

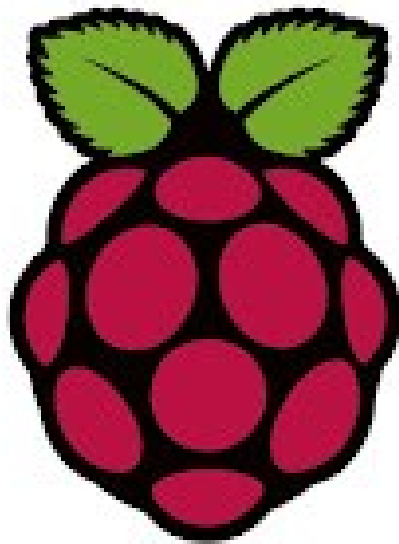
Raspbian

Raspberry Pi Flavor of Debian

Who am I ?

- GNU/Linux and FOSS Enthusiastic
- Dev-Ops Engineer at TinyOwl Mumbai
- Blogs @ <http://rahulmahale.wordpress.com/>
- Twitter handle http://twitter.com/Rahul_Mahale

Raspberry Pi + Debian



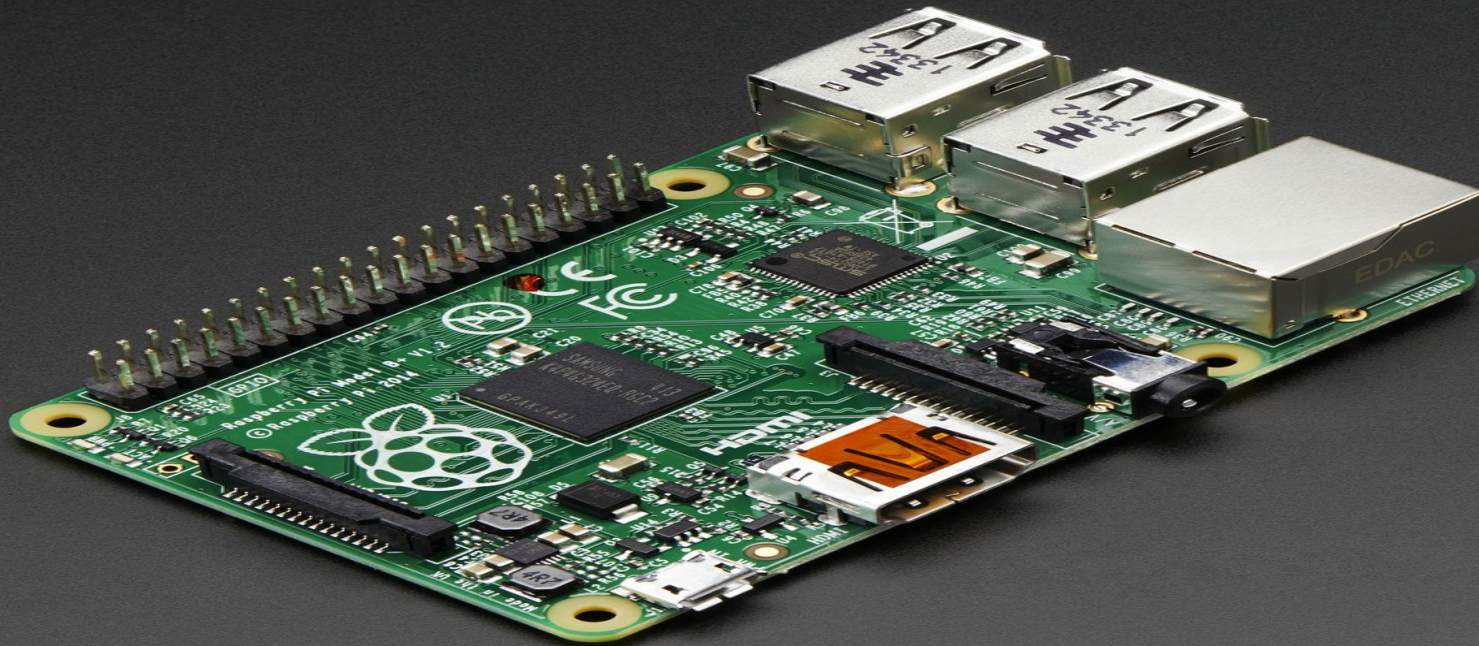
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RaspbianOS

What is Raspberry Pi ?

- Single Board Computer (SBC)
- Developed by Raspberry Pi Foundation
- Available in 2 models A+ and B+
- Based on ARM Architecture



How it differs from other boards

- Low Power Consumption
 - PC takes 65-250W
 - Laptop takes 15-60W

What Can I do with Pi ?

- Used Widely for DIY Projects
- Pi Glasses
- Raspi super computer
- Pi based smart phone
- Weather station
- Pi Tablet
- Robots
- Gardner etc..

Why Raspbian ?

- Leading OS for Raspberry Pi
- Stays very Close to Debian
- Tops the list of OS's of Pi

Installing Raspbian

- Where to get it from
- <http://www.raspberrypi.org/downloads/>
- <http://raspbian.org/RaspbianImages>

What else we need

- Micro SD Card
- USB KeyBoard
- Ethernet Cable with Network connection
- Micro USB cable

Raspbian Features

- Cool LXDE Desktop
- Almost 35K packages available on Repositories
- Easy install and upgrade process
- Most active community and forum

What are we gonna do right now

- Install Raspbian on Pi
- Make Pi as an handy WiFi Router

Installing Raspbian

- Get it from

<http://raspbian.org/RaspbianImages>

<http://www.raspberrypi.org/downloads/>

- Extract the **.img** file
- Write it to SD card using **dd**
or any other image writing software such as live usb creator

Booting Pi

- Plug the SD Card and power up using micro usb.
- Connecting it to HDMI Display
- After booting it will ask for some configuration options

We need to...

- Enable SSH
- Expand file system
- Enable Camera Module(Optional)

Login using

- Login using
- Username:

pi

- Password:

raspberry

Post installation

sudo apt-get update

- Need to use Raspbian for FOSS project ?
- Remove some Licensed packages

*sudo apt-get purge oracle-java**

Where is cool Raspbian Desktop ?

- Just need to start with

startx

Preparing Pi as Wi-Fi Router

What do we need ?

What do we need

- USB Wi-Fi Adapter with Master Mode support
- AP Mode necessary

Which packages will we need

- Install dhcp server and hostapd package
`udhcpd` it is a lightweight dhcp server and
`hostapd` for creating WiFi network.

What to install

sudo apt-get update

sudo apt-get install bridge-utils

sudo apt-get install hostapd

sudo apt-get install udhcpd

Configure udhcpd

Edit /etc/default/udhcpd

change

DHCPD_ENABLED="no"

to

#DHCPD_ENABLED="no"

Configuring udhcpd

- Make necessary changes in
`/etc/udhcpd.conf`

Configure hostapd

- Edit /etc/default/hostapd

DAEMON_CONF="/etc/hostapd/hostapd.conf"

save and exit

Configuring Hostapd

Edit /etc/hostapd/hostapd.conf

For free WiFi network

interface=wlan0

ssid=Rahul_RaspberryPi

hw_mode=g

channel=6

auth_algs=1

wmm_enabled=0

Secured Wifi Network

```
interface=wlan0  
driver=nl80211  
ssid=your_WiFi_Name  
hw_mode=g  
channel=6  
macaddr_acl=0  
auth_algs=1  
ignore_broadcast_ssid=0  
wpa=2  
wpa_passphrase=Your_WIFI_key  
wpa_key_mgmt=WPA-PSK  
wpa_pairwise=TKIP  
rsn_pairwise=CCMP
```

Giving a Pi static IP

Sudo ifconfig wlan0 192.168.9.1

And modifying /etc/network/interfaces

```
iface wlan0 inet static
```

```
address 192.168.9.1
```

```
netmask 255.255.255.0
```

Few more commands

```
sudo sh -c "echo 1 > /proc/sys/net/ipv4/ip_forward"
```

- add the following line to bottom /etc/sysctl.conf
`net.ipv4.ip_forward=1`

Not to forget Iptable rules

- `sudo iptables -t nat -A POSTROUTING -o eth0 -j MASQUERADE`
- `sudo iptables -A FORWARD -i eth0 -o wlan0 -m state --state RELATED,ESTABLISHED -j ACCEPT`
- `sudo iptables -A FORWARD -i wlan0 -o eth0 -j ACCEPT`
- `sudo sh -c "iptables-save > /etc/iptables.ipv4.nat"`

Dont want to run Iptables at each boot

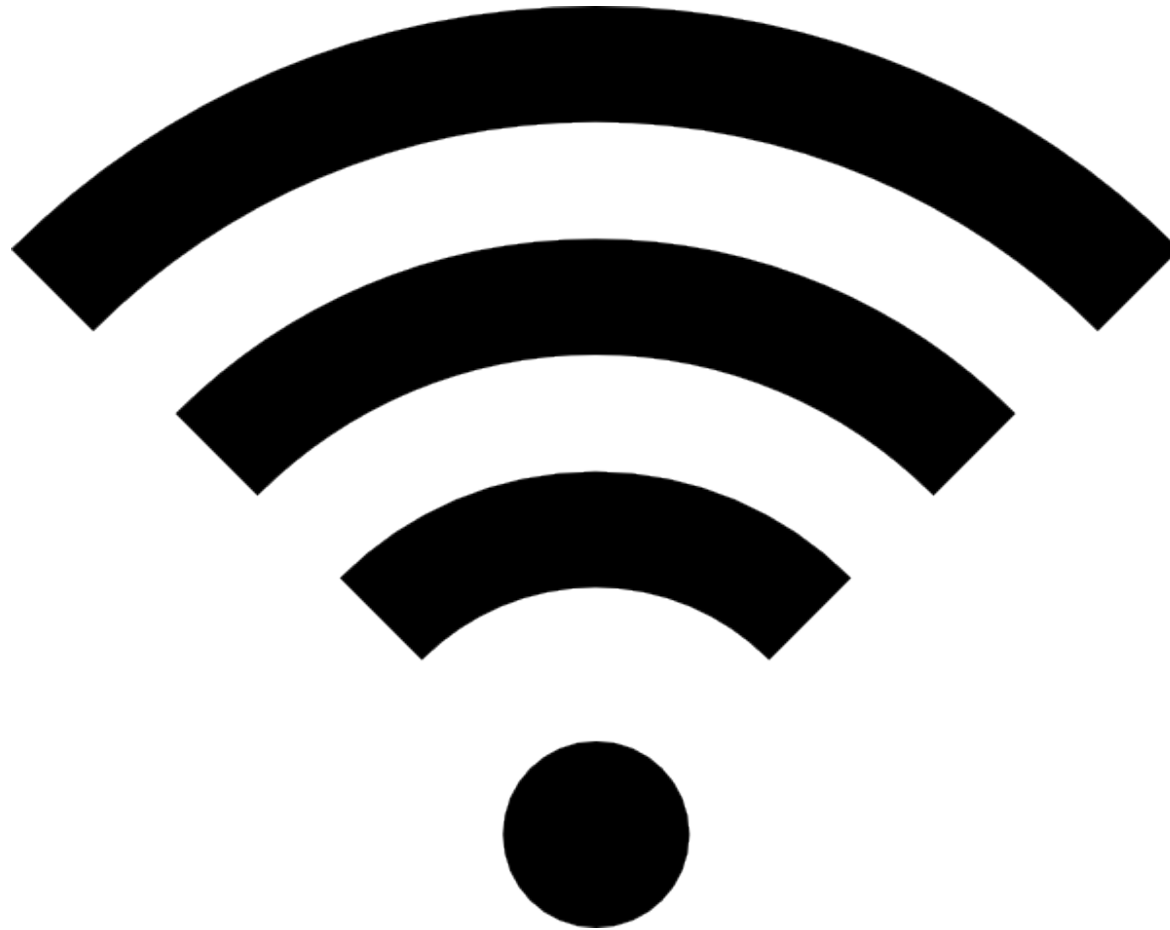
- Add the following line to bottom of the /etc/network/interfaces and save

up iptables-restore < /etc/iptables.ipv4.nat

All done fire it up :)

- Sudo service hostapd start
- Sudo service udhcpd start
- sudo update-rc.d hostapd enable
- sudo update-rc.d udhcpd enable

Can you check network of you smart
phone



Links

- <http://raspbrian.org/>
- <http://www.raspberrypi.org/resources/make/>
- <http://elinux.org/Raspbian>

