

Wifi Guide

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This guide will walk users through how to connect the BeagleBone Green to a Wifi hotspot with the help of a USB Wifi network adapter.

1. Plug the adapter into the USB port of the BeagleBone Green.
2. On the target, check network configurations.

```
# ifconfig
```

There should be a wlan0 networking interface. This is the interface through which the board connects to Wifi.

```
eth0      Link encap:Ethernet  HWaddr 38:d2:69:4a:41:0a
          UP BROADCAST MULTICAST DYNAMIC MTU:1500 Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
          Interrupt:172

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING MTU:65536 Metric:1
          RX packets:3040 errors:0 dropped:0 overruns:0 frame:0
          TX packets:3040 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:234720 (229.2 KiB)  TX bytes:234720 (229.2 KiB)

tether    Link encap:Ethernet  HWaddr 74:da:38:8f:63:a2
          inet addr:192.168.0.1  Bcast:192.168.0.255  Mask:255.255.255.0
          inet6 addr: fe80::ecdc:36ff:fe9c:e288/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST DYNAMIC MTU:1500 Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:32 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:4602 (4.4 KiB)

usb0      Link encap:Ethernet  HWaddr 38:d2:69:4a:41:00
          inet addr:192.168.7.2  Bcast:192.168.7.3  Mask:255.255.255.252
          inet6 addr: fe80::3ad2:69ff:fe4a:4100/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
          RX packets:40 errors:0 dropped:0 overruns:0 frame:0
          TX packets:3 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:6698 (6.5 KiB)  TX bytes:876 (876.0 B)

wlan0     Link encap:Ethernet  HWaddr 74:da:38:8f:63:a2
          inet6 addr: fe80::76da:38ff:fe8f:63a2/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST DYNAMIC MTU:1500 Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:45 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:7290 (7.1 KiB)
```

If you do not find a wlan0 interface, run the command #iwconfig on the target, which should output something similar to what is shown below:

```
root@cwzhang-beagle:~# iwconfig
tether    no wireless extensions.

wlan0     IEEE 802.11bgn  Mode:Master  Tx-Power=20 dBm
          Retry short limit:7  RTS thr=2347 B  Fragment thr:off
          Power Management:off

lo        no wireless extensions.

eth0      no wireless extensions.

usb0      no wireless extensions.
```

Choose an interface that does not read “no wireless extensions” after its name.

At this point, wlan0 still does not have an assigned IP address, meaning it is not connected to any network.

3. In order to set up the BeagleBone to connect to a wireless network, we must edit the network interfaces file to provide it with the credentials it needs. On the target, enter:

```
# nano /etc/network/interfaces
```

4. At the end of the file, add in the following lines:

```
allow-hotplug wlan0
iface wlan0 inet dhcp
    wpa-ssid "Your-Network-SSID-here"
    wpa-psk "Your-Network-password-here"
```

Replace the highlighted fields with the SSID and password for the network you are attempting to connect to. Note that the later two lines are offset by a single TAB character from the earlier two.

After you are done, press Ctrl+X to close and save the file. Overwrite the existing /etc/network/interfaces file.

5. Reboot the BeagleBone.

```
# reboot
```

6. Once the BeagleBone has finished rebooting, check if the wireless interface has been assigned an IP address. This may take 20~30 seconds.

```
# ifconfig
```

```
wlan0      Link encap:Ethernet  HWaddr 74:da:38:8f:63:a2
           inet addr:192.168.43.12  Bcast:192.168.43.255  Mask:255.255.255.0
           inet6 addr: fe80::76da:38ff:fe8f:63a2/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
           RX packets:23 errors:0 dropped:0 overruns:0 frame:0
           TX packets:30 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:2445 (2.3 KiB)  TX bytes:4402 (4.2 KiB)
```

If no IP is assigned, check if the network is up and running, then reboot again.

7. Check to ensure the target has a connection to the internet.

```
# ping google.ca
PING google.ca (216.58.216.163) 56(84) bytes of data:
64 bytes from sea15s02-in-f163.1e100.net (216.58.216.163): icmp_seq=1 ttl=49 time=1908 ms
64 bytes from sea15s02-in-f163.1e100.net (216.58.216.163): icmp_seq=2 ttl=49 time=967 ms
64 bytes from sea15s02-in-f163.1e100.net (216.58.216.163): icmp_seq=3 ttl=49 time=1218 ms
64 bytes from sea15s02-in-f163.1e100.net (216.58.216.163): icmp_seq=4 ttl=49 time=773 ms
```

Note that response times may be very slow, so be patient.

Note that the above instructions can only be used to connect to conventional Wifi networks that do not require additional authentication. Connection to SFUNET and SFUNET-SECURE requires additional certification and setup, which we were unable to finish. For additional setup, install and use wpasupplicant on the target.

References:

1. “Beagle Bone Green using WiFi Dongle”, https://www.seeed.cc/project_detail.html?id=1115