The Quantizing functions

What is quantizing?
Quantizing in its fundamental form is a function that automatically moves recorded notes, positioning them on exact note values:

For example, if you record a series of eighth notes, some of them may end up slightly beside the exact eighth note positions.

Quantizing the notes with the quantize grid set to eighth notes will move the “misplaced” notes to exact positions.

However, quantizing is not only a method of correcting errors, it can also be used creatively in various ways. For example, the “quantize grid” does not have to consist of perfectly straight notes, some notes can automatically be excluded from quantizing, etc.

⇒ When quantizing MIDI, only MIDI notes are affected (no other event types).
However, you can choose to move the controllers together with their respective notes by activating the “Move Controller” option in the Quantize Setup dialog, see “The Move Controller setting” on page 282.

• It is also possible to quantize audio events, which is especially useful when working with Cubase's loop slicing features – see the section “Working with hitpoints and slices” on page 215.

Setting up quantize on the toolbar
At its most basic, setting up quantizing consists of selecting a note value from the Quantize pop-up menu on the toolbar (in the Project window or a MIDI editor).

By default, this allows you to quantize to exact note values (straight, triplet or dotted notes) only.
Setting up quantize in the Quantize Setup dialog

If you want more options than those available on the pop-up menu, select “Quantize Setup...” from the MIDI menu (or “Setup...” from the Quantize pop-up menu) to open the Quantize Setup dialog.

The grid display in the middle of the dialog shows one bar (four beats), with blue lines indicating the quantize grid (the positions that notes will be moved to). Value changes in the grid, presets and quantize options will be graphically reflected here, see below.

The Quantize Setup dialog contains the following settings:

The Grid and Type pop-ups

These are used to determine the basic note value for the quantizing grid. In other words, these have the same functionality as the Quantize pop-up menu on the toolbar.

Swing

The Swing slider is only available when a straight note value is selected for the grid and Tuplet is off (see below). It lets you offset every second position in the grid, creating a swing or shuffle feel. When you adjust the Swing slider, the result is shown in the grid display.

Tuplet

Allows you to create more rhythmically complex grids by dividing the grid into smaller steps.

Any settings you make in the dialog are immediately reflected in the Quantize pop-up menus. However, if you want your settings permanently available on the Quantize pop-up menus, you have to use the presets functions (see “Presets” on page 282).

The grid display in the middle of the dialog shows one bar (four beats), with blue lines indicating the quantize grid (the positions that notes will be moved to). Value changes in the grid, presets and quantize options will be graphically reflected here, see below.

A straight eighth note grid compared with a grid with 60% swing.

The Quantize Setup dialog contains the following settings:
Magnetic Area

This allows you to specify that only notes within a certain distance from the grid lines should be affected by quantizing.

- When the slider is set to 0%, the Magnetic Area function is deactivated, i.e. all notes are affected by quantizing. If you move the slider gradually to the right, you will note how the magnetic areas are shown around the blue lines in the grid display.

Presets

The controls in the lower left corner of the dialog allow you to store the current settings as a preset, available on the Quantize menus in the toolbars. The usual preset procedures apply:

- To store the settings as a preset, click the Store button.
- To “load” a stored preset, showing the stored settings in the dialog, just select it from the pop-up menu. This is useful if you want to modify an existing preset.
- To rename the selected preset, double-click on the name and type in a new one.
- To remove a stored preset, select it from the pop-up menu and click Remove.

You can also create presets by extracting existing grooves – see “Applying quantize” on page 283.

Apply and Auto

These functions allow you to apply quantizing directly from the dialog, as described below.

⚠️ If you don’t want to apply the quantizing you have set up in the dialog, you can close the window by clicking its standard close box. You can also leave the dialog open while you continue working.
Applying quantize

There are several ways to apply the quantize:

- The standard method is to select “Over Quantize” from the MIDI menu (or using a key command, [Q] by default). This quantizes the selected MIDI parts or notes according to the current Quantize pop-up menu setting.

- You can also apply quantizing directly from the Quantize Setup dialog, by clicking the “Apply Quantize” button.

- If you activate the “Auto” checkbox in the Quantize Setup dialog, any change you make in the dialog is immediately applied to the selected MIDI parts or notes.

A great way of using this feature is to set up a playback loop, and adjust the settings in the dialog until you get the desired result.

⚠️ When you apply quantize, the result is based on the original position of the notes. Therefore, you can freely try different quantize settings with no risk of “destroying” anything. See also “Undo Quantize” on page 284.

The Auto Quantize function

If you activate the Auto Q button on the Transport panel, all MIDI recordings you make are automatically quantized according to the settings you have made in the Quantize Setup dialog.

Iterative Quantize

Another way to apply “loose” quantization is to use the Iterative Quantize function on the MIDI menu. It works like this:

Instead of moving a note to the closest quantize grid position, Iterative Quantize moves it only part of the way. You specify how much the notes should be moved towards the grid with the “Iterative Strength” setting in the Quantize Setup dialog.

Iterative Quantize also differs from “regular” quantization in that the operation is not based on the notes’ original positions but on their current, quantized position. This makes it possible to repeatedly use Iterative Quantize, gradually moving the notes closer to the quantize grid until you’ve found the desired timing.

Advanced Quantize functions

Quantize Lengths

⚠️ This function is only available from within the MIDI editors.

This function (on the Advanced Quantize submenu on the MIDI menu) will quantize the length of the notes, without changing their start positions. At its most basic level, this function will set the length of the notes to the Length Quantize value on the MIDI editors’ toolbar. However, if you have selected the “Quantize Link” option on the Length Quantize pop-up menu, the function will resize the note according to the quantize grid, taking the Swing, Tuplet and Magnetic Area settings into account. An example:

1. Length Quantize set to “Quantize Link”.

2. Some 1/16th notes.

3. Here, the quantize value has been set to straight 1/16th notes with Swing at 100%. Since Snap is activated (see “Snap” on page 298), the quantize grid is reflected in the note display’s grid.

4. Selecting Quantize Lengths will adjust the note lengths according to the grid. If you compare the result to the first figure above, you will find that notes that started within the odd sixteenth note “zones” show the longer grid length, and notes in the even zones have the shorter length.
**Quantize Ends**

The Quantize Ends function on the Advanced Quantize submenu will only affect the end positions of notes. Apart from that, it works just like regular quantizing, taking the Quantize pop-up menu setting into account.

**Undo Quantize**

As mentioned above, the original position of each quantized note is stored. Therefore, you can make the selected MIDI notes revert to their original, unquantized state at any time by selecting Undo Quantize from the Advanced Quantize submenu. This is independent from the regular Undo History.

**Freeze Quantize**

There may be situations when you want to make the quantized positions "permanent". For example, you may want to quantize notes a second time, having the results based on the current quantized positions rather than the original positions. To make this possible, select the notes in question and select “Freeze Quantize” from the Advanced Quantize submenu. This makes the quantized positions permanent.

⚠️ After you have performed a Freeze Quantize for a note, you cannot undo its quantization.

**Part to Groove**

With this function you can extract the groove from a selected MIDI part and turn it into a Quantize preset.

- In a similar way, you can extract the groove from an audio event and turn it into a Quantize preset, using Hitpoints and the "Create Groove Quantize" function as described in “Creating groove quantize maps” on page 221.

In both cases, the resulting groove appears on the Quantize menus and you apply it as you would any Quantize preset. You can also view and edit the resulting quantize settings in the Quantize Setup dialog.

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**Transpose**

The Transpose item on the MIDI menu opens a dialog with settings for transposing the selected notes:

![Transpose dialog](image)

**Semitones**

This is where you set the amount of transposition.

**Scale Correction**

Scale Correction transposes the selected notes by forcing them to the closest note of the selected scale type. This can be used for creating interesting key and tonal changes, either by itself or in conjunction with the other settings in the Transpose dialog.

- To activate Scale Correction, click the checkbox.
- Select a root note and scale type for the current scale from the upper pop-up menus.
- Select a root note and scale type for the new scale from the lower pop-up menus.

Make sure to select the correct root note if you want to keep the result in the same key as the original notes, or select an entirely different key if you want to experiment.
Keep Notes in Range

When this checkbox is activated, transposed notes will remain within the Upper and Lower Barrier values.

- If a note ends up outside the barriers after transposition, it will be shifted to another octave, keeping the correct transposed pitch if possible.

If this isn’t possible (if you have set a very narrow range between the Upper and Lower Barrier), the note will be transposed “as far as possible”, i.e. to the Upper or Lower Barrier note. If you set the Upper and Lower Barriers to the same value, all notes will be transposed to this pitch!

OK and Cancel

Clicking OK performs the transposition. Clicking Cancel closes the dialog without transposing.

Permanent settings with Freeze MIDI Modifiers and Merge MIDI in Loop

The settings described in “MIDI realtime parameters and effects” on page 270 do not change the MIDI events themselves, but work like a “filter”, affecting the music on playback. Therefore, you may want to make them permanent, i.e. convert them to “real” MIDI events, for example to transpose a track and then edit the transposed notes in a MIDI editor. For this, you can use two commands from the MIDI menu:

- “Freeze MIDI Modifiers” – applies all filter settings to the respective track and takes the result as the new standard. With this function, the settings are “added” to the available notes in the track, and all previously edited modifiers will be set to zero, so that the resulting track looks as if never edited at all to an outward observer.

- “Merge MIDI in Loop” – merges all selected tracks (or parts) to create a new track. The settings are applied during the merge and will still be displayed later in the respective menus.

These two functions are explained in the following sections.

Freeze MIDI Modifiers

The “Freeze MIDI Modifiers” function affects the following settings for MIDI tracks:

- Several settings on the main tab of the Inspector (program and bank selection and the Delay parameter).

- The settings on the MIDI Modifiers tab (i.e. Transpose, Velocity Shift, Velocity Compression and Length Compression).

- The settings on the MIDI Inserts tab (if, e.g., you are using an arpeggiator and want to convert the added notes to real events).

The following settings for MIDI parts are taken into account as well:

- The Transpose and Velocity settings for parts displayed on the info line – please note that the Volume setting is not taken into account.

To use the “Freeze MIDI Modifiers” function, proceed as follows:

1. Select the track whose settings should become permanent.

2. Pull down the MIDI menu and select “Freeze MIDI Modifiers”.

The Inspector settings will be converted to MIDI events and inserted at the beginning of the part(s). All notes of the part(s) will be modified accordingly and the Inspector settings will be reset.

Merge MIDI in Loop

The function “Merge MIDI in Loop” combines all MIDI events on all unmuted tracks, applies MIDI modifiers and effects and generates a new MIDI part, containing all the events as you would hear them play back. Proceed as follows:

1. Make sure only the desired MIDI track(s) are unmuted. If you only want to include events from a single track in the merge operation, you may want to solo the track.

2. Set up the left and right locator around the area you want to merge. Only events starting within this cycle area will be included.

3. Select the track on which you want the new part to be created. This can be a new track or an existing track. Data in the cycle area on the track can be kept or overwritten (see below).

4. Select “Merge MIDI in Loop” from the MIDI menu. A dialog appears with the following options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include Inserts</td>
<td>If this is activated, any MIDI insert effects currently activated for the track(s) will be applied.</td>
</tr>
<tr>
<td>Include Sends</td>
<td>If this is activated, any MIDI send effects currently activated for the track(s) will be applied.</td>
</tr>
</tbody>
</table>
5. Click OK.
A new part is created between the locators on the destination track, containing the processed MIDI events.

**Applying effects to a single part**

Normally, the MIDI modifiers and effects affect a whole MIDI track. This may not always be what you want — you may want to apply some MIDI effects to a single part for example (without having to create a separate track for that part only). The Merge MIDI in Loop function can help:

1. Set up your MIDI modifiers and MIDI effects the way you want them for the part. This will of course affect the whole track, but focus on the part for now.
2. Set the locators to encompass the part. Simply select the part and choose Locators to Selection from the Transport menu (or use the corresponding key command, [P] by default).
3. Make sure the track holding the part is selected in the Track list.
4. Select Merge MIDI in Loop.
5. In the dialog that appears, activate the desired effect options, make sure that Erase Destination is activated and click OK. Now a new part is created on the same track, containing the processed events. The original part is deleted.
6. Turn off or reset all MIDI modifiers and effects, so that the track plays back as usual.

**Dissolve Part**

The Dissolve Part function on the MIDI menu has two separate uses:

- When you work with MIDI parts (on MIDI channel “Any”) containing events on different MIDI channels. Dissolve Part separates the events according to MIDI channel.

- When you want to separate MIDI events according to pitch. A typical example would be drum and percussion tracks, where each pitch usually corresponds to a separate drum sound.

When dissolving a part into either separate channels or separate pitches, you can automatically remove the silent (empty) areas of the resulting parts by activating the “Optimized Display” checkbox in the Dissolve Part dialog.

**Dissolving parts into separate channels**

Setting a track to MIDI channel “Any” will cause each MIDI event to play back on its original MIDI channel, rather than a channel set for the whole track. There are two main situations when “Any” channel tracks are useful:

- When you record several MIDI channels at the same time.

  You may for example have a MIDI keyboard with several keyboard zones, where each zone sends MIDI on a separate channel. Recording on an “Any” channel track allows you to play back the recording with different sounds for each zone (since the different MIDI notes play back on separate MIDI channels).

- When you have imported a MIDI file of Type 0.

  MIDI files of Type 0 contain only one track, with notes on up to 16 different MIDI channels. If you were to set this track to a specific MIDI channel, all notes in the MIDI file would be played back with the same sound; setting the track to “Any” will cause the imported file to play back as intended.

The Dissolve Part function scans MIDI parts for events on different MIDI channels and distributes the events into new parts on new tracks, one for each MIDI channel found. This allows you to work with each musical part individually. Proceed as follows:

1. Select the part(s) containing MIDI data on different channels.
2. Select “Dissolve Part” from the MIDI menu.
3. In the dialog that appears, select the “Separate Channels” option.

Now, for each MIDI channel used in the selected part(s), a new MIDI track is created and set to the corresponding MIDI channel. Each event is then copied into the part on the track with the corresponding MIDI channel. Finally, the original part(s) are muted.

<table>
<thead>
<tr>
<th>Option</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Erase Destination</td>
<td>If this is activated, all MIDI data between the left and right locator on the destination track will be deleted.</td>
</tr>
<tr>
<td>Include Chase</td>
<td>If this is activated, chase events placed outside the selected part but relating to it will be included in the processing, e.g. a Program Change right before the left locator. For more about chase events, see “About Chase” on page 62.</td>
</tr>
</tbody>
</table>

286

MIDI processing and quantizing