**Raspberry Pi as Wi-Fi Access Point (AP) - Full Setup Guide**

This guide explains in detail how we configured a Raspberry Pi to act as a **Wi-Fi Access Point (AP)** that can host multiple ESP32-CAM clients. It includes step-by-step instructions, configuration files, and command-line usage.

**Requirements**

* Raspberry Pi with built-in Wi-Fi (e.g., Pi 3, 3B+, 4)
* Raspberry Pi OS (Lite or Full)
* SSH or terminal access
* Internet connection during setup (optional, not needed later)

**1. Update System**

sudo apt update

sudo apt upgrade -y

**2. Install Required Packages**

sudo apt install hostapd dnsmasq -y

Disable them for now (we will configure first):

sudo systemctl stop hostapd

sudo systemctl stop dnsmasq

**3. Configure a Static IP for wlan0**

Edit the DHCP client configuration:

sudo nano /etc/dhcpcd.conf

Add these lines at the bottom:

interface wlan0

static ip\_address=192.168.4.1/24

nohook wpa\_supplicant

Then reboot to apply:

sudo reboot

**4. Configure dnsmasq (DHCP Server)**

Backup the original configuration:

sudo mv /etc/dnsmasq.conf /etc/dnsmasq.conf.orig

Create a new file:

sudo nano /etc/dnsmasq.conf

Paste the following:

domain-needed

interface=wlan0

bind-interfaces

server=1.1.1.1

dhcp-range=192.168.4.2,192.168.4.100,255.255.255.0,24h

**5. Configure hostapd (Wi-Fi Access Point)**

Edit the main config:

sudo nano /etc/hostapd/hostapd.conf

Paste the following:

interface=wlan0

driver=nl80211

ssid=Pi-Camera-Net

hw\_mode=g

channel=6

wmm\_enabled=0

auth\_algs=1

wpa=2

wpa\_passphrase=12345678

wpa\_key\_mgmt=WPA-PSK

rsn\_pairwise=CCMP

Now tell hostapd where to find the config file:

sudo nano /etc/default/hostapd

Uncomment and edit this line:

DAEMON\_CONF="/etc/hostapd/hostapd.conf"

**6. Enable and Start the Services**

sudo systemctl unmask hostapd

sudo systemctl enable hostapd

sudo systemctl enable dnsmasq

sudo systemctl start hostapd

sudo systemctl start dnsmasq

**7. Confirm It Works**

* Reboot the Pi:

sudo reboot

* On your phone or computer, look for the Wi-Fi network:
  + **SSID**: Pi-Camera-Net
  + **Password**: 12345678

Connect to it and check if your device receives an IP like 192.168.4.x. You can try to ping the Pi at:

ping 192.168.4.1

**Notes**

* The AP does **not provide internet**, unless you bridge it to another interface (e.g., eth0 or USB dongle).
* You can edit the SSID or password anytime in /etc/hostapd/hostapd.conf
* Clients (like ESP32-CAM) can now connect to this AP using 192.168.4.1 as gateway.

Let me know if you need to add internet sharing or simultaneous use with a USB Wi-Fi dongle.