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Ubuntu — How to setup a wi-fi hotspot (access point mode)

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Whether your wireless card support Access Point mode

First thing to be done is perform the test whether your wireless card support going into wireless access point mode. As told earlier following test is for mac80211 framework based driver.

Install `iw` & execute following

```
sudo aptitude install iw
iw list
```

Look for supported interface section, where it should be a entry called `AP` like below

Supported interface modes:

- IBSS
- managed
- AP

- monitor
- mesh point

If your driver doesn't shows AP, It doesn't mean it can't create wireless hotspot. But those cards aren't in scope of this tutorial.

The setup is divided in three sections,

1. Setup & host a wireless network
2. IP address setup
3. Internet sharing

1. Setup and host a network

- Software required: hostapd — Install it
- Press alt + F2 and type `gksu gedit` & press enter. We are going to edit a lot of files.
- In gedit, press ctrl+o, ctrl+l & paste it in location box `/etc/hostapd/hostapd.conf` . Press Enter.
- Paste the following code,

```
interface=wlan0
driver=nl80211
ssid=test
hw_mode=g
channel=1
macaddr_acl=0
auth_algs=1
ignore_broadcast_ssid=0
wpa=3
wpa_passphrase=1234567890
wpa_key_mgmt=WPA-PSK
wpa_pairwise=TKIP
rsn_pairwise=CCMP
```

Hostapd is very sensitive to ending white spaces that are hard to troubleshoot!

Changes you need to do:

1. Change `interface=wlan0` to your wireless card name. (If you have one wireless card it should be wlan0)
2. `ssid=test . test` is the name of your hosted network.
3. `wpa_passphrase=1234567890 , 1234567890` is the password of your network.

The configuration above creates a wpa & wpa2 enabled access point in `g` mode. A more detailed instruction to build configuration file can be found here

Now start the `hostapd` . Edit the file `/etc/default/hostapd` and modify the line of DAEMON_CONF like this:

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

Then start the `hostapd` service using the following command,

```
sudo service hostapd start
```

It should start a wireless network. In your mobile device now you can see a wireless network and can authenticate. But the device won't get IP address. Stop it with the command `sudo service hostapd stop`

> **If you get any error, possibly your card doesn't support `g` mode. Try with other modes. Guide**

Part 2: Set up DHCP server for IP address management

Install isc-dhcp-server

Edit the file `/etc/default/isc-dhcp-server` and set INTERFACES like this:

```
INTERFACES="wlan0"
```

In gedit, press Ctrl+O, in location box paste `/etc/dhcp/dhcpd.conf` Find (ctrl+F) below lines and put #before it. It should look like after editing

```
# option definitions common to all supported networks…
#option domain-name “example.org”;
#option domain-name-servers ns1.example.org, ns2.example.org;
```

Again comment out following lines too

```
#default-lease-time 600;
#max-lease-time 7200;
```

Add following lines at end

```
subnet 10.10.0.0 netmask 255.255.255.0 {
        range 10.10.0.2 10.10.0.16;
        option domain-name-servers 8.8.4.4, 208.67.222.222;
        option routers 10.10.0.1;
}
```

Range describe how long the address pool will be. you need to adjust subnet value also. This config can give IP up to 15 devices

Again press Ctrl+O in gedit and paste following in location bar `/etc/network/interfaces` , Add below

```
auto wlan0
iface wlan0 inet static
address 10.10.0.1
netmask 255.255.255.0
```

> Note: After reboot the wireless will be shown as not managed. So you can't use any other wi-fi network. To get wireless with normal behaviour, put # before those newly added line and execute `sudo start networking`

now run

```
sudo service isc-dhcp-server start
sudo service hostapd start
```

At this point , your mobile device will see a network, authenticate it & after authentication it will get ip address something like `10.10.0.2` .

Setup internet connection settings

For Internet connection sharing we need `ip forwarding` and `ip masquerading` . Enable ip forwarding : execute

```
echo 1| sudo tee /proc/sys/net/ipv4/ip_forward
```

Now say you are using to a dial up/usb modem connection to connect to INTERNET. You need to get the logical interface name. For that execute `ifconfig` or `ip address`

For dialup/usb modem: it should be `ppp0` . If you want to share Ethernet connection you should use `ethX` where X is your ethernet device number. If you are connecting to internet through an android device with USB tethering, then the interface name should be `usb0` .

Now once you get the interface name execute `sudo iptables -t nat -A POSTROUTING -s 10.10.0.0/16 -o ppp0 -j MASQUERADE`

The `ppp0` in above command is the interface whose internet connection you are sharing over wireless.