An efficient fixed and mobile cooperative backup strategy based on 5G private network

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Abstract

Aims

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- We propose an efficient fixed and mobile \bullet cooperative backup strategy based on the 5G private network.
- The strategy uses the characteristics of high speed, low latency and high reliability of the 5G private network to connect fixed and mobile devices in the same backup network.

Introduction

- 5G private networks are able to support a large number of connections, fast data transfer, and real-time communication.
- In practical applications, due to the high cost of traffic tariffs, many enterprises often regard 5G network as a standby line of fixed network.
- When the fixed line fails, the 5G network can play a role as ulleta backup line instead of the failed fixed line.
- 5G private network is a local area network based on 5G New Radio (NR) technology, which is used for private wireless connection in specific areas.
 - Network backup is indispensable for 5G private network.



. 5G and dedicated lines form a fixed and mobile standby line resource **Fig.** 1. pool.

• When the fixed line link quality is poor or the link break fault occurs, the business can be automatically switched to the 5G backup link to improve the overall network robustness and achieve the effect of backup line emergency.

Headquarters headquarters in the country 31 provincial rovincial Provincial branches nationwide Branches Branches City Branches Branches Branche Branche

General

Only one general

Fig. 2. Headquarters and provinces two levels of business systems.



Fig. 3. Structure of disasters at the end of a shock to the headquarters.

Architecture



• The fixed switching strategy, which can improve the robustness of the overall network.



Special Lines As The Main Line 5G As The Backup Line ← - ->

Fig. 4. Fixed and mobile switching principle.

Fig. 5. Business escape architecture

 The end node under the service escape strategy can bypass the intermediate node directly to the total node through the 5G private network to ensure that the critical service is not interrupted.



Fig. 6. Wireless network architecture.

Typical Application



 The branches and headquarters in the wireless networking strategy can achieve pure 5G wireless access without physical wiring.

- Although private financial networks such as banks have many branches in multiple cities, there is still the possibility of transmission network outages in extreme cases.
- The architecture adopts the mode of "5G slice private network + rear routing + secondary authentication".
- The business escape based on 5G financial private network can be realized.

Fig. 7. The overall network topology of 5G financial private network.

Conclusions

- The network system introduced in this paper uses the fixed-mobile coordinated backup strategy.
- This strategy not only ensures the continuity of business operation, but also ensures the stability and security of data transmission.