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Network Training Programme

Module 7 and 8

Q3. Explore traceroute/tracert for different websites eg:google.com and analyse the parameters in the output and explore different options for traceroute command

www.google.com

```
d_sers@LAPTOP-G5RP63SK:~$ traceroute google.com
traceroute to google.com (142.250.194.142), 30 hops max, 60 byte packets
 1  LAPTOP-G5RP63SK.mshome.net (172.31.128.1)  0.284 ms  0.227 ms  0.221 ms
 2  192.168.218.158 (192.168.218.158)  2.448 ms  2.536 ms  3.642 ms
 3  * * *
 4  * * *
 5  * * *
 6  192.168.227.99 (192.168.227.99)  29.871 ms  29.787 ms  30.799 ms
 7  192.168.182.246 (192.168.182.246)  28.438 ms 192.168.182.240 (192.168.182.240)  21.677 ms 192.168.182.242 (192.168.182.242)  19.488 ms
 8  * * *
 9  * * *
10  * * *
11  72.14.195.22 (72.14.195.22)  56.897 ms  56.893 ms 72.14.195.34 (72.14.195.34)  57.027 ms
12  * * *
13  142.251.76.194 (142.251.76.194)  56.948 ms 142.251.54.96 (142.251.54.96)  33.971 ms 142.251.52.203 (142.251.52.203)  35.787 ms
14  142.251.52.205 (142.251.52.205)  36.810 ms 192.178.82.232 (192.178.82.232)  38.652 ms 142.251.255.54 (142.251.255.54)  32.906 ms
15  192.178.83.215 (192.178.83.215)  35.322 ms * del12s05-in-f14.1e100.net (142.250.194.142)  35.358 ms
d_sers@LAPTOP-G5RP63SK:~$
```

ICMP MODE

```
d_sers@LAPTOP-G5RP63SK:~$ sudo traceroute -I google.com
traceroute to google.com (142.250.193.238), 30 hops max, 60 byte packets
 1  LAPTOP-G5RP63SK.mshome.net (172.31.128.1)  0.728 ms  0.834 ms  0.734 ms
 2  192.168.218.158 (192.168.218.158)  3.128 ms  3.302 ms  3.657 ms
 3  * * *
 4  * * *
 5  * * *
 6  192.168.227.98 (192.168.227.98)  56.477 ms  52.445 ms  52.862 ms
 7  192.168.182.242 (192.168.182.242)  52.670 ms 192.168.182.240 (192.168.182.240)  51.771 ms  51.804 ms
 8  * * *
 9  * * *
10  * * *
11  142.250.168.56 (142.250.168.56)  33.580 ms  43.045 ms  43.041 ms
12  72.14.234.225 (72.14.234.225)  43.033 ms  43.029 ms  43.142 ms
13  142.251.54.101 (142.251.54.101)  43.021 ms  34.214 ms  34.288 ms
14  del11s18-in-f14.1e100.net (142.250.193.238)  34.312 ms  34.308 ms  43.343 ms
```

TCP MODE

```
d_sers@LAPTOP-G5RP63SK: $ sudo traceroute -T google.com
traceroute to google.com (142.250.193.238), 30 hops max, 60 byte packets
 1  LAPTOP-G5RP63SK.mshome.net (172.31.128.1)  0.241 ms  0.216 ms  0.221 ms
 2  192.168.218.158 (192.168.218.158)  3.902 ms  4.099 ms  4.794 ms
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  142.250.161.100 (142.250.161.100)  68.776 ms 74.125.147.192 (74.125.147.192)  68.700 ms 142.250.168.56 (142.250.168.56)  68.646 ms
12  142.250.208.225 (142.250.208.225)  68.534 ms  68.443 ms 172.253.68.93 (172.253.68.93)  64.938 ms
13  142.251.54.99 (142.251.54.99)  64.794 ms 142.251.54.101 (142.251.54.101)  64.623 ms 142.251.54.99 (142.251.54.99)  34.289 ms
14  del11s18-in-f14.1e100.net (142.250.193.238)  38.583 ms  35.046 ms  37.970 ms
d_sers@LAPTOP-G5RP63SK: $
```

NO DNS

```
d_sers@LAPTOP-G5RP63SK:~$ traceroute -n google.com
traceroute to google.com (142.250.182.174), 30 hops max, 60 byte packets
 1  172.31.128.1  0.379 ms  0.365 ms  0.362 ms
 2  192.168.24.39  3.190 ms  3.185 ms  3.181 ms
 3  * * *
 4  * * *
 5  * * *
 6  192.168.227.98  29.712 ms 192.168.227.99  87.990 ms 192.168.227.98  88.165 ms
 7  192.168.174.20  88.281 ms 192.168.174.22  85.533 ms 192.168.174.16  85.274 ms
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * 49.44.18.38  62.960 ms *
13  * * 49.44.18.38  52.474 ms
14  72.14.211.138  50.126 ms * *
15  * * *
16  * 142.250.238.198  64.219 ms *
17  192.178.110.244  56.179 ms 192.178.110.248  55.668 ms 172.253.77.20  55.627 ms
18  192.178.110.206  51.590 ms 142.251.48.137  56.784 ms 172.253.68.120  55.620 ms
19  192.178.251.217  56.606 ms 172.253.68.121  61.614 ms 108.170.232.203  59.562 ms
20  192.178.252.117  59.176 ms 142.250.63.53  59.169 ms 172.253.50.153  58.039 ms
21  172.253.50.153  68.122 ms  68.075 ms 142.250.182.174  68.051 ms
d_sers@LAPTOP-G5RP63SK:~$ Z
```

Key Learning

1. Traceroute maps the path packets take to reach a destination.

2. Each hop represents a router in the path with its response time.

3. Timeout or asterisks indicate filtered or unreachable routers.