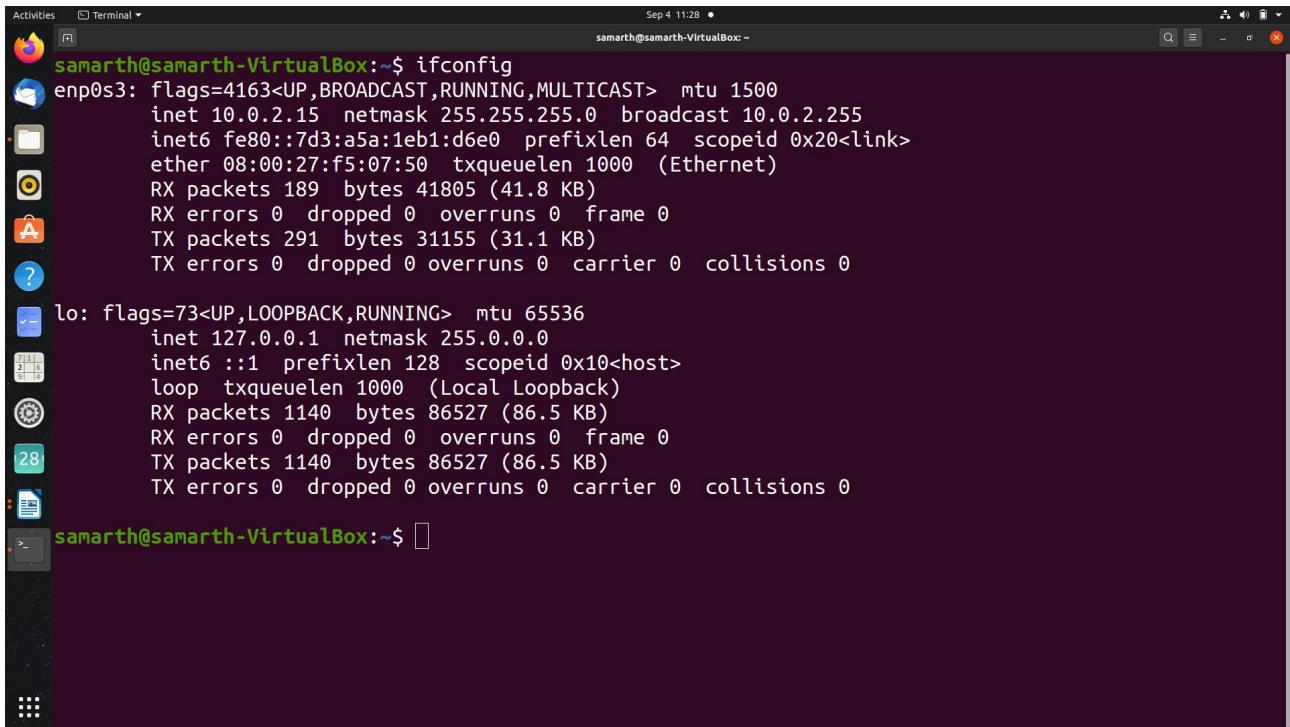


CN Assignment Lab 2: Exploring Networking commands in detail

-Samarth Shah(AU1841145)

1. Command : **ifconfig**- It is a utility for Linux machines to configure, assign, add, delete, control and query network interface in UNIX/Linux machine.

\$ ifconfig

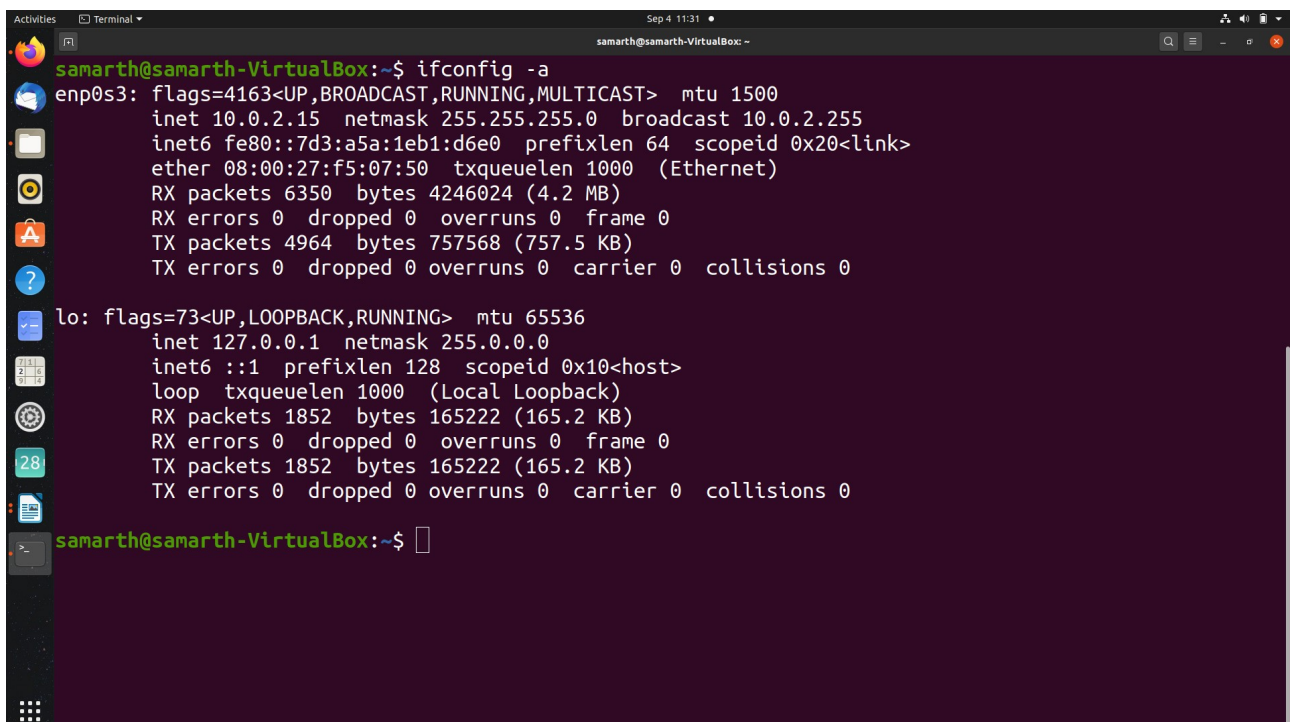


```
samarth@samarth-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::7d3:a5a:1eb1:d6e0 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:f5:07:50 txqueuelen 1000 (Ethernet)
    RX packets 189 bytes 41805 (41.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 291 bytes 31155 (31.1 KB)
    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 1140 bytes 86527 (86.5 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1140 bytes 86527 (86.5 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

samarth@samarth-VirtualBox:~$
```

\$ **ifconfig -a** - This option is used to display all the interfaces available, even if they are down.

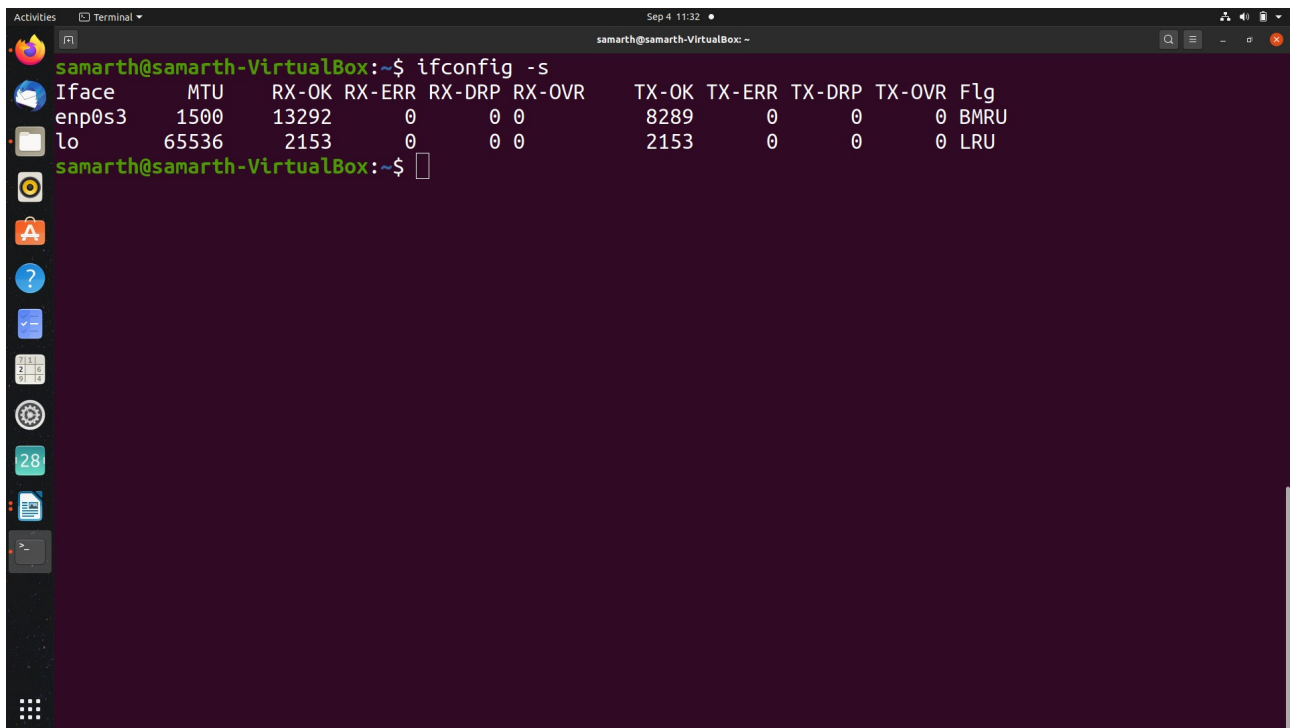


```
samarth@samarth-VirtualBox:~$ ifconfig -a
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::7d3:a5a:1eb1:d6e0 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:f5:07:50 txqueuelen 1000 (Ethernet)
    RX packets 6350 bytes 4246024 (4.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 4964 bytes 757568 (757.5 KB)
    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 1852 bytes 165222 (165.2 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1852 bytes 165222 (165.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

samarth@samarth-VirtualBox:~$
```

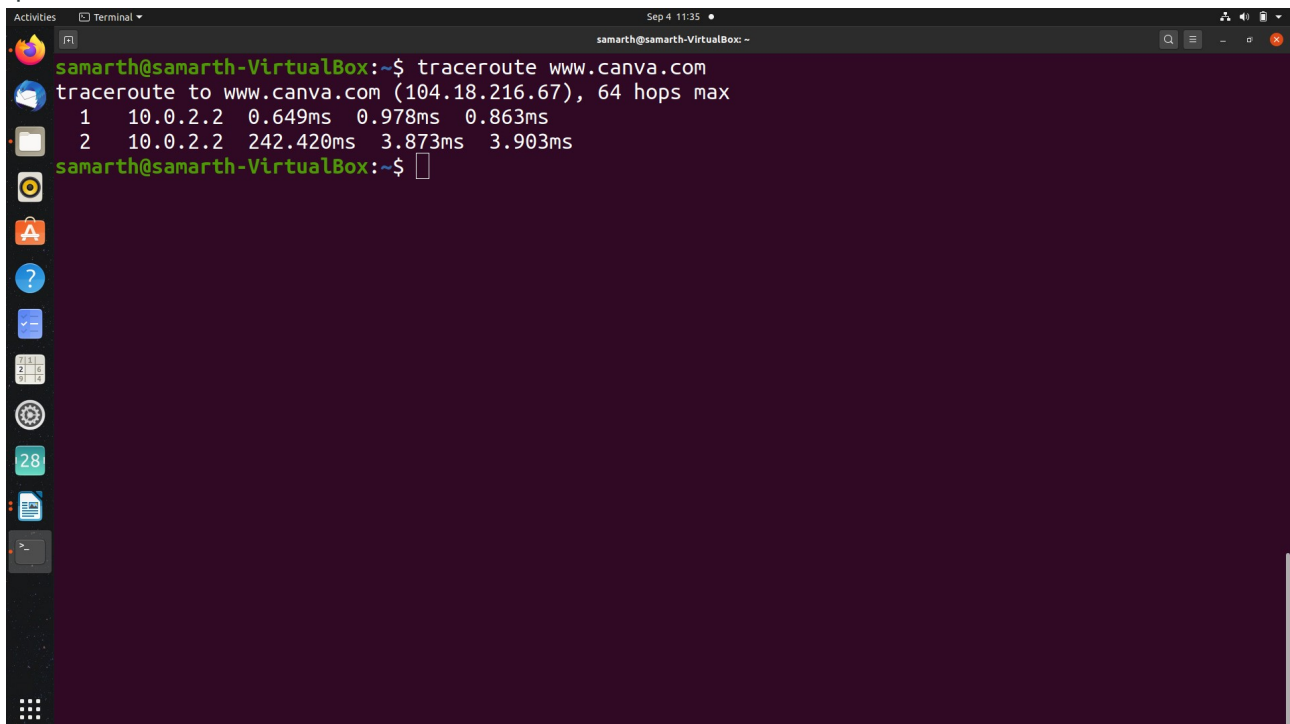
\$ ifconfig -s - Display a short list, instead of details.

A terminal window titled 'samarth@samarth-VirtualBox: ~' showing the output of the 'ifconfig -s' command. The output is a table with columns: Iface, MTU, RX-OK, RX-ERR, RX-DRP, RX-OVR, TX-OK, TX-ERR, TX-DRP, TX-OVR, and Flg. Two interfaces are listed: 'enp0s3' and 'lo'.

Iface	MTU	RX-OK	RX-ERR	RX-DRP	RX-OVR	TX-OK	TX-ERR	TX-DRP	TX-OVR	Flg
enp0s3	1500	13292	0	0	0	8289	0	0	0	BMRU
lo	65536	2153	0	0	0	2153	0	0	0	LRU

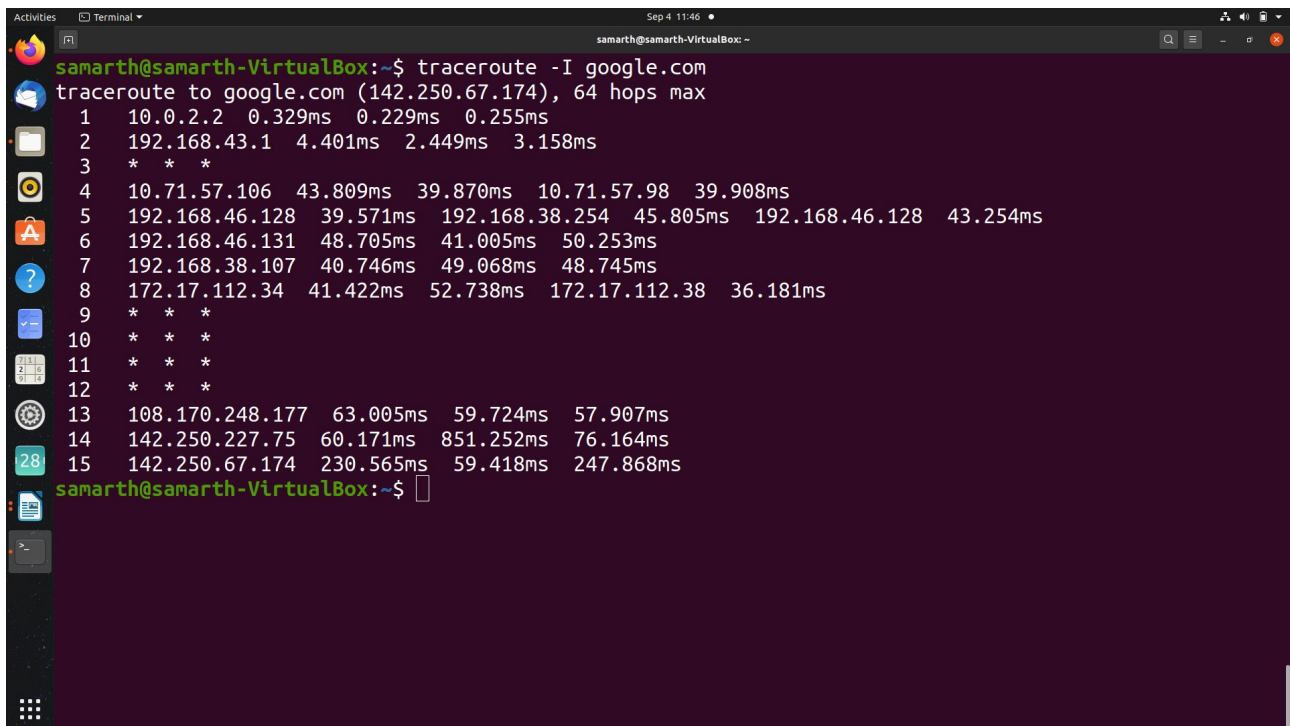
2. Command : **traceroute**- This command in Linux prints the route that a packet takes to reach the host. This command is useful when you want to know about the route and about all the hops that a packet takes.

\$ traceroute www.canva.com

A terminal window titled 'samarth@samarth-VirtualBox: ~' showing the output of the 'traceroute www.canva.com' command. The output shows the route to www.canva.com (104.18.216.67) with 64 hops max. Two hops are visible.

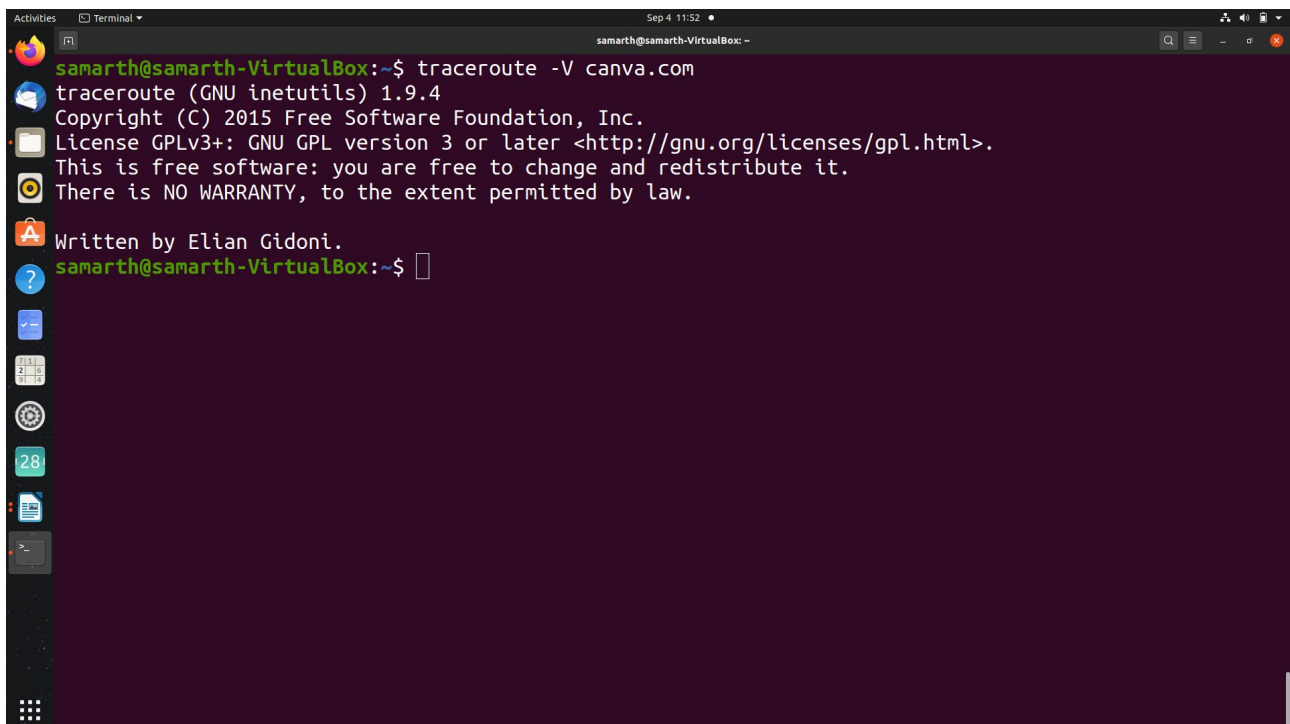
```
traceroute to www.canva.com (104.18.216.67), 64 hops max
 1  10.0.2.2  0.649ms  0.978ms  0.863ms
 2  10.0.2.2  242.420ms  3.873ms  3.903ms
```

\$ traceroute -I google.com – By default, traceroute uses high UDP(User Datagram Protocol) ports for tracing hosts. However, sometimes firewalls block these UDP ports. Hence, here it will use ICMP(Internet Control Message Protocol) instead of UDP for tracing hosts if “-I” flag is used.

A terminal window titled 'samarth@samarth-VirtualBox: ~' showing the output of the command 'traceroute -I google.com'. The output displays the path from the local host to google.com (142.250.67.174) with 64 hops maximum. The path consists of 15 hops, with some hops showing multiple parallel paths. The output is as follows:

```
samarth@samarth-VirtualBox:~$ traceroute -I google.com
traceroute to google.com (142.250.67.174), 64 hops max
 1  10.0.2.2  0.329ms  0.229ms  0.255ms
 2  192.168.43.1  4.401ms  2.449ms  3.158ms
 3  * * *
 4  10.71.57.106  43.809ms  39.870ms  10.71.57.98  39.908ms
 5  192.168.46.128  39.571ms  192.168.38.254  45.805ms  192.168.46.128  43.254ms
 6  192.168.46.131  48.705ms  41.005ms  50.253ms
 7  192.168.38.107  40.746ms  49.068ms  48.745ms
 8  172.17.112.34  41.422ms  52.738ms  172.17.112.38  36.181ms
 9  * * *
10  * * *
11  * * *
12  * * *
13  108.170.248.177  63.005ms  59.724ms  57.907ms
14  142.250.227.75  60.171ms  851.252ms  76.164ms
15  142.250.67.174  230.565ms  59.418ms  247.868ms
samarth@samarth-VirtualBox:~$
```

\$ traceroute -V canva.com – This command prints the version and exits.

A terminal window titled 'samarth@samarth-VirtualBox: ~' showing the output of the command 'traceroute -V canva.com'. The output displays the version of traceroute (1.9.4) and the license (GPLv3+). The output is as follows:

```
samarth@samarth-VirtualBox:~$ traceroute -V canva.com
traceroute (GNU inetutils) 1.9.4
Copyright (C) 2015 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

Written by Elian Gidoni.
samarth@samarth-VirtualBox:~$
```


3. Command : **netstat** - Netstat command displays various network related information such as network connections, routing tables, interface statistics, masquerade connections, multicast memberships etc.,

\$ netstat

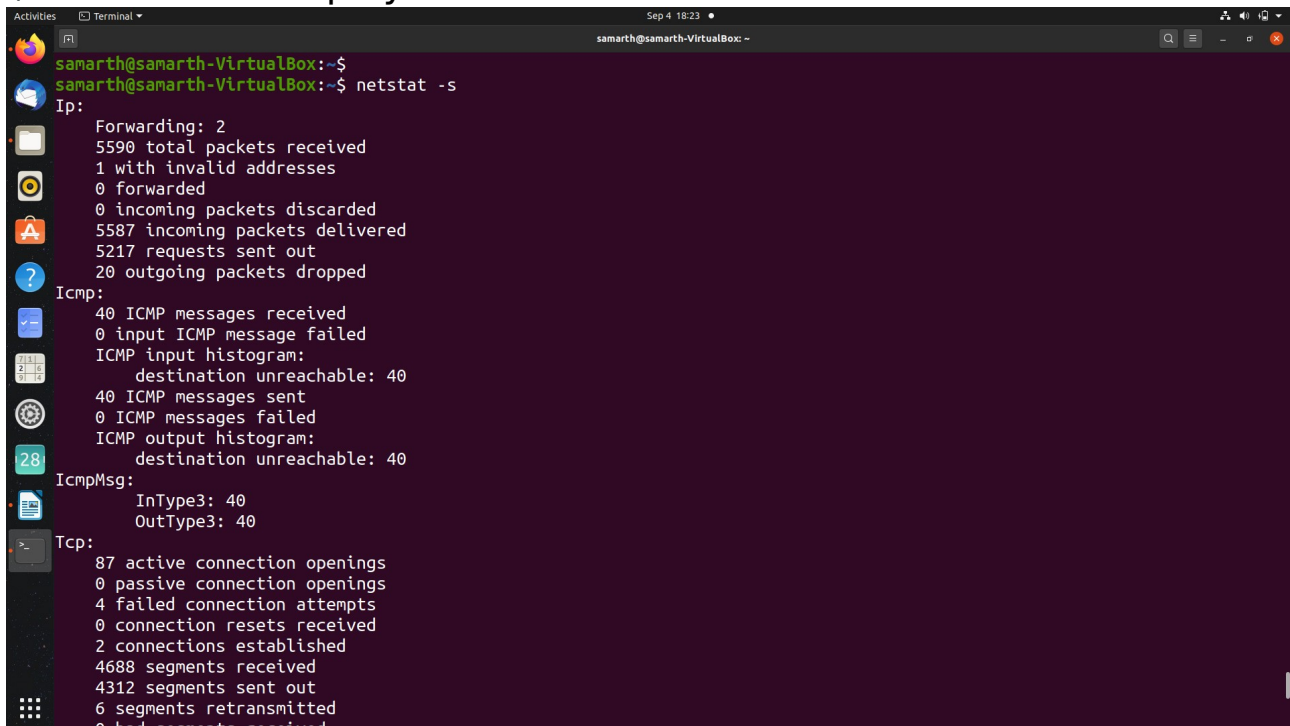
```
Activities Terminal Sep 4 11:56 samarth@samarth-VirtualBox: ~
samarth@samarth-VirtualBox:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 samarth-VirtualBo:54876 ec2-13-250-63-93.:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:44158 151.101.154.49:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:33338 deliverya.blr1.ca:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:37504 bom12s01-in-f14.1:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:44614 103.231.98.193:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:55898 ads.us.e-planning:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:44598 bom05s09-in-f14.1:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:37306 pr-bh-ing.pbp.vip:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:54560 hkg12s10-in-f3.1e:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:40596 bom07s01-in-f138.:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:35132 hkg12s09-in-f3.1e:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:56588 595.bn-nginx-load:https TIME_WAIT
tcp        0      0 samarth-VirtualBo:57528 bom12s03-in-f2.1e:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:39380 72.251.249.13:https TIME_WAIT
tcp        0      0 samarth-VirtualBo:34850 bom12s06-in-f2.1e:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:38906 150.136.25.38:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:45866 bom12s07-in-f14.1:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:44784 bom05s09-in-f14.1:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:49052 74.121.140.14:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:36960 ec2-52-12-8-165.u:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:45166 74.118.186.210:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:58704 104.17.78.107:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:48000 8.159.244.35.bc.g:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:46486 bom12s06-in-f1.1e:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:43456 bom07s18-in-f1.1e:https TIME_WAIT
tcp        0      0 samarth-VirtualBo:45522 tp172.208-100-17.:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:39626 49.44.165.201:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:47042 hkg12s09-in-f3.1e1:htt TIME_WAIT
tcp        0      0 samarth-VirtualBo:57262 69.173.159.50:https TIME_WAIT
tcp        0      0 samarth-VirtualBo:37518 205.180.86.178:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:43370 server-99-86-19-8:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:32826 kul01s09-in-f78.1:https TIME_WAIT
tcp        0      0 samarth-VirtualBo:59502 ip31.67-202-110.s:https ESTABLISHED
^C
samarth@samarth-VirtualBox:~$
```

\$ netstat -al - To list all TCP commands.

```
Activities Terminal Sep 4 18:21 samarth@samarth-VirtualBox: ~
samarth@samarth-VirtualBox:~$ netstat -al
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:domain        0.0.0.0:*               LISTEN
tcp        0      0 localhost:ipp            0.0.0.0:*               LISTEN
tcp        0      0 samarth-VirtualBo:56614 117.18.237.29:http      ESTABLISHED
tcp        0      0 samarth-VirtualBo:51916 ec2-52-32-39-224.:https ESTABLISHED
tcp        0      0 samarth-VirtualBo:56616 117.18.237.29:http      ESTABLISHED
tcp        0      0 samarth-VirtualBo:57540 ec2-54-148-237-15:https TIME_WAIT
tcp        0      0 samarth-VirtualBo:38310 whatsapp-cdn-shv-.https ESTABLISHED
tcp        0      0 samarth-VirtualBo:45978 maa03s22-in-f10.1:https TIME_WAIT
tcp6       0      0 ip6-localhost:ipp       [::]:*                  LISTEN
udp        0      0 0.0.0.0:mdns             0.0.0.0:*               *
udp        0      0 0.0.0.0:631              0.0.0.0:*               *
udp        0      0 0.0.0.0:58200            0.0.0.0:*               *
udp        0      0 localhost:domain        0.0.0.0:*               *
udp        0      0 samarth-VirtualB:bootpc _gateway:bootps         ESTABLISHED
udp6       0      0 [::]:mdns                [::]:*                  *
udp6       0      0 [::]:53758               [::]:*                  *
raw6       0      0 [::]:ipv6-icmp           [::]:*                  7

Active UNIX domain sockets (servers and established)
Proto RefCnt Flags   Type       State       I-Node      Path
unix   2      [ ACC ] STREAM   LISTENING   30783       @/tmp/.ICE-unix/1574
unix   2      [ ACC ] SEQPACKET LISTENING   13500       /run/udev/control
unix   2      [ ]     DGRAM     LISTENING   28223       /run/user/1000/systemd/notify
unix   2      [ ACC ] STREAM   LISTENING   28226       /run/user/1000/systemd/private
unix   2      [ ACC ] STREAM   LISTENING   28235       /run/user/1000/bus
unix   2      [ ACC ] STREAM   LISTENING   13473       /run/systemd/private
unix   2      [ ACC ] STREAM   LISTENING   28236       /run/user/1000/gnupg/S.dirmgr
unix   2      [ ACC ] STREAM   LISTENING   13475       /run/systemd/userdb/io.systemd.DynamicUser
unix   2      [ ACC ] STREAM   LISTENING   28237       /run/user/1000/gnupg/S.gpg-agent.browser
unix   2      [ ACC ] STREAM   LISTENING   28238       /run/user/1000/gnupg/S.gpg-agent.extra
```

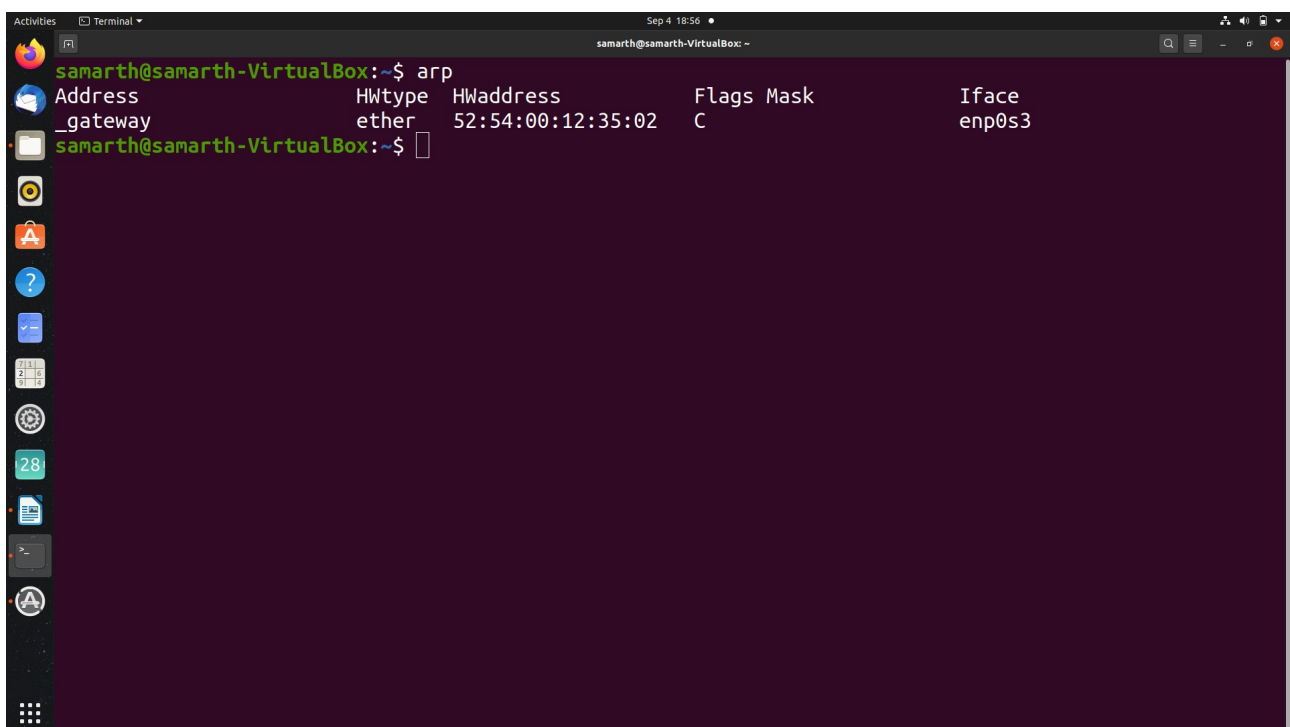
\$ netstat -s - Displays network statistics

A terminal window titled 'Terminal' with a dark background. The prompt is 'samarth@samarth-VirtualBox:~\$'. The command 'netstat -s' has been executed, displaying various network statistics categorized by protocol: Ip, Icmp, IcmpMsg, and Tcp. The output shows details like packet counts, connection openings, and message statistics.

```
samarth@samarth-VirtualBox:~$ netstat -s
Ip:
  Forwarding: 2
  5590 total packets received
  1 with invalid addresses
  0 forwarded
  0 incoming packets discarded
  5587 incoming packets delivered
  5217 requests sent out
  20 outgoing packets dropped
Icmp:
  40 ICMP messages received
  0 input ICMP message failed
  ICMP input histogram:
    destination unreachable: 40
  40 ICMP messages sent
  0 ICMP messages failed
  ICMP output histogram:
    destination unreachable: 40
IcmpMsg:
  InType3: 40
  OutType3: 40
Tcp:
  87 active connection openings
  0 passive connection openings
  4 failed connection attempts
  0 connection resets received
  2 connections established
  4688 segments received
  4312 segments sent out
  6 segments retransmitted
  0 bad segments received
```

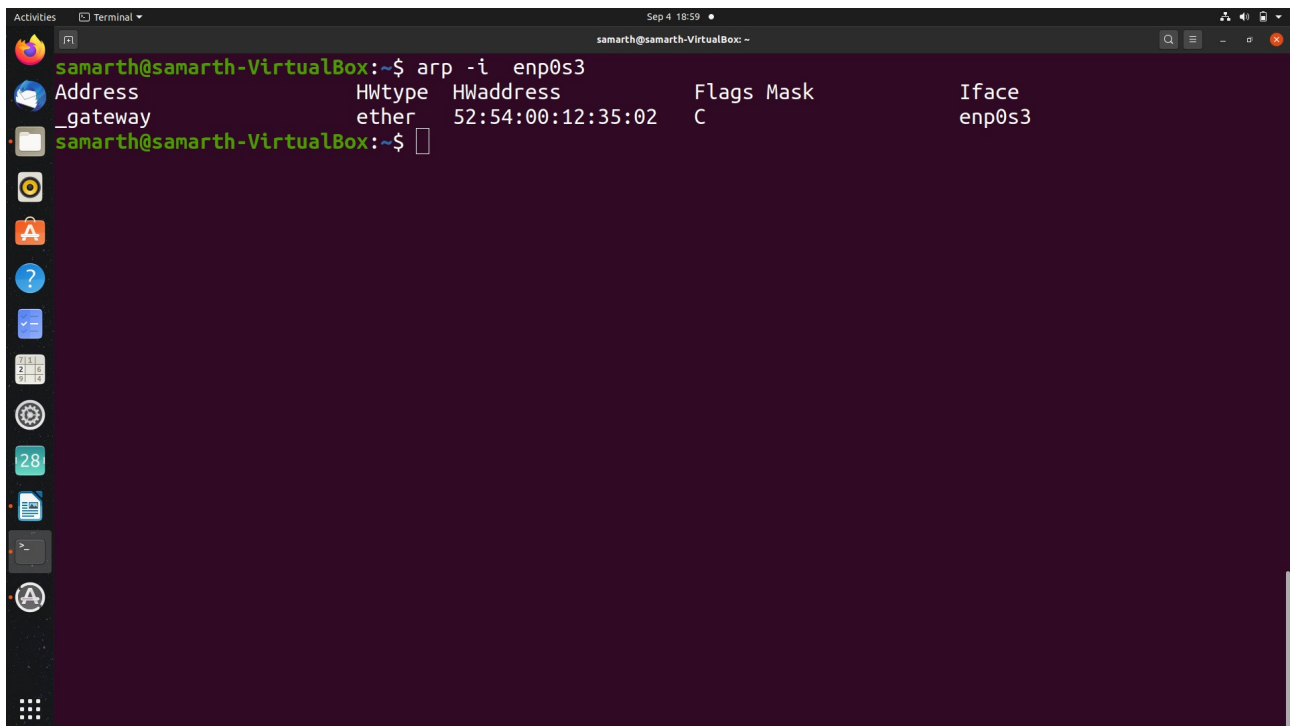
4. Command : **arp** - The purpose of the arp protocol is two-fold i.e. it determines the physical/MAC address of the destination device while sending a data packet and it responds with the MAC address of the machine on which it is running as answers queries received from other machines.

\$ arp

A terminal window titled 'Terminal' with a dark background. The prompt is 'samarth@samarth-VirtualBox:~\$'. The command 'arp' has been executed, displaying a table of ARP entries. The table has columns: Address, HWtype, HWaddress, Flags Mask, and Iface. One entry is shown for the gateway on interface enp0s3.

```
samarth@samarth-VirtualBox:~$ arp
Address      HWtype  HWaddress      Flags Mask    Iface
_gateway    ether    52:54:00:12:35:02 C              enp0s3
samarth@samarth-VirtualBox:~$
```

\$ arp -i enp0s3 -

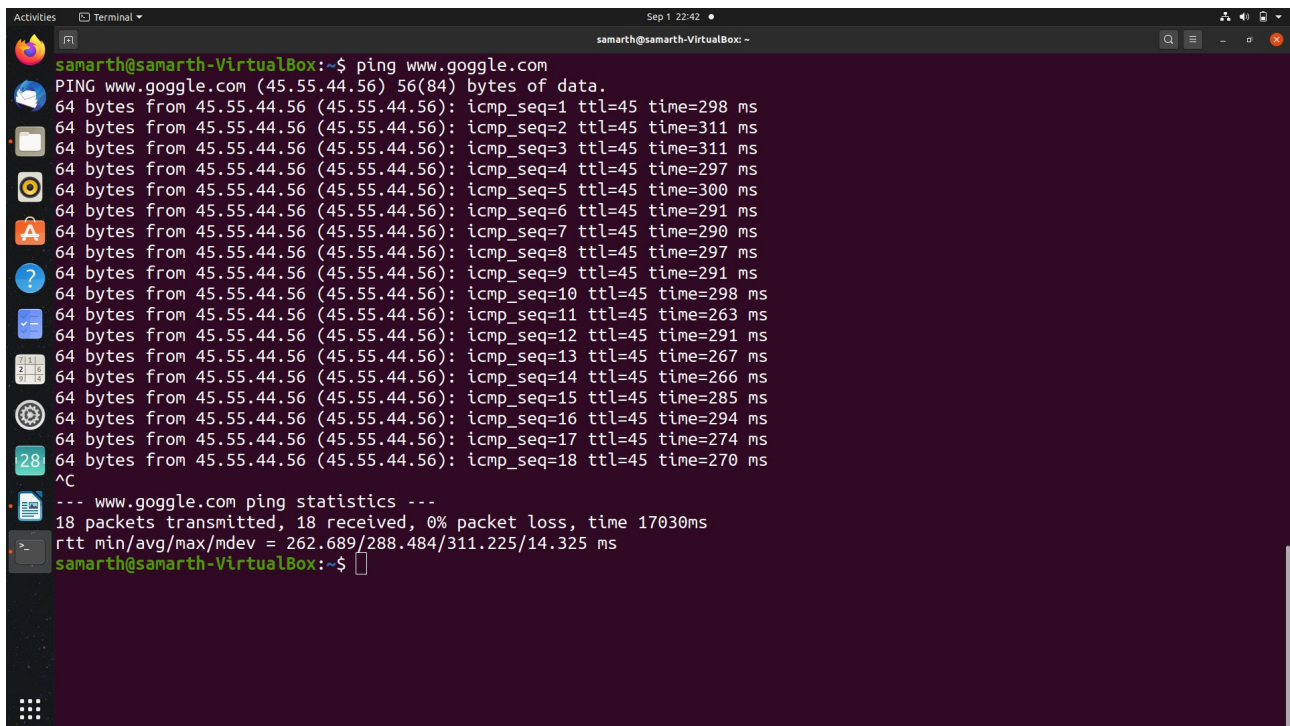


```
samarth@samarth-VirtualBox:~$ arp -i enp0s3
Address      HWtype  HWaddress      Flags Mask    Iface
_gateway     ether    52:54:00:12:35:02 C           enp0s3
samarth@samarth-VirtualBox:~$
```

5. Command : **ssh** – This protocol is used to securely connect to a remote server/system. It transfers inputs from the client to the host and relays back the output. This connection can also be used for terminal access, file transfers, and for tunneling other applications. Graphical X11 applications can also be run securely over **SSH** from a remote location.

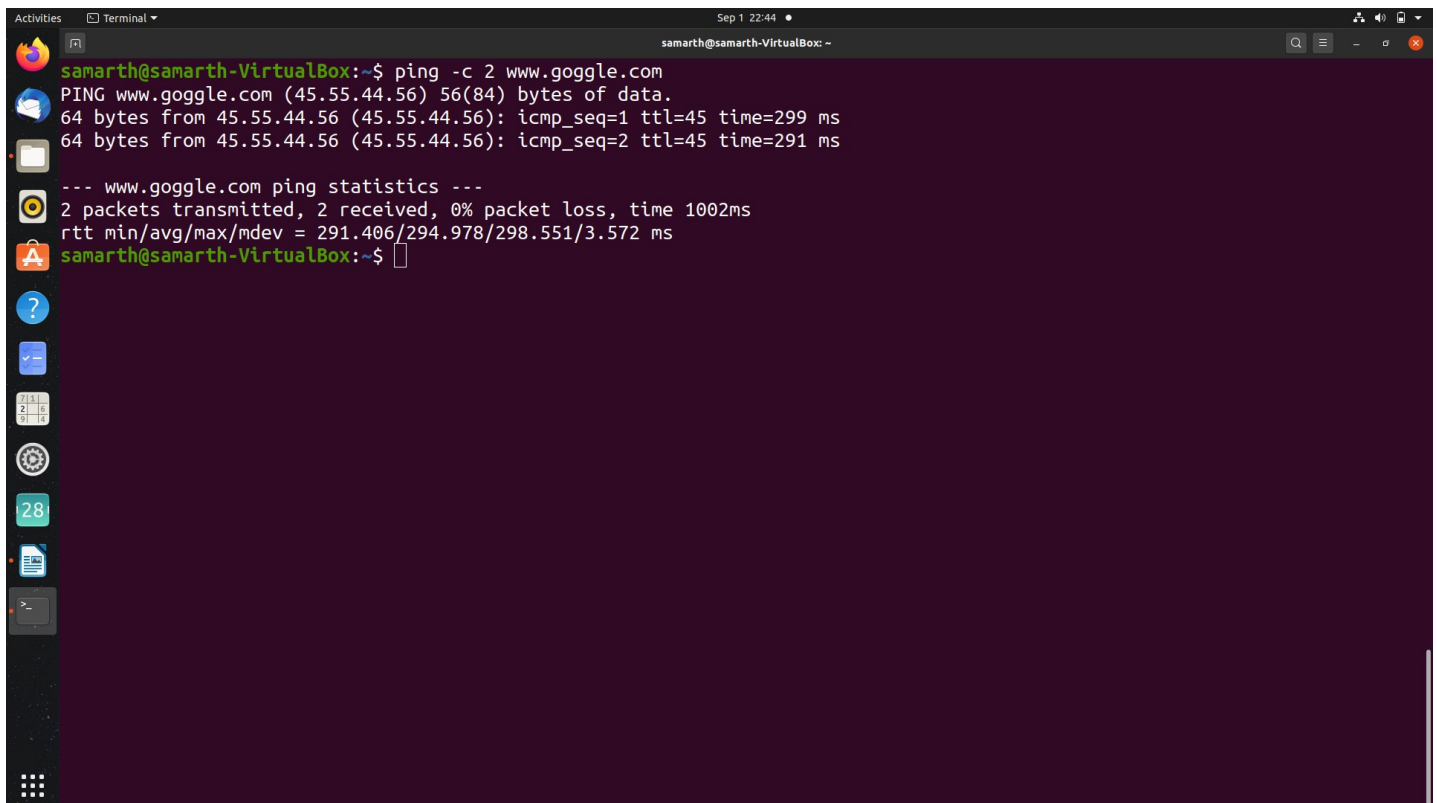
6. Command : **ping** - ping (Packet Internet Groper) is the most commonly used tool for troubleshooting a network, included with most operating systems. It is invoked using the *ping* command. The *ping* command uses ICMP (Internet Control Message Protocol) and works by sending an ICMP echo request message to the specified IP address. If the computer with the destination IP address is reachable, it responds with an ICMP echo reply message. The *ping* command outputs some information about a network performance, e.g. the round-trip time (the time from the packet transmission to reception).

\$ ping www.goggle.com



```
samarth@samarth-VirtualBox:~$ ping www.goggle.com
PING www.goggle.com (45.55.44.56) 56(84) bytes of data.
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=1 ttl=45 time=298 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=2 ttl=45 time=311 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=3 ttl=45 time=311 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=4 ttl=45 time=297 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=5 ttl=45 time=300 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=6 ttl=45 time=291 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=7 ttl=45 time=290 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=8 ttl=45 time=297 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=9 ttl=45 time=291 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=10 ttl=45 time=298 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=11 ttl=45 time=263 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=12 ttl=45 time=291 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=13 ttl=45 time=267 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=14 ttl=45 time=266 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=15 ttl=45 time=285 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=16 ttl=45 time=294 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=17 ttl=45 time=274 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=18 ttl=45 time=270 ms
^C
--- www.goggle.com ping statistics ---
18 packets transmitted, 18 received, 0% packet loss, time 17030ms
rtt min/avg/max/mdev = 262.689/288.484/311.225/14.325 ms
samarth@samarth-VirtualBox:~$
```

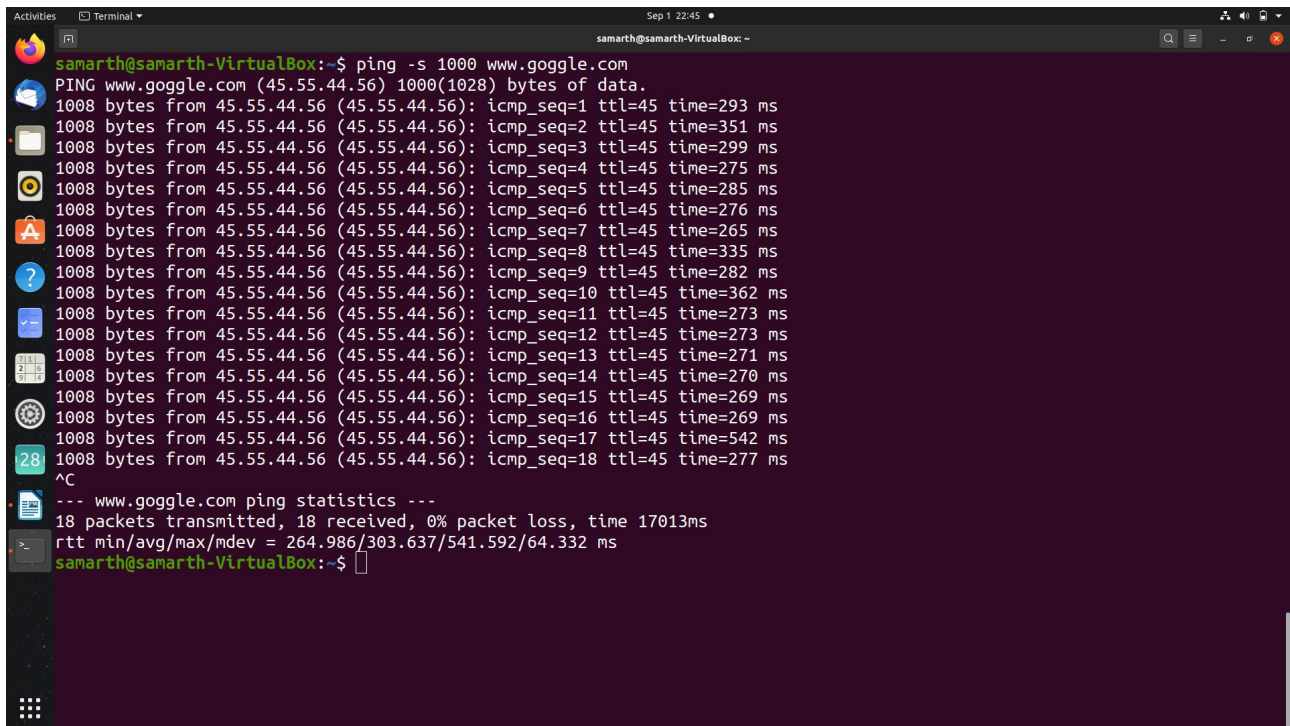
\$ ping -c 2 www.goggle.com - -c parameter is used specify the number of packets to send.



```
samarth@samarth-VirtualBox:~$ ping -c 2 www.goggle.com
PING www.goggle.com (45.55.44.56) 56(84) bytes of data.
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=1 ttl=45 time=299 ms
64 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=2 ttl=45 time=291 ms

--- www.goggle.com ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 291.406/294.978/298.551/3.572 ms
samarth@samarth-VirtualBox:~$
```

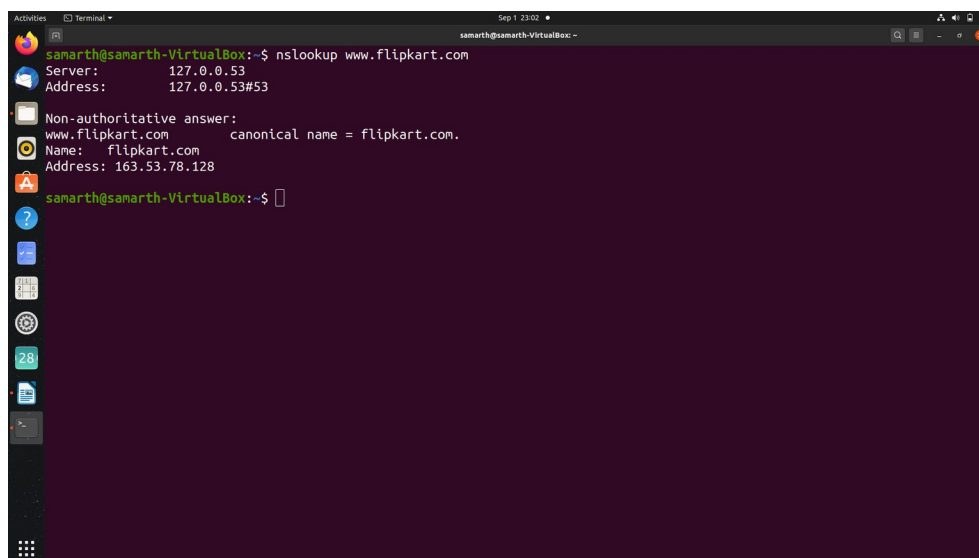

\$ ping -s 1000 www.google.com - -s parameter is used change the packets size.

A terminal window titled 'Terminal' with a dark background. The prompt is 'samarth@samarth-VirtualBox:~'. The command entered is 'ping -s 1000 www.google.com'. The output shows 18 ping attempts, each with 1008 bytes of data. The response for each attempt includes the source IP (45.55.44.56), the sequence number (icmp_seq=1 to icmp_seq=18), the TTL (45), and the time in milliseconds (ranging from 265 ms to 362 ms). After the ping sequence, the user presses '^C', and the terminal displays '--- www.google.com ping statistics ---' followed by '18 packets transmitted, 18 received, 0% packet loss, time 17013ms' and 'rtt min/avg/max/mdev = 264.986/303.637/541.592/64.332 ms'. The prompt returns to 'samarth@samarth-VirtualBox:~\$'.

```
samarth@samarth-VirtualBox:~$ ping -s 1000 www.google.com
PING www.google.com (45.55.44.56) 1000(1028) bytes of data.
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=1 ttl=45 time=293 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=2 ttl=45 time=351 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=3 ttl=45 time=299 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=4 ttl=45 time=275 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=5 ttl=45 time=285 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=6 ttl=45 time=276 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=7 ttl=45 time=265 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=8 ttl=45 time=335 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=9 ttl=45 time=282 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=10 ttl=45 time=362 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=11 ttl=45 time=273 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=12 ttl=45 time=273 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=13 ttl=45 time=271 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=14 ttl=45 time=270 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=15 ttl=45 time=269 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=16 ttl=45 time=269 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=17 ttl=45 time=542 ms
1008 bytes from 45.55.44.56 (45.55.44.56): icmp_seq=18 ttl=45 time=277 ms
^C
--- www.google.com ping statistics ---
18 packets transmitted, 18 received, 0% packet loss, time 17013ms
rtt min/avg/max/mdev = 264.986/303.637/541.592/64.332 ms
samarth@samarth-VirtualBox:~$
```

7. Command : nslookup – nslookup followed by the domain name will display the “A Record” (IP Address) of the domain. We can use this command to find the address record for a domain. It queries to domain name servers and get the details.

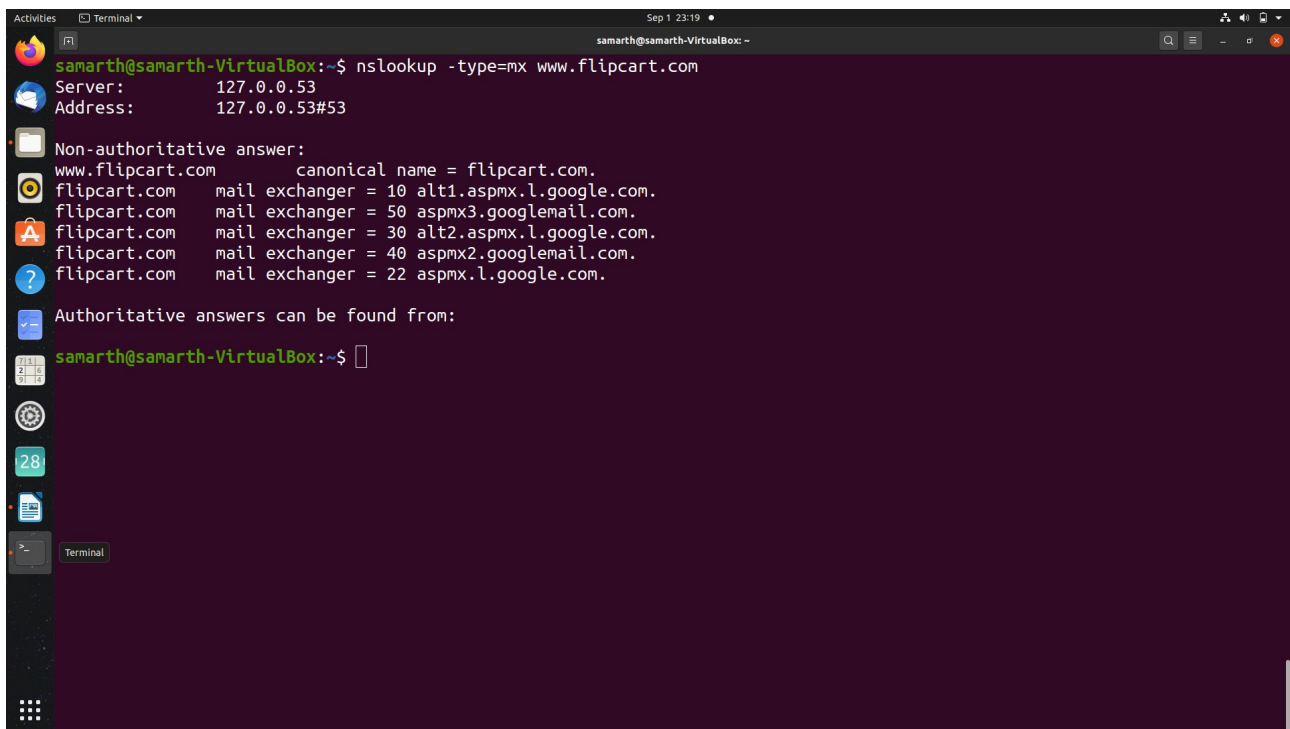
\$ nslookup www.flipkart.com

A terminal window titled 'Terminal' with a dark background. The prompt is 'samarth@samarth-VirtualBox:~'. The command entered is 'nslookup www.flipkart.com'. The output shows the server address (127.0.0.53) and the canonical name (flipkart.com) with its IP address (163.53.78.128). The prompt returns to 'samarth@samarth-VirtualBox:~\$'.

```
samarth@samarth-VirtualBox:~$ nslookup www.flipkart.com
Server:
Address: 127.0.0.53#53

Non-authoritative answer:
www.flipkart.com canonical name = flipkart.com.
Name: flipkart.com
Address: 163.53.78.128
samarth@samarth-VirtualBox:~$
```


\$ nslookup -type=mx www.flipcart.com - Lookup for an mx record MX(Mail Exchanger) record maps a domain name to a list of mail exchange servers for that domain.

A terminal window titled 'samarth@samarth-VirtualBox: ~' showing the command 'nslookup -type=mx www.flipcart.com'. The output displays the server address as 127.0.0.53 and provides a non-authoritative answer for the MX records of www.flipcart.com, listing five mail exchangers with their respective priorities and canonical names. The terminal interface includes a sidebar with application icons and a top status bar showing the date and time as 'Sep 1 23:19'.

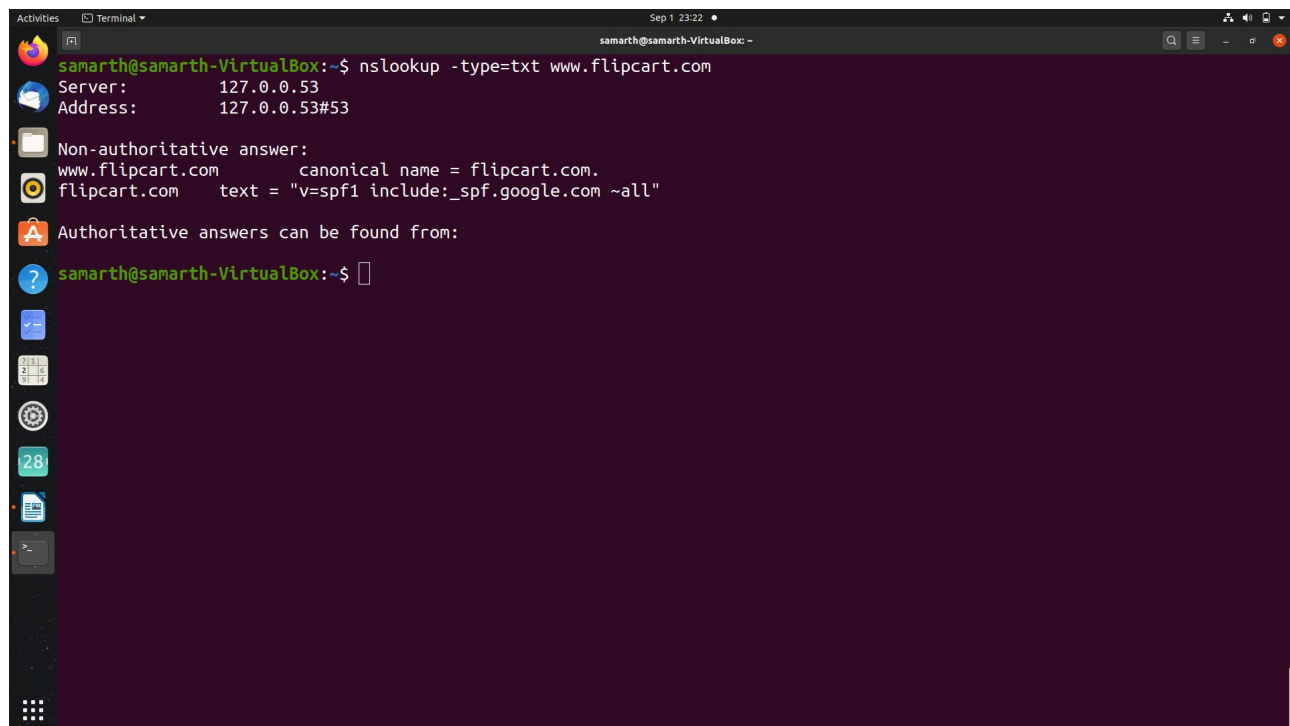
```
samarth@samarth-VirtualBox:~$ nslookup -type=mx www.flipcart.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
www.flipcart.com canonical name = flipcart.com.
flipcart.com    mail exchanger = 10 alt1.aspmx.l.google.com.
flipcart.com    mail exchanger = 50 aspmx3.googlemail.com.
flipcart.com    mail exchanger = 30 alt2.aspmx.l.google.com.
flipcart.com    mail exchanger = 40 aspmx2.googlemail.com.
flipcart.com    mail exchanger = 22 aspmx.l.google.com.

Authoritative answers can be found from:

samarth@samarth-VirtualBox:~$
```

\$ nslookup -type=txt www.flipcart.com - Lookup for an txt record that are useful for multiple types of records like DKIM, SPF, etc.

A terminal window titled 'samarth@samarth-VirtualBox: ~' showing the command 'nslookup -type=txt www.flipcart.com'. The output displays the server address as 127.0.0.53 and provides a non-authoritative answer for the TXT record of www.flipcart.com, showing a SPF record. The terminal interface includes a sidebar with application icons and a top status bar showing the date and time as 'Sep 1 23:22'.

```
samarth@samarth-VirtualBox:~$ nslookup -type=txt www.flipcart.com
Server:      127.0.0.53
Address:     127.0.0.53#53

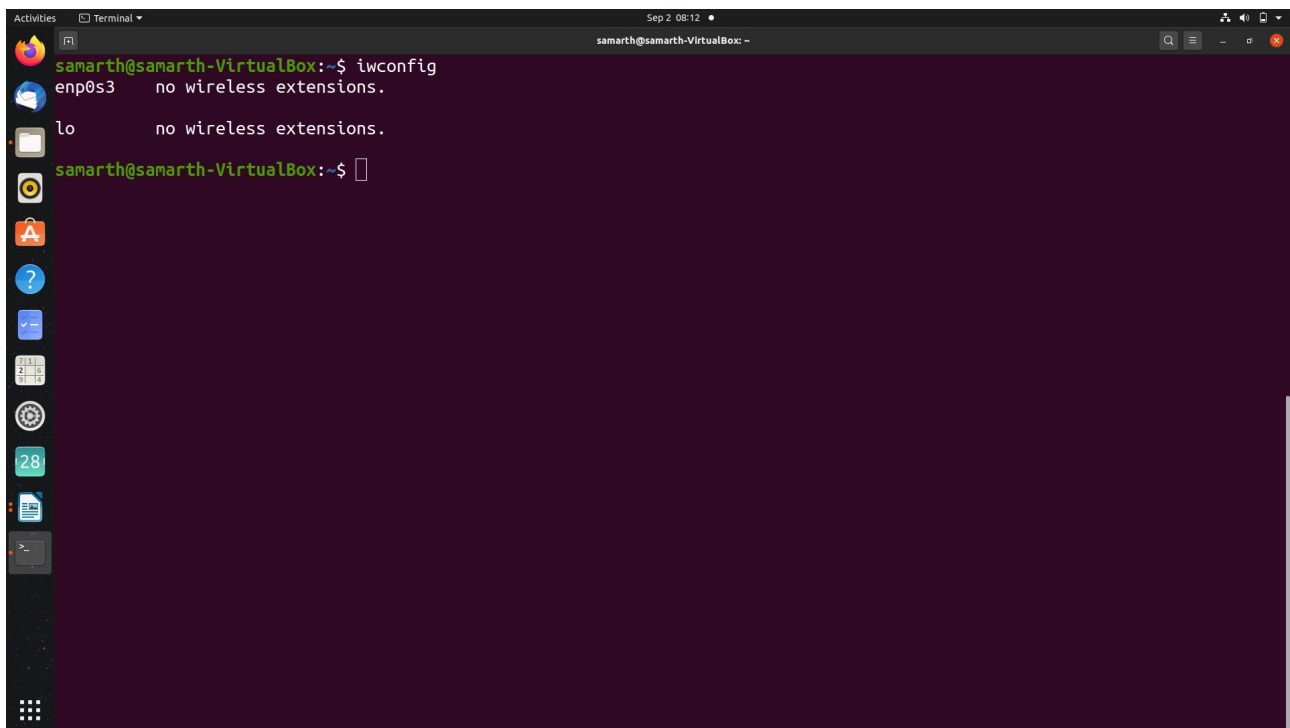
Non-authoritative answer:
www.flipcart.com canonical name = flipcart.com.
flipcart.com    text = "v=spf1 include:_spf.google.com ~all"

Authoritative answers can be found from:

samarth@samarth-VirtualBox:~$
```

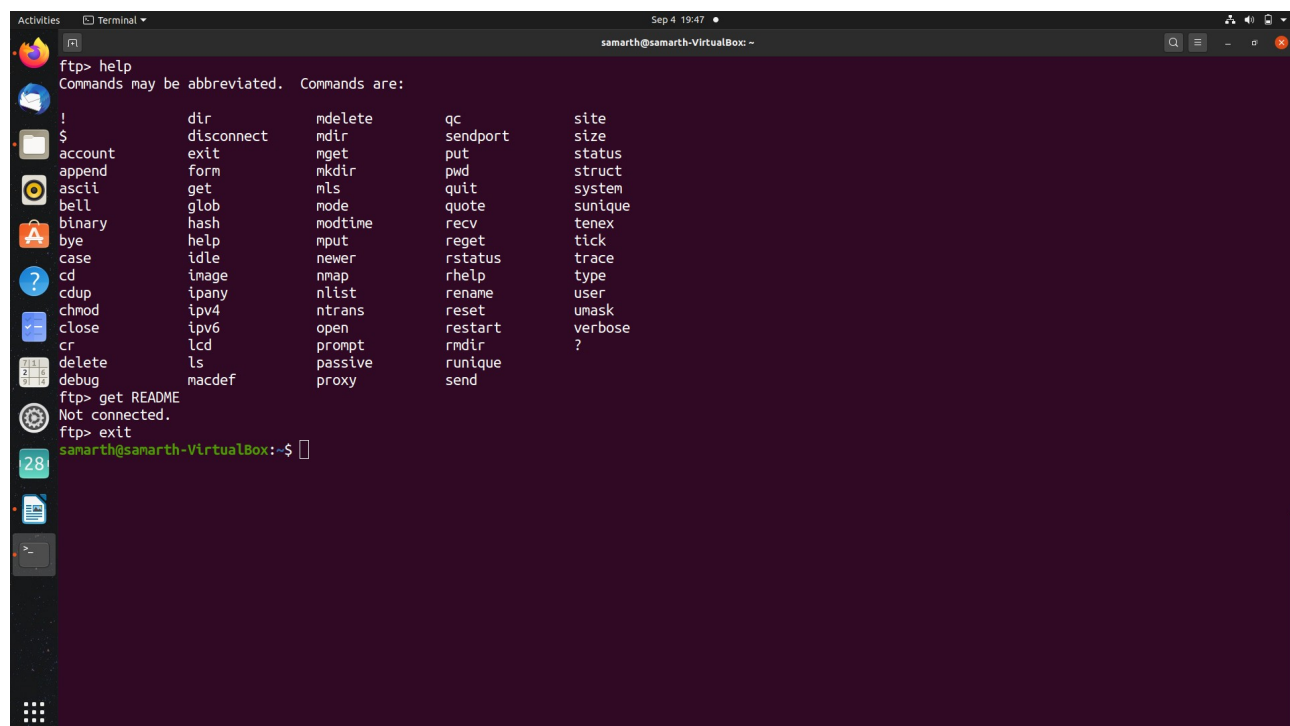
8. Command : iwconfig– Iwconfig is similar to ifconfig but is dedicated to the wireless interfaces. It is used to set the parameters of the network interface which are specific to the wireless operation (for example : the frequency). Iwconfig may also be used to display those parameters, and the wireless statistics.

\$ iwconfig

A terminal window titled 'Terminal' with a dark purple background. The prompt is 'samarth@samarth-VirtualBox:~\$'. The command 'iwconfig' has been entered, resulting in two lines of output: 'enp0s3 no wireless extensions.' and 'lo no wireless extensions.'. The prompt is now 'samarth@samarth-VirtualBox:~\$' with a cursor.

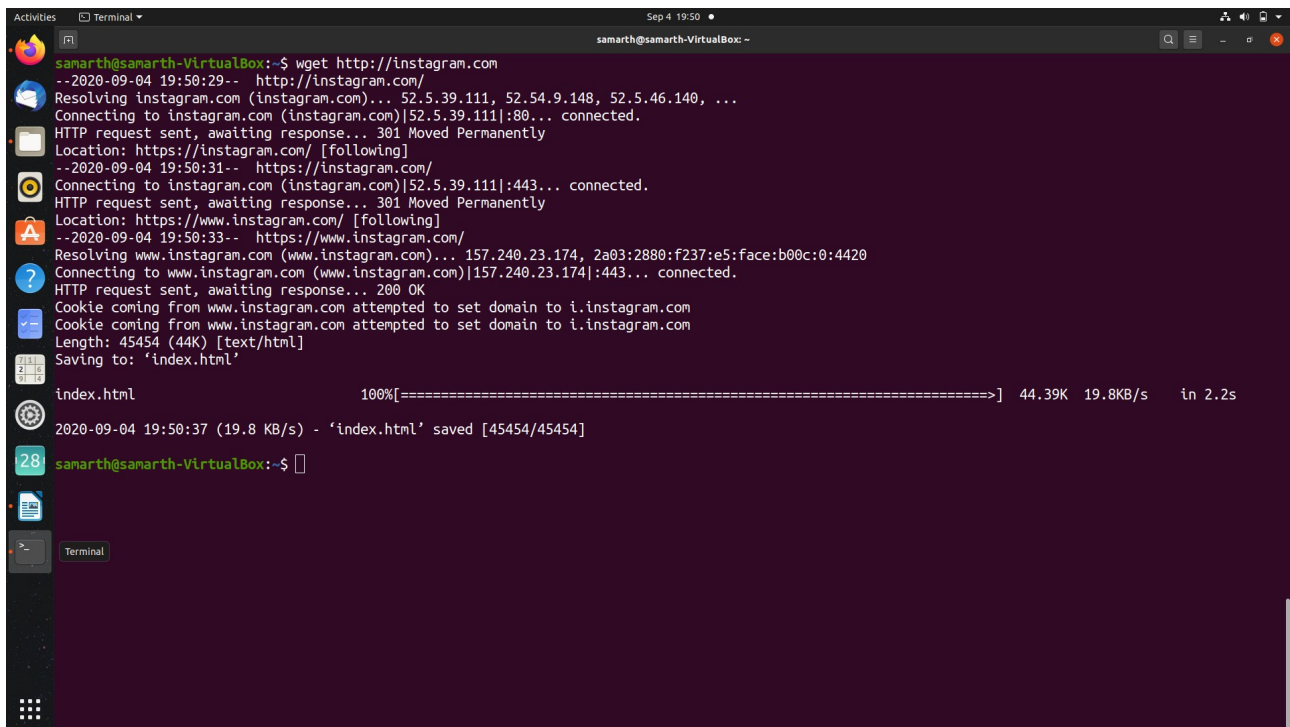
```
samarth@samarth-VirtualBox:~$ iwconfig
enp0s3 no wireless extensions.
lo no wireless extensions.
samarth@samarth-VirtualBox:~$
```

9. Command : ftp – ftp is the user interface to the Internet standard File Transfer Protocol. The program allows a user to transfer files to and from a remote network site.

A terminal window titled 'Terminal' with a dark purple background. The prompt is 'samarth@samarth-VirtualBox:~\$'. The command 'ftp' has been entered, and the prompt changes to 'ftp>'. The user enters 'help', and the terminal displays a list of commands: 'Commands may be abbreviated. Commands are: !, \$, account, append, ascii, bell, binary, bye, case, cd, cdup, chmod, close, cr, delete, debug, dir, disconnect, exit, form, get, glob, hash, help, idle, image, ipany, ipv4, ipv6, lcd, ls, mdelete, mdir, mget, mkdir, mls, mode, modtime, mput, newer, nmap, nlist, ntrans, open, prompt, passive, proxy, qc, sendport, put, pwd, quit, quote, rcv, reget, rstatus, rhelp, rename, reset, restart, rmdir, runique, send, site, size, status, struct, system, sunique, tenex, tick, trace, type, user, umask, verbose, ?'. The user enters 'get README', and the terminal displays 'Not connected.'. The user enters 'exit', and the prompt returns to 'samarth@samarth-VirtualBox:~\$'.

```
samarth@samarth-VirtualBox:~$ ftp
ftp> help
Commands may be abbreviated. Commands are:
!      dir      mdelete  qc       site
$      disconnect mdir     sendport size
account exit     mget     put      status
append form    mkdir    pwd      struct
ascii  get     mls      quote   system
bell   glob    mode     rcv      sunique
binary hash   modtime  reget   tenex
bye    help   mput     rstatus tick
case   idle   newer    rstatus trace
cd     image  nmap     rhelp   type
cdup   ipany  nlist    rename  user
chmod  ipv4   ntrans   reset   umask
close  ipv6   open     restart verbose
cr     lcd    prompt   rmdir
delete ls      passive  runique
debug  macdef proxy     send
ftp> get README
Not connected.
ftp> exit
samarth@samarth-VirtualBox:~$
```

10. Command : wget - Wget is the non-interactive network downloader which is used to download files from the server even when the user has not logged on to the system and it can work in the background without hindering the current process. GNU wget is a free utility for non-interactive download of files from the Web. It supports HTTP, HTTPS, and FTP protocols, as well as retrieval through HTTP proxies.



```
samarth@samarth-VirtualBox:~$ wget http://instagram.com
--2020-09-04 19:50:29-- http://instagram.com/
Resolving instagram.com (instagram.com)... 52.5.39.111, 52.54.9.148, 52.5.46.140, ...
Connecting to instagram.com (instagram.com)|52.5.39.111|:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://instagram.com/ [following]
--2020-09-04 19:50:31-- https://instagram.com/
Connecting to instagram.com (instagram.com)|52.5.39.111|:443... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://www.instagram.com/ [following]
--2020-09-04 19:50:33-- https://www.instagram.com/
Resolving www.instagram.com (www.instagram.com)... 157.240.23.174, 2a03:2880:f237:e5:face:b00c:0:4420
Connecting to www.instagram.com (www.instagram.com)|157.240.23.174|:443... connected.
HTTP request sent, awaiting response... 200 OK
Cookie coming from www.instagram.com attempted to set domain to i.instagram.com
Cookie coming from www.instagram.com attempted to set domain to i.instagram.com
Length: 45454 (44K) [text/html]
Saving to: 'index.html'

index.html                               100%[=====] 44.39K 19.8KB/s   in 2.2s

2020-09-04 19:50:37 (19.8 KB/s) - 'index.html' saved [45454/45454]

samarth@samarth-VirtualBox:~$
```