

INTRODUCTION

INTRODUCING SOUND FORGE XP

Sound Forge XP is a compact, easy-to-use digital audio editing solution for the Windows platform. With a Windows-compatible sound card, Sound Forge XP gives you the ability to record, edit and process professional-quality digital audio files. Sound Forge XP supports an extensive set of file formats, allowing you to develop audio for training and business presentations, Web content, musical recordings, computer games, and digital video productions.

The latest version of Sound Forge XP offers expanded file format support, including Microsoft Video for Windows (AVI), RealAudio and RealVideo (RA, RM), and Active Streaming Format (ASF) files using Microsoft NetShow. Its new features include improved processing speeds, additional effects, and support for adding regions and markers to sound files.

Sound Forge XP was developed with input from musicians, sound editors, multimedia and game designers, and studio engineers, among others. Although Sound Forge XP includes features specific to these applications, they can also be applied in many other creative ways.

Sound Forge XP is a deep program. There are many features which you may not discover immediately, and others that may seem overwhelming. Don't let this scare you. Remember, there's always the Undo command! The best advice for using Sound Forge XP is to jump in and start using it. Pick up the manual now and then, read through a section to learn a few new tricks, and then go back and try what you've learned.

READING THE MANUAL

In developing Sound Forge XP, one of our primary goals was to make the interface as easy to use as possible. However, some features may not be immediately apparent, so we hope you take some time to at least page quickly through the manual. That way, you won't miss any of Sound Forge XP's creative potential.

This manual is designed to function both as a reference guide and tutorial. It is divided into six chapters and seven appendices; chapters 2-5 contain step-by-step instructions on using Sound Forge XP's functions, chapter 6 contains reference information. Highlighted throughout the text, you will find Tips outlining particularly important information to help you quickly find what you need to get started.

CHAPTER 1 INTRODUCTION

The Introduction briefly describes Sound Forge XP, includes installation, registration and help information, and provides a general overview of digital sound for those who have no previous experience producing digital audio.

CHAPTER 2 SOUND FORGE XP BASICS

Chapter 2 is designed to provide you with an introduction to working within the Sound Forge XP interface using a combination of descriptions and tutorials.

CHAPTER 3 EDITING AND NAVIGATION

This chapter provides explanations and tutorials covering Sound Forge XP's editing functions and how to navigate through sound files.

CHAPTER 4 FILE FORMATS AND ATTRIBUTES

Chapter 4 describes how to work with file formats, including AVI and Internet files, and file attributes.

CHAPTER 5 RECORDING AND SOUND PROCESSING

Chapter 5 introduces the recording functions of Sound Forge XP, and explains how to employ processes and effects.

CHAPTER 6 SOUND FORGE XP REFERENCE

The *Reference* chapter details all Sound Forge XP menus and dialogs.

APPENDICES A-G

The Appendices are designed to provide in-depth technical and reference information. They include:

- Appendix A Optimizing Sound Forge XP
- Appendix B Troubleshooting
- Appendix C Shortcuts
- Appendix D Sound Formats
- Appendix F Object Linking and Embedding (OLE)
- Appendix G Using CSOUND, MTU, IRCAM, BICSF and EBICSF Files

GETTING STARTED

The first thing you should do is register Sound Forge XP by filling out the enclosed registration card and returning it to Sonic Foundry within 30 days of purchase. Alternately, you will be given the option to register via your modem at the end of the installation process.

NOTE

You must be registered for us to provide you with technical support and upgrade information.

SYSTEM REQUIREMENTS

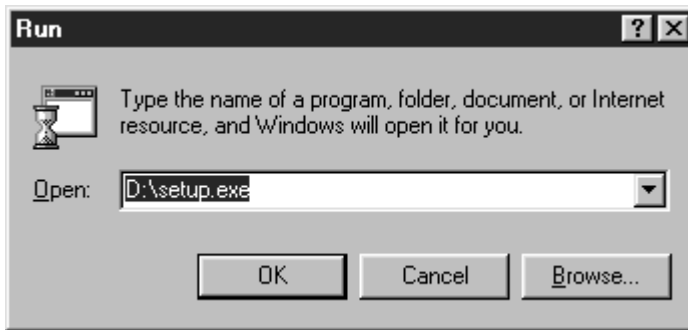
In order to use Sound Forge XP, you will need:

- Intel Pentium or Alpha AXP microprocessor
- Microsoft Windows 9x or Windows NT 4.0 or later
- Windows-compatible sound card
- VGA display
- CD-ROM drive
- 16 MB RAM
- 5 MB of hard-disk space for program installation

INSTALLATION

The install utility SETUP.EXE on the setup CD creates any necessary directories and copies all files required by Sound Forge XP.

1. After placing the Sound Forge XP CD-ROM in the drive, *AutoPlay* will bring an installation menu into focus. Simply follow the instructions.
2. If you have disabled the CD-Rom *AutoPlay* feature, run *Setup* from the Start menu as indicated below. Click *OK* to continue.



REGISTRATION

If you have an Intel-based system you may register online via your modem and a toll free number. At the end of Sound Forge XP setup, choose *Yes* when asked whether or not to register.

1. Enter user information and survey information.
2. Follow the dialog instructions.
3. Watch your mail for future Sound Forge XP products and upgrades.

ACTIVATION

After you click *OK* in the initial *Welcome* menu, you will be asked to enter your activation code. This code can be found on the inside cover of your Sound Forge XP manual. You must have this activation code whenever you wish to run the setup program.

Sound Forge XP comes with only one copy protection requirement: you must use the activation code whenever you run the setup program. Please allow us to continue this policy by abiding by the license agreement and giving your friends our phone number rather than a copy of the software.

GETTING HELP

ONLINE HELP

A variety of help functions are included in the Sound Forge XP program. There are three methods for accessing online Help:

- Find information about any program function by selecting *Contents* under the *Help* menu or pressing *F1*. This will take you straight to the Help table of contents. From this dialog, you can search by topic or get information about using online Help.
- Find information about a specific dialog by pressing the *Help* button in the dialog or the *F1* function key.
- Find information about a specific menu command by pressing the *F1* function key while selecting a menu item.

You will find that online Help is extremely useful as a quick reference guide. Since many topics are cross-linked, it's easy to navigate through all of the Help material available on a topic. Once you have become familiar with Sound Forge XP, you'll probably never have to refer to this manual to find information. All you'll need is the online Help.

TECHNICAL SUPPORT

If you experience problems while using Sound Forge XP, our technical support department is always ready to help you.

BEFORE YOU CALL

So that we are able to provide you with the best possible support, please check the following before calling:

- Make sure you have registered online or sent in your registration card.
- Check to see that the information you need isn't already covered in the manual. Appendix B, *Troubleshooting*, addresses many commonly asked questions about using Sound Forge XP.
- Verify that you've installed your sound card properly in Windows. Refer to your Windows manual or your sound card's instructions for information on correctly installing sound cards.
- Confirm that you have enough editing space available on your hard drive for the sounds you are editing.
- Have your serial number and type of sound card available to you.
- Use a phone near your computer so that our technicians can walk you through the answer to your question step-by-step if necessary.

REACHING TECHNICAL SUPPORT

Technical support is free for the 90 days following your first call. After 90 days, there are a variety of support plans available. For more information on extended support plans, contact us using any method below.

WEB

www.sonicfoundry.com

Our web page is a valuable resource for program updates, technical information and support.

INTERNET MAIL

support@sonicfoundry.com

You may also send us email via the Internet.

FAX

(608) 256-7300

You can fax us 24-hours a day.

PHONE

(608) 256-5555

Call our technical support line between the hours of 9 AM and 6 PM Central Standard Time, Monday through Friday.

FAX ON DEMAND

(608) 256-3133

Our Fax on Demand service is available 24 hours a day as an option on the main Sonic Foundry phone line.

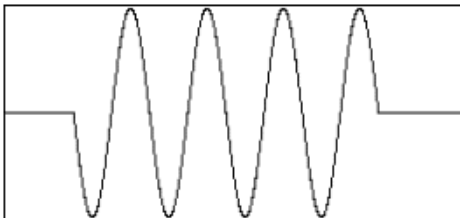
OVERVIEW OF DIGITAL SOUND

If you are new to digital sound editing, it will be well worth your time to become familiar with some basic concepts. This section covers the most important fundamentals. However, we strongly recommend that you page through a book on digital audio and sound recording if you want to get the most out of Sound Forge XP's editing and digital signal processing features.

SOUND WAVES

When you hear a sound, you are sensing changes in the air pressure around your eardrum. You can think of air pressure as the density of air molecules. When an object vibrates or moves, it displaces air molecules causing a pressure change. This in turn causes other air molecules to move. We don't hear air pressure changes caused by the weather. Instead, we hear air pressure differences that vary rapidly over time.

These rapid vibrations are picked up by your ears and converted to electrical signals that your brain interprets as sound. If we were to graph the air pressure at your eardrum as a function of time while you were listening to a short sound, it might look like the waveform below.

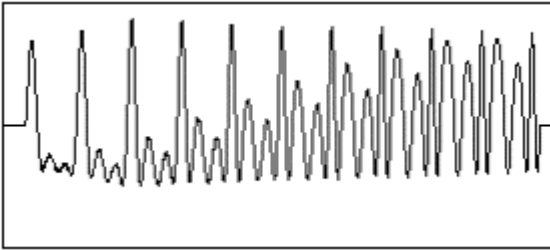


LOUDNESS AND PITCH

When the air pressure is constant there is no sound. You perceive constant air pressure as silence. When something causes a sound, the air pressure around your eardrum changes above and below the normal atmospheric level. You perceive the amount of change as the loudness of the sound. The loudness of a sound, called its amplitude, is usually measured as a fraction of a standard level, often in decibels (dB).

You perceive the rate of change in the air pressure as the pitch of the sound. In scientific terms, this term corresponds to the frequency of the wave. The frequency is usually measured in Hertz (Hz), or cycles per second.

Sounds in nature are not as simple as the above sine wave. In reality, a sound would look something like the one below. This irregular waveform does not have a periodic amplitude or frequency.



TIMBRE

Complex waveforms like the one shown above are constructed by combining a number of simple waveforms (like the one in the first drawing) of different amplitudes and frequencies. This is why we perceive both high and low pitched sounds at once when we hear most natural sounds.

The characteristic sound of a waveform (be it produced by a grand piano or a violin) is called its timbre. Timbre, also referred to as tone color, is said to be rich or full when there are many different frequencies in a sound. Most people consider a sound from a sine wave dull since it only has one frequency.

The different frequencies in a sound, combined with the varying amplitudes of each frequency, make up the spectral content of a waveform. The spectral content, which you might say is the more scientific term for timbre, usually varies over time. Otherwise, the sound remains static and again sounds dull. The spectral characteristic of a waveform over time is the signature of a tone that allows you to describe it as string-like or horn-like.

ANALOG RECORDING AND PLAYBACK

Let's say you're recording with a microphone. As you hold the microphone up in the air and talk, the microphone converts the changes in air pressure into changes in electrical voltage. This is called an analog signal.

If you were to graph the changing voltage inside a microphone cord, it would look exactly like the graph of the air pressure going up and down. To record your voice, you would send the signal to a medium, such as magnetic tape, that can store a replica of the analog signal.

To play back your recording, you need something to create the differences in air pressure, which our ear interprets as sound, i.e., an audio speaker. Speakers operate by moving a cone from one position to another in a consistent manner. In order to move the cone either forward or backward the speaker must be driven by an electrical current. During playback, a tape or record player generates a current, which is then fed to an amplifier. When connected to a speaker, the current moves the speaker in a way that reproduces the pressure changes sensed by the microphone during recording.

Until recently, sound was always recorded as an analog signal on magnetic tape or vinyl grooves. One problem with storing a signal in this form is that it is hard to accurately record the analog signal without adding noise. When you make copies of your recording you have to convert it to an electrical signal and then re-record it, adding even more noise. Listen to a third generation cassette recording and you'll know what we're talking about. Also, editing with tape is a not an easy task, since you must always be fast-forwarding or rewinding to a section, splicing, etc. Tape-based editing is called linear editing.

DIGITAL RECORDING

With recent advances in computer technology, it has become efficient and economical to record sound waves using a process called digital sampling. In digital sampling, the analog signal of the sound wave is divided and stored as numbers that represent the amplitude of the wave over very small segments of time.

For a moment, let's take a look at another process that is very similar to the way our computer makes sound – the making of movies and television. Given a scene with a person walking, we can slow down the speed at which the pictures are shown and see that each movement is captured by a different picture. As we speed up the rate of the pictures passing by, the motion becomes more fluid and eventually we stop noticing each individual picture. If we keep speeding up the movie the person appears to walk faster and faster and eventually ends up looking quite humorous. The important point is that a movie is just a collection of individual pictures.

So how do people record a movie? Obviously they pick up a movie camera and film the action. The movie camera takes a series of pictures at a fast rate and saves them on the film. The movies we see are simply a collection of pictures that are played back in rapid succession.

When we record a sound through the sound card in a computer (also called digitizing or sampling) we do much the same thing as the movie camera. The computer rapidly checks what position the microphone is in and saves it in the computer. When done recording, the computer has a collection of individual positions (normally called samples) which it can use to recreate the sound we have recorded. Individually, the samples are almost meaningless, much like an individual picture in a movie, but together they make up the recorded sound. This method of recording and playing sound is known as digitized sound.

THE PC SPEAKER

A simple model for a digital system is one where a speaker cone can be in one of two positions, either in or out, corresponding to the numbers 1 and 0 stored in a computer. The normal position, in, is when the speaker is sitting at rest with no current applied. The speaker isn't moving and we don't hear anything. When current is applied the speaker cone moves to the other position, out. As the speaker moves to the out position it forces the air around it to move and we hear a small click or pop. If we leave the speaker sitting in the out position we again hear nothing since the speaker only produces sound when it is moving, not when it is stationary.

Now if we move back and forth between the in and out positions we will hear a tone. As we move it faster and faster between the two positions (increasing the frequency) we will hear the tone increase in pitch. This model of a simple digital speaker system is exactly how the speaker inside your PC operates. Programs can put the speaker in either the in or out position to make sounds. Although there are more complicated methods to allow this type of system to produce sounds other than tones, they are beyond the scope of this introductory text.

EXPANDING THE MODEL

Instead of using just the two-position model, let's suppose we had a system that allowed us to have 100 positions or even more. If this were the case then we would be able to make much more complex sounds. We could move the speaker just a little bit or we could move it all the way out. This would allow us to have more precise control of the amplitude of the waveform. The more positions we have, the more flexibility we have in producing sound. For example, if we were to represent amplitude as a number from one to four, any values that fell in between positions would be rounded to the closest value. This rounding error is called quantization noise. When more positions are available, rounding errors become smaller.

You will often see a sound card referred to as 8-bit or 16-bit. We can directly relate this to the number of positions in which we can place the speaker. With an 8-bit card we can place it in 256 different positions and with a 16-bit card we can place it in any of 65,536 positions. Although you might think that a 16-bit card should have twice as many positions as an 8-bit card, this is not the case. It actually has 256 times as many positions. Even though 16-bit samples take up twice as much space as 8-bit samples, it is recommended that when at all possible you use 16-bit samples to minimize quantization noise.

SAMPLING RATE

The number of times a sound waveform is checked each second is the sampling rate. The sampling rate is similar to the frame rate in movies. As you can imagine, with higher sampling rates you store more information about the sound's changing amplitude. This gives you more fidelity.

As a matter of fact, it is impossible to accurately record frequencies above one-half of the sampling rate. This threshold frequency is called the Nyquist frequency, and should be considered when selecting a sampling rate. Frequencies higher than the Nyquist frequency show up as noise.

The downside to very high sampling rates is that since each sample takes up space in memory (1 byte for 8-bit samples, 2 bytes for 16-bit samples), higher sampling rates will fill up your hard drive faster than lower sampling rates. For instance, a stereo digitized sound of 44,100 Hz 16-bit data (approximately what your CD player uses) lasting 10 seconds takes up almost 2 megabytes of space! This means if you have a 40 megabyte hard drive you couldn't even store 4 minutes of sound data, and that's without having any programs or other data on your system.

ADVANTAGES OF DIGITAL EDITING

The advantages of digital editing far outweigh the enormous storage requirements. Once you've recorded a sound as a digital sample on your hard drive, you have the ability to perform edits like copying, cutting, and pasting without losing any fidelity and, as some people like to brag, with accuracy of up to 0.000023 seconds (single sample spacing at 44,100 Hz sampling rate). With a visual editor like Sound Forge XP, you can actually see a representation of the waveform to navigate through the sound file quickly and accurately.

Another advantage of storing sound digitally is the availability of digital signal processing (DSP) techniques. Digital signal processing techniques can be used for filtering, simulating room acoustics, and other special effects to restore or enhance the original recorded sound.

Finally, with a tool like Sound Forge XP, you can open and save your sound files to and from a number of different computer platforms and sound cards.

Now get in there and have some fun with Sound Forge XP!

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CHAPTER 2:

SOUND FORGE XP BASICS

Chapter 2 provides an introduction to working within the Sound Forge XP. Use of the interface is illustrated using a combination of descriptions and tutorials. The material is divided into two main sections:

- Main Screen Basics
- Data Window Basics

MAIN SCREEN BASICS

This section will introduce you to the Sound Forge XP screen and cover the most basic operations, including:

- Using the Mouse
- The Main Screen
- Toolbars
- The Data Window
- ToolTips

Many commonly used functions in Sound Forge XP can be performed in a number of different ways. Sound Forge XP has been designed to allow you to choose how you want to work – it doesn't force you to work in a certain way. To avoid confusion in the tutorials, every method of accomplishing a task will not always be described. Refer to chapter 6, Sound Forge XP Reference and Appendix C, Shortcuts, for more information on each feature.

N O T E

USING THE MOUSE

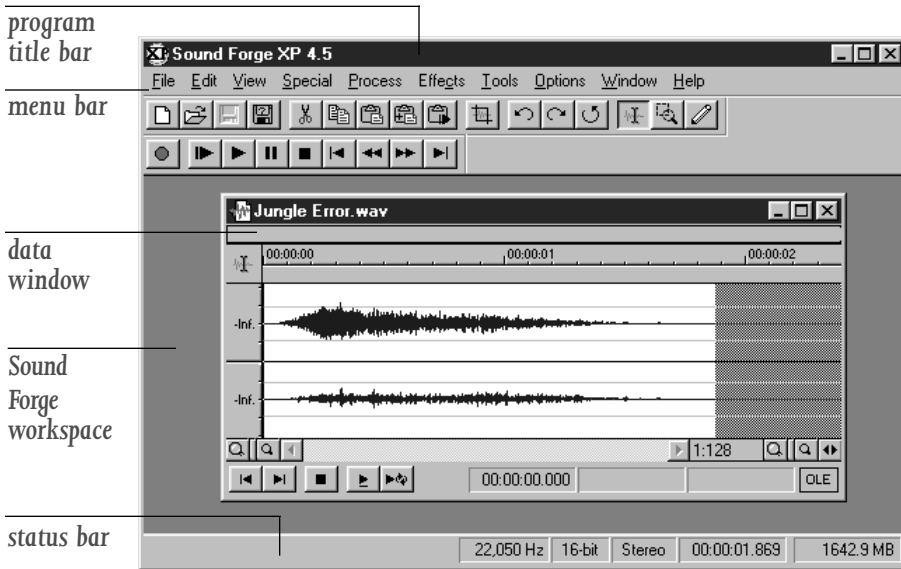
Although using the mouse in Sound Forge XP is not required, it will make your editing sessions easier. Once you become familiar with Sound Forge XP you will probably want to use some of the built-in shortcuts provided by the mouse and the keyboard. (For a complete listing of shortcuts, see Appendix C.) The following list of terms will help you when reading the manual.

Pointing	Moving the mouse pointer over an item.
Clicking	Pointing to an item and quickly pressing and releasing the left or right mouse button. The manual will indicate whether to right-click or left-click on an item to execute a specific function. When there is no left or right specification, use the left mouse button. Right-clicking is often used to reach shortcut menus.
Double-clicking	Clicking the mouse button twice in quick succession. Double-clicking always employs the left mouse button.
Triple-clicking	Clicking the mouse button three times in quick succession. Triple-clicking also always employs the left mouse button.
Toggle-clicking	Clicking the right mouse button repeatedly while holding the left mouse button to toggle through various options. This is a great shortcut for procedures such as drag and drop and changing the <i>Magnify Tool</i> mode of operation.

Shift-clicking	Clicking the mouse while holding down the Shift key on the keyboard. Shift-clicking is used mainly to skip dialogs so that you can quickly repeat operations.
Control-clicking	Clicking the mouse while holding down the Control key on the keyboard. Control-clicking is used to modify the operation of a normal click.
Dragging	Holding down the mouse button while you move the mouse. Dragging is used to quickly move sections of data between separate windows and to move trackbars, scrollbars and faders.
Slow-dragging	Holding down both the right and left mouse buttons while moving the mouse. Using this with trackbars and faders increases the resolution of the movement. This is especially helpful when making fractional adjustments to parameters in a dialog.
Dropping	Releasing the mouse button in another area of the screen after clicking on and dragging an object. Dragging and dropping is used to speed up operations like mixing or cross-fading.

THE MAIN SCREEN

When you start Sound Forge XP, the main screen, or workspace, opens. This is where you will do all of your sound editing. The very first time you open Sound Forge XP, no data windows are open and you will need to either open an existing sound file or create a new one. There are a variety of ways to do this, which are all described below.



The important parts of the Sound Forge XP screen are labeled in the above diagram. The following list briefly describes how each functions.

Program Title Bar

Shows the program name and the name of the currently active data window (if the data window is maximized within the workspace).

Data Window

When a sound file is opened, it is graphically displayed within its own data window. Data windows can be arranged, resized, or minimized.

- Menu Bar** Shows the menu headings for the available functions. When no data windows are open, the Process, Effects, and Tools menus are not listed; these contain functions that require an open data window.
- Status Bar** On the left, help (see p. 24) and processing information (see p. 21) are displayed. The fields on the right show the playback sample rate, sample size, mono/stereo, total length of the active data window, and the total free storage space. These fields can be edited by double-clicking or right-clicking on them (except for the free storage space). When no data windows are open, the fields are blank.
- Workspace** The background area behind the data windows. You can drag and drop sections of sound data here to create new data windows.

TOOLBARS

The first time you open Sound Forge XP, two toolbars appear on the screen: the *Standard* and *Transport* toolbars. The toolbars contain buttons that quickly execute commands.



- Standard** Provides quick access to many common Sound Forge XP functions. These functions are also available on the File and Edit menus. For a complete reference to these commands, see Chapter 6.

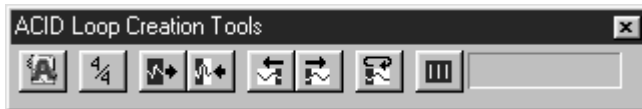
**Transport**

Includes the audio transport buttons: Record, Play All, Play, Pause, Stop, Go to Start, Rewind, Forward, and Go to End.

Two more toolbars are also available, but not automatically displayed when Sound Forge XP is opened.

**Status**

Contains operations to set the display Status. For a complete reference of these commands, see Chapter 6.

**ACID**

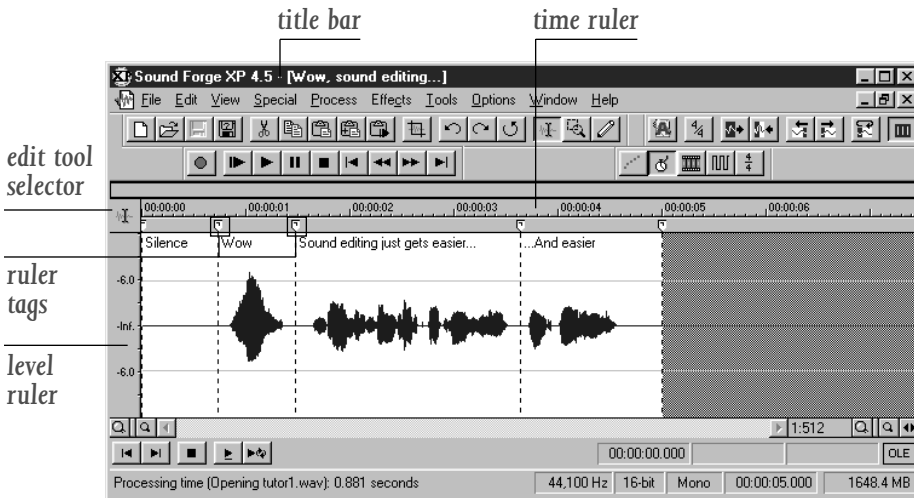
Sound Forge XP offers tools that are especially designed to help you create seamless loops which can be used in Sonic Foundry's ACID or any other application that requires perfect loops. These tools can be accessed from the ACID Toolbar. These eight buttons will be explained in this chapter, and they include: the Edit Acid Properties, the Edit Tempo, the Double Selection, Halve Selection, Shift Selection Left, Shift Selection Right, Rotate Selection and Selection Grid Lines tools.

You can drag and drop a toolbar anywhere on the screen. When you drag a toolbar to any side of the main window, it docks, or attaches to the side. If you drag a toolbar away from a side, it becomes a floating toolbar. Toolbars are also resizable and removable. To hide a floating toolbar, just click on its Close button.

To select from the list of available toolbars, select *Preferences* under the *Options* menu and look on the *Toolbars* page (or *Toolbars* in the *View* menu). To show a toolbar, check the box next to the toolbar you wish to use and then select *OK*. The number of open toolbars and their position on the screen is entirely up to you.

THE DATA WINDOW

Data windows contain sound data. These windows contain a number of sub-windows and controls that you will use in editing and viewing your sound data. Many parts of the data window lead to shortcut menus, dialogs, and other operations.



The important components of the data window are labeled in the diagram above. The following list briefly describes each part and possible mouse operations:

Title Bar

Shows the file name or, if present, the title stored in the *Summary* information of WAV files. Double-click to maximize and restore the window.

Level Ruler

Shows the amplitude of the waveform. Right-click to reach the *Level Ruler* shortcut menu. When using the *Level Zoom In* feature, click and drag the ruler up or down to shift the view vertically.

Time Ruler	Shows the current location in the data window as well as ruler tags. Right-click to reach the Time Ruler shortcut menu. Drag to scroll the data window.
Ruler Tags	Indicates the position of region end points and markers. Right-click to reach the Ruler Tag shortcut menu. Drag to change their locations. Double-click anywhere in the region to select.
Edit Tool Selector	Use this button to toggle between the Edit, Magnify, and Pencil Tools.

N O T E

The Pencil Tool requires that the zoom ratio be between 1:1 and 1:16.

Playbar	On the left side of the playbar are the following audio transport buttons: <i>Go to Start</i> , <i>Go to End</i> , <i>Stop</i> , <i>Play Normal</i> , and <i>Play Looped</i> . To the right are the playbar's selection status fields.
Selection Status Fields	Shows the beginning, end, and length of a data selection. If no portion of the waveform has been selected (highlighted), only the cursor position (also known as the insertion point) is displayed. Double-click on the left-most field to reach the <i>Go To</i> dialog. Double-click on either of the other two fields to reach the <i>Set Selection</i> dialog. Right-click to reach the <i>Status Format</i> shortcut menu.
Waveform Display	Shows a graphical representation of the sound file. The horizontal axis represents time (marked in the <i>Time Ruler</i>) and the vertical axis represents amplitude (marked in the <i>Level Ruler</i>). Right-click anywhere on the waveform display to reach the <i>Waveform Display</i> shortcut menu.
Position Scroll Bar	Use this to scroll the sound file forward and backward in time to see parts of the file not currently visible in the waveform display.

Overview	Allows for quick navigation and playback of any part of the file. Overview also shows the fraction of the waveform on the waveform, as well as the selected region. Left-click to move the cursor. Double-click to center the cursor in the waveform display. Right-click to start playback or pause. Left-click and drag to activate the <i>Audio Event Locator</i> .
Time Zoom	(Also called <i>Zoom Ratio</i>) Specifies the number of samples of data represented by each point on the screen horizontally.
Resolution	This determines the length of time that is shown in the waveform display. With a small resolution value (1:1, 1:2, 1:4,...), a shorter length of time is displayed.
Time Zoom In/Out	Use these to change the zoom resolution for the time axis. Between these buttons is a spinner that allows you to continuously change the time zoom resolution.
Level Zoom In/Out	Use these to change the zoom resolution for the level (vertical) axis. Between these buttons is a spinner that allows you to continuously change the level zoom resolution.
Maximize Width	Pressing this button stretches the width of the data window to fit within the Sound Forge XP workspace.
OLE Drag Source	Drag from this section of the data window into another application, such as Microsoft Word, to link the sound file to other documents.

TOOLTIPS

If you hold the mouse over a toolbar button or status bar field for more than one second, you will notice a small box appears next to the mouse pointer containing text. This text is a quick description of the button or field's function. Using ToolTips is an easy way to learn your way around the Sound Forge XP screen. You can disable this function by selecting *Toolbars* under the *View* menu and clearing *Show ToolTips*.



When you click (on) and hold a button in a toolbar or select a menu item, you will see a one-line description of the command in the left side of the status bar. This gives you a little more information about the function of a button. If you release the mouse button outside of a toolbar or menu item, the toolbar command will not be performed.



DATA WINDOW BASICS

With Sound Forge XP, you can have multiple sound files open simultaneously on the screen. Each file has its own data window that shows a graphical representation of the waveform and other information about the file. This section covers the following topics:

- Opening an Existing File
- Playing a File
- Playing a Section
- Using the Transport Toolbar vs. the Data Window Playbar
- Creating a New Window

- Active Windows vs. Inactive Windows
- Copying Data to a New File
- Saving a File

OPENING AN EXISTING SOUND FILE

To open an existing sound file:

1. Select the *Open* command from the File menu. Sound Forge XP displays the *Open* dialog. Use this dialog to select and open a file.
2. By default, Sound Forge XP plays a file when you select it in the dialog. You can turn off this feature by clearing the *Auto play* check box. If the *Auto play* feature is disabled, you can preview WAV files by pressing the *Play* button in the *Open* dialog. During playback, the label on the *Play* button changes to *Stop*. Pressing the *Stop* button stops the playback.
3. Use the *Files of type* list to select different types of data files. If Sound Forge XP recognizes the file type when it is highlighted in this list, it will display its information in the bottom half of the dialog.
4. For this exercise, open the file TUTOR1.WAV. This file is located in the directory where you installed Sound Forge XP.

You will now see a data window containing TUTOR1.WAV. This file is a recording of someone saying, “Wow, sound editing just gets easier and easier.” Notice that, although the file name is TUTOR1.WAV, the name of the data window is “Wow, sound editing...” This is because a title for the file is stored within the WAV file itself. Sound Forge XP allows you to embed descriptive titles as well as copyright information and other text fields for any WAV file.

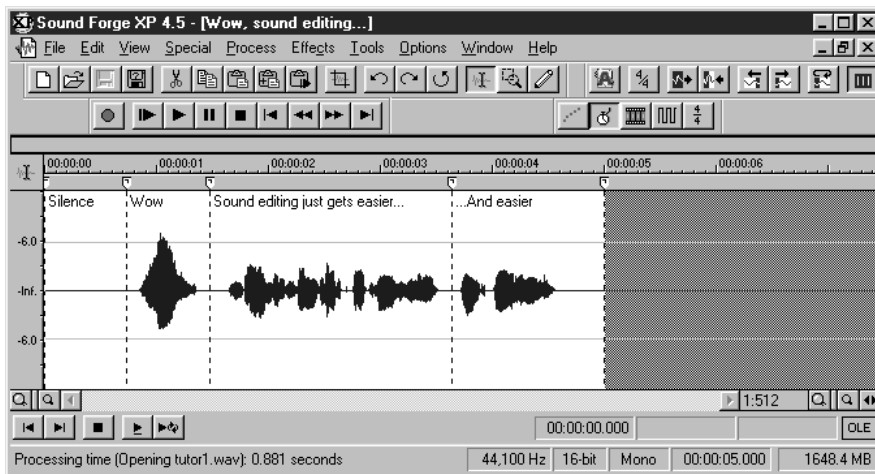
Sound files in Sound Forge XP can have a title different from the file name. To edit the title, use the Summary page of the Properties folder (File menu). You can quickly get to the Summary dialog by pressing Alt+Enter.

NOTE

PLAYING A FILE

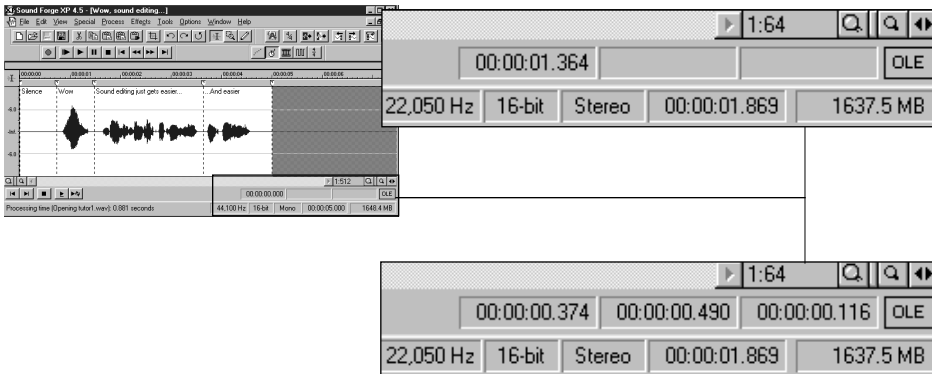
To play an opened sound file:

1. Click on the **Play All** button on the *Transport* toolbar.
2. While the file is playing, a pointer will move along the data window showing the current position. You will also see the current position in the first selection status field in the playbar.
3. Play the TUTOR1 file now. You will hear the words “Wow, sound editing just gets easier and easier.”



You can begin play from any point in the window by moving the cursor.

1. Move your mouse pointer to the silence section right after the “Wow” portion of the file. Left-click (make sure you don’t drag the mouse) and you will see the flashing cursor in the silence area after the word “Wow.” Click the **Play** button on the *Transport* toolbar and now you will only hear “sound editing just gets easier and easier.”
2. If you don’t hear anything, you may have accidentally selected a small portion of data by dragging the mouse. To see whether you’ve made a selection, look at the three right-hand status fields in the data window status bar. If only the first one is filled, then no data is selected. If they all have values, click in the data window again to clear the selection.



PLAYING A SECTION

You can also play parts of the sound data by selecting a portion of the waveform display with the mouse. To play a section:

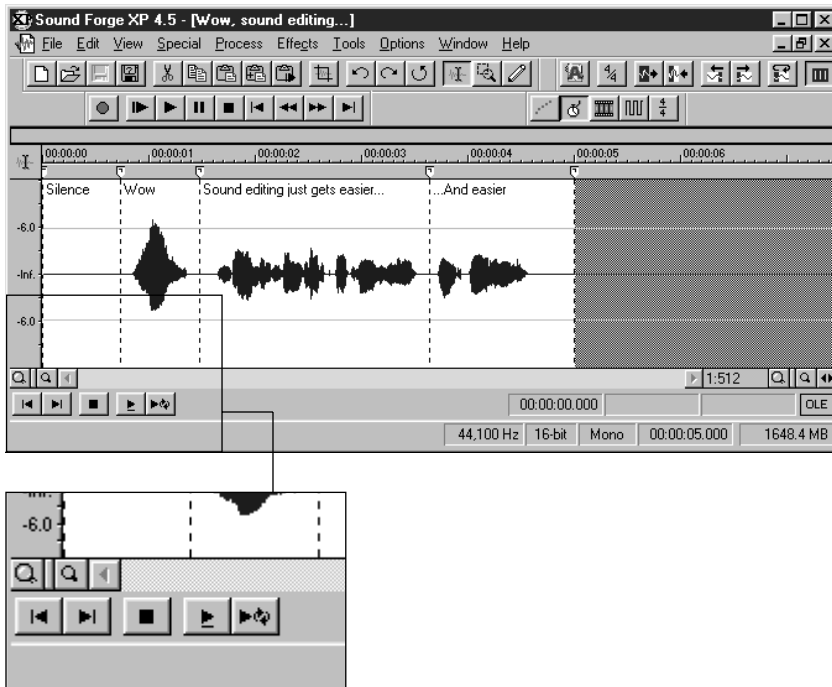
1. Click and drag the left mouse button starting at the section of silence prior to “Wow.” Drag the mouse until you are in the portion after the “Wow.” Notice that as you drag the data, the background appears in another color. Release the mouse button and you will now have a highlighted section of data.
2. Click the **Play** button. You should now hear just the “Wow” portion of the file.
3. While selecting waveform data, notice that the three selection status fields on the right side of the playbar display values. These values show you the start (*Selection Left*), end (*Selection Right*), and length (*Selection Length*) of the selection you have made. When no data is selected, the cursor position (also called the insertion point) is displayed.

Clear the selection and put the cursor back at the start of the file. To do this, click on the **Go to Start** button in the **Transport** toolbar.



USING THE TRANSPORT TOOLBAR VS. THE DATA WINDOW PLAYBAR

There are a number of ways to play your sound files in Sound Forge XP. The most common method is to use one of the *Play* buttons located either on the *Transport* toolbar or the playbar in the data window. This section describes both methods.



THE PLAYBAR BUTTONS

On the left-side of the playbar at the bottom of every data window are five buttons. These buttons allow you to play the sound data in a variety of ways. The first two buttons allow you to set the cursor to the start or end of the current file. These are the *Go to Start* and *Go to End* buttons. The third button is the *Stop* button, which you can use at any time to stop playback.

The last two buttons play the sound in different ways and, at the same time, set the default play mode. The first button is the *Play Normal* button. This button plays the currently selected section of data. If there is no data selected, pressing the *Play Normal* button plays from the current cursor position to the end of the file.



The next button is the *Play Looped* button. This button plays the selected section in a continuous loop or, if no data is selected, the entire file in a continuous loop. In addition, while the *Play Looped* button is selected, playback will follow any new cursor position or selection that is made.



Whenever you play a file using playbar buttons, you will notice a small line that appears underneath the arrow in the *Play* button you have selected. This is the current play mode, which will be used whenever you select the *Play* button in the *Transport* toolbar (or hit the *Spacebar*). *Play Normal* is the current play mode in the playbar graphic shown above.

To change the current play mode, press the corresponding playbar button or use *Control+Spacebar*.

THE TRANSPORT TOOLBAR

The *Transport* toolbar has nine buttons.



The *Transport* toolbar buttons are described below from left to right:



Record

Brings up the *Record* dialog, which allows you to record to either a new or existing window. *Shortcut: Control+R*



Play All

Plays the entire sound file from beginning to end. This allows you to hear the entire sound even if you have a selection or the cursor positioned somewhere other than the start of the data. *Shortcut: Shift+Spacebar*



Play

Plays the file using the current play mode. To set the play mode select one of the two play buttons on the playbar as described in the above section (*The Playbar Buttons*). The last button used becomes the active play mode. *Shortcut: Spacebar*







Pause

Works like the *Stop* button in that it stops play of the current file. However when selecting *Pause*, the cursor is placed at the current play position rather than back to where it was when play was selected. *Shortcut: Enter during playback*



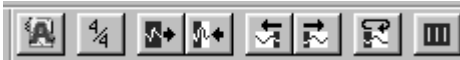
Stop

Stops play and positions the cursor where it was prior to selecting play. *Shortcut: Spacebar during playback*

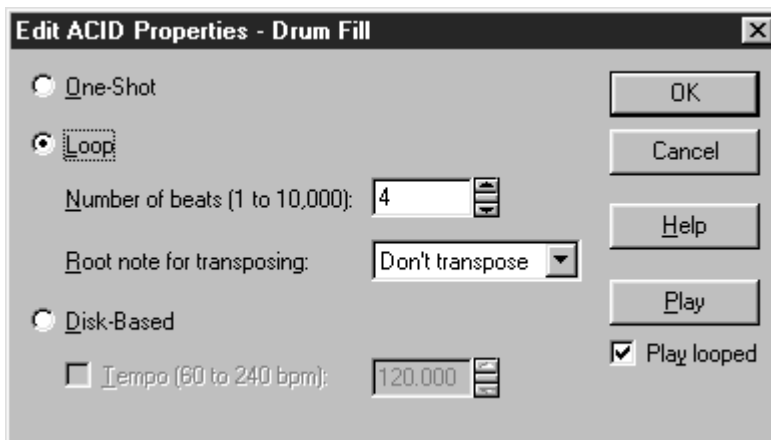
Go to Start	Places the cursor at the beginning of the sound file. <i>Shortcut: Control+Home</i>	
Rewind	Shuttles the cursor backward in the sound file. <i>Shortcut: Control+Left Arrow</i>	
Forward	Shuttles the cursor forward in the sound file. <i>Shortcut: Control+Right Arrow</i>	
Go to End	Places the cursor at the end of the sound file. <i>Shortcut: Control+End</i>	

THE ACID TOOL BAR

The ACID Toolbar has eight buttons which are detailed from left to right in this section.



The Edit ACID Properties button opens a menu which can be used to manipulate ACID specific information in the wave file. *Shortcut: Apostrophe*



ONE-SHOT

One-Shots do not stretch with tempo or change pitch with the ACID project's key. Sounds such as cymbal crashes and vocal samples are usually played as One-Shots.

LOOP

Loops stretch with tempo, and may also change pitch with the ACID project's key. Loops are the most common types of samples used in ACID.

NUMBER OF BEATS

This option determines the length, in beats, of the Loop. If a 16-beat Loop is specified as an eight beat Loop, it will play twice as fast as it should in ACID. You can type a new length number directly in the field, or use the up and down arrows to the right of the field to change the length number.

ROOT NOTE FOR TRANSPOSING

This option determines the root note that ACID will use to pitch the Loop to the project key. If the root note is A, and the project key is C, the Loop will be transposed up three semitones. You can change the note by clicking on the down arrow to the left of the field and clicking on a new root note in the list.

DISK-BASED

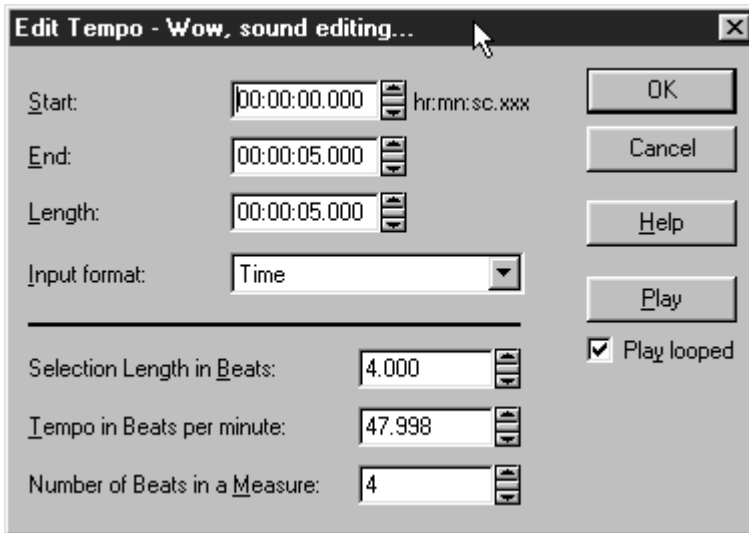
Disk-Based files can stretch with tempo, but will not change pitch with the ACID project's key. Long files like vocal tracks are usually considered Disk-Based.

TEMPO

Disk-Based tracks can stretch to the tempo of the project, but the original tempo must be specified. If a tempo is not specified, the Disk-Based track will not stretch.



The Edit Tempo key will open dialog which will automatically calculate the musical tempo (*Beats per minute*) from the current selection.



To use *Edit Tempo*, first highlight a selection in the waveform display. The selection made should be equal in size (or an integer multiple) to the length of a beat or measure. The easiest way to tune a selection to be exactly one measure long is to play the selection looped and change the selection points until a constant downbeat is heard.

Sound Forge XP uses the current tempo to display measures in the *Time Ruler*.

START, END, LENGTH, INPUT FORMAT

Determines the selection used to calculate the tempo based on the *Input Format*.

SELECTION LENGTH IN BEATS

Sound Forge XP calculates the current selection's length in beats.

BEATS PER MINUTE

(1.0 TO 1000.0)

Sound Forge XP calculates this tempo value depending on your selection length, selection type (*Measures or Beats*), and *Beats per Measure*.

BEATS PER MEASURE

(1 TO 32)

Use to specify the number of beats in a measure when selecting a measure (e.g., 4 for most pop music). It can also be used to specify beats per selection length if the selection is larger than one measure.

N O T E

The default tempo (Default: 120) can be changed on the Status page of the Preferences folder (Options menu).

**Double Selection**

The Double Selection button does exactly what its name implies – it doubles the current selection. When you are creating loops, it is very handy to be able to select (highlight) a single measure and then use the Double Selection tool to automatically increase the selection to two or four measures. *Shortcut: Apostrophe*

**Half Selection**

The Half Selection tool is as logical; it halves the current selection. Again, it is rather convenient to select a four measure section and then reduce that selection to one or two measures. *Shortcut: Semi-colon*

**Shift Selection Left, Right**

The Shift Selection Left and Shift Selection Right buttons perform tasks which mirror each other. Once you have selected (highlighted) a portion of the track, you can move it left (Shift Selection Left) or right (Shift Selection Right) by the length of the selection using the appropriate tool. Because the exact length of the selection is maintained, this tool is perfect for moving the selection a beat or measure at a time. *Shortcut(Shift Left): Less Than Symbol. Shortcut(Shift Right): Greater Than Symbol*

**Rotate Audio**

The Rotate Audio tool is best used to change the feel of a given loop. It works by taking selected audio at the beginning or end of the file and moving to the other end of the file. *Shortcut: Colon*

For example, if you had a drum part that went BOOM, BOOM, BANG, BOOM and you selected the first BOOM and selected Rotate Audio, the resulting drum part would go BOOM, BANG, BOOM, BOOM. Get it? If there is no selection, the file will rotate by 1/16th of its length.

Selection Grid Lines

The Selection Grid Lines creates (imagine this!) a grid of lines on the area selected. These lines are superimposed on any selection and divide it into four equal parts. When creating loops from raw material, lining up the lines on visible transient peaks in the waveform can help immensely.



After you have made a selection, press the <Z> key on the keyboard to snap the edges of the selection to the nearest zero crossing. This will eliminate any clicks at the loop points.

NOTE

CREATING A NEW WINDOW

In this exercise, you will create a new data window with the same data format as the file TUTOR1. To create a new data window:

1. Select the *New* command from the File menu. You can also press Ctrl-N. Sound Forge XP displays the *NewWindow* dialog.
2. Select the new data format in the *NewWindow* dialog. Set the *Sample size* to 16-bit, the *Channels* to Mono, and the *Sample rate* to 44,100.
3. Notice the *Maximum editing time* line at the bottom of the dialog. The numbers in this line show the hours, minutes, and seconds of time available for recording and editing. For example, if you see 00:51:49 on the *NewWindow* dialog, you can work with sounds that last up to 51 minutes and 49 seconds. The time depends on a number of factors including the amount of storage on your system and the format of the sound data.

4. Click the OK button. A new window will appear titled Sound2. This is an empty data window into which you will place data from TUTOR1.

ACTIVE WINDOWS VS. INACTIVE WINDOWS

When you have multiple windows on the screen, only one window is considered the active window. This is the window in which you are currently working. Any operations you perform will only affect this window.

To make a window the active window click anywhere on the window with the left mouse button. The window's title bar will change to the color you have defined as the active window color in Control Panel in Windows.

COPYING DATA TO A NEW FILE

To copy data to a new window:

1. Make "Wow, sound editing.." the active window by clicking on its title bar. If you don't have the word "Wow" selected, select it again as described above.
2. From the Edit menu, select the Copy command. This will copy the sound data for "Wow" onto the clipboard.
3. Make Sound2 the active window by clicking on its title bar. (If the title bar is covered by another window, you can always activate a data window by selecting it from the list at the bottom of the Window menu.)
4. Select the Paste command from the Edit menu and the "Wow" data will appear in the Sound2 window. If you press the Play button, you can hear how our new file sounds with just the word "Wow."

Other methods of copying data from one window to another, or from an existing window to a new window, are covered later.

SAVING A FILE

To save a data window:

1. Make sure the Sound2 window is active.
2. Select the *Save* command from the File menu. Because the Sound2 window is a new file, Sound Forge XP displays the *Save As* dialog. If the file had been opened or previously saved by Sound Forge XP, the file would be saved immediately.
3. Type a file name into the *File name* field in the *Save As* dialog and select the OK button. Save the new sound file, Sound2, as MYFIRST – Sound Forge XP will add the file extension, WAV, automatically.

The *Save As* dialog also allows you to change file types, data format, and set summary information fields. This is covered later.

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CHAPTER 3: EDITING AND NAVIGATION

Chapter 3 provides explanations and tutorials covering Sound Forge XP's editing functions and how to navigate through sound files. Sections covered include:

- Simple Editing and Navigation
- Advanced Editing and Navigation
- Regions and Markers

SIMPLE EDITING AND NAVIGATION

This section will describe the basic editing operations of Sound Forge XP. You will learn about:

- Common Edit Operations
- Status Formats
- Magnification and Zooming

COMMON EDIT OPERATIONS

The edit operations used most often include *Cut*, *Copy*, *Paste*, *Crossfade*, *Mix*, *Clear/Delete*, and *Trim/Crop*. Most of these make use of the clipboard, which is a temporary storage area. The clipboard can also be used to move data from one window to another. The following list provides a brief description of each operation:

Cut	Deletes a selected portion of data and copies it onto the clipboard. <i>Shortcut: Control+X</i>
Copy	Copies a selected portion of data onto the clipboard. <i>Shortcut: Control+C</i>
Paste	Inserts the contents of the clipboard into a data window at the current cursor position or replaces the current selection. <i>Shortcut: Control+V</i>

Crossfade	Crossfades the contents of the clipboard with the current data in a window starting at the current cursor position. <i>Shortcut: Control+F</i>
Mix	Mixes the contents of the clipboard with the current data in a window starting at the current cursor position or at the start of a selection. <i>Shortcut: Control+M</i>
Clear/Delete	Deletes a selected portion of data but doesn't copy it onto the clipboard. <i>Shortcut: Delete</i>
Trim/Crop	Deletes all data in a window except the selected section. <i>Shortcut: Control+T</i>

SELECTING WAVEFORM DATA

To make a data selection:

1. Open the TUTOR1.WAV file as described in the previous chapter. Make sure that TUTOR1 is the active data window by clicking on its title bar.
2. Make sure you are using the *Edit Tool*. To do this, look under the Edit menu for the *Tool* function and select *Edit* (it should already be checked).
3. Select (highlight) the word “Wow” with the mouse by clicking and dragging as described in the previous chapter. You can verify you have the right section of data by pressing the *Play* button to hear it.


COPYING DATA ONTO THE CLIPBOARD

To copy data:

- Make a data selection as described above.
- From the Edit menu, choose the *Copy* command. This will copy the selected data onto the clipboard. You will see no change since the *Copy* command does not change the data; it only copies it to the clipboard.

PASTING DATA FROM THE CLIPBOARD

To paste data:

-
1. Move the cursor to the beginning of the TUTOR1 file by selecting the *Go to Start* button on the playbar 
 2. Choose the *Paste* command from the Edit menu. You should now see the data for the word “Wow” appear at the beginning of the window. Press the *Play* button just to make sure. You should hear “Wow Wow Sound editing just gets easier and easier.”

You have just made your first edit in Sound Forge XP! There are quicker ways to copy and paste data with Sound Forge XP – you’ll find these described in the *Advanced Editing* section.

PASTING DATA TO ANOTHER WINDOW

Data on the clipboard remains there until it is replaced by another operation that places data onto the clipboard. Therefore, you can continue pasting the data anywhere you want.

To paste data to a new window:

1. Create a new window by selecting *New* from the File menu.
2. Again, select the *Paste* command from the Edit menu. You should now have a new data window with the data for the word “Wow.” You can also do this by selecting the *Paste to New* option from *Paste Special* on the Edit menu. This creates a new window and fills it with the clipboard contents in one easy step.

CUTTING DATA

To cut data:

1. Select a section of data you want to cut. Select one of the “Wow” words (you should have two if you have been following the examples) from TUTOR1.
2. Now select the *Cut* command from the Edit menu. This will remove the selected data and place it on to the clipboard.

UNDOING AN EDIT OPERATION

You can reverse the effects of any editing operation.

To undo the above “cut”:

1. Select *Undo Cut* from the Edit menu. You will see the original two “Wow” words in the TUTOR1 window.

REDOING AN EDIT OPERATION

If you change your mind and decide you really liked an edit you undid, you can repeat the edit operation you last undid.

To redo an operation:

1. Select *Redo Cut* from the Edit menu. In this case, the second “Wow” has been cut from TUTOR1 file again.

TRIMMING/CROPPING

Trim (also called *Crop*) allows you to single out a section of data and cut everything else out of the window except that section. You can use this feature with the *Play* button to hear selections until you have just the right amount of data and then cut everything else using *Trim/Crop*.

To trim data:

1. Select the “Wow, sound editing” section in the TUTOR1 window, but don’t select “just gets easier and easier.” Remember you can use the *Play* button to hear how the selection sounds at any time.
2. Select *Trim/Crop* in the Edit menu. After cropping you will have only “Wow, sound editing” left in the window.
3. Close the “Wow, sound editing” window. Either click on the close box of the TUTOR1 window, or select the *Close* command from the File menu. You will be asked whether you want to save the changes that you have made to TUTOR1. Select the *No* button to close without saving your changes.

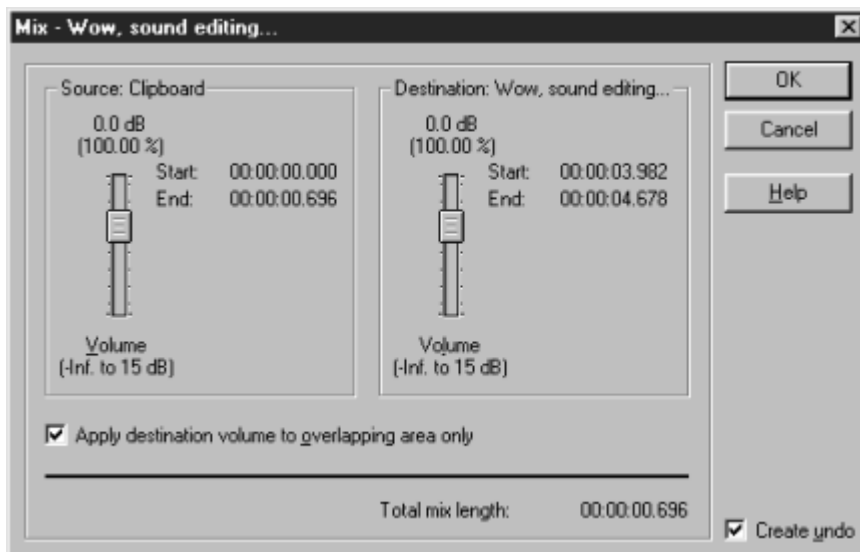
Also close any other windows you may have open, like MYFIRST.WAV.

MIXING

Mixing is a powerful and useful edit operation that you will use often. Mixing allows you to combine two sounds together into one window so you can create composite sounds.

To mix data:

1. Open two files, TUTOR1.WAV and TUTOR2.WAV, as described in the previous sections. TUTOR2 is a file that contains the sound of a snare drum and crash cymbal. You are going to mix this sound with TUTOR1, the “Wow, sound editing..” window.
2. Before mixing data, make sure the *Status Format* is set to *Time* to make finding the mixing points a little easier. To do this, select *Time* from *Status Format* under the *Options* menu. You will need to do this for both data windows since *Sound Forge XP* keeps track of the format type for each individual window.
3. To make the windows easier to view during the mix operations you may want to maximize *Sound Forge XP* by pushing the *Maximize Window* button in the upper right-hand corner and selecting *Tile Vertically* from the *Window* menu. This will arrange the windows vertically and make it easier to see your work.
4. If you examine each of the TUTOR windows you will notice that the length of TUTOR1 is 5.0 seconds long and TUTOR2 is 3.0 seconds long. (You can see the length of a file by placing the cursor at the end of the sound data and examining the status bar. You should see a field that shows the length of the file in hours, minutes, and seconds.) For this example, the drum hit should occur just before the “Wow.” You could just copy the drum hit sound onto the clipboard and then paste it before the “Wow,” but this would increase the length of TUTOR1 to 8.0 seconds. Instead, use the *Mix* command.
5. Select all the data in *Drum Hit* by making it the active window and then double-clicking in the waveform display with your left mouse button (or use *Select All* under the *Edit* menu). Now copy the data onto the clipboard by selecting the *Copy* command from the *Edit* menu.
6. Make TUTOR1 the active window and then select the *Go to Start* button on the playbar. This will put the cursor at the beginning of TUTOR1. Select *Mix* from the *Paste Special* command in the *Edit* menu.



7. The Mix dialog now appears. Keep both levels at 0 dB and select OK.
8. The drum hit sound has been mixed into the TUTOR1 window and the length of TUTOR1 is still 5.0 seconds. Press the Play button to hear the results.
9. Select the Undo Mix command from the Edit menu to return TUTOR1 to its original state.
10. This time, mix the drum hit sound closer to the “Wow” portion of TUTOR1. The “Wow” occurs at about 0.8 seconds into TUTOR1, so move your cursor in the TUTOR1 window to approximately 0.8 seconds. You do this by clicking with the left mouse button in the data window of TUTOR1 and watching the cursor position status field on the status bar (the left-most field). You don’t have to be exact. Once you’ve positioned the cursor, select the Mix command again and then hit Play for the result. Notice how the drum hit sound and the “Wow” sound overlap each other.

STATUS FORMATS

By right-clicking on the *Time Ruler* and selection status fields on the playbar, files can be set to different status formats. By changing the format, you can coordinate sound files with other events measured in that format, or use a timing base most familiar to you. Lengths and positions can be displayed in a variety of formats including *Samples*, *Time*, *Seconds*, *Frames*, *Measures and Beats*, and *SMPTE*.

SELECTING A STATUS FORMAT

To select a format, choose the *Status Format* command from the *Options* menu. This shows the ten different formats available. Choosing one of these options sets the status format for the current data window.

The available formats are:

Samples	Number of samples
Time	Hours, minutes, seconds and milliseconds
Seconds	Seconds and fractions thereof
Time & Frames	Hours, minutes, seconds and frames as defined by the <i>Edit Frame Rate</i> (<i>Special Menu</i>) command
Absolute Frames	Frames and fractions thereof
Measures & Beats	Measures, beats and quarters of a beat
SMPTE Non-Drop	SMPTE at 30 or 29.97 frames per second (fps) non-drop
SMPTE Drop	SMPTE at 30 fps with drop frames
SMPTE EBU	SMPTE at 25 fps
SMPTE Film Sync	SMPTE at 24 fps

In this exercise, you will see how the status formats affect values in the status display fields.

1. Using the *TUTOR1* file, select *Samples* from *Status Format* under the *Options* menu.
2. Now select all of the data in the *TUTOR1* window. To do this, choose the *Select All* command from the *Edit* menu. You can also double-click the left mouse button anywhere in the waveform display of the data window.

3. In the selection status fields on the playbar (at the lower right-hand side of the data window) you should see the values of 0, 220,506, and 220,507. This means that the first selected sample (*Selection Left*) is sample 0, the last selected sample (*Selection Right*) is 220,506, and the total number of samples in the selection (*Selection Length*) is 220,507.
4. Now select the *Time* option from *Status Format* under the *Options* menu. You will see that all these values change to values specified in hours, minutes, and seconds rather than samples. You can see that a sound containing 220,507 samples with a sample rate of 44,100 Hz will play for about 5.0 seconds. You can experiment with each of the status formats to see how each format is displayed.

CONFIGURING FRAMES AND MEASURES & BEATS

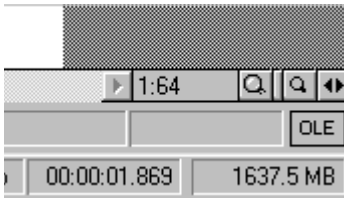
When setting the status format to *Frames* or *Measures & Beats*, you customize how these values are displayed. The *Edit Frame Rate* dialog in the *Special* menu allows you to change the frames per second. In the *Edit Tempo* dialog from the *Special* menu, you can specify the *Beats per minute* and *Beats per measure* values used to calculate measures and beats. The default values for *Frames* and *Beats* are set on the *Status* page in the *Preferences* folder (*Options* menu).

MAGNIFICATION AND ZOOMING

When sound data is drawn on the screen, it is necessary to represent many samples of data for each horizontal point on the screen. There are almost always many more samples in a sound file than there are horizontal points (pixels) on the screen. Depending on the editing operations you need to use, you may want to view the entire file at once, or you may want to look at only a small portion in greater detail. This is where the magnification, or zoom, ratio comes in.

TIME RULER ZOOMING

In the bottom right corner of the data window, just above the data window playbar, is the current time magnification ratio. The *Zoom Ratio* defines how many samples of sound data are squeezed into each horizontal point on the screen. This setting is shown as a value of 1:XX, where XX is the number of samples represented by each horizontal point on the screen.



For example, if the setting is 1:1 then each point on the screen is one sample. With this setting, a very short length of time is shown on the waveform display. You might not be able to see the cursor or selection because you are seeing it at such close range. If the setting is 1:1,024, then there are 1,024 samples represented by each point on the screen and a longer length of time can be seen. By dragging the Time Ruler right or left, you can easily scroll the data window. The further you drag in either direction, the faster the window will scroll.

If you right-click on the waveform display you can quickly select various Zoom commands from the Data Window shortcut menu.

NOTE

When Sound Forge XP opens a file it sets the horizontal magnification to the value specified by the *Normal zoom ratio* set on the *Display* page in the *Preferences* folder, unless the file is too small.

To increase or decrease the *Zoom Ratio*, use the *Zoom In/Out* spinner control found on each data window next to the ratio. Clicking on either of the magnifying glasses increases or decreases the zoom ratio by single steps. If you drag the small rectangular button between the two magnifying glasses, you can spin the zoom ratio by larger amounts.

LEVEL RULER ZOOMING

In the bottom left corner of the data window, just above the *Go To Start* button, is the spinner control for zooming in and out vertically in the data window. Zooming in along the level axis allows for more precise editing at the lower levels (where many edits start and end).

The labels for this axis can be either in decibels or in percent and are switched by right-clicking on the *Level Ruler*. When zoomed in, only the lower level samples can be seen; the peaks of the waveform will have moved beyond the scope of the data window. To view these peaks, drag the *Level Ruler* up or down.

NOTE

To optimize the level scaling of a selection, double-click on the Level Ruler. Double-click again to zoom out to the normal level.

USING ZOOM SELECTION AND ZOOM OUT

To quickly magnify a section of a data window horizontally, use the *Zoom Time/Selection* command in the *View* menu or in the *Data Window* shortcut menu. To use the *Zoom Time/Selection* command you must first select an area of data to magnify. After selecting *Zoom Time/Selection*, *Sound Forge XP* will calculate the minimum zoom ratio that will allow the full selection to fit on the screen and then center the selection within the waveform display.

NOTE

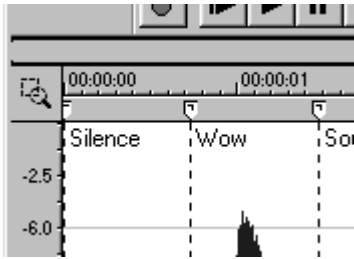
This will not affect the zoom ratio of the Level Axis. Only the Zoom Selection command in the Level Ruler shortcut menu will zoom the selection both vertically and horizontally.

To display all data in a window at one time, use the *Zoom Time/Out Full* command in the *View* Menu. This command sets the *Zoom Ratio* to the lowest value needed to display all of the data at once in the waveform display.

If you wish to set the zoom factor to its maximum magnification (1:1), use the *Zoom Time/In Full* command also found in the *View* menu or the *Data Window* shortcut menu (*Zoom In Full*). You will then be able to see the actual waveform oscillations that correspond to physical sound waves when played through your speakers.

MAGNIFY TOOL

Another way to zoom in to a particular section of the sound file is to use the *Magnify Tool*. You can select this tool from the *Edit* menu (*Tool/Magnify*) or by clicking on the *Edit Tool* selector (upper left-hand corner of data window) until the magnifying glass appears.



When the *Magnify Tool* is enabled, instead of making a selection, the mouse cursor will become a magnifying glass and a dotted square will appear when dragging the cursor. The zoom will take place within this dotted square. The three different modes of operation for the *Magnify Tool* can be selected by toggle-clicking (see *Using the Mouse* in chapter 2). These allow you to time zoom, level zoom or zoom both simultaneously. You must then return to the *Edit Tool* mode to do edit operations.

You can also enter this *Magnify* mode temporarily by holding down the *Control* key when making a selection. If you drag the mouse while still holding the *Control* key, you can select a region that will then be magnified to a “best fit” ratio within the waveform display.

ADVANCED EDITING AND NAVIGATION

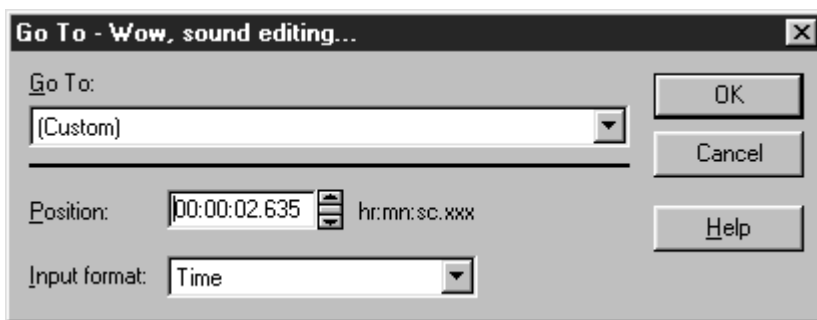
This section will show you how to use the advanced editing and navigation operations of Sound Forge XP. You will learn about:

- Go To
- Making a Data Selection Using the Set Selection Dialog
- Making a Data Selection with Markers
- Adjusting Selection Points
- Using the Overview
- Drag and Drop Operations
- Editing Stereo Files

GO TO

To quickly move the cursor to a specific point and center it in the waveform display, use the *Go To* command. You can reach the *Go To* dialog in a number of different ways:

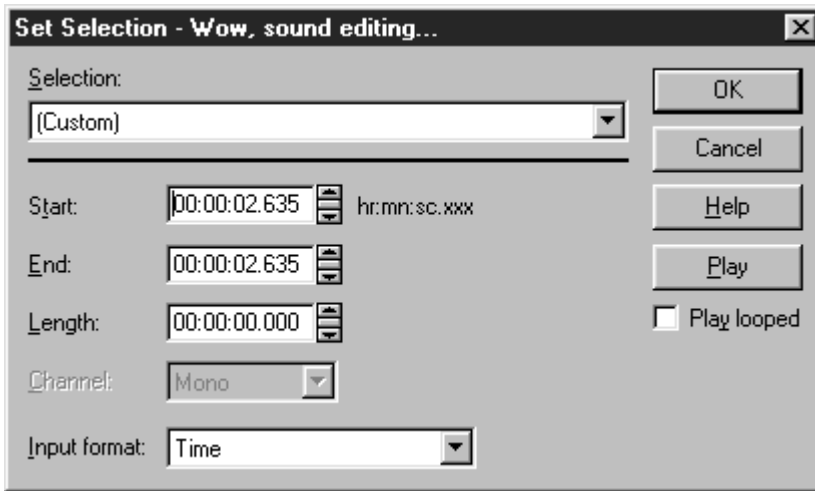
- Select the *Go To* command from the Edit menu
- Right-click on the waveform display and select *Go To* from the shortcut menu
- Double-click on the left-most selection status field
- Press *Control+G*



The *Go To* dialog is much like the *Set Selection* dialog described below. You can type in the location where you want to go or use one of the predetermined locations from the list.

MAKING A DATA SELECTION USING THE SET SELECTION DIALOG

If you need to select data at specific points, the *Set Selection* dialog allows you to type in selection points or choose a selection from a list of regions. To reach the *Set Selection* dialog, choose the *Selection* command from the Edit menu.



In the *Set Selection* dialog, you can modify the *Start*, *End*, *Length*, and *Channel* of the selection. Pre-determined regions can also be chosen from the *Selection* drop-down list.

MAKING A DATA SELECTION WITH MARKERS

Sound Forge XP has numerous techniques for selecting sound data. The drag and drop method and the *Set Selection* dialog are described above. The next section covers the various keyboard shortcuts you can use for selecting data.

Of all the selection methods, markers are unique. A marker is a placeholder that you drop in a sound file to define the beginning or end of a selection. The unique thing about markers is that you can use them in real time. That is, you can select portions of an audio file while you're listening to it.

Sound Forge XP has two corresponding marker functions:

- Press [(the left bracket key) to mark the beginning of a selection. You can also choose *Mark In* from the *Special* menu.
- Press] (the right bracket key) to mark the end of a selection. You can also choose *Mark Out* from the *Special* menu.

Although the bracket keys and the menu options are equivalent, the keyboard is probably easier for working in real time.

For example, you might have a sound clip of three events: a pool cue hitting a ball, the first ball hitting a second one, and the second ball falling into the pocket. Using markers, you can select the middle sound as you listen during playback. After you hear the cue hitting the ball, you would press [to mark the beginning of the selection. After you hear the first ball hit the second one, you would press] to mark the end. The result is that the middle section of the data appears highlighted as a normal selection.

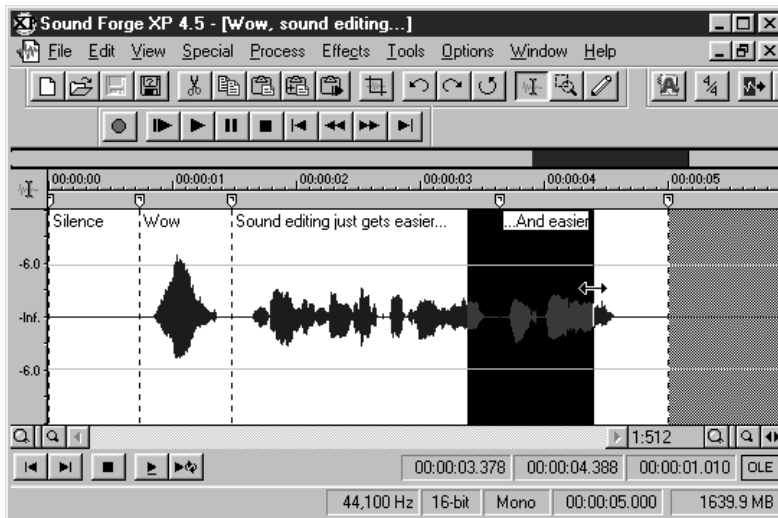
Although markers are helpful during playback, you can use them when the sound isn't playing. For example, you could mark the beginning of a selection before you're sure of where it should end. Then you might perform a number of tests or sound processing functions. Once you know where the end of the selection should come, you would drop the second marker.

For more information about markers, see *Regions and Markers* later in this chapter.

ADJUSTING SELECTION POINTS

EXTENDING A SELECTION WITH THE MOUSE

After selecting a portion of sound data, you will sometimes find that the start or end points are not exactly where you want them to be. You could just re-select the data, but it is often difficult to get the start or end points just right.



Sound Forge XP allows you to update the selection by grabbing a selection edge and moving it. Once you have established a data selection, place the mouse over the selection start or end point. You will notice that the cursor changes to a bi-directional arrow. Once this arrow appears, you can press the left mouse button and move the selection to a new position. The new position will be updated once you release the mouse button.

SELECTING WITH THE KEYBOARD

The keyboard selection controls allow you to quickly select data or update a selection accurately. For example, if you want to extend the selection end by a small amount, first make sure that the cursor is at the end of the selection. You can move the cursor from one end of the selection to another by pressing the *Home* (moves to the start) and *End* (moves to the end) keys. You can then use the *Shift+Right arrow* and *Shift+Left arrow* combinations to extend the selection end point by small increments.

The following list shows the available keyboard commands for selecting data.

Press	To select from cursor to . . .
<i>Shift+Right arrow</i>	the next screen pixel.
<i>Shift+Left arrow</i>	the previous screen pixel.
<i>Shift+End</i>	the last sample visible in the waveform display.
<i>Shift+Home</i>	the first sample visible in the waveform display.
Press	To select . . .
<i>Shift+Page Up</i>	10% of the current view previous to the cursor position.
<i>Shift+Page Down</i>	10% of the current view past the cursor position.
<i>Shift+Control+Right arrow</i>	2% of the current view past the cursor position.
<i>Shift+Control+Left arrow</i>	2% of the current view previous to the cursor position.
<i>Shift+Numpad +</i>	the next sample.
<i>Shift+Numpad -</i>	the previous sample.
<i>Shift+Control+Numpad +</i>	10 samples past the current position.
<i>Shift+Control+Numpad -</i>	10 samples previous to the current position.

NOTE

Due to a limitation in Windows 95, the last two commands work only in Windows NT.

As you can see from the above lists, Sound Forge XP has extensive keyboard support for selecting data. You will find that almost any operation has an equivalent keyboard shortcut which advanced users find invaluable. For a complete listing of keyboard and menu shortcuts, see Appendix C.

To see how some of these keys function:

1. Open the file TUTOR1.WAV. Make sure that you're using the Edit Tool by selecting it from Tool under the Edit menu. Now make a data selection that encompasses the word "Wow" with a generous amount of space on each side of the word. After pressing the Play button you should hear a little bit of silence, "Wow," and a little more silence.
2. Choose the Zoom Selection command from either Zoom Level or Zoom Time in the View menu. This will fit the selection on the screen with the best possible resolution.
3. Now adjust the right side of the selection. Grab the end of the selection with the mouse and drag to the right. Adjust the selection to be close to the end of the word "Wow" and release the mouse button. Now do the same operation with the keyboard. Hold down the Shift key and press the right arrow key. The selection will extend to the right by one screen pixel. If you hold down the Shift key and press the left arrow key, the selection will decrease by one pixel. One screen pixel is equal to the number of samples shown in the Zoom Ratio field. You can move the end of the selection in this manner until you've got the selection just right.
4. Now adjust the start of the selection. Since the cursor is at the end of the selection, any keys you press for selecting data will adjust the end. Put the cursor at the front of the selection by pressing the Home key. You will see the cursor jump to the start point of the selection. Now, use the selection keys to adjust the start of the selection.

If you're working in Windows NT, you can use the keyboard to select samples as well as pixels. As noted in the above list, the Shift + Numpad + (plus) and - (minus) keys select individual samples. This technique allows you to get the exact selection you need without having to change the Zoom Ratio.

RESTORING A SELECTION

When you change the cursor position (with the mouse or keyboard) without holding the Shift key down, you lose your selection and only the cursor is displayed. If you want to return to the last selection, select the *Toggle Selection* command under the *Special* menu or press the ‘S’ key.

SHIFTING A SELECTION

Sometimes it is necessary to move a selection’s position without changing the length of the selection. This can be accomplished in one of two ways.

The first is to use the mouse. Hold down the Shift key and grab the edge of the selection. Now, when you move the mouse left or right, the selection will move as a block and the length will be preserved.

The second way is more mathematical. Using the *ACID Loop* creation tools, you can shift a selection forward or backward by the length of the selection. This is very useful if you have exactly a beat or a measure selected and you want to jump ahead to the next beat or measure. Select *Shift Selection Left* or *Right* from the *ACID Loop Creation* fly-out menu under the *Special* menu and the whole selection will jump forward or backward by the length of the selection.

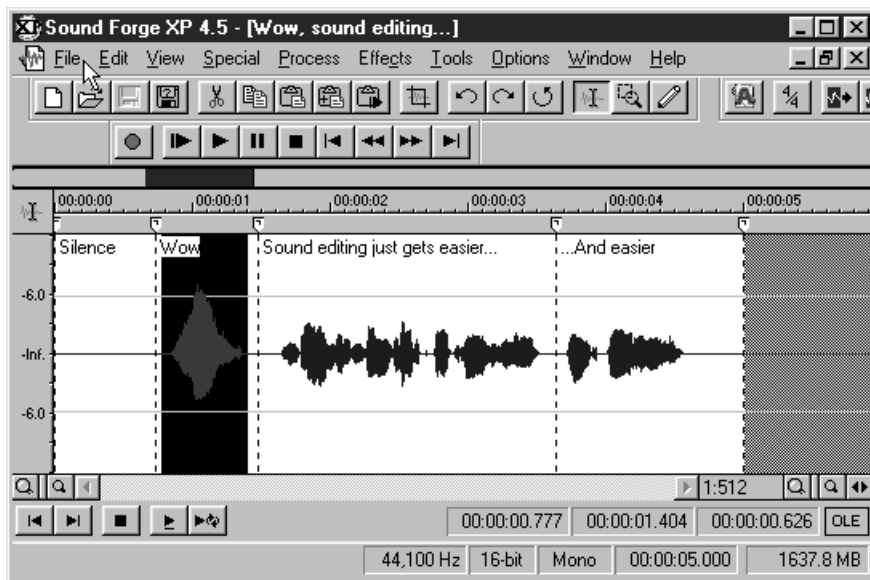
USING THE OVERVIEW

While making data selections and navigating through sound files, you probably noticed the overview (the thin bar directly underneath the title bar) change. The overview represents the length of the entire sound file, as if you were zoomed out all the way. From the overview, you can determine what section of the entire sound file is being displayed, the data selection made, and the cursor location.

GETTING THE WHOLE PICTURE

To view zooming using the overview:

1. Zoom out all the way on the TUTOR1 window (*Zoom Out Full* in the *Data Window* shortcut menu) and select the waveform data corresponding to the word “Wow.” Notice that the entire overview has brackets above and below it, since the entire sound file is being displayed. Also notice how the selection and the cursor are displayed on the overview.



2. Now press the Zoom In button a few times (the large magnifying glass in the lower right-hand corner of the data window) and notice how the brackets become smaller. This corresponds to the smaller fraction of the entire sound file that you can see when you zoom in on the waveform display. The selection size, however, remains the same and does not move. Even when you can't see them on the waveform display, you always know where the cursor or the selection are in the sound file by referring to the overview.

You can also change the cursor position by left-clicking anywhere on the overview. As always, when you change the cursor, you lose your selection. Remember you can use *Toggle Selection* if you want to restore it.

FAST NAVIGATION AND PLAYBACK

When you left-click outside the bracketed region in the overview, you will not be able to see the cursor on the waveform display. However, double-clicking anywhere on the overview will move the cursor and center the waveform display to the selected position in the sound file.

You can also play back the sound file starting from the current cursor position by right-clicking anywhere on the overview. Right-clicking again pauses playback. Left-clicking in the overview also moves the cursor position. Also note that left-clicking on the overview during playback moves the cursor to the point where you clicked and continues playback at that point. These navigation tools make it very easy to find sections in large files.

As an example, if you wanted to move the cursor to the beginning of a phrase in a speech, you can right-click on the overview bar to begin playback and then left-click at different positions within the overview until you find the right start point. Once you find the start point, you can press the *Stop* button to stop playback.

AUDIO EVENT LOCATOR

Holding down the left mouse button and dragging it in the overview bar will begin playback of small looped portions of audio around the cursor position. This is similar to a scrub function in that it allows you to hear brief segments of audio material in order to quickly scan or locate events within the sound file.

DRAG AND DROP OPERATIONS

You can perform a mix, paste, or crossfade by dragging a selection from one data window and dropping it on another.

To drag and drop:

1. Open both TUTOR1.WAV and TUTOR2.WAV and select *Tile Vertically* from the Window menu to make them easier to work with. One will be called the source window and the other the destination window.
2. Press and hold the left mouse button in the selected area of the source data window. While holding the mouse button down, move the cursor until it changes to an arrow dragging a little box.
3. Drag the cursor onto the destination window. You will see a shaded block that represents the range of the source material. You will also see that the little box accompanying the cursor now contains an “M” (Mix), “C” (Crossfade), or “P” (Paste). Position the block at the place in the destination window where you would like the mix, paste, or crossfade to occur.

4. Let go of the left mouse button. This will bring up the Mix dialog. To perform a crossfade instead of a mix, hold the Control key down while letting go of the mouse button. Holding down the Alt key when dropping performs a paste.

NOTE

An easier way to select a mix, paste, or crossfade is to drag the block to the destination window. Then, while holding the left mouse button, click the right mouse button to toggle between the Mix, Paste, or Crossfade functions. You will see the block change according to the method; a mix will look like a solid block, a crossfade will look like an “X” (or perhaps, a butterfly), and a paste will be represented by a segmented vertical line rather than a block.

DRAG AND DROP MIXING

To mix using drag and drop:

1. As in the previous example, open TUTOR1.WAV and TUTOR2.WAV. Again, to make the windows easier to view you may want to select the *TileVertically* command from the Window menu. For this exercise, TUTOR1.WAV will be the destination window and TUTOR2.WAV the source window.
2. Highlight all the data in TUTOR2 by making it the active window and double-clicking in the waveform display. Now drag the selected section by pressing and holding the left mouse button in the data window of the TUTOR2 window. Notice that the cursor changes to a pointer with a small box when you begin dragging. Drag the block to the beginning TUTOR1 data window and let go of the mouse button to drop the section.
3. When you let go of the mouse in the TUTOR1 window, you will see a dialog that shows the TUTOR2.WAV window as the source and TUTOR1.WAV as the destination. Leave the levels at 0 dB, and select OK. You will see that again the drum hit sound has been mixed into the TUTOR1 window. Press the Play button to hear the results.

DRAG AND DROP CROSSFADING

To Crossfade using drag and drop:

1. Undo the last operation.
2. Select all of TUTOR2 and drag it toward the end of TUTOR1.
3. Press and hold the Control key to see the crossfade block. This X-shaped block shows you where one sound begins to fade out and the other to fade in. By dragging the crossfade block left or right from the end of the destination file or the end of a data selection, you can adjust the length of the crossfade.
4. Once you have determined where you would like the crossfade to begin, let go of the mouse button. When you press the Play button, you should hear the end of TUTOR1 fade out as the beginning of TUTOR2 fades in.

DRAG AND DROP PASTING

To paste using drag and drop:

1. Undo the last operation.
2. Select all of TUTOR2 and drag it over to TUTOR1. Hold the Alt key down while you position the paste point at the beginning of TUTOR1.
3. Let go of the mouse button. If everything was done correctly, you should have pasted the data from TUTOR2 at the insert position in TUTOR1.

CREATING A NEW WINDOW WITH DRAG AND DROP

A very useful feature of drag and drop is the ability to quickly create a new window from a data selection. Make a selection in a data window and drop it on an empty area of the Sound Forge XP workspace. A new data window is automatically created containing the data from the selection.

EDITING STEREO FILES

When editing stereo files you have two channels of data on which to work. The upper channel is the left channel and the lower channel is the right channel. In the following examples, both labels (left/upper, right/lower) will be used.

SELECTING DATA IN STEREO FILES

When selecting data in stereo files, Sound Forge XP allows you to select either the left channel, right channel or both channels for playing, editing, and effects processing.

When editing a stereo file, the waveform display showing the two channels is split into three logical sections for selection with the mouse. The upper quarter of the waveform display is the left channel section, the lower quarter is the right channel section, and the middle half selects both channels. When selecting data with the mouse, the cursor location determines what channel(s) will be selected.

To select data in a stereo file:

1. Open the TUTOR1.WAV file.
2. Convert the file to stereo by editing the *Format* under *Properties* in the *File* menu or by right-clicking on the *Channels* playbar field and selecting *Stereo*. Set the *Channels* to *Stereo* and press *OK*. Select *Both Channels* for the destination in the *Mono to Stereo* dialog. You should now have a stereo version of TUTOR1.WAV.
3. Move the mouse pointer near the top of the left channel and select the word “Wow.” Notice the change to the left channel selection cursor, and that only the left channel of the data becomes highlighted. Do the same thing in the middle half of the window near the top of the right channel and the bottom of the left channel. This time you should see both channels being selected. Do this one more time near the bottom of the waveform display and you should see only the right channel being selected.
4. The cursor will change to reflect which channel(s) are being selected:
 - I Cursor when selecting both channels of a stereo file or when in a mono file.
 - I^L Cursor when selecting the left channel of a stereo file.
 - I_R Cursor when selecting the right channel of a stereo file.

TOGGLING CHANNEL SELECTIONS

Once you have made a selection in a stereo file you can switch between channel selections by pressing the *Tab* key. The *Tab* key will cycle between selections of *Left Channel*, *Right Channel*, and *Both Channels*. You can also set the channel selection by using the *Channel* drop-down list in the *Set Selection* dialog (*Edit* menu).

PREVIEWING CHANNELS

Selecting a single channel allows you to hear a preview of a single channel in the stereo file.

To preview a channel:

1. Triple-click in the TUTOR1 window to select all the data (or use *Select All* from the *Edit* menu). Press the *Play* button and listen to the clip.
2. Press the *Tab* key to toggle the channel selection into a single channel and press the *Play* button again. Do this one more time to hear the other channel.

SINGLE CHANNEL EDITING

Stereo data files are tied together by the nature of their format. In other words, they always play together. This means that there are some edit operations, such as *Cut* and *Paste*, that you can't use on a single channel. It would leave one channel shorter or longer than the other. This is usually not a problem in real world editing situations. To shift a single channel in time by small amounts, you can use the *Delay/Echo* function.

You can copy a selection from a single channel to the clipboard by selecting the data in either the left or right channel and using the *Copy* command. This will place a mono clip on the clipboard. You can then paste the mono clip to a mono file, both channels of a stereo file, or you can mix it into a single channel or both channels of a stereo file. When mixing mono clipboard data to a stereo file you will be asked with a dialog whether you wish to mix to a single channel or both channels.

REGIONS AND MARKERS

This section covers Sound Forge XP's ability to create regions and markers in a data window. Each data window can have its own *Regions List* stored along with the sound data when saved in the WAV file format.

Sections covered are:

- Using the *Regions List*
- Creating *Regions*
- Editing a *Region*
- Using *Markers*

USING THE REGIONS LIST

The most basic use of the *Regions List* is for dividing a sound file into separate named regions. These regions can then be quickly played or highlighted in the data window. You can also mark important time positions with markers so that you can navigate through large files faster.

CREATING REGIONS

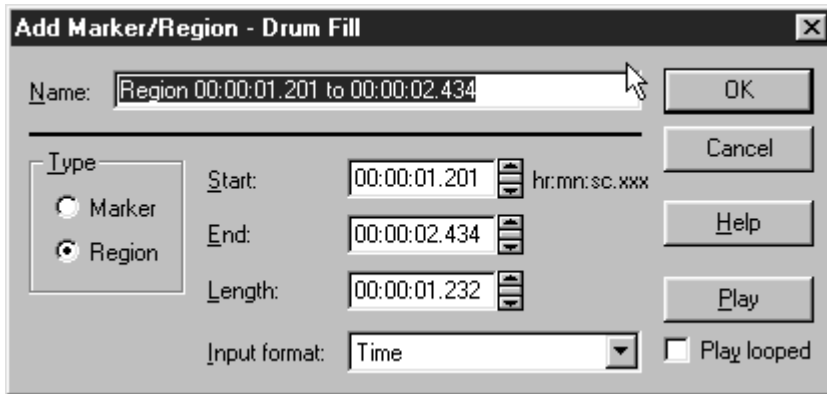
This section will describe how to create regions within a sound file.

CREATING A REGION USING MENU COMMANDS

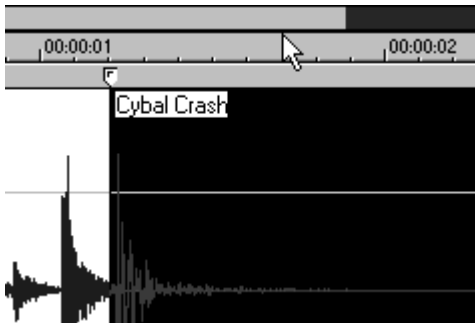
As with most features in Sound Forge XP, you can create a region in your sound file in a number of different ways. One of the simplest ways is to drag a selection from a data window into the *Regions List*.

To create a region:

1. Open the TUTFILL.WAV file.
2. Open the *Regions List* window by selecting *Regions List* from the View menu. You can also open this window by pressing Alt+1. There should be no regions in the *Regions List*; creating one is what we are setting out to do!
3. To create a region, listen to the file by pressing Play and then select the cymbal crash at the end of the file. Next, select *Add* from the *Regions List* command in the Special menu. The *Add Marker/Region* dialog will appear.



4. Name the region *Cymbal Crash* and then select *OK*. A region will be created and placed in the *Regions List*. Each region in the *Regions List* has a *Play* button that you can use to play that particular region. In addition, *Region Tags* that show the location of the region appear in the *Time Ruler*.



OTHER WAYS OF CREATING REGIONS

There is also a shortcut menu to let you quickly create regions.

1. Select the beginning part of the *TUTFILL.WAV* file with the drum roll and then right-click on the ruler. From the *Ruler* shortcut menu, select *Add Marker/Region* and the *Add Marker/Region* dialog will appear.
2. Name this region *Drum Roll*. Notice that if you click on *Drum Roll* or *Cymbal Crash*, in the *Regions List* window, the region is selected in the data window.
3. The easiest way of creating regions is to drag them from a data window and drop them directly into the *Regions List* window.

4. In the TUTFILL.WAV file, select the portion of data between the Drum Roll and Cymbal Crash regions and then drag it to the *Regions List* window and release the mouse button. The *Add Marker/Region* dialog will immediately appear upon releasing the mouse button. Name this region *Toms* and press OK.
5. Pressing “R” after making a data selection will create a region as well. This is a very fast method of creating regions, however, the *Add Regions* dialog won’t pop up. This means the region will be named automatically by its time boundaries. You can change the region name later (see below).

EDITING A REGION

This section describes how to edit an existing region in a sound file.

EDITING REGIONS WITH THE RULER REGION TAGS

Changing the end points of a region is as simple as sliding the region tags on the data window ruler (above the waveform display). When you left-click on a region tag, the corresponding region end point tag is also highlighted. Also, the name of the region is displayed in the left side of the status bar. Double-clicking on a region tag changes the selection points to the region area.

To perform region edit operations, right-click on the region tags. This brings up the *Marker/Region* shortcut menu. You can then choose from the following options:

Select	Modifies the current selection points to be equal to the region end points.
Delete	Deletes the region, not the sound data, from the <i>Regions List</i> .
Edit	Takes you to the <i>Edit Marker/Region</i> dialog for manually editing region attributes.
Update	Modifies the region end points to be equal to the current selection.

EDITING REGIONS IN THE REGIONS LIST

Another way to edit region points is to double-click on a region name in the *Regions List*. This brings up the *Edit Marker/Region* dialog, which allows you to type in region parameters. Also, right-clicking on the *Regions List* allows you to choose from various commands in the *Regions List* shortcut menu.

USING MARKERS

While regions specify a section in a sound file, a marker is a location in the sound file you wish to use as a reference point. Markers are often used to tag important file locations, making it easier to navigate around the sound file.

CREATING A MARKER WITH THE RULER SHORTCUT MENU

A marker can be created in the same ways discussed earlier for making regions. The fastest way is to place the cursor where you want the marker and then right-click anywhere on the ruler. This will bring up the *Ruler* shortcut menu, where you then select the *Add Marker/Region* option. In the *Add Marker/Region* dialog, type in a name for the marker and select *OK*. If no data is selected, *Sound Forge XP* will automatically create a marker at the cursor position. If you have selected data, *Sound Forge XP* defaults the *Type* to *Region* in the *Add Marker/Region* dialog.

EDITING MARKERS

Markers can be edited in the same way as regions (see above section). The marker tags in the ruler can be moved back and forth, and shortcut menus appear when you right-click on the tag.

STARTING PLAYBACK FROM A MARKER LOCATION

To play the sound file beginning at a marker location, press the small *Play* button to the left of the marker name in the *Regions List* window.

DROPPING MARKERS WHILE PLAYING OR RECORDING

Another useful feature in Sound Forge XP is the ability to create markers as you listen to the sound file. To do so, first start playback on any sound file. A marker will be created each time you press the 'M' key. When finished, you can then rename each marker to whatever you wish.

While recording, you can press the *Drop Marker* button (to the right of the *Play* button) in the *Record* dialog. After pressing this button once, pressing the *Spacebar* will create other markers.

CHAPTER 4:

FILE FORMATS AND ATTRIBUTES

This chapter describes how to work with file formats, including AVI and Internet files, and file attributes. The sections are:

- Working with Sound File Formats
- Working with AVI Files
- Working with Internet Media Formats

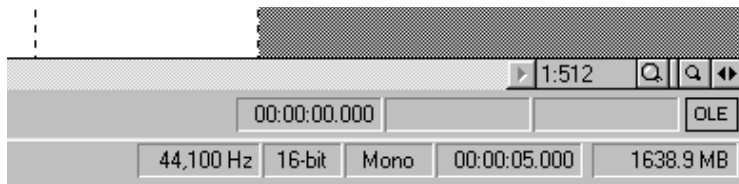
WORKING WITH SOUND FILE FORMATS

This section will show you how to deal with many different sound formats. You will learn about:

- Changing the Format of a Sound File.
- Converting Between Stereo and Mono.
- Converting Sound Files from 16-bit to 8-bit.
- Converting Files from One Format to Another.
- Embedding Summary Information.

CHANGING THE FORMAT OF A SOUND FILE

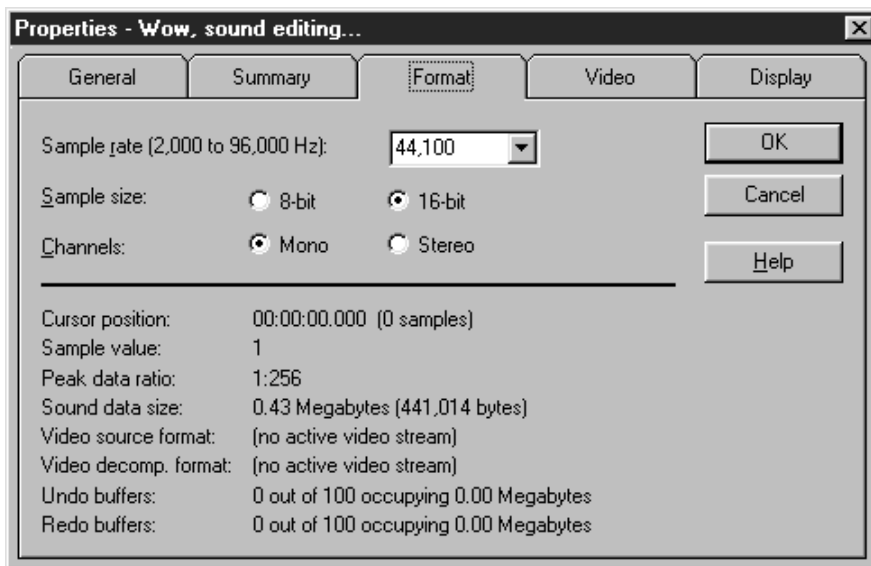
When you open a file or create a new data window, the format for the window is shown on the first three status fields of the main status bar at the bottom of the program window. The format parameters consist of the *Sample Rate*, *Sample Size*, and number of *Channels* (Mono or Stereo). The last status fields display the *Total Length* of the sound data, and the amount of *Free Storage* available.



NOTE

Changing the sample rate will make your sound play faster or slower and with a higher or lower pitch. If you want the file to sound the same at a different sample rate, use the Resample command under the Process menu.

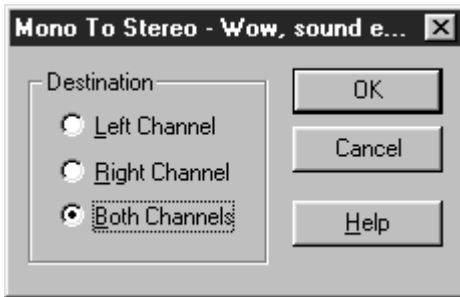
When you right-click on any of the three format fields, a shortcut menu will pop up at the current mouse location allowing you to change that parameter. You can also change all three parameters at one time by selecting *Properties/Format* under the File menu. The *Properties* folder can also be invoked by double-clicking on any of the format fields, or by right-clicking on the waveform display of the data window and selecting *Properties* in the shortcut menu.



CONVERTING BETWEEN MONO AND STEREO

To convert a file from mono to stereo:

1. Open the TUTOR1.WAV file. Right-click on the status field, which has the word Mono, and select *Stereo* from the shortcut menu.



2. When you convert from mono to stereo, the *Mono to Stereo* dialog will appear, asking you where you want to put the data. Your choices are:

Left Channel	The mono data is placed in the left channel. The right channel is set to silence.
Right Channel	The mono data is placed in the right channel. The left channel is set to silence.
Both Channels	The mono data is copied into both channels.

When performing stereo to mono conversions, the following options are available:

Left Channel	Mono data is taken only from the left channel of the stereo file.
Right Channel	Mono data is taken only from the right channel of the stereo file.
Mix Channels	Mono data is created by mixing both channels of the stereo file.

3. For this exercise, put the data in the left channel to see how the function works. Click the radio button next to *Left Channel* and select the OK button.

4. You will now have data in the upper half of the data window (the left channel) and silence in the right channel. Press the **Play** button and you will hear “Wow, sound editing just gets easier and easier” in only the left channel.

NOTE

If your sound card supports only mono data you will still be able to play stereo files if you set your playback device to Sound Mapper on the Wave page in the Preferences (Options menu).

5. Now go back to a mono sound file, but do it in a different manner. Select **Properties** from the shortcut menu that appears when you right-click on the waveform display. In the **Properties** folder select the **Format** page. This page allows you to change all the parameters at once. Set the radio button for **Channels** to **Mono** and select the **OK** button. Select the **Left Channel** for the source channel in the **Stereo to Mono** dialog and you’re back where you started.

NOTE

*The above steps were used as an illustration. Using **Undo** would have been the more efficient option.*

CONVERTING SOUND FILES FROM 16-BIT TO 8-BIT

To save storage space, 16-bit sound files are often converted to 8-bit files. However, when you represent a sound file with only 8 bits, an audible distortion referred to as quantization error becomes very prominent. To minimize quantization error, there are things you can do to the 16-bit sound file before converting it to 8-bit. You can:

- Apply a **Noise Gate** (Effects menu) to completely mute out the silent parts in a sound file. Often, a low level signal in a 16-bit sound file will become noise after the 16- to 8-bit conversion, so it’s best to have complete silence between the sound parts.
- **Normalize** (Process menu) the sound to 0 dB (peak). This ensures that the entire dynamic range available in 8-bit samples is used and lowers the signal to noise ratio.

Once you have performed the above operations, you should use *Convert to 8-Bit* in the *Process* menu to do the 16- to 8-bit conversion. Sound Forge XP provides three different 16- to 8-bit conversion options; *Truncate*, *Round*, and *Dither*.

Truncate removes the lower 8 bits and they are lost forever. *Round* is similar to *Truncate*, only some attempt is made to represent the highest of the low bits by rounding up if possible. *Dithering* is used to mask the quantization noise with less obtrusive noise. In the *Convert to 8-Bit* dialog, set the *Dither* bit depth to a low value (like 0.1) and increase the value slowly until you reach an acceptable sound.

Remember, an 8-bit sound file will always sound noisier than a 16-bit sound file, so whenever possible, stick with 16-bit. When trying to save space, it is possible to get better results from lowering the sample rate than using 8-bit samples. For more information, see *Resample* under the *Process* menu in chapter 6, *Sound Forge XP Reference*.

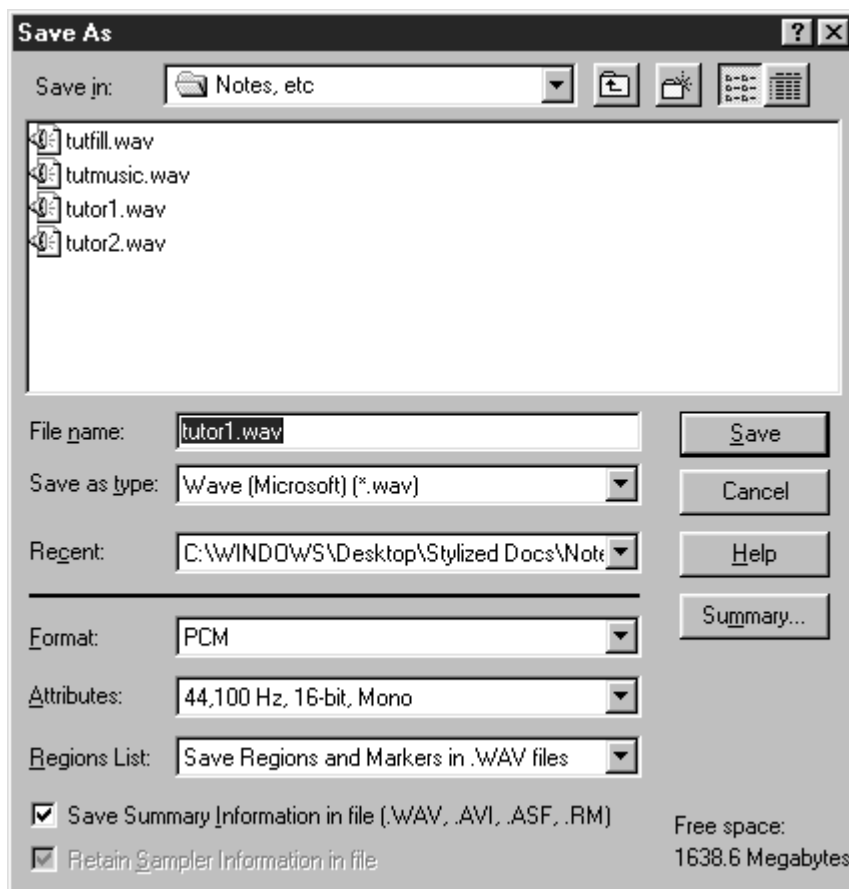
CONVERTING FILES FROM ONE FORMAT TO ANOTHER

When producing audio files you may find that you need to work with a variety of file formats. For example, WAV files could have data formats such as 8-bit mono, 16-bit stereo, or even ADPCM. You may need the files converted to Raw data, VOC, or some other PC format. You may even need to convert to a different platform like Macintosh AIF files or Amiga SVX.

In the previous sections you've seen that you can quickly convert between mono/stereo, 8-/16-bit, and change the sample rate with Sound Forge XP. You can also use the *Save As* command to save the file to a new name, or you save it in a new file format.

To convert file formats:

1. Open the TUTOR1.WAV file. Select the *Save As* command from the *File* menu. The *Save As* dialog will be displayed.



2. In the *Save As* dialog, there are three controls that are used for file conversion: *Save as type*, *Format*, and *Attributes*.

The *Save as type* is the list of all available output file types. The *Save as type* will be set to the type from which the file was opened. The default for new files is *Wave (Microsoft) (*.wav)*. You can change to the type of file you want to save by selecting the new type from the *Save as type* list. Notice that the extension of the file name will be changed to reflect the type of file you are saving.

The *Format* drop-down list shows the format of the data that will be saved in the file. Usually this will be PCM (Pulse Code Modulation), which is the standard for most file types. PCM is a standard format for normal uncompressed audio. If you are saving a file to a file type that supports other formats, they are displayed in the drop-down list. Other formats are typically used when saving audio data in a compressed form.

The *Attributes* drop-down list shows the sample size, channels, and sample rate that will be stored when saving this file. Examples include 11,025 Hz, 8-bit Mono or 44,100 Hz 16-bit stereo. You can quickly change the attributes of the data by selecting one of the options available in the drop-down list. When you change from a mono file to a stereo file using the *Attributes* field, that data is copied to both channels. If you change a stereo file to a mono file, the data is mixed to one channel.

When you change the *Save as type* you may notice that the *Format* and *Attributes* fields will also change. This is because not all file types support the same types of sound data. For example the Dialogic VOX format only supports 16-bit mono Dialogic ADPCM files. This means you can't store stereo 8-bit data in this file. Don't worry, in most cases Sound Forge XP automatically converts any file you save to an acceptable format.

EMBEDDING SUMMARY INFORMATION

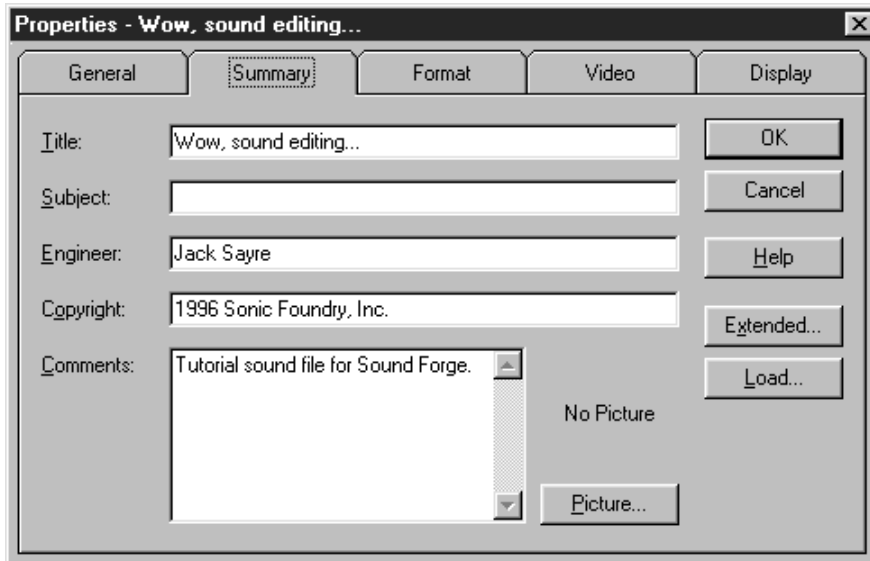
Several important sound formats let you include text information with sound data. These formats include:

- WAV
- AVI (Microsoft Video for Windows)
- ASF (Active Streaming Format files using Microsoft NetShow)
- RM (RealMedia, including RealAudio and RealVideo)

When you create one of these files, you can include over 30 text fields including, *Creation Date*, *Copyright*, *Keywords*, and a variety of other informational text data. Sound Forge XP supports viewing and editing any of these fields.

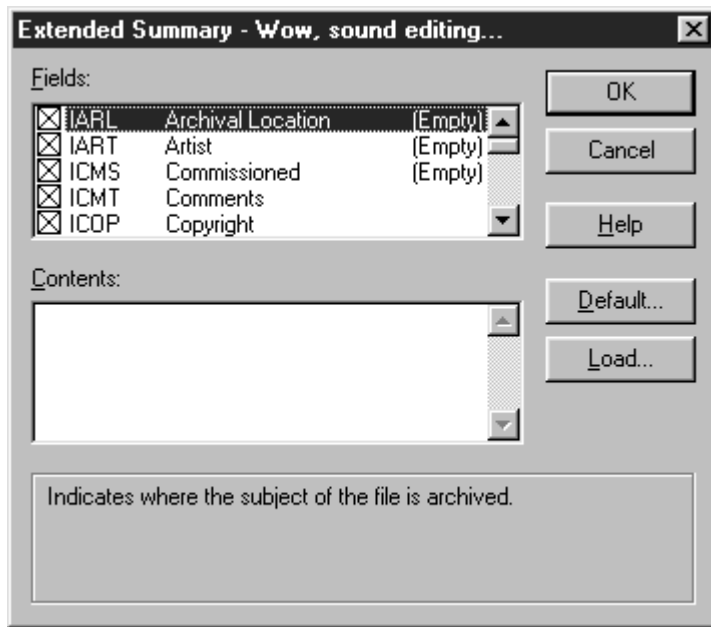
SUMMARY INFORMATION

Use the *Summary* properties to view or change summary information for a file. To see these options, choose *Properties* from the *File* menu and select the *Summary* page.



EXTENDED SUMMARY INFORMATION

To see the *Extended Summary* dialog, click *Extended* on the *Summary* page. The *Extended Summary* dialog contains a list of available fields, each of which may or may not have attached text. The *Fields* list shows the abbreviation of the field type and a short description. If the field is currently empty, the word *Empty* appears after the description. Below the list of fields is the *Contents*, which shows the contents of that field. At the bottom of the dialog is a longer description of the current field.



To the left of each field in the list is a check box, which is used to enable or disable fields of this type when saving files. The field is enabled or disabled by clicking on the check box. If a field is empty, i.e., has no text, enabling the check box has no effect on a saved file. Field information is only saved if text information exists for that field.

The *Save Summary Information in file (.WAV, .AVI, .ASF, .RM)* check box in the *Save As* dialog is used to quickly enable/disable saving of all summary fields to a file during a *Save As* operation. This allows you to quickly strip all summary information from a file.

For a description of the fields available, refer to *Properties* in the *File* menu in chapter 6, *Sound Forge XP Reference*.

DEFAULT

If the *Default* button is selected, the text in the summary fields is saved with the default fields that are automatically filled when creating a new WAV file. The *Creation date* field (ICRD) is always filled with the current date for new files. Saving a custom default setup is handy for saving copyright and engineer information for new files created at your site.

To view extended summary information:

1. Open the TUTOR1.WAV file.
2. Select the *Summary* page from *Properties* in the *File* menu. This will show you the *Summary* dialog.
3. Press the *Extended* button. Notice that the default for saving summary information is to have all fields enabled. The fields that have already been filled in for TUTOR1.WAV are *Comments*, *Copyright*, *Creation Date*, *Engineer, Name/Title*, and *Software*.
4. Scroll to and select each field. You will see the embedded text for each of these fields.

ADDITIONAL EMBEDDED INFORMATION

You can also embed non-text data in a WAV, AVI, ASF, or RM file. If you open and edit a file which has additional information created by other software, Sound Forge XP will keep track of this data and place it back in the file when you save to the original format.

If you wish to add or remove additional data (such as embedded bitmaps, metafiles, etc.), you can use the *Save As* command from the *File* menu. When you save data using the *Save As* option, Sound Forge XP will ask you if you wish to copy the additional non-audio information to the new file. At this point you can answer either *Yes* to place the additional information in the new file or *No* to save only audio data and any additional data types you have selected.

NOTE

Sound Forge XP will only prompt you to save if such data exists.

WORKING WITH AVI FILES

Sound Forge XP lets you work with *Microsoft Audio and Video Interleave (AVI)* files. You can edit the audio tracks of a video with single frame accuracy. This section covers:

- Opening an AVI File
- AVI Navigation
- Attaching a Video to a Sound File
- Saving an AVI file
- AVI Video Compression
- Editing Audio in AVI Files

OPENING AN AVI FILE

To open an AVI file, choose *Open* from the File menu and select *Video for Windows (*.avi)* from the Files of type list. Then, double-click on the file you wish to open. If the AVI file being opened in Sound Forge XP contains exactly one video stream and one audio stream, it will open these streams automatically. However, if no audio is present an audio stream will be created containing only silence for the entire length of the video.

HANDLING MULTIPLE STREAMS

AVI files can contain more than one video or audio stream. A stream is not the same as a track in a multi-track video or audio editor. Multiple streams are most commonly used to contain different versions of a video or audio track. For example, you could have an AVI file with one video stream and multiple audio streams in different languages. An AVI player, such as Microsoft's *Media Player*, can detect which language version of Windows your computer is using and automatically play the correct audio stream for that language.

If more than one stream exists, the *Video Stream* dialog will be displayed when opening the file. In this dialog, you must select a video and audio stream to open by using the *Stream Selectors* (black diamonds) to the left of each stream. Once you've selected one of each, press *OK*.

AVI NAVIGATION

VIDEO STRIP

When you open an AVI file, you will notice the video strip on top of the waveform display. When you use *Zoom Out* to view the waveform, all of the frames in an AVI will not be displayed. The left edge of the displayed frames are aligned with the audio in time. If you'd like to see the frame numbers appear on the frames, activate the *Video Strip* shortcut menu by right-clicking on the video strip and select *Number Frames*.

NOTE

To resize the video strip, drag its lower edge up or down.

To enable frame animation in the video strip, select *Animate frames* from the *Video Strip* shortcut menu. When this option is enabled, moving the cursor will cause the nearest frame to be displayed above it. During playback, you will see the active frame window play the video as the cursor moves past it.

VIDEO PREVIEW

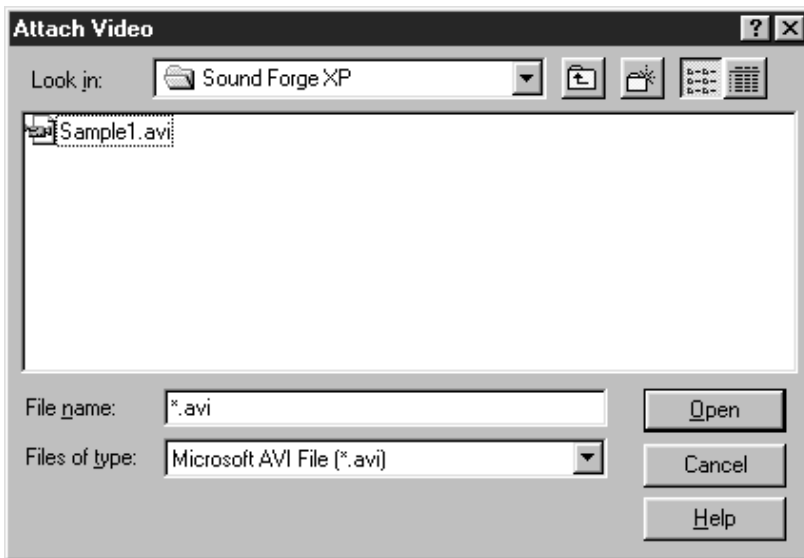
Selecting *Video Preview* from the *View* menu opens the *Video Preview* window. The frame closest to the cursor (during editing or playback) will always be displayed in this window.

At the top of the window, the original frame size and current display size (in parenthesis) are displayed, along with the frame rate and current frame number. An asterisk (*) by a frame number indicates that the frame is a key frame (see the section on compression below).

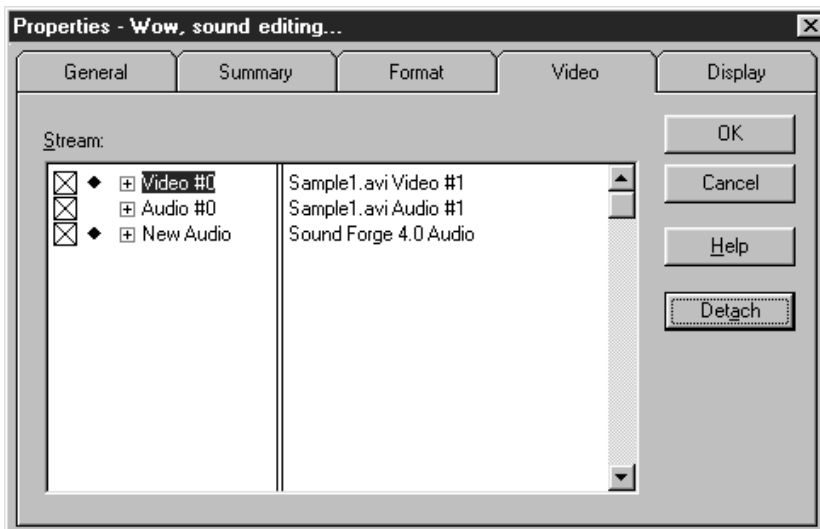
ATTACHING A VIDEO TO SOUND FILE

To attach a video to an opened sound file:

1. Select *Properties* from the *File* Menu and go to the *Video* page. Pressing the *Attach* button will display the *AttachVideo* dialog, where you can select an AVI file as a source of video.



2. Press **Open** after selecting an AVI file with a video stream. The *Video Properties* will now display the audio and video streams in the AVI file. An AVI file can contain multiple streams, but in most cases you'll have one audio stream and one video stream.

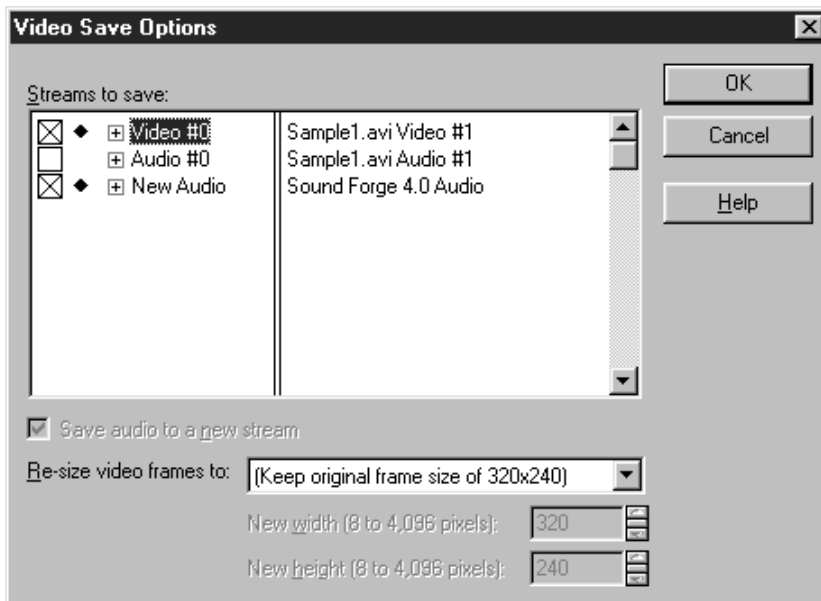


3. The check box to the left of each stream indicates which streams will be stored when you save your file. The black diamond next to it is the *Stream Selector*, which indicates which streams are currently being used in Sound Forge XP.
4. Press OK and you should now see the video strip above the waveform display. Once you're done editing, you must save the file in AVI format if you want to store the video.

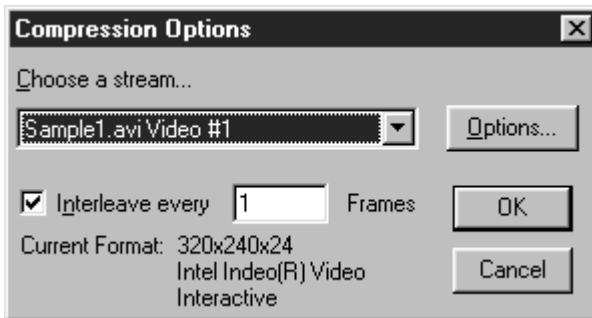
SAVING AN AVI FILE

To save an opened file in the AVI file format:

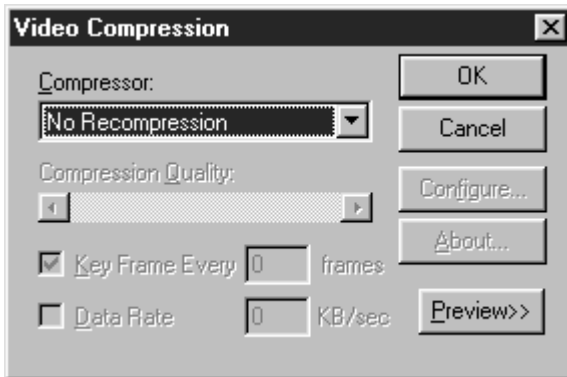
1. Select *Save* or *Save As* from the File menu. From the *Save As* dialog, select *Video for Windows (*.avi)* from the *Save as type* drop-down list. After naming the file and selecting attributes, select *Save*.
2. The *Video Save Options* dialog appears next. Here, you can select which streams to store in the AVI file by checking the square check box to the left of each stream. In this dialog, it is also possible to edit the titles of the streams.



- Pressing OK will take you to the Compression Options dialog. Here, you can select a compression scheme for each audio and video stream. To change the options for a stream, select it and press the Options button. By checking the Interleave every _ Frames option, you can specify how frequently the audio chunks are interwoven with the video.



- If you pressed the Options button, yet another dialog, Video Compression, lets you select from different compression algorithms, and even go to another dialog to set specific compression configuration parameters. For more information on compression, see the next section. Selecting No Recompression saves the stream in its original format, which is the Sound Forge XP default.



- Once you're done setting compression options, selecting OK will complete the process. If the video is long and/or the compression scheme selected is slow, saving the file might take a while. However, if you didn't change any video compression formats, the save will be much faster, since no recompression takes place.

AVI VIDEO COMPRESSION

If you thought audio files chewed up your hard-disk space quickly, wait until you start using video! CD quality audio takes up about 10 MB of hard-drive space per minute (60 seconds x 44,100 samples per second x 2 tracks for stereo x 2 bytes per 16-bit sample). However, typical video for multimedia use can easily take up about 200 MB per minute for a small window of video (60 seconds x 15 frames per second x 320 x 240 x 3 bytes for 24 bit pixels). Using uncompressed video as a final distribution format is out of the question for most practical purposes. Video compression is a necessary evil.

COMPRESSION ALGORITHMS

Many different compression algorithms exist and many more will continue to be created in the next several years. With all algorithms, there will be trade-offs between video quality, size reduction, and compression/decompression processing time. Compressing by large amounts quickly will generally produce visual artifacts such as jumpy or grainy video.

When saving an AVI file in Sound Forge XP, you can select from all of the compressors installed in your system. Included with Windows are Cinepak by Radius (cvid), Intel Indeo (IV32), and Microsoft Video 1 (CRAM). These can be selected from the *Video Compression* dialog (see section above).

COMPRESSION SETTINGS

Many compressors use key frames during compression and decompression. A key frame is a frame in the video stream that is not inter-frame compressed. The following compressed frames are derived from the closest key frame. Having fewer key frames will make the video size smaller. However, it will take a lot more time to display the frames, especially when jumping around the end video.

NOTE

When editing AVI files in Sound Forge XP, the display speed will suffer greatly if there is only one key frame in the entire file. In such cases, Sound Forge XP needs to scan all preceding data when drawing every single frame.

Also in the *Video Compression* dialog, you can specify the *Data Rate* of the video, which relates directly to the final size of the file. Different compressors do different things with this value, since it's only an expected value. In most cases you should leave this unchecked. If you have very limited playback data rates, such as with a single-spin CD-ROM, you might then want to set this value. However, note that the *Compression Quality* control setting will also affect the output size.

Use the Preview button to get an idea of the video's output quality and compression amount.

NOTE

EDITING AUDIO IN AVI FILES

When doing any operations on the soundtrack of an AVI file, the video stream is always left untouched. For example, doing a cut or paste on a sound file will not change the duration of the video stream.

In Sound Forge XP, the video stream and audio stream will always start together, and you will see the video frames only where audio exists. Therefore, if you want to view the entire video stream, you should use *Insert Silence* to add enough audio to run the entire length of the video. You can then later mix into the file any needed sounds.

WORKING WITH INTERNET MEDIA FORMATS

Sound Forge supports two different formats for creating files that are optimized for streamed playback over (usually) slow networks such as the Internet. RealNetwork's RealAudio and RealVideo (.RM,.RA), and Microsoft's NetShow Advanced Streaming Format (.ASF) files can be created in Sound Forge. To play these files, you must have the appropriate player application installed in your computer.

This section covers the following topics:

- Using Sound Forge XP to create RealMedia files
- Using Sound Forge XP to create ASF files.

USING SOUND FORGE XP TO CREATE REALMEDIA FILES

Sound Forge XP gives you the ability to save sound files in RealMedia formats (RealAudio and RealVideo) along with editing tools that help maximize the audio's fidelity. This section first explains how to save files in RealAudio format, then covers saving files in RealVideo format. All of the tips for converting files to RealAudio also apply for converting AVI files to RealVideo. For more information on authoring RealMedia content, refer to Progressive Networks' RealMedia home page (www.real.com).

PREPARING REALAUDIO FILES

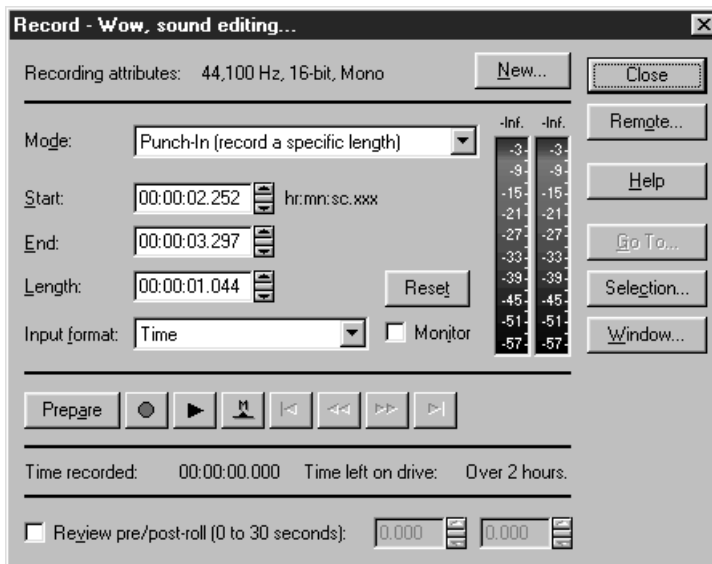
Preparing RealAudio files is a three-step process:

1. Recording the audio.
2. Preparing a sound file for RealAudio encoding.
3. Setting the RealAudio text fields.

RECORDING THE AUDIO

To record a sound file:

1. Click the *Record* button. The *Record* dialog appears displaying the settings from the last clip recorded.



2. Use the defaults or click the *New* button to change the *Sample Rate*, *Sample Size* or number of channels of the source file.
3. Check the *Monitor* box and play the clip to be encoded. Check for clipping. You want the levels to be mostly in the green area, a little in the yellow and only occasionally in the red. If Sound Forge XP displays a red *Clip* warning above the *Monitor*, you should:
 4. Stop the input source.
 5. Click the *Reset* button.
 6. Lower the volume of the input source either by turning down the output of your sound source or by turning down the input volume on your sound card's mixer window. In general, you don't want any of your levels too high or too low.
 7. Check the levels again. It is better to be conservative with the starting levels.
 8. Click the *Record* button to re-record.
 9. When the file is recorded completely or when you click the *Stop* button, a graphical display of the wave file appears.
 10. Click the *Close* button to close the *Record* dialog.

PREPARING A SOUND FILE FOR REALAUDIO ENCODING

When you have finished recording a file, it is recommended that you normalize and compress the file before saving it in RealAudio format.

Normalize

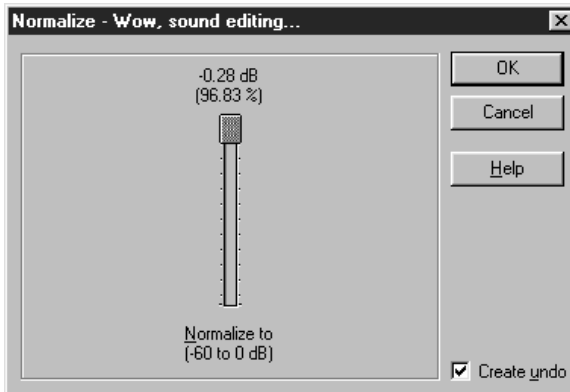
When you have finished recording a new file or opening pre-existing files, it is recommended that you perform the following processes on the file before saving the file in a RealAudio format.

Sound Forge allows you to save preset settings for each of these processes. So once you set them up the first time, you can always use the same settings.

N O T E

This process ensures that the loudest part of the file is at the maximum level. Follow these steps to normalize a file

1. Press Ctrl-A to select the entire file.
2. Select *Normalize* from the *Process* menu. The *Normalize* dialog appears.



3. Move the *Normalize* fader to *-0.50 dB (94.41%)*.
4. Select *OK*. Sound Forge XP normalizes the file.

Compress

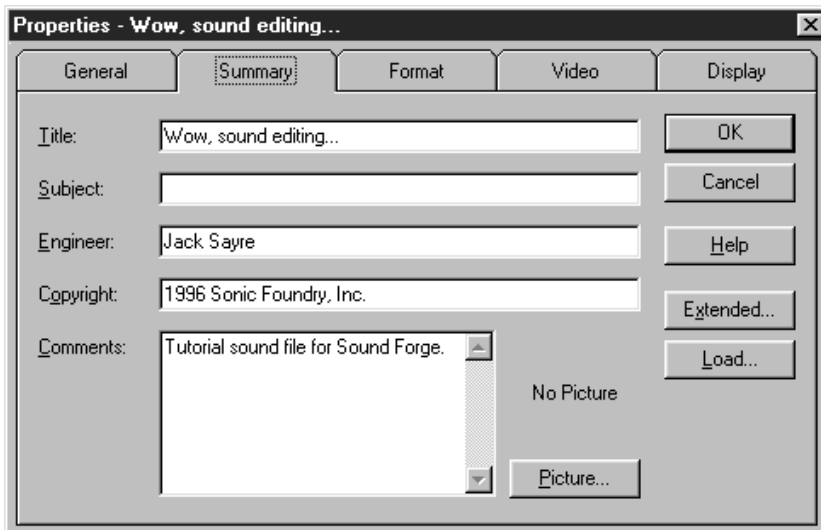
If you have not already audio compressed the file you can do so now. RealAudio files benefit from compression because it increases the overall volume and intelligibility of the sound. The suggested settings use very light compression. Follow the steps below to compress the clip:

1. Press Ctrl-A to select the entire file.
2. Click on the *Effects* menu, followed by the *Dynamics* option.
3. Move the *Threshold* slider to *-10.00 dB* and the *Ratio* slider to *2.0:1*.
4. Finally, set the *Attack* control to *1.0 milliseconds*, and the *Release* control to *300.0 milliseconds*.
5. Click the *OK* button.

SETTING REALAUDIO TEXT FIELDS

RealAudio and RealVideo files can store information about the title, author and copyright of the clip. To set the RealAudio and RealVideo text fields, follow these steps:

1. Choose *Properties* from the *File* menu. The *Properties* window for the current file displays.
2. Click the *Summary* tab.



3. Enter the *Title*, *Engineer*, and *Copyright* information. This information appears in the *Title*, *Author*, and *Copyright* text boxes on the *RealPlayer*.
4. Press the *OK* button, and the fields are transferred in to the *RealAudio* or *Video* file when it is saved.

SAVING AN AUDIO FILE AS REALAUDIO

To save an audio file as RealAudio, follow these steps:

1. Click on the *File* menu, followed by the *Save As* option. The *Save As* dialog displays.
2. Enter the file name of the file you are saving.
3. Select *RealMedia (*.rm;*.ra)* as the *Save as type*. The default extension for this type of file is *.rm*. To save using the *.ra* extension, type *.ra* at the end of the file name.

4. Next, click the Save button. The RealMedia Save Options dialog box opens. This dialog box is explained in detail in the reference chapter in the “Save As” section.
5. Select the *Audio compression* type from the drop-down list. A brief description of the highlighted compression type displays below this list.
6. If the file you recorded was stereo, and you selected a mono compression type, select the appropriate *Stereo to mono conversion* option. It is recommend that you use the *Both Channels* option.
7. Click the OK button. After the file has been saved, a message appears, asking whether you want to listen to the saved file through the RealPlayer. This message verifies that you have saved the file in RealAudio or RealMedia format. You can listen to the file by clicking the Yes button if you have the RealPlayer installed.

SAVING AN AVI FILE AS REALVIDEO

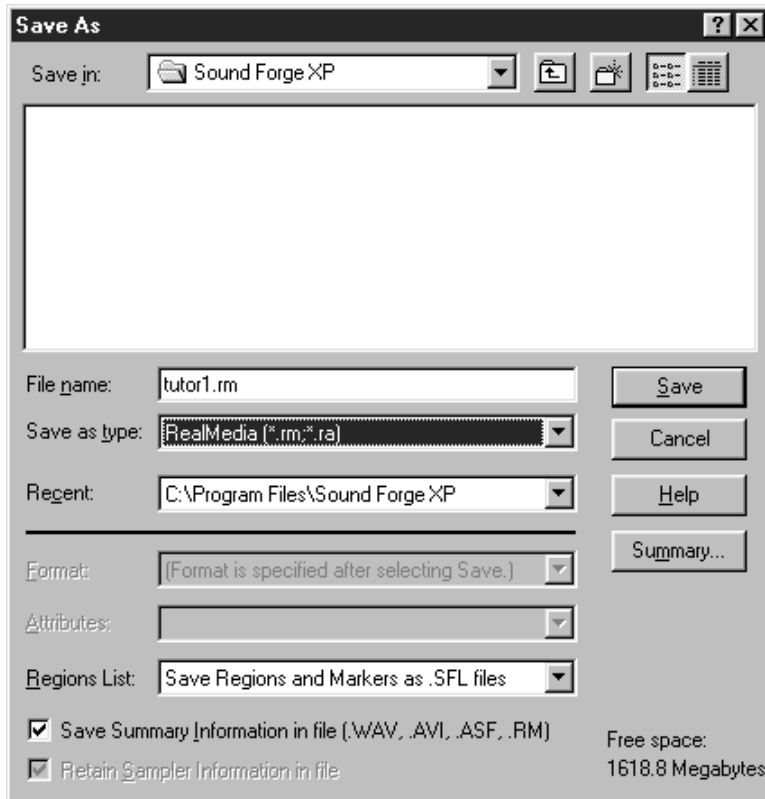
To save an AVI file as RealVideo, follow these steps:

1. Click on the File menu, followed by the Save As option. The Save As dialog displays.
2. Enter the file name of the file you are saving.
3. Select RealMedia (*.rm;*.ra) as the *Save as type*.
4. Click the Save button and the RealMedia Save Options dialog displays. This dialog box is explained in detail in the reference chapter in the “Save As” section.
5. If you wish to include the audio in the new RealVideo file, make sure the *Save Audio Stream* option is checked. Next, select the *Audio compression* type from the drop-down list. A brief description of the highlighted compression type displays below this list.
6. If you wish to include the video in the new RealVideo file, make sure the *Save Video Stream* option is checked. Next, select the *Video compression* type from the drop-down list. For a brief description of the two compression types, see the reference chapter’s “Save As” section.
7. Specify the *Desired maximum data rate* in total kilobits per second (Kbps). This option is only available if you are saving a video stream. Refer to the documentation for “Desired Maximum Data Rate” in the “RealMedia Save Options” section for more information.

- Click the OK button. After the file has been saved, a message appears, asking whether you want to listen to the saved file through the RealPlayer. This message verifies that you have saved the file in RealVideo format. You can view the file by clicking the Yes button if you have the RealPlayer installed.

REALMEDIA SAVE OPTIONS

This dialog is reached when you select *RealMedia (*.rm;*.ra)* from the *Save as type* list in the *Save as* dialog.



Enable selective record capabilities

When checked, RealMedia-compatible players can allow users to save (record) RealMedia streams to their hard drives. Use this option only if it is acceptable for users to create copies of the RealMedia file. The RealPlayer Plus from Progressive Networks supports Selective Record capabilities.

Enable PerfectPlay capabilities

When this option is enabled, users connected with standard modems can select to download a higher quality version or the audio and/or video that is normally only available over ISDN or LAN connections. The higher bandwidth RealMedia stream is then played back from the user's hard disk after the download process is complete. The RealPlayer Plus from Progressive Networks supports PerfectPlay capabilities.

Create event file (RAE) from Marker and Region labels

When this option is enabled, events can be embedded from the *Regions List* (View menu) into the RealMedia stream.

To embed an event, create a marker or region with a label starting with one of the below prefixes followed by a colon.

RM URL: Specifies a URL (web address) to open.

RM Title: Sets the Title field in the RealPlayer.

RM Author: Sets the Author field in the RealPlayer

RM Copyright: Sets the Copyright field in the RealPlayer

For example, if you create a marker with the label RM URL:http://www.sonicfoundry.com, the RealPlayer would open the Sonic Foundry home page at the marker's location in the file during playback. You can just as easily open specific web pages. For example, RM URL:http://www.sonicfoundry.com/realaudio.html would open the realaudio.html page on Sonic Foundry's web site.

Progressive Networks publishes extensive information on RealMedia events on their web site (www.real.com). However, Sound Forge XP is capable of generating all event files automatically rather than requiring several tools as described in Progressive Networks' documentation.

Save audio stream

When checked, the file's audio stream will be converted and saved into the RealMedia file.

Audio compression

This option selects the RealAudio compressor that is used when saving the file. If you need to save RealAudio files with Bandwidth Negotiation capabilities, you can automate the process using Sonic Foundry's Batch Converter Plug-In.

When a compression type is selected, a brief description of it is displayed below the list box. The frequency response parameter of the description indicates how wide, in Hertz, the bandwidth of the audio in the RealMedia file will be. The bandwidth of a normal human's hearing is about 20,000 Hz or 20 kHz.

Stereo to mono conversion

If the source audio file is stereo and you choose to convert to a mono RealAudio format, you will need to decide what channel(s) to use for the mono signal. Selecting *Both channels* will evenly mix the signal together. If you are unsure of this option, always choose *Both Channels*.

Save video stream

When checked, the file's video stream will be converted and saved into the RealMedia file.

Video compression

Currently there are two types of RealVideo compression: RealVideo (Standard) and RealVideo (Fractal). Each type is optimized for different types of video and transfer rates. Detailed information on the two types is available on the RealMedia home page (www.real.com).

Video compression quality (1 to 100)

This option allows you to compromise between quality of compression and lowest possible data transfer rate. Setting this level at 100 provides the best quality video with the greatest required bandwidth to stream. A setting of 1 gives you the lowest quality video but requires the least bandwidth to stream effectively.

Frames per second (0.050 to 1000)

This setting allows you to change the frame rate of the video that is being compressed. A lower frame rate, such as three or five frames per second, will greatly lower the bandwidth requirements for streaming the video. Type the desired frames per second into the edit box, or choose one of the presets from the drop-down list.

Desired maximum data rate (1.0 to 500.0 Kbps)

This setting is available only if you are saving a video stream. The data rate specifies the desired total kilobits per second (Kbps) for the RealMedia file (including audio and video). To increase the bandwidth available for streaming the video, you can either lower the data rate for the audio, or increase the desired maximum data rate. Note that you must allow some room for inconsistent transfer rates. For example, a 28.8 modem cannot sustain 28.8 Kbps. Instead, you should target your maximum data rate for between 20.0 and 22.0 Kbps. The allowed data rates are displayed next to the *Audio/Video* compression options. After the file has been saved, statistics about the actual data rate will be displayed. Use this information to adjust parameters as necessary.

USING SOUND FORGE TO CREATE MICROSOFT NETSHOW FILES

This tutorial shows how to create *Advanced Streaming Format* (ASF) files using Sound Forge. ASF is a multimedia file format used for streaming information across the Internet using Microsoft NetShow. With ASF files, you can deliver multimedia content, audio or video, open Web pages, or deliver scripting commands to the client computer.

Sound Forge includes support for saving WAV and AVI files, as well as their associated markers and script commands, in an ASF file. ASF files can be played off of your local drive, streamed off of an HTTP server, or optimally stored and streamed off of a NetShow server.

NETSHOW REQUIREMENTS

In order to play ASF files, you must install the *Microsoft NetShow Player* and *Tools*. These components install all of the necessary audio and video codecs for saving ASF files. Both of these components are available on the Sound Forge CD-ROM and can also be downloaded free of charge from the NetShow web page at www.microsoft.com/netshow.

To install the NetShow Player, select *Microsoft NetShow Player* from the list in the main setup program on the Sound Forge XP CD-ROM. This will run Microsoft's setup program for the player.

To install the ASF authoring and conversion tools, select *Microsoft NetShow Tools* from the list in the main setup program on the Sound Forge XP CD-ROM. This will run Microsoft's setup program for the NetShow Tools.

Further documentation for this software is available on the NetShow web page. At this time, the components shipped on the Sound Forge CD-ROM are for the x86 and Pentium platforms only. See Microsoft's web page for availability of components for other platforms.

USING THE BUILT-IN TEMPLATES

Sound Forge contains a number of built-in templates for saving AVI or WAV files as ASF files. These templates have been designed by Microsoft to be optimized for certain bandwidths. To use these templates, follow these steps:

1. Open *Sample1.avi* from the Tutorial Files\NetShow folder on the Sound Forge CD-ROM. This file is a short video clip that uses the Intel Indeo Interactive VCM video codec installed with the NetShow Player. The Intel codec is well-suited for mid to high bit-rate video. The audio track in this file is PCM.
2. Click on the File menu, followed by the Save As option.
3. Select *Advanced Streaming Format* from the *Save as type* drop-down list.
4. Click the Save button. The *NetShow Settings* dialog appears.
5. A high bit rate ASF file can be created from this file by simply choosing a built-in template. The numbers preceding the names of the templates indicate the target bandwidth for the ASF file. Higher numbers require wider bandwidth connections.

For this file, choose the *100 Presentation Video* template from the Template list. This template is designed for a Dual ISDN connection and a "talking head"-type video like *Sample1.avi*.

5. Click the Save button, and the AVI is saved.

CREATING CUSTOM TEMPLATES

Custom templates can also be created in the NetShow Settings dialog and saved for future use. To create a custom template, follow these steps:

1. Follow steps 1-4 in the section above.
2. Click the Custom button. The NetShow Encoder Template wizard starts and guides you through the template creation process.
3. Type the name of your custom template in the Template Name field.
4. Click the Next button to continue.
5. Select the desired bandwidth for the output file. The bandwidth selected in this step determines what compression options are available in the next step. You can enter a custom bandwidth in bits per second by selecting the Custom option.

NOTE

A bandwidth selection of 14.4 will not allow you to save a video stream due to the amount of bandwidth required for video.

6. Choose the audio and video codecs you wish to use.
7. Click the Finish button. Each audio codec will have a set of Formats that are available, depending on the bandwidth that was selected in the previous dialog.

NOTE

Microsoft provides a free Content Creation Guide on their web site at www.microsoft.com/netshow. This guide is a great resource for understanding which codecs work best in certain situations.

ADDING MARKERS AND SCRIPT COMMANDS

Sound Forge can embed markers in ASF files. These markers can be used for navigation in the file or for triggering events or custom script commands.

ADDING NAVIGATION MARKERS

Open *Sample1.avi* from the *Tutorial Files\NetShow* folder on the Sound Forge XP CD-ROM if you haven't already done so. If you want viewers to have the ability to jump to certain parts of the ASF file, you will want to add markers in the source file. To learn how to add markers, follow these steps:

1. Find the part of the AVI file where John says, "No, not gonna do that."
2. Place the cursor right before that point and press the <M> key on your keyboard. The *Edit Marker/Region* displays.
3. Type "No, not gonna do that" in the *Name* field.
4. Click the OK button. You now have a named marker in the file.
5. Click on File menu, followed by the Save As option.
6. Select the Advanced Streaming Format option from the *Save as type* drop-down list.
7. Click the Save button. The *NetShow Services Settings* dialog displays.
8. Choose the *100 PresentationVideo* template from the *Template* list.
9. Make sure that the *Use markers in source file* checkbox is checked.
10. Click on the Save button.
11. When the file is done saving, click the Yes button to open the ASF file. If you look just above the copyright information part of the *NetShow Player* window, there is a drop-down list that contains all of the markers that have been saved in the file. The marker you just added should now appear in that list.
12. Select your marker from the list, and click the Play button. Playback should now start from that point in the ASF file.

ADDING SCRIPT COMMANDS

Markers are also used to store script commands that are embedded in the ASF file. The most popular of these is the URL flip. This command causes the opened web browser to open specified pages as the ASF file reaches certain points in the file.

Sound Forge has a special function to automatically add certain script commands, but regular markers work just as well. Using the built-in function simply saves you from remembering the syntax for basic commands. To learn how to store script commands in a marker, follow these steps:

1. Open `Sample1.avi` again.
2. Put the cursor close to the beginning of the file, and choose *ASF Marker/Command|Add* from the Special menu. Notice that the name of the new marker has already been filled in with the correct syntax for a URL flip (`http://`). After “`http://`,” type the following: `www.sonicfoundry.com/SoundForge`.
3. Click the OK button. A new marker is inserted into the file.
4. Click on File menu, followed by the Save As option.
5. Select the Advanced Streaming Format option from the *Save as type* drop-down list.
6. Click the Save button. The NetShow Services Settings dialog displays.
7. Choose the *100 PresentationVideo* template from the Template list.
8. Make sure that the *Use script commands in source file* checkbox is checked.
9. Click on the Save button.
10. After the file is saved, choose *Yes* to listen to the file in the NetShow Player. As the file is played, you will notice that your default web browser has been opened and the Sound Forge page of the Sonic Foundry web site has been loaded.

NOTE

If you aren't already connected to the internet, the time it takes to connect will, of course, throw off the timing of the URL flip. Ideally, the viewer of the ASF file will already be online and the URL flip will be more accurate.

SAMPLE HTML USING AN ASF FILE

We have included an example HTML file on the Sound Forge XP CD-ROM, showing how to use the NetShow ActiveX control to add an ASF file to a web page. You can find the example in the \SAMPLES\NETSHOW folder on the CD-ROM.

The HTML sample requires Microsoft Internet Explorer v3.0 or better.

NOTE

Follow these steps to use this example:

1. Copy SAMPLE.HTM to the folder on your hard drive that contains the ASF file you wish to use.
2. Modify the FILENAME parameter within the NSOPlay object to reference your local ASF file (a fully qualified path is required).
3. Open the edited SAMPLE.HTM file within your browser.
4. Continue with the additional instructions listed on the example page.

CONVERTING A HIGH BIT-RATE AVI FILE TO ASF FORMAT

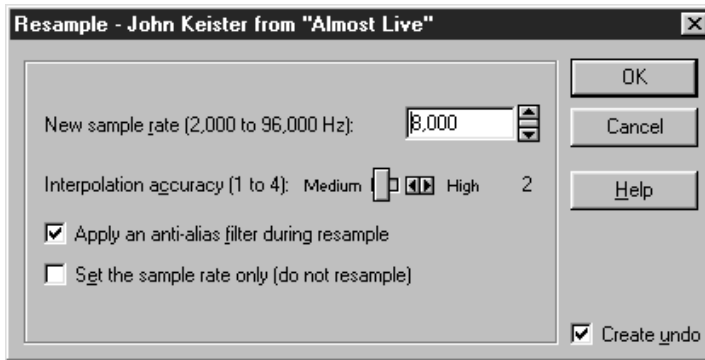
This section of the tutorial demonstrates how you can create high bit-rate video content and convert it to ASF. SAMPLE1.AVI is a short video clip that uses the Intel Indeo Interactive VCM video codec installed with the NetShow Player. The Intel codec is well suited for mid to high bit-rate video. The audio track in this file is PCM format.

1. From the File menu, open SAMPLE1.AVI from the \SAMPLES\NETSHOW folder on the Sound Forge XP CD-ROM. From the File menu select Properties. Select the Format page and set the audio Sample Size to 16 bits. Make sure that Channels is set to mono. Select OK.

Note that editing and playback performance of an AVI file will suffer greatly unless you first copy it to your hard drive. It is strongly recommended that you always copy AVI files that you are editing onto your hard disk.

NOTE

2. From the Process menu select the Resample command. The Resample dialog will appear. Set the new sample rate to 8,000 Hz and select OK.



3. From the Process menu select the Normalize command and select OK.
4. Now convert the edited AVI file to an ASF file by saving it on your hard drive. Select the Save As command from the File menu. Select Active Streaming Format (*.asf) from the Save as type drop-down list.
5. The NetShow Player installs the Lernout & Hauspie CELP 4.8kbit/s ACM codec (see previous section), which is excellent for low bit-rate voice audio. Select this codec from the Format drop-down list. Select Save. (Note that it is not a requirement of ASF to convert the audio from PCM. We perform the conversion as part of this tutorial to demonstrate how to take advantage of the installed codecs.)
6. The ASF Save Options dialog presents the settings for the Active Streaming Format file. Select OK to select all the default settings.
7. Next, the Video Save Options dialog appears. It allows you to view the audio and video properties of the AVI file. Select OK.
8. The Compression Options dialog presents the available video compression options. Press OK to select the Indeo codec.
9. When the ASF file has been created Sound Forge XP will prompt you to play it. Select Yes. This will start the NetShow Player.

10. From the File menu in the NetShow Player select *Properties*. Note the following *Properties* pages:

The *General* page contains the general information contained within the AVI file.

The *Details* page shows that the ASF file has a bit-rate of 875,000 bps.

The *Codecs* page displays information about the codecs being used with the file.

AUTHORING A LOW BIT-RATE ASF FILE

This section of the tutorial creates a low bit-rate video suitable for playback on the Internet at 28.8 Kbps. SAMPLE2.AVI is a smaller version of SAMPLE1.AVI. It uses the Intel Indeo Interactive codec and has been re-sized to 160 x 120 at 6 frames per second with one key frame every 36 frames. The VDOnet VDOWave codec and the Intel Indeo Interactive codec require that the video frame size be a multiple of 16 (i.e., 160 x 120, 320 x 240, etc.). The audio track in this file is PCM. The steps below describe how to use the VDOnet VDOWave video codec, which is an exceptional codec for low bit-rate content.

1. From the File menu, open SAMPLE2.AVI from the \SAMPLES\NETSHOW folder on the Sound Forge XP CD-ROM. You will be prompted with a message from Sound Forge XP asking if you want to disable the video strip. Select No.
2. Note that editing and playback performance of an AVI file will suffer greatly unless you first copy it to your hard drive. It is strongly recommended that you always copy AVI files that you are editing onto your hard disk.
3. From the File menu select *Properties*. Select the *Format* page and set the audio *Sample Size* to 16 bits and verify that *Channels* is set to mono. Select OK.
4. From the Process menu select the *Resample* command. In the *Resample* dialog, set the *New Sample Rate* to 8,000 and select OK.
5. From the Process menu select the *Normalize* command and select OK.

6. Now add Markers and ASF Script Commands. From the Special menu select *Region List/Add*. Add the following three Markers:

Type	Name	Time
Marker	ASF CAPTION:John is here to...	00:00:01.000
Marker	This is the middle of my ASF	00:00:09.000
Marker	ASF CAPTION:John is not here...	00:00:10.000

7. Note that you can drag and drop the markers along the time line once they have been created and during playback. Markers that start with the preface ASF are processed as stored as script commands within the ASF file. For more information, see Sound Forge XP online Help.
8. Now save the edited AVI file to an ASF file. Select the *Save As* command from the File menu. In the *Save As* dialog, Select *Active Streaming Format (.asf)* from the *Save as type* drop-down list.
9. The NetShow Player installs the Lernout and Hauspie CELP 4.8kbit/s ACM codec, which is excellent for low bit-rate voice oriented audio. Select this codec from the *Format* drop-down list. Select *Save*. The *ASF Save Options* dialog presents the settings for the ASF file.
10. Set the *Maximum Lead Time* setting to 5,000 and select *OK*. Note that 5,000 is the lead time setting that should be use when authoring low bit-rate video ASF files.
11. Select *OK* to close the *Video Save Options* dialog.
12. The *Compression Options* dialog presents the available video compression options. Select the *Options* button, and in the *Video Compression* dialog select the *VDOnetVDOWave* codec from the *Compressor* drop-down list.
13. Select the *Configure* button to bring up the *Encoder Configuration* dialog. This dialog allows you to set the specific bit-rate for the video stream. Drag the slider to the left until it is at the 14 Kbit/sec setting. Select *OK*.

14. Back at the *Video Compression* dialog verify that the check box next to the *Key Frame Every* field is enabled and set the *Frames* edit field to 60. This will set a key frame every 10 frames. It is necessary to reduce the number of key frames to attain the desired low bit-rate. Select OK.
15. Back in the *Compression Options* dialog verify that the *Interleave Every* check box is clear. Select OK to start building the ASF file.

When the ASF file has been created Sound Forge XP will prompt you to play it. Select *Yes*. This will start the NetShow Player.

16. From the *File* menu in the NetShow Player select *Properties*. Note the following *Properties* pages:

The *Details* page shows that the ASF file has a bit-rate of 19,332 bps. Achieving the exact bit-rate for a video stream will vary depending on the content. Complex video may require fewer frames per second or less frequent key frames. Frame rate, key frames, and video frame size are all variables that affect bit-rate.

The *Codecs* page displays information about the codecs being used with the file.

ADDING AN ASF FILE TO A WEB PAGE

On the Sound Forge XP CD-ROM in the \SAMPLES\NETSHOW folder there is an HTML file containing an example of how to use the NetShow Active Control to add an ASF file to a web page. This sample will be used with the low bit-rate video ASF file, SAMPLE2.ASF. Note that the HTML sample requires Microsoft Internet Explorer v3.0 or better.

1. Copy SAMPLE.HTM to the folder on your hard drive that contains SAMPLE2.ASF.
2. Modify the *FILENAME* parameter within the NSOPlay object to reference your local SAMPLE2.ASF file (a fully qualified path is required).
3. Open the edited SAMPLE.HTM file within your browser. There are additional instructions on the sample page.

CALCULATING APPROPRIATE BIT-RATES FOR THE INTERNET

When authoring Internet file formats, it is important that the content not exceed the bit-rates of your targeted modem connection. The reason is that modem connections to the Internet are often less than 14.4 Kbps or 28.8 Kbps. It is important not to consume all the bandwidth available to the browser, control protocols, etc. The following guidelines suggest a combined (audio and video) bit-rate with error corrections slightly below the targeted Internet connection:

Internet Connection	Authored Bit-Rate (audio + video)	Total Bit-Rate with Error Correction
28.8 Kbps	18,500 bps	20,813 bps
14.4 Kbps	10,000 bps	11,250 bps

For example, in the *Authoring a Low Bit-Rate File* section above, the audio was set to 4.8 Kbps and the video was set to 14 Kbps. With the addition of error correction to the stream, the total ASF file bandwidth as displayed in the NetShow Player is 19,332 bps.

WHAT DO I DO WITH MY ASF FILES?

ASF files are specifically designed for network streaming and are authored for specific network bandwidths. For network streaming, ASF files can be stored on an HTTP server or optimally off of a Microsoft NetShow server. The NetShow Player can play back ASF content as an embedded Active control within an OCX container such as Microsoft Internet Explorer 3.0 or Microsoft Visual Basic. The NetShow Player can also run in standalone mode, such as when an ASF file is launched as a link within any Internet browser. ASX files (ASF Redirector Files) are meta files that pass the ASF file link from the browser to the NetShow Player so it can start streaming.

For more information, see the NetShow web site. The entire Microsoft NetShow product can be downloaded free of charge from <http://www.microsoft.com/netshow>.

CHAPTER 5: RECORDING AND SOUND PROCESSING

In this chapter, you will be introduced to the recording functions of Sound Forge XP and how to work with processes and effects. The chapter is divided into three sections:

- Recording
- Applying Sound Processing Functions
- Sound Processing Techniques

RECORDING

Sound Forge XP has a variety of sound recording modes and options. Each one has features designed for specific recording situations. These include recording new data, recording over existing data—commonly known as *Punch-In* mode—and *Remote* Recording. This section will cover:

- Recording to a New Window
- Selecting an Alternate Record Window
- Available Recording Time
- Record Meters
- Previewing Recorded Sounds
- Using the Prepare button
- Recording Modes
- Changing the Start Position
- Recording Status
- Finishing Recording
- Remote Recording



To start a record session you can either select *Transport* then *Record* from the *Special* menu or press the *Record* button on the *Transport* toolbar (the first toolbar button).

NOTE

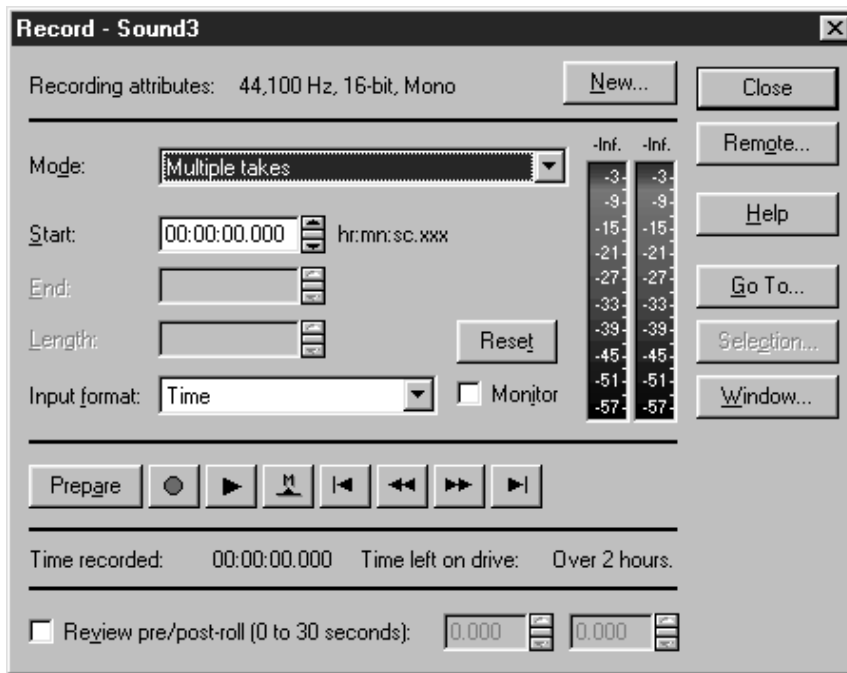
If you experience problems recording, refer to Appendix B, Troubleshooting for information on common recording problems.

After pressing the *Record* button or selecting *Transport/Record* from the *Special* menu, the *Record* dialog appears. Notice that the window into which you will be recording has its title displayed in the dialog title.

NOTE

The Record and Record Remote dialogs are always destructive and contain no Undo capabilities.

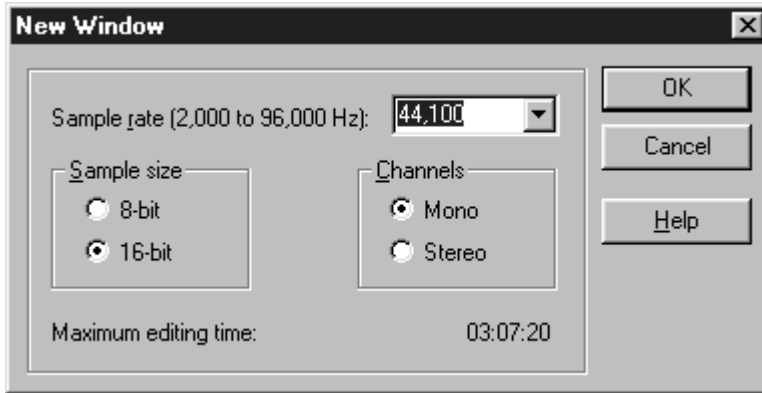
To prevent accidentally recording over sound data, record into a new or scratch data window and paste the takes you want into the desired sound data window. For extra safety *Sound Forge XP* automatically defaults to record in a new window when the current sound file is opened in direct edit mode.



In the upper left corner of the dialog are the *Recording attributes*. These are the sample rate, sample size, and number of channels that will be used when recording. These attributes are applied to the data window into which you will be recording. If you want to change these attributes, exit the *Record* dialog and change them in the data window (using the *Status Bar* shortcut menus), record to a new window, or record to a different existing window.

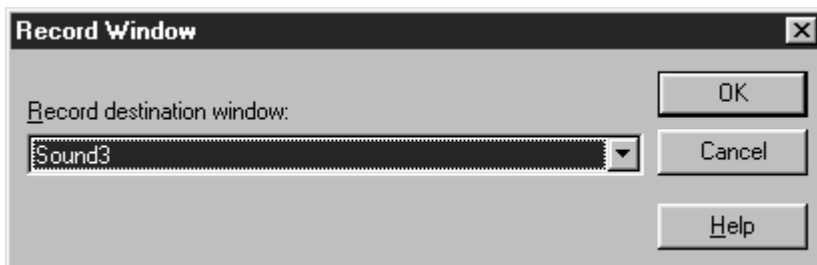
RECORDING TO A NEW WINDOW

If you want to record to a new window rather than the currently selected record window, select the *New* button at the upper right of the *Record* dialog. This brings up the *New Window* dialog where you can specify the *Sample rate*, *Sample size*, and *Channels* for the new data window. These attributes will be applied while recording.



SELECTING AN ALTERNATE RECORD WINDOW

If you wish to record to a specific data window other than the one currently displayed in the *Record* dialog title, you can do so by selecting the *Window* button. Pick the window you want to record to from the drop-down list in the *Record Window* dialog and select *OK*. The title of the window you select will now appear in the *Record* dialog title.



AVAILABLE RECORDING TIME

Near the bottom of the *Record* dialog you will see the *Time recorded* and *Time left on drive* fields. These two boxes show how much time you have recorded and how much time is available on your hard drive for additional recording. If your *Time left on drive* field shows a limited amount of available time, you may want to free up some space on your hard drive or pick an alternate drive where Sound Forge XP stores its temporary files. You can get more information on temporary file usage by referring to the *Temporary Storage* section in chapter 6, *Sound Forge XP Reference*.

RECORD METERS

The *Record Meters* can be scaled to view differing dynamic ranges by right-clicking on the meters and selecting the appropriate range from the shortcut menu. For most recording situations it is probably best to select -42 to 0 dB, as this is the most practical range to view a good record signal. To view very low levels, select -90 to 0 dB. This is a good way to measure the amount of noise you have in your system due to noisy sound sources and/or poor equipment (such as an inexpensive sound card).

Also in this shortcut menu, you can set the meters to *Hold Peaks* and *Hold Valleys*. A good way to view the peak levels while setting the record level is to select *Hold Peaks* (see *Adjusting Levels Using the Peak* below). To reset the current peak, single-click on the meter's text output (just above the meters).

CHECKING RECORD LEVELS

Sound Forge XP allows you to check the level of your input source before recording begins. To view your levels, select the *Monitor* check box. The meters will light up in relation to the level of the incoming signal. For best results, the input level should be somewhere in the yellow range with an occasional red. Once your levels are checked you can immediately begin recording by selecting the *Record* button. If you do not see the meters light up, you may have your mixer levels or input source set incorrectly. (For more information, refer to Appendix B, *Troubleshooting*.)

ADJUSTING LEVELS USING THE PEAK

The peak values displayed above the level meters are useful for maximizing your input level without distortion. When recording, you generally want your input signal to be as 'hot' as possible without clipping. This means you want your input levels to be as high as possible without exceeding the range of values that can be stored digitally when recording. When you clip, the peaks of your waveform become clipped off resulting in distortion. The peak values show you (in decibels) the highest peak that you have reached after selecting the *Monitor* check box.

To adjust your levels, select the *Monitor* check box so that Sound Forge XP begins to listen to your recording device. This is just like recording except that Sound Forge XP doesn't store any of the data it receives. Apply an input signal by speaking into the microphone, playing your CD, or whatever it is you're trying to record. If the peak value stays at a low value, increase the levels of sound you are supplying so that the peak value is somewhere in the -6 dB range. If the peak reaches 0 dB, then you have clipped the waveform and will see the word *Clip* above each meter. Once you lower your input levels, right-click on the meters and select *Reset* to clear the current peak value. Sound Forge XP always keeps the maximum peak displayed above the meters or via *Hold Peaks*.

Once you have adjusted your levels you can immediately begin recording by selecting the *Record* button or end monitoring the levels by clearing the *Monitor* check box.

NOTE

It is particularly important to record sounds with the hottest levels possible when you plan to later convert 16-bit data to 8-bit. This assures that you will use the greatest dynamic range possible in an 8-bit file (which uses fewer values to represent the waveform).

PREVIEWING RECORDED SOUNDS

After recording your material, you can listen to what you have recorded by selecting the *Play* button in the *Record* dialog. To stop playback, select the *Stop* button at any time.

USING THE PREPARE BUTTON

The *Prepare* button is used when you need Sound Forge XP to begin recording as soon as possible after selecting the *Record* button. The *Prepare* button opens the wave device and loads all recording buffers in order to minimize the time between selecting the *Record* button and the time the sound actually begins recording.

Using the Prepare button is optional. However, selecting this button prior to recording allows for more accurate takes in the Punch-In mode.

NOTE

RECORDING MODES

Sound Forge XP has three modes of recording, which are selected from the *Mode* drop-down list in the *Record* dialog. These are *Automatic Retake* (automatically rewind), *Multiple Takes*, and *Punch-In* (record a specific length). Each mode is described below.

AUTOMATIC RETAKE (AUTOMATICALLY REWIND)

The *Automatic Retake* mode is the easiest method of recording. Recording starts at the position shown in the *Start* field when you select the *Record* button and continues until you select the *Stop* button. Any data that is currently after the position in the *Start* field will be replaced. When recording is stopped, the start position is reset to the beginning of the take allowing an immediate review and retake if desired.

Automatic Retake is the default mode when recording into an empty data window or when you select the *Record* button with no data selected in the current data window.

MULTIPLE TAKES

The *Multiple takes* mode allows you to record multiple takes. Recording starts at the position shown in the *Start* field when you select the *Record* button, and continues until you select the *Stop* button. Any data, which is currently after the position in the *Start* field, will be replaced. When recording is stopped, the start position remains at the end of the take allowing the next take to be recorded immediately.

PUNCH-IN (RECORD A SPECIFIC LENGTH)

Punch-In mode is used when you want to record over a region of data in an existing data window. Recording starts at the position shown in the *Start* field when you select the *Record* button and continues until you select the *Stop* button, or the length of the data recorded is equal to the length in the *Length* field. This makes it easy to record over a section of audio without affecting the rest of the file. You can use the *Play* button to hear the selected punch-in region at any time.

You can adjust the punch-in region by changing the values in the *Start*, *End*, or *Length* edit fields. You may also adjust the format of these fields to a variety of different display status formats by selecting a format from the *Input format* drop-down list.

Punch-In mode is the default mode when you select the *Record* option while you have a region of data selected in the current data window.

USING PRE/POST-ROLL WITH PUNCH-IN MODE

At the bottom of the *Record* dialog are two edit fields which contain the pre-roll and post-roll times. These can be used when listening to a section of sound data in *Punch-In* mode. These times define the amount of audio you will hear prior to (pre-roll), and just after (post-roll) playing the selected section. This allows you to hear the transitions between the punch-in section and sound before and after the section. Click on the check box at the bottom of the dialog if you want to use the *Review pre-/post-roll* option. To disable *pre-/post-roll*, clear this box.

CHANGING THE START POSITION

The *Start* position determines where playback or recording begins from the time you press the *Play* or *Record* button. Four button controls – *Go to Start*, *Rewind*, *Forward*, and *Go to End* – allow you to quickly change the *Start* position.

Although potentially confusing at first, these controls are convenient when you're doing multiple recordings. The *Go to Start* and *Go to End* buttons move the *Start* position to the beginning or end of the file to which you are recording. After you've recorded a take, the *Rewind* and *Forward* buttons move the *Start* position to the start or end of the take.

For example, to listen to the entire file, press *Go to Start* before pressing the *Play* button. Likewise, to start recording at the end of the file, press *Go to End* before selecting the *Record* button. If you wish to start playback or recording at a specific point, press the *Go To* button and enter the desired *Start* position.

RECORDING STATUS

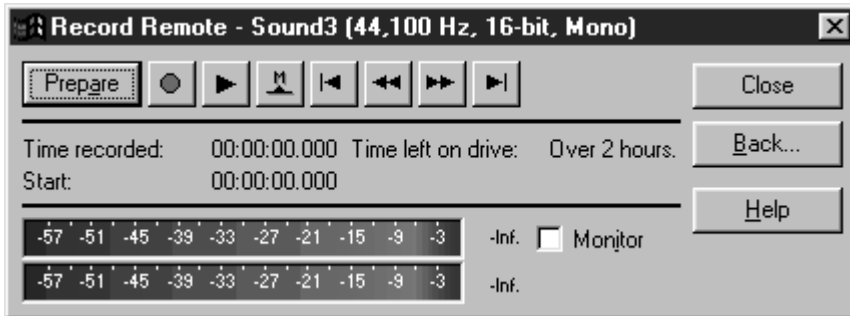
While you are recording, the amount of *Time Recorded* will increase and the *Time left on drive* will decrease. Make sure to keep an eye on your *Time left on drive* if the available record time is limited. It's never fun to run out of recording time!

FINISHING RECORDING

When you have finished recording, select the *Close* button to exit the *Record* dialog and return to normal editing mode.

REMOTE RECORDING

By selecting the *Remote* button you enter *Remote Recording* mode. *Remote Recording* mode hides the main *Sound Forge XP* window and puts up the small *Record Remote* dialog which always stays as the top-most window.



The *Remote* dialog is a fully functional but condensed version of the regular *Record* dialog. It's particularly useful when using applications that control your input sources, sound levels, or CD audio. To return to normal record mode from the *Remote* dialog select the *Back* button.

NOTE

You can access all of the same *Record* dialog features from the *Remote Record* dialog (right-click on the title bar).

APPLYING SOUND PROCESSING FUNCTIONS

The Effects, Process, and Tools menus contain a variety of functions you can use to apply an effect to the sound data, display information, or even synthesize new sounds. Each function is documented in detail in chapter 6, *Sound Forge XP Reference*. In this section, you will see examples of a few of the functions to help you become accustomed to using them.

You will learn about:

- Applying Simple Processes and Effects
- Applying Functions to Stereo Files
- Using Sound Processing Controls
- Processing Shortcuts

APPLYING SIMPLE PROCESSES AND EFFECTS

APPLYING AN EFFECT TO THE ENTIRE SOUND FILE

To apply an effect, first select a section of data on which you wish to operate. To select the entire file, double-click on the waveform display.

If you don't have a selection when you perform an effect that requires one, Sound Forge XP will apply the effect to the entire file.

NOTE

To show how effects are used:

1. Open the TUTOR1.WAV file.
2. Select *Reverse* from the Process menu. The *Reverse* operation reverses the data selection, making it sound like it's playing backwards.
3. Once the operation has finished, press the *Play* button to hear how TUTOR1 sounds when played backwards.

APPLYING AN EFFECT TO A SECTION OF THE SOUND FILE

To apply an effect to a selection:

1. Select *Undo Reverse* from the Edit menu to put TUTOR1 back to its original state.
2. Select (highlight) only the word “Wow” in the data window.
3. Select *Reverse* in the Process menu. Play the file again and notice how only the word “Wow” is played backwards.

After you have listened to the effect, undo *Reverse* again so you can try another effect.

1. Again, select only the word “Wow” in the TUTOR1 window.
2. Select *Volume* in the Process menu. Use the scale factor fader to set the scaling to -6 dB (50%). Clicking on the fader to move the fader box will give you more precision. Now select OK.
3. Press *Play*. You will notice that the volume is now at half of its original volume. You can undo the last operation by selecting *Undo* from the Edit menu.

The previous two examples show how easily effects are applied to files. Sound Forge XP has a large number of different processes and effects, ranging from simple volume changes to complex reverb/delays. To learn more about a particular effect refer to the below section, *Sound Processing Techniques* and the *Effects*, *Process*, or *Tools* menus covered in chapter 6, *Sound Forge XP Reference*.

CANCELING A FUNCTION IN PROGRESS

While applying an effect, the progress meter at the lower left-hand side of the main screen shows what percentage of a selection has been processed while running a function. You can select the *Cancel* button to stop processing the file. When you cancel an operation in progress, the affected data remains in the sound file. Undoing the operation will return the file to its original state.

APPLYING FUNCTIONS TO STEREO FILES

In a stereo file, only the selected region in the channel that you've selected is processed. Most functions can be applied to the left, right, or both channels. The only functions that cannot be applied to separate left and right channels are functions affecting the length of the data, since each track in a stereo file must be of the same length. These include *Insert Silence*, *Resample*, *Time Compress/Expand*, and *Pitch Bend*.

If you need to run a process like *Insert Silence* in only one channel, you should divide the stereo file into two mono files first, insert the silence, and then join them back together into a stereo file. Separating stereo files into two mono files is a good idea if you are going to be changing the duration of each track by cutting or inserting space to synchronize different events.

APPLYING A FUNCTION TO A SINGLE CHANNEL IN A STEREO FILE

In the previous exercises, you reversed TUTOR1 to hear how the data sounded when played backward.

To reverse a single channel of a stereo file:

1. Convert TUTOR1 to stereo by right-clicking on the status field that has the word *Mono* and select *Stereo* from the shortcut menu. Make sure to select the *Both Channels* option so that data will appear in both channels of the new stereo file.
2. Select the entire left channel by double-clicking (or triple-clicking if the file includes markers) in the upper quarter of the TUTOR1 waveform display. If you accidentally select both channels, use the *Tab* key to toggle the selection to only one channel.
3. Now select *Reverse* from the *Process* menu. You will notice that only the left channel data is reversed.
4. Press the *Go to Start* button on the playbar to clear the selection and place the cursor at the start of the file. Press the *Play* button and you will hear the audio backward in the left channel and forward in the right channel. If you only hear one channel then you are in single channel preview mode. To hear both channels use the *Tab* key to toggle the cursor or selection to encompass both channels and again press the *Play* button.

NOTE

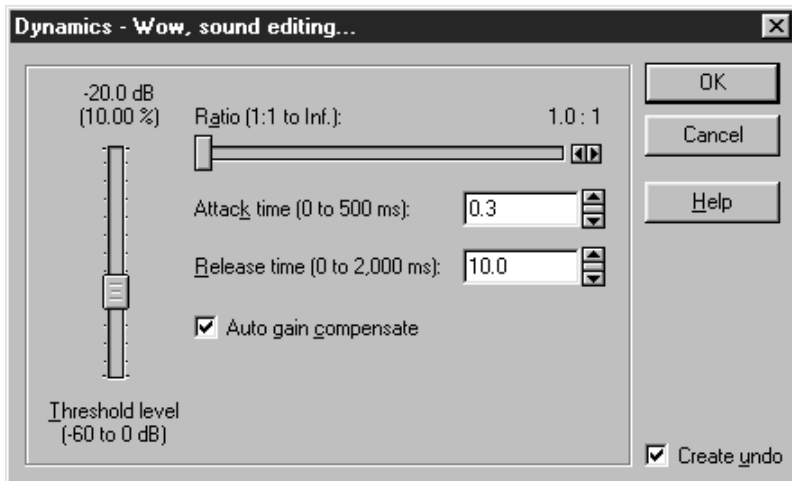
If you want more information on how to use a function, press the F1 key while selecting the function title in the menus. Also, you can press the F1 key or the Help button in all function dialogs.

USING SOUND PROCESSING CONTROLS

Before learning more about applying specific sound processing techniques, it would be helpful first to become familiar with Sound Forge XP's processing controls. These controls are simple tools like buttons and sliders that you manipulate with the mouse. You use them to provide additional information for sound processing functions and other commands. The following sections introduce these controls.

VERTICAL FADER AND HORIZONTAL TRACKBARS

To see examples of these common controls, open the Dynamics dialog. Choose Dynamics from the Effects menu.



In this dialog, the fader controls the *Threshold level* and the trackbar adjusts the *Ratio*. To change the parameter values, just left-click the box (or “thumb”) that slides along the fader or trackbar. Drag left and right or up and down to increase or decrease the value.

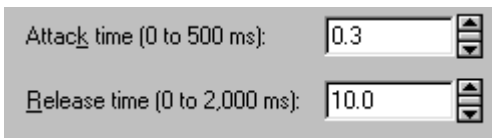
NOTE

You can fine tune a control's value by holding down both the left and right mouse buttons at the same time (or holding down Control on the keyboard)

There are many keyboard shortcuts for use with faders and trackbars. You can use the *Up*, *Down*, *Left* and *Right* arrow keys to change the value in small increments or the *Page Up* and *Page Down* keys to change the value in larger increments. The *Home* and *End* keys change the parameter value to its maximum or minimum.

If you double-click on a fader or trackbar thumb, it returns to its reset value (usually 0%, 50%, or 100%). Left-clicking on the hash marks in a fader also changes the value by very small increments.

EDIT BOX SPINNER CONTROL

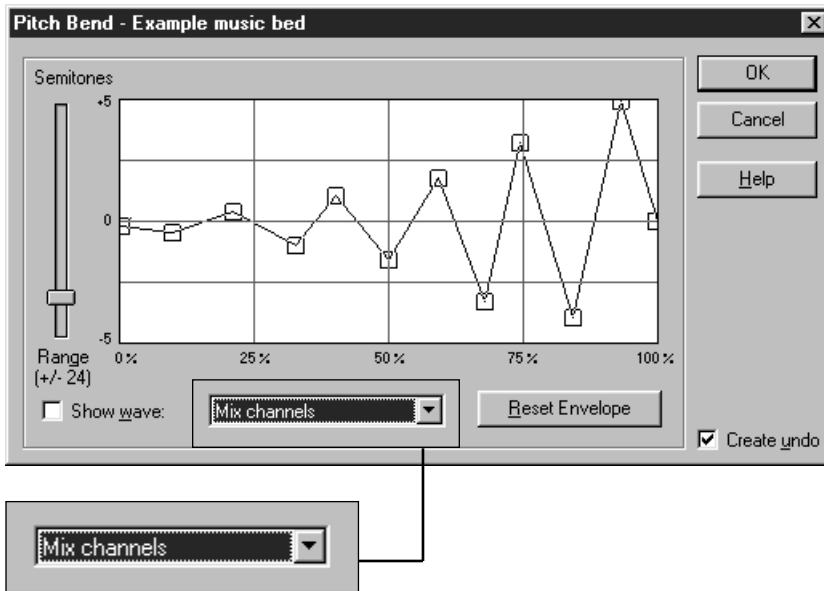


In the *Dynamics* dialog the *Attack time* and *Release time* parameters are modified with edit box spinner controls. The edit box is the box containing text, while the spinner is the small control to the right. With this type of control, you have several options for changing a parameter value. You can:

- Type in the number by left-clicking on the edit box and then typing in the value.
- Increment the value by clicking on the two small up/down buttons.
- Use the spinner to change the value. This is done by left-clicking on the center button (between the two up/down buttons) and dragging the mouse up or down. Again, holding down both the left and right mouse buttons at the same time will cause the values to increment in finer steps. You can also use the *Up/Down* arrow keys and *Page Up/Page Down* keys to alter the value.
- Adjust the spinner while holding down both mouse buttons to see the finer increment resolution (or hold down the *Control* key).

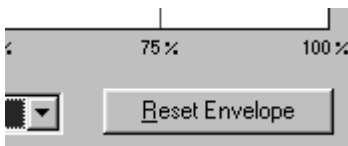
DROP-DOWN LIST

For an example of this control, display the Pitch Bend dialog. Choose Pitch Bend from the Effects menu.



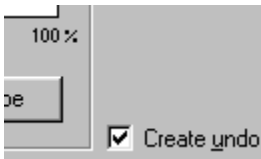
To select an item from a drop-down list, click on the drop-down list and select (highlight) the item. If you have to scroll through a large list, click on the scroll buttons or use the arrow keys. The Pitch Bend dialog uses a drop-down list to select the channels of a stereo source.

PUSH BUTTON



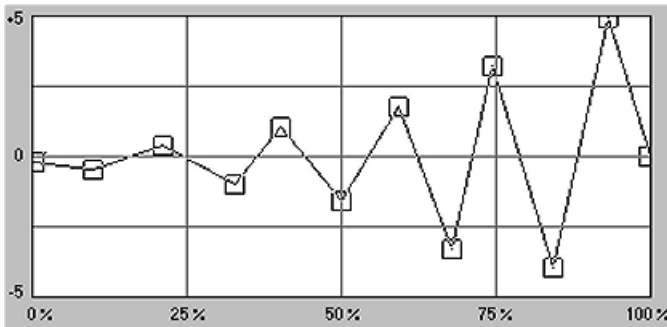
To use a push button, left-click on it or press the Spacebar while it is selected. In the Pitch Bend dialog, the OK, Cancel, Help, and Reset Envelope controls are push buttons.

CHECK BOX



A check box, as its name implies, is a square box you can check or leave blank. They are used to turn a feature on or off. The *Create Undo* and *Show Wave* controls on the *Pitch Bend* dialog are check boxes.

ENVELOPE GRAPH



Envelope graphs are used to draw the shape of a frequency or amplitude envelope that will be applied. The horizontal axis represents time, with the left-most point specifying the start of the selection and the right-most point specifying the end of the selection. The vertical axis represents either amplitude or frequency.

To create a new knob on the graph, left-click anywhere on the line connecting the envelope points and drag the knob in any direction, like pulling a rubber band.

You can delete a knob by double-clicking or right-clicking within it.

To reset the graph (delete all knobs) click on the *Reset Envelope* button.

MOVING MULTIPLE ENVELOPE POINTS

To select and move more than one envelope point at once:

1. Click on an unused section of the *Envelope Graph* in the *Pitch Bend* dialog.
2. While holding the mouse button down, drag the mouse. A dotted-line selection square will appear.
3. Move the mouse to surround the points to move with the selection square.
4. Release the mouse button. The selected points will now be colored red.
5. To move all of the selected points, drag any one of the points.

You can also select all points by pressing **Control+A** when the *Envelope Graph* is active.

DISPLAYING THE WAVEFORM ON AN ENVELOPE GRAPH

Some envelope graphs (such as in the *Graphic Fade* or the *Pitch Bend* dialogs) allow you to view the waveform of the selected data region on the graph. If the selection is small, the waveform is automatically displayed. Otherwise, you must select the *Show wave* check box. If you have a stereo file, you can choose between displaying the *Left channel only*, *Right channel only*, or *Mix channels* in the drop-down list.

RADIO BUTTON

Radio buttons always come in groups of two or more. For examples of radio buttons, display the *Chorus* dialog from the *Effects* menu.



Radio buttons are like the radio station selector in a car radio; turn one on and the rest turn off. For example, the radio buttons on the *Chorus* dialog let you choose *Light*, *Heavy*, *Vibrato*, *Reverberant* or *Echo-vibrato*.

PROCESSING SHORTCUTS

REPEATING AN OPERATION

In some situations, you may want to perform the same operation twice. For example, you might want to add reverb to one section of a file and then do the same thing with another section. Sound Forge XP has two techniques for quickly repeating an operation.

The first is known as *shift-clicking*. As the name implies, you hold down the Shift key before you click a button or choose a menu option. This technique bypasses the dialog of options that often appears when you start to perform a task. Instead of displaying the dialog, Sound Forge XP immediately performs the operation using the same parameters you specified last time. Shift-clicking works for most operations in Sound Forge XP.

You can also use *Repeat* (Control+Y) under the Edit menu to quickly repeat the last operation. This works for all Process, Effects, and Tools functions in Sound Forge XP. Holding down the Shift key while selecting *Repeat* takes you to the last function's dialog.

SOUND PROCESSING TECHNIQUES

This section covers some basic concepts relating to several of the Sound Forge XP processing functions used for modifying (or creating) sound. Detailed information about each effect is also available in chapter 6, *Sound Forge XP Reference*.

You will learn about:

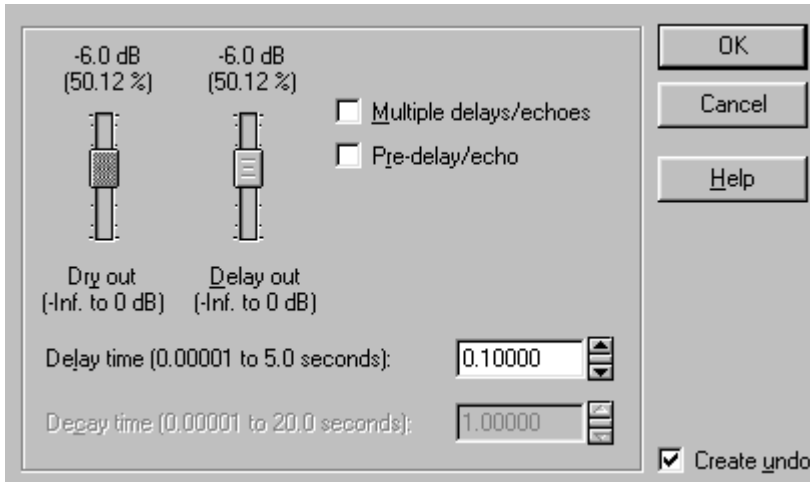
- Delay/Echo
- Reverb
- Chorus
- Flange
- Dynamics
- Changing Time Duration
- Synthesis
- Filtering

DELAY/ECHO

The *Delay/Echo* effect creates copies of the original sound, which are then mixed with the sound file to create simple echo effects.

To apply *Delay/Echo*:

1. Open TUTOR1.WAV. Select *Delay/Echo* from the Effects menu. The *Simple Delay/Echo* dialog will appear.



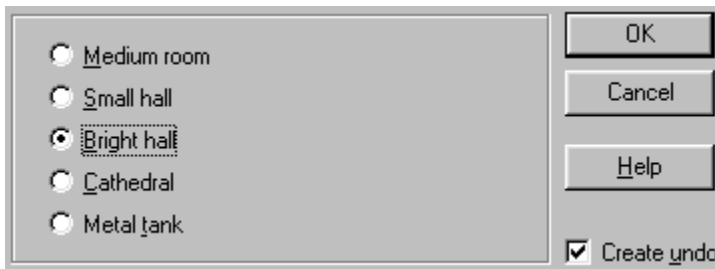
2. Enter 0.4 in the *Delay time* field and click OK. When you play the sound, you hear a second copy 0.4 seconds after the original. The *Delay time* determines the time between the original and echoed sound.
3. Check the *Multiple delays/echoes* box if you want an echo effect that contains more than a single copy of the original sound. The *Decay time* determines how long it takes for these echoes to fade out.
4. The *Pre-delay/echo* box creates echoes heard before the original sound. Use this effect while the spaceship in your next sci-fi flick travels back in time by means of a wormhole.

REVERB

The *Reverb* function is used to simulate the acoustics of different environments. When a sound is generated inside a room, you first hear the original sound, followed by a quick succession of echoes. These echoes are the early reflections. Then, as the echoes accumulate, you hear thousands of echoes combined into a smoothly decaying reverberation.

To apply *Reverb*:

1. Open TUTOR1.WAV. Select *Reverb* from the *Effects* menu. The *Reverb* dialog will appear.



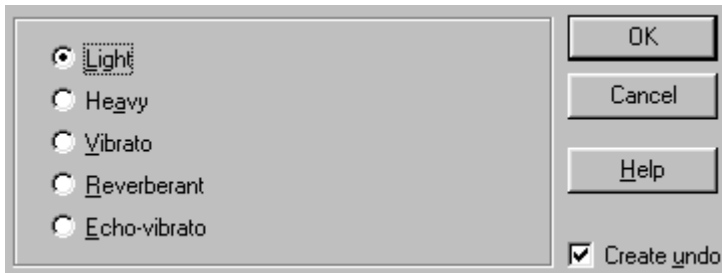
2. Select the *Bright hall* button, click *OK*, and play the sound. Notice how the imagined space where the recording took place changes from a small studio to a large, rich hall.

CHORUS

The Chorus function is used to simulate multiple sound sources from a single sound. This is achieved by mixing a delayed, pitch-modulated copy of itself to the sound source.

To apply the Chorus effect:

1. Open TUTOR1.WAV. Select Chorus from the Effects menu. The Chorus dialog will appear.



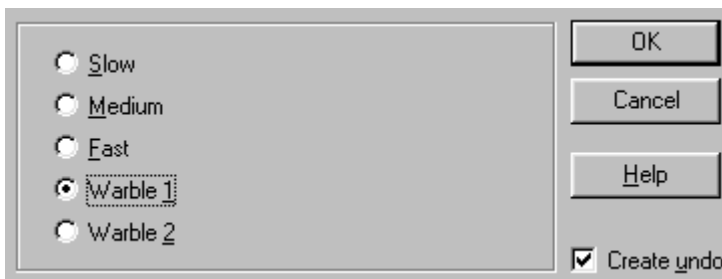
2. The buttons on the Chorus dialog provide variations on the chorus effect. For an introduction to this feature, select the Vibrato option. Click OK and play the sound, which has a richer, fuller quality than the original.

FLANGE

The Flange function is used to create the sweeping effects often heard in 60's guitar recordings and techno-sounds of today.

To hear what flanging sounds like:

1. Open TUTOR1.WAV. Select Flange from the Effects menu. The Flange dialog will appear.



2. The buttons on the dialog offer three flanging speeds and two warbling effects. For a good example of flanging, choose the *Fast* option, click *OK*, and play the sound.

DYNAMICS

Dynamics processing is used to change volume levels within a sound file. Applying dynamics specifically adjusts the lower levels and higher levels in the file to create more of a dynamic range, less of a dynamic range, or to keep the amplitude of a file within a certain range.

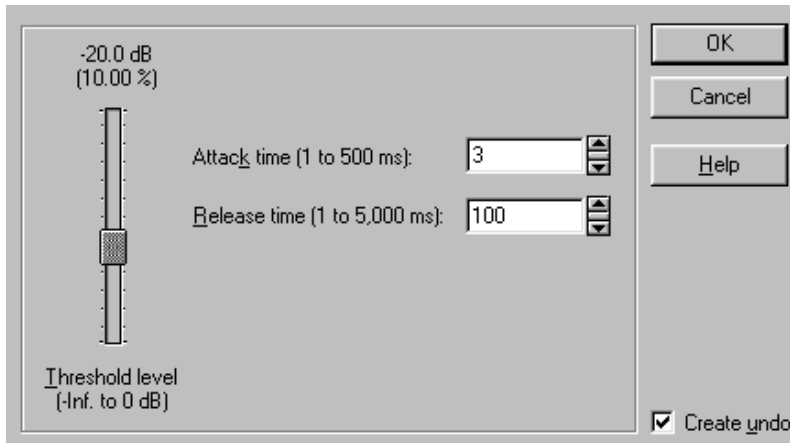
NOISE GATING

When recording a sound, there is often an audible noise floor during silent breaks. Noise is generated by many different things, including electrical equipment, machinery, and traffic outside your window. When your sound source is much louder than this background noise, it is simple to remove the noise during silent breaks, where the noise is most noticeable, with a noise gate.

To apply a *Noise Gate*:

1. Open *TUTOR1.WAV*.
2. Move the cursor to a location between “*Wow*” and “*Sound*” and select *Insert Silence* from the *Process* menu. In this dialog, insert one second of silence at the cursor. Select *OK*. If the file’s status format is not set to a time format, you will need to change this first before inserting silence in seconds. Close the dialog and change the status format of the file by right-clicking on the *Selection Status Fields* and selecting *Seconds* from the pull-down menu.
3. After inserting silence, create a new file (*New/File* menu). In the new file, use *Synthesis* (*Tools* menu) to generate four seconds of noise at -60 dB amplitude. Choose *Noise* from the *Waveform shape* list, enter 2,000 in the *Frequency* field, and drag the *Amplitude* slider until the value is approximately -60.
4. Next, copy all of the noise onto the clipboard and mix it to the beginning of *TUTOR1*. To mix, choose *Paste Special* from the *Edit* menu and select the *Mix* option. Use 100% for the noise (*Source*) and 100% for the voice (*Destination*). You should now have a file with voice and a relatively low hissing sound in the background.

5. To remove the noise during silent breaks, first analyze the amplitude of the noise. In TUTOR1, select a region with only noise (no voice), and run the Statistics function under the Tools menu. Take note of the Maximum sample value percentage. If you followed the preceding steps, it should be close to -60 dB.
6. Next, select Noise Gate from the Effects menu. The Noise Gate dialog will appear.



7. In the Noise Gate dialog, slide the threshold level to a bit over the Maximum sample value (in percentage). A value of -50 dB should be high enough to differentiate the noise from the vocals. Press OK. Notice that the noise during the silent regions should have disappeared (total attenuation). If it didn't, try raising the Threshold level until it does.
8. The other two parameters in the Noise Gate determine how fast the gate will open and close. This will affect how the beginning and end of the sound will fade in and out. If the Attack time is too slow, the beginning of the vocals might get cut off. Likewise, if the Release time is too fast, the end of the vocals will be cut. Experiment with these times until you can remove as much noise as possible without removing any of the voice.

COMPRESSION

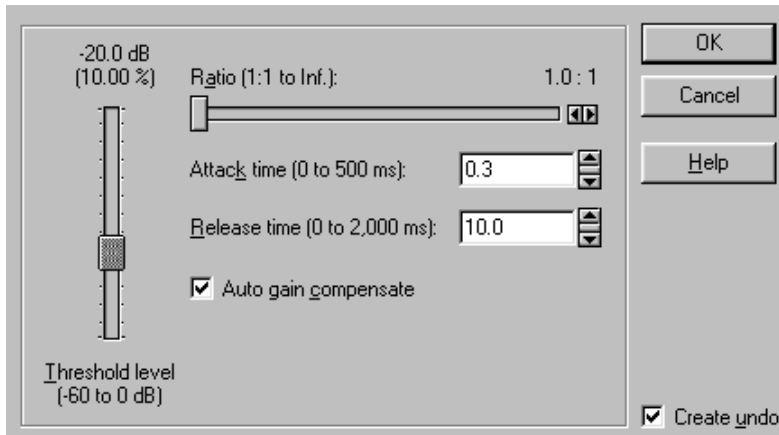
Compressing a sound lowers the dynamic range. When you compress a sound, you lower the volume of loud sections and then raise the overall volume to compensate. This is done to keep the volume level from fluctuating too much over time.

NOTE

Compression and Normalization can be used together to increase the apparent loudness of a file. This is currently a popular mastering technique.

To apply Compression:

1. Open the file TUTMUSIC.WAV. Make a copy of it by selecting the whole region and dragging it to an open space in the Sound Forge XP workspace.
2. With the new file active, select *Dynamics* from the *Effects* menu. The *Dynamics* dialog will appear.



3. Drag the *Threshold level* fader until you see the value -18 dB. Drag the *Ratio* trackbar until the compression ratio is 2:1. Select *OK* to see the results of compression in the sound. If you can see both files at once and are zoomed out, you'll be able to notice how the levels of the new file are more constant than the original. Listening should reveal the same thing.

4. In this example, sounds above the Threshold (-18 dB) are attenuated at an input to output ratio of 2:1. The compressor does not affect sounds below the Threshold.
5. Undo the previous operation and select Dynamics again. Now, increase the Ratio to 7:1 and select OK. The sound will be even more compressed, meaning that more attenuation and boosting will be applied to compressed signals.

NOTE

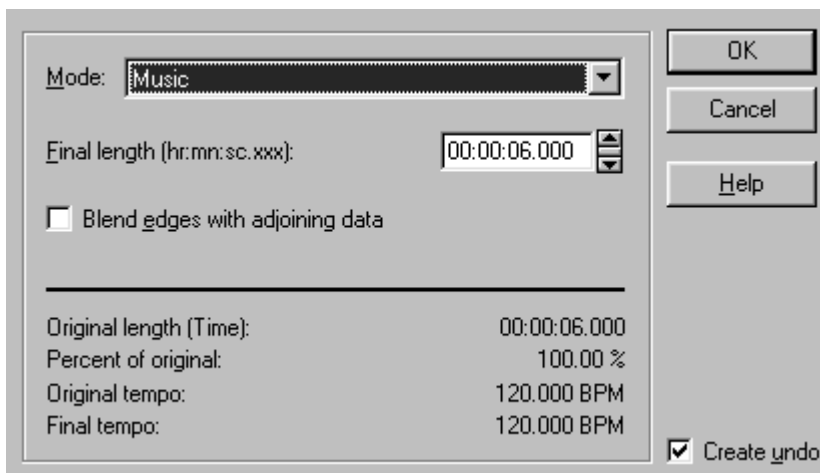
Too much compression starting at too low a threshold level will usually lead to a distorted sound.

CHANGING TIME DURATION

Another Sound Forge XP function unique to digital processing is the ability to stretch or compress the time duration of a sound without altering the pitch. This is useful for lengthening or shortening sounds to meet a specific time length.

To change the time duration:

1. Open SAXRIFF.WAV and select *Time Compress/Expand* from the Process menu. The *Time Compress/Expand* dialog will appear.



2. This process is very simple to use. In *Time Compress/Expand* dialog, you have the ability to specify the final duration of a sound, from 50% to 500% of the original length. You can select a mode of time compression to match the type of material you're processing. The *Solo instruments* mode does a good job with this sound file. Select it from the *Mode* list. Change the *Final length* from 2.5 to 2.0 seconds (80% of original) and select *OK*. Press the *Play* button and you should hear the sound played at a faster tempo.

The *Time Compress/Expand* offers a number of compression modes for various kinds of source material. If you have sounds that have few loud, sustaining low-bass frequencies, you can use modes that will result in no echoes. These include the *Drum* and *Solo Instrument* modes. For complex music, you must sacrifice some time localization for the ability to reproduce long bass notes.

If you have a drum recording with bass drum, snare, and cymbals, you will find the *Drums, unpitched (minimum echo)* mode does an impeccable job. However, once you start adding ringing low toms and congas, the *Drums (better for toms)* mode will work better. Again, experimentation is the key.

SYNTHESIS

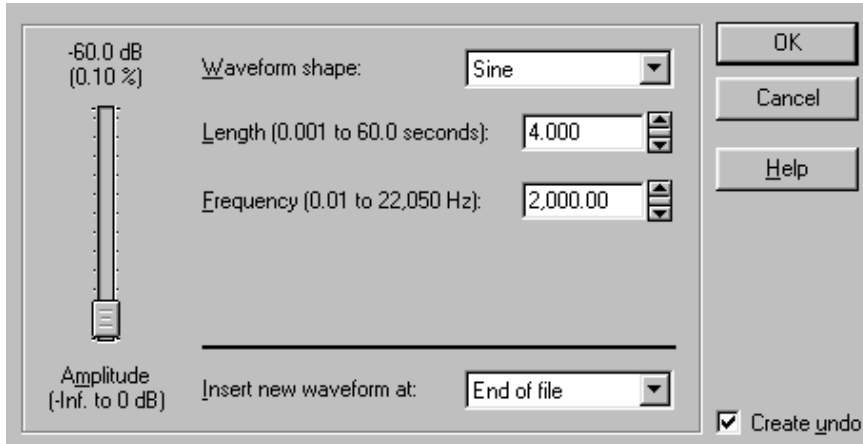
BASIC SYNTHESIS

The *Synthesis* tool can be used to generate a simple waveform of a given shape, pitch, and length.

To synthesize a simple waveform:

1. Create a new window by selecting *New* from the *File* menu and set the data format for the window to be 16-bit, 22,050 Hz, *Mono*.

2. Select *Synthesis* from the *Tools* menu. The *Simple Synthesis* dialog will appear.



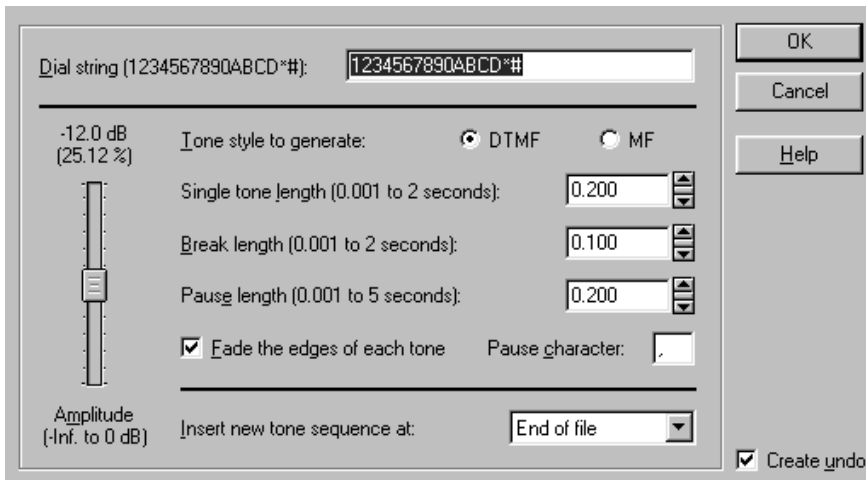
3. Select the *Sine* option from the *Waveform shape* list. Enter 3 in the *Length* field and 261.52 in the *Frequency* field. Press *OK* to generate a sine wave in the window that is 3 seconds long and has a pitch of 261.52 Hz (Middle C). Press the *Play* button to hear your reference tone.

DTMF SYNTHESIS

The *DTMF Synthesis* tool is used to generate the dial tones used by telephone companies. These dial tones correspond to the numbers in a telephone unit, along with other special codes.

To Synthesize DTMF tones:

1. Create a new window by selecting *New* from the *File* menu and set the data format for the window to be 16-bit, 22,050 Hz, Mono.
2. Choose *DTMF/MF Tones* from the *Tools* menu. The *DTMF/MF Tones* dialog will appear.



3. Enter a phone number in the Dial string field. The Amplitude control determines how loud the tones will be. Press OK to generate the tones.
4. Play back the sound file – you will hear the tones that would dial the number you specified.

FILTERING

What can you do when you have a sound that is not quite perfect, but not bad enough to throw away? Sometimes, judicious use of filtering can keep a favorite sound bite from losing favor. Filtering is not a cure-all for bad sound, but slight alterations of a sound can bring it back to life.

Sounds are composed of varying amounts of one or more frequencies. For example, a sound with a rich timbre will contain many different frequencies. A sine wave sound has only one frequency in it, like 60 or 440 Hz.

Filters allow the tailoring of the frequency spectrum of a sound. A spectrum is nothing more than a representation of how much of each frequency component (from 20 Hz up to one-half the sample rate) is present in a signal. Less of any given component means that the given frequency component is not as prevalent aurally as another component. Filters pass or reduce (attenuate) frequency components.

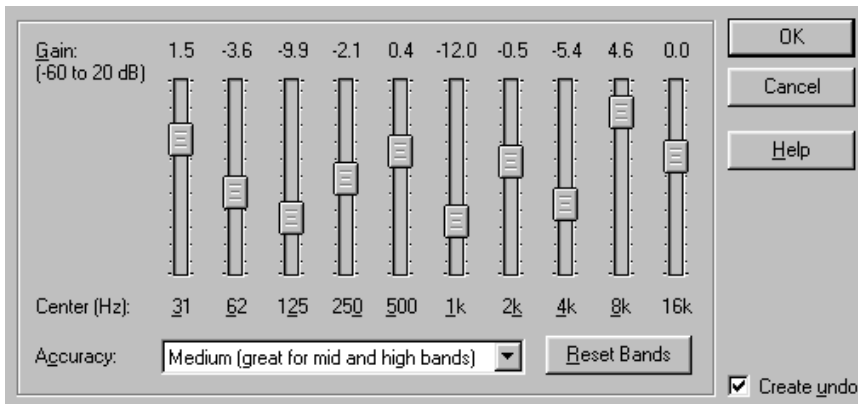
Many factors such as the frequency response characteristic of your speakers and sound card can also affect which frequencies are more prominent during the playback of a sound. In general, the goal is to make a recording sound as close to the original as possible. However, filtering is also commonly used to remove unwanted sounds such as noise, or make individual instruments in a recording sound louder.

GRAPHIC EQUALIZER

The *Graphic Equalizer* divides all the possible frequencies into ten bands which you can boost or attenuate (cut). Each band has a *Center* frequency related to it. The *Gain* value above each band indicates the amount of cut or boost applied to the band. When a band is set to zero, it means that the frequencies in the band will not be modified. Positive gain values indicate a boost and negative values indicate a cut in amplitude.

To Filter a sound file using *Graphic EQ*:

1. Open TUTMUSIC.WAV. Select *Graphic EQ* from the *Process* menu. The *Graphic EQ* dialog will appear.



2. To remove some of the high frequencies from the music, drag the 1K fader to the bottom. Repeat the process for all the faders to the right of 1K.
3. Click OK to remove the high frequencies from the music file. Press the *Play* button to hear how the music sounds much duller.

CHAPTER 6:

SOUND FORGE XP REFERENCE

This chapter contains a detailed explanation of every Sound Forge XP operation. It is organized in the same order as the on-screen menus to allow for quick reference to information about every Sound Forge XP menu and dialog option. Where applicable, descriptions include shortcut methods for performing an operation, either by using toolbar buttons, drag and drop functions, shortcut menus (right-clicking), or shortcut keys.

This section is intended for the user who is already familiar with Sound Forge XP. If you aren't familiar with using Sound Forge XP's windows and basic controls, we suggest you first read chapter 2, *Sound Forge XP Basics* and chapter 3, *Editing and Navigation*.



FILE MENU

NEW

The New command creates a new sound data window.



SAMPLE RATE

Select a standard sample rate from the drop-down list or type in a custom rate.

SAMPLE SIZE

Check the button to select whether the new data will be 8-bit or 16-bit.

NOTE

Open files are edited in 16-bit format and are only converted to 8-bit or compressed audio when saving the file.

CHANNELS

Check the button to select whether the new data will be mono or stereo.

MAXIMUM EDITING TIME

Shows the maximum time currently available on the hard drive for editing a file of the specified type.

NOTE

Using the New toolbar button (or holding the Shift key down while selecting New from the menu) will skip the New dialog and create a window using the previously selected data settings.

Shortcut:

Control+N

Drag and drop: Highlighting a section of waveform data, dragging it and dropping it to the Sound Forge XP workspace creates a new window with the same data attributes.

Selecting a blank portion of the Sound Forge XP workspace creates a new window with the most recently used attributes.

OPEN

Use this command to load a sound file into Sound Forge XP.



LOOK IN

Lists available drives and directories.

FILE NAME

Type the *File name* you want to open or *. and an extension to see a list of files with the corresponding extension in the current directory.

FILES OF TYPE

Shows the type of files displayed. Choose a type from the drop-down list. If you select *All Types (*.*)*, Sound Forge XP will try to auto-detect the file format.

If you know that the file format is unsupported, select *Raw File (.raw;*.*)*. Selecting a file with a *Raw File* format will open the *Raw file type* dialog. Specify format parameters for the file using this dialog. (More information about opening *Raw Files* and other specific file formats is included at the end of the *Open* section.)

MRU FOLDERS

Lists recently used folders. Use to speed the opening of regularly used files.

OPEN AS READ-ONLY

When checked, the sound file will be opened but you will not be able to alter the sound data in the file. This feature is useful if you only need to play the file or copy sections from the file. You can still change the *Regions List*, and *Summary* information for the file, but these changes must be saved to a new file.

When you open a sound file, Sound Forge XP defaults to the edit mode you last selected (either *Open as read-only* or *Operate directly on the sound file*).

OPERATE DIRECTLY ON THE SOUND FILE

When checked, the sound file will be opened for editing but with no temporary file created. This greatly speeds the opening process but doesn't give you the security of a backup file. In most cases this is not a problem since all changes can be undone (if you have enough disk space). However if Sound Forge XP terminates improperly, the file would remain in its edited state.

N O T E

Whenever you open a file in Sound Forge XP, a backup copy is created so that the original file is not affected until you elect to save your work. When you open a file as read-only or direct, Sound Forge XP will not create a backup copy of the file, which makes opening files quicker and uses less disk space.

AUTO PLAY

When checked, a file selected in the window will automatically begin playback without opening it in Sound Forge XP.

PLAY

Auditions the sound file without opening it in Sound Forge XP. If playing a file from a slow network or CD-ROM, some skipping might occur. This feature is only available for WAV files.

Shortcut:

Control+O

Control+F12

Control+Alt+F2

RAW FILE TYPE DIALOG

This dialog is reached when you open a *Raw file type*. Use this to open a file that is not stored in one of the standard sound file formats supported by Sound Forge XP.

SAMPLE RATE (2,000 TO 96,000 HZ)

Sample playback rate that will be used by Sound Forge XP when playing the file.

SAMPLE TYPE

Format used to store each sample value.

8-BIT PCM

Uncompressed linear format.

16-BIT PCM

Uncompressed linear format.

G.711 M-LAW

Compressed format commonly used for telecommunications in the United States.

G.711 A-LAW

Compressed format commonly used for telecommunications in Europe.

FORMAT**(UNSIGNED, SIGNED, SIGN BIT)**

Shows the sample format of data storage. Used when saving files in 8- or 16-bit PCM format.

CHANNELS**(MONO/STEREO)**

Number of channels, or tracks, stored in the file.

BYTE ORDER**(LITTLE ENDIAN OR BIG ENDIAN)**

The order in which the high and low bytes of a 16-bit sample are stored. *Little Endian* is used by Intel microprocessors, while *Big Endian* is used by Motorola microprocessors.

HEADER BYTES

Number of bytes stored in the file before the sound data.

TRAILER BYTES

Number of bytes stored in the file after the sound data.

OPEN VIDEO STREAM

This dialog is reached when you select an AVI file that has multiple audio or video streams. It allows you to select a particular video stream and an audio stream to open in Sound Forge XP. Most AVI files have just one video stream and one audio stream, in which case this dialog doesn't appear.

STREAM

Selecting the black diamond to the left of a stream will open it. More than one audio or video stream can be selected. Additional information about each stream is available by clicking on the + area to expand the list.

CLOSE

Use this command to close the current sound file. If the data has not been saved since the last edit you will be asked if you wish to save your changes.

SAVE



Use this command to save the current sound data. If the data is new data which was not retrieved from a previous file or was loaded from a format which is not supported for saving, you will be prompted with the *Save As* dialog.

NOTE

The Macintosh Resource (SND) format is not supported for saving. If you need to export sound files to a Macintosh, use the Macintosh AIFF format.

Shortcut:

Control+S

Shift+F12

Alt+Shift+F2

SAVE AS



Use this command to save the current sound data in a different file and/or file format.

SAVE IN

Lists available drives and directories.

FILE NAME

Type the file name you want to save.

SAVE AS TYPE

Shows the file types available. Choose a type from the drop-down list. When saving as a *Raw File*, the *Save Raw File Type* dialog will open. Specify format parameters for the file using this dialog. (More information about saving *Raw Files* and other specific file formats is included at the end of the *Save As* section.)

MRU FOLDERS

Lists recently used folders. Use to speed the opening of regularly used files.

FORMAT

Shows the sample format in which the data will be saved. Sound files are most often saved in the *PCM* format. However, other formats are often used for compression purposes. If you have the *Microsoft Audio Compression Manager (ACM)* installed, you can save files in a variety of compressed formats including the *Microsoft ADPCM* format. (See Appendix E for more information about the *Audio Compression Manager*.)

Windows 9x automatically includes ACM.

NOTE

ATTRIBUTES

Sample Rate, sample size, and stereo/mono. Here, you can change the file's sample size (8- or 16-bit), and convert a file between mono and stereo formats. When you convert from mono to stereo, the data will be stored in both channels. When converting from stereo to mono, the data from both channels will be mixed to a single channel.

SAVE REGIONS AND MARKERS IN WAV FILES

Check if you want to include regions and markers in the audio file.

SAVE SUMMARY INFORMATION IN FILE (WAV, AVI, ASF, RM)

Check if you want summary information (such as author and copyright) stored in the file.

RETAIN SAMPLER INFORMATION IN FILE

Check if you want sampler information (such as note assignment and loops) stored in the file.

MRU FOLDERS

Lists recently used folders. Use to speed the opening of regularly used files.

FORMAT

Shows the sample format in which the data will be saved. Sound files are most often saved in the PCM format. However, other formats are often used for compression purposes. If you have the Microsoft Audio Compression Manager (ACM) installed, you can save files in a variety of compressed formats including the Microsoft ADPCM format. (See Appendix E for more information about the Audio Compression Manager.)

ATTRIBUTES

Sample Rate, sample size, and stereo/mono. Here, you can change the file's sample size (8- or 16-bit), and convert a file between mono and stereo formats. When you convert from mono to stereo, the data will be stored in both channels. When converting from stereo to mono, the data from both channels will be mixed to a single channel.

SAVE REGIONS AND MARKERS IN WAV FILES

Check if you want to include regions and markers in the audio file.

SAVE SUMMARY INFORMATION IN FILE (WAV, AVI, ASF, RM)

Check if you want summary information (such as author and copyright) stored in the file.

RETAIN SAMPLER INFORMATION IN FILE

Check if you want sampler information (such as note assignment and loops) stored in the file.

SAVE RAW FILE TYPE

This dialog opens when you select *Raw* from the *Save as type* list in the *Save As* dialog. Use this to save an opened file into a file format that is not one of the standard sound file formats supported by Sound Forge XP.

SAMPLE TYPE (8-BIT PCM, 16-BIT PCM,
G.711 μ -LAW, G.711 A-LAW)

Format used to store each sample.

FORMAT (UNSIGNED, SIGNED, SIGN BIT)

Binary format of each sample value. Used when saving files in 8- or 16-bit PCM format.

CHANNELS (MONO/STEREO)

Number of channels, or tracks, stored in the file.

BYTE ORDER (LITTLE OR BIG ENDIAN)

The order in which the high and low bytes of a 16-bit sample are stored. Little Endian (low, high) is used by Intel microprocessors, while Big Endian (high, low) is used by Motorola microprocessors.

VIDEO SAVE OPTIONS

This dialog opens when you select *Video for Windows (.avi)* from the *Save as type* list in the *Save As* dialog. In this dialog, you can select which video streams you wish to save and edit the title, language, and priority of the saved streams.

STREAMS

Check the streams that you want to save. The black diamond next to each check box indicates currently opened streams.

Additional information is available by clicking on the + area to expand the list. This information can be edited by right-clicking on a field and selecting *Edit*.

SAVE AUDIO TO NEW STREAM

If this option is checked, the audio track currently open in Sound Forge XP will be saved to a newly created stream.

COMPRESSION OPTIONS

This dialog opens when you select *Video for Windows (.avi)* from the *Save as type* list in the *Save As* dialog and then press OK in the *Video Save Options* dialog.

CHOOSE A STREAM

Check the audio or video stream for which you want to set the compression formats.

INTERLEAVE FRAMES

When checked, selects how the audio and video streams will be interleaved. Interleaving the audio and video streams improves playback performance when using storage devices that are more efficient at providing data sequentially (such as CD-ROM disks). The *Frames* value indicates the interval between video and audio segments. The default is 1 for CD-ROMs, but can be increased for faster media.

OPTIONS

Press this button to view and/or edit the audio and video compression options for the selected stream.

VIDEO COMPRESSION

This dialog opens when you select *Video for Windows (.avi)* from the *Save as type* list in the *Save As* dialog, press OK in the *Video Save Options* dialog, and after selecting a stream, pressing the *Options* button in the *Video Compression* dialog.

COMPRESSOR

Select a compression format from any of the installed AVI compression schemes. Compression formats are available from different vendors (not from Sonic Foundry), and also come included with Windows.

If the file is already compressed, you should select *No Recompression*. This will be faster and will also avoid the loss of quality inherent in most recompression.

COMPRESSION QUALITY (0 TO 100)

Determines the final output quality. Usually, higher quality (close to 100) means less compression and fewer visual artifacts.

KEY FRAMES EVERY

Some compression formats are based on key frames (sometimes called temporal compression). A key frame is a frame that is usually less compressed. Compressed frames that follow a key frame are smaller but slower to draw. This option is only relevant to video streams.

A high number of key frames increases quality but decreases compression. Also, if the number of key frames is very low, it will take a long time to perform decompression when drawing the video strip or moving randomly through the file.

DATA RATE (KILOBYTES PER SECOND)

Determines the data rate that will be required to play the compressed stream in real time. Lower data rates are less demanding on computer systems than higher rates. If the data rate is too high for a certain computer (usually because of a bottleneck such as a slow CD-ROM, network, or hard drive) the quality begins to suffer and glitching can occur.

CONFIGURE

Press this button to set more detailed configuration parameters specific to the compression scheme being used. Not all compressors provide this options.

PREVIEW

Press this button to view a preview of the final output.

REALMEDIA SAVE OPTIONS

This dialog displays when you select RealMedia (*.rm;*.ra) from the *Save as type* list in the *Save As* dialog, and then click the *Save* button. This feature is only available for Windows 9x and NT running on x86 processors.

ENABLE SELECTIVE RECORD CAPABILITIES

When this option is enabled, RealMedia-compatible players can allow users to save (record) RealMedia streams to their hard drive. Use this option only if it is acceptable for users to create copies of the RealMedia file. The RealPlayer Plus from RealNetworks supports Selective Record capabilities.

ENABLE PERFECTPLAY CAPABILITIES

When this option is enabled, users who are connected with a standard modem can choose to download a higher quality version or the audio and/or video that is normally only available over ISDN or LAN connections. The higher bandwidth RealMedia stream is then played back from the user's hard disk after the download process is complete. The RealPlayer Plus from RealNetworks supports PerfectPlay capabilities.

CREATE EVENT FILE (RAE) FROM MARKER AND REGION LABELS

When this option is enabled, events can be embedded from the *Regions List* (*View* menu) into the RealMedia stream.

To embed an event, create a marker or region with a label starting with one of the below prefixes followed by a colon.

RM URL: Specifies a URL (web address) to open.

RM Title: Sets the Title field in the RealPlayer.

RM Author: Sets the Author field in the RealPlayer

RM Copyright: Sets the Copyright field in the RealPlayer

For example, if you create a marker with the label RM URL:http://www.sonicfoundry.com, the RealPlayer would open the Sonic Foundry home page at the marker's location in the file during playback. You can just as easily open specific web pages. For example, RM URL:http://www.sonicfoundry.com/realaudio.html would open the realaudio.html page on Sonic Foundry's web site.

RealNetworks publishes extensive information on RealMedia events on their web site (www.real.com). However, Sound Forge is capable of generating all event files automatically rather than requiring several tools as described in RealNetworks' documentation.

NETSHOW SERVICES SETTINGS

The Netshow Services Settings dialog displays when you select *Advanced Streaming Format (asf)* from the *Save as type* list in the Save As dialog, and then click the Save button.

TEMPLATE

The *Template* list displays preset saving options, as well as any custom templates that have been created. Templates contain the settings for encoding ASF files. Choose a template, and then click the Create button to encode a file to ASF.

TEMPLATE DESCRIPTION

The *Template Description* field displays a short summary of the type of encoding for which the selected template can be used.

DETAILS

The *Details* section displays the technical details of the selected template. Here you will find the name of the audio and/or video codec being used, and details of the audio and/or video format.

PROPERTIES

The *Properties* section allows you to enter specific information to embed in the encoded ASF file. Information such as title and copyright will be displayed in the player of the ASF file as the file is being played.

GENERATE REDIRECTOR FILES

When this option is checked, ASX redirector files will be generated. Click the ASX Settings button for more options.

ASF SERVER PATH

This option specifies a path for the server that will be accessed to play the NetShow file.

USE ALTERNATE DESTINATION FOLDER FOR ASX FILES

When this option is checked, the ASX files will be created in the directory you enter in the field below, rather than the destination directory, for the encoded ASF files.

PLAY START POSITION

This option allows you to specify an alternate play start position for the encoded file.

PLAY LENGTH

This option allows you to specify an alternate play length for the encoded file.

MARKERS AND SCRIPT COMMANDS

The *Markers and Script Command* options allow you to use or not use any markers that are defined in the source file. If the checkboxes are unchecked, the encoder will ignore the markers.

CUSTOM

The Custom button at the bottom of the Netshow Services Settings dialog launches the Custom Template wizard. Using this wizard, you can create your own custom templates.

TEMPLATE NAME

A unique template name must be provided.

DESCRIPTION

Type a description of the template.

NETWORK BANDWIDTH

Internet 14.4(10 kbps actual)

This bandwidth selection supports streaming of both audio and video content to clients using a network connection that operates at a minimum of 14.4 Kbps.

Internet 28.8(22 kbps actual)

This bandwidth selection supports streaming of both audio and video content to clients using a network connection that operates at a minimum of 28.8 Kbps.

Internet 56 Modem (37 kbps actual)

This bandwidth selection support streaming of both audio and video content to clients using a modem network connection that operates at 56 Kbps.

Single Channel ISDN (50 kbps actual)

This bandwidth selection supports network connections at Integrated Services Digital Network (ISDN) rates.

Intranet (100 kbps actual)

This bandwidth selection supports clients on an intranet or local area network (LAN).

Custom (bps)

This bandwidth selection is for users whose system requires a customized bandwidth setting, such as those using a dedicated network that does not use one of the preceding bandwidths. When specifying the bit rate, consider other traffic that must pass over the network. Unlike the preconfigured bandwidth settings, Microsoft NetShow Encoder uses the entire bandwidth you specify for streaming ASF information. Note that this value is entered in bits per second, rather than kilobits per second.

AUDIO PANEL

Codec and Format

Because some of the audio codecs have multiple formats, the Audio panel has options for both the codec and the format. Use the Codec list to select the audio codec. If the codec has multiple formats, use the Format list to select the amount or type of compression. The format of a codec is the sampling rate (in kilohertz [KHz] or hertz [Hz]) and sample depth (in bits). The larger the sampling rate and sample depth, the more information is recorded. When more information is recorded, the audio content usually sounds better; however, the audio portion of the total bandwidth allocated also is larger. Remember that the audio file must share the bandwidth with any video or script commands.

Advanced

Click the Advanced button to select the audio loss concealment setting.

Audio Loss Concealment

Audio Loss Concealment blends the audio so that if information is lost during transmission, there is no audible gap. There are two options that provide different types of concealment. If the audio track has a low dynamic range, such as when someone is speaking, select Voice by clicking on the radio button to the left of this option. If the audio track has a large dynamic range, such as when a band is playing, select Music by clicking on the radio button to the left of this option.

VIDEO PANEL

Use Video

Place a check in the Use Video checkbox to use video in your template.

Codec

Choose a video codec from the Codec list. Be sure to select a codec that can share the bandwidth with the audio codec you have selected.

Advanced

To adjust advanced video settings, such as the size of the window for Microsoft Media Player, the number of frames per second, and the number of I-frames, click the Advanced button.

General Tab

Image Size: To determine the height and width of the Advanced Streaming Format (ASF) content when it is viewed, use the *Image Size* panel. Quarter Common Interface format (QCIF) and Common Interface format (CIF) are predefined image standards: notice that CIF height and width are exactly double those of QCIF. These standards are provided because their image size (both height and width) is a standard that is supported by many codecs and video editing tools. The 160x130 and 320x240 options provide video windows that are slightly smaller than QCIF and CIF, respectively. The slight decrease in image size allows for more bandwidth to be used for video frames, and can improve content quality in some scenarios. Use these options if video sharpness is more important than video size for your content.

Use the Custom option to define your own image size. When resizing an ASF stream with the Custom setting, be aware that many codecs require image size settings in multiples of 16.

Frames/Second: To set the number of frames per second for the ASF stream, use the *Frames/Second* field. The *Frames/Second* value can be set from 1 through 15. How much you adjust this value depends on the speed of the computer's coprocessor, and whether the computer is encoding high-movement or low-movement video. If more frames per second are used, there are smaller changes between frames, and the video looks smoother. If fewer frames per second are used, the video has a slower motion transition rate, and thus video with a lot of motion can appear disjointed. However, the more frames per second your computer is required to encode, the harder the coprocessor must work. It is possible to overwork your coprocessor by requesting it to encode more action than its capability allows. If this happens, NetShow Encoder stops encoding, and displays a message.

Second/I-Frames: The *Second / I-frames* field displays the number of seconds that separate I-frames. All frames in between I-frames are called delta frames. Delta frames contain only the information used to display change, and are considerably smaller than I-frames; however, the visual quality of delta frames is poor. As I-frames get farther apart, the size of the video (in bytes) gets smaller. As I-frames get closer together, the size of the video (in bytes) gets larger, and the computer's coprocessor must work harder.

Pixel Format: The *Pixel Format* field displays the color depth standard that has been selected. The video card that the computer is using to receive the video source has certain color standards that it can display best, for example, RGBH = 64k thousand colors and RGBT = 16 million colors. For information about which pixel format your card works best with, see the video card's documentation. The pixel format is set automatically for the preferred video cards when you select one of the template stream formats.

Delay Buffer: The *Delay Buffer* is the amount of video coming in from the video card (measured in seconds) that NetShow Encoder stores before it starts transmitting ASF information. Five seconds is the default; it allows enough information to build up so that the client doesn't have to wait (that is, buffer information), and so the NetShow Encoder computer's memory isn't overloaded with delayed ASF information. Increasing the Delay Buffer can overload the NetShow Encoder computer's memory, and affect the computer's ability to encode information. Decreasing the Delay Buffer, in some circumstances, can cause clients to wait on NetShow Encoder.

Scalable Video: Placing a check in the *Scalable Video* checkbox creates multiple content streams within one encoded .asf file. The streams are encoded at different target bandwidth to allow a player to render content when network bandwidth is reduced. Using scalable video requires an encoding platform that has at least a Pentium II processor running at 266 megahertz(MHz). Scalable video content can only be accurately decoded by NetShow Player 3.0 and NetShow Server 3.0.

Image Quality: The *Image Quality* slider lets you fine-tune the image quality. You can emphasize either video smoothness or image crispness. Video content is smooth when movement shown on the screen has easy transition from one position to another and the edges of objects are not jagged. Video content is crisp when images and motion are well-defined and clearly delineated. As you increase the image crispness, the video becomes less smooth. In some cases, decreasing the image crispness makes the video look better.

Clipping Tab

The fields on the Clipping tab allow you to clip the image size. The image at the bottom of the tab allows you to see how your changes will affect your image. You can use the up and down arrows next to each field to adjust the image size, or you can type a number directly in the field to change the image size.

SAVE ALL

Use this command to save all the currently opened files. You will be prompted for each unsaved file. If you hold the Shift key down when selecting this command, no prompts will be displayed.

DELETE

Use this command to delete a file, you can delete files from within the *Open* and *Save* dialogs.

PROPERTIES

The *Properties* pages list attributes and information that is embedded in the currently active sound file.

GENERAL

This page contains technical information regarding the current sound file, including size, location, file type and attributes of the file.

Microsoft WAV files are composed of sections called RIFF chunks. These chunks contain the sound data plus other embedded information. If there are any non-standard chunks found in the current file, the *junk*, *padding*, and *additional chunks* fields will be checked. These chunks might be used by other sound utilities, or might just be garbage that can cause problems like glitching in some less intelligent programs.

SUMMARY

This page contains extra information that can be embedded in the sound file, about the sound file. It is available for WAV, AVI, ASE, and RM files.

TITLE, SUBJECT, ENGINEER, COPYRIGHT, COMMENTS

Commonly used fields you can quickly edit. To view and edit all other fields, press the *Extended* button.

PICTURE

Allows you to select an icon, bitmap or cursor to be attached to the current file.

EXTENDED SUMMARY

Allows you to view and edit all available summary fields.

Fields

To edit a field, you must first select it from the *Fields* list. Select a field by clicking in the box to the left of the field title. Click again to de-select the field. A check mark indicates whether the field is currently enabled for saving to the WAV file. If not selected, the field will not be written to saved files.

IARL Archival Location

Indicates where the subject of the file is archived.

IART Artist

Lists the artist of the original subject of the file. For example, Bach.

ICMS Commissioned

Lists the name of the person or organization that commissioned the subject of the file. For example, XYZZY Records.

ICMT Comments

Provides general comments about the file or the subject of the file. If the comment is several sentences long, end each sentence with a period. Do not include newline characters.

ICOP Copyright

Records the copyright information for the file. For example, “© Copyright Sonic Foundry, Inc. 1997.” If there are multiple copyrights, separate them by a semicolon followed by a space.

ICRD Creation Date

Specifies the date the subject of the file was created. List dates in year-month-day format, padding one-digit months and days with a zero on the left. For example, “1964-03-02” for March 2, 1964.

ICRP Cropped

Describes whether an image or sound has been cropped and, if so, how it was cropped. For example, “third movement, first through fourth bars.”

IDIM Dimensions

Specifies the size of the original subject of the file. For example, “8.5 in h, 11 in w.”

IDPI Dots Per Inch

Stores dots per inch setting of the digitizer used to produce the file, such as, “300.”

IENG Engineer

Stores the name of the engineer who worked on the file. If there are multiple engineers, separate the names by a semicolon and a blank space. For example, “Sayre, Jack; Feith, John.”

IGNR Genre

Describes the original work, such as, “landscape,” “portrait,” “still life,” etc.

IKEY Keywords

Provides a list of keywords that refer to the file or subject of the file. Separate multiple keywords with a semicolon and a blank space. For example, “Madison; aerial view; scenery.”

ILGT Lightness

Describes the changes in lightness settings on the digitizer required to produce the file. Note that the format of this information depends on hardware used.

IMED Medium

Describes the original subject of the file, such as, “computer image,” “drawing,” “lithograph,” etc.

INAM Name/Title

Stores the title of the subject of the file, such as, “Madison From Above.”

IPLT Palette Setting

Specifies the number of colors requested when digitizing an image, such as, “256.”

IPRD Product

Specifies the name of the title the file was originally intended for, such as, “Encyclopedia of Midwest Geography.”

ISBJ Subject

Describes the contents of the file, such as, “Aerial view of Madison.”

ISFT Software

Identifies the name of the software package used to create the file, such as, “Sound Forge XP.”

ISHP Sharpness

Identifies the changes in sharpness for the digitizer required to produce the file (the format depends on the hardware used).

ISRC Source

Identifies the name of the person or organization that supplied the original subject of the file. For example, “Sonic Foundry, Inc.”

ISRF Source Form

Identifies the original form of the material that was digitized, such as, “slide,” “paper,” “map,” etc. This is not necessarily the same as IMED.

ITCH Technician

Identifies the technician who digitized the file. For example, “Jones, Henry.”

DISP Sound Scheme Title

Sets the title that is displayed for MS Sound Systems.

Contents

Shows the text associated with the selected field. The text can be changed by typing in this box.

Default

Sets the default fields to the current file's field information. Use this to save information that will be used in a number of different files, like copyright and engineer information at your recording site.

Load

Sets the current file's summary information fields to the default settings.

FORMAT

Use this page to change the data format of the current data window. This includes *Sample rate*, *Sample size*, and *Channels*.

SAMPLE RATE**(2,000 HZ TO 96,000 HZ)**

The playback rate can be set from 2,000 Hz to 96,000 Hz by entering the rate you wish to use. You may also select the most common sample rates by using the drop-down list. Note that this will not resample the sound file. If the playback rate is different from the originally recorded rate, the pitch will vary unless resampling is done.

SAMPLE SIZE**(8-BIT OR 16-BIT)**

Select 8- or 16-bit for the sample size.

CHANNELS**(MONO/STEREO)**

Select *Mono* or *Stereo* for the number of channels.

CURSOR POSITION

Displays the cursor position in the sound file using the current units.

SAMPLE VALUE

Displays the sample value at the current cursor position in the sound file. For 16-bit audio, this value ranges from -32768 to 32767. For 8-bit audio, it ranges from -128 to 127.

PEAK DATA RATIO

Ratio at which the peak data is stored. This means that when zoomed out beyond 1:512, the peak file instead of the entire file is scanned when drawing the waveform.

SOUND DATA SIZE

Amount of storage space being used by the sound data.

VIDEO SOURCE FORMAT

Frame size (height, width, bits per pixel) and compression algorithm of the original AVI file.

VIDEO DECOMPRESSION FORMAT

Intermediate frame size (height, width, bits per pixel) and compression algorithm used by Sound Forge XP before displaying the video frames. The video decompression mode can be changed from the *Performance* page in the *Preferences* folder (Options menu).

UNDO BUFFERS

Number of *Undo buffers* currently existing for the sound file and the amount of hard-drive space they consume.

REDO BUFFERS

Number of *Redo buffers* currently existing for the sound file and the amount of hard-drive space they consume.

VIDEO

This page contains information specific to Microsoft AVI files. If your sound file does not currently contain any video, you can attach a video from an AVI file by pressing the *Attach* button.

An AVI file can contain multiple video and/or audio streams (or tracks). For example, you can include multiple audio tracks in different languages to go along with a video. When playing back, Microsoft's Media player detects what language the operating system is set to and plays the corresponding video stream.

STREAM

Displays information about the video and/or audio streams present in the AVI file, such as name, compression format, frame rate, and language.

The black diamond to the left of the streams indicate the active streams. You can view and edit additional information (stream name, language, and priority of the active audio stream) by clicking on the + sign to expand the list. Right-clicking on a field allows you to edit it.

Streams that are checked will be preserved when the file is next saved. Streams that are not checked will be deleted when the file is next saved.

DISPLAY

This page allows you to change how the data window of the sound file appears on the Sound Forge XP workspace. Checking a box will display that item in the current sound file's data window. An unchecked item will not be displayed.

To set the current settings as the default display for all sound files, check the *Save as the default for all new windows* check box.

Shortcut:

Alt+Enter

SEND

Use this command to send the current sound file via electronic mail.

This option is only available in the 32-bit version of Sound Forge XP.

NOTE

This option sends a mail message with an attached sound file. Note that you must have electronic mail (email) capabilities to use this feature. When you select the *Send* command, your email program opens with a new message and embeds the active sound file from Sound Forge XP in the message. You then have the option of sending the new mail message to the desired recipient.

When a sound file is embedded into a mail message, the entire contents of the sound file are inserted into the message. To do this requires that any modifications to a sound file be saved before the message can be sent. Sound Forge XP will prompt you to save the file if this is necessary.

NOTE

Sound files are generally very large. An email message containing an embedded sound file can take a considerable amount of time to send and receive, especially if you are using a modem and not a high-speed network.

EXIT

Use this command to exit Sound Forge XP. You will be asked whether you would like to save any sound files that you have modified during the editing session.

EDIT MENU



UNDO

Use this command to undo the last edit operation. For instance, if you deleted a section of data by accident, choose the *Undo* option from the *Edit* menu to put the data back.



NOTE

*When working on large selections, it takes Sound Forge XP longer to create an undo buffer. To save time and file space, you can disable the undo feature. This is done by selecting *Disable Undo/Redo* under the *Edit* menu or from within most processing dialogs.*

Shortcut:

Control+Z

Alt+Backspace

REDO

Use this command to re-perform an undone event. For instance, if you decide that you really did want to delete that selection of data, select *Redo* and the undo will be undone.



Shortcut:

Control+Shift+Z

REPEAT

Use this command to repeat the last performed operation. This can be used with most processing functions. The last dialog settings will be used unless you hold down the *Shift* key, which allows you to change the operation's dialog parameters.



Shortcut:

Control+Y to repeat last operation with the last used dialog options

Control+Shift+Y allows you to change the dialog settings before repeating

CUT



Use this command to remove selected sound data and put it onto the clipboard. This command has no effect if there is no selected data. Cutting sound data replaces the previous contents of the clipboard.

Cutting data from the beginning of a very large file will take a long time to process. This is because large amounts of data need to be moved.

NOTE

You cannot cut from a single channel in a stereo file since the two channels in a stereo file must always be equal in length. To shift a single channel in time, use Delay/Echo in the Effects menu.

Shortcut:

Control+X

Control+Del

COPY



Use this command to copy selected sound data onto the clipboard. This command has no effect if there is no selected data.

Shortcut:

Control+C

Control+Insert

COPY OBJECT LINK

NOTE

This option is only available in the 32-bit version of Sound Forge XP.

Use this command to copy an object link for the active sound file onto the clipboard. You can then Paste (or Paste Special) the link into another application (such as Microsoft Word or Write) that supports Object Linking and Embedding (OLE). This feature is useful for embedding sound files in documents.

Object links are references to existing sound files on your hard disk or network server. If you embed an object link to a sound file in a document, the sound file is not actually inserted into the document, just a reference. Therefore, if you copy the document to another computer, any sound file(s) that are embedded will not be available on the other computer unless the sound file is stored on a common network server.

If you intend to share documents between computers that contain embedded sound files, it is suggested that you store all sound files on a network server and embed them using *Universal Naming Convention (UNC)* path names. For example, if your server and share name for sound files is `\\myserver\sounds`, then open and embed all sound files using the UNC path (i.e., `\\myserver\sounds\<directory and file name >`).

In Windows 9x, UNC path names are extremely simple to use. Instead of using a drive letter when browsing in the *Open* dialog, select *Network Neighborhood* in the *Look in* field and browse to the appropriate network server and share containing your sound files. This method of browsing uses UNC names exclusively.

For more information on *Copy Object Link*, and OLE support in general, refer to Appendix F: *Object Linking and Embedding*.

PASTE

Use this command to insert a copy of the clipboard contents at the current insertion point. If there is a selection made, the *Paste* command deletes the selected data before inserting.



This command has no effect if the clipboard is empty.

Pasting into a stereo file will insert data to both channels since the channels in a stereo file must always be equal in length.

Pasting data of different sample rates will cause the data in the clipboard to play at the same rate as the rate of the window in which the data is pasted.

Shortcut:

Control+V

Shift+Insert

Drag and drop a selection to another data window + Alt

Drag Paste

Specifies that dropping the data here will perform a paste operation. The data will be pasted at the current cursor position within the data window. The paste operation is used rather than mix when the Alt key is held down while dragging. A small “L” or “R” will appear next to the cursor when pasting only to a left or right channel respectively.

Instead of using the Alt key while dropping, you can also hit the right mouse button while dragging. This toggles between Mix, Crossfade, and Paste drag and drop.

PASTE SPECIAL**CROSSFADE**

Use this command to crossfade a copy of the clipboard contents with the sound data. The crossfade start point is either the cursor point or the start or end of the selection in the destination file.

The *Crossfade* operation is similar to a mix, except that you apply a linear fade to the source and destination data. It is commonly used as a transition between one sound segment to another.

Crossfading data of different sample rates will cause the data on the clipboard to play at the same rate as that in the current sound data with which the data is crossfaded.

This command has no effect if the clipboard is empty.

When dealing with mono and stereo data, crossfading will occur on the channel which the selection is dropped to (*Left, Right, or Both*).

Shortcut:

Control+F

Drag and drop a selection from the source to the destination data window while holding the Control key. Make sure that you don't start the drag with the Control key down, otherwise you will switch to Magnify mode. The Control key must be down when you release (drop) the selection.

Drag Crossfade

Specifies that dropping the data here will perform a *Crossfade* operation. The crossfade will occur at the current insertion point within the data window on which the data is dropped. The *Crossfade* operation is used rather than *Mix* when the *Control* key is held down while dragging. When dragging a single channel from a stereo file or a mono file onto a stereo file you can select whether the data is placed in the left or right channel by the vertical position within the data window. A small “L” or “R” will appear next to the cursor when crossfading only to a left or right channel respectively.



MIX

Use this command to mix a copy of the clipboard contents with the sound data. The mix start point is either the cursor point or the start or end of the selection in the destination data window.



DRAG MIX

Specifies that dropping the data here will perform a *Mix* operation. The mix will occur at the current insertion point within the data window on which the data is dropped. When dragging a single channel from a stereo file, or a mono file onto a stereo file, you can select whether the data is placed in the left or right channel by the vertical position within the data window. A small “L” or “R” will appear next to the cursor when mixing only to a left or right channel respectively.



SOURCE VOLUME (-INF. TO 15 DB)

Gain applied to the source data before mixing with destination data.

DESTINATION VOLUME (-INF. TO 15 DB)

Gain applied to the destination data before mixing with source data.

APPLY DESTINATION VOLUME TO OVERLAPPING AREA ONLY (ON/OFF)

When off, the *Destination Volume* gain is applied to the entire destination sound file. Otherwise, the *Destination Volume* gain is applied only to the area where the destination and source data are mixed.

When mixing two sound files together, phase cancellation of some frequencies often occurs. Very small delays can cause very audible differences in tone quality. Mixing data of different sample rates will cause the data on the clipboard to play at the same rate as that in the current sound file with which the data is mixed. This command has no effect if the clipboard is empty.

Shortcut:

Control+M

Drag and drop a data selection from the source to the destination data window.

OVERWRITE

Use this command to replace an area of sound data with the contents of the clipboard.

The *Overwrite* command replaces data using the following rules:

If an area is selected which is greater than the length of the clipboard, the data from the beginning of the selection is overwritten for the length of the clipboard.

If an area is selected which is less than or equal to the length of the clipboard, the data within the selection is overwritten with the clipboard for the length of the selection.

The *Overwrite* command is useful when you are trying to replace silent sections of audio with background noise.

REPLICATE

Use this command to copy multiple copies of the clipboard data to the current data window.

The *Replicate* command will copy as many copies of the clipboard as will fit in a selected area. If no selection is currently made in the data window, the function will have no effect.

COPY PARTIALS

Selecting the *Copy partials* button will fill the selected region completely, using a partial copy of the clipboard if needed.

WHOLE COPIES

Selecting this option will use only whole copies of the clipboard, and will not fill the selected region completely if its length is not an exact multiple of the clipboard length.

Example:

1. Copy a 1 second section of sound data onto the clipboard.
2. Insert 5.5 seconds of silence in the data waveform.
3. Select the 5.5 second area and select *Replicate*.

If you choose *Whole copies*, 5 copies of the clipboard will be placed in the area the silence previously occupied and 0.5 seconds of silence will remain at the end.

If you choose *Copy partials*, 5.5 copies of the clipboard will be placed in the data rather than just 5. No silence will remain.

The *Replicate* command is useful when you are trying to replace silent sections of audio with background noise. It can also be used to introduce stuttering effects or echoes.

PASTE TO NEW

Use this command to create a new data window that contains the contents of the clipboard.

Shortcut:

Control+E

Drag and drop a data selection to the Sound Forge XP workspace to create a new file from the selection.

TRIM/CROP

Use this command to remove all data from the sound file except the selected data. This command has no effect if there is no selected data. *Trim/Crop* sound data does not copy data onto the clipboard.



CLEAR/DELETE

Use this command to remove selected sound data without copying it onto the clipboard.

NOTE

You cannot clear data from a single channel in a stereo file since the two channels in a stereo file must always be equal in length. This command has no effect if there is no selected data.

Shortcut:

Delete

SELECT ALL

Use this command to select all data in the current data window.

Shortcut:

Control+A

Control+Numpad 5

Double-clicking the left mouse button in the waveform display will select all data.

TOOL

EDIT



Use this command to use the *Edit Tool* of Sound Forge XP. This is the typically the tool you will use to do all of your selecting, editing, and processing.

MAGNIFY



Use this tool to zoom in to a particular region without losing your selection. While the *Magnify Tool* is activated, dragging the magnifying cursor over a region of data will draw a dotted rectangle around this area and magnify it when the mouse button is released.

DATA MAGNIFY MODE

When you are working in the data window using *Magnify*, this cursor shows that you can select an area to magnify.



There are three modes of operation for the *Magnify Tool*. These can be chosen by toggle-clicking while the *Magnify Tool* is selected. (Refer to chapter 2, *Sound Forge XP Basics* for an explanation of toggle-clicking.) These modes allow for *Zoom Time* only, *Zoom Level* only or *Time/Zoom Level*.

To return to the normal editing, choose the *Edit Tool* from the *Edit* menu.

Shortcut:

While using any tool, if you hold the *Control* key down before selecting data with the mouse, you will switch to the *Magnify Tool*. This is handy for quickly magnifying a particular section of your sound file.

PENCIL

Use this tool to edit the waveform by drawing on it. For example, if you have a glitch in the sound data, zoom in to the glitch and smoothly re-draw the waveform using the *Pencil Tool*.



DATA PENCIL MODE

When you are working in the data window using the *Pencil Tool*, this cursor shows that you can draw new audio data. Dragging within the data window will draw a new line that represents the new audio data. While holding down the left mouse button, you can also use the arrow keys to fine tune the pencil position.

The *Pencil Tool* is only available when operating at magnification levels between 1:1 and 1:16. To return to the normal editing mode, choose the *Edit Tool* from the *Edit* menu.

GO TO

Use this command to set the cursor to a particular location in the sound file.

GO TO

Provides preset locations to pick from.

POSITION (0 TO TOTAL LENGTH)

The position where the cursor will be moved can be specified here.

INPUT FORMAT

Determines the input format that will be used to enter the position.

NOTE

If you have a data selection, you can switch the cursor between selection points with the ` key (reverse quote, normally above Tab key). You can also switch the cursor between selection points by holding the Control key while selecting the Go to Start or Go to End buttons in the Playbar or Transport toolbar.

Shortcut:

Control+G

F5

Waveform Display shortcut menu

Double-click on the Selection Start field in the playbar

SELECTION

This command displays the Set Selection dialog. It allows you to manually define the selection by start and end points or length.

SELECTION

Provides preset regions to pick from.

START (0 TO TOTAL LENGTH)

The start point of the selection is specified here.

END (START TO END)

The end point of the selection is specified here.

LENGTH (0 TO TOTAL LENGTH)

The total length of the selection is specified here.

CHANNEL (LEFT, RIGHT, BOTH)

If the sound file is stereo, you can specify which channel of the data will be selected.

INPUT FORMAT

Determines the input format that will be used to enter the *Start*, *End*, and *Length*.

PLAY LOOPED

Check this box to play the selection repeatedly.

Shortcut:

Control+D

Waveform Display shortcut menu

Double-click on the *Selection Length* field in the playbar

UNDO ALL

Use this command to undo all operations performed on a file. Unless *Undo* was disabled at some point, this will return your file to its original state when first opened. However, if you disable undo at any time, you might not be able to return to the file's original state.

When not working in direct mode, you can close the file without saving changes to revert to the original file. However, when working in direct mode if you decide to not save the current changes, Sound Forge XP does an *Undo All* operation automatically before saving.

DISABLE UNDO/REDO

Use this command to prevent Sound Forge XP from creating temporary files used for undoing operations. Since creating undo files takes time and disk space, it is sometimes more convenient to have the *Disable Undo* option on, especially when working with large files.

Remember to turn the *Disable Undo* feature off when you wish to be able to undo operations.

N O T E

Since *Sound Forge XP* doesn't modify the original file unless the file is opened direct or read-only, you can always recover it by re-opening it. However, saved changes are permanent.

Shortcut:

Control+U

VIEW MENU



MAXIMIZE WIDTH

This command stretches the active data window to fit between the extents of the *Sound Forge XP* window.

FULL SCREEN

This command super maximizes the *Sound Forge XP* workspace in your display. To return to the regular window display choose the *Full Screen* command again.

TOOLBARS

This command brings up the *Toolbars* page in the *Preferences* folder (Options menu) and allows you to quickly display any toolbars on the Sound Forge XP workspace. Placing a check next to the toolbar title will display it.

CLIPBOARD

Use this command to display information on the current contents of the clipboard.

CONTENTS

Information includes *Format*, *Attributes*, *Length*, *Samples*, and *Total bytes*. If no data is in the clipboard you will be notified with a message box.

PLAY

This command will play the audio on the clipboard.

ZOOM LEVEL (VERTICAL)

OUT FULL

Use this command to zoom out vertically to allow viewing the entire amplitude range of the waveform. This command also centers the centerline.

WINDOW

Use this command to zoom in or out vertically to the maximum zoom ratio that allows you to view the entire waveform on the waveform display. This command also moves the centerline if the maximum positive and negative peaks are different.

SELECTION

Use this command to maximize a selected area both vertically and horizontally.

Shortcut:

Control+Up arrow (when a selection is active)

Level Ruler shortcut menu

Double-click on the Level Ruler

NOTE

To zoom in and out vertically by small increments, you can use Shift+Up or Shift+Down arrow keys or the Level Zoom In/Out buttons on the lower left-hand side of the data window.

ZOOM TIME (HORIZONTAL)

IN FULL

Use this command to maximize the horizontal magnification to one sample per pixel on the screen. When you zoom in full, the entire waveform display length will span a very small amount of time, usually around 20 milliseconds (depending on the sample rate and window size).

Shortcut:

Control+Up arrow (when no selection is active)

Waveform Display shortcut menu

NORMAL

Use this command to zoom out to the default zoom ratio preference setting. If the entire sound file can fit in the window at a closer magnification, zoom normal will only zoom out to that ratio.

To change the default for the Normal zoom ratio, go to the Display page in the Preferences folder (Options menu).

OUT FULL

Use this command to zoom out to the lowest magnification so that the entire sound file will fit on the screen.

SELECTION

Use this command to maximize a selected area in the data window.

The *Zoom Selection* command will calculate the maximum zoom factor for the size of a selection area, draw the data at this zoom factor, and center the selection in the data window.

Shortcut:

Control+Up arrow (when a selection is active)

Waveform Display shortcut menu

To zoom in and out in time by small increments, you can use the up and down arrow keys or the *Zoom In/Out* buttons on the lower right-hand side of the data window.

NOTE

FOCUS TO DATA WINDOW

Use this function to return the screen focus to the sound file's data window. This is the same operation as left-clicking anywhere on the data window.

Shortcut:

Alt+0

REGIONS LIST

Use this to open or close the *Regions List* window. The *Regions List* contains all of the regions and markers that exist in the currently selected data window. To play a region, press on the *Play* button to the left of each region. Selecting a marker or region moves the cursor or selection in the data window.

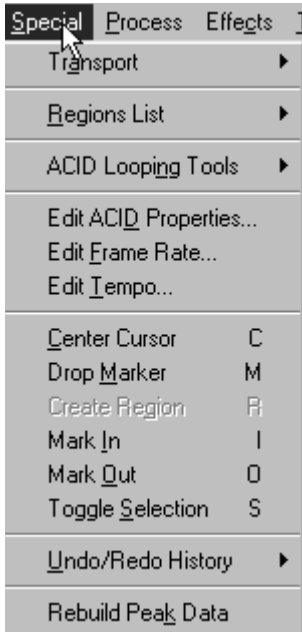
VIDEO PREVIEW

Use this to open or close the *Video Preview* window. This window shows the video frame at the current cursor or play position.

Shortcut:

Alt+2 to turn on or make active

SPECIAL MENU



TRANSPORT

Use this to perform playback and record operations.

RECORD

Use this dialog to record to an existing or new data window. To record directly to a specific file, use the *Window* button in this dialog (see below).

NOTE

If the current window is opened direct, opening the Record dialog will default recording to a new window.

MODE

Selects the current recording mode. Modes are as follows:

Automatic Retake (automatically rewind)

In this mode, recording begins at the specified *Start* position and replaces any sound data that already exists after that position. When recording is stopped, the next record start position is automatically rewound to the original starting position, allowing you to immediately do a retake which replaces the last take if necessary.

Multiple Takes

This mode will record successive takes of data.

Punch-In (record a specific length)

This mode is used to record over the top of an existing region of sound. This allows you to record a portion of a previous take without recording a whole new file.

START, END, LENGTH, INPUT FORMAT

Use to change the selection. Sound Forge XP automatically fills in the values depending on your selection or cursor position. The *Input Format* determines the recording format for the *Start*, *End*, and *Length* of the file.

REVIEW PRE/POST-ROLL

Check this option to specify the amount of time that will be played prior to and after reviewing a take. The pre- and post-roll times are entered in the edit boxes and measured in seconds.

MONITOR

Select this box to monitor the level of the input signal. The meters light up as a function of the volume of the recording input. For best results, the level should be somewhere in the yellow range with an occasional red. This button also activates the peak value. The peak value shows the maximum input level recorded since the monitor input box has been checked. If the peak value reads clip, clipping has occurred and the audio quality has been compromised. Clicking on the peak value display will reset it.

RECORD METERS

A number of commands and options affect what the *Record Meters* will display. Each is described below. To activate the *Record Meters* options:

- Right-click anywhere in the dialog, or
- Use **Alt+Spacebar**
- Choose *Record Meters* from the pop-up menu that appears.
- For direct access, right-click anywhere in the meters.

Reset Clip

This function resets the clip indication on the *Record Meters*. After a clip occurs, the clip indication will remain lit until the *Reset Clip* function is invoked. You can also click on the clip light or levels to clear it.

Resolution

(-24, -42, -60 -78 or -90 to 0 dB)

These settings display the minimum and maximum readings for the *Record Meters*. Changing the resolution of the meters is helpful for metering sound files of varying dynamism.

Show Labels

This option turns on or off the markings on the *Record Meters*.

Hold Peaks

This option turns on or off the markings to indicate the highest peaks in the sound file.

Hold Valleys

This option turns on or off the markings to indicate the lowest peaks in the sound file.

Aggressive Update

Enabling this option attempts to make the record meters more reactive. This function does not work with all sound cards. If *Aggressive Update* is selected but the meters are not accurately reflecting the audio input, disable this option.

BLINKING STATUS

(ON/OFF)

This option enables or disables blinking of the status indicator. It is reached by right-clicking anywhere in the *Record* dialog.

PREPARE

Pressing the *Prepare* button prepares your system for recording. This means that the record device is opened and all preparation that can be done prior to recording is completed. This allows the system to begin recording as quickly as possible after the *Record* button is pressed. You do not need to use the *Prepare* button unless you are trying to begin recording immediately after pressing the *Record* button.

RECORD

Pressing the *Record* button starts recording.

Shortcut:

Control + R

PLAY

Pressing the *Play* button allows you to hear a section of data over which you are going to record or which you have just recorded. This allows you to keep recording until you get the correct take. When pressed, the *Play* button turns into the *Stop* button; press again to stop playback.

Shortcut:

Alt + P

DROP MARKER

This tool inserts a marker at the current record position in the audio file.

Shortcut:

Alt + M

GO TO BEGINNING

Pressing this button returns the cursor to the beginning of the current sound file. Use to review takes or to begin recording from the beginning.

Shortcut:

Alt + Z

REWIND

Pressing this button moves the cursor backwards, take by take, in the current sound file. Use to review previous takes, or record over them.

FORWARD

Pressing this button moves the cursor forward, take by take in the current sound file. Use to navigate through several takes either to review, or record over them.

GO TO END

Pressing this button puts the cursor at the end of the current sound file. Use to quickly continue recording from the end of the current sound file if the cursor was moved to review the previously recorded material.

TIME RECORDED

This field displays the total time recorded for the current sound file. The display is in the units displayed in the *Input Format* field above.

TIME LEFT ON DRIVE

This field displays the total time left on the drive for recording. The display is in the units displayed in the *Input format* field above.

REMOTE

Press this button to enter the *Remote Recording* dialog. This mode will hide the main *Sound Forge XP* window and show only the *Record Remote* dialog. This allows you to easily record while using other components of your system like a CD player, mixer, or sequencer.

GO TO

Press this button to see the *Go To* dialog. The controls on this dialog let you select the position in the file where recording begins. You can also choose an input format.

SELECTION**(START, END, LENGTH, INPUT FORMAT)**

Press this button to see the *Set Selection* dialog. Use this dialog to determine the start, end and length of the current selection, based on the *Input Format*. This option is only available when a data selection has been made.

WINDOW

Press this button to see the *Window* dialog. Use it to choose a window to hold the sound data you record.

RESET

Press this button to reset the peak values on the record meters.

PLAY ALL

Use this function to play the entire sound file from beginning to end, regardless of cursor position or selection.

Shortcut:

Shift+Spacebar

PLAY

Playback file in current playback mode (*Normal* or *Looped* mode)

Shortcut:

Alt+P

Spacebar

Right-click on overview bar

PAUSE

Pause playback and keep the cursor at its current position.

Shortcut:

Enter

Shift+Spacebar

Right-click on overview bar (during playback)

STOP

Stop playback and return the cursor to its position prior to playback.

Shortcut:

Spacebar (during playback)

GO TO START

Move the cursor to the start of file.

Shortcut:

Control+Home

REWIND

Pressing this button moves the cursor backwards, take by take, in the current sound file.

FORWARD

Pressing this button moves the cursor forward, take by take, in the current sound file.

GO TO END

Move the cursor to the end of file.

Shortcut:

Control+End

PLAY NORMAL MODE

Sets playback to *Normal* mode. When *Play* is selected while in this mode:

- If there is no data selected, playback occurs from the cursor to end of file.
- If there is data selected, playback occurs from the beginning of the selection to the end of the selection.

Shortcut:

To switch between playback modes, use *Control+Spacebar*.

PLAY LOOPED MODE

Sets playback to *Looped* mode. When *Play* is selected while in this mode:

- If there is no selection, the entire sound file is played in an endless loop.
- If there is a selection, the selection is played in an endless loop.

Shortcut:

To switch between playback modes, use **Control+Spacebar**

REGIONS LIST

The *Regions List* is used to store region and marker positions in a file. (To view and edit the *Regions List*, display it first by selecting it from the *View* menu.)

ADD

Use this dialog to add a selection to the *Regions List*.

TYPE**(MARKER/REGION)**

A *Marker* is a single point, a *Region* is a start and end point with an associated length.

START, END, LENGTH, INPUT FORMAT

Use to change the selection. Sound Forge XP automatically fills in the values depending on your selection or cursor position. The *Input Format* determines the recording format for the *Start*, *End*, and *Length* of the file.

Shortcut:

R to create a regions

M to create a marker

Time Ruler shortcut menu

Region Tag shortcut menu

Region List shortcut menu

Press **Enter** when a region in the *Regions List* is selected

Double-click on a region in the *Regions List*

Drag and drop selection to *Regions List*

DELETE

Use this function to delete a region from the *Regions List*.

Shortcut:

In the *Regions List*, select a region and press **Delete**

Region Tag shortcut menu

EDIT

Use this function to modify a region in the *Regions List*.

TYPE

(MARKER/REGION)

A *Marker* is a single point, a *Region* is a start and end point with an associated length.

START, END, LENGTH, INPUT FORMAT

Use to change the selection. Sound Forge XP automatically fills in the values depending on your selection or cursor position. The *Input Format* determines the recording format for the *Start*, *End*, and *Length* of the file.

Shortcut:

Region Tag shortcut menu

Region List shortcut menu

Press *Enter* when a region in the *Regions List* is selected

Double-click on a region in the *Regions List*

REPLICATE

Use this function to create a new copy of the marker/region.

Shortcut:

Region List shortcut menu

UPDATE

Use this function to modify the current marker/region location in the *Regions List* to correspond with the current cursor selection in the wave file.

Shortcut:

Region Tag shortcut menu

Region List shortcut menu

CLEAR

Use this function to remove all markers/regions from the *Regions List*. This action will also clear the *Playlist*.

COPY ONTO CLIPBOARD

Use this function to copy the text of the *Regions List* onto the clipboard for use with a text editor. Excellent for making a hard copy of the *Regions List*.

Shortcut:

Region List shortcut menu

ACID LOOPING TOOLS

HALF SELECTION

Halve the currently selected area.

Shortcut:

Semi-Colon

DOUBLE SELECTION

Doubles the current selection.

Shortcut:

Apostrophe

SHIFT SELECTION LEFT

Shifts the highlighted portion of a track left the exact distance of the highlighted selection.

Shortcut:

Less Than Symbol

SHIFT SELECTION RIGHT

Shifts the highlighted portion of a track right the exact distance of the highlighted selection.

Shortcut:

Greater Than Symbol

THE ROTATE AUDIO

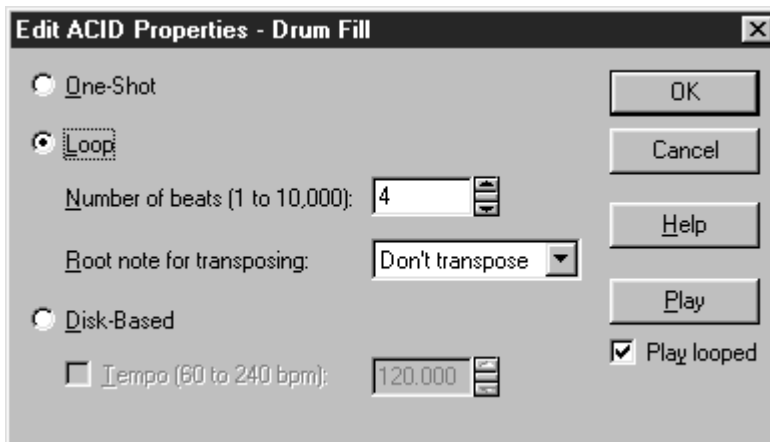
The selected audio at the beginning or end of the file is moved to the other end of the file.

Shortcut:

Colon

EDIT ACID PROPERTIES

Use this menu option to change ACID specific information in the wave file.



ONE-SHOT

One-Shots do not stretch with tempo or change pitch with the ACID project's key. Sounds such as cymbal crashes and vocal samples are usually played as One-Shots.

LOOP

Loops stretch with tempo, and may also change pitch with the ACID project's key. Loops are the most common types of samples used in ACID.

NUMBER OF BEATS

This option determines the length, in beats, of the Loop. If a 16-beat Loop is specified as an eight beat Loop, it will play twice as fast as it should in ACID. You can type a new length number directly in the field, or use the up and down arrows to the right of the field to change the length number.

ROOT NOTE FOR TRANSPOSING

This option determines the root note that ACID will use to pitch the Loop to the project key. If the root note is A, and the project key is C, the Loop will be transposed up three semitones. You can change the note by clicking on the down arrow to the left of the field and clicking on a new root note in the list.

DISK-BASED

Disk-Based files can stretch with tempo, but will not change pitch with the ACID project's key. Long files like vocal tracks are usually considered Disk-Based.

TEMPO

Disk-Based tracks can stretch to the tempo of the project, but the original tempo must be specified. If a tempo is not specified, the Disk-Based track will not stretch.

EDIT FRAME RATE

Use this dialog to change the *Frames per second* value used by Sound Forge XP for status information when using *Absolute Frames* or *Time & Frames* format. The included presets are there for your convenience. You can manually enter the frame rate below.

SET FRAME RATE TO:**HALF NTSC VIDEO (14.985 FPS)**

This is one half of the standard rate for video broadcasts.

NTSC VIDEO (29.970 FPS)

This is the standard rate for video broadcasts.

RED BOOK DIGITAL AUDIO (75.000 FPS)

When recorded to CDs, audio tracks are divided into frames, which occur at about every 8 ms. When editing a sound file that will end up on an audio CD, Red Book Digital Audio ensures that the start and end of a selected audio track will concur with the Audio CD's frame architecture.

SMPTE NON-DROP (29.970 FPS)

This is the same as NTSC video.

VIDEO FOR WINDOWS DEFAULT (15.000 FPS)

Default rate used by Video for Windows AVI files.

FRAMES PER SECOND**(1 TO 1,000)**

Number of frames per second used. You can select a preset from the list above or manually enter a value.

EDIT TEMPO

Use this dialog to automatically calculate the musical tempo (*Beats per minute*) from the current selection.

To use *Edit Tempo*, first highlight a selection in the waveform display. The selection made should be equal in size (or an integer multiple) to the length of a beat or measure. The easiest way to tune a selection to be exactly one measure long is to play the selection looped and change the selection points until a constant downbeat is heard.

Sound Forge XP uses the current tempo to display measures in the *Time Ruler*.

TYPE**(BEAT/MEASURE)**

Choose whether the current selection in the waveform display is one beat or one measure long.

START, END, LENGTH, INPUT FORMAT

Determines the selection used to calculate the tempo based on the *Input Format*.

BEATS PER MEASURE**(1 TO 32)**

Use to specify the number of beats in a measure when selecting a measure (e.g., 4 for most pop music). It can also be used to specify beats per selection length if the selection is larger than one measure.

BEATS PER MINUTE**(1.0 TO 1000.0)**

Sound Forge XP calculates this tempo value depending on your selection length, selection type (*Measures or Beats*), and Beats per Measure.

The default tempo (Default: 120) can be changed on the Status page of the Preferences folder (Options menu).

NOTE**CENTER CURSOR**

Selecting this item will center the display so that the cursor appears in the center of the data window. This item does not actually move the cursor to a new position in the data window, it redraws the display so that you will now see the areas of the sound file equally on either side of the cursor. If the cursor does not seem to center when selecting this, it is because the cursor is either very close to the beginning or end of the sound file, and therefore cannot be centered.

If you have a data selection, you can switch the cursor between selection points using Home and End. You can also switch the cursor between selection points by holding the Control key while selecting the Go to Start or Go to End buttons in the Playbar or Transport toolbar.

NOTE**Shortcut:****C**

DROP MARKER

The *Drop Marker* command is a way to mark positions in a sound file. You can drop a marker at the current cursor position while editing or on the fly during file playback.

Markers can also be created by pressing 'M' on the keyboard. Markers can be quickly selected from the list in the *Go To* dialog located in *Edit* menu. Also, markers are placed in the *Regions List* for quick playback.

NOTE

There is usually a very small delay between the time when you select Drop Marker and when the marker is actually created. Using the keyboard shortcut 'M' gives the fastest response, and thus the highest accuracy.

Depending on the sound card you are using, there might be an offset error between what you hear and where the cursor is located. To correct this, go to the *Wave* page in the *Preferences* folder (*Options* menu) and use the *Play position bias* to correct for the sound card driver's offset error.

NOTE

*Some sound cards do not return position information to Sound Forge XP very efficiently. If the cursor moves in large chunks during playback, check the *Play position bias* or *Interpolate play position* for inaccurate devices between fields options on the *Wave* page in the *Preferences* folder (*Options* menu).*

CREATE REGION

Use this function to create a new region in the *Regions List* from the current selection.

Shortcut:

R

MARK IN

This item lets you mark the start (or “in point”) of a new selection while the sound file is playing back. You can also use this as a method of marking the in point of a new selection while editing by moving the cursor to where you want the selection to start. This is a good way to accurately set the start of a selection. For greatest accuracy you should use the keyboard shortcut key '[' when *Marking In* during playback.

If there is a discrepancy between what you hear and the cursor position on screen, use the Play position bias or Interpolate play position for inaccurate devices between fields options on the Wave page in the Preferences folder (Options menu).

NOTE

Shortcut:

[(left square bracket)

MARK OUT

Use this function to create a mark out point of a new selection. *Mark In* and *Mark Out* are used to determine a selection, and can be used during playback. For greatest accuracy you should use the keyboard shortcut key ']' when marking out during playback.

If there is a discrepancy between what you hear and the cursor position on screen, use the Play position bias or Interpolate play position for inaccurate devices between fields options on the Wave page in the Preferences folder (Options menu).

NOTE

Shortcut:

] (right square bracket)

TOGGLE SELECTION

By using the 'S' key (or this menu item), you can toggle back and forth between the last selection and last cursor position. For instance, you may be setting the cursor in various places while navigating throughout a sound file. If you then hit 'S', the last selected region will immediately return to the display.

Shortcut:

S

UNDO/REDO HISTORY

CLEAR

Use this function to erase the temporary files created in the undo history for the active file. These files do take up disk space, so you might want to periodically clear them when you are sure that you don't want to undo any of your previous changes. This function only affects the current sound file.

CLEAR ALL

This command will clear the undo histories for all open sound files. *Clear all* affects all of the opened sound files. After doing this you will be unable to undo changes you have made to all modified sound files.

REBUILD PEAK DATA

This function recalculates the peak data file for the active data window. A peak data file is used in displaying a file's waveform without scanning the entire length of the file for the sample amplitudes. This makes screen redraws much faster.

If for some reason you believe that the waveform display is not accurately representing the sound file, you can use this function to force Sound Forge XP to re-scan the entire file. However, under normal circumstances you should never have to do so since Sound Forge XP will always update the peak file after every edit operation and when loading a file.

PROCESS MENU



The Process menu contains commands that perform various standard audio processes.

CONVERT TO 8-BIT

Use this dialog to convert 16-bit sound files to an 8-bit format. Because the signal-to-noise ratio of 8-bit audio is so small (42 instead of 96 dB), it is suggested that the volume of the sound file be maximized by using *Volume* or *Normalize* (Process menu) before performing the conversion.

TRUNCATE

This method of 16- to 8-bit conversion removes the least significant bits of a 16-bit sample. It is the least desirable of the three.

ROUND

When rounding, 8-bit values are mapped to the nearest 16-bit value, thereby slightly reducing the quantization noise.

DITHER (0.01 TO 2.00 BITS)

Dithering is used to reduce the audible effects of quantization noise which are most audible in 8-bit samples. This is accomplished by adding a small amount of noise to the signal to mask the more obtrusive 8-bit quantization distortion.

The dither depth is the amplitude of the added noise in terms of the least significant bits of the sound file. For most cases, a value between 0.5 and 1.2 is sufficient.

N O T E

Use very small amounts of dithering and listen to whether the quantization noise is less obtrusive. Increase the dither amount until the dither noise is louder than the quantization noise.

DC OFFSET

Use this dialog to change the baseline of a sound file. A recorded wave that is not centered around the zero baseline in the waveform display is said to have a DC offset. To correct for offsets, a constant value is added to each sample.

DC offsets are usually caused by electrical mismatches between your sound card and microphone. Glitches and other unexpected results can occur when sound effects are applied to files that contain DC offsets.

AUTOMATICALLY DETECT AND REMOVE

When this option is checked, the DC offset is calculated for each channel individually and then automatically corrected.

ADJUST DC OFFSET BY**(-32,768 TO 32,767)**

Enter the offset value. The offset can be from -32768 to 32,767 for 16-bit data and from -128 to 127 for 8-bit data.

N O T E

An easy way to spot DC offset is to zoom close up to a spot in the sound file containing only silence and see if the silence waveform matches the centerline in the waveform display.

An approximation of the DC offset of the waveform can be obtained by running the *Statistics* function under the *Tools* menu. For example, if a DC offset of 100 exists, then you should apply a -100 DC offset to cancel out the existing offset.

COMPUTE DC OFFSET FROM FIRST 5 SECONDS ONLY (ON/OFF)

When this option is enabled, only the first 5 seconds of a sound file are analyzed when measuring the DC offset. The only time that 5 seconds is not sufficient is if a long fade-in or mute has been applied at the beginning of the file.

FADE

Use a fade to vary the volume of a sound file over time.

GRAPHIC FADE

The *Graphic Fade* dialog allows you to draw a fade envelope that will be applied across the current data selection. Up to 16 envelope points are allowed.

Draw the envelope by pulling the small square boxes (drag points) up or down. The envelope default setting locates the drag points in the upper corners of the wave display (100%). You can create a new drag point by left-clicking on any point of the fade envelope. To delete a drag point, single-click on it with the right mouse button, or double-click on it with the left mouse button. Once you have finished with the envelope, press the *OK* button to apply the fade.

SHOW WAVE

Select this option to draw the current selection's waveform on the envelope graph. This is done automatically if the selection is small. For stereo files, you also have the option of displaying the left, right, or a mix of the two channels.

RESET ENVELOPE

Press this button to return the fade envelope to its default shape.

IN

Use this command to linearly fade a selection from a volume of 0 dB to a volume of -Inf.

OUT

Use this command to linearly fade a selection from a volume of -Inf. to a volume of 0 dB.

GRAPHIC EQ

Use the *Graphic Equalizer* dialog to boost or attenuate selected frequency bands to alter a signal's frequency spectrum.

BAND ATTENUATION/GAIN FADERS **(-60 DB TO 20 DB)**

Each of the ten faders corresponds to the gain or attenuation factor that will be applied to the specified frequency band. The frequency on the bottom of the fader is the center frequency of the frequency band affected by the fader.

The value of the fader affects the frequency band as follows:

- +20 dB Maximum boost
- 0 dB No effect
- 60 dB Maximum attenuation

ACCURACY **(LOW, MEDIUM, HIGH)**

Determines a compromise between filter precision and processing speed. Low precision is not recommended for performing very sharp filtering, when filtering very low frequencies, or when using a high sample rate.

RESET BANDS

Press this button to return the band faders to their default settings.

INSERT SILENCE

Use this dialog to insert a section of silence into a sound file.

INSERT

SILENCE LENGTH

Enter the length of the silence block in seconds.

Start of File

Inserts the silence at the beginning of the file.

End of File

Inserts the silence at the end of the file.

Cursor

Inserts the silence at the current insertion point.

You cannot insert silence to a single channel of a stereo file since the length of each channel must always remain equal.

NOTE

If you wish to shift in time a single channel of a stereo file, you can use the Delay/Echo function (Effects menu) to delay one channel backward or forward in time.

NOTE

INVERT/FLIP

Use this command to invert the sound file at the base line (reverse polarity). Although this does not make an audible difference, it can be useful for matching a sample transition when executing certain pastes or mixes.

MUTE

Use this command to set a selection to a volume of 0 (silence).

NORMALIZE

Use this dialog to maximize the volume of a selection without clipping. The *Normalize* function scans the audio and applies a gain to raise its level to a specified (often very high) value.

NORMALIZE TO

(-60 TO 0 DB)

This value indicates the level to which the sound file will be normalized. For example, when using peaks, if the peak level is -10 dB, and the *Normalize to* setting is set to -3 dB, a constant boost of 7 dB will be applied to the entire file.

When using RMS levels, normalizing to 0 dB means boosting the signal so that it has the same apparent loudness as a 0 dB square wave, meaning incredibly loud. If you were to do so, all of the dynamic range of the signal would be squashed and all the peaks would either be clipped or seriously compressed (see below). The lesson is, normalizing a peak to 0 dB is all right, but normalizing RMS to anything above -6 dB is playing with fire.

PAN

GRAPHIC

The *Graphic Pan* dialog allows you to draw a pan envelope that will be applied across the current data selection. You can create up to 16 envelope points.

Draw the envelope by pulling the small square boxes (drag points) up or down. The envelope default setting locates the drag points at the center on each side of the wave display. You can create a new drag point by left-clicking on any point of the fade envelope. To delete a drag point, single-click on it with the right mouse button, or double-click on it with the left mouse button. Once you have finished with the envelope, press the OK button to apply the pan.

PROCESS MODE

Pan (preserve stereo separation)

Allows you to perform right and left channel panning effects without mixing the channels together. This is used to simulate left/right positioning of stereo recordings.

Pan (mix channels before panning)

Allows you to perform right and left channel panning effects by first mixing the two channels and then changing the volume between channels.

OUTPUT GAIN

The gain applied to the signal after processing.

SHOW WAVE

Check this box to draw the current selection's waveform on the envelope graph. This is done automatically if the selection is small. For stereo files, you also have the option of displaying the left channel, right channel, or a mix of the two channels.

RESET ENVELOPE

Press this button to return the pan envelope to its default shape.

LEFT TO RIGHT

Select this option to create a smooth panning effect from the left channel to the right. If the original source data is mono, Sound Forge XP automatically converts it to stereo.

RIGHT TO LEFT

Select this option to create a smooth panning effect from the right channel to the left. If the original source data is mono, Sound Forge XP automatically converts it to stereo.

RESAMPLE

Use this dialog to change the sampling rate of an existing sound file.

NEW SAMPLE RATE (2,000 TO 96,000 HZ)

Sample rate to which the sound file will be converted.

APPLY AN ANTI-ALIAS FILTER DURING RESAMPLE (ON/OFF)

Apply an anti-aliasing low-pass filter to the sound file before resampling when changing to a lower sampling rate. Since the maximum frequency that can be represented by a particular sample rate is one-half of the sampling rate (the Nyquist frequency), high frequencies in a sound file cannot be represented if the sound file is resampled to a lower sampling rate. Therefore, when changing to a lower sampling rate, if the sound file has a strong high-frequency content, anti-aliasing should be used to prevent these high frequencies from becoming low-frequency distortion.

SET THE SAMPLE RATE ONLY (DO NOT RESAMPLE) (ON/OFF)

If this option is checked the playback rate is changed without resampling the data. This means that the original pitch of the file is not preserved. When converting between two very close sample rates and speed is of the essence, this option can be turned on.

INTERPOLATION ACCURACY

(1 - 4)

The Interpolation Accuracy parameter determines the complexity of the method used during the resampling process. The audible difference between the different values can be subtle without the use of test tones and is most apparent in high frequencies.

In general, a setting of 1 is more than adequate for general purpose audio. Settings of 2 and 3 are good for high-end audio. Setting this parameter to 4 forces some heavy duty number crunching (i.e., slow processing) but produces very near perfect results, good for audiophiles and audio researchers.

N O T E

Resampling data consists of changing the number of recorded samples per second. When changing to a higher sample rate, extra samples are interpolated and the file size increases. When changing to a lower sample rate, some samples are removed and the file size decreases.

REVERSE

Use this command to reverse a selection.

SMOOTH/ENHANCE

Use this dialog to add or remove high frequency content in a sound file selection.

The *Smooth* function will smooth out fast-changing transients in a sound and is useful for removing glitches.

The *Enhance* function boosts the very highest frequencies (close to the Nyquist rate) in the sound file, making the sound file sound more vivid. It is useful for compensating for the effects of downsampling or for bringing out very fast transients in a sound file

OPERATION

(-5 TO 5)

Determines the amount of smoothing (high frequency attenuation) or enhancement (high frequency boost) is applied to the sound file.

For a very drastic high frequency boost or cut, repeat the effect 2 or 3 times with the amount set to either limit.

NOTE

Note that since the *Enhance* function boosts frequencies near the Nyquist rate, the current sample rate will determine what frequencies will be affected. At 44,100 Hz, the effect can be very subtle (unless you repeat it a few times until your ears ring).

SWAP CHANNELS

Select this option to exchange the contents of the right and left channels of a stereo recording.

TIME COMPRESS/EXPAND

The *Time Compress/Expand* dialog changes the duration of a sound file without altering the pitch.

MODE

Selects the algorithm used to process the sound. The modes have been labeled for suggested uses, but do not assume that one mode will not work well with a certain type of sound. Depending on the source sound, different modes can vary the resulting quality drastically, so experimenting with all modes is suggested. In general, the music setting will work with the largest variety of material.

Check the bottom of the dialog for a summary of your choices. You should be able to achieve excellent results for ratios between 75% and 115%. Beyond this range, you will start to hear artifacts such as echoes, flanging, or drop-outs. Running the process a number of times using small increments (like 105%) will create different effects than processing all at once with a large time change.

FINAL LENGTH (50% TO 500% OF ORIGINAL LENGTH)

Desired length of the selection.

N O T E

You cannot perform this function to a single channel of a stereo file since the length of each channel must always remain equal.

To change the *Original tempo* displayed at the bottom of the dialog, you must go to the *Edit Tempo* dialog (Special menu).

BLEND EDGES WITH ADJOINING DATA (ON\OFF)

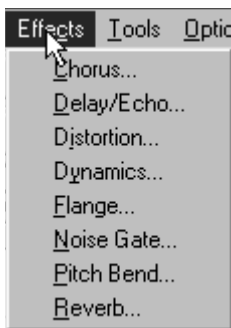
When this option is turned on, the beginning and end of the selections will be crossfaded with the original sound data. This is used to minimize glitching.

VOLUME

Use this dialog to change the volume of a selection.

GAIN (-INF. TO 20 DB)

Select a *Gain* amount from -Inf. to +20 dB. A value of negative infinity corresponds to a mute (0%). Negative decibel values lower the volume (attenuation). Positive values are used to raise the volume (boost).

EFFECTS MENU

The Effects functions allow you to apply different special effects to the sound data. Most of the functions can be applied to single channels within stereo files as well as areas selected within the file.

CHORUS

The Chorus effect creates the illusion of two or more sound sources playing together. This is done by adding a pitch-modulated and delayed version of the input signal to the unprocessed input signal. The effect simulates the variances in pitch and timing that occur naturally when two or more people try to play or sing the same thing at the same time.

Use the Chorus dialog to choose between five preset chorus effects: Light, Heavy, Vibrato, Reverberant, and Echo-Vibrato.

DELAY/ECHO

Use the Delay/Echo dialog to add a delayed copy of the sound signal to the file. A single delay or decaying multiple delays can be added before or after the sound signal.

DRY OUT (-INF. TO 0 DB)

Amount of unprocessed signal mixed into the output.

DELAY OUT (-INF. TO 0 DB)

Amount of delayed signal mixed into the output.

MULTIPLE DELAYS/ECHOES (ON/OFF)

When selected, multiple delayed copies are added to the file by using feedback (delaying the delayed signal, and so on), which creates a decaying echo effect. When off, a single delayed copy is added.

PRE-DELAY/ECHO (ON/OFF)

When on, the delayed copy is added before the sound (as heard in the *Twilight Zone*). When off, the delayed copy is added after the sound, as heard in everyday life echoes.

DELAY TIME (0.00001 TO 5.0 SECONDS)

Determines the amount of time between the delayed copy and the original sound. Also, if *Multiple delays/echoes* is checked, subsequent echoes occur at intervals specified by the *Delay time*.

DECAY TIME (0.00001 TO 20.0 SECONDS)

Determines the time it takes the multiple echoes to become nearly inaudible. Technically speaking, this is the time it takes an echo to decrease in amplitude by a factor of 30 dB. If the *Decay time* is less than the *Delay time*, no echo will be created.

You can also use *Delay/Echo* to shift one channel of a stereo file backward or forward in time. For example, if you have a file with music in the right channel and voice in the left, make a selection in only the left channel around the voice. Set the following parameters: *Dry out level* at 0%, *Delay out* 100%, no *Multiple delays/echoes*, no *Pre-delay/echo*. You can then use the *Delay time* parameter to determine the time shift. If you want to shift the vocals backward in time, check the *Pre-delay* check box.

To simulate a stereo sound from a mono file, copy the sound to both left and right channels of a stereo file and then do a very small time delay of a single channel (*Dry out level* at 0%, *Delay out level* at 100%, no *Multiple delays/echoes*, no *Pre-delay/echo*). This simple technique often works in making the sound have a more realistic stereo image. When a sound wave comes from your side, your right and left ears receive sounds at different times, which is what this effect simulates.

DISTORTION

The *Distortion* effect can simulate the overloading of an amplifier or mangle a waveform into submission. Use the *Distortion* dialog to select from five preset distortion effects: *Fuzz*, *Limiters*, *Grunge*, *Soft Clip*, and *Hard Clip*.

DYNAMICS

Dynamics processing is used to change overall volume levels within a sound file. Compression affects the dynamic range of the sound file by varying the gain as a function of the input sound level.

A compressor lowers the dynamic range of a signal by reducing the level of high volume signals and applying an overall gain to raise the level up again. Compression is often used in vocals and music to get even volume levels which often results in a smoother, fuller sound.

THRESHOLD LEVEL **(-60 TO 0 DB)**

Signal level that differentiates the *Attack* and *Release* modes. In a simple compressor or gate, the threshold is the level at which the gain begins to deviate from 1.

RATIO **(1:1 TO INF.)**

Ratio of input to output levels above the *Threshold*. This *Ratio* determines how much a signal above the *Threshold* will be boosted or faded as a function of its level. When changing the *Ratio*, all points above the *Threshold* move closer or further away from the *No Gain* line.

ATTACK TIME **(0 TO 500 MS)**

Time, in milliseconds, required for the gain to change from a pre-threshold level to a post-threshold level.

RELEASE TIME **(0 TO 2,000 MS)**

Time, in milliseconds, required for the gain to change from a post-threshold level to a pre-threshold level.

AUTO GAIN COMPENSATE **(ON/OFF)**

When on, a gain is applied during processing to try to keep the maximum input and output levels constant. In general, this gain will be equal to the highest envelope point in the graph. You can still use the *Output gain* control to fine tune the overall gain.

For best results, very low frequencies (below 20 Hz) present in a sound file should be removed before applying the Dynamics functions. This makes it easier to monitor audible frequencies while compressing.

FLANGE

The flanging effect is heard in many 60s and 70s recordings. It is the result of mixing a modulated delay signal with the original signal to create a sweeping sound much like an airplane taking off. Use the *Flange* dialog to choose between five preset effects: Slow, Medium, Fast, Warble 1, and Warble 2.

NOTE

Flange effects are best heard with long, sustaining sounds so that the entire sweep can be heard.

NOISE GATE

The *Noise Gate* dialog removes signals below a set threshold. It's used to remove noise from silent breaks in a sound file.

THRESHOLD LEVEL

(-INF. TO 0 DB)

Signals below this level will be removed from the sound file. Zero dB is a very high level, while -30 dB is very low. Noise levels are usually around -20 dB.

To get an estimate of the noise level, select a region of silence (which also contains noise) and run the *Statistics* tool. The maximum value (positive or negative) shown is a good estimate of the threshold noise level required. For example, if the maximum positive value is -50 dB and the maximum negative value is -45 dB, use a number slightly higher, maybe -40 dB, as the noise threshold level.

ATTACK TIME

(1 TO 500 MS)

Time it takes the gain of the gate to change from zero up to one once the level rises above the threshold. The attack time is best kept to a minimum if percussive attacks are to be preserved. Larger attack times make sounds slowly swell up in volume.

RELEASE TIME

(1 TO 2,000 MS)

Time it takes the gain of the gate to change from one down to zero once the level falls below the threshold. The release time is usually kept large to allow for natural sounding decays, otherwise long decays will be cut off.

PITCH BEND

Pitch Bend is used to draw an envelope that corresponds to increasing or decreasing the pitch of a sound file over time.

ENVELOPE (2 TO 16 POINTS, -RANGE TO +RANGE)

Specifies *Pitch Bend* over time. The vertical axis represents pitch change, with zero being no change. The horizontal axis represents the length of the selected region.

Click the left mouse button to define a point and drag to change its position. Click the right mouse button over an existing point to remove the point. You can create up to 16 envelope points.

RESET ENVELOPE

This button removes all points except the outermost two.

RANGE (-24 TO 24 SEMITONES)

Maximum and minimum pitch change in *Semitones* (half-steps). Example: A range of twelve half-steps (one octave) allows an increase or decrease of the pitch by an octave.

SHOW WAVE

Select this check box to draw the waveform of the current selection on the envelope graph. This is done automatically if the selection is small. For stereo files, you also have the option of displaying the left channel, right channel, or a mix of the two channels.

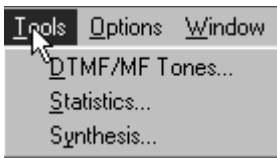
Pitch Bend is accomplished in the same manner as changing the playback speed on a tape deck. Therefore, the length of the file will be changed.

NOTE

REVERB

Reverb simulates various acoustic spaces. It consists of early reflections, which are the first reflections that arrive back to your ear, and the reverb itself. Use the *Reverb* dialog to choose from five preset reverberation effects: Medium room, Small hall, Bright hall, Cathedral, and Metal tank.

TOOLS MENU



The Tools menu contains an assortment of utilities for various purposes.

DTMF/MF TONES

Use this to generate the standard dial tones used by the telephone companies.

DIAL STRING

Use this to enter the phone number to be generated along with any necessary pause characters. Unknown characters will be ignored.

AMPLITUDE

(-INF. TO 0 DB)

Peak level of the waveform.

tone style to generate

DTMF

Dual Tone Multi-Frequency signals are used by the standard push-button phones. It uses combinations of 679, 770, 852, 941, 1209, 1336, 1477, and 1633 Hz sine waves.

MF

CCITT R1 signals are used internally by the telephone networks. They are generated by a combination of 700, 900, 1100, 1300, 1500, and 1700 Hz sine waves.

SINGLE TONE LENGTH (0.001 TO 2 SECONDS)

Output length of individual tones.

BREAK LENGTH (0.001 TO 2 SECONDS)

Length of the silence between tones.

PAUSE LENGTH (0.001 TO 5 SECONDS)

Length of silence to insert when the pause character is found.

FADE THE EDGES OF EACH TONE

When on, the tones are faded in and out a few milliseconds to prevent glitching.

PAUSE CHARACTER

Character which when present in the dial string will cause a pause between successive tones.

INSERT NEW TONE SEQUENCE AT (CURSOR, START OF FILE, END OF FILE)

Point where the generated waveform will be placed within the existing sound file.

STATISTICS

This tool displays statistical information about the selected sound file.

CURSOR POSITION

This indicates the cursor position in samples from the start of the sound file.

SAMPLE VALUE AT CURSOR

This value represents the instantaneous amplitude at this position.

For 16-bit sound files, the range of values is -32,768 to 32,767. For 8-bit sound files, the range of values is -128 to 127.

MAXIMUM/MINIMUM POSITION AND SAMPLE VALUE

Maximum and minimum sample values and the location, in samples, where they occur.

This is useful for determining if any clipping occurs in the sound file. It can also be used to determine the noise level of a signal for use on the Noise Gate effect. For example, to find the noise amplitude, run the *Statistics* function on a region of noisy silence.

RMS POWER

Root Mean Square of the sample values relative to the RMS value of a maximum-amplitude square wave (the loudest possible recording).

When used on short intervals, this relates to the volume level of the sound file. However, if used on a large selection with large volume variation, this value becomes less meaningful.

In Sound Forge XP, the value of 0 dB corresponds to a maximum amplitude square, not sine wave. A maximum value sine wave will read at -3.0 dB.

AVERAGE VALUE (DC OFFSET)

This is a sum of all of the sample values in the selected region divided by the number of samples. If non-zero, this usually indicates that there is a DC offset in the recording process.

ZERO CROSSINGS

Times per second that the waveform changes from a negative value to a positive value. This value can be used as a rough estimate of the frequency of the sound data for very simple waveforms.

SYNTHESIS

Use the Synthesis dialog to generate a simple waveform of a given shape, pitch, and length.

AMPLITUDE (-INF. TO 0 DB)

Peak level of the waveform to be generated. When generating Noise, the amplitude is affected by the cutoff frequency selected.

WAVEFORM SHAPE (SINE, SQUARE, SAW, TRIANGLE, NOISE, ABSOLUTE SINE)

Shape of a single period of the waveform.

LENGTH (0.001 TO 60.0 SECONDS)

Output length of the generated waveform.

FREQUENCY (0.01 HZ TO 11,025 HZ)

Frequency of the waveform.

When creating noise, the frequency specifies the low-pass cut-off frequency. For white noise, the frequency must be set to its maximum available setting.

Note that aliasing occurs with many of these waveforms when using high frequencies because they are not band-limited.

INSERT NEW WAVEFORM AT (CURSOR, START OF FILE, END OF FILE)

Point where the generated waveform will be placed within the existing sound file.

OPTIONS MENU



STATUS FORMAT

The current Status Format determines how Sound Forge XP displays position and length information for the waveform in the active data window.

SAMPLES

Use this option to set the status format to samples.

TIME

Use this option to set the status format to show Hour:Minutes:Seconds:Milliseconds.

SECONDS

Use this option to set the status format to show seconds with six decimal place precision.

TIME & FRAMES

Use this option to set the status format to Hour:Minutes:Seconds:Frames. The frame rate is adjustable from the *Edit Frame Rate* dialog (Special menu). In this mode, the hour, minutes, and seconds are in real time, independent of the frame rate.

ABSOLUTE FRAMES

Use this option to set the status format to show frames and fractions of a frame.

MEASURES & BEATS

Use this option to set the status format to show Measures:Beats.Quarter notes.

SMPTE NON-DROP

Use this option to set the status format to SMPTE Non-Drop (30 or 29.97 fps). The standard rate for SMPTE Non-Drop when synchronizing to video is 29.97. However, in music applications, a rate of 30.00 is often used.

When using a frame rate of 29.97, the time displayed will be different than real world time because 30 frames are still 1 second.

NOTE

SMPTE DROP

Use this option to set the status format to SMPTE Drop (29.97 fps). Frames will be dropped at specific points in time to ensure that the hours and minutes displayed stay synchronized to real world time.

SMPTE EBU

Use this option to set the status format to SMPTE EBU (25 fps). This is the standard rate used by European television.

SMPTE FILM SYNC

Use this option to set the status format to SMPTE Film Sync (24 fps), which is a common slower film rate.

ANNOTATIONS

The names of markers and regions can be shown on the waveform display, along with dotted lines that run the entire height of the window.

MARKER NAMES

Displays marker names on the waveform display.

MARKER LINES

Displays dotted lines on the waveform display showing where markers exist.

REGION NAMES

Displays region names on the waveform display.

REGION LINES

Displays dotted lines on the waveform display showing where regions exist.

VIDEO

These options affect the *Video Preview* window and the video strip above the ruler.

COPY CURRENT FRAME

Enabling this option will copy the frame corresponding to the current cursor location to the clipboard.

WHITE, BLACK OR DEFAULT BACKGROUND

This option selects the color used surrounding frames in the *Video Preview* and video strips. The default color can be chosen from the *Preferences* folder (Options menu).

ANIMATE VIDEO STRIP

When this option is turned on, the video strip above the waveform display will come to life at the current cursor or play position. This feature is frame accurate, meaning that when you move the cursor, the correct frame corresponding to the cursor position will be displayed instead of the static overview frame.

When off, the video strip always shows the frame that corresponds to the left edge of each image in the video strip.

NUMBER FRAMES

Turn this on to show the frame number at the bottom left-hand corner of the video windows.

STRETCH TO WINDOW

Turn this option on to cause each *Video Preview* frame to fit exactly into the *Video Preview* window. This mode is generally the slowest because resizing a frame by non-integral fractions requires many calculations.

INTEGRAL STRETCH

When this resize mode is enabled, the *Video Preview* frame will only be stretched by integral amounts. This is usually the fastest mode.

PRESERVE ASPECT

Check this resize option when you want the original aspect ratio (horizontal vs. vertical size) of the video to be preserved.

PASSIVE UPDATE

Checking this option will reduce the overhead needed to update the *Video Display* window. When on, the *Video Display* will only be updated when the processor is idle, which in slower computers is much less frequent. This will help to keep the audio from skipping when a computer can't update video frames fast enough.

SCROLL PLAYBACK

Checking this option makes the data window scroll automatically during playback. When the cursor moves off of the current window it will quickly scroll to show another full window of data.

Shortcut:

F6

DRAG AND DROP SNAPPING

This command toggles on and off the ability to snap to objects when dragging and dropping from window to window. With this on you can snap to major time ticks on the *Time Ruler* and cursor positions.

LOCK REGION LENGTH

Use this to have the length of a region remain constant when changing the start or end time of a region.

Shortcut:

Holding the Shift key down while dragging *Ruler Tabs* also locks the length of a region.

PASTE EVENTS

Enabling this operation will transfer any events such as regions and markers from the source to the destination sound files when pasting, mixing, or crossfading. This occurs when using drag and drop or the clipboard.

If you are pasting data from *Sound Forge XP* to another application, these events may cause problems. Although a well-written application should ignore these events, if you are experiencing clicks at the beginning or end of the data you should disable this option.

PREFERENCES

Many user-configurable options are available in the *Preferences* folder. To select an item, click on the page tab or use the Tab key to activate the page title and use the right or left arrow key to navigate through the pages.

GENERAL

Use to select general user options.

SHOW A TIP OF THE DAY ON STARTUP **DEFAULT: CHECKED**

When this option is enabled, a handy *Tip of the Day* will appear every time you run Sound Forge XP.

ALWAYS ASK FOR REGION AND MARKER NAMES **DEFAULT: CHECKED**

When creating regions, markers, or loop points and this option is turned off, the *Edit Region or Loop* dialog will not automatically appear. A default name based on location will be used.

OPEN DRAG AND DROP SOUND FILES IN DIRECT MODE **DEFAULT: UNCHECKED**

Any files opened by dragging them onto the Sound Forge XP desktop (from outside of the program) will be opened in direct mode when this option is enabled.

OPEN COMMAND LINE SOUND FILES IN DIRECT MODE **DEFAULT: UNCHECKED**

When launching Sound Forge XP from the command line (DOS prompt), if this option is turned on any files in the command will be opened in direct mode. For example, if Sound Forge XP is being launched by another application (such as a multi-track editor), when this option is turned on Sound Forge XP will edit directly on the original file.

DEFAULT TO SLOW SCROLL WHEN DRAG SELECTING **DEFAULT: UNCHECKED**

In some very fast computers, automatic scrolling while selecting is too fast to use accurately. When this options is turned on, drag-selecting will cause a slow scroll.

If you click the right mouse button while selecting, you can toggle slow scroll on or off.

NOTE

WARN WHEN MIX OR CROSSFADE RATES MISMATCH DEFAULT: CHECKED

Enabling this option tells Sound Forge XP to warn you with a dialog prior to mixing or crossfading data having different sample rates. Mixing or Crossfading data of different sample rates may produce unintended results.

ALWAYS OPEN FULL-SCREEN DEFAULT: UNCHECKED

Enabling this option forces Sound Forge XP to always open in full-screen mode. If this option is disabled Sound Forge XP opens in the size and position it was in when it was last closed.

CONFIRM ON CLOSE DEFAULT: UNCHECKED

Enabling this option forces Sound Forge XP to prompt you with a confirmation message box prior to exiting Sound Forge XP.

If you are a system administrator you may want to enable this option for users who are new to Windows, and who may double-click on the close box by accident.

**COMPATIBLE DRAW MODE
(FOR BROKEN VIDEO DRIVERS) DEFAULT: UNCHECKED**

Because Sound Forge XP's drawing routines are highly optimized, they increase the chance of causing little-known video card problems to arise. Some video cards have bugs in their drivers that can make your system lock up when Sound Forge XP tries to draw a waveform. If you experience a system lockup frequently in Sound Forge XP, it is likely that your video card is causing this problem.

Compatible draw mode uses a different method of drawing the waveform that, although not as smooth, puts less stress on the video card. With some video cards, this mode actually increases the draw speed. However, more flashing can occur.

This problem is known to happen with ATI's Mach64 card when using High Color (16-bit) in Windows 95.

**IGNORE FACT CHUNK WHEN OPENING
COMPRESSED WAV FILES DEFAULT: UNCHECKED**

Check this option if you want to ignore the fact chunk when opening compressed WAV files. This option may be useful for compressed WAV files that were created improperly.

SHOW ALL ACM CONVERT FORMATS IN SAVE AS **DEFAULT: CHECKED**

When enabled, Sound Forge XP will enumerate all compression formats available for each ACM compressor. However, this enumeration process can take long on slow machines. For simple ACM codecs (Microsoft ADPCM, IMA ADPCM, etc.), this option is unnecessary (they have only one compression type per input) and could be disabled to speed up the selection of ACM formats.

SHOW FREE STORAGE SPACE ON STATUS BAR **DEFAULT: CHECKED**

When this option is turned on, the total amount of free disk space available on your specified temporary drive is displayed on the status bar.

SHOW SHUTTLE CONTROLS ON DATA WINDOW TRANSPORT **DEFAULT: UNCHECKED**

When enabled, Rewind and Forward buttons will appear on each Data Window's Transport.

SHOW OLE DRAG SOURCE ON DATA WINDOW TRANSPORT **DEFAULT: CHECKED**

When checked, the OLE Drag Source control is displayed on the right side of the status bar in all data windows. This provides a convenient method of creating Sound Forge XP audio objects that can be embedded into other documents. If you do not use this feature and want to reclaim the space for the status bar, simply clear this option.

RECENTLY USED FILE LIST **DEFAULT: ENABLED (2 TO 9)**

This option allows you to set the number of recently used files that will appear in the File menu. If you do not wish to have any files listed in the File menu, clear the check box for this option.

DISPLAY

Use to set your display preferences.

NORMAL ZOOM RATIO **DEFAULT: 1:1 TO 1: 524,288**

Specifies the default zoom magnification when loading a new sound file or using the Zoom Normal command. This allows you to control the maximum data that will be shown in a data window when a file is opened. Higher values show more data on initial file loading.

DEFAULT SOUND FILE WINDOW HEIGHT**DEFAULT: 12**

Specifies the default data window height for a sound file on open.

DEFAULT VIDEO STRIP HEIGHT**DEFAULT: 4**

Specifies the height of the video strip, from small (1 line) to big (25 lines).

COLOR PREFERENCE FOR

The color preferences section allows you set a custom color for a variety of graphics within Sound Forge XP. Each graphic has a default color or you can set a custom color by checking the Custom box and setting the component Red, Green, and Blue of each color.

For each mode of opening sound files, Normal, Direct, and Read Only, you can assign a different color for data window graphics.

Normal: Data Left

Specifies the color used to draw the left channel or mono wave data in each data window.

Normal: Data Left Selected

Specifies the color used to draw the left channel or mono selected wave data in each data window.

Normal: Data Right

Specifies the color used to draw the right channel wave data in each data window.

Normal: Data Right Selected

Specifies the color used to draw the right channel selected wave data in each data window.

Normal: Window Background

Specifies the color used to draw the background of each data window.

Normal: Selected Background

Specifies the color used to draw the background of selected data in each data window.

Normal: Center Line

Specifies the color used to draw the center line of the wave axis.

Normal: -6.0 dB Line

Specifies the color used to draw the line at half volume for the wave axis.

Normal: Play Cursor

Specifies the color of the cursor that is drawn while playing a file.

Direct: Data Left

Specifies the color used to draw the left channel or mono wave data in each data window.

Direct: Data Left Selected

Specifies the color used to draw the left channel or mono selected wave data in each data window.

Direct: Data Right

Specifies the color used to draw the right channel wave data in each data window.

Direct: Data Right Selected

Specifies the color used to draw the right channel selected wave data in each data window.

Direct: Window Background

Specifies the color used to draw the background of each data window.

Direct: Selected Background

Specifies the color used to draw the background of selected data in each data window.

Direct: Center Line

Specifies the color used to draw the center line of the wave axis.

Direct: -6.0 dB Line

Specifies the color used to draw the line at half volume for the wave axis.

Direct: Play Cursor

Specifies the color of the cursor that is drawn while playing a file.

Read Only: Data Left

Specifies the color used to draw the left-channel or mono wave data in each data window.

Read Only: Data Left Selected

Specifies the color used to draw the left channel or mono selected wave data in each data window.

Read Only: Data Right

Specifies the color used to draw the right channel wave data in each data window.

Read Only: Data Right Selected

Specifies the color used to draw the right channel selected wave data in each data window.

Read Only: Window Background

Specifies the color used to draw the background of each data window.

Read Only: Selected Background

Specifies the color used to draw the background of selected data in each data window.

Read Only: Center Line

Specifies the color used to draw the center line of the wave axis.

Read Only: -6.0 dB Line

Specifies the color used to draw the line at half volume for the wave axis.

Read Only: Play Cursor

Specifies the color of the cursor that is drawn while playing a file.

Regions: Marker

Specifies the color used to display marker tabs on the data window *Time Ruler*.

Regions: Section

Specifies the color used to display region tabs on the data window *Time Ruler*.

Sample Loop: Sustaining

Specifies the color used to display sustaining loop tabs on the data window Time Ruler.

Sample Loop: Release

Specifies the color used to display release loop tabs on the data window Time Ruler.

Record Prepared

Specifies the color used in the *Record* dialog to indicate record prepared status.

Record Pre-roll

Specifies the color used in the *Record* dialog to indicate record pre-roll status.

Record Recording

Specifies the color used in the *Record* dialog to indicate recording status.

Graph Axis

Specifies the color used when displaying an axis in a graph.

Graph Fill

Specifies the color used when displaying a filled graph.

Graph Fill Alternate

Specifies the color used when displaying multiple filled graphs such as in *Multi-Band Dynamics*.

Envelope Axis

Specifies the color used when displaying the axis of envelope controls.

Envelope Highlight

Specifies the color used when displaying a highlight in envelope controls.

EDITING

Use this to set preferences related to editing and undo operations.

LIMIT NUMBER OF UNDO BUFFERS TO (0 TO 999) DEFAULT: 100

If this is checked, it determines the maximum number of *Undo* operations that will be saved before they start to get deleted. Having many *Undo* operations available will use a lot of hard-disk space.

LIMIT NUMBER OF REDO BUFFERS TO (0 TO 999) DEFAULT: 100

If this is checked, it determines the maximum number of *Redo* operations that will be saved before they start to get deleted. Having many *Redo* operations available will use a lot of hard-disk space.

DEFAULT ALL NEW WINDOWS TO UNDO DISABLED DEFAULT: UNCHECKED

Enabling this option will keep Sound Forge XP from creating undo buffers for any operation that modifies a sound file. You are still able to turn the undo creation on by using the *Disable Undo* command (Edit menu) for any window, but by default no undo buffers will be created.

DRAG & DROP AUTO RISE DELAY (0.1 TO 2.0 SECONDS) DEFAULT: 0.7

Determines the time necessary before a window underneath the cursor becomes active during drag and drop operations.

DISABLE TRIPLE-CLICKING TO SELECT ALL SOUND FILE DATA DEFAULT: OFF

Turn this option on if you don't want Sound Forge XP to select all sound data when you triple-click. You might want to turn this off if triple-clicks are constantly being falsely detected when you make a selection and then try to do a drag operation. Otherwise, lowering Windows' double-click threshold time might help.

FILE

Use this to set preferences related to opening and saving files.

WARN IF SAVE CHANGES THE SOUND DATA DEFAULT: CHECKED

When you save a sound file to a different format, such as doing 16- to 8-bit conversions or compressing audio, you will not hear the conversion's effect on the sound until you re-open the file. If this option is enabled, you will get a message warning of this.

**AUTOMATICALLY RE-OPEN IF SAVE
CHANGES THE SOUND DATA****DEFAULT: UNCHECKED**

If this option is on, when you save a file to a different format Sound Forge XP will save the file and then re-open it. This will happen when you change bit size, channels, or compression format and it will allow you to listen to any changes in sound quality.

**SECTOR ALIGN DATA FOR DIGIDESIGN'S
SESSION 8 WAV FILES****DEFAULT: UNCHECKED**

This option is only necessary if you are using Sound Forge XP to modify files for use with Digidesign's Session 8. Enabling this option forces Sound Forge XP to align the data portion of WAV files on a sector boundary, which is needed when using WAV files with the Session 8.

**SAVE VOC FILES USING NEWEST FORMAT
(16-BIT CAPABLE)****DEFAULT: UNCHECKED**

Prior to Creative Labs' sound boards supporting the playback of 16-bit data, VOC files had no way of storing 16-bit audio data. With the addition of 16-bit playback sound boards to the Sound Blaster line of products, a newer version of the VOC file was created. With this option disabled Sound Forge XP will save all 8-bit files in the old format and all 16-bit files in the new format. With this option enabled it will save all files in the new format. Only enable this option if you have software that requires the new format for 8-bit data.

**OPEN AND SAVE WITH SOUND FORGE XP 3.0
COMPATIBLE REGIONS****DEFAULT: OFF**

Sound Forge XP 3.0 had a minor bug when opening and saving regions in which the total length was off by one sample. Because files were both opened and saved inconsistently with the published standard, this didn't affect anything. Sound Forge XP 4.5 fixes this problem, but in doing so this means that files created with Sound Forge XP 3.0 will have their region length display 1 sample smaller than before.

If this bothers you, turn this option on when opening a file saved in Sound Forge XP 3.0, turn it off, and then save the file. From there on after, the region lengths will not be off by one sample in Sound Forge XP 4.5 (but will be in 3.0!)

PERFORMANCE

Use this to set preferences related to opening and saving files.

TEMPORARY STORAGE FOLDER **DEFAULT: C:\PROGRAM FILES\SOUND FORGE XP**

The specified directory is used to store temporary files used by Sound Forge XP.

Sound Forge XP stores its temporary data in a temporary directory on your hard drive. Using temporary file space allows you to edit very large files and keeps Sound Forge XP from eating up large portions of RAM on your computer. Your temporary directory must have enough space to handle the total size of all files you plan to edit at one time along with space for any clipboard data and undo buffers.

If you change the *Temporary storage folder*, you will have to close Sound Forge XP for the change to take effect.

FREE STORAGE SPACE IN SELECTED FOLDER

Shows the amount of available disk space in the selected folder.

VIDEO DECOMPRESSION MODE **DEFAULT: 8 BITS ALWAYS**

Determines the bits per pixel (color resolution) which will be used by Sound Forge XP when it decompresses video frames before displaying. Note that when a high number of bits is used, the performance demands on your system are higher. The available modes are:

8 bits always

Sound Forge XP will always decompress the video to 8 bits per pixel (256 color).

Best for display

Sound Forge XP will decompress the video to the best format that matches your system's color capabilities.

Full decompress always

Sound Forge XP will always decompress the video to its original bits per pixel when displaying. This is useful if you want to ensure that the video frames you see contain all the color information stored in the file. Also, if you wanted to paste frames to the clipboard, this ensures maximum resolution.

PEAK RATIO DEFAULT FOR NEW SOUND FILES **DEFAULT: 1:256**

When drawing the waveform display, Sound Forge XP will use a peak file instead of scanning all of the data when the zoom ratio is above this level. Lower values allow for faster scrolling at those ratios, but increases the peak file's size. For example, setting this value to 1:128 instead of 1:256 will make the peak file two times larger but will make scrolling at 1:128 faster and scrolling at 1:65536 or higher ratios slower.

To calculate the size of the resulting peak files, you divide the size of the file by the *Peak ratio*. For example, a 100 MB sound file will need a 0.39 MB (100/256) peak file when using 1:256.

WAIT CURSOR ZOOM RATIO THRESHOLD **DEFAULT: 1:512**

Specifies the amount of zoom above which an hourglass cursor will be displayed between data window repaints. If the mouse cursor seems to flicker on and off a lot when redrawing wave data, you may want to increase this value. This value is ignored during playback.

SHOW THE POSITION OF THE PLAYBACK CURSOR **DEFAULT: CHECKED**

When this option is enabled, the *Position* field in the status bar will show the cursor position during playback. Disable this option if you have a very slow computer or video card.

SHOW THE RECORD COUNTER WHILE RECORDING **DEFAULT: CHECKED**

When this option is enabled, the record time will show in the *Record* dialog while recording. Disable this option if you have a very slow computer or video card.

STATUS

Use to select display status options.

DEFAULT SMPTE FORMAT **DEFAULT: NON-DROP (30 FPS)**

Specifies the SMPTE type used when selecting a SMPTE format option from the *Status Bar* shortcut menu.

Non-Drop 30 FPS

Calculates status values using a 30 frames per second SMPTE code.

Drop 29.97 FPS

Calculates status values using a 29.97 frames per second SMPTE code. This is accomplished by dropping two frames every minute except for minutes 00, 10, 20, 30, 40, and 50.

EBU 25 FPS

Calculates status values using a 25 frames per second SMPTE code. This format is the European Broadcast Union time code.

Film Sync 24 FPS

Calculates status values using a 24 frames per second SMPTE code. This format is for standard 24 frames per second film media.

DEFAULT TIME FORMAT**DEFAULT: TIME**

Specifies the time format (time or seconds) used when selecting the Time option from the *Status Bar* shortcut menu.

DEFAULT FRAMES PER SECOND (1 TO 1,000)**DEFAULT: 15.000**

Specifies the default frame rate used to calculate frame values.

Frame values are useful when trying to synchronize sound with animation. Most animation players specify a playback frame rate at which video frames are shown to the user. If you are using an animation that has a frame rate of 15.0 frames per second, you would set the frame rate to 15.0. When status values are shown by Sound Forge XP they will be shown in values of frames. This allows you to find the frame to which a given point in the sound file corresponds.

Frame rates can be any value between 1.0 and 1,000.0 frames per second.

DEFAULT BEATS PER MEASURE (1 TO 32)**DEFAULT: 4**

Specifies the number of beats in each measure for displaying in measures and beats. For example 2/4 time would have two beats per measure.

DEFAULT BEATS PER MINUTE (1 TO 1,000)**DEFAULT: 120.000**

Specifies the number of beats per minute, i.e., the tempo of a song for displaying lengths. For example, a tempo of 120 is 120 beats per minute.

DISPLAY FORMAT FOR SMPTE CODE**DEFAULT: 00:00:00.00**

Specifies how SMPTE values will be formatted for display by Sound Forge XP. Select one of the available preferences from the drop-down list.

TOOLBARS

Use to select which toolbars are displayed on the main screen. A check in the box before the toolbar means that the toolbar is turned on. The following toolbars are available:

STANDARD**DEFAULT: CHECKED**

Contains standard file and edit operations.

TRANSPORT**DEFAULT: CHECKED**

Contains record and play operations.

STATUS**DEFAULT: UNCHECKED**

Contains operations to set the display Status Format.

ACID**DEFAULT: UNCHECKED**

Contains the ACID editing tools.

SHOW TOOLTIPS**DEFAULT: CHECKED**

The Show ToolTips check box turns on or off the help information box displayed next to the mouse when it is held over certain items.

WAVE

Use this page to specify what wave devices Sound Forge XP should use for recording and playback.

The capabilities of these devices may limit you from playing some files.

NOTE**PLAYBACK**

Specifies the device to be used when playing sound data.

Selecting a mapper device such as the *Wave Mapper* or *Microsoft Sound Mapper* allows Windows to select an appropriate device to use for the current sound data.

RECORD

Specifies the device to be used when recording sound data.

Selecting a mapper device such as the *Wave Mapper* or *Sound Mapper* allows Windows to select an appropriate device to use for the current sound data.

INTERPOLATE POSITION FOR INACCURATE DEVICES **DEFAULT: CHECKED**

Specifies whether Sound Forge XP should interpolate the position of the play or record position pointer during playback. If this option is not checked, Sound Forge XP relies on the device driver for the sound card to provide the correct position of the pointer during playback or record.

Many sound card drivers do not report their position accurately. If the play/record position pointer does not move smoothly you should enable this option. You may also want to contact your sound card manufacturer for updated drivers.

If your sound card driver does not have accurate position reporting, your Mark In/Out positions will also be off when dropping markers while playing.

POSITION BIAS (-64 TO 64)**DEFAULT: 0**

Specifies an offset value that Sound Forge XP should add to the position values returned by the sound card wave driver during recording or playback.

Many sound card drivers do not report their position accurately. When you play sounds back, the position of the play pointer may seem to lag or precede the actual sound you are hearing. If this is the case, you may want to adjust this value. Most sound card drivers that report incorrect position give a value ahead of the actual sound.

To remove this bias, start with smaller values and work toward larger ones in increments of 4 (a value of 1 is equal to 512 bytes) until the play position pointer is accurate. Recommended settings are 4, 8, 16, and 32. These settings correspond to the typical bias values for these drivers of -2048, -4096, -8192 and -16384 (negative multiples of 2048) bytes.

If your sound card driver does not have accurate position reporting, your Mark In/Out positions will also be off when dropping markers while playing.

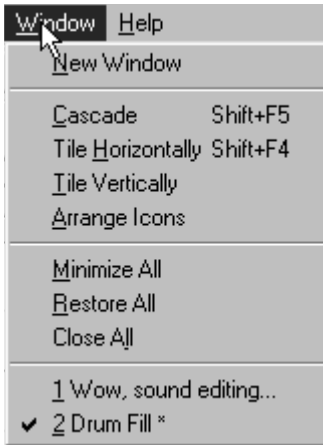
TOTAL BUFFER SIZE (KILOBYTES)**DEFAULT: 512**

Select the amount of RAM you would like to use for buffering sounds during play and record. Using a large value can optimize performance at high sample rates but may also cause a slight delay starting playback.

PRELOAD SIZE (KILOBYTES)**DEFAULT: 0**

Determines the total amount of wave data that will be queued to the sound driver before playback starts.

WINDOW MENU



NEW WINDOW

Use this command to create a new data window that will be given a generic name. This command uses the sound parameters that were set when the New dialog in the File menu was last used.

Shortcut:

Control+Shift+N

CASCADE

Use this command to arrange the data windows so they overlap with the title bar of each window remaining visible.

Shortcut:

Shift+F5

TILE HORIZONTALLY

Use this command to arrange the data windows side by side without them overlapping.

TILE VERTICALLY

Use this command to arrange the data windows top to bottom without them overlapping.

Shortcut:

Shift+F4

ARRANGE ICONS

Use this command to arrange the minimized data icons in the Sound Forge XP workspace.

MINIMIZE ALL

Use this command to minimize all open data windows in the Sound Forge XP workspace.

RESTORE ALL

Use this command to restore all minimized windows to their previous window size and position.

CLOSE ALL

Use this command to close all open data windows in the Sound Forge XP workspace.

N O T E

All open files are listed at the bottom of the Window menu. The active file is indicated by a check mark.

HELP MENU



CONTENTS

Takes you to the online help table of contents.

Shortcut:

F1

SEARCH FOR HELP ON

Search the online help index using key words. Related topics are linked.

KEYBOARD SHORTCUTS

Displays a list of shortcuts – and Sound Forge XP is loaded with them.

TROUBLESHOOTING

Use this before calling the Tech Support line.

TIP OF THE DAY

This command will bring up the *Tip of the Day* pages in the help file. These are helpful and handy tips to increase your productivity with Sound Forge XP.

THE SONIC FOUNDRY HOME PAGE

This is a direct link to our home page on the World Wide Web. Invoking this command automatically launches your default web browser and takes you to the Sonic Foundry Home Page (www.sonicfoundry.com). Here you will find downloadable demos and updates, technical information, and news of what's new with the folks at Sonic Foundry.

You can also send us comments, suggestions, questions, sound files, gossip, whatever...via email from our web page. We'd love to hear how Sound Forge XP is being used and your thoughts on how it can be improved.

ABOUT SOUND FORGE XP

Use this to display pleasantly puzzling information about Sound Forge XP, such as the software license owner, copyright and system information, program version and serial number, and the cool Sound Forge XP logo.

APPENDIX A:

OPTIMIZING SOUND FORGE XP

This appendix contains information on configuring your system to maximize Sound Forge XP's performance. Sections include:

- Hard Drive Use
- Editing in Direct Mode
- Fast File Saving
- Setting up Wave Devices
- Playback Cursor and Record Counter
- Meters
- Background Processing
- Synchronizing Audio and Video
- Crash Recovery

HARD DRIVE USE

Sound Forge XP is a disk-based sound editor, which means that all editing operations are performed on your hard drive rather than in your computer's memory. This allows Sound Forge XP to edit sound files of almost unlimited size. Sound Forge XP also stores undo/redo information and clipboard data on the hard drive.

The drive you specify for *Temporary storage* (on the *Performance* page of the *Preference* folder, Options menu) must have enough free space to store the data for each opened sound file, as well as undo/redo information, and the clipboard. Although this can use a lot of disk space, it allows you to edit long sound files that could never fit into your computer's memory (RAM). Hard drives are also typically much cheaper to add than memory.

Because Sound Forge XP is hard-drive intensive, the faster your disk access, the faster Sound Forge XP will be. The easiest thing to do to improve your performance without buying new hardware is to defragment your hard drive. Over time, and especially with heavy use, a hard drive can become fragmented. This means the data stored on the hard drive gets scattered across the surface of the disk making your files noncontinuous. When files are noncontinuous, the hard drive must jump around to retrieve the data. This jumping around can slow down access to your files and can be very noticeable on older hard drives. Windows 9x comes with a *Disk Defragmenter* utility that can be found in the *System Tools* file in your *Windows Program/ Accessories* folder.

WINDOWS 9X

Choosing system configuration settings other than the default Windows 9x settings can result in reduced performance from Sound Forge XP, as well as Windows 9x. To check these settings, select the *System* icon from Windows Control Panel and click the *Performance* page. *File System* and *Virtual Memory* should both be set to 32-bit. In the advanced settings area of the window, click on *File System*. In the *File System Properties* dialog, the *Hard Disk* tab setting for *Read-ahead optimization* should be set to *Full* and the *Troubleshooting* tab should have all of the settings unchecked.

Select *Graphics* for the *Advanced Graphics Settings* dialog. In most cases this setting should be set to *Full*. If you are experiencing unexplained glitching in your audio playback, try different settings. However, if changing these settings doesn't clear up the problem, change them back.

Finally, select *Virtual Memory* under *Advanced settings* of the *Performance* page. In most cases, you should choose to let Windows 9x handle your virtual memory.

WINDOWS NT

There are no special considerations for Windows NT.

EDITING IN DIRECT MODE

Whenever you open a file in Sound Forge XP, a backup copy is created so that the original file is not affected until you select to save your work. When you open a file as read-only or direct, Sound Forge XP will not create a backup copy of the file, which makes opening files quicker and uses less disk space. In fact, editing in direct mode can make opening a file almost instantaneous. Direct mode can only be used on files that are 16-bit and stored in the Microsoft Wave format.

The first time you open a file in direct mode Sound Forge XP will scan the file to create a peak file. This also allows Sound Forge XP to display the data in the file extremely quickly. This peak file is stored in the same location as the wave file with the same name as the wave file but with the extension *.sfk*. After a peak file is created Sound Forge XP automatically keeps it updated when you edit the file. The only time the peak file may need to be regenerated is if you modify the file with an application other than Sound Forge XP. This allows Sound Forge XP to instantaneously load the file next time you open it.

The only drawback to editing a file in direct mode is that you no longer have the security of a backup file. In most cases this is not a problem, since all changes can be undone (with ample disk space). But if, for some reason, Sound Forge XP terminates improperly, the file would remain in its edited state.

FAST FILE SAVING

When creating a new file Sound Forge XP creates a temporary file that contains all of your new sound data. When you are ready to save the file, Sound Forge XP must copy this data into the file you specify in the *Save As* dialog (File menu). If you are saving the sound data as a 16-bit Microsoft Wave file, Sound Forge XP can make this process almost instantaneous by quickly moving the file rather than copying the data to a new file. In order for this to work, the new file into which you are saving your data must be on the same drive as your temporary storage folder. Therefore, it is recommended that you keep your temporary storage folder on the same drive where you keep most of your sound files. You can set your *Temporary storage folder* on the *Performance* page in the *Preferences* folder (Options menu).

SETTING UP WAVE DEVICES

THE SOUND MAPPER/WAVE MAPPER

Sound Forge XP allows you to choose any installed Windows compatible sound card for playback and recording. It also provides one more option for playback and record called the *Sound Mapper* (depending on your configuration, this may be called the *Wave Mapper*). The *Sound Mapper* is a special device that attempts to select the most appropriate sound card (map) on which to play a sound. If this card is not available, it will translate the sound into a format that can be played on your sound card.

If you are having problems with breakups this may be caused by the overhead introduced when the *Sound Mapper* does format conversions. To check this, make sure that your sound card supports the data format you are playing or recording. The easiest way to do this is to choose a playback and record device that is not the *Sound Mapper*. If Sound Forge XP is able to play and record the sound using the actual sound card's Wave driver, then the *Sound Mapper* is not causing the breakups.

However, if the *Sound Mapper* must be selected to play or record the format that you are having trouble with, then you should convert your sound data to a format that is directly supported by your sound card. This will remove all overhead required to translate the sound data for your sound card.

There is nothing wrong with using the *Sound Mapper* when your sound card directly supports the sound data format. The *Sound Mapper* will pass the data through to your sound card, which requires negligible overhead. For more information on the *Sound Mapper*, refer to Appendix E, *Sound Forge XP and The Microsoft Audio Compression Manager*. The *Sound Mapper* is a component of the Audio Compression Manager (ACM).

TOTAL BUFFER SIZE

The *Total buffer size* option, found in the *Wave* page of the *Preferences* folder (Options menu), specifies the total amount of RAM that should be used for buffering when recording to or playing from the hard drive. For most systems, 512 kb is the recommended size. If you are still experiencing gaps during playback you may want to use more buffering or record at a lower sample rate.

There are some drawbacks to increasing the *Total buffer size*. It requires more of your computer's memory and, if you have set a large *Preload size*, there can be small delays when starting and stopping playback.

PRELOAD SIZE

The *Preload size* option in the *Wave* page (*Preferences* folder, *Options* menu), tells Sound Forge XP how much sound data it should prepare and load into your sound card driver before starting playback. This preloading is performed between the time you press the *Play* button and the time you hear the sound play.

Turning this option on may help skipping (audible gaps) on initial playback of a sound. These gaps usually occur with slow or fragmented hard drives. The trade-off for enabling this option is a slight delay before play begins; the delay time is greater for larger preload sizes. This option does not affect operations other than playing.

Some Windows sound drivers do not support this option correctly. If you are experiencing noise or dropouts at the very start of playback, try disabling this option.

PLAYBACK CURSOR AND RECORD COUNTER

The playback cursor and record counter options in the *Performance* page (*Preferences* folder, *Options* menu) allow you to configure whether or not the numeric counters (position information displayed in status fields) will be updated during playing and recording. If you are recording or playing at high sample rates (44,100 or 48,000 Hz) and are experiencing gapping or skipping problems in the data, try disabling the playback cursor and/or record counters to decrease overhead.

METERS

The *Record Meters* in Sound Forge XP take a small amount of processing overhead during recording. If you hear gaps in the sound while recording and you have the *Monitor* option enabled in the *Record* dialog (*Transport* command, *Special* menu), try turning off the *Record Meters* by clearing the *Monitor* check box.

BACKGROUND PROCESSING

When Sound Forge XP is performing operations that take a long time, such as opening a file or performing audio processing, a *Progress Meter* is displayed on the status bar. While this *Progress Meter* is visible, Sound Forge XP is doing its work. You can cancel the operation at any time by pressing the *Cancel* button to the left of the *Progress Meter*, or you can press the *Escape* key.

All processing performed by Sound Forge XP is done in the background. This means you do not have to wait for Sound Forge XP to finish its work before you can use other applications. If Sound Forge XP is taking a long time to complete an operation you can switch to another application and work on something else. Sound Forge XP will continue its processing task.

If you minimize Sound Forge XP while it is processing, the percentage processed will update in the title of the Sound Forge XP icon. This allows you to keep an eye on Sound Forge XP's progress while using other applications.

Sound Forge XP displays the amount of time required to finish processing an operation in the status bar. This processing time is only an estimate – this value is not intended for accurate profiling. The accuracy of this processing time value is heavily dependent on what other activity is being performed by your computer while Sound Forge XP is working. Using other applications while Sound Forge XP is working can cause the processing time to increase substantially.

SYNCHRONIZING AUDIO AND VIDEO

If you are having trouble synchronizing the audio with your video, there are a few points to keep in mind. If your video has been opened from a slow device, such as a CD-ROM or network drive, then Sound Forge XP may have trouble accurately playing back the audio and video in sync. This happens because video information is streamed at all times from the original AVI file. You should always copy the videos you are working with to a fast hard drive.

After you open an AVI file you may be notified that your video has very few key frames. This is generally representative of tutorial videos captured with a program that saves the video as a Run Length Encoded (RLE) stream with a single key frame. Due to non-linear access requirements of Sound Forge XP, this may result in difficulty with audio synchronization. It is recommended that you save your file with more key frames and re-open it for better performance during digital editing.

Here are a couple of other tips that can help when trying to synchronize the audio and video:

- After assembling or editing the audio you wish to use with your video, place markers during video playback to correspond to any major synchronization points. You can locate a particular frame by dragging the cursor along the audio provided the *Video Preview* window is open or the *Animate Video Strip* option is enabled. After primary locations have been located, double-click and drag your audio to these markers bringing up corresponding dialogs for mixes, pastes, and crossfades.
- Features like *Insert Silence*, *Clear/Delete*, and *Time Compress/Expand* are commonly used to tighten synchronization. Another useful trick is to create a region representing the delta between a video frame and audio event. Then you can enable the *Lock Region Length* option and drag the delta region to a preceding silent section. Use the region as a template for adjusting the audio stream length by either copying and pasting to insert time, or deleting to remove time.

CRASH RECOVERY

If for some reason Sound Forge XP terminates improperly, all the opened and unsaved sound files can be recovered excluding those opened in direct and read-only modes. Unless a file is opened in direct or read-only modes, a temporary file is created and any edits made are stored in this file. When an improper termination of the program occurs, these temporary files remain on your hard drive and can be reopened to recover any work done to the sound files before crashing. Also, the original sound files will remain unchanged until you save your work.

CRASH RECOVERY

When restarting Sound Forge XP, any temporary files in your temporary file directory will indicate to the program that something went wrong. Sound Forge XP prompts you with the *Crash Recovery* dialog to either recover, delete or ignore these files.

RECOVER

Use this to change the ending of all file names from FORGExxx.TMP to FORGExxx.WAV. You can then open these WAV files using the *Open* dialog (File menu). The files will be placed in the directory specified on the *Storage* page of the *Preferences* folder (Options menu).

DELETE

This command deletes all the temporary files regardless of selection in the drop-down list. Use this only when you are sure that no important work is in the file.

IGNORE

If you don't want to deal immediately with the temporary files left over from an improper termination, use this command. However, it is best to either rename the files and check their contents, or delete them, since they take up valuable disk space.

APPENDIX B: TROUBLESHOOTING

This appendix provides answers to a number of frequently asked questions about Sound Forge XP functionality. Subjects covered in this appendix are:

- Playing and Recording
- File Support
- Effects
- AVI Files

PLAYING AND RECORDING

WHEN PLAYING FILES FROM MY SCSI DRIVE, WHY DOES THE SOUND HAVE A WARBLING EFFECT?

When playing files from a SCSI drive connected to a SCSI controller that utilizes a DMA channel (such as most Adaptec controllers), you may experience a warbling effect in the sound playback. This can occur if your sound card uses DMA and the DMA channel is set to a higher number than your SCSI controller.

To fix this problem, set the DMA channel used by your sound card to a lower number than that used by your SCSI controller. For example, if your SCSI controller is set to DMA channel 5 and your sound card is set to DMA channel 7, try reconfiguring them so the sound card uses DMA channel 5 and your SCSI controller uses DMA channel 7.

WHEN I START SOUND FORGE XP MY PLAY AND/OR RECORD BUTTONS/OPTIONS ARE GRAYED OUT. WHY CAN'T I PLAY OR RECORD?

When Sound Forge XP starts, it checks to see if you have a wave playback and record device installed in your system. If you don't, it disables the operations corresponding to these functions. If you are sure that you have a sound card installed in your system, yet Sound Forge XP does not recognize this, first check the *Wave* page in the *Preferences* folder (Options menu). The two relevant settings are the Playback and Record drop-down list boxes. These options

determine the wave playback and record devices Sound Forge XP will use. By default, Sound Forge XP uses the Microsoft Sound Mapper (it may also be called the Wave Mapper) device. The Sound Mapper should automatically pick an appropriate wave device for use by Sound Forge XP. If either the Playback or Record device is set to (None) then Sound Forge XP can not execute the corresponding operation. To learn more about configuring your wave devices, refer to the *Wave/Preference* folder (Options menu) in chapter 6, *Sound Forge XP Reference*.

I HAVE SOUND FILES THAT WON'T PLAY ON MY SYSTEM. SOUND FORGE XP LOADS THEM – WHY WON'T IT PLAY THEM?

Sound Forge XP allows you to load many different types of sound files, including ones that your system may not be capable of playing. There are a variety of reasons that your sound card may not be capable of playing a file.

- Some sound cards only allow playback and recording at specific sample rates. Typically these rates are limited to 11,025, 22,050, and 44,100 Hz. If you try to play a file with a sample rate of 32,000 Hz the sound card will not allow you to play it.
- If you have an older sound card it may only support mono playback. If this is the case, convert any stereo files to mono and you will be able to play them. For more information on mono to stereo conversions, see chapter 4, *File Formats and Attributes*.
- If you have an older sound card it may only support 8-bit playback. If this is the case, simply change the sample size of the file from 16 to 8 bits (Convert to 8-bit command, Process menu).

DURING PLAYBACK, THE PLAY POINTER THAT SOUND FORGE XP DISPLAYS DOESN'T SEEM TO CORRESPOND TO WHAT I'M HEARING. WHY?

For Sound Forge XP to display the current position of the pointer relative to playback, it must rely on your sound card's driver to provide the correct position. Many sound card drivers don't do a very good job of this. Typically the position these cards provide is both off by a fixed amount as well as reported only in large discrete steps. Sound Forge XP provides a way to compensate for this by setting various options in the *Wave/Preferences* folder (Options menu). Refer to this section in chapter 6, *Sound Forge XP Reference*, for more information.

WHY CAN'T I GET SOUND FORGE XP TO RESPOND TO LEVELS FROM MY MICROPHONE OR MY CD PLAYER?

Most sound cards come with multiple inputs from which you can record sound. These may include microphone, CD, auxiliary, MIDI, and line inputs. Although some cards record from all of these inputs at the same time, many cards make you choose which device is currently your record device (also known as the input source). These cards come with software that allows you to pick which device is the input source. You will need to refer to your sound card manual to determine how to set the input source.

Most sound cards also come with some kind of application that controls the input level of the recording device. You may need to increase the level of your input sources in order to record from them. Again, you will need to refer to your sound card manual to learn how to adjust these levels.

WHEN I RECORD OR PLAY FILES I HEAR WHAT SOUNDS LIKE SMALL CLICKS IN THE SOUND.

When Sound Forge XP is recording or playing audio data it moves large amounts of data between your hard drive and your sound card. This can be a tremendous amount of work for your computer depending on the kind of system you have. If Sound Forge XP can't move the data fast enough, you will hear small gaps between blocks of data which typically sound like clicks or puttering. For more information on ways to reduce the overhead during the time Sound Forge XP is moving sound data, refer to Appendix A, *Optimizing Sound Forge XP*.

WHEN I RECORD (OR PLAY) DATA AT HIGH SAMPLE RATES, I CAN'T GET SOUND FORGE XP TO STOP BY PRESSING THE STOP BUTTON.

Sound Forge XP tries very hard to keep recording and playback of audio smooth (no gaps in your sound). As a result, there may be delays between the time that you press the Stop button and the time that Sound Forge XP actually stops recording or playing. Note that you can always press and hold the Escape key to stop record or playback. Just be a little patient and wait a few seconds. These delays are usually only observed when one or more components of your system can not keep up with the data rate. Problems typically stem from:

- Very slow (older) hard drives.
- Poorly written sound card drivers.

- Setting your Storage directory to a slow device like a network drive or a Compressed hard drive.

If at all possible, use the fastest uncompressed storage device available with Sound Forge XP. For more information on configuring your system, see Appendix A, *Optimizing Sound Forge XP*.

WHEN PLAYING SOUND FILES WITH RATES ABOVE 44,100 HZ ON MY TURTLE BEACH MULTISOUND OR TAHITI, MY SYSTEM CRASHES.

This is caused by a severe bug in the Turtle Beach Multisound and Tahiti sound card drivers. You will experience the same crash no matter what software you use to play sample rates above 44,100 Hz—including Media Player and even Turtle Beach’s own Wave application. Contact Turtle Beach for updated drivers.

WHEN PLAYING SOUND FILES AT 8,000 HZ ON MY TURTLE BEACH MULTISOUND, THE PLAY POINTER MOVES BUT I DON’T HEAR ANY OUTPUT.

A bug in the Turtle Beach Multisound driver causes this. Contact Turtle Beach for an updated driver.

WHEN PLAYING SOUND FILES AT RATES OTHER THAN 11,025 HZ, 22,050 HZ, OR 44,100 HZ THE FILES SOUND WRONG (THE PITCH IS WRONG).

Some sound drivers incorrectly play sounds with sample rates that are not supported by the sound card hardware. For example, a sound that is supposed to play at 13,000 Hz might get played at 11,025 Hz instead. This will cause the pitch to be lower and the playback time to be slower than it should be. The Microsoft Windows Sound System Version 2.0 and many “compatible” sound cards contain this unfortunate bug. Contact your sound card manufacturer for updated drivers.

WHEN PLAYING AUDIO FILES, SOMETIMES WHEN THE SOUND STARTS I HEAR A BLIP, DROPOUT, OR CLICK.

Some sound drivers do not deal correctly with the pre-load buffer option of Sound Forge XP. If you have set your pre-load size in the *Wave/Preferences* folder (Options menu) to a value greater than 0, try setting it back to 0. If this solves the problem, then you have a driver that does not deal with this situation correctly. Contact your sound card manufacturer for updated drivers.

FILE SUPPORT

WHEN SAVING FILES AS MACINTOSH AIFF AND TRANSFERRING THEM TO MY MACINTOSH, WHY DOESN'T THE MACINTOSH RECOGNIZE THEM AS SOUND FILES?

The Macintosh uses special information within its operating system to keep track of the types of files it can access. Sound Forge XP for Windows can save the audio data in the correct file format, but it can't tell the Macintosh what type it is. To do this you must use a program on the Macintosh, like ResEdit, which allows you to change the file's Type. Set the Type field to AIFF for the Macintosh to recognize the file as a sound file.

WHY WON'T SOUND FORGE XP OPEN MY COMPRESSED FILES LIKE MICROSOFT ADPCM?

Sound Forge XP has built-in support for the Microsoft Audio Compression Manager (ACM). This allows you to open files that are compressed with a variety of algorithms including Microsoft ADPCM, IMA ADPCM, and other third party compression schemes like The DSP Group's TrueSpeech.

If you can't open a Microsoft ADPCM file, you may not have the Microsoft ADPCM driver installed and enabled for the ACM. Refer to Appendix E, *Sound Forge XP and The Microsoft Audio Compression Manager* for more information on how to use the ACM with Sound Forge XP.

AFTER CONVERTING WAV FILES TO RED BOOK AUDIO USING THE SOFTWARE THAT CAME WITH MY COMPACT DISC RECORDER, THERE ARE AUDIBLE CLICKS AT THE END OF THE TRACK.

Not all software for converting WAV files to Red Book audio handles the WAV file structure correctly. Some software skips the first 44 bytes of data in the WAV file and then considers everything else in the file to be audio data. This means that if you have saved Summary Information in the WAV file it will be interpreted as audio data.

If you are experiencing this problem, use the *Save As* command (File menu) in Sound Forge XP to save a new WAV file with the *Save Summary Information* box unchecked. This tells Sound Forge XP to save only the minimum amount of information needed for a WAV file.

MY COMPACT DISC RECORDER USES A FILE TYPE WITH AN RBK EXTENSION. WHAT IS AN RBK FILE AND CAN I OPEN IT WITH SOUND FORGE XP?

RBK files are raw PCM sound data files. These files are used by some compact disc recorders to store Red Book audio onto a compact disc. RBK files are data-only and contain no other information. They are stored as 16-bit, stereo data with a sample rate of 44,100 Hz. There are a number of things that make them different than a normal 16-bit raw file:

- The channels are stored in reverse order
- The data is stored in Big Endian format (Motorola)
- The data length of the file has to be a multiple of 2,352 bytes (1 CD sector). The size of a CD sector is calculated as follows:

1 second of 44.1k, 16 bit, stereo audio = 176,400 bytes

CD audio has 75 sectors of data for each 1 second of audio

Sector size = $176,400 / 75 = 2,352$ bytes

To open an existing RBK file, use the *Raw File* type in Sound Forge XP's *Open* dialog (File menu) and select the RBK preset. Remember that you will have to swap the channels if you want to maintain the correct left/right channel settings.

EFFECTS

WHY DO SOME EFFECTS TAKE SO LONG TO PROCESS?

Some processing functions used by Sound Forge XP are very math intensive. Examples include EQ and the reverb effect. This means that millions of integer and floating-point arithmetic operations must be performed for each second of sampled data. Even with a powerful, co-processing machine, high resolution sound editing can tax a system resources.

Of course, running effects on stereo, 44,100 Hz, hour-long files will slow any system. If you are going to be deleting or inserting space into these huge files, it is more effective to break the files into smaller ones and then mix the smaller files together once you are done processing them. This can be especially necessary when you insert or delete from the beginning of a large file, since Sound Forge XP must shift the entire file over during processing.

AVI FILES

WHEN OPENING AN AVI FILE, IF THE AUDIO STREAM FORMAT IS 44.1 KHZ STEREO FILE MICROSOFT OR IMA ADPCM, THE AUDIO TRACK DOES NOT OPEN CORRECTLY.

This is due to a known bug in Video for Windows. It only happens if the file is both 44.1 kHz, stereo, and compressed using Microsoft ADPCM. To get around this problem, resample the audio to 22 kHz before saving (Resample dialog, Process menu).

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APPENDIX C: SHORTCUTS

This appendix contains a list of available shortcuts including:

- Keyboard Shortcuts
- Shortcut Menus
- Drag and Drop Shortcuts
- Other Mouse Shortcuts

KEYBOARD SHORTCUTS

The following is a comprehensive list of keyboard shortcuts available in Sound Forge XP.

GENERAL KEYBOARD SHORTCUTS

FILE COMMANDS

PRESS	TO
Alt+Enter	Show the <i>Properties</i> folder for the active data window
Control+N	Create a new data window
Control+O	Open a sound file into a new data window
Control+S	Save modified sound data back to the file
Control+W	Close the active data window
Alt+F4	Exit Sound Forge XP

DATA WINDOW MANAGEMENT COMMANDS

PRESS	TO
Alt+F10	Maximize the Sound Forge XP application window
Control+F5	Restore the active data window
Control+F6	Go to the next data window
Control+F10	Maximize the active data window
Control+Shift+F6	Go to the previous data window
Shift+F4	Tile the data windows vertically
Shift+F5	Cascade the data windows

EDIT COMMANDS

PRESS	TO
Control+A	Select all data in the active window
Control+C	Copy the selected data onto the clipboard
Control+E	Paste the clipboard contents into a new data window
Control+F	Crossfade data from the clipboard with the active window
Control+M	Mix data from the clipboard with the active window
Control+T	Trim (crop) to the current selection
Control+U	Toggle Undo buffer creation for the active window
Control+V	Paste data from the clipboard into the active window
Control+X	Move (cut) the selected data onto the clipboard
Control+Y	Repeat last process, effect or tool
Control+Z	Undo the last action
Control+Shift+Z	Redo the last undone action
Delete	Clear (delete) the selected data; nothing placed on the clipboard

ACID LOOPING TOOLS

PRESS	TO
Semi-Colon	Halve the currently selected area.
Apostrophe	Double the current selection.
Less Than Symbol	Shift the highlighted portion of a track left the exact distance of the highlighted selection.
Greater Than Symbol	Shift the highlighted portion of a track right the exact distance of the highlighted selection.
Colon	Move the selected audio at the beginning or end of the file to the other end of the file.

MISC. VIEW, OPTION AND SPECIAL COMMANDS

PRESS	TO
S	Toggle current selection on and off
Control+Enter	Maximize the width of the active data window
Control+D	Show the <i>Set Selection</i> dialog
Control+G	Show the <i>Go To</i> dialog
Control+R	Record new data into a data window
Escape	Stop or cancel the current action (including playback)
F1	Open the Sound Forge XP Help file to the Contents page
F10	Make the menu bar active
Shift+F10	Display a shortcut menu
F6	Toggle playback scrolling on and off
F8	Toggle drag and drop snapping on and off

WAVEFORM DISPLAY KEYBOARD SHORTCUTS

CURSOR MOVEMENT

PRESS	TO MOVE TO
Right Arrow	The next screen pixel
Left Arrow	The previous screen pixel
End	The last sample visible in the waveform display
Home	The first sample visible in the waveform display
Control+End	The last sample in the data window
Control+Home	The first sample in the data window
Page Up	10% of the current view previous to the cursor position
Page Down	10% of the current view past the cursor position
Control+Right Arrow	2% of the current view past the cursor position
Control+Left Arrow	2% of the current view previous to the cursor position
Numpad +	The next sample
Numpad -	The previous sample
Control+Numpad +	10 samples past the current cursor
Control+Numpad -	10 samples previous to the current cursor

NOTE

Due to a limitation in Windows 95, the last two commands work only in Windows NT.

Control+ Left Arrow	The previous region or marker boundary
Control+ Right Arrow	The next region or marker boundary

SELECTING DATA

PRESS	TO SELECT FROM THE CURSOR TO
Shift+Right Arrow	The next screen pixel
Shift+Left Arrow	The previous screen pixel
Shift+End	The last sample visible in the waveform display
Shift+Home	The first sample visible in the waveform display
Control+Shift+End	The last sample in the data window
Control+Shift+Home	The first sample in the data window
Shift+Page Up	10% of the current view previous to the cursor position
Shift+Page Down	10% of the current view past the cursor position
Control+Shift+Right Arrow	2% of the current view past the cursor position
Control+Shift+Left Arrow	2% of the current view previous to the cursor position
Shift+Numpad +	The next sample
Shift+Numpad -	The previous sample
Control+Shift+Numpad +	10 samples past the current cursor
Control+Shift+Numpad -	10 samples previous to the current cursor

Due to a limitation in Windows 95, the last four commands work only in Windows NT.

NOTE

Control+Shift+Left Arrow	The previous region or marker boundary
Control+Shift+Right Arrow	The next region or marker boundary

NAVIGATION AND PLAYBACK

PRESS	TO
Up Arrow	Increase time magnification (zoom in closer to data)
Down Arrow	Decrease time magnification (zoom out farther from data)
Shift+Up Arrow	Increase level magnification
Shift+Down Arrow	Decrease level magnification
Control+Up Arrow	Zoom Selection if a selection exists, Zoom In Full if no selection
Control+Down Arrow	Zoom Normal (zooms to default zoom ratio set in <i>Preferences/Options</i> menu)
Control+Shift+Up Arrow	Pan data window up if zoomed in vertically
Control+Shift+Down Arrow	Pan data window down if zoomed in vertically
Numpad 5 or *	Switch cursor to opposite end of selection

NOTE

Due to a limitation in *Windows 95*, the last command works only in *Windows NT*.

Tab	Cycle stereo selection from left channel to right channel to both channels
Shift+Tab	Cycle stereo selection from both channels to right channel to left channel
[(open bracket)	Set Mark In at the current cursor position
] (open bracket)	Set Mark Out at the current cursor position
C or . (period)	Center the cursor in the waveform display
Spacebar	Play or Stop the current data window in default mode
Shift+Spacebar	Play All or Pause the current data window
Control+Spacebar	Switch play mode between Normal and Looped

Enter	Pause playback; keep the cursor at the current position
Escape	Stop playback of the current data window

REGIONS LIST SHORTCUTS

PRESS TO

Spacebar	Play or Stop the active marker or region
Enter	Edit the active marker or region
Delete	Delete the active marker or region
` (grave accent)	Cycle through the <i>Regions List</i> display formats
R	Create region from the current selection
Shift+R	Create region without bringing up dialog

SHORTCUT MENUS

Shortcut menus are menus that appear when you click on certain areas of the screen. They allow you to quickly access important functions.

SOUND FORGE XP DESKTOP SHORTCUT MENU

This shortcut menu is reached by right-clicking on the desktop workspace of Sound Forge XP. This menu has options for sound file management on your workspace. You can open recently used files from the *Recent Files* option. The *Preferences* folder can quickly be reached from this menu as well.

WAVEFORM DISPLAY SHORTCUT MENU

This shortcut menu is reached by right-clicking on the waveform display of a sound file. It is a way of quickly reaching the following commands and dialogs: *Zoom In Full/Normal/Out Full*, *Paste*, *Crossfade*, *Mix*, *Go To*, *Selection*, *Scroll Playback*, *Properties*.

PLAYBAR SELECTION STATUS SHORTCUT MENU

This shortcut menu is reached by right-clicking on any of the playbar's selection status fields. It allows you to set the current status format (*Samples, Time, Seconds, Time & Frames, Absolute Frames, Measures & Beats, SMPTE Non-Drop/Drop, SMPTE EBU, SMPTE Film Synch*).

TIME RULER SHORTCUT MENU

This shortcut menu is reached by right-clicking on the Time Ruler. It allows you to change the status format (*Samples, Time, Seconds, Time & Frames, Absolute Frames, Measures & Beats, SMPTE Non-Drop/Drop, SMPTE EBU, SMPTE Film Synch*) and display the Add Marker/Region dialog.

REGIONS LIST SHORTCUT MENU

This shortcut menu is reached by right-clicking on the *Regions List*. It allows you to perform the following *Regions List* operations: *Add, Delete, Edit, Replicate, Update, Copy onto Clipboard*.

MARKER TAG SHORTCUT MENU

This shortcut menu is reached by right-clicking on a marker tag in the ruler.

GO TO

Moves the cursor to a marker position.

DELETE

Removes a marker from the *Regions List*.

EDIT

Takes you to the *Edit Region/Marker* dialog.

UPDATE

Changes a marker to the current cursor position.

REGION TAG SHORTCUT MENU

This shortcut menu is reached by right-clicking on a region tag in the ruler.

SELECT

Makes the selection equal to the region end points.

DELETE

Removes the region from the *Regions List*.

EDIT

Takes you to the *Edit Region/Marker* dialog.

UPDATE

Makes region end points equal to the current selection.

DISPLAY PROPERTIES SHORTCUT MENU

This shortcut menu is reached by right-clicking on the *Edit Tool* selector at the upper left-hand corner of the data window. It allows you to set options described under *Properties/Display* in the File Menu.

LEVEL RULER SHORTCUT MENU

This shortcut menu is reached by right-clicking on the *Level Ruler*. It allows you to change the labeling used, as well as various level zooming operations.

ZOOM OUT FULL

Zooms out vertically to view the maximum amplitude range.

ZOOM WINDOW

Zooms vertically to optimally fit the entire waveform display.

ZOOM SELECTION

Zooms vertically to optimally fit the current selection.

LABEL IN PERCENT

When checked, the *Level Ruler* will be labeled in percent.

LABEL IN DB

When checked, the *Level Ruler* will be labeled in decibels.

STATUS BAR SHORTCUT MENUS

These shortcut menus allow you to change the playback rate, sample size, channels (Stereo/Mono), and status format (Samples, Time, Seconds, Time & Frames, Absolute Frames, Measures & Beats, SMPTE Non-Drop/Drop, SMPTE EBU, SMPTE Film Synch) by right-clicking on the status bar fields.

RECORD DIALOG SHORTCUT MENU

This shortcut menu is reached by right-clicking anywhere in the *Record* dialog. A similar shortcut menu is available in the *Remote Record* dialog. Some options on these menus are not available in the dialog.

RECORD METERS

Allows you to set the record meter range and other options (*Reset Clip*, *Show Labels*, *Hold Peaks/Valleys*, *Aggressive Update*). Refer to the *Transport* command (Special menu) in chapter 6, *Sound Forge XP Reference*, for more information.

BLINKING STATUS

Enables the blinking record status underneath the record meters.

VIDEO STRIP SHORTCUT MENU

This shortcut menu is reached by right-clicking on the video strip above the waveform display.

COPY

Copies the selected frame as a bitmap to the clipboard. You could, for example, then paste it into the *Summary* page (*Properties* from the *File* menu) by right-clicking over the shot you want to copy.

GO TO

Moves the cursor to the beginning of the frame.

ANIMATE

Displays the frame closest to the cursor position.

NUMBER FRAMES

Displays frame number on each frame.

VIDEO PREVIEW SHORTCUT MENU

This shortcut menu is reached by right-clicking on the *Video Preview* window. It allows you to set various options of the video display. For a complete list and explanation of these options, refer to the *Video* command (Options menu) in chapter 6, *Sound Forge XP Reference*.

DRAG AND DROP SHORTCUTS

Using drag and drop allows you to quickly perform operations crossing between open data windows.

DRAG TO NEW

To create a new file from the current selection, drag the selection to an open area of the *Sound Forge XP* desktop.

DRAG MIX

To mix a selection into another data window, drag the selection from the source to the destination window. Processing begins at the point where you drop the region in the destination file. When mixing a mono selection into a stereo file, you can mix the selection to both channels by dropping the selection on the destination centerline. Otherwise, the selection will be mixed into either the left or right channel only.

DRAG CROSSFADE

To crossfade a selection into another data window, drag the selection from the source to the destination window. Press the *Control* key while holding the cursor in the destination window. Processing begins at the point where you drop the region in the destination file. When crossfading a mono selection into a stereo file, you can crossfade the selection to both channels by dropping the

selection on the destination centerline. Otherwise, the selection will be crossfaded into either the left or right channel only.

DRAG PASTE

To paste a selection into another data window, drag the selection from the source to the destination window. Press the *Alt* key while holding the cursor in the destination window. Processing begins at the point where you drop the region in the destination file. When pasting a mono selection into a stereo file, you can paste the selection to both channels by dropping the selection on the destination centerline. Otherwise, the sound data will be placed in either the left or right channel only, with silence in the other.

DRAG TO REGIONS LIST

To add the current selection to the *Regions List*, drag it to the *Regions List*.

OTHER MOUSE SHORTCUTS

SELECT ALL

Double-click on the waveform display to select the entire sound file. Triple-click if *Regions* and *Markers* exist in the file.

ZOOM BOTH TIME AND LEVEL

Double-click on the *Level Ruler* to zoom the current selection both vertically and horizontally. If no selection exists, the entire waveform display data is zoomed. Double-click again to *Zoom Out Full* vertically and *Zoom Normal* horizontally.

MAGNIFY MODE

To zoom in to a section, select an area while holding the *Control* key. This will switch *Sound Forge XP* to *Magnify* mode, which zooms to fit the selected area.

RETURN CONTROL VALUE TO DEFAULT

Double-click on a trackbar, fader, or spinner to set it to its default value.

FINE TUNE CONTROL VALUE

To fine tune a trackbar, fader, or spinner, hold down both right and left mouse buttons when dragging. This can also be done if you hold down the Control key while dragging.

MAIN STATUS BAR

Double-click on the Sample Rate, Sample Size, or Channels (Stereo/Mono) field to reach the Properties folder.

SELECTION STATUS BAR

Double-click on the Selection Left field to reach the Go To dialog. Double-click on the Selection Right and Selection Length fields to reach the Set Selection dialog.

GO TO MARKER

Double-click on a marker tag in the ruler to move the cursor to the marker's position.

SET SELECTION TO REGION

Double-click on a region tag in the ruler to change the current selection to the region end points.

EDIT REGION OR MARKER

Double-click on a region or marker in the Regions List to reach the Edit Marker/Region dialog.

SLOW AND FAST SELECTION SCROLL TOGGLE

When making a selecting past the end or beginning of the waveform display, while holding down the left mouse button, click on the right mouse button to toggle between fast scrolling and slow scrolling.

APPENDIX D: SOUND FORMATS

The file formats recognized by Sound Forge XP are listed below along with the extension used to identify them to the user. An arbitrary extension has been assigned for each of the formats used by computers other than the PC. Many of these formats when found on another type of computer will tend to use the extension SND. Thus, even if a file has the SND extension it may not be a Sounder/SoundTool file.

 Indicates this file format supports the saving of sample looping information.

Active Streaming Format **(.ASF)**

This Microsoft format lets you send multimedia content over the Internet in real time. The ASF format is for use with the Microsoft NetShow Player.

Ad Lib Sample **(.SMP)**

This format is used by the Ad Lib Gold card, for its sampled instruments. It supports 8-/16-bit, stereo/mono, and 4-bit Yamaha ADPCM compression.

Amiga SVX **(.SVX/.IFF)**

This file type is found on the Commodore Amiga and is similar in substance to the Microsoft RIFF Wave format.

Covox V8 **(.V8)**

This format is used with Covox software. It is an 8-bit mono uncompressed file format.

Creative Labs VOC (.VOC)

This is one of the more common sound formats on PC-compatible computers. The VOC format supports packed data that Sound Forge XP will unpack prior to importing the file. The VOC format also supports information for silence, looping, and varying sample rates. When Sound Forge XP imports a VOC file it uses the first sample rate found and ignores such information as looping and silence. Sound Forge XP will save VOC files as unpacked data with none of the additional information such as looping or silence. Sound Forge XP gives you the ability to save VOC files in either the old or new VOC standard. The new VOC standard supports 16-bit data. Refer to the *Preferences* section (Options menu) in chapter 6, *Sound Forge XP Reference*, for information on configuring Sound Forge XP to always use the new VOC standard.

Dialogic VOX (.VOX)

This format is used with specialized voice data boards. It is a 4-bit mono ADPCM file format that expands to 16-bit data.

Gravis Patch  (.PAT)

This format is used by the Gravis UltraSound Card. Sound Forge XP can only read and write Gravis Patch files which have single samples stored in them. Patch files with multiple samples are not recognized. Sound Forge XP recognizes Gravis Patch version 1.10 files. Older versions, such as 1.00, are not supported.

InterVoice (.IVC)

This file format is for use with Intervoice telephony systems. It is a mono format with a variety of compression schemes available.

Macintosh AIFF  (.AIF/.SND)

This format is used on the Apple Macintosh to save sound data files. An AIFF file is best when transferring files between the PC and the Mac using a network, since most network software will delete any resource information in a Macintosh file. Sound Forge XP can also read an AIFF with a Mac binary header attached but will identify the file as a Macintosh Resource instead.

Macintosh Resource (.SND)

This format is used on the Apple Macintosh to save sound resources. When reading a file of this type it must have a Mac-Binary header. This header is attached to binary files transferred with common Macintosh file transfer programs. Sound Forge XP does not save to this file format.

MIDI SDS  (.SDS)

This format is a file that contains the exact data that would be transferred to a sampler when using the MIDI Sample Dump Standard (SDS) protocol. It is a series of MIDI SysEx messages. MIDI SDS supports mono files only.

NeXT/Sun (Java) (.AU/.SND)

This is the standard format of sound files found on the NeXT and Sun Sparc station computers. This format has a large number of sub-types of file data. Sound Forge XP reads and writes the most common data formats for these files, 8-bit linear, 16-bit linear, and μ -Law.

RealMedia (.RM/.RA)

These are compressed formats designed for real-time audio and video streaming over the Internet.

SampleVision  (.SMP)

This format is used with Turtle Beach's SampleVision software. It is a 16-bit mono file format. The SMP format is for use with sampling keyboards.

Sonic Foundry Sample Resource (.SFR)

This format is an old format defined by Sonic Foundry and is supplied for compatibility. It is not recommended for use in saving files.

Sound Designer 1  (.DIG/.SD)

This format is used by Sound Designer 1.

Sounder/SoundTool (.SND)

This format is used with the shareware applications Sounder and Sound Tool. It is very popular on bulletin boards and various online services.

Video for Windows**(.AVI)**

This is a Microsoft digital video file format. It supports multiple channel audio, but Sound Forge XP will only allow you to open one audio and one video stream at a time. When saving as an AVI file, many compression schemes are available for both the video and audio streams.

Wave (Microsoft) **(.WAV)**

This is the format for sampled sounds defined by Microsoft for use with Windows. It is an expandable format that supports multiple data formats and compression schemes.

Raw Files**(.RAW/*)**

Raw files can be composed of any sound data. If the data is any form of 8- or 16-bit PCM (uncompressed) or G.711 A-Law or μ -Law (a form of companded compression), then Sound Forge XP can open and save the file.

APPENDIX E: SOUND FORGE XP AND THE MICROSOFT AUDIO COMPRESSION MANAGER

THE AUDIO COMPRESSION MANAGER (ACM)

The *Microsoft Audio Compression Manager* (more commonly referred to as the *ACM*) is a standard interface for audio compression and filtering tool in Windows. This interface allows applications like *Sound Forge XP* to use compression and filtering algorithms provided by other companies.

Sound Forge XP fully supports audio compression and filtering through the *ACM*. This enables you to use any *ACM*-compatible compression and filter driver. The best part of this support is you don't have to learn anything new to use it! *Sound Forge XP* transparently opens compressed WAV files and provides all available compression formats for WAV files in the *Save As* dialog (File menu). No Import or Export commands are necessary.

There are roughly three pieces to the *ACM* (though these pieces are tightly coupled). It is not necessary for you to know any details about these pieces to use the *ACM* from *Sound Forge XP*, so this information is supplied for those who want to know more. The three pieces of the *ACM* are:

- Audio data compression and decompression
- Audio data filtering (Digital Signal Processing)
- Transparent playback and recording of non-hardware supported audio files

AUDIO DATA COMPRESSION AND DECOMPRESSION

The first piece of the *ACM* allows you to compress and decompress audio data. Audio compression is used to decrease the amount of data required to represent a sound; this ultimately results in smaller sound files. However, there are drawbacks to using audio compression on your sound files:

- Most audio compression algorithms will degrade the quality of the sound. This is referred to as *lossy* compression since information contained in the sound is lost when it is compressed. The amount of sound degradation is dependent on the algorithm.
- Audio compression requires more processing time than uncompressed data. The amount of processing time is dependent on the algorithm as well as your hardware setup. As a result, opening and saving compressed files usually takes longer than uncompressed files.
- Compressed files are not as portable as uncompressed files. If you are distributing WAV files in a compressed format, you must make sure the person receiving the files can use them. Also, not all audio software can use compressed WAV files, which could make using other programs with Sound Forge XP inconvenient.

In Sound Forge XP, any compressed WAV file can be opened as long as a compatible ACM driver is installed and enabled. If there is no compatible ACM driver available for a compressed WAV file, Sound Forge XP will inform you of the problem when you try to open it.

Saving compressed WAV files is as simple as choosing the compression algorithm in the *Format* drop-down list of the *Save As* dialog. Once a file has been saved as compressed, Sound Forge XP will always save changes to the file using the selected compression algorithm; you do not need to re-select the compression format each time you save. Of course you can change the compression format at any time with the *Save As* dialog. You can also revert to an uncompressed format.

Experimentation is probably the most important step in deciding whether or not to use audio compression for your projects.

AUDIO DATA FILTERING (DIGITAL SIGNAL PROCESSING)

The second piece of the ACM provides access to *Digital Signal Processing (DSP)* algorithms. The ACM refers to these DSP algorithms as *Filter drivers*, though the term *Filter* in this context is more generic than just frequency filtering (like *Graphic EQ*). An ACM *Filter* can implement almost any type of audio DSP algorithm. Reverb, distortion, and time change are just a few of several possibilities.

Sound Forge XP does not come with any *ACM Filters*; you must obtain them from other sources. However, since the *ACM Filter* architecture is fully documented by Microsoft, it is possible that many types of filters will become available on BBSs and other places for use with Sound Forge XP. If any *ACM Filters* are installed in your computer, you will see the *ACM Filter* option under the Tools menu.

Sound Forge XP allows you to use any *ACM Filter* installed and enabled on your computer to process sound files. Select the *ACM Filter* option under the Tools menu to choose the filter and its attributes that you wish to apply to your sound data. The *ACM Filter* tool works exactly like all other Sound Forge XP DSP functions, including the option to save presets and set custom selections.

TRANSPARENT PLAYBACK AND RECORDING OF NON-HARDWARE SUPPORTED AUDIO FILES

The third part of the *ACM* is probably the most significant. It is called the *Sound Mapper* and allows audio data formats that are not directly supported by your sound card to be played and recorded. Sound Forge XP lets you use the *Sound Mapper* by selecting it for *Playback* and *Record* in the *Wave* page of the *Preferences* folder (Options menu). Additional configuration of the *Sound Mapper* for your system can be done using the *Windows Control Panel*.

If the *ACM* is not installed on your computer, the *Sound Mapper* option will be called the *Wave Mapper* instead. The *Wave Mapper* and *Sound Mapper* can be thought of as the same device (to a computer program, they are one and the same). However, the *Sound Mapper*, which requires the *ACM* to be installed, is much more powerful than the *Wave Mapper*. Keep this in mind when you hear people talk about the *Wave Mapper* and *Sound Mapper*.

So, what, for example, can *Sound Mapper* do? If you have a sound file that is recorded at an unusual sample rate like 22,257 Hz (perhaps a file that came from an external sampler), and the closest sample rate that your sound card supports is 22,050 Hz, then the sound file normally could not be played. You would have to change the sample rate of the file to 22,050 Hz before you could play it. However, changing the sample rate (without resampling) would cause the sound to play at a lower pitch. The *Sound Mapper* can play this sound file correctly without forcing you to resample the file first. The *Sound Mapper* will map the sound to the best format possible and perform the resampling in real time.

Other examples include the ability to play 16-bit sounds on an 8-bit-only sound card, or playing stereo sounds on a mono-only sound card. You can also record stereo files on a mono-only sound card. However, this last example is essentially useless because the *Sound Mapper* will duplicate the mono input of your sound card in both channels. So keep in mind that the *Sound Mapper* cannot create something that is better than what the sound card can supply.

The usefulness of the *Sound Mapper* for non-compressed sound files can be summarized as convenience. You don't have to convert the sound to a supported format before you listen to it. Some of the tasks that the *Sound Mapper* can perform (like format conversions while recording) are available not because they are useful in real world situations, but because the developers of the ACM knew it could be done. Much like climbing a mountain for no better reason than it's there.

So what about compressed sound files? The *Sound Mapper* allows you to play (and sometimes record) compressed sound files. Even on sound cards that do not support compression directly. So you can play a sound file that is compressed with Microsoft ADPCM or The DSP Group's TrueSpeech on any sound card without decompressing the sound file first. Many multimedia and entertainment software titles use compressed sound files to save disk space. The software then plays the files through the *Sound Mapper*.

Above we mentioned that *Sound Mapper* can sometimes record compressed sound files. The reason for this (even when the compressed file can be played) is simple. Compressing sound data can be very computationally expensive (it takes a long time); the amount of time required is completely dependent on the compression algorithm and how it is implemented. Decompressing sound data is almost always faster than compressing the same sound data, which makes it possible to play it back in real time.

It should be noted that *Sound Forge XP* does not play and record compressed sound files directly. Rather, all compression and decompression is performed while opening and saving the sound files. This limitation is actually insignificant; *Sound Forge XP* is the perfect tool for authoring compressed sound files for the ACM and many software authors are using *Sound Forge XP* for exactly this. *Sound Forge XP* saves compressed sound files using the best quality possible – something that cannot always be done in real time. So saving compressed sound files with *Sound Forge XP* will usually sound better than those recorded with audio compression.

Notes on Sound Forge XP's sound file compression support:

- The *Open* dialog (File menu) allows you to preview compressed WAV files if you have an appropriate ACM driver installed. However, you must have your *Playback* device set to the *Sound Mapper* for this to work (*Preferences/Wave* in the *Options* menu).
- When saving uncompressed audio data to a compressed format with the *Save As* dialog (File menu), it is a good idea to close the file and re-open it after saving. Since Sound Forge XP does the compression and decompression during saving and loading you will not be able to hear what the file sounds like with compression until after you've saved and reloaded the file.

SETTING UP THE AUDIO COMPRESSION MANAGER

The Microsoft Audio Compression Manager is part of Windows 9x and NT. If you are running Windows 3.x, Sound Forge XP will install *Video for Windows* in your computer, which also installs the ACM.

In Windows 9x, to view the installed audio compression and decompression drivers, go to *Control Panel/Multimedia/Advanced/Audio Compression Codecs*. Double-clicking on any of the codecs allows you to enable or disable each one.

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APPENDIX F: OBJECT LINKING AND EMBEDDING (OLE)

Sound Forge XP supports Microsoft's *Object Linking and Embedding (OLE)* technology for improved integration with other applications. This appendix discusses the implementation details and different uses for the OLE technology supported by Sound Forge XP. The following topics are covered:

- Introduction to Object Linking and Embedding (OLE)
- Using OLE with Sound Forge XP
- Tips and Limitations

INTRODUCTION TO OLE

Object Linking and Embedding (OLE) is a technology developed by Microsoft to allow independent applications to behave as though they are tightly integrated. Note that this is not an all-encompassing definition, but it will work for the implementation provided by Sound Forge XP. If you would like a more in depth look at OLE, there are many references available at most bookstores that discuss the technology.

By using the OLE support in Sound Forge XP, you can embed digital audio files used by Sound Forge XP into documents used by other applications (such as *Write*, *Microsoft Word* and *Excel*). Once a digital audio file is embedded into a document, you can then edit the audio with Sound Forge XP at any time by activating the embedded object (usually by double-clicking on it with the mouse).

USING OLE WITH SOUND FORGE XP

Sound Forge XP is an OLE server. What this means is Sound Forge XP can create OLE objects (serve them up, if you will) that can be embedded (inserted) into applications that are OLE containers (the consumers of objects supplied by servers).

The OLE objects that are created by Sound Forge XP are called *Sound Forge XP Audio objects*. These objects are really just links to a sound file on your hard disk or network server. Therefore, when you embed a Sound Forge XP Audio object into *Write*, you are really only inserting a link (a directory and file name) to the actual sound file. Why this is important to know is explained below in *Tips, Limitations, etc.*

There are three methods that can be used to create Sound Forge XP Audio objects. Any references to an OLE container means an application that can contain OLE objects (like *Microsoft Word* and *Excel*). The three methods are as follows:

1. Dragging and dropping a link from the OLE Drag Source control in Sound Forge XP to an OLE container.
2. Using the *Copy Object Link* command in the Edit menu of Sound Forge XP to place an object link onto the clipboard. This object link can then be pasted into an OLE container, usually through the *Paste Special* command (Edit menu).
3. Invoking the *Insert Object* command from an OLE container and selecting the Sound Forge XP Audio object from the list.

DRAG AND DROP

The most convenient method of embedding a Sound Forge XP Audio object into a document is to drag a link from the OLE Drag Source control in Sound Forge XP and receive from the link on the document that you desire.

Note that the application that you drop the OLE object on must be OLE 2.0 compatible. Because of this, you cannot drop Sound Forge XP Audio objects on *Write*. The example below uses *Microsoft Word* for Windows 95 when running on Windows NT.

Follow these steps to embed a Sound Forge XP Audio object into *WordPad* (Windows 9x) or *Microsoft Word 7.0* (Windows NT) using drag and drop:

1. Run *WordPad* (Windows 9x) or *Word 7.0* (Windows NT).
2. Now run Sound Forge XP and open a sound file (TUTOR1.WAV in your Sound Forge XP directory will suffice).
3. Ensure that at least a portion of *WordPad* or *Word* is visible while Sound Forge XP is open (if either application is maximized, you will need to restore them and resize them accordingly).
4. Locate the *OLE Drag Source* control in the lower right corner of the data window. It's on the right end of the selection length box and contains the letters OLE.
5. Click and hold the left mouse button on the *OLE Drag Source* control and then drag the mouse cursor while holding the mouse button down.
6. Now drag the mouse over the top of *WordPad* or *Word* and drop it (release the mouse button). If you did everything correctly, a Sound Forge XP Audio object will now be embedded in your document.

A newly created sound file must first be saved before you can drag and drop the object into an OLE container. If the sound file in question needs to be saved, you will be prompted to do so when you click on the *OLE Drag Source* control.

There is an option in the *General* page of the *Preferences* folder (Options menu) to turn off the *OLE Drag Source* control (hide it). It may be desirable to turn this control off if you do not plan to use the OLE drag and drop support of Sound Forge XP.

COPY OBJECT LINK

Another method for creating a Sound Forge XP Audio object is to invoke the *Copy Object Link* command under the Edit menu in Sound Forge XP. This method is sometimes preferable to the drag and drop method because you don't need a mouse.

Follow these steps to embed a Sound Forge XP Audio object into *WordPad* (Windows 9x) or *Write* (Windows NT) using the *Copy Object Link* command:

1. Run Sound Forge XP and open a sound file (TUTOR1.WAV in your Sound Forge XP directory will suffice).

2. Select the *Copy Object Link* command under the *Edit* menu of *Sound Forge XP*. If the sound file needs to be saved, you will be prompted to do so.
3. At this point, a *Sound Forge XP Audio* object is on the clipboard and ready to be pasted into a document.
4. Run *WordPad* (Windows 9x) or *Write* (Windows NT) and select the *Paste* command from the *Edit* menu. If you did everything correctly, a *Sound Forge XP Audio* object will now be embedded in your document.

INSERT OBJECT

The last method for creating a *Sound Forge XP Audio* object is to use the *Insert Object* command from another application. This method provides a convenient way to get a new *Sound Forge XP Audio* object embedded into a document without having to first create it in *Sound Forge XP* and copy it into the document.

Follow these steps to embed a *Sound Forge XP Audio* object into *WordPad* (Windows 9x) or *Write* (Windows NT) using the *Insert Object* command:

1. Run *WordPad* (Windows 9x) or *Write* (Windows NT).
2. Select the *Insert Object* command. For *WordPad*, use the *Object* option under the *Insert* menu. For *Write*, use the *Insert Object* command under the *Edit* menu.
3. From the *Object Type* list, select the *Sound Forge XP Audio* item and click *OK*. Note that *WordPad* has two options: *Create New* and *Create From File*. You will need to select the *Create New* option.
4. At this time, *Sound Forge XP* will run automatically to create the new object. A new window is automatically opened allowing you to copy or create any new sound data you wish. Note that you must create the sound data in the window supplied.
5. After creating sound data, save the modifications and close *Sound Forge XP*. If you did everything correctly, a *Sound Forge XP Audio* object will now be embedded in your document.

After the *Sound Forge XP Audio* object has been created and embedded into the document, you can edit it at any time using *Sound Forge XP* by double-clicking on the object in your document.

TIPS AND LIMITATIONS

As mentioned above, Sound Forge XP Audio objects are implemented as links to existing sound files on your hard disk or network server. Because of this, there are some limitations you should be aware of before using the OLE support in Sound Forge XP.

LINKS CAN BE BROKEN, BUT NOT MENDED

The most important rule to bear in mind when using OLE with Sound Forge XP is that links can be broken, but not mended. When you create a Sound Forge XP Audio object, it stores only a link (which is a directory path) to the sound file. Sound Forge XP uses links because sound files tend to be very large and would usually not be acceptable to store along with your documents.

Because Sound Forge XP uses object links, moving, renaming or deleting the sound file associated with a Sound Forge XP Audio object will break the link. Attempting to edit the object in your document will fail because Sound Forge XP will not be able to locate the correct sound file.

To replace a broken link, delete the Sound Forge XP Audio object from the document and create a new one using the correct sound file.

If you need to move a sound file that is linked to a document, you can use Sound Forge XP to save the file to a different location and the object link will automatically be updated. However, you must open the sound file that you want to move as an object for this feature to work. To open a sound file as an object, double-click on the Sound Forge XP Audio object in your document; do not open the sound file directly. You can then use *Save As* to move the sound file. Sound Forge XP will prompt you about updating the object link after saving the new file.

SOUND FILES DO NOT TRAVEL WITH YOUR DOCUMENTS

When you copy a document that contains one or more Sound Forge XP Audio objects to another computer, the sound files that are linked to the objects are not copied with the document. If you need to copy a document to another computer, you will need to copy all sound files associated with it as well. However, you must also ensure that the sound files have the exact same path on the new computer as on the old computer.

USING A NETWORK SERVER

To ease the problems associated with moving or sharing documents between computers, it is suggested that you use a network server to store all sound files that are embedded in the documents. If you do this, all computers that have access to the network server will be able to open and edit the Sound Forge XP Audio objects.

There are two methods of ensuring a common network server will work with shared documents. The first is to make sure you use the same drive letter when connecting to the network server on all machines. Remember that the full path must remain constant between computers.

The second and more preferable method is to use *Universal Naming Convention* (UNC) paths when embedding Sound Forge XP Audio objects into your documents. A UNC name looks like this:

```
\\server\share\<directory and file name>
```

Therefore, if your sound files are stored on `\\myserver\sounds`, open them in Sound Forge XP using UNC path names rather than a drive letter. You can create the Sound Forge XP Audio object using either the *Copy Object Link* command or the *OLE Drag Source* control and embed the sound files into your documents. By using UNC names, you eliminate the need to use a common drive letter on all computers that share the document.

If you are running Windows 9x, UNC path names are extremely simple to use. Instead of using a drive letter when browsing in the *File Open* dialog, select *Network Neighborhood* in the *Look In* field and browse to the appropriate network server and share containing your sound files. This method of browsing uses UNC names exclusively.

SOUND FORGE XP IS NOT AN OLE CONTAINER

Although Sound Forge XP can create OLE objects to embed in other applications, the inverse is not true. Therefore, OLE objects created by applications such as *Microsoft Word* or *Excel* cannot be embedded into sound files open in Sound Forge XP.