Setup Guide: runlinc on E32W Controller

Creating a Hotspot

In order to connect the Wi-Fi chip on local network, the runlinc web page can be opened, otherwise you cannot program with runlinc.

If you do not have a router configured with the network settings that match those pre-programmed onto the Wi-Fi chips.

- SSID (Name): runlinc
- Wi-Fi Band: 2.4GHz
- V1.2 Password: runlinc1234

You can still use runlinc by creating a hotspot with these settings:

Windows 10

1. Search for mobile hotspot in Settings (Figure 1.)
2. Click “Edit” and enter “runlinc” for Network name and set the Network Password to “runlinc1234” for Wi-Fi chip version 1.2. (Figure 2.)
3. Turn on the button of “Share mt Internet connection with other devices”. One connected device can be seen at the bottom of the page. If your controller is E32W, the “device name” should start with ESP. (Figure 3.)

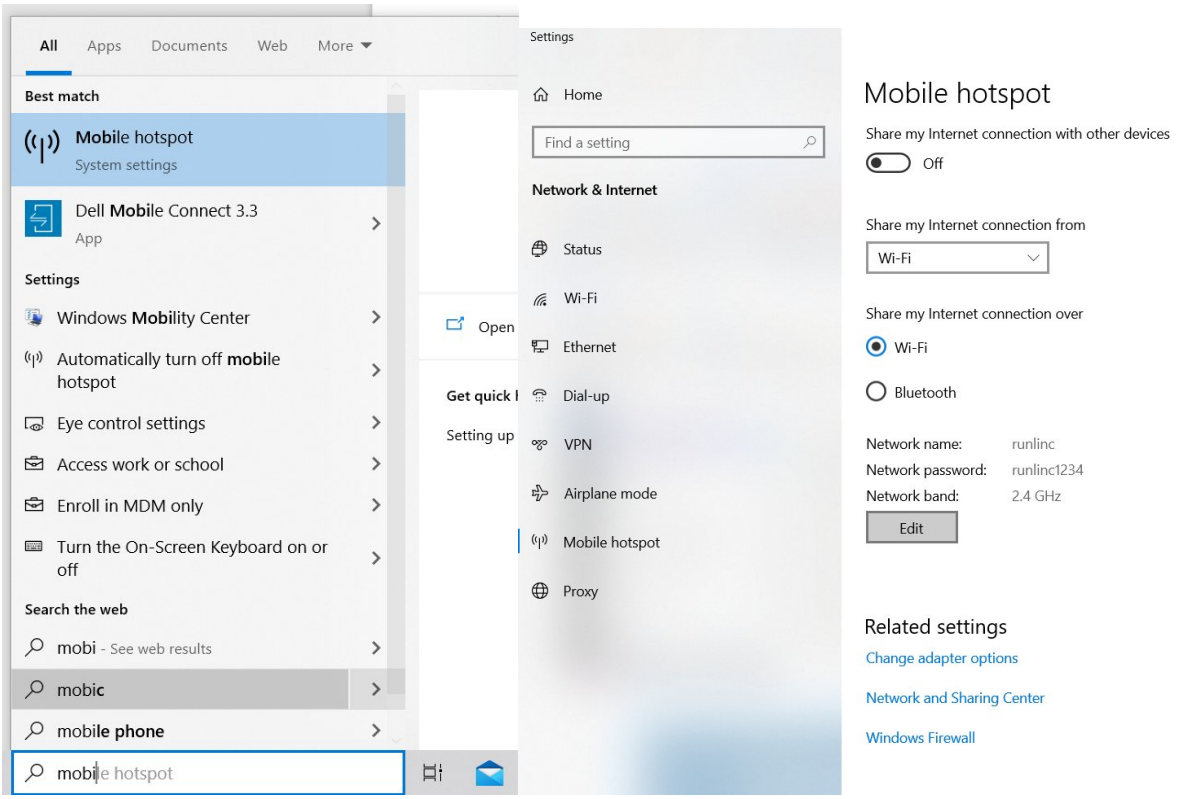


Figure 1. Search for “Mobile hotspot” in Settings

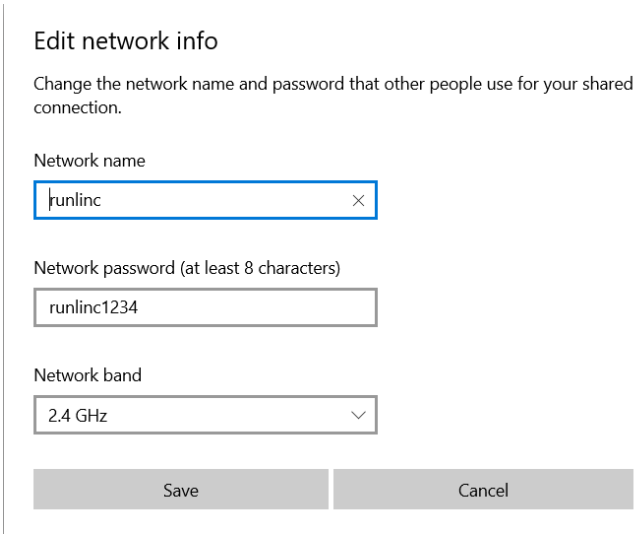


Figure 2. Popup window of 'Edit network info'

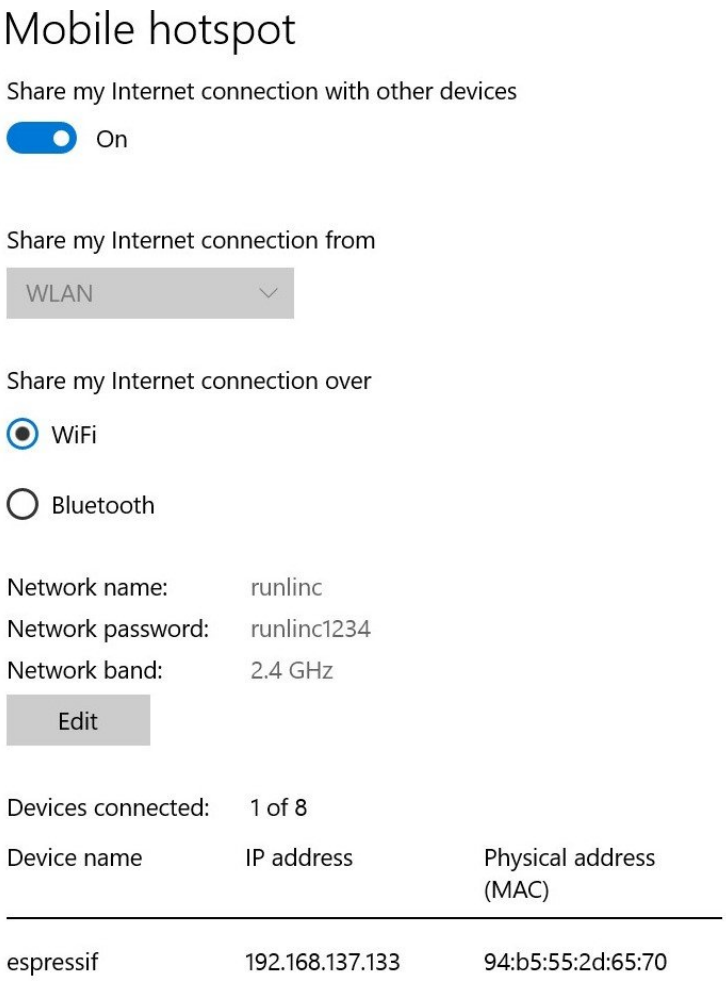


Figure 3. The interface when turn on "Share mt Internet connection with other devices"

Windows (old version)

For earlier Windows systems, a third-party hotspot software is needed,

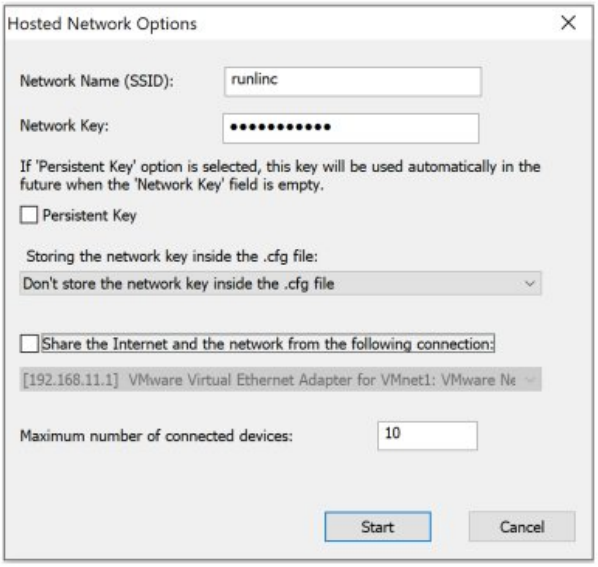
e.g., **HostedNetworkStarter**. Download it from: http://www.nirsoft.net/utils/hostednetworkstarter.zip, and unzip it.

Open HostedNetworkStarter.exe. Set as follows:

Network Name: runlinc

Network Key: set the network key to "runlinc1234" for Wi-Fi chip version 1.2

Then press ***start.***



Android

Go to settings and either search for "hotspot" or go to Network & Internet -> Hotspot & tethering -> Wi-Fi hotspot.

Change the Hotspot name to "runlinc" and set the "runlinc1234" for Wi-Fi chip version 1.2.

Once the hotspot is turned on, the Wi-Fi chip will connect to it when it boots up (you will see ESP_XXXXXX in connected devices). If you cannot see anything (e.g., If you had connected the board before creating the hotspot), try unplugging the USB and then replunging it with the Wi-Fi module on the board. This will reset both the board and the module.

runlinc IDE page

1. Power the board by either USB cable, and the red LED will be turned on.
2. Open the runlinc webpage by entering **http://xxx.xxx.xxx.yyy/control.html** on your preferred web browser's address bar. xxx.xxx.xxx.yyy is the IP address, which consists of three numbers from your Hotspot and one number from the Wi-Fi chip. The first three numbers of the IP address are provided by the Wi-Fi hotspot (e.g., The Hotspot on Windows 10 is 192.168.137). They are depending on the network configuration (Table 1.). The 4th

number is written on the yellow sticker on the Wi-Fi chip. For example, if the Wi-Fi chip number is 100, the IP address should look like **http://192.168.137.100**. Therefore, you should input **http://192.168.137.100/control.html** in the web browser's bar.

Table 1. IP address of different network configuration

Network Configuration	IP address
Router/Gateway	See Appendix B
Hotspot (Windows)	192.168.137.yyy
Hotspot (Android)	192.168.43.yyy

Your IDE page should look like this (Figure 4.).

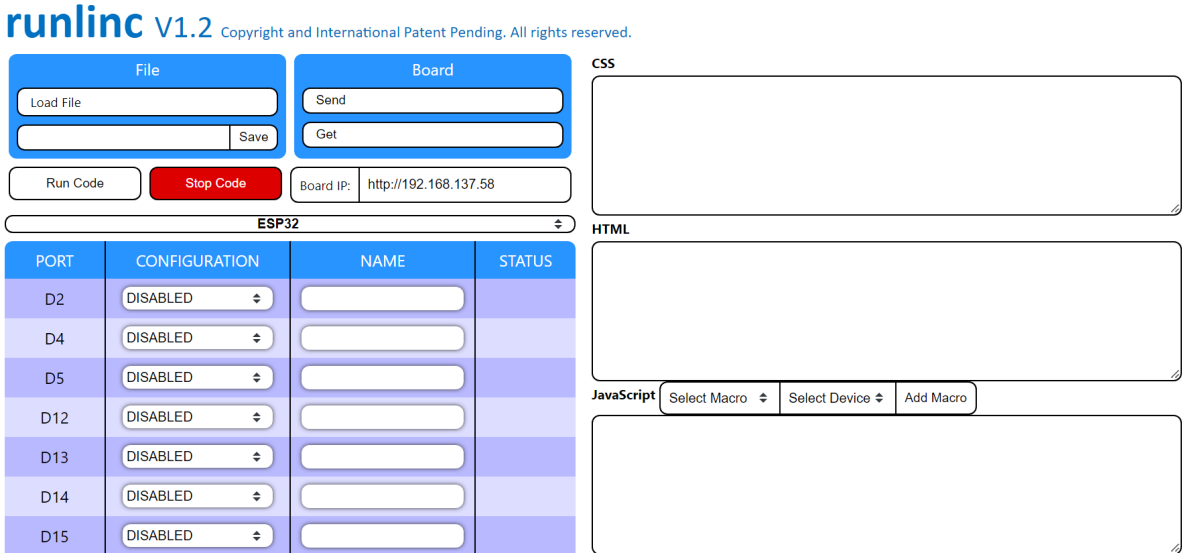


Figure 4. The IDE page that is connected to the Wi-Fi Chip

Test the Connection by using the Blue LED

1. Set the configuration of PORT D2 to **DIGITAL_OUT**. Then a red "off" button shows up in the status bar (Figure 5).
2. Click the red "off" button to turn on the blue LED on the Wi-Fi chip (Figure 6 & 7). Once the blue LED turned on, the Wi-Fi Hotspot and runlinc is connecting to the chip.

Figure 5. Test the connection by using the Blue LED

Figure 6. Click the red OFF button and turn on the LED

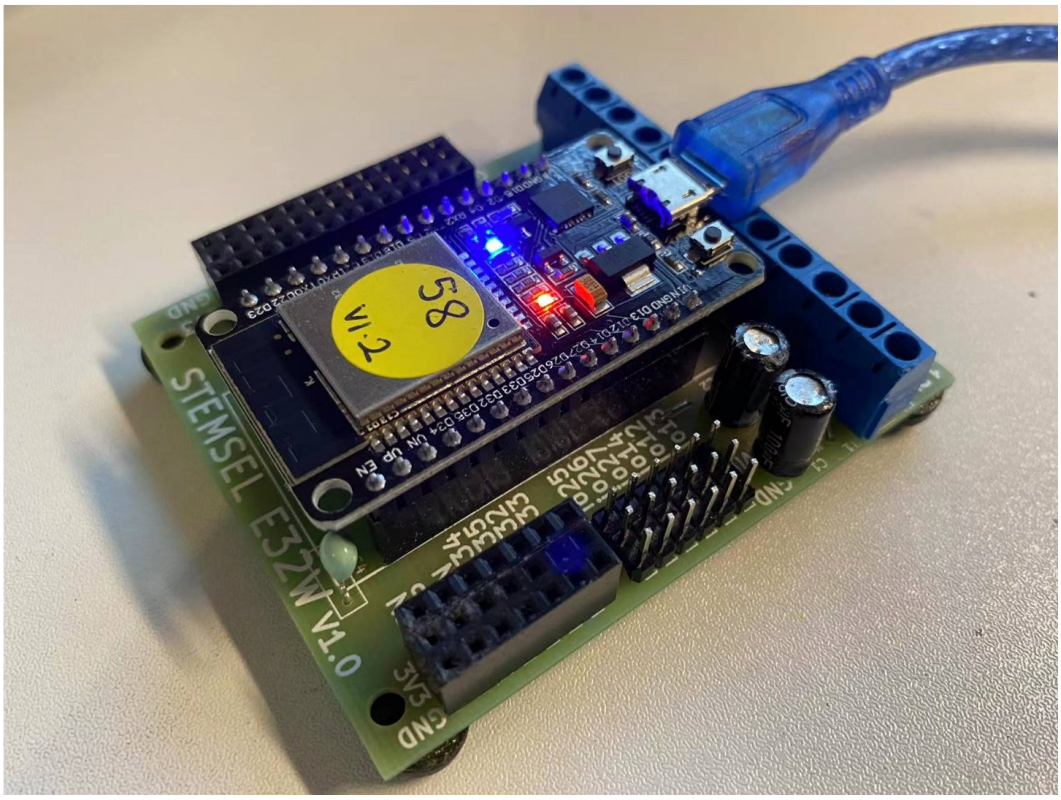


Figure 7. The blue LED is turned on

Appendix A: Making Your Webpage International

To make your webpage international, you need to setup Pagekite on your phone or computer. Before you start, ensure that you have connected the E32W board to the runlinc website. Create a Pagekite account on pagekite.net website.

It can be used free for 30 days but can be reset by the account holder. Click on the 'Buy More' link under your account details. Then move the slider back to 4. In the right-hand side, there will be a text box, where it can be filled with a friendly message to the service of pagekite.com. Make sure to ensure that it is not for a work account. (Click the check box near the textbox)

Windows:

Download and install Python 3.10.4 from https://www.python.org/ftp/python/3.10.4/python-3.10.4-amd64.exe

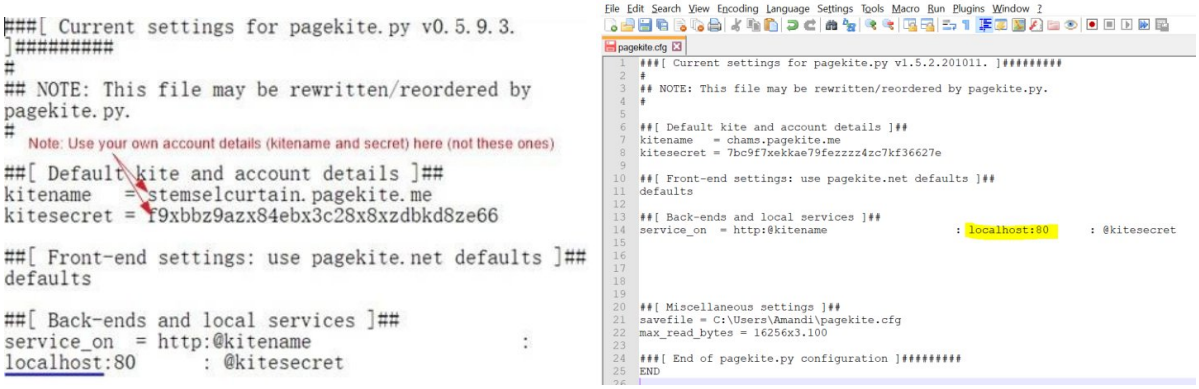
Download pagekite.py from https://pagekite.net/pk/pagekite.py (if the browser does not download it automatically, right-click on the webpage and select save as)

Open pagekite.py. The program will guide you through the process and help you set up your first kite:

Type Y and press enter to continue Type in your email address to create an account (Any account which you already use, a confirmation email will be sent to your account. Open the link and activate the account)

Give your kite a name, this will be the address of your webpage. E.g., if you name your kite as E32W, your webpage's address will be E32W.pagekite.me. After a few seconds, it should say 'Your kite is ready to fly!', then you can close it.

Search for pagekite.cfg in your computer (usually in my computer, C drive, Users, your computer name and pagekite.py) or just find from simple search bar. Open it with Notepad. Edit the underlined text to your chip's IP address which is **localhost** change with chip's IP and save changes.



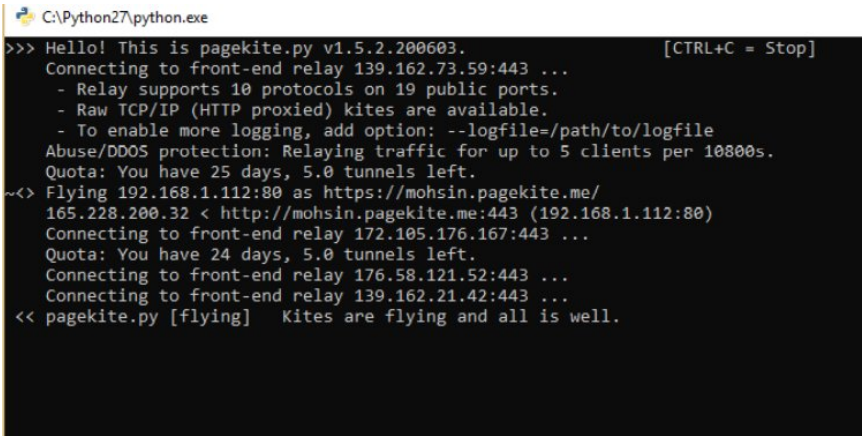
After opening pagekite.cfg on notepad, you should see "localhost:80". Change it to the IP address of your microchip. Remove 'localhost' and add the IP address instead. Follow the example bellow.

pagekite - Notepad

File Edit Format View Help

```
###[ Current settings for pagekite.py v1.5.2.200603. ]#########
#
## NOTE: This file may be rewritten/reordered by pagekite.py.
#

##[ Default kite and account details ]##
kitename   = mohsin.pagekite.me
kitesecret = 4k82eadb42k3ek8cd4778278df667848

##[ Front-end settings: use pagekite.net defaults ]##
defaults

##[ Back-ends and local services ]##
service_on  = http:@kitename                : 192.168.1.112:80      : @kitesecret



##[ Miscellaneous settings ]##
savefile = C:\Users\Mohsin Khalid\pagekite.cfg
max_read_bytes = 16256x3.100

###[ End of pagekite.py configuration ]#########
```

Reopen pagekite.py where it downloads. It should now automatically run. When it says, for example, Flying 192.168.137.76:80 as https://<your-account-name>.pagekite.me/, the kite is flying.



Now put your kite's name + /control in your browser's address bar, e.g., stemsel.pagekite.me/control.html. Now you can access your webpage and control the chip from anywhere!

Note: Wherever user need to run the pagekite it must open the pagekite.py file first otherwise the pagekite will not work and show the message on web that Temporary unavailable.

Android Phones:

You need two apps: Proxy Server. Download from GooglePlay.

PageKite (currently not available on GooglePlay. Go to:

https://pagekite.net/pk/android/PageKiteApp.apk instead.)

Ensure that you have turned on data on your phone.

Sign up on pagekite.net if you do not have an account. Set up your kite's name and secret. If you already have an account, skip this step.

In the Proxy Server app press 'Add' -> 'Proxy Server'.

Set 'Server name' as whatever you want, such as 'robot' Set 'Run on port' as 8084.

Tick 'Forward all requests to the same host'.

Set 'Forward to host' as your chip's IP address, e.g. 192.168.43.84.

Go back, save the settings and start the server.

In the PageKite app go to 'Account Details'. Set 'Kite Name' as your registered kite name, e.g., 'curtain.stemselrover.pagekite.me'. Set 'Shared Secret' as your registered secret.

Go back and go to 'Local Server Settings'. Set 'HTTP Port' as 8084. Go back and click 'Enable PageKite'.

Put your kite's name + /control in your browser's address bar, e.g., stemsel.pagekite.me/control (use your own kitename NOT stemsel). Now you can access your webpage and control the chip from anywhere!

Appendix B: Router/Gateway

NOTE: the runlinc version of the Wi-Fi chip is marked under the chip.

If you are connecting through a router that has been specifically configured for runlinc (with a network name of 'runlinc' and password of 'runlinc1234' for runlinc V1.2), you have to find the router IP address.

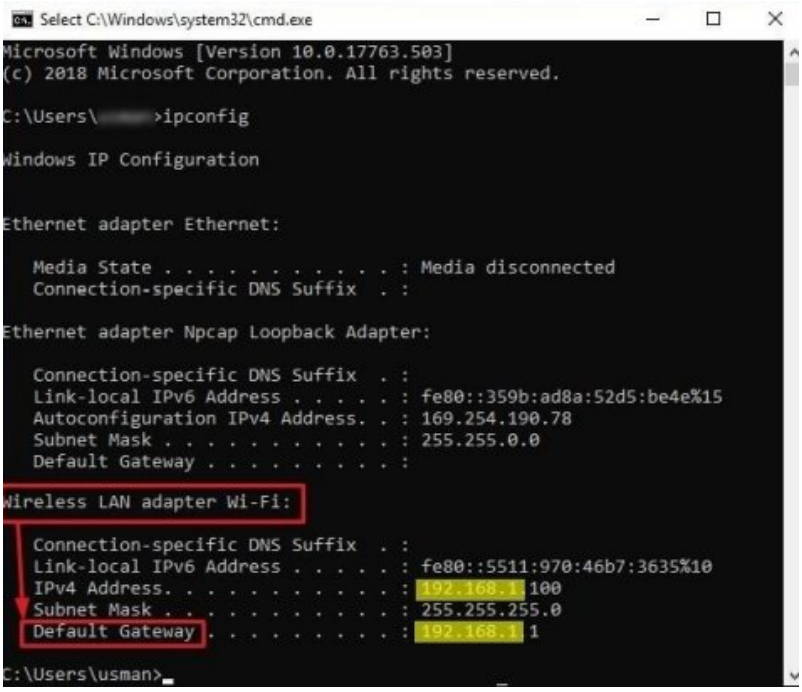
You can find the router IP address by using the following commands (Note that we only need the first three numbers of the IP address. Since we want to connect to the specific Wi-Fi module, the last number will be your module number):

Windows

1. Open the "Command Prompt" (search for it or press Windows key + R > type "cmd.exe" > Ok)

2. Type "ipconfig" and press enter.

3. Look for the Default Gateway or IPv4 address in the interface named Wireless LAN adapter

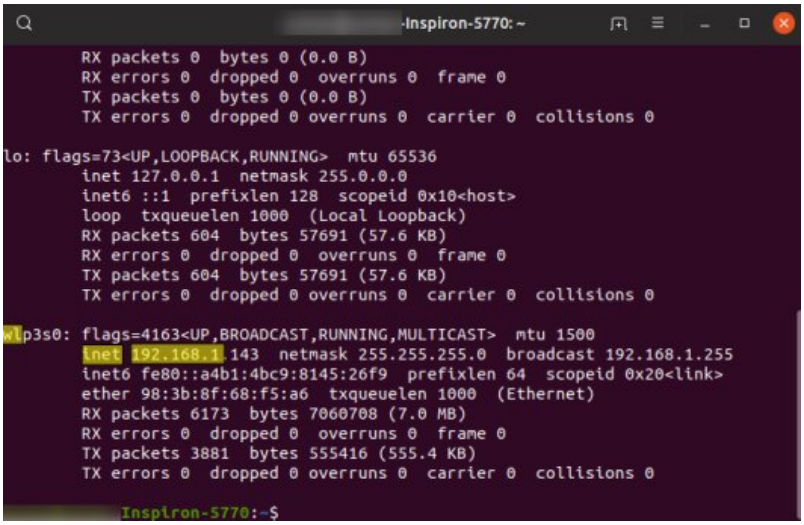


Linux

1. Open the "Terminal" (search for it or by pressing Ctrl + Alt + T)

2. Type "ifconfig" and press enter

3. Look for the **inet** address in the interface starting with **wl** (may be wlanX or wlpXsX)



Mac

1. Open the “Terminal” (you can search for it by pressing cmd + space)

2. Type “ifconfig” and press enter

3. Look for the **inet** address in the interface named **en1**