

CN LAB: Week #1

Study and understand the basic networking tools - Wireshark, Tcpcdump, Ping,

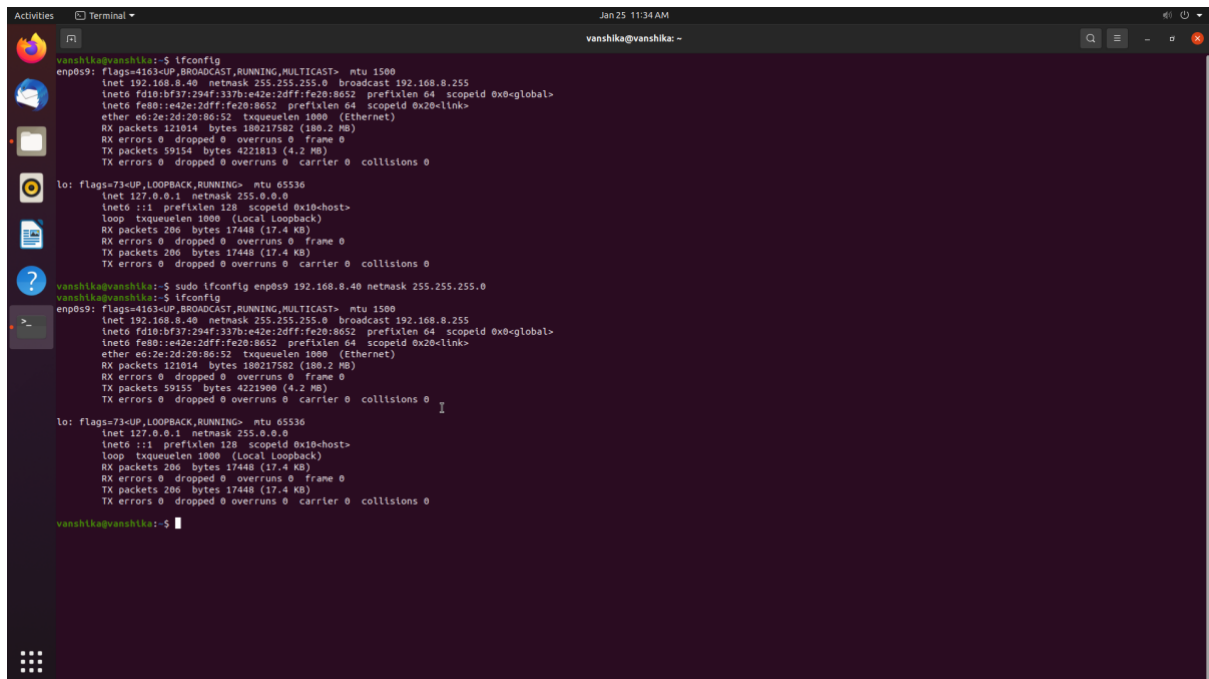
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Task 1: Linux Interface Configuration (ifconfig / IP command)

ip address table:

Interface name	IP Address (IPv4 / IPv6)	MAC Address
enp0s9	192.168.64.2	e6:2e:2d:20:86:52
lo	127.0.0.1	-

Assigned IP Address 192.168.8.40



```
vanishika@vanshika:~$ ifconfig
enp0s9: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.8.40 netmask 255.255.255.0 broadcast 192.168.8.255
    inet6 fd10:b377:294f:337b:e42e:2dff:fe20:8652 prefixlen 64 scopeid 0x0<global>
    inet6 fe80::e42e:2dff:fe20:8652 prefixlen 64 scopeid 0x20<link>
    ether e6:2e:2d:20:86:52 txqueuelen 1000 (Ethernet)
    RX packets 121014 bytes 180217592 (180.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 59154 bytes 4221813 (4.2 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 206 bytes 17448 (17.4 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 206 bytes 17448 (17.4 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vanishika@vanshika:~$ sudo ifconfig enp0s9 192.168.8.40 netmask 255.255.255.0
vanishika@vanshika:~$ ifconfig
enp0s9: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.8.40 netmask 255.255.255.0 broadcast 192.168.8.255
    inet6 fd10:b377:294f:337b:e42e:2dff:fe20:8652 prefixlen 64 scopeid 0x0<global>
    inet6 fe80::e42e:2dff:fe20:8652 prefixlen 64 scopeid 0x20<link>
    ether e6:2e:2d:20:86:52 txqueuelen 1000 (Ethernet)
    RX packets 121014 bytes 180217592 (180.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 59155 bytes 4221908 (4.2 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 206 bytes 17448 (17.4 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 206 bytes 17448 (17.4 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vanishika@vanshika:~$
```

Activate (up) and Deactivate (down) a network interface

```
Activities Terminal Jan 25 11:36 AM
vanshika@vanshika: ~
vanshika@vanshika:~$ ifconfig
enp0s9: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.64.2 netmask 255.255.255.0 broadcast 192.168.64.255
    inet6 fd00:b37:29ef:337b:e42e:2dffa:fe20:8652 prefixlen 64 scopeid 0x0<global>
    inet6 fe80::e42e:2dffa:fe20:8652 prefixlen 64 scopeid 0x20<link>
    ether e0:2e:2d:20:86:52 txqueuelen 1000 (Ethernet)
    RX packets 121036 bytes 180220471 (180.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 59217 bytes 4229542 (4.2 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 242 bytes 20444 (20.4 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 242 bytes 20444 (20.4 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vanshika@vanshika:~$ sudo ifconfig enp0s9 down
vanshika@vanshika:~$ 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 254 bytes 21320 (21.3 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 254 bytes 21320 (21.3 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vanshika@vanshika:~$ sudo ifconfig enp0s9 up
vanshika@vanshika:~$ ifconfig
enp0s9: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.64.2 netmask 255.255.255.0 broadcast 192.168.64.255
    inet6 fd00:b37:29ef:337b:e42e:2dffa:fe20:8652 prefixlen 64 scopeid 0x0<global>
    inet6 fe80::e42e:2dffa:fe20:8652 prefixlen 64 scopeid 0x20<link>
    ether e0:2e:2d:20:86:52 txqueuelen 1000 (Ethernet)
    RX packets 121043 bytes 180221508 (180.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 59239 bytes 4231812 (4.2 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 266 bytes 22292 (22.2 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 266 bytes 22292 (22.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vanshika@vanshika:~$
```

Ip neigh

```
Activities Terminal Jan 25 11:37 AM
vanshika@vanshika: ~
vanshika@vanshika:~$ ifconfig
enp0s9: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.64.2 netmask 255.255.255.0 broadcast 192.168.64.255
    inet6 fd00:b37:29ef:337b:e42e:2dffa:fe20:8652 prefixlen 64 scopeid 0x0<global>
    inet6 fe80::e42e:2dffa:fe20:8652 prefixlen 64 scopeid 0x20<link>
    ether e0:2e:2d:20:86:52 txqueuelen 1000 (Ethernet)
    RX packets 121052 bytes 180222648 (180.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 59284 bytes 4237788 (4.2 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 286 bytes 23912 (23.9 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 286 bytes 23912 (23.9 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vanshika@vanshika:~$ ip neigh
192.168.64.1 dev enp0s9 lladdr 52:ed:3c:30:1e:64 STALE
fe80::50ed:3cff:fe30:1e64 dev enp0s9 lladdr 52:ed:3c:30:1e:64 router STALE
vanshika@vanshika:~$
```

Task 2: Ping PDU (Packet Data Units or Packets) Capture

Details	First Echo Request	First Echo Reply
Frame Number	1	2
Source IP Address	192.168.64.1	192.196.64.1
Destination IP Address	192.168.64.255	224.0.0.251
ICMP Type Value	-	-
ICMP Code Value	-	-
Source Ethernet Address	52:ed:3c:30:1e:64	52:ed:3c:30:1e:64
Destination Ethernet Address	ff:ff:ff:ff:ff:ff	01:00:5e:00:00:fb
Internet Protocol Version	4	4
Time To Live (TTL) Value	64	255

Request

The screenshot shows the Wireshark interface with a packet capture from 'eng0s9'. The packet list on the left shows a single packet (Frame 1) of type 'ICMPv6' with a length of 86 bytes. The packet details pane on the right shows the following structure:

- Ethernet II, Src: 52:ed:3c:30:1e:64 (52:ed:3c:30:1e:64), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
- Internet Protocol Version 4, Src: 192.168.64.1, Dst: 192.168.64.255
- ICMPv6 Echo Request (Type 128)
- Fragment offset: 0
- Time to live: 64
- Protocol: UDP (17)
- Header checksum: 0x0000 (invalid)

The packet bytes pane at the bottom shows the raw data in hexadecimal and ASCII.

Reply

The screenshot shows the Wireshark interface with a packet capture from 'eng0s9'. The packet list on the left shows a single packet (Frame 2) of type 'ICMPv6' with a length of 87 bytes. The packet details pane on the right shows the following structure:

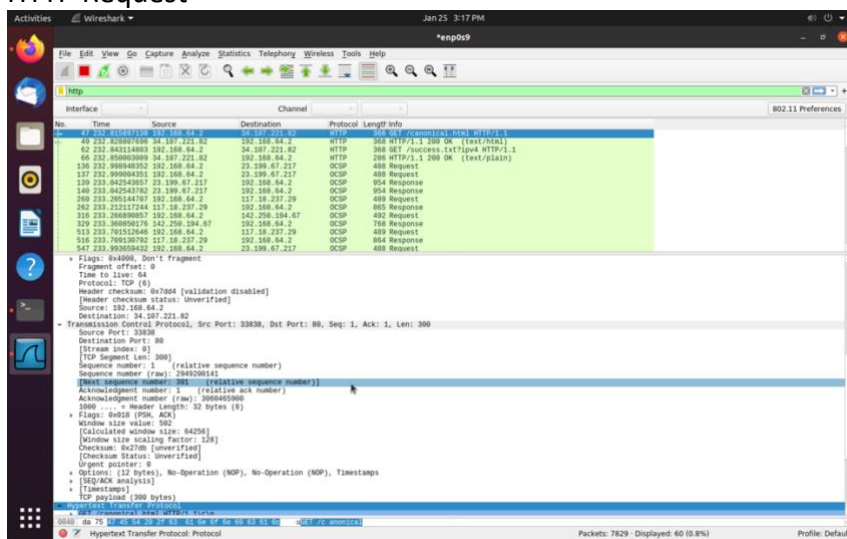
- Ethernet II, Src: 52:ed:3c:30:1e:64 (52:ed:3c:30:1e:64), Dst: 52:ed:3c:30:1e:64
- Internet Protocol Version 4, Src: 192.168.64.1, Dst: 192.168.64.1
- ICMPv6 Echo Reply (Type 129)
- Fragment offset: 0
- Time to live: 255
- Protocol: UDP (17)
- Header checksum: 0x0000 (invalid)

The packet bytes pane at the bottom shows the raw data in hexadecimal and ASCII.

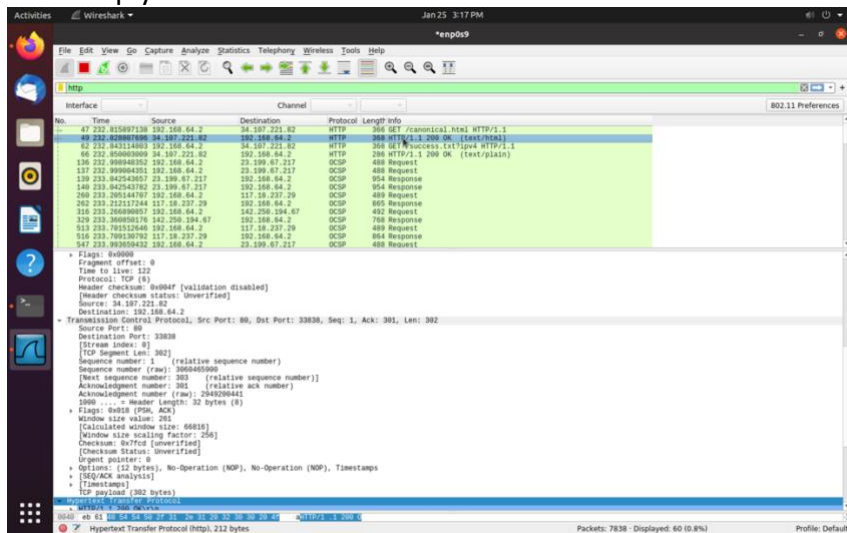
Task 3: HTTP PDU Capture

Details	First Echo Request	First Echo Reply
Frame Number	47	49
Source Port	33838	80
Destination Port	80	33838
Source IP Address	192.168.64.2	34.107.221.82
Destination IP Address	34.107.221.82	192.168.64.82
Source Ethernet Address	e6:2e:2d:20:86:52	52:ed:3c:30:1e:64
Destination Ethernet Address	52:ed:3c:30:1e:64	e6:2e:2d:20:86:52

HTTP Request



HTTP Reply



HTTP Request	GET/canonical.htmlHTML/1.1	HTTP Request	
Get	/canonical.htmlHTML/1.1	Server	nginx
Host	detectportal.firefox.com	Content-Type	text/html
User-Agent	Mozilla/5.0 (X11; Ubuntu; Linux aarch64; rv; 96.0) Gecko/2010 0101 Firefox/96.0	Date	Tue 25 Jan 2022 05:41:52 GMT
Accept-Language	en-US, en; q=0.5	Location	
Accept-Encoding	gzip, deflate,	Content-Length	90
Connection	keep alive	Connection	keep alive

Task 4: Capturing packets with tcpdump

sudo tcpdump -D

```

vanshika@vanshika:~$ sudo tcpdump -D
[sudo] password for vanshika:
1.engpp0 [Up, Running]
2.lo [Up, Running, Loopback]
3.any (Pseudo-device that captures on all interfaces) [Up, Running]
4.bluetooth-monitor (Bluetooth Linux Monitor) [none]
5.nflog (Linux netfilter log (NFLOG) interface) [none]
6.nfqueue (Linux netfilter queue (NFQUEUE) interface) [none]
vanshika@vanshika:~$

```

sudo tcpdump -i any

```

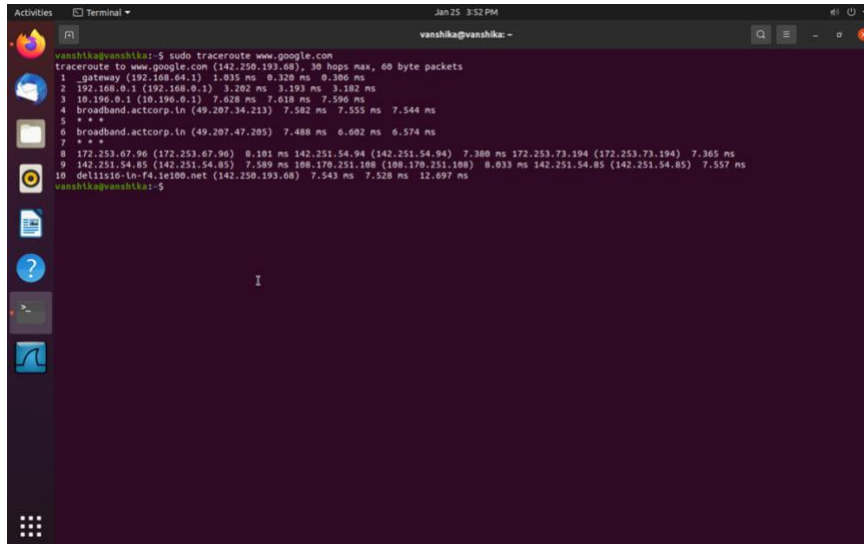
vanshika@vanshika:~$ sudo tcpdump -i any
[sudo] password for vanshika:
1.engpp0 [Up, Running]
2.lo [Up, Running, Loopback]
3.any (Pseudo-device that captures on all interfaces) [Up, Running]
4.bluetooth-monitor (Bluetooth Linux Monitor) [none]
5.nflog (Linux netfilter log (NFLOG) interface) [none]
6.nfqueue (Linux netfilter queue (NFQUEUE) interface) [none]
vanshika@vanshika:~$ sudo tcpdump -i any
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on any, link-type LINUX_SLL (Linux cooked v1), capture size 262144 bytes
15:49:32.782561 IP gateway.57621 > 192.168.64.255:57621: UDP, length 44
15:49:32.765816 IP localhost.59342 > localhost.domain: 64076+ [Iau] PTR? 1.64.168.192.in-addr.arpa. (54)
15:49:32.767095 IP vanshika.57394 > gateway.domain: 41508+ [Iau] PTR? 1.64.168.192.in-addr.arpa. (54)
15:49:32.800987 IP gateway.domain > vanshika.57394: 41508 NXDomain 0/0/1 (54)
15:49:32.801507 IP vanshika.57394 > gateway.domain: 41508+ PTR? 1.64.168.192.in-addr.arpa. (43)
15:49:32.802940 IP gateway.domain > vanshika.57394: 41508 NXDomain 0/0/0 (43)
15:49:32.825498 IP localhost.44930 > localhost.domain: 19663+ [Iau] PTR? 53.0.0.127.in-addr.arpa. (52)
15:49:37.807665 ARP, Request who-has gateway tell vanshika, length 28
15:49:37.809200 ARP, Reply gateway is-at 32:ed:3c:30:1e:64 (out Unknown), length 28
15:49:54.439314 IP localhost.40106 > localhost.domain: 756+ [Iau] A? detectportal.firefox.com. (53)
15:49:54.439314 IP localhost.40106 > localhost.domain: 23242+ [Iau] AAAA? detectportal.firefox.com. (53)
15:49:54.442590 IP vanshika.51342 > gateway.domain: 26450+ [Iau] A? detectportal.firefox.com. (53)
15:49:54.443052 IP vanshika.42083 > gateway.domain: 21708+ [Iau] AAAA? detectportal.firefox.com. (53)
15:49:54.450842 IP gateway.domain > vanshika.51342: 26450 3/0/1 CNAME detectportal.prod.mozaws.net., CNAME prod.detectportal.prod.cloudops.mozgcp.net., A 34.107.221.82 (164)
15:49:54.450954 IP gateway.domain > vanshika.42083: 21708 3/0/1 CNAME detectportal.prod.mozaws.net., CNAME prod.detectportal.prod.cloudops.mozgcp.net., AAAA 2608:1981:0:38d7:: (176)
15:49:54.451223 IP localhost.domain > localhost.40106: 756 3/0/1 CNAME detectportal.prod.mozaws.net., CNAME prod.detectportal.prod.cloudops.mozgcp.net., A 34.107.221.82 (164)
15:49:54.451383 IP localhost.domain > localhost.40106: 756 3/0/1 CNAME detectportal.prod.mozaws.net., CNAME prod.detectportal.prod.cloudops.mozgcp.net., AAAA 2608:1981:0:38d7:: (176)
15:49:54.539437 IP vanshika.41526 > 82.221.107.34.bc.googleusercontent.com.http: Flags [S], seq 3737364852, win 64240, options [mss 1460,sackOK,TS val 3709854690 ecr 0,nop,wscale 7], length 0
15:49:54.539627 IP localhost.49548 > localhost.domain: 36280+ [Iau] PTR? 82.221.107.34.in-addr.arpa. (55)
15:49:54.539804 IP vanshika.57299 > gateway.domain: 13781+ [Iau] PTR? 82.221.107.34.in-addr.arpa. (55)
15:49:54.561656 IP 82.221.107.34.bc.googleusercontent.com.http > vanshika.41526: Flags [S.], seq 3564830184, ack 3737364853, win 65535, options [mss 1430,sackOK,TS val 3348784798 ecr 3709854690,nop,wscale 8], length 0
15:49:54.561768 IP vanshika.41526 > 82.221.107.34.bc.googleusercontent.com.http: Flags [P.], ack 1, win 502, options [nop,nop,TS val 3709854712 ecr 3348784798], length 0
15:49:54.562015 IP vanshika.41526 > 82.221.107.34.bc.googleusercontent.com.http: Flags [P.], seq 1:301, ack 1, win 502, options [nop,nop,TS val 3709854713 ecr 3348784798], length 300; HTTP: GET /canonical.html HTTP/1.1
15:49:54.571392 IP 82.221.107.34.bc.googleusercontent.com.http > vanshika.41526: Flags [P.], ack 301, win 261, options [nop,nop,TS val 3348784813 ecr 3709854713], length 0
15:49:54.590802 IP vanshika.34624 > 221.5.320.34.bc.googleusercontent.com.https: Flags [P.], seq 4157913972:4157914036, ack 1181347416, win 502, opti

```

Task 5: Perform Traceroute checks

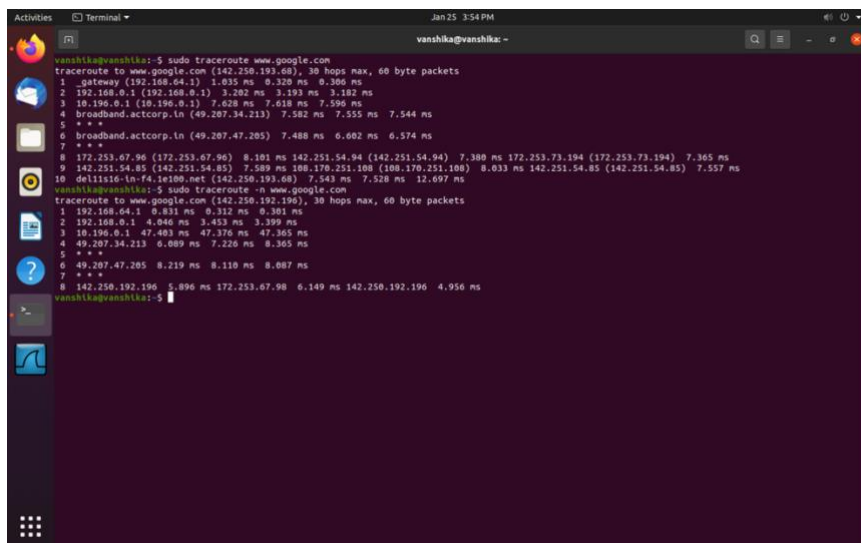
sudo traceroute www.google.com

destination address: (142.250.193.68); No of hops: 10



```
vanshika@vanshika:~$ sudo traceroute www.google.com
traceroute to www.google.com (142.250.193.68), 30 hops max, 60 byte packets
 1  gateway (192.168.0.1)  1.935 ms  0.328 ms  0.386 ms
 2  192.168.0.1 (192.168.0.1)  3.202 ms  3.193 ms  3.182 ms
 3  10.196.0.1 (10.196.0.1)  7.628 ms  7.618 ms  7.596 ms
 4  broadband.actcorp.ln (49.207.34.213)  7.582 ms  7.555 ms  7.544 ms
 5  * * *
 6  broadband.actcorp.ln (49.207.47.205)  7.488 ms  6.602 ms  6.574 ms
 7  * * *
 8  172.253.67.96 (172.253.67.96)  8.101 ms  142.251.54.94 (142.251.54.94)  7.380 ms  172.253.73.194 (172.253.73.194)  7.365 ms
 9  142.251.54.85 (142.251.54.85)  7.589 ms  108.170.251.108 (108.170.251.108)  8.033 ms  142.251.54.85 (142.251.54.85)  7.557 ms
10  dell11510-ln-fa-1e100.net (142.250.193.68)  7.543 ms  7.528 ms  12.697 ms
vanshika@vanshika:~$
```

sudo traceroute -n www.google.com



```
vanshika@vanshika:~$ sudo traceroute www.google.com
traceroute to www.google.com (142.250.193.68), 30 hops max, 60 byte packets
 1  gateway (192.168.0.1)  1.935 ms  0.328 ms  0.386 ms
 2  192.168.0.1 (192.168.0.1)  3.202 ms  3.193 ms  3.182 ms
 3  10.196.0.1 (10.196.0.1)  7.628 ms  7.618 ms  7.596 ms
 4  broadband.actcorp.ln (49.207.34.213)  7.582 ms  7.555 ms  7.544 ms
 5  * * *
 6  broadband.actcorp.ln (49.207.47.205)  7.488 ms  6.602 ms  6.574 ms
 7  * * *
 8  172.253.67.96 (172.253.67.96)  8.101 ms  142.251.54.94 (142.251.54.94)  7.380 ms  172.253.73.194 (172.253.73.194)  7.365 ms
 9  142.251.54.85 (142.251.54.85)  7.589 ms  108.170.251.108 (108.170.251.108)  8.033 ms  142.251.54.85 (142.251.54.85)  7.557 ms
10  dell11510-ln-fa-1e100.net (142.250.193.68)  7.543 ms  7.528 ms  12.697 ms
vanshika@vanshika:~$ sudo traceroute -n www.google.com
traceroute to www.google.com (142.250.192.196), 30 hops max, 60 byte packets
 1  192.168.0.1  0.431 ms  0.312 ms  0.381 ms
 2  192.168.0.1  4.046 ms  3.453 ms  3.399 ms
 3  10.196.0.1  47.403 ms  47.376 ms  47.365 ms
 4  49.207.34.213  6.089 ms  7.226 ms  8.365 ms
 5  * * *
 6  49.207.47.205  8.219 ms  8.110 ms  8.087 ms
 7  * * *
 8  142.250.192.196  5.896 ms  172.253.67.96  6.149 ms  142.250.192.196  4.956 ms
vanshika@vanshika:~$
```

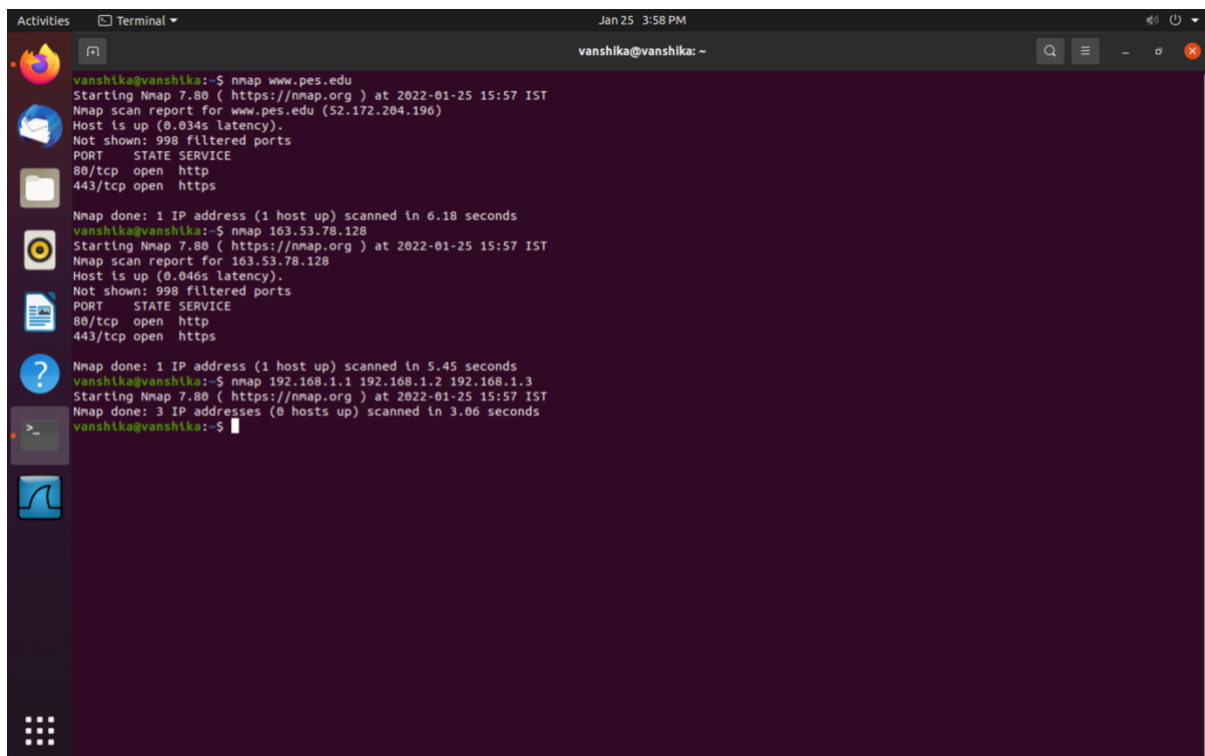

sudo traceroute -I www.google.com

```
Activities Terminal Jan 25 3:55 PM
vanshika@vanshika: ~
vanshika@vanshika:~$ sudo traceroute www.google.com
traceroute to www.google.com (142.250.193.68), 30 hops max, 60 byte packets
 1 _gateway (192.168.64.1) 1.035 ms 0.320 ms 0.306 ms
 2 192.168.0.1 (192.168.0.1) 3.202 ms 3.193 ms 3.182 ms
 3 10.196.0.1 (10.196.0.1) 7.628 ms 7.618 ms 7.596 ms
 4 broadband.actcorp.ln (49.207.34.213) 7.582 ms 7.555 ms 7.544 ms
 5 * * *
 6 broadband.actcorp.ln (49.207.47.205) 7.488 ms 6.602 ms 6.574 ms
 7 * * *
 8 172.253.67.96 (172.253.67.96) 8.101 ms 142.251.54.94 (142.251.54.94) 7.380 ms 172.253.73.194 (172.253.73.194) 7.365 ms
 9 142.251.54.85 (142.251.54.85) 7.589 ms 108.170.251.108 (108.170.251.108) 8.033 ms 142.251.54.85 (142.251.54.85) 7.557 ms
10 dell1s16-ln-f4.1e100.net (142.250.193.68) 7.543 ms 7.528 ms 12.697 ms
vanshika@vanshika:~$ sudo traceroute -n www.google.com
traceroute to www.google.com (142.250.192.196), 30 hops max, 60 byte packets
 1 192.168.64.1 0.831 ms 0.312 ms 0.301 ms
 2 192.168.0.1 4.046 ms 3.453 ms 3.399 ms
 3 10.196.0.1 47.403 ms 47.376 ms 47.365 ms
 4 49.207.34.213 6.089 ms 7.226 ms 8.365 ms
 5 * * *
 6 49.207.47.205 8.219 ms 8.110 ms 8.087 ms
 7 * * *
 8 142.250.192.196 5.896 ms 172.253.67.98 6.149 ms 142.250.192.196 4.956 ms
vanshika@vanshika:~$ sudo traceroute -I www.google.com
traceroute to www.google.com (142.250.192.196), 30 hops max, 60 byte packets
 1 _gateway (192.168.64.1) 0.581 ms 0.451 ms 0.446 ms
 2 192.168.0.1 (192.168.0.1) 18.162 ms 18.160 ms 18.159 ms
 3 10.196.0.1 (10.196.0.1) 20.743 ms 20.728 ms 20.303 ms
 4 broadband.actcorp.ln (49.207.34.213) 25.011 ms 25.010 ms 25.009 ms
 5 * * *
 6 broadband.actcorp.ln (49.207.47.205) 20.291 ms 6.737 ms 6.717 ms
 7 209.85.250.11 (209.85.250.11) 8.152 ms 7.609 ms 7.559 ms
 8 172.253.50.157 (172.253.50.157) 7.101 ms 7.100 ms 7.098 ms
 9 dell1s12-ln-f4.1e100.net (142.250.192.196) 7.097 ms 7.095 ms 7.093 ms
vanshika@vanshika:~$
```

sudo traceroute -T www.google.com

```
Activities Terminal Jan 25 3:56 PM
vanshika@vanshika: ~
vanshika@vanshika:~$ sudo traceroute www.google.com
traceroute to www.google.com (142.250.193.68), 30 hops max, 60 byte packets
 1 _gateway (192.168.64.1) 1.035 ms 0.320 ms 0.306 ms
 2 192.168.0.1 (192.168.0.1) 3.202 ms 3.193 ms 3.182 ms
 3 10.196.0.1 (10.196.0.1) 7.628 ms 7.618 ms 7.596 ms
 4 broadband.actcorp.ln (49.207.34.213) 7.582 ms 7.555 ms 7.544 ms
 5 * * *
 6 broadband.actcorp.ln (49.207.47.205) 7.488 ms 6.602 ms 6.574 ms
 7 * * *
 8 172.253.67.96 (172.253.67.96) 8.101 ms 142.251.54.94 (142.251.54.94) 7.380 ms 172.253.73.194 (172.253.73.194) 7.365 ms
 9 142.251.54.85 (142.251.54.85) 7.589 ms 108.170.251.108 (108.170.251.108) 8.033 ms 142.251.54.85 (142.251.54.85) 7.557 ms
10 dell1s16-ln-f4.1e100.net (142.250.193.68) 7.543 ms 7.528 ms 12.697 ms
vanshika@vanshika:~$ sudo traceroute -n www.google.com
traceroute to www.google.com (142.250.192.196), 30 hops max, 60 byte packets
 1 192.168.64.1 0.831 ms 0.312 ms 0.301 ms
 2 192.168.0.1 4.046 ms 3.453 ms 3.399 ms
 3 10.196.0.1 47.403 ms 47.376 ms 47.365 ms
 4 49.207.34.213 6.089 ms 7.226 ms 8.365 ms
 5 * * *
 6 49.207.47.205 8.219 ms 8.110 ms 8.087 ms
 7 * * *
 8 142.250.192.196 5.896 ms 172.253.67.98 6.149 ms 142.250.192.196 4.956 ms
vanshika@vanshika:~$ sudo traceroute -I www.google.com
traceroute to www.google.com (142.250.192.196), 30 hops max, 60 byte packets
 1 _gateway (192.168.64.1) 0.581 ms 0.451 ms 0.446 ms
 2 192.168.0.1 (192.168.0.1) 18.162 ms 18.160 ms 18.159 ms
 3 10.196.0.1 (10.196.0.1) 20.743 ms 20.728 ms 20.303 ms
 4 broadband.actcorp.ln (49.207.34.213) 25.011 ms 25.010 ms 25.009 ms
 5 * * *
 6 broadband.actcorp.ln (49.207.47.205) 20.291 ms 6.737 ms 6.717 ms
 7 209.85.250.11 (209.85.250.11) 8.152 ms 7.609 ms 7.559 ms
 8 172.253.50.157 (172.253.50.157) 7.101 ms 7.100 ms 7.098 ms
 9 dell1s12-ln-f4.1e100.net (142.250.192.196) 7.097 ms 7.095 ms 7.093 ms
vanshika@vanshika:~$ sudo traceroute -T www.google.com
traceroute to www.google.com (142.250.192.196), 30 hops max, 60 byte packets
 1 _gateway (192.168.64.1) 0.374 ms 0.332 ms 0.843 ms
 2 192.168.0.1 (192.168.0.1) 2.823 ms 2.802 ms 2.662 ms
 3 10.196.0.1 (10.196.0.1) 7.126 ms 7.095 ms 7.043 ms
 4 broadband.actcorp.ln (49.207.34.213) 6.991 ms 6.982 ms 8.002 ms
 5 * * *
 6 broadband.actcorp.ln (49.207.47.205) 6.071 ms 5.362 ms 5.319 ms
 7 209.85.250.11 (209.85.250.11) 9.016 ms 209.85.244.73 (209.85.244.73) 6.038 ms 209.85.250.11 (209.85.250.11) 8.286 ms
 8 142.250.236.55 (142.250.236.55) 5.977 ms 5.969 ms 172.253.50.157 (172.253.50.157) 5.961 ms
 9 dell1s12-ln-f4.1e100.net (142.250.192.196) 5.943 ms 8.223 ms 8.201 ms
vanshika@vanshika:~$
```

Task 6: Explore an entire network for information (Nmap)



```
vanishika@vanishika:~$ nmap www.pes.edu
Starting Nmap 7.80 ( https://nmap.org ) at 2022-01-25 15:57 IST
Nmap scan report for www.pes.edu (52.172.204.196)
Host is up (0.034s latency).
Not shown: 998 filtered ports
PORT      STATE SERVICE
80/tcp    open  http
443/tcp    open  https

Nmap done: 1 IP address (1 host up) scanned in 6.18 seconds
vanishika@vanishika:~$ nmap 163.53.78.128
Starting Nmap 7.80 ( https://nmap.org ) at 2022-01-25 15:57 IST
Nmap scan report for 163.53.78.128
Host is up (0.046s latency).
Not shown: 998 filtered ports
PORT      STATE SERVICE
80/tcp    open  http
443/tcp    open  https

Nmap done: 1 IP address (1 host up) scanned in 5.45 seconds
vanishika@vanishika:~$ nmap 192.168.1.1 192.168.1.2 192.168.1.3
Starting Nmap 7.80 ( https://nmap.org ) at 2022-01-25 15:57 IST
Nmap done: 3 IP addresses (0 hosts up) scanned in 3.06 seconds
vanishika@vanishika:~$
```

Answers to given questions:

- 1) It is running on HTTP version 1.1, as observed above
- 2) Don't know how to resolve this.
- 3) By setting the count by giving the -c parameter or use Ctrl+C to kill the foreground process in the terminal
- 4) By scanning the local networks, we can find this out i.e. by using NMA
nmap -T4-A destination_IP (details about os)
nmap -sV destination_IP (details about apps and software installed in remote host)