

## **Cakewalk DirectShow Audio Configuration**

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## General DirectShow Audio Configuration

### Options-Audio

The **Options-Audio** command opens the DirectShow Audio dialog box. Choose the General tab to control the following options:

#### Playback Timing Master and Record Timing Master

These two options determine which sound cards should control timing for the song, if you're using multiple wave drivers for playback or recording. Note that if you've got two wave drivers, but all audio tracks are playing on only one wave driver, then that driver will be the timing master no matter what you choose.

Every sound card's clock crystal is slightly different, which causes minor differences in the actual playback rate on each card. These differences may lead to slight synchronization problems if you use one card for recording and a different one for playback. Multiple wave drivers on the same card will not have sync problems.

#### Number of Aux Busses

This determines how many auxiliary mixes can be created. These are useful mainly for effects sends or for other purposes. Specify only the number of aux buses you intend to use.

#### Audio Driver Bit Depth

Determines the number of bits per sample used for communicating with the audio hardware for playback or recording. Your audio hardware must be capable of supporting the setting you supply here. In most cases, even if your hardware is "advertised" as being 18 or 20 bit, you will want to set this value to 24 for optimum performance.

#### Mono

This option forces monaural recording and playback. It is required for full-duplex recording on the Roland RAP-10.

#### Default Settings for New Projects

- The Sampling Rate drop-down list allows you to specify the audio sampling rate for a new .WRK file. Once any audio has been added to a .WRK file — either by recording audio or by using **Insert-Wave File** — you can't change the sampling rate for that .WRK file. Therefore, you should choose the sampling rate immediately after choosing **File-New** to start a new song.  
  
You can choose one of five sampling rates: 11025 Hz, 22050 Hz, 44100 Hz, 48000 Hz, and 96000 Hz. The default used by Cakewalk is 44100 Hz, the same rate as audio CDs. However, you may choose a lower rate if your PC is slow or has a slow hard disk.  
  
**Note:** For most sound cards, all digital audio in the same song must be at the same sampling rate. Some dedicated audio systems let you mix different sampling rates in the same song; Cakewalk only lets you do this if the audio system supports it. This feature is meant primarily for sound cards that use different Windows drivers for input and output; Cakewalk treats such cards as two different programs.
- The File Bit Depth field allows you to choose the number of bits per sample Cakewalk uses to store recorded (or imported) audio data to disk. The choices are 16 (the default value) or 24. The file bit depth does not have to be the same as the audio driver bit depth if your sound card can function in this way.

#### Mixing Latency

- The Buffers in Playback Queue field allows you to choose the number of buffers Cakewalk fills with audio data before starting playback. The default setting of 4 works well for most sound cards. A lower number produces lower mixing latency, but with greater risk of audio problems.
- The Latency Slider enables you to set mixing latency manually, overriding the value set by the Wave Device Profiler. To use values under 100 msec., make sure WavePipe Acceleration is enabled in the Advanced tab of the DirectShow Audio dialog box. Lower numbers increase the risk of audio problems.

#### MIDI Volume Mapping

- Linear Scale is the mapping used in Cakewalk version 6 (and earlier).
- Quadratic Taper provides a finer control of volumes at lower settings, analogous to what you might experience with a hardware console.

## **MIDI Pan Mapping**

This controls how the pan controls function.

- Balance Control works by attenuating the right channel for pans to the left, and vice-versa. This is simple, sensible and controllable, and is how previous versions of Cakewalk always dealt with pan.
- Constant Power pan alleviates a drawback of balance-control pan, by maintaining constant perceived volume at all pan settings.

## **Wave Profiler**

Wave Profiler attempts to detect the make and model of your sound card, which determine the card's DMA (Direct Memory Access) settings. Once Wave Profiler identifies the card, it displays the results and asks whether you want to use the default settings for that card or to override them:

If Wave Profiler has identified your card correctly, you may accept the default settings. Otherwise, Wave Profiler will run a series of tests to attempt to determine the correct DMA settings. Usually this process is successful; however, if it is not, you will need to enter the correct settings in the Device Profiles tab of the DirectShow Audio dialog box.

To determine the correct settings, consult your sound card documentation. Our web site, at [www.cakewalk.com](http://www.cakewalk.com), contains the latest DMA settings for commonly used sound cards.

The Wave Profiler utility runs automatically the first time you run Cakewalk. You need not run it again unless you install a new sound card or an updated driver for your current sound card.

Wave Profiler will not analyze the card at the 48 kHz sampling rate. It assumes that 48 kHz settings are the same as 44 kHz settings. If your sound card doesn't sync to 48kHz, you may need to enter the settings manually.

## **Dropouts and other Audio Problems**



## Drivers Page -- DirectShow Audio Configuration

### *Options-Audio*

The ***Options-Audio*** command opens the DirectShow Audio dialog box. Choose the Drivers tab to display a list of available drivers and selectively enable them:

#### **Input Drivers**

These control recording.

#### **Output Drivers**

These control playback.

## Advanced DirectShow Audio Configuration

### Options-Audio

The **Options-Audio** command opens the DirectShow Audio dialog box. Choose the Advanced tab to control the following options:

#### File System

- **Data Directory**—This item specifies the directory in which Cakewalk stores audio data files. You may want to keep your audio files in a separate data directory or on a different drive; just be sure to enter that data directory's path here.  
**Note:** Do not casually change the data directory! Any .WRK files that contain digital audio will be unable to locate their audio files if you enter the wrong directory.
- **Picture Directory**—This item specifies the directory in which Cakewalk stores waveform picture files. You may want to keep your picture files in a separate data directory or on a different drive; just be sure to enter that data directory's path here.
- **Enable Read Caching and Enable Write Caching**—Choosing either of these options lets Cakewalk bypass the Windows 95 disk cache while reading or writing audio data. Cakewalk will usually perform best with all caching disabled. If your computer has an older IDE disk controller, or a disk controller that does not use DMA transfers, enabling caching may improve Cakewalk's audio performance. **Note:** Changes to these settings only take effect when you restart Cakewalk.
- **Copy and Manage Imported Files**—By default, Cakewalk will make a new copy of any audio data imported via the **Insert-Wave File** command. If you don't choose this option, Cakewalk will attempt to "share" the original file, thereby saving disk space.  
If you accidentally delete the original audio file, it's gone forever!
- **I/O Buffer Size**—The number in this field sets the size in kilobytes of a buffer of audio data. The default setting is 64. If you have audio problems, try 32 and then 16. If audio problems persist, try 128, 256, 512, or reset to 64 and try a different remedy.

#### Playback and Recording

- **Simultaneous Record/Playback**—Check this option if your audio hardware is supposed to support simultaneous record and playback, but for some reason is unable to do so.
- **Stop On Driver Underrun**—A driver underrun results when your computer cannot fill the audio buffers in the amount of time allotted. You can choose whether Cakewalk stops playback or keeps playing when this occurs.
- **WavePipe™ Acceleration**—Enable this option if you use a mixing latency setting under 100 msec.
- **Clip Audio Mix Upon Overflow**—when this option is enabled, Cakewalk will "clip" every mixed output sample instead of letting it "wrap," or overflow. This often reduces the audible results of mixing too hot, and creates a warmer, more pleasing type of distortion when you overdrive tracks. You may find it especially useful on guitar-heavy mixes.  
Enabling this option adds more overhead to the mix engine, so you may notice a reduction in the maximum number of playable tracks.
- **Apply Dither**—You can use this option when you import 24 bit audio into a 16 bit project. The dither signal is added to the 16 bit signal to approximate what the 24 bit signal would sound like. This effect is not usually heard by most people, and it adds processing time. You can disable it during mixing and enable it during mastering.
- **Unpack >16 bit audio**—Checking this option can improve performance on specific 24-bit audio hardware systems (for example, the Sonorus STUDI/O card). By choosing this option, you are instructing Cakewalk to skip its expensive 24-bit data packing operation, and allowing the audio hardware to do this work instead. Please contact your hardware manufacturer to determine if their drives support this "24-bit unpacked" data format.
- **Left-justify unpacked data**—When the Unpack > 16 bit audio option is enabled, you may select whether you want this data aligned to the least significant bit ("right justified") or to the most significant bit ("left justified"). Many sound cards, including the Yamaha DSP Factory, expect their data to be left justified. Enabling this option ensures that 16 bit audio will work properly on these sound cards.

#### Synchronization

Cakewalk gives you two choices for synchronizing your audio tracks to SMPTE or MIDI Time Code:

- Trigger and Freewheel—With this option audio playback starts (or triggers) at the exact timecode, but then the audio plays at its own internal rate. The audio can gradually drift away from SMPTE time due to variations in the timecode signal.
- Full Chase Lock—With this option the speed of audio playback is continuously adjusted to stay with the timecode.

## Device Profiles

### ***Options-Audio***

The ***Options-Audio*** command opens the DirectShow Audio dialog box. Choose the Device Profiles tab to view the sound card buffer settings that the Wave Profiler has come up with. The various fields show the following data:

**Show Profile for**—This field shows the name of the sound card driver that the displayed settings are for.

**Use Wave Out Position for Timing**— Select this option if you have sync problems between MIDI and audio tracks. (In earlier Cakewalk versions, this option was available as the AltTiming=1 variable in AUDMM.INI.)

**Buffer Characteristics**—These fields list the buffer characteristics for each sound card that the Wave Device profiler has come up with. In general, it is better not to change these settings without consulting Cakewalk technical support.



