Integrating the Acoustic Magic Voice Tracker Array Microphone with Adobe Acrobat Connect Professional Voice over IP

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Introduction

As you might know from personal experience, when you communicate with remote users using Acrobat Connect Professional, it is important to have a microphone that can clearly pick up the voices of meeting attendees who may be disbursed in a room. Acoustic Magic's Voice Tracker array microphone uses sophisticated algorithms and digital signal processing to filter out interfering noise at ranges up to 30 feet, creating a crystal clear audio signal for meeting participants. The Voice Tracker eliminates the need to use headsets, is reasonably priced, and is easy to install and set up.

The Voice Tracker

The Voice Tracker uses an array of eight microphones and *beamforming technology* to reduce sound interference. This unique technology locates a speaker and automatically (and electronically) steers a *listening beam*, which is like an acoustic searchlight, in the direction of the person who is talking. This process creates spatial filtering; sounds from other parts of the room are diminished. The listening beam can scan 360°. In addition, the Voice Tracker samples constant background noise (fans and so forth) and subtracts it. The dual-mode noise reduction, coupled with increased sensitivity because the Voice Tracker's eight microphone elements are used continuously and constructively, gives the Voice Tracker outstanding range and sound quality.

Key features of the Voice Tracker

1. The sensitivity and noise reduction of the Voice Tracker ensures meeting attendees are heard clearly when speaking, even if they are disbursed in a conference room away from the microphone.
2. The Voice Tracker's Location Dependent Squelch™ (LDS) mode eliminates the annoying echo effect from speakers in the room.
3. The Voice Tracker's ability to follow a speaker's voice as they move gives them an untethered feeling and lets them move and interact freely rather than being connected to a computer by a headset.

Unlike first generation array microphones, which have a fixed listening direction, the Acoustic Magic Voice Tracker automatically locates and electronically steers toward the talker.

The Voice Tracker can eliminate the need for headsets and provide a great experience for users who use Voice over IP (VoIP) as the communication vehicle in their meetings. Because of the Voice Tracker's high sensitivity and background noise filtering, it can work in large rooms and can be used for large-group web conferences as well as single user meetings.

When to use the Voice Tracker

There are three primary instances where using the Voice Tracker can provide a natural experience for Acrobat Connect Professional users while still allowing them to use integrated VoIP capabilities.

Case 1. A collaborative meeting

When a group of people gather in a conference room for a collaborative meeting, they often want to include remote participants without having to think about audio setup. This can be done easily and seamlessly with Acrobat Connect Professional and the Voice Tracker microphone.

Most Acrobat Connect Professional attendees use headsets if they are sitting at a desk. But when people are physically gathered for a meeting, wearing a headset is not natural or intuitive; attendees who are participating in the physical room want to speak freely and move around as they would for any in-person meeting. With a Voice Tracker in the conference room, local meeting participants can talk freely from anywhere in the conference room without degrading the experience for someone attending using Acrobat Connect Professional. Remote attendees are included through Acrobat Connect Professional's VoIP capabilities and hear each person clearly. When a remote participant speaks, they are heard through desktop speakers located in the conference room.

Case 2. A virtual classroom session

Training sessions are much like the conference room instance because a class is gathered physically in a classroom and there are remote attendees who are using Acrobat Connect Professional. Instructors want the ability to walk around the classroom and interact with local students without degrading the experience for those attending remotely.

With a Voice Tracker in the classroom, an instructor can move around and speak from anywhere in the room. The Voice Tracker's ability to follow the instructor's voice as they move provides them with an untethered feeling. Remote attendees in the Acrobat Connect Professional can hear the instructor as well as any discussion in the class. Instructors won't have to repeat questions for remote users as they may be used to. The result is that the energy of a live classroom is maintained, keeping the session more interesting for remote participants and allowing the instructor to be more engaging rather than simply sitting at a desk.
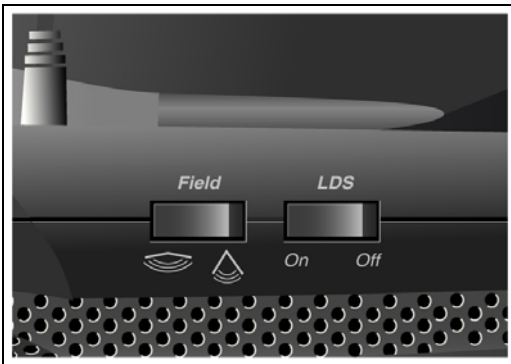
Case 3. Personal use

Although the previous examples describe instances where there is a physical group, it's also worth mentioning that the Voice Tracker also works for a user who is attending a meeting while sitting alone in an office by eliminating the need for a headset. The user can comfortably move around in the office or easily ask another person to join a discussion without changing anything about the way that the audio is set up.

The Voice Tracker is ideal for use in conference rooms or personal offices and lets meeting participants interact naturally while delivering unparalleled VoIP quality.
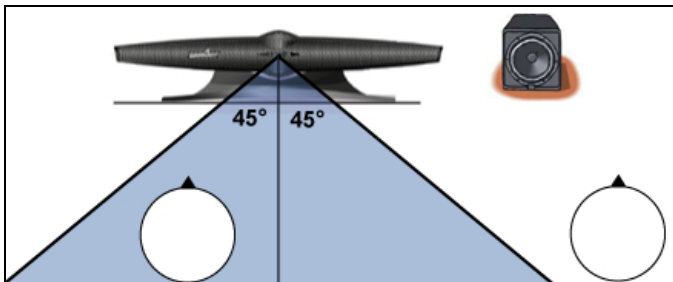
Voice Tracker basic setup

The Acrobat Connect Professional audio setting defaults are set to two-way, full-duplex mode, which lets all users speak at the same time. (There are other options in the Advanced Settings of the Audio Setup Wizard, such as half-duplex and headset, but leaving the default full-duplex mode is the optimal setting.) When using full-duplex mode, you can use the Voice Tracker's LDS mode to eliminate echo. To do this, the Voice Tracker array microphone must have the Field switch set to Narrow and the LDS switch set to On.

If you use the Voice Tracker for two-way communication, the Field switch should be set to +/- 45° (Narrow) and the LDS switch set to On.

When used with the +/- 45° (narrow) field of view, the LDS can be used to ignore unwanted sounds. After a talker pauses and the Voice Tracker turns off, the array turns on again only when sounds come from within the +/- 45° listening area.

This figure shows the listening area when the LDS switch is set to On and the field of view is set to Narrow.

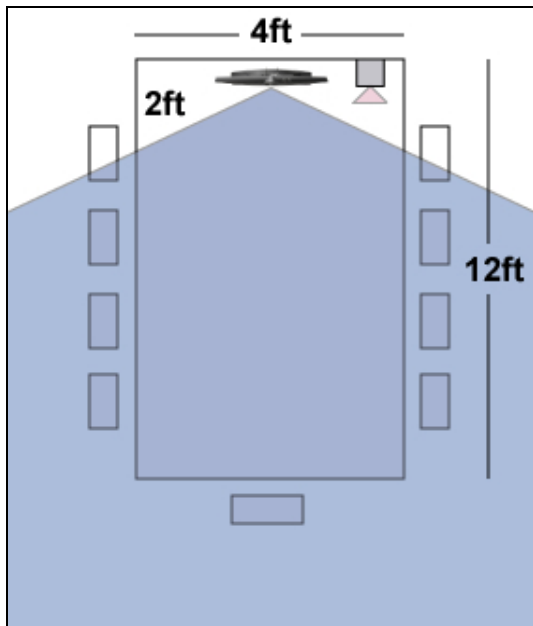## Positioning the Voice Tracker in a conference room

There are several ways to configure the Voice Tracker for use in conference rooms. Remember that the Voice Tracker is sensitive and can be placed far from the meeting participants. It is often necessary to do so to cover all the participants in the +/- 45° field of view. When the Voice Tracker is 10 feet away from participants, they can be disbursed across a 20-foot base of the field of view.

It is always better to have the microphone as close to the participants as possible, so putting the Voice Tracker on the conference table is best. Although the Voice Tracker can pick up sound from the front and the rear, it is more sensitive to sound in front. It is best to place the Voice Tracker toward one end of the conference table, so the talkers who are behind it are closer.

If the Voice Tracker is set to use LDS and a +/- 45° field of view, placement is also determined by the need to have the active participants within the forward and rear field of view. This might mean that the Voice Tracker will have to be placed farther away, allowing the field of view to cover more area.

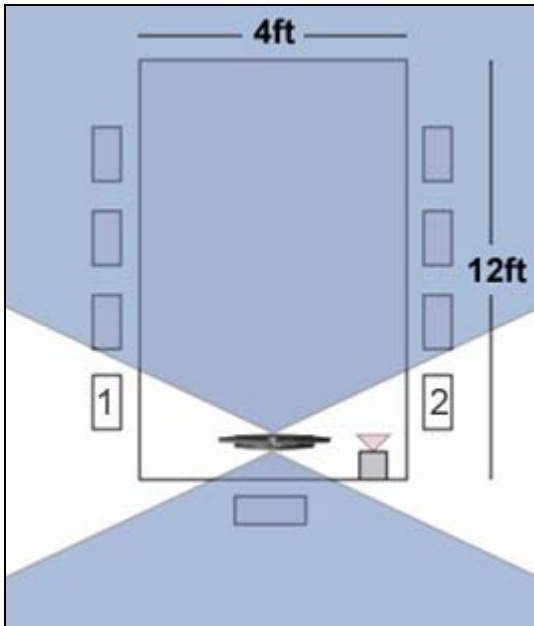### Setup A: Placing the Voice Tracker at the far end of the room

Placing the Voice Tracker and speaker at the far end of the room keeps it out of the way for local participants and the +/- 45° field of view can cover most of the table, which ensures that remote participants can hear the entire conversation.

This figure shows how the Voice Tracker can be set up at the far end of a conference room at the end of the table.

Setup B: Placing the Voice Tracker at the head of a conference room table
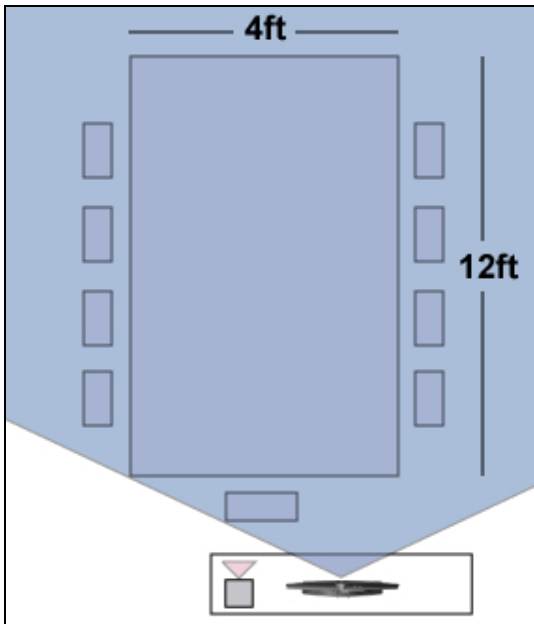
The Voice Tracker and speaker can be placed on a conference room table, which lets it pick up sound from the front as well as the rear because both areas are within the +/- 45° field of view, as shown in the following figure. However, be aware that the people seated in seats 1 and 2 are outside the +/- 45° field of view in this setup.

This figure shows how the Voice Tracker can be set up at the head of a conference room table. Participants in seats 1 and 2 will not be heard by remote participants.

Setup C: Voice Tracker placed along the front wall

Another way to ensure that all participants are heard by remote users is to place the Voice Tracker along the front wall of the conference room.
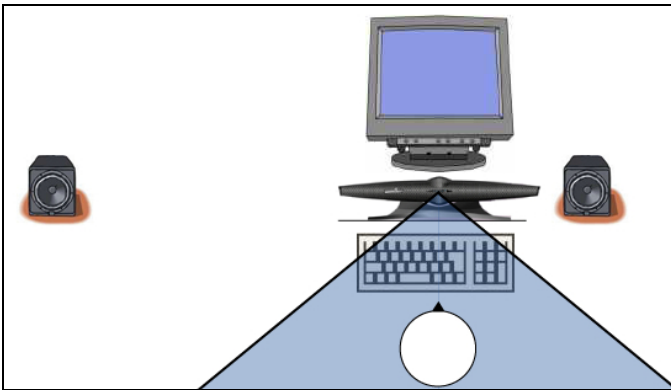

This figure shows how the Voice Tracker can be set up by the front conference room wall. Using this setup ensures that all participants are within the field of view.

Positioning the Voice Tracker for personal use

To use the Voice Tracker as a personal communication device, place the Voice Tracker under or on top of the computer monitor, facing the user. Place the speaker in line with the long axis of the Voice Tracker to assure that the speaker is well outside the field of view. This setup ensures that the sound you hear from the speaker is not picked up by the Voice Tracker, which can cause interference.

If you have two speakers connected to your computer that are broadcasting the meeting audio, place them asymmetrically, so the sound coming from the speakers does not interfere with Voice Tracker's field of view.

When using the Voice Tracker for personal use, make sure that the speakers are placed asymmetrically.
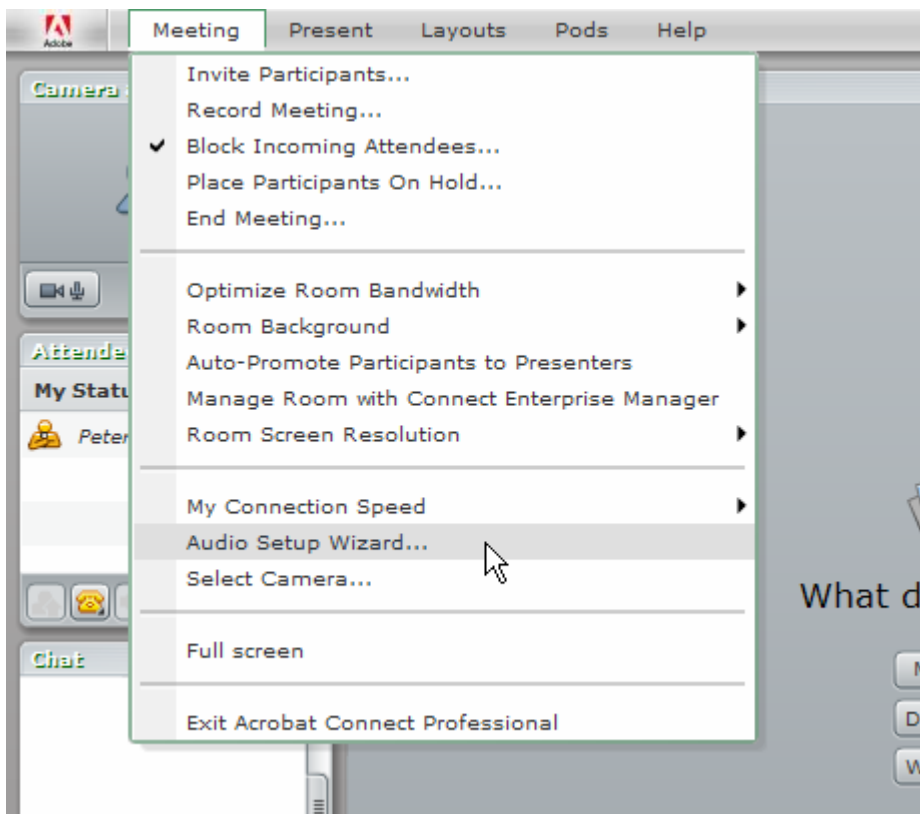
To confirm that the speaker is positioned correctly, play some pre-recorded audio form your computer and adjust the position of the speakers around until the green lights on the front of the Voice Tracker stay off. When these lights are off, the Voice Tracker is not capturing and broadcasting the audio heard through the speakers.

Using the Voice Tracker with Adobe Acrobat Connect Professional

The Voice Tracker's algorithms run on an internal digital signal processor. There is no software to load; the Voice Tracker is truly plug-and-play. To use the Voice Tracker with Acrobat Connect Professional, a meeting host must connect the Voice Tracker to the Line In jack on a computer before entering the meeting. After the host enters the meeting, simply start VoIP audio by clicking the Start my Camera and Voice button in the Camera and Voice pod. The Voice Tracker should be the default selection for the audio input.

The Voice Tracker can also be connected to the host's computer using a USB adapter, which bypasses the sound card. The USB adapter is especially important if your computer does not have a Line In jack, which is the case with many laptop computers.

If you want to ensure that you have an optimal audio experience, it's important that you tune Acrobat Connect Professional VoIP audio to your specific environment. To do this, go to the Audio Setup wizard by selecting Meeting > Audio Setup Wizard… and make sure that the Acoustic Magic device is already connected to the computer that is running the wizard. Simply follow the steps in the wizard to tune the VoIP settings with the Voice Tracker.

You should use the Audio Setup wizard to configure Acrobat Connect Professional VoIP audio to work with your specific environment before the meeting starts.

Where to go from here

The Voice Tracker costs $249 ($289.95 with the USB adapter). Although a single headset can be less expensive than the Voice Tracker, if you need multiple headsets, the Voice Tracker has a distinct cost advantage. You can set up a single Voice Tracker in a conference room and then any user can take advantage of this one device. In addition, the Voice Tracker eliminates the need for headsets, which provides a much more natural experience for meeting participants who are already used to traditional speakerphones.

Complete setup instructions for the Voice Tracker can be found in the following file:
http://acousticmagic.com/products/VoiceTrackerInstructions.pdf

The Voice Tracker can be purchased directly from Acoustic Magic's online store:
www.acousticmagic.com/Merchant2/merchant.mvc?Screen=PLST

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To learn more about Acrobat Connect Professional visit:
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About the author

Bob Feingold is the founder of Acoustic Magic. He has managed major divisions of high-tech companies such as Philips and Teradyne and has a BS degree from Columbia in Engineering Physics, an MS from the University of Pennsylvania in Physics, and an MBA from Harvard.