# EMBEDDED SYSTEM

## Mission: DHCP Server

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## 1. Device and Environment

- Devices: RPi, 5V power, net cable, micro USB, wireless LAN card
- Environments: Win 8.1 on PC, wheezy-raspbian on RPi

## 2. Installation

I chose the software isc-dhcp-server to construct the DHCP server. The installation process is rather simple. Just type the command and start the installation.

```
apt-get install isc-dhcp-server
```

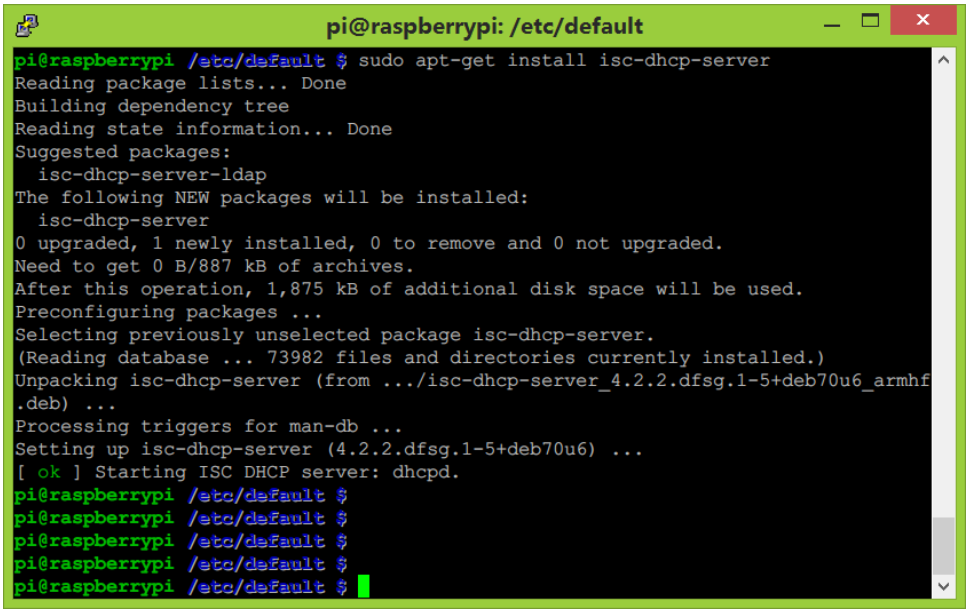


Figure 1 DHCP server installation

When the installation completed, some configuration files should be modified so that the DHCP server works as you need.

## 3. Configuration: /etc/default/isc-dhcp-server

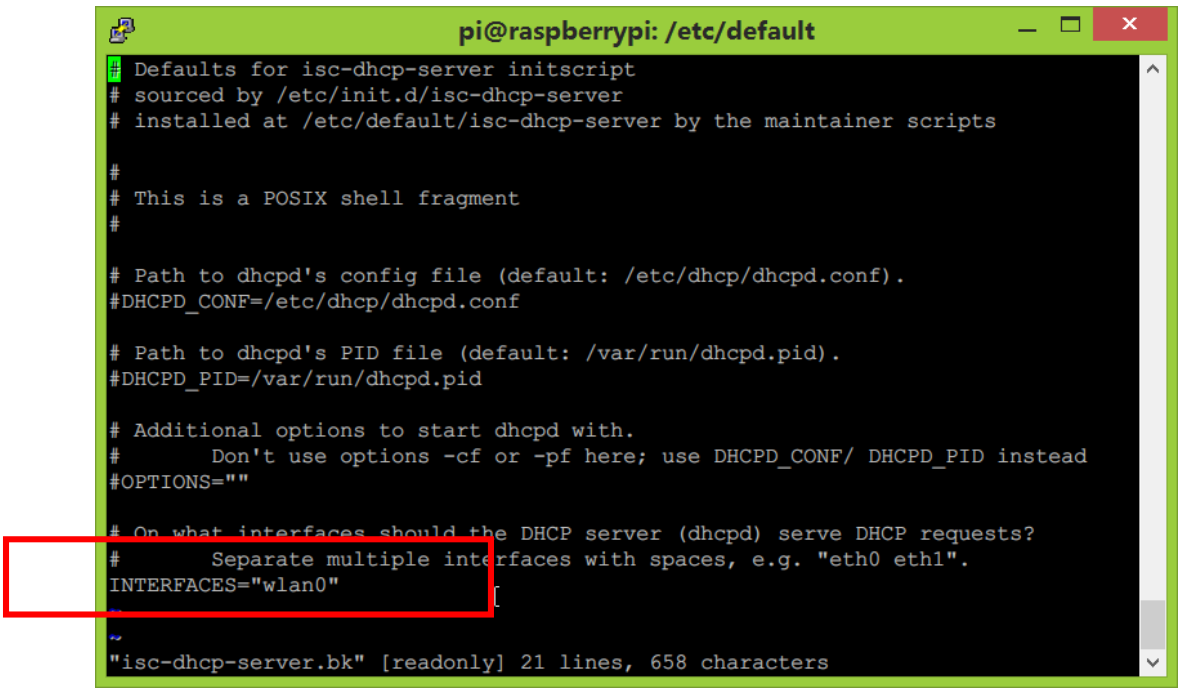


Figure 2 content /etc/default/isc-dhcp-server

The INTERFACES option depends on which network card you want the DHCP service works for. Since I would construct a WLAN server, the option is wlan0, standing for the first WLAN card.

## 4. Configuration: /etc/dhcp/dhcpd.conf

Set the default-lease-time and the max-lease-time as following.

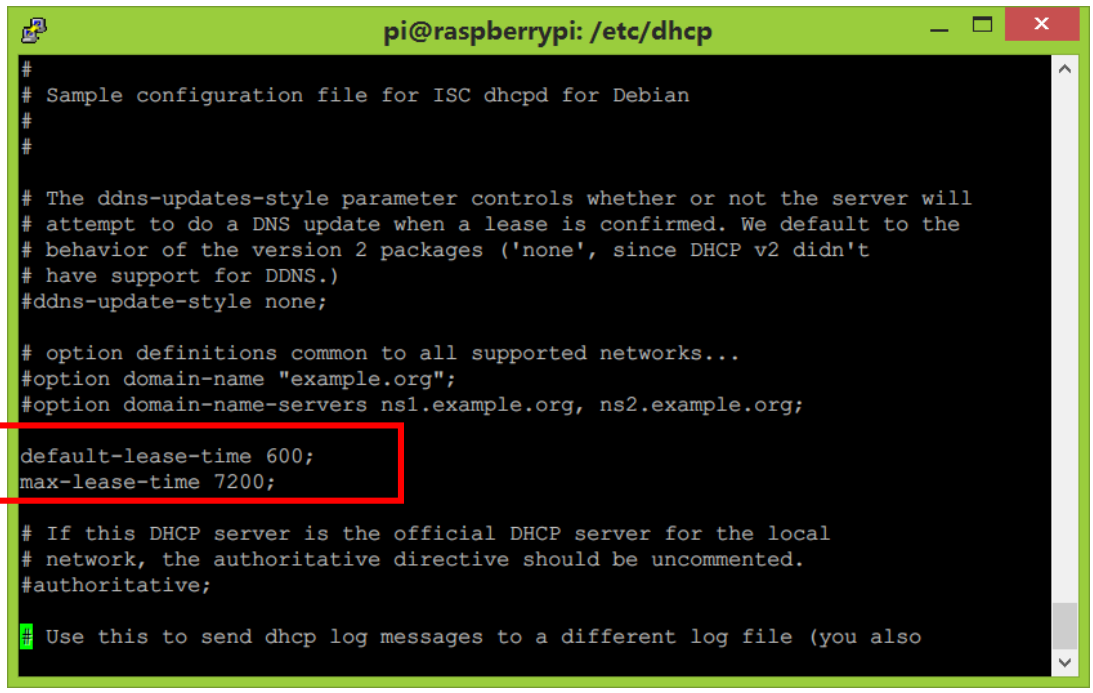


Figure 3 configuration

However, if you want the DHCP server provide service to the router process, some additional specification should be added to the text.

Since I set the RPi with IP address 192.168.42.1 and netmask etc, the specification should be added as the picture below.

Any client who want connect to the RPi would get an IP address between 192.168.42.10 and 192.268.42.200. And the DNS service wil comes from the servers you registered here.

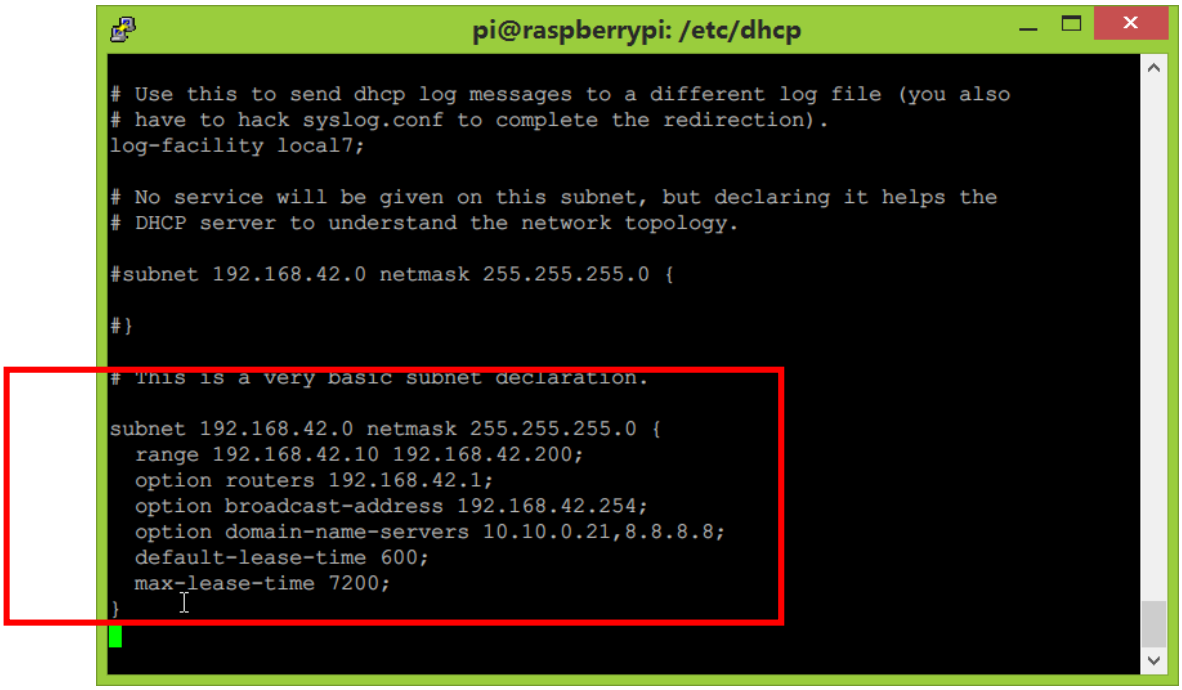


Figure 4 configuration

## 5. Set Up the DHCP Server

To start the DHCP server, the command below should be executed.

```
sudo service isc-dhcp-server start
```

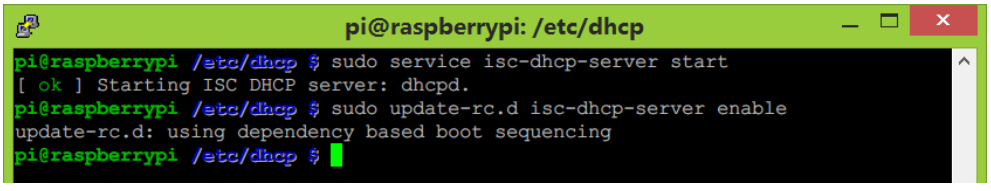


Figure 5 started successfully

And if you want the service started when booting, type the command and executed it.

```
sudo update-rc.d isc-dhcp-server enable
```

## 6. Verification

From now on, the DHCP server works. I will test the DHCP server with my mobile and my laptop. See the following pictures, and the WLAN S.H.I.E.L.D is the name of the RPi network. At first, my phone is unconnected.


Figure 6 unconnected

Now connect to the RPi WLAN.


Figure 7 connected

As my laptop…


Figure 8 unconnected

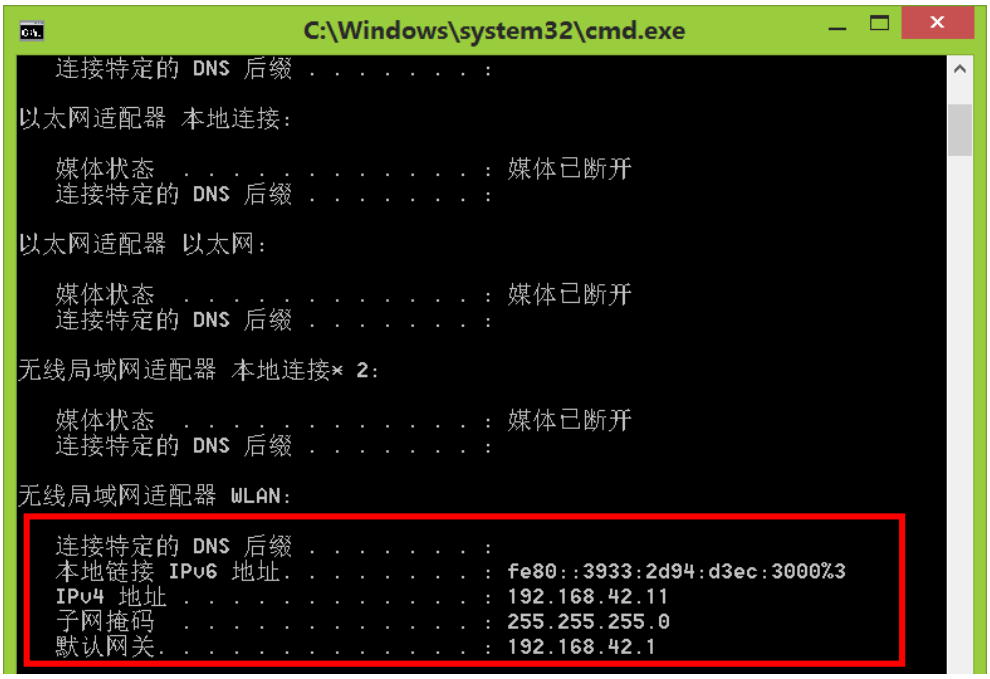


Figure 9 connected

Two devices get their IP address allocated successfully. The IP 192.168.42.14 and 192.168.42.11 are in the range of the IP pool.

**In summary, the mission was completed successfully.**