

Connect. Any Way You Want.
Application Briefs by Polycom

Polycom ®
Video Conferencing

The Power of Polycom Audio Technology:
The Polycom Advantage

Polycom Application Brief: The Power of Polycom Audio Technology

What is the most important product feature for providing a high quality video conferencing experience? Most people would probably respond with excellent video. However, the most important element of a quality video call is excellent *audio*. High quality audio is by far more important to the perceived quality of a videoconference as conversation and discussion usually convey the most important information between meeting participants.

It is Polycom's goal to create and provide videoconference solutions that deliver the highest quality audio capabilities. We do this by delivering technology for all of our videoconference systems that delivers the best fidelity possible and provide the most natural interaction between users during a conference.

Siren 14™: Polycom's leading advantage:

Siren 14 technology brings 14 kHz audio fidelity for the most natural conversation. With twice the fidelity of other vendors, and four times the fidelity of a telephone call, Polycom is the only company in the industry to offer such "super-wideband" audio capabilities for video conferences.

With 14 kHz audio in a videoconference call, participants can better hear and understand each other, while eliminating the fatigue often associated with longer duration calls under inadequate audio quality.

Why is Siren 14 audio important to the video conference user?

What are some of the specifications that define the level of audio quality when people are in the same room? First, the human ear can typically pick up frequencies in the range of 20Hz to 20,000 Hz. Speech information is usually contained in the 100-7,000Hz range. Music and other sound sources typically occupy a much wider range than this:

- CD Players: 20Hz up to 20 kHz
- FM Radio: up to 15kHz
- AM Radio: up to 5kHz
- Telephone: up to 3.4 kHz

In order to provide the full frequency of range of human hearing, simulating the sounds in a typical environment, a video conference system should be able to reproduce the 20-20,000 Hz range. State of the art video conferencing systems, such as those offered by Polycom, provide 14 kHz "almost CD quality" audio capabilities, but all systems must handle at least 7kHz to provide the means to hear remote speakers.

The Siren algorithm suite, developed and patented by Polycom is designed to provide a scalable wideband audio solution that will obviate any reason to use narrow band (3.4 kHz) audio coding. When combined with Polycom patented audio echo cancellation, the suite provides an environment that allows both the local and remote speaker to engage in conversation simultaneously, without cutting each other out.

Siren 14 operates on 14kHz audio at bit rates between 24 and 48 kbps, the usual bandwidth allocated to audio transmission in a videoconference. Polycom's unique Siren 14 *Super wide band* audio capabilities, provides incredible audio quality approaching compact disk and MP3, while maintaining a modest network

bandwidth requirement. In comparison to other audio algorithms, such as MPEG 3 and MPEG 4 and when the lower bit rates are used, Siren 14 actually delivers a smoother and more superior sound.

Polycom Audio Pickup – Siren 14's natural companion

Most video conference systems use simple directional microphones. Typically these microphones have a +/- 45 degree pickup pattern, as measured from the axis pointing from the front of the microphone. The disadvantage of this type of microphone is that participants who are sitting away from the pickup pattern cannot be heard as well as those sitting closest to the microphone. Polycom microphones deploy technology that allows for voice pickup in a 360degree radius covering distances up to 7 feet away from the microphones. Polycom microphones also use background noise suppression functions which eliminates unwanted background noise such as that generated by fans and vents. The benefit of automatic noise suppression creates a virtually noiseless audio for most meeting environments.

By using Polycom microphone technology combined with the Siren14 audio algorithm, conference attendees can sit *anywhere in the room*-without having to worry whether their voice is being heard at the remote sites. An example of this capability is exemplified within the new tabletop microphone shipped with the VSX 7000. The VSX 7000 tabletop microphone deploys a 3 element microphone array that forms a narrow beam that automatically points to the person speaking. The narrow beam eliminates noise/reverberance from other directions.. When daisy chained, the microphone that best picks up the person speaking is automatically and seamlessly chosen, so that noise/reverberance from the remaining microphone is eliminated.

Audio Reproduction from Polycom

Equally important to videoconference sound fidelity are the speakers that produce the audio signals. Often time television speakers are used for conference audio reproduction. However, these speakers are not well suited for reproducing speech, the most commonly transmitted audio signal in video conferencing applications. TV speakers are usually designed to offer adequate full bandwidth audio reproduction for a low price and as a result, most often sound like similar to a portable stereo system. For video conferencing, clear speech is the most important specification for speaker design.

Polycom offers custom high fidelity audio speaker systems to provide the highest quality speech reproduction for video conferencing. With the recent introduction of the VSX 7000, integrated speakers with a subwoofer are provided as standard features. The Polycom Executive Collection offers a 270 Watt speaker subsystem included with each Executive Collection configuration, available for Polycom iPower 9000 and VS4000 applications. Polycom also provides the Premier Accessory Packages which ships with an 80kHz speaker- co designed with BOSE® Corporation, the leader in audio reproduction products. Polycom ViewStation and iPower videoconference systems both take advantage of the Premier Accessory solutions.

The Total Polycom Audio Solution

With all of these great audio technologies, it is easy to see why Polycom's audio is the one of the best in the industry and why Polycom continues to be the market leader in video conferencing solutions.

The Polycom Office™

With integrated video, audio, data, and Web capabilities, The Polycom Office offers an easy way to connect, conference, and collaborate any way you want. Work faster, smarter, and better with The Polycom Office.

Polycom, Inc. develops, manufactures and markets a full range of high-quality, easy-to-use and affordable voice and video communication endpoints, video management software, web collaboration software, multi-network gateways, and multi-point conferencing and network access solutions. Its fully integrated end-to-end solution, The Polycom Office, is supported by the Polycom accelerated communications architecture and enables business users to immediately realize the benefits of integrated video, voice data and web collaboration over rapidly growing converged networks. For additional information, call 1-800-POLYCOM (765-9266) or +1-408-526-9000, or visit the Polycom web site at www.polycom.com.

Polycom, the Polycom logo and ViewStation are registered trademarks and iPower, Pro Motion, Siren 14, People+Content, ImageShare, and The Polycom Office are trademarks of Polycom in the U.S. and various countries. All other trademarks are the property of their respective owners. ©2003, Polycom, Inc. All rights reserved.