ArchPi cheat book

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Preface

Howto book to learn you a few things you need to know about ArchLinux ARM on RPi. From basic setup of the system to side packages installation to turn your Raspberry into a music sharing or even a versioning control server.

Structure of book

The first part of this book will be focused on system setup and basic settings as keyboard language, user account and others. The second part will describe how to install some third party sofwares as git and mpd server.

Author words

I am not an expert in linux system as ArchLinux and even less in electronic stuff. However, as a developer I like to tinker with my new toy which is a Raspberry Pi.

I had a lot of troubles when I decided to find uses for it and tried to install some third party software. As a result, I am glad to write this « book » to help you to install things on your RPi with ArchLinux.

Chapitre 1

Introduction

1.1 Are you interested ?

This book is written by a non-specialist of ArchLinux with basic knowledge of linux system so I will try to made it as simple as possible for people who have no idea about what is console. Indeed, all commands will be explained for a better comprehension and an index will be available for you.

No matter if you are an expert or a novice, you will be able to find how to install stuff on your your Pi plus tips which includes all the problems I encounter during my first installation.

1.2 What is a Raspberry Pi

If you succeed to find this book I guess you allready know but some people buy a Raspberry with OpenELEC[1] pre-installed so here is a little explaination.

The Raspberry Pi is a credit-size computer with low performances if you compare with a common PC. Nevertheless, it means its power consumption is very low (1W for B+ version[2]) so it is not a problem to let it on forever.

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1. Tiny linux system based on XBMC media center. More details on openelec.tv
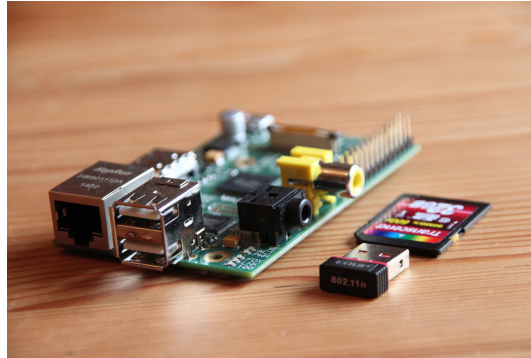2. Most robust version of RPi with 512MB of RAM and 4 usb ports

FIGURE 1.1 – Raspberry Pi B+

Finally if you install a good linux distribution on it you can turn this old computer into a cheap server on which you will have the control. You can use it at home for file sharing, media player or others but it is also possible to host a website which will be available on the internet [3].

1.3 ArchLinux versus Raspbian

The operating system recommended by the Raspberry fundation is Raspbian – a custom version of the famous Debian [4] system – optimized for RPi hardware.

In general it will be the default choice for an inexperienced user to get a user interface and most common softwares allready installed at the first boot. However we forget the limited performances of the Raspberry and you will be able to realize that for yourself if you decided to install Raspbian.

A server does not need a user interface except a terminal which is enough to manage it everyday from anywhere. As a result, my choice has been focused on ArchLinux which is a pretty light and fast system. In addition, system updates are based on rolling release [5] model, so it means you do not have one version of the system. You will just receive updates frequently – as soon as their availability – and it will be not necessary to reboot during the upgrade process.

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3. An example of website hosted by a Rpi on raspberrypi.goddess-gate.com
4. One of the most popular linux system. See debian.org for more details
5. Definition on wikipedia/Rolling_release

Chapitre 2

ArchLinux installation

2.1 We are Noobs

There are two ways to install ArchLinux on a Raspberry Pi: the first is
the ArchLinux way – no idea if it is the same with other systems – and the
second is an official manager which works with many systems.

— follow instructions from archlinuxarm.org [1] which requires to allready
have a linux system
— use NOOBS, an operating system install manager provided by the
Raspberry fundation [2]

I choose NOOBS because it is the easiest way to install a system on a RPi
and in addition you get an extra « boot manager » which is usefull. Moreover,
you can complete the full setup of your SD card on any system in few simple
steps described in the next part.

NOOBS is available on two forms: one for offline installation and the other –
the smallest one – downloads automatically the last release of the system on-
line. The offline installer contains many systems – which takes a large space –
but you can just keep ArchLinux and remove others (in **os** folder). Anyway,
you need to know that other systems files will be keeped after the installation
so it is lost space. If you still want to use the offline way because you have no
choices, you will have to find an older version of NOOBS because ArchLinux
has been removed since the last release.

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1. Specific instruction on archlinuxarm.org/platforms/armv6/raspberry-pi
2. Details on www.raspberrypi.org/help/ noobs-setup

2.2   Installer usage

According to the NOOBS documentation, you just have to download the
last NOOBS release and format your SD card before unzip and copy NOOBS
files on the card.

After putting the card into the RPi and power on, you will get the ins-
taller interface with a list of all systems you can install. If you choose the
online way you have to connect your ethernet cable in the Raspberry even if
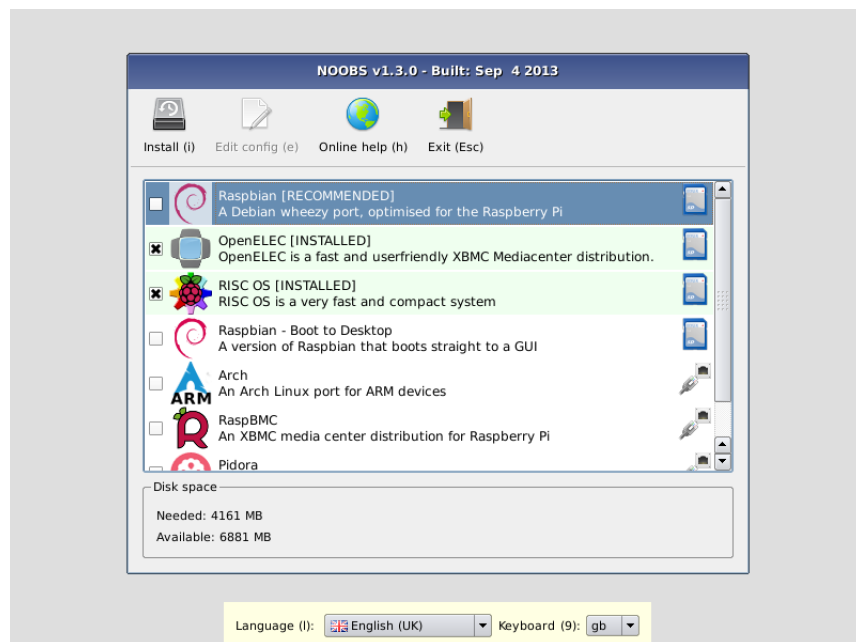you want to use a wifi dongle later.

FIGURE 2.1 – Noobs installer menu

From the menu, select ArchLinux – with ⌊↑⌋ and ⌊↓⌋ – and press ⌊space⌋ to
valid your choice. Then, you can change menu and keyboard language with
respectively ⌊L⌋ and ⌊0⌋ before pressing ⌊I⌋ to begin ArchLinux installation
on your RPi.

Chapitre 3

Basic setup

3.1 Change language

There are no default languages selected in ArchLinux but the keyboard map is set to qwerty [1] at the beginning. To choose your language you have to complete two steps and then the system will be able to use it for characters encoding and some softwares as `nano`.

3.1.1 Enable yours

Before choosing yours it is necessary to enable it in `/etc/locale.gen` file with `locale` tools.

You will need to use `nano` to edit the configuration file – `ctrl`+`W` can help you to search – and remove « # » before the language you want to enable (fr_FR.UTF-8 for example), to save your changes press `ctrl`+`X`.

```
$ locale # Current language settings

# Edit the /etc/locale.gen file
$ nano /etc/locale.gen

$ locale-gen # Update available languages
$ locale -a # See available languages
```

Listing 3.1 – Enable your language

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1. Most common layout for keyboards

3.1.2   Change your settings

The second step is to set the language and configure your keyboard map. Notice that you will have to logout for the system to take into account changes you made with language setup.

```
$ localectl status
  System Locale: n/a   # System language
      VC Keymap: n/a   # Virtual console
     X11 Layout: n/a   # Graphic interface

# Change system language (enabled one)
$ localectl set-locale LANG=fr_FR.UTF-8

# List of keymaps, choose the one you want "fr-pc" for example
$ localectl list-keymaps

# Change settings
# no-convert not update VC with X11 and vice versa
$ localectl set-keymap --no-convert fr-pc       # VC Keymap
$ localectl set-x11-keymap --no-convert fr-pc # X11 Layout

# Logout to apply changes
$ exit
```

Listing 3.2 – Change language settings

3.2   Configure wifi connexion

3.2.1   Check your dongle

The first thing you can do is check if your dongle has been recognized by the system and can be used.

```
$ ifconfig -a wlan # All wireless interfaces (also disabled)

# If you see a line with "wlan0" try to enable it
$ ip link set wlan0 up

# If you see again "wlan0" your dongle is working
# Disable it after the check
$ ifconfig wlan # Without -a show only enabled interfaces
$ ip link set wlan0 down
```

Listing 3.3 – Check wifi device

There are a lot of ways to connect your RPi to a network using a wifi dongle but all of them requires to install a package before – wifi-menu needs dialog, iw and wpa_supplicant are not installed – so it is necessary to use an ethernet wire to begin.

```
# pacman is the package manager in ArchLinux
#        -S install a new package
#
# dialog to get wifi-menu interface
# wpa_supplicant for wireless network protected with wpa keys
#
$ pacman -S dialog wpa_supplicant
```

Listing 3.4 – Install wireless dependencies

3.2.2   Searching the internet

Once you installed all the packages – synonym for software – that wifi-menu needed to run you can launch it with « `wifi-menu` » command.
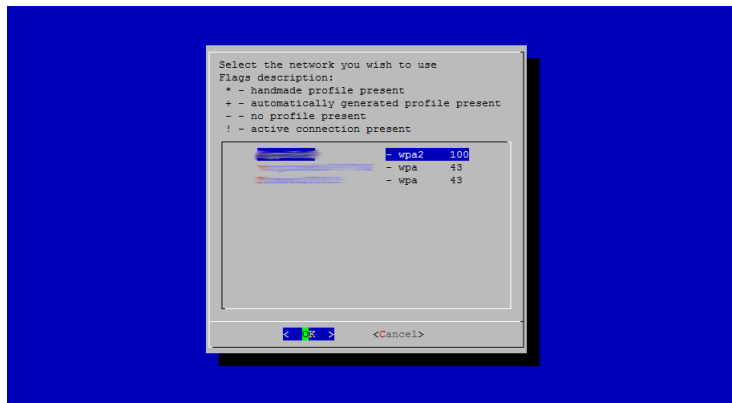

FIGURE 3.1 – wifi-menu interface

Then, select your network – with [↑] and [↓] – , type your password (if required) and you will be connected to your wireless network.

3.3   Create yourself

3.3.1   Simple user

The default username and password for ArchLinux are `root/root`, this user got all right on the system it means he can do anything – even break the system – so it is not recommanded to use it.

```
$ useradd –m jeremy  # Creates user jeremy and his home folder
$ passwd jeremy      # Changes jeremy password
```

Listing 3.5 – Create a new user called jeremy

Now we have a new user account for everydays usage. You can see all users on your system with « `cat /etc/passwd` » which will display the content of the config file for users.

3.3.2   Very important user

It is possible to specify user rights with `visudo` command, the general syntax for one user is the following « `username machine=(targetuser) commands` », let's look at some details:

username name you gave to `useradd` command

machine machine on where rights are applied, ALL in general

target user user that we takes the rights

command allowed commands separated with one coma – no spaces –, use exclamation mark for banned commands