

Mixxx Digital DJ

Version 1.8.0 User Manual

DRAFT

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Introduction

Mixxx is software designed for DJs that allows you to mix songs live. Mixxx supports MP3, OGG, FLAC, and WAVE playback, and can be controlled by numerous DJ MIDI controllers. Turntables with timecoded vinyl can also be used to control Mixxx through the *vinyl control* feature.

Installation

Windows

Windows users can install Mixxx by double-clicking on the Mixxx installer executable. Mixxx is supported on Windows XP, Vista and Windows 7, 32 and 64 bit. (It may also run on Windows 2000.)

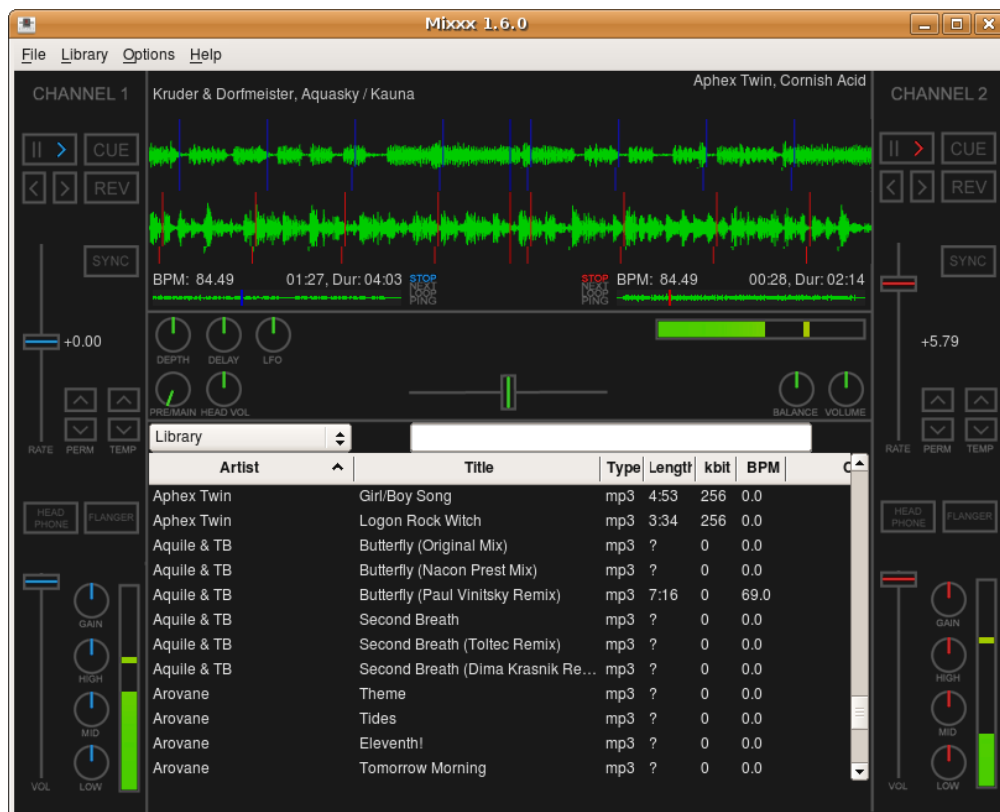
Linux

Linux users can often find Mixxx included with their favourite distribution. For example, **Ubuntu** users can install Mixxx through the *Applications→Add/Remove...* menu item. If Mixxx is not packaged for your distribution, you can compile Mixxx from scratch. For details on compiling Mixxx, see: [Compiling on Linux](#)

OS X


OS X (Intel) users can install Mixxx by double-clicking the Mixxx zip archive, and then dragging-and-dropping the Mixxx bundle into their *Applications* folder. Mixxx requires an Intel Mac running OS 10.4+.

User Interface Overview

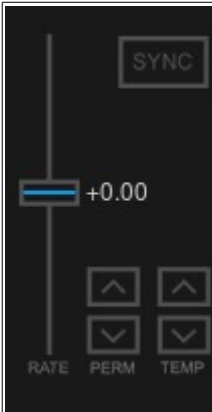


Mixxx's user interface is designed to be simple and easy to use when DJing live. This section outlines the main features of Mixxx's interface.

Playback Controls

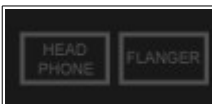
	<p>The playback controls allow you to pause, play, and otherwise manipulate the playback of a song. The REV button toggles reverse playback when pressed during regular playback. When playback is stopped, pressing the CUE button places a cue-point at the current position on the waveform. A cue-point is marked by a white vertical line in the waveform view. If the CUE button is pressed during playback, the song will seek to the cue-point and stop. Holding down the CUE button while the song is positioned on the cue-point will result in the song temporarily playing back, and seeking back to the cue-point upon release of the CUE button. This describes the “CDJ Mode” cue behaviour, which is modifiable in the preferences under <i>Interface→Default cue behaviour</i>.</p>
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Tempo Controls



The tempo controls allow you to slow down and speed up a song. This is frequently useful for [beatmatching](#) songs when mixing. The RATE slider changes the tempo of a song when it is moved. The PERM buttons apply fine adjustment to the RATE slider, and the TEMP buttons apply a temporary pitch-bend when depressed. The amount by which the PERM and TEMP buttons alter the pitch of the track can be changed in the *Options→Preferences→Interface* menu. The SYNC button attempts to automatically match the tempo of the song in the corresponding channel with tempo of the song in the other channel, based on the calculated BPM.

Headphone and Flanger



When toggled, the HEADPHONE button sends the selected channel's audio to the *Headphones* output audio device selected in the preferences under *Sound Hardware*. This feature is commonly used when [headphone cueing](#) and [beatmatching](#). The FLANGER button enables a built-in flanger effect on the selected channel. A flanger effect applies a “sweeping” sound to the channel and can add extra depth to a mix when used tactfully.

Volume and EQ



The VOL slider controls the volume of the selected channel. The GAIN knob can be used to apply extra amplification to a quiet song, which can be used to match its volume with the song in the other channel. The HIGH, MID, and LOW knobs perform equalization on the channel, reducing or increasing high, mid and low frequencies accordingly.

Waveform

	<p>The waveform display shows the loaded tracks' waveforms near the playback position. On songs with certain dynamics, the waveform displays will visibly show the beats in the song. When a cue mark is placed, it is drawn on the waveform as a vertical white line. Clicking and dragging on a waveform allows you to seek through a song.</p>
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Waveform Overview

	<p>The waveform overview provides some important information about the song currently loaded in the corresponding channel. From left to right, these are: Track tempo in BPM, current playback position, and track duration. The more interesting part however, is the waveform visualisation of the song, which is useful for seeing breaks or other important changes in the track so that you don't get surprised when they occur while DJing. It also allows you to jump to an arbitrary position in the track by clicking somewhere on the waveform.</p>
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End of Track Mode

	<p>The end of track mode determines the Mixxx's behaviour when it reaches the end of a track. The end of track mode is changed by clicking the block to toggle between the three available options; each channel has it's own end of track mode setting that can be changed independently. Stop mode will do nothing further once the end of the track is reached until you load a new track into the channel or seek backwards through the current track. Loop will return to the beginning of the finished track and play it again from the start. Next will automatically load and play the next song in the 'play queue'.</p>
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Master and Crossfader Controls



The crossfader (in the center of the picture) enables you to smoothly fade between the two channels and defines what you hear through the master output. When set all the way to the left, only channel 1 is heard, and set to the right, only channel 2 will be heard. Every position in between gives you the mixed output of both channels. (Note: The actual volume of each channel depends on the crossfader curve, defined in the *Crossfader* preferences pane.) The Volume and Balance knobs control the volume and the balance (stereo distribution) of the master output. The Pre/Main knob controls what you hear on the headphone output. It works like the crossfader but instead of crossfading between channel 1 and 2, it crossfades between the Master and Cueing signal. If the Pre/Main knob is set to the left, one only hears the cueing signal, which can be useful for prelistening tracks. The HeadVol knob controls the volume of the headphone output. The Depth, Delay and LFO knobs control the flanger. A flanger is an effect that mixes the input signal with a delayed copy of itself which leads to interferences in the signal and creates a comb-filter like effect. By routing the output of the effect back into the input (feedback), this effect can be enhanced. In Mixxx, the volume of the output signal that is routed back into the input can be controlled with the depth knob, which controls the intensity of the effect. The delay knob sets the initial value for the delay length. Inside the effect however, this value is not constant but modulated by an LFO (low frequency oscillator), controllable with the corresponding knob. If this is too technically for you just play around with it and see how the different parameters affect the sound. :)

Library

Library		<p>The library manages all your music files. This is where you can find the tracks you want to play and load them into a channel. Alternatively, you can also use your external filemanager and drop files onto the waveform display. The Library offers different viewing modes that can be switched with the combobox in the upper left corner. The second available viewing mode is the Play Queue which is like a playlist for the tracks you plan to play next. The Browse mode basically works like a usual file-manager and should be self explaining. In the Playlist mode, you can view and load playlists you've created. There is also a search function that filters the current view in realtime. The main viewing mode is the library view, which shows all files in your library. One must first create a library to use this view, but this will be done automatically during the first time Mixxx is run. If you want to rebuild your library (for example because you added or moved files) you can do this with \\Library→Rescan Library in the menu. To load a track into a player, you can either simply drag it to the waveform display or use the context menu (right-click on a track). The context menu also allows you to add a track to the play queue or a playlist (the playlist must be created first). Lastly, the context menu allows one to access a song's properties to check ID3 tags or set the BPM of the track manually.</p>
Artist	Title	
Aphex Twin	Girl/Boy Song	
Aphex Twin	Logon Rock Witch	
Aquile & TB	Butterfly (Original Mix)	
Aquile & TB	Butterfly (Nacon Prest Mix)	
Aquile & TB	Butterfly (Paul Vinitsky Rem	
Aquile & TB	Second Breath	
Aquile & TB	Second Breath (Toltec Rem	
Aquile & TB	Second Breath (Dima Krasn	
Arovane	Theme	
Arovane	Tides	
Arovane	Eleventh!	
Arovane	Tomorrow Morning	

Configuration

The first time Mixxx is started, you are asked to select a directory containing your music library. This directory will be scanned and any music found will be indexed in Mixxx's internal library. The music library path can be changed at any time in the preferences, via the *Library and Playlists* pane.

Mixxx's preferences can be accessed by selecting *Options→Preferences*.

When Mixxx is launched, it tries to select a reasonable sound device for output. You can check which device Mixxx has selected in the *Sound Hardware* pane in the preferences.

Master and Headphone Outputs

Mixxx has two audio paths: The **Master** output and the **Headphones** output. The Master output is what a DJ should have connected to their main speakers, while the Headphones output should be connected to their personal headphones. The headphone output is optional, and can be used for Headphone Cueing.

To configure the Master and Headphones outputs, enter Mixxx's preferences and select the *Sound Hardware* pane. In order to select a headphone device, either a soundcard with at least 4 channels of output (two stereo outputs, as featured on 5.1 soundcards) or two separate stereo soundcards is required. The output channel mapping, which determines the physical jack on the soundcard that the audio comes out of, can be selected under "Channel".

Example Soundcard Configurations

Single audio device (4 Channel Soundcard)

Master device: Echo Digital AudioFire4 Channels: 1/2
Headphone device: Echo Digital AudioFire4 Channels: 3/4

Dual audio devices (Two Stereo Soundcards)

Master device: ElCheapo USB Audio Channels: 1/2
Headphone device: SoundBlaster Live! Channels: 1/2

Using External Mixers

Currently, Mixxx has no special mode for routing the output of a single deck to a separate output, which is what you need when using an external mixer. However, this behaviour can be achieved with a simple trick. Move the crossfader all the way to the left and turn the "Pre/Main" knob all the way left as well. This will give you only the pre-listen signal on the headphone output. Now, enable Cueing for the second channel by toggling channel 2's HEADPHONE button. With this setup, channel 1 will be playing on the master output and channel 2 will be playing on the headphone output. The master and headphone outputs of your soundcard should then be plugged into channel 1 and channel 2 of your external mixer.

Latency

The latency in Mixxx indicates the amount of time it will take for the audio to

respond to any change in a control. For example, a latency of 36 ms indicates that it will take approximately 36 ms for Mixxx to stop the audio after you toggle the play button. Generally speaking, the lower the latency, the more responsive Mixxx will be. A latency between 36-64 ms is acceptable if you are using Mixxx with a keyboard/mouse or a MIDI controller. A latency below 16 ms is recommended when vinyl control is used because Mixxx will feel unresponsive otherwise.

In order to tweak your latency, reduce the latency slider in the *Sound Hardware* preferences pane and experiment until you can reliably run Mixxx **without hearing any crackles, pops, or dropouts in the audio**. Changing your Sound API to ASIO on Windows or JACK on Linux may allow you to reduce your latency setting, but this depends on your hardware configuration.

Keep in mind that **lower latencies require better soundcards and faster CPUs** and that **zero latency DJ software is a myth** (although Mixxx is capable of < 10 ms operation).

Some tips for reducing latency on linux

For detailed information on latency in Linux, you should consult the Web, as it's quite a complex topic. The [Jack FAQ](#) is recommended reading, especially the section on "How should I configure my Linux 2.6 Operating System?". Other useful resources are the Linux Realtime guide and [Gentoo's documentation on the subject](#).

The first thing to try if using ALSA is to set your Master output hardware to just "default" instead of specific hardware. (This made a huge difference on a test system with integrated Intel soundcard.) The drawback to this is that system sounds (KDE beeps and such) will now be mixed in and will come out the main output.

The second thing one can try to reduce system latency is getting a realtime kernel. If you're using a binary kernel, this might be as simple as installing a realtime enabled kernel with your package manager (if your package system offers one of course). Otherwise download kernel sources and the realtime patch for your kernel version. The patch can be found [here](#). Untar the patch to your kernel source directory, apply it and configure/install the kernel as usual.

There are basically two options for configuring the use of realtime-capabilities. The first and simplest one is to use the realtime-lsm modul. This only requires to install the kernel-modul with your package manager. After that you can load it and grant realtime privileges to particular users/groups by setting uid/gid as module options (for example: "modprobe realtime gid=18" gives realtime permissions to the audio group on my system). Unfortunately, this method is deprecated and doesn't work any longer since Linux kernel version 2.6.24). In current kernels you have to use rlimits with PAM to enable realtime priority support. (Note: This is also the preferred method for older 2.6 kernels that might still work with the realtime-lsm modul). To use this method, edit /etc/security/limits.conf :

Example: /etc/security/limits.conf

```
*                hard    rtprio 0
* soft          rtprio    0
@audio          -  rtprio    99
```

```
@audio - memlock unlimited
@audio - nice -19
```

The lines starting with * define default values. The "@" in @audio tells PAM that audio is a group. One can also set permissions per user by writing it without the "@".

Samplerates

The soundcard samplerate describes the temporal resolution of its audio. Because most audio tracks are encoded at a samplerate of 44100 Hz, increasing the samplerate inside Mixxx beyond this may not lead to increased audio quality. However, users that still prefer upsampled audio can select a higher sampling rate in the *Sound Hardware* preferences pane. Keep in mind that increasing the samplerate will increase CPU usage and likely raise the minimum latency you can achieve.

Sound APIs

Mixxx supports several different Sound APIs across Windows, OS X, and Linux. A Sound API is a tool Mixxx uses to interact with soundcards. Some soundcards come with drivers that provide lower latency with certain Sound APIs, so different APIs can be selected from *Sound Hardware* preferences pane.

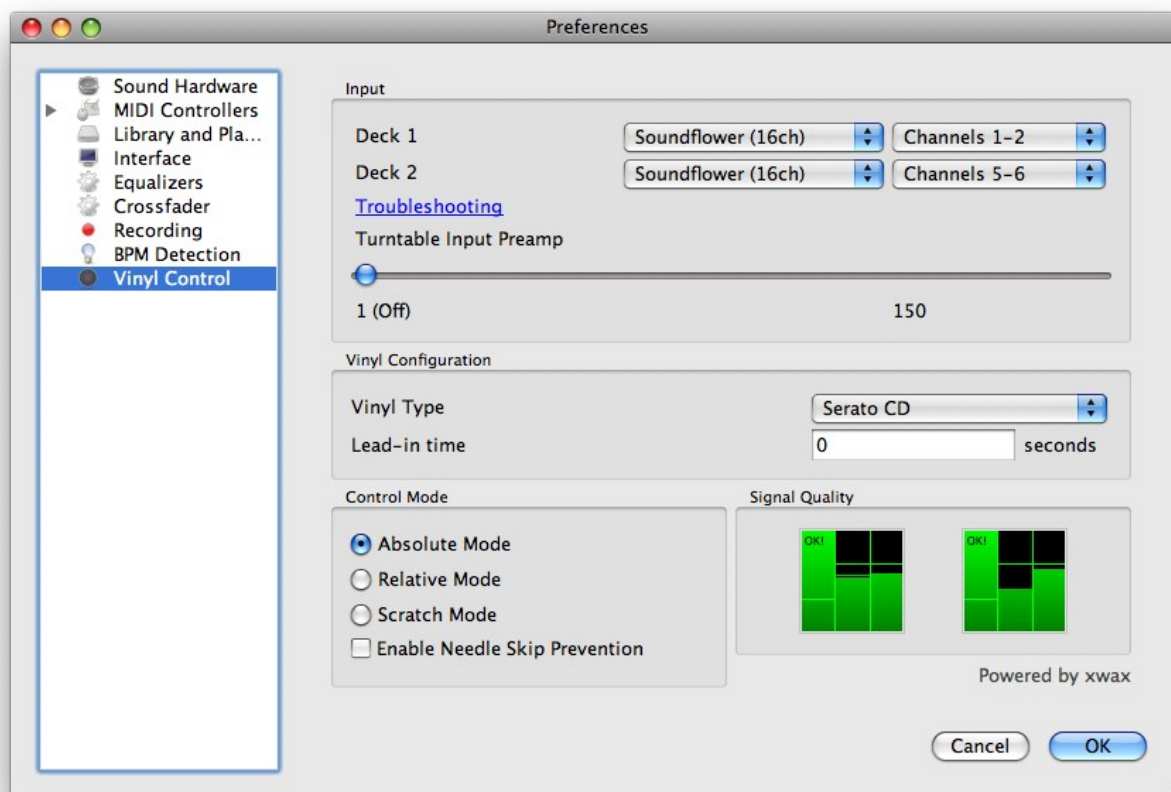
On Windows, **ASIO** is generally the lowest latency API. On OS X, **CoreAudio** is the best choice, and on Linux, **JACK** or **ALSA** provide the best compatibility and performance. Linux users wishing to use JACK should **ensure they run the jackd daemon before launching Mixxx**, otherwise JACK will not appear as a Sound API in the preferences.

Vinyl Control

Vinyl control allows a user to manipulate the playback of a song in Mixxx using a real turntable as a controller. In effect, it simulates the sound and feel of having your digital music collection on vinyl. Many DJs prefer the tactile feel of vinyl, and vinyl control allows that feel to be preserved while retaining the benefits of using digital audio.

You can configure vinyl control through the *Vinyl Control* pane in the preferences.

More information about Mixxx's vinyl control and supported hardware configurations is available on the [vinyl control wiki page](#).



Input Device Selection

Mixxx can be controlled by up to 2 decks with either timecoded vinyl or timecoded CDs. In the “Deck 1” and “Deck 2” drop-down boxes, select the soundcard(s) which your decks are plugged into. In the channel selection drop-down menu, select the channel pairs corresponding to the plug on your soundcard that your deck(s) are plugged into.

Mixxx supports vinyl control input through a single soundcard with 4-channels of input (two stereo line-in jacks), or through two separate soundcards which each have 2-channels of input (a single stereo line-in jack). Vinyl control requires the use of stereo line-in jacks - Mono or microphone inputs will not work.

Turntable Input Preamp

Many turntables provide unamplified “phono level” output, which must be boosted to a “line level” signal. Normally, a mixer provides this amplification, but if you're plugging a turntable's phono output directly into your soundcard, Mixxx can do the amplification. The “Turntable Input Preamp” slider allows you to adjust the level of preamplification applied to your decks' signal.

Vinyl Configuration

Several different types of time-coded media can be used to control Mixxx. Configure the “Vinyl Type” drop-down menu to match what type of time-coded vinyl or CD you are using on your deck(s).

The “Lead-in Time” setting allows you to set a dead-zone at the start of your vinyl or CD, where the time code will be ignored. This is useful in situations where the time code begins very close to the edge of a vinyl, which can make back-cueing over the first beat in a song tricky to do without your turntable's needle falling off the vinyl. Setting a lead-in time of 20 seconds or more helps alleviate this by giving you more room on the vinyl to cue with. It's also useful when you've worn the grooves at the edge of a control record to the point that it no longer works reliably: you simply set the lead-in so that the start of the songs begin in good groove area. You can keep doing this until you run out of groove area, thereby decreasing your record replacement frequency.

Control Mode

Mixxx supports three control types on *all* of the timecodes we support. “Absolute Mode” provides Mixxx with both pitch and position information from the timecode, and allows you to seek by needle dropping on your vinyl or seeking on your CDJ. “Relative Mode” takes the position to be relative to your deck's starting point, and only controls the pitch in Mixxx. It is not possible to seek using your deck in relative mode. “Scratch Mode” is an enhanced version of relative mode, and only applies to FinalScratch vinyl. Scratch mode improves performance slightly while scratching, but is not necessary for better performing timecodes like Serato. Finally, “Needle-skip Prevention” allows Mixxx to detect and ignore small changes in needle position, such as when you've accidentally bumped your turntable. This can be advantageous in a live performance environment, but the downside is that it reduces responsiveness during scratching. Consequently, disabling needle-skip prevention is recommended for scratch performances.

Signal Quality

A successful vinyl control setup hinges on good signal quality. Many factors can affect signal quality, but the most important one is ensuring the volume level of your timecode signal is moderate. A signal that is too loud or too quiet will cause adverse performance, often characterized by a loss of position data causing absolute mode to behave like relative mode. For more information on improving signal quality and troubleshooting, please see the [vinyl control wiki page](#).

Mixxx represents your timecode signal quality as a pair of real-time bar graphs. The two graphs correspond to your “Deck 1” and “Deck 2” input devices. The left-most column in each graph represents the overall status of the *timecode signal*. A full bar with an “OK!” indicates everything is working well. The latter two columns in the graph represent the raw, unprocessed stereo signal coming from your decks. A good signal will appear as a pair of fluctuating green bars, each of which will be out of phase. Red bars indicate the volume is too low or too high, and the “Turntable Input Preamp” setting can be adjusted to boost the volume.

DJing with Mixxx

Mixxx was designed to be easy to learn for both novice and experienced DJs. The user interface mimics a hardware DJ mixer, but also includes several extra elements to give DJs a better user experience, such as the parallel waveform displays.

Loading tracks

Songs can be loaded into a player in several ways:

- Right-click the library track table: Right-clicking on a track in the table will present the options “Load in Player 1” and “Load in Player 2”, among others. Making either selection will load a track into a player.
- Drag-and-drop from library track table: Dragging-and-dropping a song from the track table onto a waveform display will load a track into a player.
- Drag-and-drop from external file browser: Dragging-and-dropping a song from an external file browser directly onto a waveform display in Mixxx will load that song. This function is also known to work on some platforms with other applications. For example, on OS X, dragging-and-dropping a track from iTunes onto one of Mixxx's waveform displays will load that song into a player.

Waveform displays

There are two main **waveform displays** in Mixxx that are used to display the waveform of the songs you are mixing. These are useful because they allow you to see features in a song (like a breakdown) before you hear them. The waveform displays are aligned parallel to each other in order to make beat matching easier, as it is possible to beatmatch visually by aligning the beats that appear in each waveform.

Clicking and dragging on a waveform allows you to seek through a song in both directions. The waveform display is updated in realtime upon seeking. There are two smaller **waveform summary** displays located adjacent to the main waveform displays. These smaller displays show the waveform envelope of the entire song, and are useful because they allow DJs to see breakdowns far in advance. Vinyl DJs will find this familiar because quiet sections of songs can be visually distinguished when looking at a vinyl record, and this is a useful tool when planning your mixes on-the-fly.

Beatmatching and Mixing

Beatmatching is the process of adjusting the playback rate of a song so that it matches the tempo of another song. Beatmatching also involves adjusting the *phase* of the beats in a song so that they are *aligned* with the beats in the other song. Matching the tempo and aligning the beats are the two things a DJ must do to beatmatch.

In Mixxx, you can match the **tempo** of two songs by adjusting the playback

rate sliders on left and right side of the user interface. You can adjust the **phase** of the beats by clicking-and-dragging on either waveform display to temporarily slow down one of the songs until the beats are aligned. The temporary pitch bend buttons can also be used to momentarily adjust the playback rate, allowing you to “shuffle” the beats in a song forwards or backwards, so they can be aligned with another song.

Once the tempos are matched and the beats aligned between two songs, they are said to be beatmatched. A “perfect” beatmatch is near impossible - there will always be some tiny difference in the playback rates. A keen DJ will keep his or her ears open and listen for the beats drifting out of alignment. This has a distinct “double bass kick” sound which is often preceded by the kick weakening in intensity (as the two kicks drift out of phase). When this happens, the beats can be realigned by simply tapping one of the temporary pitch bend buttons a few times in the appropriate direction. Now get out there and make Tiesto jealous!

Headphone Cueing

Headphone cueing is a technique DJs use to listen to the next track they want to play in their headphones before playing it out the main speakers. Mixxx allows a DJ to route audio from either player to their headphones by toggling either of the “HEADPHONE” buttons located on the far left/right sides of Mixxx's interface. Headphone cueing is useful because it allows a DJ to beatmatch the next song in their headphones before bringing it into their mix by sliding the crossfader.

Keys and Hardware Controllers

Keyboard Shortcuts

Deck 1	Deck 2	Function
Z	N	Beat tap
G	H	Crossfader move left and right (soft step with SHIFT)
T	Y	Headphone toggle
5	6	Bass kill
4	7	Mid kill
3	8	Hi kill
2	9	Flanger
1	0	Sync
D	K	Start/Stop
SHIFT+D	SHIFT+K	Set cue
F	L	Cue goto
SHIFT+F	SHIFT+L	Cue preview
Q	U	Channel volume down
W	I	Channel volume up
A	J	Fast backward
S	K	Fast forward
Q,W,E,R,U,I,O,P		(reserved)
F1	F5	Permanent pitch down (fine with SHIFT)
F2	F6	Permanent pitch up (fine with SHIFT)
F3	F7	Temporary pitch down (fine with SHIFT)
F4	F8	Temporary pitch up (fine with SHIFT)

The shortcuts are defined in a text file, and can be changed by the user -

Linux: /usr/share/mixxx/keyboard/Standard.kbd.cfg

MacOS X: <Mixxx bundle>/keyboard/Standard.kbd.cfg

Windows: <Mixxx directory>\keyboard\Standard.kbd.cfg

MIDI Controllers

MIDI controllers are external hardware devices used that can be used to control audio applications, like Mixxx. Many DJs prefer the “hands-on” feel of a MIDI controller with Mixxx because it can feel similar to using a real mixer and turntables.

As of Mixxx 1.7.0, the following MIDI devices are supported:

- Hercules DJ Console MK2
- Hercules DJ Console MP3
- Hercules DJ Console RMX
- Hercules DJ Control Steel
- Hercules DJ Console Mac Edition
- Stanton SCS.3d
- Stanton SCS.1m
- Mixman DM2

- Tascam US-428
- M-Audio X-Session Pro
- M-Audio Xponent
- Evolution X-Session
- Ecler NUO4
- FaderFox DJ2
- Vestax VCI-100
- Numark Total Control
- Behringer BCD3000 (*no jog wheel support yet)
- Akai MPD24

Before purchasing a controller to use with Mixxx, please consult our [Hardware Compatibility](#) wiki page. It contains the most up-to-date documentation on which controllers work with Mixxx and what the caveats of each device are. Device support varies for each supported OS, so please make sure to consult the documentation.

Getting Involved

Mixxx is a community-driven project involving many DJs worldwide. Without the contributions from these DJs, Mixxx would not exist, and we're constantly looking for more contributors.

If you're interested in getting involved with Mixxx, send our [Developer's Mailing List](#) an email or hop on our IRC channel (#mixxx on Freenode).

If you're interested in coding (C++):

- Take a look at our specs/projects page on the Mixxx Wiki and see if anything catches your eye. If you want to start coding one of these, go right ahead!
- We're always willing to mentor and help out new coders
- Take a look at our bug tracker, try to fix a bug!
- Send patches to Adam, Albert, or mixxx-devel!

If you're not interested in coding, there are still many ways to help our project:

- Test beta and trunk versions of Mixxx to make sure new features and fixes work well in all cases.
- Create mappings for MIDI controllers Mixxx doesn't yet support. (Advanced functionality requires some Javascript-like programming.)
- Help answer questions in the forum.
- Help promote Mixxx - If you've got a blog, write an article about Mixxx. Blog about our new releases when they come out. Any exposure on the web and in print helps our project grow, and is much appreciated.
- Send us some photos of you using Mixxx at a gig!