

Multichannel drum timing correction in Nuendo 3

Drum timing correction has always been a pretty arduous affair, whatever platform you're on. The massive time savings seen with other editing tasks in recent years have not been seen when it comes to timing corrections on multitracked drums. Steinberg's **ANGUS BAINET** lets you in on a smart and fast way to do it.

ALTHOUGH THERE ARE ALREADY very accurate procedures for drum timing correction in Nuendo (see forum.nuendo.com for a thorough description), there is now another, much faster alternative to the traditional method of cutting and crossfading. This method uses the new Audio Warp real-time timestretching functionality that was introduced in Nuendo 3.

The big helper here is the Nuendo surround implementation. Because all channels are up to 12 channels wide (to allow full 10.2 productions), Nuendo also supports files with 12 channels. Most people will be multitracking drums to mono files, and Nuendo will allow up to 12 mono drum mics to be combined into one 12-channel file. This file can then be opened in the Nuendo Sample Editor where the Audio Warp timestretching functions can be used on all channels (and therefore drum instruments) at once.

DRUMS: FILE UNDER MULTICHANNEL — First off, we need to consolidate the mono drum tracks into one multichannel file. I'm using the example of a small kit here with seven tracks, but up to twelve can be used in exactly the same way. In Nuendo 3,

we do this by bouncing the individual tracks into one 7-channel audio file which is then reimported into the project ready for some timing correction. All the drum tracks should be in one folder for ease of use.

Before exporting the tracks, each one has to be routed to one channel of an output bus with the appropriate number of channels. In the VST Connections window, create an output bus with the required number of channels (see Screen 1). Here, I've created a 7.0 surround output bus because the drum kit in this example used seven mono channels. Then route each of the single drum tracks to one each of the output channels in the surround bus you've just created. It's important to route to the individual channel and not to the whole bus as this bypasses the channel panner settings (see Screen 2). The bus also has to be routed to individual outputs, so in the VST Connections Window give each output of the bus its own physical output from your audio card. Now solo the drums folder, position the locators to include all the drum tracks you're including in the file and you're ready for export.

Go to File, then Export and then Audio Mixdown to open the export dialog box. After entering the desired file name, select the N. Chann. Interleaved



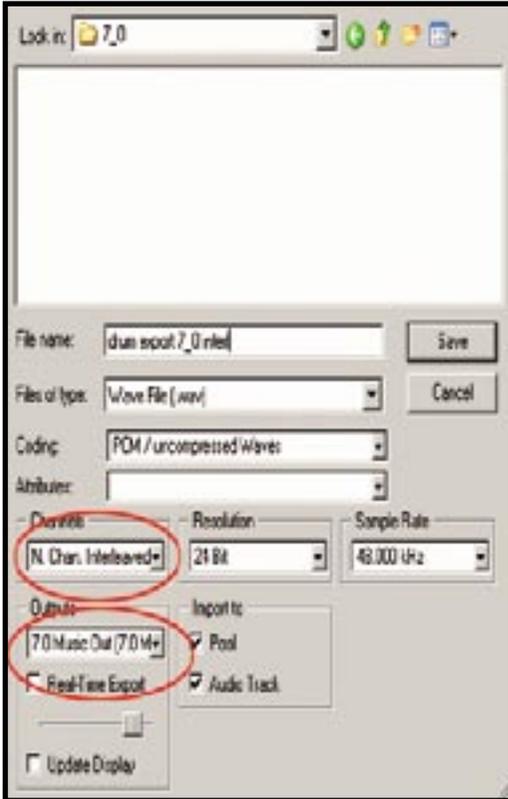
Screen 2. Don't forget to route each track to a different channel inside the surround bus you've created, rather than to the bus as a whole.

option in the Channels drop down box (see Screen 3). Outputs should be set to the surround output bus you've created for this purpose. The Import to Audio Track box should be checked. Click on OK, and a new, multichannel file will be bounced to a new track with each recorded drum track on an individual channel within the same file.

In Nuendo 3, the playback-timestretching

Bus Name	Speakers	Audio Device	Device Port
[-] Stereo Out	Stereo	ASIO Hammerfall DSP	
[-] Links			1 1 Analog MF (1)
[-] Rechts			2 2 Analog MF (1)
[-] 7.0 Music Out	7.0 Music	ASIO Hammerfall DSP	
[-] Left			9 9 ADAT MF (1)
[-] Right			10 10 ADAT MF (1)
[-] Center			11 11 ADAT MF (1)
[-] Left Surround			12 12 ADAT MF (1)
[-] Right Surround			13 13 ADAT MF (1)
[-] Side Left			14 14 ADAT MF (1)
[-] Side Right			15 15 ADAT MF (1)

Screen 1. Create a multichannel output bus in the VST Connections window which is opened by pressing F4.



Screen 3. The Export dialog setup with the options set for merging your soloed drum tracks to one multichannel file.

is calculated in real-time using a highly CPU-efficient algorithm. While heavy use can cause some audible alterations of the source material, the actual stretching can be done as an off-line process using a much higher quality. Because the whole audio file is processed at the same time, the amount of timestretching has no effect on the CPU load.

Now we need to create so-called Warp Tabs

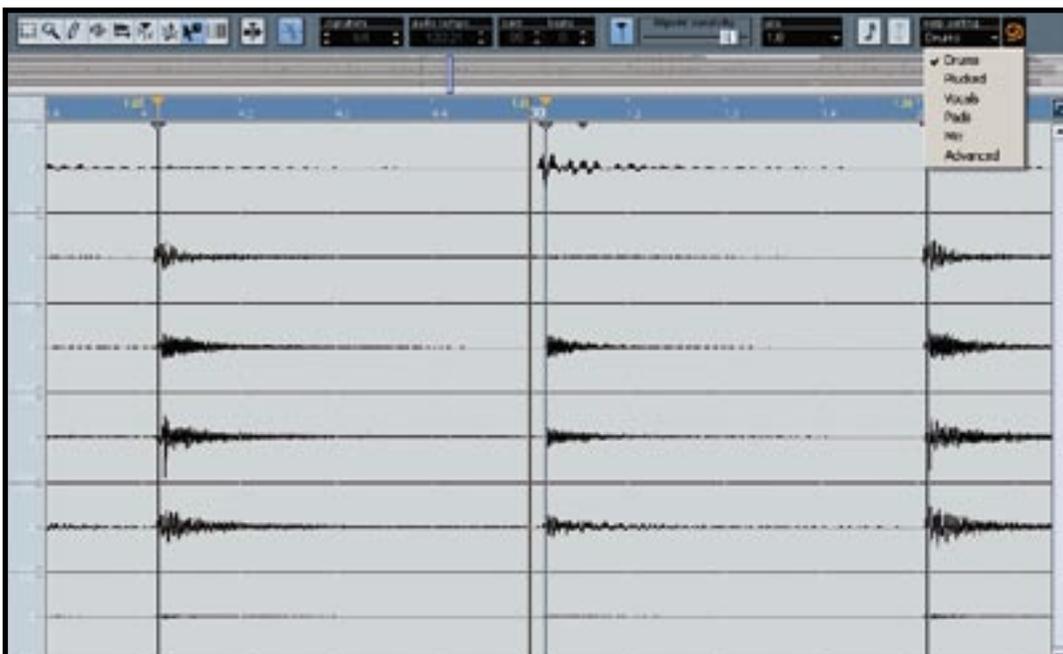
at the drum transients. The Warp Tabs are the stretching markers that divide the individual areas of the drum file into the portions we want to correct. The most time effective way to achieve this is to use the built-in Hitpoints feature to mark transients and to convert them to Warp Tabs, adding individual Warp Tabs as needed.

Open the multichannel drum file in the Sample Editor by double clicking it. Now click on the Hitpoint Edit button in the Sample Editor's button bar to open the Hitpoint detection dialog. I've used settings here that put a Hitpoint marker at almost all important transients for the kick and snare, namely a Sensitivity setting of 90, and a Threshold setting of 8. It can pay off here to experiment with the settings to get the density of Hitpoints (by the way, the upcoming Nuendo 3.1 update will include improved Hitpoint detection functionality — you heard it here first). The Sensitivity slider in the top right-hand side corner of the Sample Editor can be used to change the sensitivity after the Hitpoints have been calculated.

HIT THE HOME STRETCH — When you're happy with the Hitpoints and have got them covering most of the important transients, convert the Hitpoints to Warp Tabs by right-clicking or Ctrl-Click (on the Mac) the drum file. Then select Realtime Processing, and then the option Create Warp Tabs from Hitpoints. Switch the Sample Editor to Warp Samples mode by selecting the Warp Samples option in the right click (or Ctrl-Click on Mac) menu or selecting it in the top left hand side of the Window; the Warp Samples button has a small clock symbol in it.

Now all the Warp Tabs will show up in the time strip as orange triangles, and you're almost ready to go. In the Warp Settings dropdown box in the top right hand side of the Sample Editor, select the Drums option; this optimises the real-time timestretching algorithm for drum material.

Now it's time to get those drum hits where they're supposed to be (see Screen 4). You can get



Screen 4. Warp Tabs are set, ready for stretching. The transient is marked and is clearly late, being some way behind the first beat in bar 60 where the drummer meant to place it. Just grab the Warp Tab and slide it to the left to where it should be. Note that Drums mode is selected for the real-time Warp processing in the drop down box at the top right.

Nuendo to do this automatically by right clicking on the file (Ctrl-Click on the Mac) and selecting Realtime Processing and then Audio Quantize in the resulting menu; this will use the settings in the Quantize Settings dialog in the main MIDI menu. Alternatively, you do it yourself if you really want to get into the details.

The amount of correction you'll want to do will depend on how 'tight' the drummer really has to be (or how sloppy his timing was). Listening to the whole track with a metronome activated first is a good idea to get a rough idea of the areas that require the most attention. The elegance of this way of correcting drum timing is that all you have to do is click on each Warp Tab and move it to its 'right' place. In the screenshot you can clearly see that at the 60th bar the drummer is a fraction too late on the first beat, as I've set the dark Project Position Pointer to the 60th bar, i.e. where the beat should have been. All I have to do is click and drag the Warp Tab on that transient slightly to the left until it's lined up with the first beat of the 60th bar. Repeat for any other beats that come too late or early. It really is that simple. If you want the drummer to really sound robot-like in his 'perfection', you can use the Quantize settings box to snap the Warp Tab to the beat value of your choice. It really couldn't be simpler.

Er, that's it. You might notice an artefact here or there, but don't worry: this will not end up in the drum audio after off-line processing. Another thing you might be worrying about is that stretching drum material is going to introduce phase problems. Don't. Because you're stretching all the drum tracks at once and by exactly the same amount with sample accuracy, all the material will stay in phase.

Before exporting the corrected drum tracks, ensure first of all that the top quality MPEX algorithm is selected as your timestretch tool by going to File, then Preferences and clicking on the Audio entry in the list on the left hand side. Then on the right hand side select MPEX 2 as your Timestretch tool, and select quality level 4 for polyphonic material. This will work for drum files with up to 8 channels/tracks. If you have between 8 and 12, use the Realtime algorithm with Drums mode selected.

FINISHING UP — All you have to do now is process the file with your corrections and reimport this file into the project. Right click or (on the Mac) Ctrl-click on the file and select Realtime Processing and then the Freeze Timestretching option. The file will now be 'frozen' with all timing corrections processed into a new file using the algorithm you've set in the Nuendo preferences. All that's required now is to export this multichannel file back into your project as individual tracks ready for mixing.

Solo the multichannel drum track and set the locators to cover the entire length of the track. Then open the Export dialog and this time select as Channels the N. Chann. Split option. The Import to Audio Track option should be checked. After the file has been processed, you should select the Split Multichannel Files box in the Import Options dialog. The drums are then reimported as single tracks, ready for mixing. Now you just have to explain to the rest of the band that their drummer can play a lot tighter than they always thought...

Next time we'll be applying this technology to FX editing for post with the unique Nuendo Warp Audio to Picture functions and how Audio Warp can be indispensable in ADR work. ■