

# Networking on the Raspberry Pi / Debian Linux

## Finding out your Raspberry Pi's IP address for Networking

First either launch a terminal from the desktop or type into the console "ifconfig"  
This will display an output like the one on the other side of this sheet.

**The following information is key:**

**eth\* / lo / wlan\*** = The network interface and the IP address.

eth = Hardware / Lan connection, provided by either the network port on the RPi or a USB to Ethernet Adaptor.

wlan = Wireless connection, provided by a USB wireless card if plugged in.

lo = Loopback, this is just a virtual device to allow the Pi to connect to itself.

**HWaddr** = The mac Address of the network device

**inet addr:** = The IPv4 Address of the Network Device

**inet6 addr:** = The IPv6 Address of the network device

## Pinging another device on the network on linux

First either launch a terminal from the desktop or boot the Pi up to the console and then type in the following

**"ping IP.ADD.RE.SS" Replacing IP Address with the other device or computer you want to ping.**

**You should then see a screen like this:**

```
pi@raspberrypi-5 ~ $ ping 192.168.0.1
PING 192.168.0.1 (192.168.0.1) 56(84) bytes of data.
64 bytes from 192.168.0.1: icmp_req=1 ttl=64 time=28.2 ms
64 bytes from 192.168.0.1: icmp_req=2 ttl=64 time=10.5 ms
64 bytes from 192.168.0.1: icmp_req=3 ttl=64 time=10.4 ms
64 bytes from 192.168.0.1: icmp_req=4 ttl=64 time=10.6 ms
64 bytes from 192.168.0.1: icmp_req=5 ttl=64 time=10.5 ms
^C
--- 192.168.0.1 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4007ms
rtt min/avg/max/mdev = 10.469/14.093/28.207/7.058 ms
pi@raspberrypi-5 ~ $ █
```

Then Press CTRL + C to stop the ping program if ping is successful.

This confirms that network communication was possible from the Pi to the Device,  
You can also use a website domain such as google.com to ping the outside network if connected.

## Setting up a Static IP address on the Raspberry Pi

First either launch a terminal from the desktop or login to the console

1. Edit the network configuration file by typing `sudo /etc/network/interfaces`
2. Change `iface eth0 inet dhcp` to `iface eth0 inet static`
3. Directly below put the following information without the quotation marks:  
`address 192.168.0.<Raspberry Pi Number>`  
`netmask 255.255.255.0`  
`network 192.168.0.0`  
`broadcast 192.168.0.255`  
`gateway 192.168.0.1`
4. Type in `sudo /etc/init.d/networking stop`
5. And then type in `sudo /etc/init.d/networking start`
6. Now the network card on the RPi has been rebooted it then should have the static IP address configured. Type in `ifconfig` again to confirm that the IP address has changed, the screenshot below is an example where it has been set to 192.168.0.239

```
pi@raspberrypi-5 ~ $ ifconfig
eth0      Link encap:Ethernet  HWaddr b8:27:eb:be:22:ee
          inet addr:192.168.0.239  Bcast:192.168.0.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:122220 errors:0 dropped:0 overruns:0 frame:0
          TX packets:67309 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:32631135 (31.1 MiB)  TX bytes:18263856 (17.4 MiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:16436  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:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

pi@raspberrypi-5 ~ $
```