



SD-WAN

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Challenges Faced by Enterprise Private Networks

As enterprises gradually go digital, there is an increasing demand for collaborative office work relying on the Internet and cloud services, and more attention is paid to the quality of network services. A good exclusive line network can improve office efficiency and promote corporate development. In the past, the chosen private line is usually traditional MPLS line and self-built point-to-point VPN line network. The common problems are as follows:

Traditional MPLS line network

1. There is long opening time for cross-regional and cross-border businesses.
Operators are all local administrative offices. Thus, opening cross-regional exclusive line business needs to be applied step by step, cooperate with branches and implement according to group work orders, resulting in a long duration.
2. Complex network structure needs professional team maintenance, leading to high operation cost.
MPLS exclusive line network services, based on advanced routing protocols, need the support of professional network engineers. Traditional network equipment fails to support graphical monitoring, and requires specially-assigned personnel for operation and maintenance, which consumes a lot of labor costs.
3. Access packages are fixed and temporary changes are not supported.
Once the immobilized services are opened in line with the contract requirements, the bandwidth is limited and inflexible. The change of packages is regarded as a new business and needs to be reordered.

Point-to-point VPN Line Network

1. Quality is uncontrollable due to unguaranteed service.
Using open source VPN software, the point-to-point private line network deployed on the Internet platform will inevitably be affected by peak hours of the network, often accompanied by network fluctuations, packet loss and other issues. Software stability has potential risks, which can easily lead to the interruption of exclusive line and affect the normal office work.
2. The operation is inconvenient and requires specialized operation and maintenance. Whenever accessing businesses, it is necessary to properly connect the point-to-point VPN state, which brings certain troubles to those who are not familiar with computer operation. When VPN connection fails, it is difficult to judge whether it is caused by network or software service authentication failure. Professionals are required to locate and solve problems, which will affect office efficiency to a certain extent.

Taking business experience and investment returns as the perspective, in order to solve all the above problems, CDNetworks has now launched SD-WAN cloud exclusive line products based on years of technology research and development.



Product Introduction

Exclusive cloud line is the achievement made by CDNetworks in development and operational experience for many years and a product solution for corporate users. The line provides enterprises with exclusive network services that are convenient, secure, stable, flexible, controllable and easy to maintain. It also provides one-stop and efficient solutions to meet the needs of inter-access and interconnection between enterprises and cloud platforms, data centers, branches, etc.

Product Positioning

The most recommended scenarios for exclusive cloud line products are as follows:

- Enterprise branches access (private/public) cloud services.
- Enterprise branches access data centers.
- There is the mutual access between enterprise data centers.
- There is a private network access between enterprise branches and headquarters.

Its suitable industries are shown in the following figure (but not limited to the industries mentioned in the following figure)



Access to the Cloud, eg. Wangsu Cloud/AWS



Access to data centers, interconnection and backup between data centers



Joint ventures and foreign-funded enterprises



Conglomerate



Chain Stores



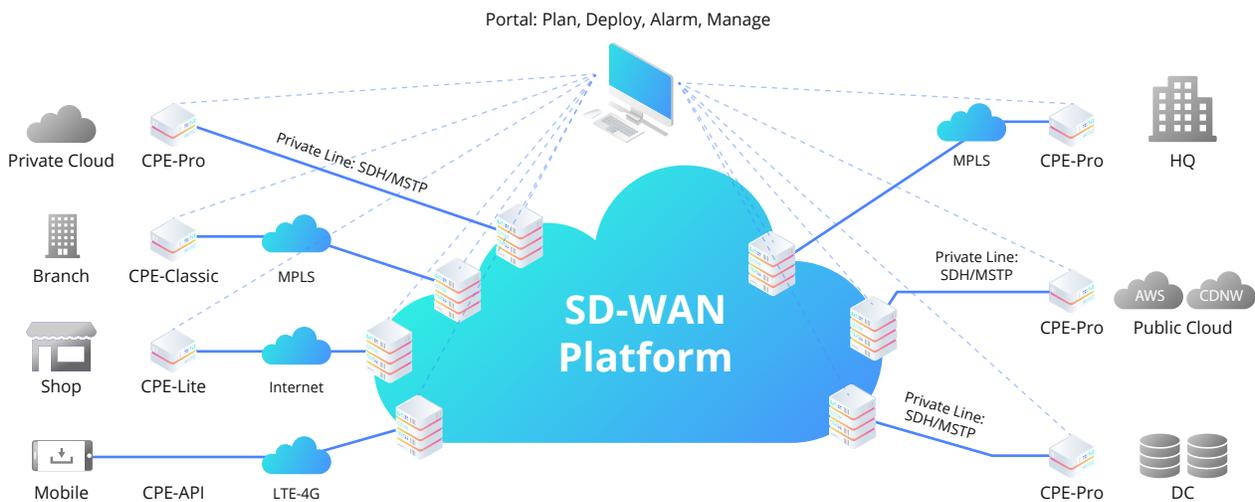
Hotel Chains



Product Architecture

SD-WAN products are divided into three parts: SD-WAN acceleration platform, client and Portal platform.

By deploying client services, user traffic is introduced into SD-WAN acceleration platform, and the application of POP (point-of-presence) node service isolation, data encryption and forwarding technology provides users with a secure and stable private network. User access points can choose suitable access modes (MSTP/SDH/MPLS/Internet/LTE-4G, etc.) according to business requirements or network environment. Through centralized management of control system, we can configure strategy and open business in the way of web pages, and provide convenient and flexible customized exclusive line network services.



Product Features

Terminal CPEv

Hardware Access

A variety of hardware selections are applied to different access environments.

1. CPE-Pro: Servers based on x86 architecture can be selected, generally using for headquarters, data center, cloud server, etc.
2. CPE-Classic: Small equipment (roughly 20 cm*30 cm) is generally used in large and medium-sized branch companies.
3. CPE-Lite: Routers accessed via gateway are generally used in small branches such as stores or offices.

Device access can be configured into gateway and bridge mode. It supports fixed IP configuration and ADSL dialing. It assigns automatic IP allocation using DHCP and supports optional WiFi, LTE and other functions.

Software Service Access

Supported terminals include Windows, Linux, iPhone, Android and so on.

Support client software connection is allowed.



Access Mode

Between the user access point and the POP point of SD-WAN acceleration platform, the best access mode can be flexibly selected according to the user's business characteristics:

MSTP/SDH Exclusive Line

Access points are generally corporate headquarters, private cloud platforms, data center computer rooms, or public cloud platforms.

MPLS Exclusive Line

Access points are: corporate headquarters, large-sized branch companies, etc.

Internet Access

Access points are: corporate headquarters, branches, offices, stores, etc.

LTE-4G Network

Access points are generally: remote small stores, mobile office terminals, etc.

Efficient WAN Acceleration Platform

Rich POP node resources

POP node resources cover the whole world, so that each user can choose access from all corners of the globe. Through the WAN optimization technology between POP nodes, it is necessary to ensure the quality requirements of mutual access in private corporate network.

Automatic switching between primary and standby nodes and high availability

Sites can choose to access different POPs. Intelligent monitoring system can detect the real-time health of POP nodes. Once the failure of POP nodes is found, they will switch in time to other nodes with a normal working state to ensure the stability of platform resources and the high availability of user services.

WAN acceleration function

The QoS function can effectively guarantee the stability of key services. Based on the recognition of application features or IP address and other contents, important businesses are guaranteed by QoS control. In the case of high bandwidth utilization, the key business is not affected.

There is improvement in the transmission link and the network transmission speed. The independent research and development technologies such as expanded transmission window and improved congestion control are applied to make a difference in TCP transmission efficiency.

Data flow and bandwidth utilization are improved. Stream compression technology is used to transmit data after compression, which reduces the amount of data transmission. The transmission speed is increased by byte stream caching and other technologies.



High Security

Standardized computer rooms to build sound operating environment of network equipment

Computer rooms with POP points are in line with the standards of the telecommunications industry and embrace a great operating environment.

Data encryption to ensure transmission security

IPSec encryption mechanism is used between CPE and POP points and among POP points to ensure the security of data transmission. At the same time, byte-level encryption of the forwarded data ensures the security of the data transmission process.

Independent and reliable private network

Through VRF (Virtual Routing Forwarding) and other technologies, business logic is isolated, and an independent forwarding channel is allocated to each enterprise. At the same time, routing protection mechanism is adopted to isolate the private corporate network from the Internet. Only the IP in the enterprise network can access the private enterprise network and provide the exclusive business network for the enterprise.

Visual Control Platform

Exclusive cloud line products provide customers with intelligent operation and maintenance as well as control platform for monitoring. Customers' administrators can login in the control platform through WEB pages to open the site business and check the company's network topology, operation status of equipment, transmission traffic of nodes, business strategy configuration and service logs.

Fully-automatic Service Opening (Zero-Touch Provisioning)

Despecialization

Customers only need to plug the CPE device into the corresponding cables and power lines, and simply authenticate through short messages or email. The rest of the work can be done automatically, without the need for on-site personnel to operate.

Process-oriented operation.

Technicians in the network management center can initialize CPE equipment (template configuration) through the system and then complete business opening. In this way, there is no need to assign professionals to configure manually. Given this, all these can not only deploy efficiency, but also reduce the errors of manual configuration, while saving labor costs.

Familiar interface, web-side operation

Open the business through one-touch operation at the WEB

The control platform connects the API interface of CPE. After the web page is logged into the system, the complete network topology, network layout, network configuration and policy centers can be checked. According to prompts on the menu bar, combining with business demand, the administrators can open businesses by quickly editing and then clicking the button to submit.



Visual Monitoring of Network Status

Using SNMP and Net Flow technology, the operation status of equipment and resources is transmitted to the control platform, and converted into a graphical interface, which can be clearly checked. It is possible to make graphic markers for resource utilization, trigger alarm alerts beyond the standard, and effectively monitor the network operation status.

Product Value

Convenient Deployment to Reduce the Cost of Network Building

Automated deployment and centralized management mode. When new business is added, CPE device can plug and play (when the device management interface connects to the Internet, it can automatically complete registration and activation on the system). Then the business template is selected by the control platform, the configuration is decentralized, and the business can be opened by clicking a button to submit. When expanding business, the policy is added to the "Policy Center" page, after selecting the exit, the confirmation is submitted, and the deployment is completed.

Compared with the deployment of traditional exclusive line network, it greatly improves the efficiency of network building and expansion, and provides strong support for business expansion of enterprises.

Security Assurance and Stable Office Network

In the process of data forwarding, three aspects of security protection technology are adopted to ensure high security of the network, namely data encryption, transmission encryption and business isolation. In the CPE receiving point, data is encrypted at byte level. In the process of data transmission (from CPE to POP point, between POP points and from POP point to CPE end), three-layer IPsec encryption mechanisms are used for protection and improve the privacy of transmission. the routing and forwarding of POP point use tag technology to classify the routes of users and isolate business. Thus, all these greatly improve the security level of enterprise network and provide a stable information network platform.

Strong adaptation & Cost Performance

Compared with the traditional private line can only be fixed access, the private cloud line network can be user-defined or diversified network structure. Users can choose access methods in line with their actual situation. According to plans of the enterprise, a new private network can also be compatible with the existing MPLS private network purchased from operators. By means of diversion, the amount of bandwidth used by MPLS can be reduced, and the amount of bandwidth used by private cloud line can be increased. Given this, comprehensive costs of the enterprise network are reduced on the premise of ensuring that corporate businesses are not affected.



Visual Operation to Improve Efficiency and Reduce Labor Costs

In the building of traditional enterprise network, there is a lack of effective mechanism to realize visual operation and maintenance, automatic arrangement and business deployment in the whole network. Exclusive cloud line solutions provide a unified monitoring platform. As for graphical depiction of the network, the depth of color is used to show the operation status of CPE equipment, the utilization of bandwidth is represented by curves and graphs, and business types are represented by different scales. For the stability of the line, indicators with potential safety hazards are set for warning prompts. Administrators can confirm the health of the network in time and position network faults quickly according to colors and alarm logs. By doing that, the efficiency of network management is improved and the cost of operation and maintenance is reduced.

Elastic Bandwidth to Save budgets

As enterprise network goes digital and office work fails to be done without Internet, bandwidth is getting more urgent. Usually, in order to ensure the stable network, when choosing bandwidth packages, enterprises often buy the largest package according to the sudden increase in traffic (e.g. daily bandwidth is 20M while that in a special case is increased to 50M, thus buying bandwidth of 50M). In this way, enterprises consume a lot of resources and increase the budget. Private cloud line solutions provide flexible access services. In the case of fixed bandwidth, service traffic is allowed to increase sharply, and the surge part is charged flexibly (e.g. customers choose 20M bandwidth, which increases sharply to 50M three times within a month. The total cost is 20M-bandwidth fee, plus the charge for this part of the traffic when the surge exceeds 20Mbit/s bandwidth). Given this, the solution provides customers with services that are consumed as needed.