Remote Conferencing

By Richard W. Boss

Remote conferencing—including teleconferencing (a telephone call among three or more people or locations), video conferencing (a conference with audio and video images carried over telco circuits or the internet), and Web conferencing (conferencing using Web browsers to hear audio; view video, power point presentations, and whiteboards; and to share files and applications—has exploded in the past five years. The primary reasons for its growth are the savings in travel, increased productivity by people who do not need to leave their place of work to attend a meeting or a training session, and the reductions in the cost of telecommunications since deregulation and the introduction of voice communication via the internet (VOIP or Voice Over Internet Protocol).

By mid-2005, remote conferencing had become a $5.0 billion a year industry, with 60 percent consisting of teleconferencing and 40 percent equally divided between video and Web conferencing. However, Web conferencing is growing by 40 percent or more annually while teleconferencing is growing at one-eighth that rate and video conferencing at one-fourth that rate. A majority of the industry's revenue now comes from remote conferencing services that provide the equipment, software, and circuits at an hourly rate or on a subscription basis, rather than from the sale of hardware and software.

Libraries have been using teleconferencing and video conferencing for meetings and training for more than 20 years, but the technology supporting the activities has changed dramatically in the past few years with the use of the internet to connect sites. Not only is the cost of connecting sites via the internet less than with conventional telco circuits, the equipment and software are also less expensive.

Teleconferencing

Teleconferencing continues to be the most popular form of remote conferencing because it is the least expensive. Many telephones and telephone systems have conferencing features that make it possible to set up a teleconference by merely dialing the numbers of the participants that are to be connected. There are also a number of teleconferencing services, including all telcos, that provide a conference bridge (a toll-free number) into which the participants may call. Upon the prompt, a participant, who can be an individual or a group at a speaker phone, enters a passcode that has been provided by the chair.

One of the greatest advantages of teleconferences over other types of remote conferences is that participants can join from wherever they are. They can talk from a cell phone or over a landline.

The most important advance in teleconferencing using a service in the past few years is that most no longer require that the conference be scheduled in advance with an operator. Instead, a teleconference can be initiated on short notice if one of the participants has a reservationless account.

The cost of a teleconference ranges from $.12 to $.71 per minute per line connected to the conference. The lowest cost is realized when VOIP is used to bring the parties together; the highest when participants dial into a toll-free conference bridge.

Teleconferencing works best for meetings among people who already know one another because it is difficult to gauge the reactions of strangers when one cannot see their body language.

It has been estimated that over 60 percent of face-to-face communication is non verbal, therefore the lack of video can be a disadvantage. Also, eye contact plays a major role in turn-taking. It is not uncommon for two or more people to speak at once in a teleconference. Finally, when

visuals are to be shared, they have to be sent prior to the conference.

Teleconferencing hardware and software should conform to ITU (International Telecommunications Union) standard H.324 for audio transmission over voice-grade telco networks or ITU H.320 for ISDN networks.

Video Conferencing

Video conferencing technology allows people at two or more sites to see and hear each other at the same time, provided that each has video conferencing equipment. ISDN, DSL, or DS3 (up to 45 MBps) circuits, rather than conventional voice-grade circuits are used because of the bandwidth requirements of video, a minimum of 300 Kbps. If telco circuits are used, it is a simply a matter of dialing another unit's phone number when two sites are to be connected. If more sites are to be connected, additional equipment is required. Organizations that wish to minimize capital expenditures can use a service that offers a video conference bridge into which all of the sites dial.

In addition to person-to-person video conferencing (two sites) and group video conferencing (three or more sites that can all see and hear one another), there is also one-way broadcast video conferencing. It involves a one-way transmission to multiple sites with only audio response available to those at the sites to which the broadcast is fed. When a presentation or lecture is being given, the speaker is always on screen. If someone at another site speaks, that person will, at best, appear in a box in a corner of the screen. Some more expensive systems make it possible to monitor audience response by using "Autoscan," a rotation among sites for a predetermined period of time.

Most video conferencing is now done via the internet because it is less expensive that using telco circuits. In fact, much video conferencing is Web-based because it adds a more user-friendly interface for controlling the adding and dropping of sites, who is on the screen, who can be heard, what peripherals can be employed, .and when the video conference ends. However, the

use of the Web does not change the technology to that which is called "Web conferencing."

When more than two parties or sites are participating, video conference is almost always controlled by one participant called the "chair." Unless there are more than four sites, the chair sees all of the other sites on a split screen that is often called "Hollywood Squares." When there are more than four, no more than three are assigned to specific sites and the fourth is "voice-activated," meaning that whoever speaks or makes a noise appears on the unassigned square. The other sites typically see only that which the chair chooses to send to all of the sites. The more sophisticated systems allow participants to signal the chair so that s/he can decide who will speak next.

There are three major types of video conferencing products: desktop, room, and enterprise. The first consists of a small camera (aka a Webcam), sound card, Microphone, speaker, display screen, a control box for videoconference over ISDN or the internet, and software. Given the availability of a robust PC, the package may cost as little as $1,000. The components are available from video conferencing companies in most cities and from some computer stores. The major drawbacks of desktop video conferencing are low-quality audio and video.

Room video conferencing requires a camera that can capture the entire group, pan the group, or zoom in on a single person. It also may require multiple microphones. speakers, and a large display screen. The control box is far more complex than that for desktop video conferencing. Given the availability of a robust PC, the cost for the components is typically $8,000 or more. The components are available from video conferencing companies in most cities. The Yellow Pages listing is generally "Videoconferencing Service—Commercial." Differences in pricing are often attributable to the quality of the video. Basic video conferencing offers 352 x 288 pixels; high definition video offers 1280 x 720 pixels.

Enterprise video conferencing products seek to tie multiple locations within an

organization together and them to other sites outside the organization. The components are similar, but more sophisticated. They are much more complex and costly, typically $75,000 or more. The nation's largest supplier of enterprise video conferencing products is IVCi (www.ivci.com). It carries the PictureTel, Polycom, TANDBERG, and VCON lines.

Regardless of the costs of the equipment and software, it should conform to the ITU H.320 video compression standard for communication over telco ISDN circuits or the H.323 standard for communication over the internet.

It is usually not cost effective to purchase high-end enterprise video conferencing products unless hundreds of hours per year of video conferencing are anticipated. Instead, a local service that provides a video conferencing studio is the better solution. Full service studios are generally found only in cities with populations of more than 100,000, however, there are video conferencing rooms available for rent in many smaller communities. They include the equipment, but require that the connection service be arranged by the renter. Citizens Conferencing (www.citizensconferencing.com) provides this service nationwide and will identify video conference rooms available for rent.

Meetings among people who do not already know one another are more effective with video conferencing than with teleconferencing because people want to see facial expressions and other body language. Video conferencing is far superior for training because listening for many minutes without visual stimuli can be very boring. Not only does seeing the presenter hold the attention better, video conferencing, also makes it possible to augment the presentation with video clips, animations, and graphics on boards.

Web Conferencing

Web conferencing is relatively new. It became generally available in 1999 and caught on right away. Growth from 2000 to 2001 alone was 198 percent. It has been 25 to 40 percent a

year since then. Its popularity is due to the fact that it offers many of the benefits of face-to-face meetings and presentations. Not only can the participants see and hear one another, they can also make PowerPoint presentations from their desktops, brainstorm on whiteboard presentations, and share files and applications without advance distribution of materials. When a whiteboard is available, participants with tablet PCs or tablet input devices can draw diagrams and share them with all of the participants. There can be multiple presenters.

A basic desktop Web conference requires only a Web cam and software on a desktop computer. If the desktop computer is robust enough (Pentium III 1.0 GHz or higher with at least 128 MB RAM, 16 MB RAM video card, SoundBlaster-compatible audio interface, 30 MB available hard disk space, Win 2000 or XP, IE 5.0 or above, Microsoft Virtual Machine for Java, and one available USB port for the Web cam) and the connection offers a minimum bandwidth of 128 Kbps upload and 384 Kbps download, the cost of the Web cam and software adds only a few hundred dollars to an existing desktop computer. The components are available from most computer stores.

When multiple sites are to be connected, each with several people, a Web conferencing server is needed. It features a Web-based administrative console to manage the conference. The chair controls the server, therefore s/he can decide who speaks, who appears on screen, who can make a presentation, and who is to be dropped. The chair can provide access to the server by peripherals such as whiteboards and can facilitate file and applications sharing among the participants.

Web conferences may bring many people together, each of whom is at his or her own desktop computer, or it may tie groups together. If the latter, cameras are required. These should be capable of changing angles, zooming in and out, panning the group, and other common functions under the control of the conference chair or someone in each group. It may also be desirable to augment the PC screens with a large display screen at each site.

Two terms often used in conjunction with Web conferencing are "Webinar" and "Webcast." The former is a presentation or seminar that is presented over the Web, but with the ability to get feedback; the latter is one way and does not allow interaction between the presenter and the audience.

Some companies, among them WiredRed (www.wiredred.com) and Meetrix (www.meetrix.com), offer Web conference software on a subscription basis. The software must be mounted on a server, with its size depending on the number of concurrent users to be accommodated. The server can be purchased from a computer store or online from a company such as Dell. WiredRed and Meetrix will assist with specifications.

The software license fee for up to five concurrent users is as little as $2,995 per year It increases to at least $4,900 a year for up to 10 and at least $9,600 per year for up to 25. Price quotations are available for a larger number of concurrent users. This approach is very cost effective if Web conferencing is undertaken on a regular basis. WiredRed includes on-site training in the use of its e/pop Web conferencing service to new subscribers at no additional charge.

WebEx (www.webex.com), the largest company in the Web conferencing service business with at least 65 percent of the market, offers a subscription service that uses its servers. The company claims to have over 10,000 customers. The cost is higher than for a software only subscription, but it avoids a capital investment in a server by the subscriber. The price per participant is $39 per month for a one year contract. A meeting center or multi-participant site license is $75 per site, but with a minimum of five sites. WebEx's major competitor is PlaceWare (www.placeware.com). a company that was acquired by Microsoft in 2003.

For occasional Web conferences, it usually is more cost effective to use a pay-per-use service from WebEx or PlaceWare. The typical rate is $.33 to $.53 per minute per user. The charges are billed to a credit card at the end of the Web conference.

Libraries' Use of Remote Conferencing

Of 20 public libraries selected at random and called by telephone, 17 have undertaken teleconferences. All have used it for meetings with staff at other locations or with other libraries; 15 have used it for contract negotiation, and 11 have used it for training. They were satisfied with it for meetings and contract negotiation, but not for training. Those who also had used video conferencing and/or Web conferencing plan not to use teleconferencing for future training.

Eleven have used video conferencing. Two of the libraries have their own equipment; the rest have used facilities at a nearby college, the state library agency, or a commercial video conferencing studio. They were satisfied with video conferencing technology, but those who own their own equipment expressed concern about the cost and those who had to use someone else's facilities did not like the inconvenience of going to a nearby college or the state library or the cost and inconvenience of renting a video conference studio. One of the libraries that own its own equipment made it available to the public for several months, but it discontinued the practice because too much staff time was required to assist the users. Of those who have used Web conferencing, all but one prefers it over video conferencing.

A public library that has considerable experience with video conferencing is the Greenwood Public Library of Indiana (www.greenwood.lib.in.us). It offers interactive programs from the Indianapolis Zoo, Clowes Hall at Butler University, Indianapolis Museum of Art, and Conner Prairie Pioneer Settlement.

Eight have used Web conferencing. All have participated in one with a vendor of an automated library system because Web conferencing has become a popular sales and marketing tool. Seven have used it for their own meetings. Only two have used it for training. Almost all of the experience has been desktop-based. Only two of the libraries have their own Web server.

One has a WebEx subscription and two have used WebEx's pay-per-use service. All of the interviewees expressed satisfaction with Web conferencing for meetings and training, and intend to use it in the future. Only those who had used Web conferencing solely for audio and video expressed concern about the cost. The three who had used PowerPoint, whiteboard, and fire sharing rated cost as a minor issue in light of the value.

Prepared by Richard W. Boss, July 10, 2006