

A New Approach to Video Conferencing

White Paper

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Introduction

Goals and scope

The goal of this white paper is to provide a general overview of video conferencing as well as to offer tips on what to look for when evaluating video, audio, and information sharing capabilities across vendors. To help guide you through the selection process, we'll explain the technology behind conferencing and the advantages and disadvantages of the two main system architectures—PC-based and appliance. We'll also introduce you to a new alternative that blends the best of both worlds. With a clear understanding of the many options currently available, you will be better equipped to choose the right video conferencing solution for your needs.

Developments in video conferencing

Video conferencing is more than just video. Today's video conferencing systems include the delivery of video, audio, and information sharing capabilities in a two-way meeting environment. The use of video conferencing as an integral part of business communications has increased dramatically in recent years. According to research firm Frost & Sullivan Inc., the growth is expected to continue unabated—jumping from a \$1.9 billion U.S. market in 2000 to \$5.4 billion in 2005.

Great strides have been made in improving audio and video quality and ease-of-use. New information sharing technologies and the availability of low-cost bandwidth have allowed video conferencing to become a highly productive tool. But one result of these technological advancements is a somewhat confusing array of competing standards and architectures. To make sense of it all, let's start with the basics.

Video conferencing standards

From a technical perspective, video conferencing results from a series of steps. Input devices—such as cameras and microphones—capture the audio, video, and data from your conference. This data is then converted, digitized, and compressed and this signal is sent across wide area networks (WANs) and/or local area networks (LANs). When the signal is received by one or more similar devices, it is uncompressed and converted back into its original video, audio, and data content.

There are two main standards that govern the technical details of how your video conferencing data is sent—H.320 or H.323. The standard you use is determined by the type of network your organization has in place. H.320 is the WAN-based conferencing standard and is used for T1, E1, and ISDN circuit-switched connections. H.320 has been in use for more than a decade and is the predominant method of video transmission. The H.323 LAN-based video conferencing standard has been available since 1997 and is used for digital, packet-switched data network connections—also known as Internet Protocol (IP) connections.

Most conferencing systems sold today are dual-mode and will work with either standard. But which type of network connection you choose warrants serious consideration. Whether you choose H.320 or H.323, there are cost and quality trade-offs.

H.320 or H.323 and why

This question is also commonly referred to as ISDN (H.320) or IP (H.323). To begin with, there are more H.320 connected video conferencing systems in place today. However, there is a lot of discussion regarding the potential cost-savings of using H.323. There are many vocal proponents in each of these two camps but don't get caught up in the battle. The decision you make should be based on your individual conferencing requirements.

As mentioned above, the key differentiator between H.320 and H.323 networks is how the data is transmitted. H.320 connections are via a circuit-switched network. It works much the same as a telephone call. Once you make the connection, you have a dedicated line for the duration of your call. This generally delivers a higher quality connection but having a single line dedicated to your call is more expensive.

H.323 calls are via a packet-switched network. It takes advantage of the ability to send portions, or packets, of your call across any available path. These types of network connections offer a variety of benefits including shared network resources, allowing true convergence of data and video, and reduced carrier fees. Since these types of calls do not require a dedicated line, it is more cost-effective. However, it lacks any type of quality guarantee. This ability to ensure transmission quality is referred to as QoS—Quality of Service.

Because H.323 conferencing takes advantage of Internet Protocol it is better equipped to handle multimedia applications, to offer added features and services, and holds the promise for greater interoperability. However, this is still newer technology and many issues are still being worked out. For the most part, those using H.323 conferencing still fall within the "early adopter" camp. It has been estimated that only about seven percent of conferencing systems are currently connecting via IP.

Your choice of H.320 or H.323 may also depend on whom you want to conference with. H.320 makes it easy to connect to other H.320 conferencing systems. However if you opt for H.323, you will need to use a bridging service to connect with H.320 conferencing systems.

You should also consider the amount of bandwidth you have available. In general, 384Kbps is desirable for H.320 calls and 256K to 768Kbps is the recommended range for IP video calls.

Form factor: appliance, PC-based, or hybrid?

Another long-running debate exists in the video conferencing industry regarding system architecture—PC-based or appliance. PC-based systems contain internal PCs to aid in audio and video compression and collaboration. Appliance systems consist of a closed, dedicated processing architecture.

Proponents of PC-based systems argue that the PC is better equipped to handle audio and video compression and that these systems offer the best platform for collaboration and multimedia. Fans of appliance systems argue that audio and video are best handled by dedicated architectures that can focus on reliability and that appliance systems are much easier to use and manage.

Appliance design	PC-based design	Hybrid design
Easier to use	Requires a more sophisticated user	Offers PC functionality but limits user access to keep overhead low and maintain ease-of-use
Adding more functionality can be expensive	More robust information-sharing capabilities	Integrated information-sharing capabilities
Generally more reliable	Less reliable, susceptible to common PC problems like viruses, accidentally deleted files,	Offers PC capabilities but is protected against external attacks and user error
Little technical support required	More overhead and management required	Does not require typical PC support
Proprietary design limits compatibility with other	Can incorporate other industry standard devices	Supports industry standards to work with other devices
Less flexible	Allows for greater customization	Allows for easy user

But an alternative hybrid design is taking shape that leverages the best of both worlds. This new system design incorporates the strengths of each type of system while eliminating the relative weaknesses of both.

Gentner Communications is introducing the first of these new hybrid architectures. The Gentner V-There™ series incorporates the processing power of the PC for sophisticated information sharing and exceptional audio and video processing, but eliminates the complicated feel of a PC interface. Rather, the V-There series maintains the simple, easy-to-use interface of appliance systems. Drawing from each architectural approach, the ultimate design delivers exceptional processing power and advanced functionality while making it as easy as possible to use. In addition, this hybrid design still allows for extensive customization capabilities usually associated with PC systems, but eliminates the overhead normally associated with PC management.

Defining Your Conferencing Needs

Ultimately, the most effective conferencing system is one that meets your communications needs. But defining your communications objectives is easier said than done. To help guide your selection process, we've outlined a number of key questions that will help you further define your conferencing needs and allow you to more effectively evaluate video conferencing systems.

- What is your conferencing setting?
- What are your audio and video requirements?
- What are your information sharing needs?
- What role do conferencing services play?

What is your conferencing setting?

Many vendors sell their video conferencing systems based on size of room. Some systems claim to be designed for "more intimate conferencing experiences," while others are "for the largest video gatherings." While it is important to buy a system that is capable of meeting your room-size requirements, the real question at hand is flexibility. Some conferencing systems that boast the largest capacity in terms of room size are the most inflexible in terms of adapting to changing needs. You need to find a system that can scale to meet a variety of needs and is flexible enough to adapt to changing settings.

Look for conferencing systems that offer options in terms of deployment and customization, such as detachable cameras, wireless options, and customizable user interfaces. Certain hardware and software design features are basic entry points and should come standard with any system you consider. These include H.320 and H.323 support, pan/tilt/zoom cameras, and camera presets. But look beyond these standard features to areas where systems can really differentiate themselves.

For example, a remote camera option in a set-top system offers set-top capability as well as the ability to customize your system for changing room requirements. With the set-top, you get a small form factor, which minimizes the footprint size and makes the system less intrusive. With the remote camera option, you can place a camera detached from the actual base unit. In a conference room this is attractive because the camera can be placed above, beside, or below a monitor or flat panel display and the system unit can be placed anywhere room-design or preferences dictate.

Wireless capabilities also allow for flexible system design. If you utilize 802.11b wireless video conferencing, you get native mobility for taking video throughout the workplace without needing dedicated ISDN or LAN connections.

One minute a system can be deployed in a conference room, and a few moments later in a lab or studio or factory floor or other conference room—without requiring ISDN or LAN jacks installed in each location. The 802.11b standard is rapidly gaining acceptance, and is only being offered in newly introduced video conferencing systems. Be sure to look for native 802.11b support. Some vendors are offering non-integrated wireless support, which is more expensive and much less reliable.

Wireless handheld remotes and keyboards are also newer features that allow for more flexibility in system configuration and easier system use. And while many newer conferencing systems offer wireless remote capability, only with both wireless remote and wireless keyboard can your conference chair feel free to move about the room without being tethered to a specific control seat.

What are your audio and video requirements?

Video conferencing vendors have spent many years touting video quality as the most important purchase consideration. However with video quality dramatically improving across the board for all vendors, audio quality remains the area with the most room for differentiation.

Many vendors make claims concerning their systems audio features. Most base their claims on their particular rendition of the audio standards that are subsets of H.320 and H.323, or on some type of proprietary onboard audio feature. Often their audio isn't all that bad. Unfortunately, the problem is that generally it's not that great either.

Audio is the foundation for effective communications but few video conferencing vendors are capable of delivering great audio. Look for a vendor that understands the importance of audio quality and has a variety of audio offerings. Specialized microphones and speakers can provide significant audio improvement as well as helping further customize your conferencing experience.

What are your information sharing needs?

If you think information sharing capabilities are not an important part of your purchase consideration—think again. The ability to share and discuss information is the reason why you conference. Today's conferencing systems are geared to move beyond pictures and sound to allow sophisticated collaboration. But not all systems incorporate collaborative tools in the same way.

Look for systems that are designed for information sharing, rather than those that include it as an add-on. Only when information sharing is integrated as a fundamental component of product design will you get the reliability and ease-of-use you require. Also be wary of systems that only include information sharing as an expensive upgrade option.

The most successful collaborative video conferencing systems include information sharing natively which allows unlimited web browsing as well as the ability to share and exchange documents created in any Microsoft Windows application. Native sharing of HTML-exportable applications, such as Microsoft Office applications, means users can deliver presentations or collaborate with one another using familiar office productivity tools.

LAN interface capabilities in combination with PC functionality, such as RS-232 ports and PCMCIA slots can significantly improve your data sharing capabilities such as allowing you to access data across your local network and/or adding capabilities through the addition of other external devices.

Another important feature to aid in collaboration is dual monitor support. This allows participants to continue to see each other on one monitor while data can appear on a second monitor. To ensure the highest quality image output for both video and data sharing, look for systems that can support both VGA and XGA.

What role do conferencing services play?

With conferencing users continually looking for added functions and features, one opportunity to further enhance the conferencing experience is the addition of conferencing services. There are conferencing services available for audio, video, and web conferencing. Using these specialized services in conjunction with your conferencing equipment can significantly improve call quality and flexibility. You can also save time and money.

The use of external audio and video bridging services can allow you the flexibility to hold scheduled and ad hoc meetings without worrying about the size of the group or having a built-in MCU (multi-conference unit). Through the use of web, audio, and video bridging services, you can add meeting participants as you see fit, and extend the reach of your meetings.

Bringing It All Together

When all is said and done, finding the right video conferencing system to fit your needs can still be a confusing journey. However, we hope these tips can provide a solid framework for your search. At Gentner Communications we pride ourselves on being a reliable resource for you. We've spent many years working closely with industry experts to identify and understand the most important factors in choosing a video conferencing system. We also work extremely hard to make sure our own products satisfy these needs and exceed expectations.

In the development of our new V-There 2000 series of video conferencing systems, we carefully designed these systems to exceed expectations on every level. We developed a new hybrid design to take advantage of the benefits of both PC-based and appliance systems. We engineered the AccuMic™ II microphone to provide Gentner-quality audio to your video conference and made V-There compatible with our renowned AP and XAP audio conferencing systems—giving you powerful audio options. We also incorporated the most sophisticated collaboration capabilities available. But most importantly, V-There is designed to be the most flexible and easy-to-use video conferencing system on the market. We are proud to incorporate our hard work and insight into a product that delivers on so many levels. To learn more about our V-There products, please visit www.gentner.com.

We are also always available to answer any questions you might have about any of our products or services. Send us an e-mail at sales1@gentner.com, or give us a call at 1-800-945-7730.

About Gentner

The Gentner legacy for conferencing perfection is built on more than a decade of relentless research, unfailing service and support, and keen attention to customer needs. Perfecting the technology behind the scenes is what we do, so you can focus on the business at hand. With any of Gentner's conferencing solutions you can be sure that above all else, the science will be extraordinary and the service will be outstanding.

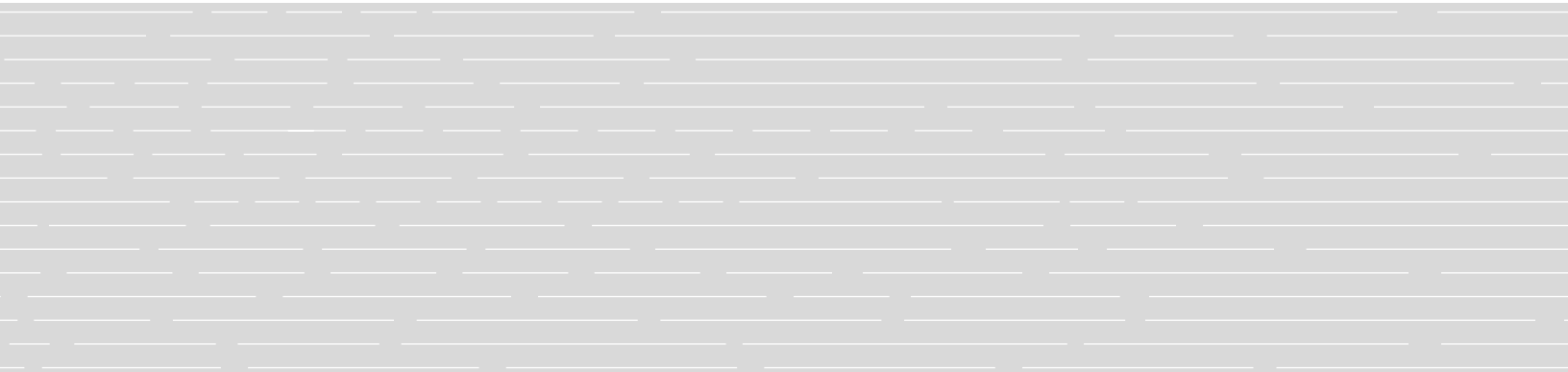
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V-There gives you complete web browsing and HTML information-sharing capabilities.



The AccuMic™ II, which features 360-degree dynamic audio pick-up and echo cancellation, is included with the V-There.



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