**Video conference "access network" method**

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For most users, the most important factors for video conferencing systems are the following: audio and video quality, system price, system security and scalability. This paper compares some of the products of the video conferencing on the market from the perspective of accessing the network and the software and hardware solutions of the application, and provides users with an efficient, flexible and connected solution according to their actual needs. The video conferencing system with convenient and manageable network provides some reference.

There are two main situations in the current ubiquitous network environment. One is based on circuit-switched networks: ISDN, DDN, PSTN, and so on. The other is a packet-switched network: ATM, IP, Frame Relay, and more.

1. Access by ISDN line

For most individual users and small business users, access to ISDN lines is a more economical option. ISDN (Integrated Service Digital Network), which uses the public telephone network to provide users with end-to-end digital channel connections for carrying various telecommunication services including voice and non-voice. Conference television is transmitted over the ISDN channel using ISDN lines at rates ranging from 384 kb/s to 2 Mb/s. Because ISDN performs communication charging according to the used B channel (64 kb/s), the domestic communication rate of the 1B channel is equivalent to the ordinary telephone communication rate (the most widely used circuit switching method).

For users with less communication and shorter communication time, the cost of using ISDN is much lower than the cost of renting DDN line or frame relay circuit, and it has the characteristics of high speed, low investment, convenient networking, etc. System application requirements. However, the national ISDN network is still in the process of continuous upgrading, and the reliability and stability are still insufficient compared to the dedicated line.

2. System using PSTN

For ordinary individual users, if you want to try the video conference experience, you can try PSTN access. The PSTN public telephone network is currently the most widely used network system. Its advantages are wide coverage, easy to use, low price, and easy networking. However, the network speed can only be provided to 56 kbps, the line quality is poor, and the transmission rate is low. The sound image transmission for video conferencing is far from enough. The software-based video conferencing system can achieve an image transmission rate of 4f/s. The biggest disadvantage is that the image quality is too poor, which will greatly affect the quality of the conference, and is generally used rarely.

3. System for renting DDN line

Large enterprises and institutions often have high requirements for video effects. At this time, the access mode of the DDN line can be selected. DDN is a data transmission network that uses a digital channel to transmit data signals. Its primary role is to provide users with a permanent and semi-permanent connection to a digital data transmission channel that can be used for communication between computers as well as for transmitting digital faxes, digital voice, digital image signals or other digitized signals. The DDN dedicated line has high transmission quality, small network delay, high circuit reliability, high network security, and convenient networking. Although DDN has the above advantages, the digital circuit provided by DDN is a semi-permanent connection, that is, the connection is maintained regardless of whether the user transmits data, so the cost is relatively high, which is not suitable for users with short communication time, but only for long Time-to-point and multi-point-to-point communication connections because DDN lines are charged on a point-to-point basis. If some subordinate departments of the group are connected to the company headquarters, you can use the multi-point-to-point DDN line networking. However, if subordinate departments need to communicate frequently, if you take a point-to-point connection, the company's subordinate departments will form a network. The network, so the user's cost is too high.

4. Using an ATM network

If you want to get good video effects and access to the ATM network is very convenient, the ATM network access method is also an option. ATM is an asynchronous transfer mode that combines the advantages of circuit switching and packet switching to deliver wideband signals at any rate for voice, data, image and video services. The biggest feature of using this technology is QoS guarantee. This scheme is recommended for units with line conditions and high quality requirements. It is characterized by good image quality and convenient networking (no need to put all video conference terminal lines) Linked to the MCU), high reliability. However, the equipment costs are high and an ATM network is required for access.

5. Systems using satellite access

Satellite networks have the performance advantages unmatched by terrestrial networks in video conferencing at medium and long distances. They can cover remote areas such as sea and mountains. The transmission rate is high and the security is good. The venue construction and relocation are flexible and convenient. It is a multinational company. A good choice, "satellite broadband video conferencing system" supports multi-party conference video, file and data integrated transmission broadcast. The disadvantage of this scheme is that it is expensive. In addition to the channel fee for renting satellites, the construction cost of each satellite ground station is about 200,000 yuan. At the same time, satellite communication has a large delay and is not suitable for video conferencing systems with high real-time requirements.

6. IP network based video conferencing system

The easiest way to access is the IP network. IP-based networks use packet switching technology because packet switching does not guarantee order and fixed delays, so there is no guarantee of fixed latency and bandwidth. In order to better solve the service quality of real-time communication, protocols such as UDP/IP, RTP, RTCP, and RSVP are adopted. The video conferencing system applied to broadband IP networks such as ADSL and FTTB+LAN has achieved good results. Today, IP networks are ubiquitous, and this method is convenient and inexpensive. However, since the IP network based on packet switching follows the principle of best effort delivery, the video conference effect of this access method is worse than that of ISDN and DDN. However, its good cost performance has been favored by more and more users, especially for small and medium-sized enterprises and individuals with sufficient network bandwidth.

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