

Making Music with Qtractor on Fedora

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If you're either a musician or someone who has the occasional musical idea to implement, there are a few great tools for the job on Fedora Linux. One of the most exciting projects is called Qtractor.

There are, basically, two different ways to make music on computers: there is Audio (digital representations of sound waves) and there is MIDI (electronic pulses triggering a synthesizer or sampler). Qtractor handles both quite well, producing music using various forms of audio and MIDI sources.

Qtractor is available in the Fedora repository. Along with Qtractor, you should install QJackCtl and QSynth. QJackCtl is an interface for wiring sound from one application to another, while QSynth is an example of a good software synthesizer.

After these programs have been installed, launch Qtractor. It should start jackd automatically – and you're ready to make music.

There are three different ways to get sound into Qtractor; you can hook up a microphone and record realworld sounds, you can import pre-recorded loops, or you can generate sound using MIDI and a synthesizer. Naturally, you can do any of these three for each track you create, thereby mixing MIDI data with audio tracks and loops until a full soundscape is achieved.

Recording Audio into Qtractor

To record sound from a microphone into Qtractor, first create an empty track. A "track" alots space where the sound may exist and be effected or adjusted. To create a new track, click the *Add Track* icon in Qtractor's toolbar or go to the *Track* menu and select *Add Track*. This will bring up a dialog box where you may name the track and define whether it is a container for Audio or MIDI.

After the track has been added to the workspace, it must be armed for recording. Arming a track is marking that track as the ultimate destination for incoming audio. The button to arm a track is found under the track's name in the form of a button labeled with "R" just next to the "M" and "S" buttons. The "M" and "S" are "Mute" and "Solo", respectively, where "Mute" silences the track and "Solo" silences all tracks but that track.

Now that the track is marked for recording, hit the *Record* button button in the top menu bar. Because

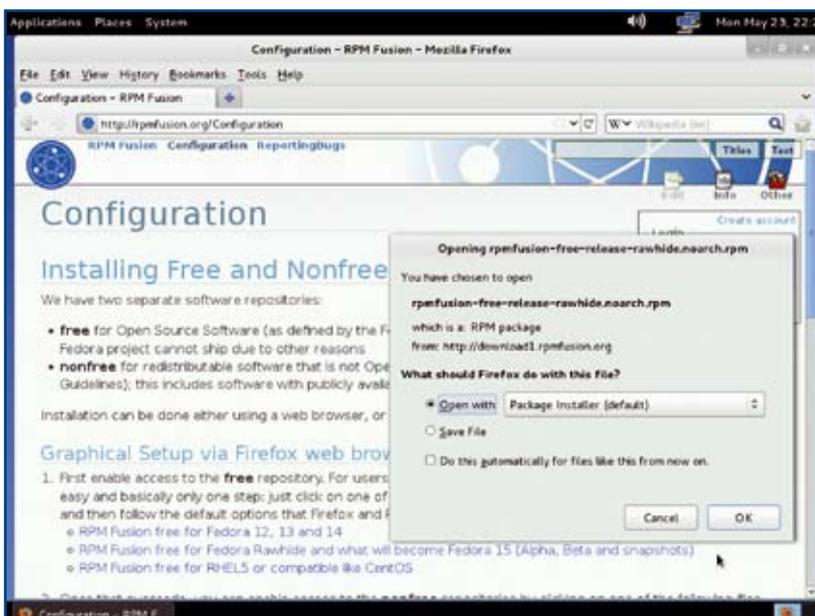


Figure 1. Enable RPM Fusion for even more great apps!

this is the first recording being made during this session, a dialog box will appear, asking for the filename and location of the data about to be received. Define these carefully; good organization is a hallmark of good production, and where the raw data is stored now will make for easy backups or system migrations later.

Qtractor is using JACK for sound input and output, so the inputs defined by JACK are defining the source of the sound input. To see the current JACK connections, you make go to the *View* menu and select *Connections*. This will show you the JACK connection window, with input (including capture devices) on the left and writable targets on the right. Most likely, your system's Capture device will be "plugged into" the Master Inputs of Qtractor. If this is not the case, then you may make that connection now.

With the track armed for recording, and recording mode enabled, click the *Play* button in the toolbar and recording will begin. Ideally, you should see sound waves being created in realtime as the microphone captures whatever sound you are generating in the real world. If not, check your levels, your JACK connections, and if those appear to be in order, check alsamixer and whatever GUI frontend for Volume control your system uses (such as KMix on KDE).

Importing and Utilizing Pre-Recorded Loops

Whether you're a professional musician or you're completely tone-deaf, sometimes it is helpful to have pre-recorded loops to help your composition along. These loops may be sound clips you yourself have created or they may be clips you've downloaded from <http://www.freesound.org> or loops you've gotten for free along with electronic music magazines or that you've purchased from loop collections. As long as they are in a standard audio format (ogg, wav, mp3, aiff, au, caf, paf, and many more), they can be imported and used in your project.

On the right of the Qtractor window there is a *Files* panel; thus far an



Figure 2. Jack, the heartbeat of your sound production

audio file will be visible, which represents the clip recorded into the first track. To bring in new files, right-click in the *Files* panel and select *Add Files*. Note that there are tabs at the bottom of this panel; one for Audio and one for MIDI. You cannot import Audio tracks into the MIDI tab, so be sure that the *Audio* tab is selected.

Select an audio file to add to your arsenal and they will be listed in the *Files* panel. You may audition them by clicking on them; stop them from playing with the *Play* button on the lower right of the panel. Once you've decided which loop to add to your project, drag and drop it from the *Files* panel into the empty space of your workspace. It will automatically add a new track for itself, complete with an appropriate name.

If this is a short loop, it probably needs to be repeated a certain number of times. To loop the clip, select the clip and right-click it, selecting *Copy*. Then right-click the space adjacent to that clip and select *Paste Repeat*. A dialogue box appears, asking

how many times you wish it to repeat. Give it a number, click *OK*, and then place the string of clips where you wish them to continue looping.

Since the art of looping relies on the lack of interruption of the clips, it often is helpful to fine-tune the *Snap* option of your cursor. By enabling snapping, you force your cursor to constrain its movements to anything from being on the beat, or within one-eighth note of the beat, or one-sixteenth, and so on. Since loops are delivered as whole bars, constraining the snapping to the beat is a good idea. To do this, go to the *View* menu, to the *Snap* submenu, and select *Beat*.

MIDI in Qtractor

Qtractor's MIDI features are quite robust and, due to its JACK awareness, allows the use of a wide variety of MIDI soft synths and applications. This means that you can either use soft synth plugins or stand-alone soft synths with Qtractor, making it a powerful MIDI sequencer.

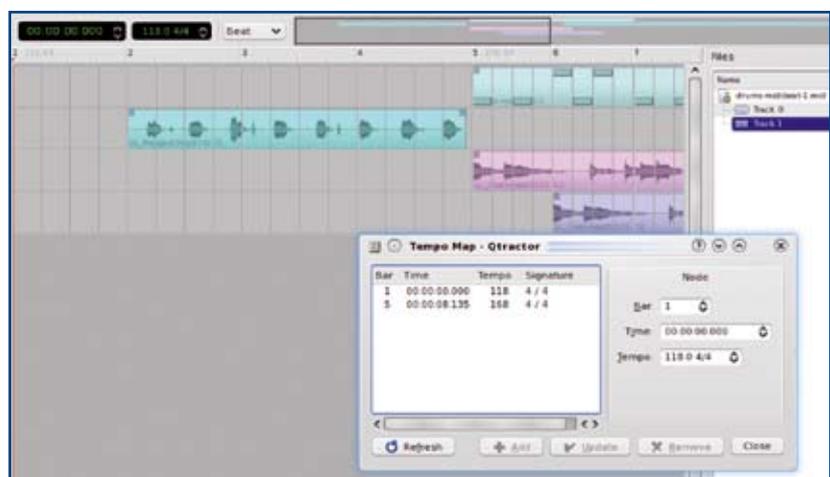


Figure 3. Mixing Audio and MIDI together to make hardcore jams in Qtractor

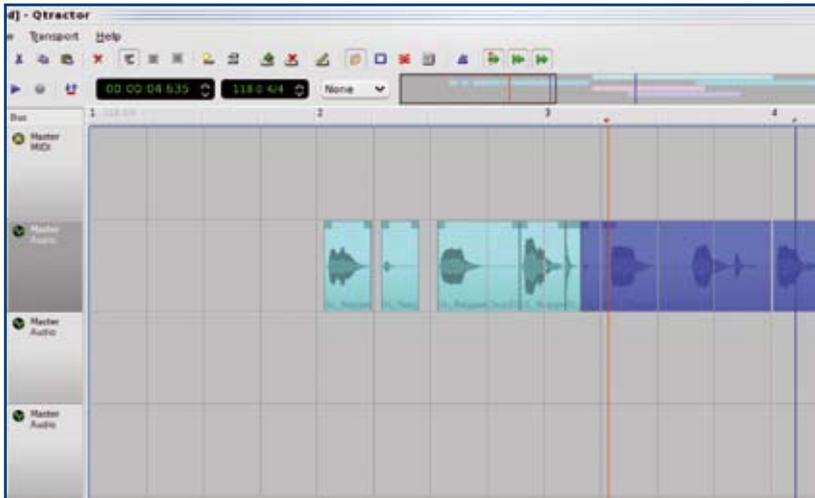


Figure 4. Editing audio loops in Qtractor

Soft Synth Plugins

Qtractor supports DSSI, LADSPA, VST, and LV2 (in svn) plugins, thereby providing a full spectrum of software synthesizers, samplers, and effects all from within one workspace. Many of the prominent Linux native synths and effects are available via your distribution's repositories, others can be found online.

Download and install the plugins you wish to use in Qtractor and then switch to Qtractor to define where they are found on your system. Do this via the View menu → Options. In the Options window, navigate to the Plugins tab; on the left of this tab is a dropdown menu of different kinds of plugins (DSSI, LADSPA, VST) and on the left are buttons to browse your system in order to define for Qtractor where it should look to find the plugins you've installed. Depending on your distribution, the location may vary, but typically the plugin files (.so files) will be located in /usr/lib/ or /usr/local/lib/.

Once you're pointed Qtractor to the location of your plugins, you must make a track for whatever MIDI data you wish to create. This is done with the Add Track button on the toolbar, or via the Track menu. In the Track dialog box, select to make the track a MIDI track and leave the remaining defaults as they are.

Now that you have a MIDI track in your project, you may assign a plugin to it so that the MIDI data you create will trigger sounds. Right-click on the name of the MIDI track, and select Track Properties. This opens up the Properties window; click on the Plugins tab at the top, and then on the Add button within this tab area.

A list of all of your installed plugins appears; select a sound generator you wish to use to generate sound, and click OK. Now the synth of your choice is assigned to that track. Depending on the synth, there may be a new window visible with an Edit or Parameters button, which

will give you greater control over what sound bank or waveform that synth will be using. A good synth to start with is WhySynth, a DSSI plugin with hundreds of pre-made sounds to choose from.

To create new MIDI data, click the New Clip button on the toolbar or go to the Edit menu, select the Clip submenu, and select New. The MIDI Editor (sometimes called a "piano roll") window appears, with the beats and bars counted along the top and the keys of a piano along the left border. Notes are drawn with the Pencil tool, defining what note will play upon what beat. This is known as sequencing, and there are many ways to do it. You might wish to plug in a USB MIDI keyboard, hit record, and actually play MIDI data into Qtractor. Or you may wish to simply point and click, drawing notes where you need them to play in your composition. There is no right or wrong way to do it, and either way allows you to return later and modify your work.

When you have finished sequencing your MIDI notes, close the MIDI editor window. It will prompt you to save the data, and then the data appears in your MIDI track. Playing your composition back will allow you to hear all of your data, be it MIDI or audio.

Stand-Alone Soft Synths

"JACK is a sound server" declares the FAQ of JACK's official website – a definition well beyond the comprehension of most average musicians. In simpler terms, it is a connection between two otherwise completely unrelated audio applications.

It is because of JACK that Qtractor can actually drive a stand-alone software synth. For this to work, you need to download and install a stand-alone synth that is JACK aware. Qsynth is a popular frontend to the very flexible fluidsynth; download it from your repository or from the project's site, and then hunt down some good soundfonts and load them into Qsynth.

With Qtractor (and by default, jackd) running, launch Qsynth. It will plug itself into JACK but you should verify that its MIDI settings are cor-

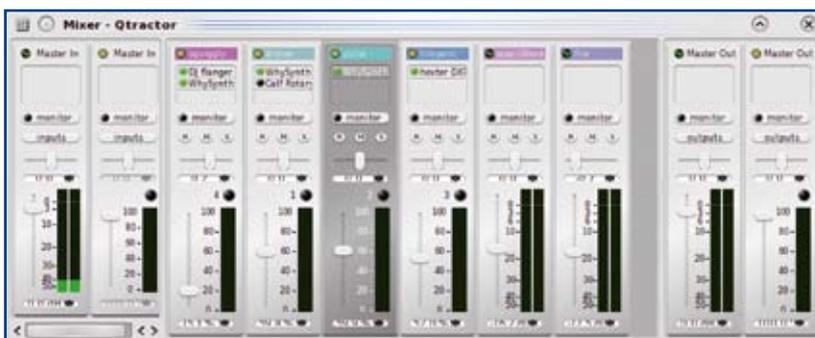


Figure 5. Soft Synths assigned to MIDI tracks in Qtractor's Mix window

rect by clicking the *Setup* button and navigating to the MIDI tab. Enable MIDI input and select your MIDI driver, which is typically `alsa_seq`. If this fails, you may do a `lsmod` to view what MIDI-related modules are active, or simply try different drivers (`jack`, `alsa_raw`, `oss`) until the MIDI signal is received properly by Qsynth. You may also launch QJackCtl and check to ensure that ALSA Sequencer Support is turned on in the *Setup* → *Misc* tab.

You may now create a new track in Qtractor. In the *New Track* dialog box, make the track MIDI and click *OK*. After the empty track appears in the Qtractor workspace, right click on its name and select *Outputs*. This brings up the connection window's MIDI tab, where you should route Master (on the left) to the fluidsynth input (on the right). Now you have connected that track, on MIDI channel 1, to Qsynth/fluidsynth and any data you place in that track will be played by Qsynth.

Since the stand-alone synth occurs outside of Qtractor's interface, any changes you wish to make to the sound being generated by that synth will be done, unlike with DSSI or VST plugins, external of Qtractor. To do this, simply switch to the synth and change what bank and patch you are using from within its interface.

Bounce Your Track

In order to distribute your completed track as a self-contained audio file, such as a `.wav` or `.ogg` file, the track must be “bounced” (that is, played back and recorded to a file).

The easiest way to do this is to create a new *Audio* track, name it “Bounce”, and arm it for recording. Then open your *Connections* window to the *Audio* tab. If you used audio tracks or synth plugins, pipe the Master Out of Qtractor to the Master In of Qtractor. If you used a stand-alone synth, then pipe the audio out of that synth back to the Master In of Qtractor.

Make sure that your playhead is at the beginning of the composition. Click the *Record* button of Qtractor in the main toolbar, and then *Play*; your

work will be played back in realtime and recorded onto the Bounce track. When finished, stop the playback.

You may export the Bounce track by clicking its “S” button (for Solo) and clicking on the *Track* menu → *Export* → *Audio*. Working

and Exporting in `.wav` or some other uncompressed format is generally a good idea; from this gold master, any number of compressed file formats can be generated, using `sox` or `oggenc` or `LAME` or similar applications. ■

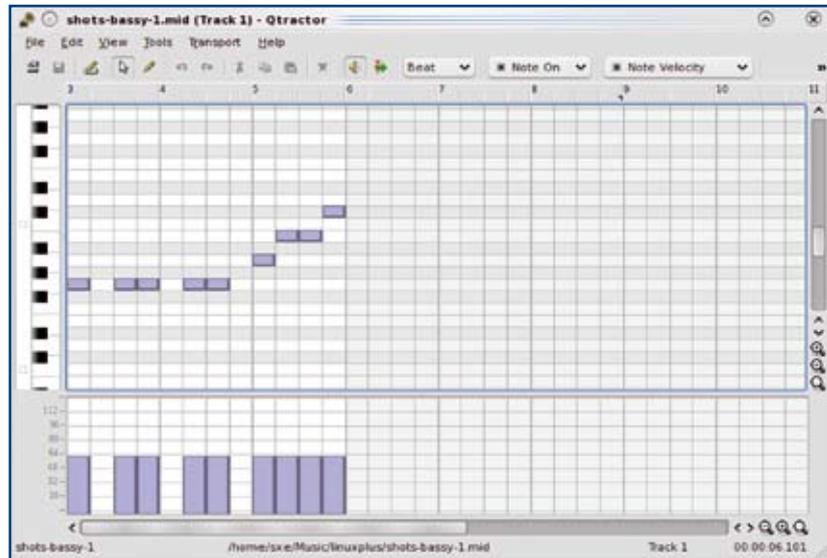


Figure 6. The MIDI “Piano Roll”

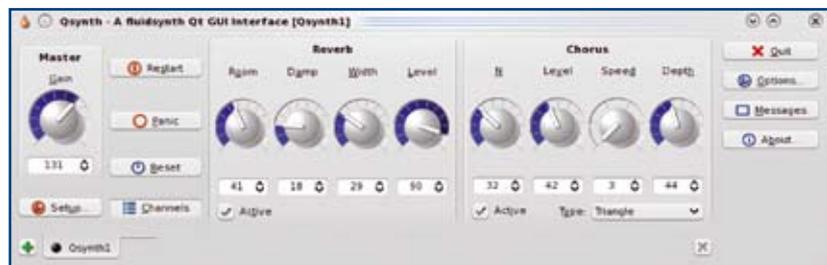


Figure 7. The Qsynth Software Synth



Figure 8. Qtractor in full swing on Fedora 15