

## 1)Traceroute google.com

The traceroute command can be executed only in linux machines and the windows alternative for traceroute is tracert. The relevant outputs are attached below.

```
Microsoft Windows [Version 10.0.26100.2605]
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C:\Users\290419>tracert google.com

Tracing route to google.com [142.250.183.142]
over a maximum of 30 hops:

  1  *      *      *      Request timed out.
  2  75 ms  81 ms  91 ms  136.226.252.93
  3  *      *      *      Request timed out.
  4  *      *      *      Request timed out.
  5  41 ms  *      *      if-ae-22-2.tcore2.cxr-chennai.as6453.net [180.87.37.115]
  6  54 ms  44 ms  44 ms  if-ae-3-3.tcore1.cxr-chennai.as6453.net [180.87.36.5]
  7  35 ms  36 ms  *      if-bundle-26-2.qcore1.cxr-chennai.as6453.net [180.87.36.139]
  8  29 ms  29 ms  30 ms  iad23s26-in-f10.1e100.net [173.194.121.42]
  9  45 ms  33 ms  31 ms  142.251.227.215
 10  33 ms  29 ms  30 ms  172.253.70.166
 11  52 ms  51 ms  52 ms  72.14.232.34
 12  49 ms  51 ms  49 ms  172.253.68.121
 13  48 ms  45 ms  46 ms  192.178.111.61
 14  59 ms  135 ms  82 ms  142.250.214.111
 15  51 ms  49 ms  50 ms  bom07s31-in-f14.1e100.net [142.250.183.142]

Trace complete.
```

## Ping google.com

In windows machine the ping command is performed to google.com and relevant outputs are presented below.

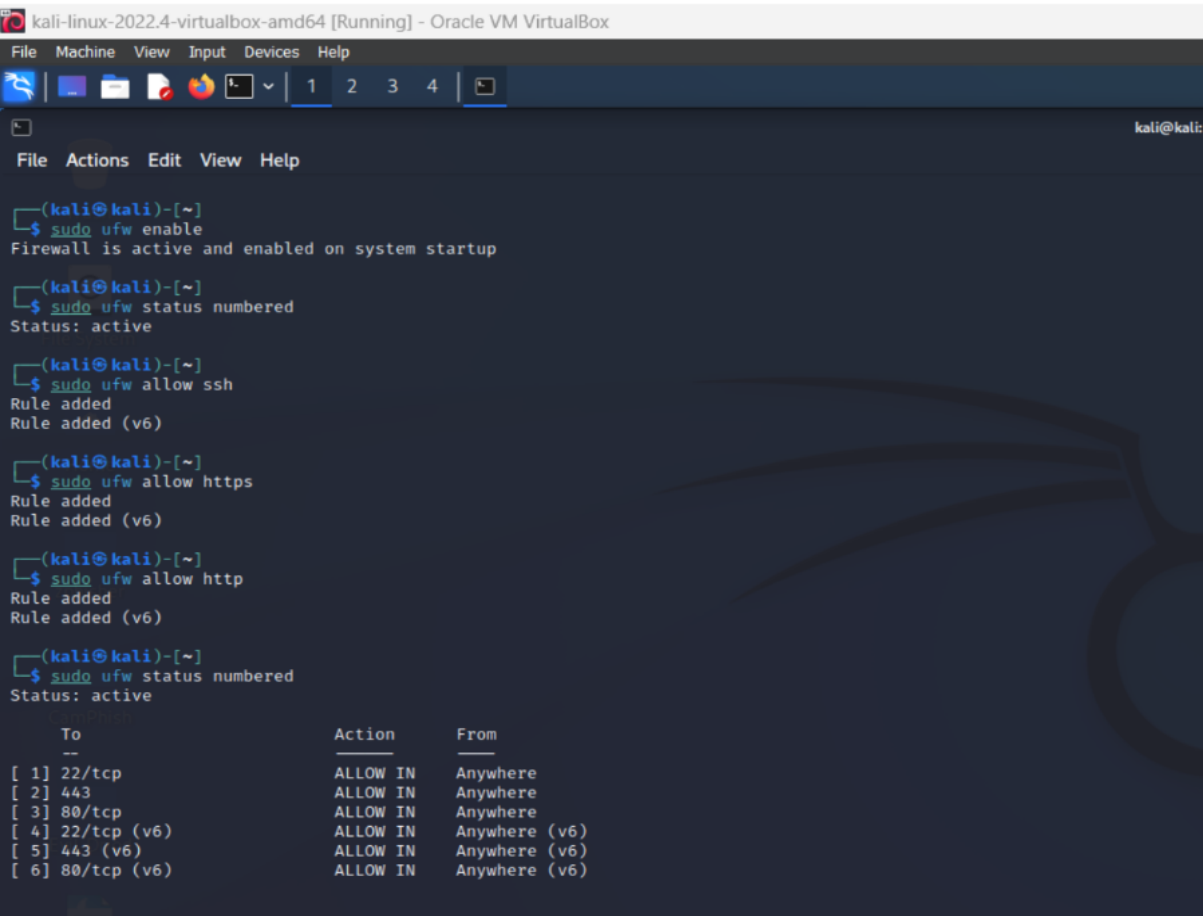
```
Pinging google.com [142.250.183.142] with 32 bytes of data:
Reply from 142.250.183.142: bytes=32 time=51ms TTL=117
Reply from 142.250.183.142: bytes=32 time=54ms TTL=117
Reply from 142.250.183.142: bytes=32 time=53ms TTL=117
Reply from 142.250.183.142: bytes=32 time=51ms TTL=117

Ping statistics for 142.250.183.142:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 51ms, Maximum = 54ms, Average = 52ms
```

## 2) Design a network with firewall and open ssh, http and https port.

I have installed the **Uncomplicated Firewall (UFW)** on my Linux virtual machine and enabled the firewall. After enabling it, I verified the active ports in the firewall. Then, I added rules to allow **SSH, HTTP, and HTTPS** traffic using the following commands:

```
sudo ufw allow ssh
sudo ufw allow http
sudo ufw allow https
```



As shown in the picture we configured the rules for the firewall allowing specific ports such as SSH, HTTP, HTTPS

