

Offering you access to a global network
with a local Ethernet feel

Virtual
Private
LAN
Service



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China Telecom Virtual Private LAN Services Overview

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China Telecom's Virtual Private LAN Service (VPLS) offers a powerful combination of Ethernet and Multi-Protocol Label Switching (MPLS), providing the flexibility and scalability of an Ethernet network. Multiple sites can be interconnected with the control and feel of a Local Area Network (LAN), while you can rest assured that your IP routing scheme is securely controlled. In addition, MPLS offers unparalleled flexibility and reliability, guaranteeing service differentiation as well as efficient bandwidth utilization and prioritization. Most importantly, China Telecom's VPLS is provided through the China Telecom CN2 network, the largest MPLS network in the world renowned for its reliability, wide coverage, and low delay and jitter. Our fully redundant network topology also ensures completely secure transmission of customer data.

Our Strength and Capabilities

Global CN2 Network

- CN2 network covers almost the entire China mainland with over 340 POPs and more than 20 major overseas cities.
- 19 nodes covered in major overseas cities, including Hong Kong, Tokyo, Singapore, London, Frankfurt, New York, Washington, San Jose, Los Angeles, Miami, etc. In addition, China Telecom has partnered with several global carriers to further extend our MPLS service around the world.
- CN2 facilitated Dual-PoP in 161 cities. China Telecom has also installed Dual-PE in 148 Single-PoP cities to secure service availability.



Benefits

High network scalability

Your sites are interconnected on OSI layer 2 as if they are in the same LAN. Sites can therefore be added, removed or moved as needed without changing any configuration to other existing sites.

Simplified network management

There is no need to implement complex routing and IP configurations to achieve global connectivity. You can use your existing knowledge of the LAN to manage your VPLS network, or outsource your network management to us by purchasing China Telecom's Managed WAN services.

High cost efficiency

Total cost of network ownership is reduced as you can utilize existing Ethernet equipment.

Flexible bandwidth management

Your bandwidth is scalable from 1Mbps up to 1 Gbps to support your changing and emerging applications. Moreover, our 5 classes of services enable you to differentiate between application types and prioritize critical business traffic.

Security and routing control

As our service operates at OSI layer 2, you can manage and control your own IP routing, eliminating concerns of IP route leaking and other security issues.

High network reliability

Our robust CN2 network ensures that in the event of a network failure, traffic is automatically redirected via the best alternative route, resulting in minimal service disruption.

Wide geographic coverage

China Telecom's CN2 network is available across APAC, AMER, and EMEA, allowing you to outsource your connectivity without having to manage different global suppliers.

Features Summary

- Meshed network for any-to-any communication with CoS for application prioritization
- Application awareness allows customers to prioritize traffic at every location and add locations with greater ease
- Sites can easily be added and bandwidth can be adjusted for enhanced scalability
- Reliable and flexible planning and routing of customer IP networks
- Security on par with Frame Relay
- Built-in disaster recovery via MPLS
- Easy access to reports and tools via a single web portal
- World-class customer support
- Industry-leading service level agreements including metrics on site availability, on time provisioning, MTTR, network latency, packet loss ratio, and jitter

Providing Powerful and Reliable Virtual Private LAN Service

Service Description

Deployment Options

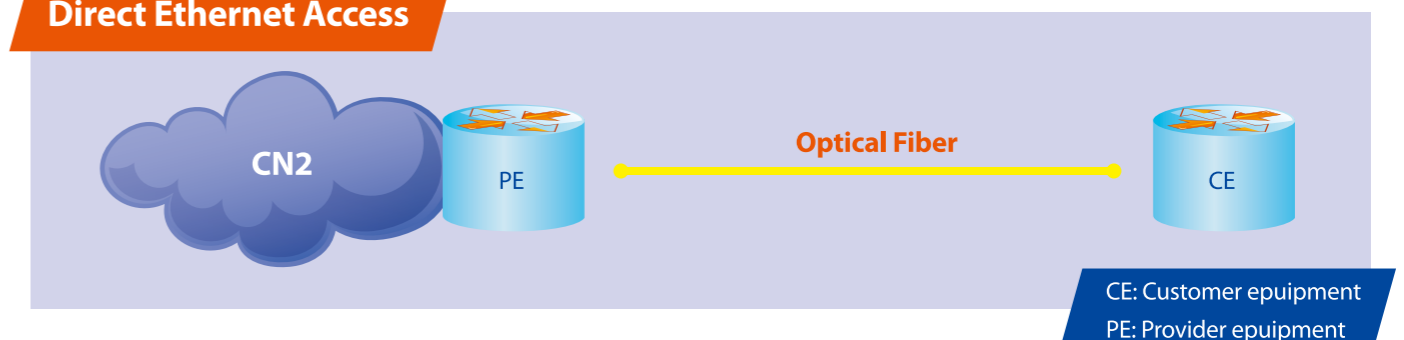
- Point-to-Multipoint
- Multipoint-to-Multipoint (Any to Any)

Access Type

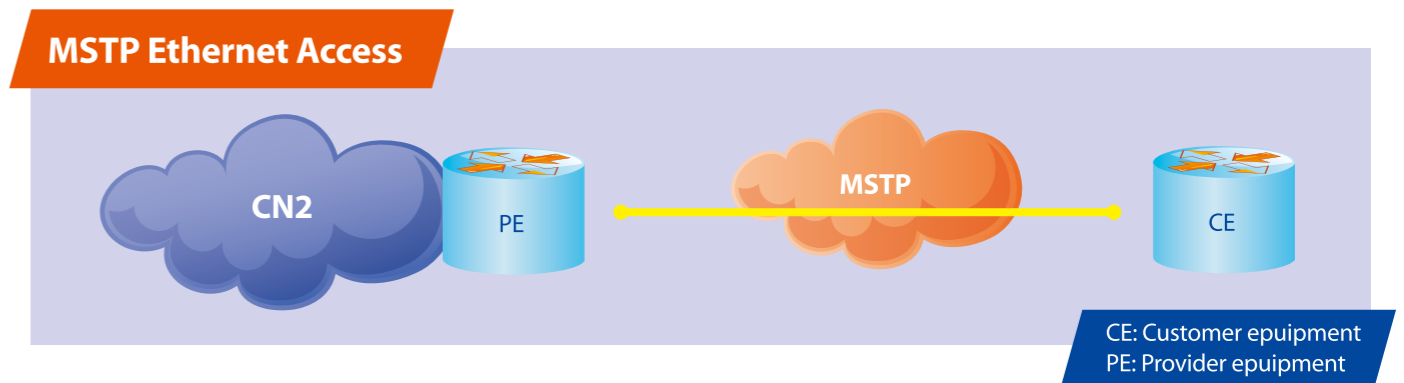
Customer Edge (CE) can access to Provider Edge (PE) by three ways (Fig 1):

- Direct Ethernet access
- MSTP Ethernet access
- Virtual Leased Line (VLL) access

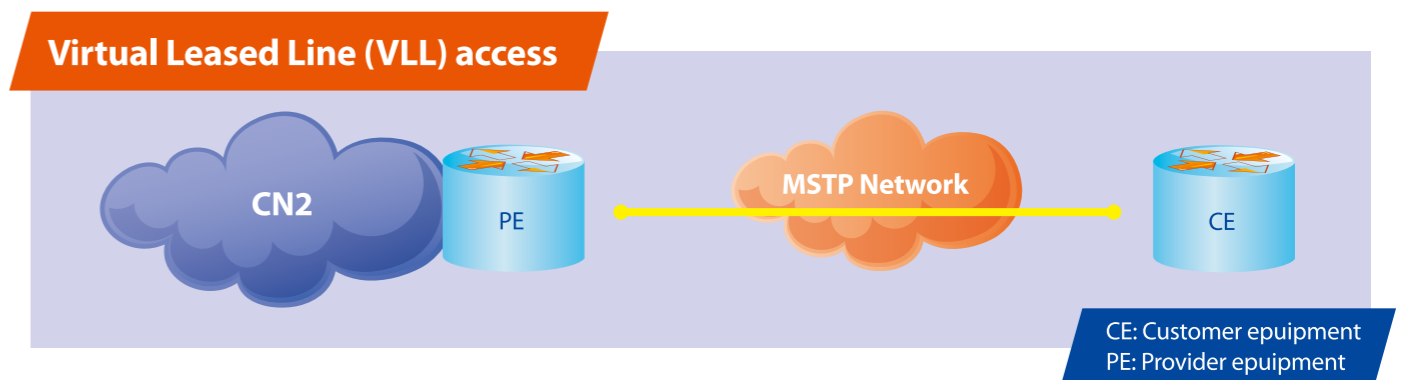
Direct Ethernet Access



MSTP Ethernet Access



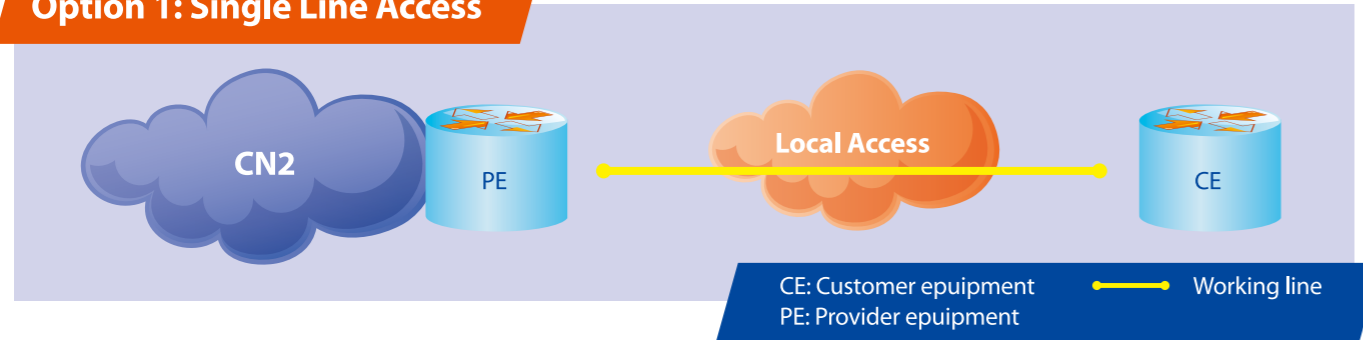
Virtual Leased Line (VLL) access



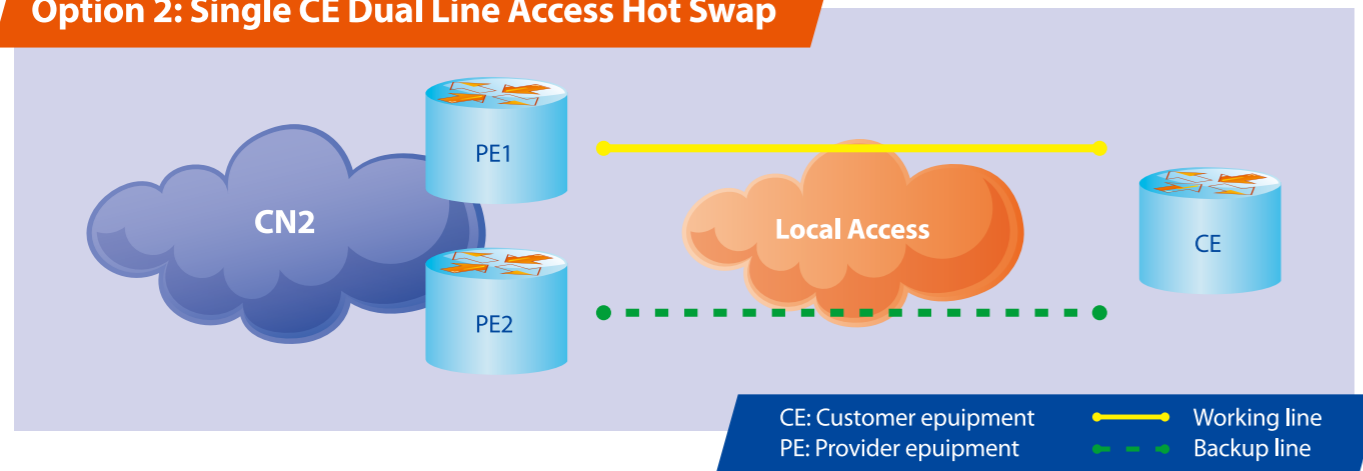
Redundancy Options

In case of multiple access links, load balancing and hot swap can also be supported (Fig 2).

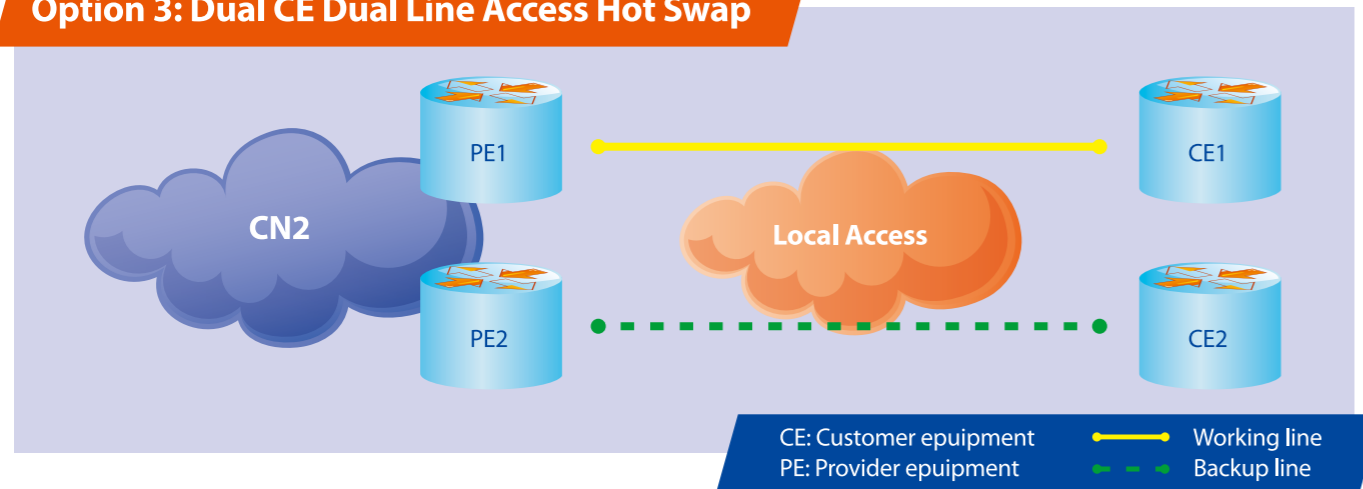
Option 1: Single Line Access



Option 2: Single CE Dual Line Access Hot Swap



Option 3: Dual CE Dual Line Access Hot Swap



Customer Service

One-Stop Service

Following the acceptance of your order form, China Telecom will assign a dedicated account manager, project manager, and service support engineer to oversee your account. We can also provide project progress reports periodically as needed.

Global Customer Service Center

China Telecom's 24/7 hotline provides bilingual service (Chinese and English) for round-the-clock customer support.

Global Network Operation Center

China Telecom's world-class GNOC provides 24/7 proactive real-time monitoring, troubleshooting, and maintenance services. Network performance reports can be obtained periodically from our web portal.

Field Technical Support

Under critical circumstances, China Telecom will dispatch skilled technical experts directly to customer sites to repair system faults and restore services.



SLAs3

China Telecom VPLS provides industry-leading service-level agreements. If the commitments set forth in SLAs cannot be met, you can ask for at most 100% monthly credits.

On Time Provisioning

Disregard customer site locations

Site Availability

Five classes range from 99% to 99.99%

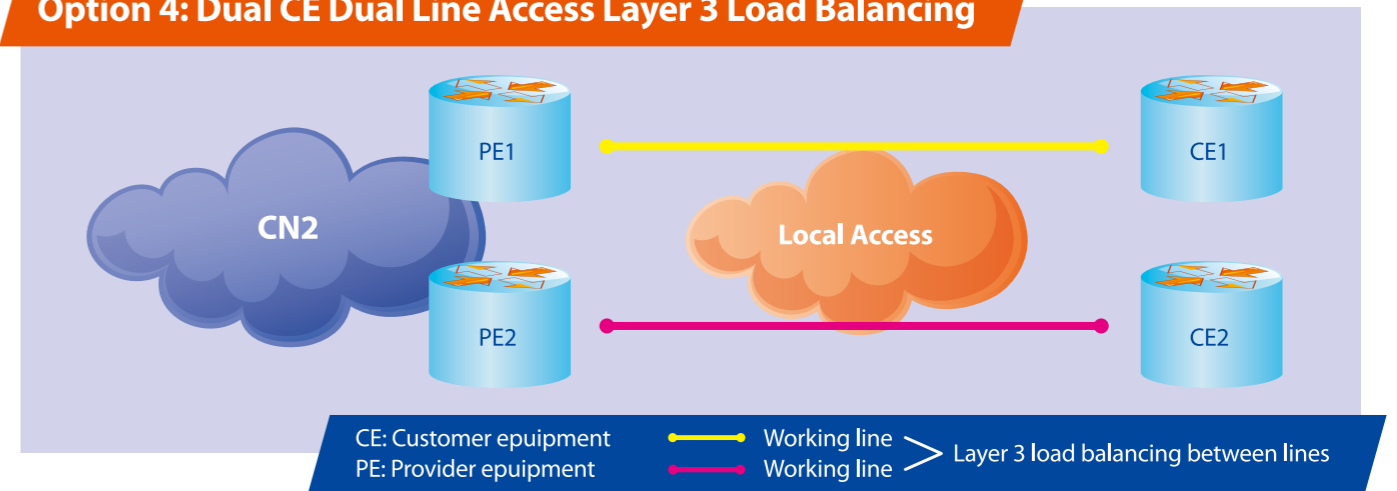
Mean Time to Restore

On-Net (12 Hours); Off-Net (32 Hours)

PE-PE Network Performance

- Latency: from 10 milliseconds to 145 milliseconds (China Mainland); maximum 280 milliseconds (other regions)
- Pack Loss Ratio: 0.1% (Diamond), 0.5% (Platinum), 1% (Gold)
- From 100 Mbps to 1000 Mbps - increasing in 50 Mbps increments

Option 4: Dual CE Dual Line Access Layer 3 Load Balancing



Bandwidth Options

China Telecom VPLS provides flexible bandwidth options, from 1 Mbps to 1 Gbps, to meet your business needs:

- From 1 Mbps to 10 Mbps - increasing in 1 Mbps increments
- From 10 Mbps to 100 Mbps - increasing in 5 Mbps increments
- From 100 Mbps to 1000 Mbps - increasing in 50 Mbps increments

Frame Size

China Telecom VPLS supports IEEE 802.1q encapsulation so that customer VLAN information can be transmitted transparently. Standard MTU of 64~1518Bytes is supported. In special cases, China Telecom VPLS supports Jumbo Frame up to 9000Bytes.

Service Differentiations

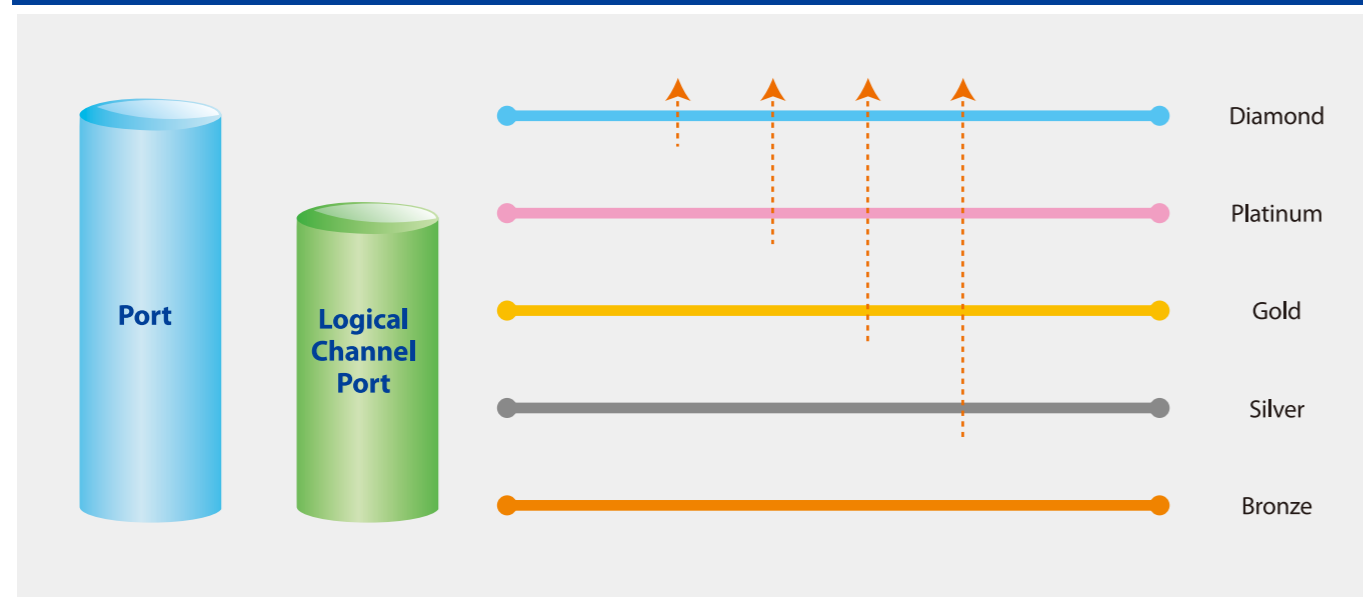
China Telecom VPLS provides five Classes of Service (CoS) to support the service performance you require for various applications (Table 1). Traffic of each service class can burst to higher levels as illustrated in Fig 3.



Table 1 Five Classes of Service

Service Level	802.1p	CN2 EXP	Typical Applications
Diamond	7/5	7	Applications which are very sensitive to delay and jitter, such as high quality real time voice.
Platinum	5/4	5	Applications which are sensitive to delay and jitter, such as video conferencing, video streaming, etc.
Gold	3	3	Enterprise data applications which require low latency and low packet loss ratio, such as SAP, interactive messaging, data backup, archiving, etc.
Sliver	2	2	Business applications, such as internal website access, file services, etc.
Bronze	1	1	Web/Internet browsing, e-mail, etc.

Traffic of each service class can burst to the total bandwidth of that and higher level service classes.



End-to-End Ethernet OAM

China Telecom VPLS supports OAM in accordance with IEEE 802.1ag and Y.1731. With our end-to-end network monitoring architecture (Fig 4), customers are well-informed of their network performance via our web self-service portal.

Table 1 Five Classes of Service

