

Setting up Wireless Access Point using Raspberry Pi

Installation Manual

• Hardware Requirements

- A Raspberry Pi Model A/B/B+
- Ethernet Cable
- Power Supply for the Pi
- WiFi USB dongle (Optional)

As Raspberry Pi 3 or Raspberry Pi Zero W both have Wi-Fi on board. So in that case no need of any external Wi-Fi module.

• Software Requirements

- Latest Raspbian Stretch OS
- Putty
- Advanced IP Scanner Software or
- Fing App to check IP address of Raspberry Pi

1. Set up the Raspberry Pi with the Raspbian Stretch OS

Prepare SD Card with bootable OS, insert it into Raspberry Pi.

- Connect LAN Cable coming out from your Network Provider into Raspberry Pi.
- Make sure your Laptop/PC is also connected with the same network.
- Connect Power Supply to Raspberry Pi.
- Check IP address of Raspberry Pi using IP Scanner Software or Fing App
- Then connect your Laptop/PC to Raspberry Pi using a terminal software like Putty.



- Update the Raspberry Pi to ensure we have the latest version of everything. This is done by using following commands:

```
pi@raspberrypi: ~  
pi@raspberrypi:~ $ sudo apt-get update
```

```
pi@raspberrypi: ~  
pi@raspberrypi:~ $ sudo apt-get upgrade
```

2. Install hostapd and bridge-utils

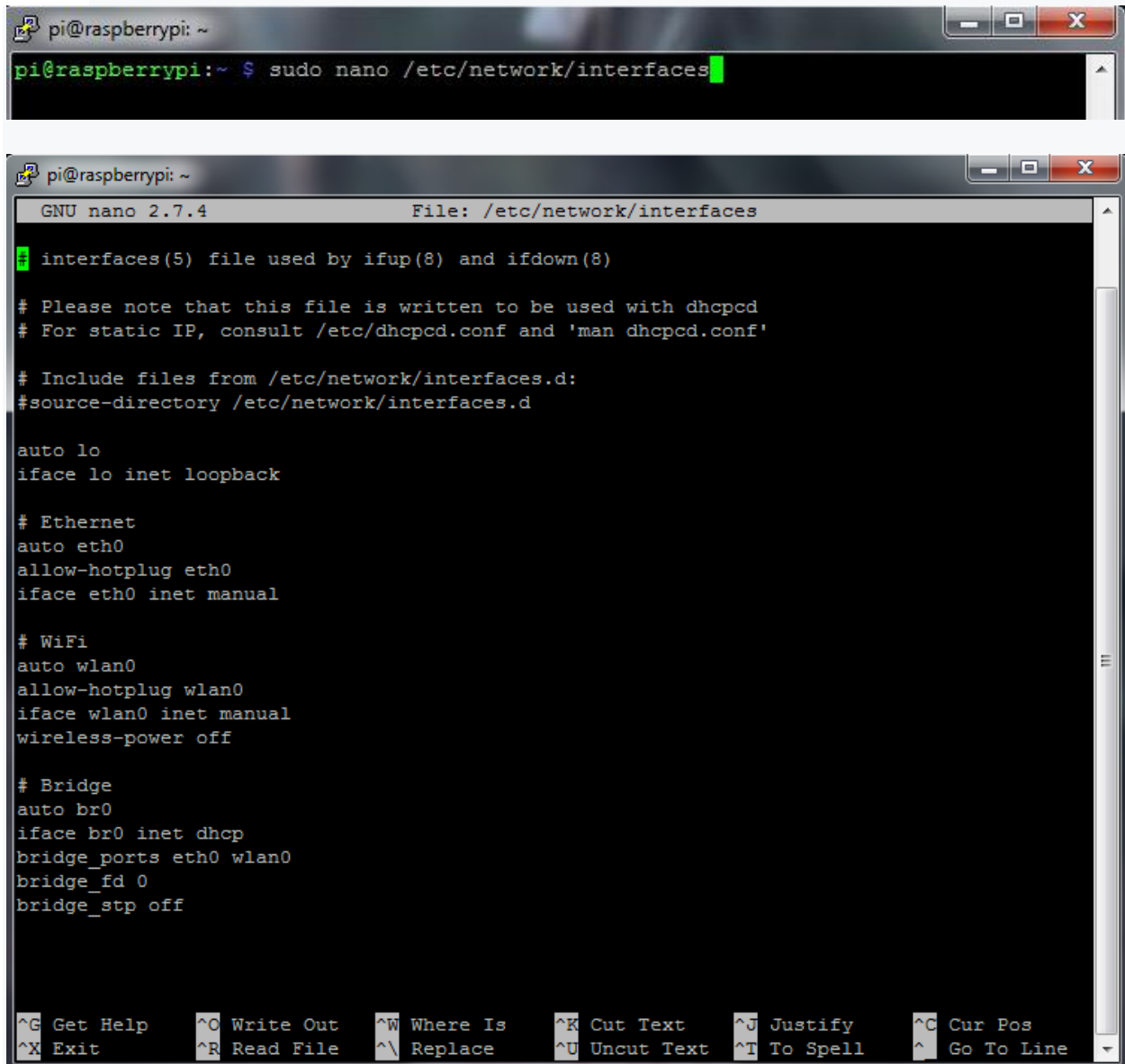
```
pi@raspberrypi: ~  
pi@raspberrypi:~ $ sudo apt-get install hostapd
```

```
pi@raspberrypi: ~  
pi@raspberrypi:~ $ sudo apt-get install bridge-utils
```

3. Edit file /etc/hostapd/hostapd.conf and add following lines to it

```
pi@raspberrypi: ~  
pi@raspberrypi:~ $ sudo nano /etc/hostapd/hostapd.conf  
  
# Bridge mode  
bridge=br0  
  
# Networking interface  
interface=wlan0  
  
# WiFi configuration  
ssid=msdgurukul  
channel=1  
hw_mode=g  
country_code=IN  
ieee80211n=1  
ieee80211d=1  
wmm_enabled=1  
  
# WiFi security  
auth_algs=1  
wpa=2  
wpa_key_mgmt=WPA-PSK  
rsn_pairwise=CCMP  
wpa_passphrase=gurukul123
```

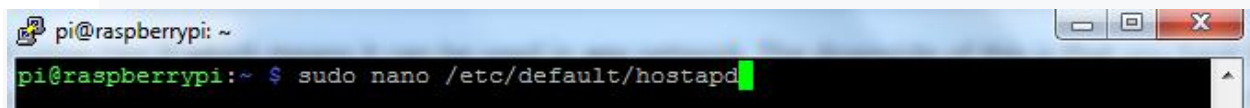
4. Edit file /etc/network/interfaces and add following lines to it



```
pi@raspberrypi: ~  
pi@raspberrypi:~ $ sudo nano /etc/network/interfaces  
  
GNU nano 2.7.4 File: /etc/network/interfaces  
  
interfaces(5) file used by ifup(8) and ifdown(8)  
  
# Please note that this file is written to be used with dhcpd  
# For static IP, consult /etc/dhcpd.conf and 'man dhcpd.conf'  
  
# Include files from /etc/network/interfaces.d:  
#source-directory /etc/network/interfaces.d  
  
auto lo  
iface lo inet loopback  
  
# Ethernet  
auto eth0  
allow-hotplug eth0  
iface eth0 inet manual  
  
# WiFi  
auto wlan0  
allow-hotplug wlan0  
iface wlan0 inet manual  
wireless-power off  
  
# Bridge  
auto br0  
iface br0 inet dhcp  
bridge_ports eth0 wlan0  
bridge_fd 0  
bridge_stp off  
  
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos  
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line
```

This will result in the Pi using DHCP which means it can be used in any network.

5. Finally ,edit last file to enable hostapd to run upon boot



```
pi@raspberrypi: ~  
pi@raspberrypi:~ $ sudo nano /etc/default/hostapd
```

```
pi@raspberrypi: ~
GNU nano 2.7.4 File: /etc/default/hostapd

Defaults for hostapd initscript
#
# See /usr/share/doc/hostapd/README.Debian for information about alternative
# methods of managing hostapd.
#
# Uncomment and set DAEMON_CONF to the absolute path of a hostapd configuration
# file and hostapd will be started during system boot. An example configuration
# file can be found at /usr/share/doc/hostapd/examples/hostapd.conf.gz
#
RUN_DAEMON=yes
DAEMON_CONF="/etc/hostapd/hostapd.conf"
```

6. To effect the changes made to the Raspberry Pi, reboot the system.

```
pi@raspberrypi: ~
pi@raspberrypi:~ $ sudo reboot
```

Note : From now on hostapd will start whenever your Pi boots up.

There should now be a functioning bridge between the wireless LAN and the Ethernet connection on the Raspberry Pi, and any device associated with the Raspberry Pi access point will act as if it is connected to the access point's wired Ethernet.

It is possible to use a static IP address for the bridge if required, but generally, if the Raspberry Pi access point is connected to a ADSL router, the DHCP address will be fine.

Testing Raspberry Pi Wireless Access Point:

To test above instructions, use a mobile phone or any other device capable of connecting to a WiFi hotspot network, you should see the name pop up. You can then connect to it by entering password we specified in hostapd.conf file.

