

Audio Choices in Adobe® Connect™

When and how to use integrated audio features most effectively

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Web conferencing has emerged as a critical communication tool for today's organizations, rapidly becoming as essential for business professionals as email and voice communications. However, some existing web conferencing solutions have fallen short of the ease and effectiveness of in-person meetings: They're complex and difficult to use, and they lack real-world functionality. In addition, without reliable, high-quality audio, web meetings just don't work.

Adobe Connect is different because it allows business users to easily communicate and interact with geographically dispersed colleagues and customers in real time using high-impact presentation and collaboration tools, including screen sharing, multipoint video, integrated telephony, and white boarding. These capabilities make web conferencing a viable way to work more effectively.

Adobe Connect leverages the ubiquitous Adobe Flash® Player for instant, hassle-free access to Adobe Connect meetings with anyone, anywhere. It lets users create personalized, easy-to-remember URLs that never change. Meeting participants can share their screens for collaborative work sessions with colleagues or one-on-one meetings with customers at the click of a button. Adobe Connect makes it easy to engage small and large audiences with video, animations, and software simulations, whether in live events or meetings recorded for later, on-demand viewing. An intuitive interface makes it simple to organize meeting workflows and customize the look and feel of meetings and events to reflect corporate branding.

Today, Adobe Connect users have a variety of technology options to enable audio communication with web conferences. These options include Voice over IP (VoIP) communication, advanced integrated telephony, Universal Voice, and hardware-assisted options.

This white paper provides an overview of the options in the meeting user interface (UI). It explains which features work with which audio provider partner, covers use cases that represent a majority of web conferencing scenarios, and outlines the best practices to consider. For additional information, visit the Adobe Connect Users Group at www.connectusers.com.

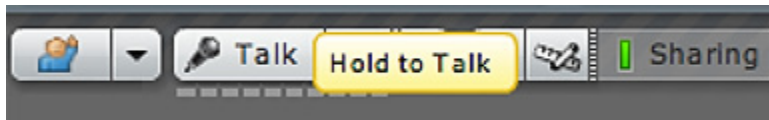
Adobe Connect VoIP

VoIP-based conferencing is similar to telephony-based audio conferencing in that it allows two or more individuals to communicate in real time. But unlike audio conferencing, VoIP communication travels exclusively over IP networks. Meeting participants use their computer microphones and speakers—or external microphones and speakers connected to the PC—to communicate with other participants, without any telephony infrastructure required. Adobe Connect provides high-quality VoIP out of the box, with features such as echo and noise cancellation, silence detection, and an easy audio setup wizard.

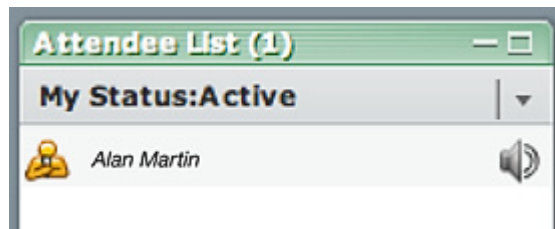
VoIP in the Adobe Connect UI

In the Adobe Connect UI, VoIP is available in two modes: push-to-talk and hands-free.

In push-to-talk mode, each participant can click and hold the Talk button to communicate with other participants. The advantage of push-to-talk mode is that it minimizes echoes and other potentially disruptive elements that participants might experience when multiple people have live microphones or attempt to talk at the same time.

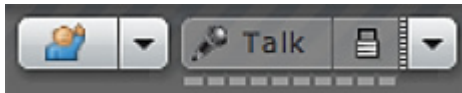


In push-to-talk mode, participants click and hold the Talk button to speak to other participants in a manner similar to using a walkie-talkie.

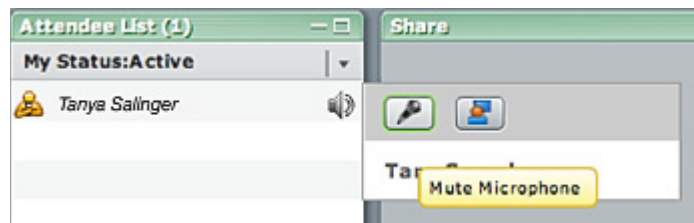


A speaker icon next to a user's name indicates that the user's microphone is actively broadcasting to meeting participants.

In hands-free mode, VoIP is "locked" in a state that allows anyone to speak at any time. The application automatically determines who is speaking and attempts to cancel out the other background audio that might be a part of the soundscape. This mode is effective when conducting general collaboration meetings.



For hands-free talking, users click the lock to the right of the Talk button, and click it again to exit hands-free mode.



In hands-free mode, a user's microphone actively broadcasts continuous audio. Users can temporarily mute the microphone by clicking the microphone button next to their name in the attendee list.

In both modes, the speaker's voice is captured by the application and streamed to all other participants. This stream is sent through the Adobe Connect Enterprise Server along with other data about the meeting, such as video, screen sharing, or chat messages. An advantage to this approach is that the audio is natively synchronized with events within the meeting room, resulting in synchronized meeting recordings and archives.

Special considerations when using VoIP

High-fidelity, full-duplex audio broadcasting within Adobe Connect doesn't incur any additional cost per attendee. But before using VoIP, meeting organizers should ensure the following items for all participants:

- **Comfortable with VoIP**—Although VoIP has been around for years, some users might not be familiar using it as their primary method of audio communication during a live event.
- **Necessary hardware**—Your audience should have internal or external speakers and microphones. When using VoIP, it's a good idea to include a note about the audio requirements in your meeting invitation.
- **Sufficient bandwidth**—Consider the potential bandwidth impact that VoIP might have on your meeting and each participant's experience.

For the best experience, all participants in a VoIP-based meeting should install the Connect Meeting Add-in. This is usually straightforward, but some IT policies might prevent installing the Add-in. If possible, verify that all participants are able to install the Add-in.

Universal Voice

In certain situations, some attendees might want to use telephony-based audio while others would like to use VoIP. This is a fairly common scenario in web conferencing meetings or seminars that span countries. A toll-free number might be available to callers within the United States, but only toll numbers are available to participants in other countries. Providing participants with the option to choose either telephony-based audio or VoIP for the same meeting is best when you are holding an important or large event such as a customer-facing webinar, where you don't have a lot of insight into the connection speeds and configurations or your attendees.

Starting with version 7.5, Adobe Connect offers Universal Voice, a feature that streams virtually any telephone conference into an Adobe Connect meeting. It creates a one-way bridge between the telephone conference and the VoIP functionality of Adobe Connect. Adobe Connect lets you integrate with any audio provider or teleconferencing platform. You can record telephone-based audio along with your web conference and then stream the telephone-based audio to VoIP participants. Participants can choose to dial in with their phones or listen via their computer speakers. Giving participants this choice can help reduce telephone charges for the meeting participants and host because fewer people are dialing in. In addition, hosted customers do not need to purchase new services or hardware nor worry about incompatibility. (On-premise customers do need a Session Initiation Protocol (SIP) gateway.)

Using Universal Voice offers the following benefits:

- **Reaching a wider audience**—Because you can offer both connection methods, participants can choose the audio option that best suits them.
- **Flexibility**—Meeting hosts can use any audio-conferencing provider, not just those that are Adobe partners. They can even use multiple providers.
- **Reduced phone toll charges**—Participants can opt to use VoIP rather than dialing in and possibly incurring telephone charges.
- **Instant availability**—After the meeting, the recording of the event is available immediately. Post-processing to sync up the audio with the event is not needed.

Take note

Universal Voice lets participants decide whether they want to dial in or listen over their computer speakers. However, Universal Voice version 7.5 creates a one-way bridge from the telephone conference to VoIP, so anything said over the telephone can be heard by all participants, but anything said using VoIP is heard only by those on VoIP.

Universal Voice in the Adobe Connect UI

When setting up a conference, the meeting host uses the wizard to configure any Universal Voice audio provider. The host can set up the conference number, dual-tone multi-frequency (DTMF) call tones, and pauses for dialing into the conference.

Provider Information Edit Cancel

Provider Name: Meeting Place
Provider Type: User Configured UV Audio Provider

Dial-In Steps:

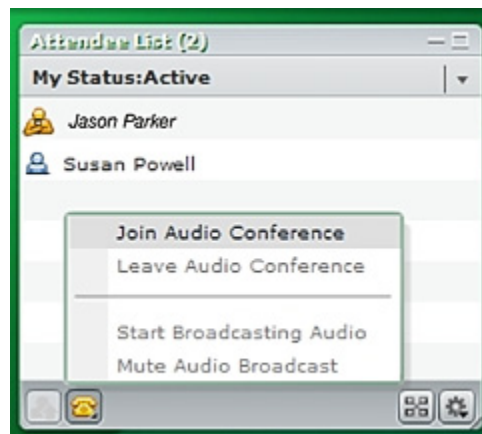
Action	Label	Key/Number	Display In...	Input Type
Conference N...	Label	15555555555	False	Text
Delay (ms)	Label	2000	False	Text
DTMF	Label	1	False	Text
Delay (ms)	Label	500	False	Text
DTMF	meeting id	Defined By User	True	Text
DTMF	Label	#	False	Text

Dial-In Numbers:

Location	Number
San Francisco	69900
Local	555-555-5555
Toll Free	555-555-5555

Provider Status: Enabled

A meeting host can configure Adobe Connect to use any audio provider.



A meeting host can join the meeting to the conference, leave the conference, or start broadcasting audio. Meeting participants see options that allow them to listen to the broadcast or mute the broadcast.



In Universal Voice, a meeting host can record telephone-based audio along with the web conference.

For more information about the audio options and their corresponding use cases, see page 9.

Take note

Of all audio options, advanced integrated telephony offers the tightest integration with the Adobe Connect meeting experience, including complete control of the telephone conference directly from the meeting interface.

Advanced telephony integration

Telephony is, by far, the most broadly accepted form of audio conferencing. Because geographically dispersed individuals require only a telephone to participate in a web conference in real time, there are very few barriers to an integrated web and audio conferencing experience. Integrated recording capability ensures a successful archiving experience when audio and web conferencing activity are synchronized.

Adobe has partnered with several audio-conferencing providers to provide advanced call features that give meeting users greater control over the complete audio and web meeting experience. Call controls, audio recording options, participant management, breakout rooms, and operator assistance are all available from Adobe's audio partners.

Some of the benefits of advanced audio telephony integration include:

- A unified workflow for scheduling, notifying, and attending web and voice conferences
- The ability to completely control the teleconference call through the web conference interface
- The convenience of recording a single, synchronized archive of the Adobe Connect meeting and audio from the teleconference

Visit www.adobe.com/products/acrobatconnectpro/partners/#audio for a complete list of audio teleconferencing partners, and see page 7 for details about which partners support which features.

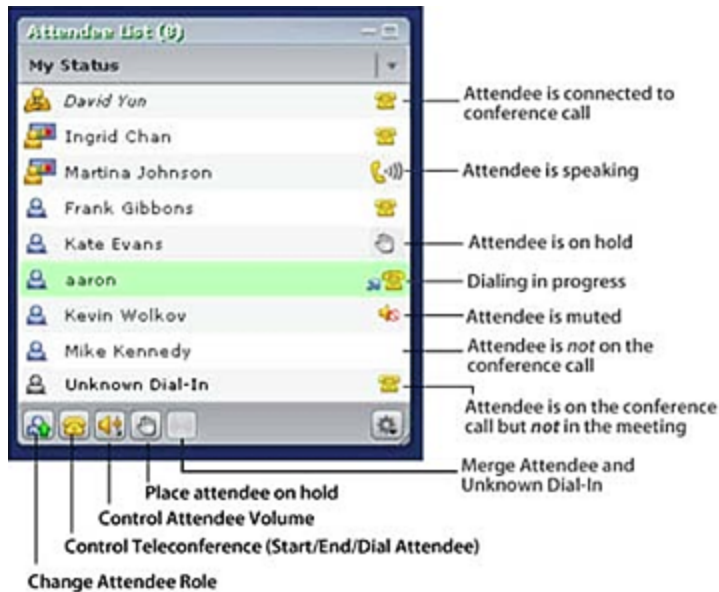
Advanced integrated telephony in the Adobe Connect UI

When setting up your meeting in the Create Meeting wizard, choose, Include Audio Conference Details with This Meeting. (If this option is not available, you might need to set up your profile with your teleconference information. Contact your Adobe Connect administrator for more details on including a supported teleconference system in your account profile.) Teleconference information is included in the meeting invite, and participants can also have the teleconference dial their phone directly without entering any passcode information. The meeting automatically records audio from an integrated teleconference. To hear the audio from the meeting, all participants must be connected to the teleconference.

Hosts and participants have many convenient call controls in the Adobe Connect UI.

Call controls for meeting hosts:

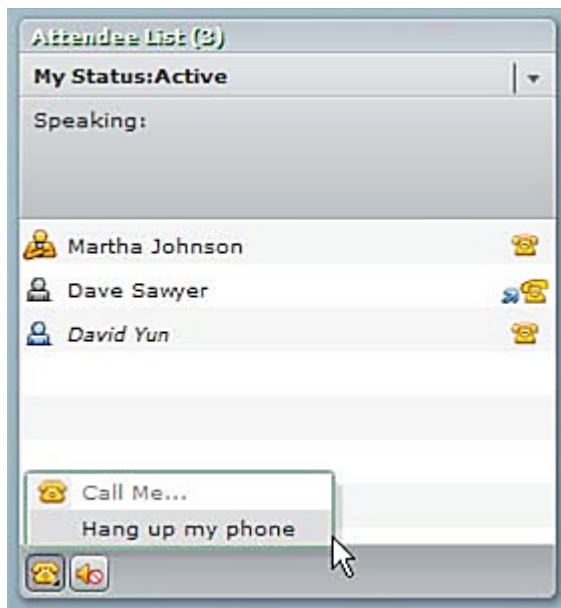
- **Start or stop the teleconference**—The host can initiate and terminate a teleconference with a click.
- **Synchronized web and voice recording**—The "record meeting" function records the web conference and teleconference simultaneously to create a single, streaming archive of the meeting.
- **Dial-out to participants**—The meeting host can dial out to existing participants in the web conference or add phone-only participants and call them to join the conference.
- **Change volume for selected participants**—The meeting host can increase or decrease the volume level for each attendee.
- **Mute participants**—The meeting host can mute all or selected meeting participants.
- **Put participants on hold**—Meeting participants can be put on hold if the host wants to temporarily close the floor to participants.
- **Disconnect participants**—The host can remove a phone participant from the meeting with one click.



The meeting host has several call controls in advanced integrated telephony.

Call controls for meeting participants:

- **Call me**—Meeting attendees can enter their phone number and have the teleconference call them back, instead of having to dial the conference number and enter the passcode through the phone.
- **Mute me**—Attendees can mute and unmute their phone lines.
- **Who's speaking indicator**—Attendees don't have to wonder who's speaking in the teleconference. A visual indicator next to the attendee's name makes it easy to identify speakers.



Meeting participants have several call controls in advanced integrated telephony, including call me, mute me, and hang up my phone.

Adobe Connect includes a telephony integration software development kit (SDK), which allows for custom development. Assuming your telephony bridge or service has published APIs, the SDK allows you or an authorized partner to build a connector between Adobe Connect and the telephony system. APIs allow for the management of the conference through call control, synchronization of recording events during the meeting, and the convergence of audio and web recordings on the Adobe Connect server.

Special considerations when using advanced integrated telephony

Before using telephony, meeting organizers should take into account the following points:

- **Cost to the organizer**—Audio-conferencing systems require users to pay additional fees for the service or technology.
- **Cost to users**—For geographically dispersed, international locations, telephone-related fees can be quite expensive for the meeting host (if using toll-free numbers) or the meeting participants (if they required to dial long distance).
- **Limited capacity**—Some teleconference audio providers support a fixed number of participants on a call. Ensure that your provider supports your required number of dial-ins in advance.

Features by audio conferencing provider

Adobe has partnered with the following leading global teleconferencing providers to offer integration between web and voice conferencing:

- Avaya
- InterCall
- MeetingOne
- PGI (Premiere Global Services)

The following chart displays which Adobe Connect features are integrated with which audio-conferencing provider adaptors.

Feature	Avaya	InterCall	MeetingOne	PGi
Call management				
Start and stop audio conference	•	•	•	•
Integrated web and audio recording	•	•	•	•
Who's speaking	•	•	•	•
Meeting participant controls				
Dial-out to self	•	•	•	•
Mute/unmute me	•	•	•	•
Roster reconciliation (token merge)	•	•	•	•
Meeting host controls				
Dial out to participant	•	•	•	•
Mute/unmute	•	•	•	•
Hang up	•	•	•	•
Merge	•	•	•	•
Breakout rooms	•	•	•	•
Disable participant dial-out	•	•	•	•
Disable dial-out	•	•	•	•
Mute/unmute conference			•	•
General features				
Volume control				•
Hold user	•	•	•	•

Hardware options

Meeting organizers can use a number of third-party devices to integrate VoIP and telephony and automatically capture audio or to enhance the quality of event recording. However beginning with Adobe Connect 7.5, you no longer need to use hardware to integrate VoIP and telephony because Universal Voice enables this integration out of the box.

Improving recorded audio quality

Many customers use Adobe Connect to broadcast live, in-person events from venues such as convention centers or conference rooms. There are a number of best practices that can help ensure an optimal experience. One such best practice is using a dedicated computer with an audio capture card. Otherwise, meeting hosts might use the host computer's internal microphone, often resulting in poor audio quality.

The Shure X2u XLR-to-USB Signal Adapter (www.shure.com/ProAudio/Products/Accessories/us_pro_X2u_content) allows users to take a high-quality audio feed from the mixer and go straight into the computer with a high-quality signal via USB. With this device, users don't have to depend on the quality of the computer's sound card or internal microphone. No audio quality is lost through the conversion, and the device supports professional XLR inputs and provides phantom power for standalone microphones. It works with both Windows® and Mac OS, and no drivers are required.



The Shure X2u XLR-to-USB Signal Adapter dramatically improves the quality of recorded audio and is ideal for large, live, in-person events.

Using hardware to integrate VoIP and telephony

Customers who want to use hardware to integrate VoIP and telephony as opposed to using Universal Voice, the out-of-the-box hybrid approach first introduced in Adobe Connect 7.5, have a few options.

Simple method—Presenters dial into the teleconference at the same time they broadcast their voice using Adobe Connect VoIP with a headset or microphone. They are essentially transmitting audio via the phone and the headset at the same time. This is the least sophisticated method.

Advanced method—A more sophisticated method that is easier for situations with multiple presenters involves a third-party device that connects the telephone to the computer's audio input. An example is the THAT-2 from JK Audio. Using this method, a host calls into the teleconference and uses a device to send the teleconference audio into the computer's line-in input. Presenters dial into the teleconference, and the host broadcasts the teleconference audio over Adobe Connect using the Talk button in the Layout Bar. This method allows a single person to manage the simulcast and reduces the complexity for presenters. It is important to note that everyone speaking on the call should be dialed into the teleconference. Think of the VoIP as a one-way stream, where users can hear audio but not speak. To view a tutorial on how to use the THAT-2 devices with Adobe Connect, visit www.connectusers.com/tutorials/2009/03/that2/index.php.

Take note

When playing back a meeting recording in which both Adobe Connect Audio broadcasting and integrated teleconferencing were used simultaneously, the recording plays back the teleconferencing audio and not the VoIP audio when both streams are present.



The THAT-2 device by JK Audio allows you to bridge telephone audio with Adobe Connect VoIP. This device is not necessary for customers using the Universal Voice feature introduced in Adobe Connect 7.5.

Professional method—If you are willing to invest more money in a combined VoIP and telephony solution, using a capture card and mixer provides the highest level of control and the best possible audio quality. The Adobe Connect Event Services team uses ViewCast Osprey 230 capture card teamed with a Polycom mixer. You use the software included with the Osprey card for the audio control, in concert with your computer and meeting controls for optimal performance. To learn more about the Osprey capture card, visit www.viewcast.com/products/osprey-230.

Adobe Connect Event Services—If getting great audio is important for one or more of your meetings but you don't want to invest in an advanced solution, the Adobe Connect Event Services team offers you the ability to broadcast audio from any telephony solution to VoIP using their state-of-the-art equipment. The services can be purchased either on a per-event basis or for multiple meetings in a series. To learn more about Adobe Connect Event Services, visit www.adobe.com/products/acrobatconnectpro/solutions/marketing/eventservices/ or contact your Adobe sales representative.

Use cases

Adobe Connect is a flexible web conferencing solution that supports a variety of scenarios. This white paper focuses on the audio communication requirements of the three common use cases, virtual classrooms, web conferencing, and sales and marketing seminars.

Virtual classrooms

- Events can be live or on demand.
- Live sessions are similar to in-person classroom environments, which sometimes involve one presenter and many learners, and sometimes consist of collaboration among participants.

Web conferencing

- Events involve two or more individuals collaborating, but generally not more than 50 participants.
- The interactions are similar to in-person interactions in a conference room.

Sales and marketing seminars

- One individual presents to many participants.
- These events are similar to lectures or seminar-style, in-person meetings.

When determining which conferencing option is best, the two biggest considerations are the size of the meeting and the desired level of interactivity. The following table provides an overview of the strengths and weaknesses of the different technology options for supporting audio communication.

Use Case	Telephony-based	VoIP-based	Universal Voice
Virtual classrooms	<p>Pros:</p> <ul style="list-style-type: none"> • Most widely accepted form of audio communication; reduces user confusion, lost participants, and need for technical support • Integrated call control provides accessible management of the audio portion of the meeting • Provides greater call control within Adobe Connect meeting interface 	<p>Pros:</p> <ul style="list-style-type: none"> • Most cost-effective way to deliver audio, especially when a majority of participants do not need to talk 	<p>Pros:</p> <ul style="list-style-type: none"> • Gives users a choice of communication technology • Reduces user costs associated with the meeting • Enables use of any audio provider, even multiple providers • Event with integrated audio is available
	<p>Cons:</p> <ul style="list-style-type: none"> • Can incur additional cost of service or technology to run audio conference • Might require multiple systems to schedule and manage 	<p>Cons:</p> <ul style="list-style-type: none"> • Might encounter participants who are uncomfortable with VoIP • Users must have functioning computer speakers to listen and microphones to interact • Sufficient bandwidth is required to ensure a high-quality experience 	<p>Cons:</p> <ul style="list-style-type: none"> • People listening via broadcast cannot respond to those on the telephone • Anything discussed among the VoIP participants is not recorded
Web conferencing (one-to-one meetings and few-to-few meetings)	<p>Pros:</p> <ul style="list-style-type: none"> • Uses technology everyone is familiar with • Provides greater call control within Adobe Connect UI • Easy to use 	<p>Pros:</p> <ul style="list-style-type: none"> • Most cost-effective way to deliver audio • Sufficient bandwidth is required to ensure a high-quality experience 	<p>Pros:</p> <ul style="list-style-type: none"> • Gives users a choice of communication technology • Reduces user costs associated with the meeting • Enables use of any audio provider, even multiple providers • Event with integrated audio is available immediately after event
	<p>Cons:</p> <ul style="list-style-type: none"> • Can incur additional cost of service or technology to run audio conference • Might require multiple systems to schedule and manage 	<p>Cons:</p> <ul style="list-style-type: none"> • Might encounter participants who are uncomfortable with VoIP • Participants must have functioning computer speakers to listen and microphones to interact 	<p>Cons:</p> <ul style="list-style-type: none"> • People listening via broadcast cannot respond to those on the telephone • Anything discussed among the VoIP participants is not recorded
Sales and marketing seminars (few-to-many meetings)	<p>Pros:</p> <ul style="list-style-type: none"> • Most widely accepted form of audio communication; reduces user confusion, lost participants, and need for technical support • Integrated call control provides accessible management of the audio portion of the meeting 	<p>Pros:</p> <ul style="list-style-type: none"> • Most cost-effective way to deliver audio to a large audience when a majority of participants do not need to talk • Broadcasting in one-to-many is the default and doesn't require operator support to manage communication 	<p>Pros:</p> <ul style="list-style-type: none"> • Gives users a choice of communication technology • Reduces user costs associated with the meeting • Enables use of any audio provider, even multiple providers • Event with integrated audio is available immediately after event
	<p>Cons:</p> <ul style="list-style-type: none"> • Large, event-style telephony can be costly • Often requires operator assistance due to large number of participants 	<p>Cons:</p> <ul style="list-style-type: none"> • Might encounter participants who are uncomfortable with VoIP • Participants must have functioning computer speakers to listen and microphones to interact • Sufficient bandwidth is required to ensure a high-quality experience 	<p>Cons:</p> <ul style="list-style-type: none"> • People listening via broadcast cannot respond to those on the telephone • Anything discussed among the VoIP participants is not recorded

Summary

Adobe Connect provides a variety of audio integration options designed to address your specific use cases. The scenario, the ability of participants to leverage VoIP, the cost-comparisons, and the features required all play a role in determining the appropriate communication vehicle used with Adobe Connect. Regardless of the approach, integrated audio with web conferencing results in more productive and effective collaborations and meetings. Integrated recordings, in-meeting call control, and integrated meeting invitation capabilities all contribute to the ease with which meeting hosts and participants can interact. By providing these capabilities in an integrated fashion, Adobe Connect helps ensure that the transition toward broader web conferencing adoption is as smooth as possible for users.

For more information

www.adobe.com/products/acrobatconnectpro/partners/audio_teleconferencing_solutions.html



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