1. What is SD-WAN
Hybrid Cloud Ready Network Topology

As-is Topology

To Be Topology

Supports more data, applications in IaaS/SaaS and more internet usage

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2. Why can’t my traditional network provide the same benefits and flexibility you just described?
Legacy WAN Architecture

- Peer-to-peer control plane
- Routing protocol prorogate for all \((N^2)\) complexity
- Localize management
- Not scalable
- Impossible to support multiple transport

Network Policy / Forwarding:
- Configuration Points
- Control Points
- Enforcement Points
- Disjoint security
Cisco SD-WAN Solution Principles

Management/Orchestration Plane

Control Plane

Data Plane

vManage

vBond

3rd Party Automation

vAnalytics

vSmart Controllers

vAnalytics

Management/Orchestration Plane

Control Plane

Data Plane

vAnalytics

vSmart Controllers

Cloud

Data Center

Campus

Branch

CoLo

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3. Cisco Integrated Viptela in August 2017 – what has happened since?
One Year Since Viptela Acquisition...

- 1000+ New Customers
- 50,000+ Endpoints
- Every Vertical
- Almost all T1 Telco’s/Partners
- #1 Market Share: 49.3% Share in 2017 by IDC
- SDWAN on ISRs
Cisco SD-WAN Edge Devices

18th July 2018

### Branch Services

**ISR 1000**
- 200 Mbps
- Next-gen connectivity
- Performance flexibility

**ISR 4000**
- Up to 2 Gbps
- Modular
- Integrated service containers
- Compute with UCS E

**ASR 1000**
- 2.5-200Gbps
- High-performance service w/hardware assist
- Hardware & software redundancy

### SD-WAN

**vEdge 100**
- 100 Mbps
- 4G LTE & Wireless
- Fixed

**vEdge 1000**
- Up to 1 Gbps
- Modular

**vEdge 2000**
- 10 Gbps
- Modular

**vEdge 5000**
- 20 Gbps
- Modular

### Virtualization

**ENCS 5100**
- Up to 250Mbps

**ENCS 5400**
- 250Mbps – 2GB

### Private / Public Cloud

- Microsoft Azure
- Amazon Web Services
Many vendors claim that they have SD-WAN Solutions – what makes Cisco so special?
Cisco SD-WAN Key Differentiations

- Differentiate the Cisco SD-WAN architecture
  - Security at scale
  - Routing at Scale
  - Flexible
  - Fast convergence
  - Multi-Cloud
5. That sounds impressive! Can you share some use cases or customer deployments you’ve seen so far?
Why Cisco SD-WAN
Trusted by Fortune 1000 Enterprises

Viptela SEN: The Most-Deployed Enterprise Grade SD-WAN
Thousands of sites, every major industry, including:

- RETAIL
- HEALTHCARE
- FINANCIAL SERVICES
- ENERGY

Standards Compliant:

Most deployed and trusted by Fortune 500 enterprises

...and more

Winning 95% of competitive POCs
7. What are the critical components of an SD-WAN solution?
Cisco SD-WAN Solution Roles and Responsibilities

**Orchestration Plane**
- First point of authentication
- Distributes list of vSmarts/vManage to all vEdge routers
- Facilitates NAT traversal

**Data Plane**
- Physical of virtual
- Zero Touch Provisioning
- Establishes secure fabric
- Implements data plane policies
- Exports performance statistics

**Management Plane**
- Single pane of glass for Day0, Day1 and Day2 operations
- Multitenant or single-tenant
- Centralized provisioning, troubleshooting and monitoring
- RBAC and APIs

**Control Plane**
- Dissimilates control plane information between vEdges
- Distributes data plane policies
- Implements control plane policies

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Most Comprehensive SD-WAN Solution in the Market
8. You mentioned the separation of the data and control planes and also vManage. Tell us more about that will you?
Easier to deploy, manage and operate
Single Pane Of Glass Operations and ZTP

- Cloud-first management and operations with a single WAN fabric across all endpoints
- Simplified workflows for easier configuration, monitoring and troubleshooting.
- Cloud + Virtualization + On-Prem end points with Integrated security
- Advanced analytics and assurance for application service level agreement
9. Let’s talk about application performance – does SD-WAN help in any way?
Application Quality of Experience

Visibility

Deep Packet Inspection

TCP Optimization

TCP Connections

Optimized TCP Connection (Cubic)

TCP Connections

SD-WAN Fabric

High Latency Path

vEdge

Servers

Users

App 1

App 2

App 3,000

Queuing

vEdge

Q0

Q1

Q2

Q7

Ingress Interface

Classification

Queuing

Egress Interface

Marking

Default Behavior

Copy

Modify with ACL/Data Policy

Modify with re-write rules

Egress Interface

SLA Routing

Internet

MPLS

Remote Site

4G/LTE

Data Center

Delivering Better Application Quality of Experience
10. You mentioned compliance standards like PCI & HIPAA earlier – how does SD-WAN help customers meet those stringent requirements?
Comprehensive threat protection  
*Integrated security*

- Isolated virtual private networks across any transport
- VPN mapping is based on physical vEdge Router interface, 802.1Q VLAN tag or a mix of both

**Use Cases**
- Security Zoning
- Compliance
- Guest WiFi
- Multi-Tenancy
- Extranet
Per-Segment Topologies

Full Mesh

Hub-and-Spoke

Regional Hub

Unified Communications

Data Center Applications

Regional Internet/Services

Optimal Application Experience
11. Many customers have adopted the Cloud, e.g. leveraging SaaS and IaaS. How does SD-WAN figure in a Cloud strategy?
Simplify migration to the cloud

- Secure branch to cloud connectivity protects data in motion
- Agile workflows simplifies extending the enterprise to IaaS or SaaS
- Analytics determines the optimal path for the best application experience
Application Quality of Experience for SAAS applications

- DNS resolution for the configured Cloud onRamp SaaS applications
- Periodic quality probes toward the configured Cloud onRamp SaaS applications
- vQoE score is determined based on loss and latency reported by the quality probes
- vEdge router determines best performing DIA circuit toward Cloud onRamp SaaS applications based on vQoE scores
12. With my branches directly accessing the cloud, do I need to invest in a security solution at every branch?
## SD-WAN Drives Security to Top of Mind

<table>
<thead>
<tr>
<th>Compliance</th>
<th>Guest Access</th>
<th>Direct Cloud Access</th>
<th>Direct Internet Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>I need to protect my sensitive data (card holder data, patient data) against data breaches before during and after a transaction.</td>
<td>I need to protect my company against liability and prevent guest users from disrupting my network when browsing the internet via guest wi-fi.</td>
<td>I want to reduce expenses and provide better user experience for cloud apps. If I open up my branch office to the internet I increase the attack surface and I need to protect my network.</td>
<td>I want to leverage the local internet path for all internet traffic; I need to protect myself against potential threats coming into my network.</td>
</tr>
</tbody>
</table>

### Direct Internet Access
- **IPsec VPN**
- **App Aware Firewall**
- **IPS**
- **Attack surface exposure**
- **Umbrella (Cloud SIG)**

### Direct Cloud Access
- **IPsec VPN**
- **App Aware Firewall**
- **IPS**
- **AMP/TG**
- **Umbrella (Cloud SIG)**
- **Attack surface exposure**

### Compliance
- **IPsec VPN**
- **App Aware Firewall**
- **IPS**
- **Umbrella (Cloud SIG)**
- **Risk**
- **Attack surface exposure**

### Guest Access
- **IPsec VPN**
- **App Aware Firewall**
- **URL Filtering**
- **Attack surface exposure**
Integrating Security into Architecture
13. Fantastic! How can I get started on SD-WAN?
Migration Sequence

Controllers

Datacenter

Branches

vManage

vSmart

vBond
14. Awesome! Now before we get onto the Q&A segment, what do you have to say to customers who want to deploy SD-WAN?
MORE QUESTIONS?

Come back to this site as Shamil will be back again to answer your questions LIVE on WebEx Teams.

Tuesday, 30th October 2018
10:00AM - 11:00AM (MY, PH, SG) 09:00AM - 10:00AM (ID, TH, VN)