

Rosegarden 4

On a Bed of Roses

The version number says it all – Rosegarden 4 has a long track record. Rosegarden 2.1 was released way back in 1997, and since then Rosegarden’s functional scope has simply exploded. **BY JÖRG SCHUMANN**

A flexible score editor is the basis for computer-based composing. And if you would like a digital tape machine to go along with that, *Rosegarden* [1] is the solution you have been looking for. It allows you to record MIDI data, play that data back, and create scores from it.

Installation

As Rosegarden has some serious realtime processing to do, it does place quite heavy demands on the hardware platform. A processor with a clock speed of no less than 1 GHz and a minimum of RAM of 256 MBytes are essential, if you want to avoid delays that can impact the program’s usability.

Rosegarden is a KDE3 program. You will need the KDE libraries (*kdelibs3*). The major distributions include these by default. Rosegarden for SuSE 8.2, Mandrake 9.0, and Red Hat 9 is available from [2]. Debian still has the Rosegarden 4 in *unstable*. Debian users can download a package from [3].

The *ALSA* sound card architecture [4], is also required. SuSE uses *ALSA* by default, but you may need to install *ALSA* on other distributions. In order to use the soundcard as a MIDI device, you will need *FluidSynth*.

First unzip the *Unison.sf2* soundfont from [7] by entering `gzip -d Unison.sf2.gz`. You can then launch the synthesizer:

```
fluidsynth Unison.sf2
```

Typing `gain 5` in the FluidSynth command line increases the

volume for the device. Many people find the default setting far too quiet.

When launched, Rosegarden opens up a **sequencer**. You can launch the sequencer individually for test purposes by typing `rosegardensequencer`. Listing 1 shows the output from our test machine.

The list below *ALSA Client information* contains the MIDI devices found by the sequencer, and below that you can see the names by which they are visible to Rosegarden:

- *device 0* is the output port for an external MIDI device.
- *device 1* is the recording interface for an external MIDI device.
- *device 2* is the MIDI port for sound output via the software synthesizer.

The Studio

Rosegarden is launched via the KDE menu, or by entering `rosegarden`. The “Tip of the Day” is the first thing that appears. This can be useful if you are new to the program. As the Rosegarden interface is not entirely intuitive, the tips

are a useful addition to the manual and tutorial.

A Rosegarden studio is a collection of input and output devices. A keyboard is a typical example of an input device, and would be attached to the PC via a MIDI port. Rosegarden will normally recognize MIDI ports and software synthesizers without any help. If it fails to discover a device, you can add it manually in the *Studio / Manage MIDI devices... Import output device*.

Before you can actually use a device, you need to tell Rosegarden what sound banks the device has. In the case of software synthesizers, you would select *Studio / Manage MIDI banks and programs...* to import the soundfont file, such as *Unison.sf2*, and allow Rosegarden to extract the instrument names from the file (see Figure 1).

Definition files are supplied for some external synthesizers. They are located in the *library* subdirectory below your

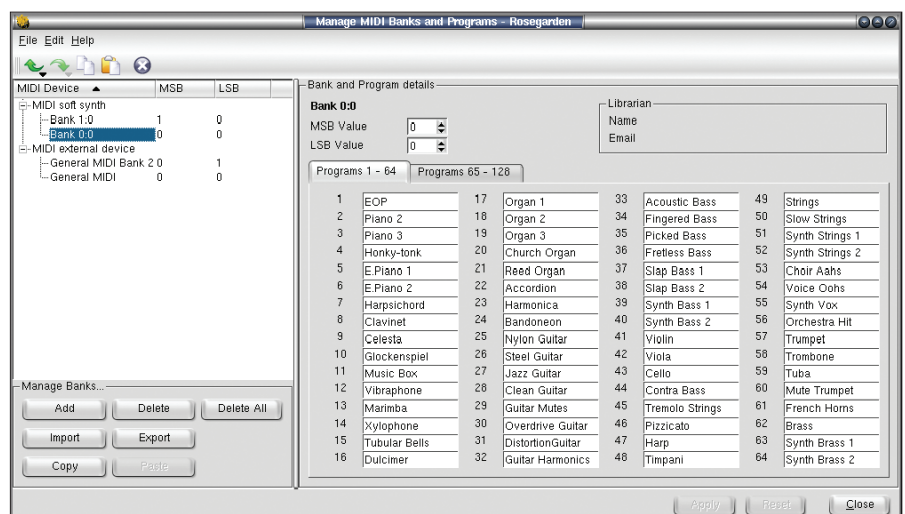


Figure 1: The Unison General MIDI soundfont comprises 128 instruments

Rosegarden directory – this is `/usr/share/apps/rosegarden/` for SuSE. If you cannot find a soundfile for your device, you will have to enter the instruments manually.

Rosegarden divides compositions up into tracks and segments, where each track is mapped to an instrument, just like the lines in a score. Each track comprises one or multiple segments. This structure makes it easy to move and copy segments within a track or between tracks. You can then assign individual parameters, such as **Transposition**, to these segments.

There are three different editors available for manipulating segments. All of them are accessible via the *Segments* menu. The Notation Editor allows you to choose between notation types. Besides the standard note symbols we use today, you can also select the mensural style common up until the Renaissance period, or crosses and triangles for drum tracks.

The Matrix Editor displays a grid, which looks just like a piano-roll used with mechanical instruments. Each tone is mapped to a line, and you can enter a score by marking sections on a timescale. This view is useful for programming **drumsets**, for example.

The Event List Editor provides an overview of events from a technical viewpoint. You cannot add or delete notes in this view; instead it is designed for fine tuning individual notes.

GLOSSARY

Sequencer: A program or device that processes MIDI data, thus controlling sound devices.

Transposition: Moves notes a specific number of half-tone steps up or down – within a key or changing the key.

Drumset: A collection of various percussion instruments with different sounds, rather than different pitches.

General MIDI: An extension of the MIDI standards that assigns a pre-defined program slot to each instrument.

Devices, Channels, Banks, Programs

Rosegarden can only handle a single device per channel. But if you have attached an expander module to an electronic piano, for example, it is quite simple to use MIDI channels to overcome this restriction. Set the piano up to react to channel 1 and map the Rosegarden piano track to this channel. You can then map the remaining channels to the expander.

To allow this to work, both devices

must have the same bank of instruments. The **General MIDI** standard [5] that most MIDI devices and soundfonts are based on, provides this kind of support.

The sounds on a MIDI device are organized in banks of 128 programs. Thus, a single MIDI device can emulate several hundred different instruments with unique sounds. But the principle is the

same for all of them. You have to map each sound you intend to use to a MIDI channel.

Let's look at an arrangement for saxophone, piano and percussion. Three MIDI channels are required, and you would use Rosegarden to map the appropriate sounds to these channels:

- Channel 1: Tenor saxophone (Bank 0, Sound 67),
- Channel 2: Piano (Bank 0, Sound 1),
- Channel 10: Drums (Bank 1, Sound 1) (Channel 10 is typically used for the drumset).

Before Rosegarden can play your arrangement, it uses the MIDI protocol to send so-called *Program Change* messages to the synthesizer, telling it to map sound 67 to channel 1, sound 1 to channel 2, and the standard drumset to channel 10.

Instruments

You can also check the *Show Instrument Parameters* in the *Settings* menu to open and display the *Instrument Parameters* box in the main windows. This tells you the sounds that are mapped to the notes in the active track. The upper part of the dialog box shows you the source device

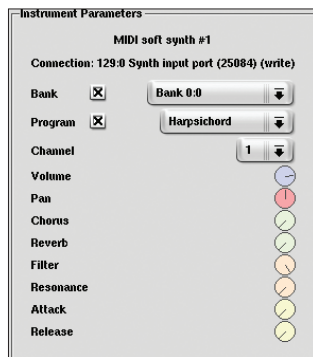


Figure 2: Rosegarden provides individual control of the parameters for each instrument

Listing 1: rosegardensequencer

```
rosegardensequencer: Registering with DCOP server
rosegardensequencer: created plugin manager
MappedAudioPluginManager::discoverPlugins - discovering plugins
Rosegarden 0.9.1 - AlsaDriver - alsa-lib version 0.9.3
cannot connect to jack server
cannot connect to default JACK server

ALSA Client information:
  72,0 - (Rawmidi 1 - MPU-401 (UART) 1-0, MPU-401 (UART) 1-0)
(DUPLEX) [ctype 2, ptype 2, cap 127]   129,0 - (FLUID Synth (18285),
Synth
input port (18285))                   (WRITE ONLY) [ctype 1, ptype 1048576,
cap 66]
Creating device 0 in Play mode for connection 72:0 MPU-401 (UART) 1-0
(duplex)
Default device name for this device is MIDI external device
Creating device 1 in Record mode for connection 72:0 MPU-401 (UART) 1-0
(duplex)
Default device name for this device is MIDI hardware input device
Creating device 2 in Play mode for connection 129:0 Synth input port
(18285)
(write)Default device name for this device is MIDI soft synth
Record client set to (72, 0)
AlsaDriver::initialiseMidi - initialised MIDI subsystem
rosegardensequencer: RosegardenSequencer - started OK
```



Figure 3: The Notation Editor can also display text

that is used for the sound, as can be seen in Figure 2.

Hold down the left mouse button on a track title to open a dropdown menu where you can select a device – *MIDI soft synth* in the case of the FluidSynth software synthesizer – and a channel. Then use the *Settings* and *Program Instrument Parameters* window to select the required sound (see Figure 2).

If you want to record a four-handed score on your own, first click the red *Record* button to record the bass part on track 1. Then select track 2 – the *R* button next to each track, selects the track for recording – and record the treble part while playing back the bass part on track 1. This allows you to use Rosegarden just like a multitrack electronic tape machine.

Notation

For our next example, we will be creating a two-part choral. To do so, left click on track 1 to create a segment, and select *Segments / Open in Notation Editor*. Then select *Edit / Add Clef Change...* and *Edit / Add Key Change...* to insert a clef and a key.

Note input in Rosegarden takes some getting used to. The program initially fills the whole staff with rests, and *Insert*

mode is automatically selected. When you input a note, it shortens the rest by the duration of the note.

Unfortunately, the Notation Editor tends to crash if you try to insert something between an existing rest and a note. Although Rosegarden saves your changes every 60 seconds by default, you will still want to avoid crashes.

Hold down the [Shift] key and click to select existing notes, and then press [Ctrl-C] to copy them. You can then select a position in the purple bar above the staff to indicate where you want to insert the content of your clipboard. [Ctrl-Shift-V] opens the *Insert* dialog box, where you can select an insert mode from insert, overwrite or merge. To use the default mode, simply press [Ctrl-V] without opening the dialog box.

You can click on the black bar below the staff to position the replay cursor. Then click on *Play* to play your composition from this point onward.

The *Text* tool allows you to add text at any position. Left click to open a dialog box where you can input your text and select a style (see Figure 3).

To create the second part in our example, we first copied the segment from the first track to the second. We then deleted the notes and inserted a bass part

instead. As the composition is for a choir, there was no need to change the text.

If you want to print your score in PDF format or export it, you have to take a detour via the *Lilypond*. The package requires the *guile* library. The current version for Red Hat 9 is available from [6]. The version supplied

on your distribution CDs should be fine for any other distributions.

Use *File / Export / Export Lilypond file ...* to save the current file in Lilypond format. Then type

```
ly2dvi -p Othmayr.ly
```

to create a PDF file (see Figure 4).

Unfortunately, this process is not error free. Although **LaTeX** users should have no trouble correcting the *.ly* file, this function is of limited every-day use.

No Roses without Thorns

Rosegarden created an ambivalent impression. It has an overwhelming functional scope that this article could not hope to cover and leaves nothing to be desired.

On the other hand, periodic crashes do restrict the program's usability, the buggy export function and the non-intuitive interface in a combination with sparse documentation seriously impact the practical value of the program's many features.

But thanks to the active and friendly support the developers provide, you should have a lot of fun with Rosegarden, despite the thorns. Readers interested in more information might like to check the mailing list, which is accessible via the project homepage at [1]. ■

GLOSSARY

LaTeX: A text layout system that can create scientific layouts using mathematical and chemical symbols, etc.

INFO

- [1] Rosegarden: <http://www.all-day-breakfast.com/rosegarden/>
- [2] Rosegarden packages: <http://apps.kde.com/rf/2/info/id/1315>
- [3] Rosegarden for Debian: <http://packages.debian.org/unstable/sound/rosegarden4.html>
- [4] ALSA: <http://www.alsa-project.org/>, <http://alsa.opensrc.org/>
- [5] General MIDI: <http://www.midi.org/about-midi/gm/gminfo.shtml>
- [6] <ftp://ftp.redhat.com/pub/redhat/linux/rawhide/i386/RedHat/RPMS/>
- [7] Unison soundfont: <ftp://ftp.personalcopy.net/pub/Unison.sf2.gz>

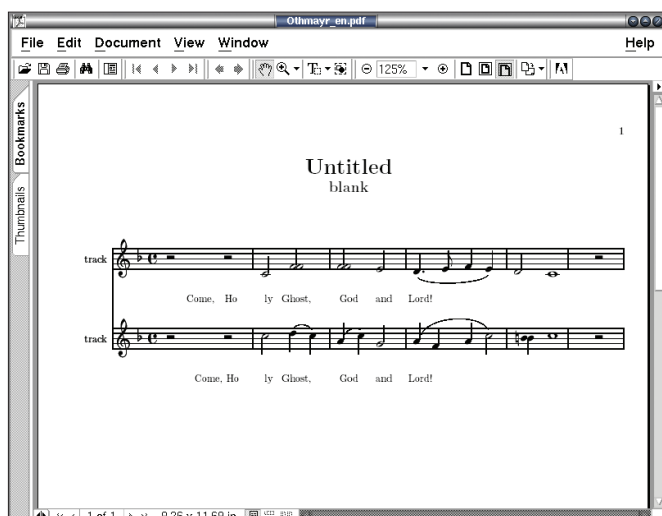


Figure 4: Error-prone Lilypond export