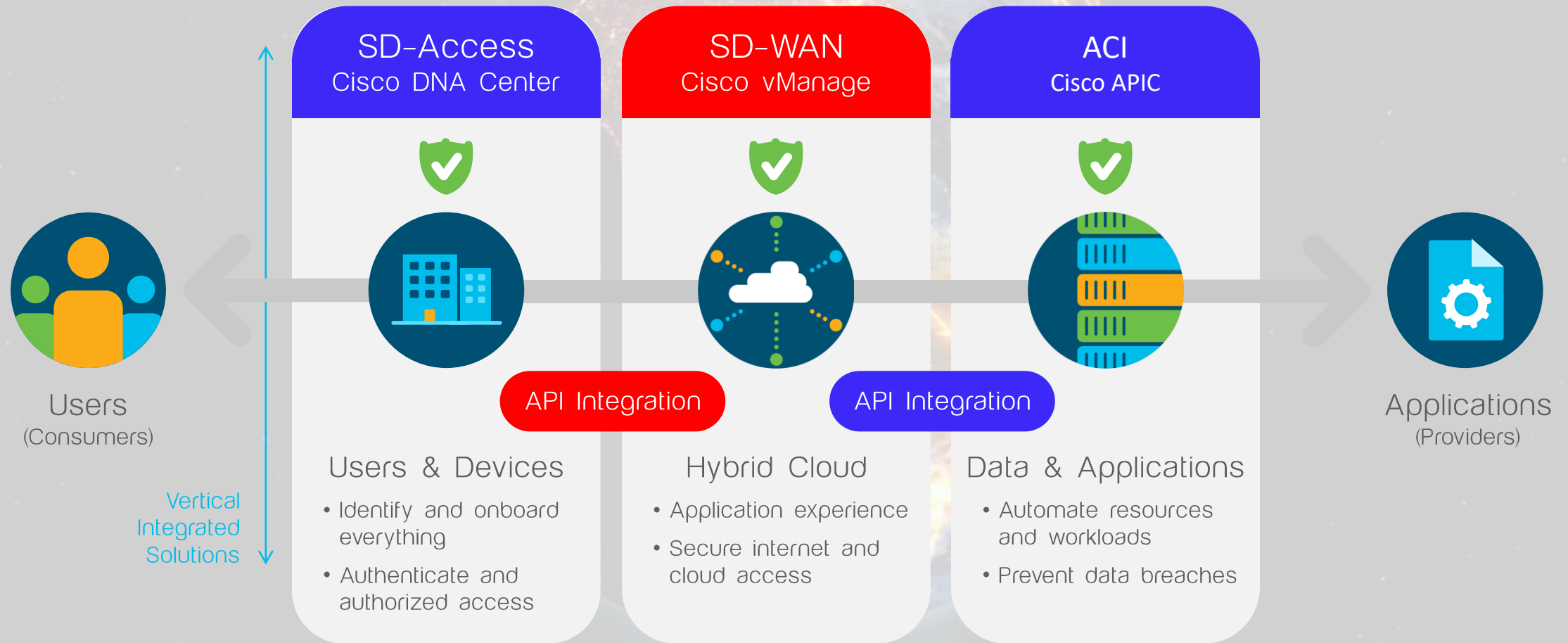
Cisco vAnalytics

Real-Time Information

- Future planning and what-if scenarios
- Recommendations for predictable app performance
- Benchmarking

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Interconnecting Multi-Domain Networks



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Broadest Set of SD-WAN Platforms

Branch Services



ISR 1000

- 200 Mbps
- Next-gen connectivity
- Performance flexibility



ISR 4000

- Up to 2Gbps
- Modular
- Integrated service containers
- Compute with UCS E



ASR 1000

- 2.5-200Gbps
- High-performance service w hardware assits
- Hardware & software redundancy

vEdge Appliances



vEdge 100

- 100Mbps
- 4G LTE & Wireless



vEdge 1000

- Up to 1Gbps
- Fixed



vEdge 2000

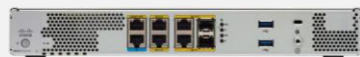
- 10Gbps
- Modular



vEdge 5000

- ~30Gbps
- Modular

Virtualization



ENCS 5100

Up to 250Mbps



ENCS 5400

Up to 250Mbps

Public Cloud



Cisco DNA SD-WAN Licensing

Use Case Based Packaging

Cisco DNA Essentials

Simplified management and security protection for the cost-conscious customer

End to end direct Internet access security

Improved application experience

Simplify operations

Basic voice optimization

Common SD-WAN architectures

Up to 50 Device Overlay

Cisco DNA Advantage

Advanced SD-WAN with enhanced security for feature-rich & valued branch deployment models

Visibility and control to defeat direct Internet/cloud access threats

Optimized SaaS application experience

Multi-domain Orchestration across domains

Enhanced voice optimization

Network analytics and visibility

Cisco DNA Premier

Advanced SD-WAN security will mitigate the most sophisticated threats to your business

Automated cloud security at scale

Keep consistent controls and visibility when users roam outside the WAN

“We enable and empower businesses and people to achieve more with less”

Cisco DNA SD-WAN Licensing

Capability Based Packaging

Cisco DNA Essentials

Simplified management & security protection for the cost-conscious customer

Enterprise firewall with Talos-powered IPS and app controls
Cisco Umbrella DNS Monitoring

Application-based SLA
Basic WAN & path optimizations

Single centralized management console in the cloud or on-prem

Forward Error Correction (FEC)
Packet duplication

Flexible topology & dynamic routing (hub/spoke, partial/full mesh)

Up to 50 Device Overlay

Cisco DNA Advantage

Advanced SD-WAN with enhanced security for feature-rich & valued branch deployment models

Cisco AMP with SSL proxy
URL filtering
Cisco Umbrella app discovery

Cloud OnRamp for IaaS, SaaS, and Colo
AppQoE & WAAS RTU

Integrated border plus orchestration for campus, branch & DC

Integrated voice/UC gateways

vAnalytics

Cisco DNA Essentials

Cisco DNA Premier

Advanced SD-WAN security will mitigate the most sophisticated threats to your business

Cisco Umbrella Insights®
Cisco Threat Grid®

Cisco DNA Advantage

Cisco DNA Essentials

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Fast track to SD-WAN with Cisco Services

SD-WAN quick
start service



Proven infrastructure simplifies implementation complexity

Expert technology guidance scales innovation and accelerates results

Cisco's experience and best practices reduces risk

Fixed price | Predefined scope for design | Implementation and validation

Why Cisco SD-WAN?

Predictable Application Experience

No matter where your applications are hosted, Cisco SD-WAN delivers the best user experience, securely across any cloud.

Right Security, Right Place

Protect all users, devices and applications by deploying the right security, on-premise and cloud delivered, in the right place, quickly.

Simplicity at Enterprise Scale

Delivering Intent-based Networking with the best of breed technologies across every domain with consistent policy and assurance integration



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Enterprise Case Study

Fortune 500 National Food Distributor

Food distributors play a key role in the food and beverage industry, serving as the intermediary between the manufacturer and their respective retail, restaurant, and foodservice customers.

Challenge



- **Cloud:** Trying to connect all of their sites to the cloud without being vulnerable to a single point of failure
- **Bandwidth and scale:** Need more bandwidth to deal with growth in applications such as Office 365
- **Security**
- **Agility:** Want to be agile, flexible, able to move wherever the market is going, which could be away from data centers and to the public cloud

Solution



- vEdge, vManage, vSmart
- The solution is a combination of **Viptela and Amazon Web Services (AWS)** for development, interlock locations, and customer facing applications
- Viptela solution extends the WAN to the cloud and brings in different types of transport
- Viptela can extend a branch to the cloud just as the data center would extend a branch to the cloud

Result



- Security
- **Ease of deployment**
- Can give more to their customers
- Can be **more agile in terms of capital planning**
- Food distributor feels they have a **partner** in terms of support and ongoing growth

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For a Demo, Proposal, Proof Of Concept, Presentation



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