White Paper

Top 10 Things to Look For When Purchasing an IP-Based Videoconferencing Solution

VCON

Introduction

As has been proven in the past decade, the real-time distance-bridging power of visual communications helps institutions gain several important benefits, including improved employee productivity, accelerated business processes and reduced costs. As visual communications evolves into rich media communications, there is an opportunity to multiply these advantages. The real value that rich media provides is the ability to seamlessly integrate the value of audio, video, text and data into a single user experience in such a way that it greatly expands and improves communications, while significantly reducing both the transmission costs and the cost of doing business overall. The lower cost and expanded access of real-time, interactive communications over IP will create immense opportunities for those companies that exploit it. The following article describes the Top 10 things to look for when purchasing an IP-based videoconferencing system, with consideration given to the evolution of rich media conferencing.

1. Video network management and monitoring tools

The network administration staff is primarily looking for tools that will ensure high availability and robustness of the IP video (or rich media) network. While most network administrators appreciate the user benefits associated with applications like videoconferencing and collaboration, their primary concern is deploying and managing these applications, while continuing to ensure the robust performance of the entire enterprise IP network. Considering that a typical enterprise IP network carries multiple business-critical applications, it's understandable that administrators will have strong demands before they will add any new application, especially those that carry unique demands and resource requirements.

The result of wide-scale implementation of rich media conferencing could mean the deployment of hundreds, or even thousands, of endpoints at multiple locations across the campus, the country, or around the world. A logical question from the enterprise network administrator is: How will all of these geographically distributed devices be efficiently installed, configured, managed, maintained, upgraded, and monitored?

In order to deliver a fully integrated, network-centric solution, enterprises must pursue a suite of integrated video network management applications and monitoring tools that maximize the revenue-enhancing potential of real-time, interactive IP-based videoconferencing. Using such tools allows network administrators to manage, administer, and monitor their IP video deployment from a remote console located anywhere on the network.

2. Directory services

Once any rich media deployment evolves to dozens or more endpoints, the function provided by an online directory takes on a critical role in delivering efficient communications between users. Without access to a centralized directory, each end user is required to create and maintain their own personal directory. In a large deployment this could mean entering hundreds of entries in individualized address books. To simplify and streamline address book access, centralized videoconferencing management systems should contain an LDAP interface that automatically maintains a

directory on behalf of all registered endpoints and resources (MCUs, gateways, etc). When users are ready to initiate a conference, they simply access the online directory with a mouse click. The centralized management system does the rest. However, in order to fully exploit such directory services, the endpoint devices must also have integrated support for accessing the LDAP directory.

3. QoS and policy-based management

A second mission of the network administrator is ensuring that every user has a high-quality experience. The network requirements for various applications running on the enterprise network can differ greatly. For example, it does not matter if an email message is delivered in four seconds or 24 seconds, but it makes a dramatic difference if an audio packet is delivered in 200 milliseconds versus even two seconds. A network that behaves the same for email as it does for interactive rich media conferencing applications will not achieve the necessary results for a high-quality experience.

Merely adding bandwidth is not enough to ensure a high degree of QoS for IP-based videoconferencing applications. An architecture must be developed with QoS and policy-based management in mind, essentially allowing the administrator to centrally control the who, what and how questions for both users and services.

There are several questions the network administrator must ask, and answer, before starting a rich media deployment, including the following:

- Do all of the users require the same quality?
- How should "quality" be defined and measured?
- How much of the total network bandwidth should be allowed at any given time for conferencing applications?
- Which resources (MCUs, gateways, directories, etc) should be accessible by which users?
- What dial plan standard should be established and how should users initiate a conference (directories, dial plan numbers, alias names, personal buddy lists, etc)?

The management system should allow for policy-based decisions by the administrator, which naturally follows the thought process outlined by the questions above. The system should also offer the administrator a real-time monitoring tool as well as a comprehensive reporting and billing tool. These tools can be used for fine-tuning the policy management decisions and for making necessary adjustments to the physical network topology itself. For example, the bandwidth limits set for a given network zone may later be determined to cause 20% of user-based conference requests to be rejected during peak hours. Understanding this, the administrator can either choose to raise the zone bandwidth limit, reduce the bandwidth allowed for each conference (thereby allowing more of them), or upgrade the physical network bandwidth in the zone.

4. Streaming Video versus Interactive Videoconferencing

The worlds of streaming video and videoconferencing used to be separate and distinct. However, over a common IP network infrastructure there is an opportunity to converge both to create some unique value. Multi-party conferences with large numbers of participants rarely require that all participants have the ability to interact. Therefore, having a system that allows a combination of interactive and passive participants provides incredible flexibility when needed. Additionally, if IP multicast is used as the streaming method, there can be a tremendous amount of bandwidth savings on the network.

In order to exploit this concept, MCUs and endpoints should have integrated support for streaming video, interactive video and a combination of both in the same conference. It is also important to understand if unicast or multicast standards are used for the streaming.

5. Video Telephony Features

IP-based videoconferencing systems should be enabled by an extensive set of call establishment and redirection features commonly found in traditional telephony PBXs. These video telephony services can greatly enhance productivity and ease-of-use, and further bring visual communications into a revolutionary new world of usability. This "video PBX" should provide common telephony features such as video call forward, video call transfer, and ad hoc conferencing. Users should be able to automatically forward incoming calls to another video user, their phone handset, or even their mobile phone. Ad hoc conferencing features should work just like the "conference" button on your telephone. During a point-to-point call, a third or more participants can be invited into the conference with the push of a button. Other features to look for include simplified gateway dialing (users simply dial 9+ISDN number) and automatic least cost routing.

6. Multipoint Conferencing

The market need for multipoint videoconferencing is similar to that of the audio conferencing market. A variety of needs exist depending on the situation at hand. The examples below provide a small sampling of this variety, and can serve as guidelines for making the MCU device selection.

- Personal versus Group Needs - The multipoint videoconferencing needs of a user at their normal workspace is typically very different than that of a group assembled in a conference room or classroom. Personal conferencing tends to be ad hoc (needed on a spur of the moment). A comparison in the audio arena can be found in the conference button on most phones. This is ad hoc conferencing. Group conferencing, on the other hand, tends to be scheduled. Just like the conference room in which the group of participants will meet, so are the multipoint videoconference requirements scheduled in advance.

- Small versus Large versus Very Large Conferences - There can be dramatic differences in the needs and meeting dynamics based on the size of the conference and the number of sites participating. A small multipoint videoconference of three to four sites is typically very

interactive and can be assembled almost "on the fly" if necessary (ad hoc conference). A larger conference of six to eight sites needs to be scheduled in advance and will usually have less overall interaction between the sites. A very large conference of twenty sites or more will certainly be scheduled and will almost always involve one site as the central presentation point, with the other sites only participating in periodic questioning during or following the presentation.

- Simple versus Complex Conference Requirements - The tools and features that are needed during a multipoint conference have less to do with the size of the conference and more to do with the type of meeting or presentation being conducted. A simple conference might entail "meet me here" dialing whereby each participant dials a pre-assigned number to a known conference session that is "always on." Contrast this with more complex conferencing features such as scheduled dial-out to all of the participants from the Multipoint Conferencing Unit (MCU), cascading (networking) multiple smaller conferences into a single large conference, or audio transcoding for times when participants need to connect using disparate audio algorithms.

7. Multi-vendor interoperability/support (standards based)

One reality of today's rapid advancements in technology is that customers are increasingly making "best of breed" purchase decisions in various product categories. For this reason, many customers don't want to be locked into a single vendor for all aspects of their rich media deployment. It's one thing to make a single-vendor or majority-vendor deployment decision based on added value. But it's another thing to do so based on proprietary features or "vendor lock." In selecting the general architecture for the IP video deployment, make sure to understand the value added features that exist when multiple components from the same vendor are selected. Also make a determination of how much of the value add is from proprietary implementations versus elegant and seamless integration.

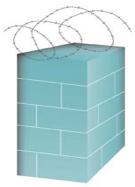
8. Support for mixed H.323 & SIP-based devices

Optimally, those looking to deploy IP-based videoconferencing should be able to deploy either SIP or H.323 in confidence and provide today's users with services available on today's platforms. Until the time if or when one of the two protocols dominates, or the two evolve sufficiently over time to completely satisfy the needs of all communities of interest, the best course of action is to support a converged environment wherein both SIP and H.323 can co-exist.

There are technical solutions that permit co-existence. The first is to deploy H.323 to SIP gateways. These support interconnectivity but may come with some feature limitations.

Proprietary solutions are available from some vendors but this might lead to "vendor lock". Selection preference should likely be given to vendors and products that have some level of support for both the H.323 and SIP industry standards.

9. Security and firewall/NAT traversal



Firewalls and NAT servers create numerous connectivity challenges for IP-based conferencing applications. Additionally, there are often requirements to have fully encrypted communications across a public or private network. IP-based video applications should be compatible with any firewall that supports the H.323 protocol. Security can be enhanced and general connectivity achieved by the addition of an H.323 proxy server or some other border traversal solution. Other "workaround" solutions exist from many vendors, but it is important to understand that when it comes to security and reliable connectivity, a workaround solution might not be good enough.

10. Integration of rich media conferencing features

In the course of normal communications people don't want to be forced into thinking ahead of time about the exact type of value-add conferencing and collaboration tools they might need as they communicate. They just want them to be available at the click of a button. After all, this is exactly what we already have today with much of our audio conferencing experiences. If you want to add a third person to a conversation you simply hit the "conference" button on the phone. If you are on a conference call and need some quick information from the Internet you simply open the web browser on your PC.

This same general user paradigm is now extending to other forms of communication and collaboration that have not yet achieved the same mainstream use as audio conferencing. The promise is clear. Allow users to start with one form of communication and then add, or switch to, another form of communication easily and seamlessly. This allows users to make dynamic decisions about added value rather than have to plan every possibility ahead of time. One approach is to integrate with presence-based instant messaging as the starting point while another approach is to integrate with the phone and phone PBX. In making the vendor/product selection decisions, ask questions about rich media conferencing capabilities.