**Development status of software video conferencing system**

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First, the design requirements of the video conferencing system

The construction of video conferencing system is a system engineering, covering multiple disciplines, including network environment, network equipment load analysis, MCU selection, video conference terminal selection, video technology, sound reinforcement technology, etc.; video conferencing Equipment selection must be fully analyzed for the needs of its own business characteristics, as far as possible to achieve the organic cooperation of the functions and performance of various equipment, so that the equipment configuration is scientific and step-by-step, so as to not waste equipment functions and performance. There is no bottleneck between the devices. Technicians should conduct research and research on relevant equipment in the market, familiarize with the technical characteristics and functions of mainstream equipment in the market, conduct on-the-spot investigation and research on successful cases, compare and analyze various technical solutions, and invite relevant experts to The program is optimized to make the best use of it.

Second, the classification of video conferencing systems

According to the classification of business needs, it can be roughly divided into teaching two-way video conferencing system, conference-type two-way video conferencing system, business-type video conferencing system (ie desktop video conferencing system); according to the frequency of use, and divided into continuous video conferencing System, general conference system; according to equipment structure, can be divided into hardware video conferencing system and software video conferencing system. A variety of different categories provide users with a wider choice of choices, providing a customized standard for a variety of different needs. For users whose requirements analysis is not clear, the consequences are to use money as a heavy price, to spend money to buy lessons, in order to avoid everyone taking fewer detours, let us discuss the demand analysis of video conferencing systems.

Third, the video conference system needs analysis

1. Demand analysis of teaching video conferencing system Teaching video conferencing is to meet the teaching requirements of teachers, so that the teacher can carry out teaching activities as easily as standing on the podium. The needs of the teaching process are the most complex. It is necessary to face teachers of various disciplines, face different teaching habits of teachers, provide a stage for teachers, and provide convenient interactive functions for students and teachers. It is as convenient as the teacher to face-to-face. All in all, to meet the needs of all teaching methods, to provide teachers with a flexible and diverse teaching environment, to meet the traditional teaching mode of video tapes, audio tapes, CDs, DVDs, physical display, file transmission, but also to meet the modern mode of teaching methods Computer teaching methods such as streaming media courseware, computer desktop transmission, interactive whiteboard, Flash, PPT documents, etc., require video conferencing terminals to provide rich device interfaces, flexible and convenient operation process, and provide VGA plug-and-play. Use functions to meet the needs of teaching. Due to the encoding limitation of H.26X, when the text document is transmitted, the high-frequency component of the converted signal between VGA and TV is seriously lost, and the text of the text document displayed in the image is blurred at the far end, which cannot meet the needs of teaching. The plug-and-play VGA input and output is very important here. In the teaching process, teachers can conveniently use the notebook or computer to conduct teaching demonstrations with multimedia courseware such as PowerPoint and Flash without starting the video conference terminal. At the same time, various unnecessary operations are reduced, and the simple and simple operation process is also a point that cannot be ignored. In this way, continuity in time is a test of the reliability of the equipment. The teaching conference system on campus is also a kind of meeting demand. The school's teaching activities and academic reports can allow more students to participate in the conference. Most of the campus LAN construction is relatively perfect, the bandwidth of the network is not a problem, the venue is right. The image quality requirements are relatively high. At this time, the video conferencing terminal requires to provide a bandwidth higher than 2 Mbit/s as much as possible. At the same time, it should be able to provide a broadcast of the video stream, which is convenient for students to browse online.

2. Demand analysis of conference-type two-way video conferencing system The conference-based two-way video conferencing system is mainly aimed at government and industry executive meetings. It is characterized by large scenes and relatively simple conference content; the camera lens of a simple video conference terminal cannot meet the needs of the conference. According to the size of the venue, the general camera position should be more than three. At the same time, there must be a complete set of video switching equipment. The requirements for tuning equipment and sound transmission system are also strict. Consider the lighting effect of the venue and the sound absorption of the venue. The sound reinforcement effect, the various parameters of the venue require as much as possible to meet the technical requirements of the studio. This demand is different from the requirements of the teaching form. There are certain requirements for the image display of the video conference. Participants can see at each location. To the video conference image, you can hear the clear main site sound, and the image quality of the video conference terminal is high. At the same time, the requirements of the MCU are different. The round robin function of the site, the preview function of the site, and the split screen display function. Conference reservations, conference group calls, chairman control and other functions require more, dynamic dual-stream video In order to increase the atmosphere of the meeting, this is due to the special nature of the Executive Council. It requires more auxiliary equipment. It should be used together with the mixing console, video switcher and sound reinforcement system. The requirements for the camera are also high. Use broadcast-level or professional-grade cameras as much as possible; sometimes some computer PPT documents need to be paired with video to render the atmosphere of the meeting to achieve the purpose of the meeting. Most of these situations have a political atmosphere, and the stability of various equipment is relatively high. The integrity of the conference is particularly evident here. Here, stability is overwhelming. Conditional units can consider equipment redundancy. High-end equipment to meet the requirements of the conference.

3. Business video conferencing system The business video conferencing system requires relatively simple, mainly to serve some business activities. This type of video conferencing system requires high cost performance. Generally, video conferencing terminals can meet the business needs, and the requirements for the MCU are generally required. Support T.120 protocol, which is conducive to the modification of business documents. It can carry out electronic whiteboard, file transfer, application sharing, etc. It requires video conference terminal to be small in size, easy to operate, flexible and convenient to use, and at the same time to provide encryption measures for video conferencing. The confidentiality of business activities provides services.

4. Video conferencing system in special environment In order to meet the needs of special groups such as production scheduling and military command, the video conferencing system is different from the teaching type and the conference type. It has the complex needs of the teaching system. The grand scene of the conference system. This type of conference system is listed in order to better distinguish the business needs according to the characteristics of the business, and describe the conference function in more detail. This type of video conferencing system is characterized by the ability to open full video conferences, group conferences, closer to production scheduling and military command, and to meet document transmission and modification under the T.120 protocol. File transfer, application sharing, etc., but also to meet the computer desktop transmission, to achieve management of all meetings of the system, including scheduled meetings and ongoing meetings. For example, in the case of flood control and flood control, the equipment also has 7×24 hours of carrier-grade operation equipment.

5. Video conferencing system on the Internet The video conferencing system above is generally used in private networks. Such video conferencing systems generally consist of private networks or dedicated lines. The bandwidth consumption of video conferencing is large. Currently, the network status of our country is still Can not meet the requirements for video conferencing on the Internet. To open a video conference on the Internet, the video equipment must first meet the requirements of low bandwidth. In the case of 128 kbit/s, it can also satisfy two-way communication. It is better to use a higher version of the H.26X format for a less demanding video conferencing system. Consider a software video conferencing system.

6. Software video conferencing system The performance of the hardware video conferencing system is superior, and its expensive price also discourages the benefit-centered enterprise. First of all, the price of the terminal and the MCU is not expensive. The H.323 system's requirements for the network also make the enterprise complain. It is not the connection line or the fiber. The rent paid is probably even more amazing than the price of the equipment. The lack of hardware system data functions, hardware terminals leaving the existing private network environment can not function properly, etc. is also a factor for enterprises to make choices. In fact, under the premise of emphasizing audio quality, the internal communication of the enterprise pays more attention to the function of data, and the requirements for video quality and frame rate are not as strong as people think. Audio real-time is the premise of communication. Video plays a role in communication. The data function allows enterprises to express their ideas more clearly, and can more specifically discuss a problem and make a problem. decision making. Therefore, the application of enterprise video conferencing systems will pay more attention to data interaction. The new software video conferencing system has tailored a near-perfect communication and collaboration platform for enterprises from the perspective of enterprise users. This type of system utilizes the company's existing PC resources and various types of Internet access, and builds a timely communication platform for enterprises with functions such as video, audio, whiteboard, document collaboration, and program sharing. Due to the use of the company's existing resources, it is a pure software solution, so the maintenance cost of the cost is almost 1/10 of the hardware system. In this way, the video conference changed from the original aristocratic identity to a civilian identity. Some people joked that the software video conference is a poor Rolls Royce. It is more in line with the interests of the public at a lower price, and the market capacity is magnified many times. It is precisely because of these characteristics of the software video conferencing system that it is one of the most promising products in the Chinese video market in the next few years. The image quality requirements such as traffic command and public security coordination are not high, and it is more suitable when there are many points.

7. Software Professional Edition HD Video Conference The traditional video conferencing system, whether it is hardware H.323 architecture or software architecture, generally only supports CIF (352 × 288) resolution, it is difficult to meet certain video requirements. User's request. The reason is that traditional video conferencing systems mostly use H.263 or H.263+ encoding technologies, such as compressing and transmitting larger resolution video, such as 640×480, which will be limited by the processing power and display capability of the terminal. The transmission capacity of the network, the limitation of the forwarding capability of the MCU. The emergence of software professional HD video conferencing has injected new vitality into the video conferencing market. It is low in price and flexible in use. It can not only meet the requirements of traditional video conferencing systems, but also integrate various functions of the network. In a video conferencing system. The software version of the video conferencing system using H.264 encoding, with a bandwidth of 1 Mbit/s, the resolution can reach 640×480, and the frame rate can reach 25 frames/second; it can take various browsing functions of the network. Various computer applications are organically integrated into the system, and it is also favored by the owners with flexible configuration and strong hardware compatibility. The combination of many advantages has attracted the attention of the video industry. It is undoubtedly the best choice for the application of complex systems, but the real application has yet to be tested by the market.

8. Confidential video conferencing Some special industry video conferences also need to consider the security needs of the conference. This requires the video conferencing terminal to have encryption function, not only for the participants to have certain identity authentication, but also for the video conference data stream. It is necessary to have an encryption function to prevent third parties from using software to eavesdrop on video conference content, so that the conference confidentiality work is fundamentally done.

9. MCU's choice of MCU investment accounts for a large proportion of the entire video conferencing system, which is the most headache for policy makers. Foreign brands pay attention to the stability of equipment. In recent years, they have carried out a series of developments on the functions of the Chinese market. The domestic brands are cost-effective, flexible, and thoughtful, and can optimize equipment for project needs. Good choice for small users. Users who pursue stability should focus on famous foreign brands. RADVISION and ACCORD are good choices, because the core technologies of video conferencing are in their hands. For example, RADVISION is an advocate of H.323 and a professional MCU manufacturer, which has certain advantages in device compatibility. It should be noted that the choice of the MCU should be considered together with the video conferencing terminal, and should match the function of the video conferencing terminal to meet the highest requirements of the video conferencing terminal, so that the performance of the terminal can be maximized, and some unnecessary is discarded. The function is to save money investment; moreover, the selection of equipment should be based on mainstream products in the market, and the scalability, advancement and future development direction of the product should be considered, and there is no room for upgrading.

10. Network Requirements for Video Conferencing The analysis of the needs of video conferencing has to talk about the needs of the network. In order to ensure the transmission quality of video conferencing, its transmission is mainly based on LAN, ATM, SDH, DDN and FR frame relay. However, due to the problem of network tariffs, it is impossible to rent bandwidth blindly and uncontrollably. The lease of network bandwidth depends on the quality of the video conference. The transmission rate of the general conference is 768 kbit/s, plus the overhead of the IP packet and the occupation of the network bandwidth. About 1Mbit/s, considering the application of triple play, generally rent 2Mbit/s bandwidth; network architecture should also be considered together, according to the number of users, packet switching rate, determine the model of the core router, according to the network The structure determines the model of the central switch. The router and switch should be selected with reliable quality and good scalability. It supports multiple QoS protocols, ensures the consistency of the router brand in the network, facilitates network optimization, and avoids network transmission bottlenecks.