Installing RetroPie on PC

Mathieu ABATI (mathieu-abati.com)

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Installing RetroPie on PC

This tutorial describes the installation and configuration of the Linux distribution RetroPie on a PC dedicated to video game emulation. This PC can be integrated as an arcade cabinet or a game console.

The goal is to have a dedicated system, meaning that as soon as it powers on, an interface will offer access to the games.

We assume that a basic Debian system has been installed on the PC. Recommendations for the rest of this tutorial:

- No graphical interface or desktop installed,
- SSH access,
- We assume below that the default user created during installation is **pi**, without special permissions,
- Minimal knowledge of the Linux shell is highly recommended,
- A 64-bit installation is recommended.

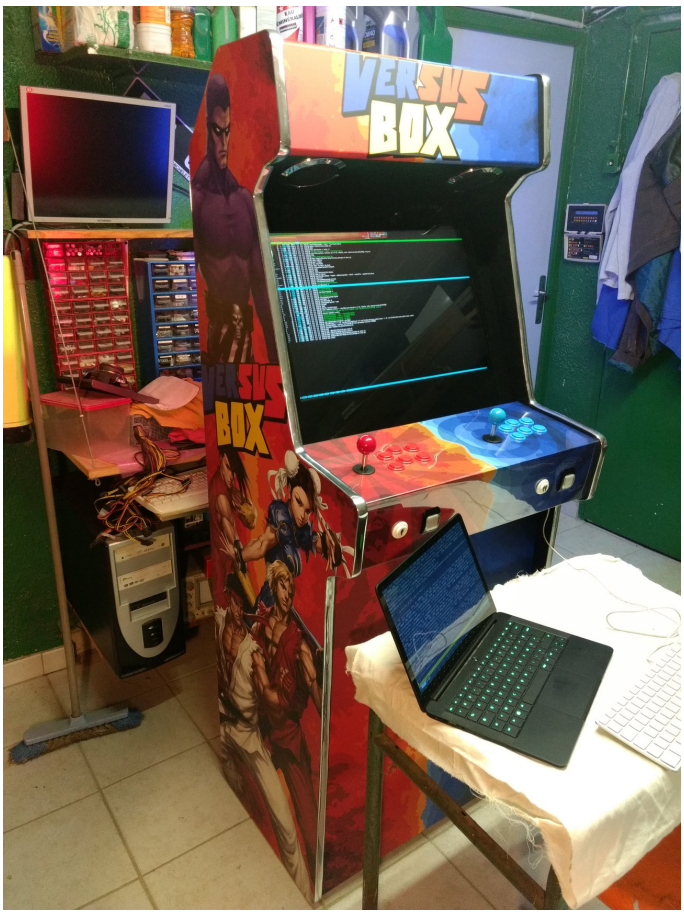

Figure 1: An arcade cabinet based on a PC, being configured

Global System Configuration

From a root shell, directly on the machine, allow **pi** to have root rights:

```
apt install sudo
usermod -aG sudo pi
```

To allow the **pi** user not to require a password for root rights, edit the sudo configuration:

```
sudo visudo
```

and add:

```
# No password for user pi
pi ALL=(ALL) NOPASSWD:ALL
```

(This is not recommended on a regular PC.)

Note the machine's IP address on the local network:

```
ip a
```

The rest of the tutorial can be done from an SSH shell from another machine:

```
ssh pi@<ip_address>
```

Install the required packages for display and audio:

```
sudo apt install xorg openbox pulseaudio alsa-utils curl
```

Add **pi** to the input group:

```
sudo usermod -aG input pi
```

Installing Graphics Drivers

To improve 3D rendering, it may be useful to install the official drivers for your graphics card.

The procedure below describes installation for a Geforce GTS 450. If another graphics card is used, the procedure will be similar; refer to the documentation on the Debian wiki: https://wiki.debian.org/GraphicsCard

Edit **/etc/apt/sources.list** and add **contrib** and **non-free**, example:

```
deb http://httpredir.debian.org/debian/ stretch main contrib non-free
```

Then install the necessary components:

```
sudo apt update
sudo apt install linux-headers-$(uname -r|sed 's/[^-]*-[^-]*-//')
    nvidia-driver
```

Immediate Boot without Grub Timeout

Edit **/etc/default/grub** and change **GRUB_TIMEOUT** to 0. Then run:

```
sudo update-grub2
```

Installing RetroPie

First:

```
sudo groupadd admin
sudo usermod -aG admin pi
```

Then follow the official tutorial for a “Basic install”: https://retropie.org.uk/docs/Debian/

Automatically Starting EmulationStation

The procedure below allows the PC to boot directly into EmulationStation.

We will automatically log in the **pi** user, then automatically start Xorg, then start the OpenBox desktop, and finally EmulationStation.

User Autologin

Run:

```
sudo systemctl edit getty@tty1
```

And enter the following content:

```
[Service]
ExecStart=
ExecStart=-/sbin/agetty --autologin pi --noclear %I $TERM
```

Automatically Start Xorg at Login

Add to the **~/.profile** file:

```
[ "$(tty)" = "/dev/tty1" ] && startx
```

Remove the Mouse Cursor

Edit **/etc/X11/xinit/xserverrc** and add the **-nocursor** option as follows:

```
exec /usr/bin/X -nolisten tcp "$@" -nocursor
```

Automatically Start OpenBox

Create the **~/.xinitrc** file, make it executable, and insert:

```
xrandr -s 1440x900
amixer set Master unmute
xset -dpms s off
openbox-session
```

Change the screen resolution in the **xrandr** line above to the optimal value for the screen used.

The **amixer** line ensures the audio output is not muted.

The **xset** line disables the screensaver and DPMS (Display Power Management Signaling) to ensure no black screen appears during gameplay.

Automatically Start EmulationStation

Run:

```
sudo RetroPie-Setup/retropie_setup.sh
```

Go to Configuration / Tools > autostart > enable Autostart Emulation Station after login.

Exit the tool, and run:

```
sudo chown pi .config/autostart/retropie.desktop
```

Edit **~/.config/autostart/retropie.desktop** and change the value of **Exec** to:

```
Exec=~/run_emulationstation.sh
```

Create a **~/run_emulationstation.sh** file, make it executable:

```
touch ~/run_emulationstation.sh
chmod +x ~/run_emulationstation.sh
```

and insert:

```
#!/bin/bash
xterm -fg white -bg black -e emulationstation --no-splash
xterm -fg white -bg black
```

The last line launches **xterm** in case EmulationStation is closed.

OpenBox Customization

Create the configuration:

```
mkdir ~/.config/openbox
```

The configuration is to be done in **~/.config/openbox/rc.xml**, which should contain at least:

```
<?xml version="1.0" encoding="UTF-8"?>
<openbox_config xmlns="http://openbox.org/3.4/rc" xmlns:xi="http://www.
    w3.org/2001/XInclude">
</openbox_config>
```

New configurations should be added inside the **openbox_config** block.

Remove Window Decorations

In the **~/.config/openbox/rc.xml** file, inside the **openbox_config** section:

```
<applications>
   <application class="*"> <decor>no</decor> </application>
</applications>
```

Fullscreen Terminal

Add inside the **applications** section:

```
<!-- Xterm fullscreen -->
<application name="xterm" class="XTerm" type="normal">
   <decor>no</decor>
   <fullscreen>yes</fullscreen>
   <layer>below</layer>
</application>
```

Background Music

The goal is to have background music when in the EmulationStation menu, and stop the music when a game is launched.

Download the **music_player.py** script from https://mathieu-abati.com/resources/guides/versusbox/music_player.py and place it in **~/music_player.py**. Make it executable:

```
chmod +x ~/music_player.py
```

Edit the script and customize the configuration in the script header.

Install the script dependencies:

```
sudo apt install python-pygame
```

To automatically launch the music, create a **~/.config/autostart/music_player.desktop** file and insert:

```
[Desktop Entry]
Type=Application
Exec=~/music_player.py
X-GNOME-Autostart-enabled=true
Name=music_player
```

All you have to do is place music files in the directory configured in the script header.

Game System Settings

NeoGeo in AES Mode

AES mode is the home console mode of the NeoGeo.

Edit **/opt/retropie/configs/all/retroarch-core-options.cfg** and change **fba-neogeo-mode** to **AES**.

Choosing the Order of Controllers

Install RetroPie Joystick Selection by following the instructions here: https://github.com/meleu/RetroPie-joystick-selection/#installation

Restart; Joystick Selection is accessible from the RetroPie menu in EmulationStation.

Troubleshooting

Illegal instruction when launching EmulationStation

GDB revealed that the issue was in libSDL2. Reinstalling fixed the problem:

```
sudo apt remove --purge libsdl2-2.0-0 libsdl2-dev
sudo apt install libsdl2-2.0-0 libsdl2-dev
```

Controller configuration is not saved after reboot / not effective in games

Exit EmulationStation, then run:

```
sudo RetroPie-Setup/retropie_setup.sh
```

Go to Manage Packages » Manage Core Packages » EmulationStation » Configuration / Options » Clear / Reset EmulationStation Input Configuration and reset the configuration.

Exit the configuration tool and reboot. Reconfigure the controllers; it should now work correctly.