

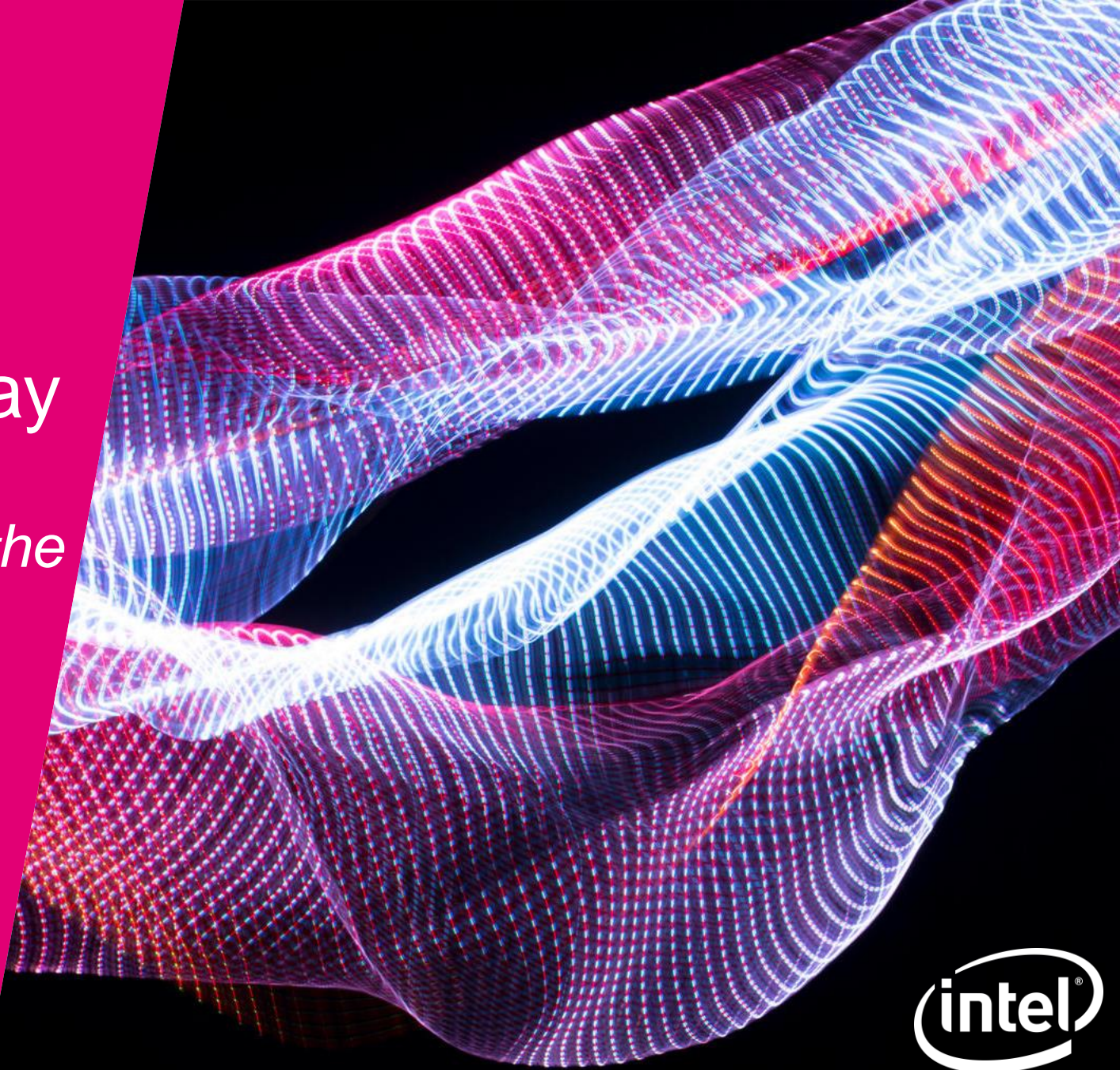
Introducing Deutsche Telekom Premium Internet Underlay

*Designed for the Cloud, built in the
Cloud*

Lisette Sens,
October 2022



ERLEBEN, WAS VERBINDET.



Deutsche Telekom Group...

Group revenue of
€101 billion



Presence in over
50 countries



No. 1 network and communication
provider in Europe with over **241 million**
customers



Pioneer in promoting social issues
(climate protection, data privacy, diversity,
sustainability)



Employees worldwide
(Dec. 2020): **226,290**



Europe's leading
telecommunication
provider with
global presence

Deutsche Telekom Group

Facts & figures

€ 101B
Revenue

€ 4.7B
Profit

226,300
Employees

50
Countries

86
Fortune 100

T-Mobile



T-Mobile offers cell-phone solutions in the Netherlands, Austria, the Czech Republic, and the USA.

Deutsche Telekom



Telekom subsidiaries provide products and services for the fixed network, mobile communications, IPTV, online and cloud services.

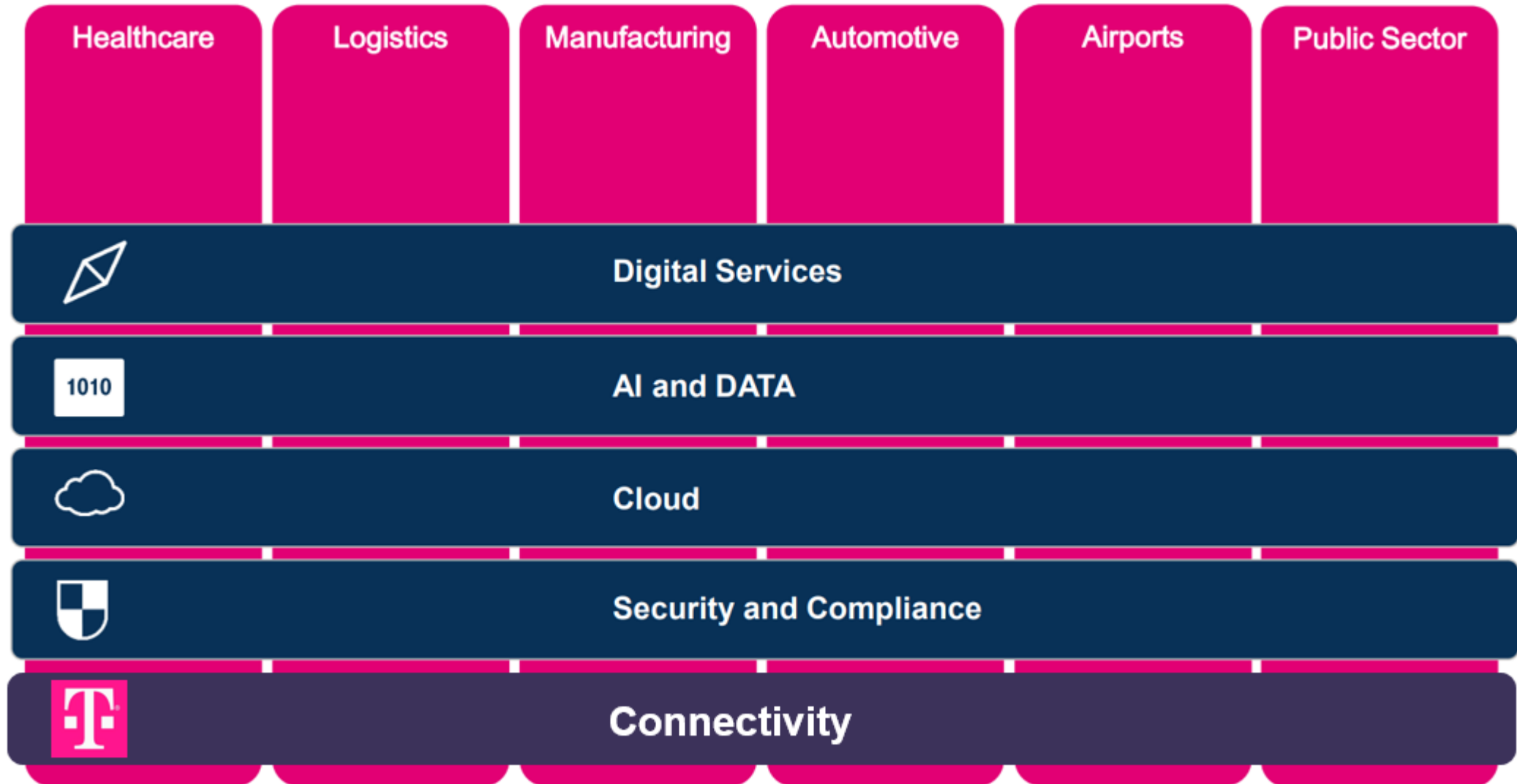
T-Systems



T-Systems delivers ICT solutions for major corporations and public-sector organizations having a global presence & alliances via partners.



Deutsche Telekom in Asia Pacific



Your Partner with global reach and network coverage...

249,155 km
international fiber backbone

28 legal entities with
dedicated
specialists covering
all regions

2,700
MPLS access points
(IP-VPN) worldwide

120,000
IP-VPN service points

VoIP in the WAN: CentralSIP gateways
with
over 50,000
Channels per gateway in active
operation

Global PoP coverage

Approximately
130 L1/L2-NNIs



... and provide the matching business-centric network solutions

Fully managed telco stack:
Overlay, Underlay and
Security

E2E management and steering –
from sales to delivery to service

Consulting for software-
defined (SD) solutions with
focus on your individual
business case

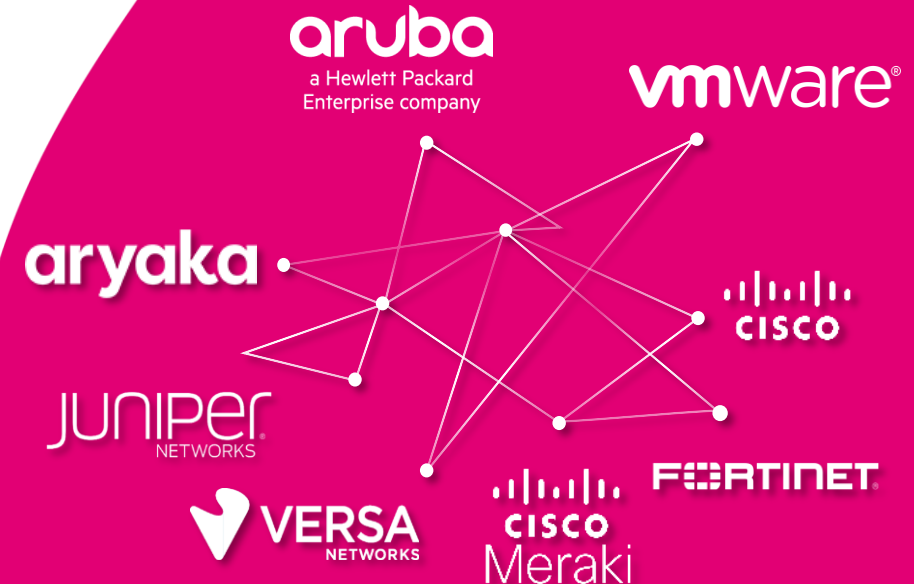
SASE evolution with
market leading vendors

Flexibility thanks to
co-management and bring
your own underlay options

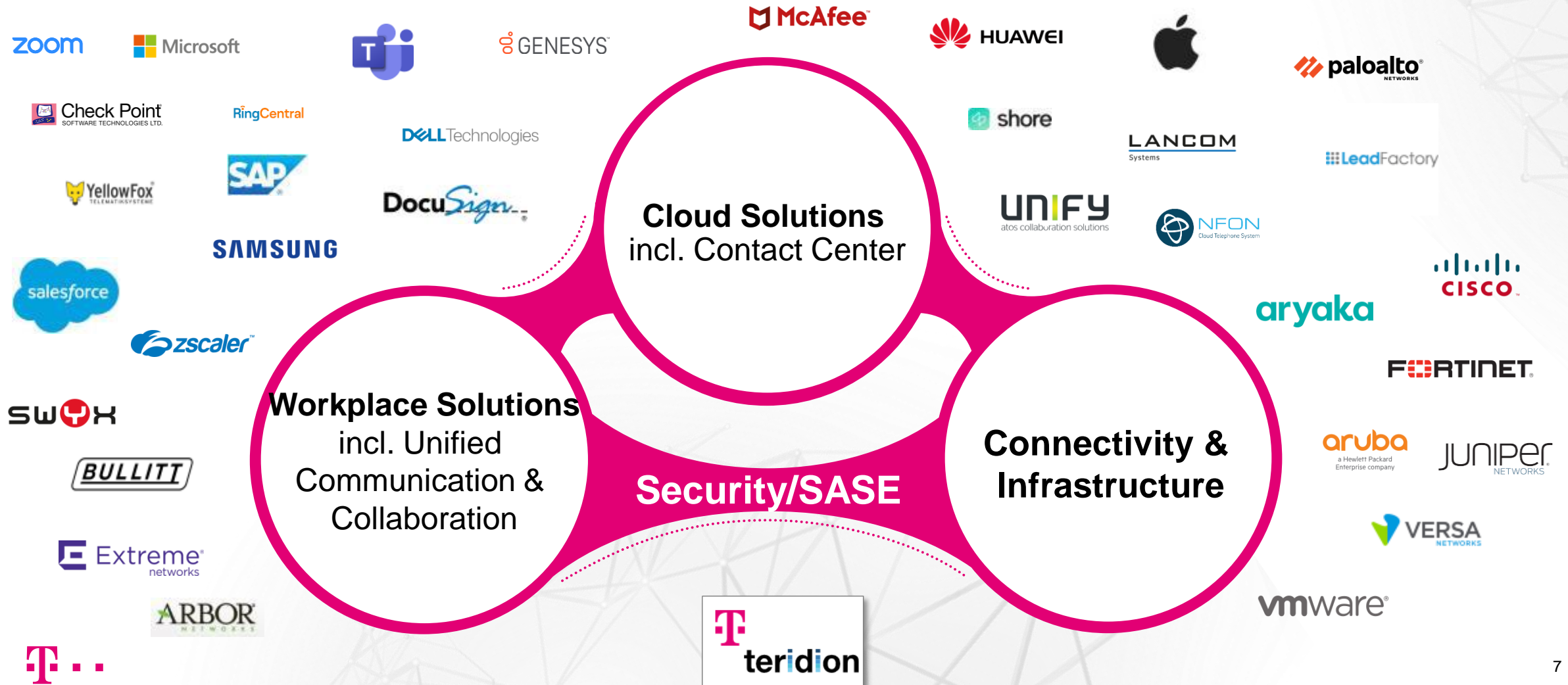
**7 global competence
centers** for SD-WAN / SD-
LAN with best of breed
ecosystem

Swift design, implementation
and management of **tailored**
business-centric network and
communication solutions

COMMERCIALY FLEXIBLE



...and can leverage the group's comprehensive portfolio and partner ecosystem





DT Premium Internet Underlay:

Designed for the Cloud, built in the Cloud

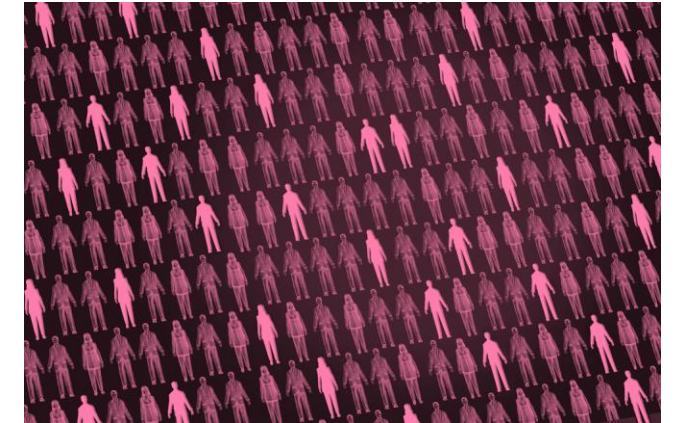
Today: Enterprises are facing three major challenges



Digital Transformation



Increase in Cybersecurity Threats



Skills Shortage & Hybrid working

6 Trends that impact the Network

Application based trends

- SaaS-ification
- Micro-services
- Serverless

IT infrastructure based

- Cloudification
- Multi-Clouds
- Edge Computing

Security

- Zero-trust
- Mix of network & security

Workforce based trends

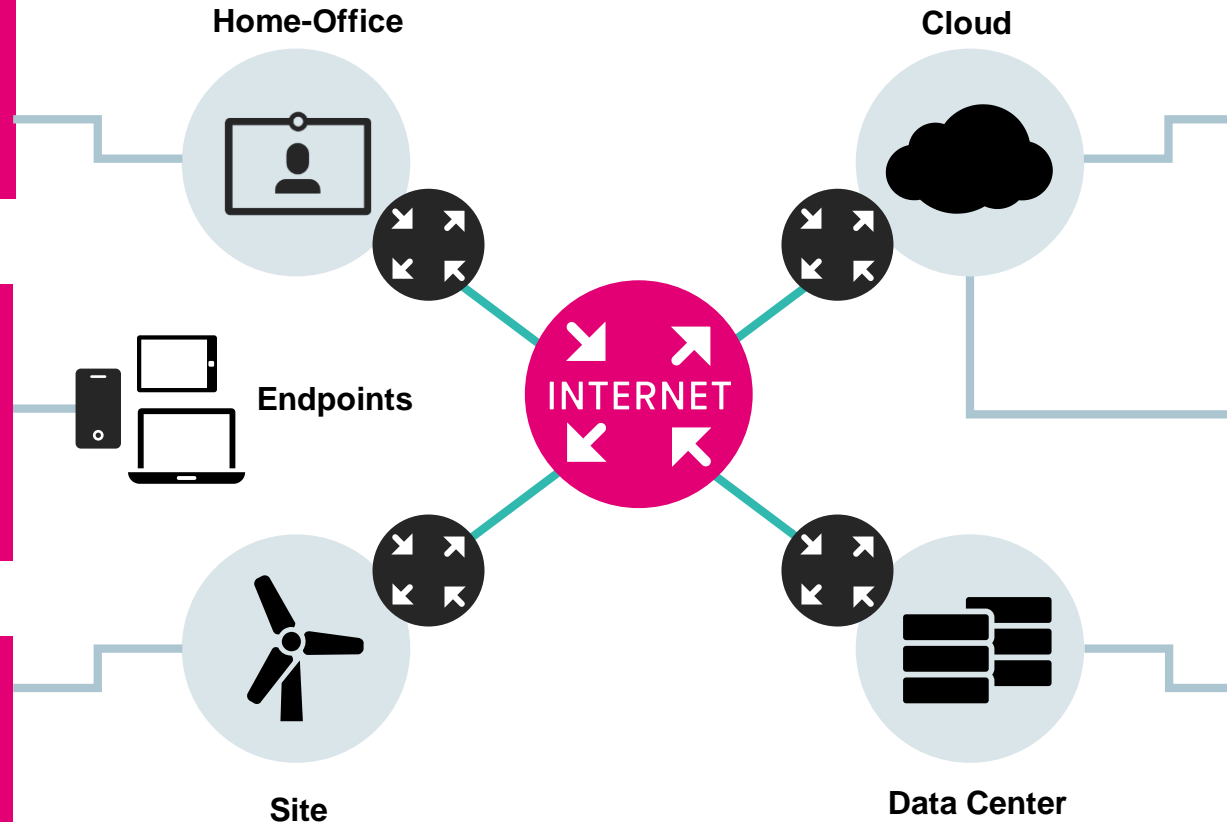
- Collaboration via Teams, Zoom, RingCentral, WebEx
- Mobile / distribute workforce

IoT based trends

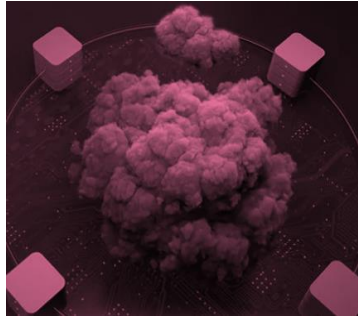
- 4.0
- IoT
- 5G Campus Edge

Innovation based trends

- OTT SDx players (Viptela, Velocloud, ..)
- Connectivity-aaS (Alkira, Aviatrix, ..)



Enhanced Internet and cloud-agnostic backbones are becoming market standard...



Multi-Cloud Connectivity



Application Performance



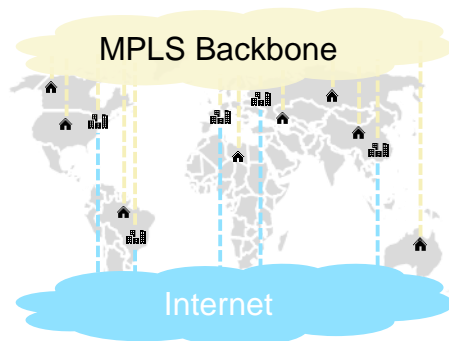
MPLS Migration to SD-WAN



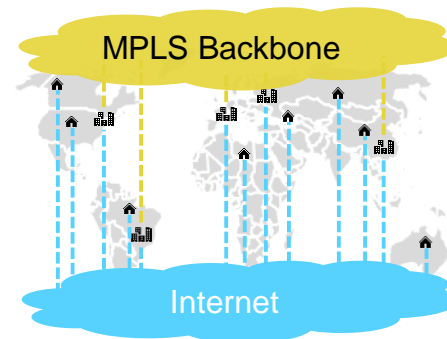
Hybrid Workplace



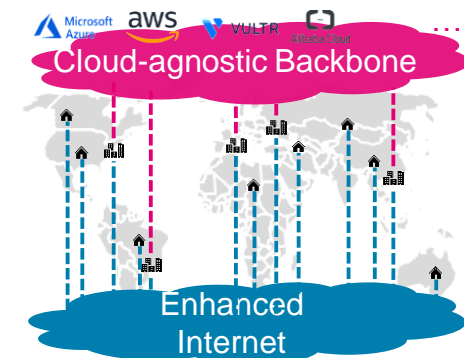
Cloud, Security & Connectivity



SD-WAN is the enabler



Cloud is the enabler



DT had two options to address the market demand for Enhanced Internet...

Traditional Telco approach... Expanding the own IP backbone



Takes time

Upgrading own backbone could take years



Invest in legacy technology needed

Invest budget would have to be used mainly for routers and trunks, difficult Business Case



Complex operations

Combining legacy MPLS VPN technology with new functionalities (e.g. SASE/ Zero Trust) significantly increases operational complexity...



Un-Carrier approach with SD-backbone... Utilizing available infrastructures



Immediate availability with true global reach

Global footprint through network Cloudification on 25+ Infrastructures, incl. Hyperscalers such as Alibaba and Microsoft



Invest in brain and state-of-the-art technology

Open Platform, API based for easy integration of further value-added services



AI /Machine learning algorithms

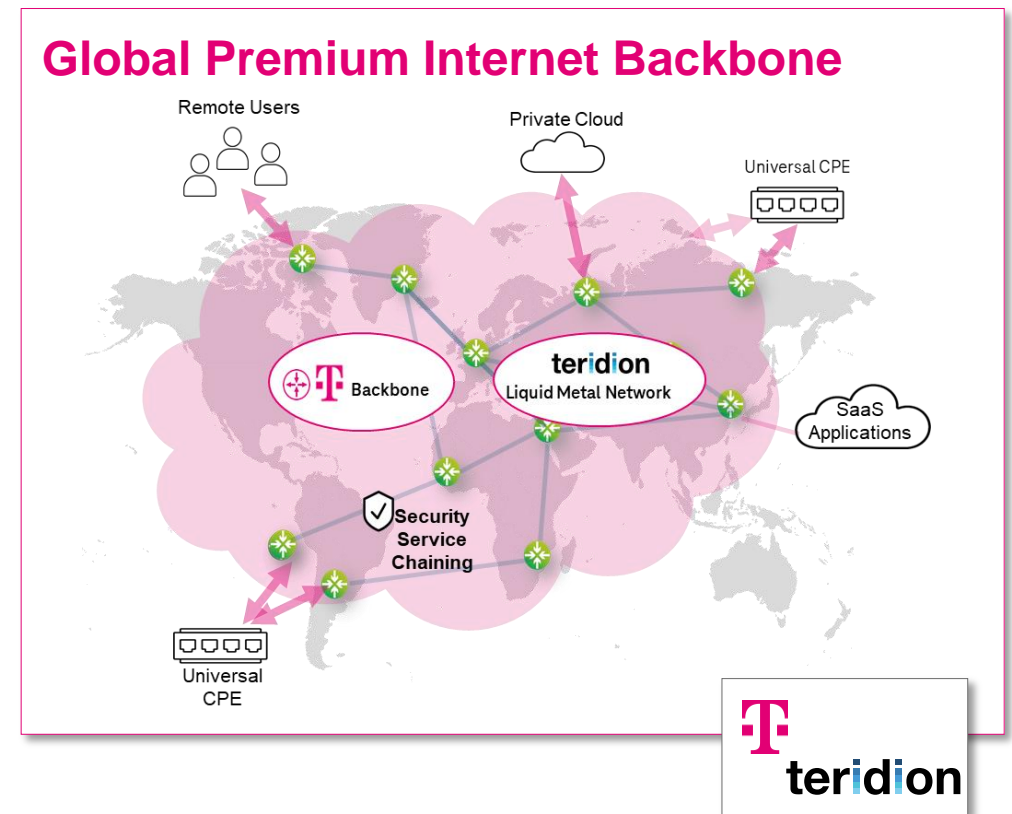
Simplified but powerful automated Operations



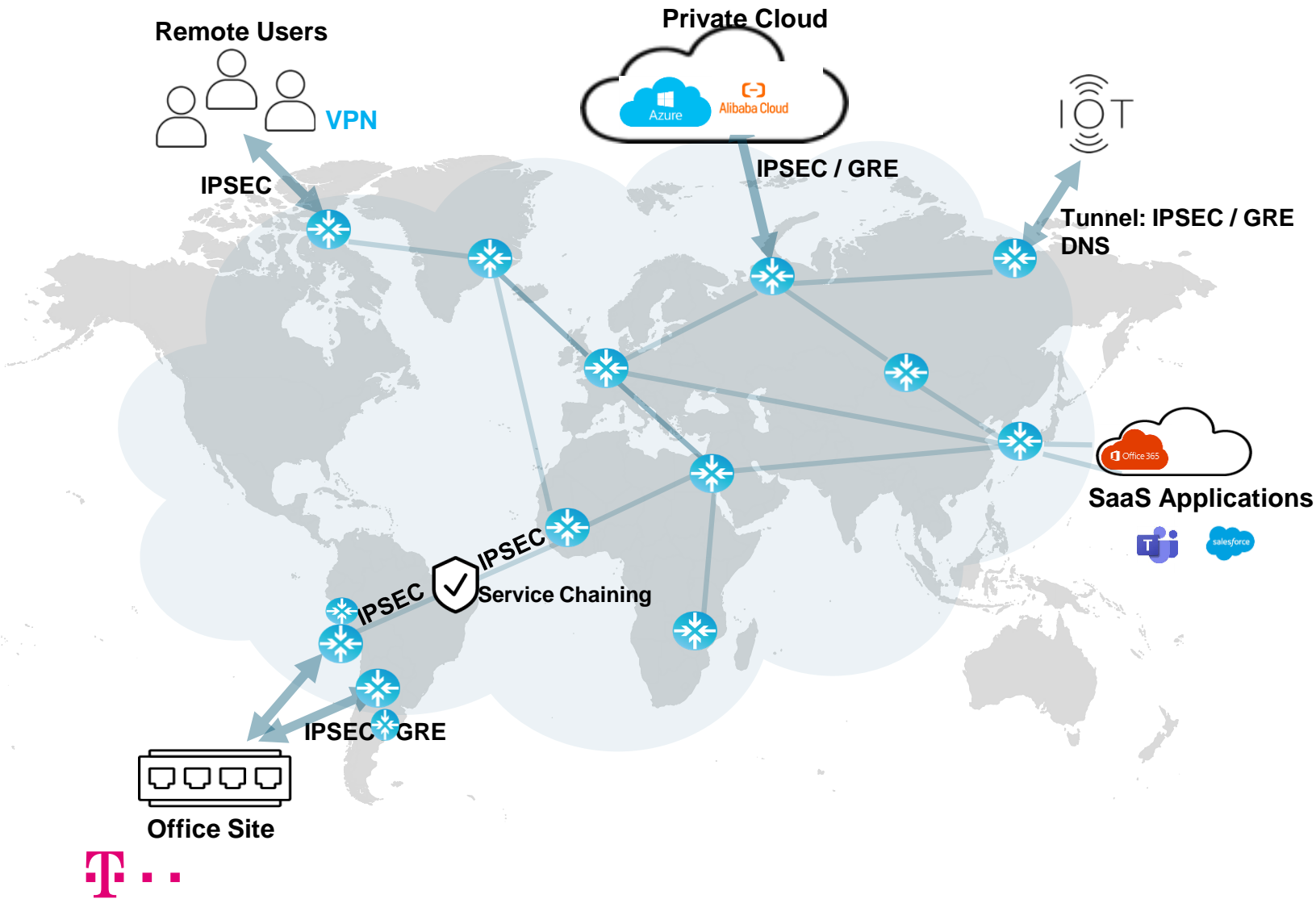
DT Premium Internet Underlay with DT portfolio company Teridion

Managed internet with E2E SLAs: jitter, throughput, packet loss and more

- Complete E2E managed solution, incl. access and CPE
- Service and Performance SLAs e.g. packet loss & roundtrip delay for site-2-site and site-2-cloud traffic
- Telekom's own global IP backbone integrated with Teridion's cloud-based, software-only WAN:
 - More than 500 PoPs worldwide utilizing 25+ cloud & infrastructure providers
 - NextGen virtual PoP concept, allowing spin-up of new PoPs or add-on services (service chaining) within hours
 - AI/Machine learning and sensor-based routing platform
 - Patented Machine learning algorithms adapted to network performance
- Attractive flat-rate pricing model – based on requested access bandwidth and Premium bandwidth



Disrupting & Flexible: Purposefully designed for the Cloud, built in the Cloud



- ✓ Use the Secure Edge device of your choice
- ✓ Best performance to cloud and branch office. MPLS-grade SLA guaranteed
- ✓ Solve for all – Site to Site, Site to Internet, Site to Cloud and Remote users
- ✓ End to End visibility

SDWAN Technology partners:

FORTINET

velocloud™

Now part of VMware

CISCO

Meraki

CHECK POINT™

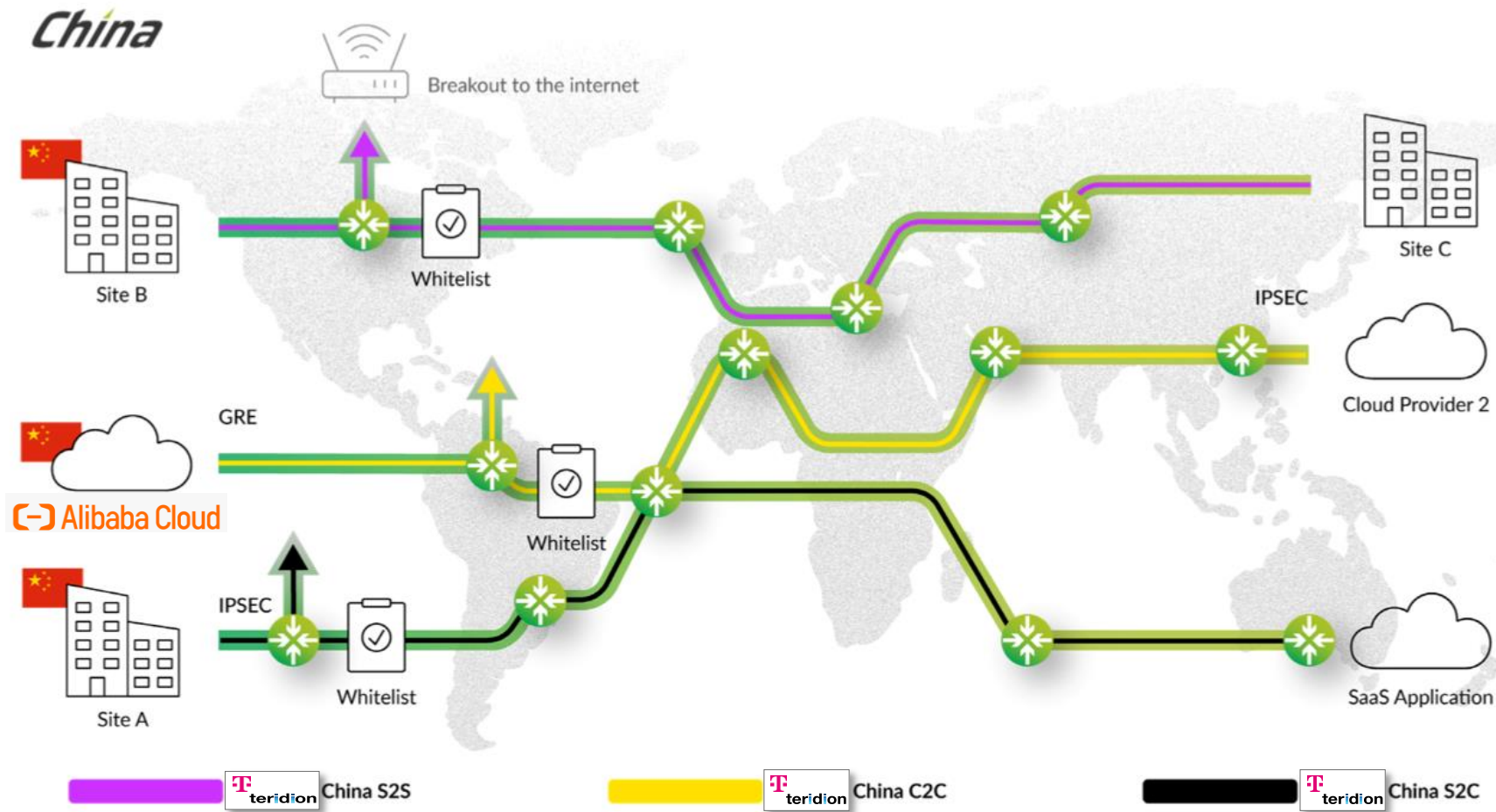
aruba

a Hewlett Packard
Enterprise company

zscaler

Teridon

Even for the most challenging locations: China



- Leverage local cloud vendors, fully compliant with Chinese regulations
- Stable, consistent connectivity, high bandwidth, high availability
- Carrier grade SLA
- Enterprise application enforcement
- Interoperability with all leading WAN, SDWAN and security edge solutions
- Simple fast onboarding with no additional HW nor SW
- Unified solution inside and outside of China
- Cost Efficient



Premium Internet SLAs at least on par with MPLS

Exemplary PoP-to-PoP Performance SLAs

Packet Loss

Max. 0.1%²

From 0.1% to 1%⁴

Roundtrip Delay (Europe-Europe)

From 45 to 74 ms

From 45 to 84 ms ⁴

Roundtrip Delay (Germany-Asia)

Max. 219 milliseconds³

From 255 to 340 ms ⁴

Roundtrip Delay (Germany-NA)

From 135 to 184 ms

From 100 to 170 ms ⁴

Jitter (Europe-Europe)

From 10 to 15 ms ⁵

Max. 20 ms ⁶

USP

1 Source: PIU Service Description
5 In final definition stage

2 Site-to-site SLA
6 CoS Voice Class

3 EU-Singapore

4 Depending CoS

PREMIUM INTERNET UNDERLAY

- State-of-the-art Underlay platform to work with all SD-WAN Overlays and future SASE / Zero Trust solutions
- Guaranteed access and performance SLAs on par with MPLS (e.g. MTTR, roundtrip delay, packet loss)
- Jitter SLA as one key differentiator
- Cloud-agnostic solution (leveraging infrastructures of all leading cloud providers / hyperscalers)
- Global coverage (Telekom's IP2 backbone extended with Teridion's virtual backbone)
- E2E service management by DT

Customer case study Manufacturing

Customer Use-Case:

Providing a global VMWare SD-WAN for all sites in EMEA and APAC including China.

Customer Problem

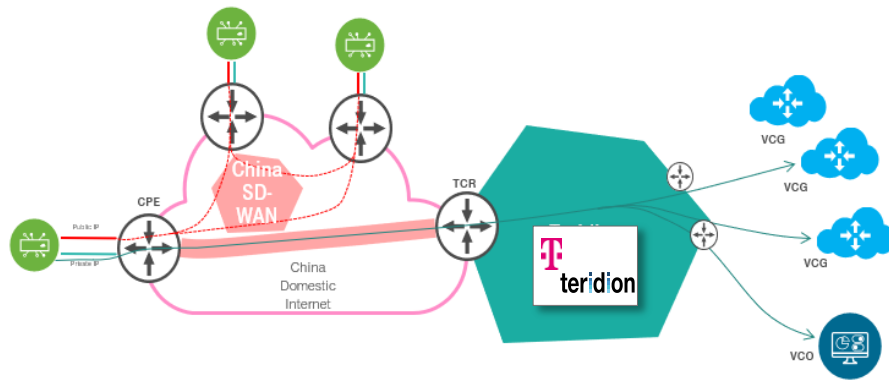
Performance issues while sending traffic in/out of China due to Chinese firewall

Solution

Dedicated enterprise traffic is routed out of China via Premium Internet Underlay (e.g. utilizing Alibaba Cloud)

Advantages/USPs

- Ability to manage/operate customer sites in China with single SD-WAN orchestrator.
- Consistent deployment of SD-WAN Overlay and user experience for all sites
- Performance SLAs like latency and packet loss are guaranteed with Premium Internet



Key takeaways:

- Enhanced internet and cloud-agnostic backbones are becoming market standard
- DT addresses this market demand with a new platform and an “un-carrier” approach
- DT Premium Internet Underlay offers the flexibility and agility of internet
- Premium Internet SLAs on par or better than MPLS
 - E2E Jitter SLA as DT USP (available with uCPE)
- DT Premium Internet Underlay offers an attractive cloud based pricing model



**DT offers
free of charge PoCs
for prospects¹**

DT managed Premium Internet Underlay with E2E SLAs is available NOW!
Call us for more information or a free pilot!

Find us in E20



Deutsche Telekom Global Business



Lisette Sens,

email: sens.lisette@telekom.com

phone: +65 88283022



teridion



Enhanced Internet and cloud-agnostic backbones are becoming market standard...

- Timeline
- Access
- Cloud
- Tech
- Network Overview

