Pi Setup

## Image

2015-11-21-raspbian-jessie.img

## Windows tools for SD card format and write

SDFormatter  
Win32DiskImager

* Sudo raspi-config
  + Expand Filesystem
  + Overclock -> 900MHz
  + Advanced
    - I2C -> Enable -> Load module by default
* mkdir /home/pi/Desktop/archived/[date]

Then recursive copy to archive home/ and etc/ folder from original filesystem into new folder. (Use sudo for recursive copy of etc/)

## Switch off the tty terminal of the UART pins

Edit /boot/cmdline.txt, removing reference to /dev/ttyAMA0, leaving only this line:

dwc\_otg.lpm\_enable=0 console=tty1 root=/dev/mmcblk0p2 rootfstype=ext4 elevator=deadline fsck.repair=yes rootwait

Then stop and disable the ttyAMA0 device

* sudo systemctl stop [serial-getty@ttyAMA0.service](mailto:serial-getty@ttyAMA0.service)
* sudo systemctl disable [serial-getty@ttyAMA0.service](mailto:serial-getty@ttyAMA0.service)

Boot message “Uncompressing Linux … done, booting the kernet.” on each reboot

Message sent at 115200 baud. Just a transient at boot-up.

No “recovery mode” login prompts (not Noobs).

After boot, /dev/ttyAMA0 sits at 9800 baud.

See post 283774 on the Raspberry Pi forum : One solution is to decompress the kernel.

## Interface File Setup

Default Wi-Fi

* sudo nano /etc/network/interfaces

auto lo

iface lo inet loopback  
iface eth0 inet dhcp  
iface usb0 inet static

address 192.168.x.y  
netmask 255.255.255.0  
network 192.168.x.0  
broadcast 192.168.x.255

allow-hotplug wlan0  
iface wlan0 inet manual  
wpa-roam /etc/wpa\_supplicant/wpa\_supplicant.conf  
iface default inet dhcp

* Save this as default and another version as /interfaces-wifi

Ad Hoc

* sudo nano /etc/network/interfaces-adhoc

auto lo

iface lo inet loopback  
iface eth0 inet dhcp  
iface usb0 inet static

address 192.168.x.y  
netmask 255.255.255.0

allow-hotplug wlan0  
iface wlan0 inet static

wireless-channel 1  
wireless-essid RPiAdHocNetwork  
wireless-mode ad-hoc

## Setting Up Ad-Hoc on Boot

* sudo nano /etc/rc.local

\_IP=$(hostname –I) || true  
if [ “$\_IP” ]; then

printf “My IP address is %s\n” “$\_IP”

fi  
ifdown --force wlan0; iwconfig wlan0 mode ad-hoc  
iwconfig wlan0 essid “RPiAdHocNetwork”  
ifconfig wlan0 192.168.x.y  
netmask 255.255.255.0  
  
exit 0

## Notable Commands for Networking

Entering Pi Root

* sudo su –

Bring down the wireless forcefully and then change the wireless configuration to ad-hoc mode

* sudo ifdown --force wlan0; iwconfig wlan0 mode ad-hoc

Bring the wireless back up

* sudo ifup wlan0

Restart the networking on the pi

* sudo service networking restart

## Setup VNC on Boot

* sudo nano /etc/lightdm/lightdm.conf

Uncomment the code at the bottom of the file and set to true.

Pi Wireless-Hotspot

## Primary installs

* sudo apt-get install hostapd isc-dhcp-server hostap-utils iw tightvncserver

## Check the dongle supports access point

* iw list | less

Check for an entry relating to AP mode:

Supported interface modes:

\* IBSS

\* managed

\* AP

\* AP/VLAN

\* WDS

\* monitor

\* mesh point

## Set RPi to use static IP Address

* sudo nano /etc/network/interfaces

auto lo  
allow-hotplug wlan0  
iface wlan0 inet static  
 address 10.5.5.1  
 netmask 255.255.255.0

## Configure the DHCP Server

* sudo nano /etc/dhcp/dhcpd.conf

Comment out the domain name servers as we don't need them for this set-up. They can be commented out by adding a hash character at the start of each line.  
#option domain-name "example.org";  
#option domain-name-servers ns1.example.org, ns2.example.org;

Make the authoritative by un-commenting (removing the # character) entry:  
# If this DHCP server is the official DHCP server for the local  
# network, the authoritative directive should be uncommented.  
authoritative;

Edit the section titled  
# A slightly different configuration for an internal subnet.  
I have created a large subnet (254 addresses, but set it so it can give out 50 entries) this is far more than we need for this.  
# A slightly different configuration for an internal subnet.  
subnet 10.5.5.0 netmask 255.255.255.0 {  
 range 10.5.5.100 10.5.5.150;  
 option routers 10.5.5.1;  
 option broadcast-address 10.5.5.255;  
 default-lease-time 600;  
 max-lease-time 7200;  
}

Now edit the default start script

* sudo nano /etc/default/isc-dhcp-server

Change interfaces to  
INTERFACES="wlan0"

## Configure the RPi as a WAP

* sudo nano /etc/hostapd/hostapd.conf

Add the following:

# Host access point config file   
# device name   
interface=wlan0

# Driver interface  
driver=nl80211

# SSID for the network  
ssid=RPiHotspot

# set appropriate country parameters (maybe required for regulatory reasons)  
country\_code=GB

# Operation mode - for 802.11n still use g to indicate using same band as g devices  
hw\_mode=g

# set channel - channel=0 for Automatic Channel Select  
channel=0

# mac address access list - 0 = accept unless in deny  
macaddr\_acl=0

## add deny rules here if required

#deny\_mac\_file=/etc/hostapd/hostapd.deny

# Use shared key authentication  
auth\_algs=1

# Enable WPA2  
wpa=2

# set passphrase  
wpa\_passphrase=raspberry

# Use WPA PSK  
wpa\_key\_mgmt=WPA-PSK

# Pairwise cipher for WPA (v1)   
wpa\_pairwise=TKIP

# Pairwise cipher for RSN/WPA2   
rsn\_pairwise=CCMP

Finally edit the default startup file for hostapd

* sudo nano /etc/default/hostapd

Add entry:  
DAEMON\_CONF="/etc/hostapd/hostapd.conf"