A low-latency terminal mutual access architecture based on 5G LAN cross-domain networking

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Abstract

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- We propose an innovative 5G LAN cross-domain lacksquarenetworking solution that integrates the high bandwidth and low latency characteristics of 5G.
- The solution can significantly reduce the delay of ulletmutual access between terminals, improve network throughput, and reduce the risk of network congestion.

Introduction

- The application of 5G is far from limited to local private networks, and its potential also extends to wide-area private networks
- The cross-domain networking architecture based on 5G LAN aims to achieve efficient communication and mutual access between different LANs and low-latency communication



between terminals.



LAN

 Traditional network architecture refers to the traditional computer network architecture, which usually consists of multiple layers and components for data transmission, communication and resource sharing. 5G LAN technology integrates multiple networks in the traditional network architecture into one network and connects to the campus network through the N19 interface.

Fig. 1. Traditional network architecture and 5G LAN network architecture.

Architecture





- The core idea of 5G LAN is to intelligently group and establish groups of terminal devices through the 5G network to form a local area network.
- The 5G LAN network architecture is divided into UE, Base station, 5GC, User database, and VN Group.



Fig. 2. 5G LAN network architecture diagram.



Fig. 3. Inter-provincial terminal visits.

 Achieve low-latency terminal mutual access based on 5G LAN technology, D2D communication technology and Mesh networking

25

Typical Application

Special Line As The Main Line

5G As The Backup Line



Fig. 4. The remote control of medical robot.

Fig. 5. Fixed and mobile switching network architecture.

- In 2022, Xinjiang and Jiangsu completed two 5G ultra-remote robot-assisted laparoscopic surgeries
- The Guizhou Provincial Hydrology and Water Resources Bureau has dozens of monitoring points across the province.

Conclusions

- We introduced the direct communication between terminals in 5G technology.
- We pointed out the need for direct communication between two remote terminals in 5G wide-area private networks, especially cross-provincial private networks