PiTOR

Ver: 0.1.0

Date: 2013-07-22

This PiTOR access point installation script is intended for the Journalist, Lawyer and Researcher in All of Us.

What is PiTOR

It is single installation script that will install

- **Opscode Chef-Solo configuration management on the Raspberry Pi.**
- **A WiFi access point to the TOR Network (using Chef).**

It makes Raspberry Pi function as a connection between WLAN and Ethernet and send all internet traffic through Onion.

References

This Raspberry Pi TOR access point is based on the following project documentation:

- **ADAFRUIT Onion Pi: http://learn.adafruit.com/onion-pi/overview**
- **Use Your Raspberry Pi as WiFi Bridge or AP: http://en.tacticalcode.de/2013/03/use-your-raspberry-pi-as-wifi-bridge-or-ap.html**
- **Howto setup RTL8188CUS on RPi as an Access Point: http://blog.sip2serve.com/post/48420162196/howto-setup-rtl8188cus-on-rpi-as-an-access-point**

All that is added here, is useability; the chef installation and this manual.

Basically a TOR access point is not something you want to buy ready made from a company. Either make it yourself or have a friend do it.

Contents

How to use this script

1. **Copy setup_pitor.tar.gz to the directory /home/pi/ on the Raspberry Pi.**
2. **Uncompress (tar xzvf setup_pitor.tar.gz)**
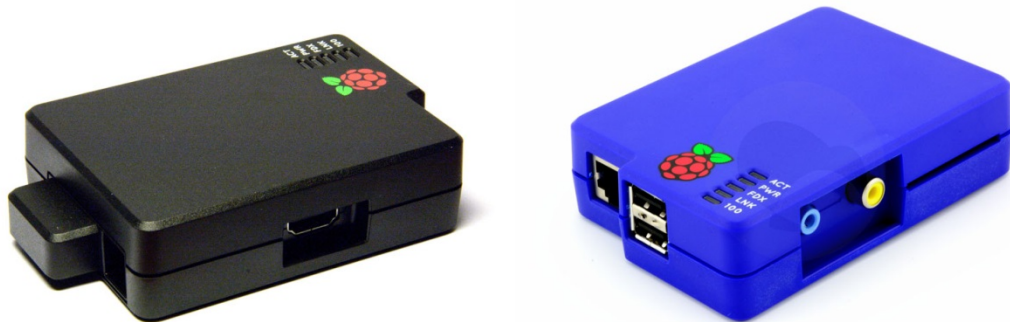3. **Run the setup file: ./_ start_here_install_chef_wheezy_pitor.sh**

Hardware

Use a standard Pi setup:

- **Raspberry Pi B**
- **Cooling set**
- SD card
    - **Samsung 32 GB SD-HCI** is a good one
    - A slower 16 GB one may also be sufficient
    - Micro SD cards are slower than comparable full size SD cards

Case

- For this Raspberry Pi application the **Cyntech case** plus **SD cover** is a good choice:

-

WiFi dongle

- In the *Raspbian "Wheezy" image most WiFi drivers and firmware are included*

- *For Realtek RTL8188SU based wifi adapters, Adafruit Occidentalis v0.1 image includes the 8192cu driver in the kernel*

List of Raspberry Pi compatible WiFi dongles and their capabilites:

http://elinux.org/RPi_VerifiedPeripherals#USB_WiFi_Adapters

NOT ALL Dongles that are compatible with the Pi can be used as access point.

Check USB WiFi Dongle capabilities
Check model: lsusb
Check for realtek dongle: dmesg | grep rtl

After installing iw, linux wifi utilities
WiFi capabilities: iw list

At least need we need the AP-Mode capability

Power

- USB Micro cable (like for smartphones)
- USB adapter > 1,2 Amp
- Solar powered battery > 1,2 Amp

The micro USB connector is only a power input, and not an USB port.

Without enough power the Raspberry will not boot

Do NOT TURN OFF the Pi by just unplugging the power.

Some people relate SD card crashes to just unplugging the USB power cord

Perform a nice shutdown over SSH or the terminal:

sudo shutdown –h now

Get system info
sudo –i
uname -a
free
df -H
cat /proc/cpuinfo

When Chef is installed: sudo ohai > sysinfo.txt

## Test Access Point
```
hostapd –dd /etc/hostapd/hostapd.conf
```

# Install Operating System: Linux Debian - Wheezy

- Download Wheezy from: http://www.raspberrypi.org/downloads
- Unzip image

On a windows computer:

- Download win32diskimager-v0.8-binary.zip van:
  http://sourceforge.net/projects/win32diskimager/
- Unzip

- Insert SD Card
- Run: Win32DiskImager.exe
-

QtGui4.dll	25-11-2012 23:46	Toepassingsuitbrei...	9.916 kB
README.txt	3-6-2013 22:07	Tekstdocument	3 kB
Win32DiskImager.exe	3-6-2013 19:56	Toepassing	93 kB

-
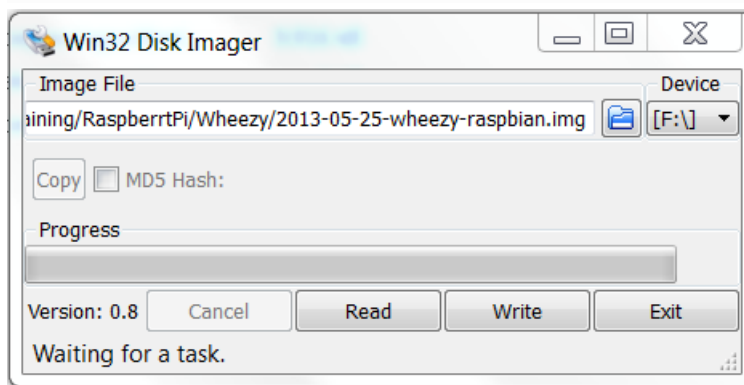
- Choose
    - o Source Image
    - o Destination Drive (DO NOT get this wrong! Check It)

    - o
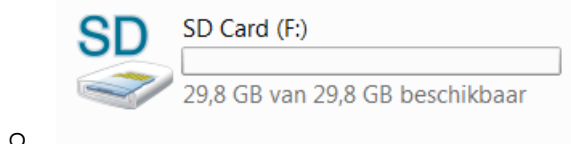
It is possible and convenient to copy files to boot partition on the SD card x:\boot now.

Linux users can easily find what to do on the Internet.

On First Boot:

- Expand Drive
- Enable SSH
- Set Password
- Set Keyboard Layout

Do:

1 Expand the drive

8 Advanced options

- **A4 Enable SSH**
- **A5 Update**

4 Internationalisation …

- **13 Change Keyboard Layout – make this correct for the keyboard in use**

e.g. Logitech Generic

Keyboard layout: Other: English US: English US, with Euro on 5

Run Raspberry Pi configuration anytime later with: sudo raspi-config

Turbo mode according to Pi doc:

The combination of only applying turbo when busy, and limiting turbo when the BCM2835′s internal temperature reaches 85°C, means there will be no measurable reduction in the lifetime of your Raspberry Pi.

You can choose from one of five overclock presets in raspi-config, the highest of which runs the ARM at 1GHz. The level of stable overclock you can achieve will depend on your specific Pi and on the quality of your power supply; we suggest that Quake 3 is a good stress test for checking if a particular level is completely stable. **If you choose too high an overclock, your Pi may fail to boot, in which case holding down the shift key during boot up will disable the overclock for that boot, allowing you to select a lower level**.

Comparing the new wheezy image with 1GHz turbo enabled, against the previous image at 700MHz, **nbench reports 52% faster on integer, 64% faster on floating point and 55% faster on memory.**

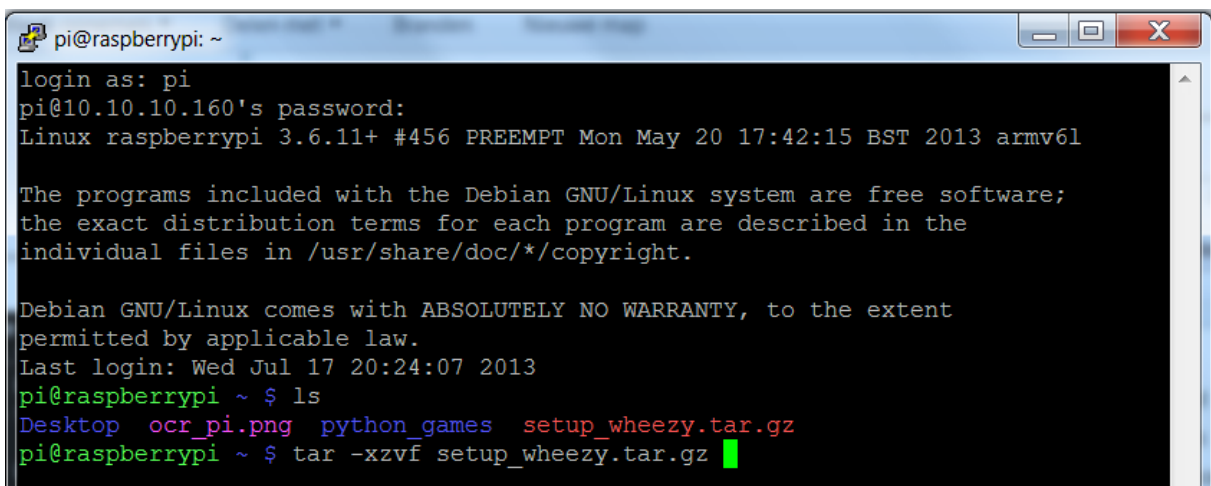# Install software with Chef

Use PUTTY / PSFTP to upload the file
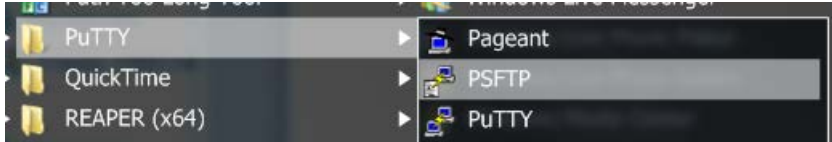
Login to Raspberry PI SSH with PUTTY

Copy file setup_wheezy.tar.gz to ~/setup

Or copy file from /boot

- **cd ~**
- **mkdir setup**
- **cd setup**
- **sudo cp /boot/setup_wheezy.tar.gz .**
- **tar xzvf setup_wheezy.tar.gz**

Unzip Chef setup file:

cd ~/setup

Run setup: ./_start_here_install_chef_wheezy.sh

Install Chef Manually

To get Chef running:

sudo apt-get update

sudo apt-get install rsync

sudo apt-get install ruby

sudo apt-get install ruby-dev

      if error: No such file to load: -mkmf

      caused by: Not installed ruby-dev

sudo gem install require

sudo gem install knife-solo

Install PiTOR packages manually

sudo apt-get update

default present in Wheezy
sudo apt-get install apt-utils
sudo apt-get install curl
sudo apt-get install nano
sudo apt-get install rsync
sudo apt-get install unzip
sudo apt-get install wget

Generic
sudo apt-get install makepasswd
sudo apt-get install tree

Access point specific
sudo apt-get install bridge-utils
sudo apt-get install dnsmasq
sudo apt-get install hostapd
sudo apt-get install hostap-utils
sudo apt-get install iw
sudo apt-get install iptables-persistent
sudo apt-get install isc-dhcp-server
sudo apt-get install rfkill
sudo apt-get install tor

Configuration

All configuration can be read from the config file templates and the default settings:

Config templates: /home/pi/setup_pitor/chef-repo/cookbooks/pitor/templates/default/*.erb

Settings: /home/pi/setup_pitor/chef-repo/cookbooks/pitor/attributes /default.rb

Templates and settings are connected in:

> /home/pi/setup_pitor/chef-repo/cookbooks/pitor/recipes/pitor_config.rb

Reconfigure anytime

1) Edit: /home/pi/setup_pitor/chef-repo/**cookbooks/pitor/attributes /default.rb**
2) Run: . /home/pi/setup_pitor/pitor_config.sh

Security

You must:

- Secure all (ssh-)Logins with a **secure password**
    - or disable ssh
- Use a **strong network key**
- Use **WPA2**, Never use WEP!

If not configured well, the Pi functions as a Man-in-the-Middle device, making it easy for everyone on the network to eavesdrop on your traffic!

To change the password of the standard user run **raspi-config** or **passwd**

Raspbian default is: user='pi', password='raspberry'