

OLD DOMINION UNIVERSITY
CYSE 270 LINUX SYSTEM FOR CYBERSECURITY

Lab #11

Networking Basics

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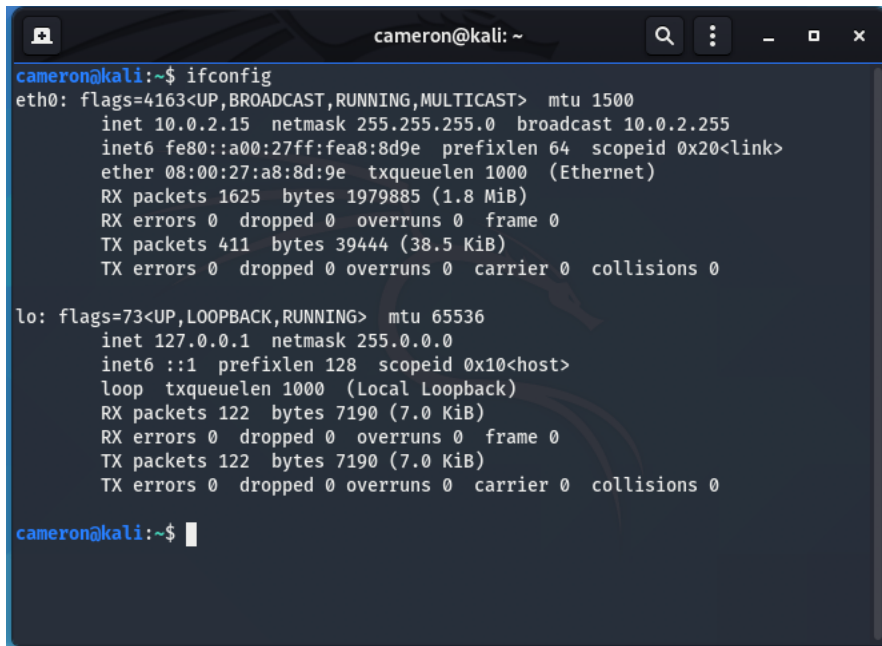
Task A – Subnetting

Category	IP Address	Binary Format
Address	75.99.120.100	01001011.01100011.01111000.01100100
Netmask	28	11111111.11111111.11111111.11110000
Network	75.99.120.96	01001011.01100011.01111000.01100000
Broadcast	75.99.120.111	01001011.01100011.01111000.01101111
First IP	75.99.120.97	01001011.01100011.01111000.01100001
Last IP	75.99.120.110	01001011.01100011.01111000.01101110
Maximum Hosts in Network	14	1110

Category	IP Address	Binary Format
Address	144.77.66.40	10010000.01001101.01000010.00101000
Netmask	18	11111111.11111111.11000000.00000000
Network	144.77.64.0	10010000.01001101.01000000.00000000
Broadcast	144.77.127.255	10010000.01001101.01111111.11111111
First IP	144.77.64.1	10010000.01001101.01000000.00000001
Last IP	144.77.127.254	10010000.01001101.01111111.11111110
Maximum Hosts in Network	16382	11111111111110

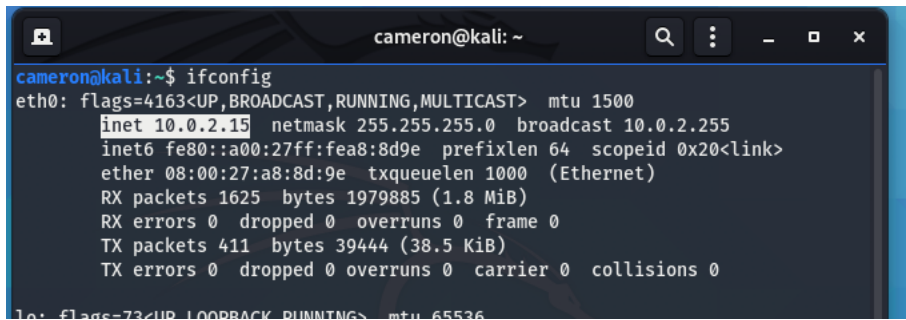
Task B – Explore Network Configurations in Kali VM

STEP 1 – I displayed the current network configurations and the highlighted the IP Address, MAC Address, and the network mask.



```
cameron@kali: ~  
cameron@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 fe80::a00:27ff:fea8:8d9e prefixlen 64 scopeid 0x20<link>  
    ether 08:00:27:a8:8d:9e txqueuelen 1000 (Ethernet)  
    RX packets 1625 bytes 1979885 (1.8 MiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 411 bytes 39444 (38.5 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 122 bytes 7190 (7.0 KiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 122 bytes 7190 (7.0 KiB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
cameron@kali:~$
```

Displaying current network configurations.



```
cameron@kali: ~  
cameron@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 fe80::a00:27ff:fea8:8d9e prefixlen 64 scopeid 0x20<link>  
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lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
```

Highlighted IP Address.

```
cameron@kali: ~  
cameron@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 fe80::a00:27ff:fea8:8d9e prefixlen 64 scopeid 0x20<link>  
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    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
```

Highlighted MAC Address.

```
cameron@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 fe80::a00:27ff:fea8:8d9e prefixlen 64 scopeid 0x20<link>  
    ether 08:00:27:a8:8d:9e txqueuelen 1000 (Ethernet)  
    RX packets 1625 bytes 1979885 (1.8 MiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 411 bytes 39444 (38.5 KiB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
```

Highlighted the network mask.

STEP 2 – Using the ifconfig command to change the IP address and then I proved that it changed.

```
cameron@kali:~$ ifconfig eth0 192.168.100.30  
SIOCSIFADDR: Operation not permitted  
SIOCSIFFLAGS: Operation not permitted  
cameron@kali:~$ sudo ifconfig eth0 192.168.100.30
```

Failed ifconfig command so I used sudo.

```
cameron@kali:~$ ifconfig eth0 192.168.100.30  
SIOCSIFADDR: Operation not permitted  
SIOCSIFFLAGS: Operation not permitted  
cameron@kali:~$ sudo ifconfig eth0 192.168.100.30  
[sudo] password for cameron:  
cameron@kali:~$
```

It worked.

```
cameron@kali:~$ ifconfig  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.100.30 netmask 255.255.255.0 broadcast 192.168.100.255  
    inet6 fe80::a00:27ff:fea8:8d9e prefixlen 64 scopeid 0x20<link>  
    ether 08:00:27:a8:8d:9e txqueuelen 1000 (Ethernet)  
    RX packets 1625 bytes 1979885 (1.8 MiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 411 bytes 39444 (38.5 KiB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Proof that it changed from before.

STEP 3 – Using the route command to display the current routing table.

```
cameron@kali:~$ route -n
Kernel IP routing table
Destination      Gateway          Genmask         Flags Metric Ref    Use Iface
cameron@kali:~$
```

Used route -n to display the table.

STEP 4 – Using the netstat command to display the current routing table.

```
cameron@kali:~$ netstat -rn
Kernel IP routing table
Destination      Gateway          Genmask         Flags  MSS Window  irtt Iface
cameron@kali:~$
```

Used netstat -rn to display the current routing table.

STEP 5 – Used the ping command to determine if the ubuntu.com system is accessible via the network.

```
cameron@kali:~$ ping -c 10 ubuntu.com
ping: ubuntu.com: Name or service not known
cameron@kali:~$
```

It was not accessible.