

# Application of Communication Engineering Technology Based on Multi-network Convergence

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**Abstract:** The increasing popularity and application of computer and network technologies have had a profound impact on the development of various industries. Multi-network fusion technology, as a new type of cutting-edge technology derived from the rapid development of science and technology, is continuously driving the long-term progress of China's communications engineering and development of. Based on this, this article first briefly introduces the multi-network fusion technology, and on the basis of analyzing the current situation and significance of multi-network fusion, discusses its application methods in communication engineering, so as to provide a reference for the future improvement of communication engineering quality.

The development of science and technology has improved the overall quality of China's communications engineering construction. However, as the development of various industries continues to increase the requirements for communications engineering, we need to continue to optimize and improve communications engineering. Multi-network convergence, as a key technology currently used in communication engineering construction, not only achieves an increase in operating speed, but also has an unprecedented effect on the improvement of various service projects. Therefore, it is important to comprehensively research and analyze the multi-network fusion technology, and to explore its reasonable application in the construction of communication engineering, which requires the relevant departments to pay great attention to it.

## 1. Overview of Multi-network Convergence Technology

Among many modern network technologies, the multi-network fusion technology is the most powerful representative. In the actual application process of the multi-network fusion system, it can achieve effective connection with security prevention, management, and monitoring equipment. The indirect transformation mode is used to realize the organic combination of the network subsystem and the information network. Then, by means of the TCP / IP communication protocol Effective propagation of fiber optic networks. Driven by the multi-network convergence system, each system can achieve effective coordination with each other, thereby further promoting the scientificity and perfection of management. In a nutshell, multi-network fusion technology can concentrate a variety of modern technologies in the same broadband network. Through the organic integration of the system, it is a new type of technology that enables efficient analysis and management.

## 2. The status and significance of multi-network convergence

### 2.1. Analysis of application status of multi-network fusion

With the increasing construction of communication engineering in China, the application of multi-network integration in communication engineering is gradually being valued. As for the selection of relevant methods and methods of this technology in engineering construction, it is necessary to rely on the current application status of multi-network integration, and take communication engineering construction goals as the starting point to find the method that best meets the needs of communication engineering construction. Judging from the current application status of multi-network convergence, it is roughly reflected in the following aspects:

(1) As far as the application field of multi-network integration is concerned, it is the most extensive communication project and has a good development prospect. From the perspective of mass demand and the effect of convergence, the convergence of broadband networks and mobile communication networks has been relatively successful and has been recognized by the general public. In addition, with the development and promotion of network technology, multi-network convergence has begun to try to get involved in all walks of life and take the best measures based on the needs of the industry, and has also achieved satisfactory results. The reason why multi-network integration has such a large promotion force is inseparable from the national economic construction and social development. In other words, only when the advantages of multi-network integration can be brought into full play can the production and living effects be strengthened, which is conducive to further promoting national construction.

(2) As far as the domestic networks are concerned, telecommunications networks, broadband networks, and radio and television networks are mainly used. Before the multi-network convergence technology has been applied to the above networks, they need to establish their own communication projects. Although it can meet the communication needs, the effort behind it is also huge, no matter from human, material, financial, or social resources, it is not a small consumption. After applying the multi-network fusion technology, the engineering department can complete the transmission of the three types of network signals by only building a set of communication projects, and the transmission speed is much faster than in the past. People really feel the advantages of the information age.

(3) From the application point of view, multi-network fusion is essentially based on a broadband network, merging control systems that exist in different network systems together, and docking through network protocols.

## **2.2. The significance of multi-network convergence**

The main reason why multi-network convergence is used as a new cutting-edge technology in various industries of social development is that it has great application value. Whether from meeting people's living needs or promoting socio-economic development, multi-network integration has played a vital role. First, multi-network convergence improves work efficiency, which is the most intuitive and prominent advantage. Before applying multi-network convergence, once a network project fails, the maintenance staff must test each network transmission point, find the fault point and repair it, which is not only time-consuming and labor-intensive, but also the work efficiency cannot be guaranteed. With the continuous expansion of the network scale, the number of network transmission points is bound to increase, which undoubtedly increases the workload of network engineering maintenance. After the multi-network integration is implemented, the number of network transmission points is greatly reduced. If there is a problem in the network project, the maintenance personnel only need to perform separate maintenance on the communication project, which not only improves work efficiency but also enhances customer satisfaction. Secondly, it is convenient to maintain and has ideal development potential. In the past, if there is a problem in the communication project, what will be faced is a large-scale network disconnection or loss of TV signals, which seriously affects people's lives. In addition, in recent years, the development process of urbanization has been accelerating. In order to meet the increasing density of urban demand, the performance of communications engineering must be optimized and improved, which also determines the complexity and comprehensiveness of communications engineering erection and design. In this case, the difficulty of engineering maintenance will inevitably increase accordingly. The realization of multi-network integration can effectively alleviate the status quo of maintenance difficulties and relieve social pressure to a certain extent.

## **3. Method for realizing multi-network fusion in communication engineering technology**

Through the introduction above, we have a brief understanding of the current application status and significance of multi-network convergence. As the development of China's communications engineering continues to accelerate, there will be better requirements for multi-network fusion

methods. In order to ensure that the advantages of multi-network convergence can be brought into full play, in the future, relevant departments need to do the following:

### **3.1. Strengthen system configuration**

The continuous optimization of communication engineering will inevitably put more requirements on the application of multi-network convergence. From the perspective of long-term development, the strengthening and improvement of the system configuration needs to run through the entire application process. Only by ensuring that the system configuration meets the application requirements of multi-network convergence in communication engineering, can its advantages be maximized to provide a guarantee for the safe and efficient operation of the network system. It should be noted that for the update and improvement of the system configuration, the software and firmware that need to be updated must be selected in accordance with the actual situation and specific needs of the communication project. It cannot be updated blindly, which can save the update cost. It can also ensure that the system operation efficiency is not affected.

### **3.2. Achieve organic integration of broadband and network**

The organic integration of broadband and network should connect all intelligent designs according to the communication pipe network provided by the operator, and achieve accurate access to the broadband network, so as to achieve effective integration between the two and provide users with Better communication services. From the perspective of practical application effects, the integration of broadband and Netcom based on multi-network fusion technology can help users to achieve multiple communication services, such as access control and remote control, which have been recognized and praised by users.

### **3.3. Effective access and transmission of fiber optic technology**

With the continuous deepening of China's urbanization process, the construction of smart communities has become a key content of urban construction and development. The so-called smart community is simply to use advanced science and technology to realize the intelligent construction of the community, that is, to use modern communication network technology, computer technology, IC card technology, and automatic control technology to establish a residential property management center with security systems and information services. The "Trinity" residential community service and management integrated system composed of the system and the property management system, the ultimate purpose is to better improve the living standards and quality of the community residents. Using multi-network fusion technology to achieve effective access and transmission of optical fiber technology is an important task in the construction of intelligent communities, and it is also the key to achieving the construction of intelligent communities. Under the multi-network fusion technology, effective access to signal sources can be achieved, and on this basis, the three networks are integrated. The three networks here mainly refer to the Internet, pstn, and catv. The internal and external connections and transmissions rely on Optical fiber technology support is completed, thus reflecting the value of multi-network convergence in communication engineering and its practical application.

### **3.4. Establish information network system**

One of the important contents of the communication engineering construction when the information system is established, its function is to realize the reasonable allocation of communication resources within a certain range. Under the multi-network fusion technology, the establishment of an information network system requires a server and a transmission protocol to help relevant departments to achieve dynamic management of the multi-network fusion technology. At the same time, for the construction of the central computer room, it is necessary to install the necessary server equipment in accordance with the actual situation in order to provide value-added services for users of communication engineering. However, it should be noted that, in order to ensure the construction quality of the entire system, the choice of the central server room must ensure its professionalism and reliability. At the same time, this is also the key to the flexible

introduction of external functional networks into the communication area.

### **3.5. Scientific design of wiring and network**

Unlike the construction of traditional communication engineering systems, in order to ensure the safe and efficient operation of various systems in communication engineering under multi-network fusion technology, careful and reasonable design of wiring and networks is essential. In the process of using communication engineering by the user, it is necessary for the user to combine the actual situation of the communication engineering system to perform reasonable operations on the wiring and access network to help the multi-network fusion technology to achieve organic integration with the communication engineering. Also taking smart communities as an example, the property as the user needs to be based on the communication management system. The multi-network convergence technology needs to access multiple project services such as monitoring, alerting, and business, and communicate with local operators to build a scientific network. Platform, so as to achieve the improvement of the quality of community communication engineering construction.

### **Conclusion**

It has become an inevitable trend to apply multi-network fusion technology to the construction of communication projects. It is not only an important way to improve the quality of communication in China, but also an important support for promoting social progress and economic development. From the analysis of this article, we can see that there are still some areas for improvement in the current application of multi-network fusion technology in communication engineering. Relevant technical personnel are required to explore the best integration path from the actual situation of communication engineering construction in order to give the future the improvement of communication project construction quality provides sufficient guarantee.

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