

QUANTIZING AUDIO

WITH

BEATQUANTIZER AND BEATCREATOR 3

DRAFT VERSION 0.1

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1. INTRODUCTION

1.1 What is this document?

This is a getting started guide for quantizing audio with software from Zero-X; BeatQuantizer and BeatCreator 3. As BeatQuantizer is the better one for this, there will be some parts that only applies to BeatQuantizer.

If you already know how to do this and want to learn about multi track quantizing with BeatQuantizer, then visit www.beatquantizer.com and download the mtq.pdf.

2. CONCEPTS

To make sure you have an idea of what we are talking about.

2.1 Slices

We presume you are familiar with how to slice up a loop/track in BC/BQ. If not, see the Help file for: Grid and Events (there will probably also be another getting started manual about this published at www.beatcreator.com).

2.2 Loop & Track

This guide is about how to quantize audio. Some of you will work with a track, some will work with a loop. To BC and BQ it's the same. So, sometimes we will write track and sometimes we will write loop.

2.3 Start & End Markers

The loop start marker and the loop end marker marks the beginning and end of the loop as well as the track. So, sometimes we will write track markers and sometimes loop markers.

2.4 Current Track

If you click in a track/sample it will be current. If you want to make it current without altering the selection, click the ruler or use Ctrl + Tab.

2.5 Groove

When you slice up a track you get xx numbers of slice markers. How many depends on the slice mode and settings. All these slice markers together are referred to as the grid. The grid in combination with the tempo, number of bars, sample rate (and a few more) is referred to as a groove. This groove can be saved to a Groove file (*.zgr) and be used either as a placeholder for the slice markers that you can apply to the same or another track (even with a different tempo and measures) or as a groove template for quantizing. If you don't want to save the groove to a file you can copy the grid/groove to the clipboard.

Currently the following software supports the Zero-X Groove file format. For instance:

Steinberg: HALion 3
Image-Line: FL Studio
Zero-X BeatSlicer
Zero-X BeatCreator
Zero-X TrackCreator
Zero-X BeatQuantizer

Soon there will be even more as currently several major software developers are working on adding support for it.

3. SINGLE TRACK IN SHORT

Going thru some of the menu items (mostly) in the Beat menu very briefly.

3.1 Multi Track Mode

This setting is available from the Multi Track menu.

You can perform single track audio quantizing in both multi and single track mode. As this document is about single track audio quantizing, just make very sure you never select any tools from the multi track menu.

3.2 Sync Scroll & Zoom (Windows)

This setting is available from the Multi Track menu.

When checked, the zooming and scrolling of all tracks will be synchronized. It is up to you to check it or not. Experiment and see what you feel the most comfortable with.

3.3 Clear Grid

Removes the slice markers from the current track.

3.4 Locate Events

Performs an event/transient based slice on the current track based on the last used settings in the Slicing Control.

3.5 Quantize

Quantizes the track based on your quantize settings. More about quantizing in the next chapter.

3.6 Quantize Finalizer

Fills/masks the gaps and smooths the overlap caused by the quantizing.
More about this in next chapter.

4. SINGLE TRACK QUANTIZING

This is it, no retreat and no surrender!

4.1 Overview

First we are going to describe briefly what quantizing audio is all about. Then we will examine the tools, mainly the Quantizer and Finalizer. Finally we are going thru the quantizing process step by step.

What Audio Quantizing is all about

When talking about quantizing, one usually mean to tighten up a live performance. This is to quantize against a click track. Mostly there is an option to quantize against a groove template as well.

This has been possible to do with midi events in most sequencers since the 80's.

We are going to show you how to do it with audio.

First we need to analyse the recording (track, loop, sample etc), to identify the individual events/notes/slices/transients. Then we can quantize these events.

When you quantize the events, each event will be moved its corresponding position in the selected quantize template (click track, groove etc). For instance if you select a 16th click track quantize template, then each event will be moved to the closest 16th. There are many options in the quantizer and we will get back to them later on.

So, after quantizing, depending on the events original positions, there will be gaps between some events and others will overlap. These overlaps and gaps often sound bad. Luckily the Finalizer solves this in a snap. It fills/masks the gaps and smooths the overlaps.

Why Quantize?

Audio Quantizing is usually thought of as in correcting a live recording and at the same time removing the human feeling. This can be very useful. Still audio quantizing can be so much more.

For instance it can:

- Alter the feel based on the groove extracted from another performance.
- Just adjust a few wrong hits without the need of redoing the recording (perhaps the musicians has gone home or perhaps your studio time is over).
- Quantizing two loops against each other to make them play together without getting phasing problems.
- Tighten up the recording but not necessarily to 100%, so you keep some of the orginal feeling but still make it tighter.

4.2 Slice Up your Track

First make sure loop start and end markers mark a full bar(s) and that the tempo and number of bar(s) are correctly set. This is very important!

In the Slice toolbar, select Event and press the “slice” button.

This will bring up the Slicing Control.

Press the default button and you will see the track is sliced according to the default settings. Press F1 for detailed information about how to slice and the settings in the Slicing Control.

Press Close to close the Slicing Control.

Examine carefully that all events that you want to quantize are correctly marked with a slice marker. If not, you can both add new slice markers and delete unwanted ones easily for instance by using the popup menu.

Examine the position of each slice and manually adjust/move them to their correct position by dragging the “hat” of the slice marker.

It is very important that the slice markers are correctly setup. More information about adjusting the slice markers can be found in the help file.

4.3 Automatic Quantize

Select Quantize from the Beat menu.

Once all events have been detected and marked by a slice marker we can start quantizing it.

Lets walk thru the settings in the dialog.

Base

First we decide what sort of quantize template to use. There are two to choose from; Static (click track) and Groove. More about these below.

Mode

You can either perform a quantizing or you can create a ghost/reference grid that only shows what the quantizing would do.

Power

Defines, in percentage of the distance to the closest quantized position, how much the slices should be quantized/moved.

Lets say that the quantize target position (as defined by the selected quantize template) for one specific slice is 12ms away. If you set the power to 100%, the slice will be moved exactly 12ms. Now lets say you set the power to 50%, then the slice will be moved only 6ms.

So, if you want to keep some of the groove, set it to less than 100%. How much less is up to you and the recording.

Magnetism

If a slice is too far away from its quantized position, it wont be quantized. Defines in ms this distance.

Target

Either quantize all slices or just the selected ones.

Static

If you select to quantize based on a static template then there are a few option available here.

Resolution

The resolution of the click-track (length of the note).

Note that both triplets and dots are supported.

Swing

The swing setting of the click-track. Note that 50% means no swing.

Groove

If you select to quantize based on a groove template then there are a few option available here.

File

Select the groove file (*.zgr) to be used as groove template.

Clipboard

If you copy a grid to the clipboard, it can be used as a groove template.

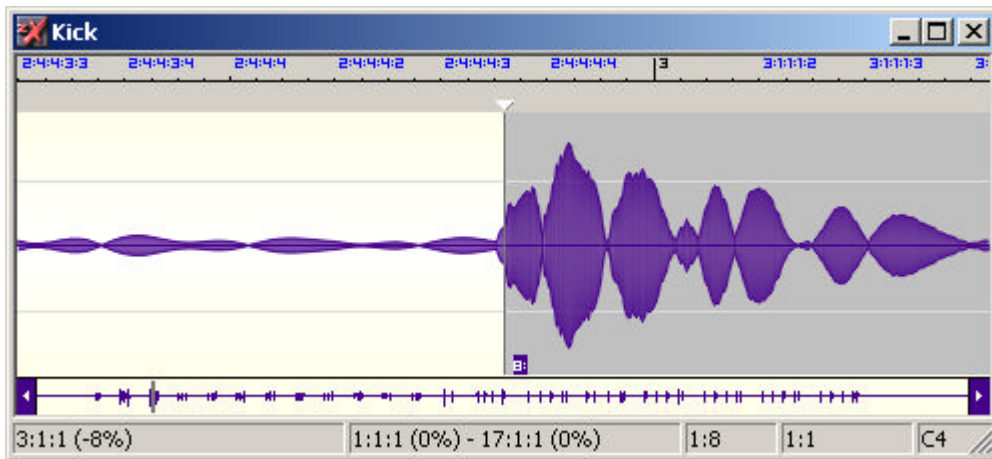
Other

Pre-Cut – BeatQuantizer only

This is a very important setting that often improves the quality of the quantizing operation (i.e. auto quantizing, manual quantizing and finalizing) a lot.

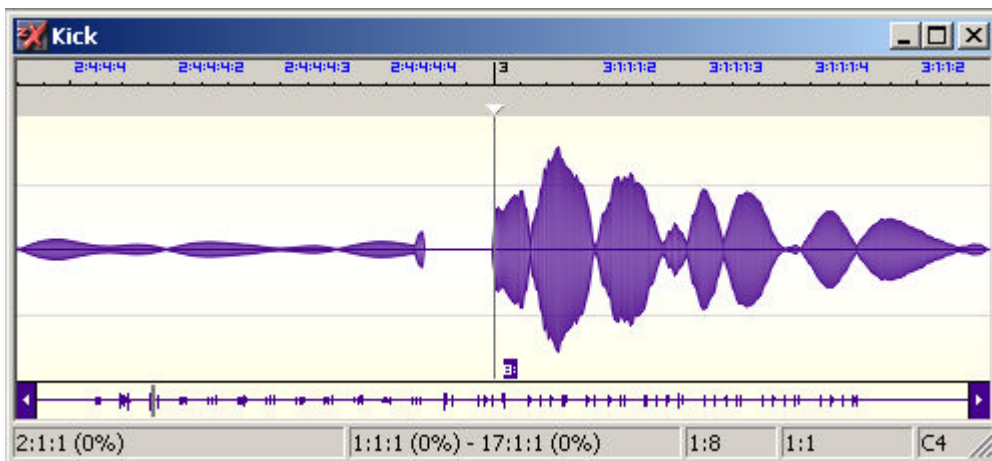
In short it defines how many ms before the slice marker the slice should be cut. The slice marker still defines the position to be quantized, but by cutting the slice xx ms before the slice marker the attack is preserved. Especially important when doing multi track quantizing.

Below is a zoomed in part of an un-quantized kick track. We will quantize this to a 16th click track. So, slice 8 will be move to the right (3:1:1). What will happen to slice 7 is impossible to see from the screen shot but we can reveal that it will also be moved to the right, but not as much. This will create a gap between slice 7 and 8. Note that the slice marker for slice 8 is set a bit into the attack of the kick.



Now lets quantize it with pre-cut is set to 0 (no pre-cut). Slice 8 is quantized to 3:1 and the gap between slice 7 and 8 is just to the left of slice 8.

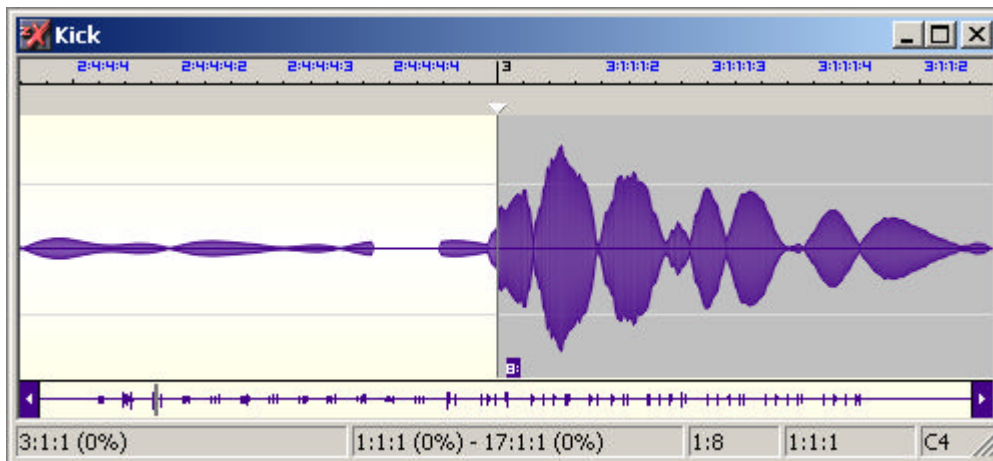
If you look closely you will see that a little part of the attack of slice 8 is now at the end of slice 7! Even if we smooth out the transition between the slices using the Finalizer, the snappy attack of slice 8 is long gone.



You may ask why not simply move slice marker 8 so that it doesn't cut the attack. Well there are two problems with that. First of all, most people don't want the zero crossing to decide where to quantize. They want their ears to decide that. In this case the attack was quite fast so it may have worked, but if the attack is slower it wouldn't have sounded tight. The second and perhaps even biggest problem is that when you work with multi tracks. Then you use the same slice markers for all tracks. Now just imagine if you have sliced the kick track and there is another drum being played just before a kick. Guess what happens to that tom attack... Yep, it will be cut, its attack will be ruined and you will get glitches and pops.

So, lets try again but this time with a pre-cut set to 5 ms.

Slice 8 is still quantized to position 3:1 but this time the attack of slice 8 is fully preserved. The cut was instead performed at the tail of slice 7. The Finalizer will not have any problems masking the gap in the tail.



Note, pre-cut is supported by both auto quantizing and manual quantizing!

Run Finalizer

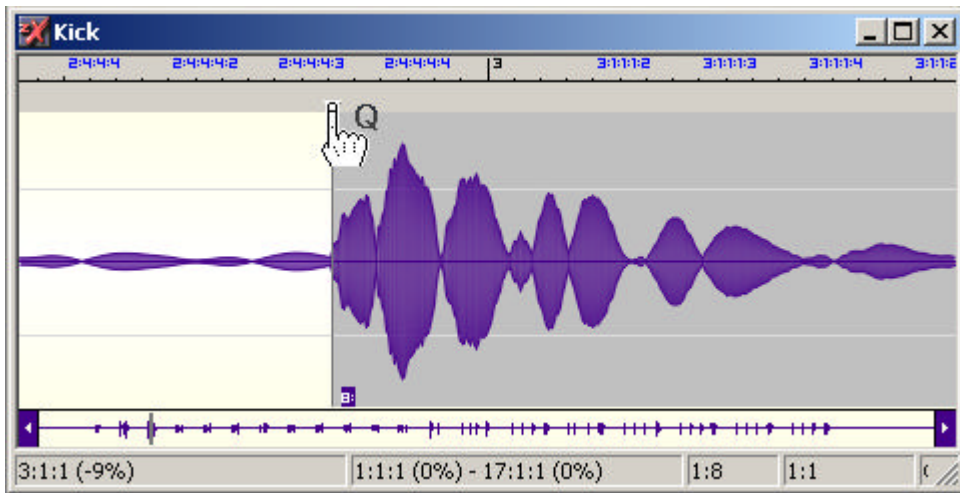
If you don't want or need to do any manual quantizing after the (automatic) quantizing, check this setting and have the Finalizer brought up automatically.

4.4 Manual Quantize

Manual quantize means to manually drag a slice to desired position. Entering the quantize mode is done by clicking the “Q” icon on the main toolbar.



While in quantize mode, you simply drag the slice marker and the slice will follow. The beauty is that you can drag any slice(s) forward and backwards as many times as you like and the overlapping sample data will always be restored.



Note:

- If ruler mode is set to Bars/Beats, the status bar shows the quantize error while dragging the slice.
- Manual Quantizing supports Pre-Cut (BeatQuantizer only).

When you are done with manually quantizing all the slices, you can use the Finalizer (more of that later on) to mask the gaps and smooth the overlaps. After the Finalizer has been run, the overlapping sample data is deleted.

If you select (automatic) Quantize, after manually quantizing, the overlap data will also be lost. So, it's recommended to first do the automatic quantize, then the manual and finally Finalize. You should always strive to avoid manually quantizing before automatic quantizing. Still you may encounter situations when you first want to manually quantize a slice or two and then Finalize them before you (automatic) Quantize and Finalize the whole track. For instance this may be required if some events are way off beat.

BeatQuantizer only:

When manually quantizing and “Sync Slices & Markers” is checked, all tracks will follow.

4.5 Finalize

Select Finalize from the Beat menu.

After Quantizing (automatic and/or manual) there are gaps between some slices and some are overlapping. This usually doesn't sound very good (glitches and pops etc). The Finalizer helps you to fix this in a snap.

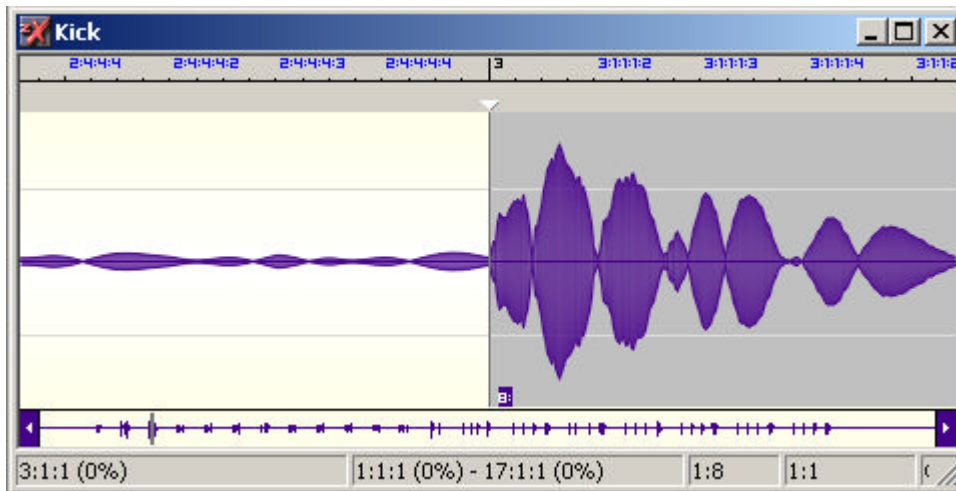
This is what it can look like after a Quantize.

As you can see there is a gap between slice number 7 and 8. This was caused by either slice 7 was moved to the left and/or slice 8 was moved to the right.

-- Image Missing! --

Here it is after Finalizing.

The gap is now perfectly masked/filled by the Finalizer.



5. TIPS AND TRICKS

So you want more? Well here is more!

6. FINAL NOTE.

Hopefully you know have a good idea of why quantizing and how to do it in BeatCreator and/or BeatQuantizer.

We plan to constantly improve this document. Please e-mail us any suggestion you may have.

Thanks for listening and happy quantizing!

The BeatQuantizer team.
www.beatquantizer.com