Video Conferencing

Imagine how happy your mother would be if her son, living thousand kilometers away, visits her everyday!’ says an advertisement on a latest video- conferencing package. These innovative tools which are about to invade our work places, perhaps sooner than any of us think, are not just for lonely mothers and their loving sons. In fact it is a fulfilment of a dream the business community has had for a remarkably long time. The first attempt at introducing a vidoe phone to the market goes back to 1964, when AT&T decided to place its new baby at a trade exhibition in New York. Though the basic functions and the engineering concepts be- hind it were not much different, this prototype of the video phone had a major drawback compared to its successor thirty years later. It was too costly.



Fortunately, things things have changed. Encouraged by low priced equipment and growing network bandwidth, video-conferencing vendors now offer systems that move full duplex video-conferences across both Local and Wide Area Networks. So what about the cost? At present, says an international networking magazine which reviews several such systems, the initial expenditure for a complete midrange pack- age is around US$1,000 per node/ phone. In Sri Lanka, the charges might be slightly higher than this because the vendors have to bear the freight charges and pay import duty for the equipment. As far as I know, no networking company has started to offer these services locally so far, but don’t be surprised if someone announces it tomorrow. The prices for video- conferencing systems continue to fall.

And there’s more good news. Vendors have finally agreed on a standard that will allow interoperability among their products and let multiple users participate in a video-conference. This has a large significance because it eliminates the proprietary factor from the systems. In plain English, if you have a non-standard ‘phone’ (which is nothing but a combination of a Personal Computer, a video camera, a software system and the rest of networking accessories in this case), you are only allowed to communicate with a person possessing the same set of equipment. A standard agreed by all, removes that bottleneck. But no presently available product supports this standard named H.323. When upcoming products based on it roll out this year, the true power of this technology will begin to shine. These utilities will let companies schedule multi participant meetings with minimal effort and cost.

Video-conferencing vendors have also realized that it is easier and effective to market products offering video services across a Local Area Network. LAN based video-conferencing is basically plug and play. No server components are required, and users can run the systems themselves.

Somehow, it is not just for internal use. Bringing customers and clients into your conferencing sphere can increase productivity and services. A picture is often worth more than a thousand words and remember it is not just your face (shot by a small camera placed on top of your PC monitor) that you can show to your client on the other side of the globe. Video-conferencing packages also allow users to share data in the form of text, graphs, product photographs, and audio/video clips.



One major reason that pre- vented the proliferation of video conferencing so far, is the low bandwidths offered by the LANs. Ethernet at 10Mbps, is currently the most popular network supporting mechanism with the 16Mbps Token Ring coming to the second place. (Token ring networks are very rare in Sri Lanka. Taking the advantage of the low cost, most of our networks use the Ethernet protocol and Thin Ethernet cabling systems). Though these types of LANS have been more than sufficient to handle the normal data transfer needs, video based data files consume more bandwidth.

They must be relatively continuous. Even a delay of a tenth of a second is not acceptable. Processing all the video information can place a heavy load on PCs at either end too. Such a load can prevent the computer from completing other tasks. Therefore, to get the practical benefit of a video- conferencing system, it is a must to go for a fiber optic or category 5 Unshielded Twisted Pair (CAT 5 UTP) cabling system based on the new IEEE standard Ethernet 802.12 VG AnyLan and a computer system with a considerable processing power.

Video-conferencing is also poorly suited to routed networks. Limited bandwidth, packet latency, and the difficulty of synchronising audio and video are only a few of the problems.

The Wide Area Networks are also not entirely left aside. There are many utilities

that support video-conferencing over corporate Intranets. The Internet also provides an inexpensive and easy method of distribution, something absent just a few years back. The Net Meeting electronic conferencing tool, from the software giant Microsoft, supports both voice and data communications. It takes an ordinary telephone or conference call and turns it into a multimedia experience by allowing users to share applications and documents, place audio calls, and transmit files. Unlike traditional conferencing systems, all NetMeeting requires its an Internet connection and Microsoft Windows 95.

Microsoft is not the only company to target Internet as a vehicle for promoting audio and data conferencing. Netscape Navigator 3.0 browser, from Netscape Communications Corp, which had turned out to be a super hit among net surfers now, has some data and video-conferencing capabilities. CoolTalk, downloaded free with Navigator, incorporates audio and video features, application and document sharing, and chat functions. The company says that it plans to expand these collaboration capabilities in Galileo, its next browser release scheduled for this year.

There are still shortcomings. The biggest disadvantage with interactive tools such as NetMeeting is the limited availability of bandwidth on the Internet. (In plain English: It is too slow. Even with high speed comunication systems a user can find it slow if the number of users are too high.) This will impose a practical difficulty by limiting the number of people who can simultaneously talk to a mere two. Voice quality will also suffer. The bottom line is that we have to wait for some more time until the 56 kbps modems and the superfast phone connections become the norm.

The new H.323 standard provides interoperability between LAN based systems from different vendors. H.323 defines the terminals, such as video ready PCs and video phones, but more important, it specifies the Multipoint Controller (MC) that allows multipoint video-conferences. The MC should be built into each terminal, so that each terminal will have multicast capabilities and be capable of managing multipoint calls, as well as controlling which terminals are multicasting. That means hardware and software upgrades, of course.

The standard H.323 is required because the more popular TCP/IP provides no standard way of multicasting data and retransmits dropped packets, a feature essentially useless to real time audio and video applications. H.323 data packets add a header containing a time stamp and sequence information that lets the conferencing application reorder and eliminate duplicate packets, synchronise audio and video, and get more continuous playback despite varying latencies suffered on

the LAN. The conversion to H.323 also requires no changes to NICs, hubs, Ethernet switches, or routers. Only the end-points of video applications are aware of it.

Modems using the Digital Simultaneous Voice and Data (DSVD) protocol, which is under development at present, will be capable of establishing virtual multi-channel PC to PC connections that will let users talk and exchange digital data, images, and video files; everything except live video-conferencing. DSVD is a handshaking and data handling protocol that resides on top of the normal V.32 modem protocol, a standard that most high speed modems support. The DSVD system adds a voice handling procedure to the modem protocol set. DSVD compatible modems intercept the analog voice signal and digitise it into a format that can be sent down the pipe with other electronic data. At the respective correspondents' ends, the process is reversed.

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US Robotics Corp was the first to ship modems incorporating DSVD last year. An internal model was listed for US$399. The DSVD scheme was developed by Rockwel International Corp, Creative Labs Inc, Hayes Microcomputer Products Inc, and Intel Corp Intel and AT&T have also released products. The DSVD design provides the functionality that users depend on most in collaborative efforts. They can communicate by voice spontaneously in real time and work on the tasks that require shared control of resources by work partners. US Robotics, for example, pack. ages one of its modems with a personal conferencing software utility from Intel that will let conferees share control of Microsoft Windows applications. Instead

of using a dedicated ISDN line or two phone lines carrying data and voice, this package will reduce the cost and technical complexity of this type of work.

As a collaborative tool, video- conferencing brings users together and encourages teamwork nearly as fast as it chews up bandwidth. As personal conferencing technology gains momentum, IT managers have to think twice whether document or video-conferencing will best suit their companies' current and future needs. Users typically select video-conferencing for presentations, when they need to see someone's body or eye movement. (On the other hand, some users may be reluctant to use it for the same reason. That is, if they do not want anyone else to see their faces giving out what they have in their minds.) conferencing Document software, which comes with most video- conferencing systems, tends to be used for exchanging graphical information. These are known as white board systems.

Most white board applications allow audio and video to be integrated with them. Pentium or even a 486 has enough horse power to handle the basic white board program as well as audio and video support. Video input requires the addition of a camera and video capture board. Audio input requires a microphone, speaker, and an audio board. Some products combine the video, video capture, and audio on a single system. The connection speed typically limits video.

Many corporations are taking a wait and see approach to video- conferencing until perhaps the end of this transition period. Still, there are early adopters who have placed all their bets on it. In a market research survey, most of these early video-conferencing adopters had said they wouldn't expect their current hardware or software investment to last more than eighteen months.