20MCA136-NETWORKING & ADMINISTRATION

LAB EXPERIMENT

SUBMITTED BY,

VIVIN V. ABRAHAM

R MCA-2020-S2

ROLL NO : 42

SUBMITTED TO ,

RINI MISS

1. Ping & traceroute tests

Ping and Trace Route tests can help to identify any connection issues between your network and a specified server (or website) address.

Ping test

The PING command is used to test the connection and latency between two network connections. The PING command sends packets of information to a specified IP Address and then measures the time it takes to get a response from the specified computer or device.

WINDOWS

```
C:\vivin>ping www.google.com

Pinging www.google.com [142.250.205.228] with 32 bytes of data:
Reply from 142.250.205.228: bytes=32 time=226ms TTL=119
Reply from 142.250.205.228: bytes=32 time=45ms TTL=119
Reply from 142.250.205.228: bytes=32 time=20ms TTL=119
Reply from 142.250.205.228: bytes=32 time=18ms TTL=119

Ping statistics for 142.250.205.228:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 18ms, Maximum = 226ms, Average = 77ms

C:\vivin>
```

UBUNTU

```
vivin@vivin-VirtualBox:~/Desktop$ ping www.google.com
PING www.google.com (142.250.205.228) 56(84) bytes of data.
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=1 ttl=118 ti
me=20.1 ms
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=2 ttl=118 ti
me=22.7 ms
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=3 ttl=118 ti
me=20.6 ms
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=4 ttl=118 ti
me=20.6 ms
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=5 ttl=118 ti
me=21.2 ms
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=6 ttl=118 ti
me=98.8 ms
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=7 ttl=118 ti
me=21.1 ms
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=8 ttl=118 ti
me=19.3 ms
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=9 ttl=118 ti
me=20.5 ms
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=10 ttl=118 t
ime=21.2 ms
```

-c represents certain number of packet can use -c3 means 3 packets used

```
vivin@vivin-VirtualBox:~/Desktop$ ping -c3 www.google.com
PING www.google.com (142.250.205.228) 56(84) bytes of data.
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=1 ttl=118 ti
me=20.2 ms
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=2 ttl=118 ti
me=30.9 ms
64 bytes from maa05s28-in-f4.1e100.net (142.250.205.228): icmp_seq=3 ttl=118 ti
me=19.5 ms

--- www.google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 19.527/23.521/30.852/5.190 ms
vivin@vivin-VirtualBox:~/Desktop$
```

Trace Route test

The TRACERT command is used to conduct a similar test to PING, but instead of displaying the time it takes to connect, it looks at the exact server hops required to connect your computer to the server.
You should already have the CMD prompt dialogue box open, after performing the PING test above.

WINDOWS

```
C:\vivin>tracert www.google.com

Tracing route to www.google.com [142.250.205.228]
over a maximum of 30 hops:

  1     1 ms     1 ms     1 ms  192.168.1.1
  2     3 ms     4 ms     3 ms  10.11.29.139
  3    18 ms    18 ms    18 ms  103.231.217.153
  4    19 ms    18 ms    19 ms  45.125.116.86
  5    21 ms    20 ms    20 ms  216.239.54.75
  6    18 ms    19 ms    30 ms  142.251.60.187
  7    18 ms    18 ms    18 ms  maa05s28-in-f4.1e100.net [142.250.205.228]

Trace complete.

C:\vivin>
```

UBUNTU

```
vivin@vivin-VirtualBox:~/Desktop$ traceroute www.google.com
traceroute to www.google.com (142.250.196.164), 30 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  0.384 ms  0.350 ms  0.341 ms
 2  _gateway (10.0.2.2)  327.454 ms  327.443 ms  328.437 ms
vivin@vivin-VirtualBox:~/Desktop$
```

2. nslookup

Microsoft Windows includes a tool called NSLOOKUP that you can use via the command prompt. This tool can be used to check DNS records propagation and resolution using different servers, and perform other troubleshooting steps.

WINDOWS

```
C:\vivin>nslookup amazon.in
Server:  UnKnown
Address:  192.168.1.1

Non-authoritative answer:
Name:    amazon.in
Addresses:  54.239.33.92
          52.95.120.67
          52.95.116.115


C:\vivin>
```

UBUNTU

```
vivin@vivin-VirtualBox:~/Desktop$ nslookup amazon.in
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
Name:   amazon.in
Address: 54.239.33.92
Name:   amazon.in
Address: 52.95.116.115
Name:   amazon.in
Address: 52.95.120.67

vivin@vivin-VirtualBox:~/Desktop$
```

Type nslookup -q=XX where XX is a type of a DNS record. Some of the available types are MX, A, CNAME, and TXT. The records are then displayed, to exit the tool type exit

WINDOWS

```
C:\vivin>nslookup -type=ns amazon.in
Server:  UnKnown
Address:  192.168.1.1

Non-authoritative answer:
amazon.in       nameserver = pdns4.ultradns.org
amazon.in       nameserver = pdns1.ultradns.net
amazon.in       nameserver = pdns2.ultradns.net
amazon.in       nameserver = ns1.p31.dynect.net
amazon.in       nameserver = pdns3.ultradns.org
amazon.in       nameserver = pdns6.ultradns.co.uk
amazon.in       nameserver = ns4.p31.dynect.net
amazon.in       nameserver = pdns5.ultradns.info
amazon.in       nameserver = ns3.p31.dynect.net
amazon.in       nameserver = ns2.p31.dynect.net

pdns5.ultradns.info     internet address = 204.74.114.1
pdns2.ultradns.net      internet address = 204.74.109.1
pdns3.ultradns.org      internet address = 199.7.68.1
pdns4.ultradns.org      internet address = 199.7.69.1
ns1.p31.dynect.net      internet address = 208.78.70.31
ns2.p31.dynect.net      internet address = 204.13.250.31
pdns5.ultradns.info     AAAA IPv6 address = 2610:a1:1016::1
pdns2.ultradns.net      AAAA IPv6 address = 2610:a1:1014::1
pdns3.ultradns.org      AAAA IPv6 address = 2610:a1:1015::1
pdns1.ultradns.net      AAAA IPv6 address = 2001:502:f3ff::1

C:\vivin>
```

UBUNTU

```
vivin@vivin-VirtualBox:~/Desktop$ nslookup -type=ns amazon.in
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
amazon.in       nameserver = ns1.p31.dynect.net.
amazon.in       nameserver = pdns5.ultradns.info.
amazon.in       nameserver = pdns6.ultradns.co.uk.
amazon.in       nameserver = pdns4.ultradns.org.
amazon.in       nameserver = pdns1.ultradns.net.
amazon.in       nameserver = pdns2.ultradns.net.
amazon.in       nameserver = ns4.p31.dynect.net.
amazon.in       nameserver = ns3.p31.dynect.net.
amazon.in       nameserver = ns2.p31.dynect.net.
amazon.in       nameserver = pdns3.ultradns.org.

Authoritative answers can be found from:

vivin@vivin-VirtualBox:~/Desktop$
```

To use **nslookup** as a troubleshooting tool, you can set the specific type of record to lookup for a domain by using the **-type=record_type** where **record_type** is A, CNAME, MX, PTR, NS, ANY.
Type **nslookup -type=ns domain_name** where domain_name is the domain for your query and hit **Enter.** Now the tool will display the name servers for the domain you specified.

WINDOWS

```
C:\vivin>nslookup -q=MX amazon.in
Server:  UnKnown
Address:  192.168.1.1

Non-authoritative answer:
amazon.in       MX preference = 10, mail exchanger = amazon-smtp.amazon.com

amazon.in       nameserver = ns3.p31.dynect.net
amazon.in       nameserver = pdns2.ultradns.net
amazon.in       nameserver = pdns3.ultradns.org
amazon.in       nameserver = pdns4.ultradns.org
amazon.in       nameserver = ns4.p31.dynect.net
amazon.in       nameserver = pdns1.ultradns.net
amazon.in       nameserver = ns1.p31.dynect.net
amazon.in       nameserver = pdns5.ultradns.info
amazon.in       nameserver = pdns6.ultradns.co.uk
amazon.in       nameserver = ns2.p31.dynect.net
pdns5.ultradns.info     internet address = 204.74.114.1
pdns5.ultradns.info     AAAA IPv6 address = 2610:a1:1016::1
ns4.p31.dynect.net      internet address = 204.13.251.31
pdns2.ultradns.net      internet address = 204.74.109.1
pdns2.ultradns.net      AAAA IPv6 address = 2610:a1:1014::1
pdns3.ultradns.org      internet address = 199.7.68.1
pdns3.ultradns.org      AAAA IPv6 address = 2610:a1:1015::1
pdns1.ultradns.net      internet address = 204.74.108.1
pdns1.ultradns.net      AAAA IPv6 address = 2001:502:f3ff::1

C:\vivin>
```

UBUNTU

```
Terminal
vivin@vivin-VirtualBox:~/Desktop$ nslookup -q=MX amazon.in
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
amazon.in       mail exchanger = 10 amazon-smtp.amazon.com.

Authoritative answers can be found from:

vivin@vivin-VirtualBox:~/Desktop$
```

3. Netstat

On Windows 10, netstat (network statistics) has been around for a long time, and it's a command-line tool that you can use in Command Prompt to display statistics for all network connections. It allows you to understand open and connected ports to monitor and troubleshoot networking problems for system or applications.

WINDOWS

```
C:\vivin>netstat

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:3745         LAPTOP-U2SEQKP4:11015  ESTABLISHED
  TCP    127.0.0.1:3746         LAPTOP-U2SEQKP4:11012  ESTABLISHED
  TCP    127.0.0.1:4110         LAPTOP-U2SEQKP4:11015  ESTABLISHED
  TCP    127.0.0.1:4112         LAPTOP-U2SEQKP4:11012  ESTABLISHED
  TCP    127.0.0.1:4113         LAPTOP-U2SEQKP4:11013  ESTABLISHED
  TCP    127.0.0.1:4114         LAPTOP-U2SEQKP4:11011  ESTABLISHED
  TCP    127.0.0.1:4116         LAPTOP-U2SEQKP4:4117   ESTABLISHED
  TCP    127.0.0.1:4117         LAPTOP-U2SEQKP4:4116   ESTABLISHED
  TCP    127.0.0.1:4119         LAPTOP-U2SEQKP4:4120   ESTABLISHED
  TCP    127.0.0.1:4120         LAPTOP-U2SEQKP4:4119   ESTABLISHED
  TCP    127.0.0.1:11011        LAPTOP-U2SEQKP4:4114   ESTABLISHED
  TCP    127.0.0.1:11012        LAPTOP-U2SEQKP4:3746   ESTABLISHED
  TCP    127.0.0.1:11012        LAPTOP-U2SEQKP4:4112   ESTABLISHED
  TCP    127.0.0.1:11013        LAPTOP-U2SEQKP4:4113   ESTABLISHED
  TCP    127.0.0.1:11015        LAPTOP-U2SEQKP4:3745   ESTABLISHED
  TCP    127.0.0.1:11015        LAPTOP-U2SEQKP4:4110   ESTABLISHED
  TCP    127.0.0.1:13827        LAPTOP-U2SEQKP4:13828  ESTABLISHED
  TCP    127.0.0.1:13828        LAPTOP-U2SEQKP4:13827  ESTABLISHED
  TCP    127.0.0.1:13829        LAPTOP-U2SEQKP4:13830  ESTABLISHED
  TCP    127.0.0.1:13830        LAPTOP-U2SEQKP4:13829  ESTABLISHED
  TCP    127.0.0.1:13831        LAPTOP-U2SEQKP4:13832  ESTABLISHED
  TCP    127.0.0.1:13832        LAPTOP-U2SEQKP4:13831  ESTABLISHED
  TCP    127.0.0.1:13833        LAPTOP-U2SEQKP4:13834  ESTABLISHED
  TCP    127.0.0.1:13834        LAPTOP-U2SEQKP4:13833  ESTABLISHED
  TCP    127.0.0.1:14740        LAPTOP-U2SEQKP4:14741  ESTABLISHED
  TCP    127.0.0.1:14741        LAPTOP-U2SEQKP4:14740  ESTABLISHED
  TCP    127.0.0.1:14742        LAPTOP-U2SEQKP4:14743  ESTABLISHED
  TCP    127.0.0.1:14743        LAPTOP-U2SEQKP4:14742  ESTABLISHED
  TCP    192.168.1.3:7259       a23-205-88-40:https    CLOSE_WAIT
  TCP    192.168.1.3:7331       20.197.71.89:https     ESTABLISHED
  TCP    192.168.1.3:7368       s3-us-west-2-r-w:https  CLOSE_WAIT
  TCP    192.168.1.3:10599      stackoverflow:https    ESTABLISHED
  TCP    192.168.1.3:11087      91.108.56.146:https    ESTABLISHED
  TCP    192.168.1.3:12193      sa-in-f188:5228        ESTABLISHED
  TCP    192.168.1.3:13758      a23-215-205-230:https  CLOSE_WAIT
  TCP    192.168.1.3:13759      a23-215-205-230:https  CLOSE_WAIT
  TCP    192.168.1.3:13762      a104-97-76-186:https   CLOSE_WAIT
  TCP    192.168.1.3:13940      a104-91-32-10:https    ESTABLISHED
  TCP    192.168.1.3:13955      20.44.229.112:https    TIME_WAIT
  TCP    192.168.1.3:13959      20.189.173.6:https     TIME_WAIT
  TCP    192.168.1.3:13964      a23-54-80-26:http      TIME_WAIT
  TCP    192.168.1.3:13972      20.44.229.112:https    ESTABLISHED
  TCP    192.168.1.3:13974      a23-54-80-26:http      TIME_WAIT
  TCP    192.168.1.3:14402      20.195.65.204:https    ESTABLISHED
  TCP    192.168.1.3:14404      20.198.162.76:https    ESTABLISHED

C:\vivin>
```

UBUNTU

```
vivin@vivin-VirtualBox:~/Desktop$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 vivin-VirtualBox:bootpc _gateway:bootps         ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ]         DGRAM                    26894    /run/user/1000/syste
md/notify
unix  3      [ ]         DGRAM                    15431    /run/systemd/notify
unix  2      [ ]         DGRAM                    15445    /run/systemd/journal
/syslog
unix  16     [ ]         DGRAM                    15455    /run/systemd/journal
/dev-log
unix  8      [ ]         DGRAM                    15459    /run/systemd/journal
/socket
unix  3      [ ]         STREAM     CONNECTED     61872
unix  3      [ ]         STREAM     CONNECTED     31628
unix  3      [ ]         STREAM     CONNECTED     24035    /run/systemd/journal
/stdout
unix  3      [ ]         STREAM     CONNECTED     60420    /run/dbus/system_bus
_socket
unix  3      [ ]         STREAM     CONNECTED     33414
unix  3      [ ]         STREAM     CONNECTED     30929    /run/user/1000/bus
unix  3      [ ]         STREAM     CONNECTED     26830    /run/dbus/system_bus
_socket
unix  3      [ ]         STREAM     CONNECTED     31336
unix  3      [ ]         STREAM     CONNECTED     30352
unix  3      [ ]         STREAM     CONNECTED     29882
```

netstat -n

command to display active connections showing numeric IP address and port number instead of trying to determine the names .

WINDOWS

```
C:\vivin>netstat -n

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:9921         127.0.0.1:9922         ESTABLISHED
  TCP    127.0.0.1:9922         127.0.0.1:9921         ESTABLISHED
  TCP    127.0.0.1:9923         127.0.0.1:9924         ESTABLISHED
  TCP    127.0.0.1:9924         127.0.0.1:9923         ESTABLISHED
  TCP    127.0.0.1:9925         127.0.0.1:9926         ESTABLISHED
  TCP    127.0.0.1:9926         127.0.0.1:9925         ESTABLISHED
  TCP    127.0.0.1:9927         127.0.0.1:9928         ESTABLISHED
  TCP    127.0.0.1:9928         127.0.0.1:9927         ESTABLISHED
  TCP    192.168.1.3:1587       52.218.197.169:443     CLOSE_WAIT
  TCP    192.168.1.3:4045       20.197.71.89:443       ESTABLISHED
  TCP    192.168.1.3:4356       23.212.252.48:443      CLOSE_WAIT
  TCP    192.168.1.3:4357       23.212.252.48:443      CLOSE_WAIT
  TCP    192.168.1.3:4358       23.212.252.48:443      CLOSE_WAIT
  TCP    192.168.1.3:4359       23.212.252.48:443      CLOSE_WAIT
  TCP    192.168.1.3:4362       52.84.6.80:443         CLOSE_WAIT
  TCP    192.168.1.3:4363       52.84.12.201:80        CLOSE_WAIT
  TCP    192.168.1.3:4365       23.213.0.11:443        CLOSE_WAIT
  TCP    192.168.1.3:4367       104.121.254.87:443     CLOSE_WAIT
  TCP    192.168.1.3:5315       40.100.136.114:443     ESTABLISHED
  TCP    192.168.1.3:5320       40.100.136.114:443     ESTABLISHED
  TCP    192.168.1.3:7800       13.107.6.158:443       ESTABLISHED
  TCP    192.168.1.3:7801       52.109.56.20:443       TIME_WAIT
  TCP    192.168.1.3:7802       161.69.226.27:443      ESTABLISHED
  TCP    192.168.1.3:7803       52.109.56.20:443       TIME_WAIT
  TCP    192.168.1.3:7804       52.109.56.20:443       TIME_WAIT
  TCP    192.168.1.3:7807       204.79.197.200:443     ESTABLISHED
  TCP    192.168.1.3:7808       40.100.136.114:443     TIME_WAIT
  TCP    192.168.1.3:7810       204.79.197.254:443     ESTABLISHED
  TCP    192.168.1.3:7811       131.253.33.254:443     TIME_WAIT
  TCP    192.168.1.3:7812       13.107.3.254:443       TIME_WAIT
  TCP    192.168.1.3:7813       204.79.197.222:443     TIME_WAIT
  TCP    192.168.1.3:7814       52.182.141.63:443      ESTABLISHED
  TCP    192.168.1.3:7815       52.182.141.63:443      ESTABLISHED
  TCP    192.168.1.3:7816       20.189.173.5:443       ESTABLISHED
  TCP    192.168.1.3:7820       40.100.136.114:443     ESTABLISHED
  TCP    192.168.1.3:7821       23.205.88.48:443       ESTABLISHED
  TCP    192.168.1.3:7822       131.253.33.254:443     ESTABLISHED
  TCP    192.168.1.3:7823       13.107.3.254:443       ESTABLISHED
  TCP    192.168.1.3:7824       204.79.197.222:443     ESTABLISHED
  TCP    192.168.1.3:9214       20.195.65.204:443      ESTABLISHED
  TCP    192.168.1.3:9219       20.198.162.78:443      ESTABLISHED

C:\vivin>
```

UBUNTU

```
vivin@vivin-VirtualBox:~$ netstat -n
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 10.0.2.15:58324         35.224.170.84:80        TIME_WAIT
udp        0      0 10.0.2.15:68            10.0.2.2:67             ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ]         DGRAM                    26978    /run/user/1000/syste
md/notify
unix  3      [ ]         DGRAM                    15432    /run/systemd/notify
unix  2      [ ]         DGRAM                    15446    /run/systemd/journal
/syslog
unix  17     [ ]         DGRAM                    15456    /run/systemd/journal
/dev-log
unix  8      [ ]         DGRAM                    15460    /run/systemd/journal
/socket
unix  3      [ ]         STREAM     CONNECTED     31877    /run/user/1000/bus
unix  3      [ ]         STREAM     CONNECTED     29737    @/tmp/.X11-unix/X0
unix  3      [ ]         STREAM     CONNECTED     31722
unix  3      [ ]         STREAM     CONNECTED     30784    /run/systemd/journal
/stdout
unix  3      [ ]         STREAM     CONNECTED     30208
unix  3      [ ]         STREAM     CONNECTED     21250
unix  3      [ ]         STREAM     CONNECTED     33915    @/tmp/dbus-x4e6fARF5
u
unix  3      [ ]         STREAM     CONNECTED     31741
u             Show Applications     STREAM     CONNECTED     29715
u                                   STREAM     CONNECTED     31720    /run/systemd/journal
/stdout
```

netstat -n INTERVAL

In the command, make sure to replace INTERVAL for the number (in seconds) you want to redisplay the information.

WINDOWS

```
C:\vivin>netstat -n 3

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:9921         127.0.0.1:9922         ESTABLISHED
  TCP    127.0.0.1:9922         127.0.0.1:9921         ESTABLISHED
  TCP    127.0.0.1:9923         127.0.0.1:9924         ESTABLISHED
  TCP    127.0.0.1:9924         127.0.0.1:9923         ESTABLISHED
  TCP    127.0.0.1:9925         127.0.0.1:9926         ESTABLISHED
  TCP    127.0.0.1:9926         127.0.0.1:9925         ESTABLISHED
  TCP    127.0.0.1:9927         127.0.0.1:9928         ESTABLISHED
  TCP    127.0.0.1:9928         127.0.0.1:9927         ESTABLISHED
  TCP    192.168.1.3:1587       52.218.197.169:443     CLOSE_WAIT
  TCP    192.168.1.3:4045       20.197.71.89:443       ESTABLISHED
  TCP    192.168.1.3:4356       23.212.252.48:443      CLOSE_WAIT
  TCP    192.168.1.3:4357       23.212.252.48:443      CLOSE_WAIT
  TCP    192.168.1.3:4358       23.212.252.48:443      CLOSE_WAIT
  TCP    192.168.1.3:4359       23.212.252.48:443      CLOSE_WAIT
  TCP    192.168.1.3:4362       52.84.6.80:443         CLOSE_WAIT
  TCP    192.168.1.3:4363       52.84.12.201:80        CLOSE_WAIT
```

UBUNTU

```
vivin@vivin-VirtualBox:~$ netstat -n 3
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 10.0.2.15:68            10.0.2.2:67             ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ]         DGRAM                    26978    /run/user/1000/syste
md/notify
unix  3      [ ]         DGRAM                    15432    /run/systemd/notify
unix  2      [ ]         DGRAM                    15446    /run/systemd/journal
/syslog
unix  15     [ ]         DGRAM                    15456    /run/systemd/journal
/dev-log
unix  8      [ ]         DGRAM                    15460    /run/systemd/journal
/socket
unix  3      [ ]         STREAM     CONNECTED     31877    /run/user/1000/bus
unix  3      [ ]         STREAM     CONNECTED     29737    @/tmp/.X11-unix/X0
unix  3      [ ]         STREAM     CONNECTED     31722
unix  3      [ ]         STREAM     CONNECTED     30208
unix  3      [ ]         STREAM     CONNECTED     21250
unix  3      [ ]         STREAM     CONNECTED     33915    @/tmp/dbus-x4e6fARF5
u
unix  3      [ ]         STREAM     CONNECTED     31741
unix  3      [ ]         STREAM     CONNECTED     29715
unix  3      [ ]         STREAM     CONNECTED     31720    /run/systemd/journal
/stdout
unix  2      [ ]         DGRAM                    30618
```

netstat -a

The netstat -a command displays all active and inactive connections, and the TCP and UDP ports the device is currently listening.

WINDOWS

```
C:\vivin>netstat -a

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:135            LAPTOP-U2SEQKP4:0      LISTENING
  TCP    0.0.0.0:445            LAPTOP-U2SEQKP4:0      LISTENING
  TCP    0.0.0.0:1027           LAPTOP-U2SEQKP4:0      LISTENING
  TCP    0.0.0.0:5040           LAPTOP-U2SEQKP4:0      LISTENING
  TCP    0.0.0.0:5357           LAPTOP-U2SEQKP4:0      LISTENING
  TCP    0.0.0.0:6646           LAPTOP-U2SEQKP4:0      LISTENING
  TCP    0.0.0.0:49664          LAPTOP-U2SEQKP4:0      LISTENING
  TCP    0.0.0.0:49665          LAPTOP-U2SEQKP4:0      LISTENING
  TCP    0.0.0.0:49666          LAPTOP-U2SEQKP4:0      LISTENING
  TCP    0.0.0.0:49667          LAPTOP-U2SEQKP4:0      LISTENING
  TCP    0.0.0.0:49668          LAPTOP-U2SEQKP4:0      LISTENING
  TCP    127.0.0.1:9921         LAPTOP-U2SEQKP4:9922   ESTABLISHED
  TCP    127.0.0.1:9922         LAPTOP-U2SEQKP4:9921   ESTABLISHED
  TCP    127.0.0.1:9923         LAPTOP-U2SEQKP4:9924   ESTABLISHED
```

UBUNTU

```
vivin@vivin-VirtualBox:~$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:mysql         0.0.0.0:*               LISTEN
tcp        0      0 localhost:domain        0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:ssh             0.0.0.0:*               LISTEN
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp6       0      0 [::]:http               [::]:*                  LISTEN
tcp6       0      0 [::]:ssh                [::]:*                  LISTEN
tcp6       0      0 ip6-localhost:ipp       [::]:*                  LISTEN
udp        0      0 0.0.0.0:52272           0.0.0.0:*
udp        0      0 localhost:domain        0.0.0.0:*
udp        0      0 vivin-VirtualBox:bootpc _gateway:bootps         ESTABLISHED
udp        0      0 0.0.0.0:631             0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp6       0      0 [::]:40374              [::]:*
udp6       0      0 [::]:mdns               [::]:*
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ]         DGRAM                    26978    /run/user/1000/syste
md/notify
unix  2      [ ACC ]     STREAM     LISTENING     26981    /run/user/1000/syste
md/private
unix  2      [ ACC ]     STREAM     LISTENING     26990    /run/user/1000/bus
unix  2      [ ACC ]     STREAM     LISTENING     26991    /run/user/1000/gnupg
```

netstat -r

The netstat -r to display routing table

WINDOWS

```
C:\vivin>netstat -r
===========================================================================
Interface List
 16...f8 0d ac 7e 99 47 ......Realtek PCIe GbE Family Controller
 20...0a 00 27 00 00 14 ......VirtualBox Host-Only Ethernet Adapter
 17...1a 47 3d 8b cd bf ......Microsoft Wi-Fi Direct Virtual Adapter
  8...9a 47 3d 8b cd bf ......Microsoft Wi-Fi Direct Virtual Adapter #2
 18...18 47 3d 8b cd bf ......Realtek RTL8821CE 802.11ac PCIe Adapter
 11...18 47 3d 8b cd c0 ......Bluetooth Device (Personal Area Network)
  1...........................Software Loopback Interface 1
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
          0.0.0.0          0.0.0.0      192.168.1.1      192.168.1.3     55
        127.0.0.0        255.0.0.0         On-link         127.0.0.1    331
        127.0.0.1  255.255.255.255         On-link         127.0.0.1    331
  127.255.255.255  255.255.255.255         On-link         127.0.0.1    331
      192.168.1.0    255.255.255.0         On-link      192.168.1.3    311
      192.168.1.3  255.255.255.255         On-link      192.168.1.3    311
    192.168.1.255  255.255.255.255         On-link      192.168.1.3    311
     192.168.56.0    255.255.255.0         On-link     192.168.56.1    281
     192.168.56.1  255.255.255.255         On-link     192.168.56.1    281
   192.168.56.255  255.255.255.255         On-link     192.168.56.1    281
        224.0.0.0        240.0.0.0         On-link         127.0.0.1    331
        224.0.0.0        240.0.0.0         On-link     192.168.56.1    281
        224.0.0.0        240.0.0.0         On-link      192.168.1.3    311
  255.255.255.255  255.255.255.255         On-link         127.0.0.1    331
  255.255.255.255  255.255.255.255         On-link     192.168.56.1    281
  255.255.255.255  255.255.255.255         On-link      192.168.1.3    311
===========================================================================
Persistent Routes:
  Network Address          Netmask  Gateway Address  Metric
          0.0.0.0          0.0.0.0    192.168.6.100  Default
===========================================================================

IPv6 Route Table
===========================================================================
Active Routes:
 If Metric Network Destination      Gateway
 18    311 ::/0                     fe80::1
  1    331 ::1/128                  On-link
 20    281 fe80::/64                On-link
 18    311 fe80::/64                On-link
 18    311 fe80::55bc:1aea:ebb0:f88d/128
                                    On-link
 20    281 fe80::d9dd:6d29:fd05:769f/128
                                    On-link
  1    331 ff00::/8                 On-link
 20    281 ff00::/8                 On-link
 18    311 ff00::/8                 On-link
===========================================================================
Persistent Routes:
  None

C:\vivin>
```

UBUNTU

```
vivin@vivin-VirtualBox:~$ netstat -r
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
default         _gateway        0.0.0.0         UG        0 0          0 enp0s3
10.0.2.0        0.0.0.0         255.255.255.0   U         0 0          0 enp0s3
link-local      0.0.0.0         255.255.0.0     U         0 0          0 enp0s3
vivin@vivin-VirtualBox:~$
```

netstat -e

The netstat -e command generates a statistic of the network interface, which shows information like the number of bytes, unicast and non-unicast sent and received packets. You can also see discarded packets and errors and unknown protocols, which can you troubleshoot networking problems.

WINDOWS

```
C:\vivin>netstat -e
Interface Statistics

                           Received            Sent

Bytes                    2204777267       424569838
Unicast packets             3669512         1977710
Non-unicast packets           19810           28966
Discards                          0               0
Errors                            0               0
Unknown protocols                 0

C:\vivin>_
```

UBUNTU

```
vivin@vivin-VirtualBox:~$ netstat -e
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
 User       Inode
udp        0      0 vivin-VirtualBox:bootpc _gateway:bootps         ESTABLISHED
 root       26543
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ]         DGRAM                    26978    /run/user/1000/syste
md/notify
unix  3      [ ]         DGRAM                    15432    /run/systemd/notify
unix  2      [ ]         DGRAM                    15446    /run/systemd/journal
/syslog
unix  15     [ ]         DGRAM                    15456    /run/systemd/journal
/dev-log
unix  8      [ ]         DGRAM                    15460    /run/systemd/journal
/socket
unix  3      [ ]         STREAM     CONNECTED     31877    /run/user/1000/bus
unix  3      [ ]         STREAM     CONNECTED     29737    @/tmp/.X11-unix/X0
unix  3      [ ]         STREAM     CONNECTED     31722
unix  3      [ ]         STREAM     CONNECTED     30208
unix  3      [ ]         STREAM     CONNECTED     21250
unix  3      [ ]         STREAM     CONNECTED     33915    @/tmp/dbus-x4e6fARF5
u
unix  3      [ ]         STREAM     CONNECTED     31741
unix  3      [ ]         STREAM     CONNECTED     29715
unix  3      [ ]         STREAM     CONNECTED     31720    /run/systemd/journal
/stdout
unix  2      [ ]         DGRAM                    30618
```

4. Ipconfig(*WINDOWS)*

Displays all current TCP/IP network configuration values and refreshes Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) settings. Used without parameters, ipconfig displays Internet Protocol version 4 (IPv4) and IPv6 addresses, subnet mask, and default gateway for all adapters.

```
C:\vivin>ipconfig

Windows IP Configuration


Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::d9dd:6d29:fd05:769f%20
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Local Area Connection* 1:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
```

PARAMETERS:

ipconfig /flushdns:

Flushes and resets the contents of the DNS client resolver cache. During DNS troubleshooting, you can use this procedure to discard negative cache entries from the cache, as well as any other entries that have been added dynamically.

```
C:\vivin>ipconfig /flushdns

Windows IP Configuration

Successfully flushed the DNS Resolver Cache.

C:\vivin>
```

ipconfig /registerdns:

Initiates manual dynamic registration for the DNS names and IP addresses that are configured at a computer. You can use this parameter to troubleshoot a failed DNS name registration or resolve a dynamic update problem between a client and the DNS server without rebooting the client computer. The DNS settings in the advanced properties of the TCP/IP protocol determine which names are registered in DNS.

```
C:\vivin>ipconfig /registerdns
The requested operation requires elevation.

C:\vivin>
```

ipconfig /displaydns:

Displays the contents of the DNS client resolver cache, which includes both entries preloaded from the local Hosts file and any recently obtained resource records for name queries resolved by the computer. The DNS

Client service uses this information to resolve frequently queried names quickly, before querying its configured DNS servers.

```
C:\vivin>ipconfig /displaydns

Windows IP Configuration

    sec-tws-prod-vip.webex.com
    ----------------------------------------
    Record Name . . . . . : sec-tws-prod-vip.webex.com
    Record Type . . . . . : 1
    Time To Live  . . . . : 45283
    Data Length . . . . . : 4
    Section . . . . . : Answer
    A (Host) Record . . . : 66.163.35.36


    Record Name . . . . . : ns1.as13445.net
    Record Type . . . . . : 1
    Time To Live  . . . . : 45283
    Data Length . . . . . : 4
    Section . . . . . : Additional
    A (Host) Record . . . : 66.163.52.1


    Record Name . . . . . : ns2.as13445.net
    Record Type . . . . . : 1
    Time To Live  . . . . : 45283
    Data Length . . . . . : 4
    Section . . . . . : Additional
    A (Host) Record . . . : 66.163.53.1


    226.195.250.142.in-addr.arpa
    ----------------------------------------
    Record Name . . . . . : 226.195.250.142.in-addr.arpa
    Record Type . . . . . : 12
    Time To Live  . . . . : 44455
    Data Length . . . . . : 8
    Section . . . . . : Answer
    PTR Record  . . . . . : maa03s43-in-f2.1e100.net


    Record Name . . . . . : ns2.google.com
    Record Type . . . . . : 1
    Time To Live  . . . . : 44455
    Data Length . . . . . : 4
    Section . . . . . : Additional
    A (Host) Record . . . : 216.239.34.10


    Record Name . . . . . : ns2.google.com
    Record Type . . . . . : 28
```

ipconfig /all:

Displays the full TCP/IP configuration for all adapters. Adapters can represent physical interfaces, such as installed network adapters, or logical interfaces, such as dial-up connections.

```
C:\vivin>ipconfig /all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : LAPTOP-U2SEQKP4
   Primary Dns Suffix  . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No

Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Realtek PCIe GbE Family Controller
   Physical Address. . . . . . . . . : F8-0D-AC-7E-99-47
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes

Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : VirtualBox Host-Only Ethernet Adapter
   Physical Address. . . . . . . . . : 0A-00-27-00-00-14
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::d9dd:6d29:fd05:769f%20(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.56.1(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :
   DHCPv6 IAID . . . . . . . . . . . : 134873127
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-27-38-85-CC-F8-0D-AC-7E-99-47
   DNS Servers . . . . . . . . . . . : fec0:0:0:ffff::1%1
                                       fec0:0:0:ffff::2%1
                                       fec0:0:0:ffff::3%1
   NetBIOS over Tcpip. . . . . . . . : Enabled

Wireless LAN adapter Local Area Connection* 1:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
    Data Length . . . . . : 8
```

4.1 Ifconfig(*UBUNTU*)

Displays all current TCP/IP network configuration values and refreshes Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) settings. Used without parameters, ipconfig displays Internet Protocol version 4 (IPv4) and IPv6 addresses, subnet mask, and default gateway for all adapters.

```
vivin@vivin-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::9eff:cca8:cb07:9c54  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:ce:5f:d4  txqueuelen 1000  (Ethernet)
        RX packets 495  bytes 85124 (85.1 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 583  bytes 58517 (58.5 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 265  bytes 22609 (22.6 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 265  bytes 22609 (22.6 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

vivin@vivin-VirtualBox:~$
```

PARAMETERS:

ifconfig -a:

This option is used to display all the interfaces available, even if they are down

```
vivin@vivin-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::9eff:cca8:cb07:9c54  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:ce:5f:d4  txqueuelen 1000  (Ethernet)
        RX packets 515  bytes 86874 (86.8 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 652  bytes 64046 (64.0 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 285  bytes 24393 (24.3 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 285  bytes 24393 (24.3 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

vivin@vivin-VirtualBox:~$
```

ifconfig -s:

This option is used to display a short list, instead of details

```
vivin@vivin-VirtualBox:~$ ifconfig -s
Iface      MTU    RX-OK RX-ERR RX-DRP RX-OVR    TX-OK TX-ERR TX-DRP TX-OVR Flg
enp0s3    1500      521      0      0 0           658      0      0      0 BMRU
lo       65536      285      0      0 0           285      0      0      0 LRU
vivin@vivin-VirtualBox:~$
```

ifconfig -v:

To run the command in verbose mode -log more details about execution

```
vivin@vivin-VirtualBox:~$ ifconfig -v
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::9eff:cca8:cb07:9c54  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:ce:5f:d4  txqueuelen 1000  (Ethernet)
        RX packets 524  bytes 87785 (87.7 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 661  bytes 64801 (64.8 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 287  bytes 24565 (24.5 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 287  bytes 24565 (24.5 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

vivin@vivin-VirtualBox:~$
```

ifconfig lo:

To view the configuration of an interface

```
vivin@vivin-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 297  bytes 25313 (25.3 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 297  bytes 25313 (25.3 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

vivin@vivin-VirtualBox:~$
```

Other Networking Commands*(WINDOWS)*

1. Hostname Command

A very simple command that displays the host name of your machine. This is much quicker than going to the control **panel>system** route.

```
C:\vivin>hostname
LAPTOP-U2SEQKP4

C:\vivin>
```

2. getmac Command

Another very simple command that shows the MAC address of your network interfaces

```
C:\vivin>getmac

Physical Address    Transport Name
=================== ==========================================================
F8-0D-AC-7E-99-47   Media disconnected
18-47-3D-8B-CD-BF   \Device\Tcpip_{CD0EDC26-52E2-4932-A709-C7A49C870736}
18-47-3D-8B-CD-C0   Media disconnected
0A-00-27-00-00-14   \Device\Tcpip_{FB7C38EF-5099-4AB8-8D51-DBE21F92AA63}

C:\vivin>
```

3.arp Command

This is used for showing the address resolution cache. This command must be used with a command line switch arp -a is the most common.

```
C:\vivin>arp -a

Interface: 192.168.1.4 --- 0x12
  Internet Address      Physical Address      Type
  192.168.1.1           bc-62-d2-17-87-d0     dynamic
  192.168.1.6           58-00-e3-a0-b5-4d     dynamic
  192.168.1.255         ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.102.18        01-00-5e-7f-66-12     static
  239.255.255.250       01-00-5e-7f-ff-fa     static

Interface: 192.168.56.1 --- 0x14
  Internet Address      Physical Address      Type
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.102.18        01-00-5e-7f-66-12     static
  239.255.255.250       01-00-5e-7f-ff-fa     static

C:\vivin>
```

4. Nbtstat

Diagnostic tool for troubleshooting netBIOS problems.

```
C:\vivin>nbtstat

Displays protocol statistics and current TCP/IP connections using NBT
(NetBIOS over TCP/IP).

NBTSTAT [ [-a RemoteName] [-A IP address] [-c] [-n]
        [-r] [-R] [-RR] [-s] [-S] [interval] ]

  -a   (adapter status) Lists the remote machine's name table given its name
  -A   (Adapter status) Lists the remote machine's name table given its
                        IP address.
  -c   (cache)          Lists NBT's cache of remote [machine] names and their IP addresses
  -n   (names)          Lists local NetBIOS names.
  -r   (resolved)       Lists names resolved by broadcast and via WINS
  -R   (Reload)         Purges and reloads the remote cache name table
  -S   (Sessions)       Lists sessions table with the destination IP addresses
  -s   (sessions)       Lists sessions table converting destination IP
                        addresses to computer NETBIOS names.
  -RR  (ReleaseRefresh) Sends Name Release packets to WINS and then, starts Refresh

  RemoteName   Remote host machine name.
  IP address   Dotted decimal representation of the IP address.
  interval     Redisplays selected statistics, pausing interval seconds
               between each display. Press Ctrl+C to stop redisplaying
               statistics.


C:\vivin>
```

5. Net Command

Used for managing users,service,shares etc..

```
C:\vivin>net
The syntax of this command is:

NET
    [ ACCOUNTS | COMPUTER | CONFIG | CONTINUE | FILE | GROUP | HELP |
      HELPMSG | LOCALGROUP | PAUSE | SESSION | SHARE | START |
      STATISTICS | STOP | TIME | USE | USER | VIEW ]

C:\vivin>
```

Other Networking Commands*(UBUNTU)*

1. Hostname Command

A very simple command that displays the host name of your machine. This is much quicker than going to the control **panel>system** route.

```
vivin@vivin-VirtualBox:~$ hostname
vivin-VirtualBox
vivin@vivin-VirtualBox:~$
```

2. ip route list

This command will display all the IP addresses with their device names that are currently available.

```
vivin@vivin-VirtualBox:~$ ip route list
default via 10.0.2.2 dev enp0s3 proto dhcp metric 100
10.0.2.0/24 dev enp0s3 proto kernel scope link src 10.0.2.15 metric 100
169.254.0.0/16 dev enp0s3 scope link metric 1000
vivin@vivin-VirtualBox:~$
```

3. arp

This command manipulates the system's ARP cache. ARP stands for Address Resolution Protocol

```
vivin@vivin-VirtualBox:~$ arp
Address                  HWtype  HWaddress           Flags Mask            Ifac
e
_gateway                 ether   52:54:00:12:35:02   C                     enp0
s3
vivin@vivin-VirtualBox:~$
```

4. sed command

The sed command is also known as **stream editor**. It is used to edit files using a regular expression. It does not permanently edit files; instead, the edited content remains only on display. It does not affect the actual file.

```
vivin@vivin-VirtualBox:~$ sed
Usage: sed [OPTION]... {script-only-if-no-other-script} [input-file]...

  -n, --quiet, --silent
                 suppress automatic printing of pattern space
      --debug
                 annotate program execution
  -e script, --expression=script
                 add the script to the commands to be executed
  -f script-file, --file=script-file
                 add the contents of script-file to the commands to be executed
  --follow-symlinks
                 follow symlinks when processing in place
  -i[SUFFIX], --in-place[=SUFFIX]
                 edit files in place (makes backup if SUFFIX supplied)
  -l N, --line-length=N
                 specify the desired line-wrap length for the `l' command
  --posix
                 disable all GNU extensions.
  -E, -r, --regexp-extended
                 use extended regular expressions in the script
                 (for portability use POSIX -E).
  -s, --separate
                 consider files as separate rather than as a single,
                 continuous long stream.
      --sandbox
                 operate in sandbox mode (disable e/r/w commands).
  -u, --unbuffered
```

5. time command

The time command is used to display the time to execute a command.

```
vivin@vivin-VirtualBox:~$ time

real    0m0.000s
user    0m0.000s
sys     0m0.000s
vivin@vivin-VirtualBox:~$
```