

Linux Lab: Network Configuration

Linux Command List: Network Configuration

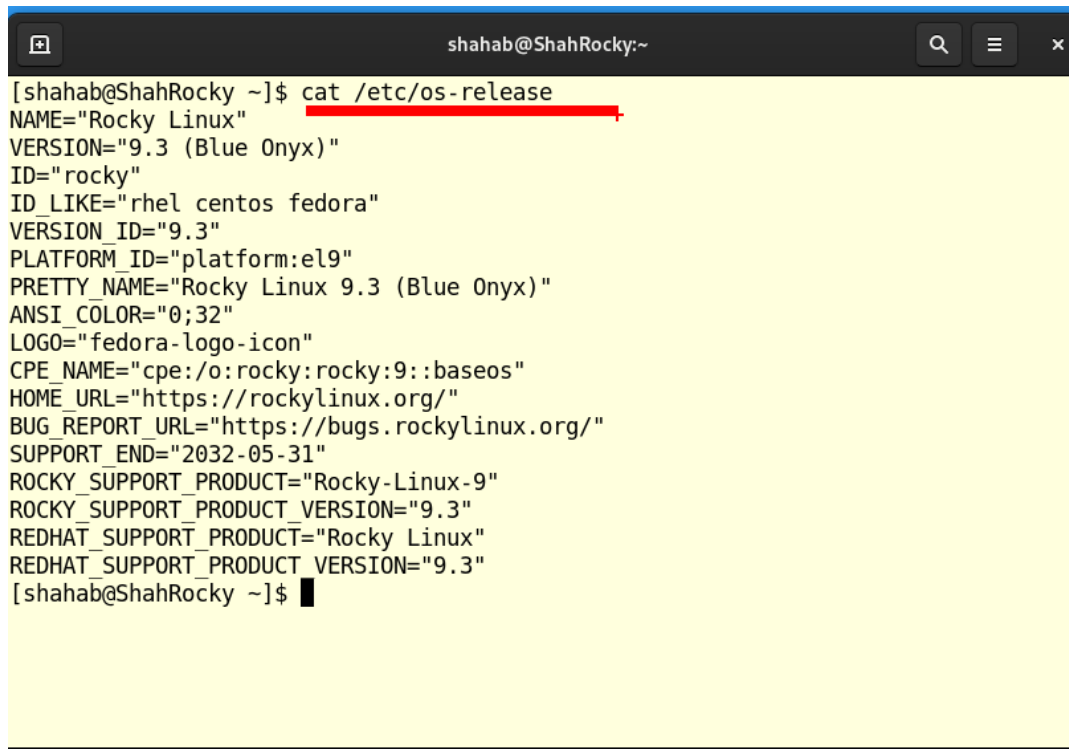
- **ifconfig** → Display network interface information → `ifconfig eth0`
- **ip addr** → Manage network interfaces and addresses → `ip addr show eth0`
- **nmcli** → Display network interface information (after NetworkManager installed)
- **route** → Display and manipulate routing table → `route -n`
- **netstat** → Display and checks on the open and listening ports of applications → `netstat -an`
- **ping** → Test network connectivity → `ping 8.8.8.8`
- **traceroute** → Trace network path to a host → `traceroute google.com`
- **host** → Get host information → `host google.com`
- **dig** → Perform DNS lookups → `dig A google.com`
- **nslookup** → Lookup domain names and IP addresses → `nslookup google.com`
- **hostname** → Set or get the system hostname → `hostname server1`
- **ip link** → View and manage network links → `ip link show eth0`
- **ip address** → Manage IP addresses on interfaces
- **uname** → Prints information about your machine's kernel, name, and hardware
- **ss, ss -tuln** → shows all listening TCP and UDP connections

Linux Command List: Network Services

- **service** → Manage system services → `service ssh start`
- **systemctl** → Manage systemd services → `systemctl enable ssh`
- **sshd** → SSH daemon → `sshd -D`
- **telnet** → Connect to a remote host → `telnet mailserver 25`
- **ftp** → File transfer protocol → `ftp ftp.example.com`
- **scp** → Securely copy files → `scp /etc/hosts user@server:/tmp`
- **wget** → Download files from the internet → `wget http://example.com/file.tar.gz`

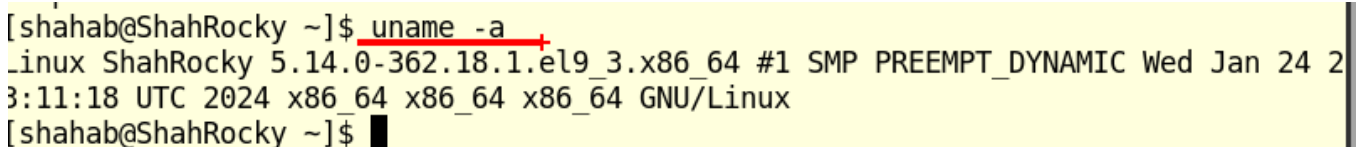
Rocky Server Linux: Network Interface Config

First, we check the operating system we have installed: **cat /etc/os-release**



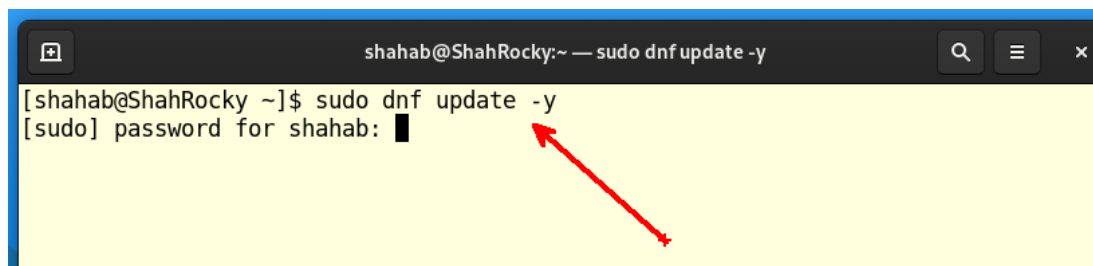
```
shahab@ShahRocky:~  
[shahab@ShahRocky ~]$ cat /etc/os-release  
NAME="Rocky Linux"  
VERSION="9.3 (Blue Onyx)"  
ID="rocky"  
ID LIKE="rhel centos fedora"  
VERSION_ID="9.3"  
PLATFORM_ID="platform:el9"  
PRETTY_NAME="Rocky Linux 9.3 (Blue Onyx)"  
ANSI_COLOR="0;32"  
LOGO="fedora-logo-icon"  
CPE_NAME="cpe:/o:rocky:rocky:9::baseos"  
HOME_URL="https://rockylinux.org/"  
BUG_REPORT_URL="https://bugs.rockylinux.org/"  
SUPPORT_END="2032-05-31"  
ROCKY_SUPPORT_PRODUCT="Rocky-Linux-9"  
ROCKY_SUPPORT_PRODUCT_VERSION="9.3"  
REDHAT_SUPPORT_PRODUCT="Rocky Linux"  
REDHAT_SUPPORT_PRODUCT_VERSION="9.3"  
[shahab@ShahRocky ~]$
```

Also can use **uname -a**



```
[shahab@ShahRocky ~]$ uname -a  
Linux ShahRocky 5.14.0-362.18.1.el9_3.x86_64 #1 SMP PREEMPT_DYNAMIC Wed Jan 24 23:11:18 UTC 2024 x86_64 x86_64 x86_64 GNU/Linux  
[shahab@ShahRocky ~]$
```

Then we update the system using our **dnf** repository



```
shahab@ShahRocky:~ — sudo dnf update -y  
[shahab@ShahRocky ~]$ sudo dnf update -y  
[sudo] password for shahab:
```

Then we **reboot**

We will use one common method which is using **NetworkManager**.

Check if it is installed, most of the time is installed by default in the RockyLinux

- `sudo rpm -q NetworkManager`
- `sudo systemctl enable NetworkManager`
- `sudo systemctl start NetworkManager`
- `sudo systemctl status NetworkManager`

```
[shahab@ShahRocky ~]$ sudo rpm -q NetworkManager
NetworkManager-1.44.0-4.el9_3.x86_64
[shahab@ShahRocky ~]$ sudo systemctl enable NetworkManager
^[[A[shahab@ShahRocky ~]$ sudo systemctl start NetworkManager
[shahab@ShahRocky ~]$
```

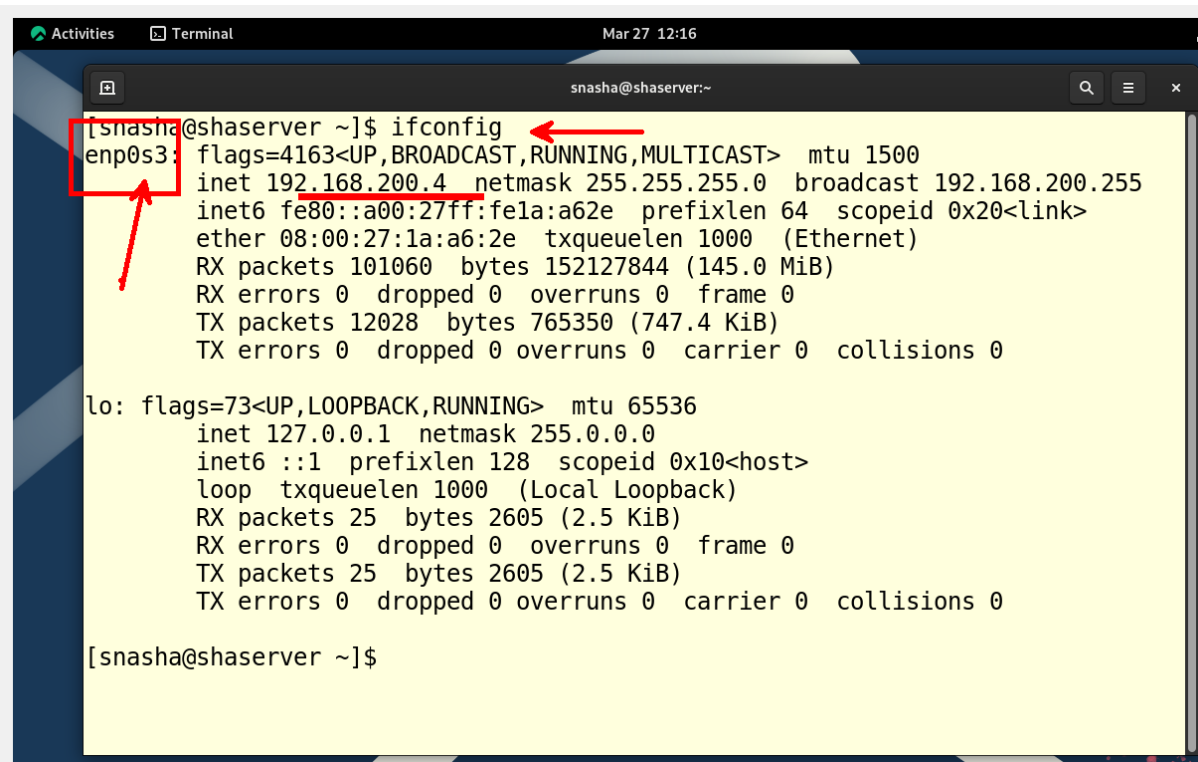
```
[shahab@ShahRocky ~]$ sudo systemctl status NetworkManager
● NetworkManager.service - Network Manager
   Loaded: loaded (/usr/lib/systemd/system/NetworkManager.service; enabled; preset: enabled)
   Active: active (running) since Mon 2024-02-19 21:28:19 +08; 6min ago
     Docs: man:NetworkManager(8)
    Main PID: 1108 (NetworkManager)
      Tasks: 3 (limit: 22342)
     Memory: 11.6M
        CPU: 191ms
    CGroup: /system.slice/NetworkManager.service
            └─1108 /usr/sbin/NetworkManager --no-daemon

Feb 19 21:28:20 ShahRocky NetworkManager[1108]: <info> [1708349300.4564] policy: set 'enp0s3' (enp0s3) as default for IP
Feb 19 21:28:20 ShahRocky NetworkManager[1108]: <info> [1708349300.4647] device (enp0s3): state change: ip-config -> ip
Feb 19 21:28:20 ShahRocky NetworkManager[1108]: <info> [1708349300.4682] device (enp0s3): state change: ip-check -> sec
Feb 19 21:28:20 ShahRocky NetworkManager[1108]: <info> [1708349300.4687] device (enp0s3): state change: secondaries ->
Feb 19 21:28:20 ShahRocky NetworkManager[1108]: <info> [1708349300.4693] manager: NetworkManager state is now CONNECTED
Feb 19 21:28:20 ShahRocky NetworkManager[1108]: <info> [1708349300.4698] device (enp0s3): Activation: successful, devic
Feb 19 21:28:20 ShahRocky NetworkManager[1108]: <info> [1708349300.4705] manager: NetworkManager state is now CONNECTED
Feb 19 21:28:20 ShahRocky NetworkManager[1108]: <info> [1708349300.4708] manager: startup complete
Feb 19 21:28:25 ShahRocky NetworkManager[1108]: <info> [1708349305.1078] agent-manager: agent[5490b4206abd56f6,:1.29/or
Feb 19 21:29:29 ShahRocky NetworkManager[1108]: <info> [1708349369.9394] agent-manager: agent[704df062074c90a9,:1.74/or
lines 1-21/21 (END)
```

Next, we can use CLI to execute commands related to the network interface.

To check the current network address configuration, we use the command, make a note of your Rocky IP address (192.168.200.4) and your network interface name (enp0s3)

- **ifconfig**



```
[snasha@shaserver ~]$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.200.4 netmask 255.255.255.0 broadcast 192.168.200.255
    inet6 fe80::a00:27ff:fela:a62e prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:1a:a6:2e txqueuelen 1000 (Ethernet)
    RX packets 101060 bytes 152127844 (145.0 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 12028 bytes 765350 (747.4 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 25 bytes 2605 (2.5 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 25 bytes 2605 (2.5 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[snasha@shaserver ~]$
```

To check for other information about the network

- **sudo nmcli general status**
- **sudo nmcli device status**
- **sudo ls -l /etc/NetworkManager/system-connections**
- **sudo nano /etc/NetworkManager/system-connections/enp0s3.nmconnection**

```
shahab@ShahRocky:~$ sudo nmcli general status
STATE      CONNECTIVITY  WIFI-HW  WIFI    WWAN-HW  WWAN
connected  full          missing  enabled  missing  enabled
[shahab@ShahRocky ~]$ sudo nmcli dev status
DEVICE  TYPE      STATE      CONNECTION
enp0s3  ethernet  connected  enp0s3
lo       loopback  connected (externally)  lo
[shahab@ShahRocky ~]$ sudo ls -l /etc/NetworkManager/system-connections/
total 4
-rw-r--r-- 1 root root 290 Jan 27 14:58 enp0s3.nmconnection
[shahab@ShahRocky ~]$ sudo nano /etc/NetworkManager/system-connections/enp0s3.nmconnection
```

We can add the IP address of our DNS server as one example (google DNS IP address)

Note: address1=192.168.200.4/24

Our Default router is 192.168.200.1

Our server also will act as a DNS server (next lab session we will set the DNS at the Rocky server)

```
GNU nano 5.6.1 /etc/NetworkManager/system-connections/enp0s3.nmconnection
[connection]
id=enp0s3
uuid=cf269c8a-4c59-339c-bef7-d3ec997cf7bd
type=ethernet
autoconnect-priority=-999
interface-name=enp0s3
timestamp=1711420506

[ethernet]

[ipv4]
address1=192.168.200.4/24,192.168.200.1
dns=8.8.8.8;8.8.4.4;192.168.200.4;
ignore-auto-dns=true
method=manual

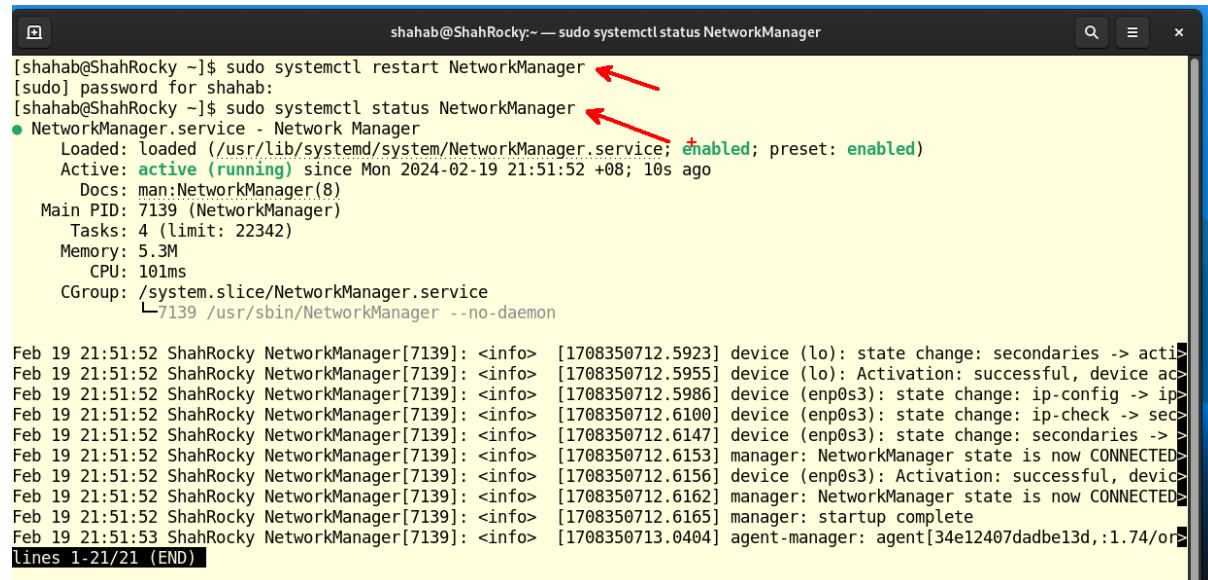
[ipv6]
addr-gen-mode=eui64
method=auto

[proxy]

[ Read 21 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut
^X Exit      ^R Read File  ^\ Replace    ^U Paste
^_          ^T Execute    ^C Location
           ^J Justify    ^_ Go To Line
```

Then we restart

- `sudo systemctl restart NetworkManager`
- `sudo systemctl status NetworkManager`



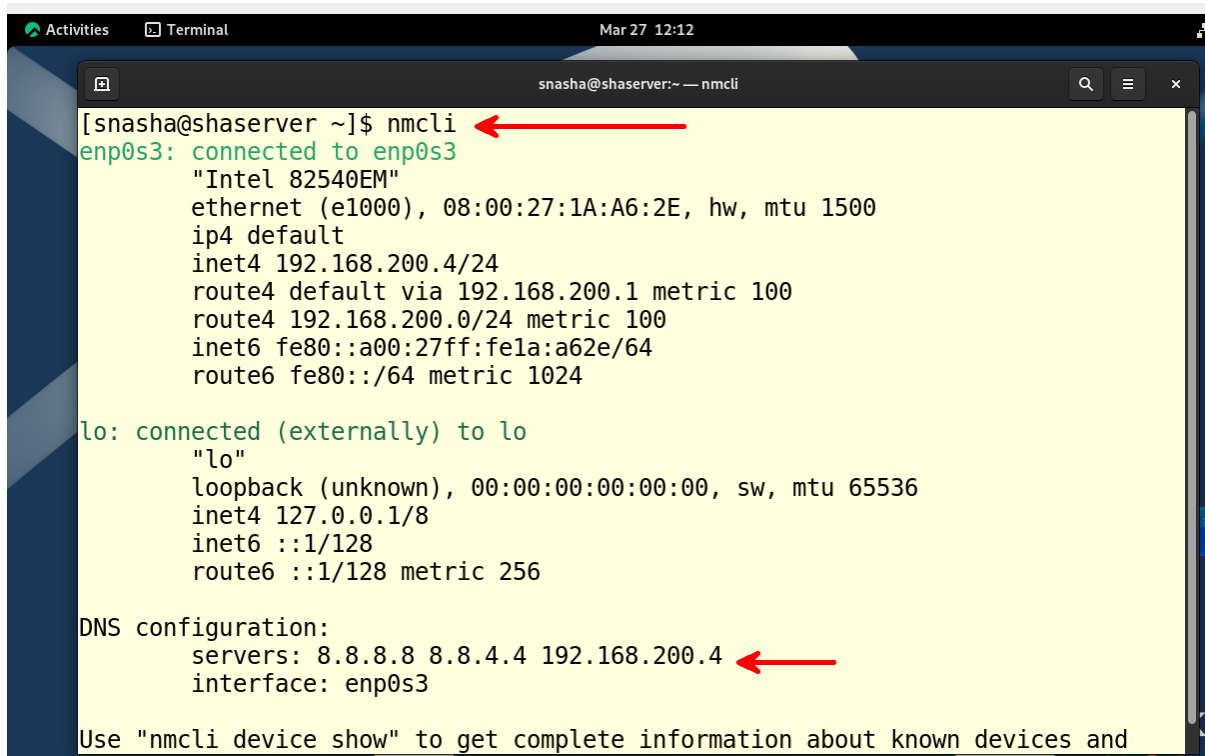
The screenshot shows a terminal window titled "shahab@ShahRocky:~ — sudo systemctl status NetworkManager". The user enters the command `sudo systemctl restart NetworkManager`, followed by `sudo systemctl status NetworkManager`. The status output shows that the service is active and running. Below the status output, there is a log of events from the NetworkManager daemon, including device state changes and successful connections.

```
[shahab@ShahRocky ~]$ sudo systemctl restart NetworkManager
[sudo] password for shahab:
[shahab@ShahRocky ~]$ sudo systemctl status NetworkManager
● NetworkManager.service - Network Manager
   Loaded: loaded (/usr/lib/systemd/system/NetworkManager.service; +enabled; preset: enabled)
   Active: active (running) since Mon 2024-02-19 21:51:52 +08; 10s ago
     Docs: man:NetworkManager(8)
   Main PID: 7139 (NetworkManager)
      Tasks: 4 (limit: 22342)
     Memory: 5.3M
        CPU: 101ms
    CGroup: /system.slice/NetworkManager.service
            └─7139 /usr/sbin/NetworkManager --no-daemon

Feb 19 21:51:52 ShahRocky NetworkManager[7139]: <info> [1708350712.5923] device (lo): state change: secondaries -> acti
Feb 19 21:51:52 ShahRocky NetworkManager[7139]: <info> [1708350712.5955] device (lo): Activation: successful, device ac
Feb 19 21:51:52 ShahRocky NetworkManager[7139]: <info> [1708350712.5986] device (enp0s3): state change: ip-config -> ip
Feb 19 21:51:52 ShahRocky NetworkManager[7139]: <info> [1708350712.6100] device (enp0s3): state change: ip-check -> sec
Feb 19 21:51:52 ShahRocky NetworkManager[7139]: <info> [1708350712.6147] device (enp0s3): state change: secondaries ->
Feb 19 21:51:52 ShahRocky NetworkManager[7139]: <info> [1708350712.6153] manager: NetworkManager state is now CONNECTED
Feb 19 21:51:52 ShahRocky NetworkManager[7139]: <info> [1708350712.6156] device (enp0s3): Activation: successful, devic
Feb 19 21:51:52 ShahRocky NetworkManager[7139]: <info> [1708350712.6162] manager: NetworkManager state is now CONNECTED
Feb 19 21:51:52 ShahRocky NetworkManager[7139]: <info> [1708350712.6165] manager: startup complete
Feb 19 21:51:53 ShahRocky NetworkManager[7139]: <info> [1708350713.0404] agent-manager: agent[34e12407dadbe13d,:1.74/or
lines 1-21/21 (END)
```

Then we run

- **nmcli (to see changes taking effect)**



```
[snasha@shaserver ~]$ nmcli
enp0s3: connected to enp0s3
    "Intel 82540EM"
    ethernet (e1000), 08:00:27:1A:A6:2E, hw, mtu 1500
    ip4 default
    inet4 192.168.200.4/24
    route4 default via 192.168.200.1 metric 100
    route4 192.168.200.0/24 metric 100
    inet6 fe80::a00:27ff:fela:a62e/64
    route6 fe80::/64 metric 1024

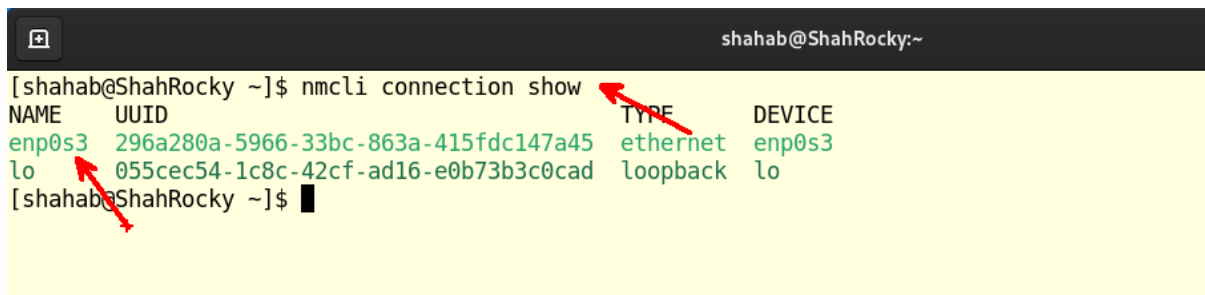
lo: connected (externally) to lo
    "lo"
    loopback (unknown), 00:00:00:00:00:00, sw, mtu 65536
    inet4 127.0.0.1/8
    inet6 ::1/128
    route6 ::1/128 metric 256

DNS configuration:
    servers: 8.8.8.8 8.8.4.4 192.168.200.4
    interface: enp0s3

Use "nmcli device show" to get complete information about known devices and
```

We can do with the CLI command as well, we need to see first the name of our connection

- **nmcli connection show**
- **nmcli connection show enp0s3 (in this case enp0s3)**



```
[shahab@ShahRocky ~]$ nmcli connection show
NAME      UUID                                  TYPE      DEVICE
enp0s3    296a280a-5966-33bc-863a-415fdc147a45 ethernet  enp0s3
lo        055cec54-1c8c-42cf-ad16-e0b73b3c0cad loopback   lo
[shahab@ShahRocky ~]$
```

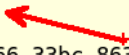



```
[shahab@ShahRocky ~]$ nmcli connection show
```

NAME	UUID	TYPE	DEVICE
enp0s3	296a280a-5966-33bc-863a-415fdc147a45	ethernet	enp0s3
lo	055cec54-1c8c-42cf-ad16-e0b73b3c0cad	loopback	lo

```
[shahab@ShahRocky ~]$ nmcli connection show enp0s3
```

```
connection.id: enp0s3
connection.uuid: 296a280a-5966-33bc-863a-415fdc147a45
connection.stable-id: --
connection.type: 802-3-ethernet
connection.interface-name: enp0s3
connection.autoconnect: yes
connection.autoconnect-priority: -999
connection.autoconnect-retries: -1 (default)
connection.multi-connect: 0 (default)
connection.auth-retries: -1
connection.timestamp: 1708350712
connection.permissions: --
connection.zone: --
connection.master: --
connection.slave-type: --
connection.autoconnect-slaves: -1 (default)
connection.secondaries: --
connection.gateway-ping-timeout: 0
connection.metered: unknown
connection.lldp: default
connection.mdns: -1 (default)
```



Ubuntu Client: Network Interface Config

Static IP configuration for our interface using nmcli (the same as Rocky Linux)

We will use one common method which is using NetworkManager.

The common method to set a static IP address on Ubuntu 22.04 LTS is by using the **nmcli tool**.

- `su -` (or use `sudo -i`)
- `apt-get update && apt-get upgrade`

In case you can't log in as a root user continue using the sudo command:

- `sudo apt-get update && apt-get upgrade`

If you can't log in as a root user then we must use sudo

- `sudo apt install network-manager`

however, is installed most of the time by default and we can the following commands:

- `sudo systemctl enable NetworkManager`
- `sudo systemctl start NetworkManager`
- `sudo systemctl status NetworkManager`

```

shah@shahUbu:~/Desktop$ sudo systemctl status NetworkManager
● NetworkManager.service - Network Manager
   Loaded: loaded (/lib/systemd/system/NetworkManager.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2024-02-19 21:13:37 +08; 1 day 20h ago
     Docs: man:NetworkManager(8)
   Main PID: 611 (NetworkManager)
    Tasks: 3 (limit: 4598)
   Memory: 10.8M
      CPU: 501ms
   CGroup: /system.slice/NetworkManager.service
           └─611 /usr/sbin/NetworkManager --no-daemon

Feb 19 21:13:42 shahUbu NetworkManager[611]: <info> [1708348422.7839] manager: >
Feb 19 21:13:42 shahUbu NetworkManager[611]: <info> [1708348422.7843] manager: >
Feb 19 21:13:42 shahUbu NetworkManager[611]: <info> [1708348422.7844] policy: >
Feb 19 21:13:42 shahUbu NetworkManager[611]: <info> [1708348422.7852] device ( >
Feb 19 21:13:42 shahUbu NetworkManager[611]: <info> [1708348422.7896] manager: >
Feb 19 21:13:44 shahUbu NetworkManager[611]: <info> [1708348424.1233] manager: >
Feb 19 21:13:45 shahUbu NetworkManager[611]: <info> [1708348425.3060] modem-ma >
Feb 19 21:13:45 shahUbu NetworkManager[611]: <info> [1708348425.3531] modem-ma >
Feb 21 17:29:37 shahUbu NetworkManager[611]: <info> [1708507777.0486] agent-ma >
Feb 21 17:30:02 shahUbu NetworkManager[611]: <info> [1708507802.0172] agent-ma >
lines 1-21/21 (END)

```

To check the current configuration, we use the command

- **ifconfig**

```

snasha@shaclient: ~/Desktop
snasha@shaclient:~/Desktop$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.200.5 netmask 255.255.255.0 broadcast 192.168.200.255
    inet6 fe80::16bb:6fb0:aa1a:1498 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:51:40:35 txqueuelen 1000 (Ethernet)
    RX packets 39 bytes 9852 (9.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 131 bytes 14487 (14.4 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 214 bytes 16844 (16.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 214 bytes 16844 (16.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

snasha@shaclient:~/Desktop$

```

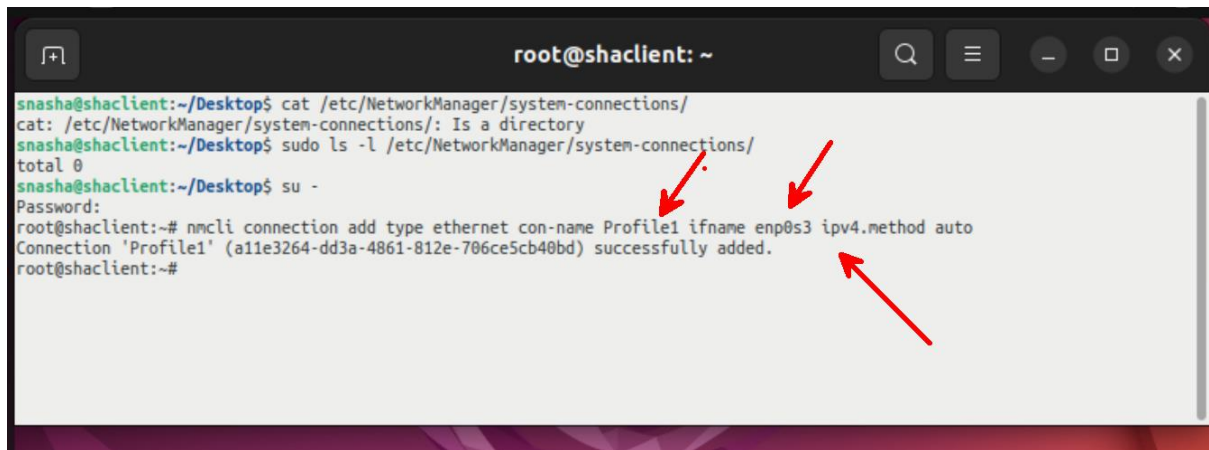
To check for other information about the network

- `sudo nmcli general status`
- `sudo nmcli dev status`
- `sudo ls -l /etc/NetworkManager/system-connections`

IMPORTANT STEP TO DO:

The nmcli configuration profiles are located in `/etc/NetworkManager/system-connections/`. Since that folder is empty by default after install, we will need to create a connection profile file called "*Profile1*" and assign it to the device `enp0s3`. Since there is only one network card, we will have to switch connection profiles.

- `Nmcli connection add type ethernet con-name Profile1 ifname enp0s3 ipv4.method auto`

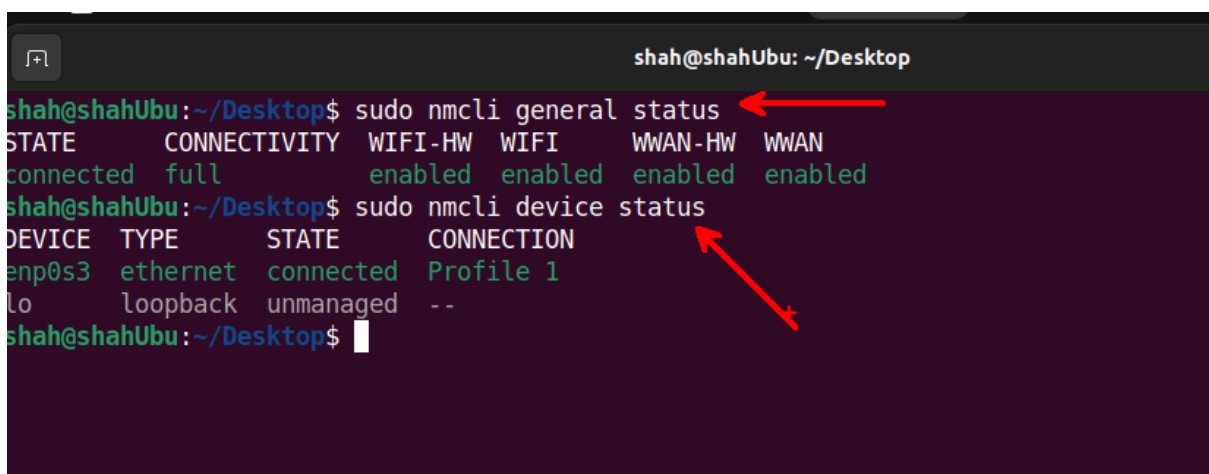


A terminal window titled 'root@shaclient: ~' showing the following commands and output:

```
snasha@shaclient:~/Desktop$ cat /etc/NetworkManager/system-connections/
cat: /etc/NetworkManager/system-connections/: Is a directory
snasha@shaclient:~/Desktop$ sudo ls -l /etc/NetworkManager/system-connections/
total 0
snasha@shaclient:~/Desktop$ su -
Password:
root@shaclient:~# nmcli connection add type ethernet con-name Profile1 ifname enp0s3 ipv4.method auto
Connection 'Profile1' (a11e3264-dd3a-4861-812e-706ce5cb40bd) successfully added.
root@shaclient:~#
```

Three red arrows point to the directory path, the interface name 'enp0s3', and the command 'nmcli'.

- `sudo nmcli general status`

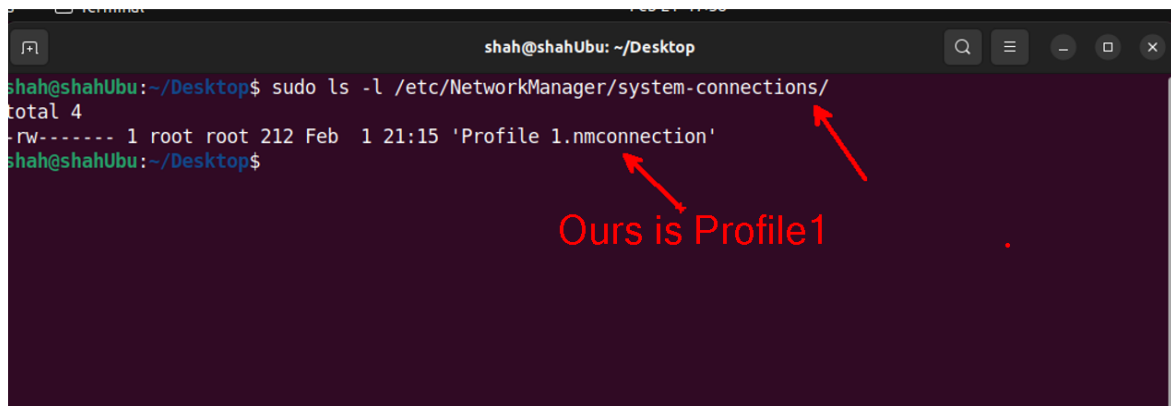


A terminal window titled 'shah@shahUbu: ~/Desktop' showing the following commands and output:

```
shah@shahUbu:~/Desktop$ sudo nmcli general status
STATE      CONNECTIVITY  WIFI-HW  WIFI    WWAN-HW  WWAN
connected  full          enabled  enabled  enabled  enabled
shah@shahUbu:~/Desktop$ sudo nmcli device status
DEVICE  TYPE      STATE      CONNECTION
enp0s3  ethernet  connected  Profile 1
lo      loopback  unmanaged  --
shah@shahUbu:~/Desktop$
```

Two red arrows point to the 'nmcli' command in both the 'general status' and 'device status' commands.

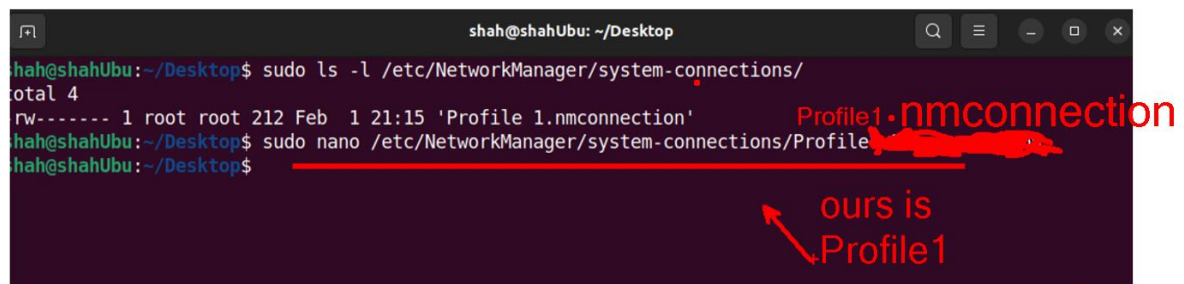
- `sudo ls -l /etc/NetworkManager/system-connections/`



```
shah@shahUbu: ~/Desktop
shah@shahUbu:~/Desktop$ sudo ls -l /etc/NetworkManager/system-connections/
total 4
-rw- - - - - 1 root root 212 Feb  1 21:15 'Profile 1.nmconnection'
shah@shahUbu:~/Desktop$
```

Ours is Profile1

- `sudo nano /etc/NetworkManager/system-connections/Profile1.nmconnection`




```
shah@shahUbu: ~/Desktop
shah@shahUbu:~/Desktop$ sudo ls -l /etc/NetworkManager/system-connections/
total 4
-rw- - - - - 1 root root 212 Feb  1 21:15 'Profile 1.nmconnection'
shah@shahUbu:~/Desktop$ sudo nano /etc/NetworkManager/system-connections/Profile1.nmconnection
shah@shahUbu:~/Desktop$
```

Profile1.nmconnection

ours is Profile1

We can add the DNS (**our Rocky Server IP**) in here for example



```
/etc/NetworkManager/system-connections/Profile1.nmconnection
[connection]
id=Profile1
uuid=a11e3264-dd3a-4861-812e-706ce5cb40bd
type=ethernet
interface-name=enp0s3

[ethernet]

[ipv4]
dns=8.8.8.8;8.8.4.4;192.168.200.4;
method=auto

[ipv6]
addr-gen-mode=stable-privacy
method=auto

[proxy]

[ Read 17 lines ]
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute  ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify  ^_ Go To Line
```

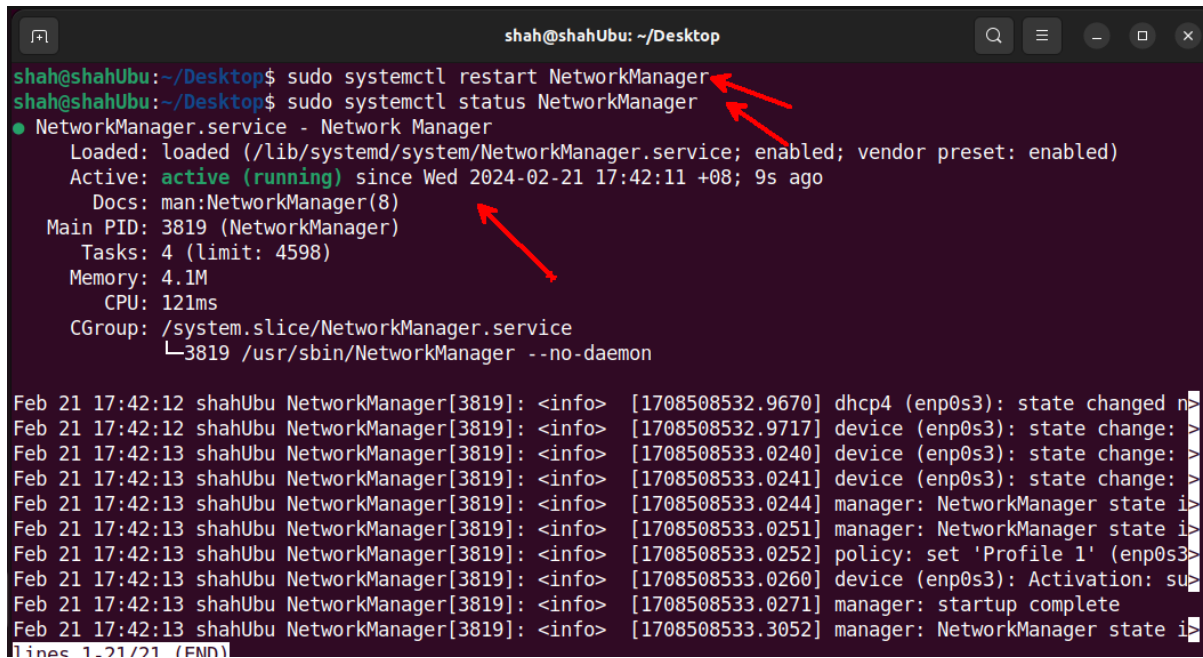
The IP address
of our Rocky
server .

Exit root

- **exit**

Then we restart

- `sudo systemctl restart NetworkManager`
- `sudo systemctl status NetworkManager`
- `reboot`



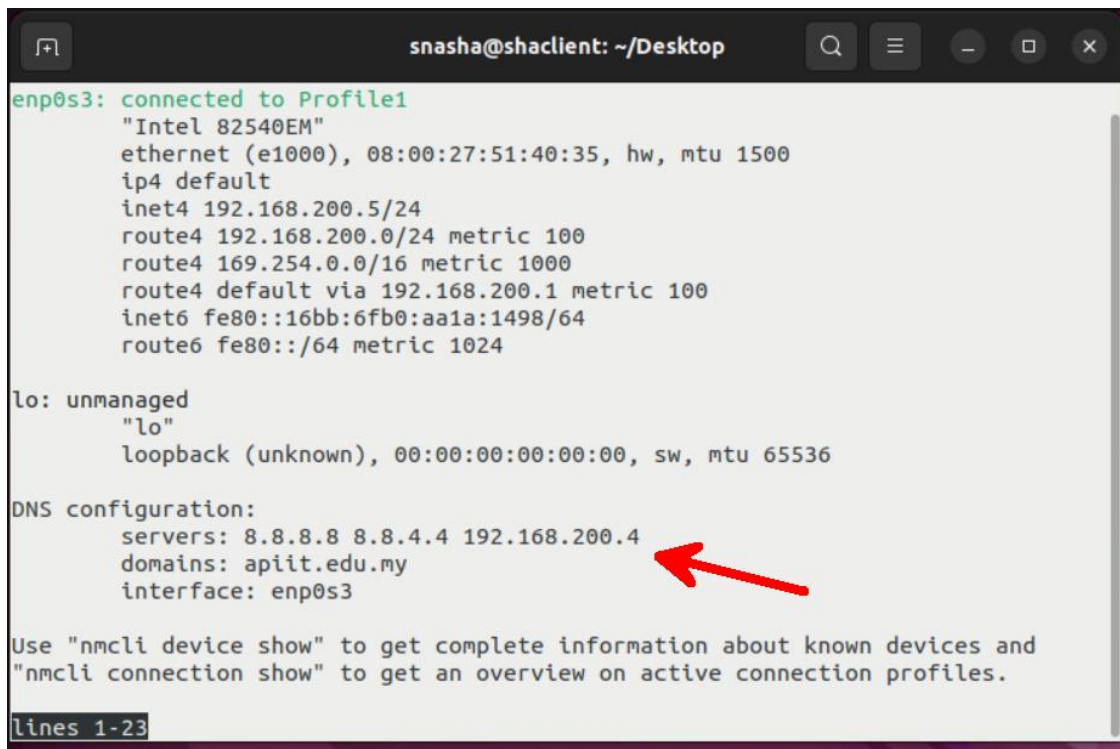
A terminal window titled 'shah@shahUbu: ~/Desktop' showing the execution of two commands. The first command, 'sudo systemctl restart NetworkManager', is followed by the second, 'sudo systemctl status NetworkManager'. The output of the second command shows that NetworkManager.service is loaded and active (running) since Wednesday, 2024-02-21 at 17:42:11 +08, 9 seconds ago. It lists details such as Docs, Main PID (3819), Tasks (4), Memory (4.1M), CPU (121ms), and CGroup. Below this, a series of log messages from NetworkManager[3819] are displayed, showing the state changes for the enp0s3 interface and the manager's startup process. Red arrows point to the command lines and the 'Active: active (running)' status.

```
shah@shahUbu:~/Desktop$ sudo systemctl restart NetworkManager
shah@shahUbu:~/Desktop$ sudo systemctl status NetworkManager
● NetworkManager.service - Network Manager
   Loaded: loaded (/lib/systemd/system/NetworkManager.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2024-02-21 17:42:11 +08; 9s ago
     Docs: man:NetworkManager(8)
    Main PID: 3819 (NetworkManager)
      Tasks: 4 (limit: 4598)
     Memory: 4.1M
        CPU: 121ms
    CGroup: /system.slice/NetworkManager.service
            └─3819 /usr/sbin/NetworkManager --no-daemon

Feb 21 17:42:12 shahUbu NetworkManager[3819]: <info> [1708508532.9670] dhcp4 (enp0s3): state changed n
Feb 21 17:42:12 shahUbu NetworkManager[3819]: <info> [1708508532.9717] device (enp0s3): state change: >
Feb 21 17:42:13 shahUbu NetworkManager[3819]: <info> [1708508533.0240] device (enp0s3): state change: >
Feb 21 17:42:13 shahUbu NetworkManager[3819]: <info> [1708508533.0241] device (enp0s3): state change: >
Feb 21 17:42:13 shahUbu NetworkManager[3819]: <info> [1708508533.0244] manager: NetworkManager state i
Feb 21 17:42:13 shahUbu NetworkManager[3819]: <info> [1708508533.0251] manager: NetworkManager state i
Feb 21 17:42:13 shahUbu NetworkManager[3819]: <info> [1708508533.0252] policy: set 'Profile 1' (enp0s3>
Feb 21 17:42:13 shahUbu NetworkManager[3819]: <info> [1708508533.0260] device (enp0s3): Activation: su
Feb 21 17:42:13 shahUbu NetworkManager[3819]: <info> [1708508533.0271] manager: startup complete
Feb 21 17:42:13 shahUbu NetworkManager[3819]: <info> [1708508533.3052] manager: NetworkManager state i
lines 1-21/21 (FND)
```

Then we run

- **nmcli** (to see changes taking effect)

A terminal window titled 'snasha@shaclient: ~/Desktop' showing the output of the 'nmcli' command. The output displays details for 'enp0s3: connected to Profile1', including hardware information, IP configuration, routes, and DNS settings. A red arrow points to the 'domains: apiit.edu.my' line. At the bottom, it says 'lines 1-23'.

```
enp0s3: connected to Profile1
"Intel 82540EM"
ethernet (e1000), 08:00:27:51:40:35, hw, mtu 1500
ip4 default
inet4 192.168.200.5/24
route4 192.168.200.0/24 metric 100
route4 169.254.0.0/16 metric 1000
route4 default via 192.168.200.1 metric 100
inet6 fe80::16bb:6fb0:aa1a:1498/64
route6 fe80::/64 metric 1024

lo: unmanaged
"lo"
loopback (unknown), 00:00:00:00:00:00, sw, mtu 65536

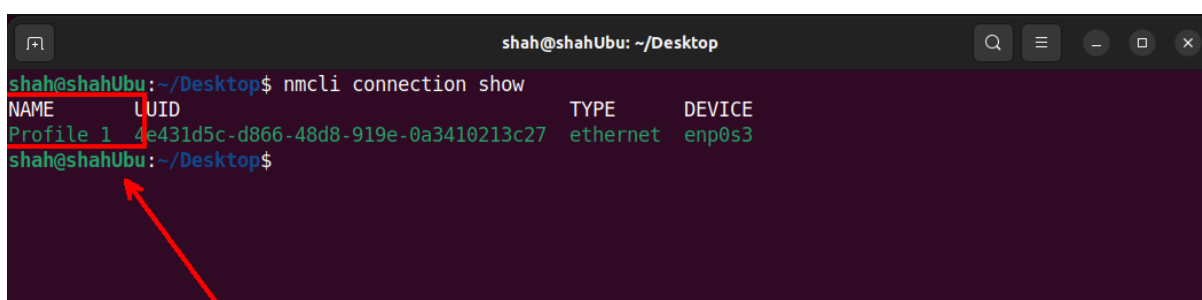
DNS configuration:
servers: 8.8.8.8 8.8.4.4 192.168.200.4
domains: apiit.edu.my
interface: enp0s3

Use "nmcli device show" to get complete information about known devices and
"nmcli connection show" to get an overview on active connection profiles.

lines 1-23
```

We can do this with the CLI command as well, we need to see first the name of our connection

- **nmcli connection show**
- **nmcli connection show Profile** (in this case Profile1)

A terminal window titled 'shah@shahUbu: ~/Desktop' showing the output of the 'nmcli connection show' command. The output is a table with columns NAME, UUID, TYPE, and DEVICE. The first row is 'Profile 1' with a long UUID, 'ethernet' type, and 'enp0s3' device. A red box highlights the 'Profile 1' name, and a red arrow points to it from below.

```
shah@shahUbu:~/Desktop$ nmcli connection show
NAME          UUID                                  TYPE      DEVICE
Profile 1     4e431d5c-d866-48d8-919e-0a3410213c27  ethernet  enp0s3
shah@shahUbu:~/Desktop$
```


Alternative commands to check the IP

- Nmcli
- Ip addr
- Ifconfig

```
shah@shahUbu: ~/Desktop
shah@shahUbu:~/Desktop$ ip addr
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: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:6e:99:d7 brd ff:ff:ff:ff:ff:ff
    inet 192.168.100.4/24 brd 192.168.100.255 scope global dynamic noprefixroute enp0s3
        valid_lft 302sec preferred_lft 302sec
    inet6 fe80::1bcc:afd7:4b47:e68/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
shah@shahUbu:~/Desktop$
```

```
shah@shahUbu: ~/Desktop
shah@shahUbu:~/Desktop$ nmcli
enp0s3: connected to Profile 1
    "Intel 82540EM"
    ethernet (e1000), 08:00:27:6E:99:D7, hw, mtu 1500
    ip4 default
    inet4 192.168.100.4/24
    route4 default via 192.168.100.1 metric 100
    route4 169.254.0.0/16 metric 1000
    route4 192.168.100.0/24 metric 100
    inet6 fe80::1bcc:afd7:4b47:e68/64
    route6 fe80::/64 metric 1024

lo: unmanaged
    "lo"
    loopback (unknown), 00:00:00:00:00:00, sw, mtu 65536

DNS configuration:
    servers: 192.168.100.6 8.8.8.8 8.8.4.4
    interface: enp0s3

Use "nmcli device show" to get complete information about known devices and
"nmcli connection show" to get an overview on active connection profiles.

Consult nmcli(1) and nmcli-examples(7) manual pages for complete usage details.
```

```
shah@shahUbu: ~/Desktop
shah@shahUbu:~/Desktop$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.100.4 netmask 255.255.255.0 broadcast 192.168.100.255
    inet6 fe80::1bcc:afd7:4b47:e68 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:6e:99:d7 txqueuelen 1000 (Ethernet)
    RX packets 16324 bytes 22557188 (22.5 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 4229 bytes 466159 (466.1 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 127 bytes 11102 (11.1 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 127 bytes 11102 (11.1 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```