Intel ProShare 2.0 Evaluation

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Introduction

The Intel ProShare Personal Conferencing Video System is a videoconferencing and data sharing product for Personal Computers running under the Microsoft Windows Operating Systems. ProShare supports videoconferencing over ISDN (Integrated Services Digital Network) phone lines and LAN (Local Area Networks).

This evaluation is not an exhaustive review of the product. The evaluation focuses on critical areas for user acceptance and use of a videoconferencing and data sharing product: Audio Quality, Video Quality, Data Sharing, Ease of Installation, and Ease of Use and Reliability. Videoconferencing systems must compete with the telephones on users desks next to their PC and e-mail. In the context of resolving any problem at work, after a certain low level of frustration is reached, the user will place a phone call and drop the videoconferencing system. In general telephone networks provide higher reliability than LANs. There are minimal installation issues with telephones which are usually pre-installed at a desk.

The current generation of PC videoconferencing products provide small (176x144 or smaller) video windows with low frames rates (less than 15 fps in most cases). The digital video compression technologies such as H.261 and H.263 usually produce blocking artifacts at low bitrates (such as 128 Kbps required for ISDN and frequently used for LANs). This video quality is too low for usable display of printed material or complex drawings. The systems must rely on the data sharing capability for this, or convert to very low frame rates and higher resolution. This video quality is also rather low for discerning facial features and body language, although this is certainly possible. This clearly limits the appeal and usefulness of the products.

Since audio and data sharing, the ability to jointly view and work on a computer document, may provide substantial utility with poor or no video, low video quality may not be the reason for the lack of widespread use of these products. Ease of installation is critical because many of these systems are difficult to install and configure, particularly if network or ISDN installation is required as well as installation and configuration of the videoconferencing system. As mentioned above, the videoconferencing system must compete with telephones which are usually already installed and trouble-free.

Configurations Tested

Intel ProShare 2.0
NOW Pentium PCI
Windows 95 (Version 4.00.950/not OEM Service Release 2)
Microsoft TCP/IP 4.00.454
3COM Etherlink III Bus Master PCI (Network Interface Card)

Intel ProShare 2.0
Micron PowerStation Pentium PCI
Windows for Workgroups 3.11/DOS 6.22
Microsoft TCP/IP-32 for Windows for Workgroups 3.11b
(downloaded from the Microsoft FTP site)
3COM Etherlink III (Network Interface Card)

Videoconferencing over a single physical Ethernet network in the laboratory. This is a typical Ethernet using hubs and 10BaseT Unshielded Twisted Pair cables. The traditional Digital/Intel/Xerox (DIX) Ethernet (not IEEE 802.3 Ethernet) was used.

Videoconferencing over ISDN lines in laboratory. The ISDN lines and switch were provided by the phone company.

Videoconferencing over the Internet between NASA Ames Research Center and the NASA Kennedy Space Center. The connection was at 128 Kbps. Audio and video performance were comparable to the LAN and ISDN performance.

Supported Platforms

- PC/Windows for Workgroups yes
- PC/Windows 95 yes
- Macintosh no
- UNIX no

Supported Networks

PC TCP/IP Implementations

- Microsoft TCP/IP
- Novell LAN WorkPlace TCP/IP
- FTP Inc.'s PC/TCP
- ChameleonNFS
- Pathway from Wollongong

other PC TCP/IP implementations are not supported

- Novell IPX/SPX

the Microsoft IPX/SPX implementation is not supported

Supported Videoconferencing Standards

ITU H.320 (Videoconferencing over ISDN)
ITU H.323 (Videoconferencing over LAN) is not supported.
ITU H.324 (Videoconferencing over telephone lines) is not supported.

Audio Quality

Audio quality is good. Speakers are comprehensible. Dropouts and static are very rare both over ISDN and the LAN. Even the audio over the Internet between NASA Ames Research Center and Kennedy Space Center was quite good.

Video Quality

ProShare 2.0 uses the H.261 video codec. At 128 Kbps, video quality is mediocre. The frame rate is 10-15 fps at 176x144 resolution. Blocking artifacts from the codec are noticeable occasionally.

The video contributed positively to the videoconference with Kennedy Space Center.

Data Sharing

ProShare has excellent data sharing tools including a shared notebook, file transfer, photo exchange, and application sharing. Application sharing allows multiple users to view and work simultaneously on the same Microsoft Windows application running on one participants PC. Application sharing worked over the Internet between NASA Ames Research Center and Kennedy Space Center. Two users can jointly view and work on Microsoft Word or Excel, for example.

Once the application sharing is activated, the tendency is to ignore the video window, to talk using the audio headsets, and look at the application displayed on the monitor.

Ease of Installation

Although not difficult, ProShare is not easy to install in practice.

(1) There are two physical hardware boards, the video capture card and the ISDN/audio card, to install in the PC. There is also an NTSC camera and an audio headset. The PC case must be opened and the two cards installed. The camera and audio headset need to be plugged into the jacks on the video capture board and the ISDN/Audio board. These are in the back of the PC, often hard to reach. It is possible to plug the audio cables in incorrectly, resulting in no audio. An ISDN cable needs to be plugged into the ISDN/Audio card for conferencing over ISDN.

(2) ISDN installation requires:

(a) Determining the type of the ISDN switch. There are several variations on the ISDN protocols used by switches from different manufacturers. This information must be entered in the ProShare configuration for ProShare to work with the ISDN switch.

(b) Determine both the phone numbers and the Service Profile Ids, SPIDs, for the ISDN taps. The SPID is often the same as the phone numbers. Each tap may have two ISDN phone numbers. All of this information must be entered in the ProShare configuration.

(c) The PC ISDN/Audio card cannot be connected directly to the ISDN tap. The cable must be plugged into an NT-1, Network Termination Type 1, converter box. A cable connects the NT-1 converter box to the ISDN tap. The NT-1 converter box is not provided with the ProShare kit from Intel but must be acquired separately. The NT-1 converter boxes used in the tests can be configured in different ways as well.

The natural intuitive user action is to connect the ISDN/Audio board directly to the ISDN tap. Although the manuals do describe the NT-1 converter box, they are not very clear. The product would be superior if the converter box was not needed or was included in the ProShare kit.

(3) During installation, the installation process will detect and calibrate the camera. In some cases the installation failed to detect the camera, requiring that the installation be repeated until ProShare installed correctly.

(4) LAN installation requires:

(a) Configuring ProShare to use a Local Area Network with the TCP/IP networking protocol (LAN/TCPIP) through some check boxes and menu selections.

(b) Telling ProShare the IP address of the machine that it resides on.

ProShare will fail to initialize LAN/TCPIP if it is given the wrong IP address even though the PC is configured correctly on the network.

(c) ProShare needs to access the TCP/IP network protocol stack at a lower level than the Microsoft WinSock 1.x standard which is not preemptive. ProShare can only work with certain TCP/IP implementations, listed above. This now includes the Microsoft 32 bit TCP/IP implementations for Windows 95 and Windows for Workgroups. Obviously, there is a problem if the user is using a TCP/IP implementation that is not compatible with ProShare.

(d) Videoconferencing over a LAN or the Internet is disabled unless the Intel LANDesk Personal Conference Manager application is running on a server (a third PC) on the network. Audio and data conferencing are possible, but the video is disabled. The Conference Manager implements a proprietary resource reservation system from Intel (not the emerging Internet RSVP standard). The current release of the LANDesk Personal Conference Manager requires a PC running the Microsoft Windows 3.1 or Windows for Workgroups 3.11 operating systems. Windows 95 is not supported.

There is an undocumented option in the .INI file, generously provided by Intel, to turn off the Conference Manager requirement. ProShare was tested over the LAN in the lab and over the Internet with this option (no Conference Manager).

Installing the Conference Manager or disabling the requirement for the Conference Manager increases the complexity of installing the product on LANs or the Internet. The greatest use for

ProShare would be over a large network or the Internet where the participants could not easily meet in person. There is no practical way to enable the LANDesk Conference Manager over the Internet.

(e) In some cases, such as a new PC, the user may need to set up and configure the TCP/IP network on the PC which contains the ProShare system. This adds to the complexity of the installation process.

In the absence of a trained support infrastructure for installing ProShare, it took several weeks to install and configure the product due to the many steps involved. With proper documentation and support activities, this could be reduced to a few days but again this is an extra cost and difficulty of using ProShare. Consider how simple using or installing a conventional telephone appears to an end user.

Ease of Use and Reliability

Once installed and configured successfully (see Ease of Installation), ProShare seems easy to use and reliable. A few times ProShare quit working and could not be launched. It was necessary to reboot the PC to fix this problem. This happened twice during two months of testing.

Videoconferences were established and left running in the lab for days at a time without system crashes. As mentioned, the few problems were fixed by rebooting the PC, a common fix under Windows.

Conclusions

The low video quality at 128 Kbps limits the usefulness of the video part of ProShare. The audio and data sharing, especially the application sharing, are potentially very powerful.

ProShare is somewhat difficult to install either on ISDN or on LANs. Either Intel should improve this situation or adopters will need to provide some assistance or training for the installation process. It is easier to install ProShare on a LAN than for ISDN.