

Project: Configure Static IP in RHEL 9 VM (VMware Workstation)

Objective

Set a **persistent static IPv4 address** for a Red Hat Enterprise Linux (RHEL 9) server running inside **VMware Workstation**, so the server can be accessed consistently via SSH and for hosting services.



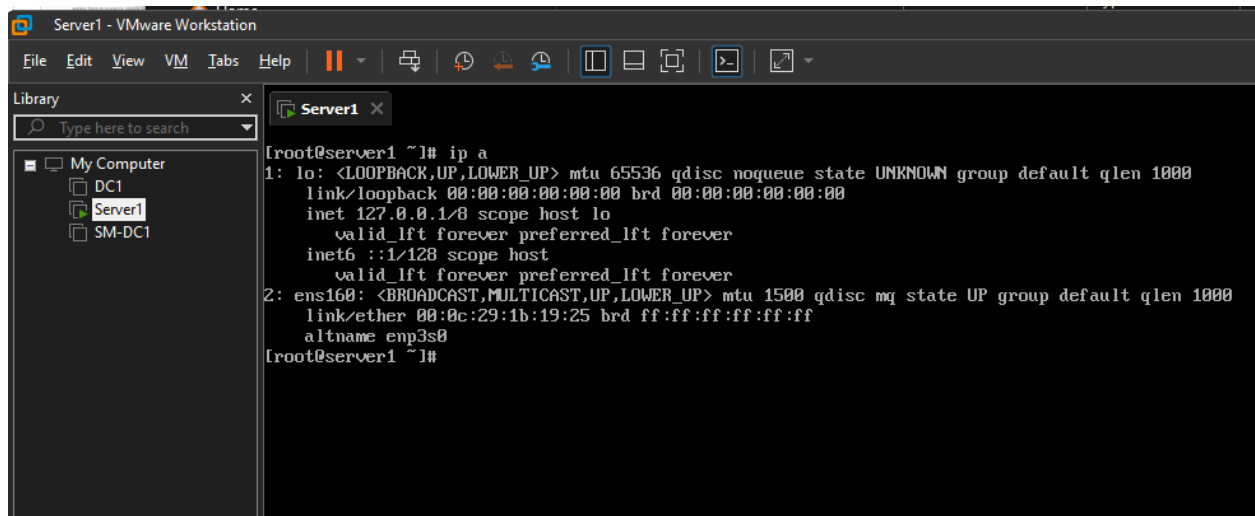
Environment

- **Host Machine:** Windows 11
 - **Hypervisor:** VMware Workstation Pro
 - **Guest OS:** Red Hat Enterprise Linux 9.5 (Plow)
 - **Network Mode:** NAT (VMware built-in DHCP, 192.168.147.0/24)
 - **Interface:** `ens160`
-

Steps

1. Verify Network Interface

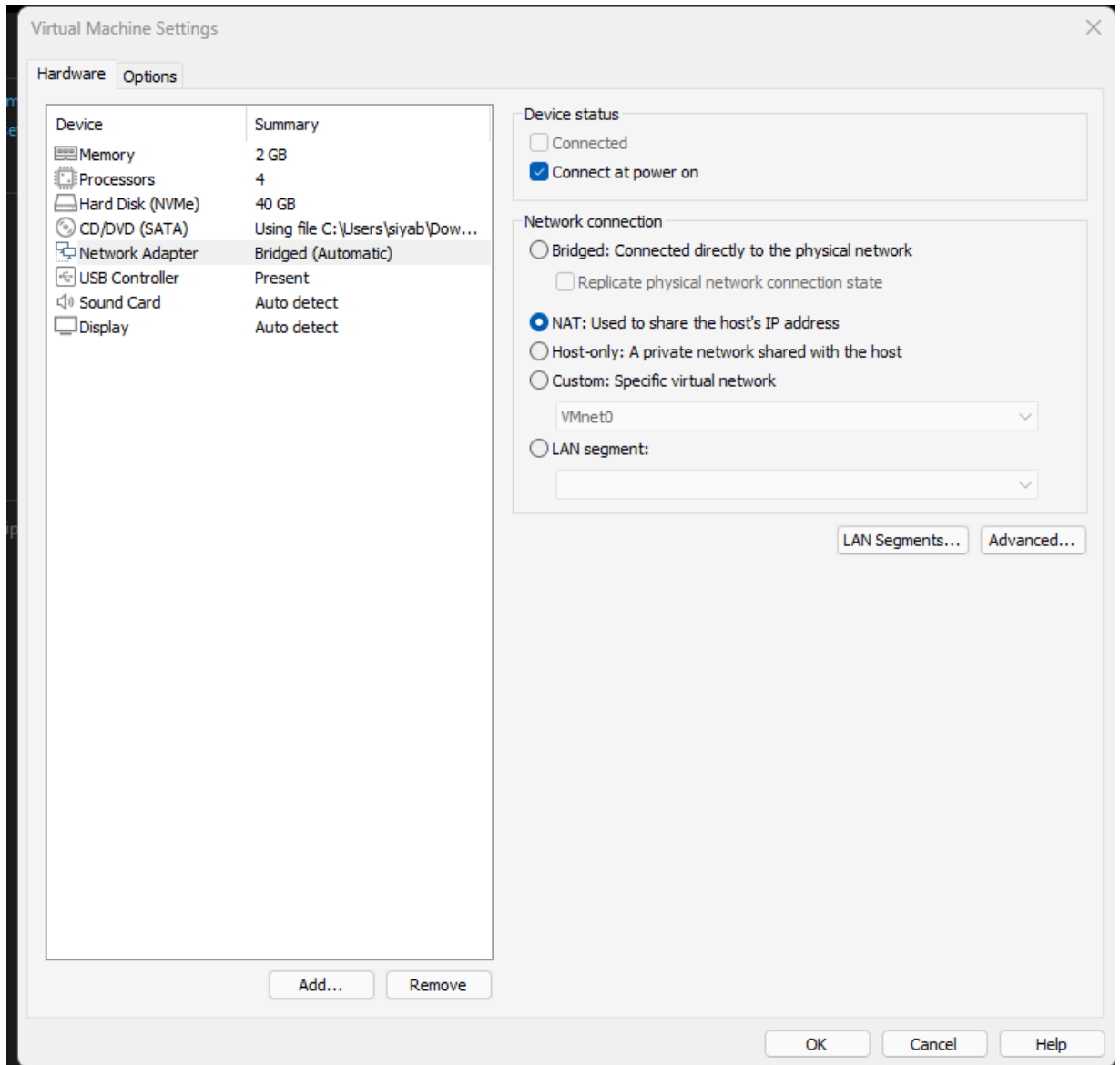
```
ip a
```



```
Server1 - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to search
My Computer
DC1
Server1
SM-DC1
[root@server1 ~]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:0c:29:1b:19:25 brd ff:ff:ff:ff:ff:ff
    altname enp3s0
[root@server1 ~]#
```

2. Switch VMware to NAT

- VM Settings → Network Adapter → Select **NAT**



3. Configure Static IP using **nmcli**

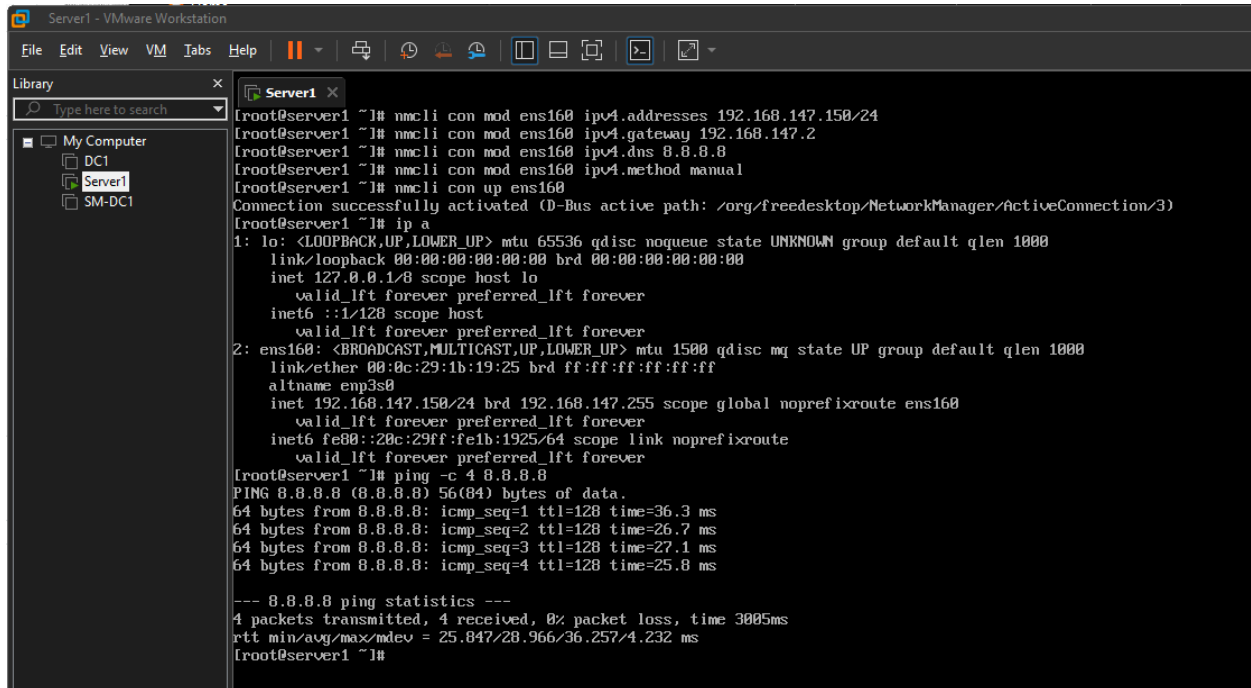
```
nmcli con mod ens160 ipv4.addresses 192.168.147.150/24
nmcli con mod ens160 ipv4.gateway 192.168.147.2
nmcli con mod ens160 ipv4.dns 8.8.8.8
nmcli con mod ens160 ipv4.method manual
nmcli con up ens160
```

4. Verify Configuration

```
ip a
```

```
ping -c 4 8.8.8.8
```

```
ping -c 4 google.com
```



The screenshot shows a terminal window titled 'Server1 - VMware Workstation'. The terminal displays the following commands and their outputs:

```
[root@server1 ~]# nmcli con mod ens160 ipv4.addresses 192.168.147.150/24
[root@server1 ~]# nmcli con mod ens160 ipv4.gateway 192.168.147.2
[root@server1 ~]# nmcli con mod ens160 ipv4.dns 8.8.8.8
[root@server1 ~]# nmcli con mod ens160 ipv4.method manual
[root@server1 ~]# nmcli con up ens160
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/3)
[root@server1 ~]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:0c:29:1b:19:25 brd ff:ff:ff:ff:ff:ff
    altname emp3s0
    inet 192.168.147.150/24 brd 192.168.147.255 scope global noprefixroute ens160
        valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:fe1b:1925/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
[root@server1 ~]# ping -c 4 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data:
64 bytes from 8.8.8.8: icmp_seq=1 ttl=128 time=36.3 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=128 time=26.7 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=128 time=27.1 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=128 time=25.8 ms

--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 25.847/28.966/36.257/4.232 ms
[root@server1 ~]#
```

5. Test SSH from Host

From **MobaXterm**:

```
ssh root@192.168.147.150
```

```
2025-09-30 22:04.30 /home/mobaxterm ssh siya@192.168.147.150
Warning: Permanently added '192.168.147.150' (ED25519) to the list of known hosts.
siya@192.168.147.150's password:
X11 forwarding request failed on channel 0
Register this system with Red Hat Insights: rhc connect

Example:
# rhc connect --activation-key <key> --organization <org>

The rhc client and Red Hat Insights will enable analytics and additional
management capabilities on your system.
View your connected systems at https://console.redhat.com/insights

You can learn more about how to register your system
using rhc at https://red.ht/registration
Last login: Tue Sep 30 21:46:07 2025
[siya@server1 ~]$ su -
Password:
[root@server1 ~]#
```

Results

- The VM now has a **fixed IP: 192.168.147.150**
- SSH works reliably without needing to check `ip a` each reboot
- The server is ready for hosting web, DNS, or other Linux projects

Reflection

This project taught me:

- How VMware NAT networking works
- Difference between DHCP and static configuration in RHEL
- Practical use of `nmcli` to manage persistent network settings
- Importance of having a stable IP for server administration and future labs