



## HOMWORK LINUX

*Teacher: Bunthoeun*

Heng Kimleang

SNA2011

Class: B

### Configure DHCP Relay Agent on RedHat

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## I. DHCP server

Configuring a DHCP server is to create the configuration file that stores the network information for the clients. Global options can be declared for all clients, or options can be declared for each client system.

### Step1: Set IP to interface of network card by Manual configuration

```
[root@localhost root]# cd /etc/sysconfig/network
network          networking      network-scripts
[root@localhost root]# cd /etc/sysconfig/network-scripts/
[root@localhost network-scripts]# dir
ifcfg-eth0      ifdown-isdn    ifup-aliases   ifup-plusb     ifup-wireless
ifcfg-lo        ifdown-post    ifup-ipppp      ifup-post      init.ipv6-global
ifdown          ifdown-ppp     ifup-ipv6       ifup-ppp       network-functions
ifdown-aliases ifdown-sit     ifup-ipv6       ifup-routes    network-functions-ipv6
ifdown-ipppp    ifdown-sl      ifup-isdn       ifup-sit
ifdown-ipv6     ifup           ifup-plip       ifup-sl
```

- Vi ifcfg-eth0

```
DEVICE=eth0
BOOTPROTO=static
IPADDR=192.168.2.6
NETWORK=192.168.2.0
NETMASK=255.255.255.0
GATEWAY=192.168.2.1
DOMAIN=cambodia.kh
SERVER=192.168.2.5
ONBOOT=yes
```

- Add the interface for dhcp server

```
# Command line options here
DHCPDARGS=
DHCPD_INTERFACES="eth0" vi /etc/sysconfig/dhcpd
```

- Restart services

```
[root@localhost network-scripts]# service network restart
Shutting down loopback interface: [ OK ]
Setting network parameters: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface eth0: [ OK ]
[root@localhost network-scripts]#
```

- Check ip address

```
[root@localhost network-scripts]# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:A1:9F:98
          inet addr:192.168.2.6  Bcast:192.168.2.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:2752 errors:0 dropped:0 overruns:0 frame:0
          TX packets:853 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:100
          RX bytes:288818 (282.0 Kb)  TX bytes:80609 (78.7 Kb)
          Interrupt:5 Base address:0x2000

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:65 errors:0 dropped:0 overruns:0 frame:0
          TX packets:65 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:6724 (6.5 Kb)  TX bytes:6724 (6.5 Kb)
```

## Step2: Mount CD and copy to folder RPM

- Create folder RPM for store file of package

```
[root@localhost root]# mkdir RPM
[root@localhost root]# cd RPM/
[root@localhost RPM]# mount -t iso9660 /dev/cdrom /mnt/cdrom/
ide-floppy driver 0.99.newide
hdc: ATAPI 1X CD-ROM drive, 32kB Cache, UDMA(33)
mount: block device /dev/cdrom is write-protected, mounting read-only
[root@localhost RPM]# cp -v /mnt/cdrom/RedHat/RPMS/dhcp-
dhcp-3.0p11-23.i386.rpm          dhcp-devel-3.0p11-23.i386.rpm
[root@localhost RPM]# cp -v /mnt/cdrom/RedHat/RPMS/dhcp-*.rpm /root/RPM/
'/mnt/cdrom/RedHat/RPMS/dhcp-3.0p11-23.i386.rpm' -> '/root/RPM/dhcp-3.0p11-23.i3
86.rpm'
'/mnt/cdrom/RedHat/RPMS/dhcp-devel-3.0p11-23.i386.rpm' -> '/root/RPM/dhcp-devel-
3.0p11-23.i386.rpm'
[root@localhost RPM]# ls
dhcp-3.0p11-23.i386.rpm  dhcp-devel-3.0p11-23.i386.rpm
[root@localhost RPM]#
```

## Step3: Mount CD and copy to folder RPM

- Install the package using command rpm -Uvh

```
[root@localhost RPM]# ls
dhcp-3.0p11-23.i386.rpm dhcp-devel-3.0p11-23.i386.rpm
[root@localhost RPM]# rpm -Uvh dhcp-3.0p11-23.i386.rpm
warning: dhcp-3.0p11-23.i386.rpm: U3 DSA signature: NOKEY, key ID db42a60e
Preparing...
1:dhcp
[root@localhost RPM]# rpm -Uvh dhcp-devel-3.0p11-23.i386.rpm
warning: dhcp-devel-3.0p11-23.i386.rpm: U3 DSA signature: NOKEY, key ID db42a60e
Preparing...
1:dhcp-devel
[root@localhost RPM]# _
```

## Step4: Configure DHCP services

Note: if we don't see the file dhcpd.conf we have to create our own file and then copy the sample from `usr/shre/doc/dhcp-3.0p11/dchpd.conf.sample`

```
[root@localhost etc]# touch dhcpd.conf
[root@localhost etc]# cp /usr/share/doc/dhcp-3.0p11/dhcpd.conf.sample /etc/dhcpd.conf
cp: overwrite '/etc/dhcpd.conf'? yes
[root@localhost etc]# vi /etc/dhcpd.conf _
```

- Configure vi /etc/dhcpd.conf

```
ddns-update-style interim;
ignore client-updates;
option domain-name "cambodia.kh";
option domain-name-servers 192.168.2.5;

#192.168.2.0 site
subnet 192.168.2.0 netmask 255.255.255.0 {
    range 192.168.2.20 192.168.2.100;
    option routers 192.168.2.1;
}

#172.16.1.0 site
subnet 172.16.0.0 netmask 255.255.0.0 {
    range 172.16.1.1 172.16.1.100;
    option routers 172.16.1.1;
}

default-lease-time 21600;
max-lease-time 43200;

# we want the nameserver to appear at a fixed address
host ns {
    next-server marvin.redhat.com;
    hardware ethernet 12:34:56:78:AB:CD;
    fixed-address 207.175.42.254;
```

- Restart services

```
[10]+ Stopped          vi /etc/dhcpd.conf
[root@localhost root]# service dhcpd restart
Shutting down dhcpd: [ OK ]
Starting dhcpd: [ OK ]
[root@localhost root]# /etc/init.d/dhcpd reload
Shutting down dhcpd: [ OK ]
Starting dhcpd: [ OK ]
[root@localhost root]# _
```

- Ping to ip gateway

```
[root@localhost network-scripts]# ping 192.168.2.1
PING 192.168.2.1 (192.168.2.1) 56(84) bytes of data.
64 bytes from 192.168.2.1: icmp_seq=1 ttl=64 time=3.43 ms
64 bytes from 192.168.2.1: icmp_seq=2 ttl=64 time=0.419 ms
64 bytes from 192.168.2.1: icmp_seq=3 ttl=64 time=0.296 ms
64 bytes from 192.168.2.1: icmp_seq=4 ttl=64 time=0.296 ms
64 bytes from 192.168.2.1: icmp_seq=5 ttl=64 time=0.266 ms
```

## II. DHCP Relay Agent Server

The DHCP Relay Agent (*dhcpdlay*) allow use to relay DHCP and BOOTP request from a subnet with no DHCP server on it to one or more DHCP server on other subnets.

When DHCP clients request information, the DHCP Relay Agent forwards the request to the list of DHCP servers specified when the DHCP Relay Agent is started. When DHCP server returns a reply, the reply is broad cast or unicast on the network that sent the original request

### Step 1 Create Folder RPM and Mount CD2

```
[root@localhost root]# mkdir RPM
[root@localhost root]# cd RPM/
[root@localhost RPM]# mount -t iso9660 /dev/cdrom /mnt/cdrom/
ide-floppy driver 0.99.newide
hdc: ATAPI 1X CD-ROM drive, 32kB Cache, UDMA(33)
mount: block device /dev/cdrom is write-protected, mounting read-only
```

### Step2: Copy file package to folder RPM

```
[root@localhost RPM]# cp /mnt/cdrom/
.discinfo GPL RedHat TRANS.TBL
EULA README RPM-GPG-KEY
[root@localhost RPM]# cp /mnt/cdrom/RedHat/RPMS/dhcp-3.0p11-23.i386.rpm /root/RP
M/
[root@localhost RPM]# ls
dhcp-3.0p11-23.i386.rpm
[root@localhost RPM]# _
```

### Step3: Install package

```
[root@localhost RPM]# ls
dhcp-3.0p11-23.i386.rpm
[root@localhost RPM]# rpm -ivh dhcp-3.0p11-23.i386.rpm
warning: dhcp-3.0p11-23.i386.rpm: U3 DSA signature: NOKEY, key ID db42a60e
Preparing... ##### [100%]
   1:dhcp          ##### [100%]
[root@localhost RPM]# _
```

### Step4: Configure networks

⇒ Cd /etc/sysconfig/network-script

```
[root@localhost root]# cd /etc/sysconfig/network-scripts/
[root@localhost network-scripts]# dir
ifcfg-eth0      ifdown-ipv6    ifup            ifup-plip      ifup-sl
ifcfg-eth1      ifdown-isdn    ifup-aliases   ifup-plusb    ifup-wireless
ifcfg-lo        ifdown-post    ifup-ipppp     ifup-post     init.ipv6-global
ifdown          ifdown-ppp     ifup-ipv6      ifup-ppp      network-functions
ifdown-aliases ifdown-sit     ifup-ipvx      ifup-routes   network-functions-ipv6
ifdown-ipppp    ifdown-sl      ifup-isdn      ifup-sit
[root@localhost network-scripts]# _
```

⇒ Set ip for interface 1 ( vi ifcfg-eth0)

```
DEVICE=eth0
BOOTPROTO=static
IPADDR=192.168.2.1
NETMASK=255.255.255.0
ONBOOT=yes
```

⇒ Set ip for interface 2 ( vi ifcfg-eth1)

```
DEVICE=eth1
BOOTPROTO=static
IPADDR=172.16.1.1
NETMASK=255.255.0.0
ONBOOT=yes
```

⇒ Restart network services

```
"ifcfg-eth1" 5L, 78C written
[root@localhost network-scripts]# service network restart
Shutting down loopback interface: [ OK ]
Setting network parameters: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface eth0: [ OK ]
Bringing up interface eth1: [ OK ]
```

- View ip interfaces

```
Bringing up interface eth0: [ OK ]
Bringing up interface eth1: [ OK ]
[root@localhost network-scripts]# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:0A:65:2A
          inet addr:192.168.2.1  Bcast:192.168.2.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:4 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:100
          RX bytes:0 (0.0 b)  TX bytes:168 (168.0 b)
          Interrupt:5 Base address:0x2000

eth1      Link encap:Ethernet  HWaddr 00:0C:29:0A:65:34
          inet addr:172.16.1.1  Bcast:172.16.255.255  Mask:255.255.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:4 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:100
```

#### Step4: Configure dhcp for relay

- ⇒ Vi /etc/sysconfig/dhcrelay

```
# Command line options here
INTERFACES="eth0 eth1"
DHCPSEVERERS="192.168.2.6"
```



Note in order to allow the dhcp client to access through dhcp-relay server we have

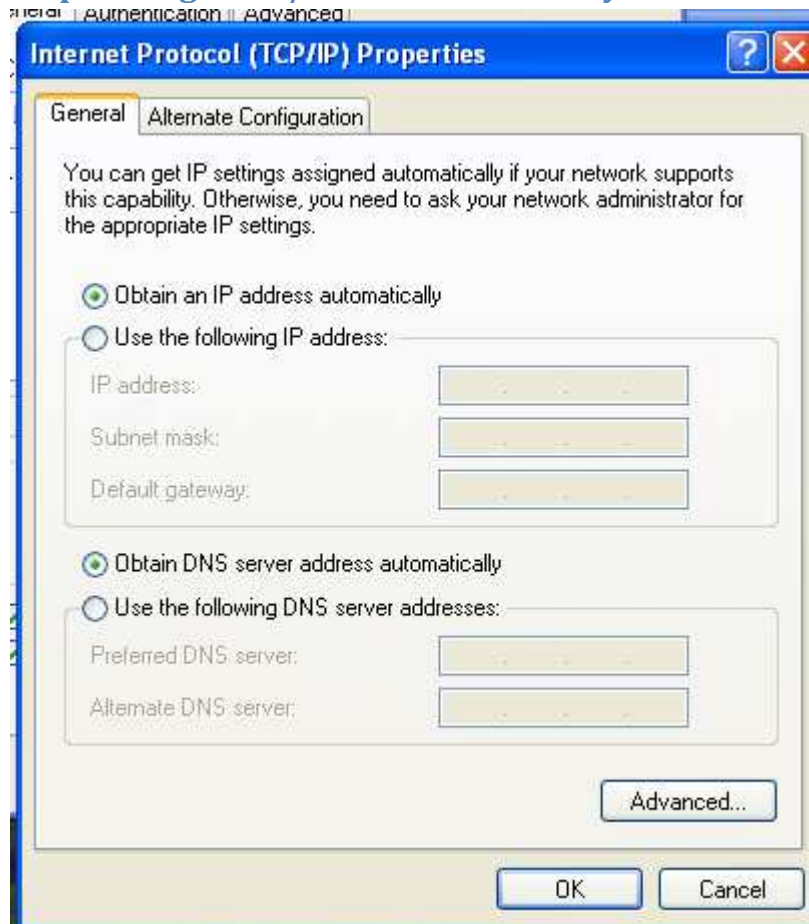
```
[root@localhost root]# echo 1 /proc/sys/net/ipv4/ip_forward
1 /proc/sys/net/ipv4/ip_forward
[root@localhost root]# service dhcrelay restart
Shutting down dhcrelay: [ OK ]
Starting dhcrelay: [ OK ]
[root@localhost root]# _
```

- ⇒ Restart service and ping to dhcp server

```
[root@localhost root]# service dhcrelay restart
Shutting down dhcrelay: [ OK ]
Starting dhcrelay: [ OK ]
[root@localhost root]# service dhcrelay restart
Shutting down dhcrelay: [ OK ]
Starting dhcrelay: [ OK ]
[root@localhost root]# ping 192.168.2.6
PING 192.168.2.6 (192.168.2.6) 56(84) bytes of data.
64 bytes from 192.168.2.6: icmp_seq=1 ttl=64 time=0.376 ms
64 bytes from 192.168.2.6: icmp_seq=2 ttl=64 time=0.534 ms
64 bytes from 192.168.2.6: icmp_seq=3 ttl=64 time=0.581 ms
64 bytes from 192.168.2.6: icmp_seq=4 ttl=64 time=0.325 ms
64 bytes from 192.168.2.6: icmp_seq=5 ttl=64 time=0.284 ms
64 bytes from 192.168.2.6: icmp_seq=6 ttl=64 time=0.650 ms
```

### III. Configure on DHCP Client

#### Step1: assign TCP/IP for automatically for DHCP server



Using command `ipconfig /release` and `ipconfig /renew`



```
C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\kimleang>ping cambodia.kh
Ping request could not find host cambodia.kh. Please check the name.
C:\Documents and Settings\kimleang>ipconfig /release
Windows IP Configuration

Ethernet adapter Local Area Connection 2:

    Connection-specific DNS Suffix  . : 
    IP Address . . . . . : 0.0.0.0
    Subnet Mask . . . . . : 0.0.0.0
    Default Gateway . . . . . : 

C:\Documents and Settings\kimleang>ipconfig /renew
Windows IP Configuration

Ethernet adapter Local Area Connection 2:

    Connection-specific DNS Suffix  . : cambodia.kh
    IP Address . . . . . : 172.16.1.100
    Subnet Mask . . . . . : 255.255.0.0
    Default Gateway . . . . . : 172.16.1.1

C:\Documents and Settings\kimleang>ping 192.168.2.6

Pinging 192.168.2.6 with 32 bytes of data:

Reply from 192.168.2.6: bytes=32 time=2ms TTL=63
Reply from 192.168.2.6: bytes=32 time<1ms TTL=63
Reply from 192.168.2.6: bytes=32 time=1ms TTL=63
Reply from 192.168.2.6: bytes=32 time=1ms TTL=63
```