


```
(niayaf@niayaf)-[~]
└─$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fd00::a00:27ff:fed4:9288 prefixlen 64 scopeid 0<global>
    inet6 fe80::a00:27ff:fed4:9288 prefixlen 64 scopeid 0<link>
    inet6 fd00::db40:8775:dee0:3909 prefixlen 64 scopeid 0<global>
    ether 08:00:27:d4:92:88 txqueuelen 1000 (Ethernet)
    RX packets 32771 bytes 40550161 (38.6 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 11179 bytes 1704120 (1.6 MiB)
    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 0<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 8 bytes 480 (480.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 8 bytes 480 (480.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

2. Use the correct **route** command to display the current routing table.

```
(niayaf@niayaf)-[~]
└─$ route
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
default 10.0.2.2 0.0.0.0 UG 100 0 0 eth0
10.0.2.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0
```

3. Use the **netstat** command to list current TCP connections.

```
(niayaf@niayaf)-[~]
└─$ netstat -t
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address Foreign Address State
```

4. Use the **ping** command to determine if the **ubuntu.com** system is accessible via the network.

(Use the correct option to send 10 ping requests only.)

```
(niayaf@niayaf)-[~]
└─$ ping -c 10 ubuntu.com
PING ubuntu.com (185.125.190.29) 56(84) bytes of data:
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=1 ttl=255 time=87.6 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=2 ttl=255 time=87.5 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=3 ttl=255 time=89.4 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=4 ttl=255 time=89.0 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=5 ttl=255 time=88.4 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=6 ttl=255 time=90.7 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=7 ttl=255 time=92.2 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=8 ttl=255 time=91.1 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=9 ttl=255 time=90.8 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=10 ttl=255 time=90.0 ms

— ubuntu.com ping statistics —
10 packets transmitted, 10 received, 0% packet loss, time 9166ms
rtt min/avg/max/mdev = 87.538/89.678/92.198/1.481 ms
```

5. Use the **host** command to perform a DNS query on www.odu.edu

```
(niayaf@niayaf)-[~]
└─$ host www.odu.edu
www.odu.edu has address 35.170.140.174
```

6. Use the **cat** command to display the contents of the file that contains the system's hostname.

```
(niayaf@niayaf)-[~]
└─$ cat /etc/hostname
niayaf
```

7. Use the **cat** command to display the contents of the file that contains the DNS servers for this system.

```
(niayaf@niayaf)-[~]
└─$ cat /etc/nsswitch.conf
# /etc/nsswitch.conf
#
# Example configuration of GNU Name Service Switch functionality.
# If you have the `glibc-doc-reference' and `info' packages installed, try:
# `info libc "Name Service Switch"' for information about this file.

passwd:          files systemd winbind
group:           files systemd winbind
shadow:          files systemd
gshadow:         files systemd

hosts:           files mdns4_minimal [NOTFOUND=return] dns
networks:        files

protocols:       db files
services:        db files
ethers:          db files
rpc:             db files

netgroup:        nis
```

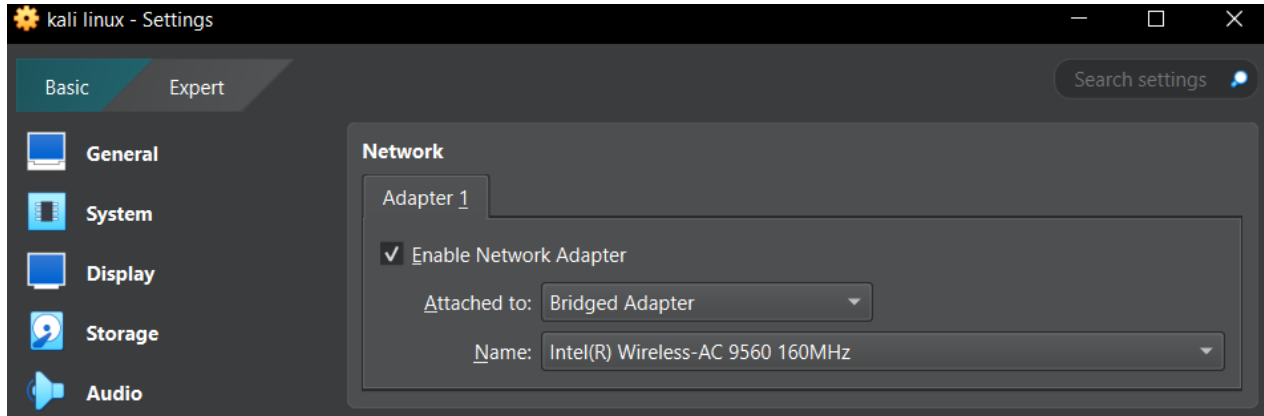
8. Edit the same file you display in the previous step, set the system's hostname to your MIDAS ID permanently. Reboot system and **repeat step 6**.

```
(niayaf@niayaf)-[~]
└─$ sudo vim /etc/hostname
```

```
(niayaf@nfull005)-[~]
└─$
```

Task B – A Different Network Setting (3 * 20 = 60 Points)

9. Change the VM network connection from NAT to the bridge mode (you will lose your Internet connection if you are connected to the ODU campus Wi-Fi network, but it is okay).



10. Reboot your system, then repeat Steps 1 – 7 in Task A.

11. Highlight the differences at the end of each step and discuss what do you find.

```
(niayaf@nfull005)-[~]
└─$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.1.201 netmask 255.255.255.0 broadcast 192.168.1.255
    inet6 2600:4040:1646:5700:a00:27ff:fed4:9288 prefixlen 64 scopeid 0<global>
    inet6 2600:4040:1646:5700:afe4:58ed:e2fb:dfec prefixlen 64 scopeid 0<global>
    inet6 fe80::a00:27ff:fed4:9288 prefixlen 64 scopeid 0<link>
    ether 08:00:27:d4:92:88 txqueuelen 1000 (Ethernet)
    RX packets 828 bytes 54836 (53.5 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 80 bytes 10118 (9.8 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 0<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 8 bytes 480 (480.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 8 bytes 480 (480.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

(niayaf@nfull005)-[~]
└─$ route
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
default CR1000A.mynetwo 0.0.0.0 UG 100 0 0 eth0
192.168.1.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0

(niayaf@nfull005)-[~]
└─$ netstat -t
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address Foreign Address State
```

The IP addresses and broadcast addresses are different. The RX and TX packet byte data is different as well as the default gateway.

```
(niayaf@nfull005)-[~]
└─$ ping -c 10 ubuntu.com
PING ubuntu.com (2620:2d:4000:1::27) 56 data bytes

— ubuntu.com ping statistics —
10 packets transmitted, 0 received, 100% packet loss, time 9212ms
```

It was unable to send or receive any packets from the ubuntu website, resulting in 100% packet loss.

```
(niayaf@nfull005)-[~]
└─$ host www.odu.edu
www.odu.edu has address 35.170.140.174
```

```
(niayaf@nfull005)-[~]
└─$ cat /etc/hostname
nfull005

(niayaf@nfull005)-[~]
└─$ cat /etc/nsswitch.conf
# /etc/nsswitch.conf
#
# Example configuration of GNU Name Service Switch functionality.
# If you have the `glibc-doc-reference' and `info' packages installed, try:
# `info libc "Name Service Switch"' for information about this file.

passwd:          files systemd winbind
group:           files systemd winbind
shadow:          files systemd
gshadow:         files systemd

hosts:           files mdns4_minimal [NOTFOUND=return] dns
networks:        files

protocols:       db files
services:        db files
ethers:          db files
rpc:             db files

netgroup:        nis
```

Everything else was the same in the last 3 steps.