SpecWeb Web Interface and Command Line Stereo to Surround Converter

Version 1.3

Table of Contents

Introduction

SpecWeb is a command line (windows console) version of the SPEC stereo to surround tool from www.surroundbyus.com. It is designed to be faster and easier to use than the full version, does not require Plogue Bidule, but has fewer features.

SpecWeb also has an html5 “web” user interface, which works with chrome, firefox, iOS, android, and windows 10 edge browsers. You can control SpecWeb from a browser on the same computer or on any computer or supported device on your local network. For instance, you could sit in your home theatre listening position and control SpecWeb with an iPad.

It’s a great way to get started in making your own upmixes as all you have to do is drag and drop a lossless stereo file onto the SpecWeb icon and you get a 5.1 multichannel file in seconds.

While not all of the “knobs” from the full version have been included, the most important ones are here and you can adjust them while you listen to the song, just as you can in the full version, then “record” the results.

See the License section for details but SpecWeb is “Donation ware” for personal use. Please donate to keep SpecWeb development alive. There is a paypal donate button in the web interface or use the below link

Donate Here

SpecWeb Is not licensed for commercial use and may not be used for commercial purposes under the license terms listed in this document.

Requirements

SpecWeb uses Intel's threaded building blocks, to take advantage of all the CPU cores in your system, and also uses Intel's Integrated Performance Primitives to do the forward and reverse FFT calculations needed by Spec and SpecWeb. The result is a very fast and efficient audio conversion/upmix process, however it does require a CPU that supports the SEE3 instruction set.

See: http://en.wikipedia.org/wiki/SSE3 for a list of CPUs with SSE3.

Basically any Intel CPU since February 2004 and any AMD CPU since April 15, 2005.

Windows Vista, 7, 8.x or 10. Windows XP and earlier are not supported.

SpecWeb needs a minimum screen resolution of 1024x768.

SpecWeb needs an html5 compliant browser; Chrome, firefox, iOS, Android, or

Windows 10 Edge. Microsoft IE does not work.

SpecWeb only works with lossless stereo sources. No mp3s.

For SpecWeb to play back in 5.1 you need one of:

a) A sound card with at least 6 analog outputs connected to a powered surround speaker set, or a Home Theatre unit with 6 analog ins.

b) A sound or video card with an Audio over HDMI feature, connected via HDMI to a Home Theatre system

c) A sound card with either dts interactive or dolby live, and an SPDIF connection to a Home Theatre system.

If you don't have any of the above, you can still playback via SpecWeb, with stereo speakers. You can use the playback controls of SpecWeb to solo or mute certain surround channels so you can get a sense of what it will sound like in surround. You should use the solo function to verify that your particular audio driver is playing back all 5.1 channels via your stereo speakers.

What's New In This Version

New Experimental Features for users

1) Post Zag processing (optional) with Free Master Limiter 5.1 VST

2) Rotation of Sound Field

3) Windowed metering mode, vs. whole song – in play mode only, in command and web gui only

4) Constant Amplitude Panning vs. Constant Power Panning

5) (not really experimental) Speaker Angles are now exposed/settable

Bug Fixes

fftsize using ranges rather than exact values

e.g. 176.4KHz was using wrong fft size

New Command Line flags

-6x = Post ZAG VST limiter threshold (default off/none).
If present, AND ZAG is used, sets the post ZAG limiter threshold
to x dB below the loudest peak in the track (suggested starting value is -3).

-Dx = Set ArcTan Direction or Pan Mode 0 = Constant Power 1 = Constant Amplitude (default 0).

-8x = Set ArcTan Image Rotation (-180 to +180) to x degrees (default 0).

-7v,w,x,y,z Speaker angles in degrees CCW from zero (straight ahead). LF,RF,C,LS,RS.
Default is ITU 5.1 angles 30,330,0,110,250.

-9 (Hidden for AudioMuxer) Don't use console, flush buffers

New ini settings

```
[postzagvst]
;EXPERIMENTAL !!!!
;This allows you to use a 5.1 Mastering VST as a 3rd pass, post ZAG (ZAG
must be used for this to
work).
;The intent is to make the overall loudness of the 5.1 track more like
that of the original stereo.
;At the current time only one VST is supported, and only one parameter,
the threshold, can be
adjusted
;but in the future more options may be available, such as specifying
```

```
your own VST(s) and
parameters.
;The VSTHost software I'm using is giving a slightly different output
file size, vs. the input. This is
one reason
;why this is "EXPERIMENTAL" at this point. I am bugging the author to
fix it.
;Note that you won't see the VST GUI or be able to make adjustments
(other than the threshold
parameter below).
;
;Again, to use this you must also be using ZAG.
usevst=no
;
;5.1 Master Limiter Threshold
;threshold is where the limiter will kick in. The default is 3dB below
the loudest peak in any
channel
;so if you put -3 here, and ZAG gives you a zero dB loudest peak, then
the limiter threshold will
be set to
;-3db. Another example would be if you are using ZAG matchlevel=yes, and
you get a quiet song
with a peak level of -10dB
;-3 here would set the limiter to a threshold of -13dB. This will give
you consistent amounts of
limiting for any song level.
threshold=-3
;
[arctan]
;rotation (experimental) rotates the surround sound filed up to +/- 180
degrees
;this can be useful if the stereo has vocals or other things that you
want centered
;panned hard left or right.
;default is 0
rotation=0
;
;
;panmode can be CPP for Constant Power Panning or CAP for Constant
Amplitude Panning
;This refers to how ArcTan places sounds between surround speakers
;default is CPP Constant Power Panning
panmode=CPP
;
;
;Speaker angles in your playback setup
;LFE is non directional so isn't considered here.
;speakerangles=LF,RF,C,LS,RS where the angles are in degrees counter
clockwise from zero, zero
being directly
;in front of the listening position, so the Center Speaker angle would
normally be zero.
;The defaults are the ITU recommended positions for 5.1 surround.
;If you are making upmixes for yourself, and for one particular surround
setup, you will get the best results
;by setting the speaker angles to match your surround setup.
;If you are making upmixes for others, and you don't know their setup,
```

```
it is best to stick with ITU angles
;30,330,0,110,250
;Another use for this is if you wanted to make quad upmixes, you will
want to set the angles for a quad setup
;such as a square, 45,315,0,135,225 (and set the centerwidth=0)
speakerangles=30,330,0,110,250
```

Known Issues

- Live playback at 192Khz can be glitchy on slower computers
- When using an ASIO audio device, the volume will go to zero the first time you adjust it
- When using an ASIO audio device, there is a click at the end of the song (not in output file)
- When using audio device -1 (windows default device), the device name may sometimes be shown incorrectly
- When using audio devices with more than 6 outputs, there is no way to map SpecWeb outputs to other than the first 6, in ITU order (LF, RF, C, LFE, LS, RS)
- No support for ASIO devices (input or output) during “live” or “on the fly” conversion
- Some people have reported “missing libmmd.dll” errors after first successfully installing SpecWeb on windows 10. The fix is to manual run:

  "\Install\bin\w_ccompxe_redist_msi_2013_sp1.4.237\w_ccompxe_redist_ia32_2013_sp1.4.237.msi"

  , from the SpecWeb install location. At this time it is not known why windows 10 sometimes removes these Intel files.

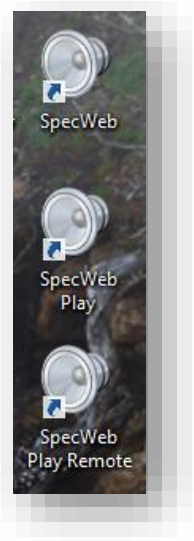
Installation:

Uncompress the SpecWeb distribution and move/copy the folder where you want it to live on your hard drive. The installation creates shortcuts that expect SpecWeb to be in the same location it was when the installation was run. Placing the SpecWeb folder under “Program Files” (32bit system) or “Program Files (x86)” (on a 64 bit system) is fine, but anywhere will work.

Once you have moved/copied the SpecWeb folder to its final location, open it up and double click on the “Install_SpecWeb.bat” file. This will open one or more command windows and install the needed components, if you don’t already have them:

1) Microsoft 2012 C++ runtime
2) Intel Parallel Studio XE runtime

The installation program will create three shortcuts on your desktop:



Drag and dropping one or more lossless stereo file (.wav or .flac), onto the SpecWeb icon will open SpecWeb with the file(s) as an input.

SpecWeb Play is the same however it is set to Playback live via the first audio device on your system.

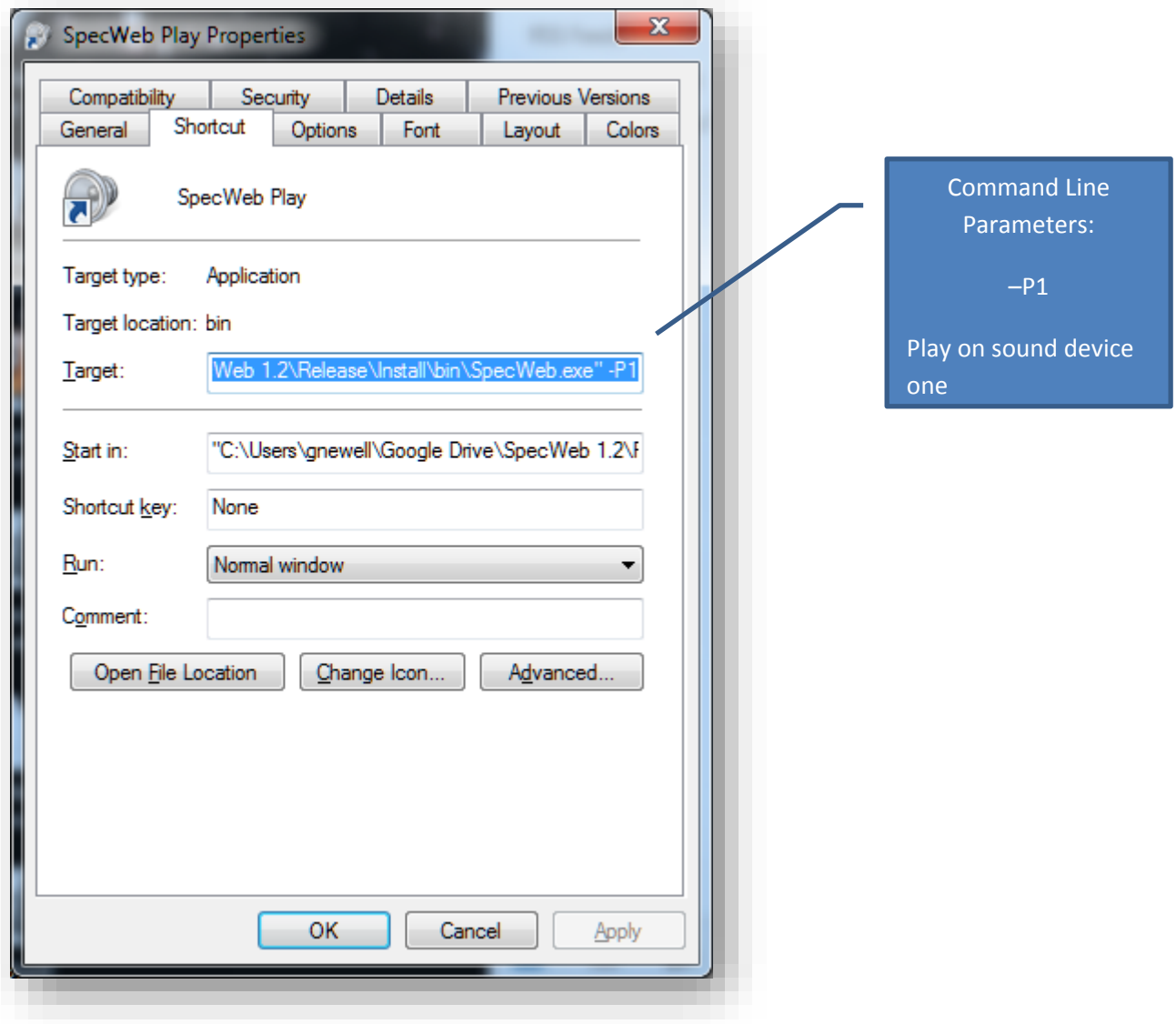
SpecWeb Play Remote is the same as Play, however it will wait for a connection from a remote browser (such as from a tablet or phone or another computer) before it plays.

These shortcuts are just examples and you can modify the command line parameters in them or make additional icons with different command line options (right click → Properties).

The SpecWeb.exe is in the “bin” folder of the installation directory, if you want to make additional shortcuts:

Right click on SpecWeb.exe and select “create shortcut”.

Right click on the shortcut and select “Properties” to add command line parameters.



Then copy/move the shortcut to your desktop or another location.

You may also wish to add SpecWeb to your Windows "Send To" menu.

"Send To Menu" Instructions:

Windows Vista, 7, 8, & 10: http://www.howtogeek.com/howto/windows-vista/customize-the-windows-vista-send-to-menu

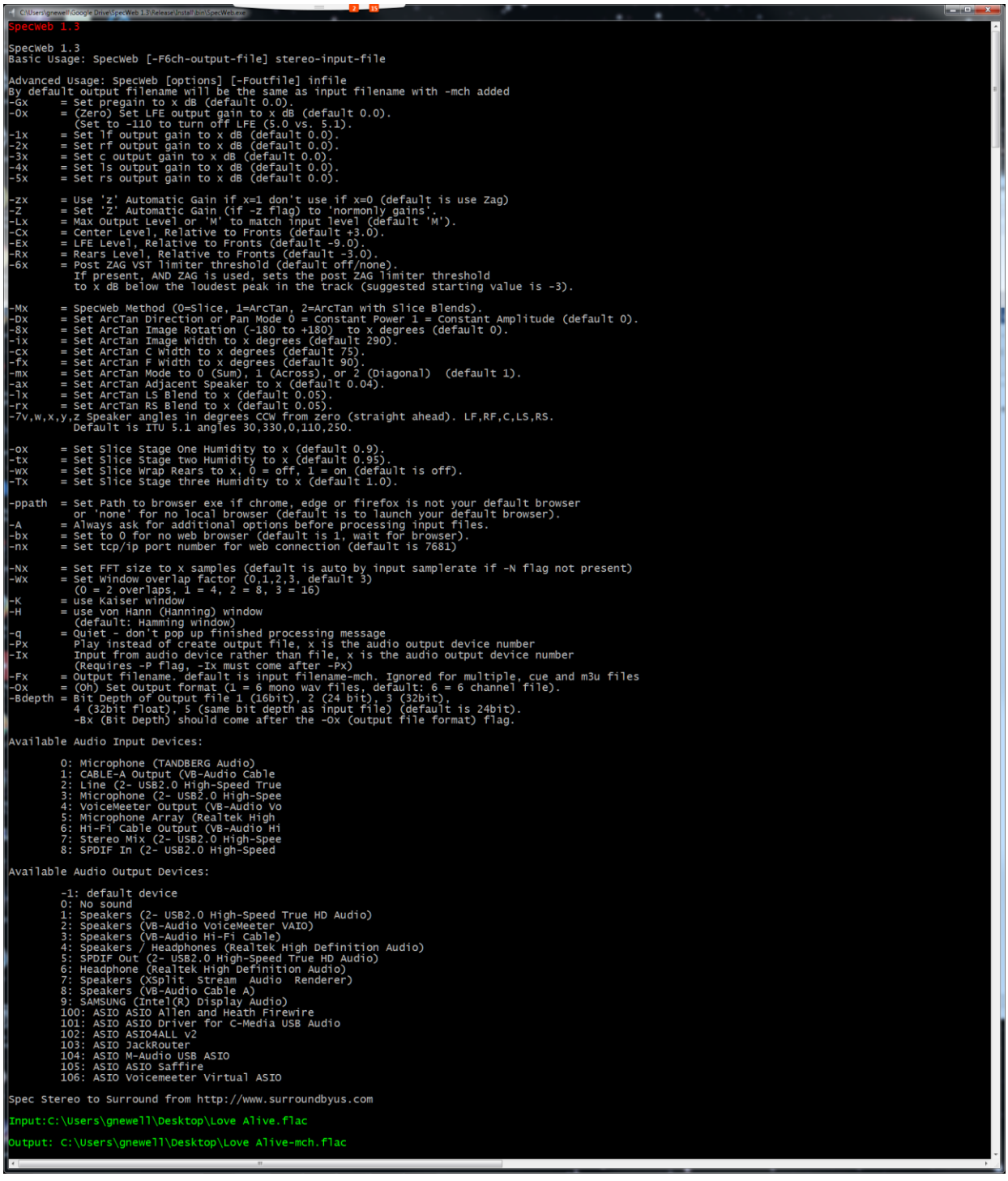
See the section on using SpecWeb with foobar2000 for additional installation steps inside foobar2000

Quickstart

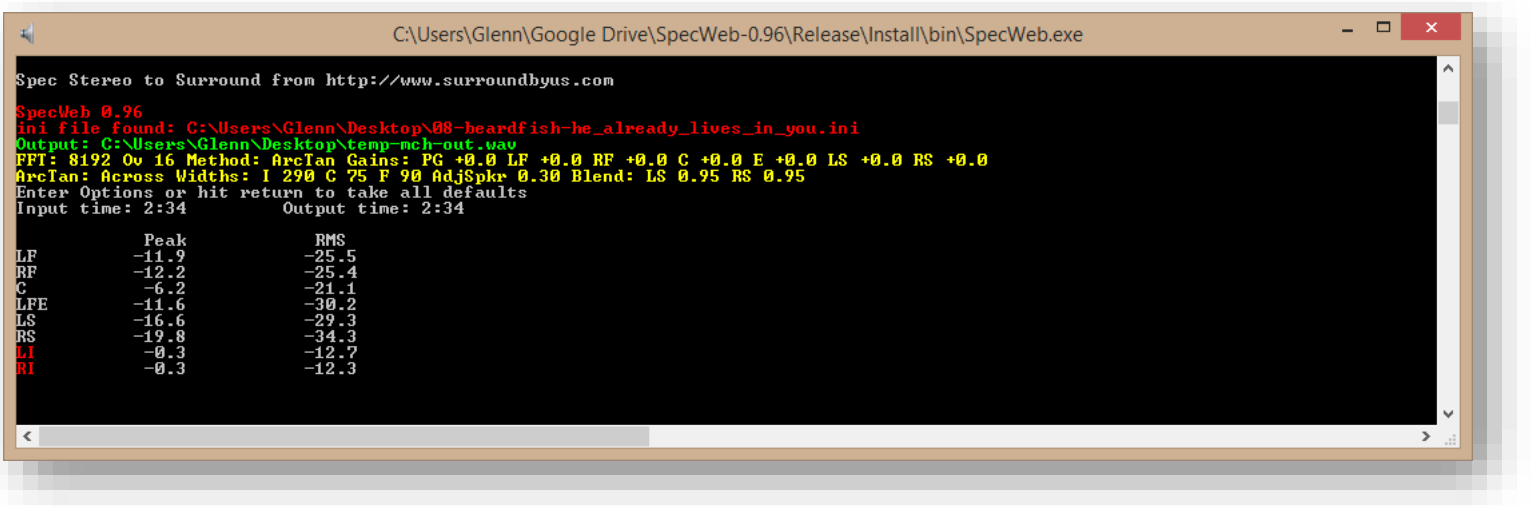
Drag and drop a lossless (.wav or .flac) stereo song file on the SpecWeb icon. A cmd window will open, print the SpecWeb options and list the available audio devices on your system.

> You can remove the "-A" parameter from the SpecWeb icon properties if you don't want it to ask for additional arguments and just start processing.

In this screen shot I've re-sized the window so you can see everything without scrolling:



At this point you can enter any of the command switches or options, but for now just hit return to use the default settings.



SpecWeb then prints the version number (top red line) and tells you it loaded an ini settings file from the install bin directory.

Next it prints input and output file names and locations (in Green), then 2 lines showing the current settings (in yellow).

Below that are a time readout and 8 Peak and RMS meters. One set for each output and input channel. The input channels, “LI” and “RI” are shown in red because they are currently muted (more about that in the section on Live Playback).

Because the default ini file, in the install bin directory, has ZAutomatic Gain (ZAG) enabled, SpecWeb will make two passes. In the first pass the stereo is converted to 5.1 surround and written to a 32 bit float 6 channel temporary wav file, temp-mch-out.wav, in the same folder as the input file.

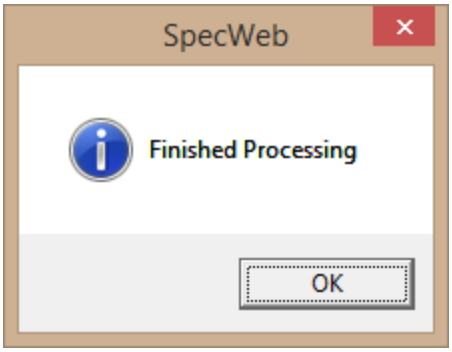
At the end of this pass “ZAG” knows the peak and RMS levels for all the input and output channels and can calculate the proper gains to apply to each channel to both balance the surround channels and ensure maximum level without clipping. In SpecWeb 1.3 the default for ZAG is to match the peak output level to the Peak input level of the stereo input file.

Rather than reconvert from stereo to surround in a 2nd pass, SpecWeb reads in the temp-mch-out.wav file from the first pass, applies the calculated gains and writes the output file. This approach makes the 2nd pass very fast.

In the above screen shot, you can see the input and output files are again printed in green, the Zag settings in yellow, followed by the timer and the final meters.

The elapsed time is the total time for both passes. In the 2nd pass the LI and RI levels will stay at -110 dB as there is no stereo input in the 2nd pass. The meters show the final output levels.

Once the 2nd pass is finished a dialog will open, giving you a chance to see the SpecWeb output:



Once you click OK the SpecWeb window will close (-q option will eliminate this dialog and SpecWeb will just close when finished processing).

At this point you will have a 6 ch. (5.1) flac version of your song. This can be played back via an audio file player, such as foobar2000, streamed to a home theatre system, or DTS or Dolby encoded for buring to CD, DVD, or BluRay disk.

More detailed instructions for SpecWeb options and pre and post processing follow.

Note: If the font size of SpecWeb's command line interface is too small, you can adjust it by setting the default font size of command windows. See section 12 of the command line tips and tricks section of this guide.

Going a Little Deeper

To launch SpecWeb:

Drag and drop one or more (up to 50) lossless stereo .wav or .flac file(s) onto the SpecWeb exe or shortcut. Cue and m3u files may also be dropped.

OR

Send a stereo wav file to SpecWeb via the "Send To" item on the right click (context) menu of the wave file

OR

Integrate SpecWeb as a file converter into foobar2000 (instructions in a later

section) OR

Open a command window and type SpecWeb at the prompt (if SpecWeb.exe isn't in current folder, or in your path, you will need to prepend the path to SpecWeb)

An easy way to open a command window is to navigate in the windows explorer to the folder above the one you want to open a cmd in. Hold down the shift key and right click on the desired folder, and select "Open command window here". More cmd tips and tricks are available in a later section.

If you open a cmd window in the bin directory of the install folder, typing "SpecWeb.exe" without any arguments will print the usage options and other info and then exit.

Dragging and dropping a lossless stereo wav or flac file, using the "send to" menu, or launching SpecWeb on the command line with only an input filename (no other arguments) will also print the usage info, and give you chance to enter options.

The output file, input file name with –mch added, will be written in the folder the input file is in. SpecWeb does NOT ask if it can overwrite the output file.

Example:

```
SpecWeb 1.3

SpecWeb 1.3
Basic Usage: SpecWeb [-F6ch-output-file] stereo-input-file

Advanced Usage: SpecWeb [options] [-Foutfile] infile
By default output filename will be the same as input filename with -mch added
-Gx     = Set pregain to x dB (default 0.0).
-0x     = (Zero) Set LFE output gain to x dB (default 0.0).
          (Set to -110 to turn off LFE (5.0 vs. 5.1).
-1x     = Set lf output gain to x dB (default 0.0).
```

```
-2x     = Set rf output gain to x dB (default 0.0).
-3x     = Set c output gain to x dB (default 0.0).
-4x     = Set ls output gain to x dB (default 0.0).
-5x     = Set rs output gain to x dB (default 0.0).

-zx     = Use 'z' Automatic Gain if x=1 don't use if x=0 (default is use Zag)
-Z      = Set 'Z' Automatic Gain (if -z flag) to 'normonly gains'.
-Lx     = Max Output Level or 'M' to match input level (default 'M').
-Cx     = Center Level, Relative to Fronts (default +3.0).
-Ex     = LFE Level, Relative to Fronts (default -9.0).
-Rx     = Rears Level, Relative to Fronts (default -3.0).
-6x     = Post ZAG VST limiter threshold (default off/none).
          If present, AND ZAG is used, sets the post ZAG limiter threshold
          to x dB below the loudest peak in the track (suggested starting value is -3).

-Mx     = SpecWeb Method (0=Slice, 1=ArcTan, 2=ArcTan with Slice Blends).
-Dx     = Set ArcTan Direction or Pan Mode 0 = Constant Power 1 = Constant Amplitude
(default 0).
-8x     = Set ArcTan Image Rotation (-180 to +180)  to x degrees (default 0).
-ix     = Set ArcTan Image Width to x degrees (default 290).
-cx     = Set ArcTan C Width to x degrees (default 75).
-fx     = Set ArcTan F Width to x degrees (default 90).
-mx     = Set ArcTan Mode to 0 (Sum), 1 (Across), or 2 (Diagonal)  (default 1).
-ax     = Set ArcTan Adjacent Speaker to x (default 0.04).
-lx     = Set ArcTan LS Blend to x (default 0.05).
-rx     = Set ArcTan RS Blend to x (default 0.05).
-7v,w,x,y,z Speaker angles in degrees CCW from zero (straight ahead). LF,RF,C,LS,RS.
          Default is ITU 5.1 angles 30,330,0,110,250.

-ox     = Set Slice Stage One Humidity to x (default 0.9).
-tx     = Set Slice Stage two Humidity to x (default 0.95).
-wx     = Set Slice Wrap Rears to x, 0 = off, 1 = on (default is off).
-Tx     = Set Slice Stage three Humidity to x (default 1.0).

-ppath  = Set Path to browser exe if chrome, edge or firefox is not your default browser
          or 'none' for no local browser (default is to launch your default browser).
-A      = Always ask for additional options before processing input files.
-bx     = Set to 0 for no web browser (default is 1, wait for browser).
-nx     = Set tcp/ip port number for web connection (default is 7681)

-Nx     = Set FFT size to x samples (default is auto by input samplerate if -N flag not
present)
-Wx     = Set Window overlap factor (0,1,2,3, default 3)
          (0 = 2 overlaps, 1 = 4, 2 = 8, 3 = 16)
-K      = use Kaiser window
-H      = use von Hann (Hanning) window
          (default: Hamming window)
-q      = Quiet - don't pop up finished processing message
-Px       Play instead of create output file, x is the audio output device number
-Ix       Input from audio device rather than file, x is the audio output device number
```

```
          (Requires -P flag, -Ix must come after -Px)
-Fx     = Output filename. default is input filename-mch. Ignored for multiple, cue and m3u
files
-Ox     = (Oh) Set Output format (1 = 6 mono wav files, default: 6 = 6 channel file).
-Bdepth = Bit Depth of Output file 1 (16bit), 2 (24 bit), 3 (32bit),
          4 (32bit float), 5 (same bit depth as input file) (default is 24bit).
          -Bx (Bit Depth) should come after the -Ox (output file format) flag.

Available Audio Input Devices:

        0: Microphone (TANDBERG Audio)
        1: CABLE-A Output (VB-Audio Cable
        2: Line (2- USB2.0 High-Speed True
        3: Microphone (2- USB2.0 High-Spee
        4: VoiceMeeter Output (VB-Audio Vo
        5: Microphone Array (Realtek High
        6: Hi-Fi Cable Output (VB-Audio Hi
        7: Stereo Mix (2- USB2.0 High-Spee
        8: SPDIF In (2- USB2.0 High-Speed

Available Audio Output Devices:

        -1: default device
        0: No sound
        1: Speakers (2- USB2.0 High-Speed True HD Audio)
        2: Speakers (VB-Audio VoiceMeeter VAIO)
        3: Speakers (VB-Audio Hi-Fi Cable)
        4: Speakers / Headphones (Realtek High Definition Audio)
        5: SPDIF Out (2- USB2.0 High-Speed True HD Audio)
        6: Headphone (Realtek High Definition Audio)
        7: Speakers (XSplit  Stream  Audio  Renderer)
        8: Speakers (VB-Audio Cable A)
        9: SAMSUNG (Intel(R) Display Audio)
        100: ASIO ASIO Allen and Heath Firewire
        101: ASIO ASIO Driver for C-Media USB Audio
        102: ASIO ASIO4ALL v2
        103: ASIO JackRouter
        104: ASIO M-Audio USB ASIO
        105: ASIO ASIO Saffire
        106: ASIO Voicemeeter Virtual ASIO

Spec Stereo to Surround from http://www.surroundbyus.com
```

A basic run (default options, no Zag)) looks like this:

```
SpecWeb SpecWeb.ini file found in C:\SpecWeb\install\bin
Input: C:\Users\Public\Music\We Are The Dead.flac
Output: C:\Users\Public\Music\ Are The Dead-mch.flac
FFT: 8192 Ov 16 Method: ArcTan Gains: PG +0.0 LF +0.0 RF +0.0 C +0.0 LS +0.0 RS +0.0
ArcTan: Across Widths: I 290 C 75 F 90 AdjSpkr 0.04 Blend: LS 0.05 RS 0.05

Elapsed time: 1 m 8.0 s Input time: 4:59         Output time: 4:59

             Peak            RMS
LF           -7.4           -23.3
RF           -8.4           -25.4
C            -5.1           -23.5
LFE          -9.0           -32.9
LS          -11.2           -26.8
RS           -9.3           -29.1
LI           -0.4           -16.1
RI           -1.3           -18.0
```

The input file is a lossless stereo flac, wav, etc. (but NOT mp3), and the output file is a multichannel flac (6 channels) by default, or 6 mono wavs. The output file will have a bit depth of 24bits (by default).

SpecWeb can read, process, play, and output files at any sample rate from 44.1KHz up to 192KHz. The output sample rate will be the same as the input rate.

Remember if you ask for a multichannel .wav file your file will not be usable if it is larger than ~4.2 GB. This applies especially to the 32 bit float multichannel temp files that SpecWeb uses when Zag is active. For this reason you should convert individual songs vs. a whole album at once. This can easily be done using a cue or m3u file as the input to SpecWeb (more on the album workflow in a later section).

If you ask for a multi-channel file, to encode the results to DTS (or Dolby) you will need the output file split into mono files. You can do this with Audiomuxer:

http://www.surroundbyus.com/sbu/viewtopic.php?f=7&t=135

Specific Audiomuxer instructions are in a later section of this guide

SpecWeb can also process multiple songs in row by listing multiple input files or through the use of either a .cue or .m3u file as an input. The cue file needs to have individual files for each track. Pathnames in cue or m3u files are not supported (all files need to be in the same directory as the cue or m3u file).

The output file name will be the same as the input file, with –mch appended. E.g.: Hands-Tied.flac becomes Hands-Tied-mch.flac.

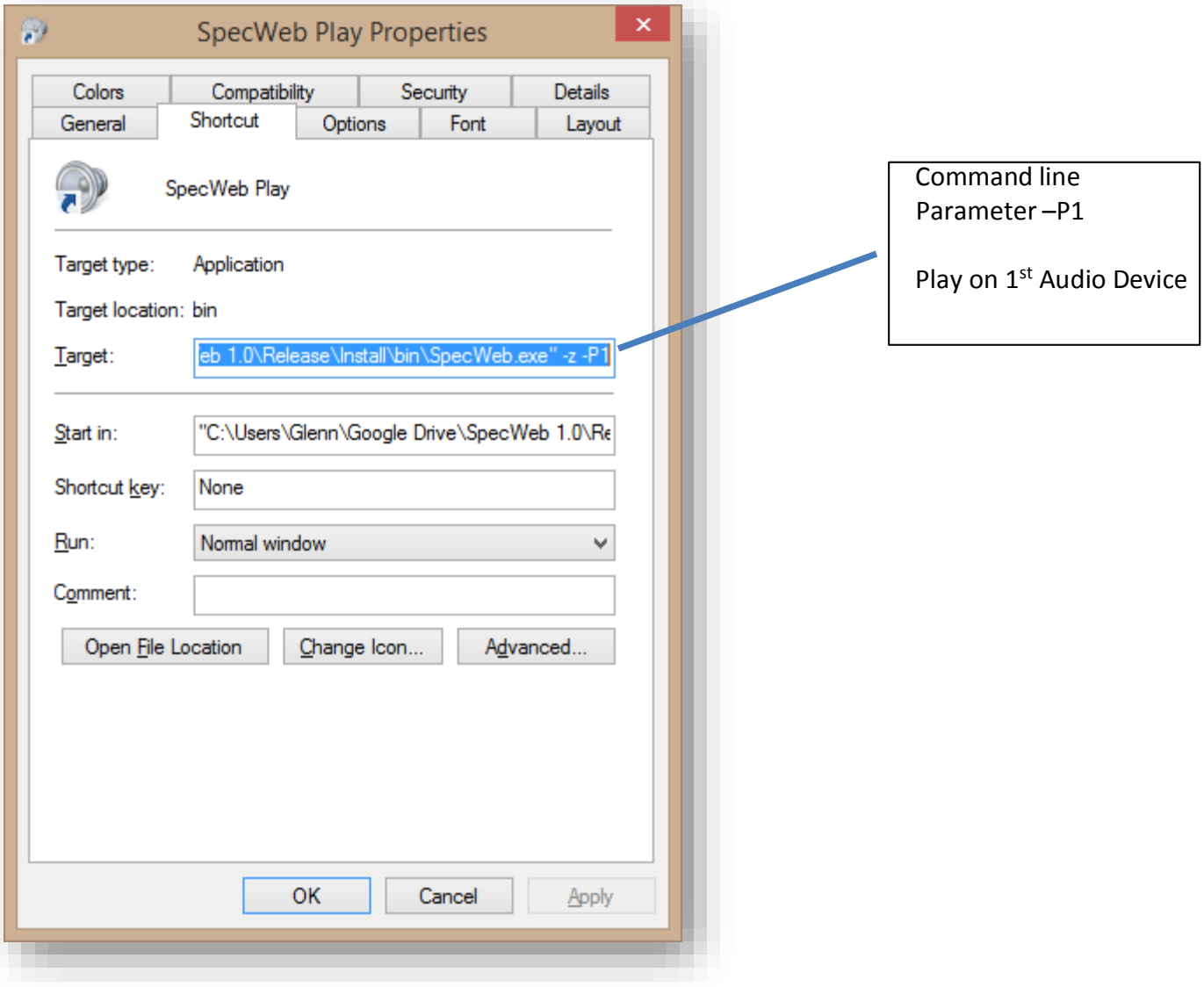
Live Playback

In order to listen to your conversion and adjust settings, SpecWeb includes a live playback capability. You can invoke this either by dropping a file on the “SpeCL Play” icon on your desktop, or by adding the command line opton:

-Px

where x is the audio device number. -P means play vs. output a file. Note:

The SpecWeb Play shortcut icon, created by the installer, has “-P1” as a command line option. If your surround audio output device is not listed by SpecWeb as number one, you will need to edit the properties of the SpecWeb Play shortcut to have the correct device number.



SpecWeb will open your default web browser with the SpecWeb HTML5 interface loaded:

Note: If your default browser is IE, you'll need to use the –p (path to browser) flag to tell SpecWeb the path to a supported browser (Chrome, Firefox, or windows 10 Edge).

Using –pnone will cause SpecWeb to wait for a browser to connect from another device or computer on your local network, such as an iPhone/Pad, Android device, or browser on another computer.

The –b0 flag will tell SpecWeb to not wait for a browser and just use the command line interface.

Once SpecWeb establishes a connection with the web interface (Green Connection Status "LED") your file will begin plaining on the audio interface specified in the –P flag.

Controls that are not relevant with the current settings are blacked out.

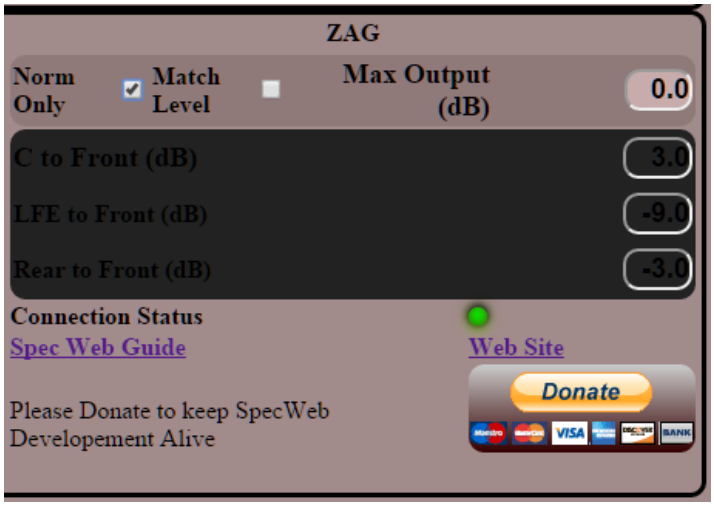
All the controls can be used to adjust things until you get the results you want, then pressing the record button will stop play and process the file with your settings and write the output file.

> Note that if your device has a keyboard, once you have clicked on a slider you can also adjust it with the left and right arrow keys.
>
> If your device does not have a keyboard (such as an iPhone) you may need to "pinch zoom" to make a slider large enough to where you can slide it with your finger.

Clicking on the Save button will save your current settings in an ini file, which depending on its name and location can be used as global, album, or song defaults (more on ini files in a later section).

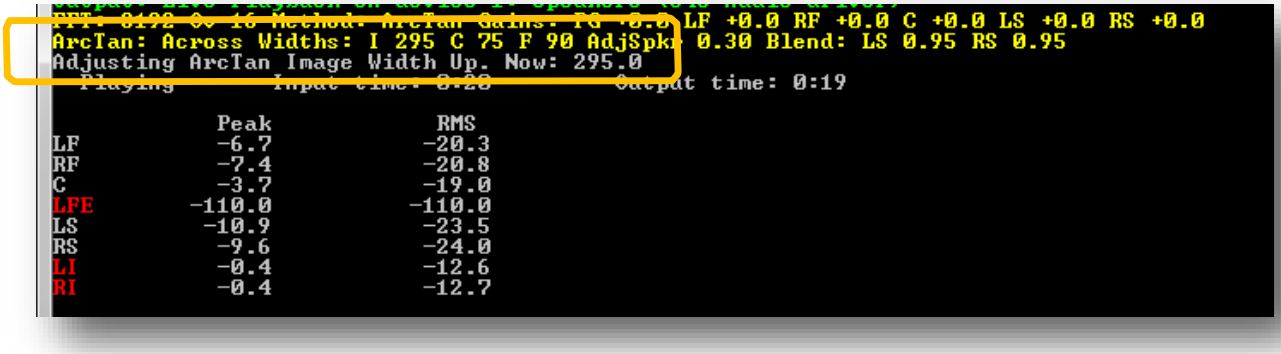
The webpage will close when SpecWeb is closed.

The remaining sections of the guide mainly explain the command line interface, however all of the control descriptions, as to how they affect conversion/upmix, apply to the controls in the web interface as well.



If using the command line interface, while playing, pressing one key on the keyboard either does an action, or puts you in an "adjust this parameter" mode, until you hit another "command key".

To adjust the selected parameter, use the +, i or k keys, as noted below. The 6th line of the SpecWeb output wi ll indicate the current status.



It takes a second or so for the keys to take effect, due to fft latency and playback audio buffer size. If you hold down keys, or press them repeatedly it will take a while for them all to be processed. Use a light touch!

```
Command keys:
Pregain              p
LF gain              1
RF gain              2
C gain               3
LFE gain             ~
LS gain              4
RS Gain              5
Spec Method          M (Shift m) toggles ArcTan --> ArcTan/Slice --> Slice
(ArcTan/Slice = ArcTan with Slice blended rears)
ArcTan Method        m toggles Across --> Diagonal --> Sum
ArcTan Image width   i
ArcTan C width       c
ArcTan front width   f
ArcTan AdjSpkr       a
ArcTan LS blend      l
ArcTan RS blend      r
Slice Stage 1 Hum    ! (Shift 1 on US keyboards)
Slice Stage 2 Hum    @ (Shift 2 on US keyboards)
Slice Stage 3 Hum    # (Shift 3 on US keyboards)
Slice Wrap rears     w

increment current    +
parameter

decrement current    -
parameter

key in a value       k (playback will pause while you key in the value)
for current param

jump forward 30 seconds    tab
jump backwards 30 seconds  Ctrl+tab
```

start song over Backspace
start song over R (Shift r)
and "record"
instead of play
with current settings
(writes output file)

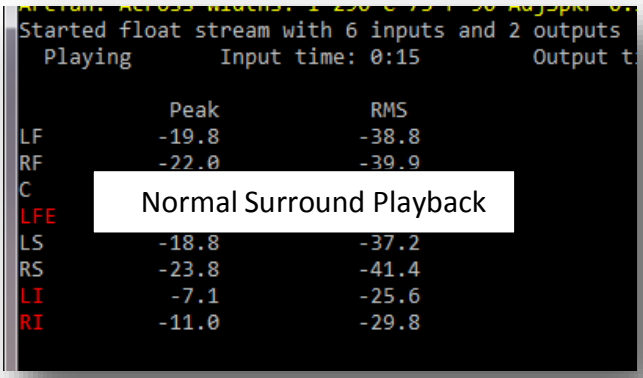
Save Settings S (Shift s)
Between Songs

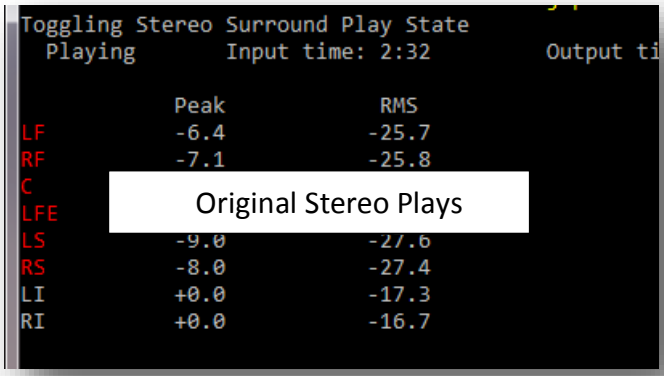
Playback volume v
toggle play/pause space bar

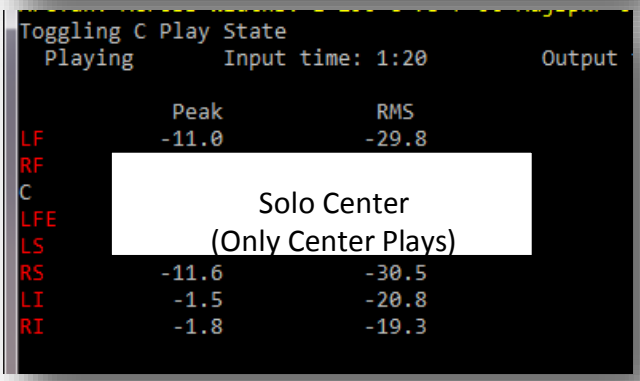
toggle LF solo/mute 6 Red colored channel names, in the meters, are muted channels
toggle RF solo/mute 7
toggle C solo/mute 8
toggle LFE solo/mute . (period)
toggle LS solo/mute 9
toggle RS solo/mute 0

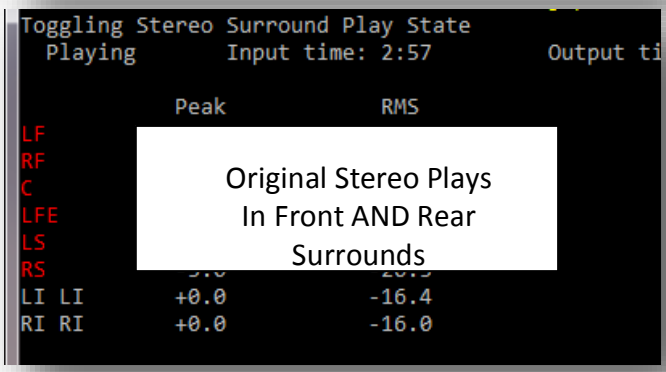
toggle playback * Surround --> Original Stereo --> Original stereo in front AND rear

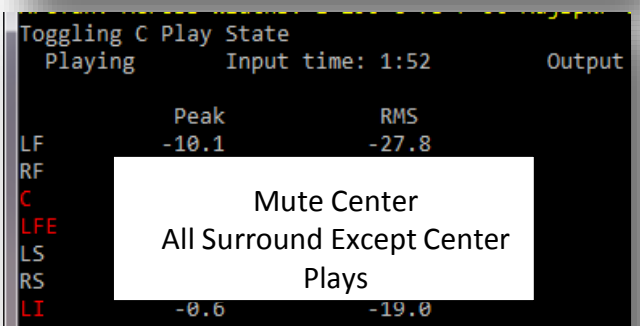
Red colored channel names, in the meters, are muted channels. Double LI and RI names indicate stereo in front AND rear plays











```
stop and exit        e or end

If you use the "S" (Save settings between songs) key, subsequent songs
will start with the final settings of the previous song.
```

Once you are happy with the sound use the "R" ("record") key to write the output file.

Also see the included SpecWeb.ini file (in the bin folder) for information on what you can do with ini files. Open the ini file with Notepad or other text editor. You might want to grab the free Notepad++ program:

http://notepad-plus-plus.org/

as it will recognize the ini file format and use colored fonts to highlight comments, sections, and values.

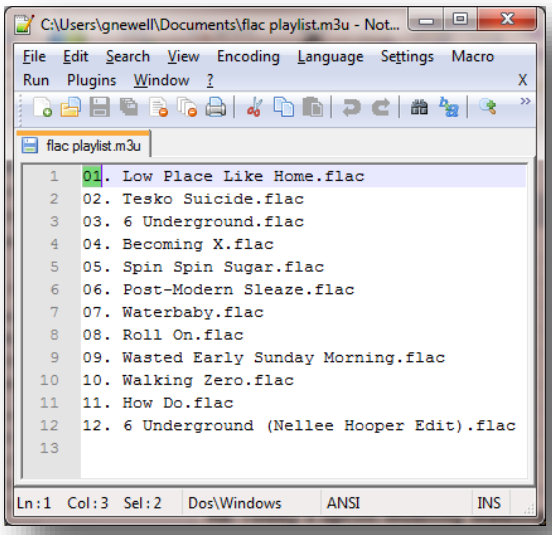
Album Conversion Workflow

The album conversion workflow for SpecWeb is different from that of Spec, running in Plogue Biddle. This is mainly due to the differences in ZAutomatic Gain between the two programs.

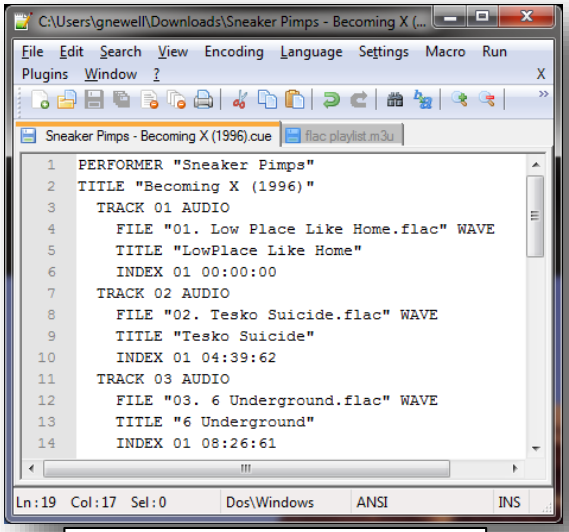
For the Plogue version of Spec you need a single album length stereo input file, and a .cue file that points to that single file.

However, for SpecWeb you need an individual stereo input file for each track, and (optionally) a .cue or .m3u file where each track points to each input file.

The cue file is optional because you can choose to work on one song at a time, using the song as the input file for SpecWeb, or, you can use a cue (or m3u) file as the input to SpecWeb, and SpecWeb will process all the songs in order.



Example .m3u File



Example .cue File
With a File for each Song

In either case, you'll end up with a multi-channel surround file for each song.

If all you want is individual multi-channel surround files (one for each song), when you are finished with SpecWeb, you are finished with your conversion.

If you will be encoding your results with DTS, MLP, of Dolby, you'll want six album length mono files (one for each surround channel). Converting from the individual track multi-channel files to album length monos can easily be accomplished in Audiomuxer, and that is covered in a later section of this guide.

A Note about Sample Rates

In general, you'll want to process in SpecWeb at the sample rate of your target output format, or higher.

DTS music CD:	44.1KHz
DTS DVD:	48KHz → 96KHz
DTS AVCHD/BluRay:	48KHz → 192KHz

If your input file is not already at the same sample rate as your target output format you will want to resample your input files to that rate or higher. Typical programs used to resample are AudioMuxer, foobar2000, R8Brain,

When "up sampling" it is suggested you use a bit depth of 24 bits.

If you hear any undesirable artifacts in your conversion, such as a "harshness" or "graininess", "swooshing" or "backwards" sounding cymbals or snare sounds, you should experiment with up-sampling to a higher sample rate, such as double the target output sample rate. Of course, if you upsample past the target output rate, you will need to "downsample" to the target rate, after processing with SpecWeb.

Workflow

1) Get input songs ready (pre-processing)
    a. Individual files for each song
    b. (optionally) .cue or .m3u file with file entries for each song
    c. If needed, resample input files to desired sample rate for output format
        i. Optionally resample to a higher sample rate than needed for output file format, for higher quality conversion and to eliminate any “swooshing” or backwards cymbal or snare sounds

2) Convert with SpecWeb
    a. Use –Px (x= audio device number) to play
    b. Adjust settings for that song
    c. Use the “R” key to “record” with current settings, writes a multichannel output file for the song
    d. Repeat for each song
        i. If you used a cue or m3u file as an input, after writing a song, SpecWeb will start the next song in play mode
        ii. Note that the settings go back to what was applied via ini file or command line options (vs. what you changed during playback), for each song, unless you use the “S” command key. “S” (save settings) needs to be used before “R”.

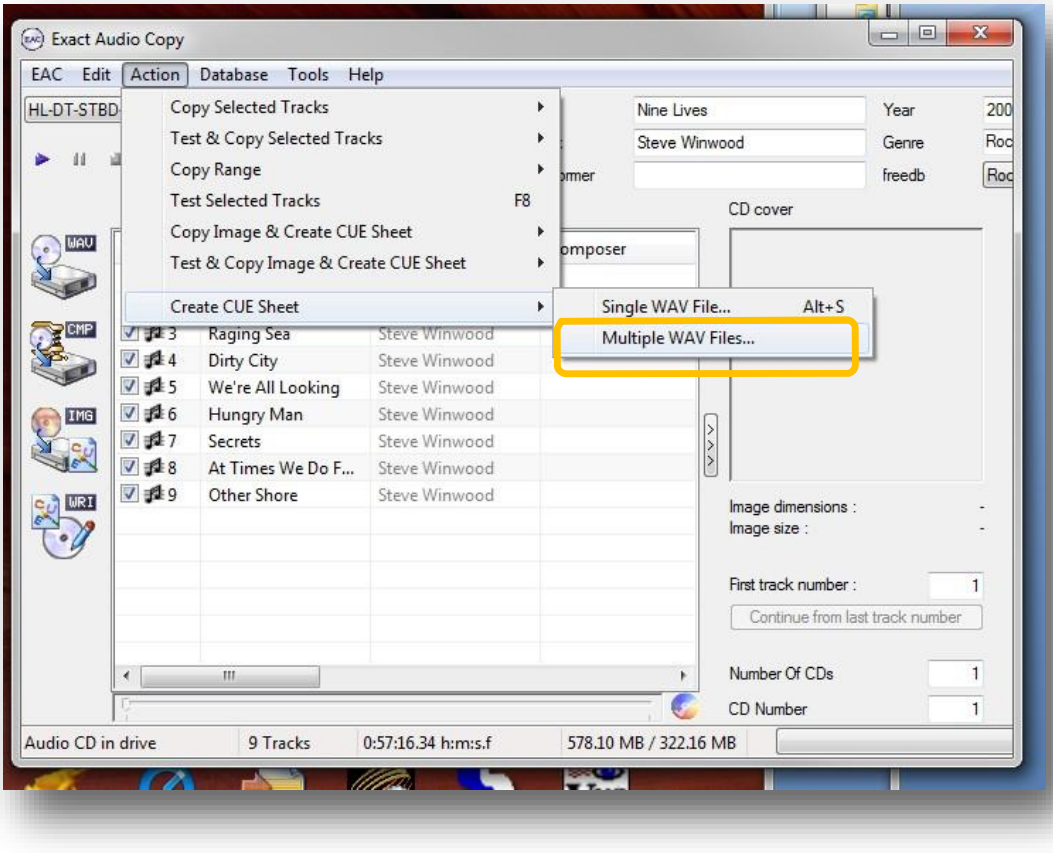
3) Post-processing
    a. If needed (you had processed through SpecWeb at higher than output format rate), resample output files to desired sample rate for output format
    b. If you just wanted individual multi-channel surround files you’re all done
    c. If you are going to encode (DTS, MLP, Dolby)
        i. use Audiomuxer to join the individual output files and make a cue file that points to that file.
        ii. Use Audiomuxer to split the album long joined file into 6 mono files
        iii. Use an encoder to encode your album
        iv. For DTS cd
            1. Edit the Audiomuxer made cue file to point to the dts output file
            2. Burn to cd by loading the cue file into ImgBurn
        v. For DVD, AVCHD, BluRay
            1. Use Audiomuxer to create muxed audio & video (See the Audiomuxer guide)

Using EAC to Rip Songs and Create Cue Files

Exact Audio Copy is great, and free, audio ripping tool:

http://www.exactaudiocopy.de/

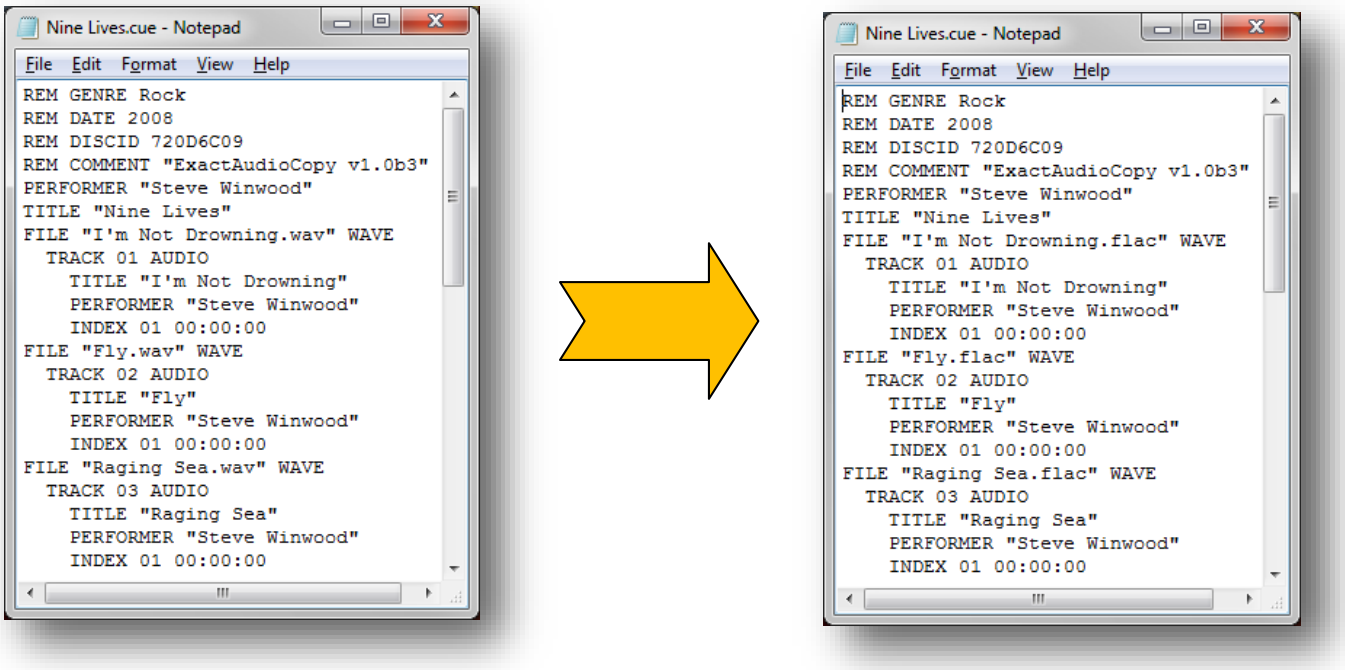
It can be used to both rip and create cue files for SpecWeb's use. To make a cue sheet file, use Action → Create Cue Sheet → Multiple WAV files.



Then to rip the files, use Action → Copy Selected Tracks → Uncompressed.

That will create a wav file for each track, and the tracks and cue file should be ready for SpecWeb. You can test by opening the cue file with foobar2000. If all the tracks show in foobar and play, they your files are ready for SpecWeb.

Optionally you could rip to flac files. Action → Copy Selected Tracks → Compressed (assuming you have EAC set up for flac, vs. mp3 compression). The files will take up less space on your hard drive, but will take slightly longer (a few seconds each) to convert because SpecWeb will have to uncompress the audio data. Also, you w ill have to edit the cue file, replacing all ".wav" extensions with ".flac" (you can leave the "WAVE" string after the extension). You can do this with Notepad or another text editor.



Starting with individual or album length files

If you're starting with individual files and don't have a cue or m3u file, you can do one of the following:

a) Download one from Cue Sheet Heaven http://www.regeert.nl/cuesheet/ (and possibly edit if your files are titled differently).

b) Make one by hand in Notepad

c) Make an m3u file with foobar2000 (File → Save Playlist → select m3u as a file type)

d) Make one using ImgBurn (covered in a later section)

If you're starting with a single album length stereo file you can use Audiomuxer (Select Audio, check: "split in files" then press "cue split"). You'll need a cue file for that operation as well.

How To Win With ArcTan (a mini guide from a contributor)

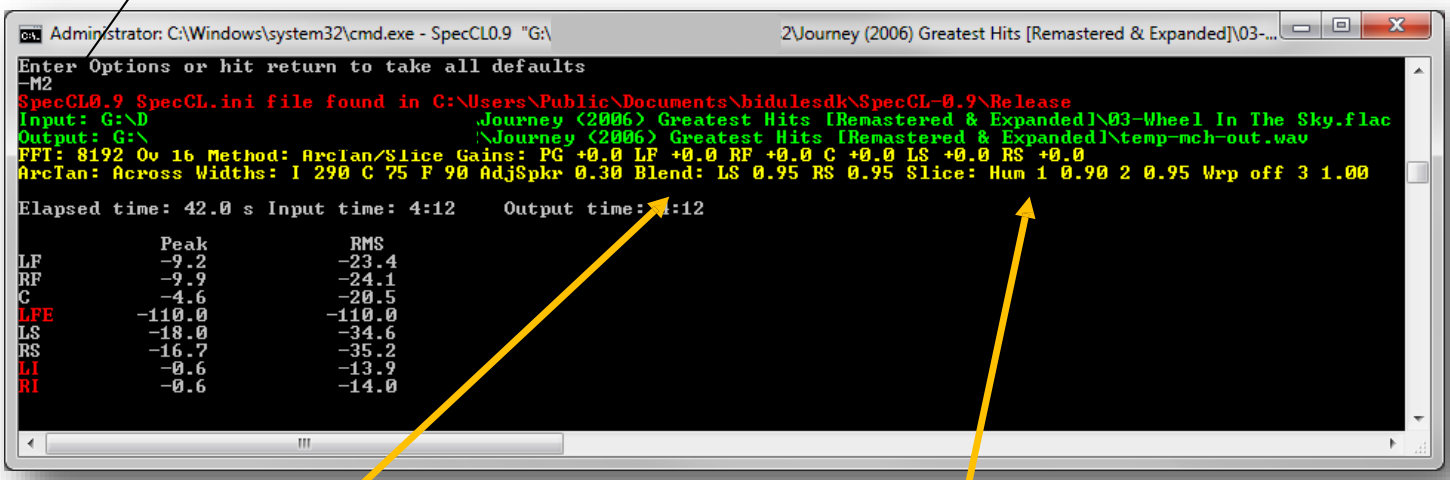
This is a guide we've shared in the past with some SBU members who were having a difficult time navigating through the different controls in ArcTan. Working this way has allowed me to work quicker, and has removed some of the guesswork with ArcTan. As with everything else, this is not a foolproof guide to ArcTan, but I do find that it gives me a running start with a majority of albums across genres.

If starting with your standard rock album, mixed without any hard left or right vocal panning, with not a lot of crazy vocal reverb, I have my ArcTan settings at the following (Note, these are the default values for SpecWeb):

Image Width: 290
Center Width: 75
Front Width: 90
Mode: Across
Adjacent Speaker: .03 with wrap OFF

Here is where the tweaking starts. I live monitor my rears closely at these settings, but with the rear Slice blend set to 0.0 (which is "off"). If I can eliminate most of the vocal in the rears on a track without doing anything else, or at least enough that they're well-masked unless your ear is right at the speaker, I'm done. If not, I'll try slightly raising my center and front width, but not too much. Too much makes the soundfield too front-dominant. I'll also try "sum" mode rather than "across." If I'm still not there, this is where the ArcTan with Slice blended rears come in.

-M2
ArcTan with Slice Blended Rears



I then switch to ArcTan/Slice and have my Slice humidity's at .9 and .95, and start slowly moving the rear blend control away from 0.0 until it sounds good to me. Some tracks take a lot. Some tracks only take a little.

There are some tracks where all this is hopeless because of a more reverb-y vocal, or a track where instrumentation is spare or the vocal is just mixed way up front. This is where I give up on isolating the vocal and see whether "diagonal" mode in ArcTan does a good job at giving me some nice instrumentation back there, but not worry so much about complete vocal isolation. In all probability, the listener is going to experience the vocal up front anyway. I then continue the same process with the Slice rear blend until I like what I hear.

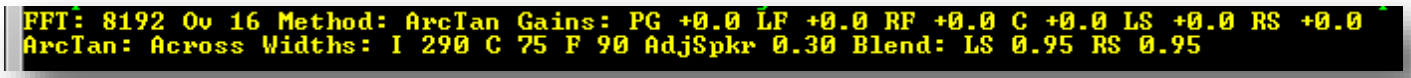
That's pretty much how most of my conversions go.

Absolutely use ZAG.

ArcTan controls during play:

```
Spec Method          M (Shift m) toggles ArcTan --> ArcTan/Slice --> Slice
(ArcTan/Slice = ArcTan with Slice blended rears)
ArcTan Method        m toggles Across --> Diagonal --> Sum
ArcTan Image width   i
ArcTan C width       c
ArcTan front width   f
ArcTan AdjSpkr       a
ArcTan LS blend      l
ArcTan RS blend      r
```

ArcTan Controls



During Playback

```
Spec Method          M (Shift m) toggles ArcTan --> ArcTan/Slice --> Slice
(ArcTan/Slice = ArcTan with Slice blended rears)
ArcTan Method        m toggles Across --> Diagonal --> Sum
ArcTan Image width   i
ArcTan C width       c
ArcTan front width   f
ArcTan AdjSpkr       a
ArcTan LS blend      l
ArcTan RS blend      r
```

Command Line

```
-Mx     = SpecWeb Method (0=Slice, 1=ArcTan, 2=ArcTan with Slice Blends).
-ix     = Set ArcTan Image Width to x degrees (default 290).
-cx     = Set ArcTan C Width to x degrees (default 75).
-fx     = Set ArcTan F Width to x degrees (default 90).
-mx     = Set ArcTan Mode to 0 (Sum), 1 (Across), or 2 (Diagonal)  (default 1).
-ax     = Set ArcTan Adjacent Speaker to x (default 0.04).
-lx     = Set ArcTan LS Blend to x (default 0.5).
-rx     = Set ArcTan RS Blend to x (default 0.5).
```

Ini File

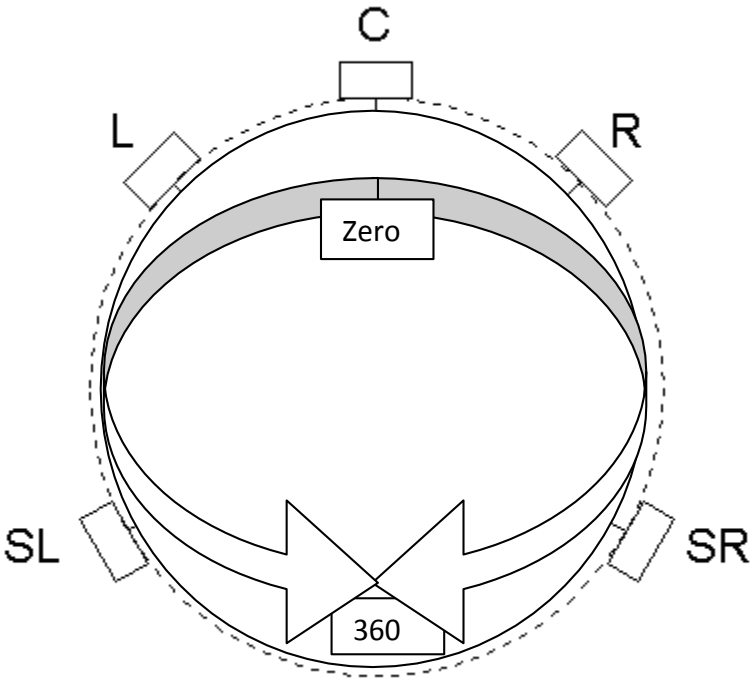
```
[method]
;slice, arctan, arctan+slice
mode=arctan
 [arctan]
imagewidth=290
centerwidth=75
frontwidth=90
;sum, across, diagonal
mode=across
adjspkr=0.04
;1 minus the amount of sound from the blend source. 0=none, 0.05 would be 5% blend
;for ArcTan the blend source is the original stereo, for ArcTan+Slice, the blend source
;is the rears from Slice
;LS blend
lsblend=0.05
;RS blend
rsblend=0.05
```

Width Controls (and Speaker Angles)

ArcTan is a spectral method that uses the Arc Tangent of the ratio of each of the Left and Right frequency magnitude bins to determine the "angle" of the sound the producer created for that frequency in the stereo field. This angle is then magnified to fill a 360 or smaller degree sound field using the "Image Width" control.

The "Total Image Width" control can set from 0 to 360 degrees. A setting of zero will result in all of the sound coming from only the center channel (assuming no "Adjacent Speaker" or "Blend Controls" are used). A setting of 90 degrees should recreate the stereo image (but utilizing all three front speakers). A setting equal to the larger angle between your rear speakers will spread the stereo image from center all the way around to your rears, and a setting of 360 degrees will spread the stereo image 360 degrees around you so that what was the extreme outsides of the stereo field appear to come from behind you, between the rear speakers (as in SLCE with "Wrap" turned on).

While any setting between zero and 360 degrees can be used, it is assumed that settings between the larger angle between your rear speakers and 360 degrees (inclusive) would be used in conversions (for instance if the larger angle between your rear speakers is 240 degrees, you would probably want to experiment with "Image Width" settings between 240 and 360 degrees inclusive).



In ArcTan you can further modify the sound field with width controls individually for center, front, and rear (rear image width is automatically set based on what is "left over" from your center and front width settings).

These controls change the relationship between the ArcTan angle (as modified by the width control) and the actual angle each frequency bin is output at. Larger widths mean more of the stereo sound field will be mapped into those speakers, and smaller widths mean less. With the controls set at 72 degrees the relationship is basically 1:1 . The output angle is "capped" at the value of the image width control.

ArcTan has three different modes of distributing the sound into the surround field:

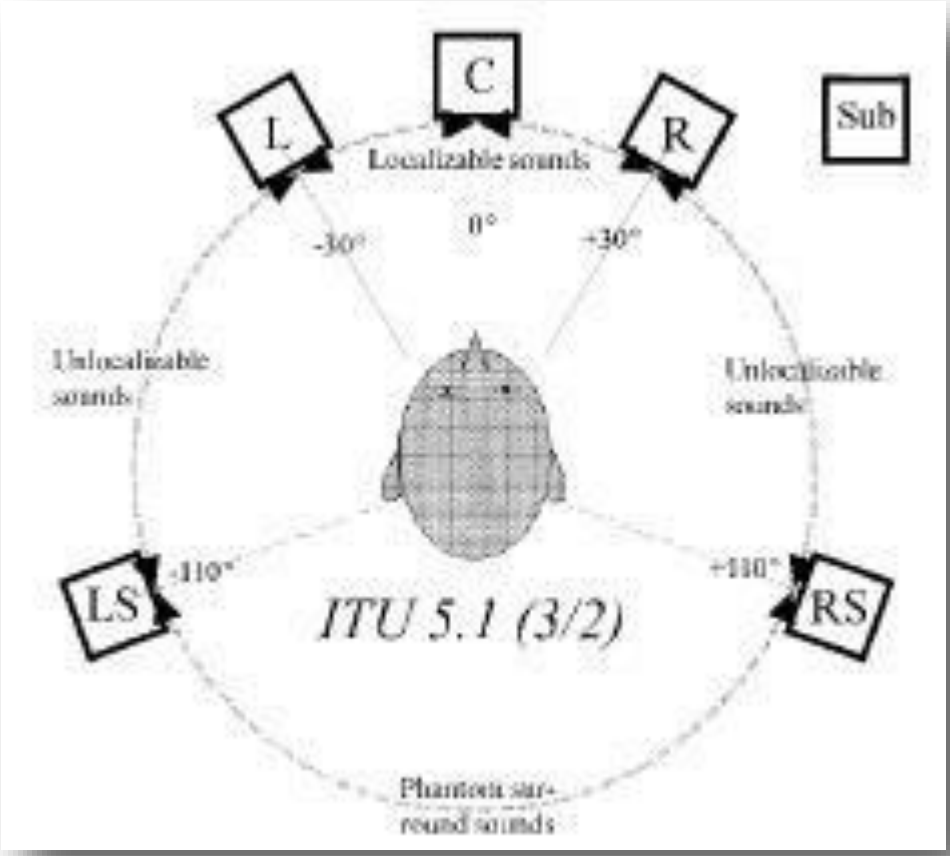
1) Sum - The original Left and Right magnitudes of the frequency bins are added together and output at the calculated angle. This should be the most accurate reproduction/expansion of the original mix

2) Across – The louder of the original left and right magnitude is output at the calculated angle, and the quieter signal is output at an equal angle on the other side of zero degrees. This will give a more "full" sound, with more sound being concentrated toward the front and center speakers

3) Diagonal - The louder of the original left and right magnitude is output at the calculated angle, and the quieter signal is output at an angle 180 degrees from the calculated angle. This has the interesting effect of putting sounds that are slightly off center behind you, in both rears. We've found this to be particularly useful in songs where harmony vocals are panned just a little left or right (vs. the lead vocal in the center).

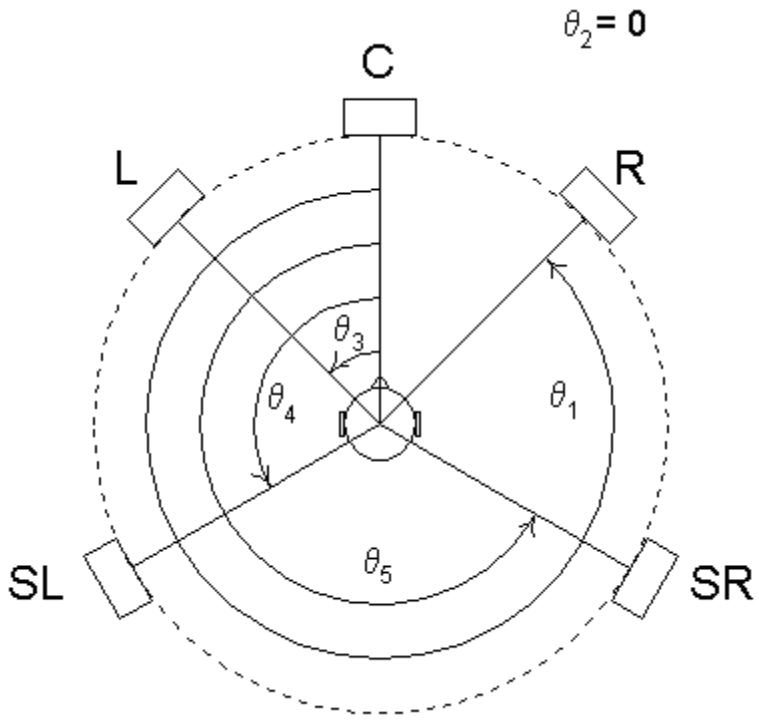
   Note that larger Center Width vs. Front Width settings are another possible way to spread out things panned only slightly off center in the original stereo.

By default SpecWeb's calculations assume your speakers are at the ITU recommended positions:



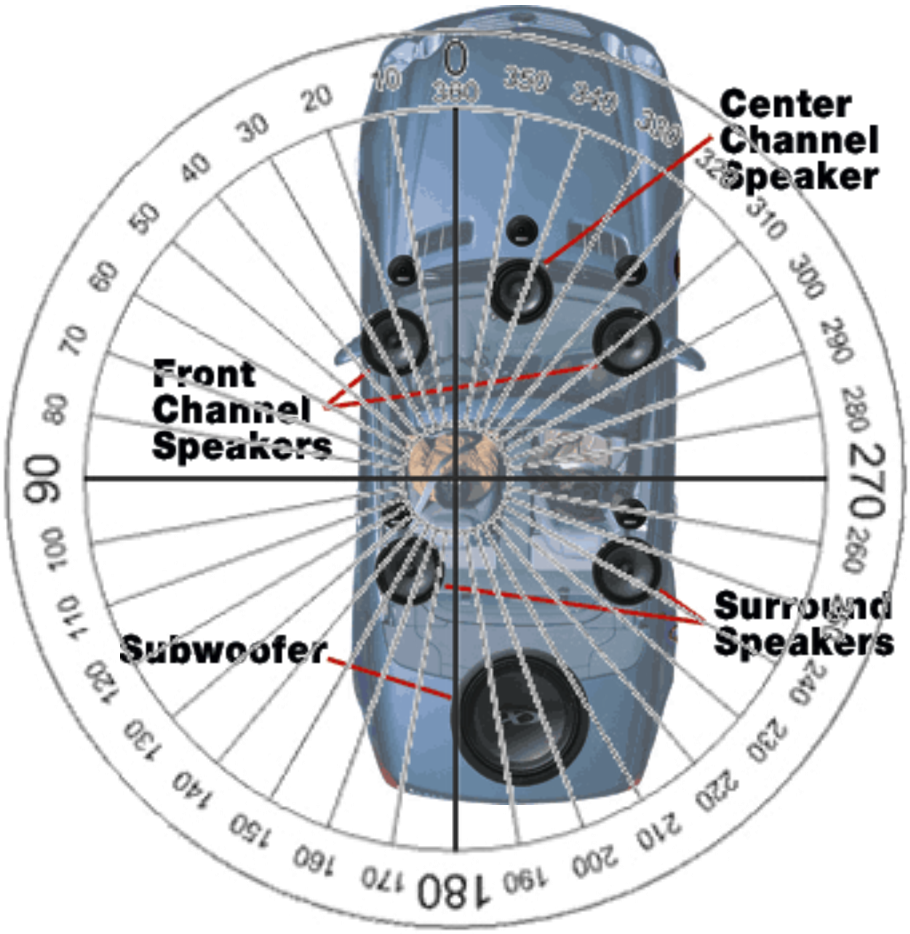
However, you can tell SpecWeb the actual angles to your speaker positions via ini file settings or command line arguments.

Speaker angles are measured in degrees counter clockwise from the (normal) center channel position.



LFE is non directional so isn't considered here.

If you are making upmixes for yourself, and for one particular surround setup, you will get the best results by setting the speaker angles to match your surround setup. For instance you could optimize sound in your car, for the driver, by setting the speaker angles as appropriate for the car with the driver as the listening position:



20,310,340,150,240 for LF, RF, C, LS, RS

If you are making upmixes for others, and you don't know their setup, it is best to stick with ITU angles:

30,330,0,110,250 for LF, RF, C, LS, RS

Another use for this is if you wanted to make quad upmixes, you will want to set the angles for a quad setup such as a square, 45,315,0,135,225 (and set the centerwidth=0)

Adjacent Speaker and Blend Controls

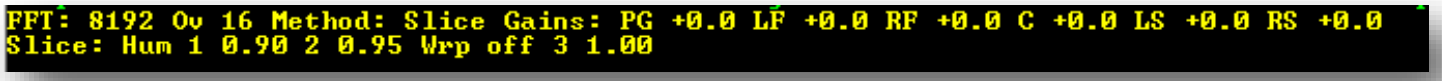
The adjacent speaker control lets you add in some signal destined for each speaker to the speakers on either side of it. This can “fatten” or “fill in” the sound. We have found that 0.04 (The default) is a good setting for this control. Zero is “off” and 1.0 would be essentially 5 channel mono.

The blend controls allow you to mix in sound to the rear channels, either from the original stereo (ArcTan mode) or from the Slice method (-M2 ArcTan with Slice blended rears). 0 = no blend and 1 = only the blend source (no sound from ArcTan). Just a touch of blends (0.05, the default) tends to be great for ArcTan, while with ArcTan with Slice a lower setting may be optimal.

These controls are useful if the pure rear signals from ArcTan sound artificial or strange in some way.

Slice Controls

While ArcTan creates a continuous sound field between speakers, the Slice method "Slices" the sound into 5 sections and outputs each section from one of the 5 surround speakers.



During Playback

```
Spec Method          M (Shift m) toggles ArcTan --> ArcTan/Slice --> Slice
(ArcTan/Slice = ArcTan with Slice blended rears)

Slice Stage 1 Hum    ! (Shift 1 on US keyboards)
Slice Stage 2 Hum    @ (Shift 2 on US keyboards)
Slice Stage 3 Hum    # (Shift 3 on US keyboards)
Slice Wrap rears     w
```

Command Line

```
-Mx     = SpecWeb Method (0=Slice, 1=ArcTan, 2=ArcTan with Slice Blends).
-ox     = Set Slice Stage One Humidity to x (default 0.9).
-tx     = Set Slice Stage two Humidity to x (default 0.95).
-wx     = Set Slice Wrap Rears to x, 0 = off, 1 = on (default is off).
-Tx     = Set Slice Stage three Humidity to x (default 1.0).
```

INI File Options

```
[method]
;slice, arctan, arctan+slice
mode=slice
[slice]
;A Humidity of 1 = 100% wet, or SLICE processed signal
;A Humidity of 0 = 0% wet or 100% dry signal from the previous stage
; (or original left and right in the case of stage one).
;Stage 1 Humidity
stage1humidity=0.90
;Stage 2 Humidity
stage2humidity=0.95
; Wrap  Rears adds a third stage of separation
;This has the effect of taking what was the extreme
;outside of the original stereo field and placing it
;in both rear speakers, creating a virtual center rear
wrap=off
;Stage 3 Humididty
stage3humidity=1.00
```

Stage Humidity Controls

Stage one is the humidity setting for the input of stage 2, affects LF, RF, LS, and RS. Stage two is the humidity setting for the LS and RS outputs.

A Humidity of 1 = 100% wet, or SLICE processed signal. A Humidity of 0 = 0% wet or 100% dry signal from the previous stage (or original left and right in the case of stage one). Humilities near one are used to decrease any artifacts heard in the outputs.

Recommended settings to start with are 0.9 for stage one and 0.95 for stage two.

Wrap Rears adds a third stage of separation. This has the effect of taking what was the extreme outside of the original stereo field and placing it in **both** rear speakers, creating a virtual center rear. This causes the sound field to wrap around you 360 degrees.

To learn more about SPEC, or to have more flexibility and control of the stereo to surround process, you can get the full (current version) SPEC package here (requires Plogue Biddle):

http://www.surroundbyus.com/sbu/viewforum.php?f=8

LFE

The LFE channel is the .1 in 5.1. LFE stands for Low Frequency Effects. **It is not the subwoofer channel**. It's also called the .1 channel because it is not a full frequency range channel, typically only carrying sounds up to about 120Hz.

The LFE channel is NOT the "subwoofer channel. Whatever system you use to listen to 5.1 music does "bass management" and (assuming you don't have full range speakers) extracts the subwoofer signal from the 5.0 surround channels, and sends it on to your subwoofer.

Technically speaking, the LFE channel should not really be used for surround music. It's meant to have sounds that DON'T appear in the other 5 channels (special effects sounds). However, in stereo to surround conversions most people expect 5.1 vs. 5.0 and you can add some LFE to give the deep bass a little kick.

If you do decide to go with 5.0, SpecWeb will run a little faster, and will create an empty LFE channel, so your output files are still in ITU order (LF, RF, C, LFE, LS, RS).

If you stick with 5.1 (the default) we have ensured that any signal in the LFE channel is time and phase aligned with the other five channels. This is to avoid any low frequency cancelation in your subwoofer or listening environment, due to adding sounds in the LFE that are also present in the other 5 channels.

SpecWeb's LFE is an infinite slope digital filter (runs in the frequency domain). Any sounds below 20Hz or above 90Hz are rejected. The frequency response between 20Hz and 90Hz is flat.

> Note: This is a different approach that in Spec in Ploge Biddule, where digital versions of analog filters are used in the time domain.

During Playback

```
Command keys:
LFE gain              ~
toggle LFE solo/mute  . (period)
```

LFE Command Line Options

Output Gain:

-0x = (Zero) Set LFE output gain to x dB (default 0.0).
(set to -110 to turn off LFE processing)

Zag:

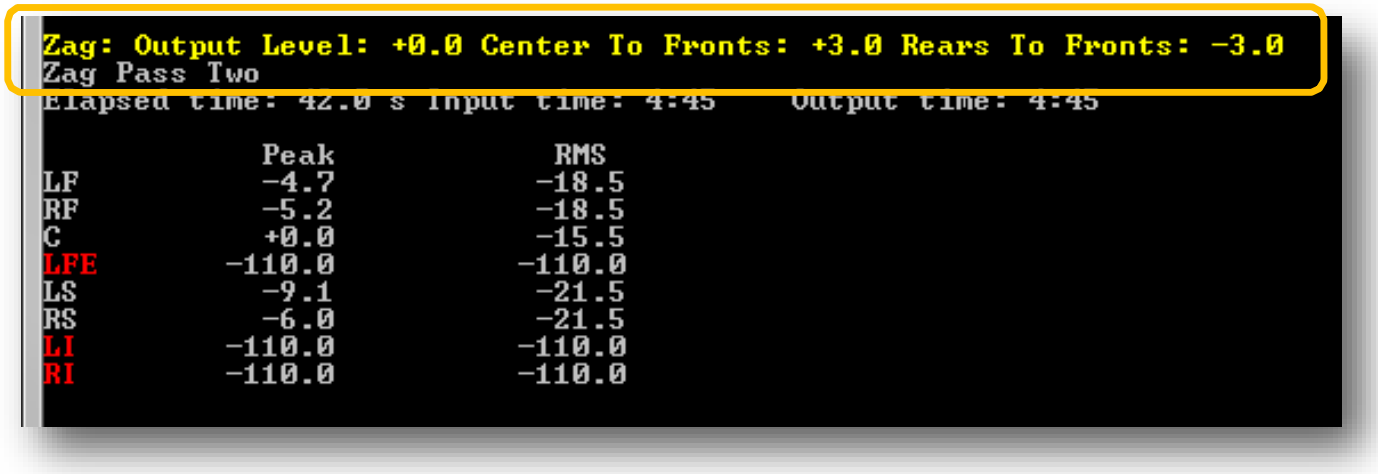
-Ex = LFE Level, Relative to Fronts (default -9.0).

LFE INI File Options

```
[gain]
; use -110 for LFE to turn off LFE (5.0 vs. 5.1) and speed up processing
lfe=0

[zag]
;lfe level, realative to fronts (dB)
;default -9
lfe2fronts=-9
```

ZAutomatic Gain Controls (Zag)



Because the default ini file, in the install bin directory, has ZAutomatic Gain (ZAG) enabled, SpecWeb will make two passes. In the first pass the stereo is converted to 5.1 surround and written to a 32 bit float 6 channel temporary w64 file, *pid*-mch-out.w64, in the same folder as the input file.

At the end of this pass "ZAG" knows the peak and rms levels for all the input and output channels and can calculate the proper gains to apply to each channel to both balance the surround channels and ensure maximum level without clipping.

Rather than reconvert from stereo to surround in a 2nd pass, SpecWeb reads in the temp-mch-out.wav file from the first pass, applies the calculated gains and writes the output file. This approach makes the 2nd pass very fast.

In SpecWeb 1.3 the default setting for Zag is for the peak output level to match the peak input levels in the stereo input file. This allows for "quiet" songs in an album to retain their original volume, relative to the rest of the album (matchlevel=yes in ini files)

SpecWeb 1.3 also has an additional new Zag option "normonly" gains, for "normalize only". This means that rather than using the channel to channel ratios (Center to Fronts, Rears to Fronts, and LFE to Fronts) Zag will normalize the peak output level to your output level settings (or match the level from the input as described above) but will let the original stereo + upmix method determine the channel to channel levels. Assuming a perfectly setup and calibrated 5.1 ITU speaker system, this should give the most "true to the original stereo" results. This is not the default settings however, allowing you to customize channel to channel levels for your setup/system.

In the above screen shot, you can see the the Zag settings in yellow followed by the timer and the final meters.

The elapsed time is the total time for both passes. In the 2nd pass the LI and RI levels will stay at -110 dB as there is no stereo input in the 2nd pass (you can scroll up to pass one to see the LI and RI values). The meters show the final output levels.

Zag Command line Options

```
-zx     = Use 'z' Automatic Gain if x=1 don't use if x=0 (default is use Zag)
-Z      = Set 'Z' Automatic Gain (if -z flag) to 'normonly gains'.
-Lx     = Max Output Level or 'M' to match input level (default 'M').
-Cx     = Center Level, Relative to Fronts (default +3.0).
-Ex     = LFE Level, Relative to Fronts (default -9.0).
-Rx     = Rears Level, Relative to Fronts (default -3.0).
```

Command line options override any ini file options.

Zag INI Options

```
[zag]
;set to yes to use Z Automatic Gain, set to "no" for no Automatic Gain
;set to "normonly" to only normailize track so that loudest peak = your output setting
;(no channel to channel adjustments)
;default "yes"
usezag=yes
;match input song output level
;overrides output level setting if yes
;default=yes
matchlevel=yes
;peak output level will be (dB)
;default 0
outputlevel=0
;center level, relative to fronts (dB)
;default 3
center2fronts=3
;lfe level, relative to fronts (dB)
;default -9
lfe2fronts=-9
;rears level, relative to fronts (dB)
;default -3
rears2fronts=-3
```

Misc. Controls

Command line

```
-ppath  = Set Path to browswer exe if chrome, edge or firefox is not your default browser
             or 'none' for no local browser (default is to launch your default browser).
-A      = Always ask for additional options before processing input files.
-q      = Quiet - don't pop up finished processing message
-bx     = Set to 0 for no web browser (default is 1, wait for browser).
-nx     = Set tcp/ip port number for web connection (default is 7681)

-Nx = Set FFT size to x samples (default is auto by input samplerate if -N flag not present)
-Wx        = Set Window overlap factor (0,1,2,3, default 3)
           (0 = 2 overlaps, 1 = 4, 2 = 8, 3 = 16)
-K      = use Kaiser window
-H      = use von Hann (Hanning) window
           (default: Hamming window)
-Px      Play instead of create output file, x is the audio output device number
-Ix      Input from audio device rather than file, x is the audio output device number
          (Requires -P flag, -Ix must come after -Px)
-Fx      = Output filename. default is input filename-mch. Ignored for multiple, cue and m3u files
-Ox      =(Oh) Set Output format (1 = 6 mono wav files, default: 6 = 6 channel file).
-Bdepth = Bit Depth of Output file 1 (16bit), 2 (24 bit), 3 (32bit),
          4 (32bit float), 5 (same bit depth as input file) (default is 24bit).
          -Bx (Bit Depth) should come after the -Ox (output file format) flag.
```

INI File Controls

```
[fft]
;size is a a power of 2 >= 64 =< 32768
;default "auto" which will use the below sizes based on input file sample rate
; Recommended size for 48/44.1Khz input files = 8192. 96kHz input files = 16384.  176/192KHz input files = 32768.
size=auto
;2, 4, 8, 16
;default 16 Higher number = higher quality and more cpu load
overlap=16
;hanning, hamming, kaiser,
;default hamming
window=hamming
[outputfile]
; mono, mch (6 mono file or a single 6 channel flac)
;default mch (6 channel flac)
channels=mch
;16, 24, 32, 32f, same (same=same as input, 32 and 32f are not compatible with flac
;output type will be changed to wav)
;default 24
bitdepth=24
```

```
[browser]
;yes,no
waitforbrowser=yes
;pathtobroswer is needed if your default browser is not Edge, Chrome, or firefox (e.g. if your default browser is ie)
;if your default browser is ie, install a supported browser and uncomment the bellow and check the path (or use "remote" and an iphone/iPad/Android device)
;pathtobroswer can also be "none" (without quotes), meaning no local browser on this computer, but wait for a remote browser to connect.
;pathtobrowser="C:\Program Files (x86)\Google\Chrome\Application\chrome.exe"
;portnumber for websocket server to use. default is 7681. if you have a firewall running on this computer is will need to allow SpecWeb on this TCP port
portnumber=7681
```

The FFT Size and Overlap affect the quality of your conversions. Smaller sizes and overlaps will have less quality. The tradeoff is in the time it takes to process the conversion. An FFT size of 8192 and an overlap of 16 are a good quality for 44.1 and 48KHz sample rate conversions. If your target output sample rate is higher than 48KHz you should experiment with higher FFT sizes (must be a power of 2). The only reason to use a smaller FFT size than 8192 (or an overlap factor below 16) is if during live playback your computer cannot keep up (gaps, glitches, or buzzing during playback).

In SpecWeb 1.3, by default, the FFT size is set automatically based on the input file sample rate.

The three window types, Kaiser, Hanning, and Hamming (default) will all have a slightly different sound. Feel free to experiment.

The output file controls can be used to select between a multi-channel or multiple mono files, as well to specify the output bit depth. The default output file type is flac for multi-channel and wav for multiple mono files. If you select 32bit float as a bit depth and multi-channel output the file type will be wav. The default bit depth is 24 bits (suitable for all encoders).

Given the way ZAG works in SpecWeb, and the ease of joining mult-channel files and splitting them into multiple monos in Audiomuxer, there is little reason to select multiple mono type output (if you are going to encode more than one song).

The browser section of the ini file lets you specify which HTML5 compliant browser to use (or don't use one at wall), wait or don't wait for a browser to connect, and the port number SpecWeb's web server runs on.

INI Files

There are three ways to change the control settings used in SpecWeb:

1) During Playback, using the command keys

2) On the command line, or at the "Enter Options" prompt (if you have specified only an input file on the command line, or dragged and dropped an input file)

3) Via ini files

The ini files give you the capability to:

a) Have different "default" settings than those provided with SpecWeb (SpecWeb.ini file in the same directory as SpecWeb.exe)

b) Have different "default" settings than those provided with SpecWeb (SpecWeb.ini file in the "starting directory")

c) Use the same settings for all tracks on an album (SpecWeb.ini file the same directory as the input files)

d) Have custom settings for each track in an album (a file with the same name as the input file, except with an ".ini" extension, in the same directory as the input file).

Ini files can be in four different places:

1) In the same directory as SpecWeb.exe. This will affect SpecWeb globally, unless one of the below ini files is present

2) In the "starting directory" of the SpecWeb command. If you are running SpecWeb from a shortcut, the "starting directory" is controlled by the shortcut properties (Right Click → Properties). If you are running SpecWeb from a command prompt, the starting directory is the directory you were in when you invoked SpecWeb. If you are running SpecWeb as a foobar2000 converter, the starting directory is the directory containing the file foobar2000 is converting.

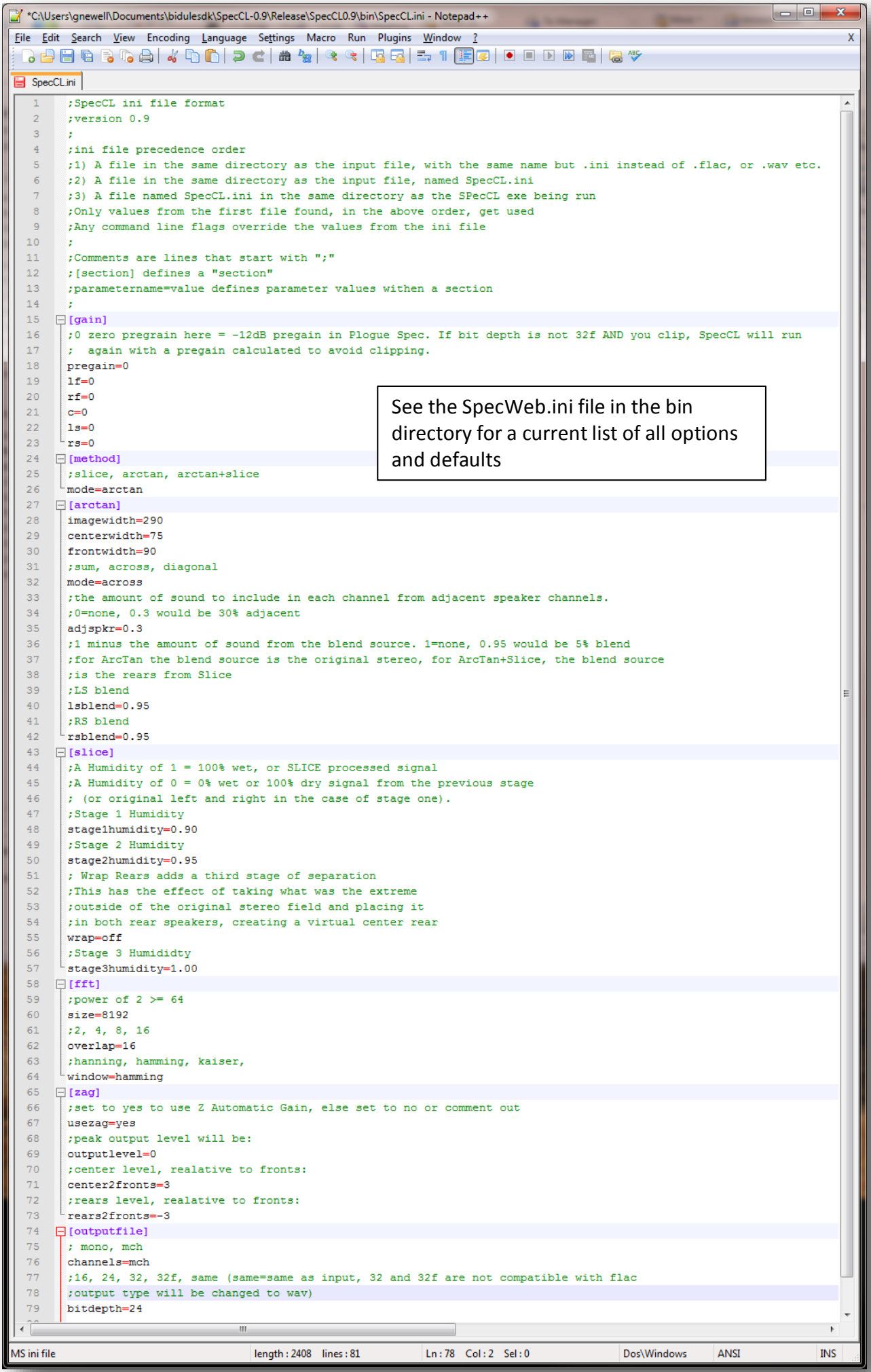
   SpecWeb will look for a file named "SpecWeb.ini" in the starting directory. If no other ini files are found in the below cases, a SpecWeb.ini file in the starting directory will control settings (unless overridden by command line options or during live playback).

3) A file named "SpecWeb.ini" in the same directory as the input file being converted. If no other ini files are found in the below case, a SpecWeb.ini file in the input file directory will control settings (unless overridden by command line options or during live playback).

4) A file with the same name as the input file, except with an ".ini" extension, in the same directory as the input file will control settings (unless overridden by command line options or during live playback).

The instructions for usage and values of the ini files are included as comments in the SpecWeb.ini file in the installation bin directory.

You can edit ini files with Notepad, or any other text editor. The free Notepad++ http://notepad-plus-plus.org/ is especially nice because it recognizes and color codes the syntax of ini (and many other) files.



See the SpecWeb.ini file in the bin directory for a current list of all options and defaults

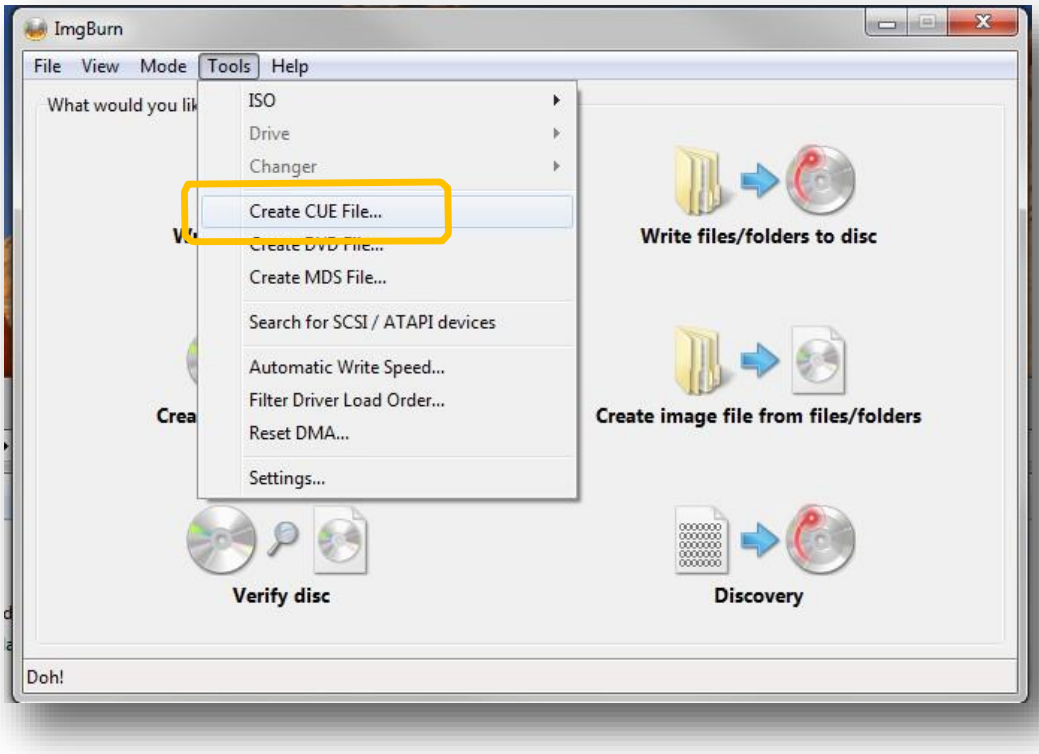
Making a Cue File, for SpecWeb, using ImgBurn

ImgBurn is a free tool for burning CDs and DVDs

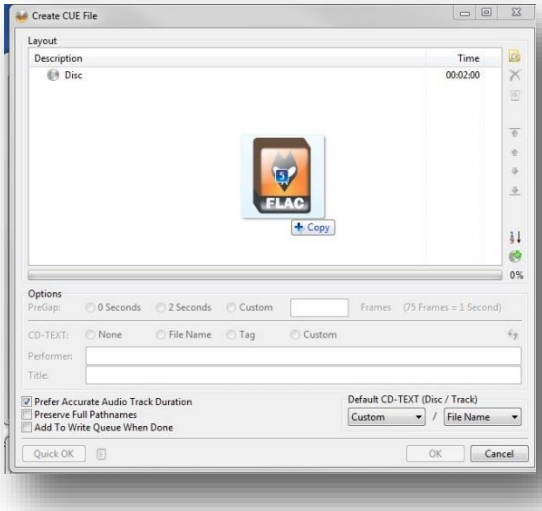
http://www.imgburn.com/

Note: for flac file support, you'll also need madflac:
http://forum.doom9.org/showthread.php?t=130498

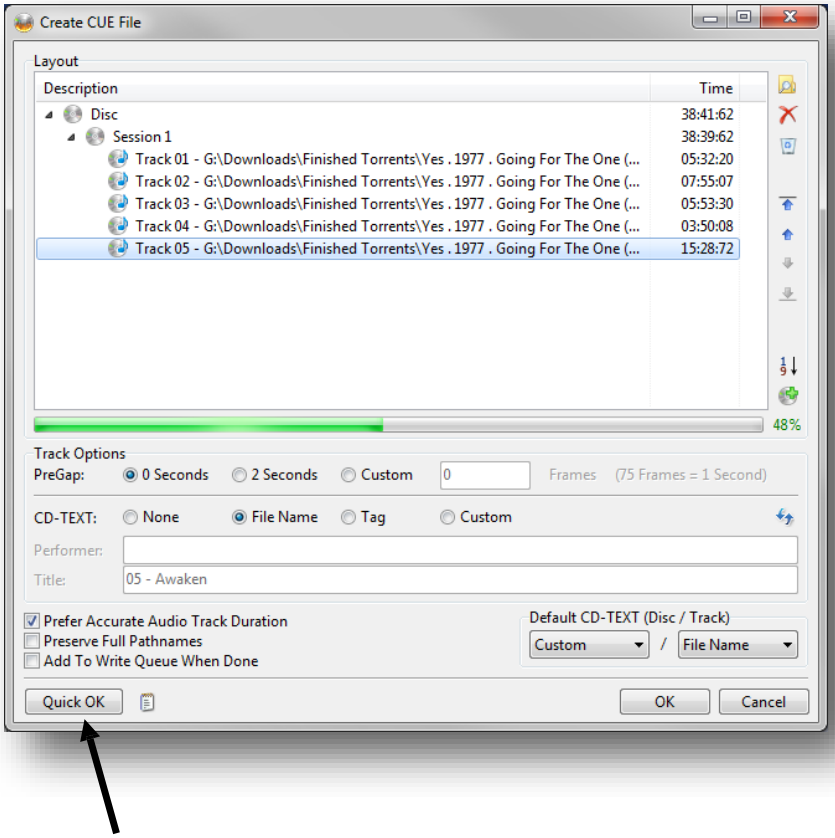
However it is also an easy way to generate cue files from individual song files.



Drag tracks in:



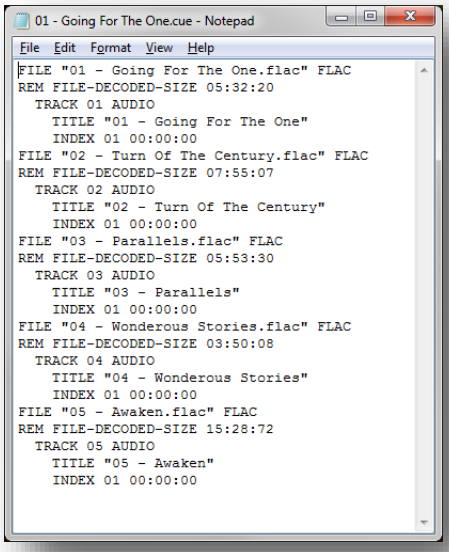
Tracks will be analyzed:



Press “Quick OK”. (You don’t need to wait for the status bar to finish).

That’s it!

If you open your cue file in Notepad, it will look similar to this:



Your cue file is ready for SpecWeb

Using Audiomuxer to Join Tracks and Make Monos for Encoding

Audiomuxer is great (and free) tool to have in your toolbox. Also from SurroundByUs.com:

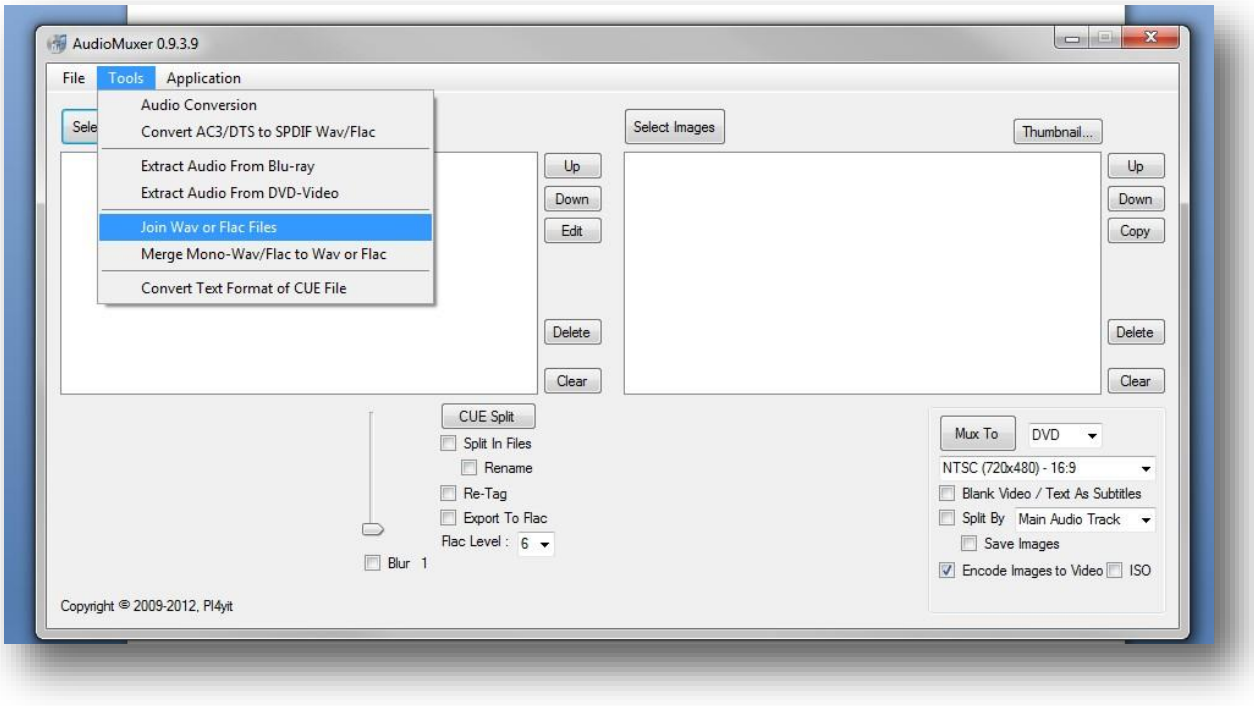
http://www.surroundbyus.com/sbu/viewtopic.php?f=7&t=135

Besides making it quick and simple to create surround music DVDs, AVCHDs and BluRays from SpecWeb or Spec converted music, it can also do a lot of audio file conversions.

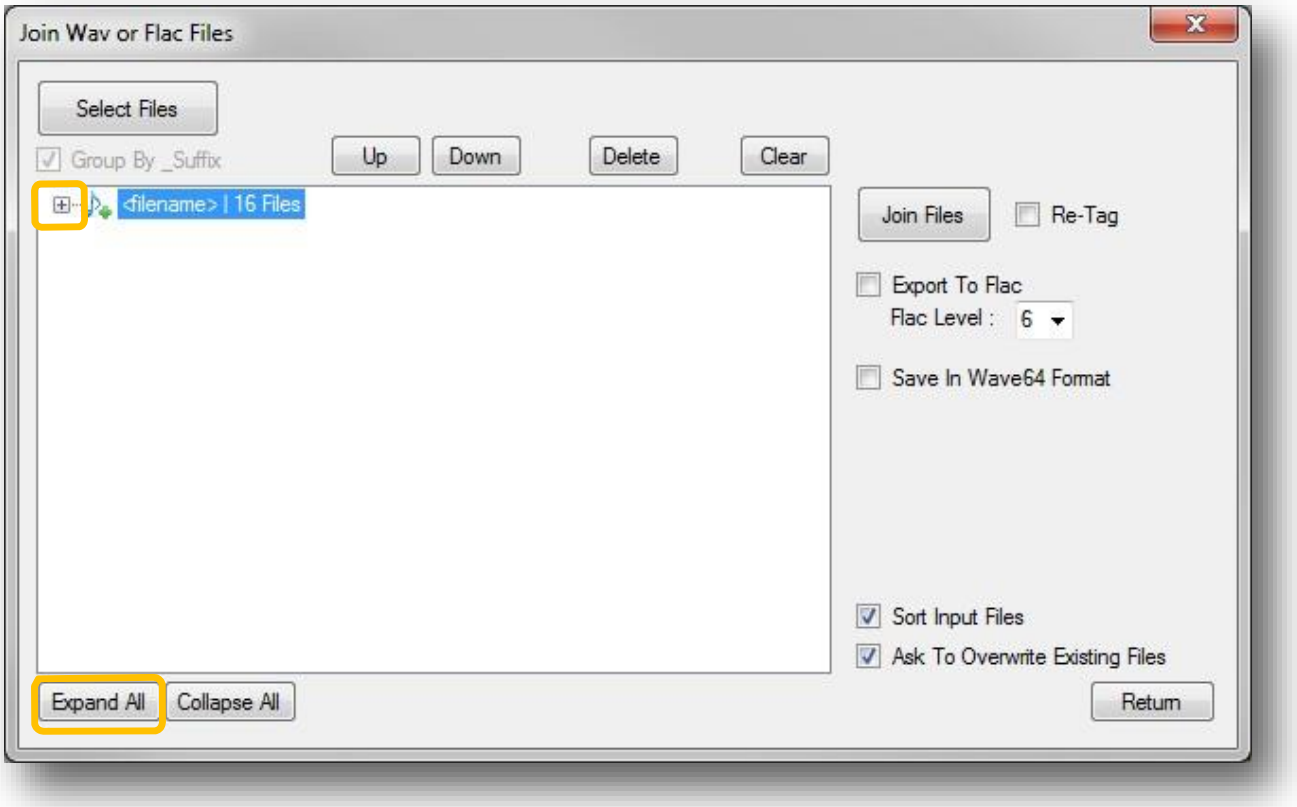
If you are going to DTS, MLP, or Dolby encode your conversions you'll need 6 album length mono files, one for each surround channel.

You can use Audiomuxer to first join the individual song multi-channel files from SpecWeb, to one album length file, and then split that file into six monos.

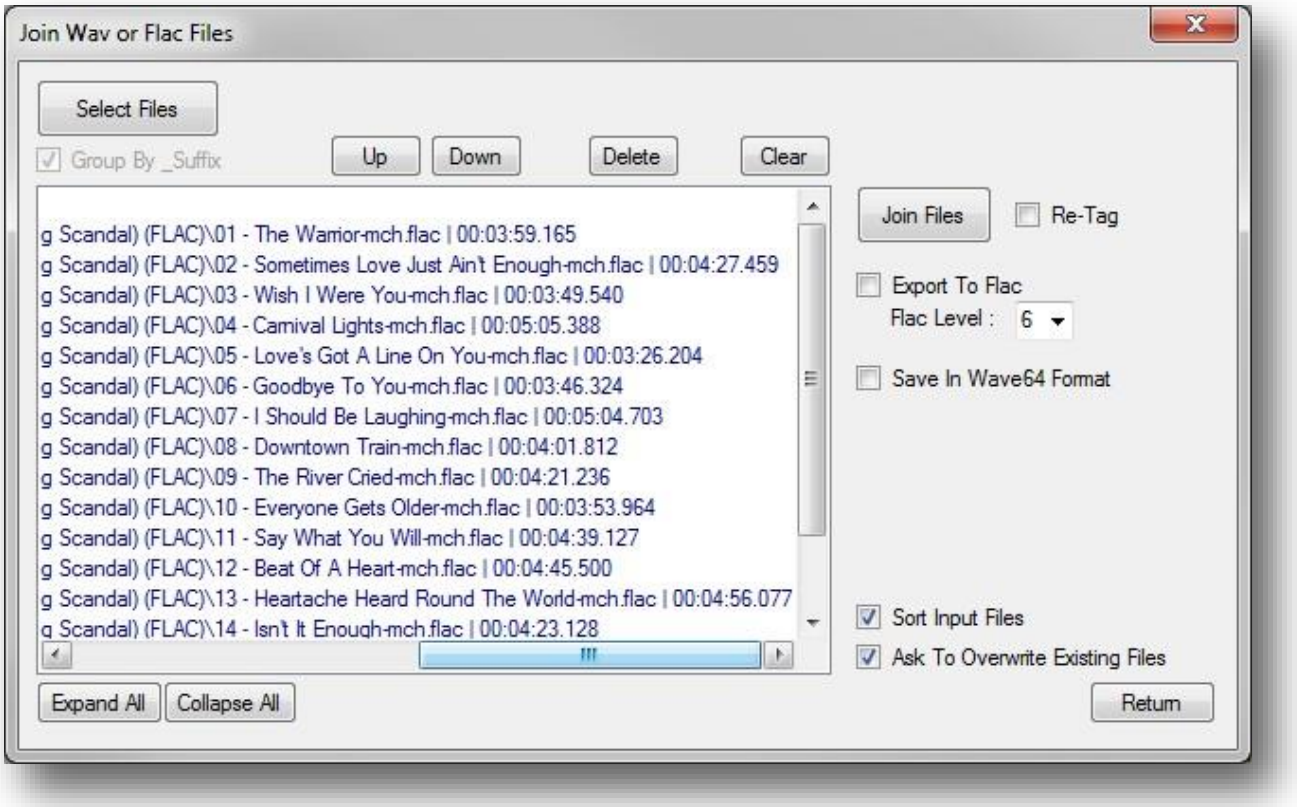
In Audiomuxer, select Tools → Join Wave or Flac Files



When the file dialog opens, navigate to your music folder and select ALL the multi-channel track files.

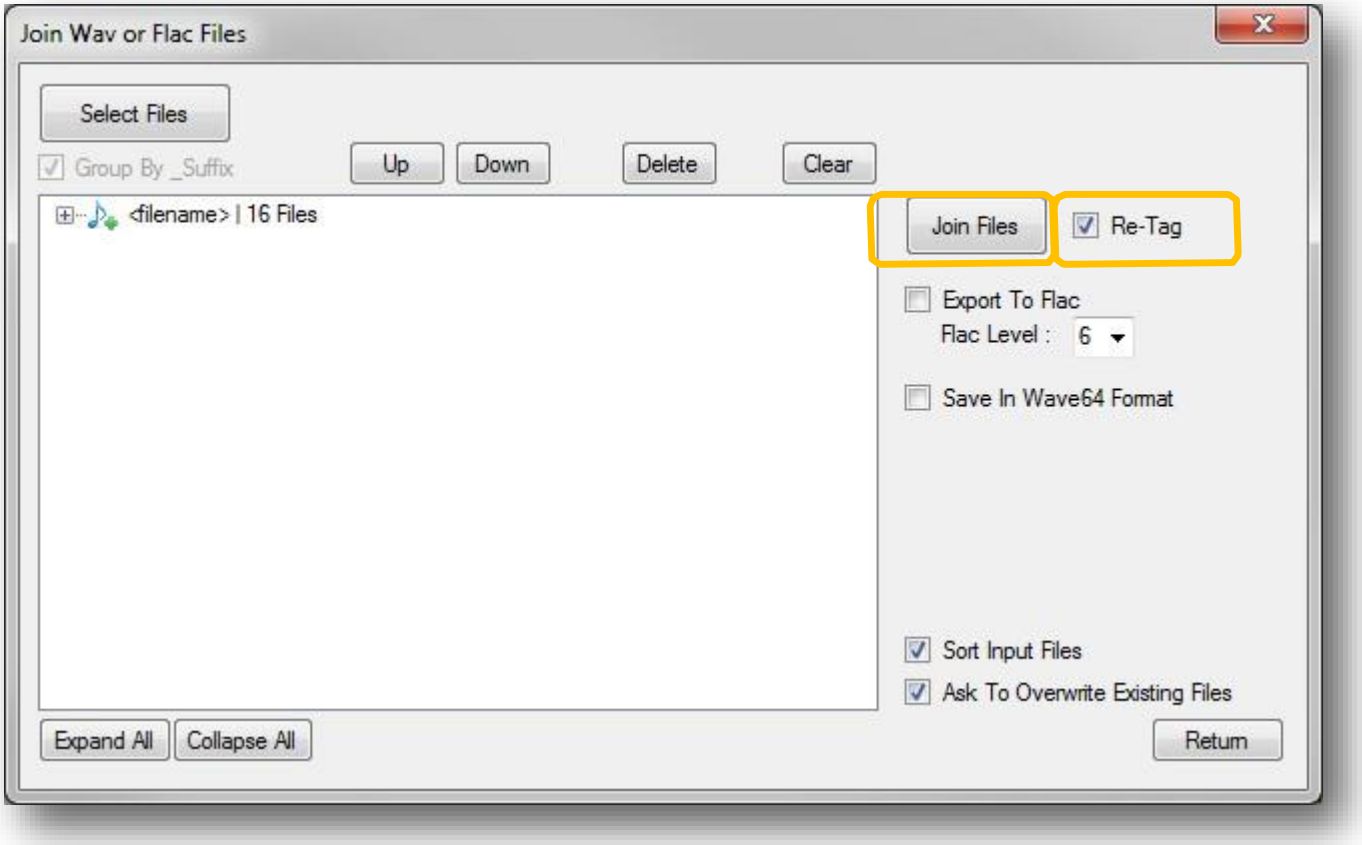


You can click on the "+" sign or click the "Expand All" button to see your tracks and check the order:



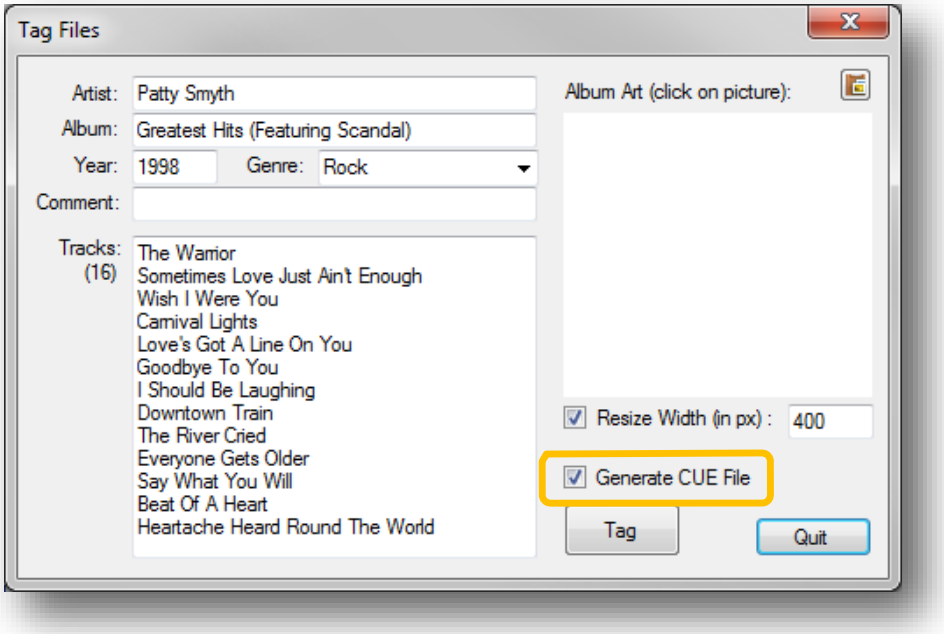
If the order's not right, select tracks and use the up and down buttons to fix the order.

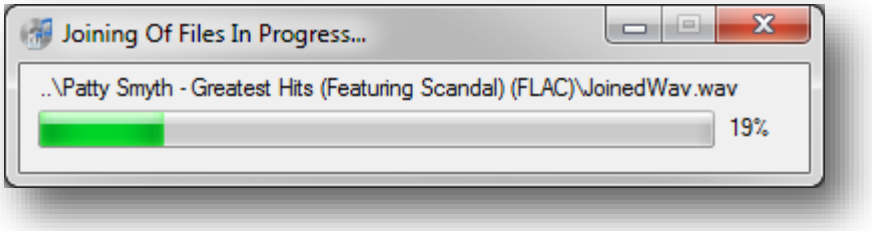
Once you are happy with the order, click the “Join files” button.



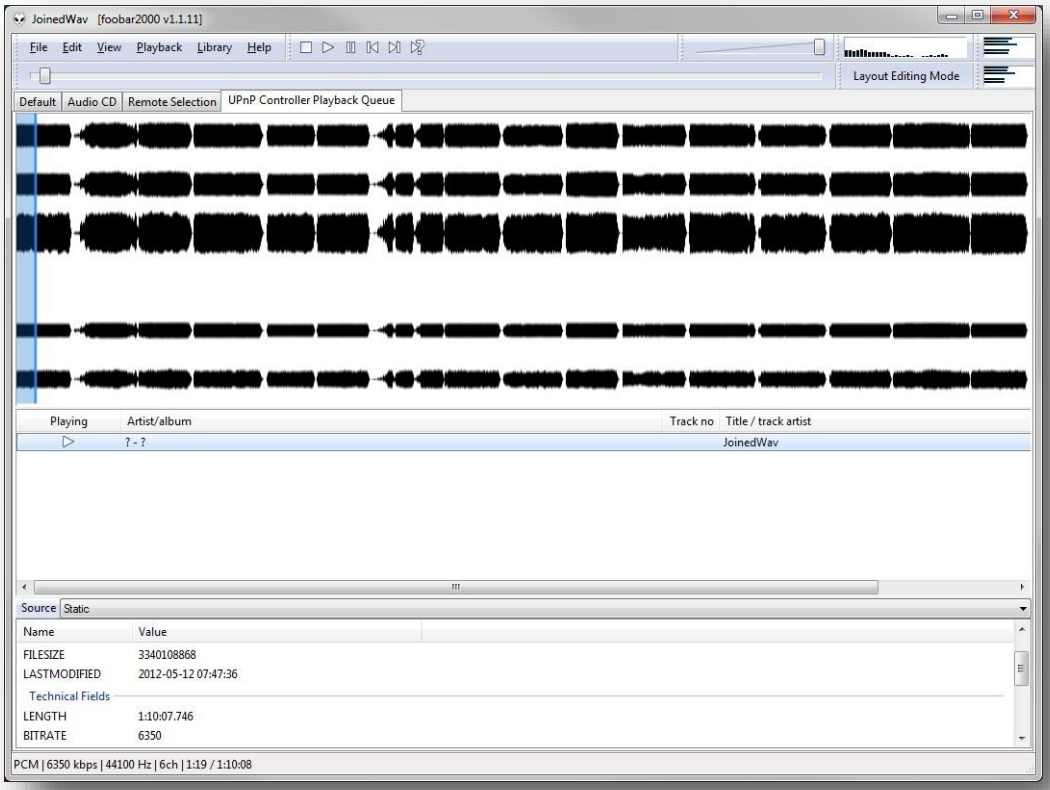
You can use the “Export to flac” or the “Save in Wave64 Format” option to ensure your joined file doesn’t exceed the ~4.2 GB limit for wav files.

This is also a good time to create a cue file that points to a single audio file (vs. a separate file for each track as needed by SpecWeb). To do this, select the “Retag” option before joining your files.



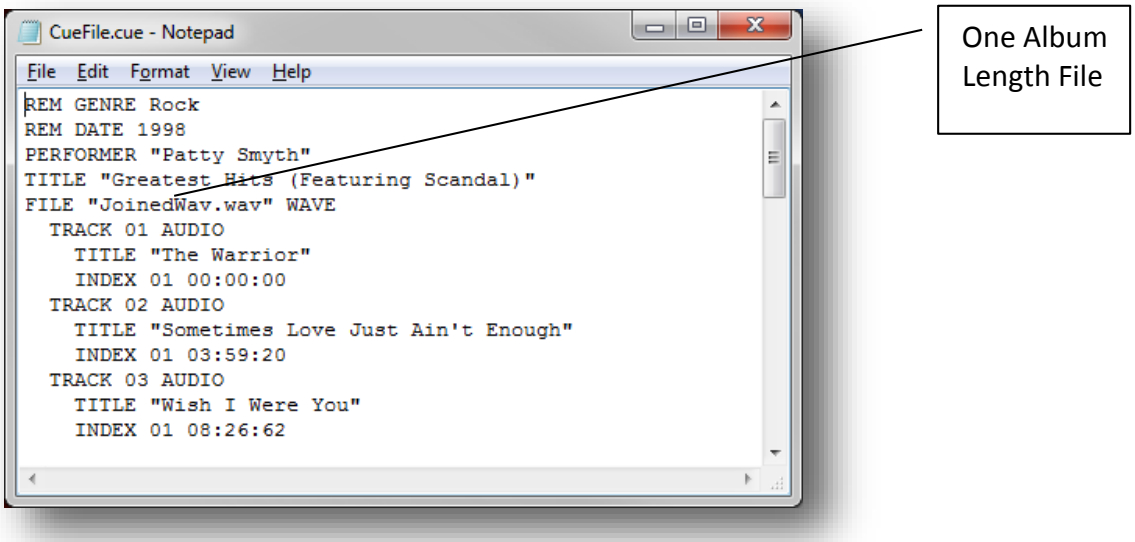


You can check your work at this step by loading the single multi-channel file into foobar2000:

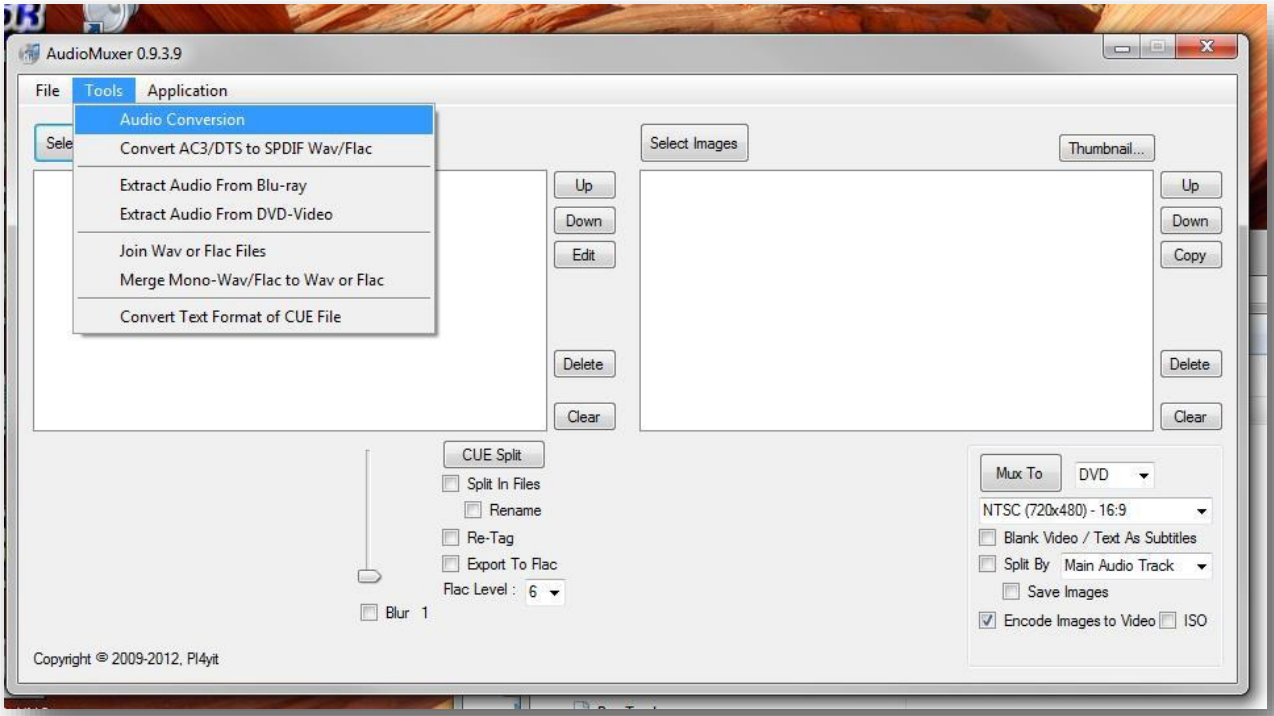


Loading just the single channel file will show as one file in foobar (see above). Loading your new cue file will show as individual tracks.

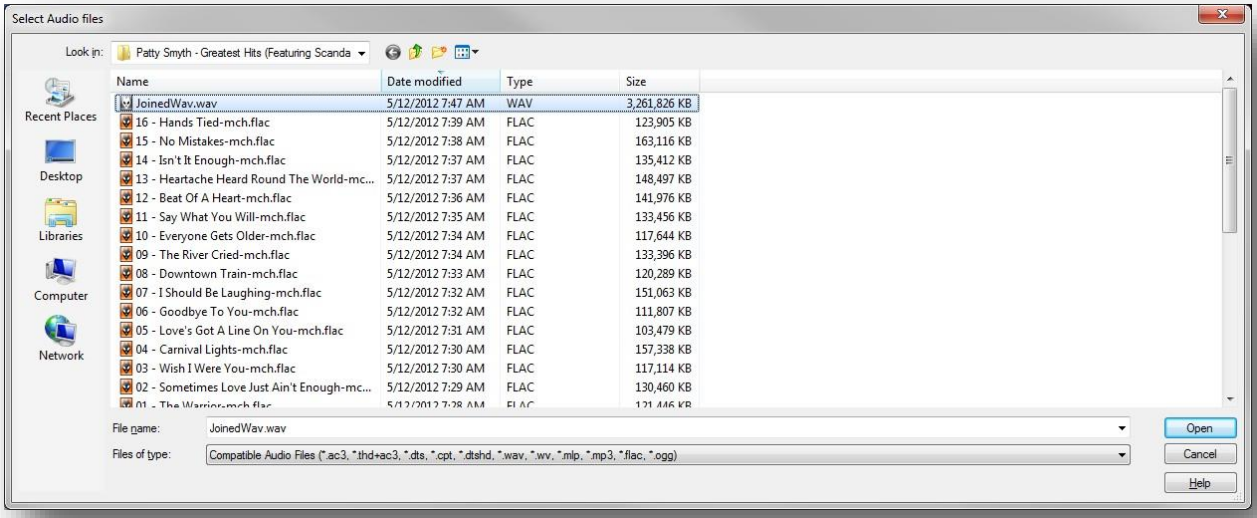
Again, you can view/edit your cue file with Notepad, or another text editor:

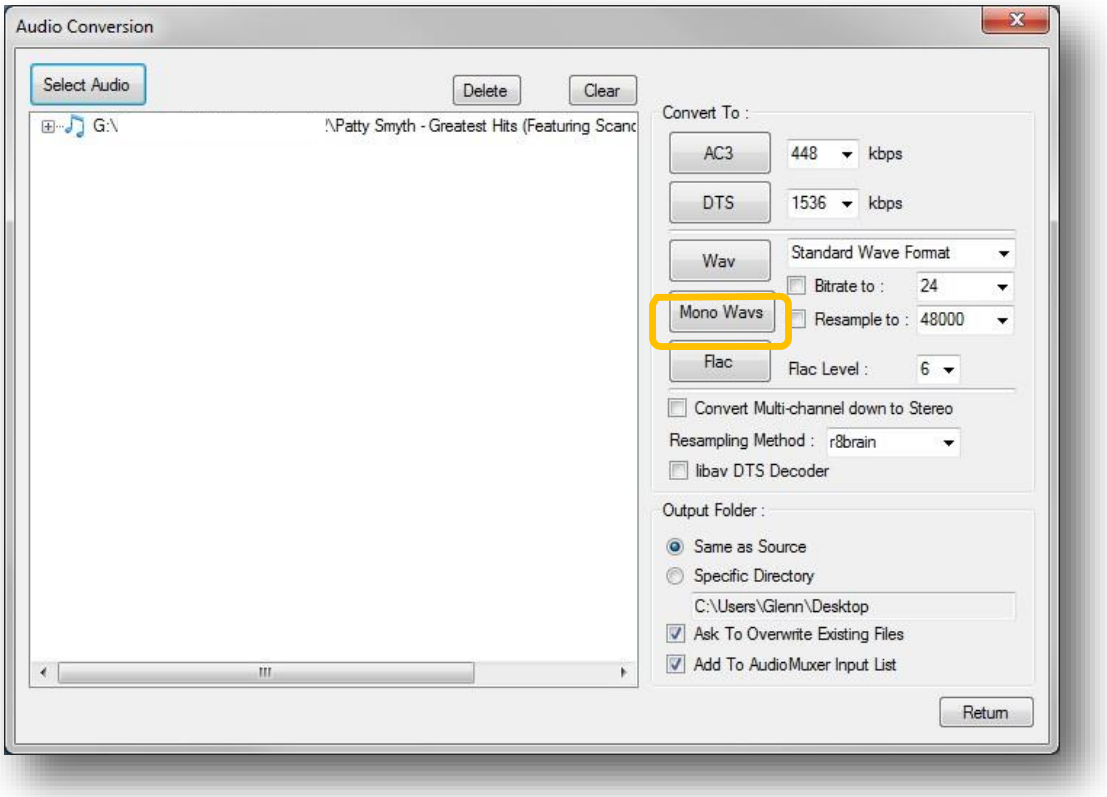


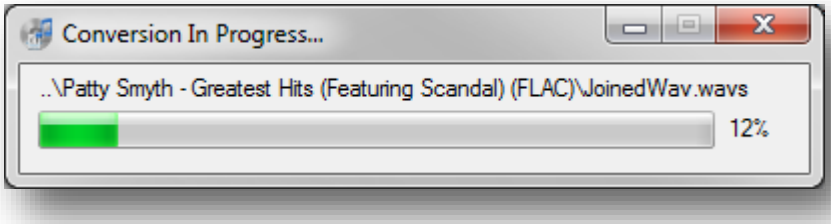
Now we need to split the one long file into 6 monos. Go back to Audiomuxer and select Tools → Audio Conversion.



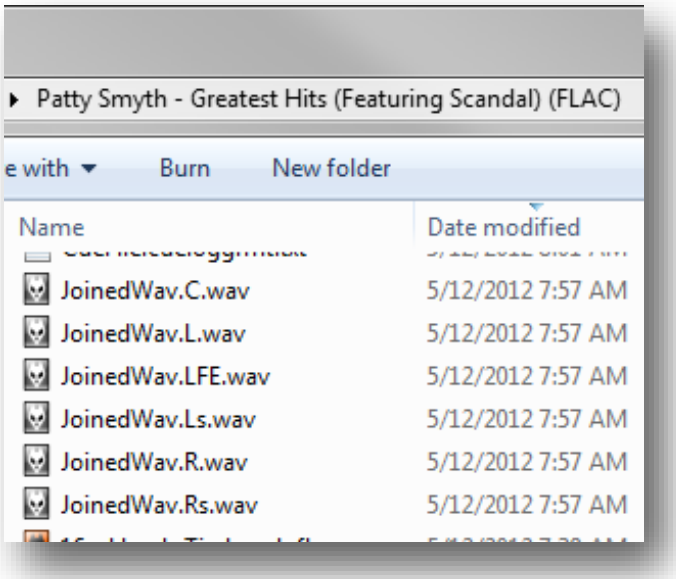
In the file dialog, select your long joined file:







Select “Mono Wavs”. Now you have your six monos, ready for encoding.



Stereo to 5.1 “On The Fly”

Introduction

While we believe that the maximum quality results from SpecWeb come from custom tuned settings for each song or album, there’s no reason why you can’t enjoy SpecWeb’s 5.1 output when listening to playlists, or internet radio or other stereo sources, “live” or “on the fly”. These could be your stereo music collection via a software player such as iTunes, Foobar2000, or Winamp, Internet Radio such as Pandora or LastFM, or even external audio sources such as a CD Player or disc changer.

Using SpecWeb to listen “live” to video is also possible, but there is an added challenge in syncing the audio and video due to the processing delay inherent in SpecWeb. Some software DVD and / or video players have the ability to delay the video to match audio timing.

Methods

Processing “live” music with SpecWeb can be achieved in a number of different ways. All methods involve using an audio input device in SpecWeb, in addition to the audio playback device you listen to.

Input devices are selected with the –I (dash uppercase “eye”), similar to how output devices are selected with –P.

> Note: The –P flag must be before the –I flag on the command line.
>
> Note: At this time you cannot use an ASIO output device while using an input device. ASIO input devices are not yet available.

Software Stereo Sources with Two Audio Cards

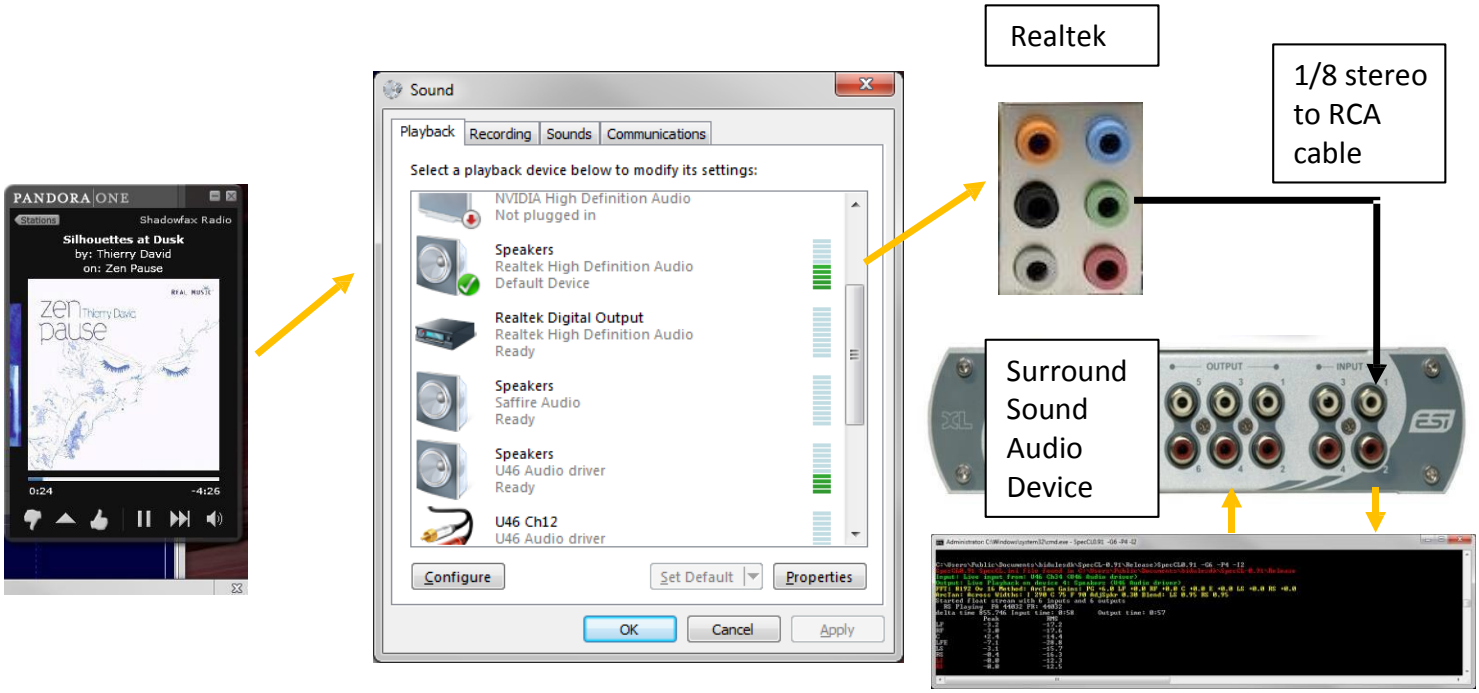
We’ll cover more sophisticated ways to achieve routing sound from software sources in a minute but a simple method (and in some ways the most reliable), if you have two audio devices, is to use a cable to connect the output of one audio device to the input of another.

Let’s say you have stereo Audio Device on your motherboard and a separate device for surround (with a stereo line input). Simply setup your software source (foobar2000, etc.), or windows itself (in the case of software that doesn’t let you pick and audio output device) to use the audio device on your motherboard, and then connect the motherboard line out to the line in of your surround sound device. Depending on your devices you may need audio adapters, such as 1/8” stereo to RCA, etc., to achieve this.

Make sure your surround device isn’t configured to “monitor” or otherwise pass any sound on its input to its output.

On the SpecWeb command line, select your surround Audio Device from the list of **input** device, using the –I flag, and select your surround output device, from the **output** device list with the –P flag and you’re ready to listen.

Note: Windows likes to change the audio device numbers. This can happen when you select a device to be the default output in the windows sound control panel, or when you add or remove a device, etc. It's best to check the current device numbers with SpecWeb before setting the –I and –P flags.



The only downside of this method is that you are going through an extra digital to analog and back to digital conversion. So some very slight background noise and perhaps reduced quality of sound will result, but if you're listening to mp3s or internet radio you probably won't notice.

The upside of this method is that things like sample rate, buffer sizes, and clock differences between devices are not an issue.

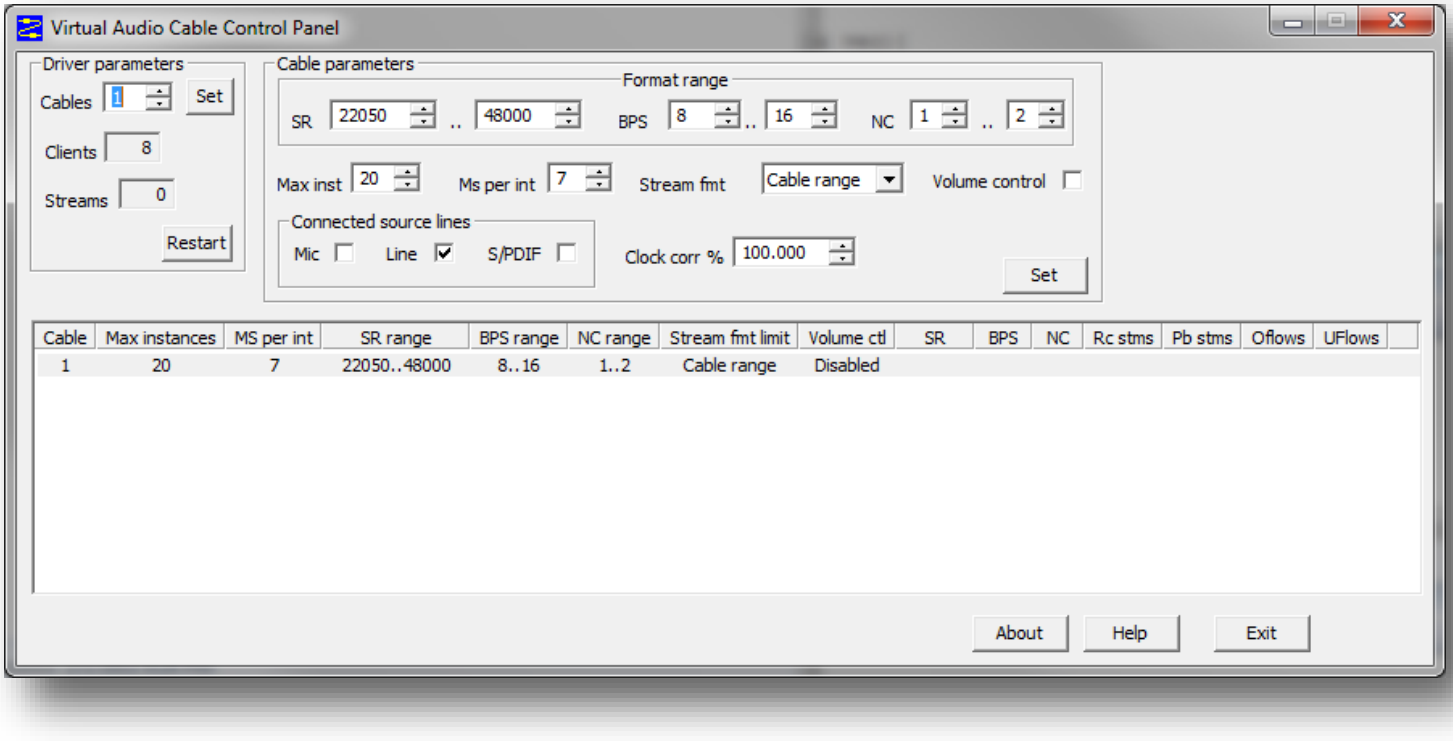
Using a "Virtual" Audio Device

Besides the above physical cable between two sound cards, you can achieve the same result with only a surround output device and a Virtual Audio Device. There are several of these Virtual Audio Device Software packages but one that is inexpensive and known to work for this purpose is "Virtual Audio Cable", http://software.muzychenko.net/eng/vac.htm.

Note: VAC version 4.10 has been tested and works well, however I have not been able to get VAC version 4.12 to play without glitches under windows 7.

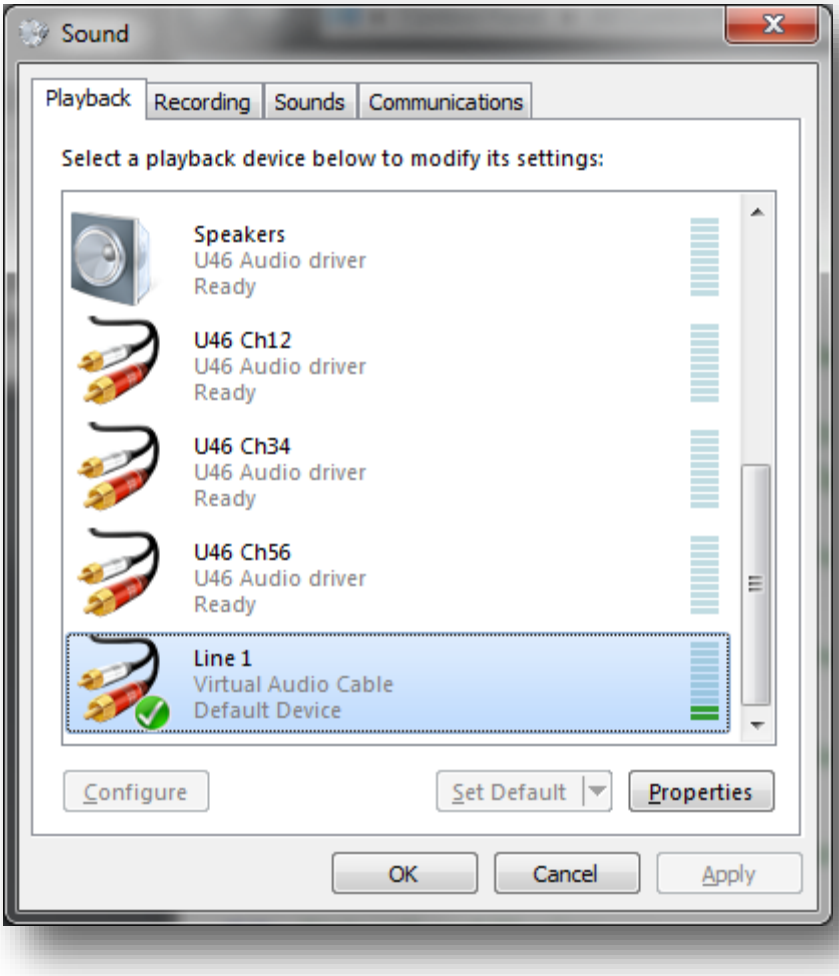
VAC version 4.13 has been tested on Windows 8.1

Install Virtual Audio Cable (be sure to use the 64bit installer if you are running a 64 bit version of Windows) and use its control panel (the vcctlpan.exe file in its program folder, run as Administrator) to set up one virtual cable:

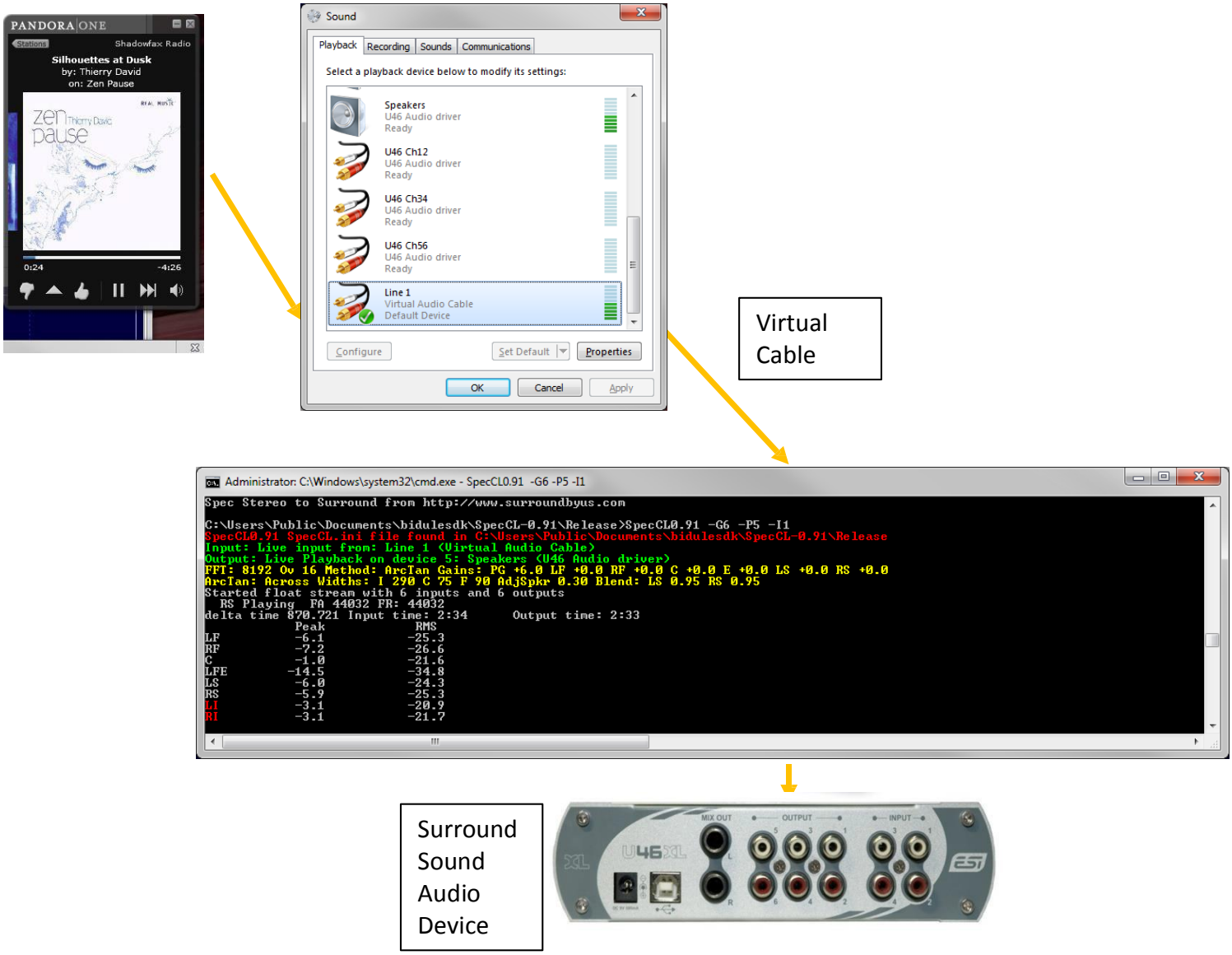


Set your software source (foobar2000, etc.) to use Virtual Audio Cable as its output device.

In the case of Pandora, VLC, or iTunes, which always use the default windows audio device, you can set windows to use Virtual Audio Cable:



Once you have your source playing through Virtual Audio Cable you can use Virtual Audio Cable as an input for SpecWeb.

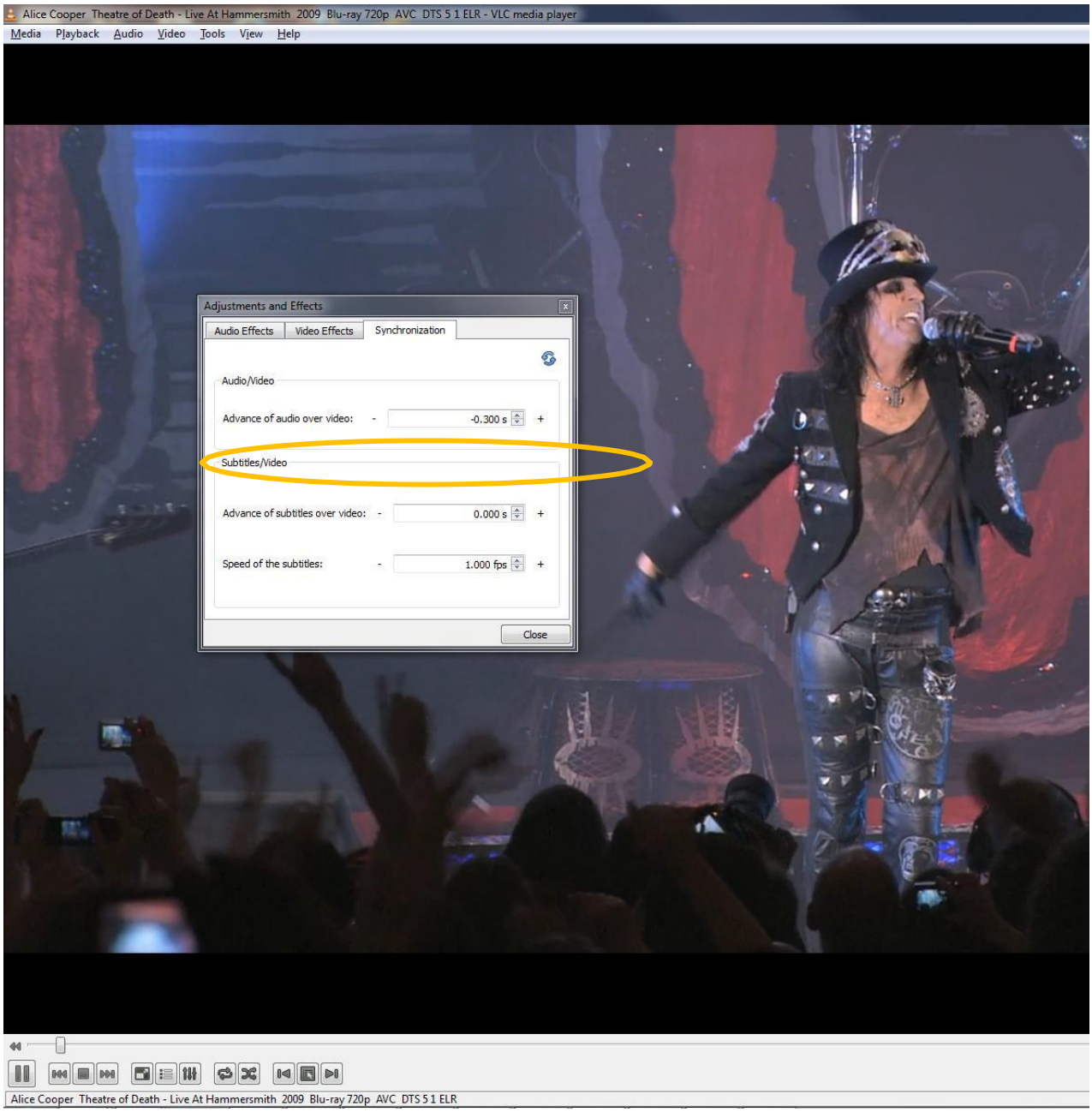


Syncing Video to SpecWeb Audio

Note: It is strongly suggested that you convert your stereo audio track to surround ahead of playback. While the below describes how to sync video and SpecWeb “on the fly”, any cpu spikes during playback, due to other apps, etc., could cause the sync to drift.

Using the full version of Spec, with Plogue Biddle, is one way around the drifting sync problem

Different Software Video Players may or may not have the have the capability to re-sync sound and video when running the Audio through SpecWeb. On example of a Player that does is VLC, http://www.videolan.org/vlc/.



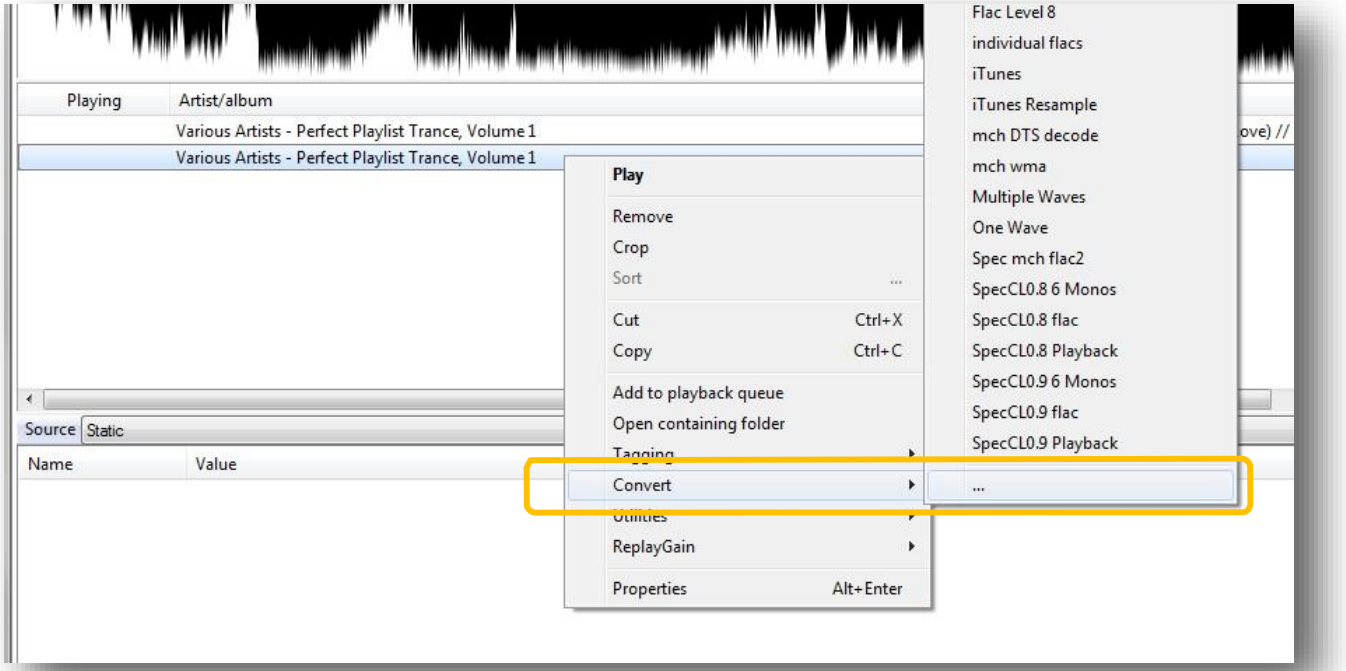
To control the Audio Device used for playback, use the Windows Sound Control Panel and set the device (such as Virtual Audio Cable) as the default for windows. Setup SpecWeb as described in the above sections. Once you have audio playing, go to the VLC tools menu, select Track Synchronization tab (shown above).

You will need to input a negative number in the “Advance Audio over Video” box. The exact number depends on many factors, so you will have to adjust it by eye/ear. On my system, with SpecWeb set @44100 samples/sec, 8192 FFTsize, and 16 FFT overlap, I need about -2.000 seconds.

SpecWeb as a converter for foobar2000 (foobar v1.1.11 or higher)

Converting from stereo directly to a six channel flac file

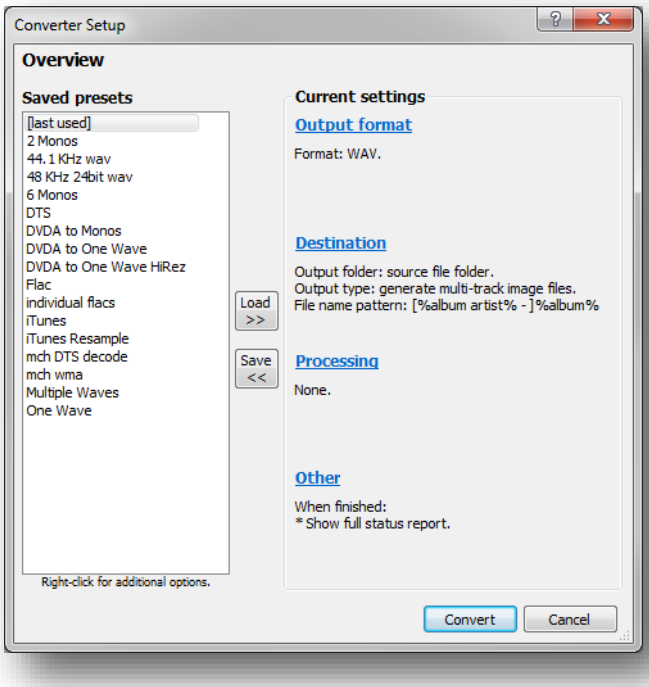
Open a stereo file in foobar. Right click on the file and select Convert → …

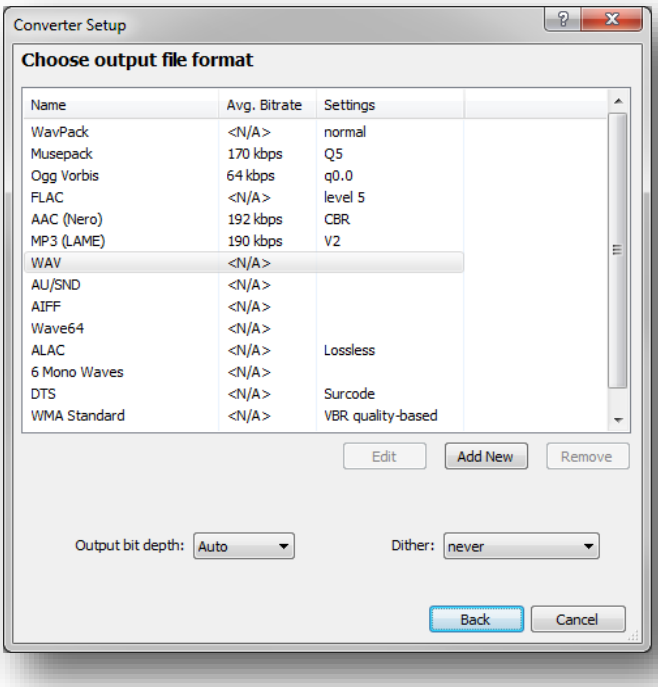


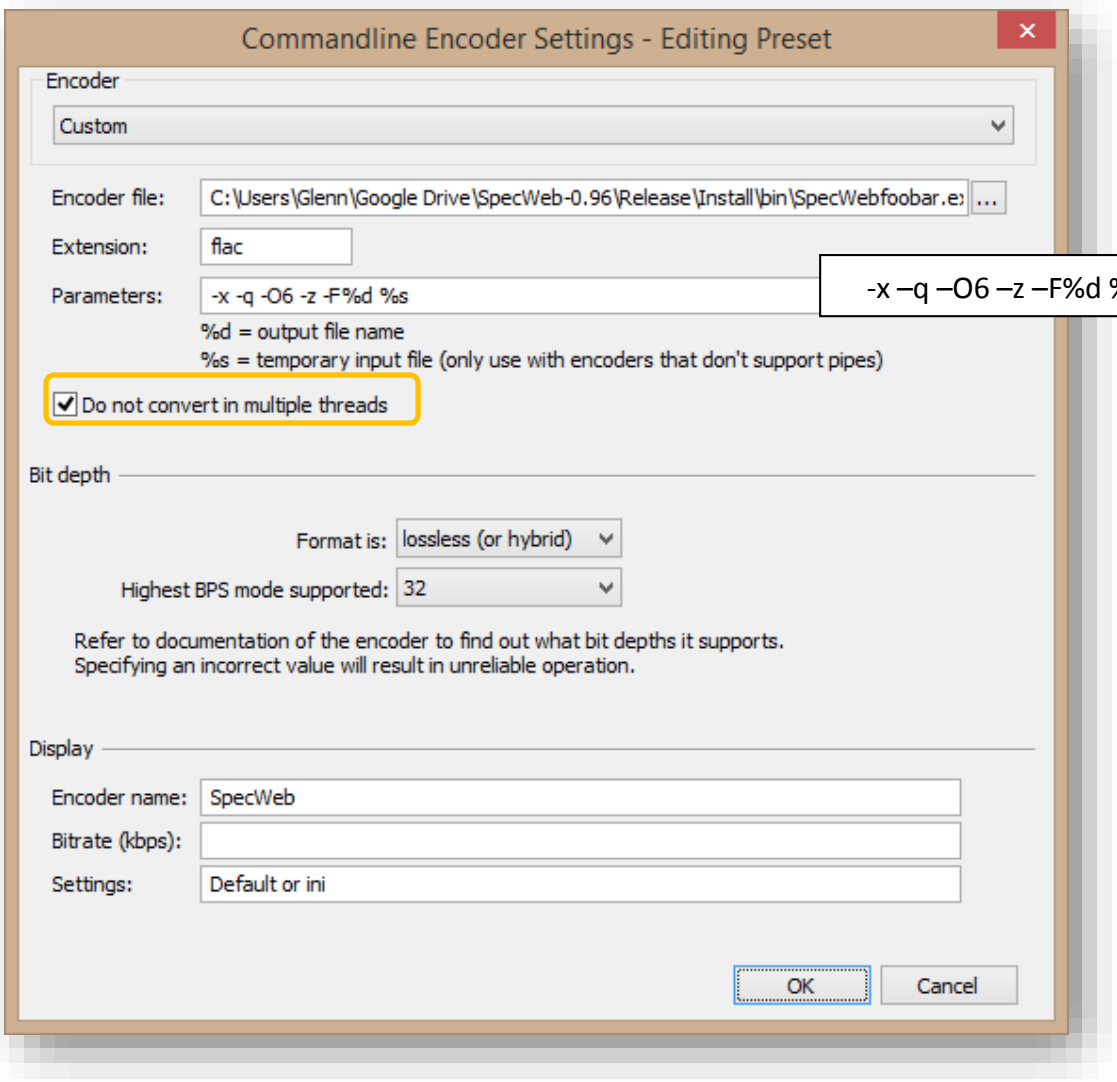
In "Converter Setup", click on "Output Format"

Now click on "Add New" Then select "Custom" and fill in all fields as shown below. Use the […] button

to browse to the location of SpecWebfoobar.exe. It's in the "bin" folder of the download.







-x –q –O6 –z –F%d %s

-x = pop open SpecWeb

No –x will hide SpecWeb

-q = quiet, no dialog at end

-O6 = single 6 ch. File

-z = use zag

-F%d is the output file name

%s is the input filename

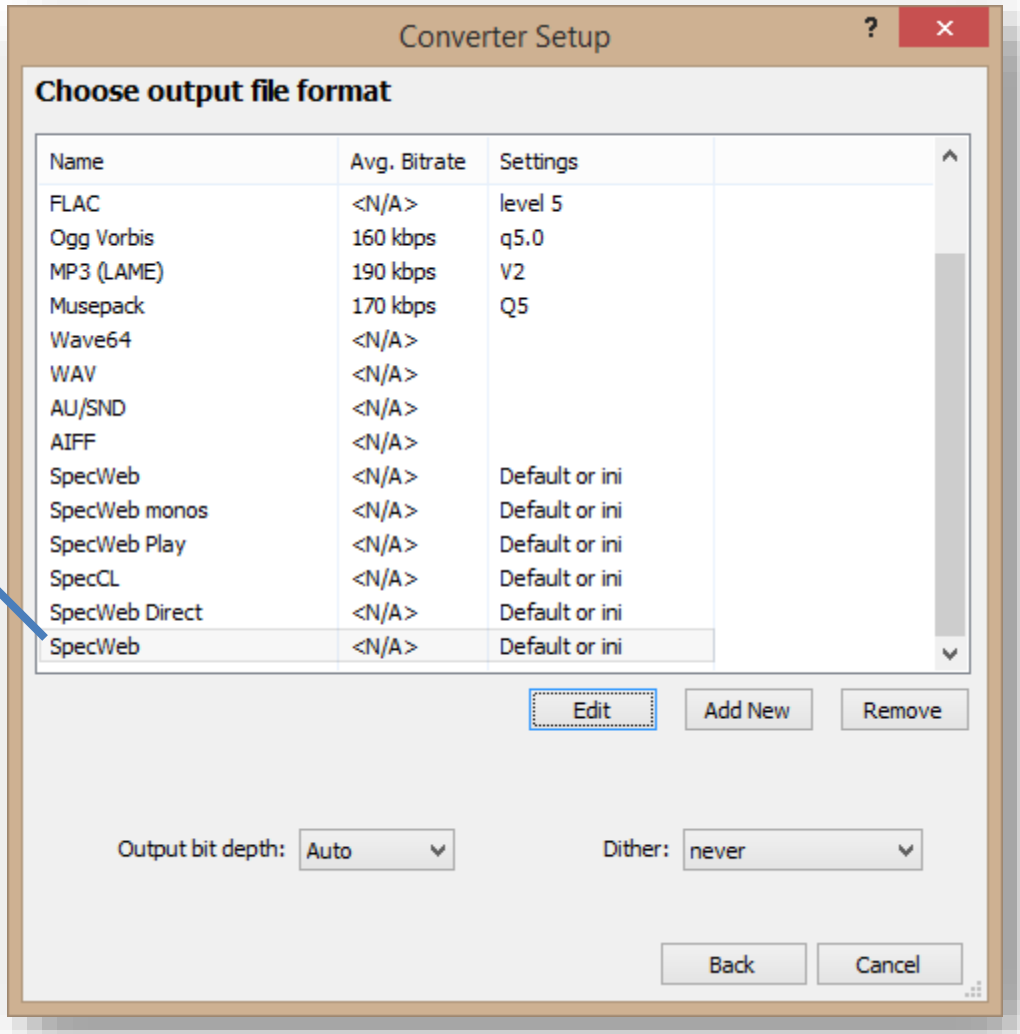
Of course you can include other SpecWeb arguments, e.g.:

-x –q –O6 -G-3 –i360 –z –F%d %s

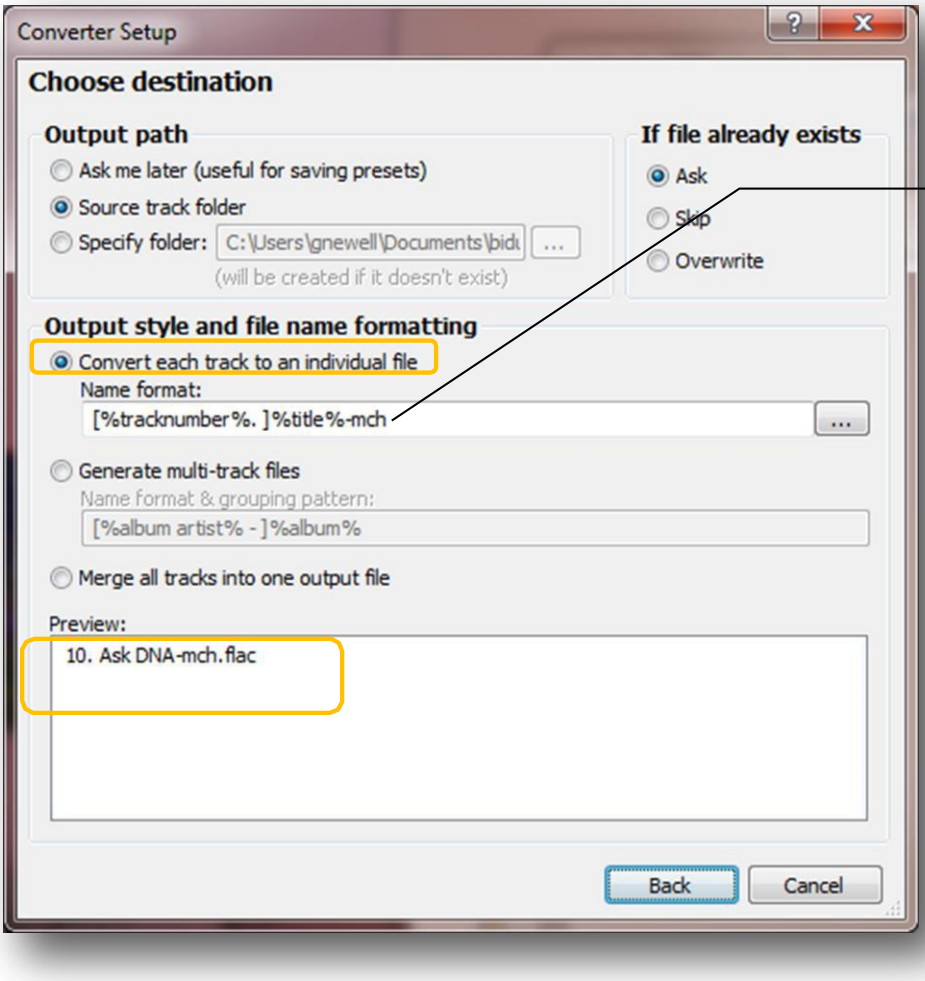
to set the PreGain to -3 and the ImageWidth to 360. Any option here will override any corresponding settings found in ini files.

Don’t forget to check “Do not convert in multiple threads. Click on “OK”.

Here's our new setting

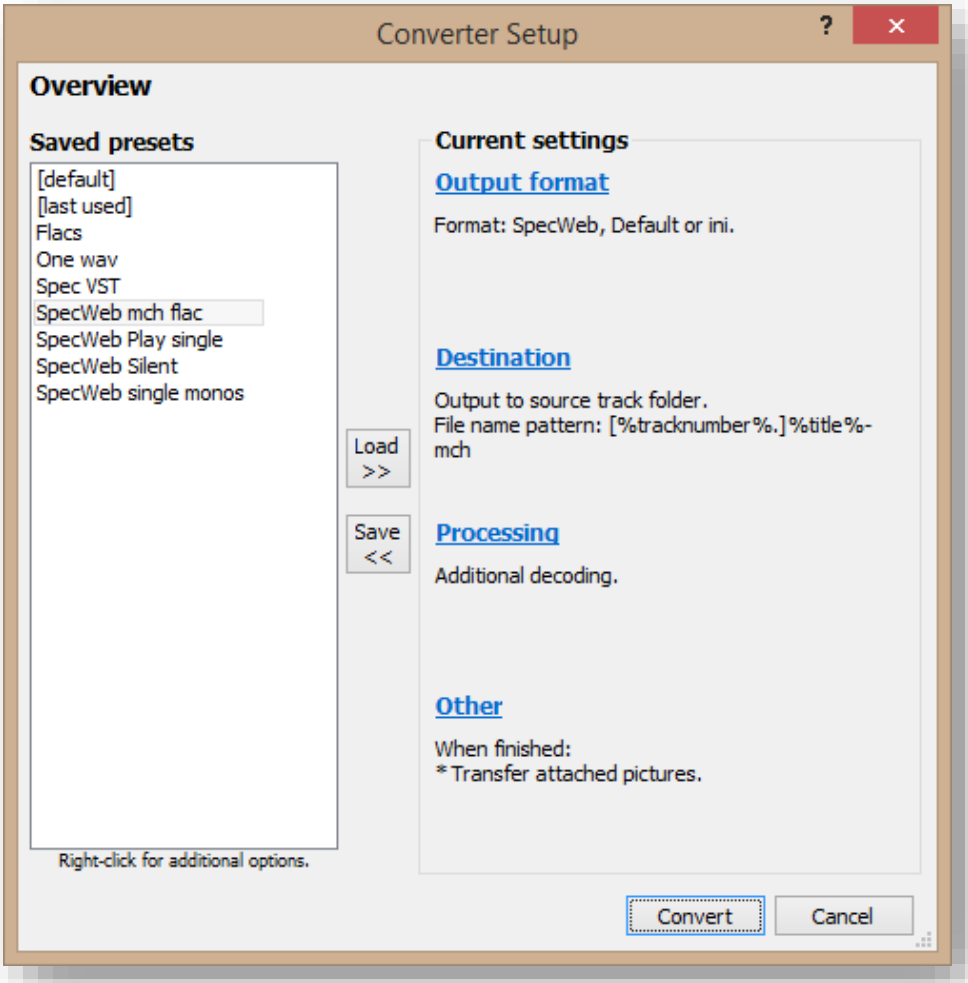


Press “Back”, then “Destination” and fill in the form as shown below:



Add “-mch”, or something, to the file name so you can tell it’s surround sound

Press “Back”, then “Save” and create a new preset. Name it something like “SpecWeb mch flac”.



That's it! You can press Convert to convert your stereo file. In the future, you can select one or more tracks in the playlist and then right click Convert → SpecWeb mch flile

This will create a lossless 6 channel 5.1 flac file that foobar can play back via your analog, HDMI, or SPDIF/HDMI with Dolby live or DTS express, sound card.

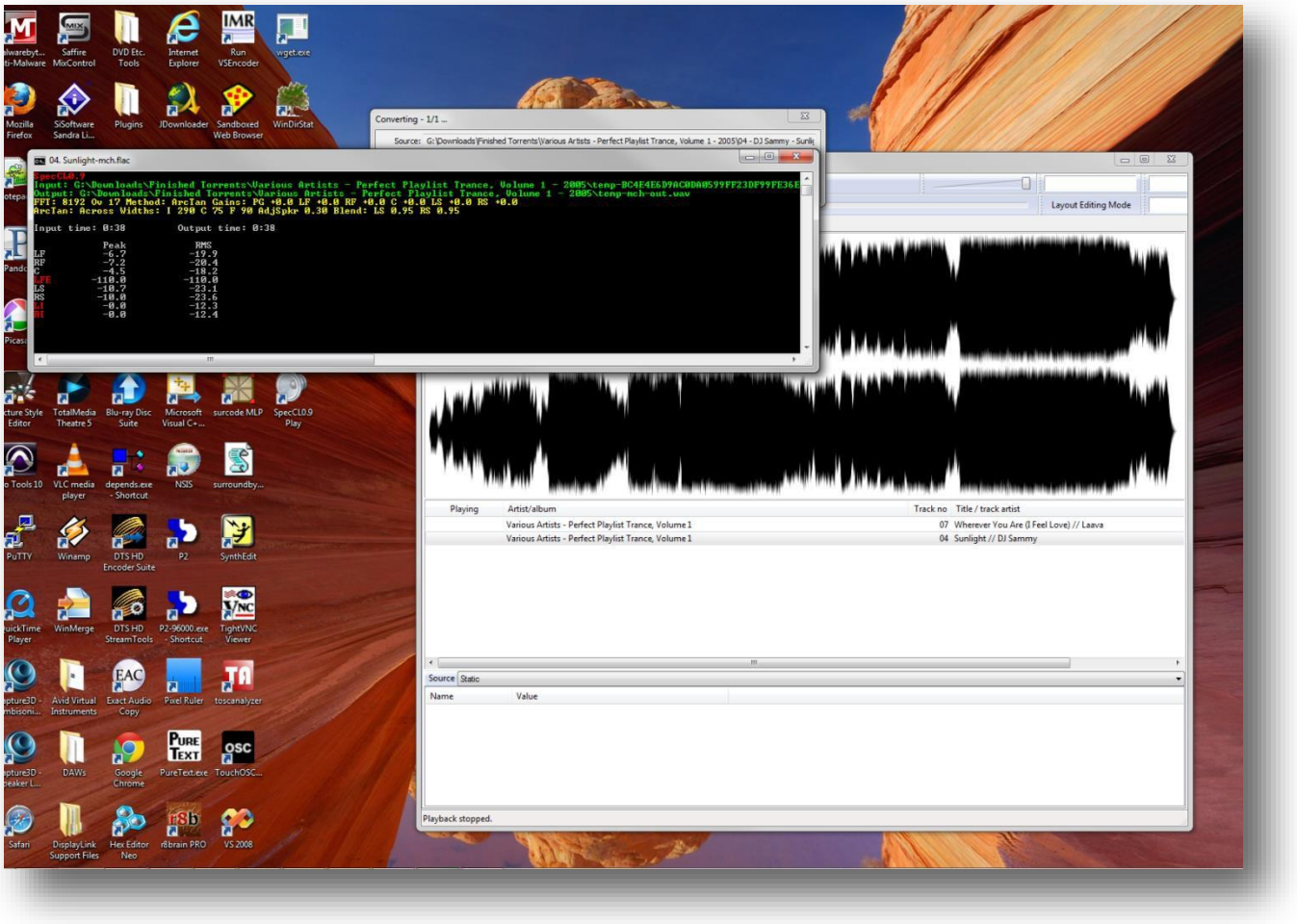
If you want to go on to DTS encode your tracks, you will need to use the "Audio Conversion" tool in Audiomuxer (http://www.surroundbyus.com/sbu/viewtopic.php?f=7&t=135) to create 6 mono files for input into the DTS encoder.

Or, follow the below instructions for setting up a "6 monos" converter setting in foobar.

Note: Since foobar2000 makes a temporary file in the conversion output directory, which becomes the input file for SpecWeb, ini files should go in the output directory.

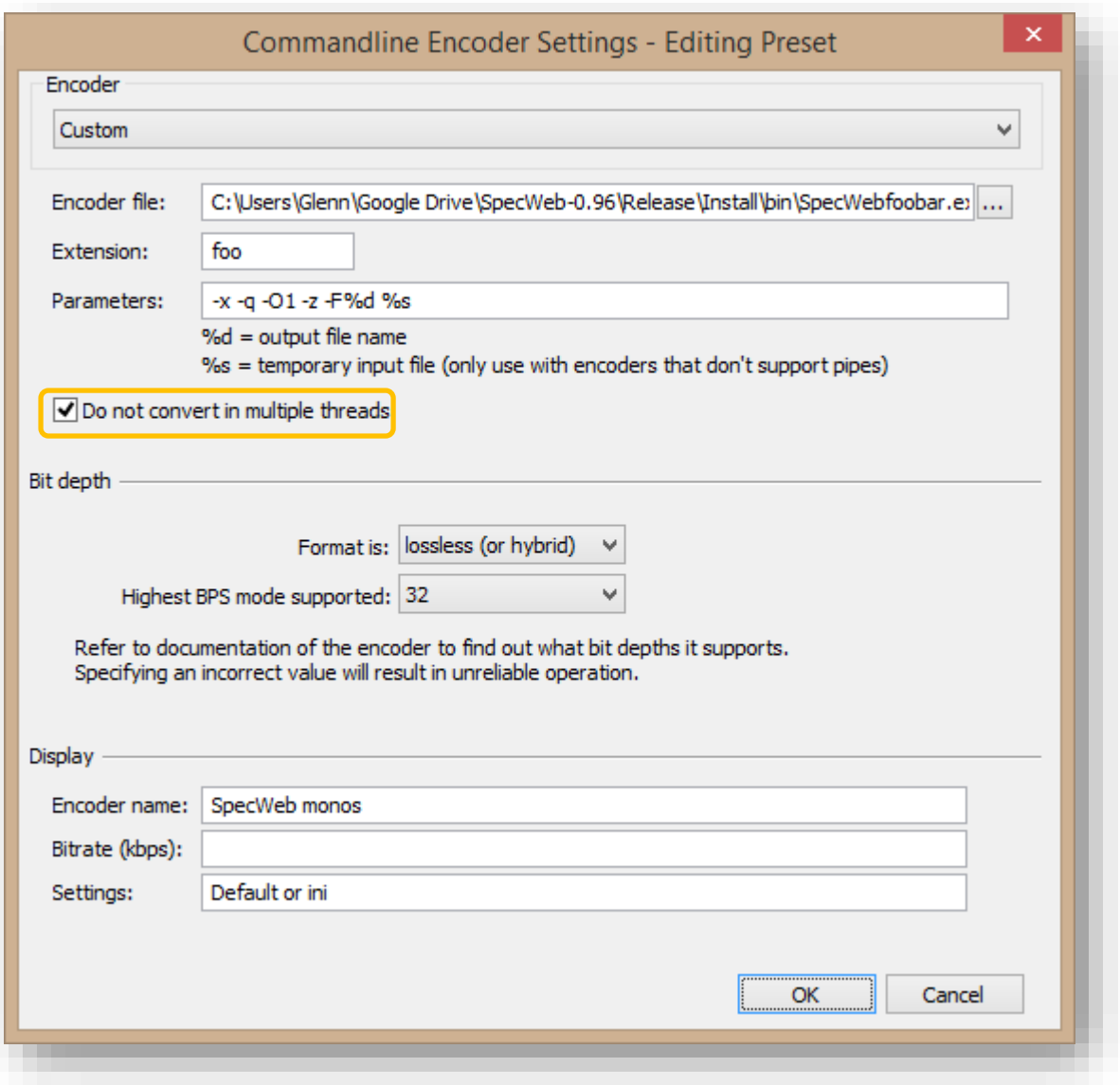
Note that in foobar you can select multiple tracks, and then right click on any selected track → Convert →

"Spec Default", to convert them all.



Converting from stereo directly to six mono files

As above, navigate in foobar2000 to the new custom converter dialog and fill in all the fields as shown below:

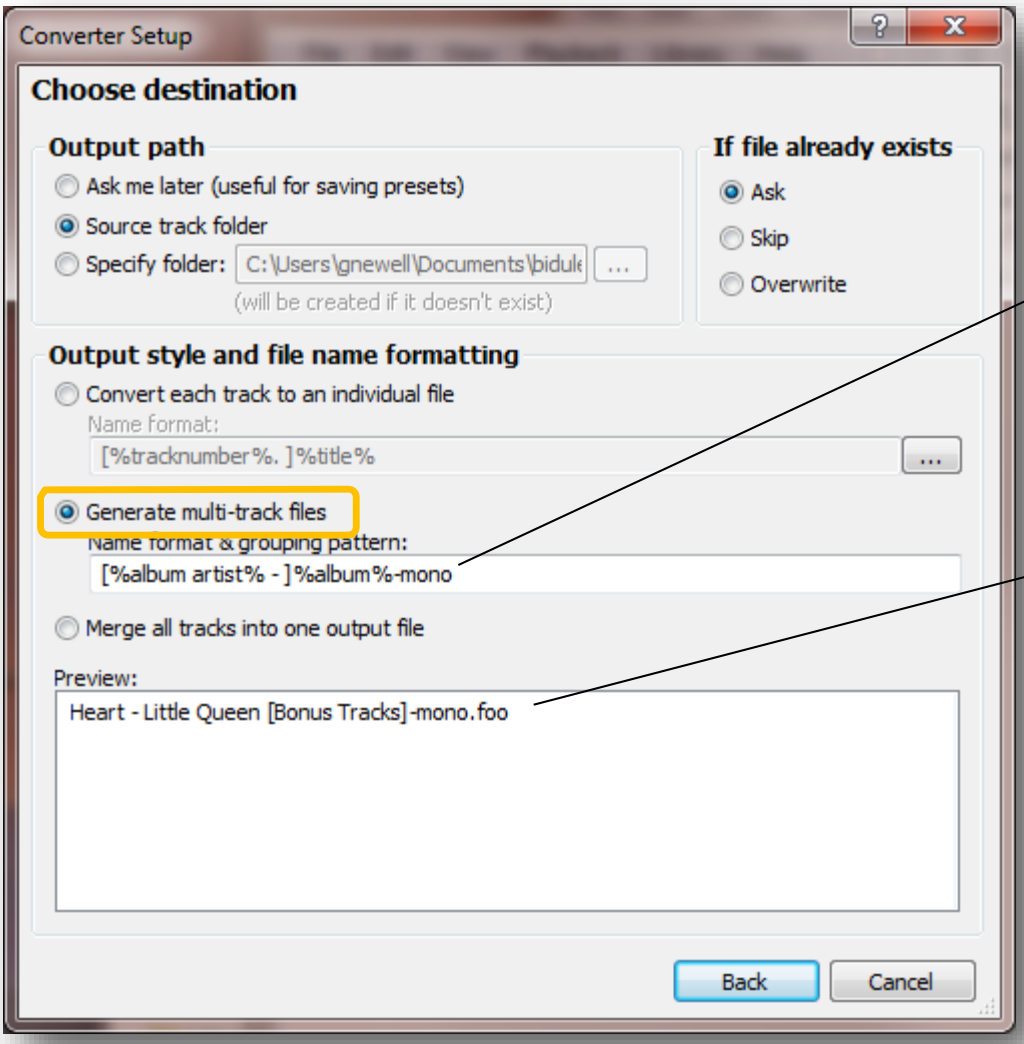


Note the file extension “foo”. Because we are converting to six mono wav files, foobar will get confused and display an error unless we create a dummy file for it to check for. If we used a format it recognized, like wav, it would know that it was an empty file. So, in addition to SpecWeb creating the six mono files, SpecWebfoobar will create a 0 byte “.foo” file in the destination folder. You can delete these after your conversion.

That’s a lower case dash p and an uppercase dash O (as in “Output”) and the numeral one. The –p is to “pop open” a SpecWeb window so you can see what’s going on with the conversion. The –O1 is for the output to be six mono files. Dash lower case z to use “ZAG” (Z Automatic Gain Control).

Click on “OK”

Press “Back”, then “Destination” and fill in the form as shown below. Note that this time we will select “Generate multi-track files”, so that any selected songs in foobar will all be in one set of six mono files:



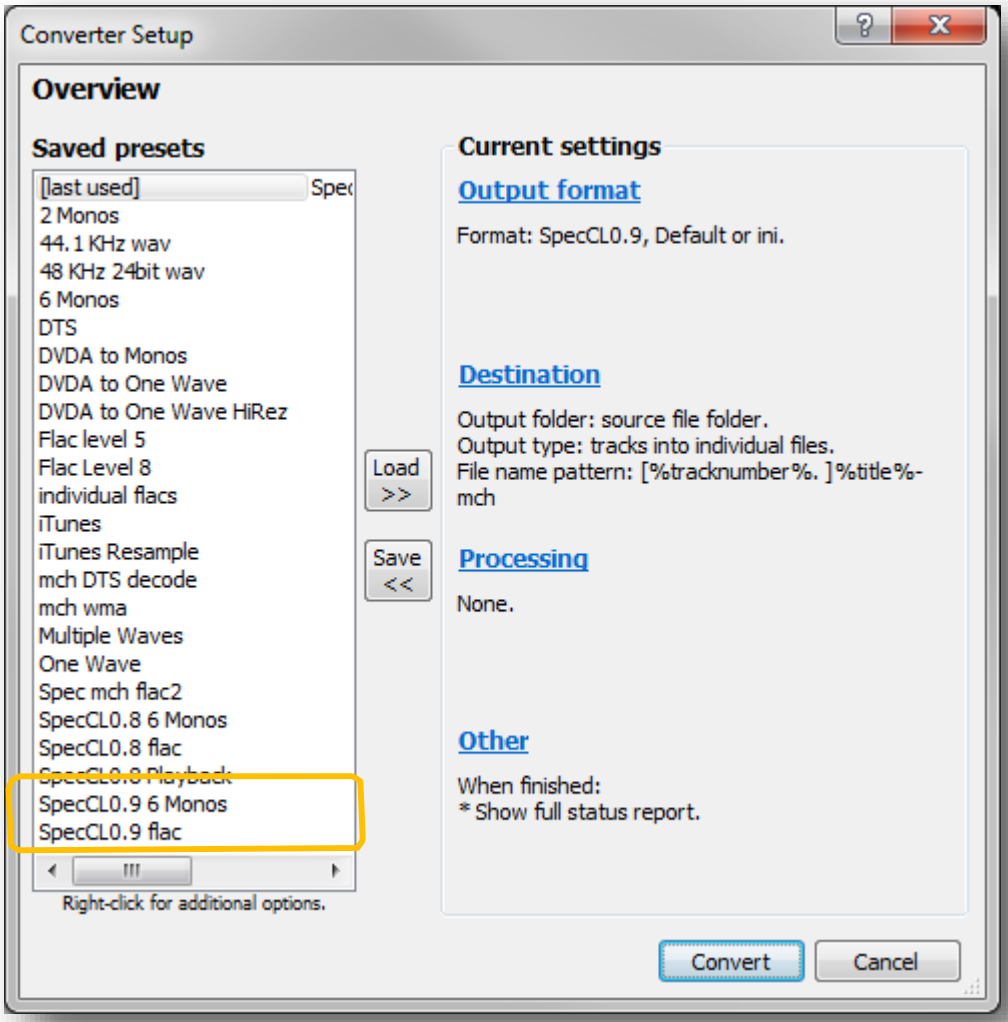
Add “-mono”.

SpecWeb will add

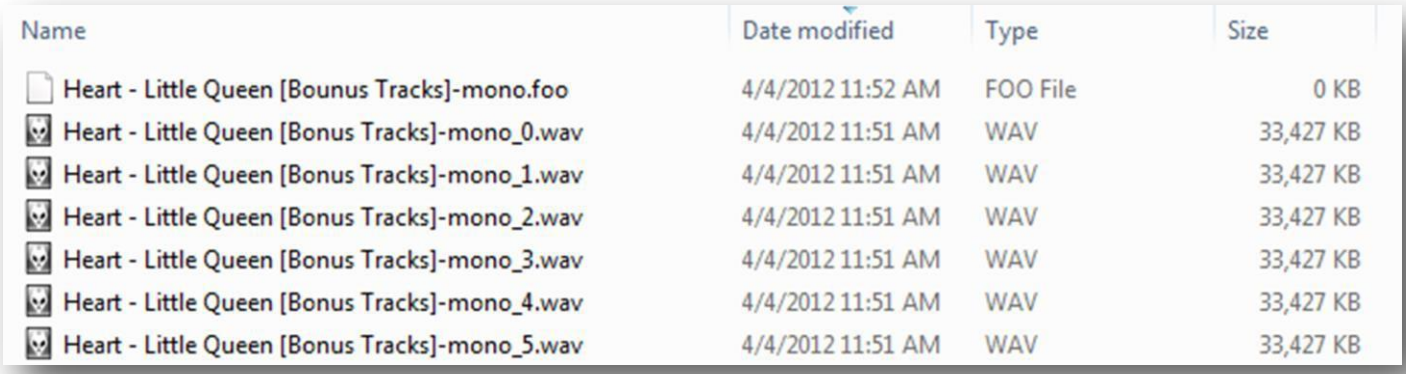
the
channel numbers (0-5),
after the –mono.

After your conversion you can delete the empty “.foo” file(s) from your destination directory.

Press “Back”, then “Save” and create a new preset. Name it something like “SpecWeb 6 monos”.

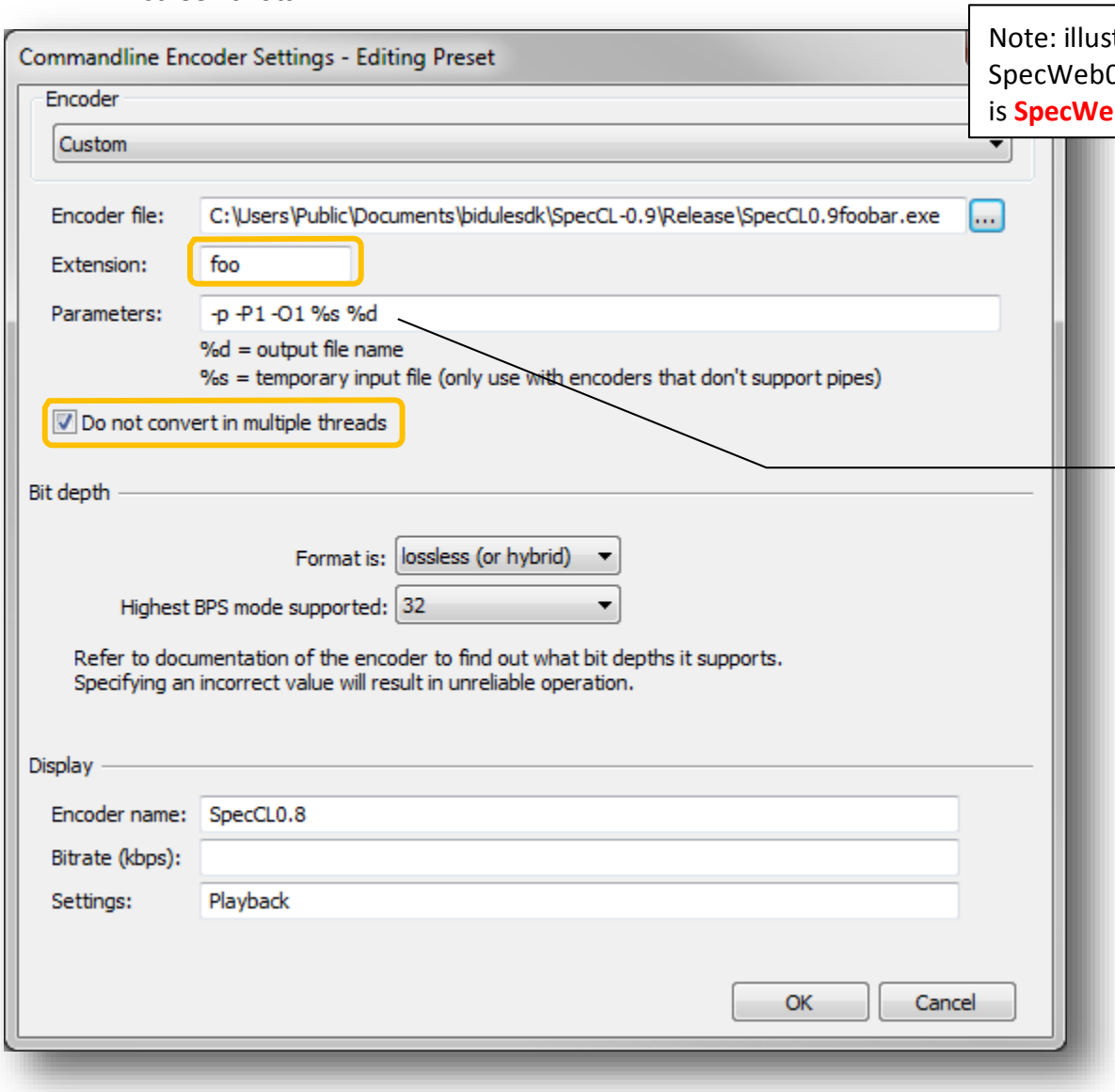


That's it! You can press Convert to convert your stereo file to six monos. In the future, you can select one or more tracks in the playlist and then right click Convert → SpecWeb 6 monos.



Using the foobar converter to play back via SpecWeb

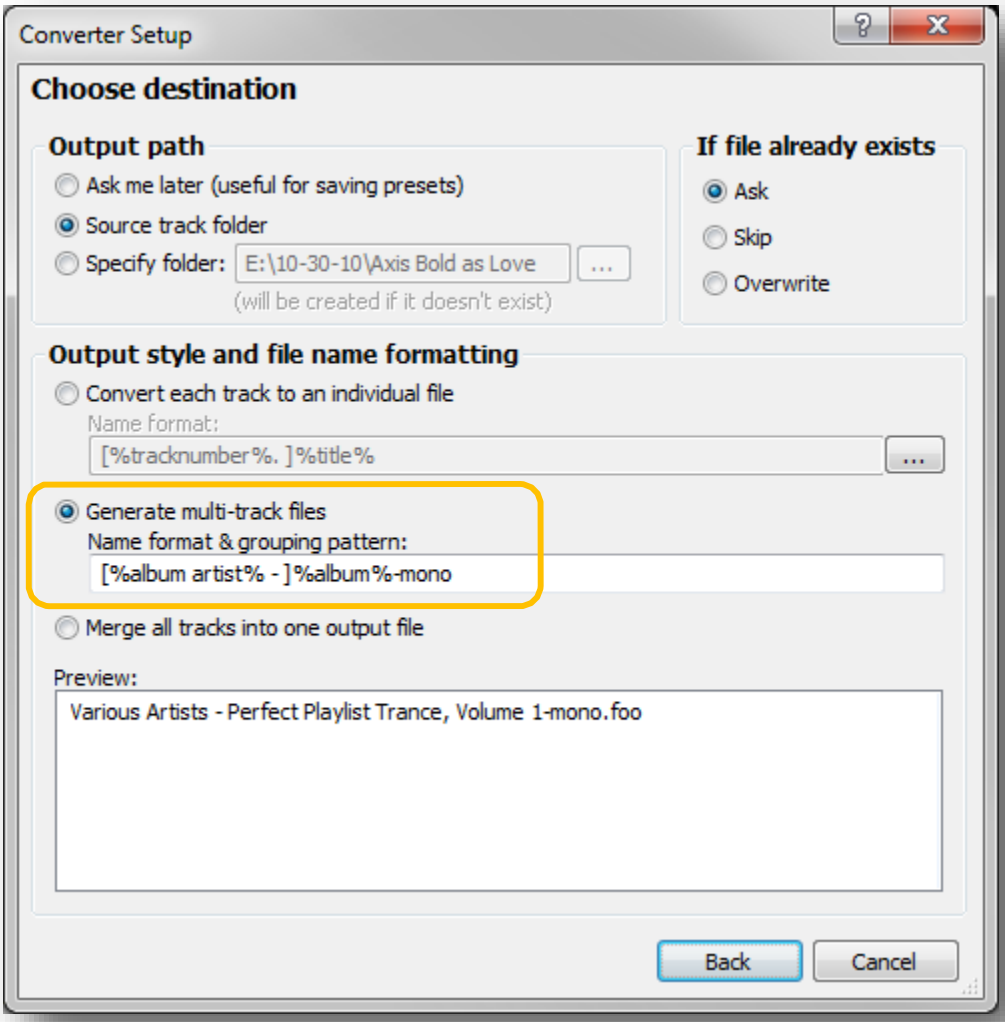
Repeat the above steps to create a “SpecWeb Playback” converter setting. Here are the screen shots:

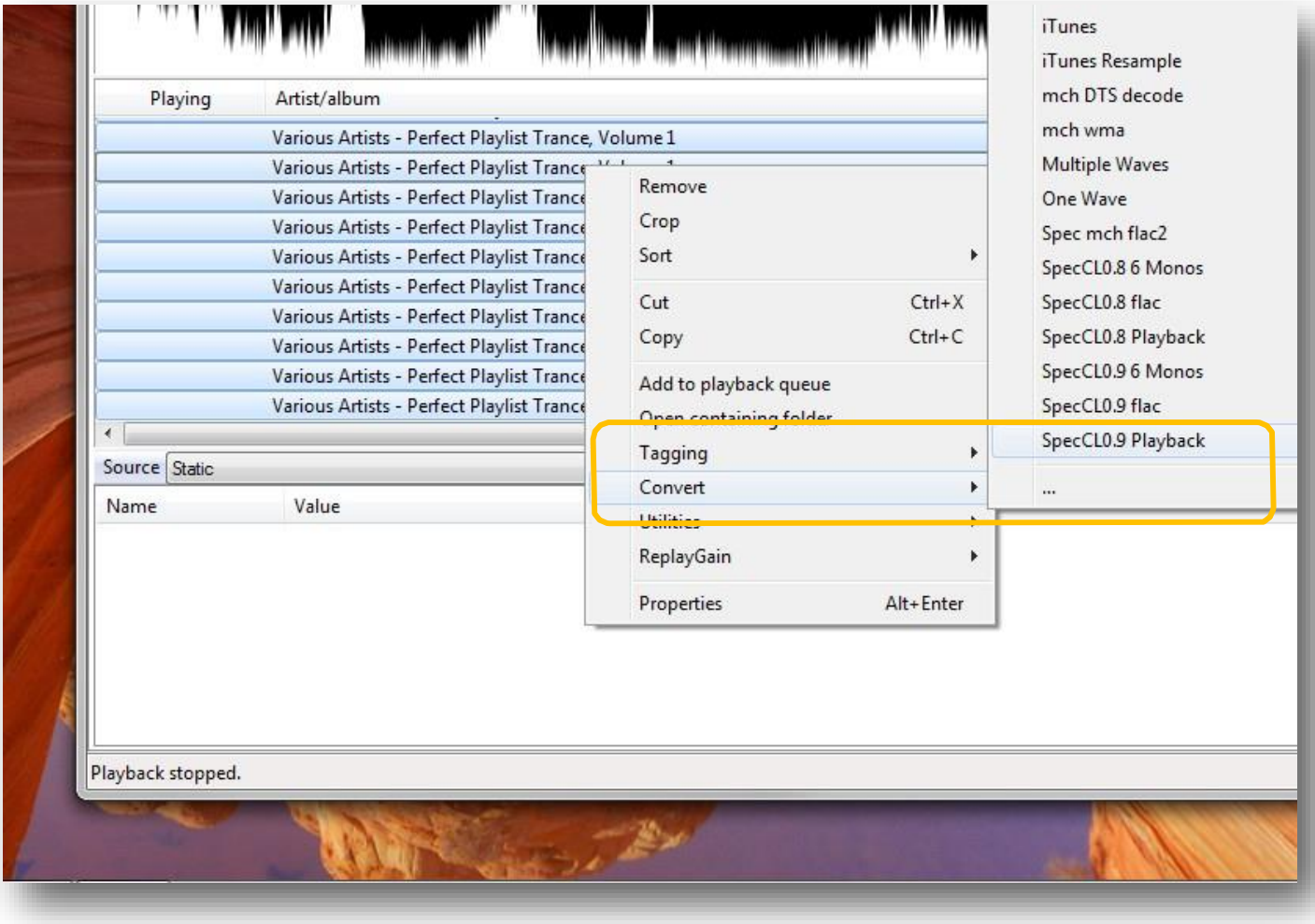


Note: illustrations show SpecWeb0.9. . This version is **SpecWebfoobar.exe**

-p -P1 -O1 %s %d
The –P1 (The number 1) is to playback on the first audio device. See The SpecWeb instructions

Note that we started from a copy of the mono settings.


Converter Setup
Choose destination
Output path
Ask me later (useful for saving presets)
Source track folder
Specify folder:
E:\10-30-10\Axis Bold as Love
(will be created if it doesn't exist)
If file already exists
Ask
Skip
Overwrite
Output style and file name formatting
Convert each track to an individual file
Name format:
[%tracknumber%.]%title%
Generate multi-track files
Name format & grouping pattern:
[%album artist% -]%album%-mono
Merge all tracks into one output file
Preview:
Various Artists - Perfect Playlist Trance, Volume 1-mono.foo
Back
Cancel

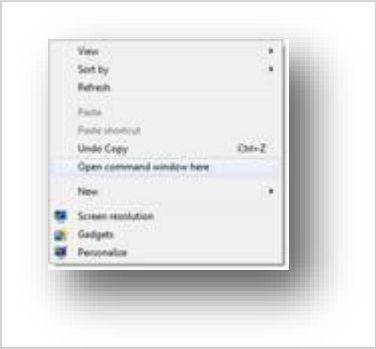


Select the files in the playlist you want SpecWeb to play, and “convert” them using the conversion setting you just made.

A SpecWeb window will pop in playback mode, and play all the songs in the playlist (as if they were all in one input file). Again, a zero byte .foo file will be written, just to keep the foobar converter happy. You can delete it later if you want.

Windows Command Window (cmd) Tricks and Tips

1. Open the Command Prompt From Any Location



If you've ever worked in the Command Prompt for very long, you know that it can be really frustrating executing the cd/chdir command over and over again to get to the right directory you want to work from.

Luckily, there's a super easy Command Prompt trick that will let you open a Command Prompt window from whatever folder you're viewing in Windows.

All you have to do is navigate, in Windows, to the folder you want to start working from in the Command Prompt. Once there, hold down your *Shift* key while you *right-click* anywhere in the folder. Once the menu pops up, you'll notice an entry that's not usually there: **Open command window here**.

Click it and you'll start a new instance of the Command Prompt, ready and waiting at the right location!

2. Drag and Drop For Easy Path Name Entry

Most Command Prompt commands require you, or have options, to specify full paths to files or folders but typing out a long path can be frustrating, especially when you miss a character and have to start over.

For example, in Windows 7, the path to the *Accessories* group in my Start Menu is **C:\Users\Glenn\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Accessories**. Who wants to type that all in manually? Not me.

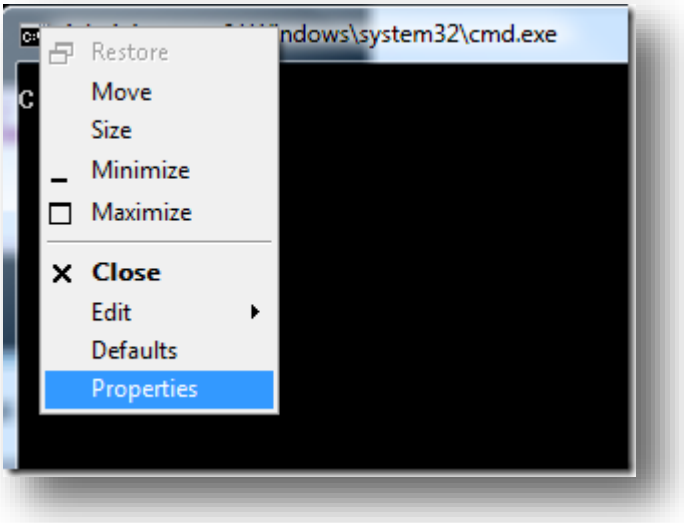
Luckily there's a Command Prompt trick that makes this much easier: drag and drop.

Just navigate to the folder you want the path for in Windows Explorer. Once there, drag the folder or file to the Command Prompt window and let go. Like magic, the full path is inserted, saving you a considerable amount of typing depending on the length and complexity of the path name.

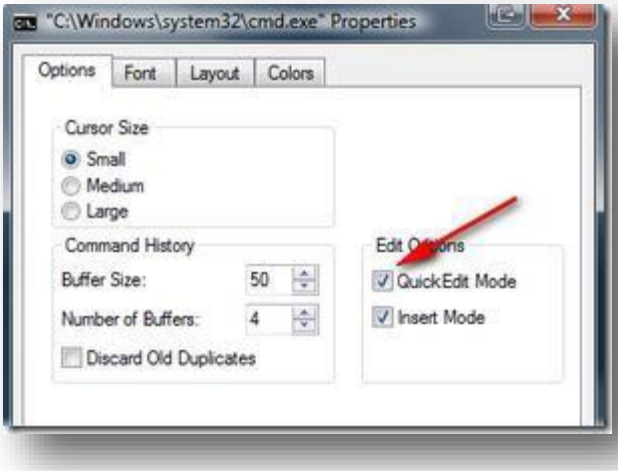
Note: Unfortunately, the drag and drop feature does not work in an elevated Command Prompt.

3. Quick Edit Mode

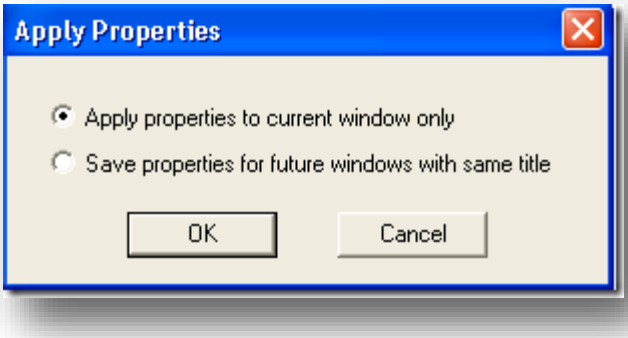
Open the command prompt properties



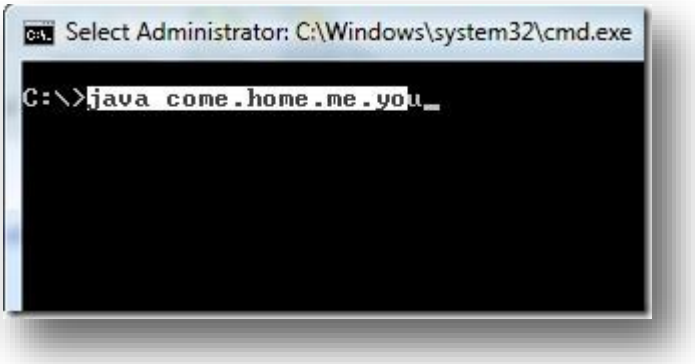
Select the Quick Edit mode



Once you have done that click on Ok button. In some instance you may be prompted to choose to either limit your changes to the session or apply it to all future command windows that you may use. Choose the latter so that you do not have to do this again and again.



Once you have done that you can now select any text on the command prompt by simply using your mouse.



Note simply selecting the text will not copy it, you will have to hit the return [enter] button once you have made your selection for it to be copied.

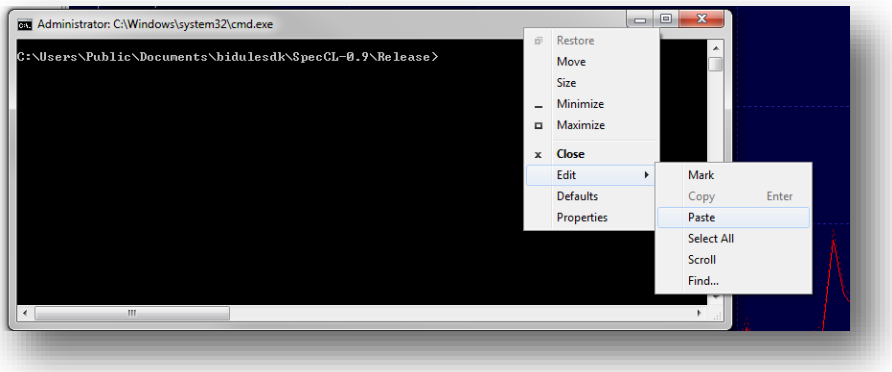
Another approach:

Right-click anywhere in the Command Prompt window and choose **Mark**. Now, highlight with your left mouse button whatever you'd like to copy. Once your selection is made, press **Enter**.

Now you can paste that information into whatever program you'd like.

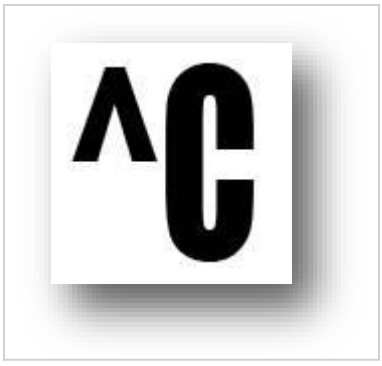
4. Cut and Paste on the Edit menu

Once you have enabled the Quick Edit Mode, you can also cut and paste using the Edit menu if you right click on the title bar of a cmd window:



Note that unlike all other windows programs the cmd window uses a rectangular (vs. line by line) selection.

5. Use Ctrl-C to Abort a Command



Just about any command can be stopped in its tracks with the abort command: Ctrl-C.

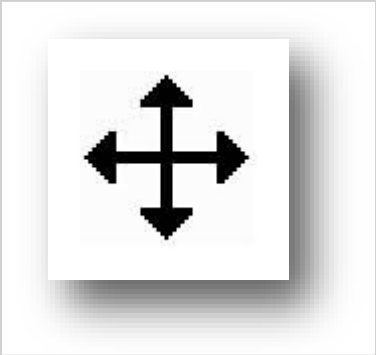
If you haven't actually executed a command, you can just backspace and erase what you've typed, but if you've already executed it then you can do a Ctrl-C to stop it.

Warning: Ctrl-C isn't a magic wand and it can't undo things that aren't undoable, like a partially complete format command. However, for things like the dir command that seem to go on forever or questions you're asked at the prompt that you don't know the answer to, the abort command is an excellent Command Prompt trick to know.

6. Use the CLS command to clear the screen

If you Ctrl-C out of SpecWeb and then run it again in the same cmd window the format may not work correctly, If that happens you can use Ctrl-C again and the Clear Screen Command: CLS to clear the screen

7. Access Previously Used Command with the Arrow Keys



Another great Command Prompt trick has to be the use of the keyboard arrow keys to cycle through previously executed commands. The up and down arrow keys cycle through the commands you've entered and the right arrow automatically enters, character by character, the last command you executed.

This might not sound that interesting, but there are several situations where the arrow keys become huge time savers.

Consider this example: You've typed out 75 characters of a command and then try to execute it, only to find that you forgot to add an option at the very end. No problem, just hit the up arrow and the entire command is automatically entered in the Command Prompt window, ready for you to edit to make it work.

8. Automatically Complete Commands with Tab Completion

Tab completion is another Command Prompt trick that can save you lots of time, especially if your command has a file or folder name in it that you're not completely sure of.

To use tab completion in the Command Prompt, just enter the command and then the portion of the path that you do know, if at all. Then press the tab key over and over to cycle through all of the available possibilities.

For example, let's say you want to change directories to some folder in the *Windows* directory but you're not sure what it's named. Type **cd c:\windows** and then press tab until you see the folder you're looking for. The results cycle or you can use Shift+Tab to step through the results in reverse.

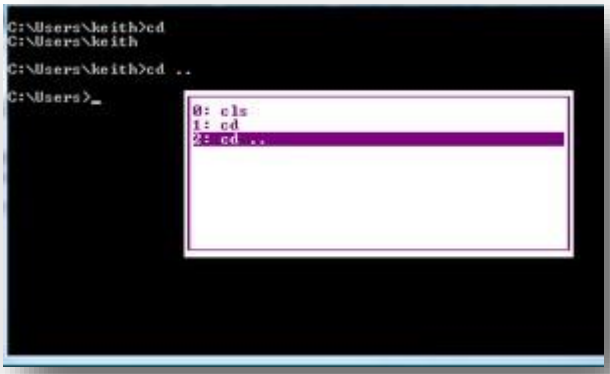
9. Become a Command Prompt Power User with Function Keys

The fact that the function keys actually do something in the Command Prompt is maybe one of the best kept secrets about the tool:

F1: Pastes the last executed command (character by character)
F2: Pastes the last executed command (up to the entered character)
F3: Pastes the last executed command
F4: Deletes current prompt text up to the entered character
F5: Pastes recently executed commands (does not cycle)
F6: Pastes ^Z to the prompt

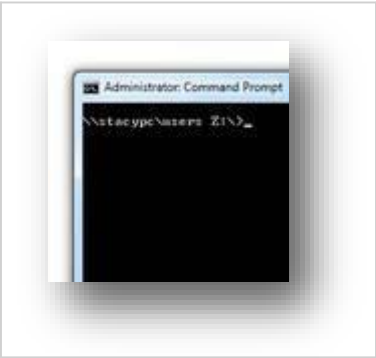
F7: Displays a selectable list of previously executed commands
F8: Pastes recently executed commands (cycles)
F9: Asks for the number of the command from the F7 list to paste

F7 Key Shortcut
Pressing the F7 key will show you a list of commands you had typed in earlier, very useful if you repeat the same commands over and over again and dread typing them.



F1 and F2 shortcut keys
Typing in long commands can always result in mistakes in order to correct those mistakes you may have to type in the whole command again. Instead of typing in the whole command again you can simply press the F1 key and it output one character at a time from the previous command. If you think that is slow you can use the F2 key which will prompt you the number of characters you want to copy from the previous command.

10. Hack the Prompt Text

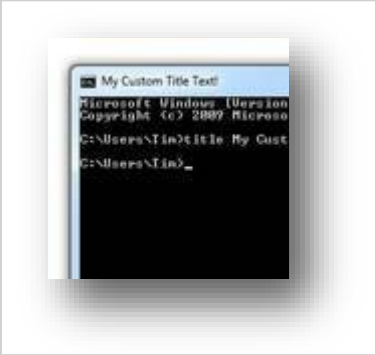


Did you know that the prompt itself in the Command Prompt is completely customizable thanks to the prompt command? It is, and when I say customizable, I mean *really* customizable.

Instead of **C:\>**, you can set the prompt to any text you want, have it include the time, the current drive, the Windows version number, you name it.
One useful example is **prompt mp$g** which will show the full path of a mapped drive in the prompt, alongside the drive letter.

You can always execute **prompt** alone, without options, to return it to its sometimes boring default.

11. Customize the Command Prompt Title Bar Text



Tired of that *Command Prompt* title bar text? No problem, just use the title command to change it to whatever you like.

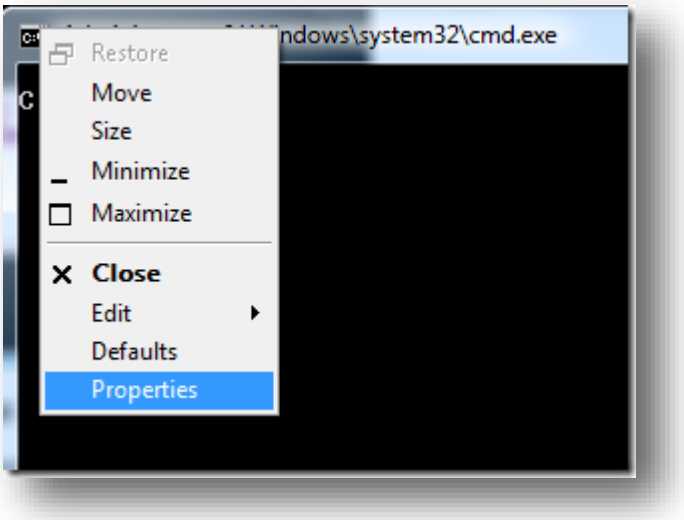
For example, let's say your name is Maria Smith, and you want to express your ownership of the Command Prompt: execute **title Property of Maria Smith** and the Command Prompt's title bar will change immediately.

The change won't stick, so the next time you open Command Prompt the title bar will be back to normal.

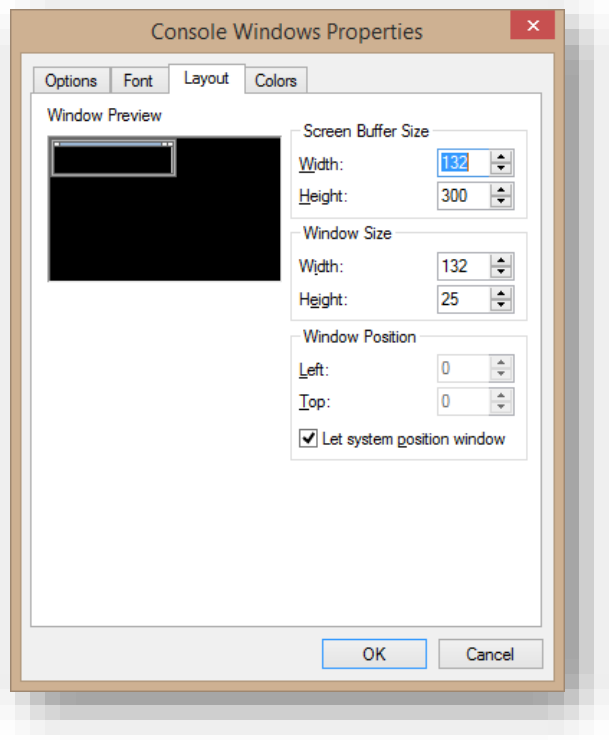
The title command is usually used to help give a custom appearance in script files and batch files... not that I'm saying titling it with your name isn't a good idea!

12. Adjust the CMD window fonts and window size

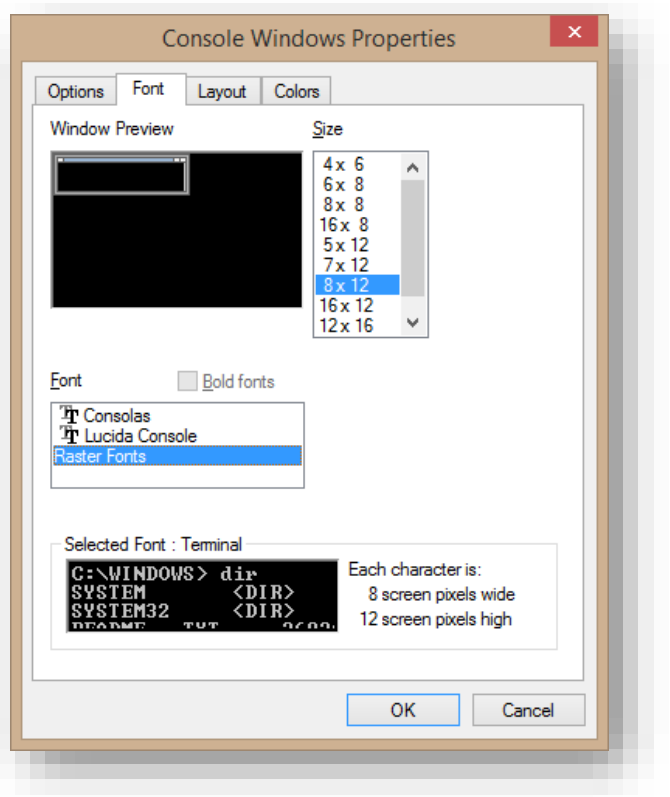
Open the command prompt properties



Select Defaults



Use the tabs to set default window sizes and fonts.



This will control the fonts in SpecWeb command line.

Licenses and Legal Information

SpecWeb end-user license agreement (EULA)

PLEASE READ THIS DOCUMENT CAREFULLY BEFORE USING THIS SOFTWARE. THIS LICENSE PROVIDES IMPORTANT INFORMATION CONCERNING THE SOFTWARE, PROVIDES YOU WITH A LICENSE TO USE THE SOFTWARE AND CONTAINS WARRANTY AND LIABILITY INFORMATION.

BY USING THE SOFTWARE, YOU ARE ACCEPTING THE SOFTWARE “AS IS” AND AGREEING TO BE BOUND BY THE TERMS OF THIS LICENSE AGREEMENT. IF YOU DO NOT WISH TO DO SO, DO NOT INSTALL, USE, OR EVALUATE THE SOFTWARE.

"User" or "you" means the software customer or "end-user" of the program.

"Program" or "software" means the SpecWeb exe file included in this software product which you downloaded from www.surroundbyus.com and/or installed and/or executed.

"Donationware" means software which is free to use by anyone who downloads the software from www.surroundbyus.com; but donations are appreciated. "Donationware" does not require any registration or subscription fee to use it.

USAGE. This program is Donationware and can be used freely for **non-commercial and non-broadcast purposes only**.

SOURCE AND DISTRIBUTION. You may NOT distribute or make copies of the program, any portion of the program or the included materials. Usage of the Software obtained from sources other than www.surroundbyus.com is not allowed.

RESTRICTIONS. The user shall not rent, sell or license the original or any copy of the Software and/or the included materials to other parties. The user may not edit, modify, reverse engineer, hack, or decompile the Software. The user may not edit the structure of the Software, nor ask to any other person to do so in order to modify its properties. The user shall not include the Software in other software, or translate the Software**, or use the Software for any commercial or broadcast purposes**. The license will immediately terminate without notice if the user fails to comply with any provision set forth herein.

DISCLAIMER OF RESPONSIBILITY. The software is provided "AS IS" and without any technical support or
warranty of any kind including, without limitation, any warranty or condition of merchantability, fitness
for a particular purpose and non-infringement.

DISCLAIMER OF WARRANTY AND LIMITATION OF LIABILITY. The author of the software shall not be liable for any loss of profits, loss of business, loss of information, personal injury, indirect, incidental or consequential damages, expressly or not set forth herein incurred before, during or after the use of SpecWeb. No warranties, either expressed or implied, including the warranties or conditions of merchantability and fitness for a particular purpose are applicable to this software.

INTELLECTUAL PROPERTY OWNERSHIP, COPYRIGHT PROTECTION. The software and any included materials are the intellectual property of the author of the software. The Owner retains all ownership, right, title and interest in, to and of the Software, the included materials, and all copies of it. This agreement does not grant you any intellectual property rights of the software and all rights not expressly granted are reserved by the author of the software.

Additional code or libraries:

SpecWeb uses the Phase Vocoder code from:

http://people.bath.ac.uk/masrwd/pvocex/pvocex.html (none of the copyrighted files used in SpecWeb)

SpecWeb depends on libsndfile. Libsndfile is released under the GNU Lesser General Public License, either version 2.1 or optionally version 3 (see the bottom of this file for the text of those licenses).

SpecWeb depends on Libwebsockets. Libwebsockets is released under the GNU Lesser General Public License version 2.1 with the following exceptions (see the bottom of this file for the text of that license):

1) Static linking of programs with the libwebsockets library does not constitute a derivative work and does not require the author to provide source code for the program, use the shared libwebsockets libraries, or link their program against a user-supplied version of libwebsockets.

If you link the program to a modified version of libwebsockets, then the changes to libwebsockets must be provided under the terms of the LGPL in sections 1, 2, and 4.

2) You do not have to provide a copy of the libwebsockets license with programs that are linked to the libwebsockets library, nor do you have to identify the libwebsockets license in your program or documentation as required by section 6 of the LGPL.

However, programs must still identify their use of libwebsockets. The following example statement can be included in user documentation to satisfy this requirement:

"[program] is based in part on the work of the libwebsockets project (http://libwebsockets.org)"

SpecWeb depends on Curl. Curl and libcurl are licensed under a MIT/X derivate license (see the bottom of this file for the text of that license).

SpecWeb depends on JellyCanCode's SimpleIni library, licensed under the MIT license (see the bottom of this file the text of that license).

SpecWeb depends on the Bass, and BassASIO audio libraries for live playback, "BASS is free for non-commercial use".

SpecWeb depends on Intel Parallel Studio XE and the included tbb and ipp libraries and dlls. Portions are redistributed with SpecWeb under the terms of the Intel license.

SpecWeb (optionally) depends on MrsWatson by Teragon Audio. See the bottom of this file for the text of that license)

SepcWeb (optionally) depends on 5.1 Master Limiter MK2 VST, http://jsplugins.supermaailma.net/
See the bottom of this file for the text of that license.

SpecWeb and the Surroundbyus.com website collect certain information during use. See the below privacy policy.

Surroundbyus.com Privacy Policy

We have updated the SurroundByUs.com privacy policy as of 3/25/2011.

INTRODUCTION

This Privacy Policy applies to information that users transmit to SurroundByUs.com through the SurroundByUs.com website at www.surroundbyus.com or through use of SpecWeb or AudioMuxer Software.
SurroundByUs.com is committed to your privacy. This Privacy Policy is designed to inform you of what information we collect from you on our Sites and through Software we distribute and how we use that information.

WHAT WE COLLECT AND WHEN

Personally Identifiable Information

We collect personally identifiable information on our Sites and through our Software, including in the following ways:

- When you register for the site or donate in support of the Software;
- When you login to and/or use the site after logging in;
- When you license or activate the Software during or after installation;
- When you send email through the Site or Software;
- When you fill out a feedback form or participate in a webcast through the Site;
- When you are using the SurroundByUs.com SpecWeb or AudioMuxer Software and are connected to the internet; and
- When the Software checks for updates.

The types of personally identifiable information collected include your Internet Protocol (IP) address, username on the site, and email address. Additionally, if you donate via PayPal information such as your full name, billing and shipping addresses, email address, and additional contact and transaction-related information, as well as any additional information you choose to include in communications to us is available. When you use the SurroundByUs.com SpecWeb or AudioMuxer Software, we also collect Software and Plogue Bidule version and settings information in order to improve the Software, support you when you have an issue, and to understand our user demographics. When you use the SpecWeb or AudioMuxer Software and are connected to the internet, such information is provided to us automatically. When you post or download on the Site, or correspond with us via email or conferencing software, we may store portions of those communications.

We consider each of the above types of information to be "Personally Identifiable Information" because it is (or it is associated with) individually identifiable information about you.

Other Information
In the following circumstances we collect information that is not personally identifiable:

- When you navigate the Site, use the SurroundByUs.com SpecWeb or AudioMuxer Software when connected to the internet, we log various types of non-personally identifiable information to help manage and improve our Site, Software, services, and communications regarding our software and services, in general and for you in particular

- Cookies, etc.

Like many websites we use cookies and other standard web technology to collect information for our own use.

A cookie is a small data file that we transfer to your computer's hard disk for record-keeping purposes. You can instruct your browser, by editing its options, to stop accepting cookies or to prompt you before accepting a cookie and to permit you to refuse it. In some cases refusing a cookie will hamper your navigation of our Site.

Cookies make it easier for you to use the Site and for us to offer opt in and opt out opportunities, and they enable us to follow your navigation through the Site and customize it to your interests. They allow us to remember your identity, are linked to your personally identifiable information,

and are linked to your preferences so we can display content appropriate for you and your interests.
We do not use any third party tracking technologies, the information is only used to help manage our Site and deliver Software and information to you.

HOW WE USE YOUR PERSONALLY IDENTIFIABLE INFORMATION

We use your Personally Identifiable Information (and at times other information we collect) to:

- Authenticate your visits;
- Send you information, including software updates; or
- Help us make you aware of and provide services and software that may be of interest to you.

We also use the information to manage and improve our Site and Software.
We may also use your Personally Identifiable Information to contact you, via email, with our newsletters, customer support materials or notices about new software and services that may become available and to customize and deliver that information to you.

LIMITED DISCLOSURE OF YOUR PERSONAL INFORMATION TO THIRD PARTIES

We do not share, sell, rent or trade your personally identifiable information with third parties for marketing purposes. We do use Google analytics software on our site to generate statistics about visitors to the Site, such as the number of page views or times of peak traffic. See http://www.google.com/intl/en/analytics/privacyoverview.html . See the below CHOICE section for how you can opt out of Google Analytics.
We reserve the right to disclose non personally identifiable information to Plogue.com for the purpose of Software support.
We reserve the right to disclose personally identifiable information as required by law and when we believe that disclosure is necessary to protect our rights and/or comply with a judicial proceeding, court order, or legal process served on our Web site.

CHOICE

Use of Personally Identifiable Information Only as Necessary
You are not required to register to gain access to many areas of the Site. If you use the Software and our Site's personalized services, however, we will collect your Personally Identifiable Information as described in this Privacy Policy and use it to the extent necessary to provide software, information and services you request. If you would like to edit the personally identifiable information we have collected about you, please contact us as described below.

Reporting

Our Software is capable of collecting and sending us information use of the Software. We use such information to improve the Software and services. We call this, "Reporting". When you use our SpecWeb or AudioMuxer Software, this information is sent to us automatically when you are connected to the internet.

Google Analytics Opt-Out

Google Analytics generates statistics about visitors to websites, such as the number of page views or times of peak traffic. If you don't want your anonymous browser data to be collected by Google Analytics when you visit sites that use Google Analytics, you can install an opt-out in your web browser from this link: http://tools.google.com/dlpage/gaoptout

Community Forums/Testimonials

If you use our community forum on this Web site, you should be aware that any personally identifiable information you submit there can be read, collected, or used by other users of these forums, and could be used to send you unsolicited messages. We are not responsible for the personally identifiable information you choose to submit in these forums.

If you join one of our community forums, other users may be able to see your screen or username, in addition to any comments or submissions that you choose to post on or submit to the Site. Providing your Personally Identifiable Information in this context, as in others, is voluntary and should correlate with the degree of interaction you wish to have with other users. We recommend that you guard your anonymity and sensitive information and that you not use your real name as your screen or username to the extent that allows others to identify you. We may also have testimonials on our Site, for which participants have given permission to show their full name.

MORE ON PRIVACY

Children's online privacy protection

SurroundByUs.com understands the importance of protecting children's privacy, especially in an online environment. The Site and the Software are not designed for or directed at children. Use of the Software is currently limited to adult environments. It is our policy not to knowingly collect or maintain information about anyone under the age of 13.

Links to third party websites

The Site contains links to third party websites. We assume no responsibility for the information practices of those websites. We encourage visitors to review each website's privacy policy before disclosing any personal information on that website.

Phishing

We do not and will not, at any time, request your Personally Identifiable Information or other information in a non-secure or unsolicited e-mail conference, or telephone communication. Identity theft and the practice currently known as "phishing" are of great concern to us. Safeguarding information to help protect you from identity theft is one of our priorities. For more information about phishing, visit the Federal Trade Commission at http://www.ftc.gov/bcp/edu/pubs/consumer/alerts/alt127.pdf

Security

The security of your personal information is important to us. When you enter sensitive information to make a donation, we encrypt that information using secure socket layer technology (SSL). We follow generally accepted industry standards to protect the personal information submitted to us, both during transmission and once we receive it. No method of transmission over the Internet, or method of electronic storage, is 100% secure, however.

Therefore, while we strive to use commercially acceptable means to protect your personal information, we cannot guarantee its absolute security.

Access to data

Registered users may contact us with requests that we delete their Personally Identifiable Information from our systems and we will attempt to accommodate such requests. If all such information is deleted from our systems, your account may become deactivated. In any event, we may retain an archived copy of your records as required by law or for legitimate business purposes. See below for privacy contact information.

International Users

SurroundByUs.com is located in the United States of America. If you live outside of the United States, by visiting our Site or using the Software and providing us with data, you acknowledge and agree that your data may be transmitted to the United States which is outside your resident jurisdiction. Furthermore, you acknowledge and agree that such data may be stored and processed on servers located in the United States.

CHANGES TO THIS POLICY

If we decide to change our privacy policy, we will post those changes to this privacy statement, the home page, and other places we deem appropriate so that you are aware of what information we collect, how we use it, and under what circumstances, if any, we disclose it.
We reserve the right to modify this privacy statement at any time, so please review it frequently. If we make material changes to this policy, we will notify you here, by email, or by means of a notice on our home page.
The most current version of the Privacy Policy can be found at http://www.surroundbyus.com/privacy.html

CONTACT

We welcome inquiries or comments about our Privacy Policy and any queries or concerns about SurroundByUs.com by email at admin –at- surroundbyus.com (remove spaces and replace -at- with @ in the address).

GNU LESSER GENERAL PUBLIC LICENSE 2.1

Applies to libsndfile and libwebsockets only

Version 2.1, February 1999

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be

consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify

that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6.

Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the

Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further

restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

11. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and

conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

GNU LESSER GENERAL PUBLIC LICENSE 3.0

Applies to libsndfile only

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser General Public License, and the "GNU GPL" refers to version 3 of the GNU General Public License.

"The Library" refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.

1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

Curl MIT license:

SimpleINI licence

MrsWatson License

5.1 Master Limiter MK2 VST License