

DHCP Server

Ajay Bhaginath Shete
N19633252
abs717

1. Set up a DHCP server on router R4 such that, it leases IP addresses to the Linux eth0 interface using the eth2 interface of router R4. Use the subnet you indicated in your previous assignment. Your subnet should be larger than a /30.

```
Connected (unencrypted) to: QEMU (263_20_36)
GNU nano 2.5.3 File: /etc/network/interfaces

# interfaces(5) file used by ifup(8) and ifdown(8)
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet static
address 10.10.10.14
netmask 255.255.255.252
network 10.10.10.12
broadcast 10.10.10.15

auto eth1
iface eth1 inet static
address 10.10.10.17
netmask 255.255.255.252
network 10.10.10.16
broadcast 10.10.10.19
up route add -net 10.10.10.0 netmask 255.255.255.248 gw 10.10.10.18

auto eth2
iface eth2 inet static
address 10.10.10.33
netmask 255.255.255.240
network 10.10.10.32
broadcast 10.10.10.47
```

Configured the eth2 of r4 as subnet /28

```
Connected (unencrypted) to: QEMU (263_20_37)
GNU nano 2.5.3 File: /etc/network/interfaces

# interfaces(5) file used by ifup(8) and ifdown(8)
auto lo
iface lo inet loopback

auto eth0
#iface eth0 inet static
#up route add -net 10.10.10.0 netmask 255.255.255.248 gw 10.10.10.33
#up route add -net 10.10.10.8 netmask 255.255.255.252 gw 10.10.10.33
#up route add -net 10.10.10.16 netmask 255.255.255.252 gw 10.10.10.33
```

Ubuntu configurations

2. The first step is to configure the dhcpd.conf file in Router R4. This file is present in /etc/dhcp.

```
# A slightly different configuration for an internal subnet.
subnet 10.10.10.32 netmask 255.255.255.240 {
    range 10.10.10.35 10.10.10.46;
    option domain-name-servers 10.10.10.36, 10.10.10.33;
    # option domain-name "internal.example.org";
    option subnet-mask 255.255.255.240;
    option routers 10.10.10.36;
    option broadcast-address 10.10.10.47;
    default-lease-time 600;
    max-lease-time 7200;
}
```

DHCP configurations

3. As there are multiple interfaces you will also need to edit /etc/defaults/isc-dhcp-server to indicate which of the interfaces dhcpd will run on.

```
# Defaults for isc-dhcp-server initscript
# sourced by /etc/init.d/isc-dhcp-server
# installed at /etc/default/isc-dhcp-server by the maintainer scripts

#
# This is a POSIX shell fragment
#

# Path to dhcpd's config file (default: /etc/dhcp/dhcpd.conf).
#DHCPD_CONF=/etc/dhcp/dhcpd.conf

# Path to dhcpd's PID file (default: /var/run/dhcpd.pid).
#DHCPD_PID=/var/run/dhcpd.pid

# Additional options to start dhcpd with.
# Don't use options -cf or -pf here; use DHCPD_CONF/ DHCPD_PID instead
#OPTIONS=""

# On what interfaces should the DHCP server (dhcpd) serve DHCP requests?
# Separate multiple interfaces with spaces, e.g. "eth0 eth1".
INTERFACES="eth2"
```

Changed the defaults to eth2

```
root@CN-R4:/home/student# /etc/init.d/isc-dhcp-server restart
[ ok ] Restarting isc-dhcp-server (via systemctl): isc-dhcp-server.service.
root@CN-R4:/home/student# systemctl status isc-dhcp-server
● isc-dhcp-server.service - ISC DHCP IPv4 server
   Loaded: loaded (/lib/systemd/system/isc-dhcp-server.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2017-11-03 10:37:57 EDT; 14s ago
     Docs: man:dhcpd(8)
    Main PID: 1573 (dhcpd)
    CGroup: /system.slice/isc-dhcp-server.service
            └─1573 dhcpd -user dhcpd -group dhcpd -f -4 -pf /run/dhcp-server/dhcpd.pid -cf /etc/dhcp/

Nov 03 10:37:57 CN-R4 dhcpd[1573]: All rights reserved.
Nov 03 10:37:57 CN-R4 dhcpd[1573]: For info, please visit https://www.isc.org/software/dhcp/
Nov 03 10:37:57 CN-R4 dhcpd[1573]: Wrote 0 leases to leases file.
Nov 03 10:37:57 CN-R4 dhcpd[1573]: Listening on LPF/eth2/00:00:00:00:00:0a/10.10.10.32/28
Nov 03 10:37:57 CN-R4 sh[1573]: Listening on LPF/eth2/00:00:00:00:00:0a/10.10.10.32/28
Nov 03 10:37:57 CN-R4 sh[1573]: Sending on LPF/eth2/00:00:00:00:00:0a/10.10.10.32/28
Nov 03 10:37:57 CN-R4 sh[1573]: Sending on Socket/fallback/fallback-net
Nov 03 10:37:57 CN-R4 dhcpd[1573]: Sending on LPF/eth2/00:00:00:00:00:0a/10.10.10.32/28
Nov 03 10:37:57 CN-R4 dhcpd[1573]: Sending on Socket/fallback/fallback-net
Nov 03 10:37:57 CN-R4 dhcpd[1573]: Server starting service.
root@CN-R4:/home/student# _
```

Status of the DHCP

```
Ubuntu 16.04.2 LTS Ubuntu tty1

Ubuntu login: student
Password:
Last login: Thu Nov  2 23:53:31 EDT 2017 on tty1
Welcome to Ubuntu 16.04.2 LTS (GNU/Linux 4.8.0-54-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

113 packages can be updated.
0 updates are security updates.

student@Ubuntu:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 00:00:00:00:00:0b
          inet addr:10.10.10.35  Bcast:10.10.10.47  Mask:255.255.255.240
          inet6 addr: fe80::667c:cb59:6d9e:1ac7/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:66 errors:0 dropped:0 overruns:0 frame:0
          TX packets:111 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:4665 (4.6 KB)  TX bytes:10805 (10.8 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:271 errors:0 dropped:0 overruns:0 frame:0
          TX packets:271 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:20027 (20.0 KB)  TX bytes:20027 (20.0 KB)

student@Ubuntu:~$ _
```

Ubuntu ifconfig

```
# The format of this file is documented in the dhcpd.leases(5) manual page.
# This lease file was written by isc-dhcp-4.3.3

lease 10.10.10.35 {
    starts 5 2017/11/03 14:38:59;
    ends 5 2017/11/03 14:48:59;
    tstp 5 2017/11/03 14:48:59;
    cltt 5 2017/11/03 14:38:59;
    binding state free;
    hardware ethernet 00:00:00:00:00:0b;
}
server-uid "\000\001\000\001!\217;\305\000\000\000\000\000\012";

lease 10.10.10.35 {
    starts 0 2017/11/05 15:32:51;
    ends 0 2017/11/05 15:42:51;
    cltt 0 2017/11/05 15:32:51;
    binding state active;
    next binding state free;
    rewind binding state free;
    hardware ethernet 00:00:00:00:00:0b;
    client-hostname "Ubuntu";
}

lease 10.10.10.35 {
    starts 0 2017/11/05 15:36:45;
    ends 0 2017/11/05 15:46:45;
    cltt 0 2017/11/05 15:36:45;
    binding state active;
    next binding state free;
    rewind binding state free;
    hardware ethernet 00:00:00:00:00:0b;
    client-hostname "Ubuntu";
}

lease 10.10.10.35 {
    starts 0 2017/11/05 15:41:38;
    ends 0 2017/11/05 15:51:38;
    cltt 0 2017/11/05 15:41:38;
    binding state active;
    next binding state free;
    rewind binding state free;
    hardware ethernet 00:00:00:00:00:0b;
    client-hostname "Ubuntu";
}
```

DHCP Leases