HOW TO CONFIGURE STATIC NETWORK INFO ON RASPBERRY PI

What Is an IP Address?

An Internet Protocol (IP) address is used to uniquely identify each device on a computer network, or the network itself on the internet – more on that later. The IP address is normally written in 'dot-decimal' notation: four decimal numbers, each ranging from 0 to 255, separated by dots. An example is **192.168.1.107**.

By default in Raspberry Pi OS, which is a Linux-based operating system, your Raspberry Pi's IP address is reconfigured automatically each time you reboot it, so it may well change. Naturally, this is not ideal when you need a reliable address at which to connect to the Raspberry Pi from another device, such as when using it as a server. So it's better to set a static IP address on Raspberry Pi.

Private vs. Public IP

A public IP address is used to identify your local network on the wider internet. This typically changes every time your router connects to the internet, although you may be able to make it static depending on your internet service provider.

You can find the public IP address on a Linux system such as Raspberry Pi OS by entering a special Terminal command, or simply by doing a web search for 'What's my IP?'. It is only required if you intend to connect to a device from outside your network, which is not relevant for our purposes.

Instead, we are looking at the private IP addresses used to identify each device on your own local network. While it may be possible to reserve a certain address for your Raspberry Pi in your wireless router's settings for the same purpose, here we'll be showing you how to set a static IP from the Raspberry Pi itself.

1. DHCP Configuration

Raspberry Pi OS (formerly known as Raspbian) uses DHCP (Dynamic Host Configuration Protocol) to assign an IP address to the Raspberry Pi automatically whenever it is rebooted. You can find out more in our guide to DHCP.

To change Raspberry Pi OS's behavior so that it uses the same static IP address each time, you will need to modify the configuration file for the DHCP client daemon, dhcpcd.conf.

Before that, you will need some information on your current network setup so you can add the required details to the configuration file. You will require the following info:

• The type of network connection. This is either wlan0 if your Raspberry Pi is connected to the router wirelessly, or eth0 if it's connected using an Ethernet cable.

• The Raspberry Pi's currently assigned IP address – it's safest to reuse this for its static IP so that you can be sure the latter hasn't already been to another device on the network. If not, make sure another device isn't already using it.
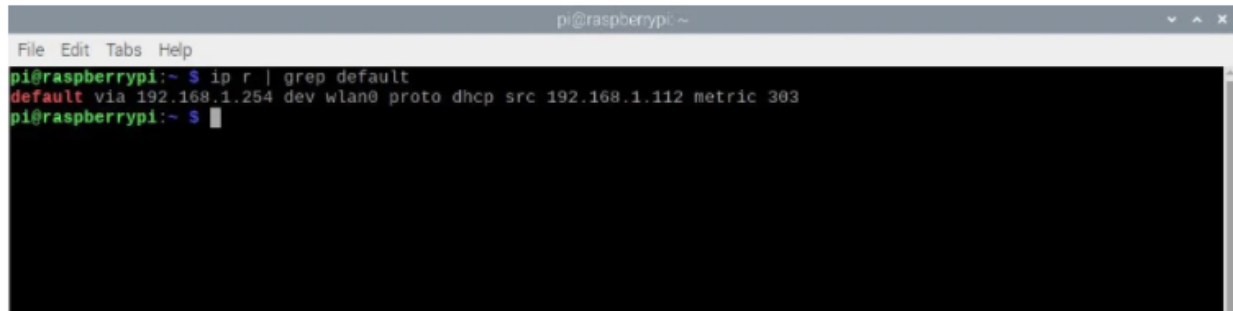
To find the Raspberry Pi's current IP address, enter the following command in a Terminal window:

```
hostname -I
```

• Your router's gateway IP address – the one used to contact it from the local network, not its public IP. It varies depending on the router model, but typically starts with 192.168.

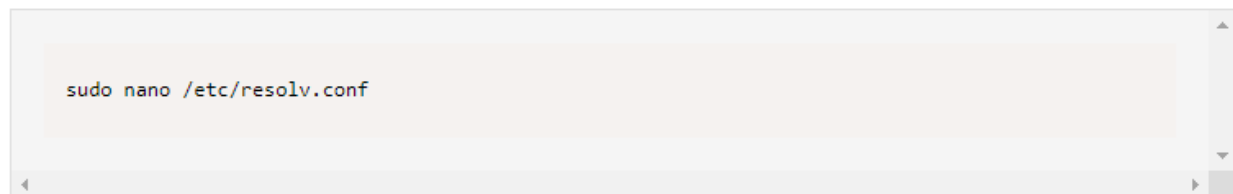To find it, enter the following command and note the first IP address given:
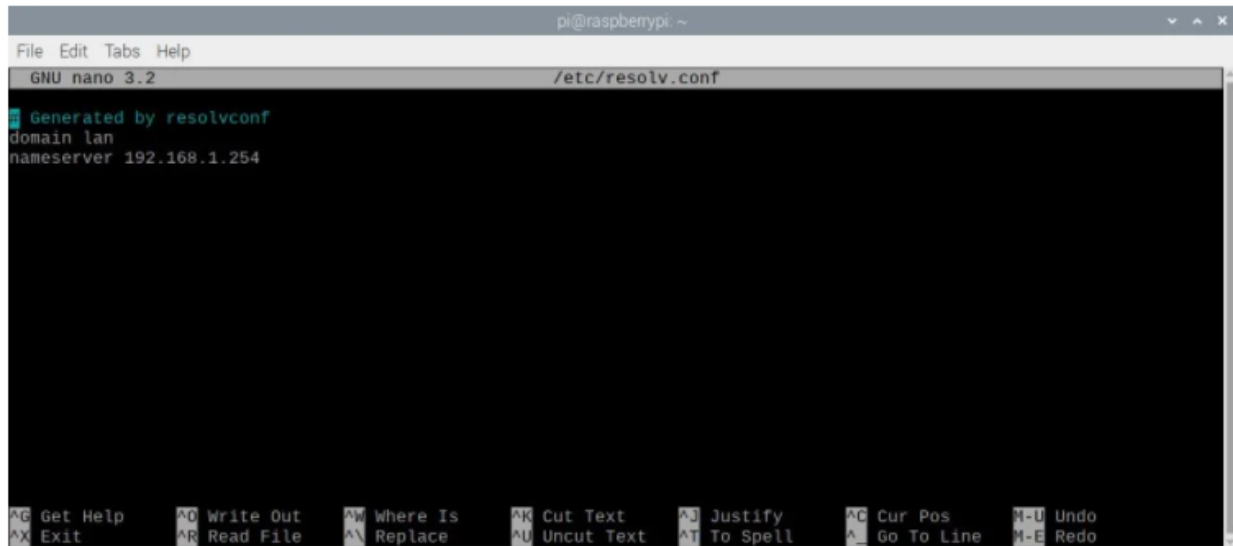
```
ip r | grep default
```

```
pi@raspberrypi:~ $ ip r | grep default
default via 192.168.1.254 dev wlan0 proto dhcp src 192.168.1.112 metric 303
pi@raspberrypi:~ $
```

Your router's DNS (Domain Name System) IP address. This is typically the same as its gateway address, but may be set to another value to use an alternative DNS – such as 8.8.8.8 for Google, or 1.1.1.1 for Cloudflare.

To find the current DNS IP address, enter the command:
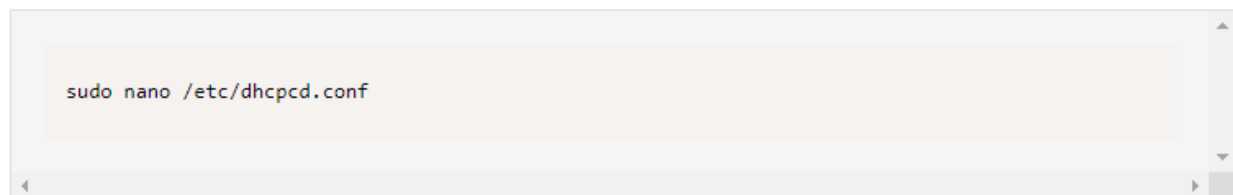
```
sudo nano /etc/resolv.conf
```

```
                                     pi@raspberrypi: ~                                          ⌄ ⌃ ✕
File  Edit  Tabs  Help
  GNU nano 3.2                          /etc/resolv.conf
  Generated by resolvconf
domain lan
nameserver 192.168.1.254




^G Get Help     ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify      ^C Cur Pos      M-U Undo
^X Exit         ^R Read File    ^\ Replace      ^U Uncut Text   ^T To Spell     ^_ Go To Line   M-E Redo
```

Note the IP address after nameserver – that's the DNS address – and then press Ctrl +
X to close the file.

2. Add Static IP Settings

Now you have found all your network connection information, it's time to edit the
dhcpcd.conf configuration file to add the settings you need to set up a static IP address
for your Raspberry Pi:

```
sudo nano /etc/dhcpcd.conf
```

If you haven't edited the file previously, it will mainly contain various comment lines preceded by a hash (#) symbol. At the bottom, add the following lines, replacing the emboldened names with your own network details as noted below. You may instead delete all lines in the file and just this information:

```
interface NETWORK

static ip_address=STATIC_IP/24

static routers=ROUTER_IP

static domain_name_servers=DNS_IP
```

Replace the emboldened names as follows:

• **NETWORK** – your network connection type: eth0 (Ethernet) or wlan0 (wireless).

• **STATIC_IP** – the static IP address you want to set for the Raspberry Pi.

• **ROUTER_IP** – the gateway IP address for your router on the local network.

• **DNS_IP** – the DNS IP address (typically the same as your router's gateway address).

Here is an example configuration to set the static IP to 192.168.1.120 with a wireless connection to a router at 192.168.1.254:

```
interface wlan0

static ip_address=192.168.1.120/24

static routers=192.168.1.254

static domain_name_servers=192.168.1.254
```


Once you have entered the settings, press Ctrl + X and then Y and ENTER to close and save the modified configuration file.

3. Reboot the Raspberry Pi

With the dhcpcd.conf configuration file modified, restart your Raspberry Pi to effect the changes and set the static IP address for it:
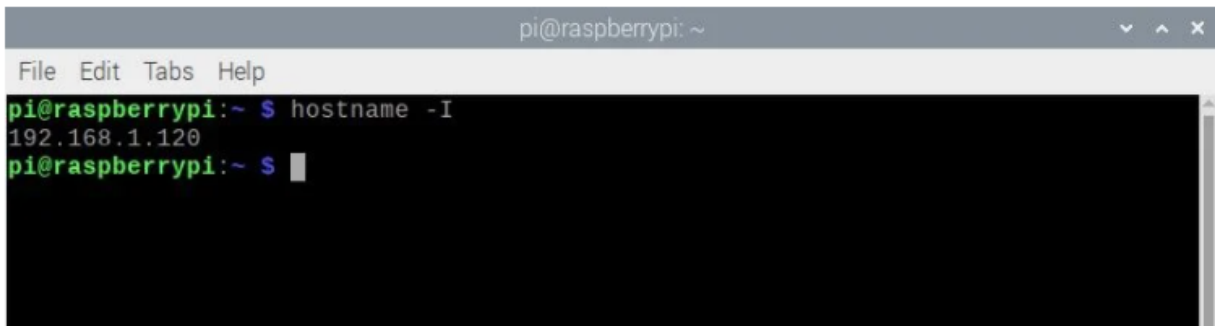
```
sudo reboot
```

Rather than using an address assigned automatically by DHCP, the Raspberry Pi will now attempt to connect to the router using the new static IP address that you set in the dhcpcd.conf file.

To check that it is working correctly, enter the following command:

```
hostname -I
```

You should now see the static IP address that you set in the dhcpcd.conf configuration file.

Set a Static IP Address: Success

Congratulations: you have set up a static IP address on your Raspberry Pi!