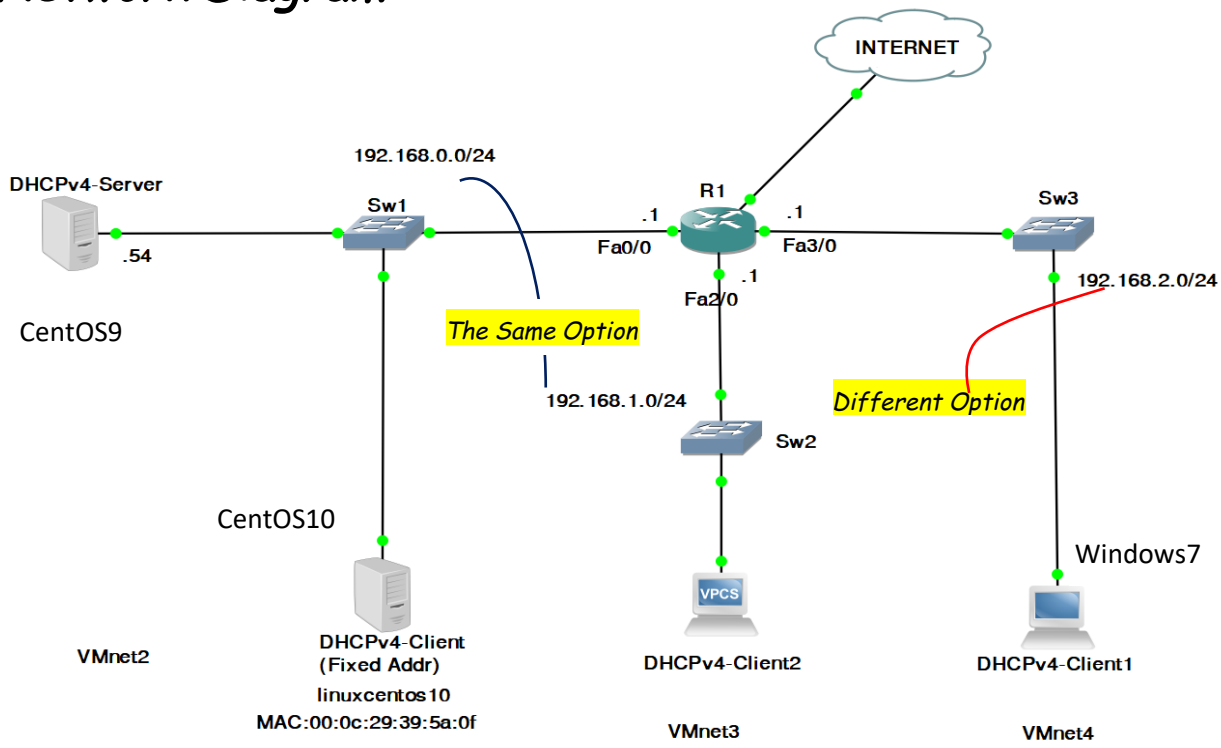
Lab (DHCPv4)-Configure DHCPv4 Server on Linux CentOS 9

○ Network Diagram



ជំហាន (Steps):

➢ Linux CentOS 9 Machine

1. Install DHCPv4 Packages named dhcp-server (for Server) and dhcp-client (for Client) & Verify

   >> Install:

   yum install dhcp-server dhcp-client -y

   >> Verify:

   rpm -q dhcp-server dhcp-client

   dhcp-server-4.4.2-19.b1.el9.x86_64
   dhcp-client-4.4.2-19.b1.el9.x86_64 } ជាន់ដំឡើងរួច

2. Configure DHCPv4 Server

   For starters, to setup a DHCP server, the first step is to edit the main file configuration called **dhcpd.conf** file, and the main DHCP configuration file is normally /etc/dhcp/**dhcpd.conf** (which is empty

by default), it keeps all network information sent to clients.
There is a sample configuration file named dhcpd.conf.example which located under: /usr/share/doc/dhcp-server/dhcpd.conf.example, which is a good starting point for configuring a DHCP server.
ដូច្នេះ ត្រូវបើក File "dhcpd.conf.example" រួចហើយចម្លងពីតីមានគំរូដូចខាងក្រោម៖

```
# Option definitions common to all supported networks...
option domain-name "example.org";
option domain-name-servers ns1.example.org, ns2.example.org;
default-lease-time 600;
max-lease-time 7200;
# If this DHCP server is the official DHCP server for the local
# network, the authoritative directive should be uncommented.
#authoritative;
# A slightly different configuration for an internal subnet.
    subnet 10.5.5.0 netmask 255.255.255.224 {
      range 10.5.5.26 10.5.5.30;
      option routers 10.5.5.1;
      option broadcast-address 10.5.5.31;
    }
# Fixed IP addresses can also be specified for hosts.  These addresses should not also be listed as being available for dynamic assignment.
    host fantasia {
      hardware ethernet 08:00:07:26:c0:a5;
      fixed-address fantasia.fugue.com;
    }
```

ចម្លងទាំងនេះយកទៅដាក់នៅក្នុង File Configuration ចម្បងដែលមានឈ្មោះថា dhcpd.conf រួចកែតម្រូវទៅតាមតម្រូវការនៃស្ថាបនរបស់អ្នក ដូចខាងក្រោម៖

```
# Option definitions common to all supported networks...
# The same for Net: 192.168.0.0/24 & Net: 192.168.1.0/24
    option domain-name "lovekhmer.com";
    option domain-name-servers 192.168.0.54,192.168.0.53,8.8.8.8;
    default-lease-time 3600;
    max-lease-time 7200;
# If this DHCP server is the official DHCP server for the local
# network ( This is the  primary dhcp Server to response first
# any requests if have many dhcp Servers)
    authoritative;
# Subnet-declaration for DHCPv4 Clients
# We have 3 subnets
#Subnet1-192.168.0.0/24
    subnet 192.168.0.0 netmask 255.255.255.0 {
      range 192.168.0.100 192.168.0.254;
      option routers 192.168.0.1;
      option broadcast-address 192.168.0.255;
    }
# Fixed IP addresses can also be specified for hosts.
    host linuxcentos10 {
      hardware ethernet 00:0c:29:39:5a:0f;
      fixed-address 192.168.0.254;
    }
#Subnet2-192.168.1.0/24
    subnet 192.168.1.0 netmask 255.255.255.0 {
```

```
  range 192.168.1.100 192.168.1.254;
  option routers 192.168.1.1;
  option broadcast-address 192.168.1.255;
 }
#Subnet3-192.168.2.0/24
# A slightly different configuration:
 subnet 192.168.2.0 netmask 255.255.255.0 {
  range 192.168.2.100 192.168.2.254;
  option domain-name-servers 192.168.0.54,192.168.0.53,3.3.3.3;
  option domain-name "ilu.com";
  option routers 192.168.2.1;
  option broadcast-address 192.168.2.255;
  default-lease-time 7200;
  max-lease-time 10800;
 }
```

⇨ **SAVE and EXIT From dhcpd.conf file**

esc:wq

3. Test syntax errors of DHCP configuration

dhcpd

4. Start and Enable dhcp Service (dhcpd)

```
systemctl start dhcpd
systemctl enable dhcpd
========================
```

>> Verify DNS Status:

```
systemctl status dhcpd
```

● dhcpd.service - DHCPv4 Server Daemon

Loaded: loaded (/usr/lib/systemd/system/dhcpd.service; enabled; preset: disabled)

Active: active (running) since Sun 2025-02-23 09:53:27 +07; 1min 16s ago

Docs: man:dhcpd(8)

man:dhcpd.conf(5)

Main PID: 10598 (dhcpd)

Status: "Dispatching packets..."

Tasks: 1 (limit: 22812)

Memory: 4.9M

CPU: 20ms

CGroup: /system.slice/dhcpd.service

└─10598 /usr/sbin/dhcpd -f -cf /etc/dhcp/dhcpd.conf -user dhcpd -group dhcpd --no-pid

5. Allow DHCPv4 Server through FireWall

Add a allow rule in firewall to let clients can connect to DHCP server.

```
firewall-cmd --add-port=67/udp --permanent
firewall-cmd --reload
```

==========

>>Verify Firewall Table:

```
firewall-cmd --list-ports
67/udp
```

6. Test from DHCPv4 Clients

>> Windows Client

```
ipconfig /all
```

>> Linux Client

```
ifconfig
```

```
root@linuxcentos10:~# ifconfig
ens160: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.0.254  netmask 255.255.255.0  broadcast 192.168.0.255
        inet6 fe80::20c:29ff:fe39:5a0f  prefixlen 64  scopeid 0x20<link>
```

ether 00:0c:29:39:5a:0f txqueuelen 1000 (Ethernet)

RX packets 930 bytes 173708 (169.6 KiB)

RX errors 0 dropped 0 overruns 0 frame 0

TX packets 738 bytes 119531 (116.7 KiB)

7. Lease Database

On the DHCP server, the file **/var/lib/dhcpd/dhcpd.leases** stores the DHCP client lease database. Do not change this file. DHCP lease information for each recently assigned IP address is automatically stored in the lease database. The information includes the length of the lease, to whom the IP address has been assigned, the start and end dates for the lease, and the MAC address of the network interface card that was used to retrieve the lease.