



IT3010

Network Design & Management

3rd Year, 2nd Semester

Assignment/Lab Report

Practical 02/Lab Report 02

Submitted to

Sri Lanka Institute of Information Technology

In partial fulfillment of the requirements for the
Bachelor of Science Special Honors Degree in Information Technology

<<28 – 02 - 2024>>

Declaration

I certify that this report does not incorporate without acknowledgement, any material previously submitted for a degree or diploma in any university, and to the best of my knowledge and belief it does not contain any material previously published or written by another person, except where due reference is made in text.

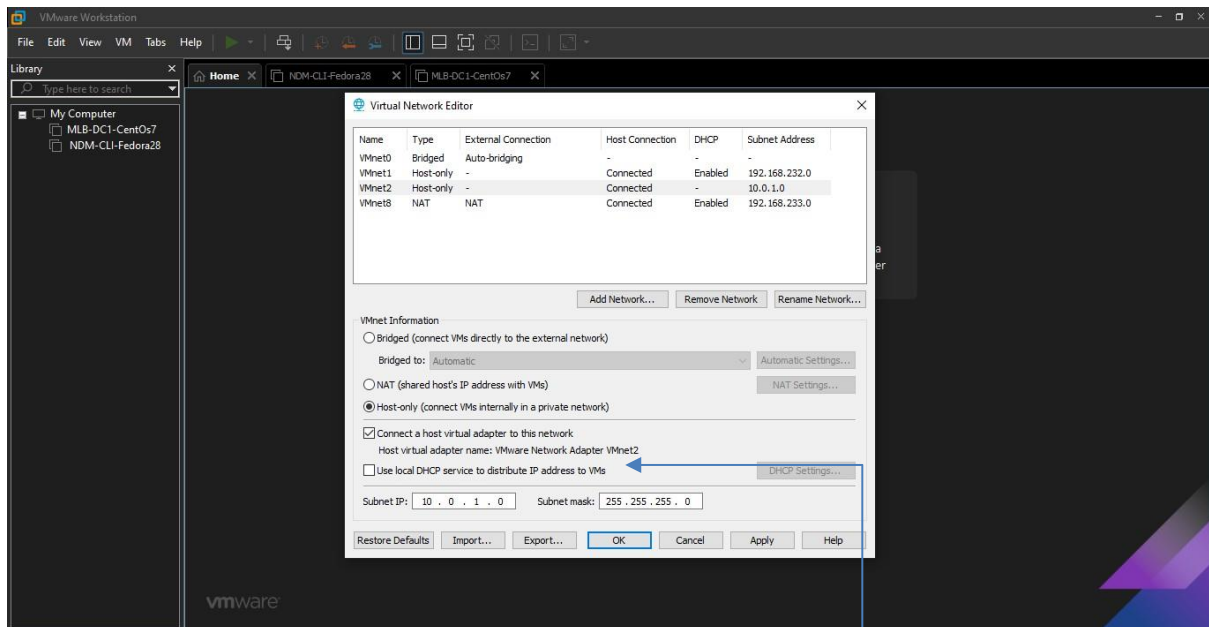
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Installing and Configuring DHCP

Step 1

Disable the DHCP settings in VMnet 2.

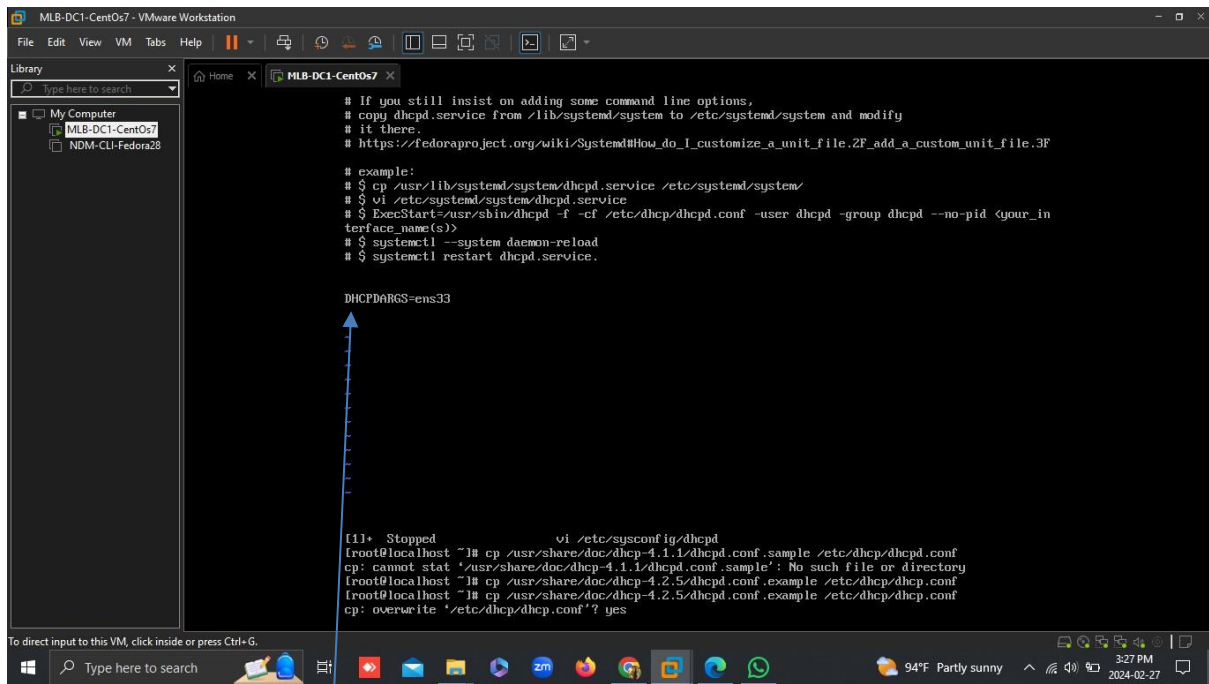


- Open the VMware Workstation and go to Edit, then click on Virtual Network Editor.
- Once you received the Virtual Network Editor Window, Click on the Change Settings Button.
- Then disable(untick) “**use local DHCP service to distribute IP address to VMs**”.
- Then click on Apply and Ok.

Step 2

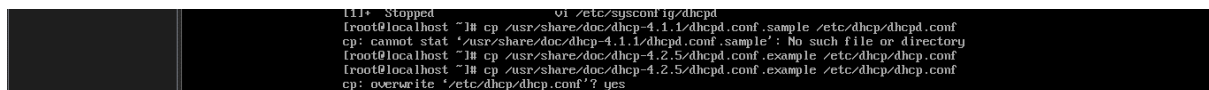
Installing DHCP in Centos.

- First we need to deactivate VMnet 2 connection in Centos7 and activate NAT connection.
- To install DHCP server on CentOS, enter the following command.
\$ yum install -y dhcp



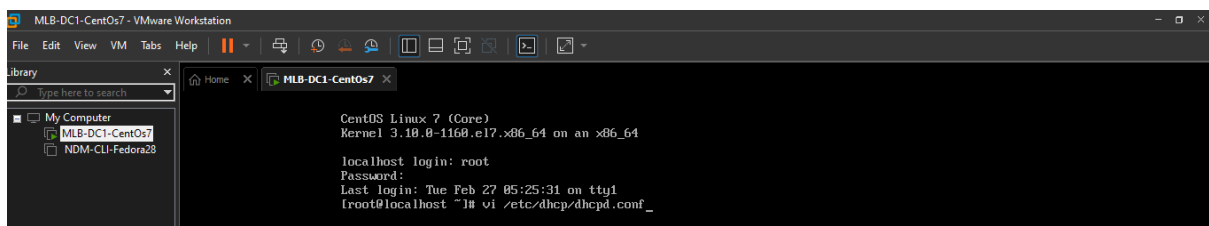
- Save and close the file.
- Copy the sample dhcp configuration file to /etc/dhcp/ directory.

cp /usr/share/doc/dhcp-4.2.5/dhcpd.conf.example /etc/dhcp/dhcpd.conf



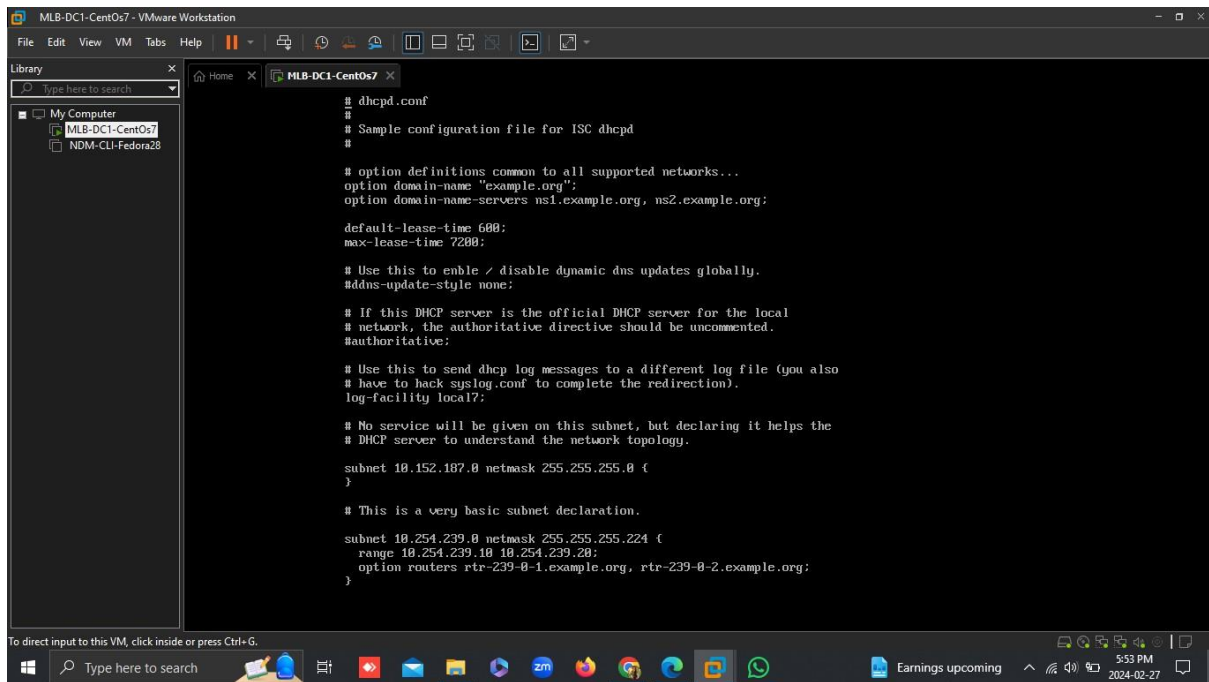
- Now, edit dhcpd.conf file,

vi /etc/dhcp/dhcpd.conf



- Make the changes.
- Set the domain name and domain-name servers
- And, If this DHCP server is the official DHCP server for the local network, you should uncomment the following line

[...] authoritative; [...]



```
# dhcpd.conf
#
# Sample configuration file for ISC dhcpd
#

# 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;

# Use this to enable / disable dynamic dns updates globally.
#ddns-update-style none;

# If this DHCP server is the official DHCP server for the local
# network, the authoritative directive should be uncommented.
#authoritative;

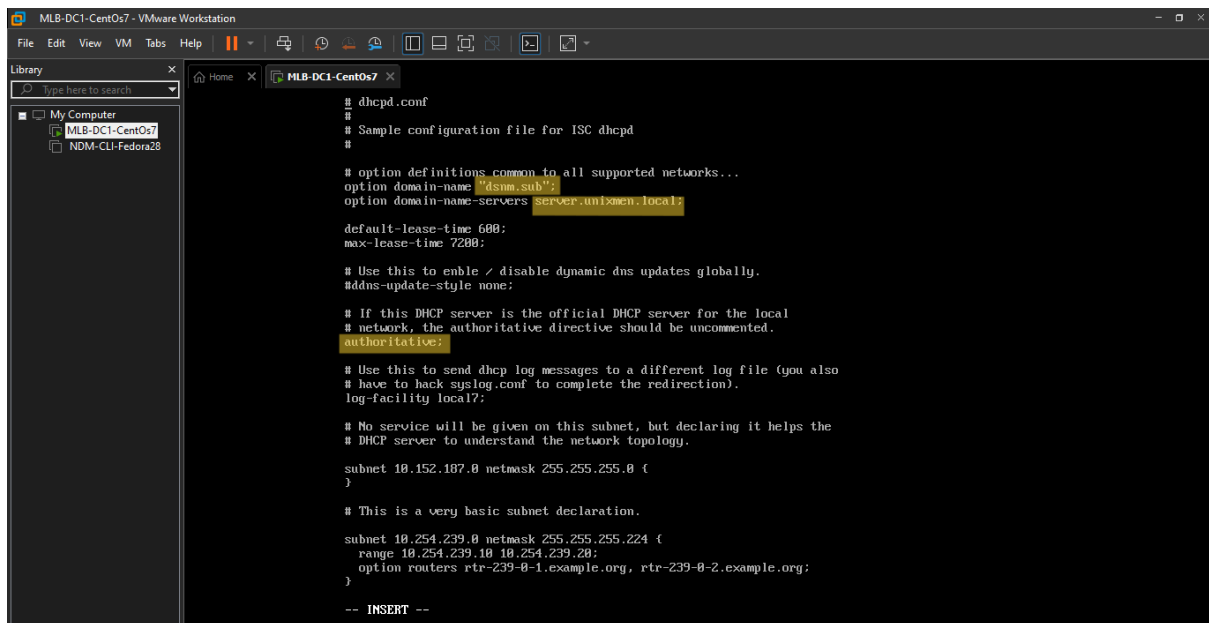
# Use this to send dhcp log messages to a different log file (you also
# have to hack syslog.conf to complete the redirection).
log-facility local7;

# No service will be given on this subnet, but declaring it helps the
# DHCP server to understand the network topology.

subnet 10.152.187.0 netmask 255.255.255.0 {
}

# This is a very basic subnet declaration.

subnet 10.254.239.0 netmask 255.255.255.224 {
    range 10.254.239.10 10.254.239.20;
    option routers rtr-239-0-1.example.org, rtr-239-0-2.example.org;
}
```



```
# dhcpd.conf
#
# Sample configuration file for ISC dhcpd
#

# option definitions common to all supported networks...
option domain-name "dsnm.sub";
option domain-name-servers server.unixmen.local;

default-lease-time 600;
max-lease-time 7200;

# Use this to enable / disable dynamic dns updates globally.
#ddns-update-style none;

# If this DHCP server is the official DHCP server for the local
# network, the authoritative directive should be uncommented.
authoritative;

# Use this to send dhcp log messages to a different log file (you also
# have to hack syslog.conf to complete the redirection).
log-facility local7;

# No service will be given on this subnet, but declaring it helps the
# DHCP server to understand the network topology.

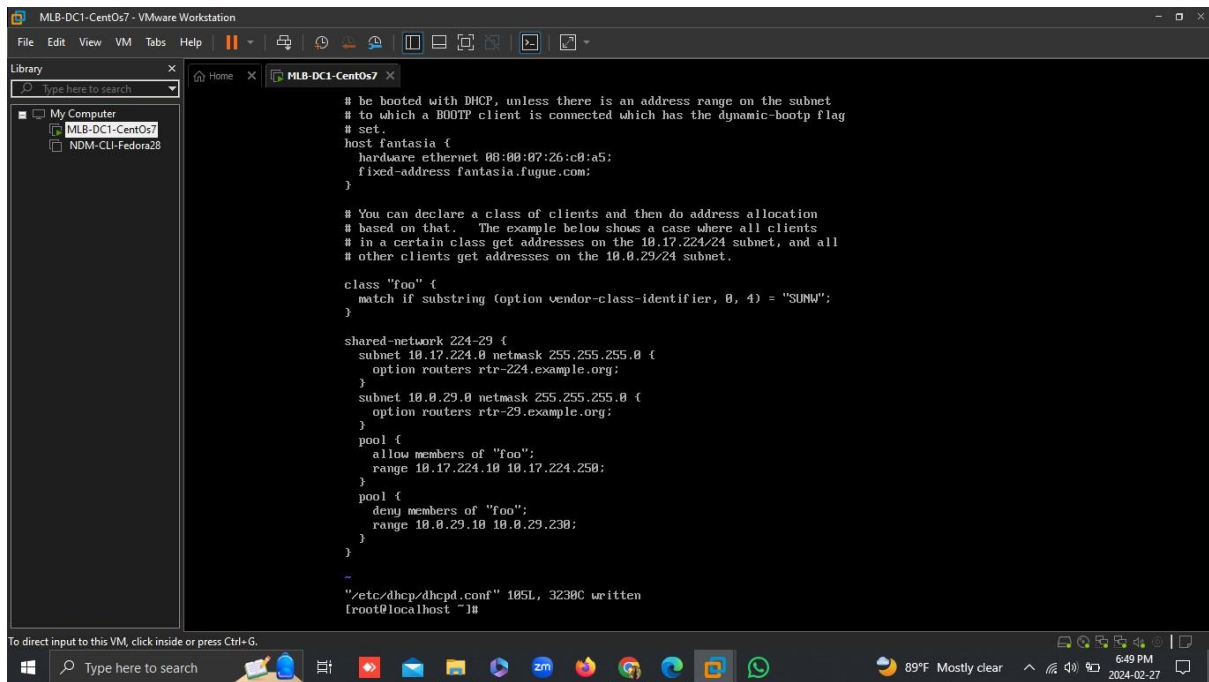
subnet 10.152.187.0 netmask 255.255.255.0 {
}

# This is a very basic subnet declaration.

subnet 10.254.239.0 netmask 255.255.255.224 {
    range 10.254.239.10 10.254.239.20;
    option routers rtr-239-0-1.example.org, rtr-239-0-2.example.org;
}

-- INSERT --
```

- Define the subnet, range of ip addresses, domain and domain name servers.

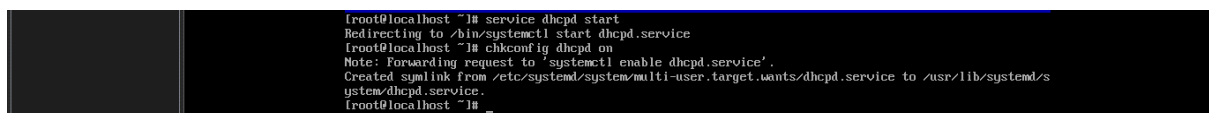


- After making all the changes you want, save and close the file. Be mindful that if you have another unused entries on the dhcpd.conf file, comment them. Otherwise, you'll have issues while starting dhcpd service.
- Now, start the dhcpd service and make it to start automatically on every reboot.

service dhcpd start

- If you want to start up the DHCP server at logon to the server session use.

chkconfig dhcpd on

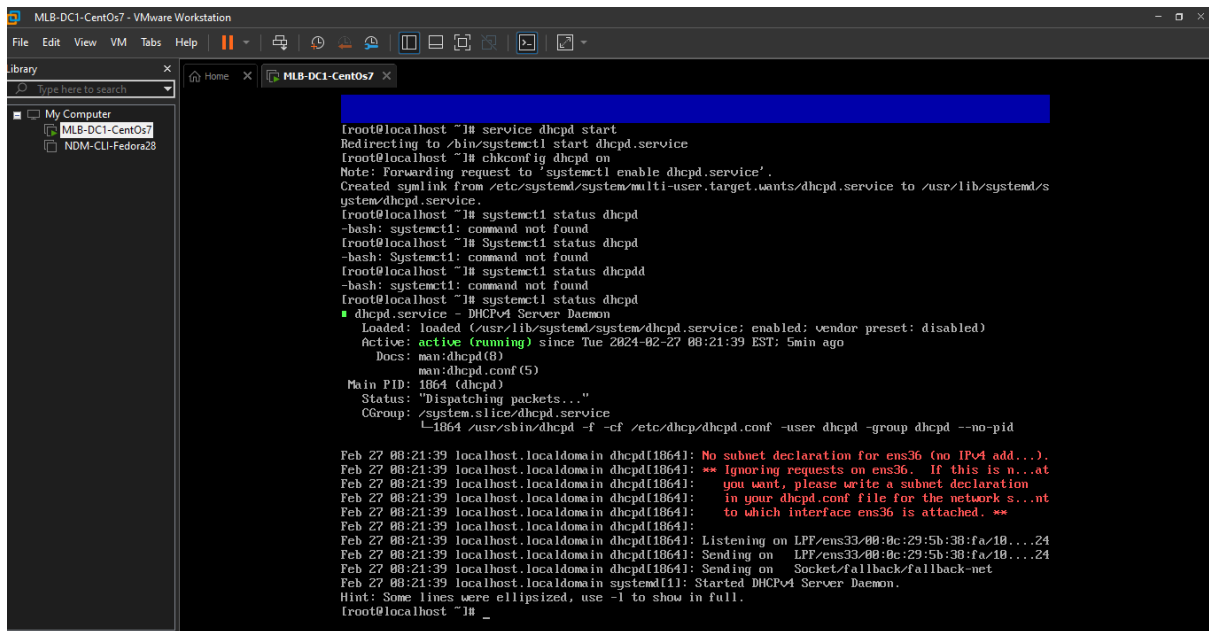


Step 4

- Checking the status of DHCP server and client.
- You can use the following command and check the DHCP server status.

Systemctl status dhcpd

- DHCP must active and running now.

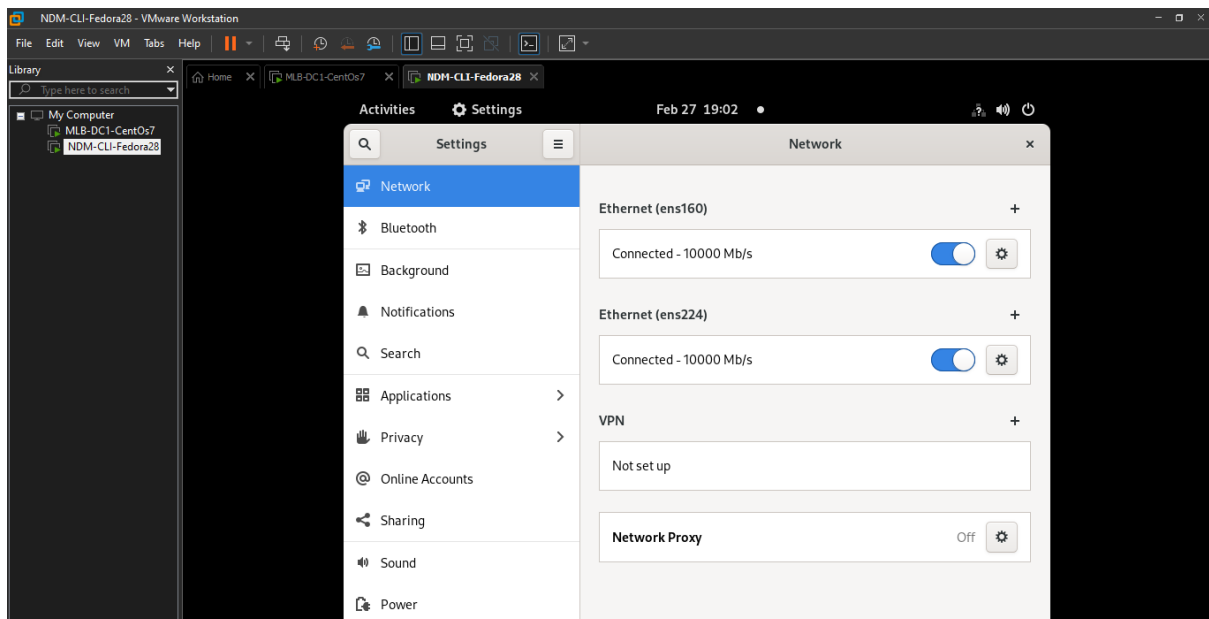


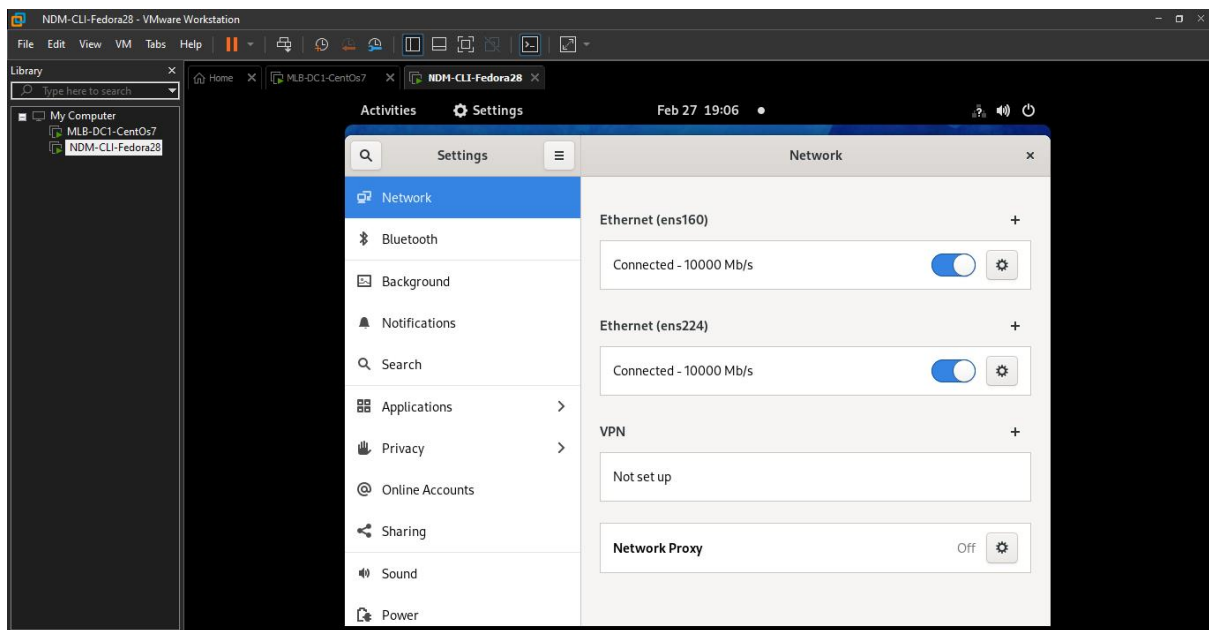
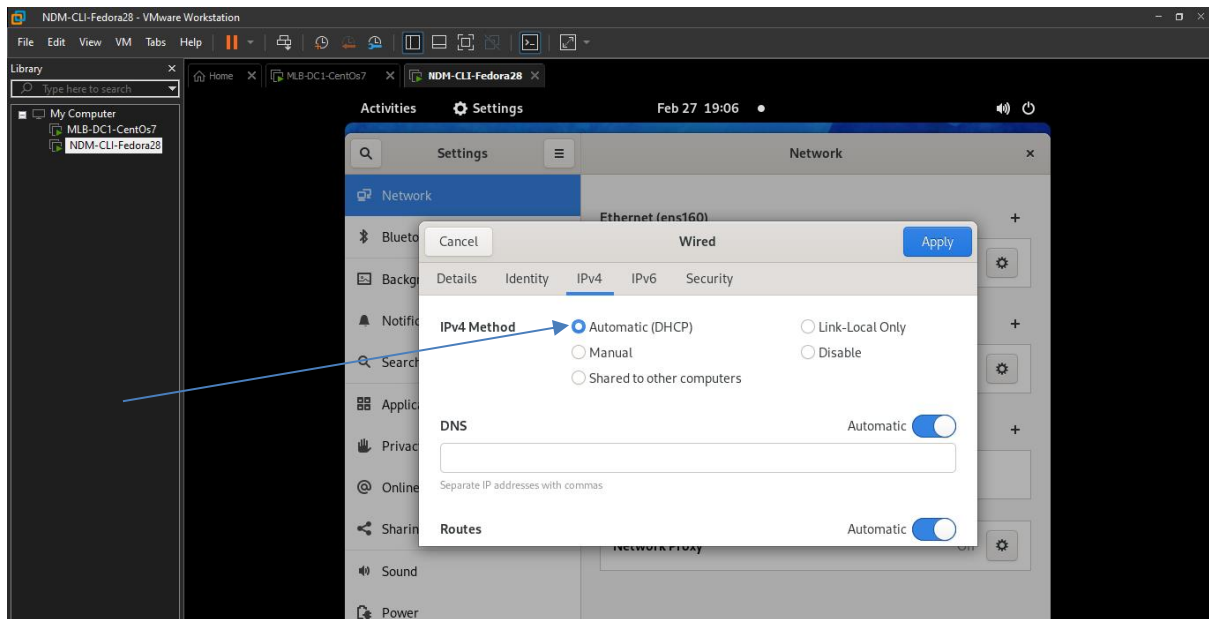
The terminal window shows the following commands and output:

```
[root@localhost ~]# service dhcpd start
Redirecting to /bin/systemctl start dhcpd.service
[root@localhost ~]# chkconfig dhcpd on
Note: Forwarding request to 'systemctl enable dhcpd.service'.
Created symlink from /etc/systemd/system/multi-user.target.wants/dhcpd.service to /usr/lib/systemd/system/dhcpd.service.
[root@localhost ~]# systemctl status dhcpd
-bash: systemctl: command not found
[root@localhost ~]# Systemctl status dhcpd
-bash: Systemctl: command not found
[root@localhost ~]# systemctl status dhcpdd
-bash: systemctl: command not found
[root@localhost ~]# systemctl status dhcpd
dhcpd.service - DHCPv4 Server Daemon
Loaded: loaded (/usr/lib/systemd/system/dhcpd.service; enabled; vendor preset: disabled)
Active: active (running) since Tue 2024-02-27 08:21:39 EST; 5min ago
Docs: man:dhcpd(8)
      man:dhcpd.conf(5)
Main PID: 1864 (dhcpd)
Status: "Dispatching packets..."
CGroup: /system.slice/dhcpd.service
└─1864 /usr/sbin/dhcpd -f -cf /etc/dhcp/dhcpd.conf -user dhcpd -group dhcpd --no-pid

Feb 27 08:21:39 localhost.localdomain dhcpd[1864]: No subnet declaration for ens36 (no IPv4 add...).
Feb 27 08:21:39 localhost.localdomain dhcpd[1864]: ** Ignoring requests on ens36. If this is n...at
Feb 27 08:21:39 localhost.localdomain dhcpd[1864]: you want, please write a subnet declaration
Feb 27 08:21:39 localhost.localdomain dhcpd[1864]: in your dhcpd.conf file for the network s...nt
Feb 27 08:21:39 localhost.localdomain dhcpd[1864]: to which interface ens36 is attached. **
Feb 27 08:21:39 localhost.localdomain dhcpd[1864]:
Feb 27 08:21:39 localhost.localdomain dhcpd[1864]: Listening on LPP/ens33/08:0c:29:5b:38:fa/10....24
Feb 27 08:21:39 localhost.localdomain dhcpd[1864]: Sending on LPP/ens33/08:0c:29:5b:38:fa/10....24
Feb 27 08:21:39 localhost.localdomain dhcpd[1864]: Sending on Socket/fallback/fallback-net
Feb 27 08:21:39 localhost.localdomain systemd[1]: Started DHCPv4 Server Daemon.
Hint: Some lines were ellipsized, use -l to show in full.
[root@localhost ~]# _
```

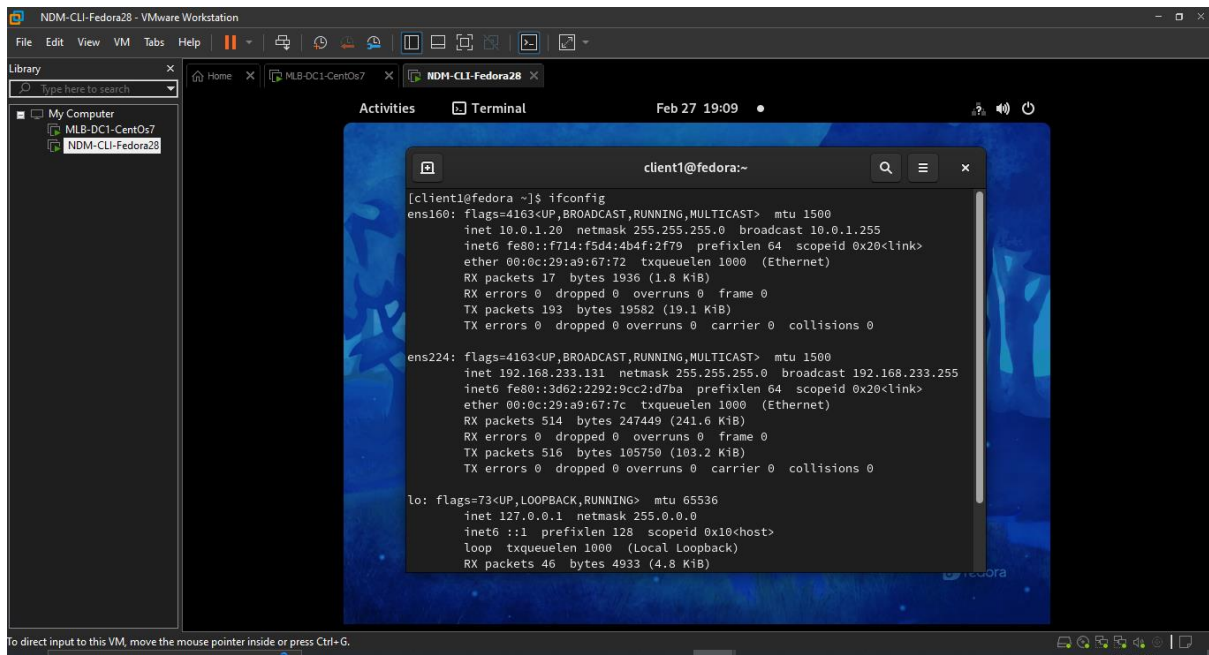
- Now, go to the client's network configuration settings and change the IP settings to Automatic (DHCP).





- Now check the ip address of fedora and see if the DHCP server is working or not. You can use the command.

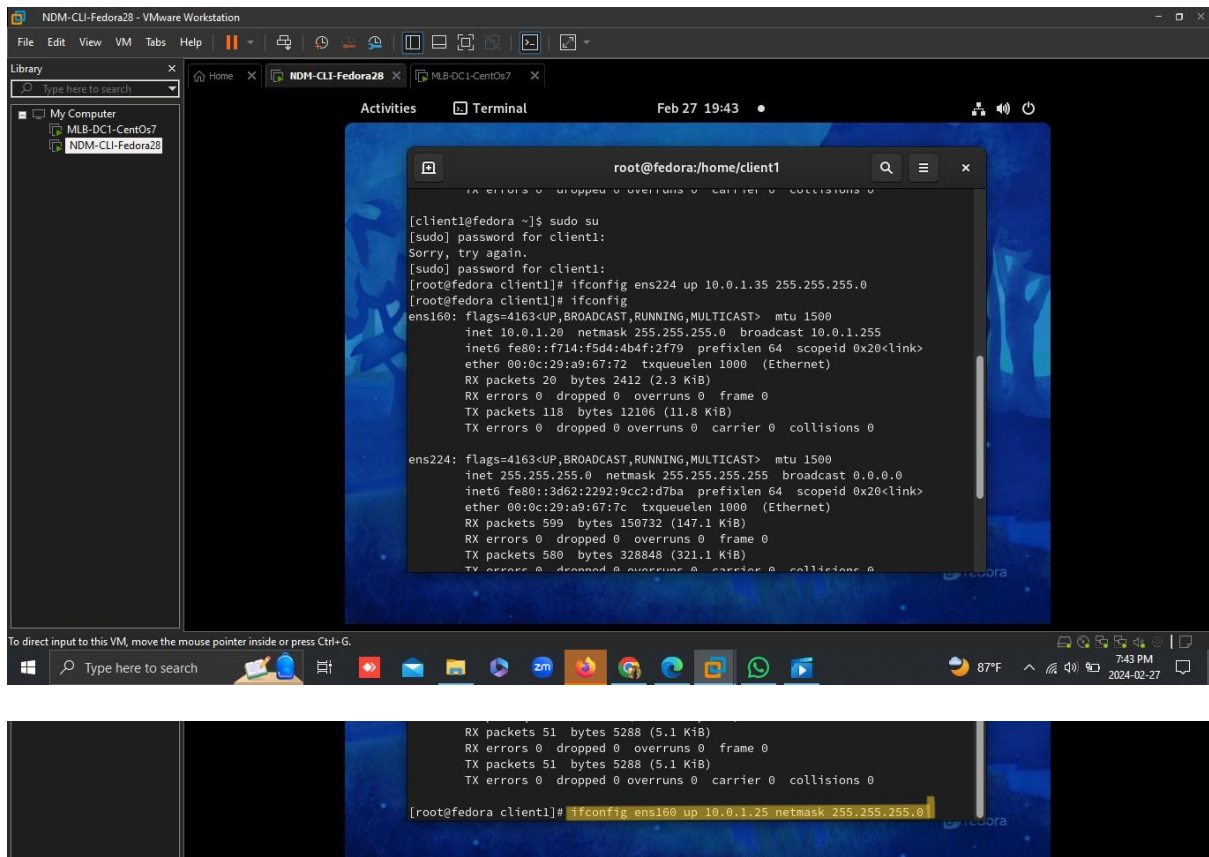
Ifconfig



Changing IP Configurations in Linux

1. Identify the interface you need to configure using the **ifconfig** command.
2. Assign the temporary IP.

Ifconfig <interface name> up <ip address> netmask<subnetmask>



```
[client1@fedora ~]$ sudo su
[sudo] password for client1:
Sorry, try again.
[sudo] password for client1:
[root@fedora client1]# ifconfig ens224 up 10.0.1.35 255.255.255.0
[root@fedora client1]# ifconfig
ens160: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.1.20 netmask 255.255.255.0 broadcast 10.0.1.255
    inet6 fe80::f714:f5d4:4b4f:2f79 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:a9:67:72 txqueuelen 1000 (Ethernet)
    RX packets 20 bytes 2412 (2.3 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 118 bytes 12106 (11.8 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

ens224: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 255.255.255.0 netmask 255.255.255.255 broadcast 0.0.0.0
    inet6 fe80::3d62:2292:9cc2:d7ba prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:a9:67:7c txqueuelen 1000 (Ethernet)
    RX packets 599 bytes 150732 (147.1 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 580 bytes 328848 (321.1 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[root@fedora client1]# ifconfig ens160 up 10.0.1.25 netmask 255.255.255.0
```

