How to do a custom Live CD install of Debian Bookworm i686

Preamble

I use the Daphile music player on a old Acer Aspire One. It works pretty well. Daphile is based on a Gentoo distribution and it is particularly almost impossible to take this base to add personal components unless you are a Gentoo expert, which I am not.

As I have several Aspire One at home to convert into music players, it seemed interesting to me to do something similar on a more popular and easy distribution.

There are other distributions that do the same thing, particularly PicorePlayer, which is dedicated to Raspberry Pis. The problem is that PicorePlayer is for the Pi's ARM architecture and isn't compatible with i686.
However, for a lower price than Raspberry Pis, you can buy old netbooks on the used market. Moreover, these netbooks have a screen and a keyboard, which Pis don't have unless you spend a little extra money. I'm looking at the prices of raspberries, they're crazy.

It's been raining in my area for the past few days, so I sat down at a computer and began the first steps of a Debian-based live CD to convert old i686s into music players.

The system should be composed of the same internal components : the Lyrion Music Server as the server, the Squeezelite program as the player, and Jivelite as the on-screen interface, and later if possible write the programs or scripts to configure the creature when it will work.

So let's start the work ;

A- Clone a Debian Distribution :

In the Debian bookworlm repositories, I couldn't find a Live CD for the i686 architecture. There are plenty of them for all other architectures, including x86_64, but not for i686. the latest i686 live cds are for debian version 11 not 12. I had to make one first.

Fortunately, Debian has a very powerful tool for creating a basic Live CD: Live-Build.
It is also possible to do a live Cd Debian from scratch, liitle bit long. This is not the subject of this document.

A-1 : Do a LiveCD Debian for i686 with Live Build.

So on a debian stable computer, install all the necessary tools live-build. Easy.

Make a directory live-default :

```
$mkdir live-default ; cd live-default
```

then lanch « lb config » with the good parameters. I didn't invent anything, I just took the parameters for an x86_64 from a Debian live-CD and adapted them for an i686. the logs inside the CD ISO provide all the necessary information :

```
$lb config -mirror-bootstrap http://deb.debian.org/debian/ --mirror-binary http://deb.debian.org/debian/ --security false -updates false -distribution bookworm -debian-installer live -debian-installer-distribution bookworm -cache-packages false -archive-areas main non-free-firmware non-free contrib -iso-volume defaut-live 12,10st i386 -architecture i386
```

then launch the build :

```
$sudo lb build
```

What else? Nothing. There is an ISO image file of the Debian Live CD distribution on i686. Thanks to the Debian contributors for providing such an easy tool.

Test this Iso File in a virtual machine (kvm, qemu, virtualbox) or a computer with a burned USB key → all is ok.
(In fact not exactly, the kernel inside the live CD is a i686-PAE, this kernel does not work very well on the Aspire One with 1Go of Ram. When adapting the Live CD, it's essential to change the kernel to a non-PAE i686 version. We shall see that later.)
aside : Despite all my attempts using the --linux-flavors and --linux-packages parameters in lb config , I haven't been able to directly create a Live CD with the correct kernel; each time I create it, the kernel is in i686-pae.)

So next step : adapt the liveCD to the goal : make a music player.

A-2 : Clone the LiveCD and Adapt it

There are several ways to do this.
One is a bit complex using the command line, and another is very easy using a graphical program found on the internet (Cubic). Here are the two, first the command line then the graphical program. to adjust the future live CD nothing prevents juggling between the two.

A-2-1 : Clone with the command line :

To do this, In the directory where the iso is created in the previous step ~/live-default, we obtain a hierarchy of directories and files. We are only interested in two directories to work with : ./chroot/ and ./binary/isolinux/

The idea is to chroot into the chroot directory and do the tweaking work. While in isolinux, we'll modify the CD boot configuration files to get something to suit us.

In ./live-default :

```
$sudo mount -bind /dev/chroot/dev
$sudo mount -bind /sys /chroot/sys
$sudo mount -bind /proc chroot/proc
```

```
$sudo chroot chroot/ /bin/bash
```

And do the stuff.
As I said, the first to do is to install a new kernel.
To this :
fill the file /etc/apt/sources.list with the good repository (you can easily find online)

```
$ apt update
$ apt upgrade
$apt install linux-image-6.1.0-33-686
```
(the latest update at the time of writing, no doubt this will evolve into new versions)

and do more : the install of LyrionMusicServer, Squeezelite and Jivelite

After these customizations, we can create the new live CD.

There are several tools for this: genisoimage, mkisofs and xorriso, each more complicated than the last.
Since the default live CD was created with xorriso and the developers kindly provided the logs, we're using the initial build command with xorriso.
you are not exempt from reading the documentation on the numerous parameters of the command xorriso.

```
$cd ..
```

```
$sudo xorriso -as mkisofs -R -r -V ''Debian Live Clone'' -o debianLiveClone.iso- J -J -joliet-long -isohybrid-mbr isohdpfx.bin -b isolinux/isolinux.bin -c isolinux/boot/cat -boot-load-size 4 -boot-info-table -no-emul-boot ./live-default
```

A-2-2 : Clone with the Cubic tool :

You can get it there : https://github.com/PJ-Singh-001/Cubic

it’s a wizard tool. It extracts the original ISO file, opens a virtual environment to make system modifications, and then re-burns a CD with the chosen kernel and compression.
It's really very easy to use. No need to elaborate.
Except that sometimes it may be necessary to manually chroot into the directory to make the modifications rather than using the cubic virtual environment.

In all cases, it's necessary to modify the isolinux configuration to obtain the correct parameters, particularly those that call the kernel (vmlinuz) and the initramfs (initrd.img).

In the customization of the Live CD, the goal is to have the lyrion music player also in the chroot or virtual environment, you must follow the instructions in this other document: **HowtoInstall_LMS_and_other_onDebian.pdf**