Powered by SA: 5G LAN support for IoT in Cloud Office

China Mobile

5G LAN support for IoT in Cloud Office

Introduction

5G LAN (Local Area Network) is one of the most promising technologies in 3GPP Release 16. It is able to address the three types of needs of enterprise network communication: convenient management, flexible interoperability and reliable communication. The 5G LAN technology is used to build an enterprise cloud office network for enterprise customers. As enterprises do not need to build a network, it can save network construction and maintenance costs for the campus.

China Mobile is a mobile communication operator with a global user scale and network scale, of which 4G roaming has covered 73 countries worldwide. At present, China Mobile has nearly 3 million 4G base stations, and there will be more than 50,000 5G base stations in 2019, achieving 5G commercial services in more than 50 cities.

Executive Summary

With the development of mobile communications, the share of mobile access in enterprise office systems has expanded and digital services have become increasingly fragmented. Branch offices and employees need systems that are flexible, cross-regional, secure, trusted and interoperable.

Currently, in central offices a large number of traditional devices are connected via Wi-Fi and access the enterprise network through fixed network access. At the same time, there are a large number of portable devices which access the enterprise network via the mobile network. In branch offices, devices access the enterprise network through dedicated fixed lines. These lead to various issues: high construction costs, un-guaranteed user experience, and low levels of corporate information security.

5G LAN technology can be applied to connect enterprise headquarters and branches, interwork mobile terminals and fixed terminals, mobile terminals communicating directly via user planes, local shunting, and so on. Based on 5G capability, 5G LAN technology allows a specific group of users to communicate with each other, or a specific user to communicate with existing private network users. This enables flexible group management, direct communication and access to the enterprise cloud anytime and anywhere.

China Mobile's solution can effectively replace the Wi-Fi network in the enterprise campus scenario. 5G LAN technology can be used to build a cloud office network for enterprise customers. It relieves the enterprise from the need to build a separate, independent network, saving network construction and maintenance costs.

Business Imperative

Future 5G networks will provide services such as connections for a massive number of Internet of Things (IoT) devices and high-definition video capture and transmission for vertical industries. However, the 5G standard of 3GPP Release 15 only guarantees the quality of the core network (such as E2E (End-to-End) network slicing and QoS (Quality of Service), but it cannot meet the requirements of enterprises for flexible management of terminals, and will not be able to provide quality assurance when the data is not in the realms of the core network.

Based on 5G LAN technology, this solution can enable third-party flexible management of its terminal status (such as active, offline, group communication, handover grouping, etc.), and will be able to map the core network QoS policy to the existing fixed network line in the future.

5G LAN support for IoT in industry and cloud office

5G LAN technology

5G LAN is able to address the three major requirements of enterprise network communication: convenient management, flexible interoperability and reliable communication. With the support of 5G LAN technology, the network can allocate IP addresses of the same network segment to the enterprise cloud according to the needs of enterprises. The network can also establish an end-to-end tunnel from the wireless, to the core network, to the enterprise cloud. Furthermore, enterprise administrators can flexibly manage these terminals. The terminals will be perceived as if they are within the intranet, enabling seamless management by the enterprises**.**

China Mobile's solution

The solution from China Mobile is to build an enterprise cloud office private network for users based on 5G LAN technology. The core feature of 5G LAN technology is the concept of a terminal group. User terminal subscription data can indicate which group the terminal belongs to, and a specific DNN or group ID is used to indicate a group. Each company is assigned a group ID of its own. Terminals of different groups cannot communicate with each other, ensuring the security and isolation of enterprise communications. In addition, the 5G LAN can support direct communication between users in the group served by multiple UPFs, and the group attribution of user terminals will not change even if the terminal is handed over to other UPF. The UPF assigns different VLAN tags for different groups, constructs a 5G UPF service tunnel to the intranet and ensures reliable communication of terminals in the LAN. This means that our solution can support off-site offices more flexibly and conveniently, and is suitable for large-scale enterprises with branch offices.
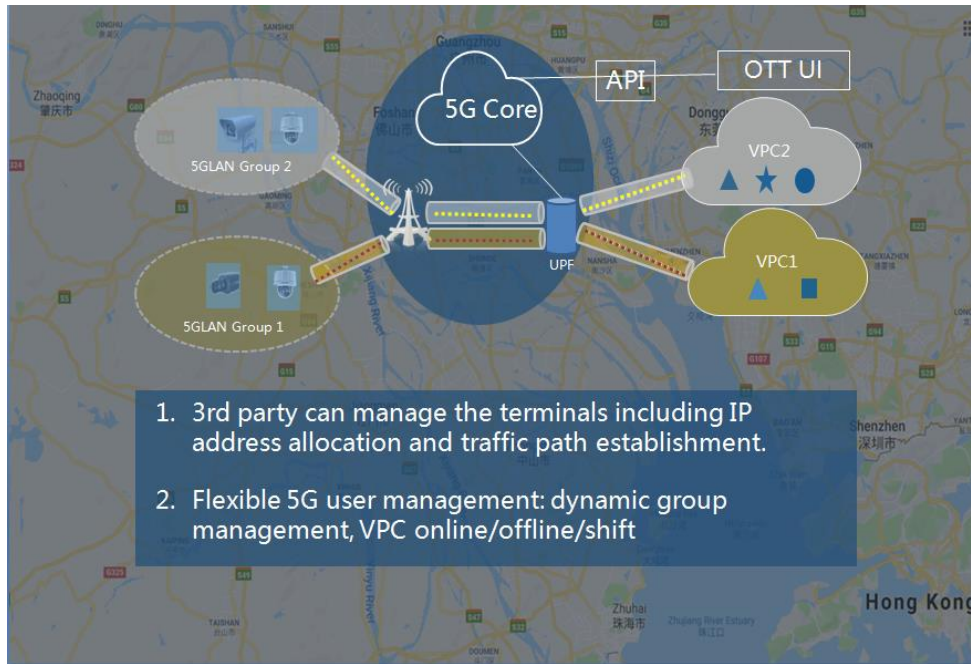
Economic Benefits

According to the 2018 China Statistical Yearbook, the number of large and medium-sized enterprise campus in China exceeds 100,000. Referring to a typical campus, the enterprise's investment and maintenance cost for WIFI network results in annual expenditure of tens of millions of yuan. The 5G LAN technology is used to build an enterprise cloud office network for enterprise customers. It is not necessary for the enterprise to build a separate independent network, saving network construction and maintenance costs.

Deployment

On April 11 2019, China Mobile, together with Baidu and Huawei, demonstrated the 8K HD video capture and live broadcast based on 5G LAN technology for the first time under the 5G SA Option 2 architecture at the ABC Summit.

In addition, based on 5G LAN technology, China Mobile has customized the 5G cloud dedicated line solution and developed the corresponding management platform. The platform can customize the proprietary 5G LAN-based enterprise private network for enterprise users. This symbolizes the successful application and implementation of 5G LAN technology.

1. 3rd party can manage the terminals including IP address allocation and traffic path establishment.
2. Flexible 5G user management: dynamic group management, VPC online/offline/shift

Summary

China Mobile has always been committed to being a technology leader, embracing new technologies and contributing significantly to international standards, especially for 5G. In the future, 5G LAN technology can be applied to the enterprise cloud office network, which can save costs and improve economic benefits for the enterprise campus.

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