AudialHub Users Guide

by Tyler Loch
Fearless Leader, Techspansion LLC

Release 1.07, 08/10/08

TECHSPANSION

This one goes out to the one I love.

Table of Contents

Chapter 1:
Crash Course

"*Please allow me to introduce myself...*"

— The Rolling Stones, **Sympathy for the Devil**, Beggars Banquet, 1968

Introduction

AudialHub was designed to simplify the conversion of video and audio files to popular audio formats for playback on computers, digital audio players, CD players, and the like. This Users Guide was written to explain important concepts, info on the different output formats, and to provide detail into the processes behind AudialHub.

There are a lot of people who are familiar with the concepts herein (or are too proud to admit they can't read), and will jump right in to using AudialHub without needing to read this guide.
For the rest of us, these threeish dozen or so electronic pages exist to clear up any questions that might arise before they're even asked....and actually, this page may just be everything most of you need. There are also a lot of goodies near the end of the Guide that the too-smart and the too-illiterate will miss, so please enjoy.

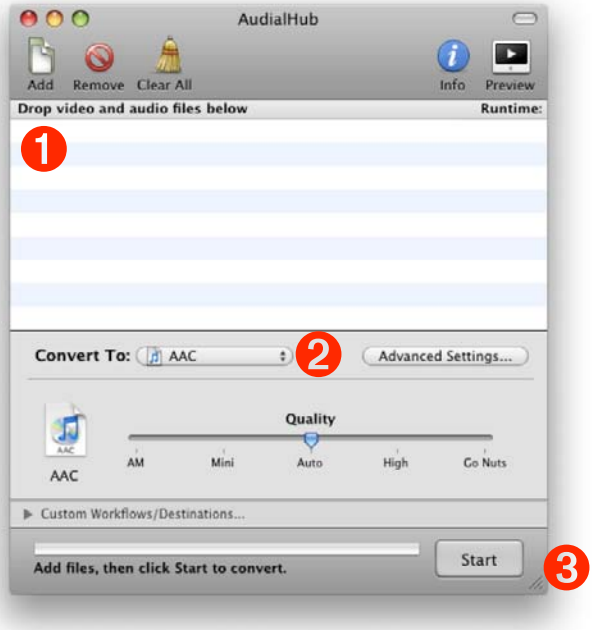
Workflow

The normal workflow of AudialHub works as follows:

1: Drag the files you want to convert into AudialHub's File List.

2: Choose the format you want to convert to from the aptly-titled "Convert To" popup menu.

3: Click Start.



Other Settings

For most conversions, the default settings are sufficient. For example, converting to AAC or MP3 offers a single setting in the main window, dealing with audio quality. The "Auto" level is usually the desired setting.
For more in-depth tweaking, an Advanced panel is available allowing modification of nearly every aspect of the conversion process. More on that (and everything else) later.

Adding Files, Custom Destinations

There are many ways to tell AudialHub what files you want converted. The cool kids drag and drop multiple files from Finder onto the File List. You can also drag files on top of the AudialHub icon in Finder or in the Dock. The "Add" button in the Toolbar is yet another way.

By default, AudialHub will save each converted file to the same folder that the original came from. If you're converting files from multiple folders or multiple volumes, you may find it easier or more convenient to convert them all in once place. Expand the "Custom Workflows/Destinations box to reveal the "Save To" option. Click the "Edit..." button to choose a folder where all converted file will congregate after they're completed.

Progress

Once you click Start, AudialHub will take a look at each file, figure out the best way to convert it based on the selected settings, and start the conversion. The progress bar at the bottom of the window will keep you updated with the overall progress and the estimated time remaining. The AudialHub Dock icon will also periodically update its slider to match the window's progress bar.

Special File Menu Options

New Queue

You can have multiple AudialHub queues open at the same time, all doing different conversions. When you create a new queue, the current window moves slightly to the side, and a new window appears.
Each window is like a separate copy of AudialHub running, and need to be quit separately.

Special Conversion Menu Options

Pause/Resume

If you need to pause work during a conversion, you can do so here, as well as via the Pause/Resume buttons that show up where the Start button was before you clicked it. If you leave a conversion paused for a long period of time, the estimated time remaining for the conversion will be quite wrong when you Resume.

Assembly Line Mode

In this mode, AudialHub sits idle, waiting for files to be added to its list. When a file (or multiple files) is added, AudialHub springs into action, converting it/them right away, then waiting for more again. This is useful if you receive files throughout the day that all need to be converted to a specific format, and is especially useful for automated conversions via scripts.

Custom Workflows

Expand the “Custom Workflows/Destinations” box on the main window to reveal the additional settings.

Stitch Files Together

This option converts every file in the queue to a single audio file. Useful for merging multi-part clips, among other things.

When Done:

These are actions to take once conversion completes.

Add to iTunes - (when available) Adds each file as it’s finished to your iTunes library.

...as Audiobook - (when available) Adds each file as it’s finished as a .m4b Audiobook file to your iTunes library.

...as iPhone Ringtone - (when available) Adds each file as it’s finished as a .m4r Ringtone file (up to 40 seconds long) to your iTunes library. This method works on iPhone firmwares 1.1.3 and 1.1.4. Functionality on other firmwares may vary.

Open Destination Folder - When the entire conversion is complete, the folder set as the “Save To” location (or just the last file’s location is nothing is set) is opened in Finder, revealing its contents.

Put Computer to Sleep - When the entire conversion is complete, AudialHub tells your computer to fall asleep.

Shut Down Computer - When the entire conversion is complete, AudialHub will tell your computer to Shut Down. The standard shutdown procedure takes place, so any programs with unsaved info or other alerts could cancel it.

Quit AudialHub - When the entire conversion is complete, guess what happens.

Run Script... - When selected, you will be prompted to select an AppleScript .scpt file that will be run after conversion. This file has to be constructed a special way. Check the **Automation** chapter for more information.

Info Panel

The Info panel displays key information about the selected file, such as its bitrate, number of channels, etc.

Preview Panel

The Preview panel lets you hear a small snippet of the end result. You can hear how special Advanced settings or Trim values affect the audio, and even how the file will sound post-compression. If you’re making many small tweaks, this can be a real time-saver.

Chapter 2:
Anatomy of an Audio File

"*Eyes and Ears and Mouth and Nose. Head, Shoulders, Knees and Toes. Knees and Toes.*"

— **Head, Shoulders, Knees and Toes**, Classic children's song

Introduction

Sound works when an object vibrates, or in some way manipulates air at a steady rate. People vibrate their voice boxes while talking; changing mouth shapes to shape the sound. Musical instruments like a guitar or piano have strings struck or plucked, and allow the strings' vibration to reverberate.

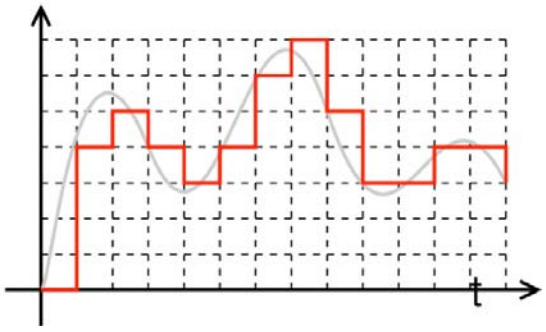
The "waves" from these vibrations travel through air and reach our ear drums, causing them to vibrate.

Different pitches are caused by different speeds of vibration. Higher pitches are caused by high-speed vibration, while low pitches are caused by low-speed vibration. The speed of the vibration is knows as **Frequency**, and measured in Hertz (**Hz**).

Differing loudness is caused by how violently the vibrations are made. Stronger vibrations are naturally louder. This is known as **amplitude**, and measured in Decibels.

So...how are these natural waves converted into digital forms?

Recording



Microphones operate by transmitting electric pulses whenever a thin material in the microphone vibrates (much like our ear drums vibrate) when stimulated by sound. These pulses are then measured for their amplitude and frequency, then written to a file. (A quick segué...speakers work in the opposite order, where electrical pulses vibrate a membrane, which in turn vibrates the air around it, creating sound. Some headphones can even be used as microphones in a pinch, though they surely weren't designed to work that way.)

For audio storage, **Hertz** is used to dictate the resolution of the audio file, or its **sample rate**. A CD-level audio file is sampled (or processed) at 44,100Hz, or 44,100 times every second. Lower resolutions, such as 22,050Hz or 11,025Hz are not as clear or "crisp", because any small variations in the sound aren't written in as great a detail as CD-level audio is. On the other side of the technological spectrum, professional studios author audio at 48,000Hz or even 96,000Hz for greater quality while editing before downsampling to 44,100Hz or 48,000Hz for distribution. It's common to see these same measurements made in **Kilohertz**, or **kHz**. CD-level audio would then be 44.1kHz.

Amplitude (for the scope of AudialHub) is stored as a 16-bit value, meaning there are 65,536 (or 32,768 depending on how you count) possible different levels of "loudness". Older computer recordings were 8-bit, while professional studios may use 24-bit during the production process. AudialHub focuses on 16-bit recordings since nearly all possible playback and output devices focus on (or require) 16-bit audio.

Compression

The space required to store audio digitally can add up quickly. A single second of 16-bit 44,100Hz audio needs around 172KB (kilo**bytes**), or 1,378kb (kilo**bits**). An hour of this audio would take almost 620MB (megabytes). When safely stored in 80-minute batches on CDs, it's not a problem...but when you want to send audio over the internet, or store it in a digital audio player, space is at a premium.

Various **compression** techniques have been developed to store audio in less space. Some store the data in such a way that the audio remains precisely intact, while others go the extra mile and actually remove portions of the audio that aren't as easily heard by the human ear. This type of "lossy" compression can generally compress audio to one-tenth its original size at qualities similar to the original, though that is a very subjective outlook.

Many different compression techniques are available in AudialHub, each with its own strength and weaknesses. The next two chapters list each format in detail.

Chapter 3:
Lossy Encoders

"Hey, don't let it go to waste. I love it but I hate the taste."

— Foo Fighters, **All My Life**, One By One, 2002

What Is It?

Lossy compression means data is taken away in order to make file sizes smaller. Frequencies that humans can't easily hear are removed, and any near-redundancies in the data are written in a more efficient way. This concept is similar to JPEG images, where quality is reduced where it isn't as important. Much like a good eye can definitely detect a difference between an original and JPEG-compressed photo, a good ear can detect the difference between original audio and a lossy-compressed audio file.

Most Lossy compressors have a CD(ish)-quality "sweet spot" bitrate near 128 kilobits per second (128kbps), aka 16K/second. This works out to about a megabyte a minute. Any lower, and the sound quality is very noticeably degraded. Higher bitrates will deliver higher quality audio, closer to the original (with diminishing returns), though no Lossy compression will ever sound the same as the original. That's why it's called Lossy.

Quality Settings

There are five different Quality levels in AudialHub when converting to a Lossy file: **AM**, **Mini**, **Auto**, **High**, and **Go Nuts.**

Auto sets a bitrate at the "sweet spot" mentioned above. For audio files resembling CD characteristics, that means 128kbps. Other audio files will be given a proportional bitrate to match its characteristics.
Mini lowers the Hz on Mono files below 44100Hz. Stereo files are reduced to Mono, halving the bitrate needed.
AM also halves the Hz. This means a CD-level audio file (44100Hz, Stereo) becomes 22050Hz and Mono at 32kbps. This format is ideal for voice-based material (like many podcasts), and can even stream over dialup internet connections.
...and in the other direction...
High increases the bitrate used to 1.5x that of **Auto**. A CD-level file will convert to 192kbps.
Go Nuts increases to 2.5x that of **Auto**. A CD-level file will convert to 320kbps, which is the upper limit for most devices.

Lossy Audio Compression Formats

AAC - Advanced Audio Coding

AAC made its (popular) debut in QuickTime 6 in 2002. It was designed to be an improvement over MP3, offering slightly better quality at the same bitrates. Starting with iTunes version 4, it became the default format for encoding using iTunes; and due to its common use there, other devices now offer AAC playback compatibility.

Common software/devices: iTunes, iPod, iPhone, PS3, PSP, Xbox 360, various cell phones.

MP3 - MPEG-1 Audio Layer III

Developed nearly a decade and a half ago, the MP3 format became popular in the late 90's with the advent of music sharing services such as the original Napster. Its explosion of popularity prompted companies to provide MP3 compatibility on their devices whenever it made sense (and in come cases, when it didn't make sense). All computers, many DVDs players, almost all digital audio players, lots of CD players, almost all modern cell phones, and even some GPS devices play MP3s. No other format compares when it comes to universal compatibility.
By default, MP3 encoding in AudialHub is CBR (constant bitrate) for best device compatibility. Check the Cheat Codes appendix section for VBR (variable bitrate) options.

Common software/devices: Almost every modern digital audio player.

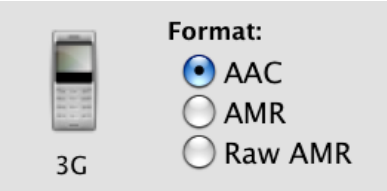
WMA - Windows Media Audio

WMA is Microsoft's answer to MP3, and the default format for conversion in Windows Media Player. Its device compatibility and quality is close to that of MP3 on dedicated audio players.

Common software/devices: Windows Media Player, Zune, Sansa, PSP, Xbox 360.

3G - Cell Phone

So-called "3G" cell phones are capable of playing certain formats meant for over-the-air distribution. These formats can also be synced via computers.



AAC - Same as the AAC audio above, but in another file "wrapper". Some phones will only play AAC in this .3gp format.
AMR - AMR is cell-phone-quality audio. Its extremely low quality and bitrate makes it ideal for voice, but not much else.
Raw AMR - AMR in its own file "wrapper" — .amr

Common software/devices: Modern (about 2003 and later) cell phones.

Ogg Vorbis

Ogg Vorbis is a codec from the Open Source community, aiming to compete with MP3 in most situations, succeeding at providing better quality at lower bitrates. Unfortunately, its support on digital audio devices is extremely poor.

Common software/devices: VLC, various other players.

Chapter 4:
Lossless Encoders

"*You don't know what you're missing now.*"

— Led Zeppelin, **The Song Remains The Same**, Houses of the Holy, 1972

What Is It?

Lossless compression means all the data from the original file stays completely intact during conversion. There's no degradation of quality. This concept is similar to standard file compression, such as ZIP. It's used when top-quality is more important that frugal use of storage space.

Two kinds of lossless codecs are covered here - those that do actual compression on the original source, and those that are purely uncompressed raw audio formats.

Lossless Audio Compression Formats

AIFF - Audio Interchange File Format

AIFF is primarily used by Apple as a standard uncompressed audio format. Its data is stored "big-endian", mirroring the processor architectures originally used in Macintosh computers (680x0, PowerPC) before the Intel transition. It is a common format used for audio production, though not as well-used as WAV.

Common software/devices: QuickTime, iTunes, iPod (not iPod shuffle), iPhone, many other software programs.

WAV - Waveform Audio Format

WAV is a very common standard uncompressed audio format. Its data is stored "little-endian", mirroring the processor architecture used in IBM-based PC (x86) computers. Its ubiquitous support among software makes it a common uncompressed audio format for nearly all purposes.

Common software/devices: QuickTime, Windows Media Player, nearly every audio program.

Apple Lossless (ALAC)

Apple Lossless is Apple's lossless-compression format capable of playback on the iPod. It is also used by iTunes and the AirPort Express for digital audio transmission via AirTunes. Audio can be compressed to a little over half its original size. Compatibility is mainly limited to standard computer use outside of the iPod/Phone.

Common software/devices: QuickTime, iTunes, iPod (not iPod shuffle or 1/2G iPod), iPhone.

FLAC - Free Lossless Audio Codec

FLAC is an open-source audio conversion format much like Ogg Vorbis is to Lossy conversion. Audio can be compressed to a little over half its original size. Again, much like Ogg Vorbis, it does not have much traction in portable devices, though there are a few that support FLAC.

Common software/devices: VLC, various other players.

Chapter 5:
Audio CDs and MP3 CDs

"*You spin me right round, baby, right round. Like a record, baby.*"

— Dead or Alive, **You Spin Me Round (Like a Record)**, Youthquake, 1984

What Is It?

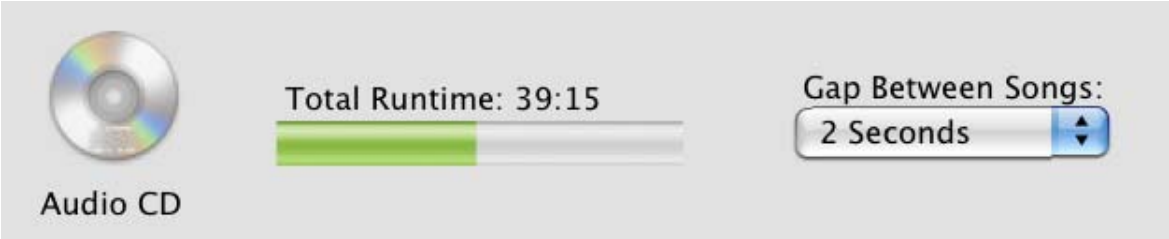
CDs. They have music inside. Have you heard of them?

Audio CDs are the standard format that play in any CD player, using uncompressed audio.
MP3 CDs are computer data CDs that contain regular MP3 files. Some CD players advertise MP3 playback, and using this format, over 10 times as much audio can fit on a single disc thanks to MP3 compression.

Audio CDs

Modern blank audio CDs hold up to 80 minutes of audio in up to 99 separate sections known as tracks. Each audio file in AudialHub's file queue will be converted to a single track.

Gap Between Songs:
The amount of silent space between tracks can be controlled. The default is 2 seconds. If you're dealing with songs or audio that flows together, choose a Gap of "None".



MP3 CDs

Modern blank CDs hold up to 700MB of data. This means 700 minutes of audio (or 960 minutes, i.e. 16 hours, at a lower quality).
When converting a very large amount of audio, AudialHub will convert to a quality level/bitrate that will allow it all to fit on one disc - 192kbps at the high mark, 96kbps at the low mark.
If you put compatible MP3s into AudialHub's file queue for inclusion on an MP3 CD, they will be copied to the disc without being converted again.

Burning

When conversion of all files completes, a CD will be burned. If you don't have a blank CD already in your optical drive, the drive will open at this point (on tray-loading burners), awaiting a disc.
On modern CD burners, the burning process will take about 5 minutes for a full disc.
Check the Preferences section of the Users Guide for information on choosing multiple burners or changing burn speed.

Chapter 5:
Advanced & Preview Settings

"...'cause it's so dangerous, you'll have to sign a waiver."

— Barenaked Ladies, **One Week**, Stunt, 1998

Audio Tab Settings

Option	Explanation
Hz (Hertz)	Audio sample rate. DVD: 48000, CD: 44100. Lower levels will result in lower audio quality.
Channels	Chooses between Mono and Stereo. Mono requires only half the **Bitrate** for conversion.
Bitrate	Data rate for the audio. Measured in kilobits per second. Standard CD-level MP3: 128
"Fit each file into:"	Will calculate a **Bitrate** that will fit the finished file under *n* megabytes based on the reported running time of each source file.
Decoder	Chooses which decoding engine to use. Left alone, AudialHub will determine which to use by the source file's type. Troublesome files may benefit by the tweaking of this setting.
Audio Track #	If your source file has multiple audio tracks, the desired track can be forced.
Volume	Amplifies or softens overall audio volume to *n%* of the original.
Normalize	Changes the **Volume** of each audio file to a neutral and common level.
Extra FFmpeg Flags	Additional ffmpeg command line flags can be added here for very advanced users.
Extra * Flags	When converting to AAC, MP3, Ogg Vorbis or FLAC, an extra field is available for additional commands for the formats' respective encoders: afconvert, LAME, oggenc, and FLAC

One-Offs Tab Settings

One-Off settings were designed for converting single files, since many settings available here aren't usually universal. Keep in mind that settings made on the Advanced panel will affect every file in the queue.

Option	Explanation
Trim	Allows begging and end points to be set for a specific file. This is useful to trim excess from the start or end of a file, and for creating ringtones. Check the **Cheat Codes** appendix of the Users Guide if you need more accuracy.
Title	Sets a custom Title entry in the converted file's metadata, when applicable.
Artist	Sets a custom Artist entry in the converted file's metadata, when applicable.
Album	Sets a custom Album entry in the converted file's metadata, when applicable.
Track	Sets a custom numerical Track entry in the converted file's metadata, when applicable.
Year	Sets a custom numerical 4-digit Year entry in the converted file's metadata, when applicable. This field will be obsolete in 7,992 years.
Genre	Sets a custom Genre entry in the converted file's metadata, when applicable.
Comment	Sets a custom Comment entry in the converted file's metadata, when applicable.

Preview Panel Settings

Option	Explanation
Start *n* seconds in	Begins the preview *n* seconds into the source file. A **Trim** value will override this setting.
Play for *n* seconds	Creates a preview clip *n* seconds long. A **Trim** value will override this setting.
Loop	When selected, the preview will repeat continuously.
Play including Compression	Will create the Preview clip taking the current format, Quality, and Advanced settings into account.

Chapter 6:
Preferences

“Aww, baby. You know what I like!”

— The Big Bopper, **Chantilly Lace**, Chantilly Lace (single), 1958

General Preferences

Number of Simultaneous Conversions

When working with a batch of files, AudialHub will convert as many files at once as there are CPU cores in your computer. You can change that (higher or lower) here.

CD/Stitching Batch Error Handling

Certain conversions, like CD burning or Stitching, rely on every file in the queue making it intact to the end. In the case of an error with one of the files, AudialHub will cancel the entire conversion since it's all or nothing.
You can set AudialHub to carry on with conversion and just do as much as it can with what it has left.

Extra Pallet Visibility

Inspector pallets, like the Advanced panel, will disappear when AudialHub is in the background. In some cases, it might be useful to refer to them while another program is in the foreground.

Initial Settings

If you have a specific .ahub Settings file you want use every time, add it here and it will be loaded on every launch.

Processing Priority

Normally, Mac OS X makes every program share CPU power evenly. Enabling this option means AudialHub will only use CPU power that would otherwise be idle and unused, in order to avoid adversely affecting other programs.

File Handling Preferences

Default Save Location

By default, AudialHub will put converted files where the original ones were. Along with changing this on the main window for a single queue, you can set a location to always be used here.

Adding to iTunes

By default, iTunes makes a copy of an imported file for its own Library. If you would like the converted file deleted after iTunes makes its own copy (effectively, "moving" the file), select "Move Converted File to iTunes LIbrary"

Creation/Modification Dates

Converted files will have their creation and modification dates set in the present, as expected. If you use these dates for organization, you can override this setting and use the original file's Creation and Modification dates in the converted files.

Cancelled File Handling

Normally, when canceling a conversion in mid-process, the partially-completed file will be kept for review. For cleanliness' sake, you can have these remnants deleted automatically.

Scratch File Location

AudialHub requires additional hard drive space for preparation work during some conversions, like CD burning, normalization, etc. If your main drive is very full, you may want to move this scratch area to an external disk.

Burning Preferences

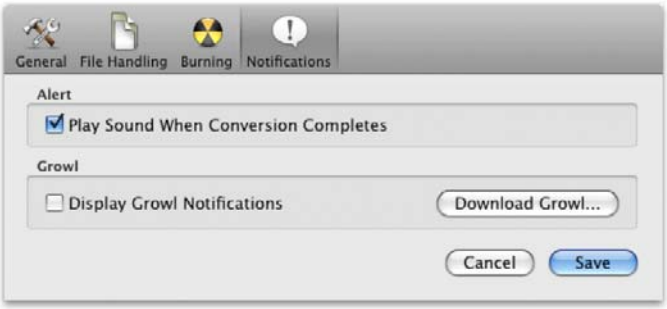
Default CD/DVD Burner

Mac OS X usually picks the internal optical drive as the default, regardless of its capabilities (or lack thereof). If you have multiple CD/DVD burners, this option will allow you to pick between them. If you add or remove drives on your computer, re-visit this setting to make sure it stays accurate.

Burn Speed

Some players (like old in-dash car CD players) have trouble reading some burnt CDs. Try burning at a slower speed if your player has trouble with burnt discs. Not all speeds listed here are available on all drives, so the closest speed supported by your drive will be used.

Notification Preferences



Alert Sound

When conversion completes, AudialHub will “ding”. If you are easily startled, or if you are a ninja on assignment, this alert can be turned off.

Growl Notifications

Growl is a third-party framework popular for providing quick, passive notifications. AudialHub can send “File Complete” and “Conversion Complete” Growl notifications through if Growl is available on your system.
http://growl.info

Chapter 7:
Tidbits

"I'm in pieces. Bits and pieces."

— Dave Clark Five, **Bits and Pieces**, Glad All Over, 1964

File statuses

There are five different status icons in AudialHub's file list:

Blue means ready to convert.

Orange (with wavy thing) means this file is starting conversion. (icon turns into an pie graph during conversion)

Green (with checkmark) means this file has been converted and is finished.

Red (with X) means this file's conversion failed, or the file has DRM. Check the Troubleshooting chapter for more info.

Blue (with question mark) means AudialHub doesn't fully recognize the file, and it may not convert.

CD Ripping

AudialHub is designed for regular file conversion, but can also work for ripping CDs, thanks to how Mac OS X's handles Audio discs. Just drag the ".aiff" files from the Audio CD and drop them into AudialHub like any other file.
If you have iTunes open, AudialHub will grab the tag information (artist/album, etc) that iTunes compiled, and will use that in the converted files.

Multiple Reconversions

If at all possible, go back to the highest quality, most original source you can get if you're converting to a different format. Making a lossy conversion of an already-lossy-converted file will cause further degradation. Just one reconversion isn't bad, but you want to avoid multiple iterations.
For the curious among you, here's a test demonstrating an MP3 file converted from an MP3 (converted from an MP3 converted from an MP3...) from a single iteration, all the way to 20. It sounds neat.
http://www.techspansion.com/audialhub/multiplerecompressions.mov

What AudialHub Isn't

Though AudialHub is totally awesome, it was all designed around the desire to do one thing:
AudialHub is designed to convert audio files from one format to another.
Some people may try shoehorning AudialHub into doing other tasks, but it won't do them very well...

For example:

AudialHub is not a legendary file tagger.
Sure, it has the ability to add the common set of tags to a converted file, or to pass that same set of tags from one format to another...but it's not meant for outright music collection organization. AudialHub will not modify the tags of existing files, nor would you want to reconvert a file through AudialHub just to change its tags. There are dedicated tagging programs that could do these jobs a lot better than a dedicated audio converter ever would.

AudialHub is not a CD duplicator.
Sure, you can rip a CD's contents to something like AIFF or WAV and then burn that result to another CD, but it won't be a precise copy. More like a glorified sequentially-ordered mixtape.

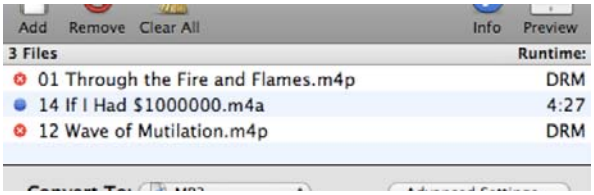
Chapter 8:
Troubleshooting

“We can work it out and get it straight, or say good night.”

— The Beatles, **We Can Work It Out**, We Can Work It Out / Day Tripper (single), 1965

There's a red "X" next to one of my files in the list! What do I do?!?

If you were running a conversion, **a Red X means the conversion failed** on that file. To see what happened, select the file, then click the Info button on the Toolbar. The Info panel will appear, explaining the error result. For more in-depth information (especially useful when posting on the Forum or e-mailing for help), click "Show Log" on the sheet that appears when conversion completes. Older Log files can be accessed from AudialHub's Help menu.



A conversion can fail for many reasons. There are hundreds of combinations of audio codecs (and settings), file formats, and conversion programs/devices, each potentially having their own quirks.
It's very possible you'll come across one or a series of "hell files" that are difficult to convert. AudialHub has a few tricks to try to get something useful out of a "hell file":

Multiple Decoders

There's more than one way to skin a cat. Some cat-skinners can do a better job that others, depending on the specific breed of cat. AudialHub offers **three different selectable Decoders** for bringing audio into the conversion engine: **QuickTime, ffmpeg, and VLC**. Each has its strengths and weaknesses and are chosen on a file-by-file basis depending on what AudialHub thinks would work best for the specific file.
Sometimes, a different decoder can be better than the default for a job.
Other times, a different decoder, although less ideal, may work where the default won't.

- **ffmpeg** is the go-to decoder for most file formats, like .mp3, wav, .aiff, and many others. It's also the most straightforward decoder.

- **QuickTime** is used for MPEG-4 .mp4/.m4a files, as well as regular .mov and others. If you have additional plugins like Perian (http://perian.org) installed, QuickTime is able to decode many more types of files.

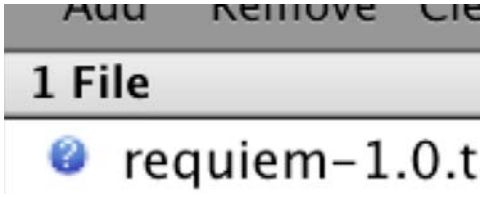
- **VLC** (http://videolan.org) is never automatically used, but can be very helpful for trouble files.

If you have trouble with a regular conversion, **try using the Decoder option on the Advanced panel** to force AudialHub to use one of these different paths.
If the three decoders can't make sense of a problem file, then check what the Log File shows in the way of errors. When conversion completes (or fails), click the "Show Log" button that appears on the sheet at the end of conversion. If you can't understand what's being shown in there, it could still be very useful to someone on the Forum in order to help figure out what's going on.

If you just added the file, a Red X means the file is protected by DRM, and cannot be converted. Check the DRM Appendix section for more information.

Alright, then what's this blue dot with the Question Mark?

That means there's **some important info (like the file's duration) that couldn't be figured out**. In fact, there's a good chance AudialHub won't even be able to convert the file...if it's even an audio/video file in the first place. We won't know for sure until we try, so it's still allowed to convert.



I'm on a slow computer. Can you magically make my conversions faster?

If you're on a slower (say, single processor PowerPC) Mac, something you can try is to **Hide the AudialHub window** during conversion, by using the Hide command. Mac OS X's progress bar is actually very taxing to draw. Hiding the window lets the System neglect drawing it, thus saving up some precious CPU cycles for something more important. It may not make a big difference, but everything helps. The AudialHub icon in the Dock will show the progress as it progresses too. Check its bar during a conversion.

Nothing's working. The thing isn't doing it, and it says it won't let me. Why?

Please don't give me high school IT department flashbacks.

No, seriously. I have a problem that I can't figure out by myself. Can someone help me?

Most likely. The first thing to do before you ask for help is to check the **Techspansion Support site**'s Frequently Asked Questions section, and then the **Techspansion Support Forums** for a similar problem. Most of the time, a few minutes of searching will save you from waiting many hours for a personal response.
Remember: Your "smart computer friends" aren't really geniuses – they just know how to Google everything very quickly.

If your problem isn't also someone else's problem, there are two ways to get help:
1: Techspansion Support Forum - http://www.techspansion.com/forum/
Here, you can post a new topic, asking your problem in the midst of thousands (well, probably fewer) of other users. If you're lucky, you could have your question answered rather quickly by a fellow user. Techspansion staffer(s) will come through from time to time and sweep through anything not answered.
Feel free to stick around and help other people with their problems if you know the answer. Pay it Forward. Traditionally, helpful users have been promoted to beta testers of new features and upcoming Techspansion products.
2: E-mail - techspansion@mac.com
If your problem can't be solved using the message board (or is a private matter), you can e-mail us at the address above. Please allow us 48 hours to get back to you. E-mail support is only available in English.

In either case above, please please please be descriptive when explaining your problem, including info like the version of AudialHub, and a log file from the problematic conversion, if applicable. You can prevent a few unnecessary back-and-forth rounds of correspondence by providing this information upfront!

Chapter 9:
Automation

“Bend me, shape me anyway you want me. You got the power to turn on the light.”

— The Outsiders, **Bend Me Shape Me**, The Outsiders In, 1967

What Is Automation?

Automation is the art of being lazy. In the age of computers, you may find yourself with a frequently-followed workflow leaving you to point and click like a monkey on the same stuff over and over again. Automating that workflow means the computer will do all that hard work for you, leaving your time freed up for other things, like RickRolling your friends. A little inspiration and elbow grease in the beginning can pay off in a big way.

What Can I Do With It?

Some possibilities:

1: Create tiny droplet applications that will convert files you drop onto it to a pre-determined format in a single step.
2: Watch a server for new files to automatically and immediately convert.
3: Run a separate program after a normal conversion completes and feed it the finished files
4: Create an Automator action to convert files from an Automator Workflow to your desired format.
5: Countless other things. Scripting is all about creativity and connections between a program and your unique workflow.

What You Need to Know

This isn't an instruction manual on AppleScript itself. You'll need to understand its basic concepts if you're looking to make your own scripts. Apple has a great list of resources here: http://www.apple.com/applescript/resources.html

Starting Your Script

Since AudialHub itself is an AppleScript application, it's not possible to have a standard AppleScript dictionary (ironic, isn't it?), so a little improvisation was in order. This chapter documents the special pseudo-dictionary created for AudialHub.

To load the AudialHub pseudo-dictionary, start your script with this "Magic Line":

```
tell application "AudialHub" to set AudialHub to load script (scripts path of main bundle & "/automation.scpt" as POSIX file)
```

This creates the special (and aptly-named) AudialHub variable that we will call AudialHub with.

Commands to AudialHub can now be made as follows:

```
tell AudialHub
    AddFiles(filelist)
    StartConversion()
    QuitApp()
end tell
```

The above command does this:

1: Starts AudialHub if it is not open.
2: Adds a pre-determined list of files to AudialHub's list.
3: Starts the conversion.
4: When the conversion is complete, AudialHub is told to quit.

This is one of the simplest scripts that goes through a full conversion. There are many other commands that can be used in many other ways.

Dictionary Commands and Syntax

CheckStatus() - Returns the percentage complete as decimals between 0 to 1, and then current status message in an AppleScript list.

Example result: {0.403704, "About 3 minutes remaining for the batch..."}

AddFiles(theFiles) - Adds files to AudialHub's File List. Accepts AppleScript lists only, as either a variable or by itself. AppleScript-style colon-paths preferred, POSIX paths also allowed.

Example commands:

```
AddFiles({"Macintosh HD:Users:scripter:Music:killerbeat.mp3", "Macintosh HD:Users:scripter:Music:hamsterdance.wav"})
AddFiles({"/Users/scripter/Movies/awesomemusicvideo.mpg"})
```

ClearAll() - Clears AudialHub's File List.

SetSaveLocation(saveas) - Sets the "Save To:" field in the Custom Workflows/Destinations section. AppleScript-style colon-paths preferred, POSIX paths also allowed. Setting the saveas argument to null clears the field entirely.

Example commands:

```
SetSaveLocation("Macintosh HD:Users:scripter:Music")
SetSaveLocation(null)
```

StartConversion() - Just like clicking the Start button. Your script will not continue until the conversion of all files has completed.

StartAssemblyLine() - Just like selecting "Start Assembly Line" from the Conversion menu. Your script will continue immediately after AudialHub starts the Assembly Line.

LoadSettings(thefile) - Loads an .ahub Settings file. Used to set any format options, settings, etc. AppleScript-style colon-paths preferred, POSIX paths also allowed.

Example command:

```
LoadSettings("Macintosh HD:Users:scripter:Desktop:mysettings.ahub")
```

QuitApp() - Just like Apple-Q, or File->Quit.

ForceQuit() - Bypasses AudialHub's warnings and kills the program (and its processes) dead.

SetWhenDone(theoption) - Sets a "When Done" post-action to do once conversion completes. For the built-in commands, this argument takes a number from 0-based list, matching the order of the When Done popup menu on AudialHub's Custom Workflows/Destinations section.

In order to run a separate script at the end of conversion, enter the path to the .scpt file as an argument instead.

Example commands:

```
SetWhenDone(3)
SetWhenDone("Macintosh HD:Users:scripter:Desktop:postaction.scpt")
```

TurnOnStitch(filename) - Enables Stitching the files in the list together. Set the filename argument to a name without a file extension. The extension will be added for you. The file will be written to the location in the "Save To" field.

Example command:

```
StitchWhenDone("stitchedname")
```

Common Workflow Examples

Things can get ridiculously powerful really quickly. Here are some relatively simple generic scripts to get you started.

Convert a Folder's Worth of WAV Files

This script gets a list of .wav files from the Desktop of the user "scripter", and converts them using the settings saved in an .ahub settings file, then quits AudialHub.

```
tell application "AudialHub" to set AudialHub to load script (scripts path of main bundle & "/automation.scpt" as POSIX file)
tell application "Finder" to set everywav to (every file of desktop whose name extension is "wav")
tell AudialHub
	AddFiles(everywav)
	LoadSettings("Macintosh HD:Users:scripter:Desktop:mysettings.ahub")
	StartConversion()
	QuitApp()
end tell
```

Create a Hot Folder

This uses AppleScript's Folder Action capability to watch a folder, and execute the script whenever a file is added. The StartAssemblyLine Command is used because the Folder Action may trigger again in the middle of an earlier run. Output files are placed into the ~/Desktop folder when done.

```
on adding folder items to this_folder after receiving these_items
	tell application "AudialHub" to set AudialHub to load script (scripts path of main bundle &
		"/automation.scpt" as POSIX file)

	tell AudialHub
		AddFiles(these_items)
		-- The following line figures out the current user's Desktop folder path in order to not feed
			the Hot Folder with an endless loop of converted files.
		set thedesktop to (do shell script "cd ~/Desktop ; /bin/pwd")
		SetSaveLocation(thedesktop)
		StartAssemblyLine()
	end tell
end adding folder items to
```

AudialHub Automation in a Bash Script

Using bearded-guru-level incantations, it's possible to even control AudialHub with a shell script. Keep in mind the console user needs to be logged in via the GUI (though not necessarily in the foreground) for this to work.

This script finds a file via "mdfind", and passes that as a bash variable to a specially-crafted osascript command.

```
filetoconvert=`mdfind thisoldfile.m4a | head -1`

osascript -e 'tell application "AudialHub" to set AudialHub to load script (scripts path of main
bundle & "/automation.scpt" as POSIX file)' -e 'tell AudialHub' -e "AddFiles({\"$filetocon-
vert\"})" -e 'LoadSettings("Macintosh HD:Users:scripter:Desktop:mysettings.ahub")' -e 'SetSaveLo-
cation("Macintosh HD:Users:scripter:Music")' -e 'StartConversion()' -e 'QuitApp()' -e 'end tell'
```

“When Done” Postactions

AudialHub can run a script when a batch conversion completes. This postaction script needs to be constructed in a special way to receive the file information that AudialHub will give it.

Your script must have a `runscript` function that takes two variables — `originalfiles` and `convertedfiles`. These two variables contain AppleScript lists of the original pre-conversion files, and the end-result converted files.

Below is an example script that will delete the original files after a conversion. **This can be dangerous to do unless you’re absolutely confident in your workflow.**

```
on runscript(originalfiles, convertedfiles)
	repeat with thisfile in convertedfiles
		do shell script "/bin/rm " & quoted form of POSIX path of thisfile
	end repeat
end runscript
```

Discussions and More

Discuss, collaborate, show off and complain on AudialHub’s Automation Forum:
http://www.isquint.org/cgi-bin/ikonboard.cgi?act=SF;f=19

Chapter 15:
Appendix

“I still have a great deal more to tell you.”

— the pillows, **Advice**, Happy Bivouac, 1999

(vermiform appendix)

(marinate, then cook at 350 degrees for at least 10 minutes)

Appendix A:
Cheat Codes

“Up Up, Down Down, Left Right Left Right, B, A, Start. Just because we use cheats doesn't mean we're not smart.”

— The Moldy Peaches, **Anyone Else But You**, The Moldy Peaches (album), 2001

What in the world is a “cheat code”? How do I rescue the princess?

A “cheat code” in this sense is a very advanced setting for people who want to go above and beyond the GUI. A cheat code could also be a way to use AudialHub in strange, horrible ways.

Many Cheat Codes are selectable from the Advanced panel. Cheat codes should go in the Extra _____ Flags section of the Advanced panel, depending on the listing here.

Explanation	String
Extra FFmpeg Flags	
Encode only a very specific duration (in seconds):	-t *n*
Start encoding *n* seconds into the file:	-ss *n*
Mid-batch settings change:	Did you know you can change settings during a batch encode? The next file in line will use the new settings. You really shouldn’t do this, but if you like living dangerously...
Konami Code:	↑↑↓↓←→←→ⒷⒶ
Extra LAME Flags	
Best possible quality	--vbr-new --alt-preset insane
Variable Bitrate (VBR)	--vbr-new -V *n* (where *n* is 0 - 9, lower is better quality)
Joint Stereo	-m j
Extra oggenc Flags	
True Variable Bitrate (VBR)	-q *n* (where *n* is -1 - 10, higher is better quality)

Add your own

Have any Cheat Codes or recipes of your own? Submit them to the AudialHub Forum! http://www.techspansion.com/audialhub/forums/

Appendix B:
Supported Codecs/Formats

"*To-may-toe, To-mah-toe. Po-tay-toe, Po-tah-toe. Let's call the whole thing off!*"

— George & Ira Gershwin, performed by Fred Astaire and Ginger Rogers
Let's Call the Whole Thing Off, Shall We Dance (film), 1937

The Lists

What follows are charts of known-working audio codecs and container formats for **import** into AudialHub. Supported **output** formats are the formats available in the “Convert To:” popup menu.. “Partial” means not all files in that format/container are supported - it’s hit or miss depending on container/codec-specific information. AudialHub cannot convert protected files, as found on the iTunes Store or Windows-based audio/video stores.

This is in no way an exhaustive list!

Files with other extensions may contain familiar data and convert without issue. Trying “mystery” formats couldn’t hurt.

Container Formats
MP3: .mp3
MPEG-4: .m4a .mp4 .m4v (**unprotected**)
Windows Media: .wma .asf .wmv (**unprotected**)
3GPP: .3gp .amr
Ogg Media Container: .ogg .ogm (partial)
AIFF: .aif .aiff
WAV: .wav
FLAC: .flac
MIDI: .mid .midi
APE: .ape
QuickTime: .mov
AVI: .avi
MPEG: .mpg .mpeg .m1v .m2v .vob .ts .m2t .mp2
DV: .dv
Flash: .flv .swf
Matroska: .mkv (partial)
Legacy RealMedia: .rm (partial)
CoreAudio: .caf

Audio Codecs
All QuickTime Codecs
MP3
AAC
WAV
AIFF
PCM (many styles)
MIDI
AC3
MP2
Ogg Vorbis
WMA (non-specialized, unencrypted)
ATRAC3
Apple Lossless
FLAC
Monkey’s Audio (ape)
Legacy RealAudio
AMR (Narrowband)
Nellymoser
Shorten
Many other specialized codecs

Appendix C:
Digital Rights Management (DRM)

“I went down to the sacred store where I'd heard the music years before, but the man there said the music wouldn't play.”

— Don McLean, **American Pie**, American Pie (album), 1971

What's Digital Rights Management? It sounds like I don't care.

Digital Rights Management (or DRM) is a term (some say a euphemism) for copy protection added by the content creator/distributor.
Its intention is to prevent commercial and casual piracy of songs, movies, etc. by making it hard (or impossible) for other people or other devices to play the file, or to convert the file to a different format.

That's fine. I won't be sharing my stuff. So what?

The problem comes when you want to, say, play a purchased iTunes song on an Xbox 360, PS3, PSP, Zune, cell phone, or any other kind of non-Apple digital music player. The same protection that prevents you from giving the file away prevents you from converting it to another, uncontrolled format (which **wouldn't** be able to stop you from giving it away).

So, what stuff uses this "DRM" thing?

Some uses and users of DRM
Apple: Uses DRM (FairPlay encryption) on iTunes Store purchases to prevent playback of **.m4p** and some **.m4v** files on more than 5 authorized computers or on non-Apple devices.
Microsoft: Uses DRM on Zune Marketplace to prevent playback of their protected **.wma** tracks on multiple computers or on non-Zune devices. Also offers subscription service with expire-able files.
Real: Uses DRM on Rhapsody to prevent playback of their protected **.rax** tracks on a non-subscriber computer. Offers subscription service with expire-able files.
Napster: Uses DRM (PlaysForSure) to prevent playback of their protected **.wma** tracks on more than 3 authorized computers. Also offers subscription service with expire-able files.
Audible: Uses DRM to prevent playback of their protected **.aa** tracks on more than 3 authorized computers.
DVD: Protected DVDs use DRM (CSS encryption) to prevent easy ripping or copying of **.vob** content.

Alright, so how do I get around it?

Most formats are able to have their copy protection circumvented, though that is way beyond the scope of this Users Guide — not to mention beyond the scope of lawful behavior, as circumventing copy protection schemes is technically illegal in the United States (Google "DMCA"), even for personal use...so we won't be getting into that here.

Well, why bring it up?

It's important for anyone converting audio or video files to know what can and can't be done.
AudialHub is able to recognize and reject protected iTunes, Audible, and Rhapsody files right away, but is unable to detect protected WMA files before trying to convert them.
Files recognized as having DRM will show "DRM" in the Runtime column of the file list, as well as a Red X to prevent a conversion attempt that would only fail anyway.

Appendix D:

Credits and Other Info

Credits

FFmpeg
Copyright (c) 2000-2008 Fabrice Bellard, et al.
http://ffmpeg.org
Specific source changes and license info can be found in the application bundle.

FAAC, FAAD
©2004 AudioCoding - http://www.audiocoding.com

libogg, oggenc
© 1994-2008 Xiph.org - http://xiph.org

liba52
http://liba52.sourceforge.net

FLAC
http://flac.sourceforge.net

LAME
http://www.mp3dev.org

libdca
http://developers.videolan.org

tagreader, tagwriter
TagLib - http://developer.kde.org/~wheeler/taglib.html

normalize
©1999-2005 Chris Vaill
http://normalize.nongnu.org

mov123
©2003-2004 Logitech

afconvert
©2007 Apple, Inc.
http://developer.apple.com/tools/download

qt_export
@2003-2004 David Van Brink
http://www.omino.com/~poly/software/qt_tools/

AtomicParsley
http://atomicparsley.sf.net

Sources available at http://techspansion.com/sources/

License Information

Installing and using the software indicates your agreement to the terms of this license. If you do not agree to the terms of this license you must uninstall and delete the software from your computer.

All rights and privileges are reserved except as explicitly defined in this document.

AudialHub's license allows household use. Any computers within or controlled by the members of a standard household are allowed to share the same license. A user may install the software and license on their home and personal work computer. Your uncle Phil from Oregon is not in the same household as you. The cute girl in Accounting's computer is not your work computer. She wouldn't go out with you anyway.

Commercial use of single license on multiple computers is prohibited without a separate commercial license. Discounted 5-Pack and 10-Pack licenses are available at the standard Techspansion store, and can be mixed and matched for custom quantities.

You may not share your Registration Code with persons outside your immediate family or household.
You may not redistribute the AudialHub software.
You may not alter or reverse engineer the AudialHub software.

Warranty
This program is provided as-is, and without warranty. Limited technical support is provided through e-mail and support forums. No software program will be perfect until robots start writing them. No promises are made that AudialHub is error-free, or can convert every file. Techspansion LLC and its members will not be liable for damages or losses, tangible or intangible, arising out of use of this software.

Copyright
AudialHub application code, icon, Users Guide, and other related material ©2006-2008 Techspansion LLC. All other programs, icons, and technologies are trademarks/copyrights of their respective companies.

AudialHub icon created by Nelson Darkwah Oppong.
http://buschfeuer.com