DHCP, or **Dynamic Host Configuration Protocol,** allows an administrator to configure network settings for all clients on a central server.

The DHCP clients request an IP address and other network settings from the **DHCP server** on the network. The **DHCP server** in turn leases the client an IP address within a given range or leases the client an IP address based on the MAC address of the client's network interface card (NIC). The information includes its IP address, along with the network's name server, gateway, and proxy addresses, including the netmask.

Nothing has to be configured manually on the local system, except to specify the **DHCP server** it should get its network configuration from. If an IP address is assigned according to the MAC address of the client's NIC, the same IP address can be leased to the client every time the client requests one. DHCP makes network administration easier and less prone to error.

Exam Question Configure the DHCP server by matching the following conditions:

- *Subnet and netmask should be 192.168.0.0 255.255.255.0*
- *Gateway Should be 192.168.0.254*
- *DNS Sever Should be 192.168.0.254*
- *Domain Name should be example.com*
- *Range from 192.168.0.10-50*

Exam Question You have DHCP server, which assigns the IP, gateway and DNS server ip to Clients. There is one DNS servers having MAC address (00:50:FC:98:8D:00 in your LAN, But it always required fixed IP address (192.168.0.10). Configure the DHCP server to assign the fixed IP address to DNS server.

Configure dhcp server

In this example we will configure a **dhcp server** and will lease ip address to clients.

For this example we are using three systems one linux server one linux clients and one window clients.

dhcp rpm is required to configure dhcp server. check it if not found then install

```
[root@Server ~]# rpm -qa dhcp
dhcp-3.0.5-7.el5
[root@Server ~]# _
```

Now check dhcpd service in system service it should be on

#setup

Select System service from list

[*]dhcpd

To assign IP to dhcp server

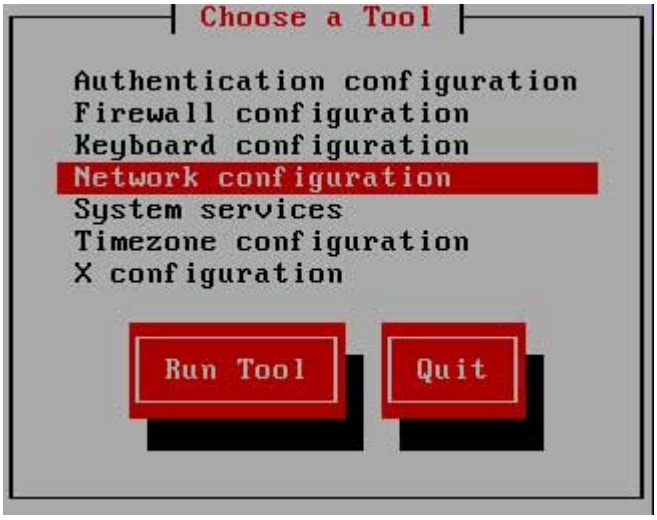
DHCP server has a static a ip address. First configure the ip address **192.168.0.254** with netmask of **255.255.255.0** on server.

Run setup command form root user

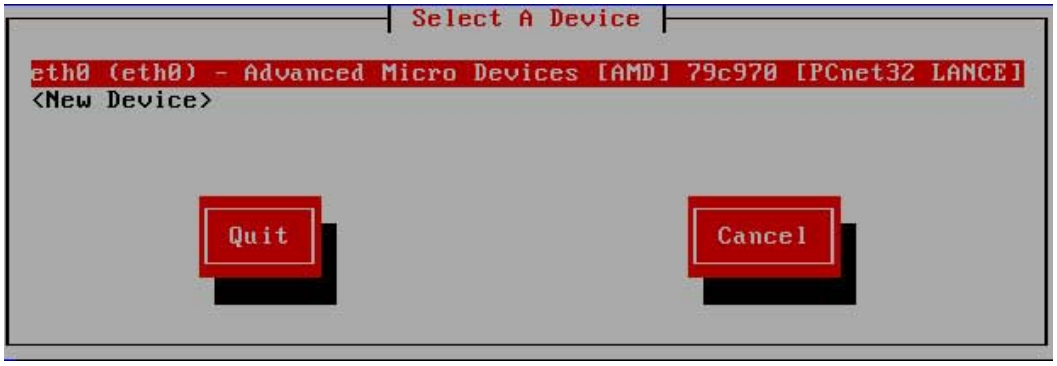
#setup

```
[root@localhost Server]# setup_
```

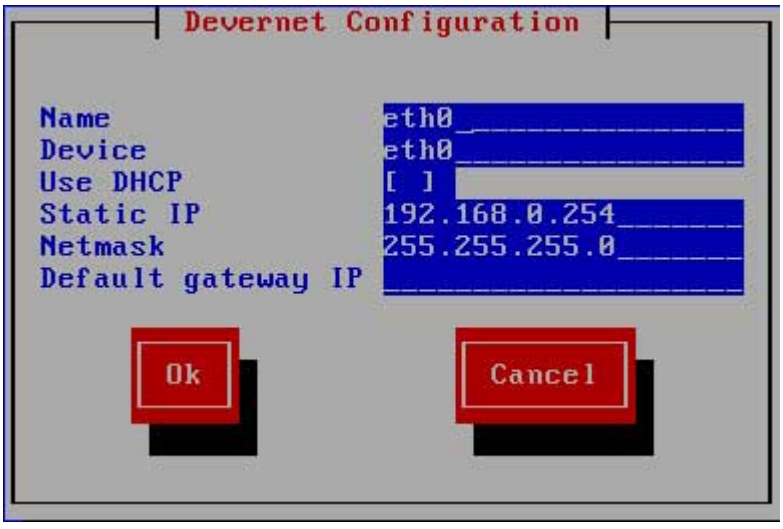
This will launch a new window select network configuration



Now a new window will show you all available LAN card select your LAN card (if you don't see any LAN card here mean you don't have install driver)



assign IP in this box and click ok



click on ok, quit and again quit to come back on root prompt.

restart the network service so new ip address can take place on LAN card

```
#service network restart
```

main configuration file of dhcp server is dhcpd.conf. This file located on /etc directory. If this file is not present there or you have corrupted this file, then copy new file first, if ask for overwrite press y

```
[root@Server ~]# cp /usr/share/doc/dhcp-3.0.5/dhcpd.conf.sample /etc/dhcpd.conf
cp: overwrite `/etc/dhcpd.conf'? y
[root@Server ~]# _
```

now open /etc/dhcpd.conf

```
[root@Server ~]# vi /etc/dhcpd.conf _
```

default entry in this file look like this

```
ddns-update-style interim;
ignore client-updates;

subnet 192.168.0.0 netmask 255.255.255.0 {

# --- default gateway
        option routers                  192.168.0.1;
        option subnet-mask              255.255.255.0;

        option nis-domain               "domain.org";
        option domain-name              "domain.org";
        option domain-name-servers      192.168.1.1;

        option time-offset              -18000; # Eastern
#       option ntp-servers              192.168.1.1;
#       option netbios-name-servers     192.168.1.1;
# --- Selects point-to-point node (default is hybrid). Do
# -- you understand Netbios very well
#       option netbios-node-type 2;

        range dynamic-bootp 192.168.0.128 192.168.0.254;
        default-lease-time 21600;
        max-lease-time 43200;
```

make these change in this file to configure dhcp server

remove this line

 # - - - default gateway

set option routers to

192.168.0.254

set option subnet-mask to

255.255.255.0

option nis domain to

example.com

option domain-name to

example.com

option domain-name-servers to

192.168.0.254

range dynamic-bootp to

192.168.0.10 192.168.0.50;

After change this file should look like this

```
ddns-update-style interim;
ignore client-updates;

subnet 192.168.0.0 netmask 255.255.255.0 {

        option routers                  192.168.0.254;
        option subnet-mask              255.255.255.0;

        option nis-domain               "example.com";
        option domain-name              "example.com";
        option domain-name-servers      192.168.0.254;

        option time-offset              -18000; # Eastern
#       option ntp-servers              192.168.1.1;
#       option netbios-name-servers     192.168.1.1;
# --- Selects point-to-point node (default is hybrid). Do
# -- you understand Netbios very well
#       option netbios-node-type 2;

        range dynamic-bootp 192.168.0.10 192.168.0.50;
        default-lease-time 21600;
        max-lease-time 43200;
```

How to assign fix IP address to any host

locate this paragraph and change hardware Ethernet to client's mac address and fixed -address to ip address which you want to provide that host

```
# 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;
}
```

after making necessary change save file and exit

now create a blank file use to store the allocated ip address information

```
[root@Server ~]# touch /var/lib/dhcpd/dhcpd.leases
[root@Server ~]# _
```

Now restart dhcpd service and on it with chkconfig commands

```
[root@Server ~]# service dhcpd restart
Shutting down dhcpd:                                       [FAILED]
Starting dhcpd:                                            [  OK  ]
[root@Server ~]# chkconfig dhcpd on
[root@Server ~]# _
```

Linux Client configuration

Client configuration is very easy and straightforward. All you need to do is set ip address to dynamic in the properties of lan card. In Linux

#setup

select network configuration from menu list

Select lan card and enter on ok

Select USE DHCP and enter on ok

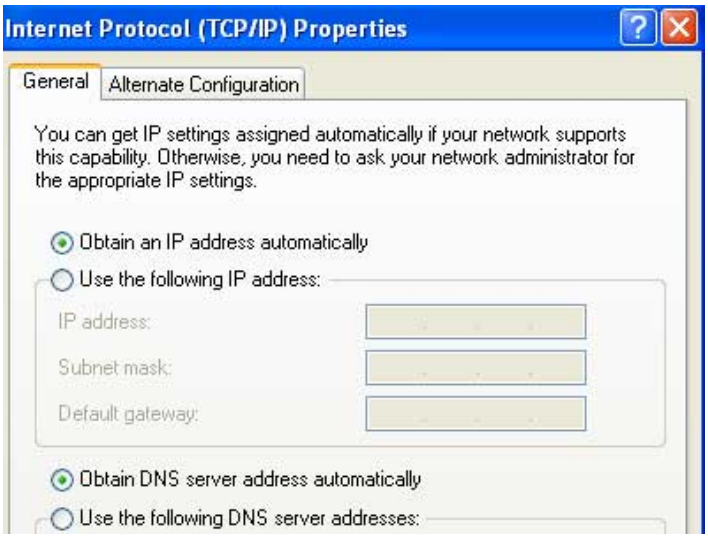
Now click on quit and quit to come back on root prompt

Now restart the network service to obtain ip from dhcp server

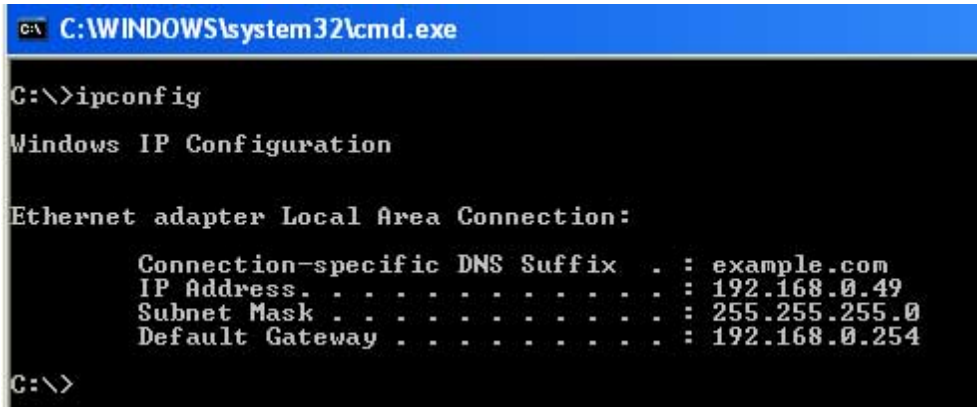
```
[root@Client1 temp]# service network restart
Shutting down interface eth0:                              [  OK  ]
Shutting down loopback interface:                          [  OK  ]
Bringing up loopback interface:                            [  OK  ]
Bringing up interface eth0:
Determining IP information for eth0... done.
                                                           [  OK  ]
[root@Client1 temp]# ifconfig eth0
eth0      Link encap:Ethernet  HWaddr 00:0C:29:62:28:1A
          inet addr:192.168.0.50  Bcast:192.168.0.255  Mask:255.255.
          inet6 addr: fe80::20c:29ff:fe62:281a/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:42 errors:0 dropped:0 overruns:0 frame:0
          TX packets:134 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:5962 (5.8 KiB)  TX bytes:23484 (22.9 KiB)
          Interrupt:67 Base address:0x2000

[root@Client1 temp]# _
```

Window Client configuration

To configure windows system as dhcp clients open LAN card properties and select TCP/IP and click on properties and set obtain ip address automatically



Go on command prompt and check new ip address



Check lease on DHCP server

you can check allocated address on server.

```
[root@Server ~]# cat /var/lib/dhcpd/dhcpd.leases_
```

```
lease 192.168.0.50 {
  starts 3 2010/02/17 12:13:27;
  ends 3 2010/02/17 18:13:27;
  binding state active;
  next binding state free;
  hardware ethernet 00:0c:29:62:28:1a;
}
lease 192.168.0.49 {
  starts 3 2010/02/17 12:14:38;
  ends 3 2010/02/17 18:14:38;
  binding state active;
  next binding state free;
  hardware ethernet 00:0c:29:69:d8:2f;
  uid "\001\000\014)i\330/";
  client-hostname "nikki-82617912b";
}
[root@Server ~]# _
```