

Using BBG to connect your phone hotspot with a WIFI adapter

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Introduction:

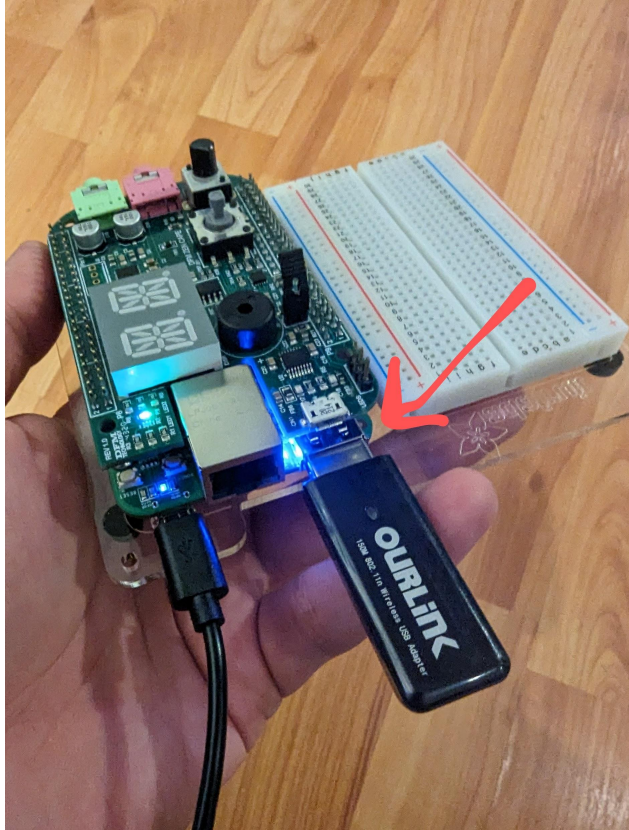
This guide provides information on how to connect your Beaglebone to a hotspot using a wifi adapter. The BBG should be run in Debian15. We are using **wpa_supplicant** which is a wifi connection and config tool. It supports encryption like WEP, WPA, and WPA2.

Hardware:

- Wifi adapter
- Beaglebone
- Phone

Step 1: Connect the wifi card to the Beaglebone

Plug the wifi adaptor into your Beaglebone USB port.



Step 2: Find the name of your wireless interface

Use the following command:

```
$(bbg) ifconfig
```

The interface name is usually wlan0. In this guide wlan0 is used for the wireless interface, if this is different you should change it for the rest of the setup

```
debian@BeagleBone: ~  
ether 30:e2:83:d6:78:18 txqueuelen 1000 (Ethernet)  
RX packets 217 bytes 20391 (19.9 KiB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 95 bytes 18452 (18.0 KiB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
usb1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
inet 192.168.6.2 netmask 255.255.255.0 broadcast 192.168.6.255  
inet6 fe80::32e2:83ff:fed6:781a prefixlen 64 scopeid 0x20<link>  
ether 30:e2:83:d6:78:1a txqueuelen 1000 (Ethernet)  
RX packets 102 bytes 10518 (10.2 KiB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 50 bytes 9280 (9.0 KiB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
wlan0: flags=-28669<UP,BROADCAST,MULTICAST,DYNAMIC> mtu 1500  
ether 00:e0:4c:26:cb:e6 txqueuelen 1000 (Ethernet)  
RX packets 0 bytes 0 (0.0 B)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 0 bytes 0 (0.0 B)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
debian@BeagleBone:~$
```

Step 3: Restart the wifi adapter

This should turn the light indicator on the wifi-card for this adaptor.

```
$(bbg) iwconfig wlan0 down
```

```
$(bbg) iwconfig wlan0 up
```

Step 4: Install WPA_Supplicant

```
$(bbg) sudo apt install wpasupplicant
```

Step 5: Setup wpa_supplicant

We need a config file named: `wpa_supplicant.conf`

`wpa_supplicant.conf` is the configuration file describing all networks that the user wants the computer to connect to. Run the following command to create this file. Replace ESSID (network name) and Wi-Fi passphrase with your own.

```
Run command: wpa_passphrase your-ESSID your-wifi-passphrase | sudo tee -a /etc/wpa_supplicant/wpa_supplicant.conf
```

This should generate the following file at `/etc/wpa_supplicant/wpa_supplicant.conf`

```
debian@BeagleBone: /etc/wpa_supplicant
debian@BeagleBone:~$ cd /etc/wpa_supplicant/
debian@BeagleBone:/etc/wpa_supplicant$ ls
action_wpa.sh  ifupdown.sh          wpa_supplicant-wlan0.conf
functions.sh  wpa_supplicant.conf
debian@BeagleBone:/etc/wpa_supplicant$ cat wpa_supplicant
cat: wpa_supplicant: No such file or directory
debian@BeagleBone:/etc/wpa_supplicant$ cat wpa_supplicant.conf
ctrl_interface=/var/run/wpa_supplicant
ctrl_interface_group=0
update_config=1
network={
    Your_hotspot_name
    ssid="<a>"
    psk="dapassword"
}
network={
    ssid="<network name 1>"
    psk="<network name 2>"
}
network={
    ssid="Alirezaa"
    #psk="dapassword"
    psk=1374fac45d3249bfd6955b9fcc4922d5c1b8ed47c35b6a2c57607ba6405f0a9d
}
debian@BeagleBone:/etc/wpa_supplicant$
```

Step6: Turn on your hotspot

Check if the wifi card able to scan your hotspot

```
$(bbg) sudo iwlist wlan0 scan | grep ESSID
```

Step7: Connect to your hotspot

```
$(bbg) sudo wpa_supplicant -c /etc/wpa_supplicant/wpa_supplicant.conf -I wlan0
```

You have successfully connected to your hotspot. You can also connect to other wifi networks by changing the wifi name and password in the /etc/wpa_supplicant/wpa_supplicant.conf file.

To confirm your connection. There has to be an IP address associated with the wifi card. you can check this by running **ifconfig** again

```
debian@BeagleBone: ~  
RX packets 646 bytes 53543 (52.2 KiB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 387 bytes 73800 (72.0 KiB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
usb1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
inet 192.168.6.2 netmask 255.255.255.0 broadcast 192.168.6.255  
inet6 fe80::32e2:83ff:fed6:781a prefixlen 64 scopeid 0x20<link>  
ether 30:e2:83:d6:78:1a txqueuelen 1000 (Ethernet)  
RX packets 128 bytes 13234 (12.9 KiB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 57 bytes 10332 (10.0 KiB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
wlan0: flags=-28605<UP,BROADCAST,RUNNING,MULTICAST,DYNAMIC> mtu 1500  
inet 192.168.40.3 netmask 255.255.255.0 broadcast 192.168.40.255  
inet6 fe80::2e0:4cff:fe26:cbe6 prefixlen 64 scopeid 0x20<link>  
ether 00:e0:4c:26:cb:e6 txqueuelen 1000 (Ethernet)  
RX packets 4 bytes 1010 (1010.0 B)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 19 bytes 3122 (3.0 KiB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
debian@BeagleBone:~$
```

Troubleshooting:

- You may run into an error asking you to delete a file when you connect to the hotspot

```
$(bbg) rm -rf [the file]
```

Delete the file and try running the connect command again

- You may fail to connect your hotspot

Check if your hotspot is turned on and check the

/etc/wpa_supplicant/wpa_supplicant.conf file has your hotspot ESSID and password

- If running `$(bbg) iwconfig wlan0 up` does not turn on the wifi card, you can try running this command:

```
$(bbg) sudo ip link set dev wlan0 up
```

- `RTNETLINK answers: Operation not possible due to RF-kill`

You need to unblock wifi with the following command:

```
$(bbg) sudo rfkill unblock wifi
```

Note:

The wpa_supplicant run in the foreground, in this way you may want to create another terminal. This way, you can see if there are any errors.

There is also a way to run wpa_supplicant in the background just simplify add -B option

\$(bbg) `sudo wpa_supplicant -B -c /etc/wpa_supplicant.conf -i wlan0`