Getting Started

Welcome to NGWave

Thank you for using NGWave, Next Generation Software, Inc's award-winning audio editor for Windows.

Please read on for detailed information on how to get started with NGWave.

Getting Started

NGWave is a sound editing application for Microsoft Windows. NGWave has many features you will not find in other audio editing applications. More specifically, NGWave was engineered from the ground up to be fast, efficient, and to handle most issues as intelligently as possible.

Please choose the most appropriate option below:

- I am new to sound editing on the PC
- I am familiar with other audio editing applications

Or jump directly to one of the following topics:

- Keyboard Usage
- Program Options
- Dialog Windows
- Licensing and Ordering Information

You can press the F1 Key in any dialog of NGWave to view help specific to that dialog.

This page is only shown automatically the first time you run NGWave. After that, simply press F1 for help, or visit the Help menu for more options.

More information is available on our web site: NGWave.com. Check frequently for product updates, news, and support information.

If you are new to NGWave but familiar with other sound editors, be sure to try out our test scenarios designed to demonstrate first-hand what sets NGWave apart from the rest. Go ahead and give your current favorite editor a chance against NGWave.

Digital Audio Basics

When audio is *Digitized*, or Digitally Recorded, the audio data is sampled at regular intervals. The rate at which the audio level is sampled is called the *Sampling Frequency*, or *Sample Rate*.

Each sample is then represented by a number that corresponds to the level of the audio at that point. A Compact Disc holds digitized audio that was sampled 44,100 times per second. Each sample is represented as a 16-Bit number, giving it 65,536 possible levels for each sample. The number of bits used to store each sample is referred to as the *Bit Resolution*.

The more bits and the higher the sample rate, the higher the quality -- but the trade-off is that the audio will take more disk space and/or memory to store. CD-Quality audio in an uncompressed format takes approximately 10 megabytes per minute of audio.

PC Sound Editing

Sound editing on the PC has been around for quite a while. As PCs become faster and less expensive, sound editing becomes easier and more practical. Many features available in today's editors simply weren't possible or practical a few short years ago.

Operations that would take hours a few years ago can be accomplished in mere seconds these days. NGWave expands on that, and attempts to be faster at most things than most other editors. Many editors simply take advantage of the fact that computers are getting faster every day, and choose not to optimize their performance.

Waveform Display

The most basic concept in PC audio editing is the Waveform Display. This is basically a visual representation of the sound you are working with. This may not seem to make sense at first -- you certainly can't "see" sound -- but it will become second nature before you know it. It is a good idea to familiarize yourself with the concept by experimenting on some sound files, and getting a feel for how each sound "looks" on your screen.

Some sounds have a very distinct look. You will quickly be able to recognize a drum hit, for example. Other sounds -- those that are comprised of many composite tones -- are a bit less easy to spot.

Sound is simply a variation in air pressure. Analog devices record or reproduce this by attempting to mimic the air pressure variations. A loudspeaker, for example, modifies the pressure of the surrounding air by moving a cone in and out of its shell. Similarly, a microphone picks up these variations in air pressure. Its diaphragm (like the cone in the loudspeaker) moves with the pressure changes, and the pickup detects the changes and converts them to an electrical signal.

Digital audio goes a step further, by quantifying these changes. Many times a second, the current position is recorded as a number. The frequency at which this takes place is called the *Sampling Frequency*, or *Sample Rate*. By storing numbers instead of arbitrary magnetic positions, digital audio is able to more accurately reproduce the original sound.

A Compact Disc samples the audio 44,100 times every second. It uses a 16-bit number, giving each sample 65,536 possible positions. This may sound like a lot, but many applications use a much finer resolution (NGWave allows for

billions of positions with its 32-bit internal processing). When you are editing, you generally want higher precision than when you are simply archiving the finished product.

NGWave supports sample rates of up to 192,000 Hz (Hertz, or Samples per Second). NGWave also supports files of up to 64-Bits resolution, and can communicate with sound cards at up to 24-Bits (if your card supports this).

Visual Representation

Imagine if we draw out these numbers on your computer screen. Louder sounds will look larger than smaller sounds. Imagine even further if you could "zoom in" on the sound -- viewing more detail, and less data. This is the heart of a sound editing application -- the ability to show the audio in a visual manner that makes sense to the user.

NGWave attempts to make the waveform look as true as possible. Lots of coding time went behind our waveform display technologies, and we hope to have achieved a really nice effect. Other editors offer a very limited view -- some require specific zoom ratios, or don't allow as much detail. NGWave lets you zoom to any integral zoom ratio.

As of version 2.0, NGWave's waveform display is even further improved. We offer various options to choose the best representation method for your purposes. See the Display sections in the Options dialog for more details.

Trying it Out

The best way to learn to understand a waveform display is to try it out. If you have some sound files, open one up in NGWave. Zoom in and out on the waveform, and play the audio back using the audio controls toward the bottom of the window.

Once you get the feel for the visual representation, the rest is quite easy!

Actually "Editing" Sound

Once you understand the idea of visualizing your audio, you can do things like:

- Select a portion of audio with your mouse (just like you might do with text)
- Perform an operation on the selection (an equalizer perhaps)
- Delete the selection
- Copy, Cut, and Paste the selection

Adding to the standard Copy/Paste, sound editors usually have an additional Paste mode: *Paste Mix*. This *Mixes* the sound on the clipboard with the destination sound.

NGWave lets you "nudge" the selection in the Paste Mix dialog, so you can preview and adjust until you're pasting exactly where you wanted to: where it sounds the best. You can also adjust the volume level of the pasted audio.

▸ Continue to Learning NGWave

▸ **Back to Help**

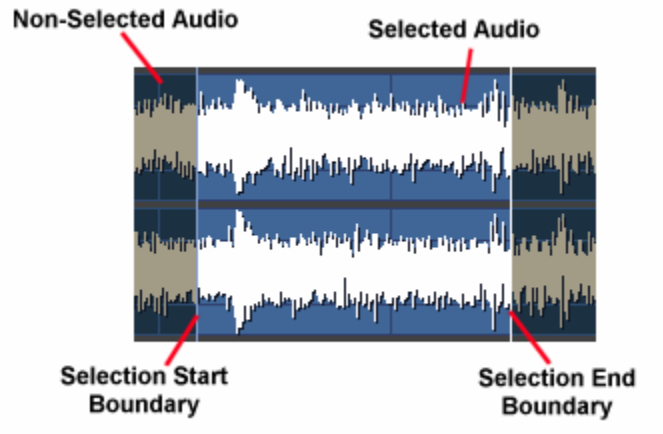
Learning NGWave

If you have used other audio editing applications, you already have a basic knowledge of audio editing on the PC. This help topic will help you to get started with NGWave's more advanced features.

First, we will address some things that are different in NGWave.

Display

NGWave offers a very nice visual representation of the audio waveform. NGWave's audio display is completely customizable; you can select the colors from within the Options Dialog, disable the Shadow, control its Scrolling Behavior, and much more.



Key Differences

NGWave lets you view the waveform at an arbitrary zoom ratio. Unlike some editors, you are not restricted to a *power of two* zoom ratio.

You can use the Mouse Wheel (if your mouse has one) to zoom in or out by a configurable amount. You can also use the up and down arrow keys on your keyboard to do this.

NGWave defaults to center the current view when zooming; however, when you are playing back audio, it zooms so that the playback cursor ends up in the same position.

You can also use the Page Up and Page Down keys to zoom in and out by 50%.

Selection

Some editors handle selection differently, but NGWave sticks with the Windows Standards. You can simply click and drag with your left mouse button to select a portion of audio. Going past the end of the view causes the waveform to scroll in order to let you select more. If you press and hold the right mouse button while the selection is scrolling, it will scroll faster.

You can also drag either selection boundary to expand or shrink your selection; hovering over the selection

boundaries will cause the mouse pointer to change, indicating that you can drag the boundary left or right.

Scrolling

NGWave offers a standard Scrollbar to let you drag the waveform left and right. If your mouse has a third button (on most wheel mice, your wheel serves as a "middle button"), you can also drag the waveform left and right by middle-clicking the wave and moving your mouse.

Additionally, you can click and drag the area just above the scrollbar, where the time display is shown, to move the viewable display left and right.

The mouse wheel can be used to zoom in and out. You can configure how much it zooms, and you can invert the operation of the wheel.

More mouse buttons

If you have a Microsoft Intellimouse (or other 5-button mouse), your extra buttons (or "forward" and "back" buttons) can be configured to do additional tasks. You can have these buttons:

- Start and Stop Playback
- Undo and Redo
- Zoom In and Out Horizontally or Vertically

Additionally you can reverse the operation of the buttons. More Details...

Other differences

The most notable difference in NGWave is its speed. Many operations that would take a few seconds (or even minutes) in other editors are instantaneous in NGWave. Undo and Redo functions are both quite instant; likewise, any delete, mute, insert silence, and many other options are nearly instant.

NGWave avoids storing redundant data. With its unique data storage format, you won't have to wait for your editor to copy the entire file (eg, creating an "undo") just to delete a couple seconds of space. NGWave simply marks that data as "deleted", and will not waste any time about it.

Run through a typical editing session with NGWave, and we're sure you'll be sold on its performance alone.

- **New: Crash Recovery**

If NGWave exits prematurely for any reason -- NGWave crashes, Windows hangs, or even a power outage -- it will prompt you on the next load to recover your session. Unlike any other editor, NGWave will recover the entire session, complete with full Undo/Redo history, copy buffers, and saved views.

Notes: Everything up to the current edit is restored. If an edit was in progress, however, you will not retrieve that last edit; it will pick up at the point prior to initiating the edit.

With an NTFS file system, if you were in the middle of recording, NGWave *will* recover the last take, where recording was in progress. Every 400 milliseconds while recording, NGWave flushes the record buffers to disk so that the recorded data can be recovered in the event of a crash.

Under FAT32, however, NGWave may or may not be able to restore the last recording take.

- **New: Saved Session**

Building on Crash Recovery, you can now save your Session. When you exit NGWave, you are asked if you want to save your current session. If you chose 'Yes', rather than saving the individual files back to their original format, NGWave simply hangs on to the temporary files it works with. When you start NGWave again, your entire session will be restored, as though you never exited. Full Undo/Redo history, saved views, everything.

- **Intelligent Saving**

NGWave saves your files in the safest possible manner. When you begin saving, NGWave saves to a new filename. If your file was called, for example, *example.wav*, NGWave creates *example.wav.ng*. Once the file has been saved successfully, NGWave then renames the new file over the old filename.

This prevents any possibility of corrupting your existing file, and gives you the option to cancel the Save operation without any side effects.

Additionally, if the file you are working with has been modified outside of NGWave between session, NGWave will prompt you to save your changes, even if you haven't modified the file in NGWave. This ensures you don't accidentally lose work because you had changed the file in another program.

Finally, NGWave preserves the *creation time*. Most programs do not do this, so once you have modified, then saved a file, the *creation* time reflects the *modified* time, which is incorrect. The *creation* time should reflect the date and time the file was originally created.

Challenge

Our web site has a few test scenarios that allow you to compare a few real-world editing sessions between NGWave and your current favorite sound editor. We're sure that these tests will both get you familiar with NGWave, and prove that NGWave is superior in many ways to most other audio editing applications.

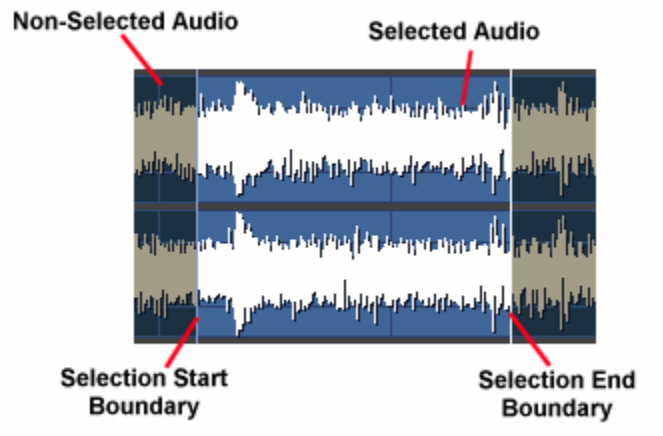
- Continue to NGWave's Main Interface

- **Back to Help**

Main Interface

Waveform Display

The Waveform Display is where you will interact with NGWave the most:

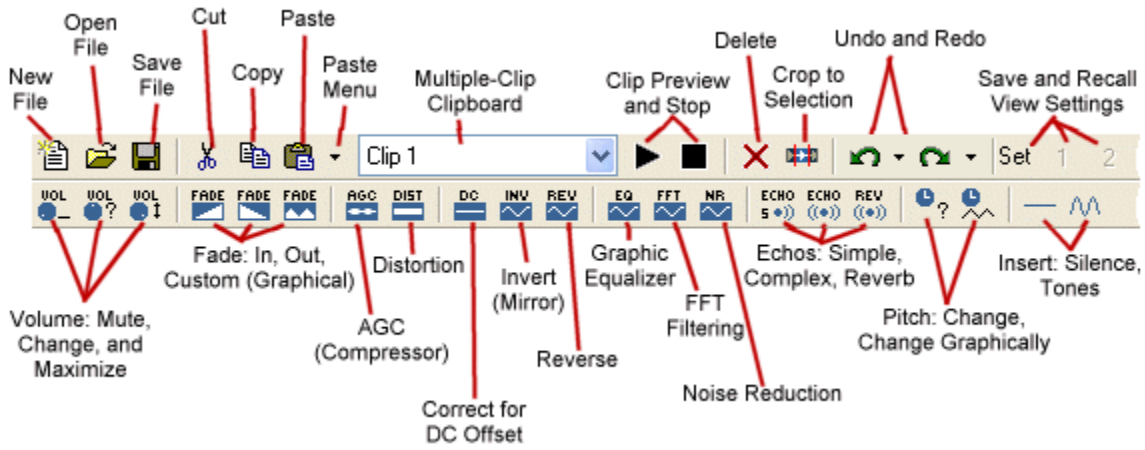


You can select audio with your mouse, as you would do with text. Hovering over the Selection Boundaries allows you to drag that edge of the selection.

Pressing the TAB key toggles which Selection Boundary is Active (the white boundary in the image). This is the boundary that you can manipulate using the keyboard; holding SHIFT and pressing the Left and Right arrow keys moves that boundary by four pixels; holding CTRL, SHIFT, and pressing the Left and Right arrow keys moves the selection by one pixel.

Main Toolbar

The main toolbar is shown below, with descriptions for each button:



Some of the buttons launch a Dialog Window. Others perform an action directly -- namely the Cut, Copy, Paste,

Delete, Crop, Fade-In, Fade-Out, Undo, and Redo buttons simply perform their action without showing a dialog window first.

Most of the buttons are self-explanatory, but some are not.

Multiple-Clip Clipboard

NGWave does not utilize the Windows clipboard to store temporary data (when you hit 'Copy' or 'Cut'). Instead, NGWave uses its own, internal clipboard. There are several reasons for this:

- Unlike the Windows Clipboard, NGWave does not actually copy large amounts of data around; internally it simply sets pointers to the data that has been "copied"

- NGWave allows you to have multiple clips. The clipboard is never emptied unless you explicitely empty it

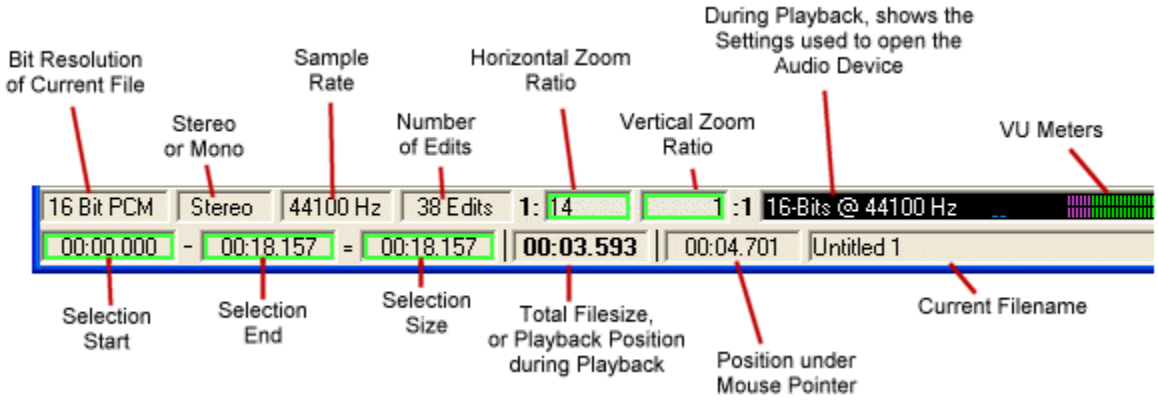
- NGWave lets you Preview each clip, so that you know which one you are working with

- NGWave automatically resamples and converts between Mono and Stereo when Pasting; you don't have to care what format the clipboard data is in

The only downside to this is that you will be unable to copy and paste from NGWave to another application.

Status Area

There is also a Status Area at the bottom of NGWave's display. The following image explains what each field shows:



Note that in the above picture, some fields are outlined with a green box. These fields allow you to edit them by clicking into them. For example, you can manually key in a Zoom Ratio and press Enter to instantly zoom to that ratio. You can also adjust your selection by keying in a time using the currently displayed format. See the Text Entry Fields topic for details.

The green boxes are shown for reference and do not actually appear in the program.

The VU meters display various information. On the far left, it displays what settings were used to successfully open the audio device. This will in most cases be the same format as the currently playing file, but if your card does not support the bit resolution or sample rate, NGWave automatically converts as necessary in order to play back the file. This section displays in exactly what format NGWave is communicating with your sound card.

Each VU segment represents 1 db. Segments that are in Purple represent levels below the theoretical minimum noise floor for the current format. For example, a 16-Bit format can only realistically have a resolution down to -96 db; segments below that floor are in Purple.

Then you have Green segments, followed by Amber starting at -12 db, and finally Red for -1 and 0 db.

- Continue to Text Entry Fields

- **Back to Help**

Text Entry Fields

As described in the Main Interface topic, NGWave allows you to edit certain status-bar fields directly. NGWave tries its best to interpret what you enter, and is extremely lenient in what it accepts.

However, you must specify the field in some way that makes sense in the format it is currently displaying. For example, if you have the view set to *Formatted Time*, and you want to set it to 45 seconds, you can enter it in a number of ways:

- 0:45.000
- 0:45
- 45.0
- 45

All of these examples will be accepted as *45 Seconds*. You will receive an error if NGWave does not understand what you are trying to tell it.

With the two Zoom fields, you can enter a number directly (eg, "64") or the up/down arrow keys to increment or decrement the value. You can also press PGUP and PGDN to double or half the current value.

Vertical zoom can be between 1:1 and 256:1; Horizontal zoom can be between 1:1 and 1:262144.

- Continue to NGWave's Common Elements

- **Back to Help**

Common Elements

NGWave has many common elements that you should become familiar with. These are things you will find in many different areas of NGWave, and they essentially function the same way.

Quick Info

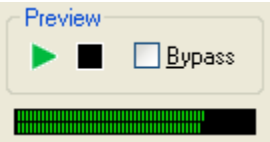
Wherever you see a label that looks like this in a dialog of NGWave:

Quick Info

This is a quick shortcut to a brief popup description of the feature. Some things are difficult to explain within the dialog itself, and are not very self-explanatory. Quick Info links help to explain a feature without requiring that you open the full Help file.

Preview

NGWave offers true real-time preview of all processing functions. You can listen to the effect your settings have in true realtime, much like you would using a hardware-based processor. A small LED VU Meter is visible when audio is being played.



Pressing the Play button starts the audio playback, and the Play button turns green to indicate playback has started. You can press Play again to restart playback from the beginning.

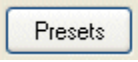
The Stop button stops playback, and the Bypass checkbox allows you to hear the raw sound, with no processing done, for quick comparison.

Processing is done in realtime, so any changes you make to settings in the dialog take place immediately (and will be audible within about 200 milliseconds).

▪
▪
▪ **Note:** In order to ensure that changes affect what you hear as quickly as possible, the Preview playback does not use nearly as much audio buffering as the standard playback. Thus, depending on the speed of your PC, what other programs are running, and the type of sound card, you may hear audible glitches during Preview playback.

Presets

Another common element you will find in most dialogs is the Presets control:



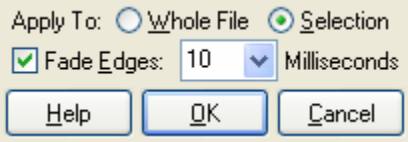
The Presets control allows you to save and retreive settings, or *Presets*. Clicking on the control gives you a menu:

You can select an existing preset, and its settings will instantly apply to the current dialog. You can also Save your current settings as a preset; NGWave will prompt you for a name. If you provide the name of an existing preset, NGWave will ask if you want to overwrite the existing preset with your new settings.

You can Delete a preset by selecting it from the *Delete Preset* pop-out menu item.

Fade Edges

Another common element is the standard buttons found in most dialog windows:

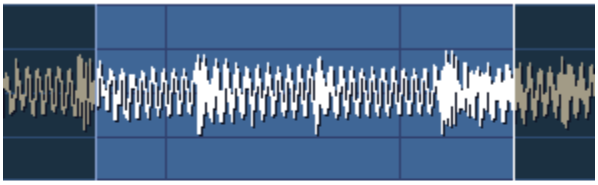


The basic Help, OK, and Cancel buttons are self explanatory, but most functions offer the ability to *Fade Edges*. What this means is that after processing your selection, it will cross-fade a few milliseconds (ms) at the selection boundaries. The beginning of the selection will fade from unprocessed audio to processed audio, and the end will fade back.

You can configure how much fade time is applied. This eliminates click noises and other artifacts resulting from a harsh transition.

The best way to demonstrate this is to perform a Volume Change over a one-second selection. Set the level to -12db, and the Fade Edges to 100 ms. The result:

Before:



After:

Notice that instead of abruptly dropping the level, which can result in a pop or click at the boundaries, it fades over 100 ms into the processing, and fades back over 100 ms at the end. If this were an Equalizer, it would fade from non-equalized audio into equalized audio, then back. With any edit operation, this results in a smooth transition. All processing functions, and many editing functions, offer this option.

100 ms is a bit extreme in most cases, but is useful for demonstration purposes. In practice, 10 ms is usually sufficient. In most cases 10 ms is completely imperceptable, and hardly visible, yet completely removes the harsh transition.

Additionally, you can apply the operation to either the Selection (default) or the Whole File. This lets you select a portion for preview purposes, then apply the operation to the entire file, for example.

Note that this element is disabled if the whole file is selected.

Sliders

NGWave makes extensive use of the *Slider* control. NGWave's sliders behave slightly differently than the standard Windows sliders.

When using the Scroll Wheel on your mouse (if one is present), you do not have to set focus to the slider first (in most Windows applications, you must first click on the slider to give it focus). Additionally, you can modify the increment in most of NGWave's sliders by holding the SHIFT key while moving the scroll wheel.

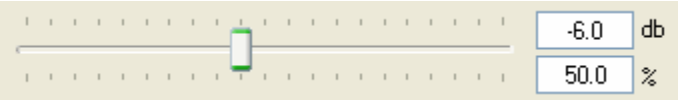
In the above picture, the scroll wheel normally adjusts the slider by 10 ms (milliseconds). Holding SHIFT results in an adjustment of 1 ms. This is useful for fine-adjustment.

Another difference is in horizontal sliders (sliders that are "sideways"). In most Windows applications, scrolling the mouse wheel upward results in the slider moving left -- which is thought of as "down". This is unintuitive, so NGWave

works the other way: moving the wheel upward moves the slider to the right, increasing the value of the slider.

Volume Sliders

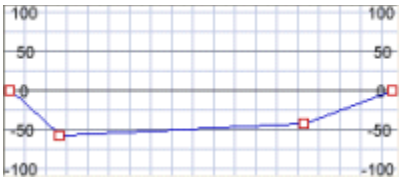
Many areas in NGWave offer a Volume Control slider. An example is the Volume Change, or Paste Mix dialog windows. In these dialogs, you will see two additional text controls along-side the slider:



These display the Decibel level as well as the Percentage of the resulting volume adjustment. You can click on either of these fields to manually key-in a number within the allowed range (+/- 60db, or between 0.1 and 102400.0 percent).

Interactive Graph

Some functions, like the Graphic Fade, offer an Interactive Graph:



This graph lets you plot a curve to apply processing to. In the Fade example, drawing a curve applies a fade using that curve.

To set a point, click on the graph with the Left mouse button. The point becomes a red box, and you can drag it around as needed.

To release a point, click on the point with the Right mouse button. The first and last point cannot be removed; right-clicking them will reset them to the default position on the graph (zero in the example).

You can also choose whether the curve is drawn linearly or using a cosine function. Linear will simply draw straight lines connecting the points, while cosine will offer a more smooth transition.

See Also

- **Back to Help**

Dialog Windows

A description of each Dialog Window in NGWave is shown below:

File Functions:

- New File Properties
- Open Dialog
- Save Dialog
- File Information

Edit Functions:

- Undo History
- Paste Mix
- Trim Silence
- Insert Silence
- Generate Tones
- Resample

Amplitude Functions:

- DC Offset
- Graphic Fade
- Volume Change

Processing Functions:

- Equalizer
- FFT Filtering
- Noise Reduction
- Simple Echo

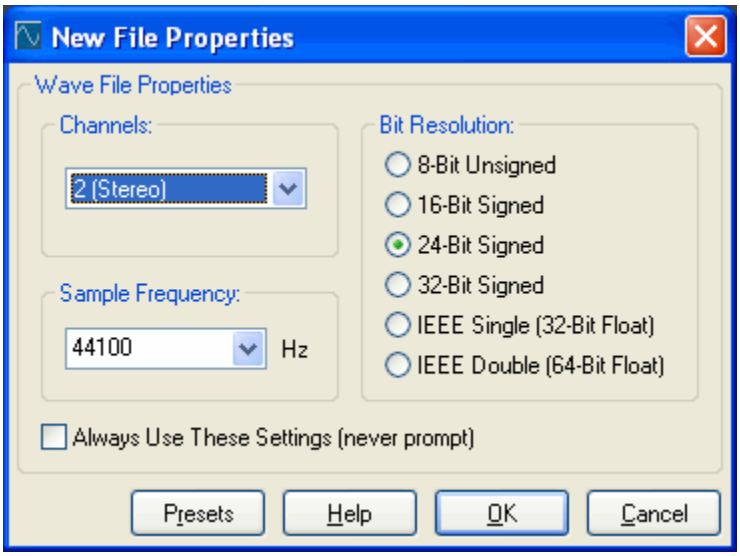
- Echo Processor
- Reverb
- AGC/Compression
- Distortion
- Pitch and Time

Recording Dialog:

- Main Recording Dialog
- Recording Options
- Recording Mixer
- Playback Mixer
- Metronome
- Tuner

- **Back to Help**

New File Properties



This dialog lets you choose properties for a new file, after clicking the New File button or menu options. It offers the following options:

Channels allows you to choose how many channels the new file will contain. It can have one channel (Mono) or two (Stereo).

Sample Frequency lets you specify the Sampling Rate used in this file.

Tip: NGWave supports arbitrary sample rates. You can key in any value between 4,000 and 192,000 Hz.

Bit Resolution lets you choose how many bits are used to represent each sample. Note that this only affects the default Save behavior; internally, all files are created and edited using 32 bits in an unbounded floating point representation.

This dialog remembers your last settings, and additionally you may save and retrieve Presets.

You can also check *Always Use These Settings*. When you check this, the next time you choose to create a New file, your saved settings will be used, and you will not be prompted. You may re-enable this or change your default settings by visiting the Options dialog.

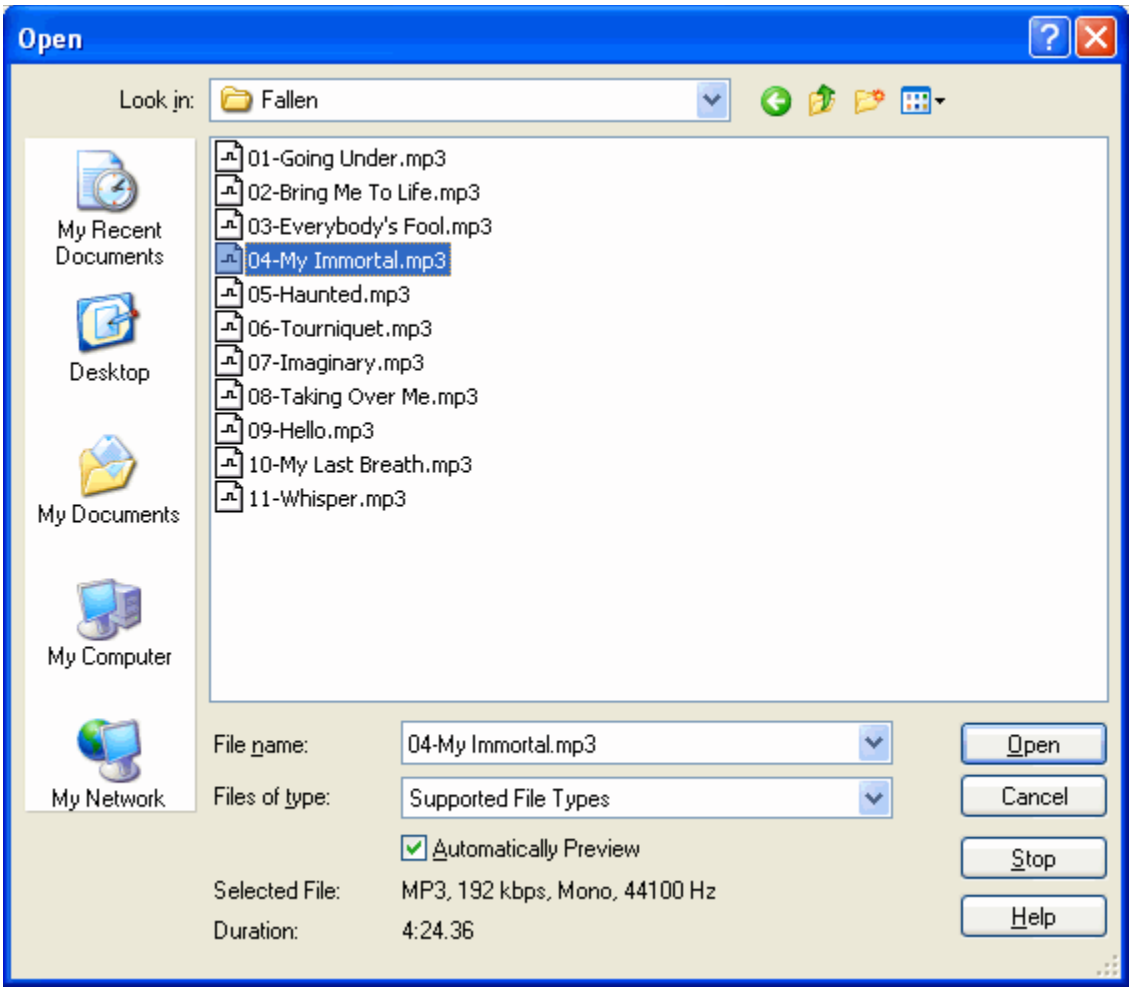
Back to Dialog Windows

Back to Help

Open Dialog

NGWave utilizes the standard Windows Open Dialog. This dialog will look different under different versions of Windows.

NGWave adds some extra options to the standard Open dialog to make finding your media files easier:



Most of the dialog is the standard dialog, however you will notice a few extra options. The *Preview* button lets you listen to any supported media file right within the Open dialog. The *Automatically Preview* checkbox causes Preview playback to start as soon as you hilite a file.

The dialog also displays some brief information about the selected media file. If this dialog is able to show this information and preview the file, the file is supported in NGWave.

Note: You can select more than one file to open. If you hold down CTRL while you click on each file, it will select multiple files.

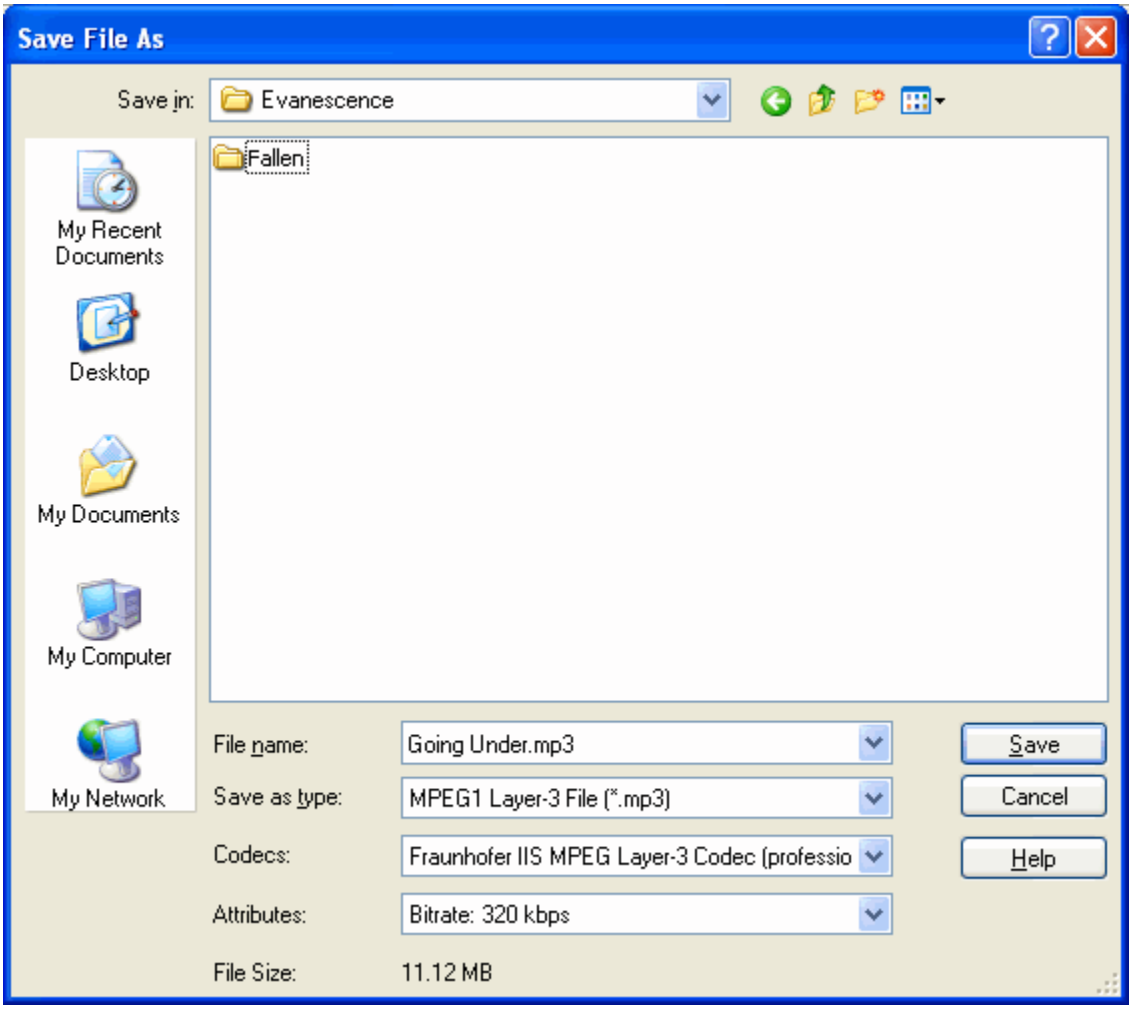
 **See Also**

- **Back to Dialog Windows**

- **Back to Help**

Save Dialog

NGWave utilizes the standard Windows Save dialog. Some extra options are available, however, that are specific to working with audio files.



If you select WAV as the file type, you will see various attributes in the *Attributes* drop-down. This lets you select the target bit resolution and sample format.

If you choose MP3 as the file type, you will see a list of installed MP3 codecs to choose from. Once a codec is selected, the *Attributes* drop-down is populated with supported bitrates for the current file and codec.

The dialog also displays, where possible, the resulting file size of your choices.

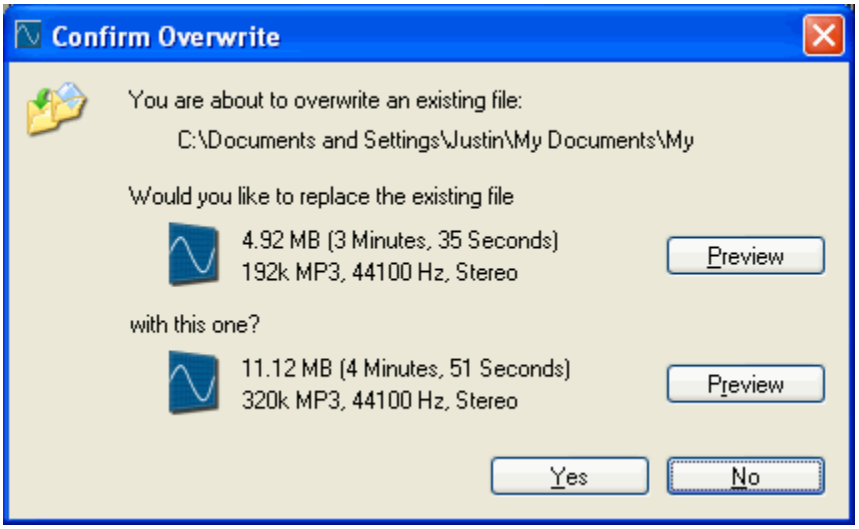
▪ **See Also**

- **Back to Dialog Windows**

- **Back to Help**

Confirm Overwrite

When you choose to *Save As* over an existing file, NGWave prompts you with a friendly Overwrite Confirmation dialog:



This dialog is similar to the overwrite dialog in Windows Explorer, showing more detailed information than is typically available in this situation. Additionally, since you will be dealing with media files, a *Preview* button appears for each file (the existing file and the new one).

Selecting Preview lets you listen to the file you are about to overwrite, to ensure that this is what you want to do.

Select **Yes** to overwrite the existing file; select **No** to return to the Save dialog to select a new filename.

See Also

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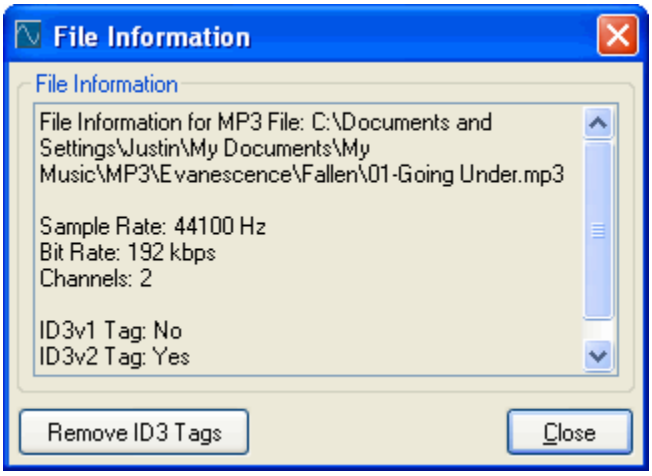
File Information

The File Information dialog simply displays a bit of information about the file. For MP3 files, it displays ID3 tag information, if available.



If ID3 tag information is present, you can click the *Remove ID3 Tags* button to remove them from the file. This change will only modify the file the next time you save it.

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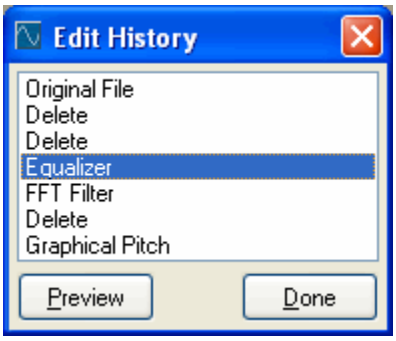
Edit History



This window lets you jump to any level in your Edit History. Clicking on a level immediately loads that level into the wave display. Click *Close* to close the dialog.

You can also audibly preview any level from within this window, making it even easier to find the specific point in the file's life that you are looking for.

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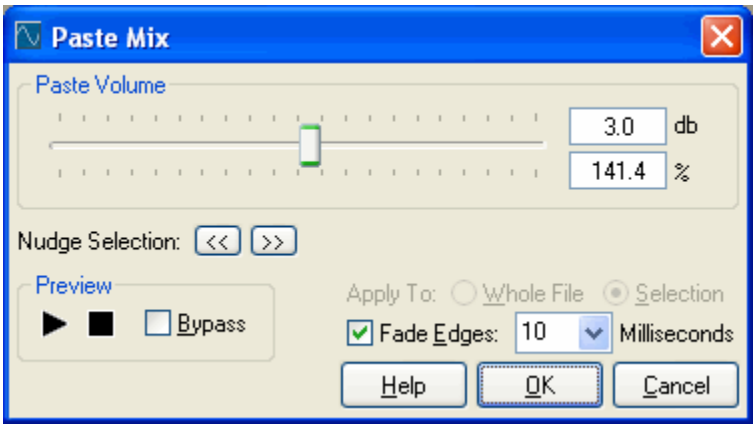
Paste Mix



This function lets you mix the Clipboard contents with the current file. You can adjust the audio level of the pasted audio with the Level control.

You can also "Nudge" the selection to the left or right. This lets you preview the result, and adjust the selection a small bit at a time until you have found exactly where you want to mix the clip.

If you right-click on the Nudge buttons, you can choose how much the Nudge buttons move your selection.

See Also

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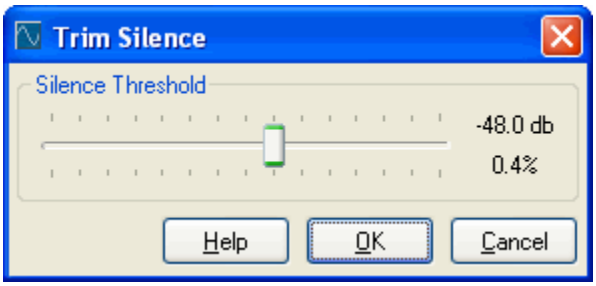
Trim Silence



This feature removes leading and trailing silence from the current file. You can select the Threshold for the silence detection; anything below that threshold is considered "silence".

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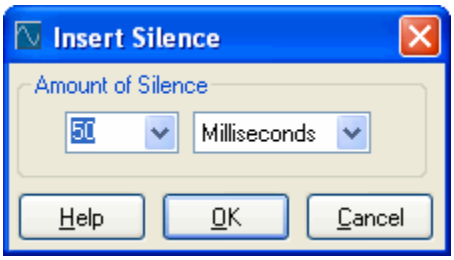
Insert Silence



This function simply adds blank audio data, or silence, into the file.

- **Back to Dialog Windows**

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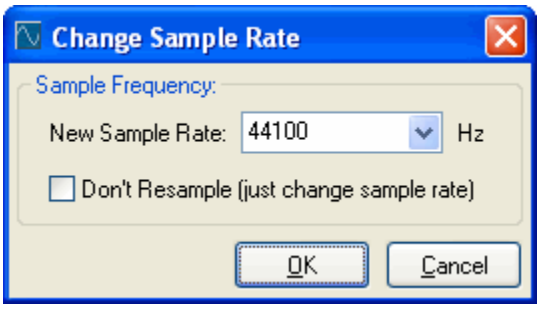
Resample



This dialog lets you resample the file to a new sampling rate. NGWave uses a band-limited linear interpolation technique that provides fast and good quality sample rate conversions.

If you check the box for "Don't Resample", NGWave will not resample the audio; instead, it will simply change the sample rate that it uses in this file. Note that this will result in an incorrect playback rate, but can be useful to fix corrupted audio files, or for effect.

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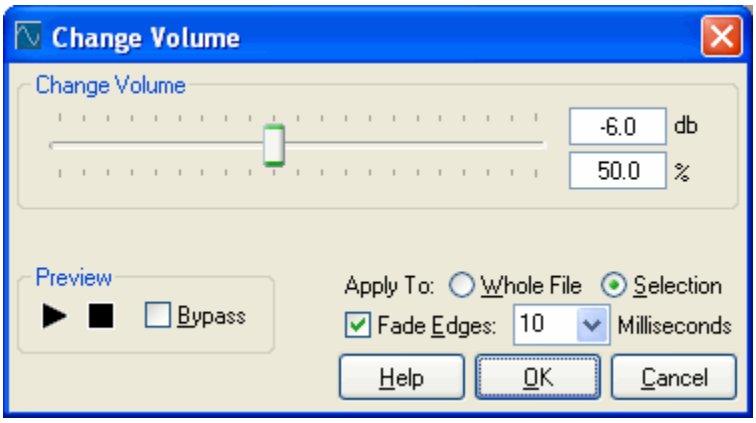
Volume Change



This dialog lets you adjust the audio level. You can adjust from -60db to +60db.

If you choose the *Normailze* option, the level control will be placed at the recommended setting after scanning the peak level. Because of the way the decibel unit works at a logorithmic curve, if your audio is 3db over, then you simply reduce it by 3db to *normalize* (or Maximize) the audio.

See Also

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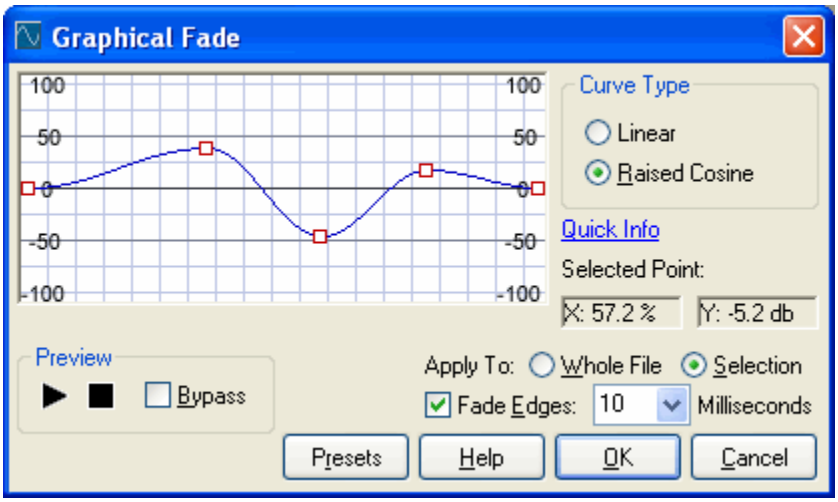
Graphic Fade

The Graphical Fade dialog lets you fade the selection, altering the fade curve graphically:



See the Common Elements page for details on manipulating the graph.

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Correct DC Offset

This feature lets you correct a DC offset in a sound file. A *DC Offset* is where the entire wave is shifted up or down, where zero is not quite zero. Some inexpensive sound cards may record audio with an offset that isn't quite zero; this feature will let you correct this.

Tip: NGWave lets you correct for this on the fly within the Recording dialog.

After scanning the file to determine the offset, you are prompted to correct this. If you choose to apply the same correction for both channels, the audio is shifted by the average offset of the combined channels. This is not recommended, however; it's best to let each channel be adjusted independantly.

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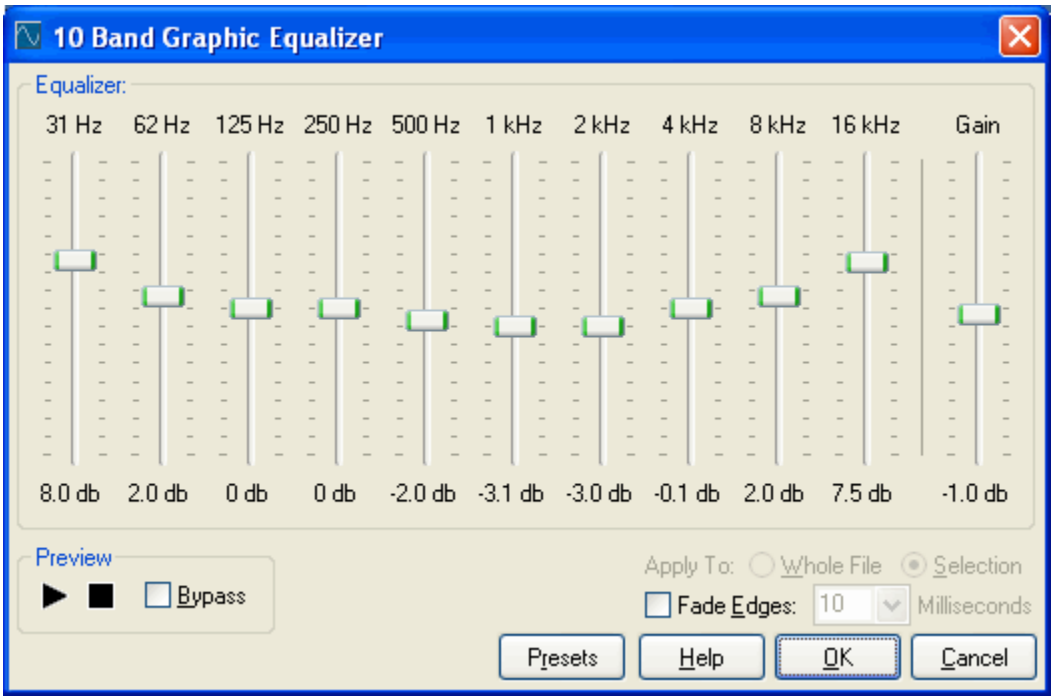
Equalizer



NGWave offers a 10-band Graphic Equalizer. This functions very much like a standard analog equalizer. The code mimics analog circuitry as much as possible, resulting in a very warm equalization.

Each band is at IEEE standard cuttoffs, in one-octave steps with a 12 db/octave curve. Each band utilizes approximately a 4th-order Butterworth filtering technique.

Note that the actual frequencies will depend on the sampling rate of the current audio file.

As of version 2.1, the Equalizer also offers an overall Gain control.

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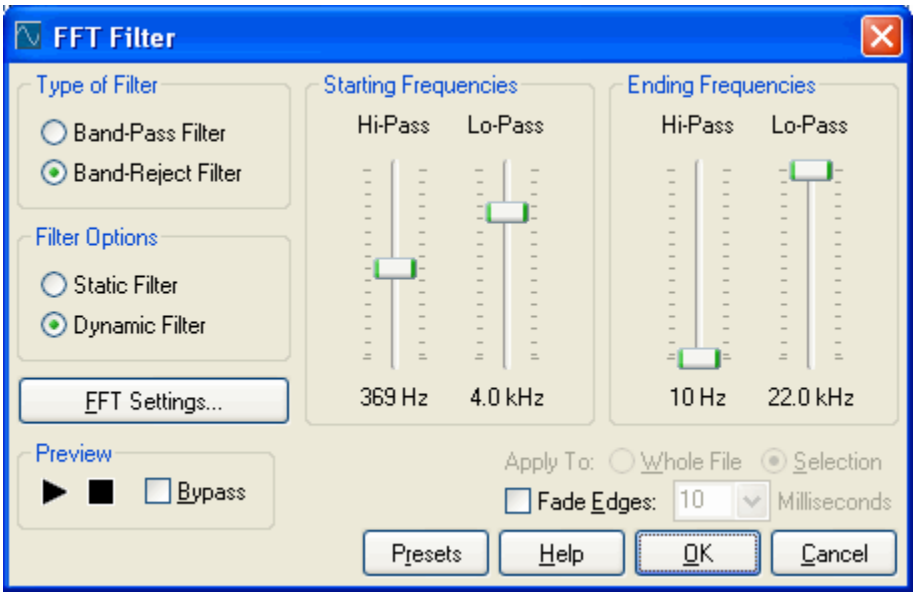
FFT Filtering



Unlike the Graphic Equalizer, the FFT filtering uses a Fourier Transform to perform filtering. The result is a "brick wall" filtering, where anything beyond the range of the filter is completely filtered out.

There are various options for the filtering:

Type of Filter - a filter is either Band-Pass, where frequencies *outside* the specified range are filtered out, or Band-Stop, where frequencies *within* the specified range are filtered out.

Note that you can achieve a Hi-Pass or Lo-Pass filter by using BandPass, and setting the Lo- or Hi-Pass setting to the maximum or minimum positions, respectively.

Filter Options - a Static filter simply performs the same filtering throughout the selection. A Dynamic filter sweeps linearly between your Start and End settings.

FFT Settings - This lets you jump to the FFT section of the Options dialog to adjust the properties used in the Fourier transform.

Note that FFT filtering is slower than the 10-Band Graphic Equalizer, however the actual speed depends on the FFT settings being used.

Advanced

This is a digital technique that guarantees the cut-off frequency, with no slope. Contrary to popular belief, however, phase distortion can occurr even when digitally stripping out frequencies. Phase is relative to all frequencies within a sound; stripping some of those frequencies out can in fact affect the overall phase relationship.

- **Back to Dialog Windows**

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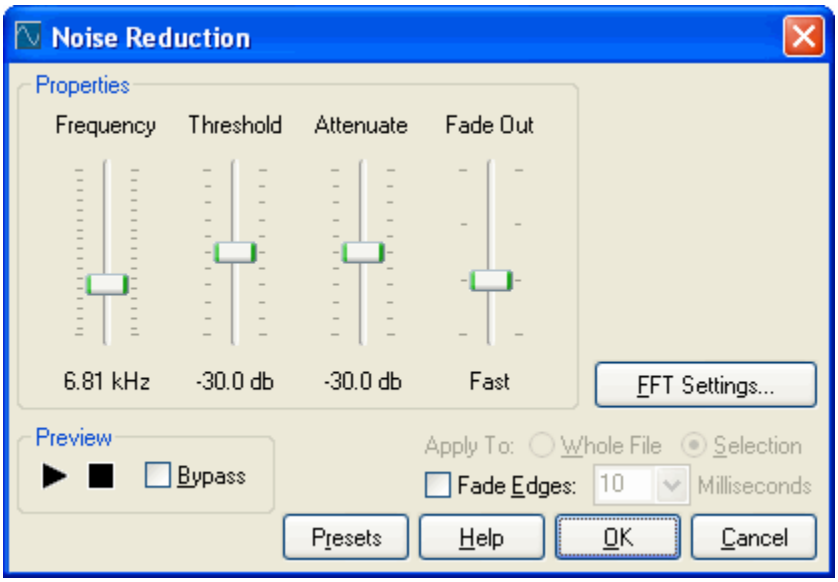
Noise Reduction



This function attempts to reduce background noise or hiss from the audio.

The way this works is the audio is split into multiple frequencies. Each frequency is then gated through a soft noise gate. Anything below the Threshold you set is muted, and frequencies above the threshold are allowed through at full volume. You can adjust how quickly a frequency is cut off with the Fade Out control.

The Frequency control lets you choose what frequencies are affected. Frequencies below this level are let through with no processing.

The Attenuate control lets you adjust how much attenuation is applied to frequencies below the threshold.

Operation

A standard Noise Gate would simply mute the audio when it is below a certain threshold. Once the audio is above the threshold, it is audible -- tape hiss, background noise, and everything present in the audio is heard.

Noise Reduction, on the other hand, applies a soft noise gate to each frequency present in the audio. You can completely eliminate hiss, without limiting treble response. Likewise, you can reduce background rumble without losing low-frequency response.

The best way to get started is to follow this procedure:

1) Set the Frequency all the way down to 0.0 Hz
2) Set the Threshold all the way down to -60.0 db
3) Set Attenuate down to -60.0 db
4) Set the Fade Out to Medium.

With these initial settings, virtually no reduction of noise occurrs.

Gradually increase the Threshold, just until the undesired noise is completely removed. Then, bring up the Frequency to just before the noise starts to come through again. If you are removing hiss, the Frequency control should be relatively high (around 4 kHz or higher). If removing rumble, it may need to be all the way down.

Finally, raise the Attenuation slider to just before you start to hear the noise again. This makes sure you're not unnecessarily attenuating -- only enough to remove the undesirable noise.

Adjust the Fade Out to suit your own tastes. You will notice that with a slower fade out, you may hear the background noise or hiss fade out after a loud sound is played. Sometimes it can lead to a reverb-like effect. Faster fade outs may cause the audio to sound "artificial". Adjust as necessary for the source you are working with.

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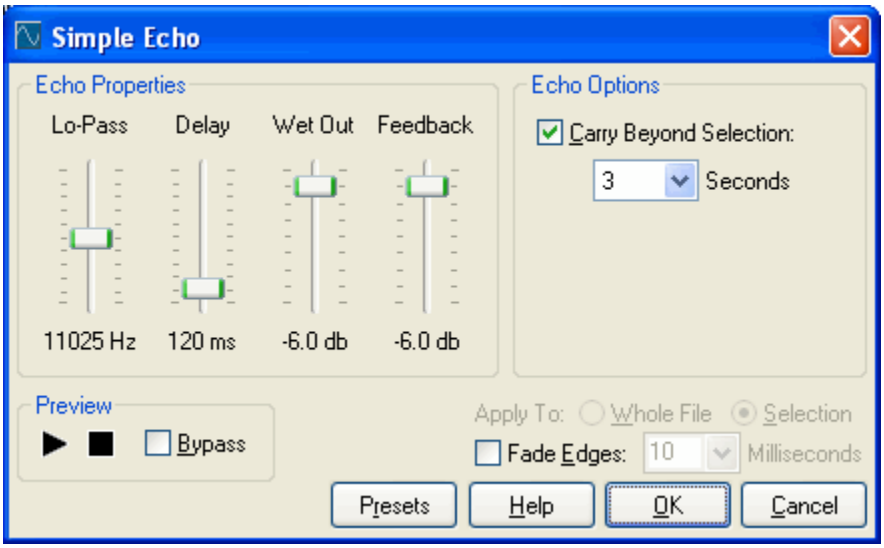
Simple Echo



The full Echo Processor may be a bit intimidating, and sometimes it is overkill. The Simple Echo dialog lets you perform a much simpler echo.

The parameters you can change are described below:

Lo-Pass - this applies a simple Lo-Pass filter to the input prior to entering the Delay.

Delay - This controls the amount of delay.

Wet Output - This controls how much of the processed audio is mixed to the output.

Feedback - This feeds some processed output back into the input, for a repeating echo.

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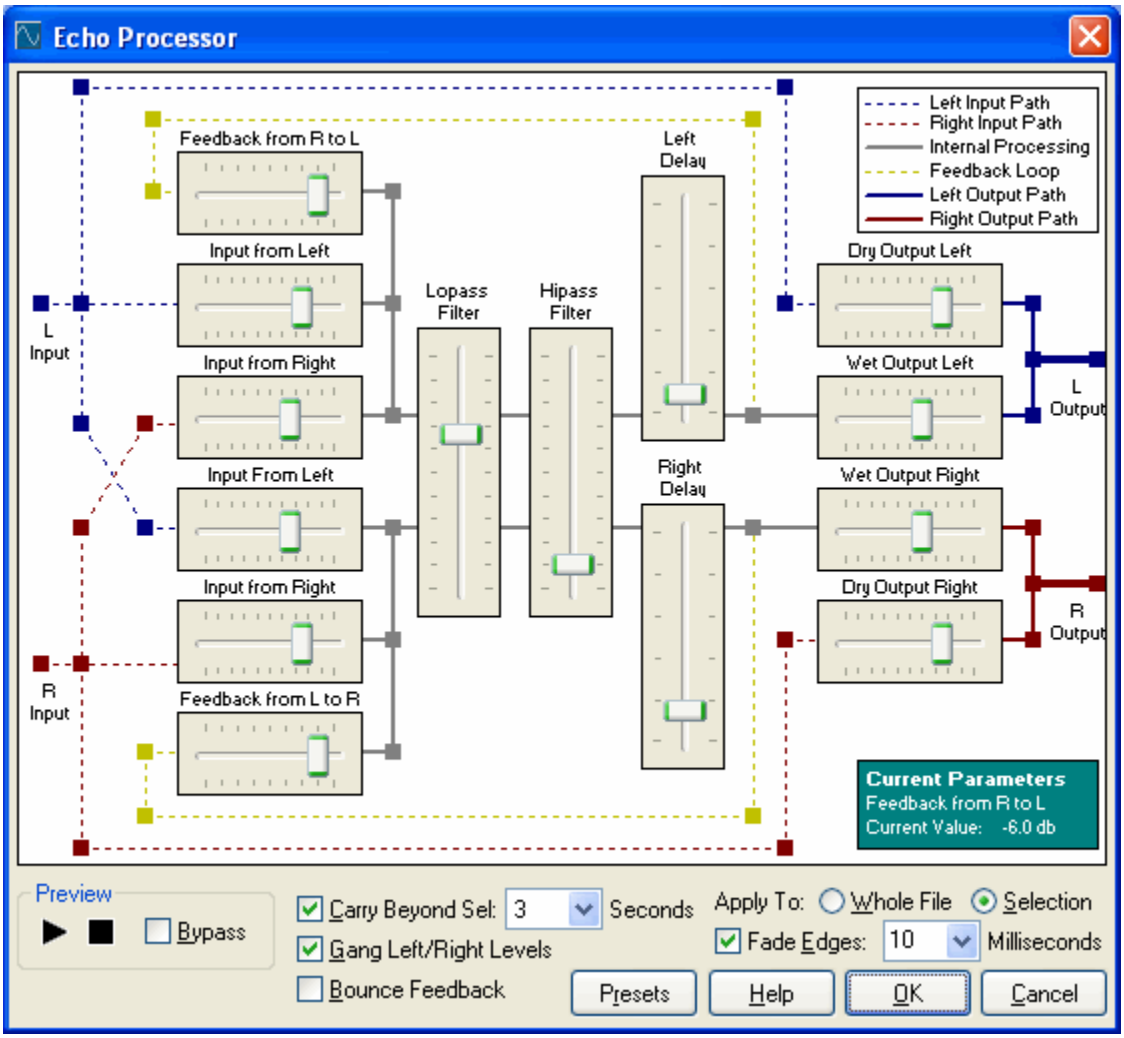
▪ **Back to Help**

Echo Processor



The Echo Processor may look intimidating at first -- but it's a lot easier than it looks.

The Echo Processor offers many settings. We will introduce them in the order of processing. Starting on the left, in the middle of the dialog:

Input from Left/Right - These four controls let you control how much of the Left and Right channel inputs are fed in to the Left and Right lines. You can keep them completely independant (by reducing the opposite channel levels to -48) or mix them.

The audio chain continues to the Filtering section:

Lo-Pass Filter and Hi-Pass Filter - These apply a simple filter to the audio before the Delay stage. You can tweak the

resulting tone of the echo with these controls.

Then the Delay section comes into play:

Delay - You can adjust how much delay is introduced for each channel independantly. This allows you to create neat stereo effects.

The audio then forks into the Wet outputs -- the amount of "processed" audio that gets fed to the output -- and the Feedback Loop.

The *Feedback Loop* feeds some processed output back into the input. This allows your echo effect to carry for a long time -- but be careful, as you can very easily overdrive the processor with too much feedback! This is of course harmless, unless you have your speakers cranked up too loud...

The *Dry Output* simply feeds some unprocessed input back into the output. This lets you mix some processed audio into the unprocessed audio.

Use a loud (0 db) Dry Output, and a low (-12 db or so) Wet Output, to achieve a subtle reverb-like effect. Do the opposite -- low Dry and loud Wet -- for a "pre-echo" or chamber effect.

Gang Left and Right Levels - With this box checked, all level controls are "ganged", or tied together. Adjusting the Left Dry Output, for example, also affects the Right Dry Output to the same amount. This checkbox otherwise has no effect on the audio (it does *not* mono the input or output).

Bounce Feedback - This box causes the Left channel to feed back into the Right, and vice-versa. This is for further stereo effects. Note that the diagram changes to reflect this.

Carry Beyond Selection - This option carries the echo -- but does not process further -- past the selection. This lets you highlight a small section that you wish to hear echoed, and the echos will carry on past where you selected. Audio that is beyond the selection is not echoed.

Note: It is a good idea to have your Dry Output set to 0db when using this feature to mix echoes with more, non-processed audio; for example, when you echo a selected portion of audio, and have the "Carry Beyond Selection" mix the decay with the rest of the file. This way there will be no sudden level change at the end of the processing.

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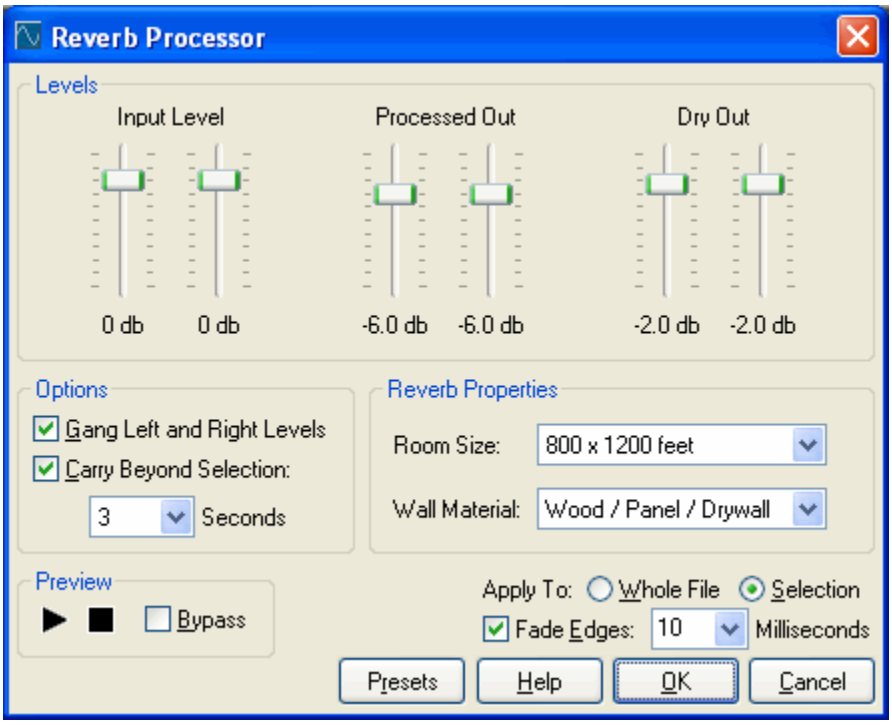
- **Back to Help**

Reverb Processor



NGWave's Reverb Processor produces a reverb effect. This is similar to an Echo effect, except that NGWave tries to mimic the sound properties of a large (or small) room.

The *Input Level* controls how much of the input is fed into the processor from each channel. Note that the input is mixed down to one channel during processing -- but the Dry Output remains in stereo, and the effect is a stereo effect.

The *Wet Output* controls how much processed audio is fed into the output. The *Dry Output* controls how much unprocessed audio is mixed into the output.

The *Room Size* controls the size of the "room". Larger rooms will have slower echo effects.

The *Wall Material* controls which type of material the reverb processor simulates. Metal will give a ringing effect, while Foam will try to absorb most of the audio, reflecting very little and sounding somewhat muffled.

Gang Left and Right Levels ties the Left and Right controls together. It does not affect the processing.

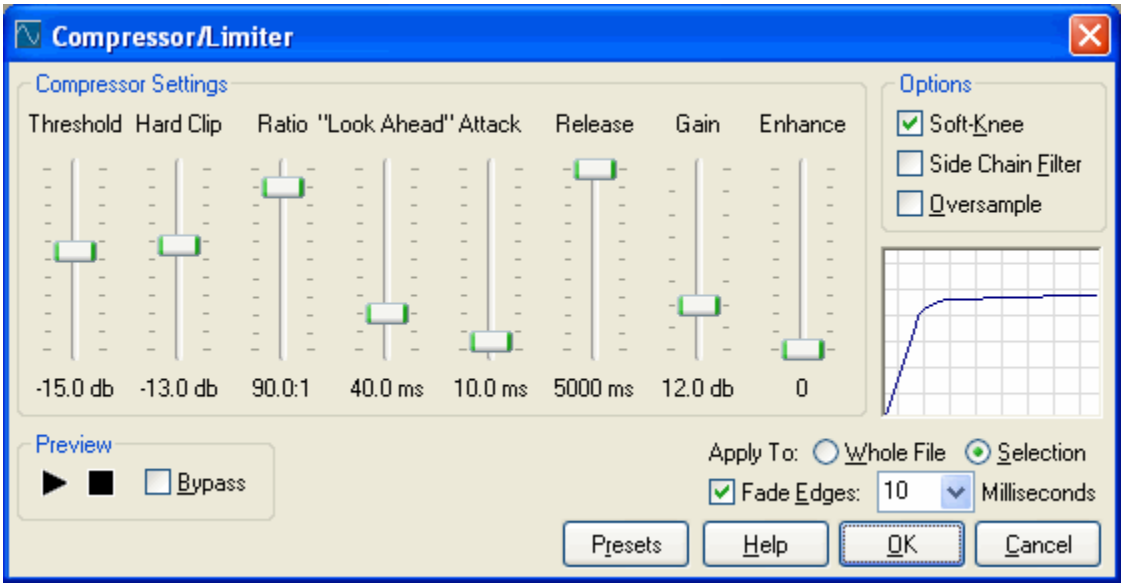
Carry Beyond Selection - This option carries the reverb -- but does not process further -- past the selection. This lets you highlight a small section that you wish to hear echoed, and the echos will carry on past where you selected. Audio that is beyond the selection is not echoed, but is mixed with the fading echo effect.

▪ **Back to Dialog Windows**

- **Back to Help**

Compressor/Limiter

NGWave features a full Dynamic Compressor/Limiter. This can be used for effect (great for Drums or controlling vocals), or for Automatic Gain Control (AGC).



Many settings are available:

Threshold - When your audio exceeds this level, compression is applied.

Hard Clip - When your audio exceeds this level, the audio is clipped. This is recommended only for effects, and shouldn't be used with normal compression. Set to +12 db to effectively disable it.

Ratio - This controls how much compression is applied. The ratio is between decibels over the threshold, and decibels of compression applied. So 1:1 means no compression will be applied, and inf:1 means full compression.

"Look Ahead" - This introduces a delay-line. The end result is a "Look Ahead" feature, where the compression acts slightly ahead of the actual audio path. This lets you have a slower attack, but since it will attack ahead of time, you can eliminate the *Pop* sound that typically comes with slower attacks.

Attack - This is the rate at which the compression is applied. Lower numbers (in milliseconds) give faster attacks.

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▪ **Tip:** Set the "Look Ahead" to about four times your Attack time, and keep the Attack below 20 ms for best results. Since the Attack time is not linear, a 3.0 ms attack doesn't necessarily mean it will have fully applied compression after 3 milliseconds.

Release - This is similar to the Attack; it controls the rate the compression is released (volume increases)

Gain - This allows you to increase the output gain to make up for the compression. Typically set this to the inverse of the Threshold, minus a few db, if the Ratio is at inf:1. As the Ratio is lowered, the Gain should be lowered.

As a general rule, keep the Gain set to where the curve in the graph is not clipped at the top.

Enhance - This setting is similar to the Enhance setting on some real-world compressors. It lets you add back in some treble (higher frequencies) as compression is applied. It helps to reduce the "Pumping" effect compressors often have.

Soft-Knee Curve - This setting causes the compressor to attack before the input reaches the threshold; the closer to the threshold, the faster the attack. The knee is reflected in the graph.

Side-Chain Filter - This option inserts a hi-pass filter into the *side-chain*. The side-chain is the audio that is actually causing the compressor to act. By filtering this audio, lower frequencies do not have as much effect on the compression, and will help to further reduce pumping.

Oversampling - With this option enabled, NGWave will oversample the audio by 10 times before applying compression. This helps to smooth faster attacks, and prevents over-attack. However, this uses more processing power (will be slower). This does not resample the resulting audio, so no audible side effects will be present.

The Oversampling option makes a huge difference with very small Attack times. With an Attack time of greater than 3.0 ms, Oversampling doesn't add much to the result, and is best disabled to speed up the process.

Graph

The Compression dialog displays a graph showing the resulting audio curve. This graph is not interactive -- it is for reference purposes only. The settings that directly affect the graph are:

- Threshold
- Hard Clip
- Ratio
- Gain
- Soft Knee

The other parameters do not affect the graph, but can contribute to the resulting audio curve and/or output level, depending mostly on the program material.

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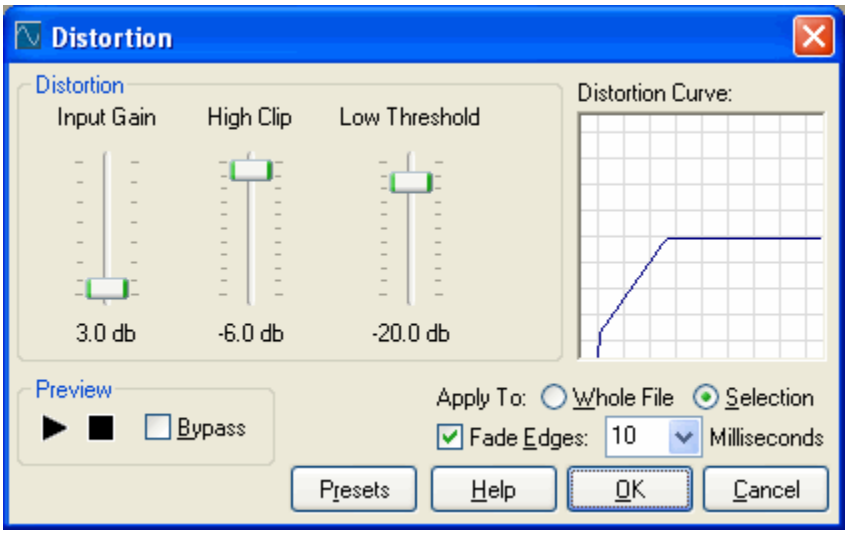
Distortion



The Distortion processor lets you clip your audio, as well as set a low threshold. Audio above the Clip threshold will be clipped. Audio below the Low threshold will be silent.

This can be used to produce a "fuzzy" effect, or to simply limit your audio range by cutting off high peaks.

The Distortion Curve display is non-interactive; it is simply there to show you the resulting audio cuve.

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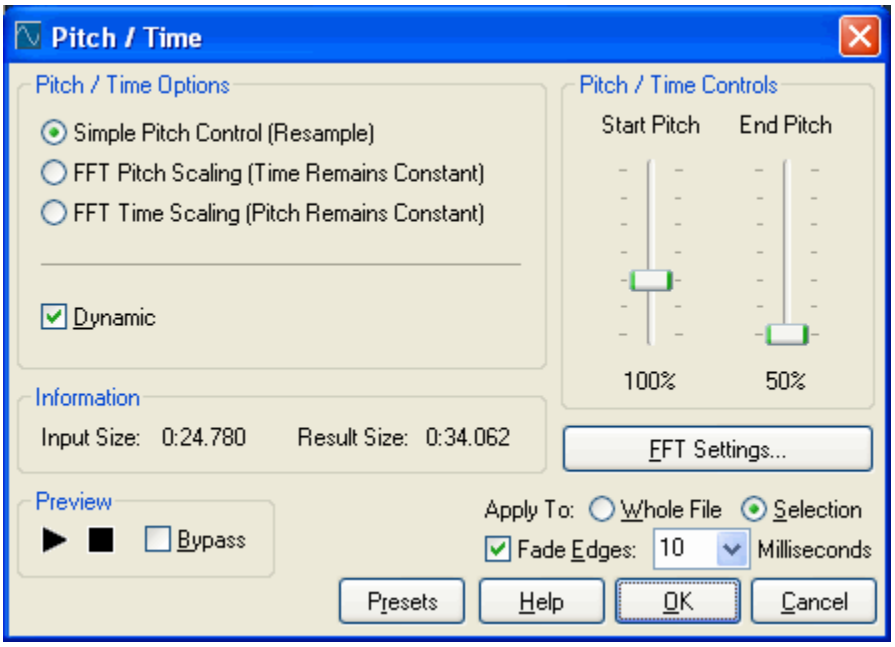
Pitch and Time



This function lets you alter the pitch or time. There are three modes:

Pitch Shift - This acts as a simple resampling. Both the Pitch and Time (speed) are affected. This is the fastest option, and is similar to playing back a tape fast or slow.

Pitch Scaling - Using a Fast Fourier Transform (FFT), this option *scales* the pitch, leaving the time (speed) unchanged.

Time Scaling - Also utilizing an FFT, this option stretches or shrinks the time, without affecting pitch.

Selecting the *Dynamic* option causes the Pitch or Time to be shifted/scaled from the Start setting to the End setting. The speed of this sweep depends of course on how much audio is selected.

The dialog's *Information* frame shows how long the selection will be as a result of the operation.

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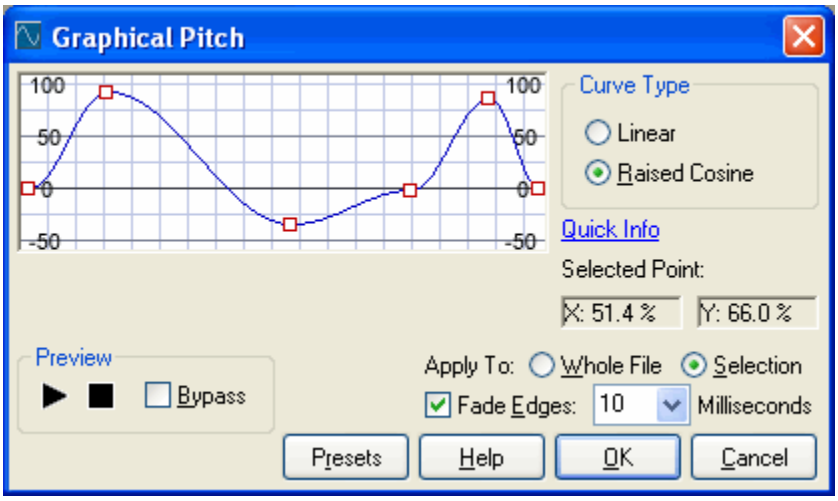
Graphic Pitch

The Graphical Pitch dialog lets you adjust pitch, altering the curve graphically:



See the Common Elements page for details on manipulating the graph.

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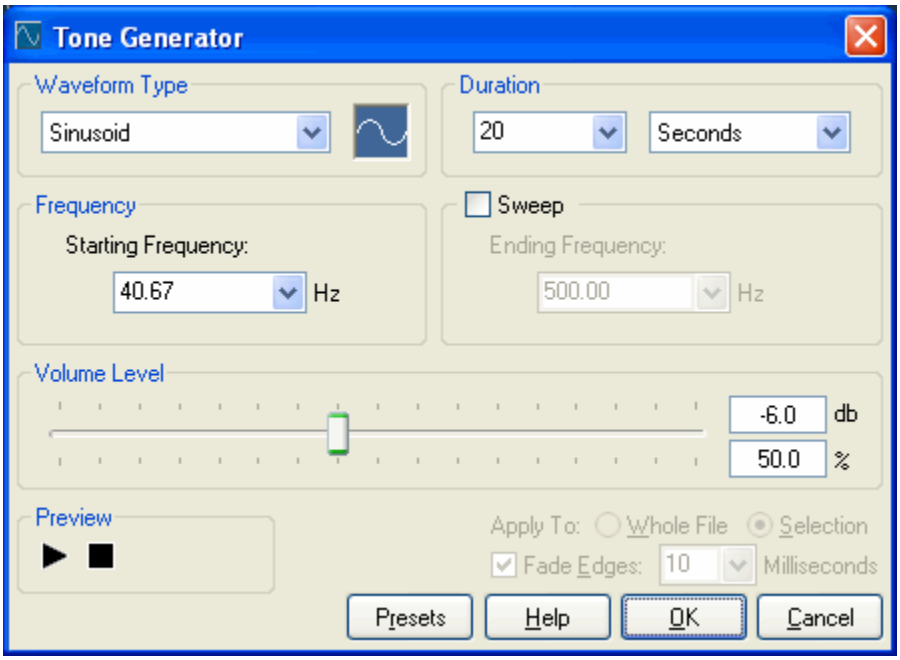
Sound Generator



NGWave's integrated Sound Generator lets you create waveforms. The settings are as follows:

Waveform Type - choose from Sin, Triangle, Sawtooth or Square waves. A small image shows a rough example of the type of waveform; note that the image is not interactive.

Duration - Specify how much sound to generate.

Frequency - Specify the frequency of the tone.

Sweep - If selected, the tone will sweep, linearly, from your Start frequency to the End frequency.

Volume - This adjusts the resulting output level of the tone.

▪ **See Also**

▪ **Back to Dialog Windows**

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Main Recording Dialog

The Recording dialog lets you record sound using your sound card. It offers many functions to help you quickly record audio input from any source, from any sound card.

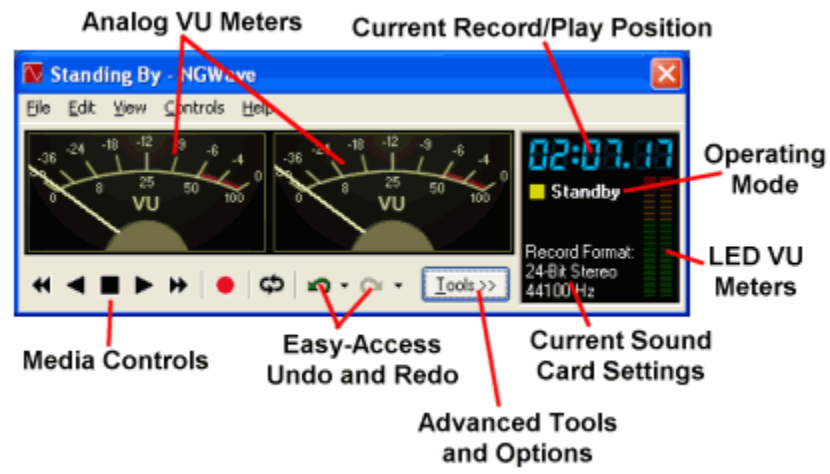
When this dialog is opened, you are always in one of three modes:

Standby means you aren't playing or recording, but you *are* capturing and monitoring input on your sound card. The level indicators function as though you were actually recording. This allows you to set your levels and get everything set up before actually recording.

Playing is when you are playing back a file. The audio card is no longer capturing data, and the analog meters temporarily become Playback level indicators.

Recording mode is when you are actually capturing audio and inserting it into the current file.

Below is a detailed view of the dialog:



The *Operating Mode* will be one of the modes described above: Standby, Recording, or Playing.

The *Analog VU Meters* mimic the properties of a true analog meter element. They are partly for looks, but can be quite useful since they tend to show the average level rather than the peak level.

The *Digital VU Meters* show the current *peak* level. At the top are two *Clip Indicators*; when your audio level clips, the Clip Indicators will light and remain lit for approximately one second.

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▪ **Tip:** For best recording results, try to keep the Digital meters averaged around -12db -- the first amber (orange-yellow) segments. Likewise, try to keep the Analog meters around the center. NGWave makes it easier to keep levels under control during recording, since you can see both the instantaneous peak level (the Digital meters) as well as a natural average (Analog meters).

The *Current Record Position* shows the current recording position in realtime. In Standby mode, it displays the position of where the next recording will be inserted. In Playback mode, it shows the playback position.

All positions are relative to the entire file.

The *Media Control Buttons* work similarly to the Media Toolbar in the main NGWave window.

The *Record* button begins recording. You can stop recording by either clicking it again, using the Stop button, or pressing Escape.

Pressing Escape again (while in Standby mode) closes the Record dialog.

Easy-Access Undo and Redo are extremely handy when doing multiple recording takes. You can Undo and Redo, without closing the Record dialog.

-
-
- **Tip:** When in Recording mode, the *Undo* button acts as an *Abort* button; pressing it not only stops the current recording, but performs an *Undo* operation. Note that if this is done accidentally you can still *Redo* to get back to the previous recording take.

The *Settings Used to Open Sound Card* is a unique feature of NGWave. Like many high-end editors, NGWave gives you the option to utilize 24-Bit playback and recording when it is available. However, most editors -- even very expensive *Professional* ones -- give you no indication as to whether it is actually communicating with the audio device using 24-Bit.

Unfortunately many 24-Bit cards don't always work in 24-Bit mode; it typically depends on the driver being used. Because of this, NGWave feels it is necessary to display what settings were used to *successfully* open the audio device.

All of this applies to higher sampling rates as well. Many cards that claim to support 192 kHz do not; NGWave again automatically resamples as necessary (optional), but unlike other editors, NGWave informs you that this is being done.

Advanced Tools and Options -- this button opens up the lower-portion of the dialog, revealing many goodies...

Tools and Options

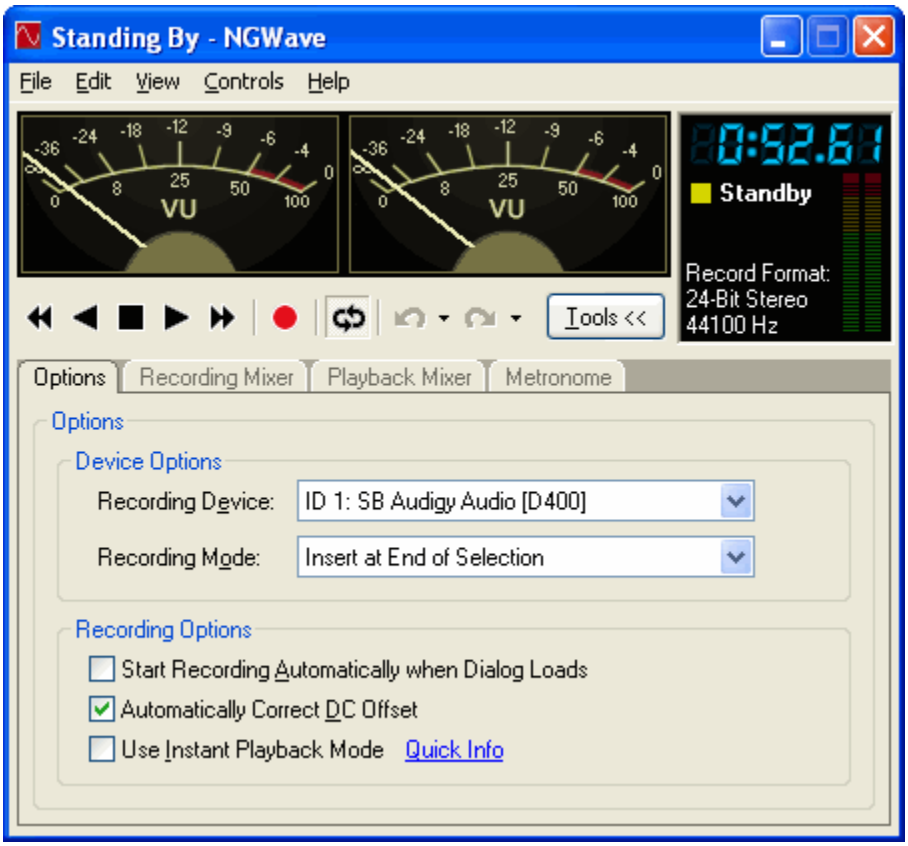
- Recording Options
- Input Mixer
- Output Mixer
- Metronome
- Tuning and Frequency

- **Back to Dialog Windows**

- **Back to Help**

Recording Options

With the Tools button enabled, the Recording dialog gives you a few options:



The *Recording Device* allows you to select among your installed sound cards. You can choose any card that is capable of recording.

Recording Mode - You can choose whether each take *Inserts* at the end of the selection, or *replaces* the current selection.

Start Recording Automatically - With this box checked, next time you load the Recording dialog, it will begin recording immediately.

Automatically Correct DC Offset - With this box checked, NGWave incorporates a second-order Bessel filter set at 4 Hz to correct for any DC-Offset your audio card produces. Many cheap audio cards are poorly calibrated for zero, and the result is an *offset*. Rather than simply decoupling this, NGWave uses a Bessel filter, which is known for its low phase-distortion properties.

Use Instant Playback Mode - This option causes the Record button to cycle through three modes:

While in Standby mode, the button is Red. Click to begin Recording.

While Recording, the button is Green. Click to instantly play back what you just recorded.

While Playing (only if engaged from the green Record button), the button is Yellow and stops the playback.

With the option disabled, it simply cycles between Record and Standby modes, and the button is Yellow and Red.

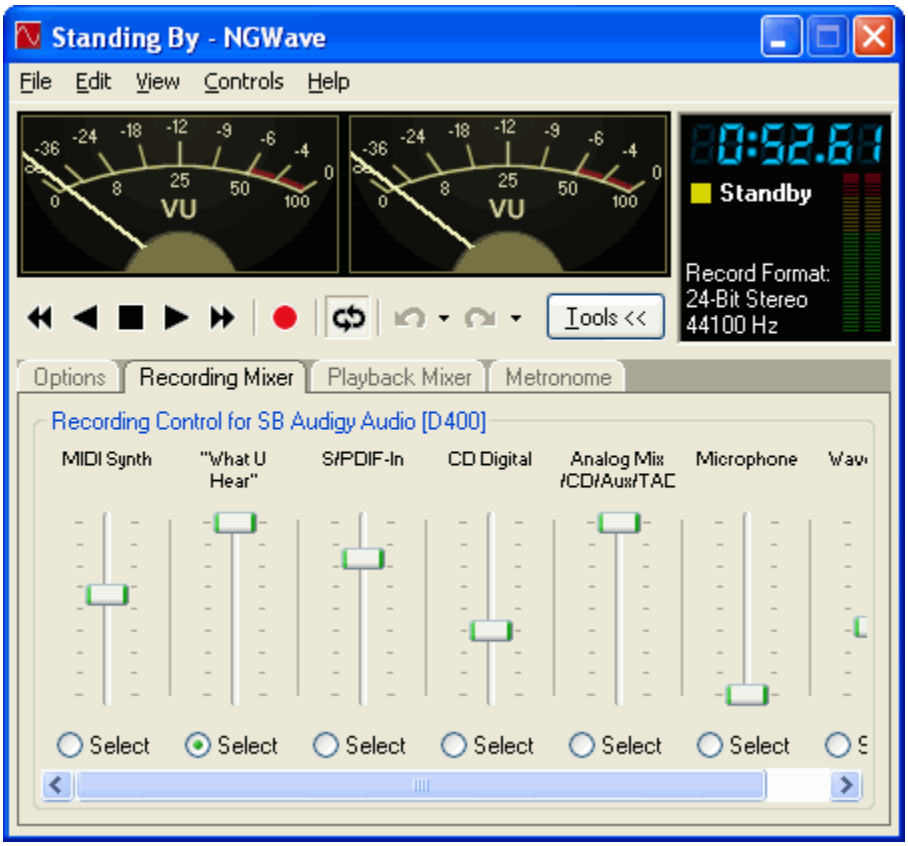
Essentially, the color of the button represents the mode it will go into.

- **Back to Dialog Windows**

- **Back to Help**

Recording Mixer

This dialog displays a Recording Control mixer for the sound card you are currently recording with:



You can adjust the levels of each input your card recognizes. Note that what is show depends completely on your sound card and driver. An updated driver may give you more options -- so always use the latest driver available for your audio card.

Within the mixer, you may see various controls, depending on what functions your sound card and driver supports. The number of Faders visible depends on how many available input source lines your card supports. If more than 6 are shown a scrollbar will appear, allowing you to scroll to view all available mixing sources.

Some sound cards require you to "Select" a particular line for input. If your card has this option, you will see a "Select" button directly below each fader. Choosing this will select that line for recording input. Most cards offering this option are *Mutually Exclusive*, meaning that selecting one line deselects the others.

Some cards also offer a Mute function; if your card offers this, a Mute button will also appear below each fader. Clicking Mute will cause that line to be silent.

Note: On some audio cards, the Mute function does *not* affect the *recording* level; rather, it mutes the *playback* on that line. For example, you may want to Mute the Microphone input, so that the microphone is not heard over your

speakers, but the card will still record from this input. On other cards, muting the mic input will in fact prevent recording from it.

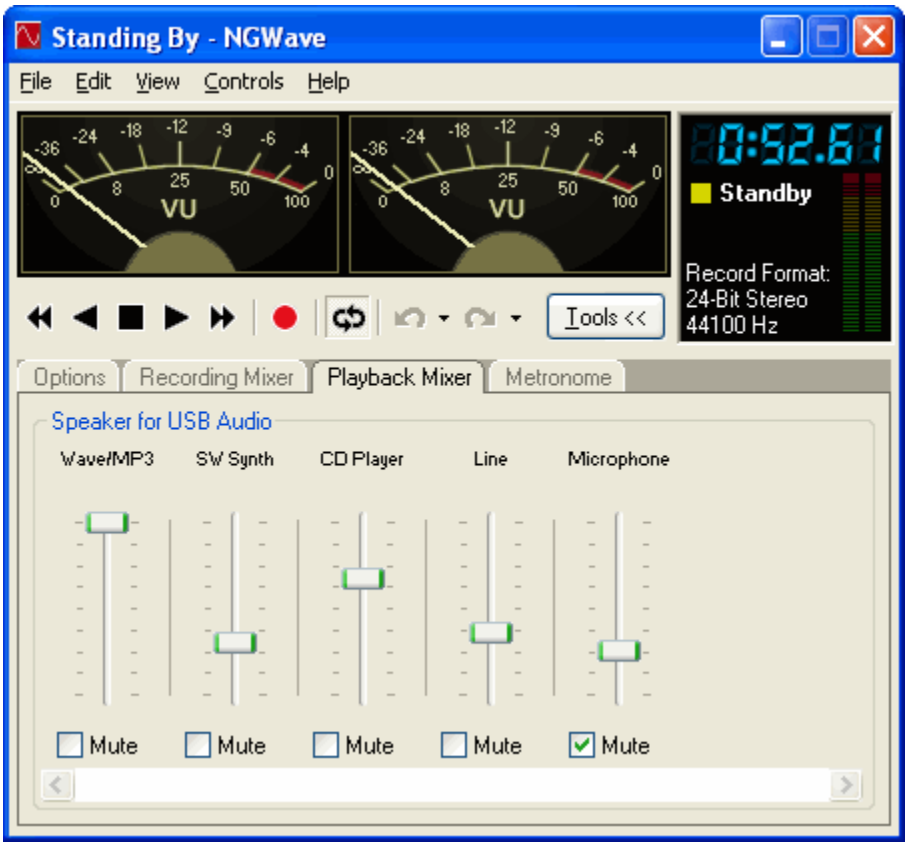
See your sound card's documentation for details specific to your hardware.

- **Back to Dialog Windows**

- **Back to Help**

Playback Mixer

Similar to the Recording Mixer, NGWave's record dialog gives you a Playback Mixer:



This is useful when your Record mixer groups certain options; many cards group all Analog inputs into one Record Level, thus you may wish to adjust each analog input separately. The Playback Mixer gives you a handy way to do this.

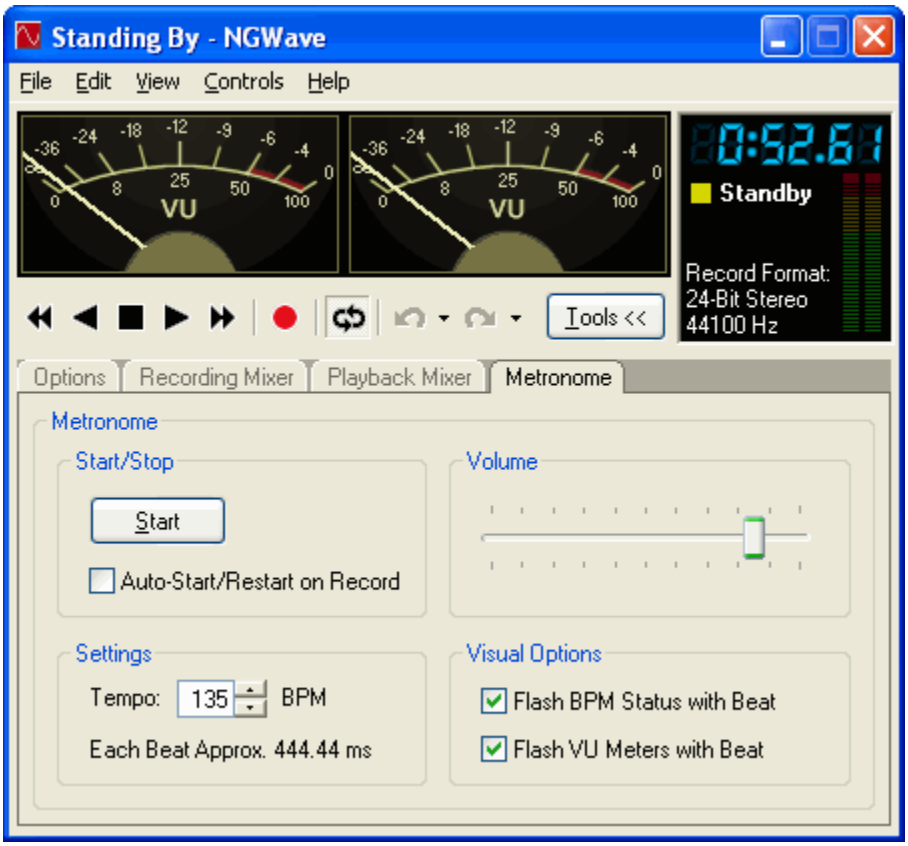
For other cards this may not be an issue.

▪ **Back to Dialog Windows**

▪ **Back to Help**

Metronome

NGWave's Record Dialog contains an integrated Metronome:



The Metronome simply plays a built-in click sound at the specified tempo.

Start/Stop

In this section you can manually start or stop the Metronome, or you can have NGWave automatically start and stop it with the Record button.

Volume

Here you can set the volume of the Metronome sound. Note that this does not affect the Wave Output level; you can set that within the Playback Mixer.

Settings

Here you can adjust the tempo, between 30 and 300 BPM (Beats Per Minute). As you adjust the BPM setting, NGWave shows you how long each beat is in milliseconds. If it is evenly divisible, it will show the text:

Each Beat Exactly 400.00 ms

Otherwise, it may show something like:

Each Beat Approx. 397.35 ms

Visual Options

These options give a visual representation that flashes with the beat:

- *Flash BPM Status with Beat* - This option flashes the text "BPM: 135" (reflecting the actual BPM setting) in the Status area

- *Flash VU Meters with Beat* - This option flashes the border around the Analog VU meters (or Tuner)

Notes

You must have a full-duplex sound card (one capable of both playback and record at the same time), or multiple cards. Likewise, your card must be able to playback audio without also recording the played audio; otherwise you will record the click. This will depend on your audio card, driver version, and mixer settings.

If you see the VU meters reacting to the click, the click is being recorded. Make sure it is not being picked up by your mic, and if not, your card is likely mapping the Wave output to the recording input. See your audio card's documentation for details.

- **Back to Dialog Windows**

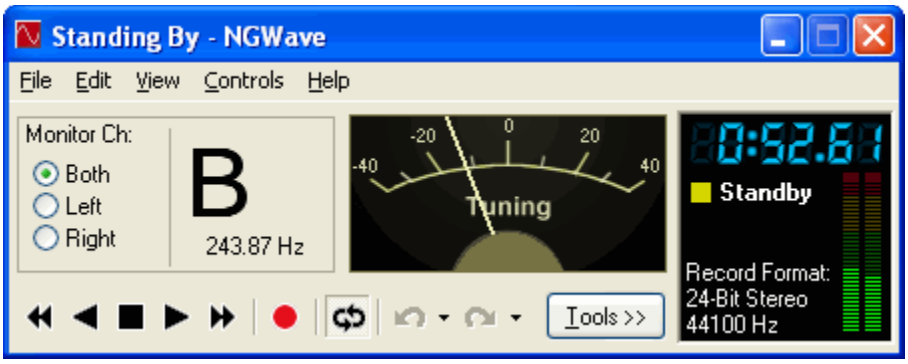
- **Back to Help**

Tuner

Tuner

NGWave's Record Dialog features a Tuner. To enable the tuner, click the *View* menu, then select *Analog VU Mode*, and finally click on *Tuner*. The tuner replaces the Analog VU Meters.

The Tuner lets you view the strongest frequency being detected, as well as the corresponding note:



The note displays in a large font so you can see it from a distance. The tuner needle shows how far off the input is from the detected note. The tuner is as accurate as your sound card's clock frequency, typically within a few thousandths of a percent.

Note: Musical notes shown in this dialog and referenced in this help file are based on the A440 standard, and use a linear twelfth order of two stepping (rather than typical Piano tuning).

Guitar Tuner

NGWave's tuner can be easily used as a guitar tuner. Most tuner applications (both software and hardware) aren't good enough to dynamically lock in on the input frequency; thus, most tuners require you to tell it what note you are trying to hit, or at least only listen to certain frequency ranges.

NGWave's tuner, on the other hand, locks in within a few milliseconds, and is extremely stable. Using it as a guitar tuner is simply a matter of knowing each string's note.

There are many tunings in use, but the *Standard Tuning* is as follows, starting with the top string (the "top" string is the thickest string, representing the lowest note you can pluck on a guitar):

E	82.40 Hz
A	110.00 Hz
D	146.83 Hz
G	195.99 Hz
B	246.94 Hz
E	329.63 Hz

If you can at least roughly tune a guitar, you can simply use the tuner needle to fine-tune each string to hit the note exactly.

There are other common guitar tunings as well. Below are a few:

Standard Tuning	E A D G B E
Drop-D	D A D G B E
Open-C	C G C G C E
Open-G	D G D G B D
DadGad	D A D G A D

Locking In

Note that in some cases, lower notes may be detected as a harmonic (multiple) of the target frequency. For example, the low "E" string may be picked up at 164.80 Hz. This is why NGWave utilizes our exclusive *Phase Offset Error Tracking* system, which will still give relatively accurate results even when it locks in on one of the note's harmonics.

- **Tip:** For best results when tuning a guitar, follow these guidelines:

- Keep the input level loud, but don't clip
- Pluck the string with your finger instead of a pick; this reduces harmonic content
- Pluck the string toward the center of the string; this produces a cleaner note
- Do not use any distortion or other effects when tuning
- If tuning an accoustic guitar, keep the microphone close to the opening on the guitar

Using the above tips, you will be better able to lock right in on any note.

- **Back to Dialog Windows**

- **Back to Help**

Options Dialog

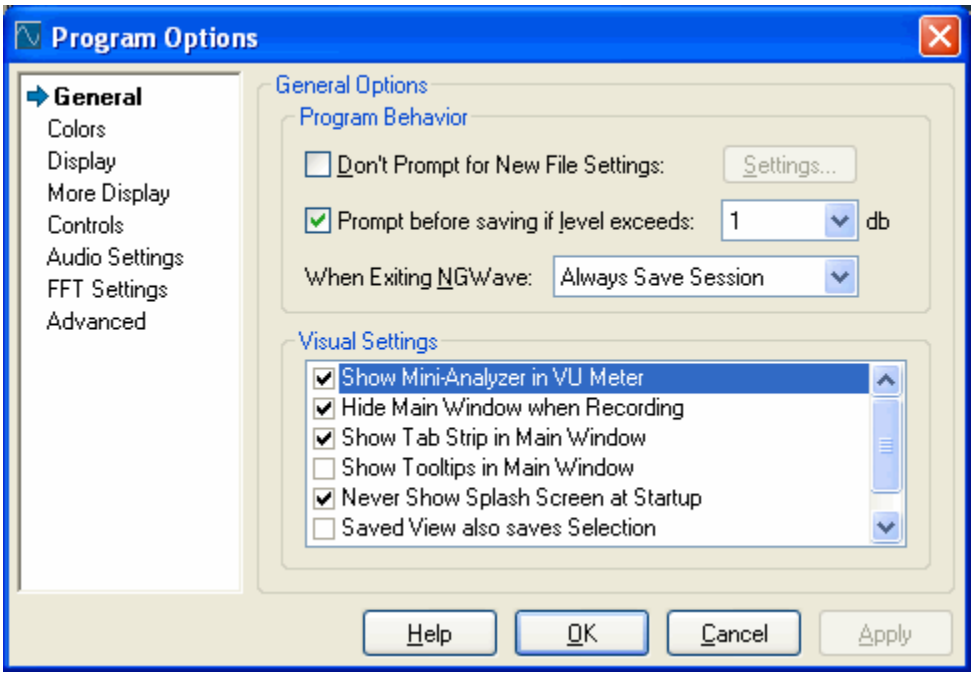
NGWave offers various optional features and custom settings. Click on *Tools*, then choose *Options* to open the Options dialog.

You navigate the Options dialog by clicking on a Heading in the left panel; that heading's options appear on the right.

See the topics below for details on each Options page:

- **Back to Help**

General



Program Behavior

These options affect certain aspects of NGWave's behavior:

Don't Prompt for New File Settings - when this option is checked, clicking *File --> New* will simply create a new file, using your last settings. You can click on *Settings* to change the default New File properties.

With this option enabled, clicking the **Record** icon in NGWave's main toolbar when no file is open brings you immediately to the record dialog with a new file already created. Combine this with the Record Dialog's *Automatically Start Recording when Dialog Loads* option to have true one-click record capabilities.

Prompt before saving if level exceeds - If the option is enabled, NGWave will warn you, prior to saving your file, if the file is over-driven (or Clipped). You can adjust the threshold at which NGWave issues this warning.

If enabled, and if a file is over the threshold, NGWave will offer to automatically *Normalize* the audio, bringing it to a peak level of 0db.

The default is +1db, to avoid prompting unnecessarily for ever-so-slight clipping. If you will tolerate no clipping at all, set this to 0db.

When Exiting NGWave - This lets you choose how the *Saved Session* feature behaves. By default, NGWave simply saves your entire session, retaining all open files with full undo/redo history, as well as your clipboard.

If you wish, you can either disable this completely (*Never Save*), or have NGWave prompt you whenever you close the program.

Visual Settings

Show Analyzer - This simply enables or disables the small 10-band analyzer shown on the left side of the VU meters in NGWave's main window and recording dialog.

Hide Main Window when Recording - with this option enabled, NGWave's main window will be hidden when the Recording dialog is shown. This is handy when you need to use another program, such as when recording audio from a video clip playing in another program.

Show Tab Strip - This option enables or disables the tab strip shown at the bottom of NGWave's main window. The tab strip shows a "tab" for each open file, allowing you to quickly jump to another file.

Show Tooltips - You can disable the *Tooltips*, or popup descriptions, for the toolbars and status bar in NGWave.

Never Show Splash Screen - This option disables the Splash Screen that appears while NGWave is loading.

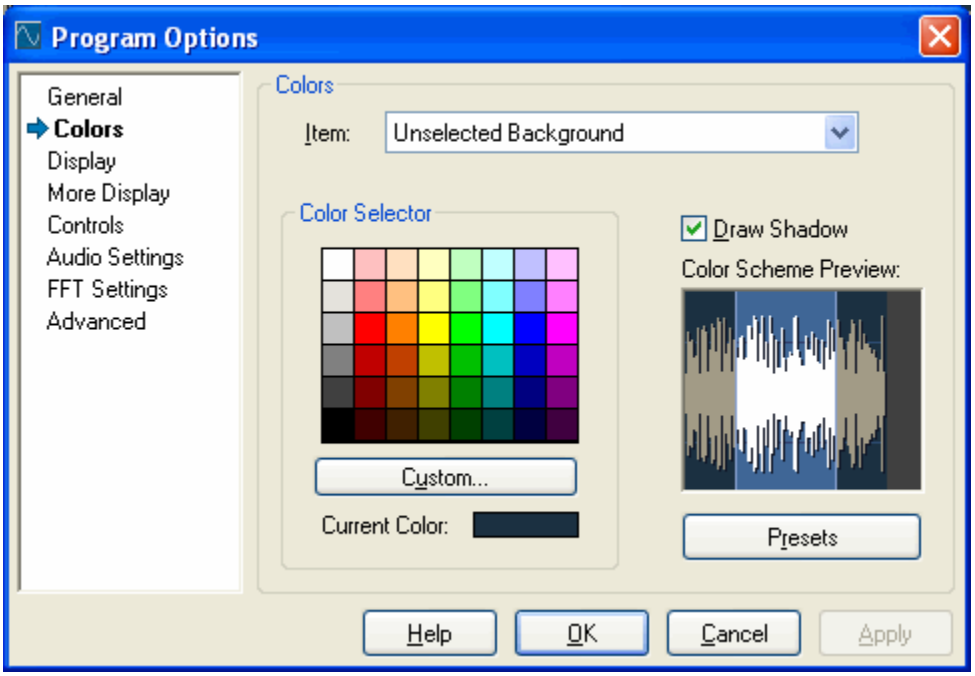
Saved Views also save Selection - When retrieving a saved view, by default your selection (and cursor position) are not retrieved. This option causes NGWave to also carry the selection with the saved views.

Undo/Redo Restores View - When this option is checked, NGWave behaves like previous versions. When you Undo or Redo, the view settings (zoom and position) are restored to that of the previous undo level. By default, NGWave keeps your current view.

- **Back to Options**

- **Back to Help**

Colors



You can customize NGWave's Waveform Display area here. Choose an item in the Items: dropdown, or click on an item in the Preview area. Then choose a color, or click Custom for a full color selection dialog.

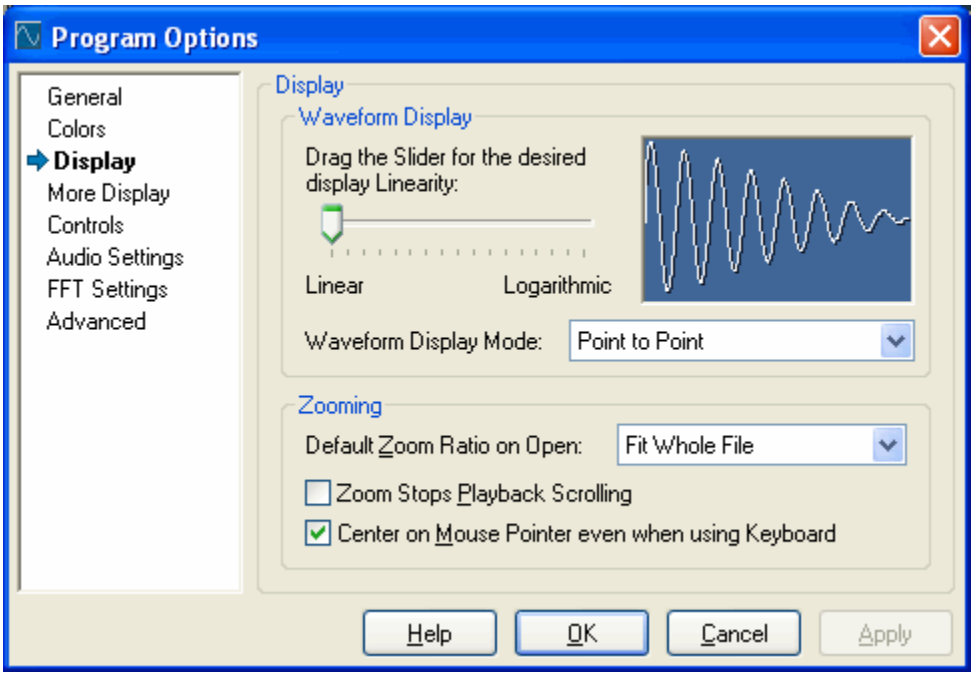
The *Draw Shadow* option shows a small drop-shadow, offset by one pixel down and to the right, underneath the waveform. This helps give a 3D effect, and helps the waveform to stand out from the background. Disabling it may result in a (very slight) increase in drawing speed.

The *Presets* button lets you load saved color schemes. NGWave comes with several color schemes by default.

▪ **Back to Options**

▪ **Back to Help**

Display



Display Linearity

This setting lets you adjust the linearity of the Waveform display. Other audio editors, including previous versions of NGWave, simply draw the audio data in a linear manner. While this is more mathematically correct, it doesn't conform to the actual perceived audio curve as heard by the human ear. Quiet sounds will appear much more quiet than they actually are.

Using a Logarithmic curve shows the audio in a more natural manner, similar to the VU meters. NGWave allows you to adjust the linearity anywhere between Linear and Logarithmic, with 16 steps in between. This way you can display your audio in the best manner for you.

This setting does not alter the audio in any way, nor does it alter playback of the audio. It is strictly for visual representation.

Waveform Display Mode

As of version 2.0, NGWave's default waveform drawing method has changed. Previously, every visible sample would necessarily cross the zero-point, resulting in a *filled-in* look. The newer method is more accurate, shows more detail, and in most cases simply looks better.

Here you can change between three modes: the new mode, the old (or "Classic") method, and a third method that can be useful when zoomed in 1:1.

Default Zoom Ratio on Open - NGWave now lets you choose the initial zoom ratio when you open a file. You can

choose from a number of predefined zoom ratios, or have it simply zoom to fit the window.

Zoom Stops Playback Scrolling - By default, zooming in and out does not stop the playback from scrolling in the display. With this option checked, however, zooming will in fact freeze the playback scrolling.

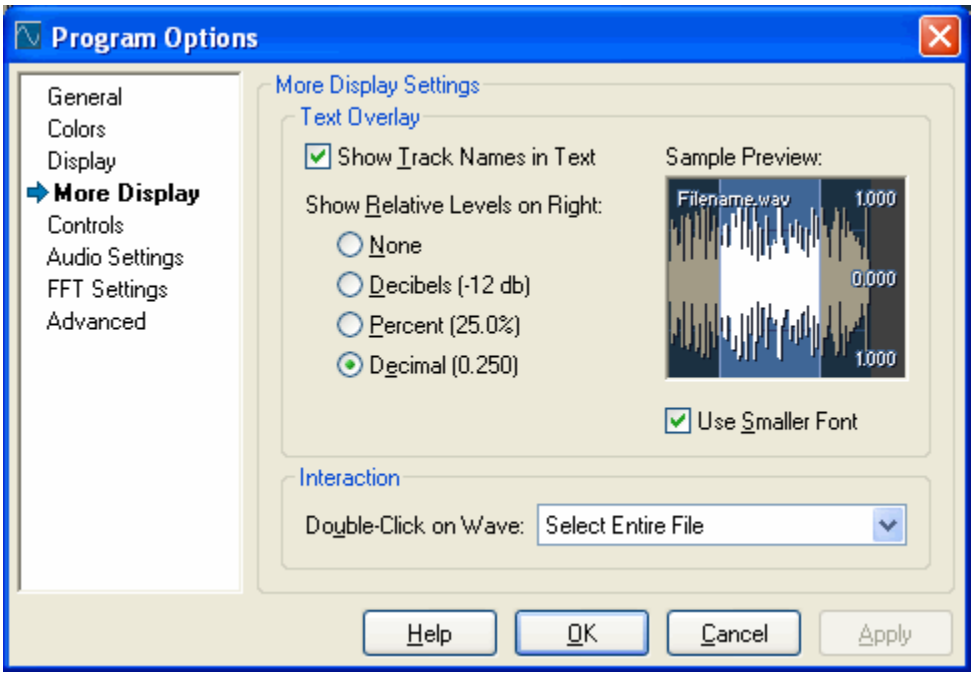
Center on Mouse Pointer even when using Keyboard - When you use the keyboard to zoom, this option makes sure the viewable waveform centers on the mouse pointer. If you uncheck this, zooming with the keyboard will zoom to the center of the display, ignoring the mouse pointer.

Zooming using the mouse will always center on the pointer.

- **Back to Options**

- **Back to Help**

More Display



This options page gives some additional display options. Here, you can select how the text captions are displayed on the waveform view window.

Text Overlay

Show Track Names in Text - This option shows the *track name* on the waveform view for each track.

Show Relative Levels on Right - you can have NGWave display the relative levels on the right-hand side of the display. This is handy when using the Vertical Zoom feature. You can choose to view this in decibels, as a percent, or as an absolute decimal value.

Use Smaller Font - this option utilizes a small, 6-point font. This makes it less intrusive, but may be difficult to read depending on your monitor and display settings.

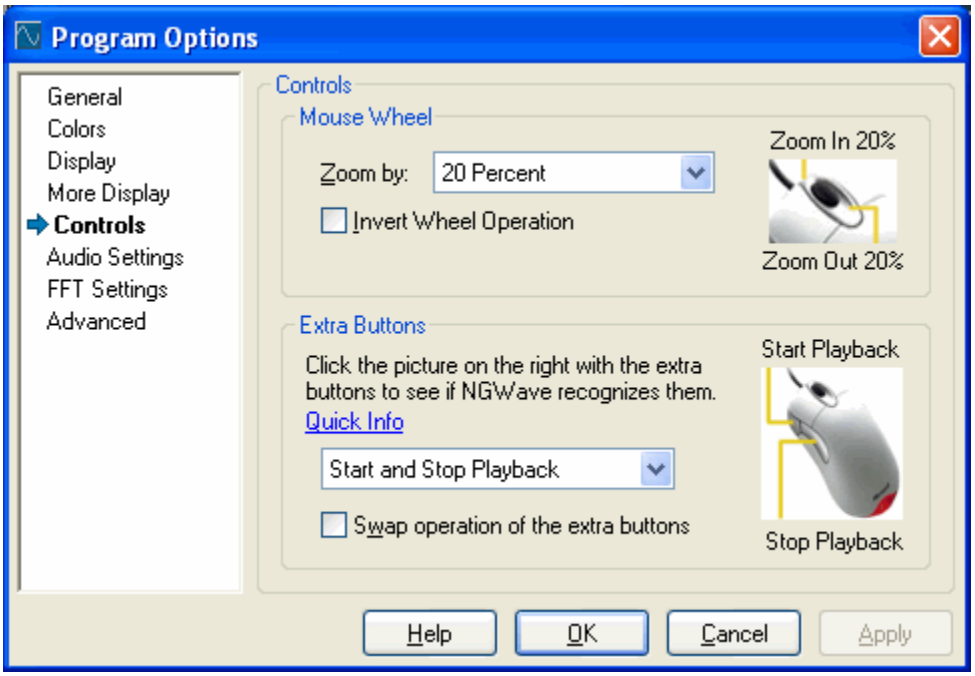
Interaction

Double-Click on Waveform - this allows you to choose what happens when you double-click on the waveform display.

▪ **Back to Options**

▪ **Back to Help**

Controls



Mouse Wheel Zoom

Here you can choose how much the mouse wheel zooms the display. You can also choose to invert the operation, so you can use whichever mode is most comfortable.

Extra Buttons

Some pointing devices, such as the Microsoft Intellimouse Explorer, have two additional "thumb" buttons. These are typically used as "Forward" and "Backward" buttons in your web browser, but are generally unused in other applications. NGWave lets you choose what action these buttons perform.

Notes:

With some drivers, especially under Windows 98, your mouse wheel and/or extra buttons may not function properly in NGWave. If your mouse wheel causes NGWave's display to scroll instead of zoom, check your driver settings (choose the Mouse or Pointers applet in your Windows Control Panel).

Likewise, if your extra buttons do not function in NGWave, you may need to see your mouse or driver documentation for details. Typically under Windows XP, you can simply use the default Windows drivers and everything will work as expected.

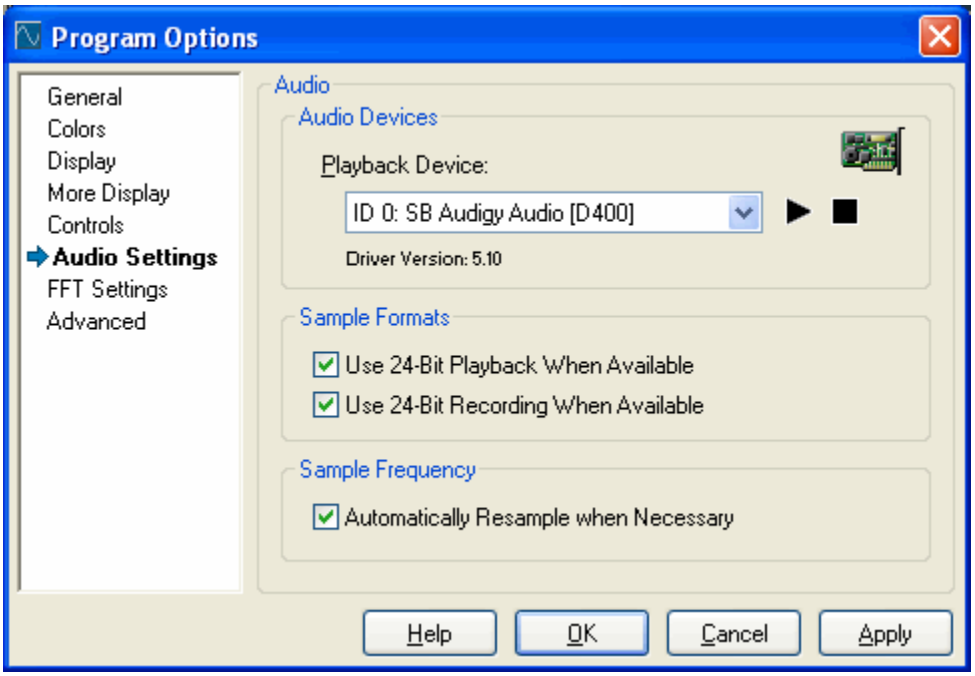
If NGWave won't recognize your extra buttons, and your mouse driver lets you program the buttons, you can set the "Back" button to send a CTRL+SHIFT+Q, and the "Forward" button to send CTRL+SHIFT+W. NGWave will recognize these key presses, and perform whatever action you define in the Options dialog for the Extra buttons.

Likewise, you may be able to program your wheel to send Up and Down arrow keys, if your driver supports this.

- **Back to Options**

- **Back to Help**

Audio Settings



Audio Device - You can select which of your installed sound cards NGWave will play audio through. Use the Play/Stop buttons to play a sound through the selected device. The sound played is a file called "test.mp3", residing in NGWave's program folder. Note that when you select an audio device, its driver version is displayed for reference.

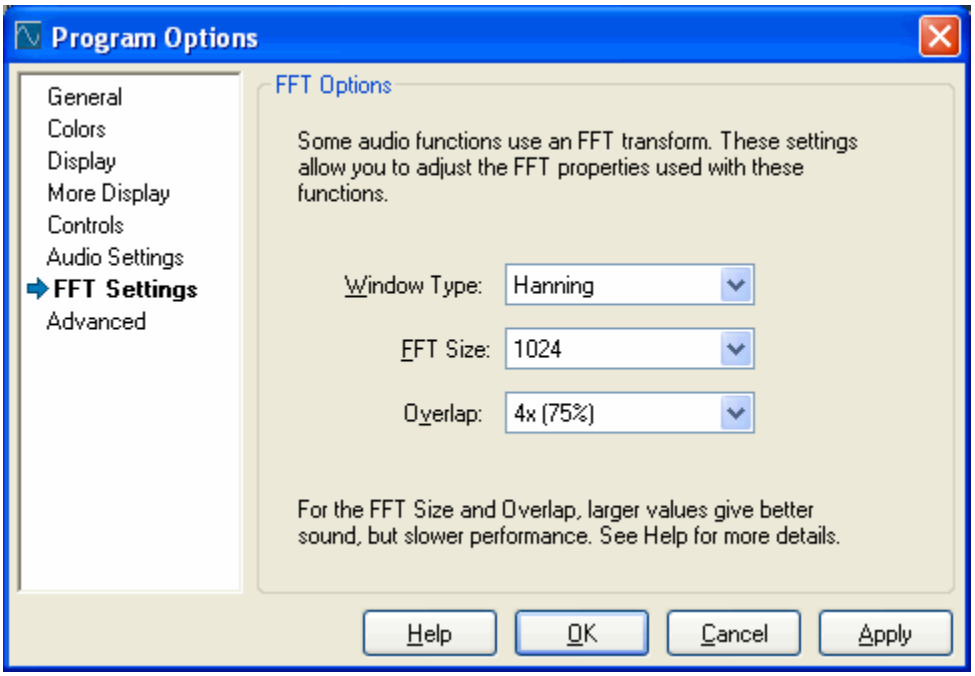
Sample Formats - With these options enabled, NGWave will try to use 24-Bit samples to communicate with your audio card for playback and recording, respectively. If this fails, NGWave will silently fall-back to 16-Bit samples.

Sample Frequency - This option allows NGWave to automatically resample audio going to or coming from the sound card if its native format isn't supported. It is highly recommended to leave this option enabled.

▪ **Back to Options**

▪ **Back to Help**

FFT Settings



Some functions utilize a Fast Fourier Transform. Here you can customize certain properties used with this transform. If none of this is familiar to you, the defaults should work fine for most people.

Window Type - Choose from several windowing techniques. Rectanle is a rounded rectangular window, and is the best choice for time stretching. Barlett is a simple Triangle window, while Hanning is a raised cosine. Sine is just a Sine window, useful for certain effects. The other window types are variations of the Hanning window. Typically Hanning gives the most natural sound with the least amount of artifacts when used with FFT frequency filtering.

Window Size - This lets you choose how large the FFT window is. Larger windows may result in better low-frequency response, but higher latency (can lead to a "beating" sound). 1024 is ideal for time stretching.

Overlap - This lets you choose how much the windowing overlaps. 75% is usually sufficient, but some uses may require more overlap. The higher the overlap, the slower the process will be.

More FFT Details

For most operations, the Hanning window yeilds the best results. It is the most linear, and offers the smoothest sounding output. The Window Type does not affect the speed of FFT operations.

The optimal Window Size will depend on what you are doing, and what you are working with. Larger windows give better low-frequency response, but can lead to a *swishy* sound with high frequencies. Sudden sounds (like a drum hit) may seem dull with too large a window.

A smaller window will give better sound for higher frequencies, but may introduce very audible aliasing effects for very

low frequencies.

The Window Size affects speed; the larger the window, the slower the operation.

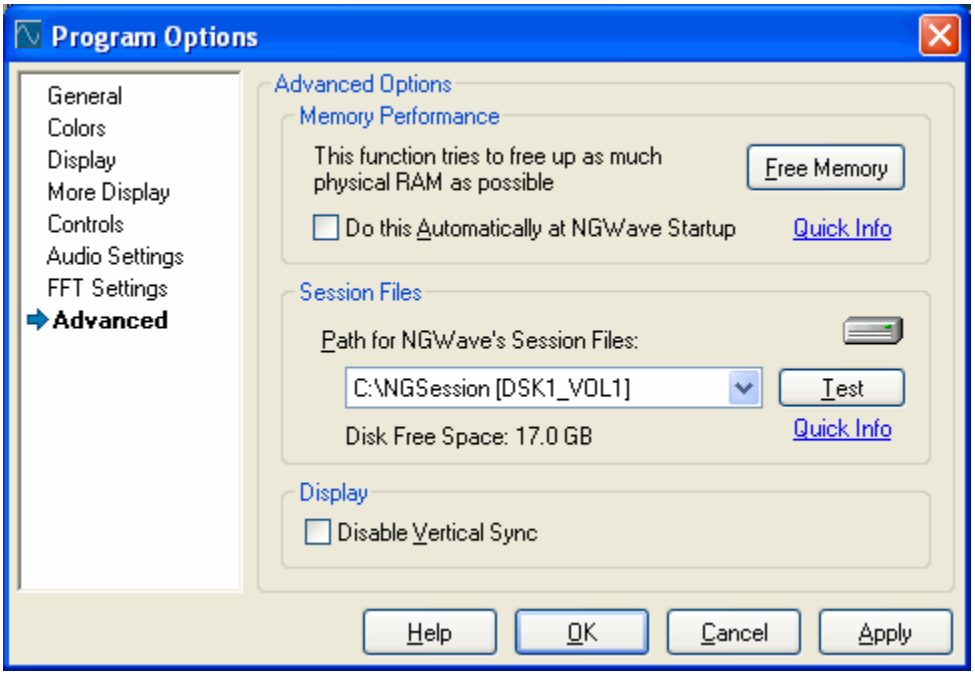
Overlap affects speed in direct proportion to the amount of overlap. Doubling the overlap doubles the amount of time the operation will take. More overlap leads to higher sound quality, and reduced *swishy* sound.

- **Back to Options**

- **Back to Help**

Advanced

The *Advanced Options* page contains options that most users will not need to adjust. Only change these settings if you understand what they do.



Free Memory - This feature performs an operation similar to *Free Mem* or *RAM Defrag* utilities. It simply allocates a large amount of memory, then frees it, forcing Windows to flush unused memory such as the disk cache. The result is faster access to new memory, and a perceived faster response in some programs. Specifically, this can help NGWave if you are experiencing glitches during playback or recording.

This option is especially useful under Windows 98, 98SE, and Me. **However**, Windows NT, 2000, and XP manage memory much more efficiently, so this option is likely to have no perceivable effect under these operating systems, and in fact may cause already loaded programs to respond sluggishly at first.

You can optionally choose to perform this function every time NGWave starts, and you can choose to have the dialog close automatically (instead of displaying a summary).

Session Files - Here you can choose which hard disk NGWave will use for temporary storage. It is recommended that you choose your fastest available disk drive. This is where all files in an NGWave Session are stored. NGWave will create a directory called "NGSession" on the root of the disk.

Note that changing this will only take effect after you close NGWave **without** a saved session. If you save a session, NGWave will continue to use the previous path.

Click the **Test** button to perform a test on each of your disks. NGWave will perform a simple read/write speed test and let you know which of your disks appears to be fastest. This is **not** a comprehensive performance analysis, however.

NGWave simply measures the time it takes to perform a few operations that are common in NGWave.

The time taken for the test determines which disk drive is fastest at these operations. The fastest drive is selected in the drop-down for you.

Note that this test may take a few seconds to complete. A fast drive may complete it in less than one second, but slower drives can take as much as 8 or 9 seconds. A score of less than 1000 is considered good. Any more than 3000, you should look for better IDE controller drivers, or a faster hard disk.

The score is actually how many milliseconds the test itself took. You may need to repeat the test a couple of times to get accurate results.

Disable Vertical Sync - To avoid "tearing", an annoying effect caused by out-of-sync screen updates, NGWave waits for your monitor to reach the blanking interval -- a period of time where nothing is being drawn to the screen -- before updating the display. This way your monitor refresh is less likely to coincide with a screen update, resulting in the "tearing" effect. It helps make the display scrolling ultra-smooth in most cases, if your video card is fast enough.

If you are having problems with this, you can try disabling vertical sync to see if it helps. When it's disabled, NGWave simply pauses for a few milliseconds between updates, ignoring the vertical blanking interval.

- **Back to Options**

- **Back to Help**

Voice Processing

We are frequently asked how certain things are done. For example, the voice processing on NGWave's introduction file was done of course in NGWave.

We hired a professional voice-talent, JJ McKay (website), to perform some raw vocals, and we later processed it in NGWave.

To walk through this tutorial, you can download the raw file that JJ McKay provided from our Downloads page on our web site.

First Step: Finding the right take

The first step is finding the best take. JJ spoke our slogan, and a few variations of it, in different ways so that we would have plenty to work with. The raw file is just under two minutes, but we ended up using only 4 seconds. This is typically how voice production goes.

Listen to the file, and pick the particular take that sounds best to you. The one we chose starts at 1:27.42 and ends at 1:31.57.

▪
▪
▪ **Tip:** You can manually key-in these numbers into the Status bar fields in NGWave's main interface. This allows you to quickly select the appropriate portion to work with in this tutorial. See the Text Entry Fields section for details.

Next Step: Trimming

Now that you have the appropriate section highlited, press CTRL+C and CTRL+F (Copy to Clipboard, Paste to New File). This puts your working audio into a new window.

The next thing we did was trim a tiny bit of the silence between phrases. The first bit was after the word **NGWave**.

Assuming you copied and pasted the selection using the exact numbers mentioned above, you can cut out the correct places by keying in the following:

- Selection Start: 1.1934
- Selection End: 1.3767

Now press Delete.

The next bit we trimmed out was between the words **PC** and **Audio**. The gap isn't large, but it sounds better and flows more quickly when it is trimmed down some. Assuming you've deleted the first section exactly as mentioned above, key in the following:

- Selection Start: 2.9743
- Selection End: 3.0262

And press Delete.

The final part to trim is between the words **Audio** and **Editing**. This was an even smaller gap. Highlite the following:

- Selection Start: 3.3868
- Selection End: 3.3979

And press Delete.

Next Step: Compression

In order to have a nice, powerful sound, some compression was applied. We did this in three steps, starting with a Volume Maximize.

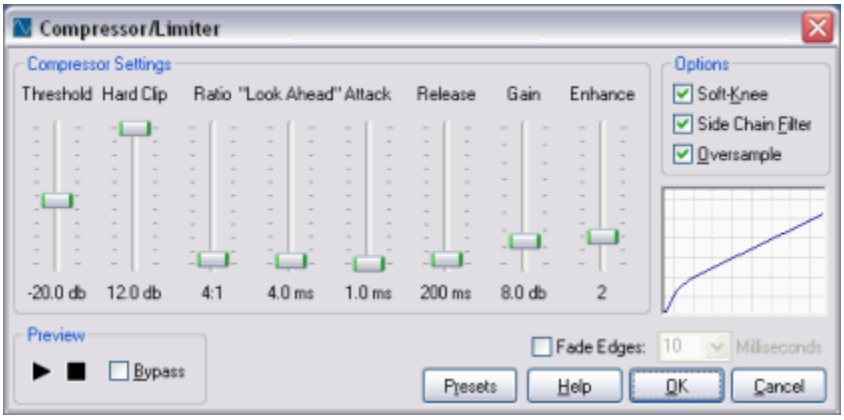
Select the entire file (CTRL+A), then click on Amplitude and Maximize. Apply the recommended level change.

The first stage of compression was done at 4:1. Open up the AGC/Compression dialog (Process -> Dynamics -> Compressor/Limiter) and use the following settings:

Threshold: -20.0 db
Hard Clip: 12.0 db (effectively disabled)
Ratio: 4:1
Look Ahead: 4.0 ms
Attack: 1.0 ms
Release: 200 ms
Gain: 8.0 db
Enhance: 2

Soft-Knee: Checked
Side Chain Filter: Checked
Oversample: Checked

Your settings should look like the following:



Then apply the changes by pressing **OK**.

Then, the final compression stage was done with the following settings:

Threshold: -5.0 db

Hard Clip: 12.0 db
Ratio: inf:1 (all the way to the top)
Look Ahead: 1.0 ms
Attack: 0.1 ms
Release: 80 ms
Gain: 0.0 db
Enhance: 0

Soft-Knee: Checked
Side Chain Filter: Unchecked
Oversample: Checked

When you apply these changes, no gain increase is done; it simply limits everything to just below -6db.

Now compare what you have here with the "raw" audio (Hint: Click the Clipboard Preview Playback button. The last thing copied to the clipboard was the raw version of what we have now). The processed version sounds more powerful, and flows more quickly.

Conclusions:

Many people asked how we did the processing on our previous "test" file that came with previous versions of NGWave, so this time we decided to do a walk-through, documenting each step. Hopefully this will give you some basics in voice processing.

▪ **Back to Help**

Sound Quality

This tutorial gives some advice and hints that will help to achieve the best possible audio quality. None of this tutorial is NGWave-specific; it applies to any studio situation, especially where a PC is involved.

PC Audio Device

The heart of PC audio is the interface between the computer and the analog world: your *PC Audio Device*. Often this is referred to as a **Sound Card**, however many devices these days are external, and thus don't quite fit the *card* part of this. Here will will use the term *PC Audio Device*, or simply *Audio Device*.

A good audio device is essential to good sound from a PC. You have to keep in mind that most audio devices sold today are aimed at the consumer market -- not studios. Thus, these devices are generally not up to par with the rest of your equipment, and become the weakest link in the entire chain.

It is a myth that you will necessarily get better quality from an external device. Yes, your PC is full of electrical noise, but a good quality internal audio card that is well designed can offer an impressive S/N ratio. Likewise, a badly-designed USB external device can easily pick up interference from other sources (or even digital noise from within its own package).

What to Look For

When looking at an audio device for potential purchase, here are some specific details you will want to pay attention to:

▪ *S/N ratio* - If the device's box does not specify the S/N ratio, this generally means it will not be that good. For most applications, anything better than 80db is good. For more demanding applications, look for a 24-Bit card with a 100db or better S/N.

▪ *Bit Depth* or *Bit Resolution* - Most applications will be just fine at 16-Bits. If your demands are higher, 24-Bits will be more well suited. Make sure the device supports both playback *and* recording at 24-Bits, and make sure the S/N ratio is at least 100db (with anything less than 96db, the 8 additional bits will be nothing but noise, thus defeating the purpose of having 24 bits).

▪ *Metal Connectors* - Most inexpensive audio devices have plastic connectors for your audio plugs. Metal connectors are less likely to wear loose, and provide a better ground termination for each connection. Ideally the connectors will be isolated from the metal ground of the casing (if applicable) to avoid ground-loop interference. While this doesn't necessarily mean it is better, it does indicate that this was taken into consideration in the design stage. Look for a gap between the metal connector and the housing or back-plate.

▪ *External Connections* - Even better, some devices offer a *break-out* box; this is simply some external box that connects to the sound card. It may mount in a drive bay, or simply be a wide connector with RCA-type plugs coming out of it. These give you not only better isolation, but also less risk of breaking the mini-phone plugs at the rear of your PC, and of course they provide more room for more connections.

- *SPDIF Interface* - If you might ever decide to connect to a DAT machine or other digital device, an SPDIF interface is a must. This lets you interface with the device digitally, removing any loss from the analog stage. Note that in this case the quality of the D/A converters (eg, the S/N ratio) is irrelevant as you will be bypassing that stage all together. Another advantage of SPDIF is that you can obtain an external, high-quality D/A converter for extremely demanding applications.

Things NOT to look for

Don't be sold on EAX, 5.1 surround, or other features that are useless to an audio professional. If your machine doubles as your gaming machine, the best bet is to have both a *gamer*-marketed device and a *Studio Grade* device, though there are some devices that are capable of doing a great job with both.

Professional studio cards do not have 3D audio positioning and similar features, as they are unnecessary in this environment. Also, don't be fooled into thinking that a 5.1 card gives you any more than two actual audio channels. The rest are derrived from the ordinary stereo channels in the same way a home-theater decoder provides 5 or 6 channels from two actual audio tracks.

This is not to say that these features are inherently bad, or that they will cause any problems with standard wave recording and playback. We simply want to point out that these features are of no use, and may be an extra, unnecessary expense, for a studio environment.

MIDI is another feature that most studios do not need; however, it is used in some environments, and whether you require MIDI support is of course dependant upon your application.

Cabling

One frequently overlooked item is *cable routing*, especially in a computer environment. It turns out that in this environment, proper routing of audio signal cables is more important than in most other environments.

The best way to handle this is to route your cables in three separate bundles, each as far away from the others as possible:

- Audio Signal
- Digital and Video
- Power

If you have the room, you can separate Digital cables from Video, though in most cases this isn't necessary (and won't contribute to audio quality).

Audio Signal includes any audio cables going to and from your sound card or mixer that carries an audio signal (including speaker cabling).

Digital will include any USB, keyboard, mouse, printer, or network cables.

Video of course primarily consists of your monitor cable, but may include others if you have other video equipment.

Power would be any power source, for powered speakers, your PC and monitor power cables, etc. Any telephone lines should be routed with this bundle (or separately).

This applies not just to the cabling behind your PC, but any cabling in your studio. Balanced XLR cables do pick up less noise than unbalanced cabling, but it is still a good idea to route audio signal cables separate from other types of cables.

Each bundle should be at least a few inches from the others. Most important to isolate is the audio bundle; if the Digital, Power, and Video bundles need to be much closer together, at least make sure the Audio bundle is as isolated as is possible.

Finally, keep any audio cables as far away from a CRT (monitor) as possible.

If you really want to see first-hand how much of a difference this makes, perform the following steps:

- Start Recording in NGWave. Use some external source, such as a microphone.

While you perform the next steps, make audible notes as to what you are doing, then remain silent for a few seconds, for reference when checking the results.

- Move the cables going into your audio device away from any source of noise (including other cables as described above). If you have to hold them suspended for a moment, do so. Ideally, unplug all but two (your current input and output that are in use right now).

- Next, for whichever cable you are currently using for input (mic cable, or line-in if you use an external pre-amp), move it close to your monitor cable. Move it around near the video card.

- Finally, move that cable back, and take any other cable that goes into your sound card and do the same. This can be your speaker cable, audio output, etc.

When you've done the above, stop the recording, and in NGWave, isolate the first section, with the cables away from noise sources. Make sure to highlight only the quiet section. Select *Amplitude* and *Maximize*. Make note of the volume change it recommends. Listen (using the Preview feature) to the resulting sound.

Now, do the same for the other two portions. You might notice that the second portion is noisier; not only did the Maximize feature likely recommend a lower setting, but you can actually hear the vertical refresh frequency of your monitor.

The third one will be quieter than this, but will still affect the audio in some way. This shows that not only the sound card input, but *any* cable going into the audio path, is important and should be isolated.

-
-
- **Tip:** You can also use NGWave's Vertical Zoom feature to see how the three sections look compared to each other.

Final Notes

There are a few more observations that you may find helpful:

- For internal sound cards, mount the audio card as far away as possible from your video card. The lowest physical slot is ideal (farthest from the video card), with any other cards (network, modem, etc) more toward the top (toward the video card and away from the sound card).

- Don't mount a fan too near the audio card; specifically, if using any slot-mounted fans, try to keep them away from the audio card.

- Only connect an internal CD-Audio cable if you actually use this. If so, try to route it far away from IDE cables, and just about any other cables inside your PC. If it is long enough, try to route it along the metal chassis of the case, using tape to hold it in place. This applies even if using the digital output of the CD drive.

- If your internal card has a drive-bay mounted connection panel (or *break-out box*), also take care in how its connection cable is routed. Many of these are not shielded, so carefully route the cable away from sources of noise.

- For external devices, take the same precautions you would with any other audio unit; for example, don't mount it on or near a monitor, or other sources of noise.

- If possible, use a flat-panel display in your studio. CRTs ("regular" monitors) emit tons of noise, where an LCD/TFT display is generally much quieter in this respect. A dynamic mic will pick up a lot of noise from a nearby CRT, as will any audio cabling.

- Unless you have no other choice, try to never use the Mic input on your audio card. These generally offer a very low-quality pre-amp, and have a bias voltage made for condensor electret microphones. A real mic will be connected to a pre-amp or mixer, and routed into the Line-Inputs of your card.

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Keyboard Usage

Help ▪
▪ **Keyboard Usage**

NGWave offers many keyboard shortcuts and commands. This page will describe all available keyboard commands.

Basic Editing Functions

NGWave offers the standard editing functions. The Copy action is performed by holding Control (CTRL) and pressing 'C'. Below is a list of the Edit functions and their keyboard shortcuts:

Copy: **CTRL+C**
Cut: **CTRL+X**
Paste Insert: **CTRL+V**
Paste Replace: **CTRL+R**
Paste Mix: **CTRL+M**
Crop To Selection: **CTRL+T**
Delete: **DEL**
Undo: **CTRL+Z**
Redo: **CTRL+Y**
Undo History: **CTRL+H**
Zoom 1:1: **CTRL+J**
Zoom to Selection: **CTRL+K**
Zoom Out Full: **CTRL+L**

Wave Display and Navigation

There are several advanced shortcuts for navigating within the Wave Display. They are as follows:

Basic Navigation

- Left and Right Arrows let you scroll the view left and right, respectively
- Holding CTRL while using the Left and Right arrows scrolls a full page
- Up and Down Arrows let you zoom in and out by 10%
- PGUP and PGDN zoom in and out by 50%
- Home moves the view to the start of the file
- End moves to the end of the file
- TAB switches between the Selection Start and Selection End markers
- SHIFT+TAB cycles the selected channel
- CTRL+TAB cycles between your open files

Selection

You can adjust the Selection by holding SHIFT and pressing the Left and Right arrow keys. Pressing TAB toggles which side of the selection you are working with (the selection boundary marker will become the color of the Waveform display).

This method adjusts the selection by 4 pixels; how much actual audio this represents depends on your zoom ratio.

Holding CTRL while doing this adjust the selection by a single pixel. By zooming in to 1:1, you can adjust your selection down to the individual sample using the keyboard.

Playback

Pressing the Space Bar toggles normal playback.

By default, playing back the audio causes the view to scroll, keeping the current playback position in view. You can choose between three modes using *View --> Playback Scrolling*. These modes are:

- ***S**mooth Scrolling* scrolls the view smoothly. Slower video cards may appear jerky with this option.
- ***P**age Mode* moves the view a full page at a time. When the position indicator reaches the end, the view changes, so the indicator starts back on the left side (or right if playing backwards)
- ***N**o Scrolling* - your view does not change during playback

You can hold SHIFT and press 'S', 'P', or 'N' to quickly switch to each of these modes respectively. Note that once you touch the display (move it, or click it with the mouse) scrolling ceases; pressing SHIFT and 'S' or 'P' again resumes the scrolling without having to restart playback.

Playback Controls

You can access the standard Playback toolbar using keys F2 through F9. The following image shows the relationship:

You can also click the *Controls* menu to view these shortcuts.

Saving Views

You can save your current view using the View toolbar. Clicking 'Set', then choosing one of the 8 View buttons, assigns your current view to that button. The saved view includes the current position, zoom ratio, and selection.

You can also use the keyboard for this. Pressing the number keys '1' through '8' switches to that view; holding Shift and pressing '1' through '8' assigns the current view to that button.

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Command-Line Parameters

Command-Line Flags

NGWave supports a couple of command-line flags. Any flag used must be used by itself. Flags may not be combined, nor can they be used in conjunction with a filename parameter.

Auto-Record

If you specify the "/r" flag, NGWave will launch directly into the Recording Dialog, with a new file. Depending on your settings, it may prompt you for the format of the new file first.

You can create a shortcut using this. NGWave.dll, in NGWave's program directory, contains three icons; one is the default blue, one is red, and one is purple.

By default, NGWave's installer creates a shortcut directly to the Record Dialog, using the Red icon from NGWave.dll. If, however, you choose not to let the installer create a folder in the Start menu, this icon will not be created.

No Session

If for some reason you are having trouble with NGWave's Session Recovery or Crash Recovery, you can specify a "/s". This will **delete** the saved or crashed session, and launch NGWave without attempting to re-open it.

Other Parameters

Anything other than the two above flags will be interpreted as a filename if it does not begin with a slash. If it starts with a slash, you will receive an error that the flag is invalid or unknown.

You can pass multiple filenames to NGWave; each should be in quotes, separated by spaces.

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Error Messages

Many error messages offer a Help option to a page specific to that error. This section contains descriptions and details for these error messages.

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File Error Messages

NGWave uses a "Safe Save" feature. Whenever you choose to save a file, NGWave creates a temporary file in the same directory first. It then writes out the new data you are saving.

Once this is completed and has been verified, NGWave deletes the original file, and renames the temporary file to become the new file.

This ensures that the integrity of your original file is never altered until NGWave is sure that the save was successful.

If you receive an error stating that NGWave could not create a temporary file, make sure the directory you are saving to is not marked as "Read-Only", and make sure the disk has enough free space. If saving to a network share, be sure you have permission to *create* files on that share.

See your Operating System documentation for assistance.

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WAV File Errors

WAV files -- also known as RIFF PCM audio files -- come in a variety of formats. Some programs add non-standard extensions to WAV files.

NGWave is able to handle most WAV files available, including RIFF MP3 files. NGWave will ignore any non-standard chunks found in a WAV file, but there must be at least a 'fmt' chunk and a 'data' chunk.

If NGWave is unable to open a WAV file created with another program, check that program's documentation to see if it is able to create standard RIFF PCM WAV files. If not, please contact our support team and let us know what program generated the file you are having trouble with, and we will see if it is possible to support those files in a future update of NGWave.

As of version 2.0, NGWave supports many different WAV file extensions, mostly thanks to user-submitted reports about specific programs. Files created with various programs, PDA-devices, and others are now supported.

When reporting a WAV file error, please include the text of the error you received, along with any error codes the program may have given you; this will help the NGWave programming team in adding support for such files in a future release.

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MP3 CODEC Errors

If an error message tells you that a CODEC could not be found, this means that you do not have the appropriate CODECs required to open or save the file type.

If an error message states that your CODEC may be corrupted, this means the conversion process failed in some way. Contact the vendor of the CODEC for assistance.

See our Codecs Page on our web site for details on how to obtain an *Encoding* CODEC, as well as more CODEC information in general.

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Playback Errors

If an error occurrs while recording or attempting to open the sound card, NGWave gives a message with a brief description. Below are more details on what can cause some of these errors:

Sound Card In Use by Another Program

Though most system allow you to play multiple files at the same time, it is possible that an older sound card will not support this. Ensure that no programs are currently playing back audio and try again.

Alternatively, if you are recording (just having the Recording dialog open means you are "recording" from the sound card), your audio card may not support *Full Duplex* mode. Full Duplex means it is capable of playback and recording at the same time. Thus, in this situation you would be unable to use the Metronome in NGWave's Record Dialog.

Driver Failed to Initialize, or **Driver Not Properly Installed**

This usually means that a driver is not properly installed, but it could also indicate a hardware problem. The first step is to obtain the latest drivers for your sound card, and see if that helps. If not, you may need to replace the sound card.

Device does not support Audio Playback

This error really should not happen, but if you happen to have a "Capture-Only" card installed (one that is intended *only* for recording), you could receive this error. Open the Options Dialog and select a different playback device.

Can't open Wave Output Device

If NGWave gives you a detailed message indicating that it tried different formats, this means your audio card simply doesn't support any compatible format. NGWave will (if the option is enabled) automatically try to resample the output to different formats until it finds one that works; if this procedure fails, then your card has extremely limited format support.

Either create a new file using a supported format (or using a sample rate that is evenly divisible by a supported one), or replace the audio card with one more capable.

If instead NGWave alerts you that your audio card does not support at least 16-Bit playback, you will need to upgrade to a card that does. NGWave does not work with less than 16-Bits with the sound card (though you can of course open and save 8-Bit files; they will be played back using 16 or more bits).

Unknown Error

This means your audio card driver returned an error that NGWave did not recognize. Please report this error to NGWave Support, including the error code reported. Include the brand and model of sound card you are using, along with your version of Windows.

▪ **Back to Help**

Recording Errors

If an error occurrs while recording or attempting to open the sound card, NGWave gives a message with a brief description. Below are more details on what can cause some of these errors:

Can't Write to Wave Out Device

This error means that for some reason your audio card did not accept the audio data NGWave sent to it. This should never happen, and indicates a driver or hardware issue.

Wave device is not responding

This indicates that your audio card has not responded in a few seconds. This could be one of two things:

1) If this happens frequently (is easily repeatable), it may be an IRQ conflict. See your hardware and operating system documentation for information on troubleshooting an IRQ conflict.

2) Some audio cards may "lock up" -- going through all of the motions of playback, but not actually advancing the position. When this happens, usually a reboot is required. This is a hardware-level problem that is common with certain brands of sound card, and can only be cured by replacing the card. Sometimes even with two cards of the same brand and model, one will exhibit this behavior and the other will not.

Sound Card In Use by Another Program

Though most system allow you to play multiple files at the same time, only one application can be recording from a sound card at any given moment. While NGWave's Record Dialog is open, it is recording from the card (even in Standby mode, it is still capturing data from the card).

Close any programs that might be recording; note that any program that monitors input is technically "recording". Alternatively, try using another sound card if you have more than one installed.

Driver Failed to Initialize, or **Driver Not Properly Installed**

This usually means that a driver is not properly installed, but it could also indicate a hardware problem. The first step is to obtain the latest drivers for your sound card, and see if that helps. If not, you may need to replace the sound card.

Device does not support Audio Capture

This error really should not happen, but unfortunately some sound cards that do not support recording still list themselves as an available recording device.

If you receive this error, select another audio device for recording, or contact your hardware vendor.

Can't open Wave Input Device

If NGWave gives you a detailed message indicating that it tried different formats, this means your audio card simply doesn't support any compatible format. NGWave will (if the option is enabled) automatically try to resample the input to different formats until it finds one that works; if this procedure fails, then your card has extremely limited format

support.

Either create a new file using a supported format (or using a sample rate that is evenly divisible by a supported one), or replace the audio card with one more capable.

Unknown Error

This means your audio card driver returned an error that NGWave did not recognize. Please report this error to NGWave Support, including the error code reported. Include the brand and model of sound card you are using, along with your version of Windows.

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Licensing Information

NGWave is **not** free software, or *freeware*. What you have downloaded is an Evaluation Copy of NGWave. This means we have released a version of NGWave for people to evaluate before making a decision to Purchase the software.

The Evaluation version does not allow you to save files. You can open files, and perform all editing operations on those files -- but you will not be able to save your changes to them.

If you want the ability to save files, you must purchase a License Key.

Secure Online Ordering - only $29.95

What does a License key give me?

A License Key is a special code, based on your name, that unlocks the Save feature of NGWave. This License NEVER expires -- you may continue using the product for as long as you like. This License is NOT bound to a specific computer, Operating System, or other hardware -- you may use your license on your current computer, as well as any future upgrades you may make, without having to contact us in any way. You can even download free updates of new versions of NGWave, and your license automatically carries over with you.

Unlike some other licensing schemes, ours is simple: your code will always work in any version of NGWave for as long as you have a Windows computer.

Online orders are processed immediately, providing your License Key by email within minutes.

How do I place an Order?

NGWave can be purchased for only **$29.95** USD. You can purchase online using our Secure Online Ordering server by clicking the following link. This requires an active Internet connection - your web browser will launch directly to our Secure order form.

Secure Online Ordering - only $29.95

Other Options

If you do not wish to place your order online, or if you do not have Internet access or a credit card, you may mail $29.95 in United States dollars (check or money order -- do not send cash) to the following address:

Next Generation Software, Inc.
1104 Collingwood Lane
Alpharetta, GA 30022
USA

Please be sure to include your **Full Name**, First and Last, since your License Key is based on your name. Also be sure to include one of the following:

- A valid email address
- A US telephone number
- A return mailing address

We will send your License Key using whichever method you prefer. Email is the fastest option, but the choice is yours. Be sure to allow a sufficient amount of time for processing; personal checks will take a few days longer than a US or Postal money order.

Why won't NGWave accept my License Data?

If you are having trouble entering in your License Data, be sure to check the following:

- Make sure you are entering your Full Name exactly as it appears in your License Information email
- Make sure you enter the License Key exactly as it appears
- Try to Copy and Paste the information from the email to see if it is a typing issue

If you need further assistance, please contact us. You can send an email to Support@NGWave.com, or see the Support Resources on our web site.

- **Back to Help**

Copyrights and Credits

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Free Memory

This feature performs an operation similar to *Free Mem* or *RAM Defrag* utilities. It simply allocates a large amount of memory, then frees it, forcing Windows to flush unused memory such as the disk cache. The result is faster access to new memory, and a perceived faster response in some programs. Specifically, this can help NGWave if you are experiencing glitches during playback or recording.

This option is especially useful under Windows 98, 98SE, and Me. **However**, Windows NT, 2000, and XP manage memory much more efficiently, so this option is likely to have no perceivable effect under these operating systems, and in fact may cause already loaded programs to respond sluggishly at first.

You can optionally choose to perform this function every time NGWave starts, and you can choose to have the dialog close automatically (instead of displaying a summary).

The **Test** button will perform a simple test on each of your disks, and let you know which one appears to be fastest.

This is **not** a comprehensive performance analysis, however. NGWave simply measures the time it takes to perform a few operations that are common in NGWave.

You may need to repeat the test a couple of times to get accurate results.

Note
Make sure you have the correct drivers for your IDE or SCSI controller. The *generic* drivers that Windows uses by default may not be optimized. Speed-ups of 5 times or more are not uncommon when using the drivers made for your motherboard instead of the default Windows drivers.

Numbers Seem wrong?
The test has changed a couple of times, and is even more comprehensive. The test may take longer than previously, and the result numbers will reflect this.

Score
If your drive scores less than 1000, you have a highly optimised system, and performance will be great. If you score more than 5000, you should look at your IDE or SCSI drivers, defragment your disk, or even purchase a newer, faster disk; NGWave's performance is very I/O bound, meaning a faster disk will speed up NGWave (and most other programs) quite a bit.

Extra Buttons

This feature works with the Microsoft Intellimouse Explorer and some other 5-Button pointing devices. However, if NGWave does not see the extra buttons, it is likely that your particular device handles the buttons differently.

You may try updating the driver for your mouse. Also note that under Windows 2000 or XP, the default drivers will generally do the right thing. Installing third-party drivers may actually cause the buttons to no longer function in NGWave.

Click on Help for more details.

Interactive Graph

To set a point, click on the graph with the Left mouse button. The point becomes a red box, and you can drag it around as needed.

To release a point, click on the point with the Right mouse button. The first and last point cannot be removed; right-clicking them will reset them to the default position on the graph (zero in the example).

You can also choose whether the curve is drawn linearly or using a cosine function. Linear will simply draw straight lines connecting the points, while cosine will offer a more smooth transition.

decibel

Official definition:
A unit used to express relative difference in power or intensity, usually between two acoustic or electric signals, equal to ten times the common logarithm of the ratio of the two levels.

Simply put, sound measurement in decibels is always relative to something. In digital audio, everything is relative to 0db, which represents full volume.

-6db represents 25% of the audible volume, but 50% of the actual voltage (audible volume is the square of the voltage). Thus, +6db doubles the voltage and quadruples the audible level.

Note that percentages used in NGWave are percentages of the *voltage* level, not the audible level. Thus, +6db is equal to 200% (double the voltage).

waveform

Official Definition:
The mathematical representation of a wave, especially a graph obtained by plotting a characteristic of the wave against time.

In NGWave, the waveform view is the area of NGWave that displays your audio file graphically.

Instant Playback Mode

When this box is checked, clicking the **Record** button while recording immediately plays back what you just recorded. This mode is indicated by the button turning Green while recording:

Otherwise, it simply stops the recording. In this case, the button will be Yellow: