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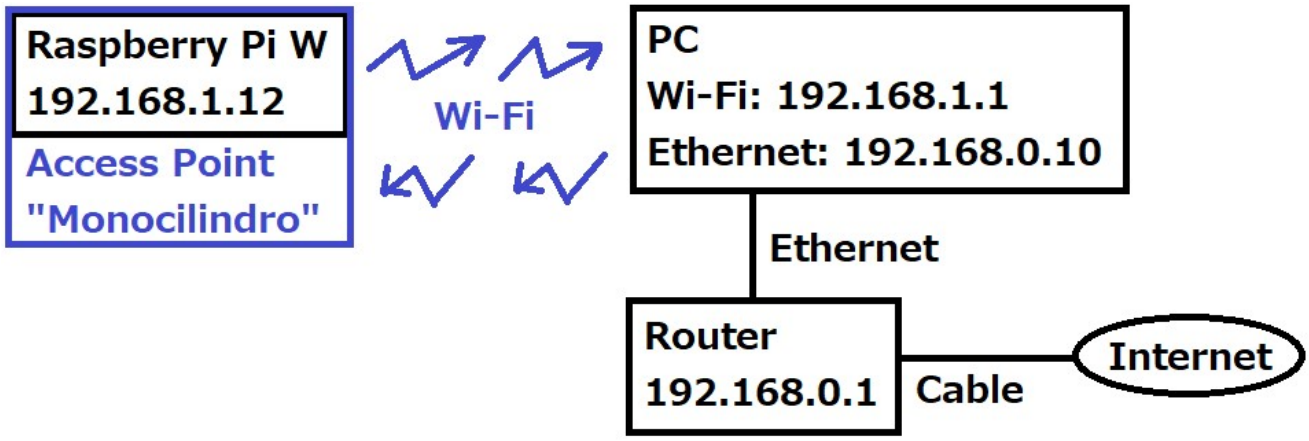
25th November 2017

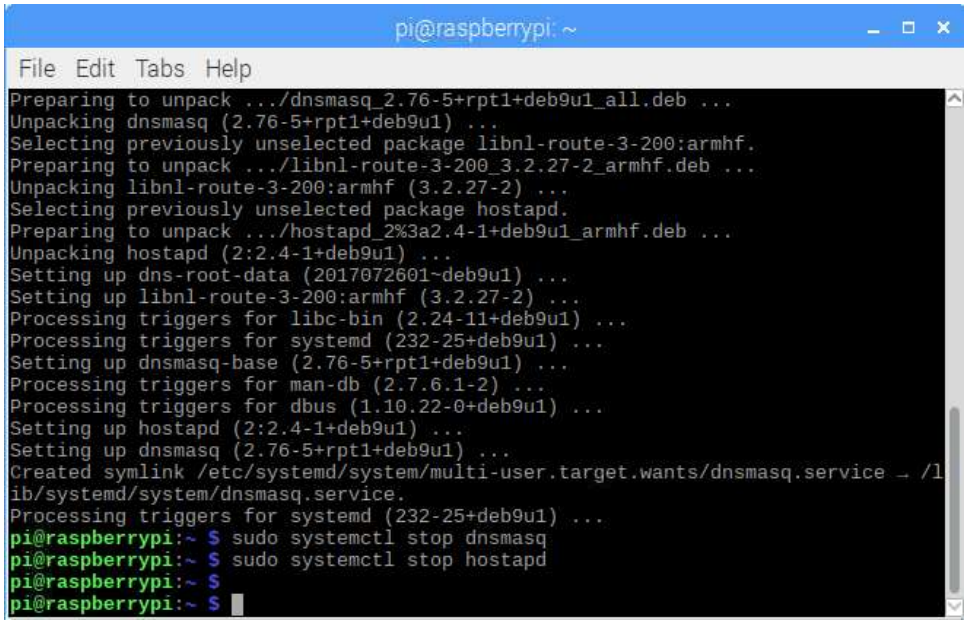
This guide will explain how to transform your Raspberry Pi into an Wi-Fi Access Point. Some parts of this guide are taken from the Raspberry Pi official website.
A PC connects to Raspberry Pi Zero W by using Wi-Fi, and shares its Internet connection through Ethernet LAN. Therefore, the Raspberry Pi Zero W can connect to the Internet through the PC (the PC is acting as a sort of Internet network bridge).
The reason why I decided to implement this network layout is that I wanted to use my Raspberry Pi Zero W as a standalone unit (I want to leave it connected on the Fuelino installed on my motorcycle), and sometimes add Internet Connection through my PC. Raspberry Pi is going to work as an Access Point (including DHCP server) most of the time, and I will connect it to Internet only to perform Raspbian OS updates.



Configuration on Raspberry Pi side.

Install the necessary packages, and then disable their services.

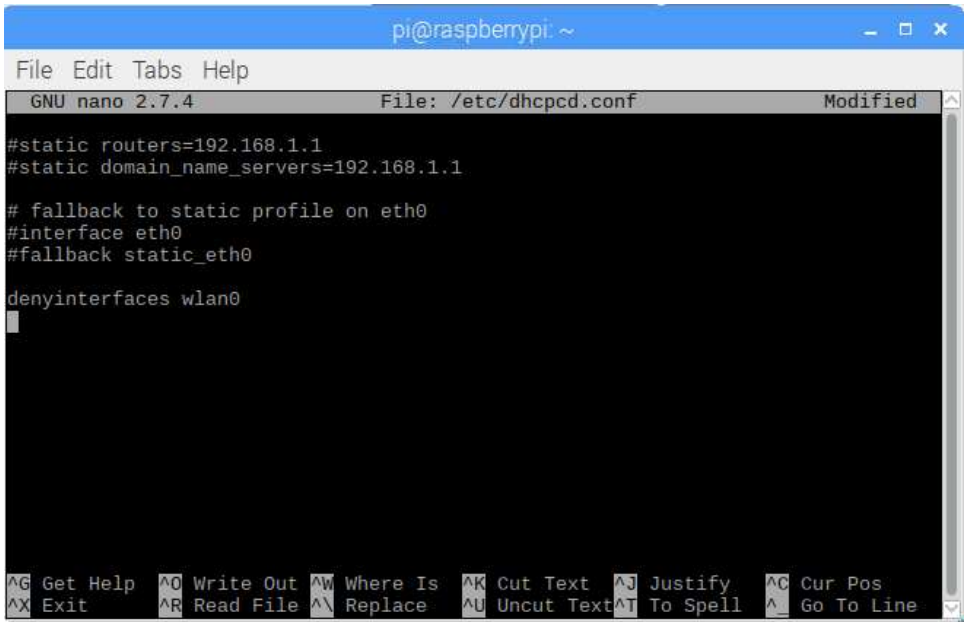
sudo apt-get install dnsmasq hostapd
sudo systemctl stop dnsmasq
sudo systemctl stop hostapd



Modify DHCP client settings (DHCP client is not needed when working as Access Point).

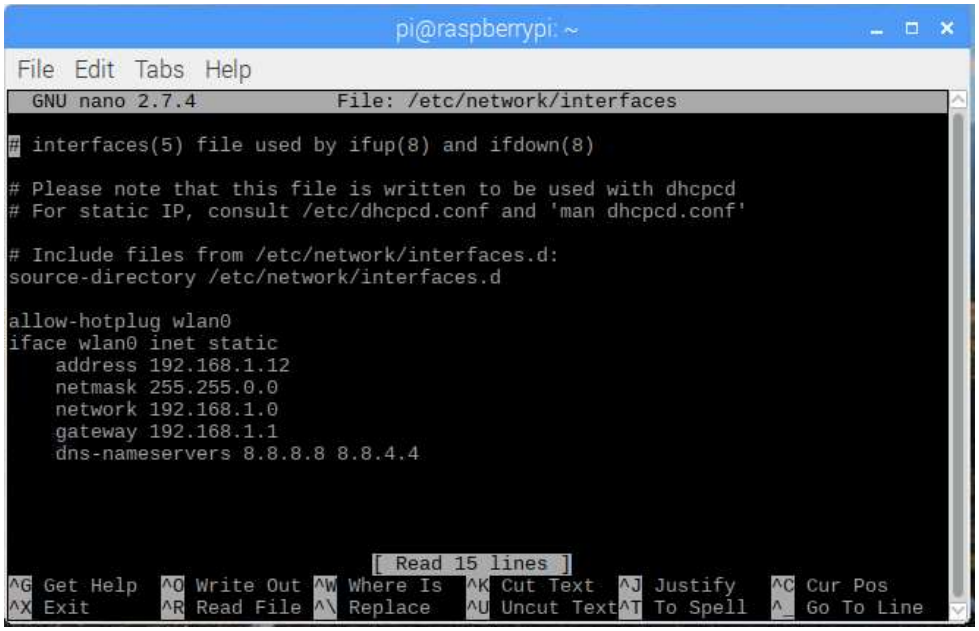
sudo nano /etc/dhcpcd.conf

Add *denyinterfaces wlan0* to the end of the file (but above any other added interface lines) and save the file.



sudo nano /etc/network/interfaces

allow-hotplug wlan0
iface wlan0 inet static
address 192.168.1.12
netmask 255.255.0.0
network 192.168.1.0
gateway 192.168.1.1
dns-nameservers 8.8.8.8 8.8.4.4



Type the following:

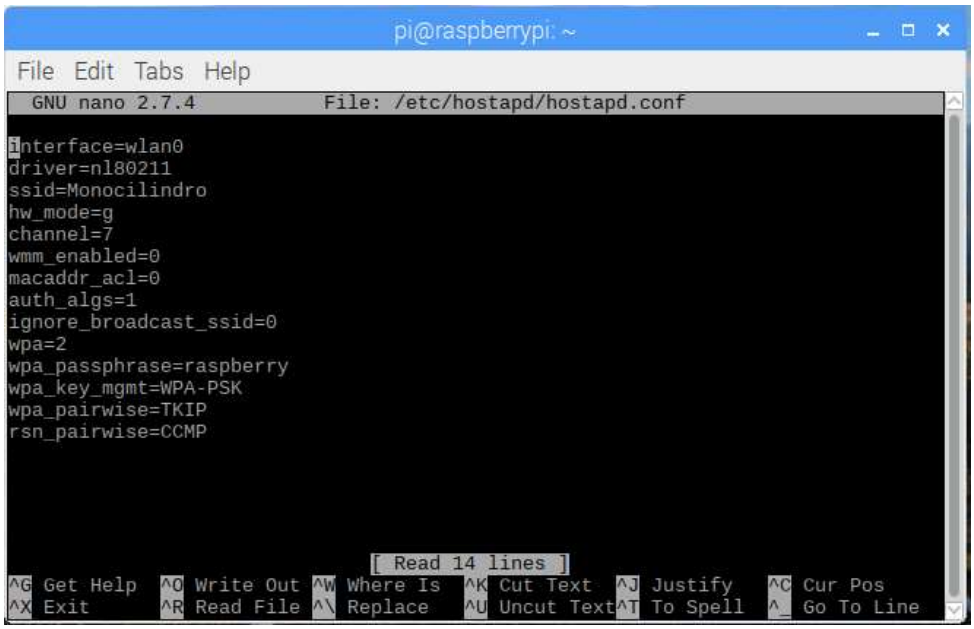
sudo service dhcpcd restart
sudo ifdown wlan0
sudo ifup wlan0

Configuring the access point host software (hostapd):

sudo nano /etc/hostapd/hostapd.conf

interface=wlan0
driver=nl80211
ssid=Monocilindro
hw_mode=g
channel=7
wmm_enabled=0
macaddr_acl=0
auth_algs=1

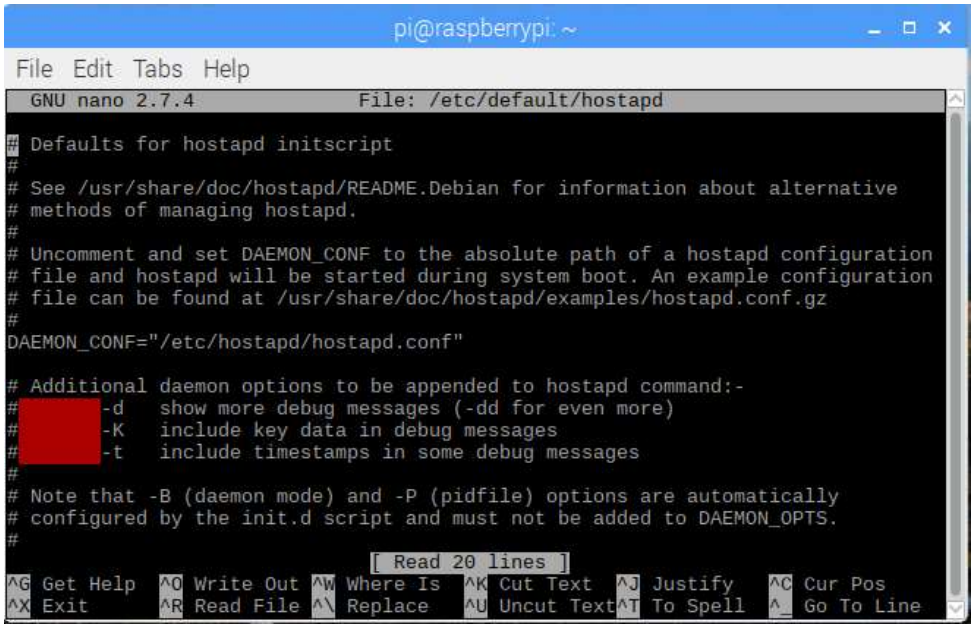
ignore_broadcast_ssid=0
wpa=2
wpa_passphrase=raspberry
wpa_key_mgmt=WPA-PSK
wpa_pairwise=TKIP
rsn_pairwise=CCMP



sudo nano /etc/default/hostapd

Correct as following:

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

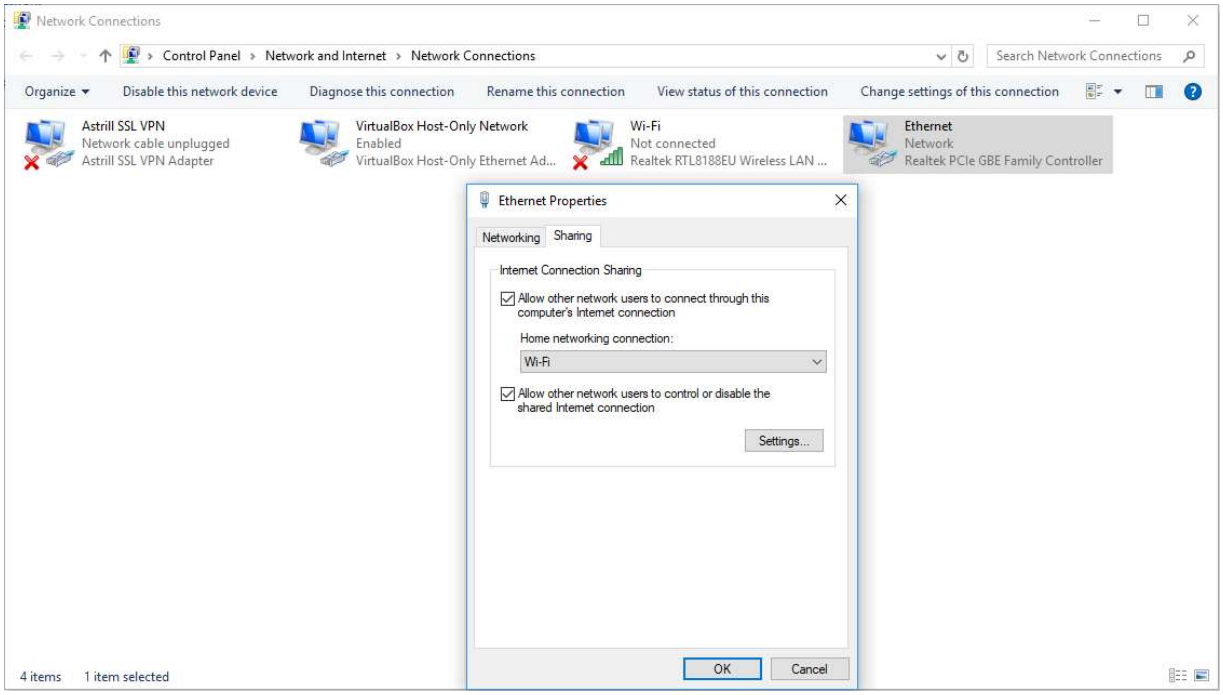


Start up by the Access Point on Raspberry Pi by writing:

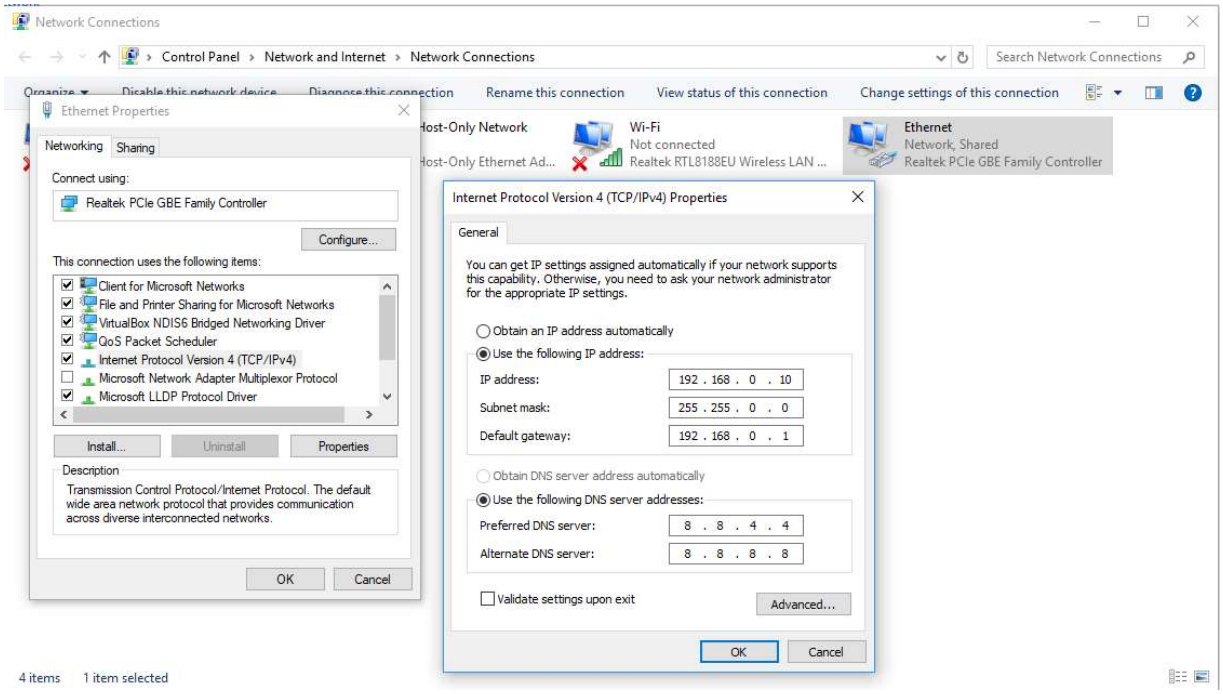
sudo service hostapd start
sudo service dnsmasq start

Configuration on PC side.

Select the “Ethernet” (Cable LAN) connection and share the Internet connection with “Wi-Fi” network.

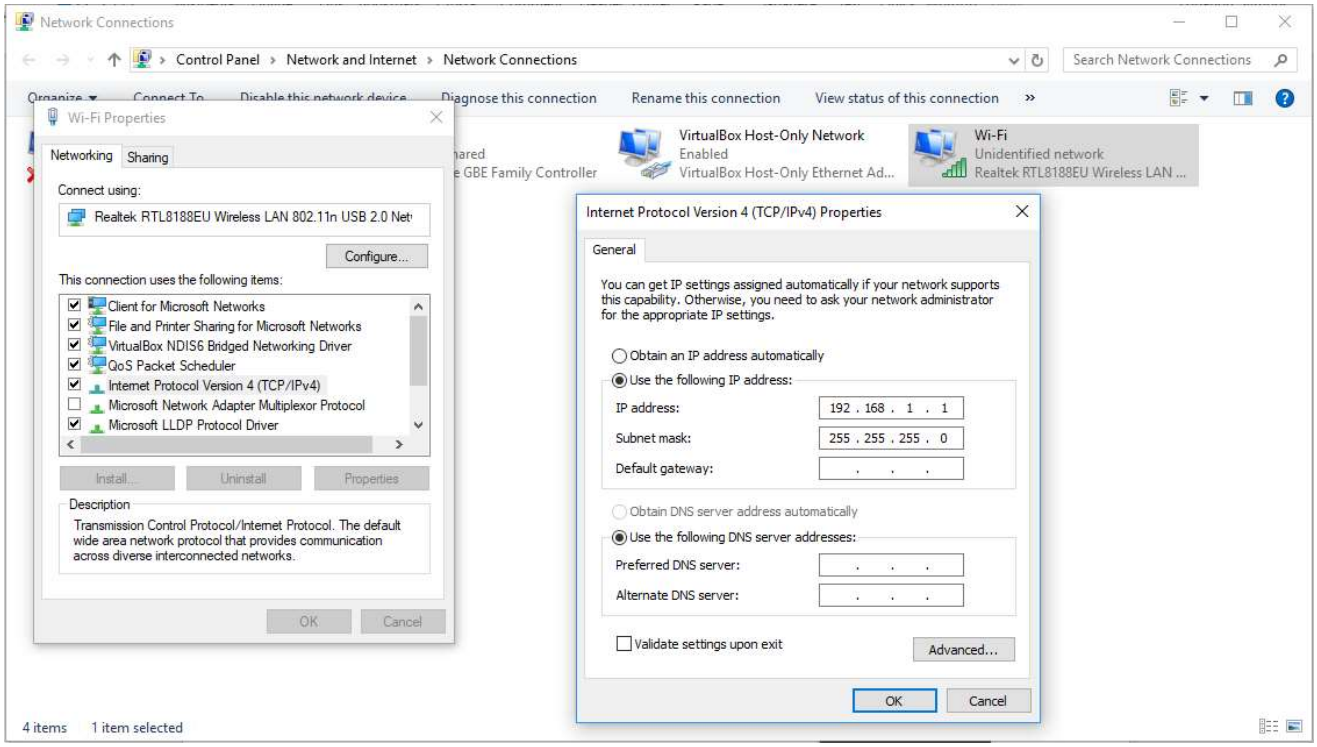


[Optional: set static IP address for the Ethernet connection]

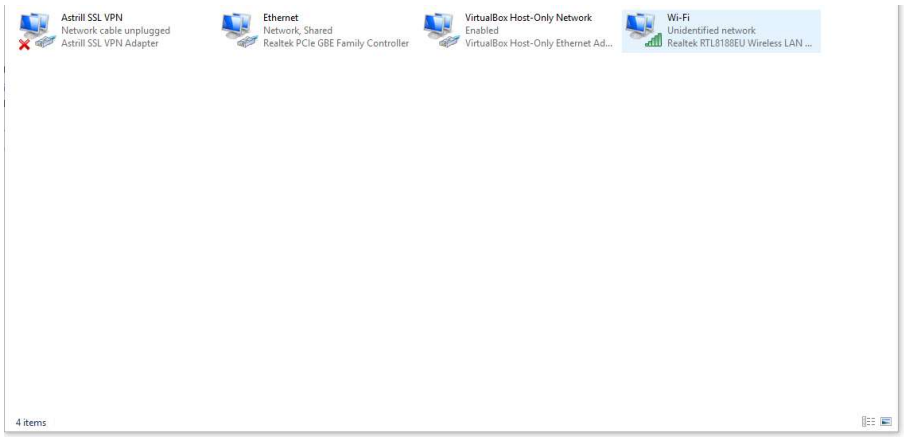


Set-up the settings for the Wi-Fi connection with Raspberry Pi:

- IP Address: 192.168.1.1
- Subnet Mask: 255.255.255.0



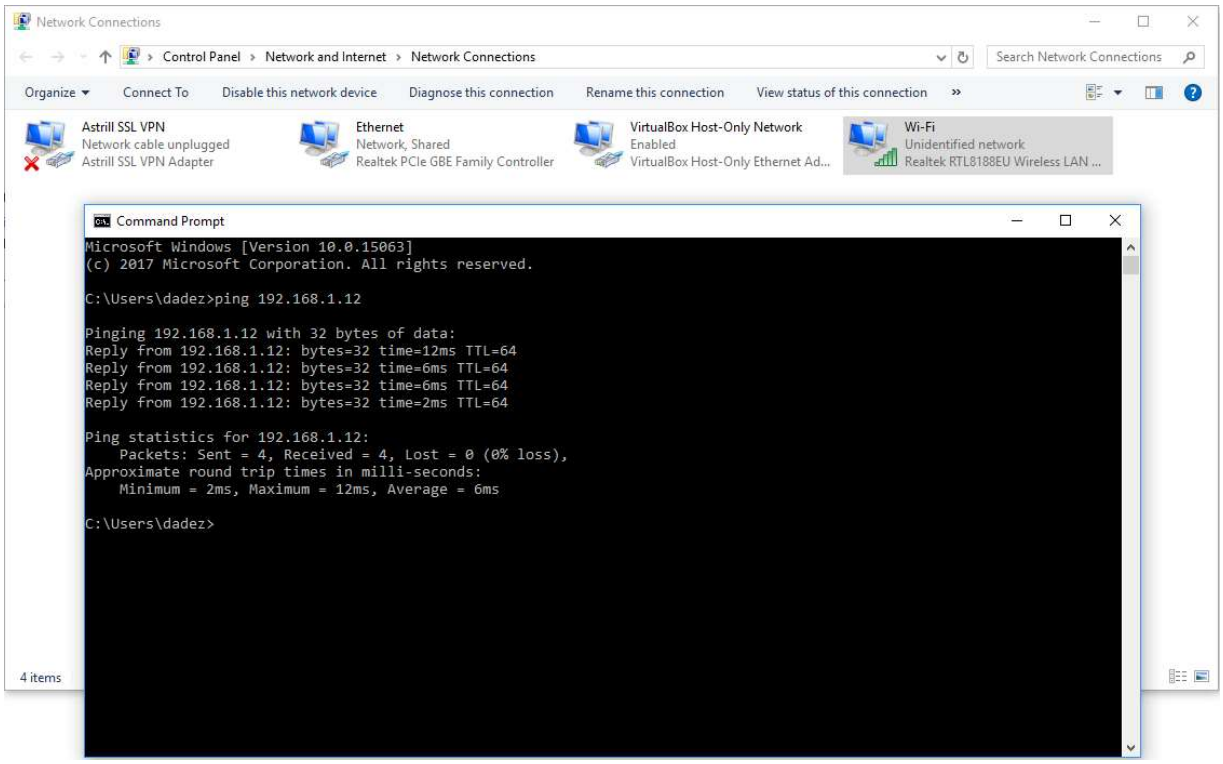
Connect to Raspberry Pi (Access Point). The AP name is “Monocilindro”, the password is “raspberry”.



Final test on PC side.

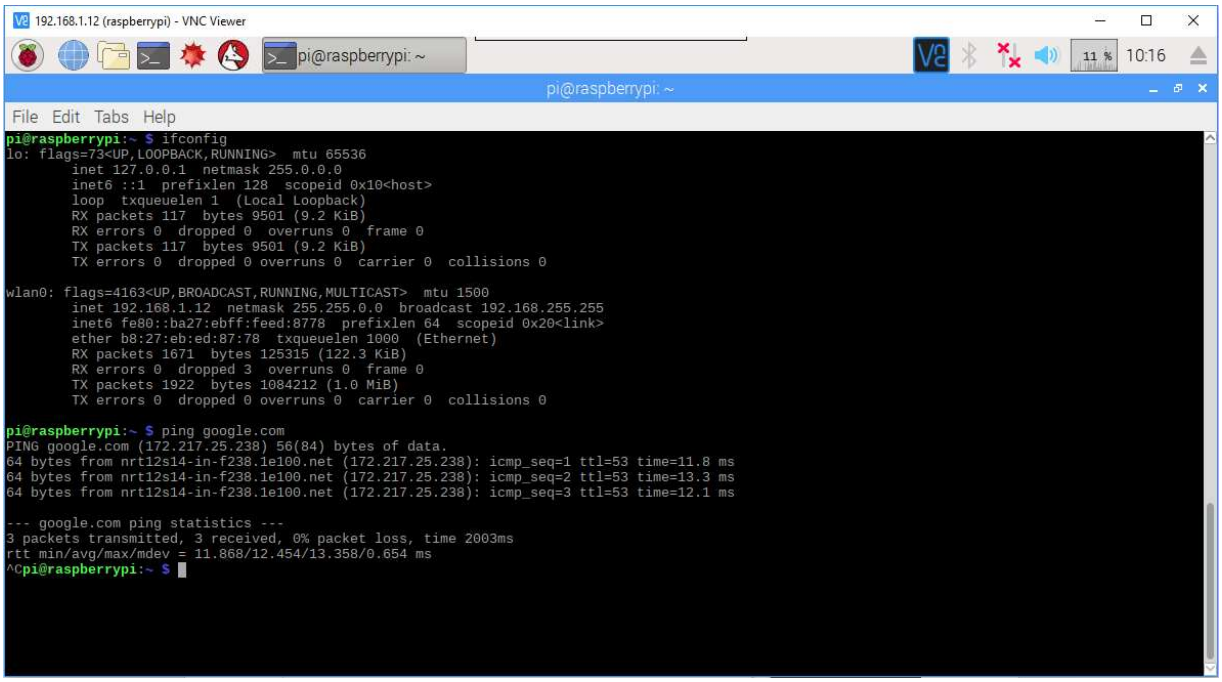
Just to make sure, open “cmd” (Command Prompt) and send a ping to Raspberry Pi.

ping 192.168.1.12



Connect to Raspberry Pi using VNC Viewer.
From Raspberry Pi (192.168.1.12), check “ifconfig” and ping “google.com”.
If you get a reply, it means that the configuration is working properly.

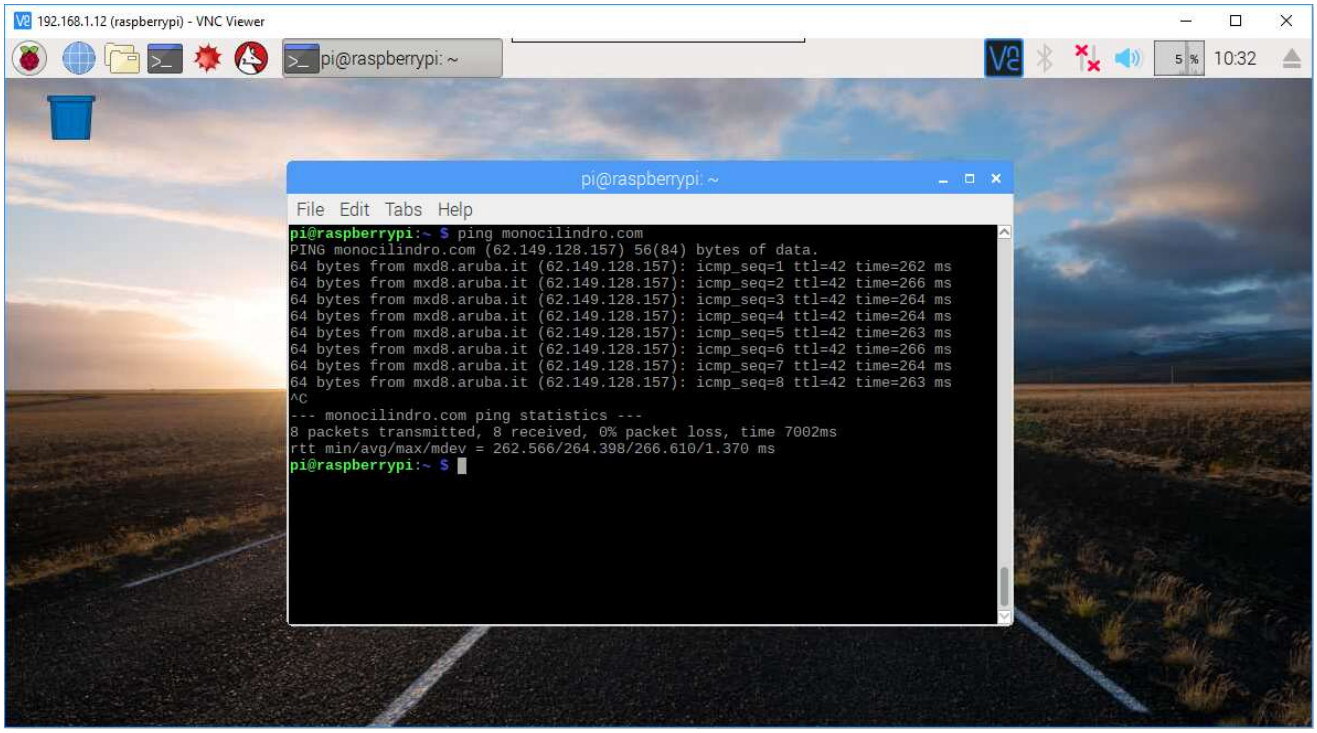
ifconfig
ping google.com



Alternatively, you can also try to ping “monocilindro.com”: 😊

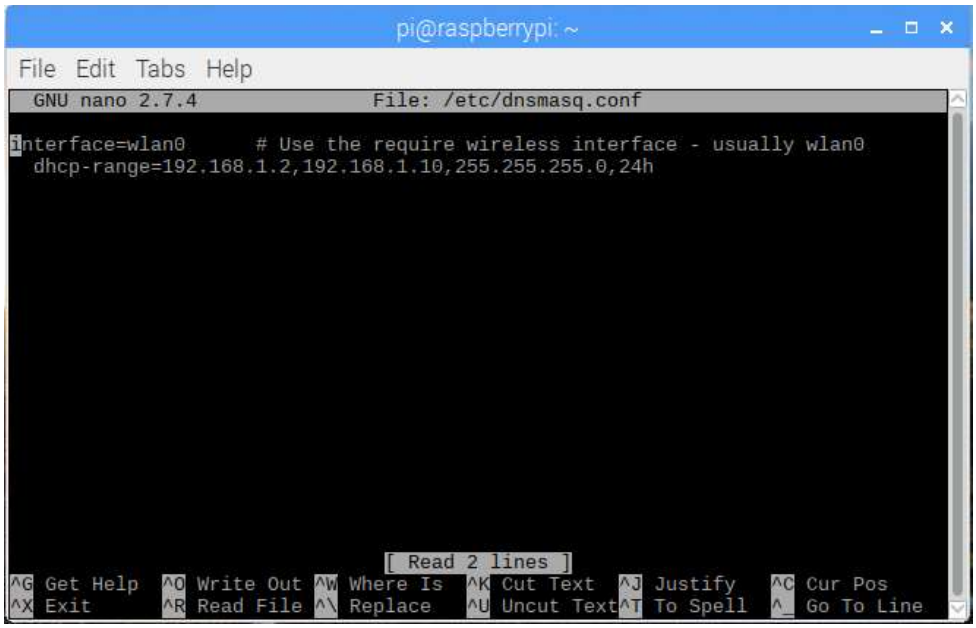
ping monocilindro.com

The following message should appear.


192.168.1.12 (raspberrypi) - VNC Viewer
pi@raspberrypi: ~
10:32
pi@raspberrypi: ~
File Edit Tabs Help
pi@raspberrypi:~ $ ping monocilindro.com
PING monocilindro.com (62.149.128.157) 56(84) bytes of data.
64 bytes from mxd8.aruba.it (62.149.128.157): icmp_seq=1 ttl=42 time=262 ms
64 bytes from mxd8.aruba.it (62.149.128.157): icmp_seq=2 ttl=42 time=266 ms
64 bytes from mxd8.aruba.it (62.149.128.157): icmp_seq=3 ttl=42 time=264 ms
64 bytes from mxd8.aruba.it (62.149.128.157): icmp_seq=4 ttl=42 time=264 ms
64 bytes from mxd8.aruba.it (62.149.128.157): icmp_seq=5 ttl=42 time=263 ms
64 bytes from mxd8.aruba.it (62.149.128.157): icmp_seq=6 ttl=42 time=266 ms
64 bytes from mxd8.aruba.it (62.149.128.157): icmp_seq=7 ttl=42 time=264 ms
64 bytes from mxd8.aruba.it (62.149.128.157): icmp_seq=8 ttl=42 time=263 ms
^C
--- monocilindro.com ping statistics ---
8 packets transmitted, 8 received, 0% packet loss, time 7002ms
rtt min/avg/max/mdev = 262.566/264.398/266.610/1.370 ms
pi@raspberrypi:~ $

Optional: DHCP server setup on Raspberry Pi

Add DHCP server functionality to Raspberry Pi, in case you want to connect to it also by using other devices (such as an Apple Iphone, Android phone, etc…) and you don't want to manually setup the IP address of your phone everytime.

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

interface=wlan0 # Use the require wireless interface - usually wlan0
dhcp-range=192.168.1.2,192.168.1.10,255.255.255.0,24h