

IMPROVING AUDIO WITH AUDACITY



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Audacity is a free, cross platform, open source audio recording program. Though it is nearly as powerful as many basic professional audio editing systems, it comes with no guarantee. However, there is a very active user base with Q&A forums that can provide valuable assistance. (see the support section of this book)

What Can You Do With Audacity?

Audacity is a program that manipulates digital audio waveforms. In addition to recording sounds directly from within the program, it imports many sound file formats, including WAV, AIFF, MP3, and Ogg Vorbis. PCM formats of 8,16,24 and 32-bits can be imported and exported.

- Cut, Copy, Paste, Delete, Silence, Duplicate, Split
- Apply plug-in effects to any part of a sound
- Built-in volume envelope editor
- Simple to complex align operations for tracks and groups of tracks

What Can't Audacity Do?

Although Audacity is a very powerful audio editor that works with an unlimited number of tracks of virtually unlimited size, it cannot do everything. It cannot:

- Record more than two channels at once on many systems. Some support for multitrack recording is included in version 1.2.4, but it does not support very many systems yet.
- Audacity currently supports displaying MIDI files if you import them using Import MIDI in the Project menu but does not support playing, recording, or editing MIDI files. It does not even support saving MIDI Tracks in a project file. The current functionality is useful to only a small group of people who are studying algorithms that relate MIDI data to audio data and simply wish to see the visual representation of the MIDI data and how it lines up with the audio data.

How Does It Work?

Audacity works with tracks that contain one audio file. This file is editable and all actions are undoable. Undos are instantaneous. Almost anything is undoable, including importing and deleting tracks!

There are no inserts, auxes or buses yet. (If you don't know what these are you probably won't need them!)

All versions can use LADSPA plug-ins, and the Windows and Mac versions can use VST plug-ins using the VST Enabler (a separate download). That is to say you can download separate pieces of software that will modify your project in ways the basic software cannot.

Editing functions include Cut, Copy, Paste, Duplicate (to new track at same timecode), Split (to new track at same timecode), and Silence.

A grid can be activated for each track, and snapping can be switched on as well.

What Makes Audacity Unique?

- Audacity is free and the source code is available under the GNU General Public License.
- Audacity is cross-platform - it runs on Windows (98 through XP), Mac OS X, and many UNIX platforms, including Linux. Previous versions worked with Mac OS 9.
- No limits on the number of tracks or the length of any track, except the size of your hard disk.
- Import almost anything: WAV, AIFF, Next/AU, IRCAM, MP3, and Ogg Vorbis files are supported natively, but Audacity will also open just about any uncompressed sound file and automatically deduce the format (using the Import Raw Data... feature).
- Audacity not only includes many high-quality effects built-in, but also lets you use LADSPA and VST plug-in effects. There are dozens of free, shareware, and commercial plug-ins online that do everything from Reverb to Noise Reduction.
- Audacity supports plug-ins written in the Nyquist programming language, a high-level language designed specifically for working with audio.
- Audacity acts like a non-destructive editor, providing multiple levels of undo, but it also writes changes made to the audio to disk, eliminating the need for complicated real-time processing.
- Label tracks allow you to annotate waveforms (for example, transcribing speech) and later export the waveforms to a text file.
- Powerful spectral features allow you to view waveforms as spectrograms or plot the power spectrum of any region of audio, and even export this data to a spreadsheet.
- Pitch-changing and tempo-changing effects

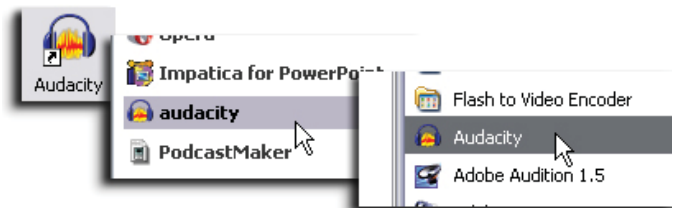
Setting Up Audacity to Record an Audio File

Before you begin recording: Remember that good audio starts with your environment. Noise in the world equals noise on your podcast. Ideally, headphones that cover your ears do the best job of isolating your recording sound from other audio distractions. Earbuds, like those supplied with Apple's iPod, make an affordable alternative.

Audacity 1.2.4 offers a solid complement of editing features with an interface simple enough for a novice. However, it does not natively output the MP3 format audio file you will need for distributing your podcast. This is easily fixed with another free, open source solution called the Lame MP3 encoder.

Launch Audacity 1.2.4

- 1) Double click on the desktop icon, the icon in the icon in the All Programs section of the Start menu
- 2) Go to Edit > Preferences > File Formats and click on the Find Library button in the bottom right hand corner, and browse to the location where the LAME file is located



Basic setup configurations

- 1) Connect your microphone to the microphone-in connection on the PC. Our mics are connected via a pink port on the front of the computer tower.
- 2) After you launch Audacity, make sure "Microphone" is selected as the recording source in the drop-down menu on the z.

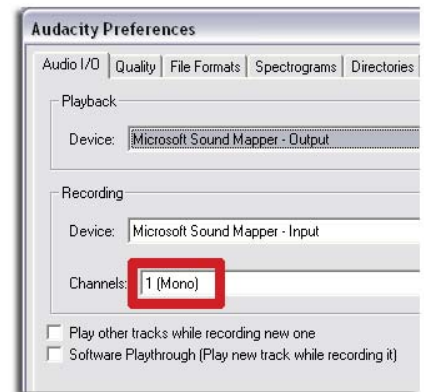


- 3) Open the Audacity Preferences window from the Edit menu. On the Audio I/O tab, verify that your sound card is selected as the device for both playback and recording.
- 4) In the Channels drop-down box under Recording, choose "1 (Mono)".

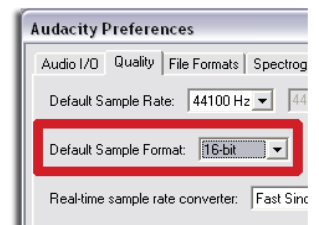
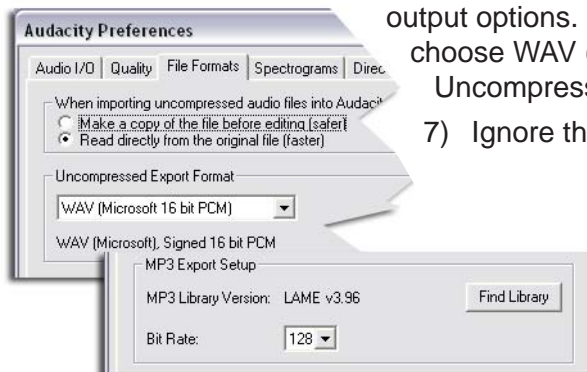
Unless you are using two microphones, the Stereo option simply duplicates the track, making the file size bigger without a resulting improvement to audio fidelity.

- 5) Switch to the Quality tab, and choose 44,100 Hz as the Default Sample Rate and 16-bit as the Default Sample Format.

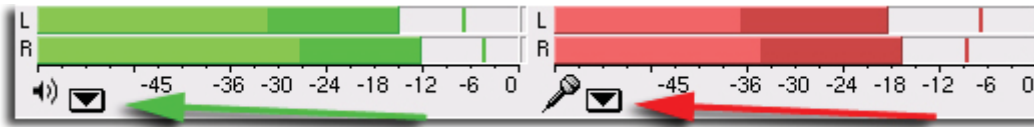
Audiophiles might argue that higher sample rates and formats are better, but for spoken word, 44,100 Hz and 16-bit sampling works admirably, especially considering that the resulting output will be MP3. Ignore the rest of the settings on the Quality tab.



- 6) Click on the File Formats tab to configure output options. If not done so already, choose WAV (Microsoft 16 bit PCM) as the Uncompressed Export Format.
- 7) Ignore the rest and click OK.



Setting proper recording levels is the first step in creating good sounding audio. The Meter Toolbar is used for monitoring the input and output audio levels. Typically it is used to make sure that the loudest volume is as loud as possible (for maximum fidelity) without clipping or distorting it. The output (playback) meter is the green one and the input (recording) meter is in red. Also notice the speaker icon below the output and the microphone icon below the input.



Normally the meters are only active when you are playing or recording audio. However, you can also monitor input when you're not recording. If you have a microphone or other input source attached, you will be able to watch the level of the audio before you start recording and set the input levels accordingly.

Each meter shows several characteristics of the audio level at once:

- The right hand end of the meter corresponds to the point at which the audio will be clipped, and the left hand end is silence.
- For stereo, the top bar shows the left channel, and the bottom bar shows the right channel.
- The brightest part of the bar shows the average audio level (related to the loudness) and the darker part of the bar shows the peak audio level.
- The peak-hold line to the right of this shows the maximum audio level achieved in the last 3 seconds.
- The clipping indicators on the far right of each meter will light up if clipping is detected (meaning that the audio was too loud and will sound distorted).

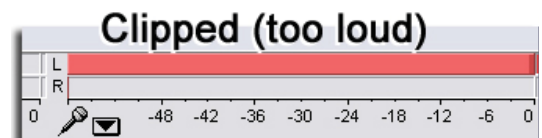
To turn on Monitoring and adjust the input level

- 1) Click on the microphone icon in Audacity's Meter toolbar (as seen above)

You should see a red level indicator moving slightly as it picks up room noise.

- 2) Talk into the microphone and make adjustments to the volume until you get a level that rises close to the right edge of the meter without turning the far-right section solid red.

If you get a solid red bar at the far right (see right), the audio is clipping, which means your finished file will sound distorted. Once you've adjusted the level, you're ready to record.



If clipping is detected when you are recording

- 1) Lower the volume of your input source using the Mixer Toolbar.
- 2) Start recording again from the start.

If this doesn't work, lower the volume on the microphone or increase the distance between your mouth and the microphone.

Creating an audio recording

Audacity's controls are very similar to other applications you might have seen or even those of your home stereo system:

To record

- 1) Click the Record button
- 2) Start speaking normally.
- 3) When you finish, click the Stop button.

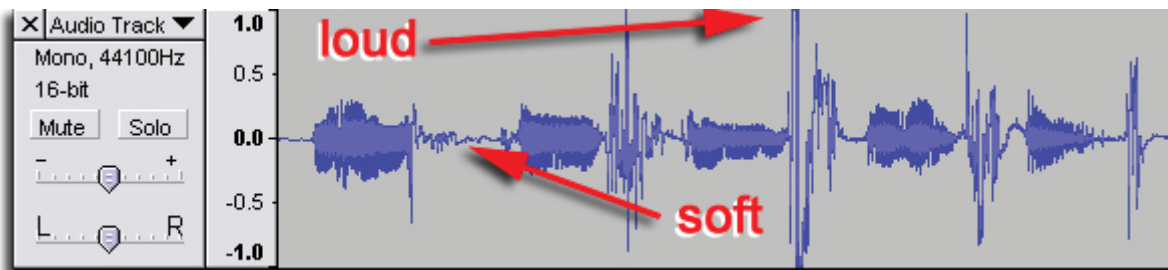


For more information on the interface, see page 9

To playback your audio file

- 1) Click the Play button or the spacebar
- 2) Stop the playback by clicking the Stop button or by pressing the spacebar again

When finished recording, your audio file may look something like this:

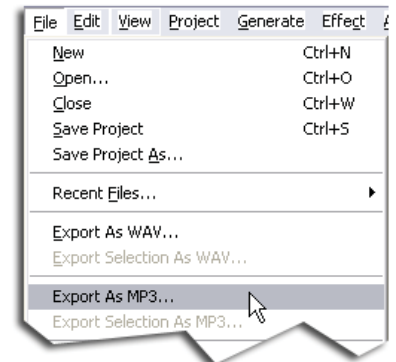


Audacity provides you with many ways to edit your recording. You can delete the blank places, get rid of “pops” and “hisses” and boost the volume.

To export an audio file as an Mp3 file

- 1) Click on the “File” menu and choose “Export as MP3”.
- 2) The next window is a standard save box. Give your file a relevant name and save it to your desktop.
- 3) Since podcasts are show episodes, name your file episode1
- 4) Click “OK”.

The next dialog gives you the opportunity to provide metadata that will show up in the play list of podcast players such as Apple's iTunes.



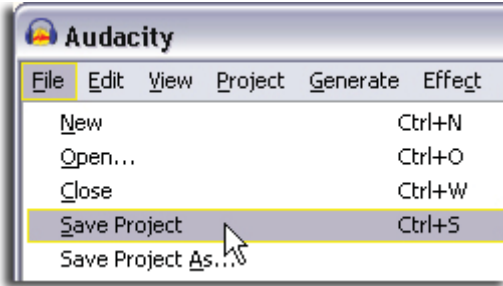
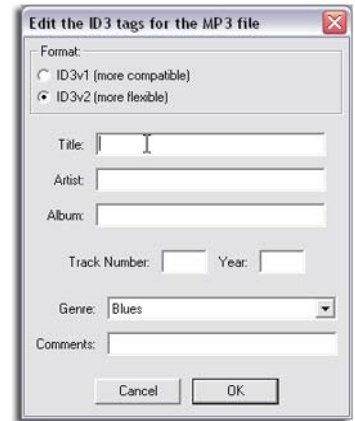
To add meta data to your Mp3 file

- 1) Type in info you find appropriate
- 2) Audacity has no “Genre” called podcast so you can choose “other” if you like
- 3) Click OK. A separate file has been saved

Note: Exporting as an MP3 file leaves your original file untouched and unsaved.

To save the original recording

If you are happy with your recording you can close this file without saving. Otherwise, you can save it as an Audacity project and edit it later.



- 1) From the File menu choose Save Project
- 2) The next window is a standard save box. Give your file a relevant name and choose a location for your file to be save (such as the desktop)
- 3) Click “OK”

NOTES:

Tools

Cursor to Start



Places the cursor at the start of the project.

- **SHIFT + click** expands the selection to the start of the project.

Play Button



Click on the play button to listen to the audio in your project. You can also hit the spacebar to start or stop playback. Playback begins at the current cursor position. If a region of audio is selected, only the selected region will play.

To quickly play the entire project:

- 1) Choose Edit > Select > All before playing
- 2) Press the space bar or click on the Play button

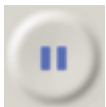
Record Button



Press the record button to record a new track from your computer's sound input device. Use the Preferences to configure the recording options. In particular, there is an option to record stereo or mono, and there is an option to play the other tracks while recording.

Note: Recording always happens at the project's sample rate.

Pause Button



Pauses during playback or during recording. Click again to unpause.

Stop Button



















Click the stop button or hit the spacebar to stop playback immediately.

Cursor to End



Places the cursor at the end of the project.

- **SHIFT + click** expands the selection to the end of the project.

Selection Tool		This is the main tool you use to select audio. Playback will always begin at the position of the selection cursor. If a range of audio is selected, only the selected range will play.
Envelope Tool		The envelope tool gives you detailed control over how tracks fade in and out, right in the main track window. When the envelope tool is selected, the amplitude envelope of each track is highlighted in a green line, with control points at the beginning and end of each track.
Time Shift Tool		This tool allows you to change the relative positioning of tracks relative to one another in time
Zoom Tool		This tool allows you to zoom in or out of a specific part of the audio.
Draw		Enables the user to draw in to the actual waveforms. This is especially useful to eliminate small pops and clicks from material.
Cut		Removes the selected audio data and places it on the clipboard. Only one “thing” can be on the clipboard at a time, but it may contain multiple tracks.
Copy		Copies the selected audio data to the clipboard without removing it from the project.
Paste		Inserts whatever is on the clipboard at the position of the selection cursor in the project, replacing whatever audio data is currently selected, if any.
Trim		Deletes everything but the selection.
Silence		Erases the audio data currently selected, replacing it with silence instead of removing it completely.
Undo		This will undo the last editing operation you performed to your project. Audacity currently supports full unlimited undo - meaning you can undo every editing operation back to the last time the document was closed and re-opened.
Redo		This will redo any editing operations that were just undone. After you perform a new editing operation, including simply resizing a track, you can no longer redo the operations that were undone.
Zoom In		Zooms in on the horizontal axis of the audio, displaying more detail about less time. You can also use the zoom tool to zoom in on a particular part of the window.
Zoom Out		Zooms out, displaying less detail about more time.
Zoom to Selection		Zooms in until the selected audio fills the width of the screen to show the selection in more detail.
Zoom to entire Project		Fits the entire project in the viewable window.

The Project Menu

Import Audio

This command is used to import audio from a standard audio format into your project. Use this command if you already have a couple of tracks, and you want to add another track to the same project, maybe to mix them together.

Use this command to import anything except MIDI files. You cannot yet use this option to import Audacity Projects.

Import Labels

This command takes a text file which contains time codes and labels, and turns them into a Label Track.

Import MIDI

This menu command imports MIDI files and puts them into a Note Track. Audacity can display MIDI files, but cannot play, edit, or save them yet.

Import Raw Data

This menu command allows you to open a file in virtually any format, as long as it is not compressed. When you select the file, Audacity will look through it and try to guess its format. It will guess correctly about 90% of the time, so you can try just pressing "OK" and listening to it. If it is not correct, however, you can use the dialog presented to try all of the different possibilities.

At the beginning of your imported track(s), you may notice a little bit of noise. This is probably the file's header, which Audacity was not able to parse. Just zoom in and select the noise with the Selection Tool, and then choose Delete.

Edit ID3 Tags

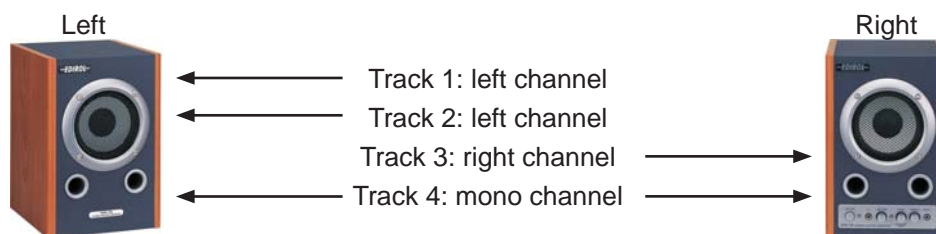
Opens a dialog allowing you to edit the ID3 tags associated with a project, for MP3 exporting.

ID3 Tags are used to store the Title, Artist, Author, and other information in MP3 files. When you import an MP3 file, Audacity remembers this information and stores it with your project. When you export an MP3 file, Audacity will prompt you for the ID3 tags, showing you any tags it collected from an original MP3 file, or that you typed by selecting "Edit ID3 Tags" from the Project menu.

Audacity allows you to store ID3 tags in either the ID3v1 or the ID3v2 format. In general, you should use the ID3v2 format, because ID3v2 tags go at the beginning of an MP3 file, whereas ID3v1 tags go at the end. Having the title and author first means that someone downloading an MP3 you created will know that information before they've finished downloading the song.

Quick Mix

This command mixes all of the selected tracks down to one or two tracks. The channel of a track being mixed affects whether it will be mixed into the left channel of the resulting track(s), the right channel, or both (mono). For example, if you have four tracks:



and you select them all and perform a Quick Mix, you will end up with two tracks: the first will contain a mix of tracks 1, 2, and 4 (the new left channel) and the other will contain a mix of tracks 3 and 4 (the new right channel).

Your tracks are mixed whenever you hit the Play button and whenever you select Export. If you try to mix two very loud tracks together, you may get clipping (it will sound like pops, clicks, and noise). To avoid this, you should use the track gain controls to reduce the amplitude of all of your tracks.



New Audio Track

This creates a new empty audio track. This command is rarely needed, since importing, recording, and mixing automatically create new tracks as needed. But you can use this to cut or copy data from an existing track and paste it into a blank track.

New Stereo Track

Creates a stereo version of the new audio track above. You may need this if you start with a load of mono tracks and want to export a stereo mix.

New Label Track

This creates a new Label track, which can be very useful for textual annotation. See the discussion on Label tracks for more information on how to use label tracks.

New Time Track

Creates a special track that can be used to speed up and slow down playback over the course of the project. This affects all tracks in the project.

Remove Track(s)

This command removes the selected track or tracks from the project. Even if only part of a track is selected, the entire track is removed. You can also delete a track by clicking the X in its upper-left corner. To cut out only part of the audio in a track, use Delete or Silence.

Align with Zero

Aligns the start of any selected tracks to the start of the project.

Align with Cursor

Aligns the start of any selected tracks to the cursor position.

Align with Selection Start

Aligns the start of any selected tracks to the start of the current selection

Align with Selection End

Aligns the start of any selected tracks to the end of the current selection

Align End with Cursor

Aligns the end of any selected tracks to the cursor position.

Align End with Selection Start

Aligns the end of any selected tracks to the start of the current selection

Align End with Selection End

Aligns the end of any selected tracks to the end of the current selection

Align Tracks Together

If you select multiple tracks, this command adjusts their time offset so that they start at the same time. It adjusts their starting time to the average of all of the tracks' original starting times. To adjust the time offset of one track, use the Time Shift tool.

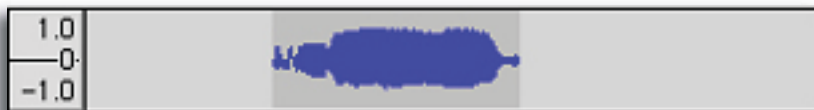
Selected Edit Menu Items

Undo

This will undo the last editing operation you performed to your project. Audacity currently supports full unlimited undo - meaning you can undo every editing operation back to when you opened the window.

Trim menu item

Deletes everything but the selection.



Silence

Erases the audio data currently selected, replacing it with silence instead of removing it completely.



Split menu item

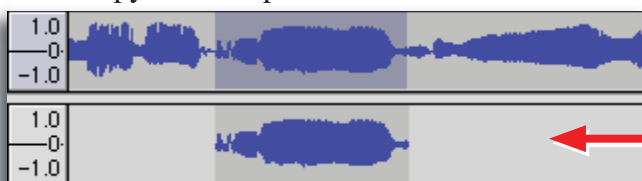
Moves the selected region into its own track or tracks, replacing the affected portion of the original track with silence. See the figure below:



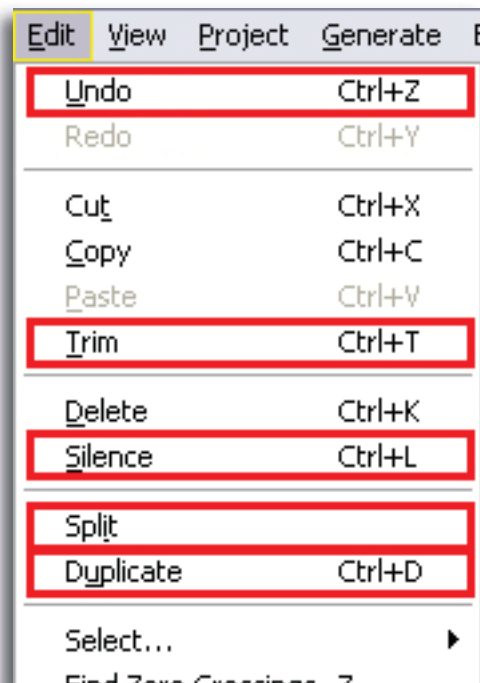
Selected area has been moved into a new track

Duplicate menu item

Makes a copy of all or part of a track or set of tracks into new tracks. See the figure below:



Selected area has been copied and pasted into a new track



Create A Better Recording From The Start

Microphone

Producing anything for web deployment means making it consumable by the average user. Average users have average or worse speakers on their computers. Though podcasts are meant to be played back on iPods or other such devices, many are played back on computers. This means that one of the most crucial decisions you will make as a podcaster is your choice of microphones. If you have a microphone that came with your computer, make several test audio files and listen to the playback on several different sets of speakers if possible. If your computer has a built in microphone, don't use it. It is more than likely an omnidirectional microphone designed to pick up sounds from all angles, including the noise from your computer. The resultant sound files will sound fuzzy and "far away". See the websites listed in the user support section of this document or "Google" a phrase such as "podcast microphone". Also, depending on your computer's audio input capabilities, you may require a microphone with a USB connection or a "mini-jack to USB" converter. These units start at a basic \$35.00 and can go into the hundreds of dollars.

Headphones

Headphones allow you to do three very important tasks: help you monitor your audio as you record by isolating your ears from other ambient noises, prevent your microphone from picking up audio from the computer, and help you test how users will hear your presentation through headphones. Though Earbuds or small "Walkman" type headphones are fine, full size headphones do a better job of isolating your audio file from the noise in your environment.

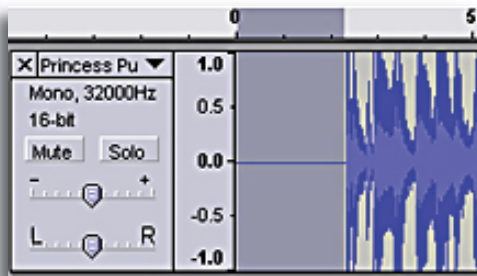
Script/outline

Having a script or at least an outline of your podcast will help you be more efficient as a podcaster and spare your audience from the pain of listening to Ummms and Ahhs as you search for the next thought. A few minutes of preparation can result in less time editing.

Basic Editing Tasks

Deleting blank/unwanted space

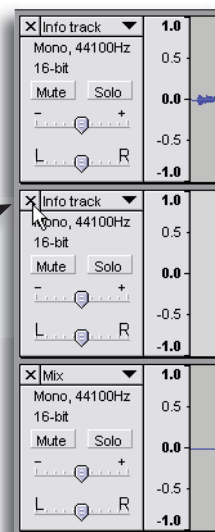
- 1) Select the area you wish to delete by clicking and dragging on it
- 2) Press the delete key or press the Ctrl+x key combination



Deleting an entire track

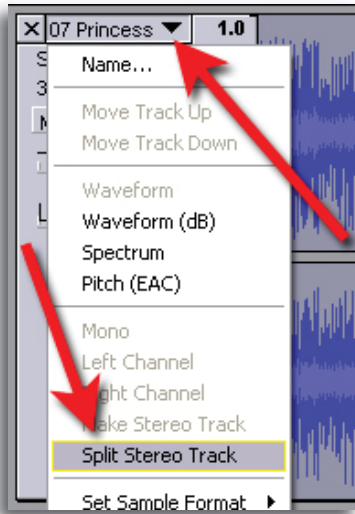
- 1) Locate the Close box at the top, left corner of the track
- 2) Click on the Close box

track to be deleted

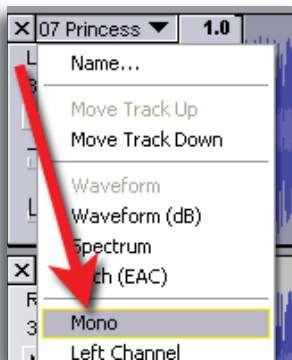


Mix down from stereo (convert to Mono)

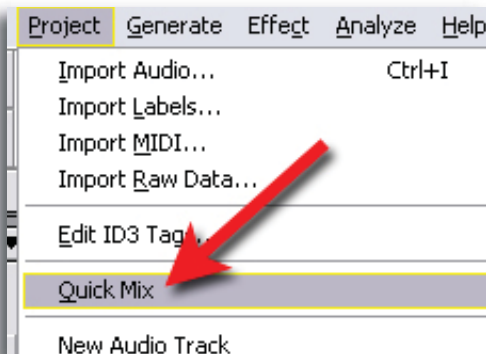
- 1) Select the desired stereo tracks
- 2) Choose Split Stereo Track from the track drop down menu



- 3) Select one track at a time and select Mono from the track drop down menu



- 4) Repeat for the remaining track
- 5) Select both tracks
- 6) Select QuickMix from the Project menu

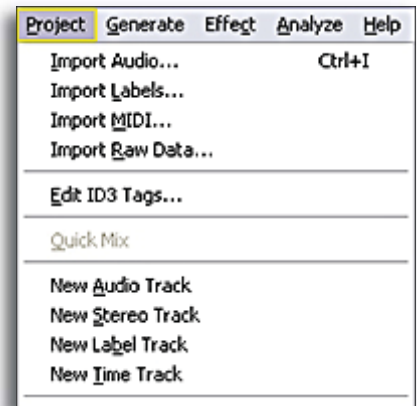


Adding background sounds or music

Audacity allows you to have multiple tracks “layered” in one audio file. This makes it easy to add music to your project at just the right point in time or carefully position additional sounds. You can even use this feature to “fix” parts of your spoken voice track that you didn’t get quite right the first time you recorded.

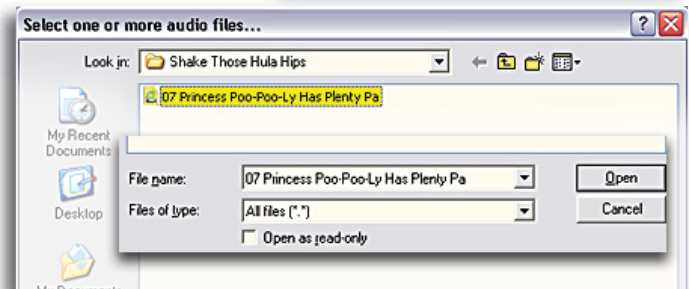
To add additional tracks you can:

- 1) Import an audio file into your Audacity project
- 2) Record new sounds in a new track in your Audacity project



Importing audio from a file on your computer

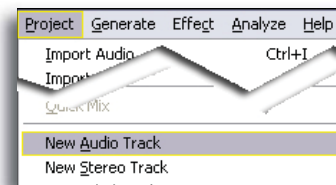
- 1) Click on the Project menu
- 2) Select Import Audio
- 3) Navigate to where your file is stored, select it and click Open
- 4) A new track with your audio file will be created



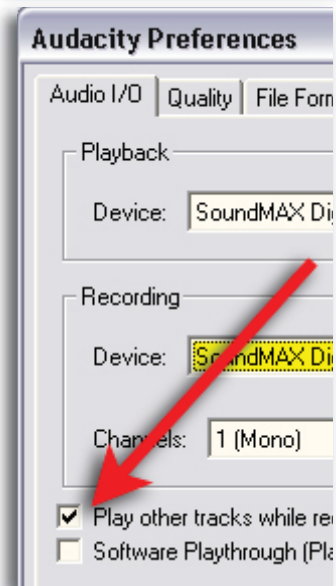
Record new sounds in a new track while listening to existing tracks

Note: if you have an existing track, skip to step #3.

- 1) Create a new track
 - a) Click on the Project menu
 - b) Select New Audio Track
- 2) Record your spoken track
- 3) Click on the Edit menu and open the Preferences
- 4) Click on the Audio I/O tab
- 5) Click on the Play other tracks while recording check box
- 6) Click the Record button.



The first track you recorded will play while Audacity records a new track at the same time. When you play the two tracks you recorded together, they probably won't be synchronized. This is normal and is not the fault of Audacity. To fix it, you will need to grab the Time Shift tool and slide one of the tracks around until it sounds right.



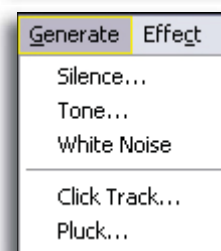
To use the Time Shift Tool



- 1) Select the Time Shift Tool
- 2) Click and hold on a track
- 3) Drag it to the left or right

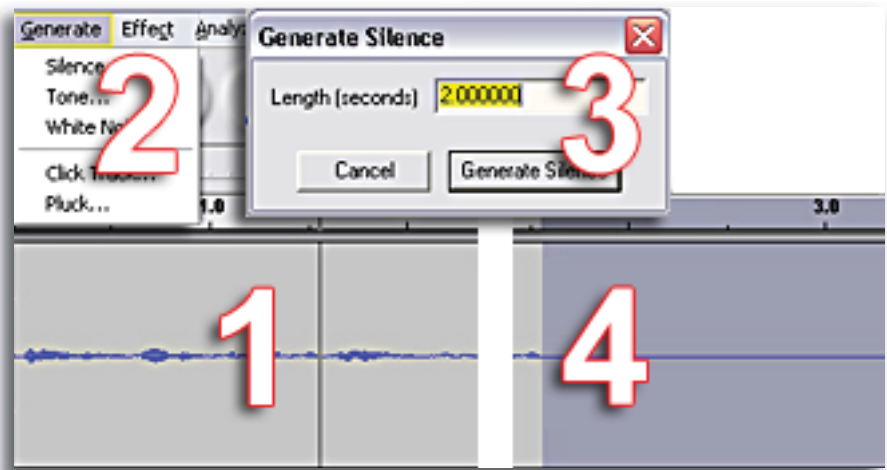
Add silence, tone or white noise

- 1) Select an area of the track to be converted to silence, white noise or tone
- 2) Choose the desired menu item from the Generate menu
- 3) Click the Generate button on the ensuing dialog box



You can also

- 1) Place the cursor at some point in the track and
- 2) Choose the desired menu item
- 3) Enter the amount of time desired and click the Generate button
- 4) The desired amount of tone or silence will be added to your audio file. (It will appear as selected content)



Adjusting volume

There are several different ways to increase the volume of all or parts of your audio file. If you properly set up the gain on your microphone and isolate yourself from noise you will spend less time trying to fix the volume levels later. See the microphone setup instructions on page 6 for more information.

Amplitude tweaking with the Envelope tool

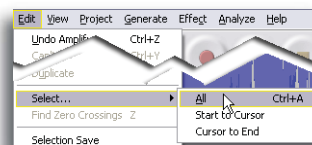
- 1) Select the Envelope tool
- 2) In the waveform, find the first sudden peak that stands out
- 3) Click to create control points on either side of the peak
- 4) Click and drag the points to reduce the volume of the peak

Dragging up increases volume; dragging down decreases it. You can create as many control points as you need to fine-tune the adjustment. When the peak sits level with the rest of the waveform, move to the next and repeat the process.

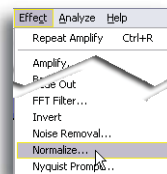
Leveling Out the Louds and Softs with Normalize

Normalization is the process of adjusting the loudness of an audio track so it is the same throughout the entire track.

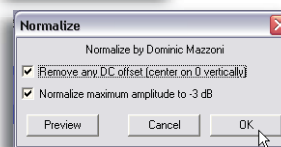
- 1) From the Edit menu, click on the Select submenu and select the All option



- 2) From the Effect menu, select Normalize



- 3) In the next dialog box, keep the two options selected by default



- 4) Press OK

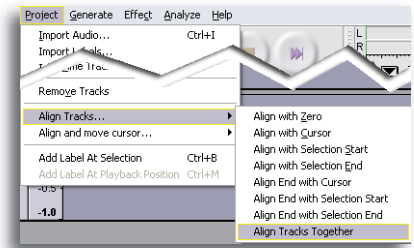
After the normalization has finished, the audio file should have no large peaks or low valleys. This allows the audio track to have about the same loudness throughout. This also keeps the listener from constantly turning the volume up and down.

Moving Tracks in Time

If you have more than one track you may find that the timing (synching) between the tracks is not what you want.

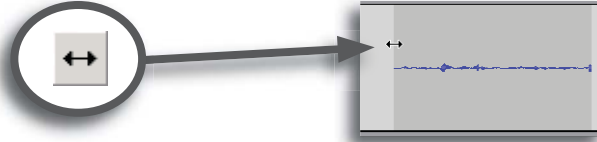
Aligning multiple tracks at the same point in time

- 1) Select desired tracks
- 2) From the Project menu select Align Tracks, then Align Tracks Together



Moving a single track to a specific point in time

- 1) Choose the Time Shift tool
- 2) Click and hold on the track
- 3) Drag the track to the point in time



Multiple takes/fixing flubs

If your audio file contains an area that is “less than perfect” try this:

- 1) Drag the cursor across the unwanted area to select it
- 2) Use the Silence generator to delete the content but leave the remainder of the file in its place
- 3) Create another track as described above
- 4) Re-record the content as necessary
- 5) Use the time shift tool to align the new portion as needed
- 6) It may be necessary to adjust the gap in the original material either by deleting time or inserting vSilence

Create separate files from a single file

- 1) Open the audio file
- 2) Select the portion of the file you wish to save as a separate file
- 3) Choose Export Selection as MP3 (or other file format) from the File menu
- 4) Select another portion and Export again

Note: This should not effect your original file

Adding Effects

To apply an effect, simply select part of a track, an entire track or all of the tracks you want to modify, and select the effect from the menu. Audacity remembers the last effect you used so you can reapply it to another area.

To apply the effect last used, do one of the following

- 1) Press Ctrl + R on your computer keyboard
- 2) Click on the Effects menu and select Repeat Last Effect

Amplify

This effect increases or decreases the volume of a track or set of tracks. When you open the dialog, Audacity automatically calculates the maximum amount you could amplify the selected audio without causing clipping (from being too loud).

Bass Boost

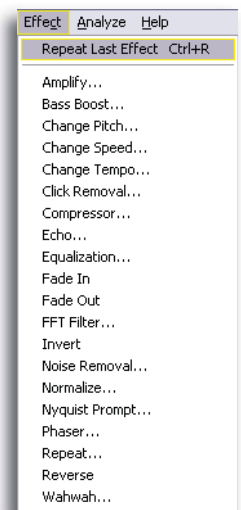
This is a safe, smooth filter which can amplify the lower frequencies while leaving most of the other frequencies alone. It is most effective if you don't try to boost too much; 12 dB is usually just right.

Echo

This effect repeats the audio you have selected again and again, softer each time. There is a fixed time delay between each repeat.

First select the audio you want to apply the effect to. You may want to first add silence to the end of your track(s) so that the echo has plenty of time to die out. When you select “Echo...” from the Effect menu, Audacity will ask you for two numbers.

The first number is the amount of delay between the echoes, in seconds. The second value is the decay factor, which is a number between 0 and 1. A decay factor of 0 means no echo, and a decay factor of 1 means that each echo is just



as loud as the original. A value of 0.5 means that its amplitude is cut in half each time, so it dies out slowly. Smaller values will make it die out even more quickly.

The Echo effect is very simple and is not intended to be used in place of a Reverb effect, which simulates the sound of a room, concert hall, stage, or other natural environment. Audacity for MacOS and Windows comes with Gverb, a free LASPA Reverb plug-in.

Note that if you set the decay value to 1.0, you can use Echo to create loops that repeat as long as you want any never change volume.

Fade In

Applies a linear fade-in to the selected audio.

Fade Out

Applies a linear fade-out to the selected audio.

FFT Filter...

This is the most general type of filter. You define a curve that shows how much louder or quieter each frequency in the signal should be made.

If you're careful, you can use it to highlight exactly the frequencies you want. However, doing an FFT filter is more likely to result in artifacts, especially if the filter you draw is not smooth.

Invert

This effect flips the audio samples upside-down. This normally does not affect the sound of the audio at all. It is occasionally useful, for example when the left and right channels of a song both contain equal amounts of vocals, but unequal amounts of background instruments. By inverting one of the channels and not the other, the vocals will cancel each other out, leaving just the instrumental. Obviously this only works if the exact same vocal signal is present in both of the channels to begin with.

Noise Removal...

This effect is ideal for removing constant background noise such as fans, tape noise, or hums. It will not work very well for removing talking or music in the background.

Removing noise is a two-step process. In the first step, you select the part of your file that's silent except for the noise. Then choose Noise Removal from the Effect menu and click Get Profile. Audacity learns from this selection what the noise sounds like, so it knows what to filter out later.

Then, select all of the audio where you want the noise removed from and choose Noise Removal... again. This time, click the "Remove Noise" button. It may take a few seconds or longer depending on how much you selected.

If too much or not enough noise was removed, you can Undo (from the Edit menu) and try Noise Removal... again with a different noise removal level. You don't have to get a new noise profile again if you think the first one was fine.

Removing noise usually results in some distortion. This is normal and there's virtually nothing you can do about it. When there's only a little bit of noise, and the signal (i.e. the voice or the music or whatever) is much louder than the noise, this effect works well and there's very little audible distortion. But when the noise is very loud, when the noise is variable, or when the signal is not much louder than the noise, then the result is often too distorted.

Phaser

The name "Phaser" comes from "Phase Shifter", because it works by combining phase-shifted signals with the original signal. The movement of the phase-shifted signals is controlled using a Low Frequency Oscillator (LFO).

Reverse

This effect reverses the selected audio temporally; after the effect the end of the audio will be heard first and the beginning last. Some people reverse small portions of audio to make inappropriate language unintelligible, while others believe you can hear subliminal messages if you listen to speech backwards. You can also create interesting sound effects by recording natural events and reversing the audio.

Wahwah...

Just like that guitar sound so popular in the 1970's.

This effect uses a moving bandpass filter to create its sound. A low frequency oscillator (LFO) is used to control the movement of the filter throughout the frequency spectrum.

The WahWah effect automatically adjusts the phase of the left and right channels when given a stereo recording, so that the effect seems to travel across the speakers.

Audacity specific websites:

Official Audacity forum

- <http://audacityteam.org/forum/>

Audacity documentation

- <http://audacity.sourceforge.net/help/documentation>

The Audacity Wiki

- <http://audacityteam.org/wiki/index.php>

A list of Audacity tutorials

- <http://audacity.sourceforge.net/help/tutorials>

Email help list for Audacity users

- <https://lists.sourceforge.net/lists/listinfo/audacity-help>

Audacity Help

- <http://www-users.york.ac.uk/~raa110/audacity/AudacityHelp.html>

Podcasting and music/audio technology related sites:

What Microphone Do I Get?

- http://www.transom.org/tools/recording_interviewing/200106.microphones.jtowne.html

What Is A Good Microphone For Podcasting?

- http://www.creativetechs.com/iq/what_is_a_good_microphone_for_podcasting_1.html

CreativeTechs (Left brain support for right brain professionals)

- <http://www.creativetechs.com/>

Sweetwater.com (on-line music technology store)

- <http://www.sweetwater.com>

Much of this information is taken from the Audacity manual and tutorial section found here:
<http://audacity.sourceforge.net/manual-1.2/index.html>

Amplitude:

The maximum departure of the value of an alternating current or wave from the average value. A sound is louder when the amplitude, as shown by the wave form, extends higher in the track.

Bed music:

A selection of music that is placed in a separate track and set at a lower volume level to add background interest to the overall composition of the recording.

Bit depth:

Essentially, the precision of the digital waveform. The higher the value the better the quality. For example, 16 bit audio is the standard for CD quality sound.

CD quality:

The sampling rate and accuracy for commercially prepared CDs (see chart under sampling rate).

Channel:

In Audacity, a channel can be thought of as an assigned space for a specific part or element. Ex.: one channel is devoted to the background music, one channel is for spoken word, one channel for audio from the computer.

E.Q.:

The process of modifying or improving a sound in order to correct, or make equal the high and low frequencies.

Frequency:

The number of occurrences within a given time period (usually 1 second); "the frequency of modulation was 40 cycles per second". The higher the frequency the higher the sound.

Gain

The loudness of an audio signal measured in decibels (dB).

Mono:

Short for monaural or monophonic. A channel with a sound file that has no left or right speaker assignment.

Project:

In Audacity a project is the raw combination of audio elements saved in the native Audacity format from which Mp3, aiff, mov, or wave files can be derived.

Sample:

In digital recording, a "snapshot" of the true analog sound at a given point in time.

Sample rate:

The rate at which the samples are captured or played back, measured in Hertz (Hz), or samples per second. An audio CD has a sample rate of 44,100 Hz, often written as 44 KHz for short. This is also the default sample rate that Audacity uses.

	CD Audio	DVD Audio
Sampling Rate	44.1 kHz	192 kHz
Samples per second	44,100	192,000
Sampling Accuracy	16-bit	24-bit
Number of Possible Output Levels	65,536	16,777,216

Stereo:

A channel containing two audio tracks that can be assigned to be heard through the left or right side speaker or a combination of either.

Track:

In Audacity, a channel of sound is represented by one mono audio track, a two channel sound by one stereo audio track.

Wave form:

A graphic representation of the shape of a wave that indicates its characteristics (as frequency and amplitude).

Note to Apple MacOS X users: CTRL = Command ⌘

File Commands

New Project	CTRL+N
Open Project	CTRL+O
Close Project	CTRL+W
Save Project	CTRL+S
Preferences	CTRL+P

Editing Tools

Selection Tool	F1
Envelope Tool	F2
Editing Tool	F3
Zoom Tool	F4
Timeshift Tool	F5
Multi Tool	F6
Cycle tool forward	D
Cycle tool backward	A

Edit Commands

Undo	CTRL+Z
Redo (Windows)	CTRL+Y
Redo (Mac/Unix)	CTRL+SHIFT+Z
Cut	CTRL+X
Copy	CTRL+C
Paste	CTRL+V
Delete	CTRL+K
~ or ~	DELETE (DEL)
Silence	CTRL+L
Duplicate	CTRL+D
Select All	CTRL+A
Find Zero Crossings	Z

Navigation, Playback & Recording

Play/Stop	SPACE
Loop	SHIFT+SPACE
~ or ~	L
Pause	P
Record	R
Preview 1 second	1
Play From Cursor To Selection	B
Zoom In	CTRL+1
Zoom Normal	CTRL+2
Zoom Out	CTRL+3
Fit In Window	CTRL+F
Fit Vertically	CTRL+SHIFT+F
Zoom to Selection	CTRL+E
Import Audio	CTRL+I
Create Label	CTRL+B
Repeat Last Effect	CTRL+R

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