

Networks Lab Week 1

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Task 1

ens33

Parameter	Analysis
MTU	1500
Inet	192.168.195.130
Inet6	fe80::a5a:16e7:f0a8:a75c
MAC	00:0c:29:fa:ef:55
RX	290274
TX	126088

lo

Parameter	Analysis
MTU	65536
Inet	127.0.0.1
Inet6	::1
RX	2026
TX	2026

Task 2

```
oslab@oslab-VirtualBox:~$ ifconfig ens33
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.195.130 netmask 255.255.255.0 broadcast 192.168.195.255
    inet6 fe80::a5a:16e7:f0a8:a75c prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:fa:ef:55 txqueuelen 1000 (Ethernet)
    RX packets 290697 bytes 422842309 (422.8 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 126440 bytes 9554178 (9.5 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
oslab@oslab-VirtualBox:~$ ifconfig lo
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 2105 bytes 242017 (242.0 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 2105 bytes 242017 (242.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
oslab@oslab-VirtualBox:~$ ifconfig -a
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.195.130 netmask 255.255.255.0 broadcast 192.168.195.255
    inet6 fe80::a5a:16e7:f0a8:a75c prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:fa:ef:55 txqueuelen 1000 (Ethernet)
    RX packets 290833 bytes 422858007 (422.8 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 126515 bytes 9566027 (9.5 MB)
    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 2122 bytes 244009 (244.0 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 2122 bytes 244009 (244.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
oslab@oslab-VirtualBox:~$ ifconfig -s
```

Iface	MTU	RX-OK	RX-ERR	RX-DRP	RX-OVR	TX-OK	TX-ERR	TX-DRP	TX-OVR	Flg
ens33	1500	290835	0	0	0	126517	0	0	0	BMRU
lo	65536	2122	0	0	0	2122	0	0	0	LRU

```
oslab@oslab-VirtualBox:~$ ifconfig -v
```

```
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.195.130 netmask 255.255.255.0 broadcast 192.168.195.255
    inet6 fe80::a5a:16e7:f0a8:a75c prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:fa:ef:55 txqueuelen 1000 (Ethernet)
    RX packets 290837 bytes 422858313 (422.8 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 126519 bytes 9566333 (9.5 MB)
    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 2122 bytes 244009 (244.0 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 2122 bytes 244009 (244.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
root@oslab-VirtualBox:/home/oslab# ifconfig ens33 up
root@oslab-VirtualBox:/home/oslab# ifconfig ens33 down
root@oslab-VirtualBox:/home/oslab# ifconfig
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 2484 bytes 273028 (273.0 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 2484 bytes 273028 (273.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
root@oslab-VirtualBox:/home/oslab# ifconfig ens33 mtu 1500
root@oslab-VirtualBox:/home/oslab# ifconfig ens33
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.195.130 netmask 255.255.255.0 broadcast 192.168.195.255
    inet6 fe80::a5a:16e7:f0a8:a75c prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:fa:ef:55 txqueuelen 1000 (Ethernet)
    RX packets 290981 bytes 422876733 (422.8 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 126693 bytes 9586935 (9.5 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Task 3

```
root@oslab-VirtualBox:/home/oslab# ping vit.ac.in
PING vit.ac.in (136.233.9.13) 56(84) bytes of data.
64 bytes from www.vit.ac.in (136.233.9.13): icmp_seq=1 ttl=128 time=49.6 ms
64 bytes from www.vit.ac.in (136.233.9.13): icmp_seq=2 ttl=128 time=49.1 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=3 ttl=128 time=49.6 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=4 ttl=128 time=49.6 ms
^C
--- vit.ac.in ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 4057ms
rtt min/avg/max/mdev = 49.105/49.487/49.638/0.221 ms
root@oslab-VirtualBox:/home/oslab#
```

```
root@oslab-VirtualBox:/home/oslab# ping 1.0.0.0
PING 1.0.0.0 (1.0.0.0) 56(84) bytes of data.
64 bytes from 1.0.0.0: icmp_seq=2 ttl=128 time=3.55 ms
64 bytes from 1.0.0.0: icmp_seq=3 ttl=128 time=3.31 ms
64 bytes from 1.0.0.0: icmp_seq=4 ttl=128 time=3.54 ms
^C
--- 1.0.0.0 ping statistics ---
4 packets transmitted, 3 received, 25% packet loss, time 3046ms
rtt min/avg/max/mdev = 3.307/3.465/3.552/0.112 ms
root@oslab-VirtualBox:/home/oslab#
```

```
root@oslab-VirtualBox:/home/oslab# ping -c 2 google.com
PING google.com (142.250.193.110) 56(84) bytes of data.
64 bytes from maa05s24-in-f14.1e100.net (142.250.193.110): icmp_seq=1 ttl=128 time=4.39 ms
64 bytes from maa05s24-in-f14.1e100.net (142.250.193.110): icmp_seq=2 ttl=128 time=5.04 ms

--- google.com ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1003ms
rtt min/avg/max/mdev = 4.388/4.715/5.042/0.327 ms
root@oslab-VirtualBox:/home/oslab#
```

```
root@oslab-VirtualBox:/home/oslab# ping -i 5 google.com
PING google.com (142.250.193.110) 56(84) bytes of data.
64 bytes from maa05s24-in-f14.1e100.net (142.250.193.110): icmp_seq=1 ttl=128 time=4.41 ms
64 bytes from maa05s24-in-f14.1e100.net (142.250.193.110): icmp_seq=2 ttl=128 time=4.00 ms
64 bytes from maa05s24-in-f14.1e100.net (142.250.193.110): icmp_seq=3 ttl=128 time=4.26 ms
64 bytes from maa05s24-in-f14.1e100.net (142.250.193.110): icmp_seq=4 ttl=128 time=4.03 ms
^C
--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 15012ms
rtt min/avg/max/mdev = 4.004/4.175/4.406/0.166 ms
root@oslab-VirtualBox:/home/oslab#
```

```

root@oslab-VirtualBox:/home/oslab# ping -s 64 google.com
PING google.com (142.250.193.110) 64(92) bytes of data.
72 bytes from maa05s24-in-f14.1e100.net (142.250.193.110): icmp_seq=1 ttl=128 ti
me=4.88 ms
72 bytes from maa05s24-in-f14.1e100.net (142.250.193.110): icmp_seq=2 ttl=128 ti
me=4.73 ms
72 bytes from maa05s24-in-f14.1e100.net (142.250.193.110): icmp_seq=3 ttl=128 ti
me=5.23 ms
72 bytes from maa05s24-in-f14.1e100.net (142.250.193.110): icmp_seq=4 ttl=128 ti
me=6.00 ms
72 bytes from maa05s24-in-f14.1e100.net (142.250.193.110): icmp_seq=5 ttl=128 ti
me=4.49 ms
^C
--- google.com ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4008ms
rtt min/avg/max/mdev = 4.491/5.065/5.998/0.523 ms

```

Task 4

```

root@oslab-VirtualBox:/home/oslab# traceroute google.com
traceroute to google.com (142.250.193.110), 30 hops max, 60 byte packets
 1  _gateway (192.168.195.2)  0.462 ms  0.442 ms  0.422 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *

```

n. The cause was diagnosed after the **traceroute** command issued a probe at twice the path length

```

root@oslab-VirtualBox:/home/oslab# traceroute -f 10 google.com
traceroute to google.com (142.250.193.110), 30 hops max, 60 byte packets
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * ^C

```

```

20  * * ^C
root@oslab-VirtualBox:/home/oslab# traceroute -m 10 google.com
traceroute to google.com (142.250.193.110), 10 hops max, 60 byte packets
1  _gateway (192.168.195.2)  0.372 ms  0.343 ms  0.322 ms
2  * * *
3  * * *
4  * * *
5  * * *
6  * * *
7  * * *
8  * * *
9  * * *
10 * * *
root@oslab-VirtualBox:/home/oslab#

```

Task 5

```

root@oslab-VirtualBox:/home/oslab# nslookup google.com
Server:          127.0.0.53
Address:         127.0.0.53#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.193.110
Name:   google.com
Address: 2404:6800:4007:81f::200e

```

```

root@oslab-VirtualBox:/home/oslab# nslookup 142.250.193.110
110.193.250.142.in-addr.arpa    name = maa05s24-in-f14.1e100.net.

Authoritative answers can be found from:

root@oslab-VirtualBox:/home/oslab#

```

Task 6


```

root@oslab-VirtualBox:/home/oslab# netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp        0      0 localhost:domain        0.0.0.0:*               LISTEN
tcp        0      0 oslab-VirtualBox:57334  211.253.186.35:https    ESTABLISHED
tcp        0      0 oslab-VirtualBox:54504  151.101.158.114:https   ESTABLISHED
tcp        0      0 oslab-VirtualBox:40284  55.65.117.34.bc.g:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:50652  ec2-52-220-168-3.:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:59440  ec2-13-112-21-218:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:56722  maa03s36-in-f2.1e:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:50616  104.18.33.52:https      TIME_WAIT
tcp        0      0 oslab-VirtualBox:38144  ec2-52-74-74-229.:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:39636  server-13-33-146-:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:33222  server-18-161-229:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:56078  ec2-52-77-152-198:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:50834  maa05s28-in-f2.1e:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:47808  server-108-159-15:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:40868  af721359bfd441050:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:56626  ec2-3-233-153-146:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:48156  104.18.24.185:https     ESTABLISHED
tcp        0      0 oslab-VirtualBox:48168  server-13-33-146-:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:42678  598.bm-nginx-load:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:55312  server-13-33-151-:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:39892  18.117.213.35.bc.:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:54466  151.101.158.114:https   ESTABLISHED
tcp        0      0 oslab-VirtualBox:50800  maa03s41-in-f2.1e:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:51720  ec2-18-179-71-18.:https ESTABLISHED
tcp        0      0 oslab-VirtualBox:44596  182.161.73.145:https    ESTABLISHED
tcp        0      0 oslab-VirtualBox:58808  103.71.26.123:https     ESTABLISHED
tcp        0      0 oslab-VirtualBox:60036  maa05s10-in-f2.1e:https ESTABLISHED
tcp6       0      0 ip6-localhost:ipp      [::]:*                 LISTEN
udp        0      0 oslab-VirtualBox:44021  _gateway:domain        ESTABLISHED
udp        0      0 0.0.0.0:mdns           0.0.0.0:*               ESTABLISHED
udp        0      0 localhost:domain       0.0.0.0:*               ESTABLISHED
udp        0      0 oslab-VirtualBox:bootpc 192.168.195.254:bootps  ESTABLISHED
udp        0      0 localhost:49480        localhost:domain        ESTABLISHED
udp        0      0 0.0.0.0:47734         0.0.0.0:*               ESTABLISHED
udp        0      0 0.0.0.0:631           0.0.0.0:*               ESTABLISHED
udp        0      0 localhost:49480        localhost:domain        ESTABLISHED
udp        0      0 0.0.0.0:47734         0.0.0.0:*               ESTABLISHED
udp        0      0 0.0.0.0:631           0.0.0.0:*               ESTABLISHED
udp        0      0 localhost:56072        localhost:domain        ESTABLISHED
udp6       0      0 [::]:mdns              [::]:*                  ESTABLISHED
udp6       0      0 [::]:53742              [::]:*                  ESTABLISHED
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7

```



```

root@oslab-VirtualBox:/home/oslab# netstat -r
Kernel IP routing table
Destination      Gateway          Genmask          Flags      MSS Window  irtt Iface
default          _gateway        0.0.0.0          UG         0 0        0 ens33
link-local       0.0.0.0         255.255.0.0      U          0 0        0 ens33
192.168.195.0    0.0.0.0         255.255.255.0    U          0 0        0 ens33
root@oslab-VirtualBox:/home/oslab# S

```

Task 7

```

192.168.195.0    0.0.0.0         255.255.255.0    U          0 0        0 ens33
root@oslab-VirtualBox:/home/oslab# arp
Address          HWtype  HWaddress         Flags Mask          Iface
_gateway        ether    00:50:56:f4:0a:d3 C               ens33
192.168.195.254 ether    00:50:56:ec:2b:c1 C               ens33
root@oslab-VirtualBox:/home/oslab# █

```