

# Set Up Sound Blaster Live! 5.1 & Audigy Rx in Slackware

This HOWTO is based on setup experience with following hardware:

- Creative Labs Sound Blaster Live! 5.1 ( SB0060)
- Creative Inspire T3100 2.1 Speakers
- Intel DG965SS motherboard
- Intel Core 2 Duo 2.2 GHz E4500 CPU
- 3 Gb RAM, 500 Gb HDD, Slackware 14.0 32bit Full install, generic kernel.
- 4 Gb RAM, 1 Tb HDD, Slackware64 14.1 - 64 bit Full install, default huge kernel.
  
- Creative Labs Sound Blaster Audigy Rx ( SB1550 )PCIe on ASUS R8H61/i3 - 3220/ 16 Gb RAM / Slackware64 14.1

## Installation and Basic Configuration

- Shutdown the computer
- Insert the Sound Blaster card into a free PCI slot ( Audigy - in PCIe slot) on your motherboard.

Try not to block the existing cards' ventilation.



I usually try to put the sound card in the “lowest” slot, most distant from the CPU, and close to the bottom of the case.

- When the Sound Blaster card has been installed and secured with a bracket screw, you may turn the computer on and log into Slackware.
- After login, you will have working sound from your new sound card.
  - In order to obtain full control, do the following (in KDE): click on “**kmixer > mixer > settings > configure channels...**”, and drag & drop all channels you need from the “**Available channels**” window to the “**Visible channels**”.

## WaveTable MIDI Configuration

Now it's time to set up the [WaveTable](#) feature:

- Download the latest awesfx package here: <ftp://ftp.suse.com/pub/people/tiwai/awesfx/> (tested with 0.5.1d)
- Extract the source tarball, and compile it (with the usual “./configure && make && make install” routine as root)
- After that, you need a soundbank aka *soundfont* - examples of freely available soundfonts are:
  - <http://www.alsa-project.org/~james/sound-fonts/8MBGMSFX.SF2>
  - <http://www.systemshock.org/index.php?topic=3188.0>

- <http://www.alsa-project.org/~tiwai/awedrv.html#SoundFonts>
- Choose one of these soundfont (.sf2) files and copy it to a directory which you may have to create first: /usr/local/share/sounds/sf2/
- Then edit /etc/rc.d/rc.local with a text editor (vi, nano, or midnight commander's built-in editor) to initialize the WaveTable.

An example:

```
#!/bin/sh
#
# /etc/rc.d/rc.local: Local system initialization script.
#
# Put any local startup commands in here. Also, if you have
# anything that needs to be run at shutdown time you can
# make an /etc/rc.d/rc.local_shutdown script and put those
# commands in there.

echo "SB synth module load!"
/sbin/modprobe snd_emu10k1_synth

echo "sleep for LivE! appear"
sleep 5

echo "Load 8 Mb midi patch set for SB Live! 5.1 soundcard!"

#/usr/local/bin/asfxload /usr/local/share/sounds/sf2/8mbgmsfx.sf2
/usr/local/bin/asfxload /usr/local/share/sounds/sf2/WeedsGM3.sf2

echo "Pause ***** Sleep 10 *****"
sleep 10
```

- You can comment the “sleep” command (using a # character at the beginning of the line) - it pauses the computer for N seconds. I added that “sleep” to get time to check whether the soundfont is being loaded without errors during startup.
- The command “modprobe snd\_emu10k1\_synth” is needed here, because without it, I have experienced the error “No Emux synth hwdep device is found” when trying to load a soundfont at this stage of the boot.
  - When i try to load a soundfont after I login to KDE, it succeeds without requiring that “snd\_emu10k1\_synth” commandline in rc.local, but as I want to load a soundfont automatically at startup, I load that module as shown in the example code)
- After these preparations and a restart, everything should be working and you can use your MIDI WaveTable device.

## Playing MIDI

For playing MIDI (.mid) files you can use the [Audacious](#) program - in KDE that can be found under **Start > Multimedia > Audacious (Music Player)**.

- Start Audacious, and choose **File > Preferences**

- Choose **Plugins** tab, then **Input** tab, and choose **AMIDI-Plug (MIDI Player)**
- In the **AMIDI-Plug Settings** window, choose **Preferences**, then **ALSA backend**
- You will see **ALSA output Ports**. Choose (by ticking the checkbox) **17:0 Emu10k1 WaveTable Emu10k1 Port 0**
- Press **Ok** and close all configuration dialogs.
- Now you can play your MIDI files in Audacious.

If you encounter any problems, or found an error in this HOWTO, please contact me: john AT sten.lv.

## Play files from CLI

For playing MIDI (.mid) files under Command Line Interface, you can use a **aplaymidi** command from slackware, or download and install pmidi from <http://slackbuilds.org> . The both programmes is very similar in use and syntax. To play MIDI via aplaymidi:

do

```
aplaymidi -l
```

you get something like this:

```
aplaymidi -l
Port      Client name                Port name
14:0      Midi Through               Midi Through Port-0
16:0      SB Audigy 2 Value [Unknown] Audigy MPU-401 (UART)
16:32     SB Audigy 2 Value [Unknown] Audigy MPU-401 #2
17:0      Emu10k1 WaveTable          Emu10k1 Port 0
17:1      Emu10k1 WaveTable          Emu10k1 Port 1
17:2      Emu10k1 WaveTable          Emu10k1 Port 2
17:3      Emu10k1 WaveTable          Emu10k1 Port 3
```

now you must define hw wavetable port for programm and midi file to play:

```
aplaymidi -p 17:0 BBEE.MID
```

To play another types of files ( .wav .flac .mp3 and so on) you can use “play” command. in default it use default sound card for output.

```
play loona.mp3
```

```
loona.mp3:
```

```
File Size: 3.44M      Bit Rate: 112k
Encoding: MPEG audio
Channels: 2 @ 16-bit
Samplerate: 44100Hz
Replaygain: off      Artist: Loona
Duration: 00:04:05.48 Title: Hijo de la La Luna
```

You also can use mixer for change volume:

```
alsamixer
```

## Troubleshooting

### Diagnostic and information gathering

For first -try gathering some useful information about your situation:

```
lspci
```

Gives you info about hardware devices sits on PCI and PCIe bus of your computer

```
cat /proc/asound/cards
```

gives you information about cards found your sound system and its numerating. 0 card is be default card.

there is also some another useful commands:

```
aplay -l
```

and

```
aplay -L
```

and even

```
lsmod
```

### Make a right soundcard as first (default)

Firstly, make a file called sound.conf under /etc/modprobe.d/ :

```
##alias char-major-116 snd
options snd cards_limit=2 slots=snd-emul0k1,snd-hda-intel
# LHB6.m0mgEN0gox0:SBLive! 5.1 Digital Model SB0220
alias snd-card-0 snd-emul0k1
alias sound-slot-0 snd-emul0k1
# W60f.x8s5HMdIibD:82801EB/ER (ICH5/ICH5R) AC'97 Audio Controller
alias snd-card-1 snd-hda-intel
alias sound-slot-1 snd-hda-intel

##options snd-emul0k1 enable=1 index=0 max_buffer_size=756
options snd-emul0k1 enable=1 index=0 max_buffer_size=1750
```

```
options snd-hda-intel enable=1 index=1
```

## Problems with SoundFonts

SB Live! And Audigy Rx use similar DSP - emu10k based, and looks like have similar problems.

As i read, problem root is in that fact, a DSP use 31 bit in memory address instead of 32 bits - and it causes problem on linux x64 systems with more than 2 (3?) Gb RAM.

I encounter that with 4 Gb RAM on Slackware64 14.1 - the symptoms is that, you cannot load soundfont larger than 16 Mb - asfxload on trying that writes:

```
sfxload: no memory left
```

while asfxload -M gives something like this:

```
DRAM memory left = 115576 kB
```

it means - about 100+ megabytes free ram. But you really cannot load even 30 Mb soundbank.

Ok, what is workaround? There is two: decrease memory size used by system at boot stage to 2 Gb - use at lilo kernel parameter

```
memmap=2048M\ \ $6144M
```

Other is more usable - change kernel source files and recompile kernel:

go to /usr/src/~linux - that is your linux source.

```
arch/x86/include/asm/dma.h
```

change in string:

```
/* 4GB broken PCI/AGP hardware bus master zone */
#define MAX_DMA32_PFN ((4UL * 1024 * 1024 * 1024) >> PAGE_SHIFT)
```

change 4UL to 2UL:

```
/* 4GB broken PCI/AGP hardware bus master zone */
#define MAX_DMA32_PFN ((2UL * 1024 * 1024 * 1024) >> PAGE_SHIFT)
```

after that need to recompile kernel. after that you get usable 1 Gb RAM for SB Live /Audigy Rx soundfonts.



if you want more than 1 Gb for soundfonts - you need edit also:

```
sound/pci/emu10k1/emu10k1.c
```

```
err = snd_card_create(index[dev], id[dev], THIS_MODULE, 0, &card);
if (err < 0)
    return err;
if (max_buffer_size[dev] < 32)
    max_buffer_size[dev] = 32;
// else if (max_buffer_size[dev] > 1024)
//     max_buffer_size[dev] = 1024;
if ((err = snd_emu10k1_create(card, pci, extin[dev], extout[dev],
    (long)max_buffer_size[dev] * 1024 * 1024,
    enable_ir[dev], subsystem[dev],
    &emu)) < 0)
    goto error;
```

you must comment that strings, as in upper block:

```
else if (max_buffer_size[dev] > 1024)
    max_buffer_size[dev] = 1024;
```

And then there is one else thing: default memory size for soundfonts is 128 Mb. If you want to increase it, you must create a sound.conf file in /etc/modprobe.d/

write in file /etc/modprobe.d/sound.conf :

```
options snd-emu10k1 max_buffer_size=1750
```

where max\_buffer\_size reffers to amount of RAM dedicated to soundfonts, in megabytes. in that case its about 1.7 Gb.



after that you can use up to 2 Gb RAM for soundfonts loading ( when define that in max\_buffer\_size, and do restart).

## Useful Links:

- <http://www.alsa-project.org/~tiwai/awedrv.html>
- <http://alsa.opensrc.org/Emu10k1>
- <http://www.systemshock.org/index.php?topic=3188.0>
- <http://www.simpilot.net/~richnagel/#downloads>
- <http://alsa.opensrc.org/Asfxload>
- <http://vladimir-stupin.blogspot.com/2012/05/midi-debian-gnulinix.html> (in russian)
- <https://bugs.launchpad.net/ubuntu/+source/awesfx/+bug/183456>
- <https://github.com/koppi/renoise-refcards/wiki/HOWTO-setup-EMU10k-soundfont-DSP-on-Ubuntu-11.10>
- <http://www.linuxquestions.org/questions/slackware-14/sound-problems-in-slackware64-14-1-xfce-4175497387/>

# Sources

Originally written by — [John Ciemgals](#) 2013/02/07 04:50

Rewritten with used materials from “Links” and LinuxQuestions.org Slackware forum, especially user Drakeo help — [John Ciemgals](#) 2014/03/19 01:15

Edited by — [mfillpot](#)

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