SSN College of Engineering, Kalavakkam
Department of Computer Science and Engineering
V Semester - CSE 'B'
UCS1511 NETWORKS LAB

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Network Commands

Command : tcpdump

Syntax : tcpdump [option] [interface]

Description : tcpdump is a command line utiltiy that allows the user to capture and analyze network traffic going through the system.

Screenshots :

-D --list-interfaces   Print the list of the network interfaces available on the system and on which tcpdump can capture packets.

```
rahul@rahul-Ubuntu:~$ tcpdump -D
1.wlo1 [Up, Running]
2.lo [Up, Running, Loopback]
3.any (Pseudo-device that captures on all interfaces) [Up, Running]
4.eno1 [Up]
5.bluetooth-monitor (Bluetooth Linux Monitor) [none]
6.nflog (Linux netfilter log (NFLOG) interface) [none]
7.nfqueue (Linux netfilter queue (NFQUEUE) interface) [none]
8.bluetooth0 (Bluetooth adapter number 0) [none]
rahul@rahul-Ubuntu:~$ tcpdump -i wlo1
```

-i interface Listen on interface.

```
rahul@rahul-Ubuntu:~$ sudo tcpdump -i wlo1
[sudo] password for rahul:
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on wlo1, link-type EN10MB (Ethernet), capture size 262144 bytes
21:55:46.164882 ARP, Request who-has _gateway tell rahul-Ubuntu, length 28
21:55:46.166176 IP rahul-Ubuntu.39881 > _gateway.domain: 9549+ PTR? 1.18.168.192.in-addr.arpa. (43)
21:55:46.170980 ARP, Reply _gateway is-at f0:3f:95:9d:54:e7 (oui Unknown), length 28
21:55:46.191525 IP _gateway.domain > rahul-Ubuntu.39881: 9549 NXDomain 0/0/0 (43)
21:55:46.192548 IP rahul-Ubuntu.42831 > _gateway.domain: 37391+ PTR? 10.18.168.192.in-addr.arpa. (44)
21:55:46.248846 IP _gateway.domain > rahul-Ubuntu.42831: 37391 NXDomain 0/0/0 (44)
21:56:02.325310 IP6 fe80::1.40441 > ff05::c.1900: UDP, length 126
21:56:02.326343 IP rahul-Ubuntu.43690 > _gateway.domain: 53540+ PTR? c.0.0.0.0.0.0.0.0.0.0.0.0.0.0.
0.0.0.0.0.0.0.0.0.0.5.0.f.f.ip6.arpa. (90)
21:56:02.428488 IP _gateway.domain > rahul-Ubuntu.43690: 53540 NXDomain 0/1/0 (154)
21:56:02.430097 IP rahul-Ubuntu.60470 > _gateway.domain: 57503+ PTR? 1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.
0.0.0.0.0.0.0.0.0.0.8.e.f.ip6.arpa. (90)
21:56:02.530357 IP _gateway.domain > rahul-Ubuntu.60470: 57503 NXDomain 0/1/0 (154)
21:56:02.535682 IP6 fe80::1.40441 > ff05::c.1900: UDP, length 126
21:56:02.743326 IP rahul-Ubuntu.46132 > _gateway.domain: 34691+ A? www.googleapis.com. (36)
21:56:02.747467 IP rahul-Ubuntu.45264 > _gateway.domain: 64758+ A? www.google.com. (32)
21:56:02.837428 IP6 fe80::1.40441 > ff02::c.1900: UDP, length 126
21:56:02.837459 IP _gateway.domain > rahul-Ubuntu.46132: 34691 11/0/0 A 142.250.67.42, A 142.250.67.7
4, A 172.217.26.202, A 172.217.167.138, A 172.217.31.202, A 172.217.160.138, A 216.58.196.170, A 172.
217.163.42, A 172.217.163.74, A 172.217.163.170, A 216.58.200.138 (212)
21:56:02.837488 IP _gateway.domain > rahul-Ubuntu.45264: 64758 1/0/0 A 172.217.26.164 (48)
21:56:02.838110 IP rahul-Ubuntu.55344 > _gateway.domain: 3104+ PTR? c.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0
.0.0.0.0.0.0.0.0.0.0.2.0.f.f.ip6.arpa. (90)
21:56:02.840542 IP rahul-Ubuntu.51913 > maa03s22-in-f164.1e100.net.443: UDP, length 1350
21:56:02.841065 IP rahul-Ubuntu.48823 > maa05s12-in-f10.1e100.net.443: UDP, length 1350
21:56:02.841519 IP rahul-Ubuntu.51913 > maa03s22-in-f164.1e100.net.443: UDP, length 979
21:56:02.841742 IP rahul-Ubuntu.51913 > maa03s22-in-f164.1e100.net.443: UDP, length 101
21:56:02.841936 IP rahul-Ubuntu.51913 > maa03s22-in-f164.1e100.net.443: UDP, length 96
21:56:02.915869 IP rahul-Ubuntu.51913 > maa03s22-in-f164.1e100.net.443: UDP, length 1350
21:56:02.920132 IP _gateway.domain > rahul-Ubuntu.55344: 3104 NXDomain 0/1/0 (154)
21:56:02.921081 IP rahul-Ubuntu.34699 > _gateway.domain: 20555+ PTR? 164.26.217.172.in-addr.arpa. (45
)
21:56:02.924493 IP maa03s22-in-f164.1e100.net.443 > rahul-Ubuntu.51913: UDP, length 36
21:56:02.924532 IP maa05s12-in-f10.1e100.net.443 > rahul-Ubuntu.48823: UDP, length 36
21:56:02.924540 IP maa03s22-in-f164.1e100.net.443 > rahul-Ubuntu.51913: UDP, length 1350
21:56:02.924545 IP maa03s22-in-f164.1e100.net.443 > rahul-Ubuntu.51913: UDP, length 20
21:56:02.924551 IP maa05s12-in-f10.1e100.net.443 > rahul-Ubuntu.48823: UDP, length 1350
21:56:02.925354 IP rahul-Ubuntu.51913 > maa03s22-in-f164.1e100.net.443: UDP, length 28
21:56:02.926009 IP rahul-Ubuntu.48823 > maa05s12-in-f10.1e100.net.443: UDP, length 28
21:56:02.926301 IP rahul-Ubuntu.48823 > maa05s12-in-f10.1e100.net.443: UDP, length 586
21:56:02.945658 IP _gateway.domain > rahul-Ubuntu.34699: 20555 2/0/0 PTR maa03s22-in-f164.1e100.net.,
 PTR maa03s22-in-f4.1e100.net. (114)
21:56:02.946359 IP rahul-Ubuntu.48398 > _gateway.domain: 50478+ PTR? 42.67.250.142.in-addr.arpa. (44)
21:56:02.956349 IP maa03s22-in-f164.1e100.net.443 > rahul-Ubuntu.51913: UDP, length 548
21:56:02.956376 IP maa03s22-in-f164.1e100.net.443 > rahul-Ubuntu.51913: UDP, length 230
21:56:02.956687 IP rahul-Ubuntu.51913 > maa03s22-in-f164.1e100.net.443: UDP, length 28
21:56:02.960380 IP maa03s22-in-f164.1e100.net.443 > rahul-Ubuntu.51913: UDP, length 207
21:56:02.960406 IP maa03s22-in-f164.1e100.net.443 > rahul-Ubuntu.51913: UDP, length 21
21:56:02.960704 IP rahul-Ubuntu.51913 > maa03s22-in-f164.1e100.net.443: UDP, length 28
21:56:03.043224 IP maa05s12-in-f10.1e100.net.443 > rahul-Ubuntu.48823: UDP, length 20
```

-c count   Exit after receiving count packets.

```
rahul@rahul-Ubuntu:~$ sudo tcpdump -i wlo1 -c 10
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on wlo1, link-type EN10MB (Ethernet), capture size 262144 bytes
21:56:38.662619 IP rahul-Ubuntu.36779 > maa03s31-in-f14.1e100.net.443: UDP, length 181
21:56:38.663454 IP rahul-Ubuntu.37164 > _gateway.domain: 30762+ PTR? 10.18.168.192.in-addr.arpa. (44)
21:56:38.780310 IP _gateway.domain > rahul-Ubuntu.37164: 30762 NXDomain 0/0/0 (44)
21:56:38.780352 IP maa03s31-in-f14.1e100.net.443 > rahul-Ubuntu.36779: UDP, length 20
21:56:38.780369 IP maa03s31-in-f14.1e100.net.443 > rahul-Ubuntu.36779: UDP, length 182
21:56:38.780373 IP maa03s31-in-f14.1e100.net.443 > rahul-Ubuntu.36779: UDP, length 16
21:56:38.780921 IP rahul-Ubuntu.36779 > maa03s31-in-f14.1e100.net.443: UDP, length 28
21:56:38.781467 IP rahul-Ubuntu.40936 > _gateway.domain: 5319+ PTR? 1.18.168.192.in-addr.arpa. (43)
21:56:38.783639 IP rahul-Ubuntu.32928 > maa03s31-in-f14.1e100.net.443: UDP, length 1350
21:56:38.853109 IP rahul-Ubuntu.32928 > maa03s31-in-f14.1e100.net.443: UDP, length 1350
10 packets captured
16 packets received by filter
0 packets dropped by kernel
rahul@rahul-Ubuntu:~$
```

Command : netstat

Syntax : netstat [option]

Description :
   Netstat prints information about the Linux networking subsystem.

Screenshots :
   (none) By default, netstat displays a list of open sockets. If you don't specify any address families, then the active sockets of all configured address families will be printed.

```
rahul@rahul-Ubuntu:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
tcp        0      0 rahul-Ubuntu:58718     sc-in-f188.1e100.n:5228 ESTABLISHED
tcp        0      0 rahul-Ubuntu:40166     216.46.185.183:https    ESTABLISHED
udp        0      0 rahul-Ubuntu:bootpc    _gateway:bootps         ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ]         DGRAM                     42541    /run/user/1000/systemd/notify
unix  2      [ ]         DGRAM                     37217    /run/user/125/systemd/notify
unix  4      [ ]         DGRAM                     15819    /run/systemd/notify
unix  2      [ ]         DGRAM                     15833    /run/systemd/journal/syslog
unix  23     [ ]         DGRAM                     15843    /run/systemd/journal/dev-log
unix  10     [ ]         DGRAM                     15847    /run/systemd/journal/socket
unix  3      [ ]         SEQPACKET  CONNECTED      65109    @0000d
unix  3      [ ]         SEQPACKET  CONNECTED      65107    @0000c
unix  2      [ ]         DGRAM                     31110    /run/wpa_supplicant/wlo1
unix  3      [ ]         STREAM     CONNECTED      45238
unix  3      [ ]         STREAM     CONNECTED      39376
unix  3      [ ]         STREAM     CONNECTED      37663    /run/dbus/system_bus_socket
unix  3      [ ]         STREAM     CONNECTED      32335
unix  3      [ ]         STREAM     CONNECTED      40732    /run/systemd/journal/stdout
unix  3      [ ]         STREAM     CONNECTED      35791
unix  3      [ ]         STREAM     CONNECTED      66368    /run/dbus/system_bus_socket
unix  3      [ ]         STREAM     CONNECTED      58290
unix  2      [ ]         DGRAM                     44399
unix  3      [ ]         STREAM     CONNECTED      37813    /run/systemd/journal/stdout
unix  3      [ ]         STREAM     CONNECTED      37558    @/var/lib/gdm3/.cache/ibus/dbus-7QbmmNJV
unix  3      [ ]         STREAM     CONNECTED      37326
unix  3      [ ]         STREAM     CONNECTED      71410
unix  3      [ ]         STREAM     CONNECTED      66340
unix  3      [ ]         STREAM     CONNECTED      48228
unix  3      [ ]         STREAM     CONNECTED      36348    /run/user/125/bus
unix  3      [ ]         STREAM     CONNECTED      45294    @/tmp/dbus-XIXTmyWIeN
unix  3      [ ]         STREAM     CONNECTED      45100    /run/systemd/journal/stdout
unix  3      [ ]         STREAM     CONNECTED      32248
unix  3      [ ]         STREAM     CONNECTED      29368
unix  3      [ ]         STREAM     CONNECTED      22490    /run/systemd/journal/stdout
unix  2      [ ]         DGRAM                     38630
unix  3      [ ]         STREAM     CONNECTED      40096
unix  3      [ ]         STREAM     CONNECTED      33569    @/tmp/.ICE-unix/1515
unix  3      [ ]         STREAM     CONNECTED      42916    @/tmp/dbus-XIXTmyWIeN
unix  3      [ ]         STREAM     CONNECTED      41679    /run/systemd/journal/stdout
unix  3      [ ]         STREAM     CONNECTED      43349    /run/user/1000/bus
unix  3      [ ]         STREAM     CONNECTED      42608
unix  3      [ ]         STREAM     CONNECTED      36358    /run/user/125/bus
unix  2      [ ]         DGRAM                     30875
unix  3      [ ]         STREAM     CONNECTED      29847
unix  3      [ ]         STREAM     CONNECTED      79092
unix  3      [ ]         STREAM     CONNECTED      70835
unix  3      [ ]         STREAM     CONNECTED      35773    /run/systemd/journal/stdout
unix  3      [ ]         STREAM     CONNECTED      43321    @/home/rahul/.cache/ibus/dbus-qvjmSxjt
unix  2      [ ]         DGRAM                     39540
unix  3      [ ]         STREAM     CONNECTED      32213
unix  3      [ ]         STREAM     CONNECTED      31182
unix  3      [ ]         STREAM     CONNECTED      95890    @/tmp/dbus-XIXTmyWIeN
```

-a, --all   Show both listening and non-listening sockets. With the --
interfaces option, show interfaces that are not up

```
rahul@rahul-Ubuntu:~$ netstat -a
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 rahul-Ubuntu:58718      sc-in-f188.1e100.n:5228 ESTABLISHED
tcp        0      0 rahul-Ubuntu:40166      216.46.185.183:https    ESTABLISHED
tcp6       0      0 ip6-localhost:ipp       [::]:*                  LISTEN
udp        0      0 0.0.0.0:39546           0.0.0.0:*
udp        0      0 localhost:domain        0.0.0.0:*
udp        0      0 rahul-Ubuntu:bootpc     _gateway:bootps         ESTABLISHED
udp        0      0 0.0.0.0:631             0.0.0.0:*
udp        0      0 224.0.0.251:mdns        0.0.0.0:*
udp        0      0 224.0.0.251:mdns        0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp6       0      0 [::]:45557              [::]:*
udp6       0      0 rahul-Ubu:dhcpv6-client [::]:*
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      [ ACC ]     SEQPACKET  LISTENING     15849    /run/udev/control
unix  2      [ ]         DGRAM                    42541    /run/user/1000/systemd/notify
unix  2      [ ]         DGRAM                    37217    /run/user/125/systemd/notify
unix  2      [ ACC ]     STREAM     LISTENING     42544    /run/user/1000/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     37220    /run/user/125/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     42549    /run/user/1000/bus
unix  2      [ ACC ]     STREAM     LISTENING     37227    /run/user/125/bus
unix  2      [ ACC ]     STREAM     LISTENING     42550    /run/user/1000/gnupg/S.dirmngr
unix  2      [ ACC ]     STREAM     LISTENING     37228    /run/user/125/gnupg/S.dirmngr
unix  2      [ ACC ]     STREAM     LISTENING     42551    /run/user/1000/gnupg/S.gpg-agent.browser
unix  2      [ ACC ]     STREAM     LISTENING     37229    /run/user/125/gnupg/S.gpg-agent.browser
unix  2      [ ACC ]     STREAM     LISTENING     42552    /run/user/1000/gnupg/S.gpg-agent.extra
unix  2      [ ACC ]     STREAM     LISTENING     37230    /run/user/125/gnupg/S.gpg-agent.extra
unix  2      [ ACC ]     STREAM     LISTENING     42553    /run/user/1000/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]     STREAM     LISTENING     37231    /run/user/125/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]     STREAM     LISTENING     42554    /run/user/1000/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM     LISTENING     37232    /run/user/125/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM     LISTENING     42555    /run/user/1000/pk-debconf-socket
unix  2      [ ACC ]     STREAM     LISTENING     38412    @/tmp/dbus-cBHEtB8omJ
unix  2      [ ACC ]     STREAM     LISTENING     37233    /run/user/125/pk-debconf-socket
unix  2      [ ACC ]     STREAM     LISTENING     42556    /run/user/1000/pulse/native
unix  2      [ ACC ]     STREAM     LISTENING     37234    /run/user/125/pulse/native
unix  2      [ ACC ]     STREAM     LISTENING     42557    /run/user/1000/snapd-session-agent.socket
unix  2      [ ACC ]     STREAM     LISTENING     37235    /run/user/125/snapd-session-agent.socket
unix  2      [ ACC ]     STREAM     LISTENING     35073    @/tmp/dbus-n0cadqUF
unix  2      [ ACC ]     STREAM     LISTENING     44187    @/tmp/.ICE-unix/2050
unix  2      [ ACC ]     STREAM     LISTENING     36555    @/tmp/.ICE-unix/1515
unix  2      [ ACC ]     STREAM     LISTENING     42569    /run/user/1000/keyring/control
unix  2      [ ACC ]     STREAM     LISTENING     35074    @/tmp/dbus-wHxi6NTR
unix  2      [ ACC ]     STREAM     LISTENING     37273    @/tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     39398    @/tmp/.X11-unix/X1
unix  2      [ ACC ]     STREAM     LISTENING     32306    /run/user/125/keyring/control
unix  2      [ ACC ]     STREAM     LISTENING     32307    /run/user/125/keyring/ssh
unix  2      [ ACC ]     STREAM     LISTENING     43310    /run/user/1000/keyring/pkcs11
```

--statistics, -s   Display summary statistics for each protocol.

```
rahul@rahul-Ubuntu:~$ netstat -s
Ip:
    Forwarding: 2
    157507 total packets received
    1 with invalid addresses
    0 forwarded
    0 incoming packets discarded
    156603 incoming packets delivered
    50902 requests sent out
    20 outgoing packets dropped
Icmp:
    171 ICMP messages received
    0 input ICMP message failed
    ICMP input histogram:
        destination unreachable: 77
        timeout in transit: 60
        echo replies: 34
    109 ICMP messages sent
    0 ICMP messages failed
    ICMP output histogram:
        destination unreachable: 41
        echo requests: 68
IcmpMsg:
        InType0: 34
        InType3: 77
        InType11: 60
        OutType3: 41
        OutType8: 68
Tcp:
    407 active connection openings
    0 passive connection openings
    4 failed connection attempts
    98 connection resets received
    2 connections established
    138478 segments received
    45088 segments sent out
    58 segments retransmitted
    2 bad segments received
    2466 resets sent
Udp:
    18075 packets received
    41 packets to unknown port received
    19 packet receive errors
    6284 packets sent
    19 receive buffer errors
    0 send buffer errors
    IgnoredMulti: 25
UdpLite:
TcpExt:
    72 TCP sockets finished time wait in fast timer
    2 packetes rejected in established connections because of timestamp
    533 delayed acks sent
    1 delayed acks further delayed because of locked socket
    Quick ack mode was activated 408 times
    91769 packet headers predicted
```

```
       41 packets to unknown port received
       19 packet receive errors
       6284 packets sent
       19 receive buffer errors
       0 send buffer errors
       IgnoredMulti: 25
UdpLite:
TcpExt:
       72 TCP sockets finished time wait in fast timer
       2 packetes rejected in established connections because of timestamp
       533 delayed acks sent
       1 delayed acks further delayed because of locked socket
       Quick ack mode was activated 408 times
       91769 packet headers predicted
       2770 acknowledgments not containing data payload received
       1163 predicted acknowledgments
       TCPLostRetransmit: 15
       TCPTimeouts: 34
       TCPLossProbes: 25
       TCPLossProbeRecovery: 4
       TCPBacklogCoalesce: 6135
       TCPDSACKOldSent: 410
       TCPDSACKOfoSent: 4
       TCPDSACKRecv: 18
       46 connections reset due to unexpected data
       41 connections reset due to early user close
       1 connections aborted due to timeout
       TCPDSACKIgnoredNoUndo: 11
       TCPRcvCoalesce: 62877
       TCPOFOQueue: 3068
       TCPOFOMerge: 4
       TCPChallengeACK: 2
       TCPSYNChallenge: 2
       TCPAutoCorking: 455
       TCPFromZeroWindowAdv: 57
       TCPToZeroWindowAdv: 57
       TCPWantZeroWindowAdv: 929
       TCPSynRetrans: 26
       TCPOrigDataSent: 4636
       TCPKeepAlive: 999
       TCPDelivered: 4972
       TCPAckCompressed: 2036
       TCPZeroWindowDrop: 11
IpExt:
       InMcastPkts: 211
       OutMcastPkts: 416
       InBcastPkts: 25
       OutBcastPkts: 13
       InOctets: 209563339
       OutOctets: 5850837
       InMcastOctets: 23102
       OutMcastOctets: 69585
       InBcastOctets: 4126
       OutBcastOctets: 940
       InNoECTPkts: 157507
rahul@rahul-Ubuntu:~$
```

-at   Display statistics for all the tcp ports.

```
rahul@rahul-Ubuntu:~$ netstat -at
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 rahul-Ubuntu:58718    sc-in-f188.1e100.n:5228 ESTABLISHED
tcp        0      0 rahul-Ubuntu:40166    216.46.185.183:https    ESTABLISHED
tcp6       0      0 ip6-localhost:ipp     [::]:*                  LISTEN
```

-au   Displays statistics for all the udp ports.

```
rahul@rahul-Ubuntu:~$ netstat -au
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 0.0.0.0:39546           0.0.0.0:*
udp        0      0 localhost:domain        0.0.0.0:*
udp        0      0 rahul-Ubuntu:bootpc     _gateway:bootps         ESTABLISHED
udp        0      0 0.0.0.0:631             0.0.0.0:*
udp        0      0 224.0.0.251:mdns        0.0.0.0:*
udp        0      0 224.0.0.251:mdns        0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp6       0      0 [::]:45557              [::]:*
udp6       0      0 rahul-Ubu:dhcpv6-client [::]:*
udp6       0      0 [::]:mdns               [::]:*
rahul@rahul-Ubuntu:~$
```

-l   Displays statistics for all the listening ports.

```
rahul@rahul-Ubuntu:~$ netstat -l
Active Internet connections (only servers)
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
tcp6       0      0 ip6-localhost:ipp       [::]:*                  LISTEN
udp        0      0 0.0.0.0:39546           0.0.0.0:*
udp        0      0 localhost:domain        0.0.0.0:*
udp        0      0 0.0.0.0:631             0.0.0.0:*
udp        0      0 224.0.0.251:mdns        0.0.0.0:*
udp        0      0 224.0.0.251:mdns        0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp6       0      0 [::]:45557              [::]:*
udp6       0      0 rahul-Ubu:dhcpv6-client [::]:*
udp6       0      0 [::]:mdns               [::]:*
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7
Active UNIX domain sockets (only servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ACC ]     SEQPACKET  LISTENING     15849    /run/udev/control
unix  2      [ ACC ]     STREAM     LISTENING     42544    /run/user/1000/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     37220    /run/user/125/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     42549    /run/user/1000/bus
unix  2      [ ACC ]     STREAM     LISTENING     37227    /run/user/125/bus
unix  2      [ ACC ]     STREAM     LISTENING     42550    /run/user/1000/gnupg/S.dirmngr
unix  2      [ ACC ]     STREAM     LISTENING     37228    /run/user/125/gnupg/S.dirmngr
unix  2      [ ACC ]     STREAM     LISTENING     42551    /run/user/1000/gnupg/S.gpg-agent.browser
unix  2      [ ACC ]     STREAM     LISTENING     37229    /run/user/125/gnupg/S.gpg-agent.browser
unix  2      [ ACC ]     STREAM     LISTENING     42552    /run/user/1000/gnupg/S.gpg-agent.extra
unix  2      [ ACC ]     STREAM     LISTENING     37230    /run/user/125/gnupg/S.gpg-agent.extra
unix  2      [ ACC ]     STREAM     LISTENING     42553    /run/user/1000/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]     STREAM     LISTENING     37231    /run/user/125/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]     STREAM     LISTENING     42554    /run/user/1000/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM     LISTENING     37232    /run/user/125/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM     LISTENING     42555    /run/user/1000/pk-debconf-socket
unix  2      [ ACC ]     STREAM     LISTENING     38412    @/tmp/dbus-cBHEtB8omJ
unix  2      [ ACC ]     STREAM     LISTENING     37233    /run/user/125/pk-debconf-socket
unix  2      [ ACC ]     STREAM     LISTENING     42556    /run/user/1000/pulse/native
unix  2      [ ACC ]     STREAM     LISTENING     37234    /run/user/125/pulse/native
unix  2      [ ACC ]     STREAM     LISTENING     42557    /run/user/1000/snapd-session-agent.socket
unix  2      [ ACC ]     STREAM     LISTENING     37235    /run/user/125/snapd-session-agent.socket
unix  2      [ ACC ]     STREAM     LISTENING     35073    @/tmp/dbus-n0cadqUF
unix  2      [ ACC ]     STREAM     LISTENING     44187    @/tmp/.ICE-unix/2050
unix  2      [ ACC ]     STREAM     LISTENING     36555    @/tmp/.ICE-unix/1515
unix  2      [ ACC ]     STREAM     LISTENING     42569    /run/user/1000/keyring/control
unix  2      [ ACC ]     STREAM     LISTENING     35074    @/tmp/dbus-wHxi6NTR
unix  2      [ ACC ]     STREAM     LISTENING     37273    @/tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     39398    @/tmp/.X11-unix/X1
unix  2      [ ACC ]     STREAM     LISTENING     32306    /run/user/125/keyring/control
unix  2      [ ACC ]     STREAM     LISTENING     32307    /run/user/125/keyring/ssh
unix  2      [ ACC ]     STREAM     LISTENING     43310    /run/user/1000/keyring/pkcs11
unix  2      [ ACC ]     STREAM     LISTENING     37407    /run/user/125/keyring/pkcs11
unix  2      [ ACC ]     STREAM     LISTENING     41521    /run/user/1000/keyring/ssh
unix  2      [ ACC ]     STREAM     LISTENING     36785    @/var/lib/gdm3/.cache/ibus/dbus-7QbmmNJV
unix  2      [ ACC ]     STREAM     LISTENING     35072    @/tmp/dbus-k7lu5fyy
```

```
unix  2      [ ACC ]      STREAM     LISTENING      37230      /run/user/125/gnupg/S.gpg-agent.extra
unix  2      [ ACC ]      STREAM     LISTENING      42553      /run/user/1000/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]      STREAM     LISTENING      37231      /run/user/125/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]      STREAM     LISTENING      42554      /run/user/1000/gnupg/S.gpg-agent
unix  2      [ ACC ]      STREAM     LISTENING      37232      /run/user/125/gnupg/S.gpg-agent
unix  2      [ ACC ]      STREAM     LISTENING      42555      /run/user/1000/pk-debconf-socket
unix  2      [ ACC ]      STREAM     LISTENING      38412      @/tmp/dbus-cBHEtB8omJ
unix  2      [ ACC ]      STREAM     LISTENING      37233      /run/user/125/pk-debconf-socket
unix  2      [ ACC ]      STREAM     LISTENING      42556      /run/user/1000/pulse/native
unix  2      [ ACC ]      STREAM     LISTENING      37234      /run/user/125/pulse/native
unix  2      [ ACC ]      STREAM     LISTENING      42557      /run/user/1000/snapd-session-agent.socket
unix  2      [ ACC ]      STREAM     LISTENING      37235      /run/user/125/snapd-session-agent.socket
unix  2      [ ACC ]      STREAM     LISTENING      35073      @/tmp/dbus-n0cadqUF
unix  2      [ ACC ]      STREAM     LISTENING      44187      @/tmp/.ICE-unix/2050
unix  2      [ ACC ]      STREAM     LISTENING      36555      @/tmp/.ICE-unix/1515
unix  2      [ ACC ]      STREAM     LISTENING      42569      /run/user/1000/keyring/control
unix  2      [ ACC ]      STREAM     LISTENING      35074      @/tmp/dbus-wHxi6NTR
unix  2      [ ACC ]      STREAM     LISTENING      37273      @/tmp/.X11-unix/X0
unix  2      [ ACC ]      STREAM     LISTENING      39398      @/tmp/.X11-unix/X1
unix  2      [ ACC ]      STREAM     LISTENING      32306      /run/user/125/keyring/control
unix  2      [ ACC ]      STREAM     LISTENING      32307      /run/user/125/keyring/ssh
unix  2      [ ACC ]      STREAM     LISTENING      43310      /run/user/1000/keyring/pkcs11
unix  2      [ ACC ]      STREAM     LISTENING      37407      /run/user/125/keyring/pkcs11
unix  2      [ ACC ]      STREAM     LISTENING      41521      /run/user/1000/keyring/ssh
unix  2      [ ACC ]      STREAM     LISTENING      36785      @/var/lib/gdm3/.cache/ibus/dbus-7QbmmNJV
unix  2      [ ACC ]      STREAM     LISTENING      35072      @/tmp/dbus-k7lu5fyy
unix  2      [ ACC ]      STREAM     LISTENING      15822      /run/systemd/private
unix  2      [ ACC ]      STREAM     LISTENING      15824      /run/systemd/userdb/io.systemd.DynamicUser
unix  2      [ ACC ]      STREAM     LISTENING      15835      /run/systemd/fsck.progress
unix  2      [ ACC ]      STREAM     LISTENING      15845      /run/systemd/journal/stdout
unix  2      [ ACC ]      STREAM     LISTENING      43198      @/tmp/dbus-vj6CncPu
unix  2      [ ACC ]      STREAM     LISTENING      18666      /run/systemd/journal/io.systemd.journal
unix  2      [ ACC ]      STREAM     LISTENING      24161      /run/acpid.socket
unix  2      [ ACC ]      STREAM     LISTENING      24163      /run/avahi-daemon/socket
unix  2      [ ACC ]      STREAM     LISTENING      24165      /run/cups/cups.sock
unix  2      [ ACC ]      STREAM     LISTENING      43197      @/tmp/dbus-HyhqnsOi
unix  2      [ ACC ]      STREAM     LISTENING      24167      /run/dbus/system_bus_socket
unix  2      [ ACC ]      STREAM     LISTENING      24169      /run/snapd.socket
unix  2      [ ACC ]      STREAM     LISTENING      24171      /run/snapd-snap.socket
unix  2      [ ACC ]      STREAM     LISTENING      43257      @/home/rahul/.cache/ibus/dbus-qvjmSxjt
unix  2      [ ACC ]      STREAM     LISTENING      24173      /run/uuidd/request
unix  2      [ ACC ]      STREAM     LISTENING      35075      @/tmp/dbus-xvoJus0c
unix  2      [ ACC ]      STREAM     LISTENING      43247      /tmp/ssh-K5LFeHUwP5P8/agent.1881
unix  2      [ ACC ]      STREAM     LISTENING      36556      /tmp/.ICE-unix/1515
unix  2      [ ACC ]      STREAM     LISTENING      39849      @/dbus-vfs-daemon/socket-uSJkhVBz
unix  2      [ ACC ]      STREAM     LISTENING      37274      /tmp/.X11-unix/X0
unix  2      [ ACC ]      STREAM     LISTENING      31784      /run/irqbalance//irqbalance992.sock
unix  2      [ ACC ]      STREAM     LISTENING      65877      /tmp/.org.chromium.Chromium.ETGbW0/Singlet
onSocket
unix  2      [ ACC ]      STREAM     LISTENING      39399      /tmp/.X11-unix/X1
unix  2      [ ACC ]      STREAM     LISTENING      44188      /tmp/.ICE-unix/2050
unix  2      [ ACC ]      STREAM     LISTENING      99720      /tmp/OSL_PIPE_1000_SingleOfficeIPC_f4c52e1
8533aec3d132c4de3e6593d87
unix  2      [ ACC ]      STREAM     LISTENING      28604      /var/run/nvidia-persistenced/socket
unix  2      [ ACC ]      STREAM     LISTENING      40388      @/tmp/dbus-XIXTmyWIeN
rahul@rahul-Ubuntu:~$ 
```

-lt   Displays statistics for all the listening tcp ports.

```
rahul@rahul-Ubuntu:~$ netstat -lt
Active Internet connections (only servers)
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
tcp6       0      0 ip6-localhost:ipp       [::]:*                  LISTEN
rahul@rahul-Ubuntu:~$ 
```

-lu   Displays statistics for all the listening udp ports.

```
rahul@rahul-Ubuntu:~$ netstat -lu
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 0.0.0.0:39546           0.0.0.0:*
udp        0      0 localhost:domain        0.0.0.0:*
udp        0      0 0.0.0.0:631             0.0.0.0:*
udp        0      0 224.0.0.251:mdns        0.0.0.0:*
udp        0      0 224.0.0.251:mdns        0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp6       0      0 [::]:45557              [::]:*
udp6       0      0 rahul-Ubu:dhcpv6-client [::]:*
udp6       0      0 [::]:mdns               [::]:*
rahul@rahul-Ubuntu:~$
```

Command : ifconfig

Syntax : ifconfig [options] [interface]

Description : Ifconfig is used to configure the kernel-resident network interfaces.

Screenshots :
   (none)   If no arguments are given, ifconfig displays the status of the
currently active interfaces

```
rahul@rahul-Ubuntu:~$ ifconfig
eno1: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        ether e8:d8:d1:57:f9:2f  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        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 867  bytes 90109 (90.1 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 867  bytes 90109 (90.1 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wlo1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.18.10  netmask 255.255.255.0  broadcast 192.168.18.255
        inet6 fe80::2038:c30d:b530:2  prefixlen 64  scopeid 0x20<link>
        ether 40:5b:d8:ca:b9:b7  txqueuelen 1000  (Ethernet)
        RX packets 122895  bytes 167426285 (167.4 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 33951  bytes 4831085 (4.8 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

rahul@rahul-Ubuntu:~$ man ifconfig
```

   -a   display all interfaces which are currently available, even if down

```
rahul@rahul-Ubuntu:~$ ifconfig -a
eno1: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        ether e8:d8:d1:57:f9:2f  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        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 867  bytes 90109 (90.1 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 867  bytes 90109 (90.1 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wlo1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.18.10  netmask 255.255.255.0  broadcast 192.168.18.255
        inet6 fe80::2038:c30d:b530:2  prefixlen 64  scopeid 0x20<link>
        ether 40:5b:d8:ca:b9:b7  txqueuelen 1000  (Ethernet)
        RX packets 122847  bytes 167422349 (167.4 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 33941  bytes 4826799 (4.8 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

rahul@rahul-Ubuntu:~$ ifconfig-s
```

-s   display a short list (like netstat -i)

```
rahul@rahul-Ubuntu:~$ ifconfig -s
Iface      MTU     RX-OK RX-ERR RX-DRP RX-OVR    TX-OK TX-ERR TX-DRP TX-OVR Flg
eno1      1500         0      0      0 0             0      0      0      0 BMU
lo       65536       867      0      0 0           867      0      0      0 LRU
wlo1      1500    122862      0      0 0         33951      0      0      0 BMRU
rahul@rahul-Ubuntu:~$ ifconfig wlo1
```

ifconfig with network interface 'wlo1'

```
rahul@rahul-Ubuntu:~$ ifconfig wlo1
wlo1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.18.10  netmask 255.255.255.0  broadcast 192.168.18.255
        inet6 fe80::2038:c30d:b530:2  prefixlen 64  scopeid 0x20<link>
        ether 40:5b:d8:ca:b9:b7  txqueuelen 1000  (Ethernet)
        RX packets 122884  bytes 167425795 (167.4 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 33951  bytes 4831085 (4.8 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

rahul@rahul-Ubuntu:~$ ifconfig
```

Command : nslookup

Syntax : nslookup [-option] [name | -] [server]

Description : Nslookup is a program to query Internet domain name servers.
Nslookup has two modes: interactive and non-interactive. Interactive mode allows the
user to query name servers for information about various hosts and domains or to

print a list of hosts in a domain. Non-interactive mode is used to print just the name and requested information for a host or domain.

Screenshots :

www.google.com

```
rahul@rahul-Ubuntu:~$ nslookup www.google.com
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
Name:   www.google.com
Address: 216.58.197.68
Name:   www.google.com
Address: 2404:6800:4007:800::2004

rahul@rahul-Ubuntu:~$ nslookup www.gmailcom
```

www.gmail.com

```
rahul@rahul-Ubuntu:~$ nslookup www.gmail.com
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
www.gmail.com   canonical name = mail.google.com.
mail.google.com canonical name = googlemail.l.google.com.
Name:   googlemail.l.google.com
Address: 216.58.200.133
Name:   googlemail.l.google.com
Address: 2404:6800:4007:808::2005

rahul@rahul-Ubuntu:~$ nslookup www.youtube.com
```

www.youtube.com

```
rahul@rahul-Ubuntu:~$ nslookup www.youtube.com
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
www.youtube.com canonical name = youtube-ui.l.google.com.
Name:   youtube-ui.l.google.com
Address: 172.217.163.46
Name:   youtube-ui.l.google.com
Address: 216.58.196.174
Name:   youtube-ui.l.google.com
Address: 172.217.160.142
Name:   youtube-ui.l.google.com
Address: 172.217.26.206
Name:   youtube-ui.l.google.com
Address: 172.217.26.174
Name:   youtube-ui.l.google.com
Address: 216.58.197.46
Name:   youtube-ui.l.google.com
Address: 142.250.67.78
Name:   youtube-ui.l.google.com
Address: 142.250.67.46
Name:   youtube-ui.l.google.com
Address: 216.58.200.142
Name:   youtube-ui.l.google.com
Address: 172.217.166.110
Name:   youtube-ui.l.google.com
Address: 172.217.163.206
Name:   youtube-ui.l.google.com
Address: 172.217.163.174
Name:   youtube-ui.l.google.com
Address: 172.217.163.78
Name:   youtube-ui.l.google.com
Address: 2404:6800:4007:80b::200e
Name:   youtube-ui.l.google.com
Address: 2404:6800:4007:812::200e
Name:   youtube-ui.l.google.com
Address: 2404:6800:4007:80a::200e
Name:   youtube-ui.l.google.com
Address: 2404:6800:4007:809::200e

rahul@rahul-Ubuntu:~$
```

Command : traceroute

Syntax : traceroute [options]

Description : traceroute tracks the route packets taken from an IP network on their way to a given host.

Screenshots :
   www.google.com

```
rahul@rahul-Ubuntu:~$ traceroute www.google.com
traceroute to www.google.com (216.58.197.68), 30 hops max, 60 byte packets
 1  _gateway (192.168.18.1)  6.518 ms  6.505 ms  6.492 ms
 2  10.30.4.1 (10.30.4.1)  102.411 ms  102.422 ms  102.409 ms
 3  103.98.62.1 (103.98.62.1)  102.404 ms  102.393 ms  102.381 ms
 4  103.88.76.6 (103.88.76.6)  102.370 ms  102.358 ms  102.347 ms
 5  108.170.253.113 (108.170.253.113)  102.311 ms 108.170.253.97 (108.170.253.97)  102.321 ms  102.310 ms
 6  108.170.236.197 (108.170.236.197)  102.271 ms 108.170.237.95 (108.170.237.95)  203.268 ms  203.226 ms
 7  maa03s21-in-f68.1e100.net (216.58.197.68)  203.178 ms  103.307 ms  103.282 ms
```

www.gmail.com

```
rahul@rahul-Ubuntu:~$ traceroute www.gmail.com
traceroute to www.gmail.com (216.58.200.133), 30 hops max, 60 byte packets
 1  _gateway (192.168.18.1)  15.525 ms  15.514 ms  15.502 ms
 2  10.30.4.1 (10.30.4.1)  26.650 ms  26.665 ms  26.653 ms
 3  103.98.62.1 (103.98.62.1)  26.630 ms  26.625 ms  30.447 ms
 4  103.88.76.6 (103.88.76.6)  30.449 ms  30.439 ms  30.428 ms
 5  74.125.242.129 (74.125.242.129)  33.769 ms  33.782 ms 74.125.242.145 (74.125.242.145)  30.387 ms
 6  216.239.54.197 (216.239.54.197)  33.749 ms  61.779 ms 216.239.54.159 (216.239.54.159)  61.757 ms
 7  maa05s10-in-f5.1e100.net (216.58.200.133)  61.736 ms  20.669 ms  24.269 ms
```

www.youtube.com

```
rahul@rahul-Ubuntu:~$ traceroute www.youtube.com
traceroute to www.youtube.com (172.217.163.78), 30 hops max, 60 byte packets
 1  _gateway (192.168.18.1)  89.122 ms  89.093 ms  89.090 ms
 2  10.30.4.1 (10.30.4.1)  89.080 ms  89.073 ms  89.054 ms
 3  103.98.62.1 (103.98.62.1)  89.049 ms  89.010 ms  89.027 ms
 4  103.88.76.102 (103.88.76.102)  89.008 ms  89.005 ms  88.994 ms
 5  103.88.76.101 (103.88.76.101)  88.983 ms  88.971 ms  88.959 ms
 6  as15169.maa.extreme-ix.net (45.120.251.135)  88.949 ms  99.304 ms  99.270 ms
 7  74.125.242.145 (74.125.242.145)  99.228 ms  99.175 ms 74.125.242.129 (74.125.242.129)  99.235 ms
 8  216.239.42.243 (216.239.42.243)  99.197 ms 216.239.42.237 (216.239.42.237)  99.195 ms  99.178 ms
 9  maa05s02-in-f14.1e100.net (172.217.163.78)  99.194 ms  99.177 ms  99.173 ms
```

Command : ping

Syntax : ping [options]

Description : ping uses the ICMP protocol's mandatory ECHO_REQUEST datagram to elicit an ICMP ECHO_RESPONSE from a host or gateway.

Screenshots :

www.google.com

```
rahul@rahul-Ubuntu:~$ ping www.google.com
PING www.google.com (216.58.197.68) 56(84) bytes of data.
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=1 ttl=120 time=27.6 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=2 ttl=120 time=126 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=3 ttl=120 time=149 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=4 ttl=120 time=24.7 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=5 ttl=120 time=28.4 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=6 ttl=120 time=20.7 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=7 ttl=120 time=20.8 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=8 ttl=120 time=20.9 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=9 ttl=120 time=21.3 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=10 ttl=120 time=102 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=11 ttl=120 time=125 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=12 ttl=120 time=46.1 ms
64 bytes from maa03s21-in-f4.1e100.net (216.58.197.68): icmp_seq=13 ttl=120 time=20.6 ms
^Z
[4]+  Stopped                 ping www.google.com
rahul@rahul-Ubuntu:~$
```

www.gmail.com

```
rahul@rahul-Ubuntu:~$ ping www.gmail.com
PING googlemail.l.google.com (142.250.67.69) 56(84) bytes of data.
64 bytes from maa05s13-in-f5.1e100.net (142.250.67.69): icmp_seq=1 ttl=120 time=103 ms
64 bytes from maa05s13-in-f5.1e100.net (142.250.67.69): icmp_seq=2 ttl=120 time=21.6 ms
64 bytes from maa05s13-in-f5.1e100.net (142.250.67.69): icmp_seq=3 ttl=120 time=45.9 ms
64 bytes from maa05s13-in-f5.1e100.net (142.250.67.69): icmp_seq=4 ttl=120 time=69.1 ms
64 bytes from maa05s13-in-f5.1e100.net (142.250.67.69): icmp_seq=5 ttl=120 time=90.8 ms
64 bytes from maa05s13-in-f5.1e100.net (142.250.67.69): icmp_seq=6 ttl=120 time=113 ms
64 bytes from maa05s13-in-f5.1e100.net (142.250.67.69): icmp_seq=7 ttl=120 time=32.8 ms
64 bytes from maa05s13-in-f5.1e100.net (142.250.67.69): icmp_seq=8 ttl=120 time=21.4 ms
64 bytes from maa05s13-in-f5.1e100.net (142.250.67.69): icmp_seq=9 ttl=120 time=21.2 ms
^Z
[5]+  Stopped                 ping www.gmail.com
```

www.youtube.com

```
rahul@rahul-Ubuntu:~$ ping www.youtube.com
PING youtube-ui.l.google.com (216.58.196.174) 56(84) bytes of data.
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=1 ttl=120 time=73.8 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=2 ttl=120 time=97.8 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=3 ttl=120 time=21.2 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=4 ttl=120 time=40.4 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=5 ttl=120 time=62.3 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=6 ttl=120 time=84.6 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=7 ttl=120 time=311 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=8 ttl=120 time=25.9 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=9 ttl=120 time=50.3 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=10 ttl=120 time=73.3 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=11 ttl=120 time=95.6 ms
^Z
[6]+  Stopped                 ping www.youtube.com
```