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Recording Conference Calls on a Budget

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The audio conferencing system for the corporation in which I was working did not support recording calls as part of its standard service. This article explains how to do your own conference call recordings at minimal cost.

Introduction

Changes to the conference calling system had removed a feature that was vital to many global teams. It was no longer possible to record calls on the standard conference call bridge lines. Under the new system, to record a conference call you had to order the recording, which is an additional cost over and above standard conference calling, and use a different number for each call.

The change in functionality may have been part of a plan to reduce overall costs. Unfortunately, it also eliminated a vital tool for global teams.

It is impossible to find a meeting time that is good for team members in all regions (Americas, Europe, and Asia Pacific). Whatever time you choose ends up being the middle of the night for somebody. Various solutions have been tried: adjusting the starting time of the meeting, alternating meeting times to accommodate different regions, holding two or three separate meetings, one in each of the different time zones. No solution is perfect. But one of that has proved best in practice is to record the team meetings so those who cannot attend in person can listen to the meeting later and initiate email discussions for any topics where they have input or feedback.

However, the new conference call system does not accommodate this weekly or biweekly recording. Besides the inconvenience of changing dial-in numbers for each meeting, few organizations can justify the ongoing expense of the new service charge for recordings.

The purpose of this article is to describe how to setup and operate your own conference call recordings using the standard bridge lines at minimal cost.

Note: Laws vary by state and by country, but in general it is illegal to record telephone calls without the participants' knowledge. Be sure to notify everyone on the call that it will be recorded before starting the recording.

Evaluating the Alternatives for Do-It-Yourself Recording

If call recording is not a standard feature of the conference lines your company uses, the alternative is to record the calls yourself. There are essentially three ways to do this:

1. Use a telephone line splitter and a PC with a voice modem to record the call through the modem.
2. Use a telephone tap that connects to the handset and record the call through the PC's microphone jack

3. Use a telephone tap that connects between the phone line and the phone and record the call through the PC's microphone jack.

Option #1 is cheapest in terms of hardware; a telephone line splitter is small, unobtrusive and costs between \$2-4. And most modern PCs include a built-in voice modem. However, you cannot use the voice modem as audio input as is. You must purchase a commercial or shareware program that will cost you \$30-50. But the real flaw in option #1 is quality: there is so much noise introduced via the modem that the recording is all but useless when you get done.

Option #2 is better. The phone tap is still relatively cheap (\$15-20), connects between the phone and the handset, and most importantly connects directly to your PC's microphone jack so you can use any standard recording software to do the actual recording. The audio quality is acceptable (far better than option #1). The only drawback to this option is that you **must** have a phone with a handset. It cannot be used on wireless handsets or with a headset – such as I use – since the headset turns off audio to the handset.

Option #3 is more expensive than #2 (\$25-35) and has essentially the same results quality-wise. However, the major advantage of option #3 is that it connects between the main line and the phone itself, rather than to the handset. This has two benefits: you can use it with any landline phone, including wireless, and you can use a headset without interfering with the recording. Another minor advantage is that since it can connect anyway before the phone, it can be fit out of the way under the desk or behind a shelf so as not to clutter up the desk and interfere with using the phone itself.

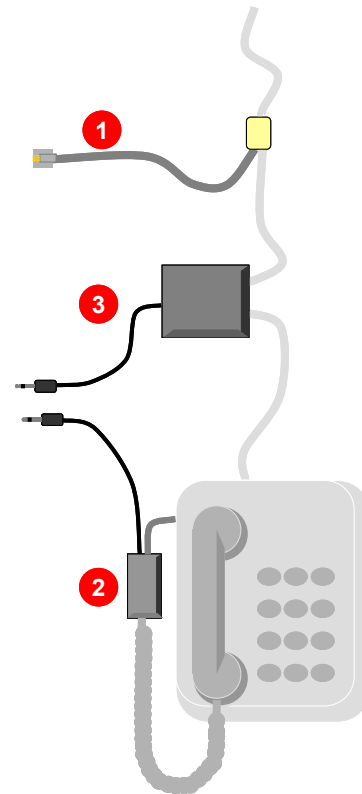
These benefits were sufficient to lead me to choose option #3. There are more expensive options (in the \$200 range) that are supposed to resolve some of the noise and volume control issues I discuss later. But remember, this is phone recording on a budget, so option #3 seems to be the best in the under \$100 category.

Everything You Will Need

So, having chosen how to do the recording, the rest of this article will describe exactly what you need and how to set it up. What you need to do the recording is:

- A telephone tap that connects between the phone line and the phone itself
- A software application that can record audio and export to MP3
- A landline phone
- A PC with a standard 2.5mm microphone input jack

Several vendors sell telephone recording "taps". Just because it was convenient, I purchased mine from RadioShack. However, you can find several others available online. Similarly, for doing the actual recording, there are any number of sound



recording applications you could use, such as Adobe Audition or Cakewalk. To keep it cheap, and also because I actually like its simplicity, I recommend the freeware tool Audacity.

If you use Audacity, you will also need to get the LAME DLL to do the MP3 encoding for export. There are lots of other file types you could use to export your recordings, but for general usefulness and file size, I recommend MP3.

So assuming you already have a PC with an audio input jack and a landline phone, the items I recommend are:

- RadioShack Telephone Recording Control (item #43-228)
- Audacity (freeware, available from <http://audacity.sourceforge.net/>)
- LAME_enc.DLL (available from <http://www-users.york.ac.uk/~raa110/audacity/lame.html>)

The following sections example how to set up and configure these specific tools and how to use them to record conference calls.

Setting Up to Record Telephone Calls

The following are the steps you need to do to prepare to record telephone calls using the equipment discussed.

1. Plug in your phone tap between the phone line and the phone

The phone tap is easy to install. Insert it between the phone line and your telephone by unplugging the phone cord from the back of the phone, plugging the line into the controller, then plugging the phone jack from the controller into the back of the phone. If you are using the RadioShack Telephone Controller, there is a switch to alternate between recording and playback. Make sure the switch is set to record.

2. Download and install Audacity

Audacity is an open source audio recording program. You can download it from <http://audacity.sourceforge.net/>.

3. Download and unzip the LAME encoder DLL

For copyright reasons, Audacity does not include MP3 export "out of the box". Instead, you must download and install the LAME encoder separately. You can find LAME here: <http://www-users.york.ac.uk/~raa110/audacity/lame.html> Once you download it, unzip the DLL file and remember where you put it. (I put it in C:\Program Files\Audacity\ so it would be easy to find.) You will need to reference it in the next step.

4. Configure Audacity

Audacity is easy to use. But there are two steps you can take to optimize the recording process. You only need to perform these steps once.

A. Locate the LAME encoder

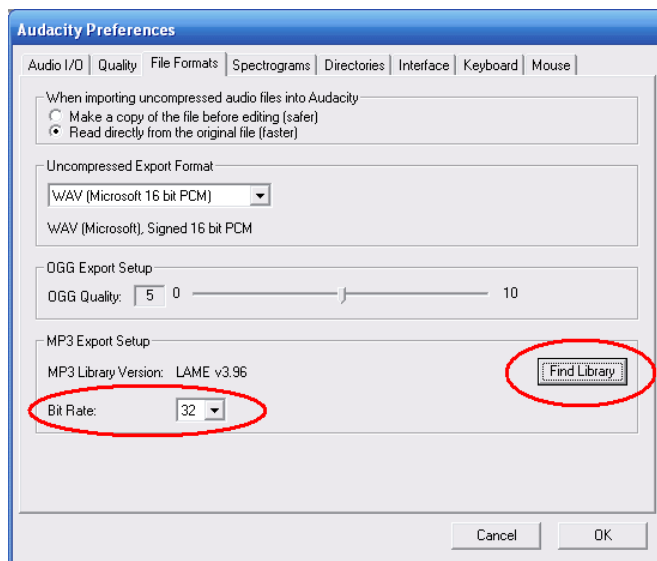
The first things you should do is configure Audacity so it knows where

the LAME encoder is so it can export MP3 files. Start Audacity, then select Preferences... from the Edit menu. Select the File Formats tab and you will see a Find Library button in the MP3 section. Click on the button and locate the LAME_enc.DLL file you installed in step #3.

B. Set the MP3 bit rate

MP3 files can be recorded at varying bit rates. The higher the bit rate, the larger the resulting file. The lower the bit rate, the lower the quality of the sound. The goal is the balance sound quality versus file size to reach a balance that is most effective.

Phone calls are fairly low quality to begin with, so very high bit rates (anything over 56bps) have no noticeable impact on quality but will significantly increase the file size. By trial and error, we determined that 32bps is the best compromise for the bit rate, resulting in acceptable quality and file sizes of approximately 15mb for every hour of recording. Lower bit rates will have a noticeable impact on quality to the point of being unlistenable.



To set the bit rate, use the pull down menu in the MP3 section of the same "File Formats" tab used to locate the LAME encoder.

Click OK when you are done.

Recording the Call

Now you are ready to record your conference calls.

1. Plug the phone tap into the microphone input jack on your PC.

In the case of the RadioShack Telephone Controller, there are two audio plugs, one larger than the other. Plug the larger (2.5mm) plug into your PC microphone input jack. (The smaller plug is used for playback but is not used in this situation.) Note that you do not need to disassemble the controller

setup each time. It can stay plugged into the phone without interfering with normal use. You can just plug and unplug the audio cable as necessary.

2. Start your conference call.

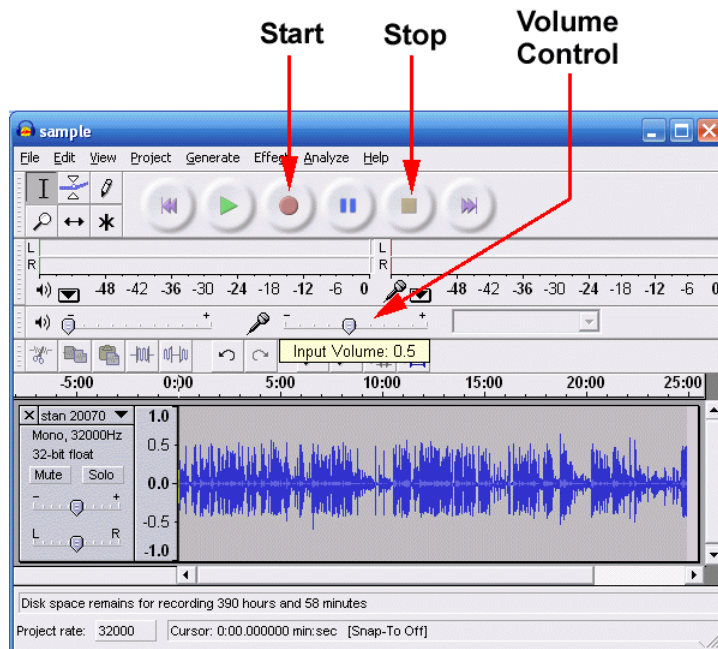
Start (or join) your conference call as normal.

3. Tell the participants that the call will be recorded

As mentioned earlier, in many places there are laws against secretly recording phone calls. So be sure you notify the participants before starting the recording.

4. Start Audacity and Start the recording.

Start the Audacity application. The program has a simple interface like a tape recorder or VCR. Press the round red button to start the recording.



5. Adjust the input volume.

One of the problems with recording phone conversations is that the volume of the other speakers is quite low. So the first thing you want to do is increase the input volume in Audacity. Use the slider below the microphone icon to turn the volume up. In General, I found .6 to be the best recording volume when others are speaking.

On the other hand, your own voice is far louder than anyone else's in the recording. So if you will be presenting on the call, I recommend turning the input volume down to .4 while you are talking. This records your own voice well, but will still capture questions or comments from other participants. When you are done with your presentation, you can turn the input volume back up.

Also, be sure to mute your phone whenever you are not talking. Muting your phone significantly reduces the noise level on the line and improves the clarity of the other participants.

Watch the red meter above the input volume control. This meter should move as others are talking. If you are not seeing much movement, you may be recording too quietly and need to turn the volume up. If, on the other hand, the meter is peaking out frequently, you probably have the volume up too high.

6. Repeat that the call is being recorded.

It is a good idea to mention again that the recording has started. This both notifies any presenters that they can start their presentation or discussion, and it makes sure that the recording itself captures notification to the participants that the meeting is being recorded.

7. When the call is over, stop the recording.

To stop the recording, simply press the square yellow stop button.

8. Export the recording to MP3.

When your recording is complete, go to the File menu and select Export As MP3... You will be asked to select a location and file name. Then you will be given the option to enter information about the recording. The fields are designed for describing music (album, artist, etc.) however, you can use them for describing audio calls as well. If you do, that information can help users who use the file to understand what it contains.

There are no rules, but I suggest using the album field for the name of the meeting and comment for the date. If the call is a presentation, use the artist field for the name of the presenter and the title field for the title of their presentation.

Finally, there is a pull-down menu for genre. The easiest thing to do is choose *Other* since it indicates that the recording is not music and it is easy to find without having to scroll.

9. Post your recording and announce its availability.

Perhaps the hardest part of the process is deciding where to post the recordings. If you have an intranet web site, you can post the resulting MP3 file to that web site. If not, you will have to find a web site or file share where you can store it.

In many companies, you can't post MP3 files directly to SharePoint sites. However, if SharePoint is your only choice, you can compress the MP3 file into a ZIP file first. This is less than ideal because the listeners have to both download and unzip the file before listening to the recording. (Also, you do not gain any disk space by compressing the already compressed MP3 file.) But if you have no other choice, that may be acceptable. Also, it can be useful if you already have a meeting workspace and want to store the recording with other materials that were used for the meeting.

Finally, be sure to notify those who could not attend where to find the recording. It is also a good idea to tell them how long the recording will be available and to clean up old recordings on a regular basis.

Things to Watch Out For

A few things to keep in mind when recording phone calls directly from the phone line:

- Be sure to announce that the call will be recorded and ask if anyone objects
- Mute your phone whenever you aren't talking to reduce ambient noise
- Turn the volume down when you are speaking and back up when you are done
- Try to avoid placing the phone and audio cables next to or on top of other cables. Phone and audio cables are not shielded and proximity to electrical devices will create unwanted noise on the line.

Acknowledgment

This document was first published as an internal document within Hewlett-Packard. This revision is free for general use and distribution, assuming all acknowledgments remain in place.