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CYSE 270
Assignment 11

Task A – Explore Network Configurations (8 * 5 = 40 Points)

1. Use the correct ifconfig command to display the current network configuration. Highlight your IP address, MAC address, and the network mask.

```
zyron@kali: ~  
Session Actions Edit View Help  
(zyron@kali)-[~]  
└─$ 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 fd17:625c:f037:2:a00:27ff:fea8:37e5 prefixlen 64 scopeid 0x0<global>  
    inet6 fd17:625c:f037:2:f03f:10f9:744c:256f prefixlen 64 scopeid 0x0<global>  
    inet6 fe80::a00:27ff:fea8:37e5 prefixlen 64 scopeid 0x20<link>  
    ether 08:00:27:a8:37:e5 txqueuelen 1000 (Ethernet)  
    RX packets 9 bytes 3723 (3.6 KiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 29 bytes 4884 (4.7 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 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  
  
(zyron@kali)-[~]
```

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

```
(zyron@kali)-[~]  
└─$ 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.

```
(zyron@kali)-[~]  
└─$ 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.)

```
(zyron@kali)-[~]
└─$ 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=25
5 time=92.2 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=2 ttl=25
5 time=92.3 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=3 ttl=25
5 time=96.1 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=4 ttl=25
5 time=97.3 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=5 ttl=25
5 time=91.8 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=6 ttl=25
5 time=96.9 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=7 ttl=25
5 time=102 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=8 ttl=25
5 time=93.5 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=9 ttl=25
5 time=106 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=10 ttl=25
55 time=99.7 ms

— ubuntu.com ping statistics —
10 packets transmitted, 10 received, 0% packet loss, time 13149ms
rtt min/avg/max/mdev = 91.828/96.765/105.744/4.406 ms
```

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

```
(zyron@kali)-[~]
└─$ host www.odu.edu
;; communications error to 209.192.249.101#53: timed out
;; communications error to 209.192.249.101#53: timed out
www.odu.edu has address 35.170.140.174
;; communications error to 209.192.249.101#53: timed out
;; communications error to 209.192.249.101#53: timed out
;; communications error to 209.192.249.101#53: timed out
;; communications error to 209.192.249.101#53: timed out
;; communications error to 209.192.249.101#53: timed out
;; communications error to 209.192.249.101#53: timed out
```

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

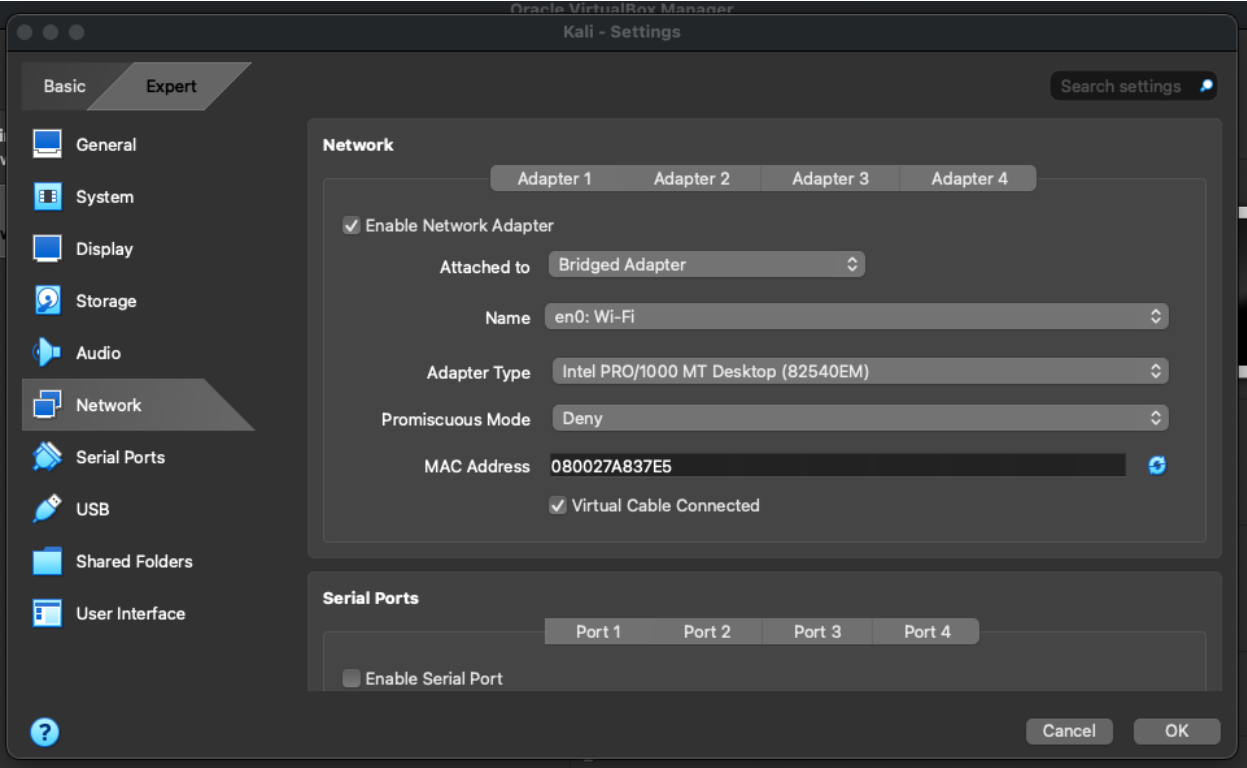
```
(zyron@kali)-[~]
└─$ cat /etc/hostname
kali
```



```
(zyron@zsumu001)-[~]  
$ cat /etc/hostname  
zsumu001
```

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

1. 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).



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

1. Use the correct ifconfig command to display the current network configuration. Highlight your IP address, MAC address, and the network mask. The differences are with the IP addresses and broadcast address

```
(zyron@zsumu001)-[~]
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.0.37 netmask 255.255.255.0 broadcast 192.168.0.255
    inet6 2600:8805:5c0d:5e00:5608:4a28:a315:3985 prefixlen 64 scopeid 0<global>
    inet6 2600:8805:5c0d:5e00:a00:27ff:fea8:37e5 prefixlen 64 scopeid 0<global>
    inet6 2600:8805:5c0d:5e00::dab prefixlen 128 scopeid 0<global>
    inet6 fe80::a00:27ff:fea8:37e5 prefixlen 64 scopeid 0<link>
    ether 08:00:27:a8:37:e5 txqueuelen 1000 (Ethernet)
    RX packets 18 bytes 2935 (2.8 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 46 bytes 8327 (8.1 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
```

2. Use the correct route command to display the current routing table. The IP Address of the gateway has changed.

```
(zyron@zsumu001)-[~]
$ route
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
default 192.168.0.1 0.0.0.0 UG 100 0 0 eth0
192.168.0.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0
```

3. Use the netstat command to list current TCP connections. Nothing has changed.

```
(zyron@zsumu001)-[~]
$ 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.

When utilizing the ping command the difference is originally I was pinging ubuntu.com using its ipv4 address. However, when I switched it to the bridged adapter it pinged the website with its ipv6 address and it was unsuccessful.

```
(zyron@zsumu001)-[~]
$ ping -c 10 ubuntu.com
PING ubuntu.com (2620:2d:4000:1::26) 56 data bytes

— ubuntu.com ping statistics —
10 packets transmitted, 0 received, 100% packet loss, time 9200ms
```

5. Use the host command to perform a DNS query on www.odu.edu. Both were successful on performing a DNS query however when I originally use the command I got communications error, but when switching to bridged adapter I did not.

```
zyron@zsumu001: ~
Session Actions Edit View Help
(zyron@zsumu001)-[~]
$ 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. Hostname has changed to my MIDAS ID.

```
(zyron@zsumu001)-[~]
$ cat /etc/hostname
zsumu001
```

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

The difference between the two is that originally i had a nameserver with an IP address of 209.192.249.101 and then when I switched to the bridged adapter I got a nameserver in a IPV6 address of 2001:578:3f::30

```
(zyron@zsumu001)-[~]
$ cat /etc/resolv.conf
# Generated by NetworkManager
nameserver 68.105.28.11
nameserver 68.105.29.11
nameserver 2001:578:3f::30
# NOTE: the libc resolver may not support more than 3 nameservers.
# The nameservers listed below may not be recognized.
nameserver 2001:578:3f:1::30
```