



SpecWeb Web Interface and Command Line Stereo to Surround Converter

Version 2.1

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Introduction

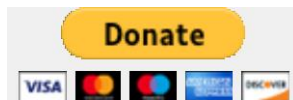
SpecWeb is a command line (windows console) version of the SPEC stereo to surround tool from www.surroundbyus.com. It is designed to be faster and easier to use than the full “Spec” version, and does not require Plogue Bidule.

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 “Spec” 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 up/down sample and 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 AVX instruction set.

See: https://en.wikipedia.org/wiki/Advanced_Vector_Extensions for a list of CPUs with AVX.

Basically, any Intel or AMD CPU from 2011 or later.

Windows 10.

Windows XP, 7, Vista, and 8 are no longer supported.

SpecWeb needs a minimum screen resolution of 1280x960.

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 (.wav, .flac).

No mp3s please.

For matching the loudness of the original stereo track with Sonic Anomaly's "Unlimited" VST (the default configuration for SpecWeb 2.1) a functioning audio device is required. This can be stereo and doesn't have to have anything connected to it. The audio device on your computer's motherboard is fine.

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 or TV/Monitor with 5.1 speakers.
- c) A sound card with either dts interactive or dolby live, and an SPDIF connection to a Home Theatre system or TV/Monitor with 5.1 speakers.

What's New in This Version

2.1

Default withs and channel levels (in the ini file) changed again. Back to subjective (vs. statistical) settings based on over 50 example tracks of all genres and production types, using a BBC studio virtual listening room with personally calibrated headphones on a Smyth Research A16.

Older settings are documented in the included ini file, should you prefer them or just want to understand the differences.

Zone 2 is the new default ArcTan mode. Zone two being preferred of other options by users.

Note: The SpecWeb Play web interface has not been updated for Zone 2 yet. That will be addressed in SpecWeb 2.2.

Bug Fixes

Echo at end of some files that fade to silence (when using VST)

Tagging a mixture of tracks with tags and no tags did the wrong thing

2.0

Built in upsampling - 2x by default -u1 would be no upsample -u2 (the default) would be 2x upsample -u4 would be 4x upsample. Downsample to the original input rate is automatic. All other settings relevant to upsample are auto (by default) e.g. fft size etc.

Limiter VST changed to Sonic Anomaly Unlimited. No distortion with this VST so clipping detection is deprecated (but -k flag left in to avoid breaking AudioMuxer integration)

Loudness of final surround (ebur128 LUFS and True Peak) are now within 0.5dB of original stereo

Default widths changed based on a statistical analysis of many sample songs of all music and mix types

Zone method of ArcTan added, -m3, Special keyboard code "t" for "test" to toggle back and forth between ArcTan Across and ArcTan Zone during play

Updated ArcTan math to be the same as the latest Spec (unreleased) versions

Build tools and all libraries updated – which meant support for older OS's had to be dropped.

Increased Play/live performance and meter responsiveness

1.5

Ambiance Extraction - crossfade and add

Flipped outputs option in playback (to focus on Ambiance in center during playback)

Unicode File Name Handling

Console parameter changes updates update web interface

Display sample rate and bit depth for input and output files (all stages)

Display dBTP for surround (if dynamics measurement is on – slower processing)

Fix bug where x values ever so slightly above 1/-1 causing distortion in flac

Speed ups and command line options to defeat some of the new features

Robust code to protect against 5.1 limiter VST crashes

New “Commands Cheat Sheet” pdf in install directory

-6 command line flag will make and keep per track VST log files

-d (keep temp files) flag also leaves a per song log file of the internals of the VST retry stuff. That file is not created at all without -d (or -6).

-V to turn on/off dynamics measurements. With VST in use, loudness measurements are still taken during conversion (but no true peak). With VST not in use, and -V0, no dynamics measurements are taken. Default is currently -V0 (off).

-k to turn on/off clipping detection. This doesn't really save any time, other than if clipping is detected in the VST step, it repeats (with less aggressive settings, until clipping goes away. -k0 would be equivalent to 1.41, -k1 is currently the default. Whether one can hear the "clipping" probably depends on how high end your system is, etc. The whole clipping detection exercise was driven by a bug that caused massive clipping, only ever found in one track, and as far as I know no one ever complained about clipping/distortion in the VST previously.

Few cosmetic improvements to help you identify windows and such when running multiple copies at once. Process IDs are used in VST window titles and "finished processing" dialogs.

Tracks are numbered and referred to by number as necessary. Track number shows in the "red" line as each track starts. Track numbers add to the file names of temp files.

For torture testing only - a "-sx" option, where x is the number of seconds of the track to process (will be off by the size of the buffer for that sample rate so -s6 might give ~12 seconds, etc

"Live" function works again (I recommend for this VB-Audio software cables for this).

Speed up (at least when using usevst=nogui, which is now the default)

Auto dispatch of cpu optimized code

Base requirement is an x86 CPU with SSE2 instructions set (same as recent versions of SpecWeb)

If you have a newer Intel CPU that supports AVX you'll get optimized code for that. If you have an even newer Intel CPU that supports AVX2 you'll get optimized code for that

And yes AMD CPUs work (as long as they support SSE2, but they won't get any faster code. Blame Intel)

1.4:

New Features:

Using the new defaults and the Master 5.1 Limiter VST, the loudness of the surround now matches the loudness of the Original Stereo to less than 1 dB of difference, for most songs. “Transients in the rears” are also more gracefully handled with automatic settings of the mastering VST.

New command line option -vx to turn vst on/off (on by default)

-vx = Use 5.1 Master Limiter (Pre Zag) if x=1 don't use if x=0 (Requires Zag, default is use Limiter)

The limiter is now “pre” ZAG, vs. Post.

The Master 5.1 Limiter is now visible so you can see its operation.

Ebur128_loudness and true peak utility in \Install\bin

Bug Fixes:

Many. ?;0)

1.31:

New Features:

Save As ini dialog starts in current song directory and other improvements to the Save As dialog

Record All button in Web interface

Song Title and Play Status in Web interface

Increase process priority of Play and increase Play buffer size

(helps on slower or CPU overloaded systems)

Bug Fixes:

Crash on center width = 0 fixed

Fftsize = auto not being saved in ini files fixed

Rotation direction fixed

Long absolute silence at beginning of track could cause crash fixed

Edge Browser Fix for Edge stopped responding if no control touched in a while fixed

1.3:

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) 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 = Pre 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

See the SpecWeb.ini file in the \Install\bin directory.

Known Issues

- Due to a memory leak in some Intel libraries I'm using, at around 48 tracks in one go, you run out of memory and crash (might depend on how much ram you have, not sure). You won't care if you are using AudioMuxer or QQHelper though, as those call SpecWeb per track.
- 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 an ASIO audio device, only one song at a time is currently working

- 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

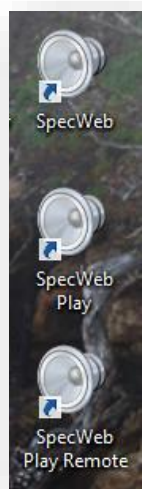
Installation:

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 2010SP1 C++ runtime
- 2) Microsoft 2015, 2017, 2019 C++ runtime
- 2) Intel System Studio 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.

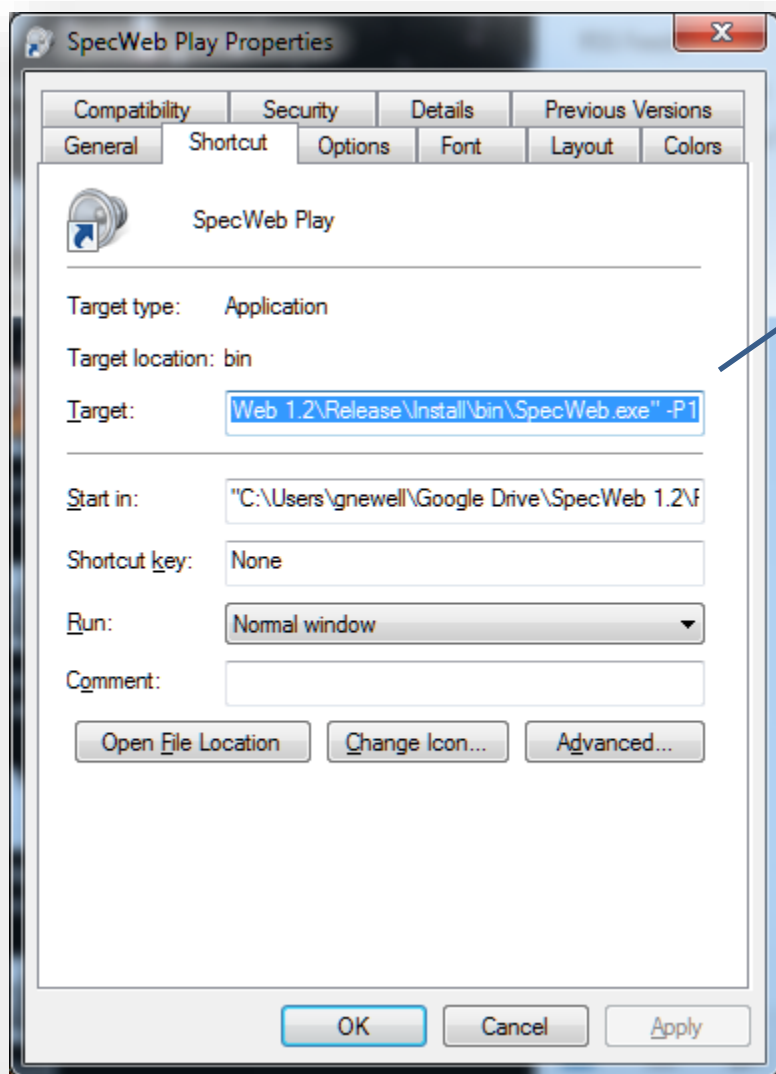
SpecWeb Play Remote is the same as Play, however it will wait for a connection from a remote browser (such as from a tablet or phone or another computer) before it plays.

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.

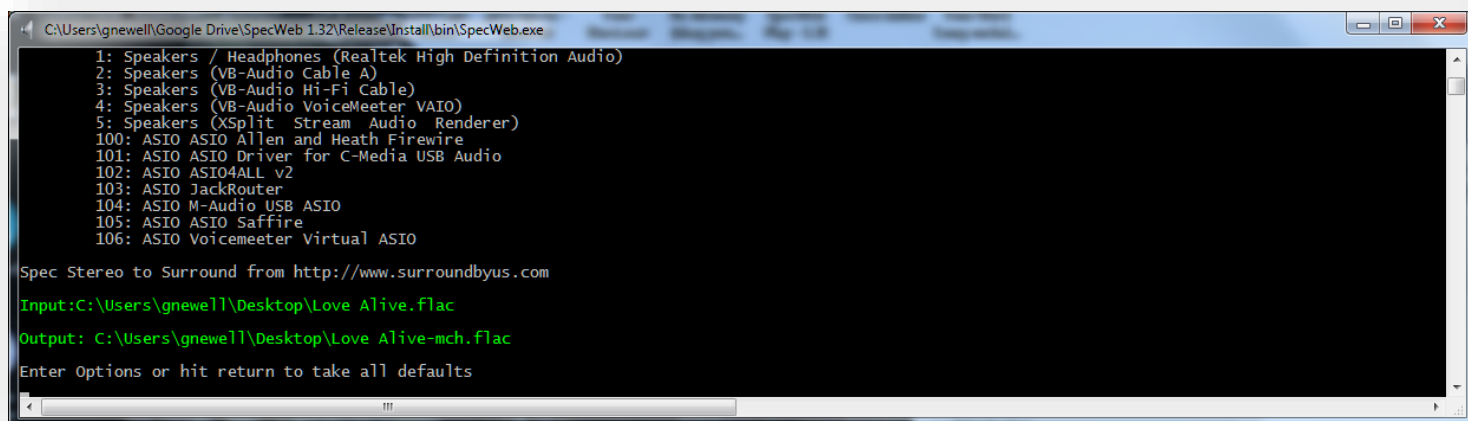
"Send To Menu" Instructions:

Windows 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 to the SpecWeb icon on your desktop. A cmd window will open, print the SpecWeb options and list the available audio devices on your system.



```

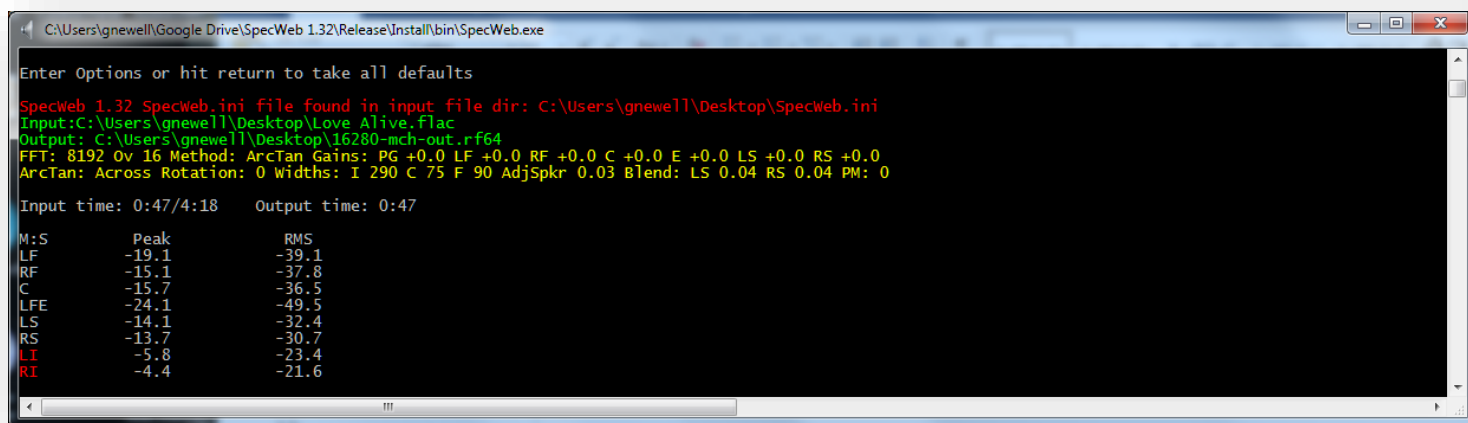
C:\Users\gnewell\Google Drive\SpecWeb 1.32\Release\Install\bin\SpecWeb.exe
1: Speakers / Headphones (Realtek High Definition Audio)
2: Speakers (VB-Audio Cable A)
3: Speakers (VB-Audio Hi-Fi Cable)
4: Speakers (VB-Audio VoiceMeeter VAI0)
5: Speakers (XSplit Stream Audio Renderer)
100: ASIO ASIO Allen 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
Input: C:\Users\gnewell\Desktop\Love Alive.flac
Output: C:\Users\gnewell\Desktop\Love Alive-mch.flac
Enter Options or hit return to take all defaults

```

For now, just press return or enter to accept default settings

SpecWeb will now convert to surround (Pass 1):



```

C:\Users\gnewell\Google Drive\SpecWeb 1.32\Release\Install\bin\SpecWeb.exe
Enter Options or hit return to take all defaults

SpecWeb 1.32 SpecWeb.ini file found in input file dir: C:\Users\gnewell\Desktop\SpecWeb.ini
Input: C:\Users\gnewell\Desktop\Love Alive.flac
Output: C:\Users\gnewell\Desktop\16280-mch-out.rf64
FFT: 8192 Ov 16 Method: ArcTan Gains: PG +0.0 LF +0.0 RF +0.0 C +0.0 E +0.0 LS +0.0 RS +0.0
ArcTan: Across Rotation: 0 Widths: I 290 C 75 F 90 AdjSpkr 0.03 Blend: LS 0.04 RS 0.04 PM: 0

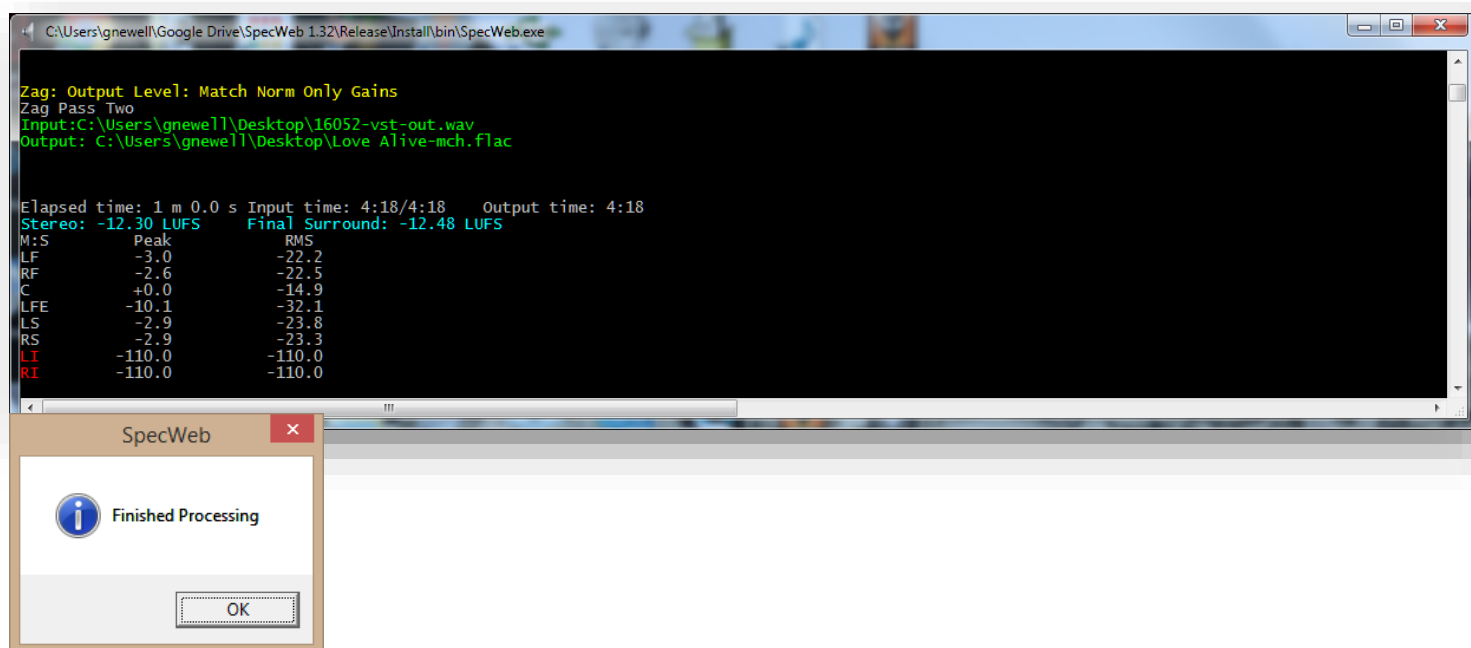
Input time: 0:47/4:18   Output time: 0:47

M:S      Peak      RMS
LF        -19.1      -39.1
RF        -15.1      -37.8
C         -15.7      -36.5
LFE       -24.1      -49.5
LS        -14.1      -32.4
RS        -13.7      -30.7
LI        -5.8       -23.4
RI        -4.4       -21.6

```

Next, in a 2nd pass, SpecWeb will use the “Unlimited” VST, to “re master” the surround to match the original dynamics/loudness of the stereo input. By default, the user interface of the VST is not displayed, as my VST hosting library is more stable that way.

Finally, SpecWeb will make a final pass over the Surround, and Normalize the level so the peak level in the surround matches the peak level in the original stereo:



That's it!

You'll now have a 24 bit 5.1 surround flac file, in the same directory as the stereo source, with the same name but with "-mch" added at the end of the filename.

The above also works if you drag and drop multiple lossless stereo files at once, on the SpecWeb icon. SpecWeb will process each song, one at a time, until finished with all the songs.

Important Note: Higher quality results (fewer artifacts, or "swishing" sounds) can be achieved if you first resample your lossless stereo input songs to at least twice the original sample rate. Beginning in SpecWeb 2.0, this upsampling is built in at 2x by default. 4x is also supported by ini or command line options. Upsample can also be defeated with a 1x option by ini or command line option.

SpecWeb 2.1 will always downsample back to the original stereo file sample rate.

Built in up/down sampling in SpecWeb is preferred to external programs;

Dynamics matching to original stereo is maintained (ebur128 LUFS and True Peak)

Downsampling occurs directly after conversion to 5.1, with further SpecWeb steps happening at the original stereo sample rate. This speeds up the whole process

Quickstart 2

Again, with just a little more detail:

Drag and drop a lossless (.wav or .flac) stereo song file on to the SpecWeb icon on your desktop. 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 the screen shot on the next page I’ve re-sized the window so you can see everything without scrolling (The list of audio devices in this screen shot reflects my computer):

```

D:\Google Drive\SpecWeb 2.0\Release\Install\bin\SpecWeb.exe
SpecWeb 2.0

SpecWeb 2.0
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).

-Vx = Use Unlimited VST if x=1
      if x=2 use but don't display during record/convert
      don't use if x=0 (default is 2).
-Vx = if x=0 skip dynamics measurements (dBTP, not used for VST settings).
      if VST is also not used, skip all dynamics measurements (LUFS, for speed)
      (x=0, take only required measurements, is default).

-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' (default is normonly).
-Lx = Max Output Level in dB or 'M' to match input loudness (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).

-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 2 = Zone (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 54).
-fx = Set ArcTan F Width to x degrees (default 36).
-mx = Set ArcTan Mode to 0 (Sum), 1 (Across), or 2 (Diagonal) or 3 (Zone) (default 1).
      Zone implies Discrete panning mode.
-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).
-ex = Set Ambiance Extraction Amount (0 to 1 default 0.0).
-gx = Set Ambient Extraction Mode. 0 = crossfade, 1 = add (default crossfade)

-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).
-ux = Set Upsample Ratio. Valid values are 1, 2, and 4.
      1; no Upsample, 2; 2x Upsample, 4; 4x Upsample (default 2).
-q = Quiet - don't pop up finished processing message.
-d = Don't delete intermediate files.
-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 (USB Camera-B4.09.24)
1: Saffire Audio (2- Saffire Audio)
2: Microphone (HD Webcam C270)
3: Microphone (Rift Audio)

Available Audio Output Devices:

-1: default device
0: No sound
1: Speakers (2- Saffire Audio)
2: marantz-AVR (Intel(R) Display Audio)
3: Headphones (Rift Audio)
4: SAMSUNG (NVIDIA High Definition Audio)
100: ASIO ASIO Avid Driver
101: ASIO Focusrite USB ASIO
102: ASIO Guitar Rig Mobile I/O
103: ASIO Guitar Rig Session I/O
104: ASIO Realtek ASIO
105: ASIO Rig Kontrol 3
106: ASIO ASIO Saffire

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

Input: D:\Test Tracks\01 - A. D. 1928.flac
Output: Bits: 24 D:\Test Tracks\01 - A. D. 1928-mch.flac

Enter Options or hit return to accept all defaults

```

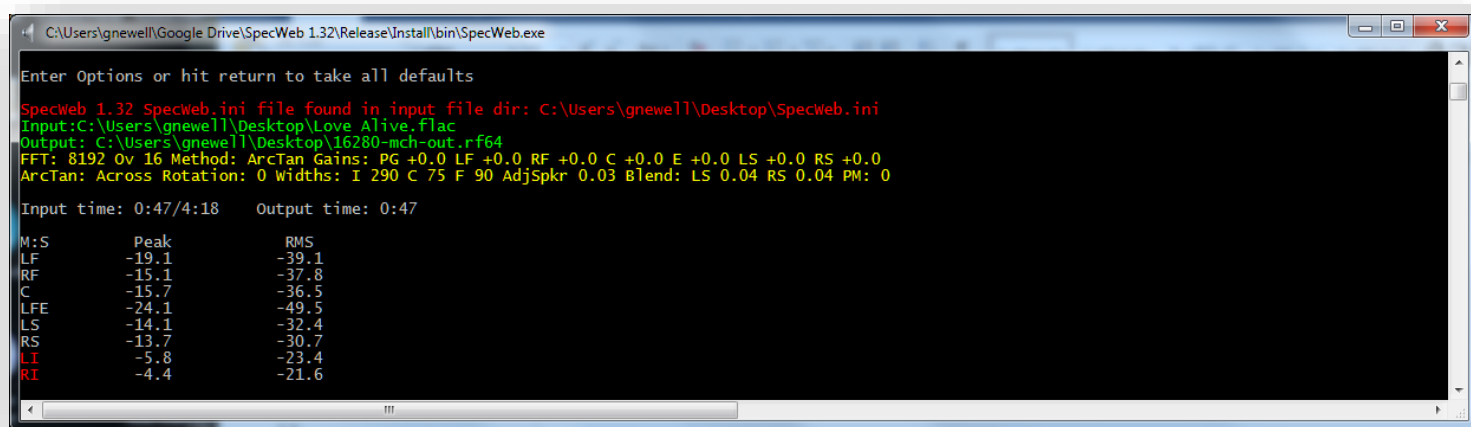

At this point you can enter any of the command switches or options, but for now just hit return to use the default settings.

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

.ini settings files are one way to pass options to SpecWeb. Depending on their location and naming, they can apply globally, to all tracks in a directory, or to individual tracks.

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).



The screenshot shows a Windows command prompt window titled "C:\Users\gnewell\Google Drive\SpecWeb 1.32\Release\Install\bin\SpecWeb.exe". The output text is as follows:

```

Enter Options or hit return to take all defaults
SpecWeb 1.32 SpecWeb.ini file found in input file dir: C:\Users\gnewell\Desktop\SpecWeb.ini
Input: C:\Users\gnewell\Desktop\Love Alive.flac
Output: C:\Users\gnewell\Desktop\16280-mch-out.rf64
FFT: 8192 Ov 16 Method: ArcTan Gains: PG +0.0 LF +0.0 RF +0.0 C +0.0 E +0.0 LS +0.0 RS +0.0
ArcTan: Across Rotation: 0 Widths: I 290 C 75 F 90 AdjSpkr 0.03 Blend: LS 0.04 RS 0.04 PM: 0
Input time: 0:47/4:18   Output time: 0:47

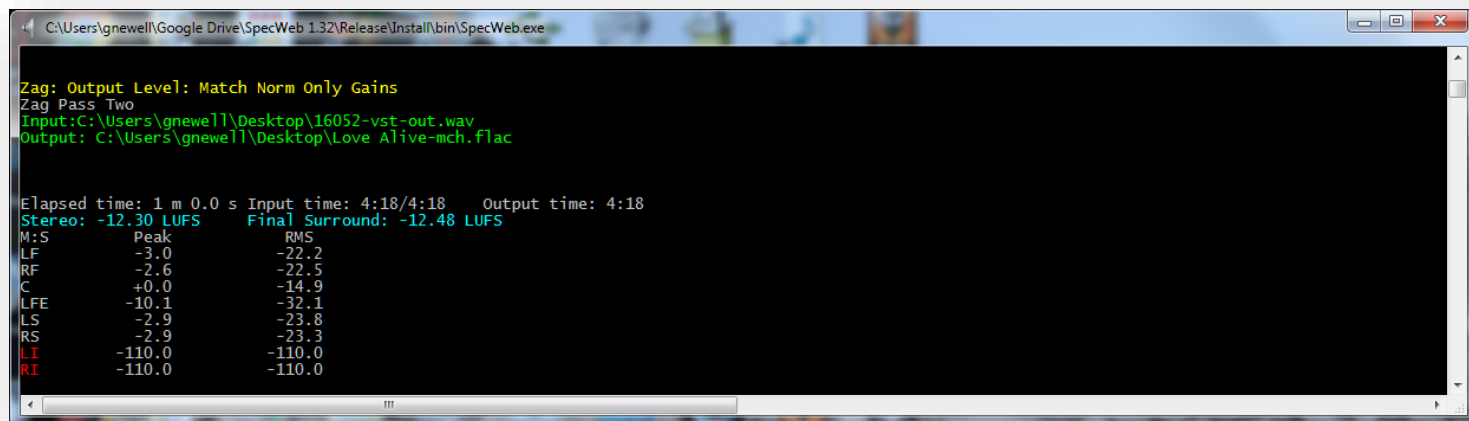
M:S      Peak      RMS
LF        -19.1      -39.1
RF        -15.1      -37.8
C         -15.7      -36.5
LFE       -24.1      -49.5
LS        -14.1      -32.4
RS        -13.7      -30.7
LI        -5.8       -23.4
RI        -4.4       -21.6

```

Next, in a 2nd pass, SpecWeb will use the “Unlimited” VST, to “re master” the surround to match the original dynamics/loudness of the stereo input. By default, the user interface of the VST is not displayed, as my VST hosting library is more stable that way.

The dynamics/loudness information of the original stereo file, and some values needed to calculate the 5.1 Master Limiter settings are printed in Cyan in the SpecWeb Window.

Finally, SpecWeb will make a final pass over the Surround, and Normalize the level so the peak level in the surround matches the peak level in the original stereo. A comparison of the Surround Loudness, to the Original Stereo Loudness, is shown in Cyan.



```

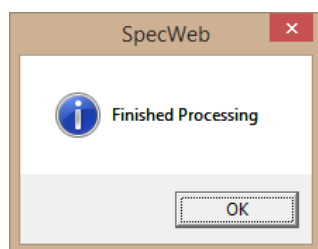
C:\Users\gnewell\Google Drive\SpecWeb 1.32\Release\Install\bin\SpecWeb.exe

Zag: Output Level: Match Norm Only Gains
Zag Pass Two
Input: C:\Users\gnewell\Desktop\16052-vst-out.wav
Output: C:\Users\gnewell\Desktop\Love Alive-mch.flac

Elapsed time: 1 m 0.0 s Input time: 4:18/4:18 Output time: 4:18
Stereo: -12.30 LUFS Final Surround: -12.48 LUFS

M:S      Peak      RMS
LF        -3.0      -22.2
RF        -2.6      -22.5
C         +0.0      -14.9
LFE       -10.1     -32.1
LS        -2.9      -23.8
RS        -2.9      -23.3
LI        -110.0    -110.0
RI        -110.0    -110.0

```



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 burning 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 (see actual program for most recent list of options):

SpecWeb 2.1

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).

-vx = Use Unlimited VST if x=1
if x=2 use but don't display during record/convert
don't use if x=0 (default is 2).

-Vx if x=0 skip dynamics measurments (dBTP, not used for VST settings).
if VST is also not used, skip all dynamics measurments (LUFS, for speed)
(x=0, take only required measurements, is default).

-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' (default is normonly).

-Lx = Max Output Level in dB or 'M' to match input loudness (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).

-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 2 = Zone (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 54).

-fx = Set ArcTan F Width to x degrees (default 36).

-mx = Set ArcTan Mode to 0 (Sum), 1 (Across), or 2 (Diagonal) or 3 (Zone) (default 1).
Zone implies Discrete panning mode.

-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).

-ex = Set Ambiance Extraction Amount (0 to 1 default 0.0).

-gx = Set Ambient Extraction Mode. 0 = crossfade, 1 = add (default crossfade)

-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).

-ux = Set Upsample Ratio. Valid values are 1, 2, and 4.
1; no Upsample, 2; 2x Upsample, 4; 4x Upsample (default 2).

-q = Quiet - don't pop up finished processing message.

-d = Don't delete intermediate files.

-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.

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 is a limitation of the .wav file format (not of SpecWeb).

The default output file format, flac, does not have the 4 GB limitation. Also, the 32 bit file format that Spec uses between stages, .rf64, does not have the 4GB limitation, however, the 24 bit VST output file format (used between the VST stage and the final normalization stage is .wav so does have a 4GB limitation.

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.

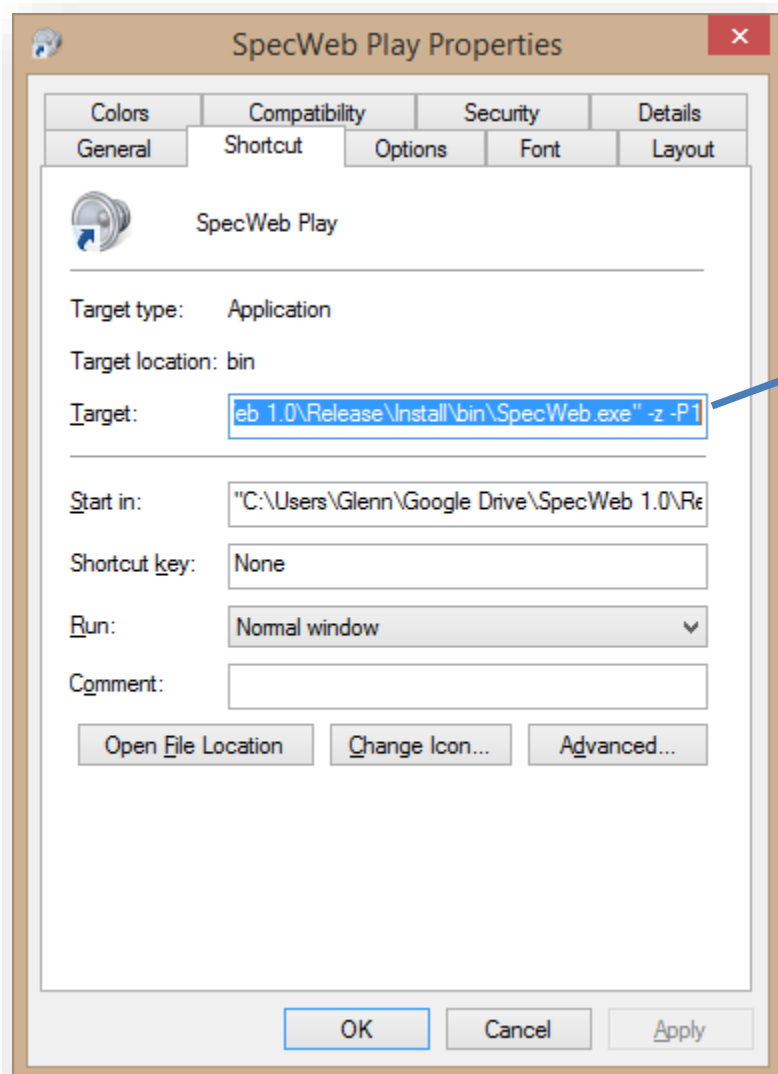
Live Playback

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

-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.



Command line
Parameter -P1

Play on 1st Audio Device

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 playing 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.

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 will indicate the current status.

```

FFT: 0192 0.16 Method: ArcTan Gains: LG +0.0 LF +0.0 RF +0.0 C +0.0 LS +0.0 RS +0.0
ArcTan: Across Widths: I 295 C 75 F 90 AdjSpkr 0.30 Blend: LS 0.95 RS 0.95
Adjusting ArcTan Image Width Up. Now: 295.0
Playing      Input time: 0:20      Output time: 0:19

      Peak      RMS
LF      -6.7      -20.3
RF      -7.4      -20.8
C       -3.7      -19.0
LFE     -110.0     -110.0
LS      -10.9     -23.5
RS       -9.6     -24.0
LI       -0.4     -12.6
RI       -0.4     -12.7

```

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

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

Normal Surround Playback:

Playing		
Input time: 0:11/3:16 Output time: 0:11/3:16		
M:S	Peak	RMS
LF	-3.9	-20.9
RF	-5.7	-26.4
C	-1.5	-20.3
LFE	-13.5	-31.4
LS	-2.5	-20.1
RS	-5.2	-23.4
LI	-0.0	-13.5
RI	-0.0	-14.5

Started float stream with 6 inputs and 2 outputs
Playing Input time: 0:15 Output t

	Peak	RMS
LF	-19.8	-38.8
RF	-22.0	-39.9
C		
LFE		
LS	-18.8	-37.2
RS	-23.8	-41.4
LI	-7.1	-25.6
RI	-11.0	-29.8

LFE muted

Toggling Stereo Surround Play State
Playing Input time: 2:32 Output ti

	Peak	RMS
LF	-6.4	-25.7
RF	-7.1	-25.8
C		
LFE		
LS	-9.0	-27.6
RS	-8.0	-27.4
LI	+0.0	-17.3
RI	+0.0	-16.7

Original Stereo Plays

Toggling C Play State
Playing Input time: 1:20 Output

	Peak	RMS
LF	-11.0	-29.8
RF		
C		
LFE		
LS		
RS	-11.6	-30.5
LI	-1.5	-20.8
RI	-1.8	-19.3

Solo Center

Toggling Stereo Surround Play State
Playing Input time: 2:57 Output ti

	Peak	RMS
LF		
RF		
C		
LFE		
LS		
RS		
LI LI	+0.0	-16.4
RI RI	+0.0	-16.0

Original Stereo Plays
In Front AND Rear

Toggling C Play State
Playing Input time: 1:52 Output

	Peak	RMS
LF	-10.1	-27.8
RF		
C		
LFE		
LS		
RS		
LI	-0.6	-19.0
RI	0.0	-17.0

C and LFE muted

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.

Web Interface Playback Controls

The screenshot shows a web interface for audio playback with the following components and labels:

- Time:** 0:03 (Current time in song) / 4:18 (Total time in song)
- Play Controls:**
 - Jump Back (Left arrow)
 - Start Song Over (Double left arrow)
 - Play/Pause (Play/Pause button)
 - Record button (Red circle)
 - Save (Save button)
 - End/Next (End/Next button)
- Playback Volume:** 0% to 100% slider
- Surround:** Dropdown menu
- Meters:**
 - Meter Type:** Solo/Mute (SM) buttons for each channel.
 - Song Peak:** Meters representing values for the beginning of the song until now.
 - Window RMS:** Meters representing values for the current buffer.
- Normal/Mute Indicators:** Red 'LI' and 'RI' indicators for Left and Right channels.
- Solo/Mute/Normal Buttons:** Buttons for each channel (LF, RF, C, LFE, LS, RS, LI, RI).
- Peak Meters:** Meters showing peak values for each channel.
- RMS Meters:** Meters showing RMS values for each channel.

Meter Type	Solo/Mute	Song Peak	Window RMS
LF	SM	-23.6	-42.5
RF	SM	-31.3	-54.2
C	SM	-26.9	-45.5
LFE	SM	-45.9	-64.9
LS	SM	-13.2	-31.4
RS	SM	-22.0	-45.4
LI		-7.2	-25.3
RI		-13.8	-35.8

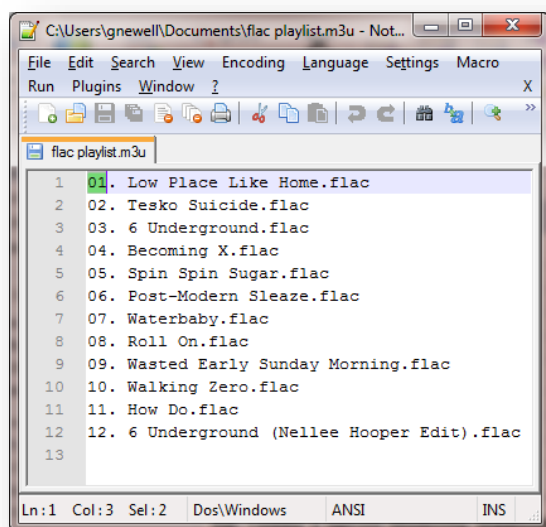
Album Conversion Workflow

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.

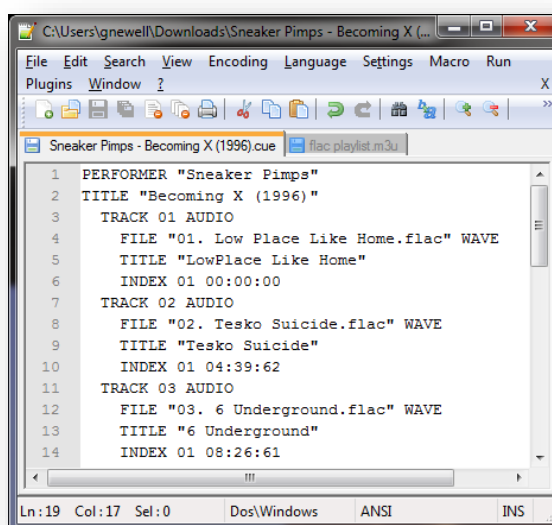
For the Plogue version of Spec you need a single album length stereo input file, and a .cue file that points to that single file.

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, or 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 2x input format, or higher. SpecWeb 2.1 doubles the sample rate of your input file (by default) for processing, and returns the sample rate to the original rate in the output file. SpecWeb 2.1 can also quadruple the input rate (via ini file or command line options).

You may then need to resample the output file depending on your target media:

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

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

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.

SpecWeb 2.1 upsamples by a factor of two by default, but a factor of 4 is also supported (by ini file or command line options)

Workflow

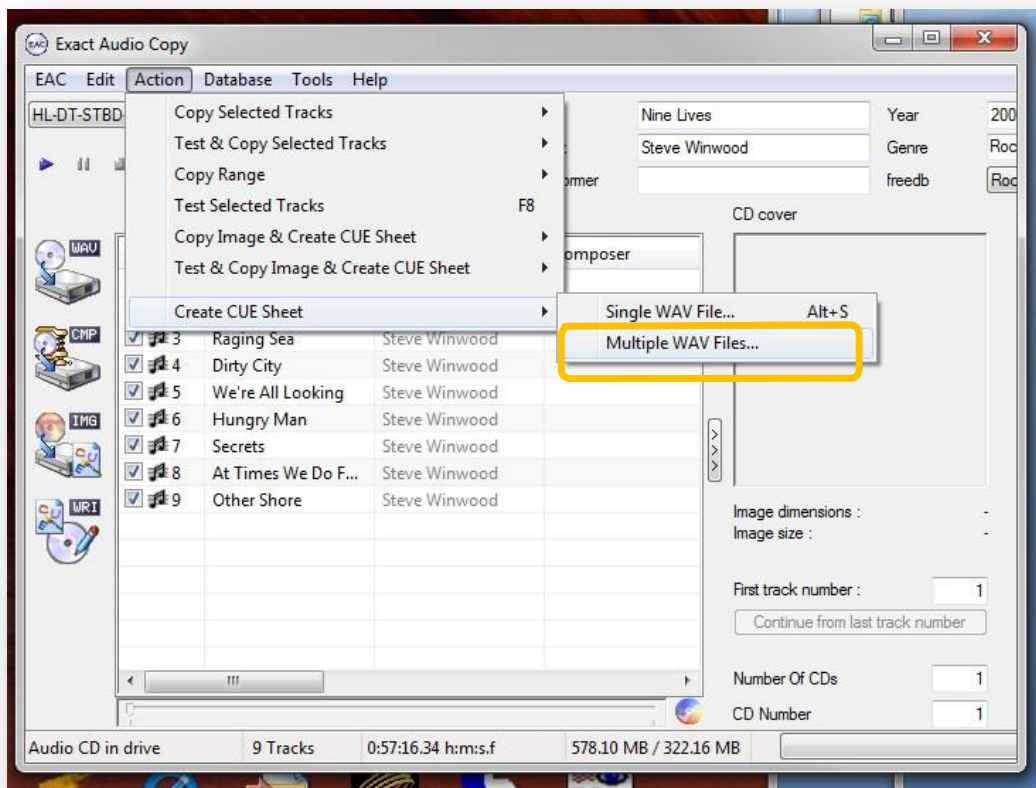
- 1) Get input songs ready (pre-processing)
 - a. Individual files for each song
 - b. (optionally) .cue or .m3u file with file entries for each song
 - c. If needed, resample input files to desired sample rate for output format
 - i. Optionally resample to a higher sample rate than needed for output 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/>

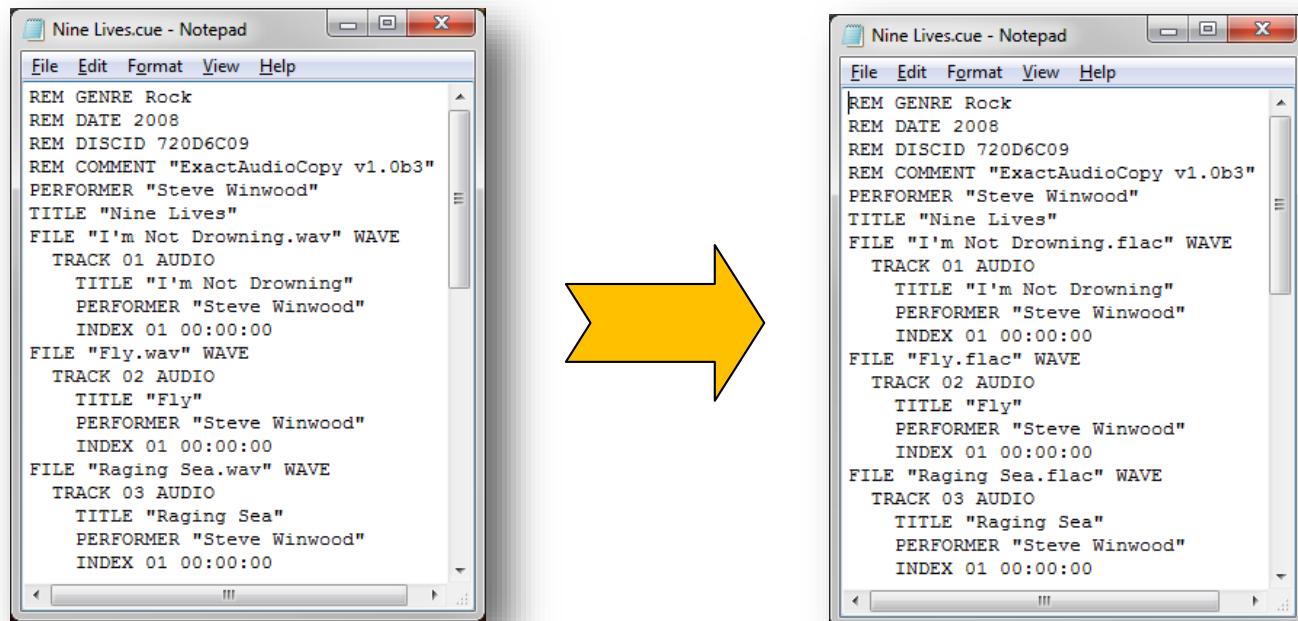
It can be used to both rip and create cue files for SpecWeb's use. To make a cue sheet file, use Action → Create Cue Sheet → Multiple WAV files.



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 will 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:

- Download one from Cue Sheet Heaven <http://www.regeert.nl/cuesheet/> (and possibly edit if your files are titled differently).
- Make one by hand in Notepad
- Make an m3u file with foobar2000 (File → Save Playlist → select m3u as a file type)
- 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)

Note: In SpecWeb 2.1 default Center and Front Widths are now 54 and 36 respectively.

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

```

Administrator: C:\Windows\system32\cmd.exe - SpecCL0.9 "G:\
2\Journey (2006) Greatest Hits [Remastered & Expanded]\03-...
Enter Options or hit return to take all defaults
-M2
SpecCL0.9 SpecCL.ini file found in C:\Users\Public\Documents\bidulesdk\SpecCL-0.9\Release
Input: G:\D Journey (2006) Greatest Hits [Remastered & Expanded]\03-Wheel In The Sky.flac
Output: G:\ Journey (2006) Greatest Hits [Remastered & Expanded]\temp-mch-out.wav
FFI: 8192 Ov 16 Method: ArcTan/Slice 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 0.30 Blend: LS 0.95 RS 0.95 Slice: Hum 1 0.90 2 0.95 Wrp off 3 1.00
Elapsed time: 42.0 s Input time: 4:12 Output time: 4:12

```

	Peak	RMS
LF	-9.2	-23.4
RF	-9.9	-24.1
C	-4.6	-20.5
LFE	-110.0	-110.0
LS	-18.0	-34.6
RS	-16.7	-35.2
LI	-0.6	-13.9
RI	-0.6	-14.0

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

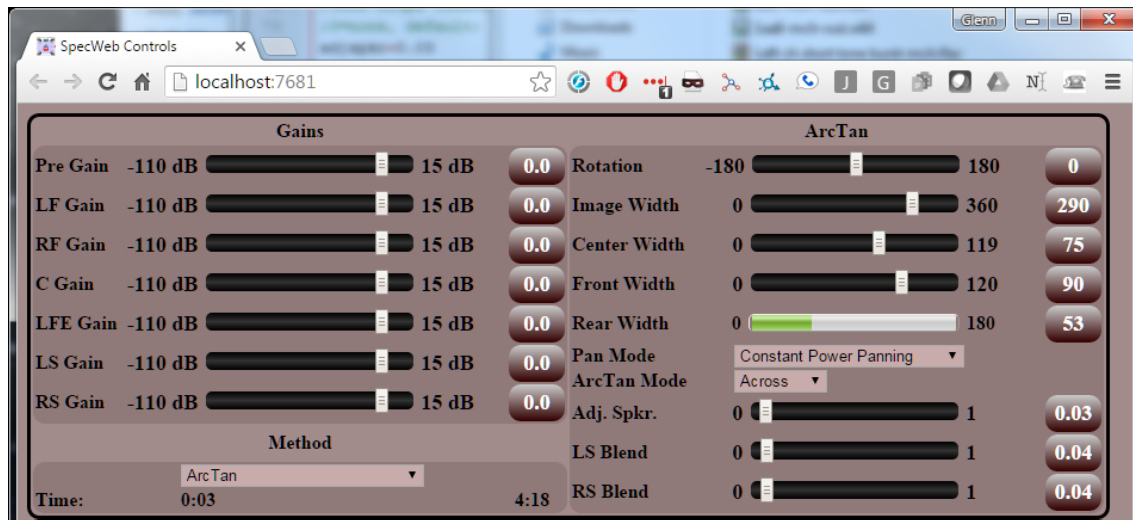
```

ArcTan Controls

```
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 0.30 Blend: LS 0.95 RS 0.95
```

During Playback

Web Interface:



Keyboard:

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 (Best edited with the excellent and free Notepad++ program)

```
;SpecWeb ini file format
;version 2.0
;
;ini file precedence order
;1) A file in the same directory as the input file, with the same name but .ini instead of .flac, or .wav etc.
;2) A file in the same directory as the input file, named SpecWeb.ini
;3) A file named SpecWeb.ini in the working directory of the icon properties
;4) A file named SpecWeb.ini in the same directory as the SpecWeb exe being run
;Only values from the first file found, in the above order, get used
;Any command line flags override the values from the ini file (that includes command line flags in shortcut properties)
;
;Comments are lines that start with ";"
;[section] defines a "section"
;parametername=value defines parameter values within a section
;
[ gain ]
;0 zero pregain here = -12dB pregain in Plogue Spec. If bit depth is not 32f AND you clip, SpecWeb will run
; again with a pregain calculated to avoid clipping.
;defaults all zero (dB)
; use -110 for LFE to turn off LFE (5.0 vs. 5.1) and speed up processing
pregain=0.0
lf=0
rf=0
c=0
lfe=0
ls=0
rs=0
;
[ method ]
;slice, arctan, arctan+slice
;
mode=arctan
;
[ arctan ]
;rotation (experimental) rotates the surround sound field 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
;
;imagewidth is the total width to spread the stereo sound field into
;0 to 360. 0 would be mono and 360 would be the original left and right would both
;seem to come from a phantom rear center.
;default 290
imagewidth=290
;
;centerwidth is the amount of the sound field to put in the center speaker
;0 would be no center at all and 119 (the maximum value) would be
;a big chunk of the common sound between left and right
;default 54
centerwidth=54
;
;frontwidth is the amount of the sound field to put in the front speakers
;0 would be no fronts at all and 120 (the maximum value) would be
;a big chunk of the sound field goes to the fronts
;default 36
;Note that there is no "rearwidth" because the rears get whatever is left
;over after you specify the center and front widths.
;adjusting the widths is one way to reduce artifacts
frontwidth=36
;
;arctan mode is how the sound is dispersed. See the manual.
;sum, across, diagonal, zone default across
;selecting zone will force the panmode to be DISC
mode=across
;
;panmode can be CPP for Constant Power Panning, CAP for Constant Amplitude Panning, and DISC for discrete selection of
surround speakers (no panning between speakers)
;This refers to how ArcTan places sounds between surround speakers
;default is CPP Constant Power Panning
panmode=CPP
```

```

;
;adjspkr is the amount of sound to include in each channel from adjacent speaker channels.
;this helps reduce artifacts, at the cost of reduced separation.
;0=none, default: 0.04 would be 4% adjacent
adjspkr=0.03
;
;blends are another way to reduce artifacts (in the rears) also at the cost of reduced separation.
;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 default 0.04
lsblend=0.04
;RS blend default 0.04
rsblend=0.04
;
;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
-;
[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 default 0.9
stage1humidity=0.9
;Stage 2 Humidity default 0.95
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
;on, off default: off
wrap=off
;Stage 3 Humidity default 1.0
stage3humidity=1.00
-;
[ambiance]
;Ambiance extraction works with ArcTan (or ArcTan + Slice)
;it routes "ambient" or "decoherent sound" around ArcTan to a virtual center rear channel
;Besides adjusting the "Amb Extraction" control in the Web Playback interface,
;you can use the "Flipped Surround" setting in the monitor mode dropdown (Surround, Original Stereo,
;2x2 Stereo, Flipped Surround) to isolate the ambient signal in the C channel (which can then be solo'd, etc.)
;"Flipped Surround" puts the C channel in a virtual rear center, LF in LS, RF in RS, and the virtual rear center
(ambient) signal
;in C.
;
;Ambiance extraction gives an added depth to the surround field, but DOES NOT add any signal (ambiance or other) that
wasn't
;there in the original stereo. It simply pulls it out of the surround field and routes it to a virtual rear (1/2 the
signal
;sent to each rear channel).
;
;0 = no ambiance extraction
;1 = full ambiance extraction
;0 to 1 default 0
crossfade=0
;

```



```

;
; OK by popular demand there is now an option to add, vs. crossfade, the decoherent signal to the virtual center rear.
When you use this
;option you are adding additional sound to change the original mix. Instead of the decoherent sound being routed AROUND
arctan it will be
;left in arctan AND be routed to the virtual center rears
;
; crossfade (default) = any extracted signal is crossfaded between arctan and virtual rear center
; add = any extracted signal is added to the virtual rear center and is left in arctan as well
ambientmode=crossfade
;
;[fft]
;size is 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
;
;overlap can be 2, 4, 8, or 16
;default 16 Higher number = higher quality and more cpu load
overlap=16
;
;fft window type. pick whichever one sounds better to you.
;hanning, hamming, kaiser,
;default hamming
window=hamming
;
;Upsample the Audio before FFT processing (and downsample to the original sample rate after)
;This is preferable to up/down sampling outside of SpecWeb, because this will better preserve
;the dynamics of the original mix.
;1 equals no upsample, 2 equals 2x upsample, and 4 equals 4x upsample,
;This is a quality vs. speed of processing trade off. If "noisy instruments like high-hats or brushed drums or
;cymbals have an un-natural "swoosh"ing sound, that is a sign you need to increase the upsample value.
;Note: with the above fft size set to auto, this will also adjust the fft size.
;Default is 2
;
upsample=2
;
;[prezagvst]
;This allows you to use a 5.1 Mastering VST pre ZAG.
;The intent is to squash any loud transient peaks, produced by Spec, that would cause ZAG to push down
;other channels when it really shouldn't.
;Also helps match the dynamics/loudness of the surround to the original stereo track.
;
;ZAG is required when you are using this.
;
;At the current time only one VST is supported, "Unlimited", and the parameters are set automatically.
;At this time the threshold, specified here, will be used only during "play" and is the level below the peak output of
the stereo input song
;(or the peak level of the surround, whichever is lower), where the limiter kicks in.
;The output level is automatically set to the peak level of the stereo input song (or the peak level
;of the surround, whichever is lower).
;yes,nogui,no
;nogui means use the vst but don't display it while converting/recording (more stable, however any error during VST
processing,
;gui or nogui, will just repeat the step)
;default nogui
usevst=nogui
;
;5.1 Master Limiter Threshold
;threshold is where the limiter will kick in (used in Play only). The default is -3 dB
threshold=-3.0
;
;[zag]
;set to useazg=yes to use Z Automatic Gain, set to "no" for no Automatic Gain
;set to "normonly", the default, to only normalize track so that loudest peak = your output setting
;(no channel to channel adjustments)
;keep in mind that zag is going to "undo" differences in your gain settings (in the gain section)
;in favor of those in the below center2fronts, rears2fronts, and lfe2fronts, UNLESS you choose useazg=normonly
;also you would use useazg=normonly to let the original stereo mix control the surround channel to channel levels
;(assumes your surround system is perfectly volume balanced at the listening position)
;default "normonly"
useazg=normonly
;

```

```

;
;matchlevel=yes means the output peak level will match the input song's peak level
;overrides outputlevel setting if yes
;use matchlevel=yes if you want songs to keep the same level after processing
;use matchlevel=no to specify the output level for all songs (all songs will come out with the same peak level you
specify)
;default=yes
matchlevel=yes
;
;set the peak outputlevel level of the song to this level (dB)
;this settings is overridden if you have matchlevel=yes
;default 0
outputlevel=0
;
;center level, relative to fronts (dB)
;this is overridden if you have usezag=normonly
;default 3
center2fronts=3
;
;lfe level, relative to fronts (dB)
;this is overridden if you have usezag=normonly
;default -9
lfe2fronts=-9
;
;rears level, relative to fronts (dB)
;this is overridden if you have usezag=normonly
;default -3
rears2fronts=-3
-;
[outputfile]
;channels can be mono or mch (6 mono file or a single 6 channel flac)
;default mch (6 channel flac)
channels=mch
;
;bitdepth can be 16, 24, 32, 32f, or same (same=same as input, 32 and 32f are not compatible with flac
;and output type will be changed to wav)
;default 24
bitdepth=24
-;
[browser]
;yes,no
waitforbrowser=yes
;pathtobrowser 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)
;pathtobrowser 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
-;

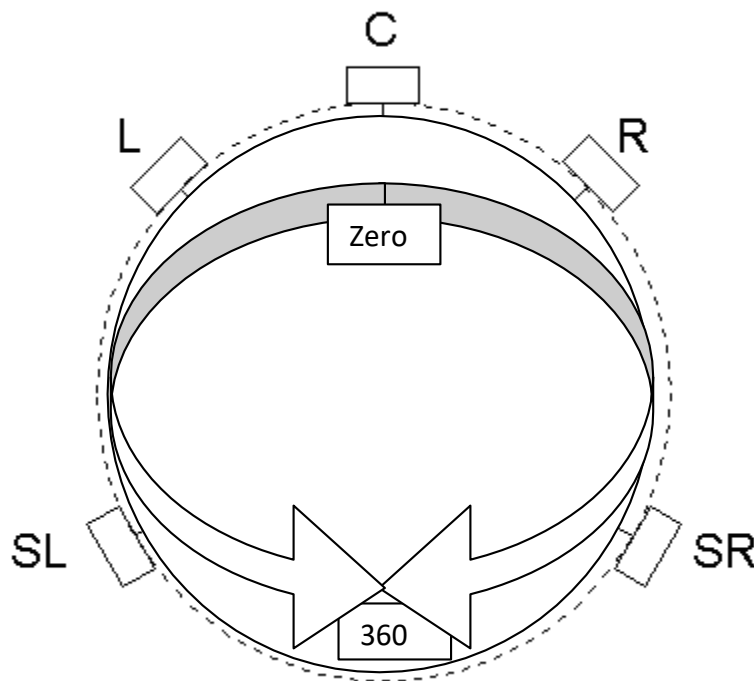
```

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).

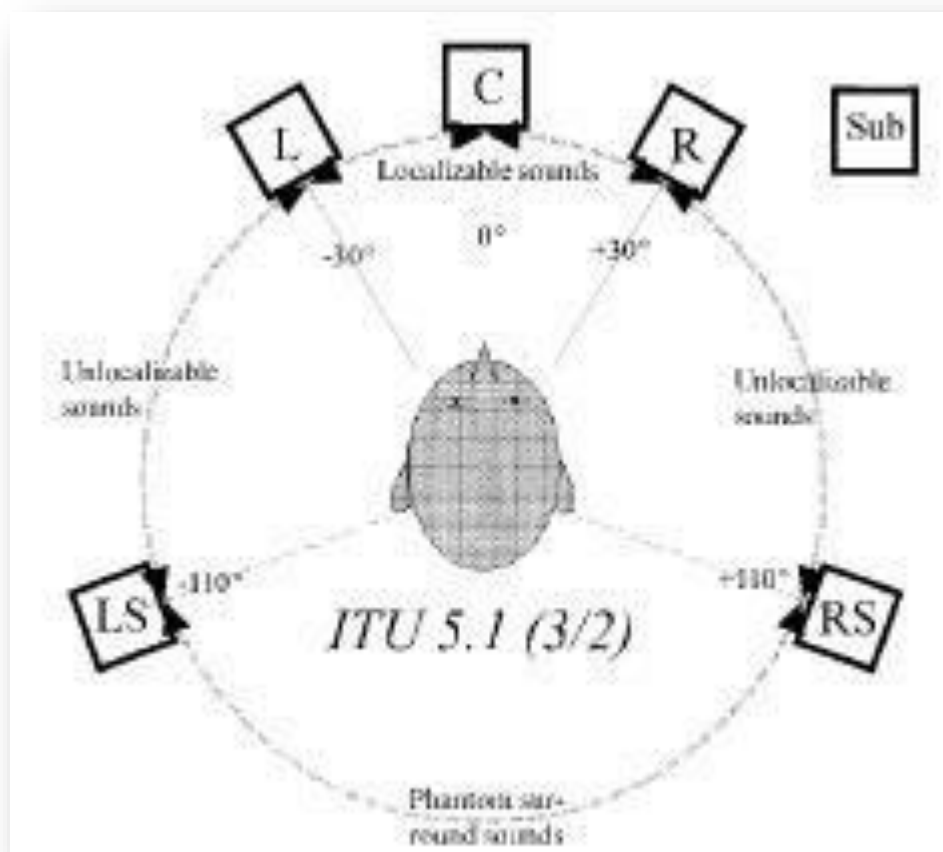
These controls change the relationship between the ArcTan angle (as modified by the width control) and the actual angle each frequency bin is output at. Larger widths mean more of the stereo sound field will be mapped into those speakers, and smaller widths mean less. With the controls set at 72 degrees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

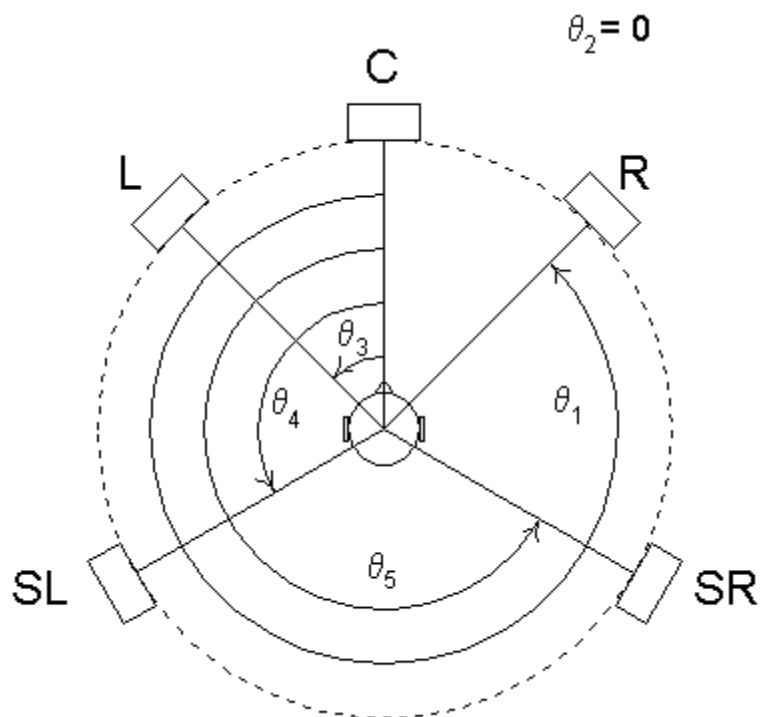
Note that larger Center Width vs. Front Width settings are another possible way to spread out things panned only slightly off center in the original stereo.

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



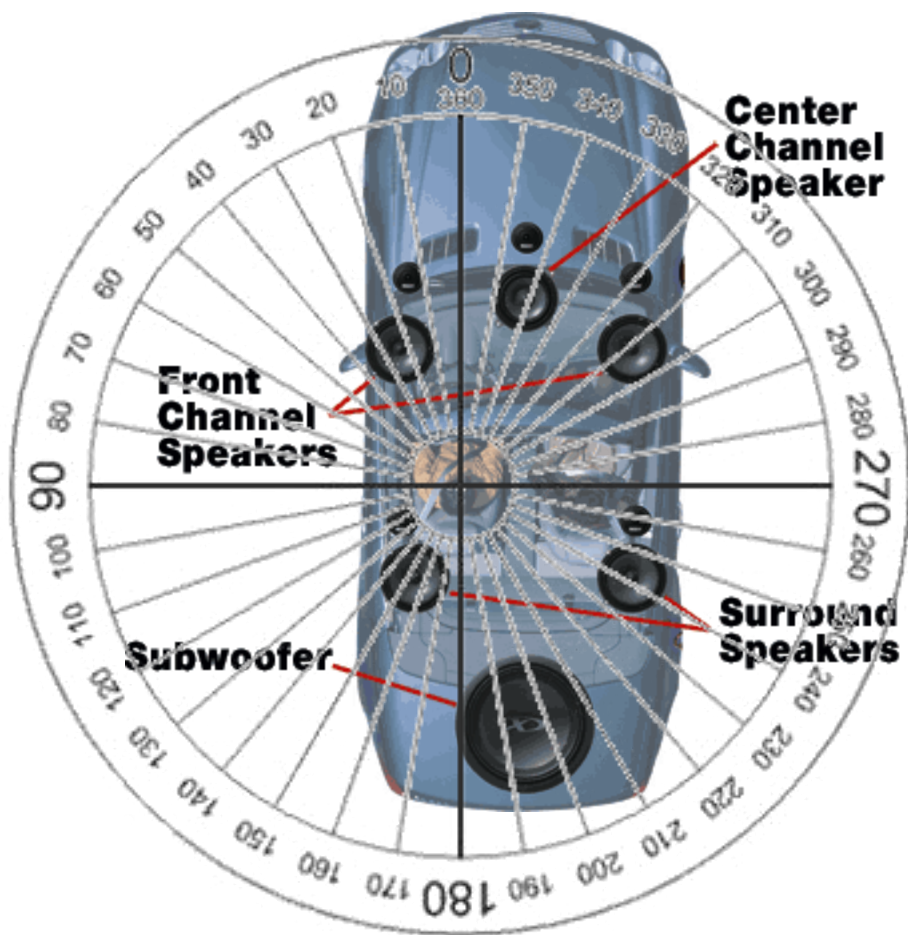
However, you can tell SpecWeb the actual angles to your speaker positions via ini file settings or command line arguments.

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)

There is a Speaker Angle Chart, at the end of this guide, you can print out and use to measure your Speaker Angles.

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.

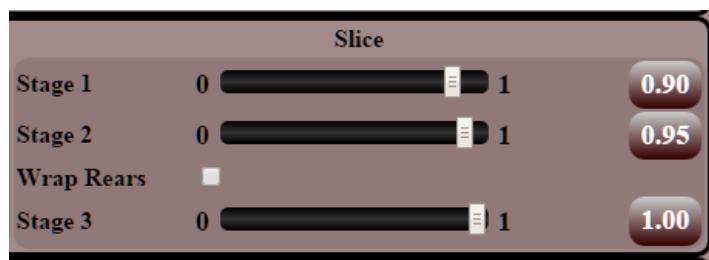
Slice Controls

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.

```
FFT: 8192 Ov 16 Method: Slice Gains: PG +0.0 LF +0.0 RF +0.0 C +0.0 LS +0.0 RS +0.0
Slice: Hum 1 0.90 2 0.95 Wrp off 3 1.00
```

During Playback

Web Interface:



Keyboard:

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 Humidity
stage3humidity=1.0

```

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 Plogie Biddule, where digital versions of analog filters are used in the time domain.

During Playback

Web Interface:



Command keys:

LFE gain ~
toggle LFE solo/mute . (period)

LFE Command Line Options

Output Gain:

-Ox = (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)

```

Zag: Output Level: +0.0 Center To Fronts: +3.0 Rears To Fronts: -3.0
Zag Pass Two
Elapsed time: 42.0 s Input time: 4:45 Output time: 4:45

      Peak      RMS
LF      -4.7      -18.5
RF      -5.2      -18.5
C        +0.0      -15.5
LFE     -110.0     -110.0
LS       -9.1      -21.5
RS       -6.0      -21.5
LI     -110.0     -110.0
RI     -110.0     -110.0

```

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 *pid-mch-out.w64* from the first pass, applies the calculated gains and writes the output file. This approach makes the 2nd pass very fast.

In SpecWeb 2.1 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 2.1 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 Web Interface

The screenshot shows a web interface titled "ZAG". It contains two checkboxes: "Norm Only" and "Match Level". To the right of "Match Level" is a "Max Output (dB)" label and a slider set to "0.0". Below these are three more sliders: "C to Front (dB)" set to "3.0", "LFE to Front (dB)" set to "-9.0", and "Rear to Front (dB)" set to "-3.0".

If “Match Level” is checked off the Max Output section will be blacked out.

If “Norm Only” is checked off the C to Front, LFE to Front, and Rear to Front section will be blacked out.

Note: When entering values in the Zag web interface, the number will turn **RED** until you hit enter. The new value is not read by the program until you hit enter and the number turns **BLACK** again.

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

Pre ZAG VST

In SpecWeb 2.1 the default settings will process each song, before ZAG, with the 5.1 Unlimited:

<https://sonic.supermaailma.net/plugins>

Which is included in your SpecWeb installation.

The limiter settings are automatic and designed to “re master” the surround to match the original dynamics/loudness of the stereo input file.

Limiter Threshold, Surround Weight, and Output level are all set automatically by SpecWeb.

Note that you must also use ZAG in order to use Pre ZAG VST processing.

In future versions of SpecWeb it may be possible to substitute other VSTs, or combinations of VSTs, and set all their parameters, but for this release there is only support for the 5.1 Unlimited

In this version the command line argument for setting the limiter threshold has been removed, as it is now set programmatically.

VST Command line Options

-vx = Use 5.1 Master Limiter (Pre Zag) if x=1 don't use if x=0 (Requires Zag, default is use Limiter)

VST INI Options

[prezagvst]

;This allows you to use a 5.1 Mastering VST pre ZAG.

;The intent is to squash any loud transient peaks, produced by Spec, that would cause ZAG to push down other channels when it really shouldn't.

;Also helps match the dynamics/loudness of the surround to the original stereo track.

;

;ZAG is required when you are using this.

;

;At the current time only one VST is supported, the 5.1 master limiter, and 3 parameters are set automatically; Threshold, Surround Weight, and Limiter Output.

;At this time the threshold, specified here, will be used only during "play" and is the level below the peak output of the stereo input song

;(or the peak level of the surround, whichever is lower), where the limiter kicks in.

;The output level is automatically set to the peak level of the stereo input song (or the peak level

;of the surround, whichever is lower).

usevst=yes

;

;5.1 Master Limiter Threshold

;threshold is where the limiter will kick in (used in Play only). The default is -3 dB

threshold=-3.0

;

VST Play/Record Options

During Playback, with the web interface, the VST is visible and you can interact with it and set parameters, however these settings are not kept when you “record”. Instead the limiter parameters are set automatically as described above.

Misc. Controls

Command line

```
-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.
-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 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
;pathtobrowser 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)
;pathtobrowser 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 2.1, 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 multi-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 all), 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.

*C:\Users\gnewell\Documents\bidulesdk\SpecCL-0.9\Release\SpecCL0.9\bin\SpecCLini - Notepad++

File Edit Search View Encoding Language Settings Macro Run Plugins Window ?

SpecCLini

```

1 ;SpecCL ini file format
2 ;version 0.9
3 ;
4 ;ini file precedence order
5 ;1) A file in the same directory as the input file, with the same name but .ini instead of .flac, or .wav etc.
6 ;2) A file in the same directory as the input file, named SpecCL.ini
7 ;3) A file named SpecCL.ini in the same directory as the SpecCL exe being run
8 ;Only values from the first file found, in the above order, get used
9 ;Any command line flags override the values from the ini file
10 ;
11 ;Comments are lines that start with ";"
12 ;[section] defines a "section"
13 ;parametername=value defines parameter values within a section
14 ;
15 [gain]
16 ;0 zero pregain here = -12dB pregain in Plogue Spec. If bit depth is not 32f AND you clip, SpecCL will run
17 ; again with a pregain calculated to avoid clipping.
18 pregain=0
19 lf=0
20 rf=0
21 c=0
22 ls=0
23 rs=0
24 [method]
25 ;slice, arctan, arctan+slice
26 mode=arctan
27 [arctan]
28 imagewidth=290
29 centerwidth=75
30 frontwidth=90
31 ;sum, across, diagonal
32 mode=across
33 ;the amount of sound to include in each channel from adjacent speaker channels.
34 ;0=none, 0.3 would be 30% adjacent
35 adjspkr=0.3
36 ;1 minus the amount of sound from the blend source. 1=none, 0.95 would be 5% blend
37 ;for ArcTan the blend source is the original stereo, for ArcTan+Slice, the blend source
38 ;is the rears from Slice
39 ;LS blend
40 lsblend=0.95
41 ;RS blend
42 rsblend=0.95
43 [slice]
44 ;A Humidity of 1 = 100% wet, or SLICE processed signal
45 ;A Humidity of 0 = 0% wet or 100% dry signal from the previous stage
46 ; (or original left and right in the case of stage one).
47 ;Stage 1 Humidity
48 stage1humidity=0.90
49 ;Stage 2 Humidity
50 stage2humidity=0.95
51 ; Wrap Rears adds a third stage of separation
52 ;This has the effect of taking what was the extreme
53 ;outside of the original stereo field and placing it
54 ;in both rear speakers, creating a virtual center rear
55 wrap=off
56 ;Stage 3 Humidity
57 stage3humidity=1.00
58 [fft]
59 ;power of 2 >= 64
60 size=8192
61 ;2, 4, 8, 16
62 overlap=16
63 ;hanning, hamming, kaiser,
64 window=hamming
65 [zag]
66 ;set to yes to use Z Automatic Gain, else set to no or comment out
67 usezag=yes
68 ;peak output level will be:
69 outputlevel=0
70 ;center level, relative to fronts:
71 center2fronts=3
72 ;rears level, relative to fronts:
73 rears2fronts=-3
74 [outputfile]
75 ; mono, mch
76 channels=mch
77 ;16, 24, 32, 32f, same (same=same as input, 32 and 32f are not compatible with flac
78 ;output type will be changed to wav)
79 bitdepth=24

```

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

MS ini file length: 2408 lines: 81 Ln: 78 Col: 2 Sel: 0 Dos\Windows ANSI INS

Making a Cue File, for SpecWeb, using ImgBurn

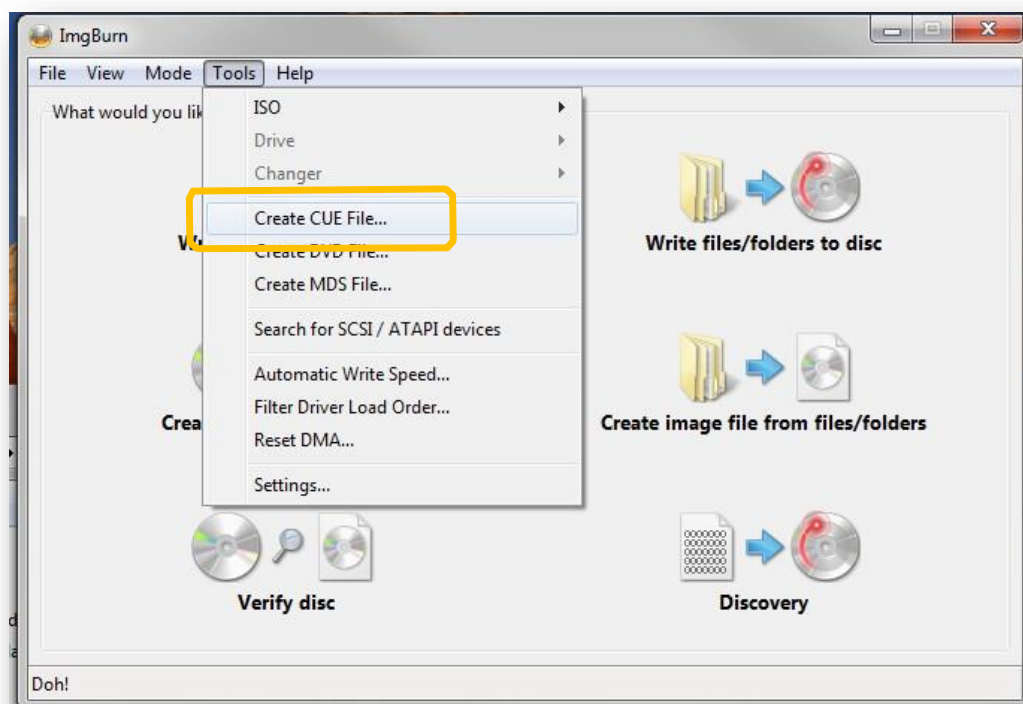
ImgBurn is a free tool for burning CDs and DVDs

<http://www.imgburn.com/>

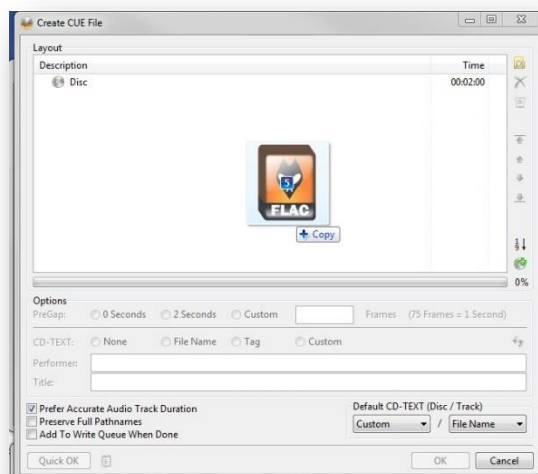
Note: for flac file support, you'll also need madflac:

<http://forum.doom9.org/showthread.php?t=130498>

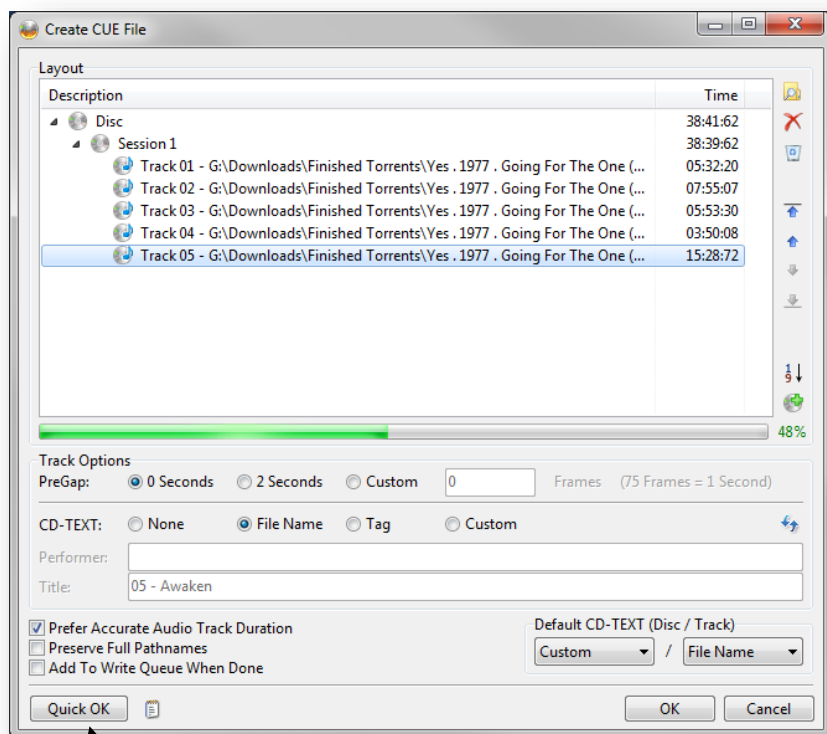
However it is also an easy way to generate cue files from individual song files.



Drag tracks in:



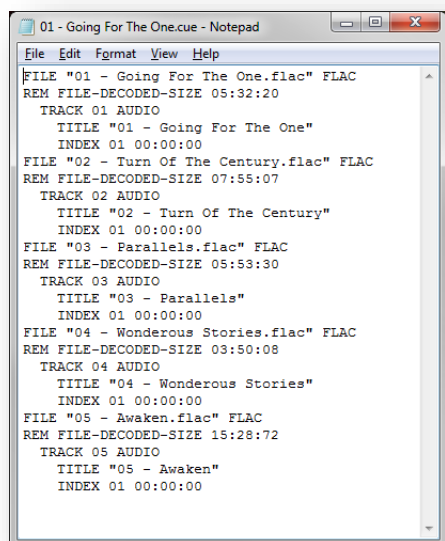
Tracks will be analyzed:



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:

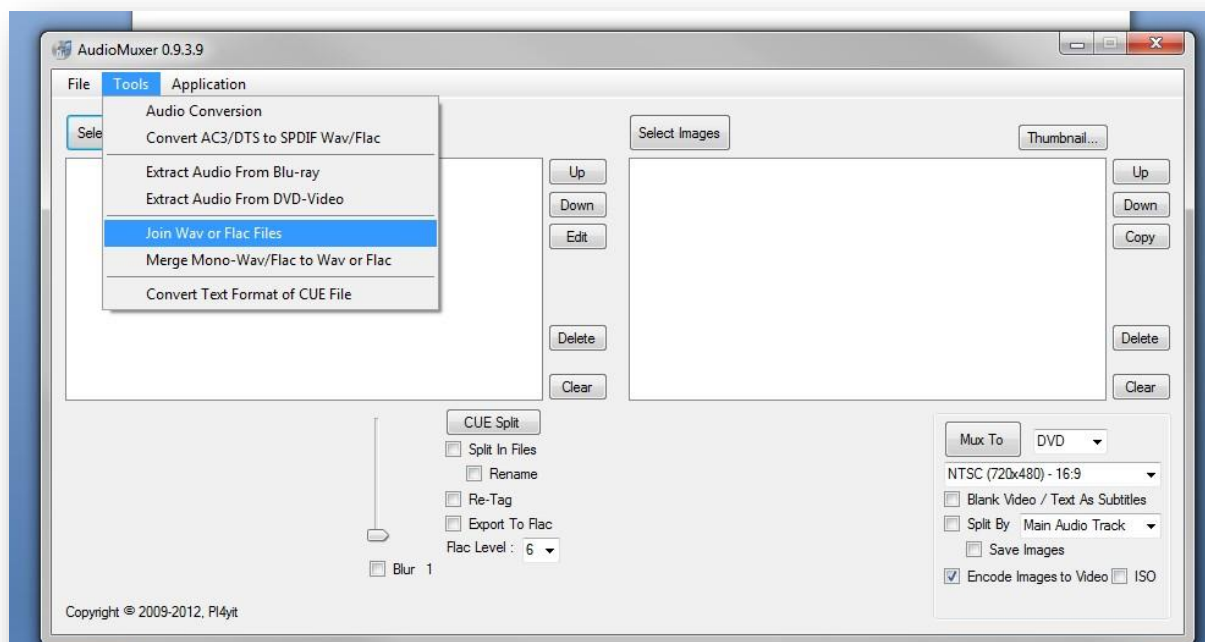
<http://www.surroundbyus.com/sbu/viewtopic.php?f=7&t=135>

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.

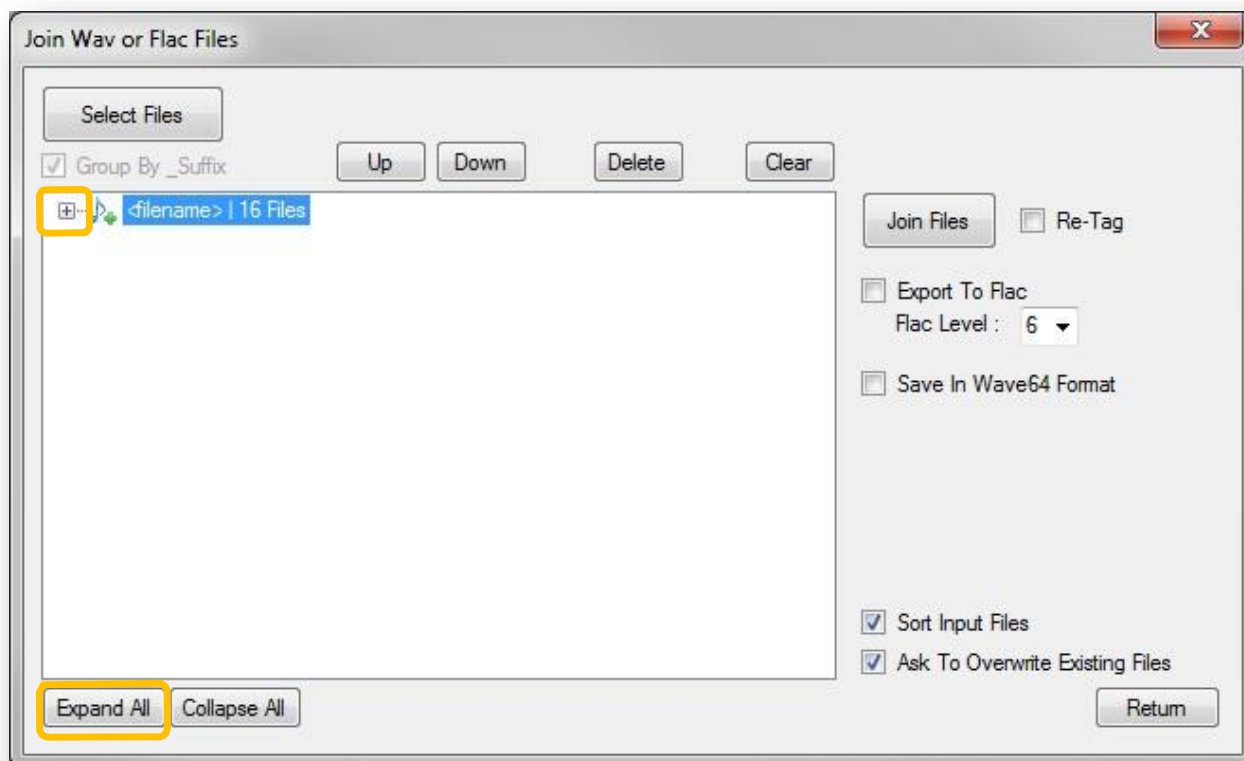
If you are going to DTS, MLP, or Dolby encode your conversions you'll need 6 album length mono files, one for each surround channel.

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.

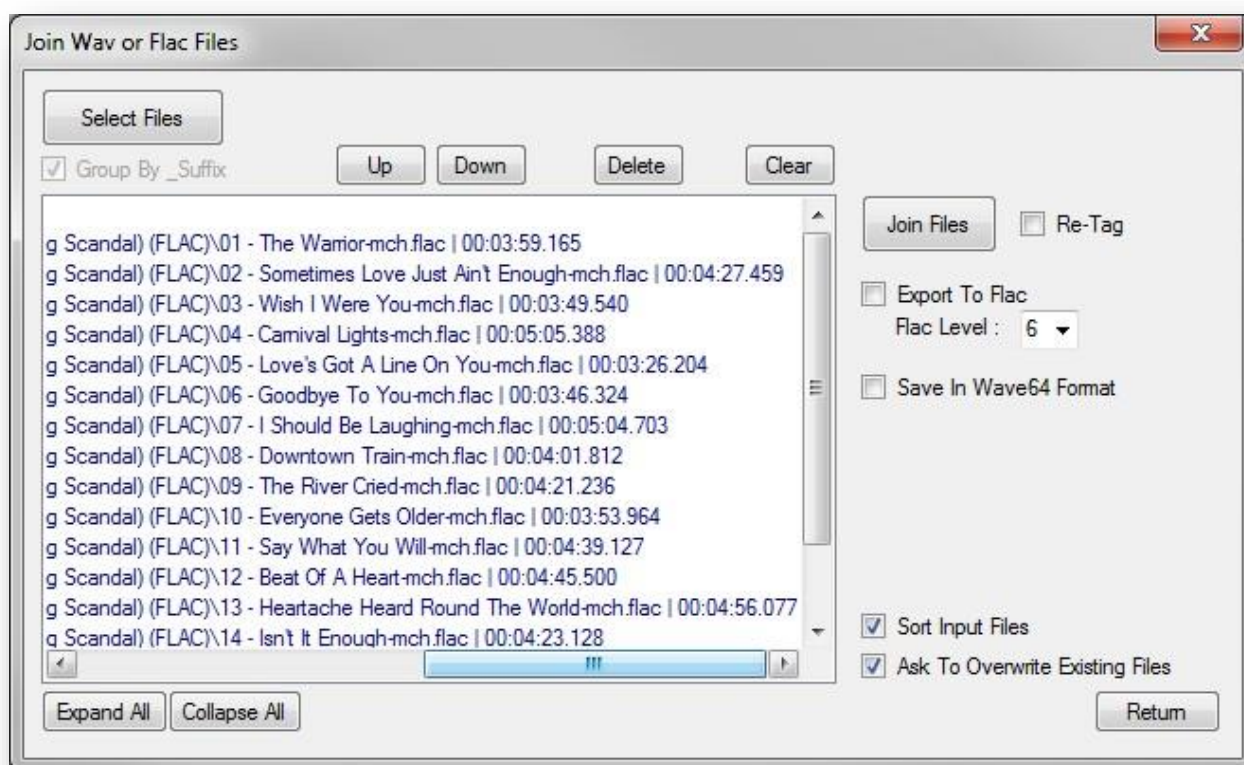
In Audiomuxer, select Tools → Join Wave or Flac Files



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

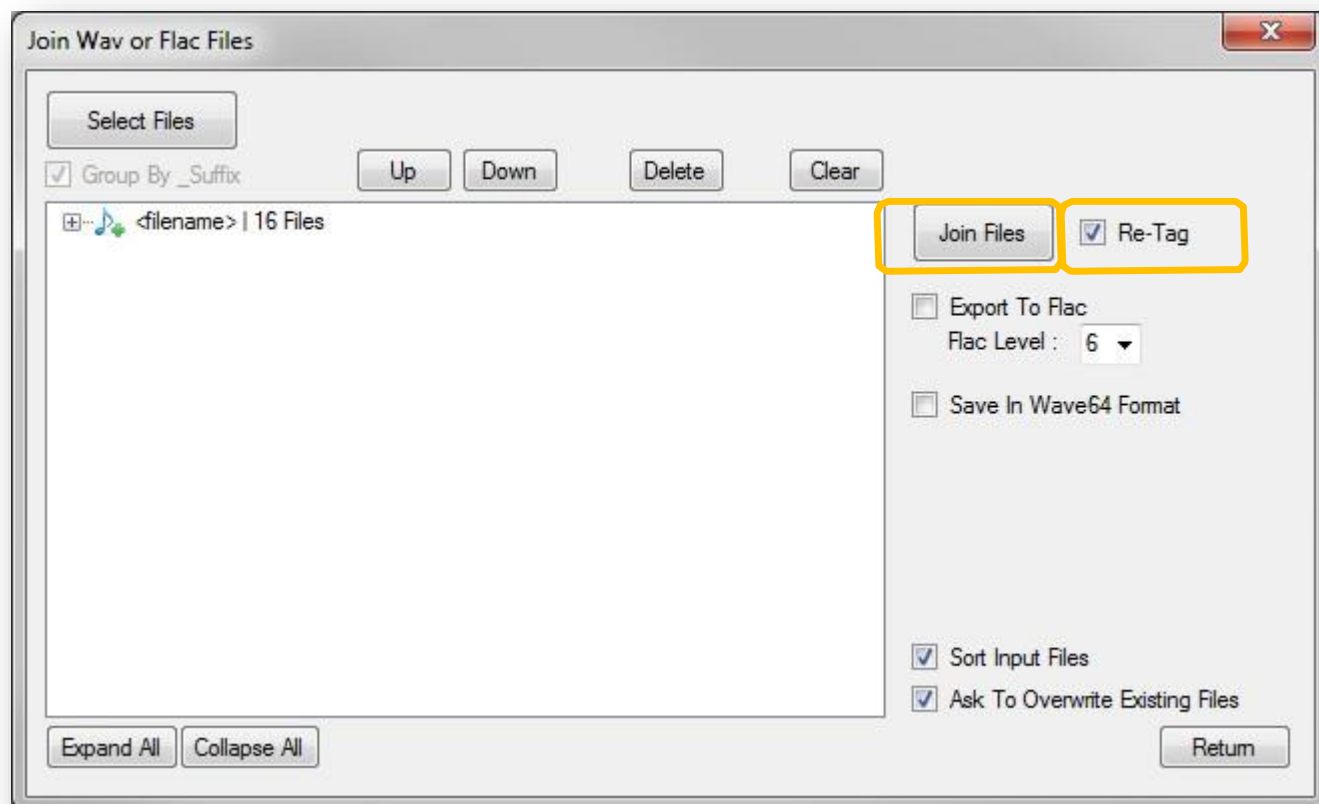


You can click on the “+” sign or click the “Expand All” button to see your tracks and check the order:



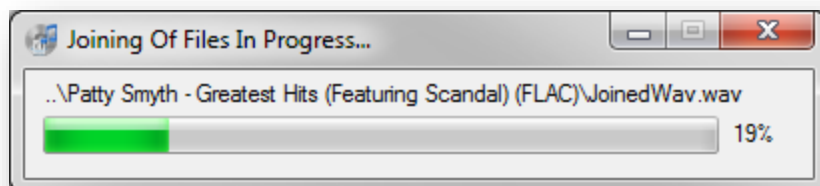
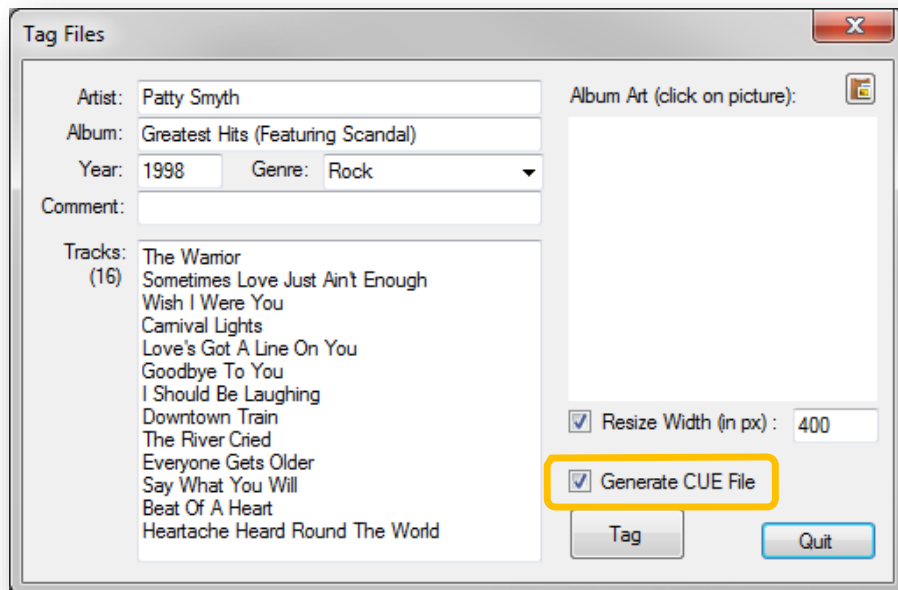
If the order's not right, select tracks and use the up and down buttons to fix the order.

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

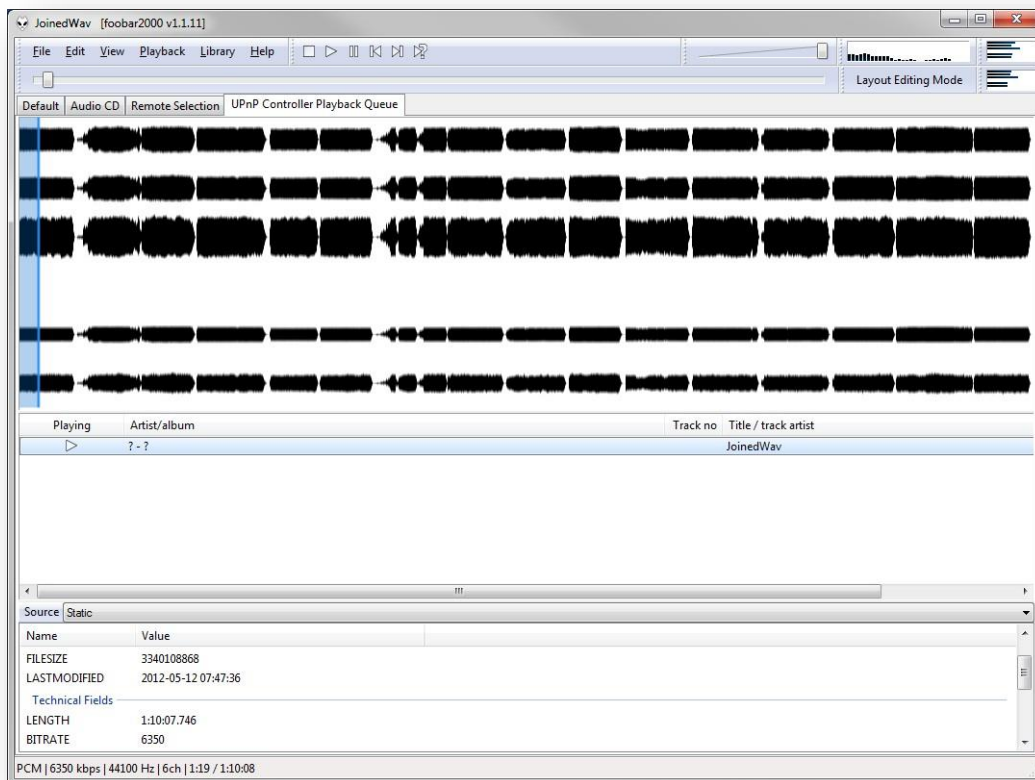


You can use the “Export to flac” or the “Save in Wave64 Format” option to ensure your joined file doesn’t exceed the ~4.2 GB limit for wav files.

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.

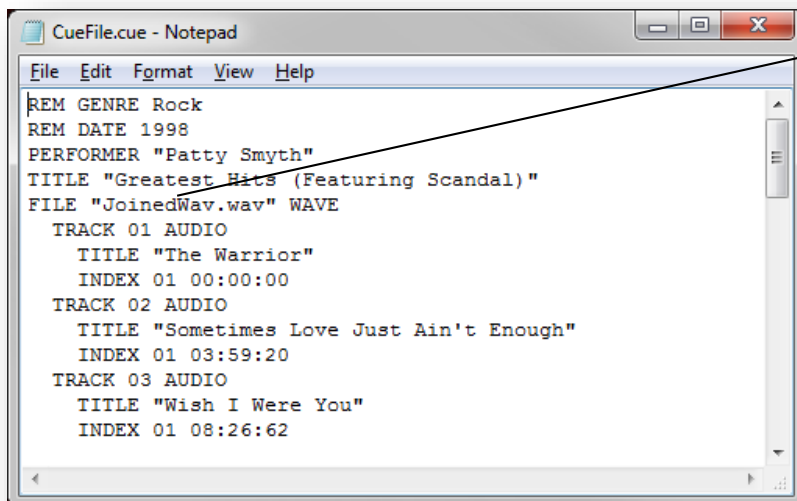


You can check your work at this step by loading the single multi-channel file into foobar2000:



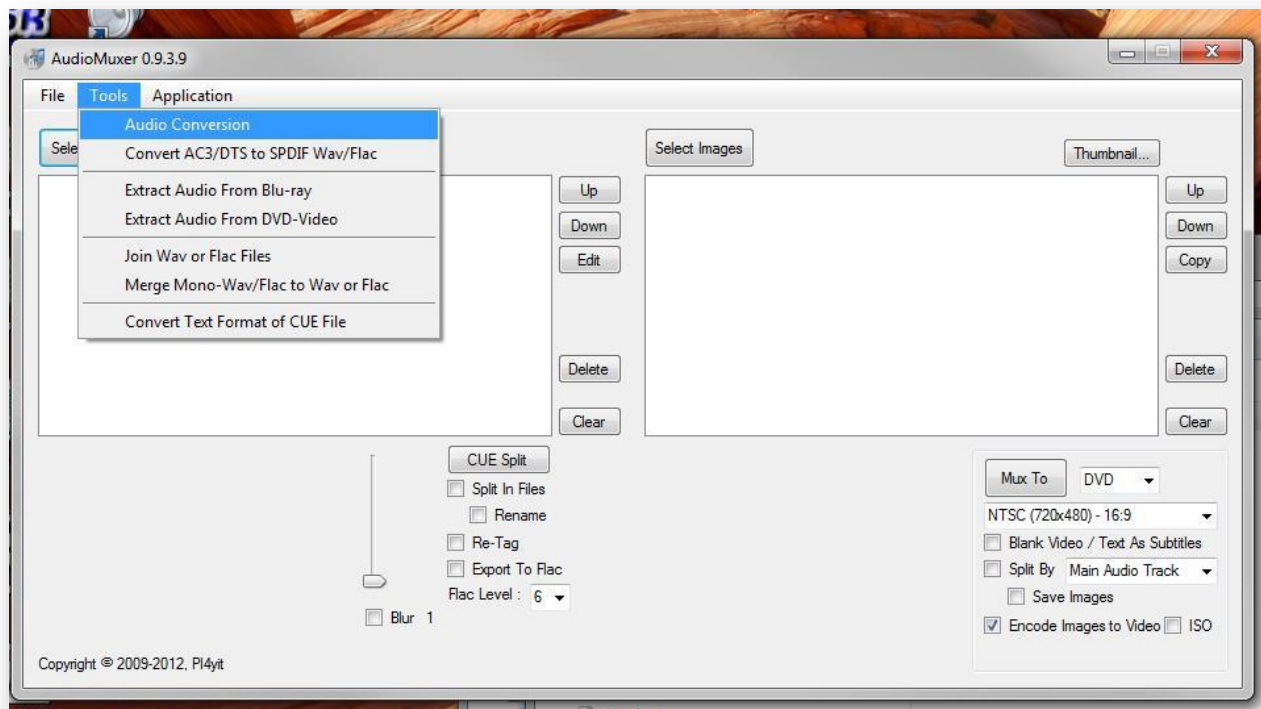
Loading just the single channel file will show as one file in foobar (see above). Loading your new cue file will show as individual tracks.

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

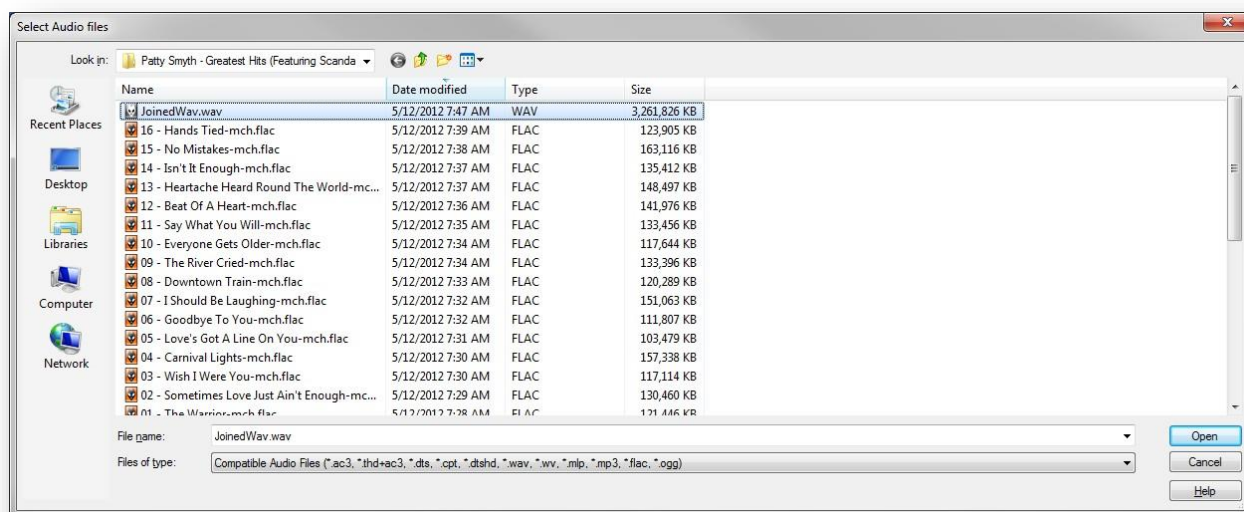


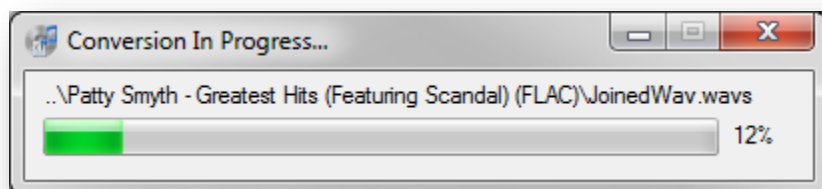
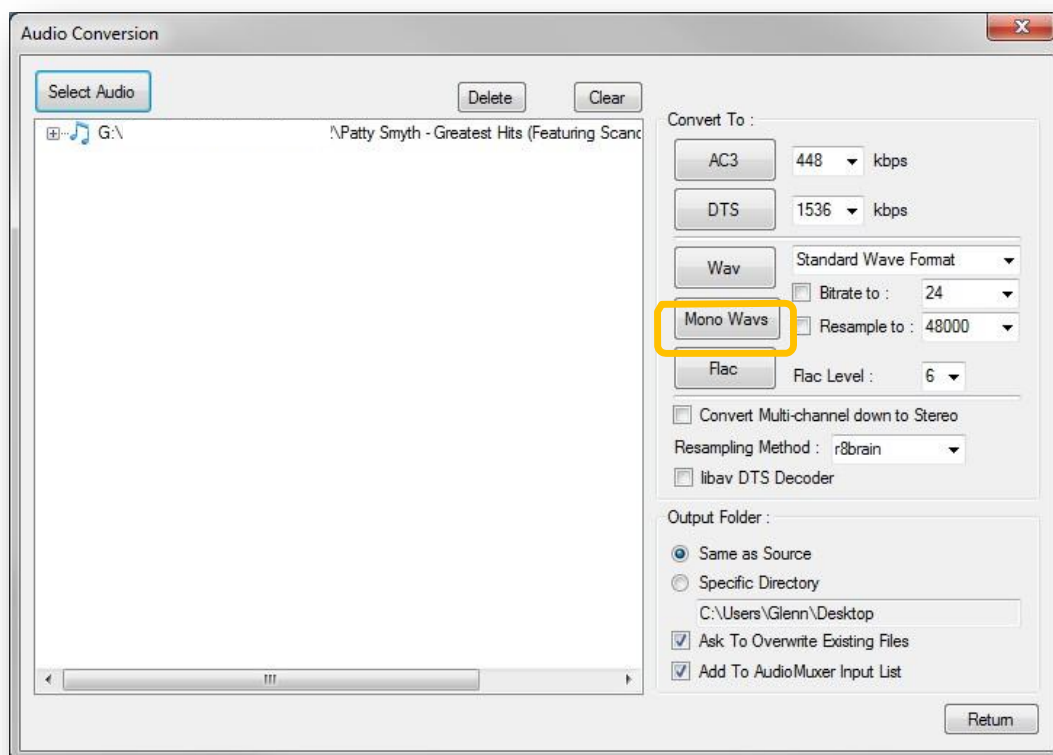
One Album
Length File

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

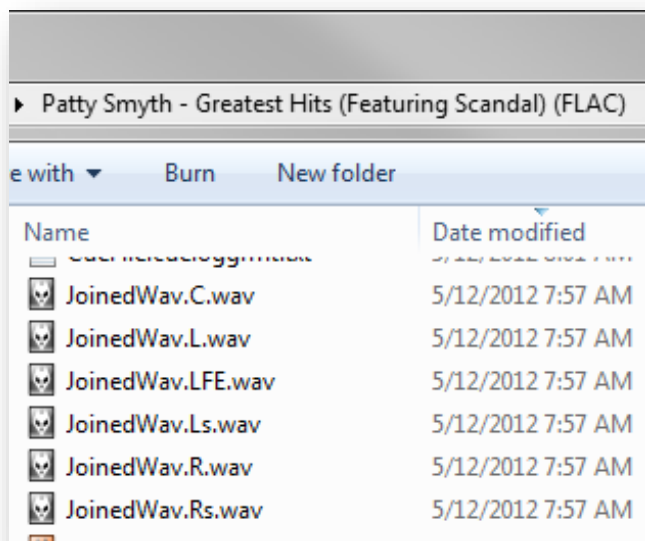


In the file dialog, select your long joined file:





Select "Mono Wavs". Now you have your six monos, ready for encode



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.

NOTE: This section has not been updated for the now recommended and easier to use VB-Audio software cables; <http://www.vb-audio.com/>

)

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

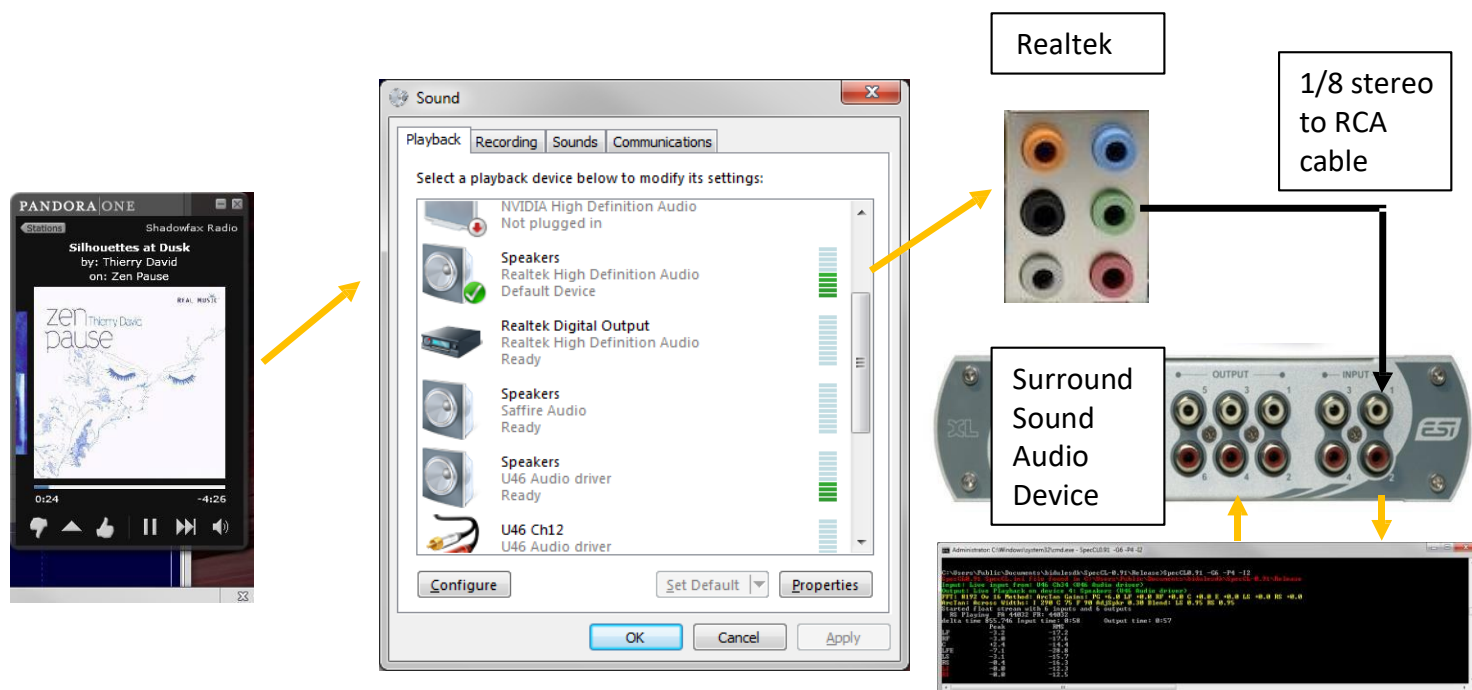
We’ll cover more sophisticated ways to achieve routing sound from software sources in a minute but a simple method (and in some ways the most reliable), if you have two audio devices, is to use a cable to connect the output of one audio device to the input of another.

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 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.

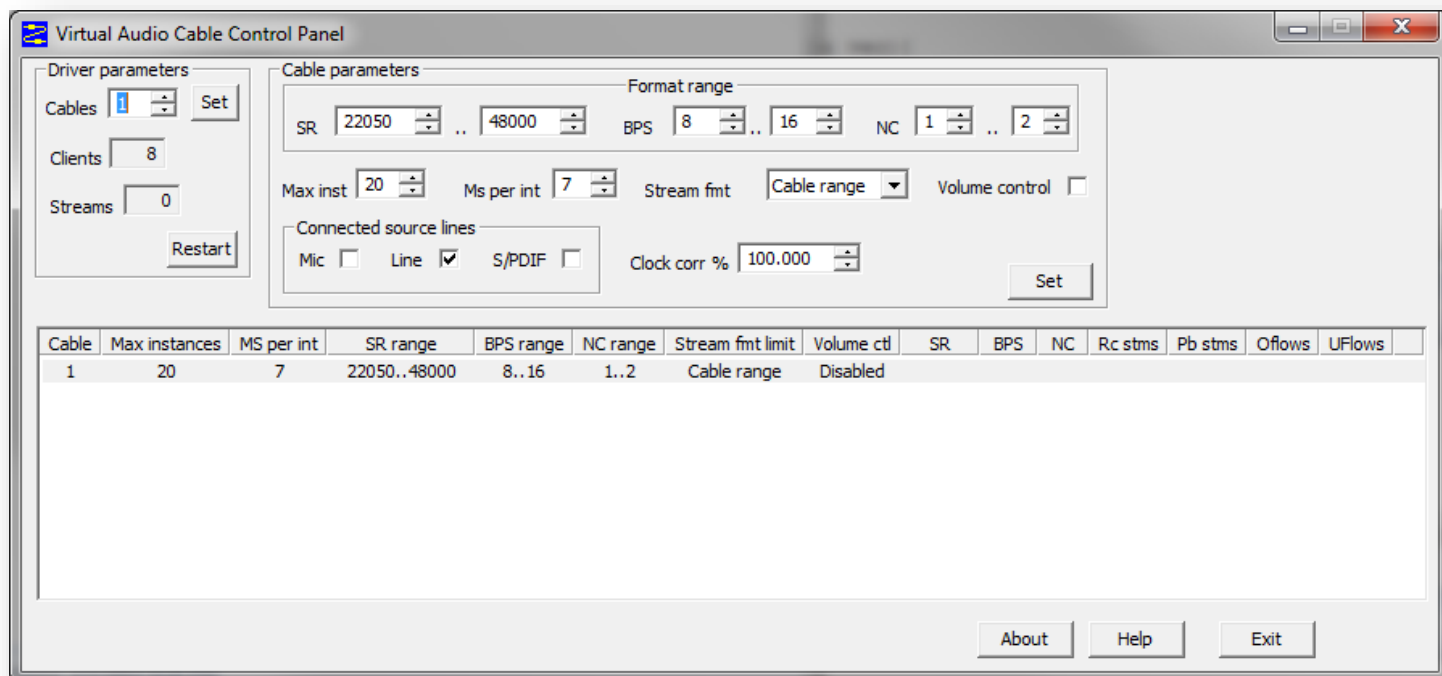
Using a "Virtual" Audio Device

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.

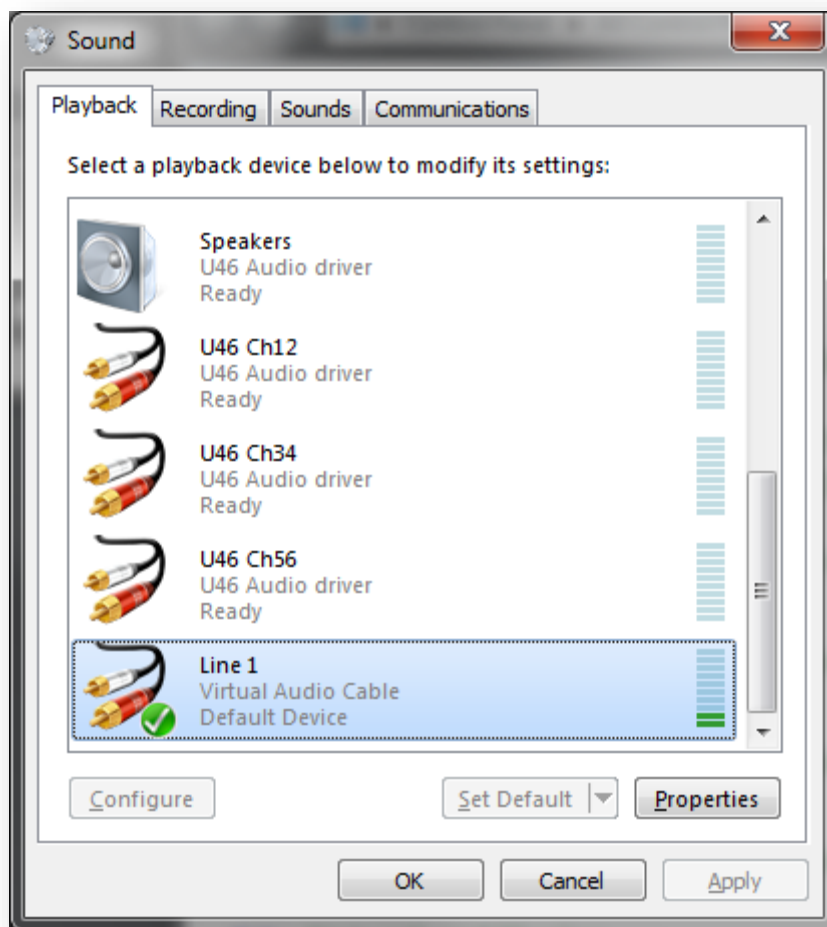
VAC version 4.13 has been tested on Windows 8.1

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:

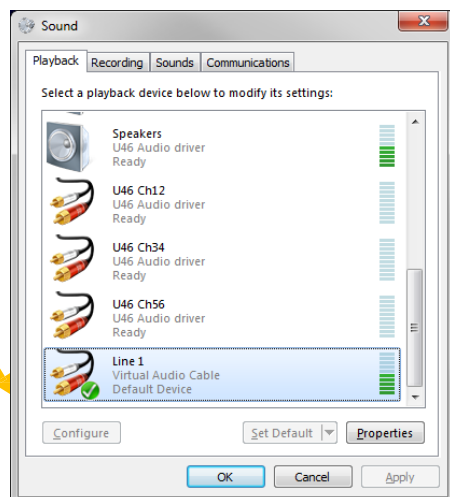


Set your software source (foobar2000, etc.) to use Virtual Audio Cable as its output device.

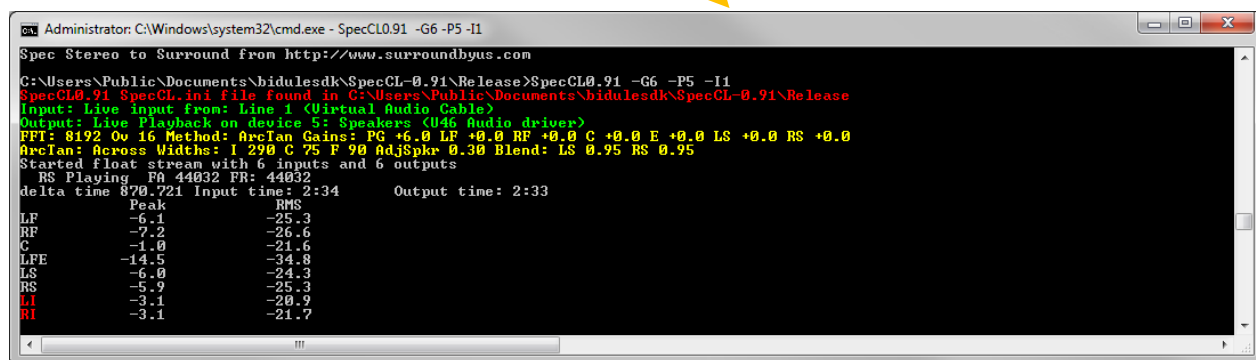
In the case of Pandora, VLC, or iTunes, which always use the default windows audio device, you can set windows to use Virtual Audio Cable:



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



Virtual
Cable



Surround
Sound
Audio
Device

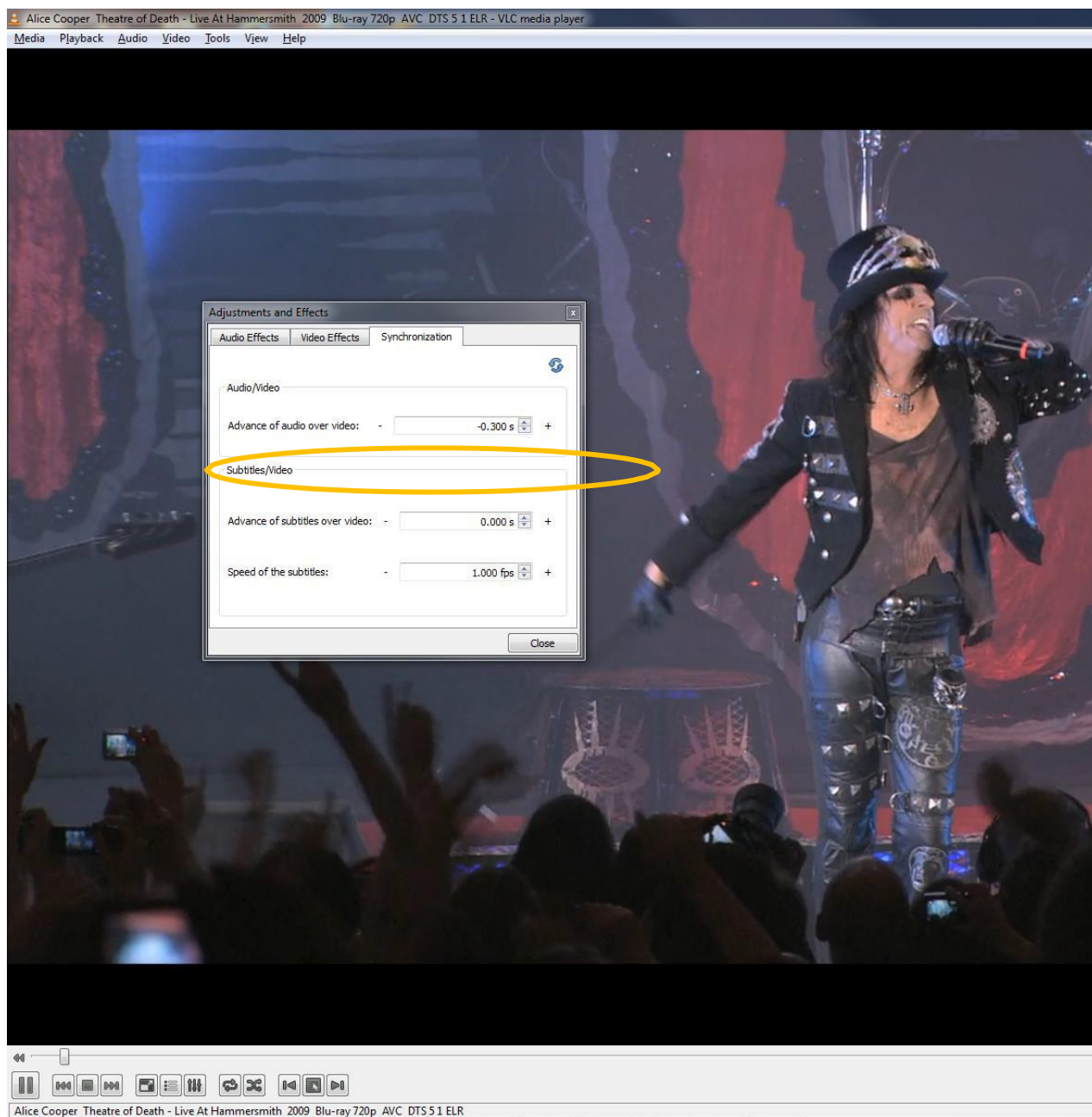


Syncing Video to SpecWeb Audio

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 capability to re-sync sound and video when running the Audio through SpecWeb. One example of a Player that does is VLC, <http://www.videolan.org/vlc/>.



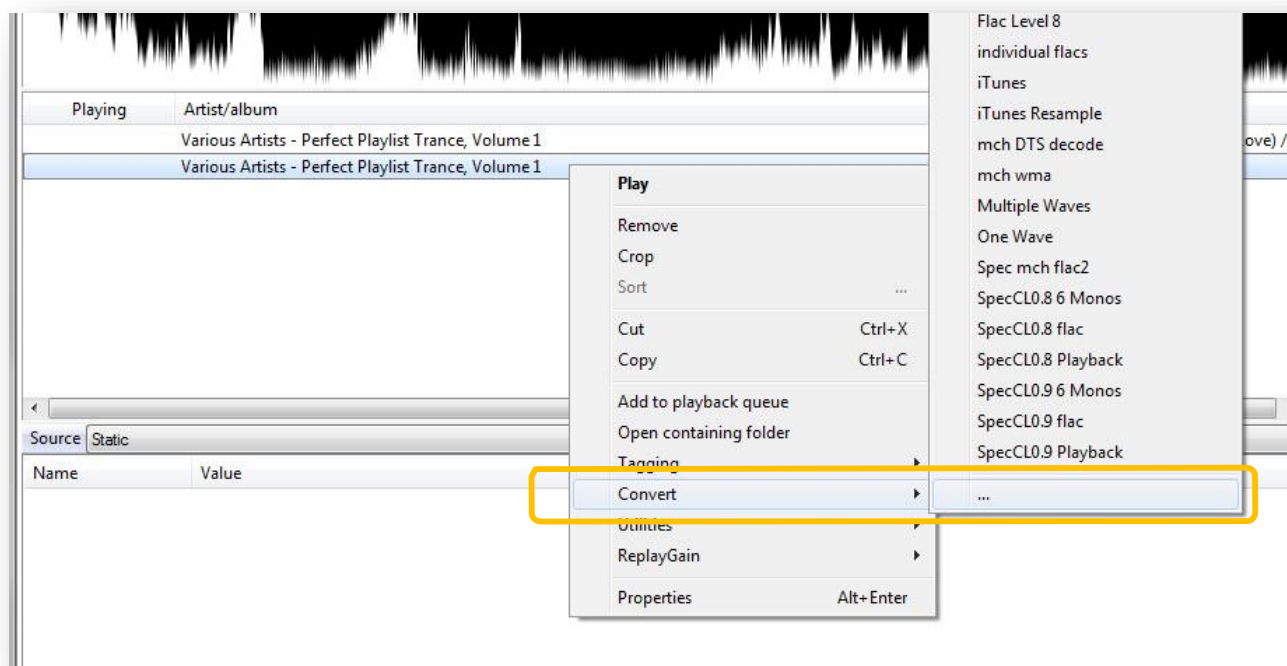
To control the Audio Device used for playback, use the Windows Sound Control Panel and set the device (such as Virtual Audio Cable) as the default for windows. Setup SpecWeb as described in the above sections. Once you have audio playing, go to the VLC tools menu, select Track Synchronization tab (shown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

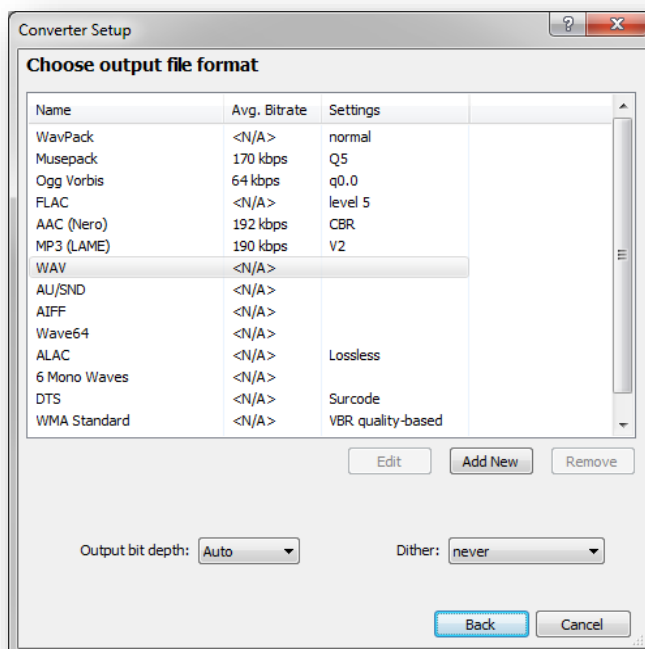
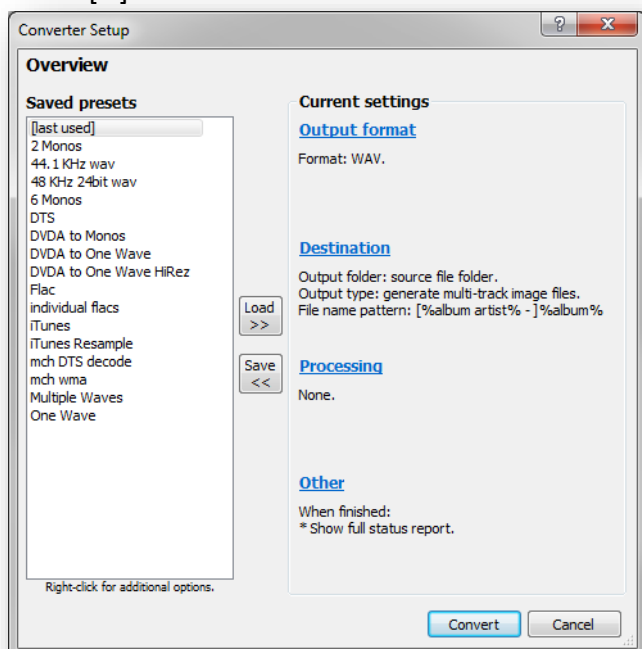
Open a stereo file in foobar. Right click on the file and select Convert → ...

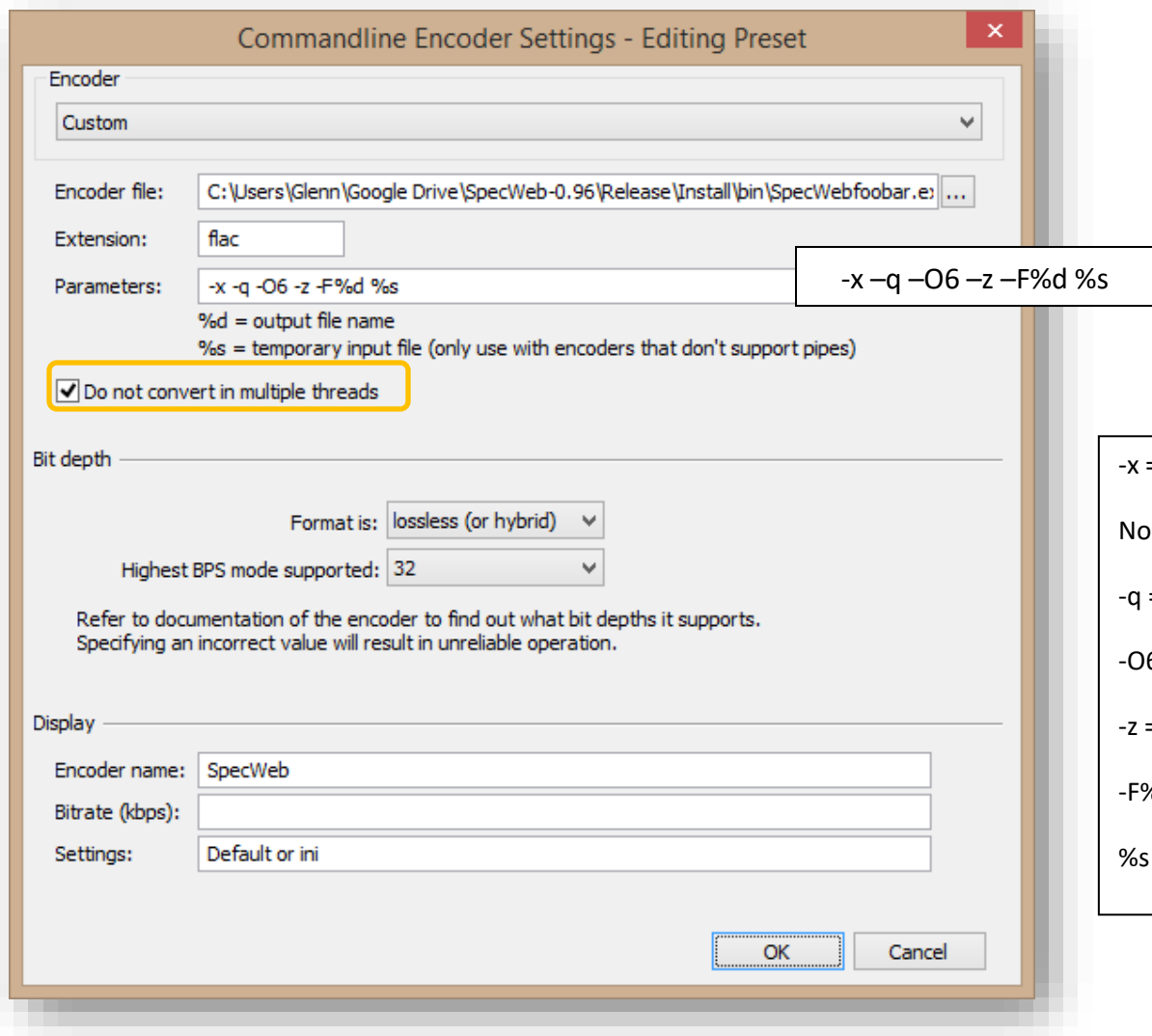


In “Converter Setup”, click on “Output Format”

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 = 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

Converter Setup

Choose output file format

Name	Avg. Bitrate	Settings
FLAC	<N/A>	level 5
Ogg Vorbis	160 kbps	q5.0
MP3 (LAME)	190 kbps	V2
Musepack	170 kbps	Q5
Wave64	<N/A>	
WAV	<N/A>	
AU/SND	<N/A>	
AIFF	<N/A>	
SpecWeb	<N/A>	Default or ini
SpecWeb monos	<N/A>	Default or ini
SpecWeb Play	<N/A>	Default or ini
SpecCL	<N/A>	Default or ini
SpecWeb Direct	<N/A>	Default or ini
SpecWeb	<N/A>	Default or ini

Edit Add New Remove

Output bit depth: Auto Dither: never

Back Cancel

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

Converter Setup

Choose destination

Output path

☐ Ask me later (useful for saving presets)

☒ Source track folder

☐ Specify folder: C:\Users\lgnewell\Documents\bidl ...
(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%-mch ...

☐ Generate multi-track files

Name format & grouping pattern:
[%album artist% -]%album%

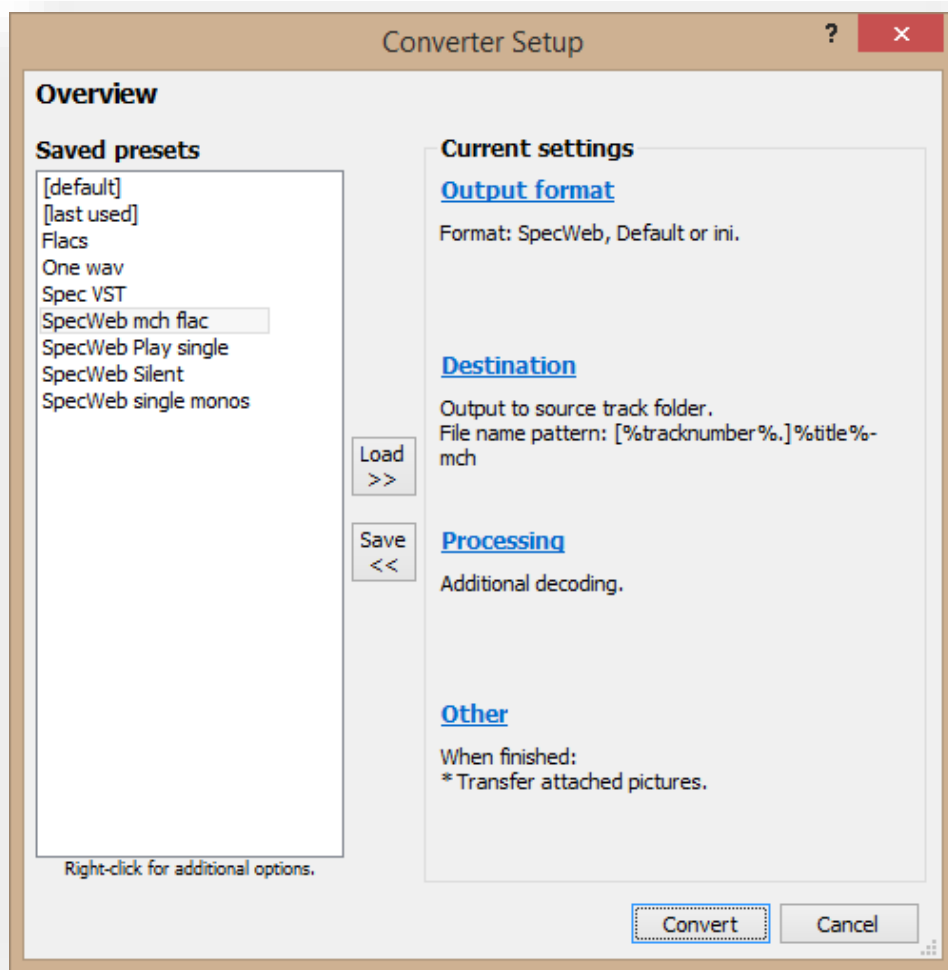
☐ Merge all tracks into one output file

Preview:
10. Ask DNA-mch.flac

Back Cancel

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.

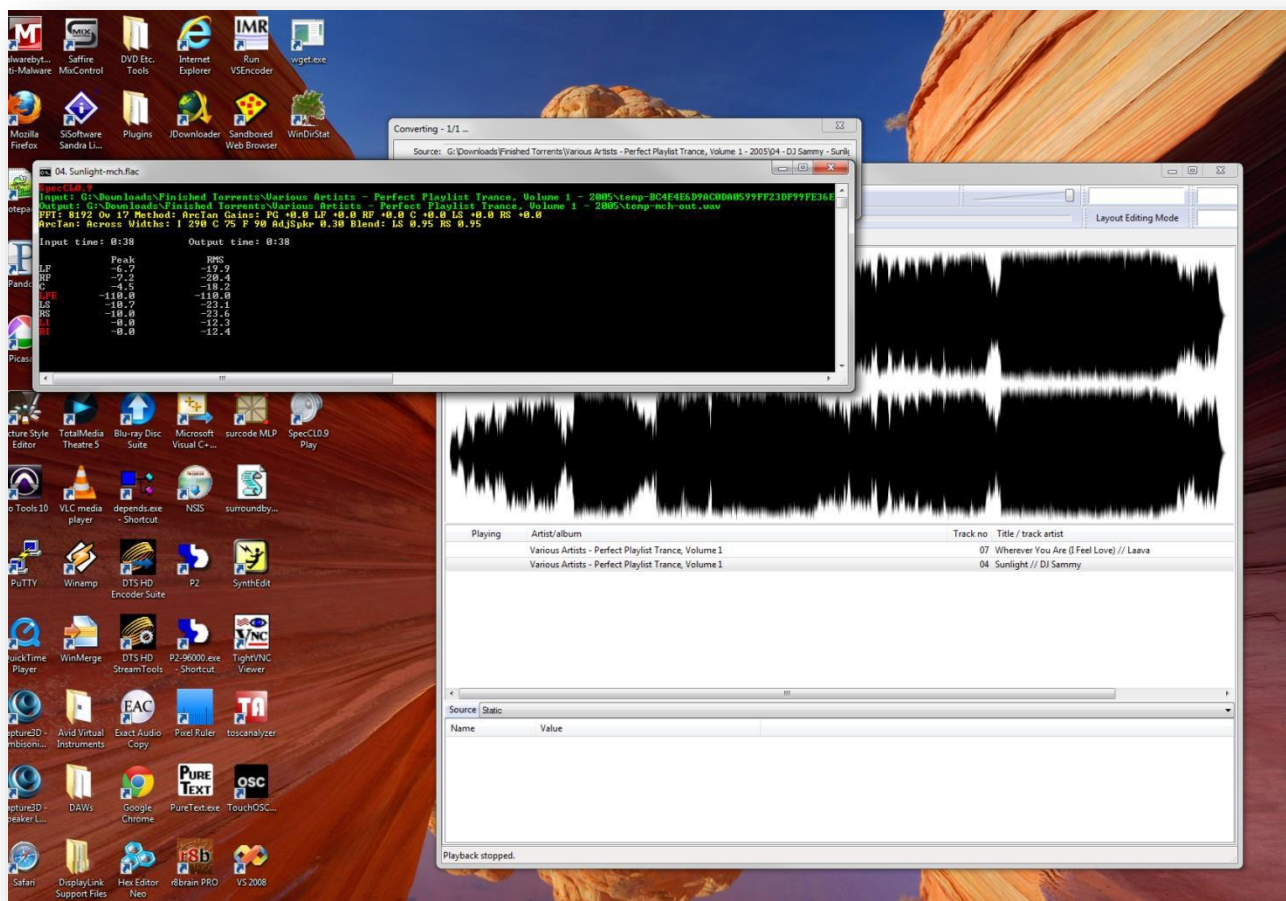
If you want to go on to DTS encode your tracks, you will need to use the “Audio Conversion” tool in Audiomuxer (<http://www.surroundbyus.com/sbu/viewtopic.php?f=7&t=135>) to create 6 mono files for input into the DTS encoder.

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.

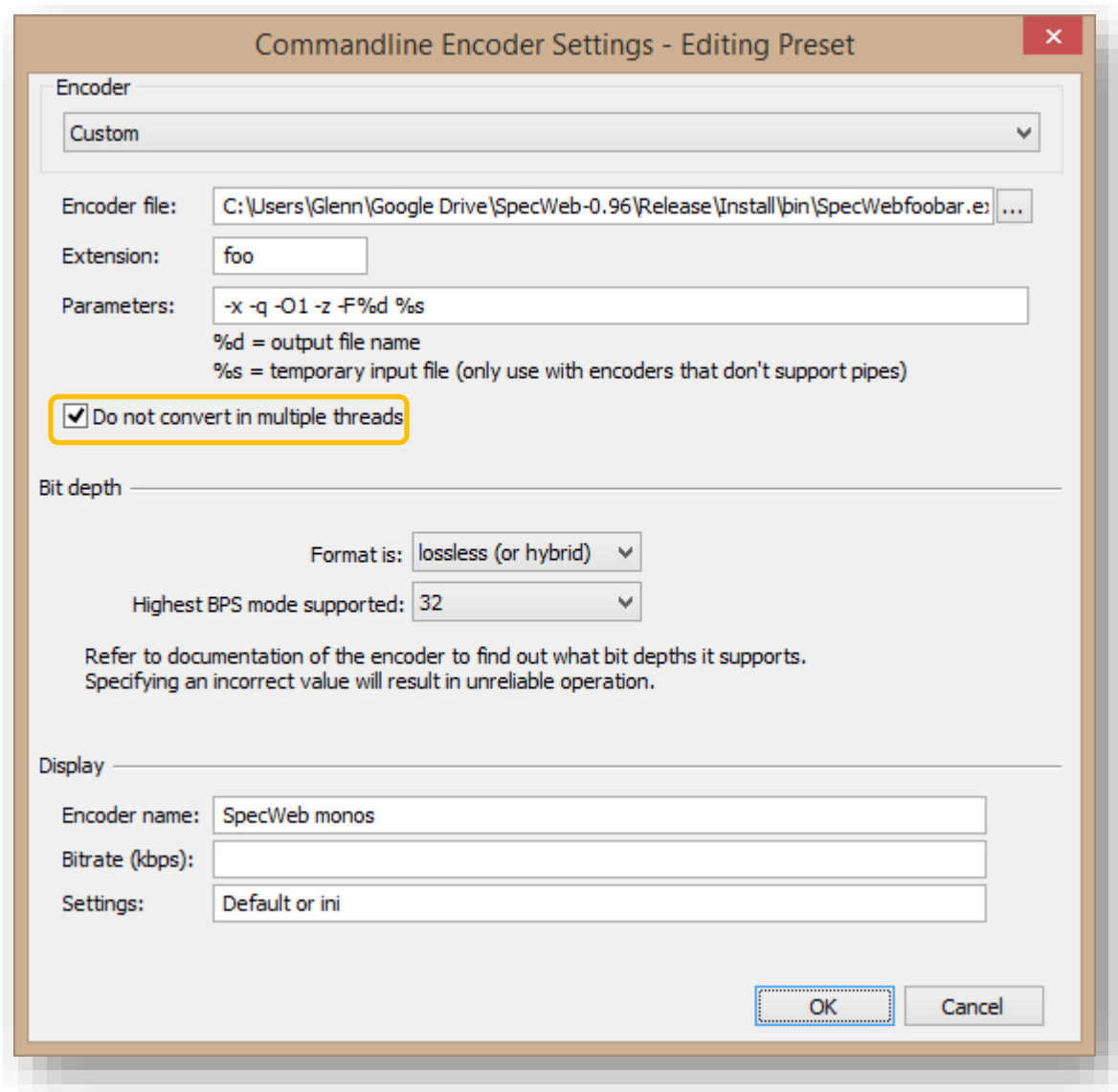
Note that in foobar you can select multiple tracks, and then right click on any selected track → Convert →

“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:

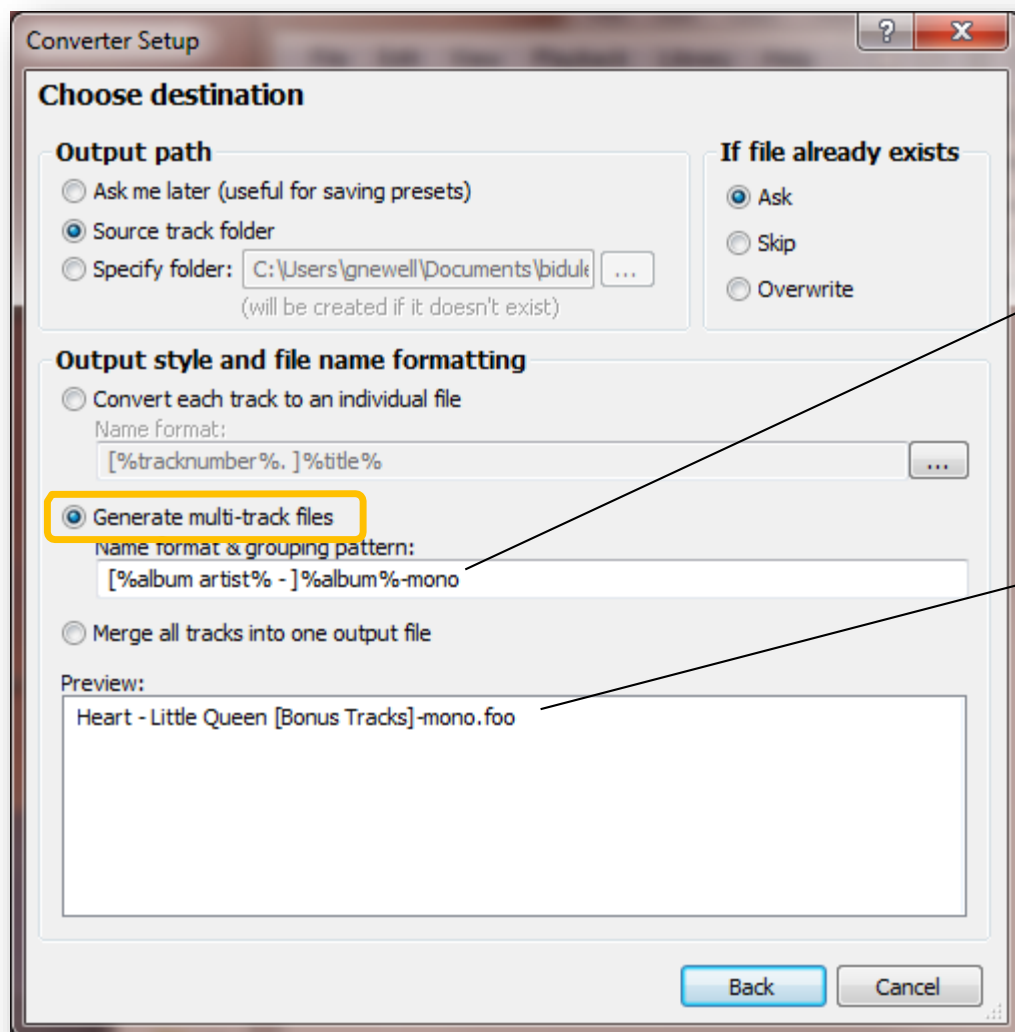


Note the file extension “foo”. Because we are converting to six mono wav files, foobar will get confused and display an error unless we create a dummy file for it to check for. If we used a format it recognized, like wav, it would know that it was an empty file. So, in addition to SpecWeb creating the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

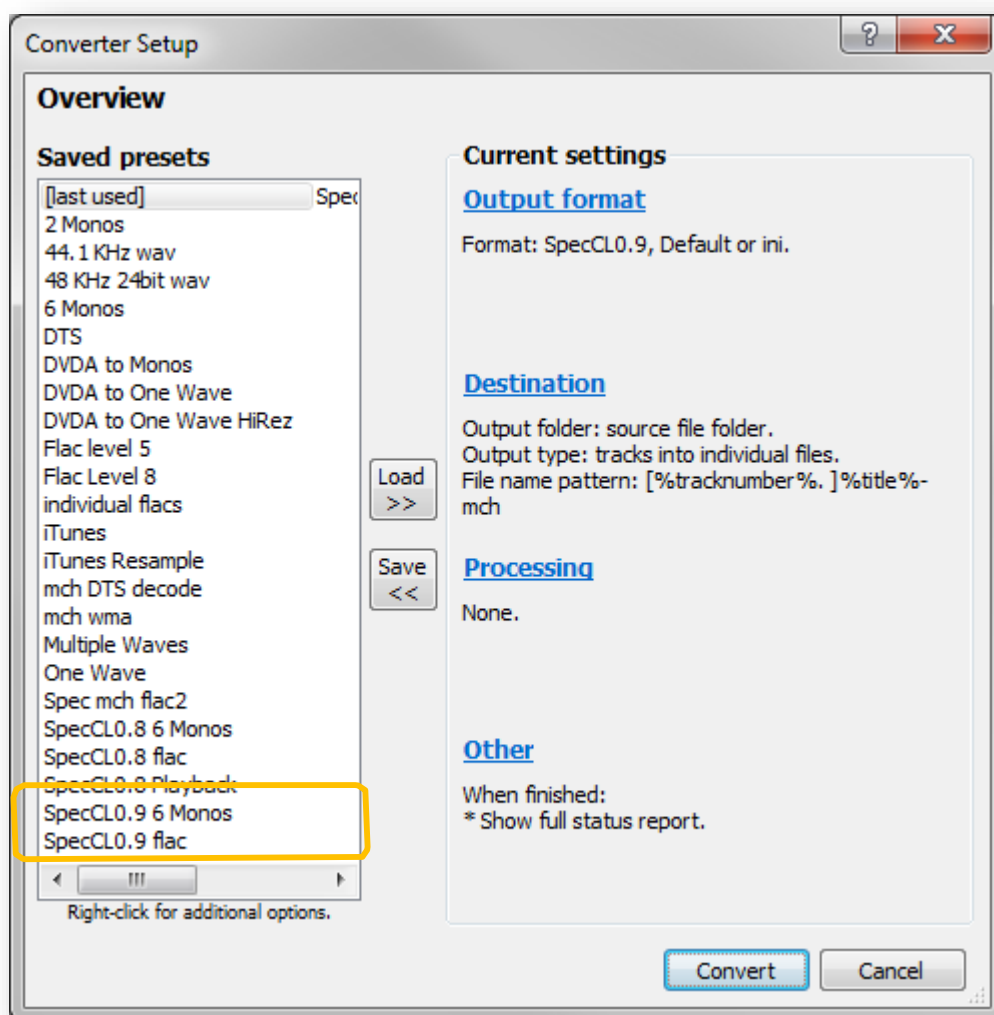
That’s a lower case dash p and an uppercase dash O (as in “Output”) and the numeral one. The –p is to “pop open” a SpecWeb window so you can see what’s going on with the conversion. The –O1 is for the output to be six mono files. Dash lower case z to use “ZAG” (Z Automatic Gain Control).

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:



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

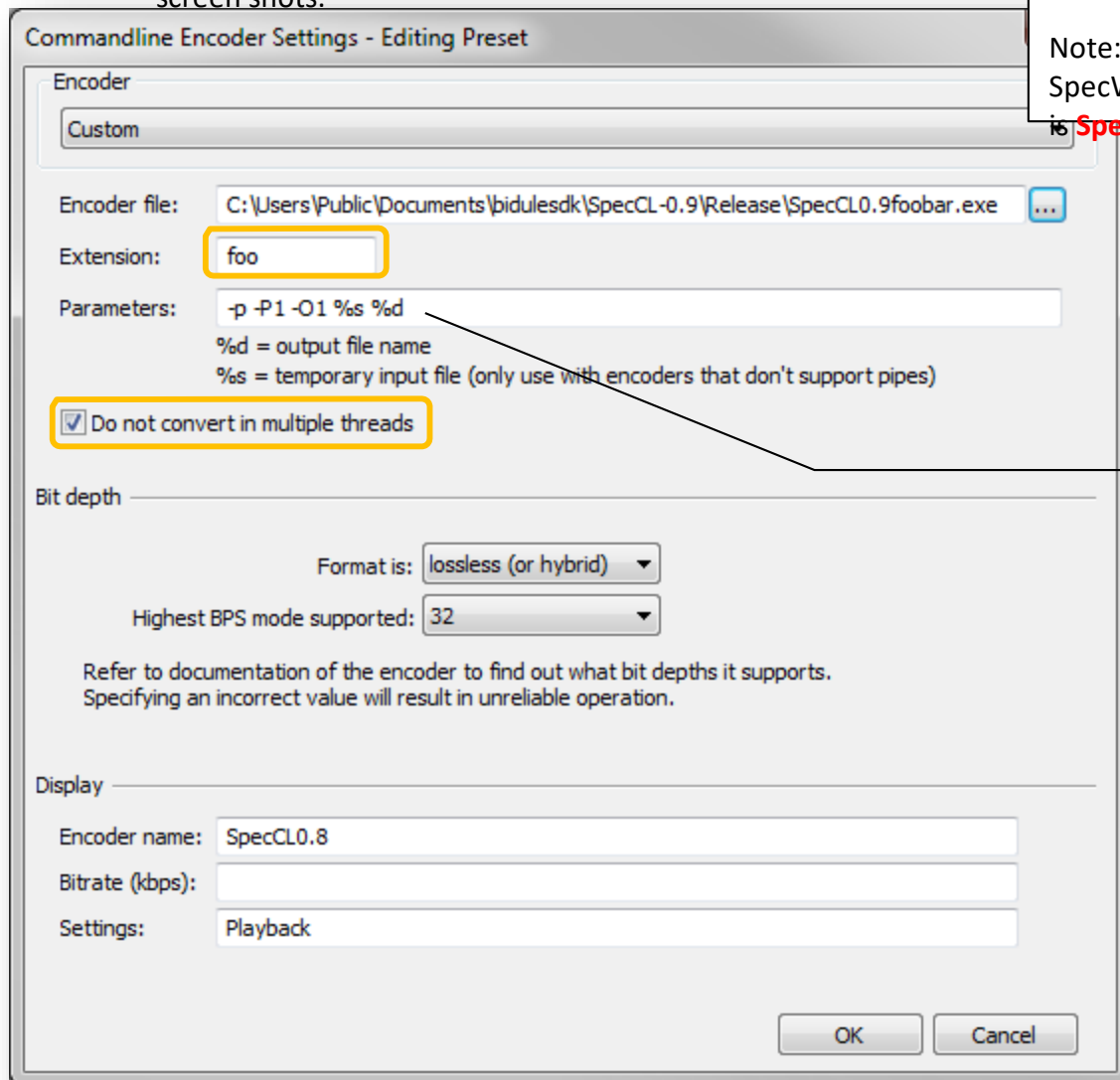


That's it! You can press Convert to convert your stereo file to six monos. In the future, you can select one or more tracks in the playlist and then right click Convert → SpecWeb 6 monos.

Name	Date modified	Type	Size
Heart - Little Queen [Bounus Tracks]-mono.foo	4/4/2012 11:52 AM	FOO File	0 KB
Heart - Little Queen [Bonus Tracks]-mono_0.wav	4/4/2012 11:51 AM	WAV	33,427 KB
Heart - Little Queen [Bonus Tracks]-mono_1.wav	4/4/2012 11:51 AM	WAV	33,427 KB
Heart - Little Queen [Bonus Tracks]-mono_2.wav	4/4/2012 11:51 AM	WAV	33,427 KB
Heart - Little Queen [Bonus Tracks]-mono_3.wav	4/4/2012 11:51 AM	WAV	33,427 KB
Heart - Little Queen [Bonus Tracks]-mono_4.wav	4/4/2012 11:51 AM	WAV	33,427 KB
Heart - Little Queen [Bonus Tracks]-mono_5.wav	4/4/2012 11:51 AM	WAV	33,427 KB

Using the foobar converter to play back via SpecWeb

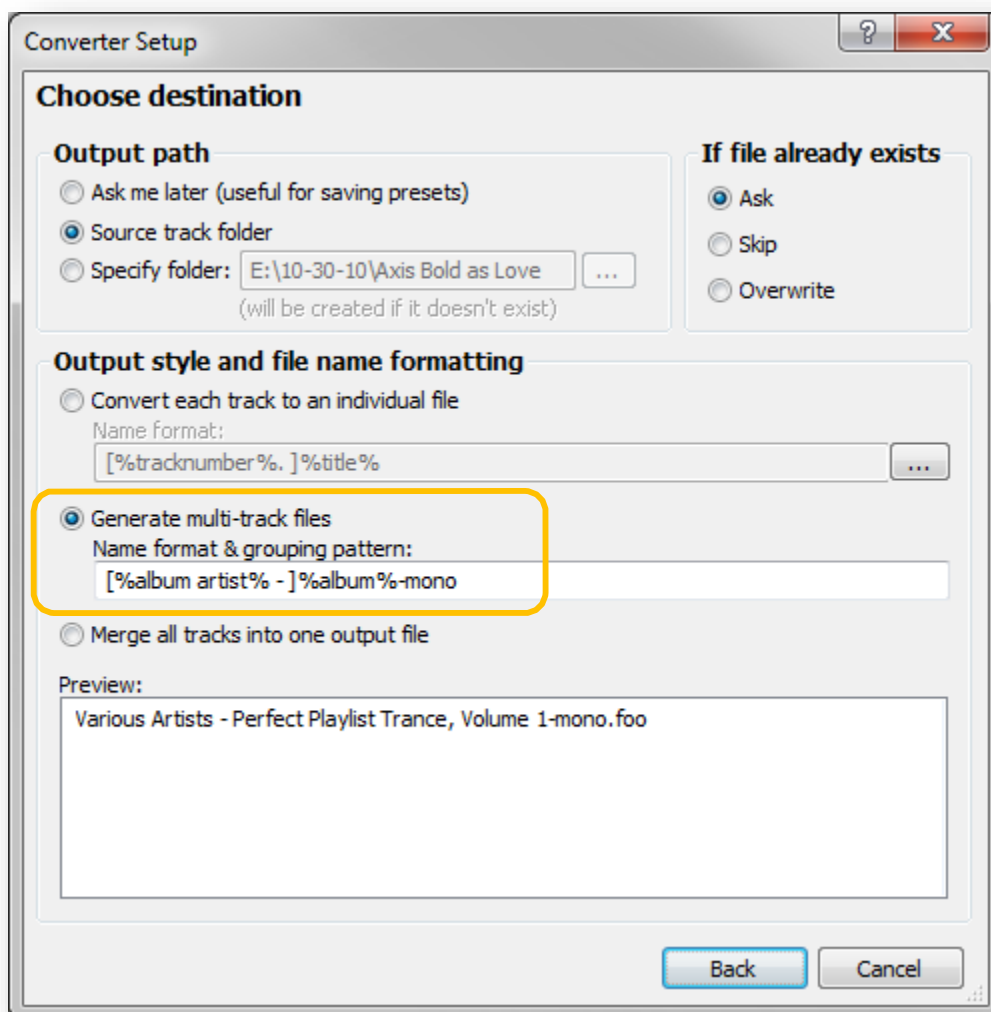
Repeat the above steps to create a “SpecWeb Playback” converter setting. Here are the screen shots:

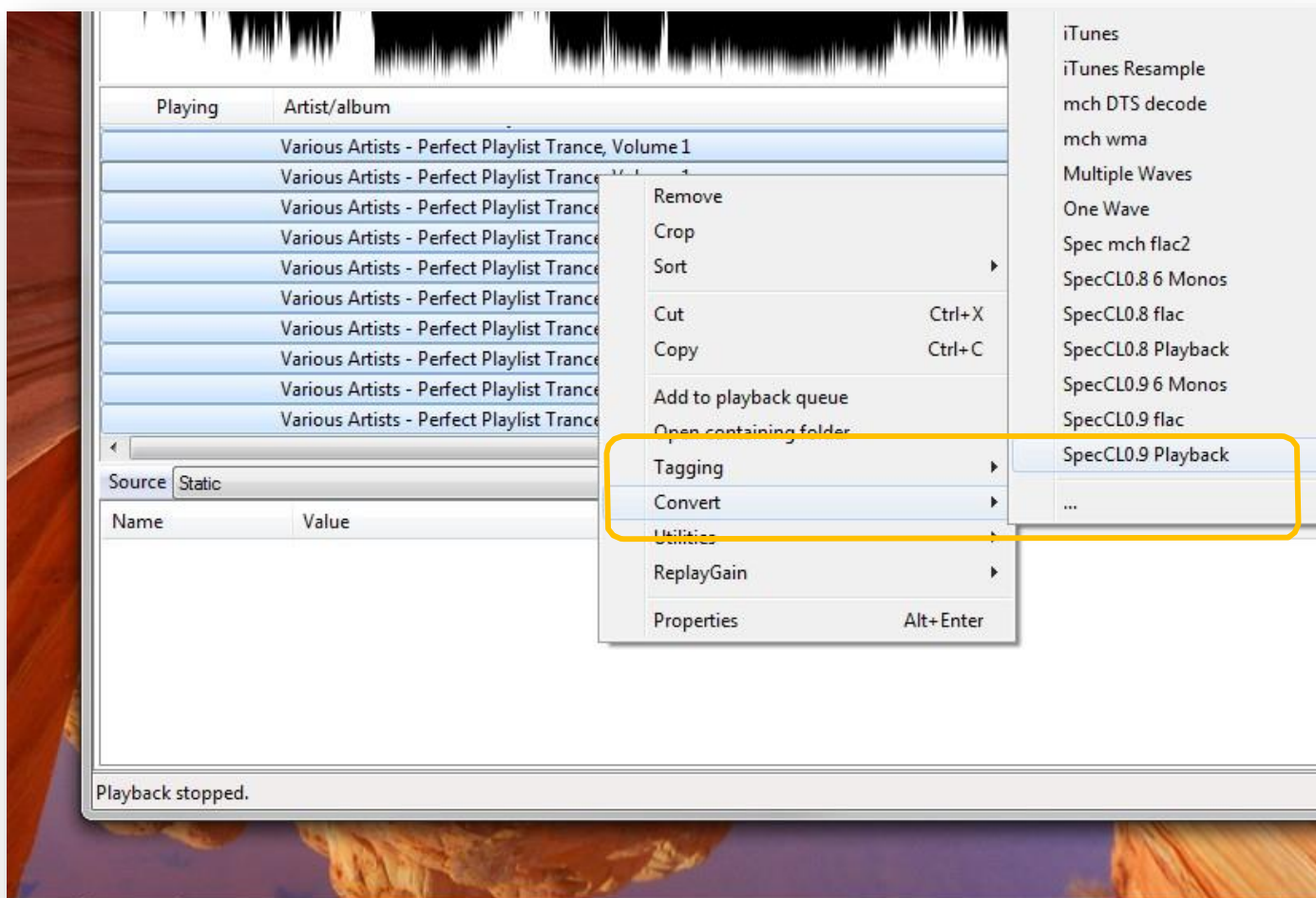


Note: illustrations show SpecWeb0.9. . This version is **SpecWebfoobar.exe**

-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.





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

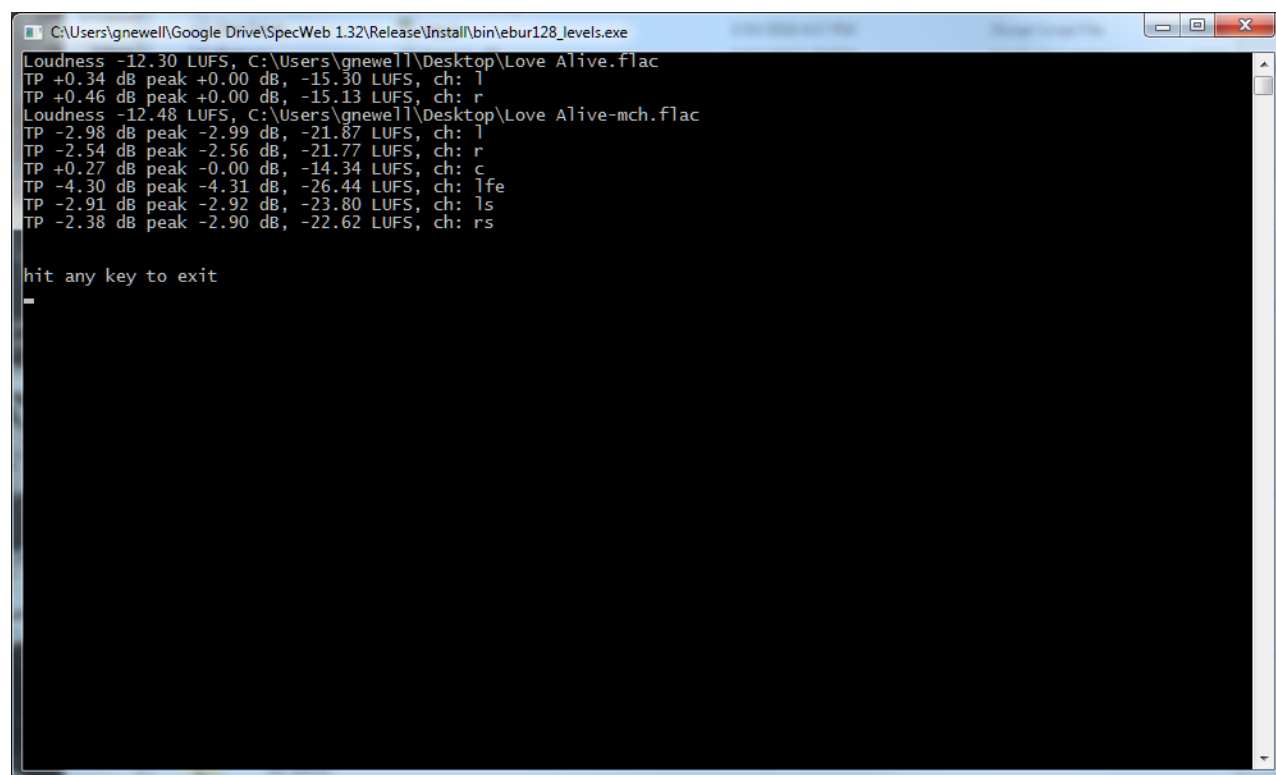
A SpecWeb window will pop in playback mode, and play all the songs in the playlist (as if they were all in one input file). Again, a zero byte .foo file will be written, just to keep the foobar converter happy. You can delete it later if you want.

Eburl128_levels utility

In SpecWeb 2.0 I've added a utility to measure the loudness, True Peak (intersample peak), and peak levels of lossless stereo and 5.1 files.

You will find the eburl128_levels.exe utility in the \Install\bin folder.

Drag and drop one or more stereo or 5.1 lossless files onto the exe file and you will get an output similar to:



```

C:\Users\gnewell\Google Drive\SpecWeb 1.32\Release\Install\bin\eburl128_levels.exe
Loudness -12.30 LUFS, C:\Users\gnewell\Desktop\Love Alive.flac
TP +0.34 dB peak +0.00 dB, -15.30 LUFS, ch: l
TP +0.46 dB peak +0.00 dB, -15.13 LUFS, ch: r
Loudness -12.48 LUFS, C:\Users\gnewell\Desktop\Love Alive-mch.flac
TP -2.98 dB peak -2.99 dB, -21.87 LUFS, ch: l
TP -2.54 dB peak -2.56 dB, -21.77 LUFS, ch: r
TP +0.27 dB peak -0.00 dB, -14.34 LUFS, ch: c
TP -4.30 dB peak -4.31 dB, -26.44 LUFS, ch: lfe
TP -2.91 dB peak -2.92 dB, -23.80 LUFS, ch: ls
TP -2.38 dB peak -2.90 dB, -22.62 LUFS, ch: rs

hit any key to exit
_
  
```

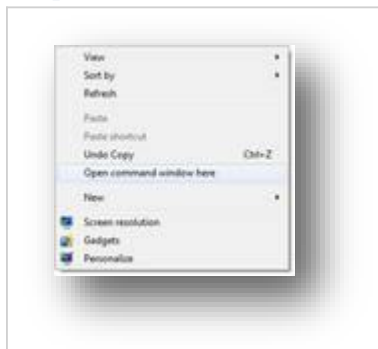
TP indicates the true or intersample peak. Peak is the peak sample value, and LUFS measurements are the loudness, according to EU standards.

Note: if you get a reading like “-1.#J” it means there was total silence in that channel.

You can create a shortcut for this utility and place it on your desktop if you wish.

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.

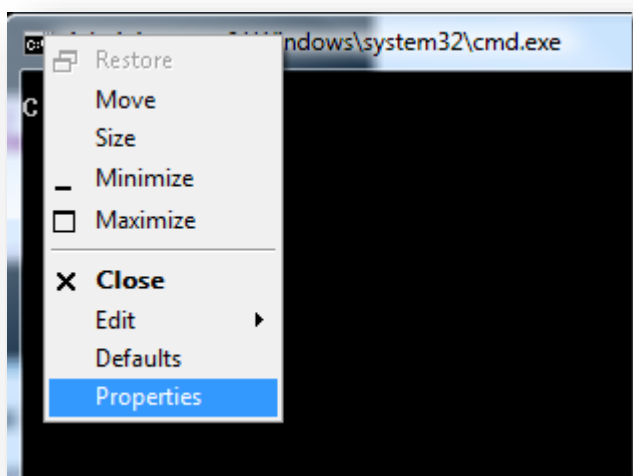
Luckily there's a Command Prompt trick that makes this much easier: drag and drop.

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.

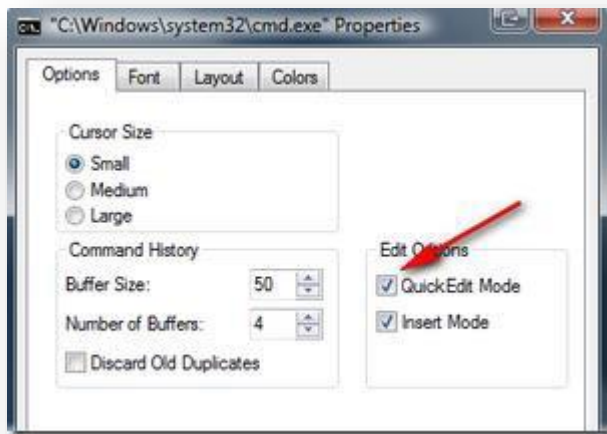
Note: Unfortunately, the drag and drop feature does not work in an elevated Command Prompt.

3. Quick Edit Mode

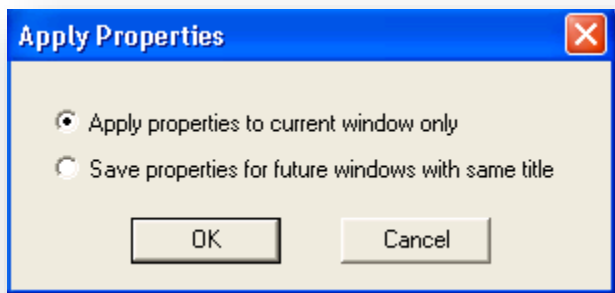
Open the command prompt properties



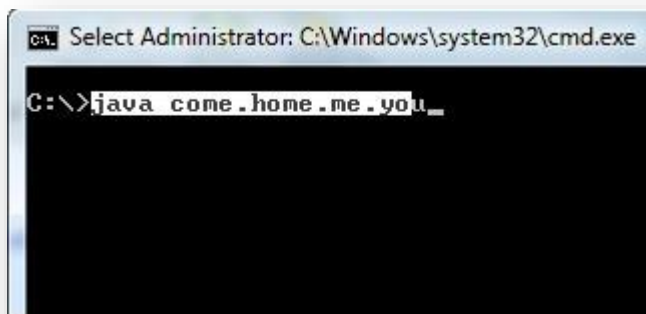
Select the Quick Edit mode



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.

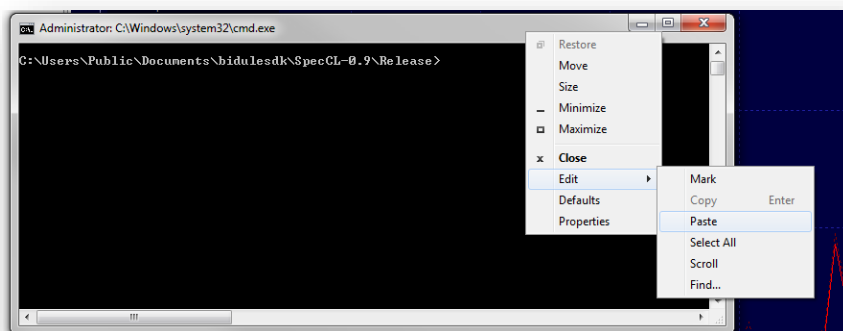
Another approach:

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.

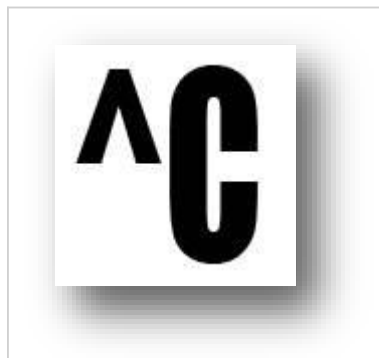
4. Cut and Paste on the Edit menu

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](#).

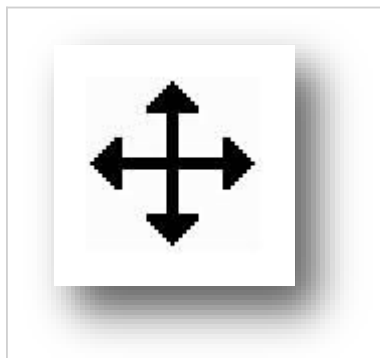
If you haven't actually executed a command, you can just backspace and erase what you've typed, but if you've already executed it then you can do a Ctrl-C to stop it.

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

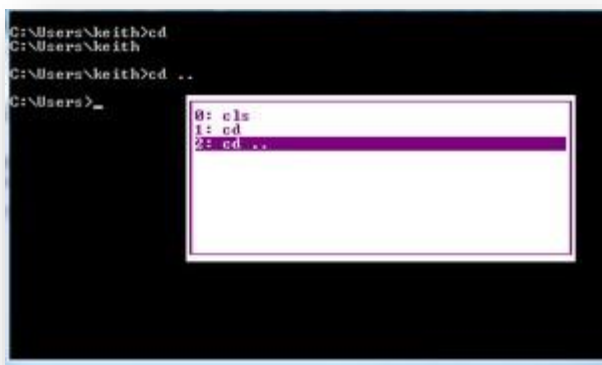
F7: Displays a selectable list of previously executed commands

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.

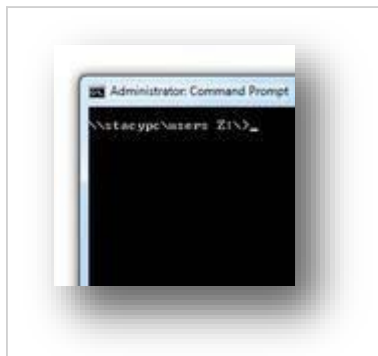


F1 and F2 shortcut keys

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



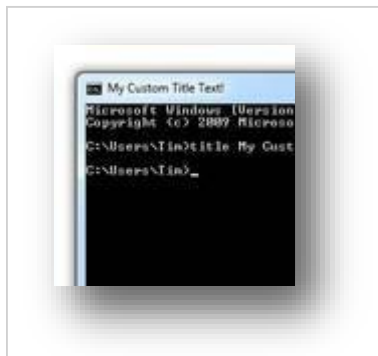
Did you know that the prompt itself in the Command Prompt is completely customizable thanks to the prompt command? It is, and when I say customizable, I mean *really* customizable.

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 \$m\$p\$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.

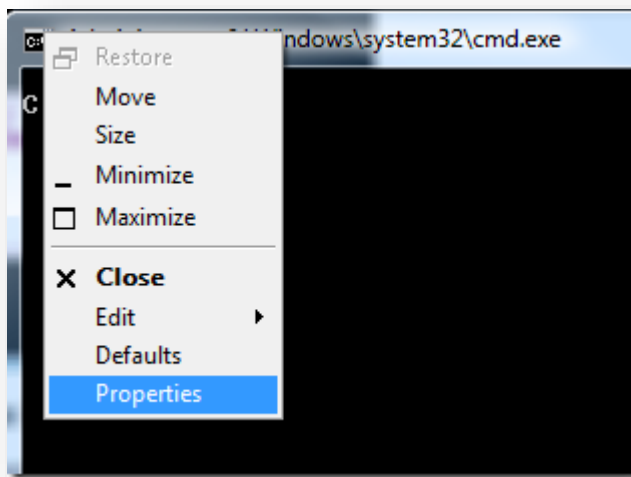
For example, let's say your name is Maria Smith, and you want to express your ownership of the Command Prompt: execute **title Property of Maria Smith** and the Command Prompt's title bar will change immediately.

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

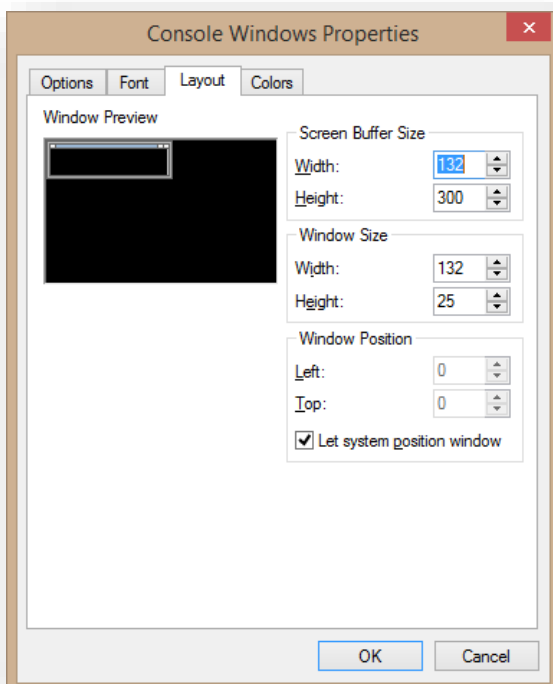
The title command is usually used to help give a custom appearance in script files and batch files... not that I'm saying titling it with your name isn't a good idea!

12. Adjust the CMD window fonts and window size

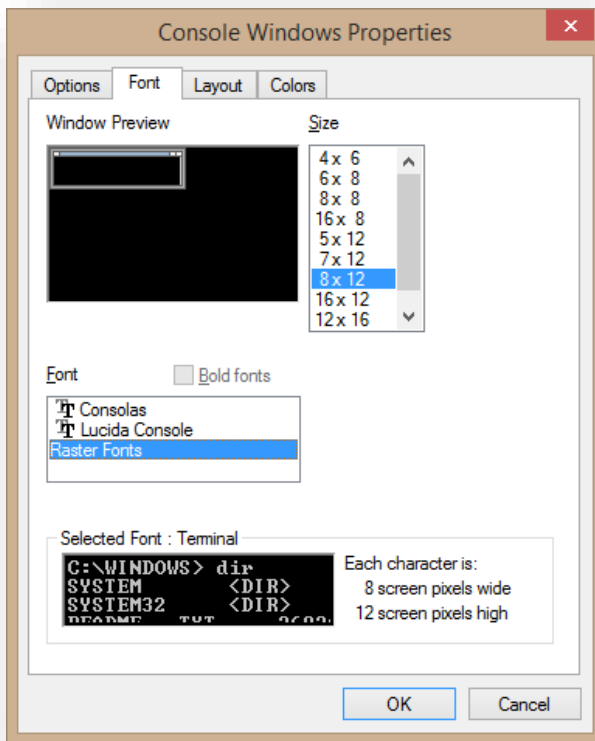
Open the command prompt properties



Select Defaults



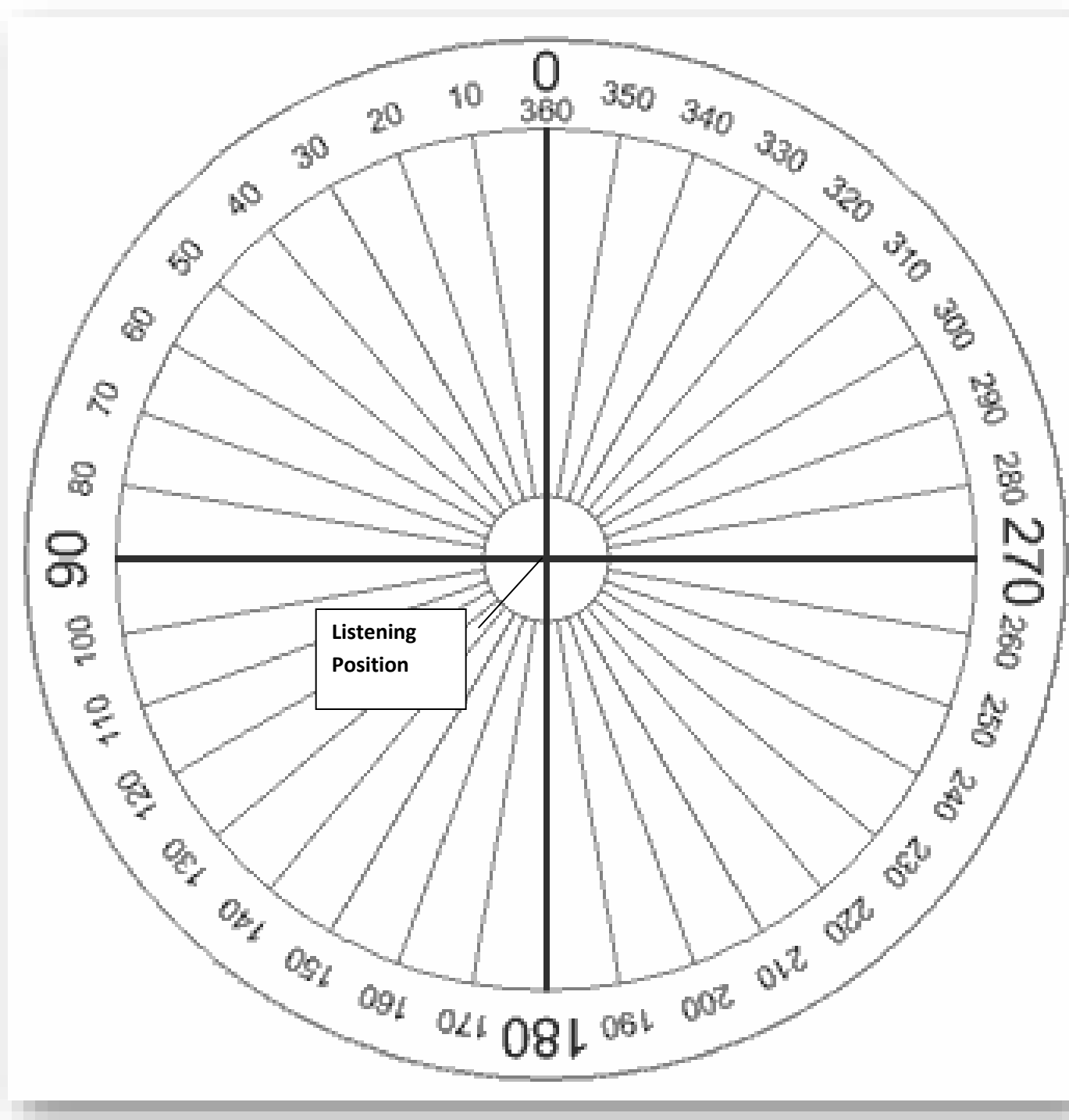
Use the tabs to set default window sizes and fonts.



This will control the fonts in SpecWeb command line.

Speaker Angle Chart:

Center Speaker



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SpecWeb end-user license agreement (EULA)

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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):

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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).

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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)

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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.

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Applies to libsndfile and libwebsockets only

Version 2.1, February 1999

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Applies to libsndfile only

Version 3, 29 June 2007

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