SD-WAN Solutions

Product Introduction

EXPLORING **SUCCESS** TOGETHER

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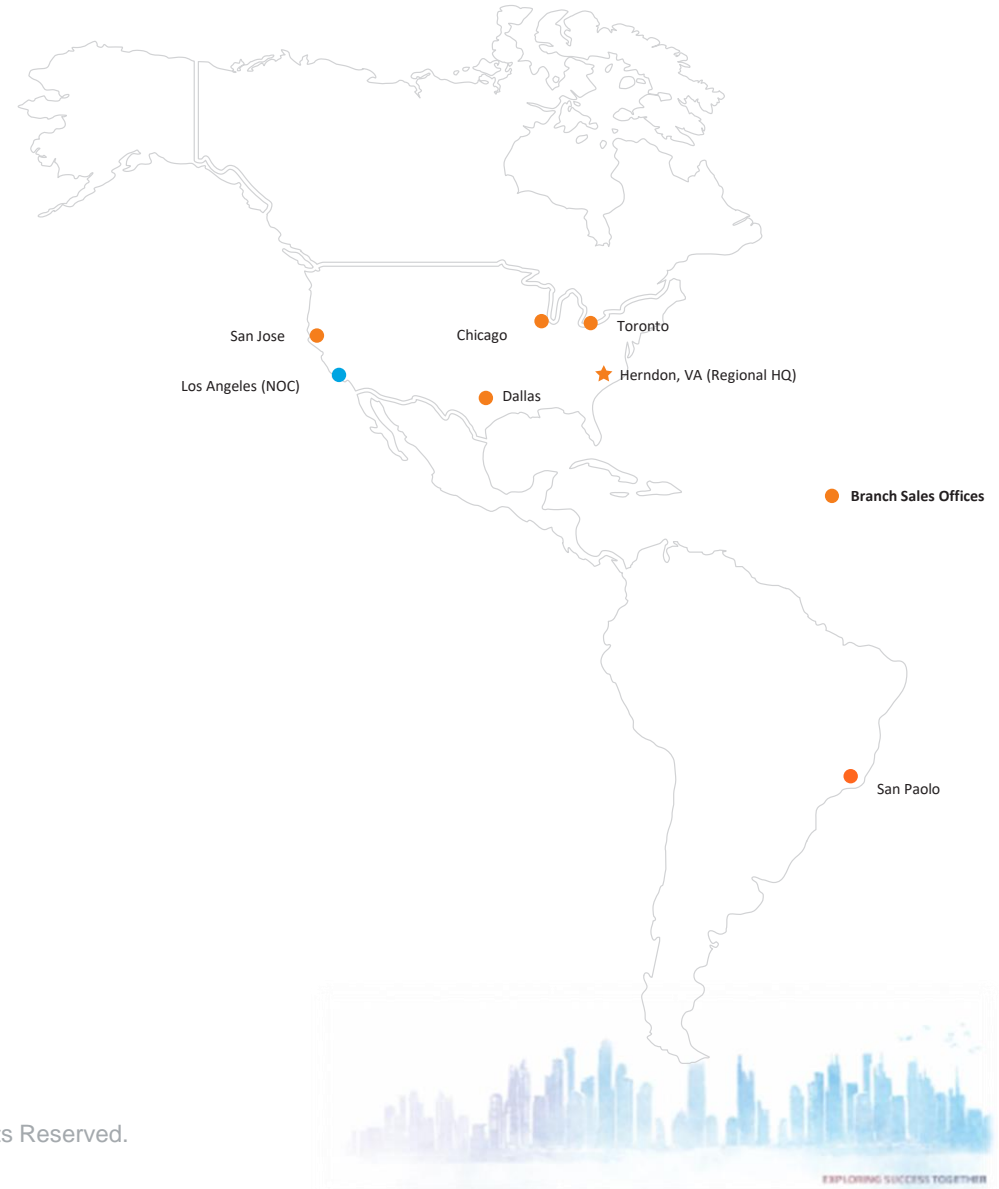
EXPLORING SUCCESS TOGETHER

Who Are We?

China Telecom (Americas) Corporation (CTA)

China Telecom (Americas) Corporation (CTA), through its business partners and affiliates, provides customized, cost-effective and integrated network and communication solutions to its diverse base of customers. As a leading facility-resale private carrier with unique access to providers in Asia and the Americas, CTA offers a wide range of communication and data center services for multinational customers.

CTA is headquartered in Herndon, Virginia, with offices in Chicago, Dallas, Los Angeles, San Jose, Sao Paulo and Toronto. Enterprises throughout the Americas trust CTA's one-stop, turnkey solutions to meet the challenges of today's complex business environment.

- Established in 2001
- Headquartered in Herndon, VA
- **250+** Employees in US, Canada & LATAM
- **7** Regional Sales & Support Offices

- **2** Network Operations Centers in LA & HK
- **22** Points of Presence (PoPs) in North America
- **12** Points of Presence (PoPs) in South America

- **100+** Customers in the Fortune 500
- **100+** Carrier Partnerships
- **21** Channel Master Partnerships

San Jose
Los Angeles (NOC)
Chicago
Toronto
Herndon, VA (Regional HQ)
Dallas
● **Branch Sales Offices**
San Paolo

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SD-WAN Structure Overview

SD-WAN: Software Defined Wide Area Network

A management platform that provides connectivity and cross-border networking. Compared to traditional solutions, it has more flexibility accessing, configuring and managing.

Overlay Network

OTT Network, IP Reachable
Based on tunnels that carry traffic over multiple underlay networks.
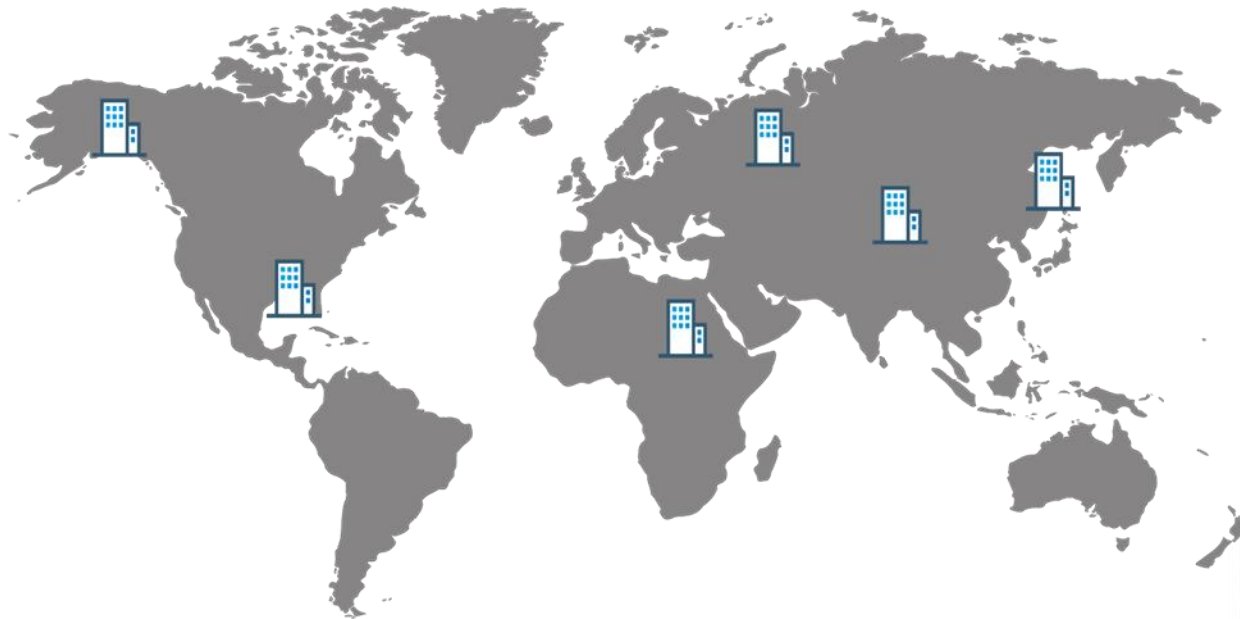
Underlay Network

Same docking procedure as traditional network. Could be *MPLS VPN, *IEPL, IPsec etc..

*MPLS VPN, IEPL not available in the US

Coverage

Europe

- Paris
- London
- Prague
- Stockholm
- Frankfurt
- Dublin
- Milan

North, South, East, Southwest China

- Hangzhou
- Shanghai
- Nanjing
- Chengdu
- Guiyang
- Shenzhen
- Heyuan
- Guangzhou
- Fuzhou
- Beijing
- Zhangjiakou
- Hohhot
- Ulanqab
- Qingdao

Asia Pacific

- Hong Kong
- Jakarta
- Singapore
- Bombay
- Tokyo
- Macau
- Kuala Lumpur
- Seoul
- Bangkok
- Sydney
- Osaka
- Manila

America

- Toronto
- Sao Paulo
- Silicon Valley
- Virginia
- Ohio
- California
- Oregon
- Mexico City
- Santiago

Africa & Middle East

- Fujilla
- Johannesburg
- Nairobi
- Largs
- Cairo
- Dubai
- Bahrain
- Cape Town
- U.A.E

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CTA SD-WAN Advantages & Features

Multi-vendor independent operation

Selection of SD-WAN manufacturers from Cisco, Versa, Silver peak etc. independently, and CTA also adapts the optimal solution according to customer needs.

Comprehensive security protection capability

Covers a full range of security functions such as Next Generation Firewall (NGFW), Unified Threat Management (UTM), Intrusion Detection and Prevention (IDS/IPS), Antivirus/Antimalware, Web Application Firewall (WAF), etc.

Cloud-Network Integration

Industry-leading cloud network resources, support SD-WAN integrated cloud, support agile on-demand service provisioning and delivery, and dynamic resource management/scheduling optimization.

Multiple modes and protocols support

According to the network environment of the user terminal, different protocols and routes can be selected to improve the network usage experience.

SaaS Acceleration

SD-WAN instant services to provide users with mainstream SaaS service acceleration including Office365, Salesforce, Zoom, etc.

Multiple network encryption protocol support

Support all mainstream network encryption modes, provide encryption algorithms based on tls, sha256, etc., to escort user data security.

Global backbone network resources

SD-WAN has backbone network resources all over the world to meet the business access needs of users in various regions..

Lower Latency

Using high-quality private line resources, it is safe and stable, ensures lower latency, and provides optimized QoE basic guarantees for key enterprise applications.

24x7 Technical Support

With a complete and mature network operation and maintenance system of operators, it provides users with professional SD-WAN+WFX services.

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CTA SD-WAN POC Packages

POC Packages	Features Included	Cost	Setup Requirements	Configuration Environment	Deliver Time	POC Window	Support
Versa SD-WAN	1. SD-WAN CAE/vCAE (Versa FlexVNF on the VMware ESXi VM) over PC at customer branch. 2. SD-WAN VxLAN tunnel between CGWs. 3. Enjoy end to end SD-WAN underlay tunnel premium performance.	Free	1. Customer has a registered ID in CTA system. 2. Customer provide trial window time. 3. BSS new product request order is necessary. (Order Type: POC Order) 4. BSS manager approval required based on request order TCV.	1. Similar product environment as customer request. 2. Bandwidth/site: 10M, 20M. 3. Max 3 branches network (Including CAE, VCAE).	5 days BSS processing time. (Manager Approval time is not include) + 30 days SD-WAN network configuration and CAE shipping.	1 month	1. Cloud base SD-WAN environment setup. 2. Configuration instruction for how to setup vCAE over PC. 3. Test assistant during test period.
Versa SD-WAN (Paid)	1. CAE at customer branch or vCAE over Cloud. 2. Experience end to end or fully mashed SD-WAN network 3. Versa portal function.	1. Standard price MRC including number of CAE/vCAE, CGWs and related bandwidth. 2. Trial price NRC $1000. 3. Min 90 days commitment.	1. Customer signs the BSS 3 months contact. (Regular Order) 2. Customer provide the provisioning - Customer Network Information Gathering Form.	Real product environment as customer request.	30 days including SD-WAN network configuration and CAE shipping.	3 months	1. Standard support service included in the contact. 2. Paid additional management service options.
FAST VPN	1. FAST VPN account over PC or APP at customer side. 2. FAST Account setup and operation guide. 3. Enjoy FAST VPN premium performance.	Free	1. Customer have a registered ID in CTA system. 1. Fill the FAST POC APPLICATION FORM. 2. Customer provide trial window time.	1. FAST VPN platform over global cloud network. 2. Max bandwidth 20M. 3. Max FAST Account: 25 users.	2 days after information received.	15 days Can extend once.	1. Cloud base FAST environnent setup. 2. Configuration instruction for how to setup FAST account over PC or App. 3. Test assistant during test period.
Cisco SD-WAN	1. cEdge at customer branch or cEdgeCloud over VM. 2. Experience end to end Cisco SD-WAN function. 3. Enjoy end to end SD-WAN underlay tunnel premium performance.	Free	1. Customer has a registered ID in CTA system. 2. Customer provide trial window time. 3. BSS new product request order is necessary. (Order Type: POC Order) 4. BSS manager approval required based on request order TCV.	1. Branch to branch 2. Branch + SaaS optimize with whitelist 3. Branch + cloud gateway Max 3 branches as request. ECP underlay bandwidth: 10M	30 days including SD-WAN network configuration and vEdge shipping.	15 days Can extend once.	1. Test environment setup. 2. vEdge pre-config and shipping. 3. Test assistant during test period.
Partner SD-WAN & IPSec VPN* *IP Sec VPN not available in US	1. Offer Cisco, Versa, Fortinet, Palo Alto Brand SD-WAN POC 2. Turbo VPN for remote customers. 3. Customized POC environment for customer.	Free	1. Customer has a registered ID in CTA system. 2. Customer provide trial window time. 3. Solution topology and WAN/LAN IP information	For SD-WAN 1. Max 2 Physical Branch 2. Max bandwidths: 50M For Turbo VPN 1. Standard BW : 10M 2. Standard Turbo Account: 5 users	3-4 weeks for SD-WAN network including equipment shipping. 2 days for Turbo VPN	7+7 days	1. Zenlayer test environment setup. 2. Provide Client Operation Guide to customer. 3. Zenlayer test assistant during test period.

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Branded SD-WAN

Our Partners

VERSA NETWORKS
Global

CISCO
Global

silver peak™
Global

FORTINET
Global

paloalto NETWORKS
Global

APPEX Networks
China

zenlayer
Global

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Versa SD-WAN

VERSA NETWORKS

- ➤ **Coverage:** Global

- ➤ **Basic Network**: CTA-NET, SDN or public IP network

- ➤ **Portal Software:** Versa SD-WAN

- ➤ **VAS (Value Added Service):**

- • FAST: App level remote access

- • Onsite CAE install and configuration

- • Managed Service: Traffic application identification and acceleration

- ➤ **SLA:** 99.95% (CGW to CGW), latency by request

- ➤ **Post-Sale Support:** 7*24 GCSC & Global NOC team

- ➤ **Trial:** 1-month Free POC or 3 months Paid POC

Trial: Free or Paid

CAE Equipment: Versa 110 NW, Versa 810 or Versa

Software over Cloud

CAE Deployment Mode:
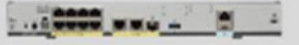
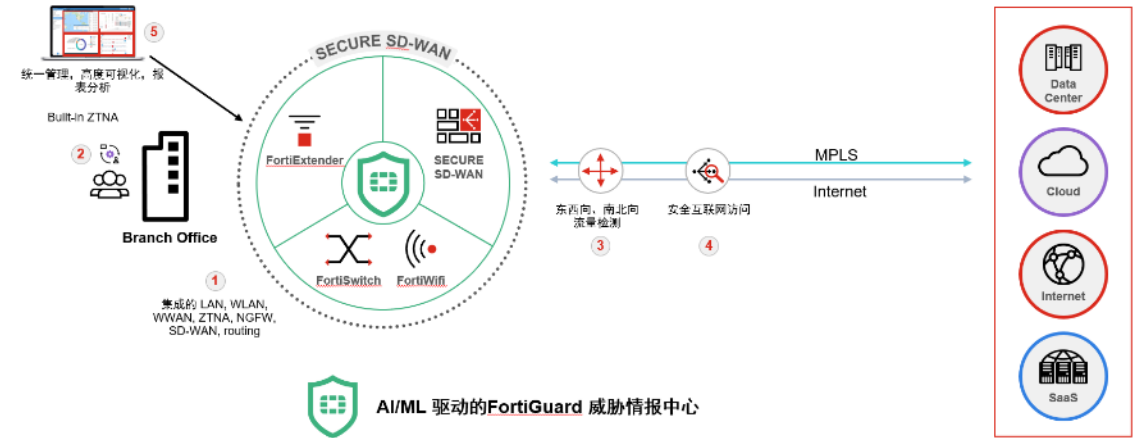ZTP (Zero-touch-provision)

Software over cloud-vCAE

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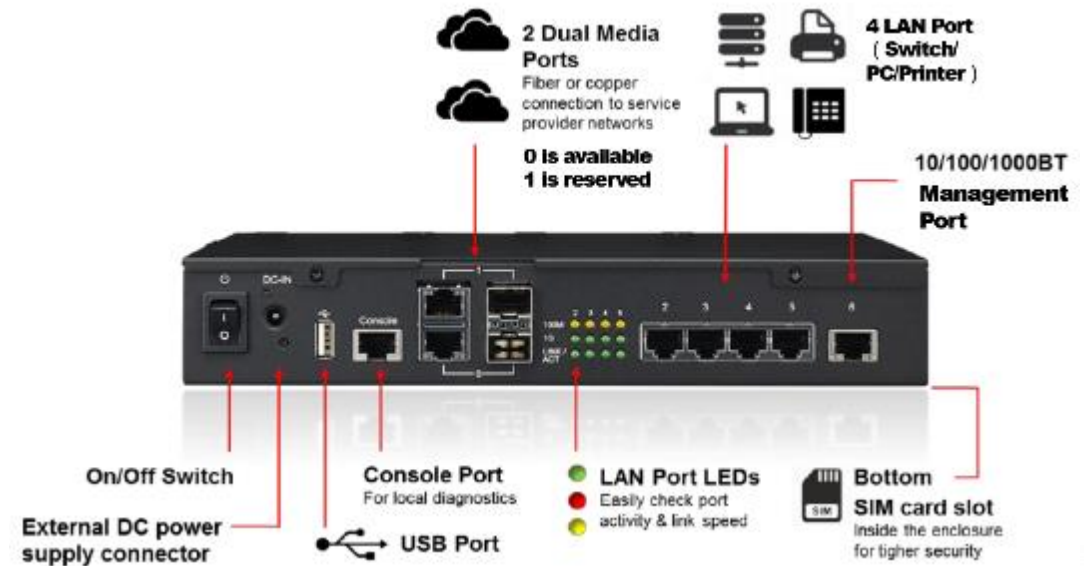
Cisco SD-WAN

- **Coverage:** Global
- **Basic Network:** SDN or public IP network
- **Portal Software:** Cisco SD-WAN

- **CAE Equipment:** cEdge, cEdge over Cloud
- **CAE Deployment Mode:** ZTP, new edge on site, software over cloud or existing license upgrade.
- **Free Trial:** 1 months Free POC
- **Managed Service:** Premium, Advanced, Standard, Basic, or Token Options.
- **SLA:** 99.95% (CGW to CGW), latency by request
- **Post-Sale Support:** 7*24 GCSC & Global NOC team

ISR 1000	C1111-4P	
ISR 1000	C1111-4PLTELA	
ISR 1000	C1111-8P	
ISR 1000	C1111-8PLTELA	
ISR 1000	C1111X-8P	

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Aruba *EdgeConnect* SD-WAN

- **Coverage:** Global
- **Basic Network:** CTA-NET, SDN, MPLS* or public IP network
- **Portal Software:**
  Aruba EdgeConnect SD-WAN

- **CAE Equipment:** EdgeConnect US, XS, etc. EC over Cloud
- **CAE Deployment Mode:** EdgeConnect on site, EC Software over Cloud, EC BOOST
- **Virtual Environment:** ESXi; Xen; Hyper-V; KVM
- **Feature Service:** Boost WAN Option
- **SLA:** 99.95% (CGW to CGW), latency by request
- **Post-Sale Support:** 7*24 GCSC & Global NOC team

	EdgeConnect US	EdgeConnect XS	EdgeConnect S-P	EdgeConnect M-H	EdgeConnect L-H	EdgeConnect XL-H
Model	EC-US	EC-XS	EC-S-P	EC-M-H	EC-L-H	EC-XL-H
Typical Deployment	Small Branch/ Home Office	Small Branch	Large Branch	Head Office/Data Center Large Hub	Data Center Large Hub	Data Center Large Hub
Typical WAN Bandwidth	1–100 Mbps	2–1000 Mbps	10–2000 Mbps	50–5000 Mbps	2–10 Gbps	2–10 Gbps
Simultaneous Connections	256,000	256,000	256,000	2,000,000	2,000,000	2,000,000
Recommended Boost up to	25 Mbps	250 Mbps	500 Mbps	1 Gbps	1 Gbps	5 Gbps
Redundancy/ FRUs	No	No	SSD and Power (AC or DC)	SSD and Power	SSD and Power	SSD, NVMe, Power
Data Path Interfaces	3 x RJ45 10/100/1000	4 x RJ45 10/100/1000	8 x RJ45 4 x 1/10G Optical	8 x RJ45 4 x 1/10G Optical	6 x 1/10G Optical	6 x 1/10/25G Optical

*MPLS not available in the US

Fortinet SD-WAN

FÜRTINET.

- ➤ **Coverage:** Global
- ➤ **Basic Network:** CTA-NET, SDN or public IP network
- ➤ **Portal Software:** Fortinet SECURE SD-WAN
- ➤ **CAE Equipment:** FortiGate, FotiWiFi, FortiGate VM/HW
- ➤ **CAE Deployment Mode:** LAN Edge (FortiAP, FortiSwitch), WAN Edge (FortiGate, FEX), Date Center Edge (FortiGate VM/HW), Public/Private Cloud (FortiGate VM), Cloud Edge (SASE), ZTNA
- ➤ **Feature Service:** ZTNA, AP, 5G/LTE
- ➤ **SLA:** 99.95% (CGW to CGW), latency by request
- ➤ **Post-Sale Support:** 7*24 GCSC & Global NOC team

Remote Office / Home	Small Branch	Medium Branch
FortiGate / FortiWiFi 40F Series	FortiGate / FortiWiFi 60F Series	FortiGate / FortiWiFi 80F Series
~10 users 3G/4G, WiFi WAN VPN Throughput 4.4 Gbps Application Control Throughput: 990 Mbps	~20 users Storage, WiFi WAN VPN Throughput 6.5 Gbps Application Control Throughput: 1.8 Gbps	~50 users Storage, Bypass, WiFi WAN VPN Throughput 7.5 Gbps Application Control Throughput: 1.8 Gbps

Large Branch	Very Large Branch	Private and Public Cloud
FortiGate 100F Series	FortiGate 200F Series	FortiGate VM
~250 users Storage WAN VPN Throughput 11.5 Gbps Application Control Throughput: 2.2 Gbps	~500 users Storage WAN VPN Throughput 13 Gbps Application Control Throughput: 13 Gbps	aws, Azure, Google Cloud, Alibaba Cloud, ORACLE, IBM, vmware, NUTANIX

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Other Brand SD-WAN

Zenlayer:

- SDN underlay
- Low price solution
- Turbo VPN

Palo Alto Networks:

- PRISMA Cloud Network & SDN underlay
- PRISMA SASE
- SaaS & Cloud Access

APPEX

- CloudWAN network
- Low price solution
- CPE, vCPE, Mobile CPE

Zenlayer, APPEX and Palo Alto SD-WAN are case by case solution and quote.
Zenlayer, APPEX and Palo Alto SD-WAN are still supported by GCSC & Global NOC team, 24x7.

Managed SD-WAN or Unmanaged SD-WAN

- **Managed SD-WAN:**
  - For small and medium enterprises who outsource their IT team, customer can focus on business goals rather than managing an SD-WAN.
  - SD-WAN as-a-Service, CTA provides add-on value to the network with its own additional features.

- **Unmanaged SD-WAN:**
  - For large enterprises who have global standards, own IT team set up and manages all the components in-house.
  - CTA can offer end SD-WAN equipment without license in China Region.

Scenarios & Cases

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SD-WAN Scenarios

Enterprise Networking Customer

- Standard SD-WAN with Internet

Cloud Access Customer

- Cloud Access SD-WAN with ECP/Public Cloud

SaaS Access Customer

- SaaS Access SD-WAN with Cloud vCAE

Remote Access Customer

- FAST/Turbo Access SD-WAN

High Quality MPLS Underlay Customer

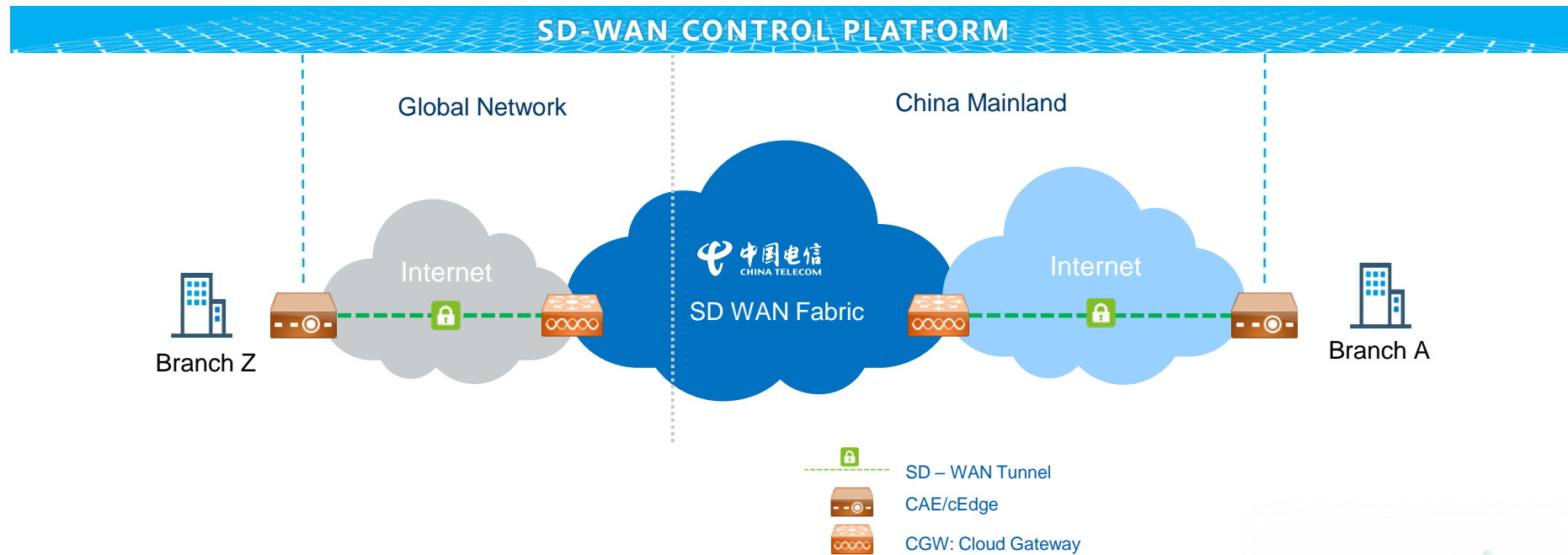- Hybrid SD-WAN for Global Networking

Standard SD-WAN with Internet

Scenario:
- ❑ Enterprise WAN network
- ❑ WAN optimization for cross border interconnection
- ❑ WAN connecting branch sites

SD-WAN CONTROL PLATFORM

Global Network

China Mainland

Internet

中国电信 CHINA TELECOM

SD WAN Fabric

Internet

Branch Z

Branch A

- ⊟ SD – WAN Tunnel
- ⊟ CAE/cEdge
- ⊟ CGW: Cloud Gateway

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SD-WAN Use Case 1: Enterprise Networking Customer

Industry:

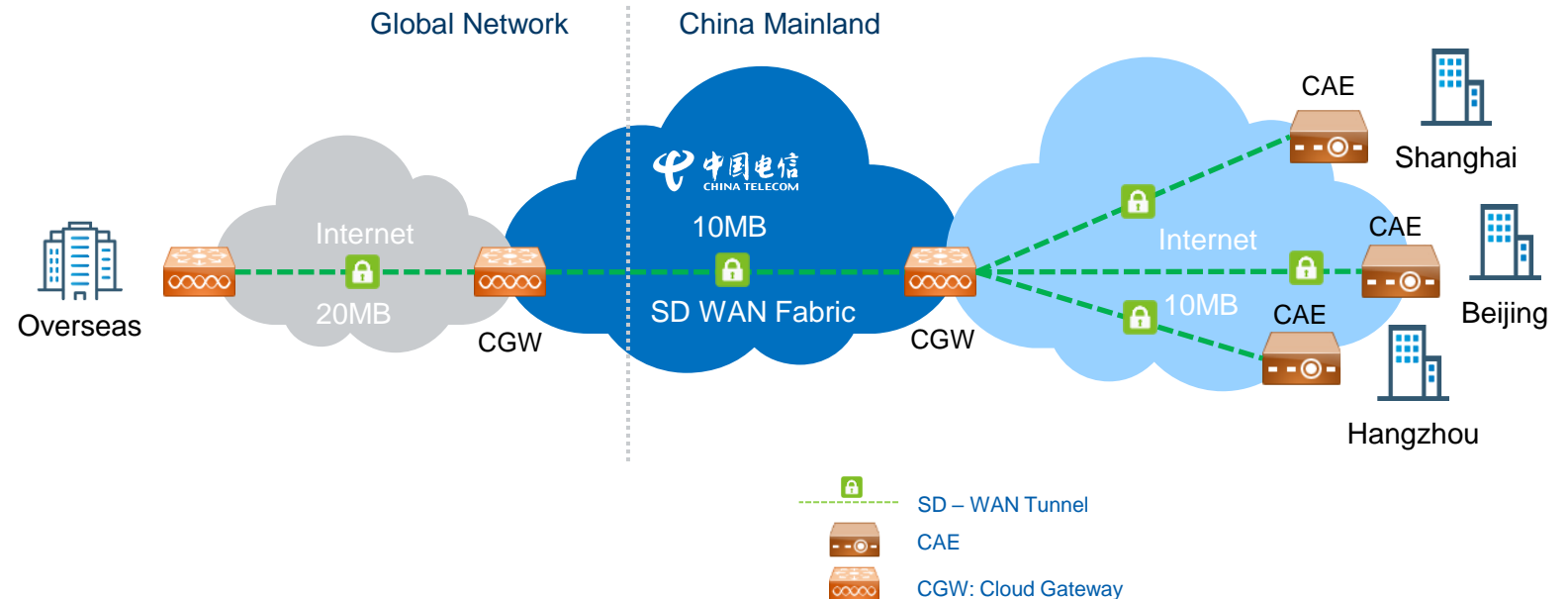☐ Computer Systems Design and Related Services Industry

Customer Background:

☐ Computational storage subsystem (CSS) solutions. The Company offers data-driven infrastructure that enables responsive performance, affordable scaling, and agile platforms for compute and storage I/O intensive applications. They serve customers in the United State and China.

Keyword:

☐ Enterprise Standard SD-WAN

☐ Stable Performance

☐ Quick Win and Customer Sign

Requirement:

☐ Customer wants to establish well performance enterprise network between China branch and U.S.

Global Network | China Mainland

Overseas — Internet 20MB — CGW — 中国电信 CHINA TELECOM 10MB SD WAN Fabric — CGW — Internet 10MB

CAE — Shanghai
CAE — Beijing
CAE
CAE — Hangzhou

🔒 SD – WAN Tunnel
CAE
CGW: Cloud Gateway

Value & Benefits:

☐ Fast pre-sale procedure for customer quick decision and sign.
☐ Product and pre-sale team value bring customer back and sign again.
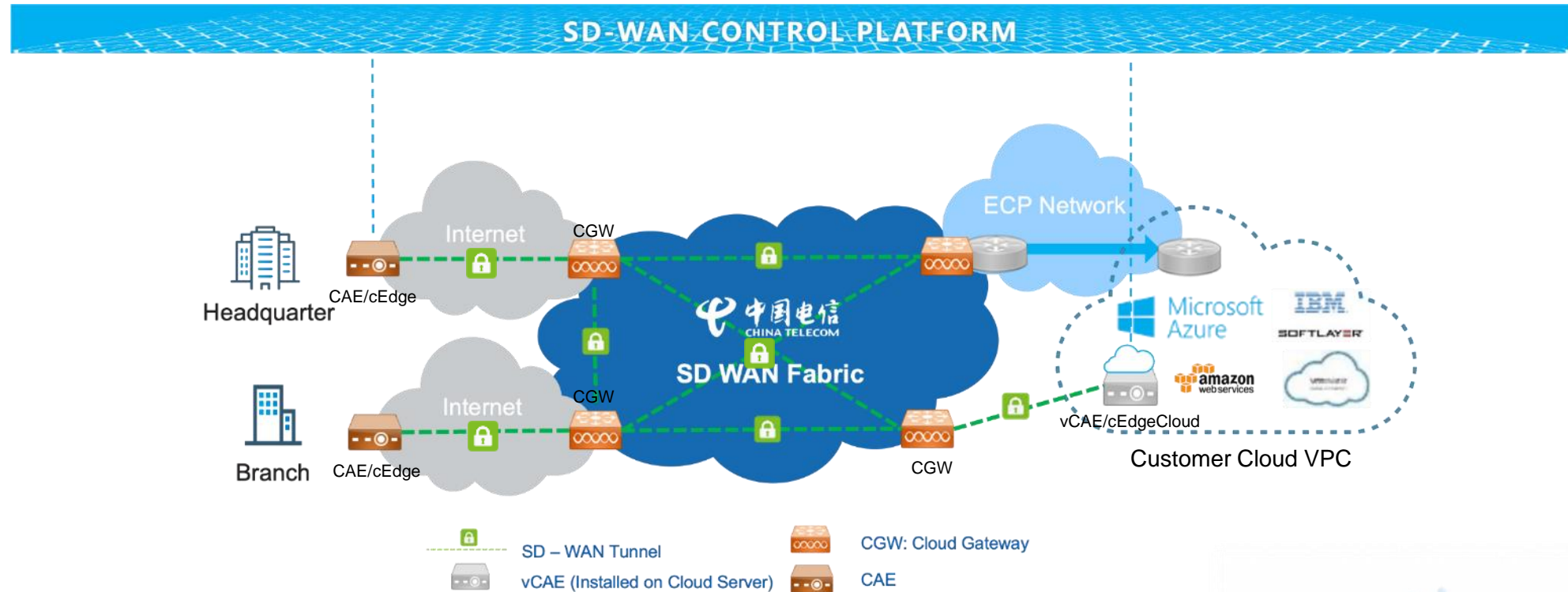
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Cloud Access SD-WAN with ECP/Public Cloud

Scenario:
- ❏ Office network secure access to Cloud VPC environment.
- ❏ WAN connection to access applications hosted though private tunnel or VPN

SD-WAN Use Case 2: Cloud Access Customers

Industry:
☐ Software and management system company

Customer industry background
☐ This company is a reservations system for campgrounds and parks. They have a comprehensive suite of reservation and licensing technology, and service solutions support federal, state, provincial and local government park and conservation agencies, as well as private campground owners, conveniently connecting them with outdoor adventure seekers from around the world.

Keyword:
☐ Cloud Access SD-WAN
☐ Connect China AWS and Global AWS
☐ Existing SD-WAN network expand

Requirement:
☐ The SD-WAN existing customer wanted to setup the link between two AWS regions between China and U.S. based on existing SD-WAN network to sync up their application database.
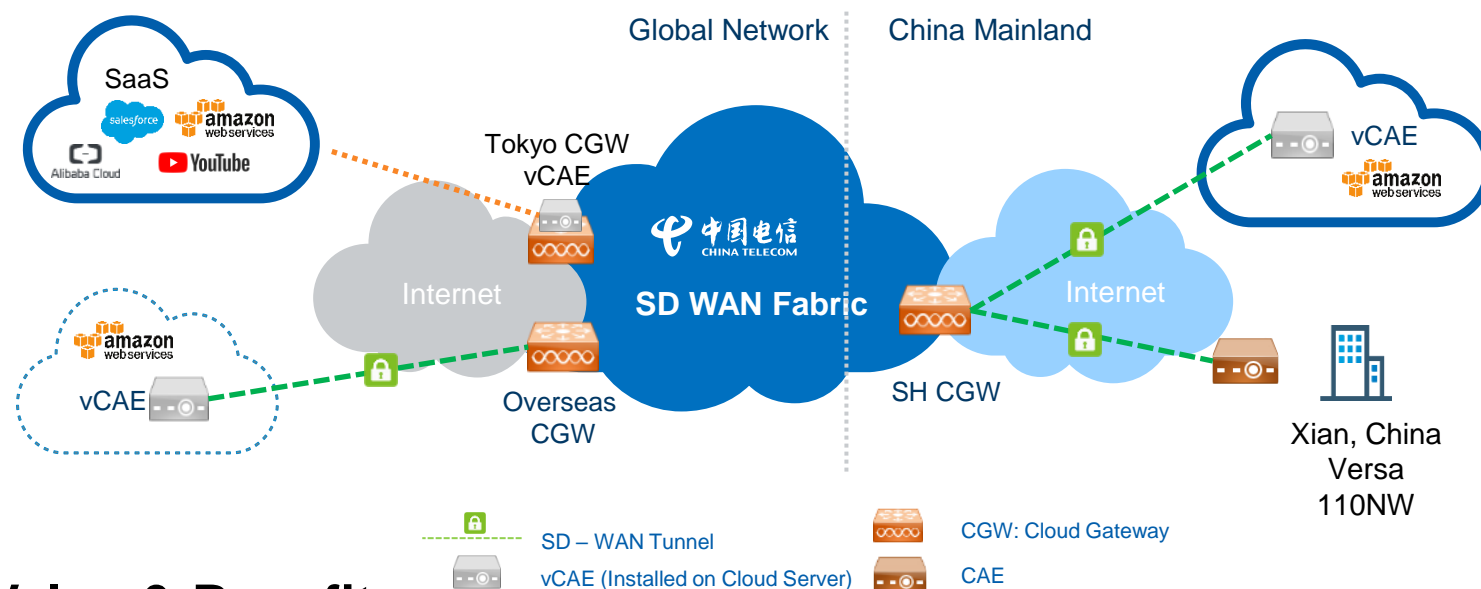
Value & Benefits:
☐Premium communication between China AWS and U.S. AWS.
☐Smooth network upgrade and expand over existing SaaS Access SD-WAN network.
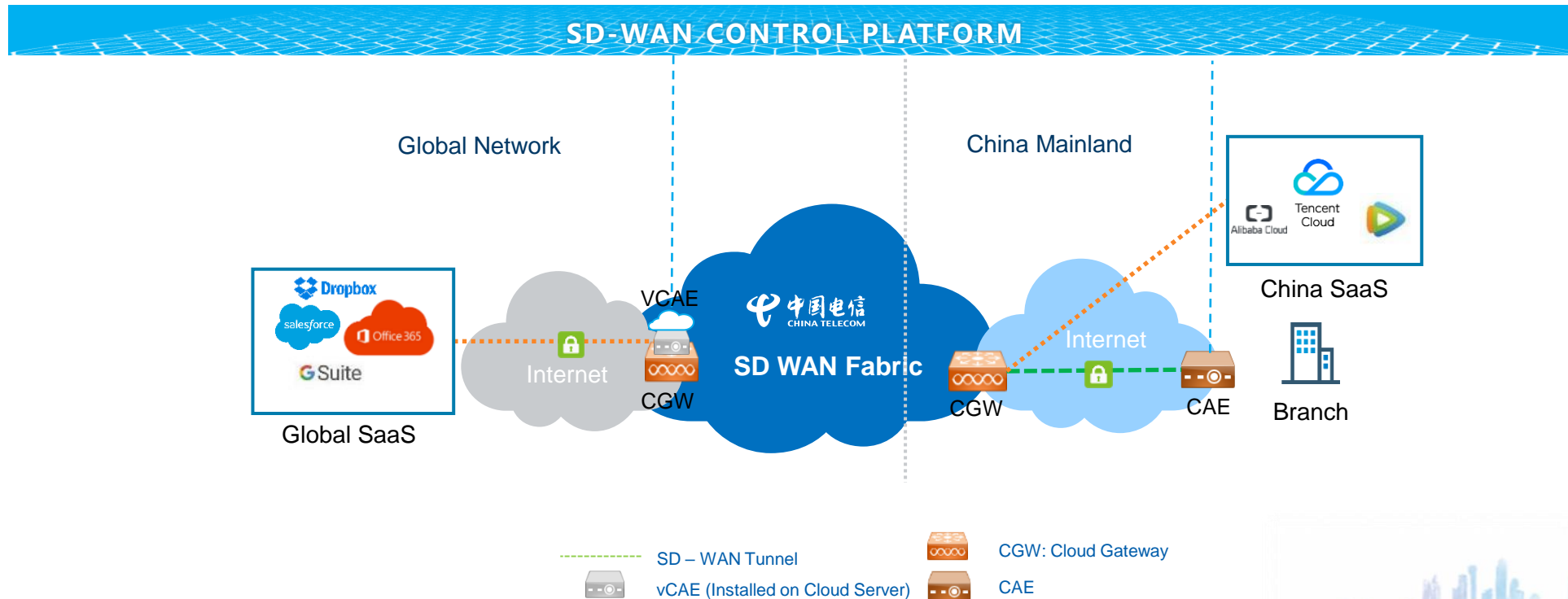☐Fast and quality delivery.

SaaS Access SD-WAN with Cloud vCAE

Scenario:

❑ Premium Access for Oversea SaaS from Mainland China (such as O365, G-suite, Google, Salesforce)

❑ Premium Access for China SaaS from Oversea (such as Ali Cloud, Tencent Video)

SD-WAN Use Case 3: SaaS Access Customers

Industry:
- Manufacturer, leading provider of industrial solutions

Customer Background:
- Worldwide coverage, this manufacturing company is positioned to service customers regionally. Powerful industry leader with over 1,300 employees in 13 manufacturing facilities and technology center locations.

Keyword:
- SaaS Access SD-WAN
- Option: Versa vs Cisco

Requirement:
- Customer needs connection between China and US based SaaS. Initially proposal a site-to-site Cisco SD-WAN.
- Customer change request, connection goes directly from China to public cloud Platform without go through U.S. Branch. Use Versa SD-WAN instead.
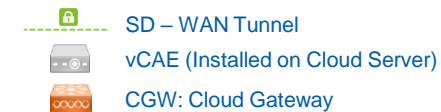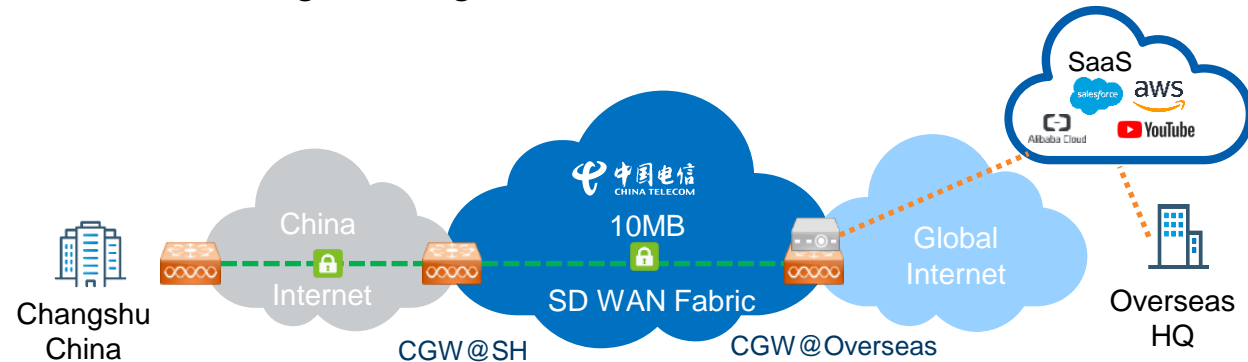
Value & Benefits:
- China branch visit U.S. Cloud application server without reach U.S. branch.
- Fast switch SD-WAN solution between Versa and Cisco.
- Portfolio of products that can be customized to meet customer's requirement.

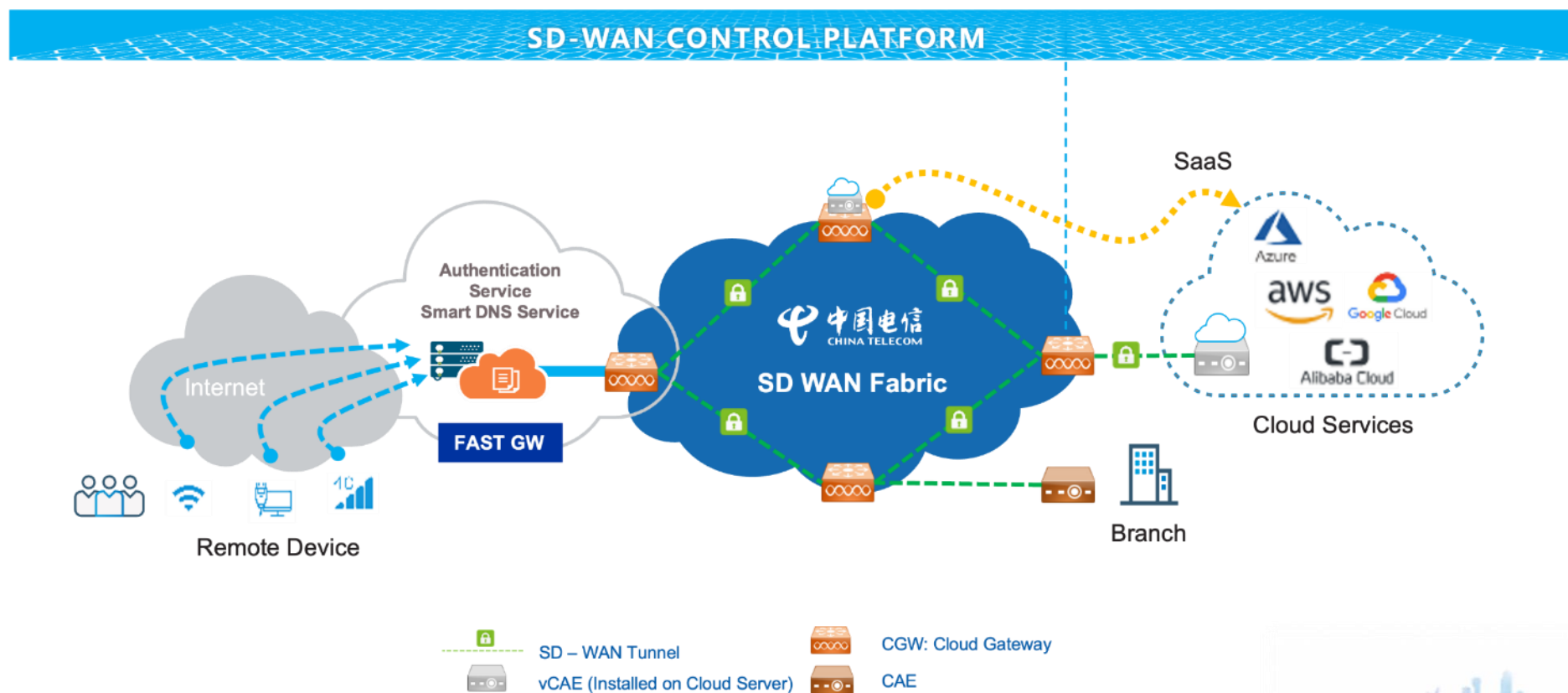# Remote Access

Scenario:
- ❑ Enterprise Level Remote Access
- ❑ Remote/Hybrid Working Mode
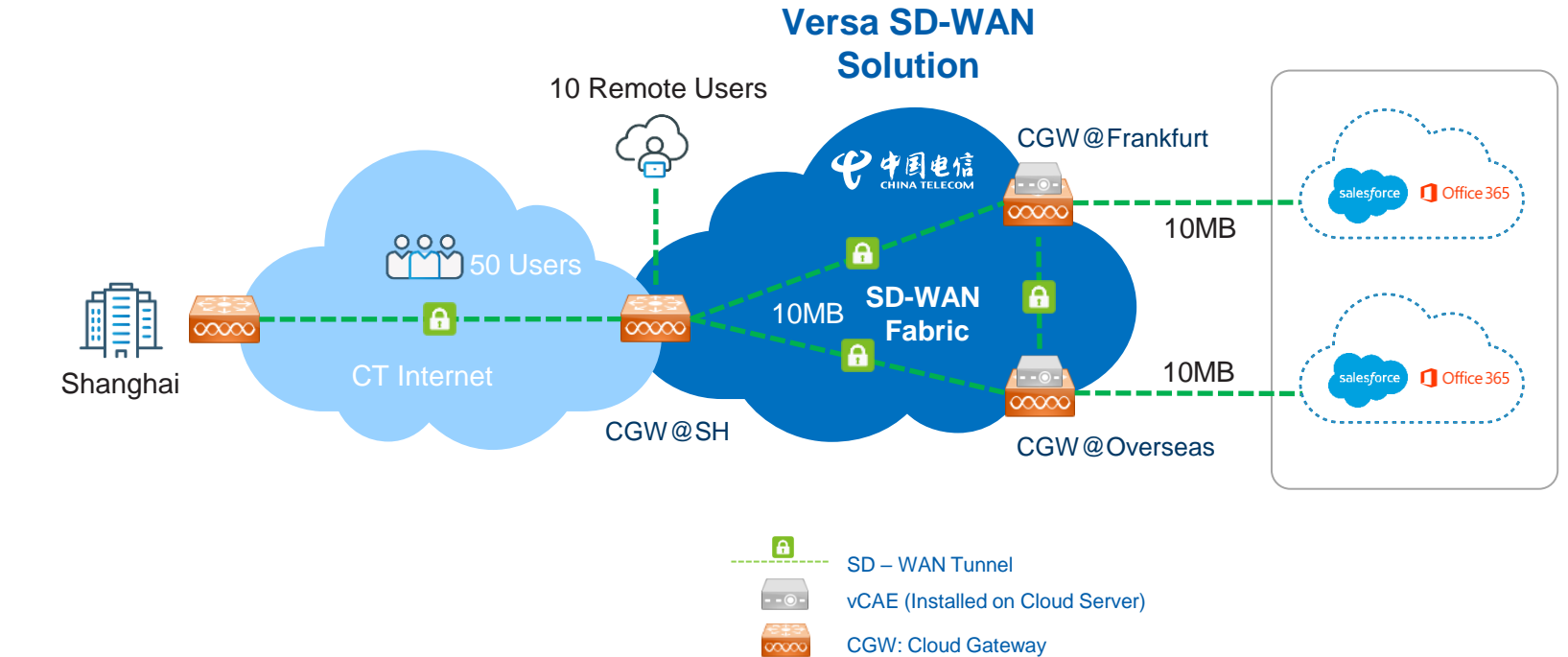
SD-WAN Use Case 4: Remote Access Customers

Industry:
❑ Plastics/Manufacturing

Customer Background:
❑ A global manufacturer of specialized polymer materials. Its products include thermoplastic compounds, plastic colorants and additives, thermoplastic resins and vinyl resins.

Versa SD-WAN Solution

10 Remote Users

CGW @Frankfurt

50 Users

10MB

SD-WAN Fabric

Shanghai

CT Internet

CGW @SH

10MB

CGW @Overseas

10MB

Office 365

salesforce

Office 365

SD – WAN Tunnel
vCAE (Installed on Cloud Server)
CGW: Cloud Gateway

Keywords:
❑FAST
❑SaaS Access SD-WAN
❑Fast Delivery
❑SD-WAN 3 months POC

Value & Benefits:
❑ Fast deployment, Fast Remote Access delivery in 2 days to help customer's business online for emergency and flexible use.
❑ Split traffic to Global SaaS application in America and Europe to target different customer needs.
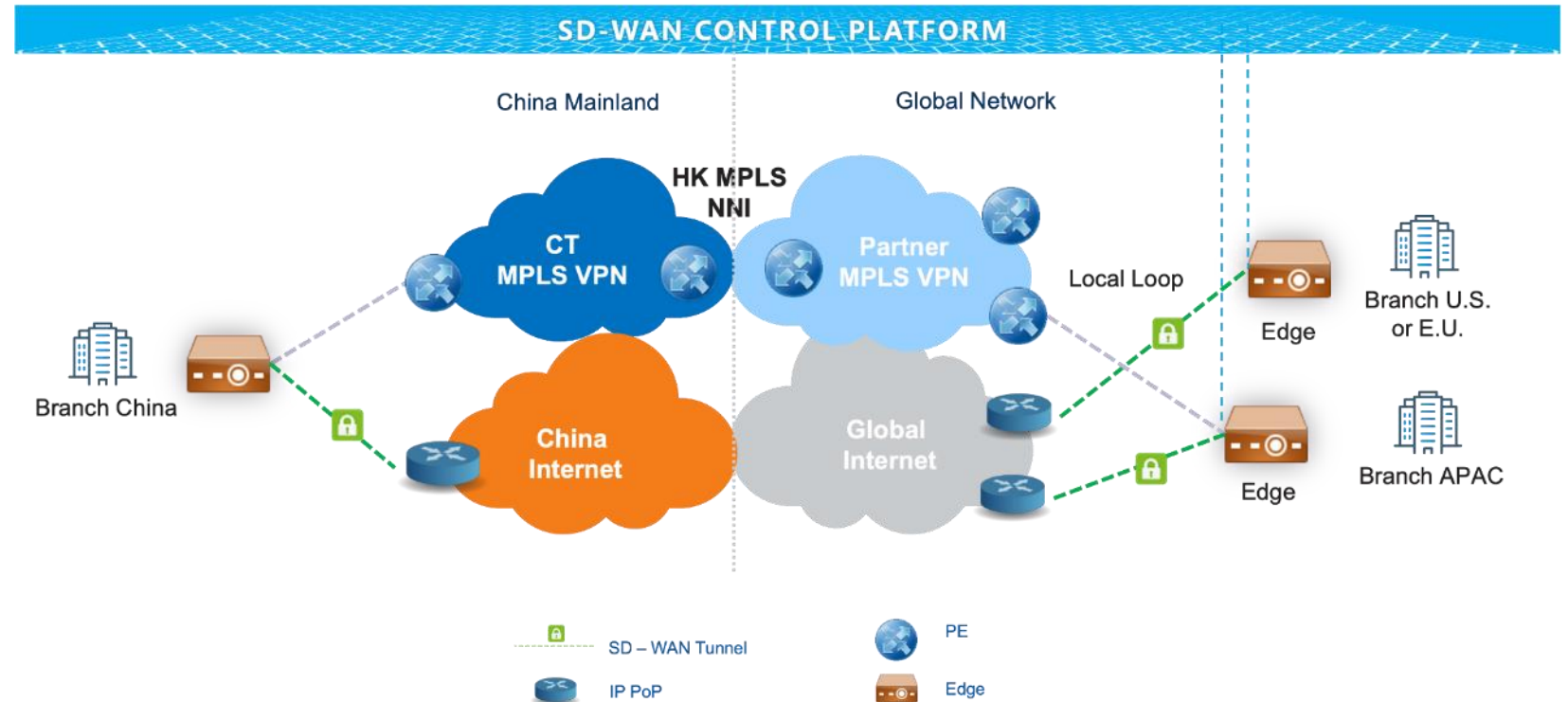
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High Quality MPLS Underlay SD-WAN Customer

- **Hybrid SD-WAN Solution:**
1. China Branch: Edge Equipment, local IP, MPLS, Shipping & Installation Service provided by CT China.
2. U.S. and E.U. Branch: Edge Equipment, local IP, MPLS, Shipping & Installation Service provided by CT Carrier Partner.
3. APAC Branch: MPLS and local IP provided by CT, Edge Equipment, Shipping & Installation Service provided by CT Carrier Partner.
4. SD-WAN Service Platform and Customer Portal provided by CT Carrier Partner.

- **Shipping & IOR (Importer of Record) Service** and **Professional Installation Service** need to be charged.
- No standard price table, case by case quote.
- SD-WAN brand offer:

Thank You.

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