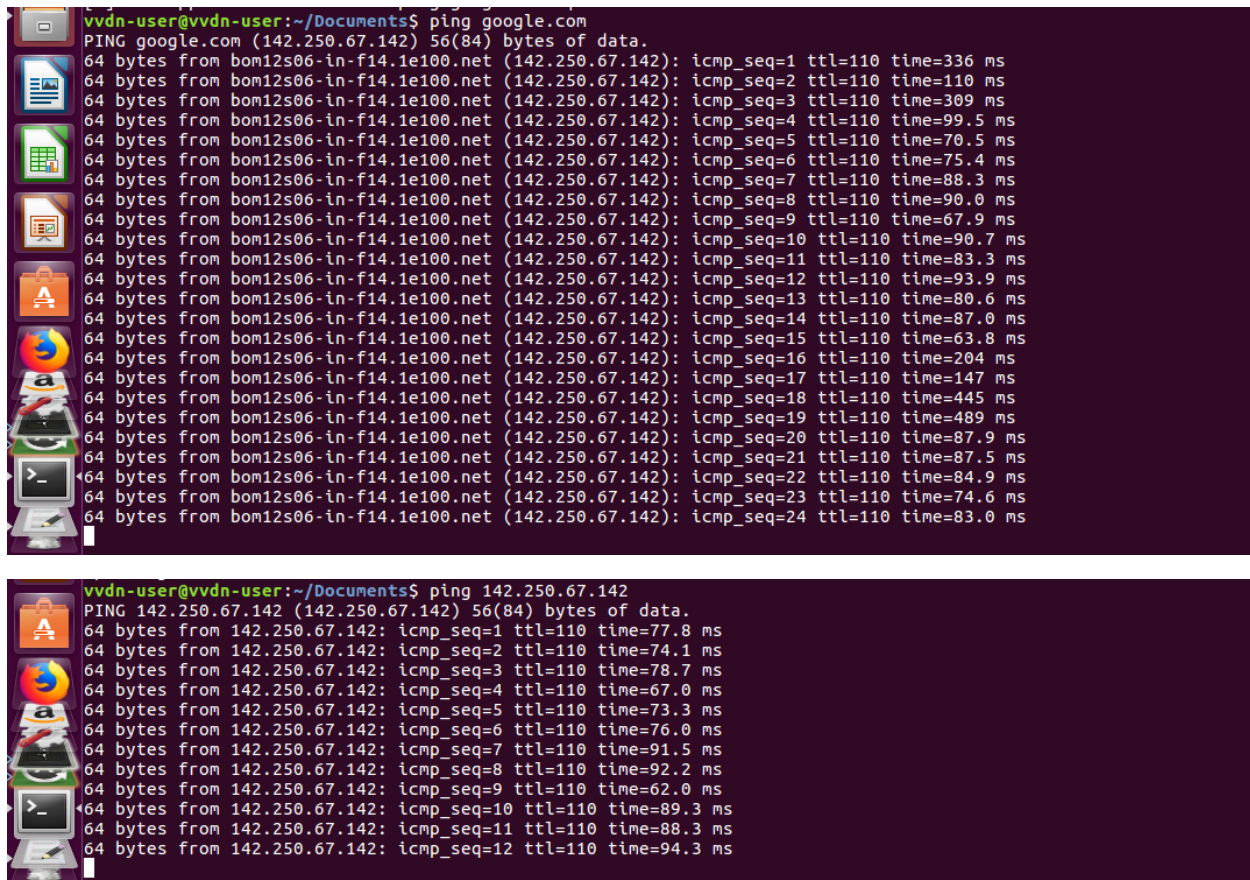


ADVANCED NETWORKING COMMANDS-LINUX

1.PING:

Verifies IP-level connectivity to another TCP/IP computer by sending Internet Control Message Protocol (ICMP) Echo Request messages. The receipt of corresponding Echo Reply messages are displayed, along with round-trip times. Ping is the primary TCP/IP command used to troubleshoot connectivity, reachability, and name resolution.



```
vvdn-user@vvdn-user:~/Documents$ ping google.com
PING google.com (142.250.67.142) 56(84) bytes of data:
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=1 ttl=110 time=336 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=2 ttl=110 time=110 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=3 ttl=110 time=309 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=4 ttl=110 time=99.5 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=5 ttl=110 time=70.5 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=6 ttl=110 time=75.4 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=7 ttl=110 time=88.3 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=8 ttl=110 time=90.0 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=9 ttl=110 time=67.9 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=10 ttl=110 time=90.7 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=11 ttl=110 time=83.3 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=12 ttl=110 time=93.9 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=13 ttl=110 time=80.6 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=14 ttl=110 time=87.0 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=15 ttl=110 time=63.8 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=16 ttl=110 time=204 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=17 ttl=110 time=147 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=18 ttl=110 time=445 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=19 ttl=110 time=489 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=20 ttl=110 time=87.9 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=21 ttl=110 time=87.5 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=22 ttl=110 time=84.9 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=23 ttl=110 time=74.6 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=24 ttl=110 time=83.0 ms

vvdn-user@vvdn-user:~/Documents$ ping 142.250.67.142
PING 142.250.67.142 (142.250.67.142) 56(84) bytes of data:
64 bytes from 142.250.67.142: icmp_seq=1 ttl=110 time=77.8 ms
64 bytes from 142.250.67.142: icmp_seq=2 ttl=110 time=74.1 ms
64 bytes from 142.250.67.142: icmp_seq=3 ttl=110 time=78.7 ms
64 bytes from 142.250.67.142: icmp_seq=4 ttl=110 time=67.0 ms
64 bytes from 142.250.67.142: icmp_seq=5 ttl=110 time=73.3 ms
64 bytes from 142.250.67.142: icmp_seq=6 ttl=110 time=76.0 ms
64 bytes from 142.250.67.142: icmp_seq=7 ttl=110 time=91.5 ms
64 bytes from 142.250.67.142: icmp_seq=8 ttl=110 time=92.2 ms
64 bytes from 142.250.67.142: icmp_seq=9 ttl=110 time=62.0 ms
64 bytes from 142.250.67.142: icmp_seq=10 ttl=110 time=89.3 ms
64 bytes from 142.250.67.142: icmp_seq=11 ttl=110 time=88.3 ms
64 bytes from 142.250.67.142: icmp_seq=12 ttl=110 time=94.3 ms
```

2.NETSTAT:

Netstat (Network Statistic) command display connection info, routing table information etc.,

```

Terminal File Edit View Search Terminal Help
unix 3 [] [] STREAM CONNECTED 21362 @/tmp/ibus/dbus-JarJmPFX
unix 3 [] [] STREAM CONNECTED 52576 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 22211
unix 3 [] [] STREAM CONNECTED 21766
unix 3 [] [] STREAM CONNECTED 21568 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 21538 @/tmp/.X11-unix/X0
unix 3 [] [] STREAM CONNECTED 17294
unix 3 [] [] STREAM CONNECTED 22416
unix 3 [] [] STREAM CONNECTED 22207 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 21767 @/tmp/.X11-unix/X0
unix 3 [] [] STREAM CONNECTED 20129 /run/systemd/journal/stdout
unix 3 [] [] STREAM CONNECTED 16893 /run/systemd/journal/stdout
unix 3 [] [] STREAM CONNECTED 67670 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 22152
unix 3 [] [] STREAM CONNECTED 22078
unix 3 [] [] STREAM CONNECTED 21898 /run/systemd/journal/stdout
unix 3 [] [] STREAM CONNECTED 12730
unix 3 [] [] STREAM CONNECTED 23281 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 20078
unix 3 [] [] STREAM CONNECTED 52575
unix 3 [] [] STREAM CONNECTED 22206
unix 3 [] [] STREAM CONNECTED 21825 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 21921
unix 3 [] [] STREAM CONNECTED 23282 /run/systemd/journal/stdout
unix 3 [] [] STREAM CONNECTED 20077
unix 3 [] [] STREAM CONNECTED 22233
unix 3 [] [] STREAM CONNECTED 22134 @/tmp/dbus-6KkDd6hXYK
unix 3 [] [] STREAM CONNECTED 21774 @/tmp/dbus-6KkDd6hXYK
unix 3 [] [] STREAM CONNECTED 20252
unix 3 [] [] STREAM CONNECTED 22208 @/tmp/dbus-6KkDd6hXYK
unix 3 [] [] STREAM CONNECTED 21874 @/tmp/dbus-6KkDd6hXYK
vvdn-user@vvdn-user:~/Documents$

```

2.1.netstat -a:

Displays all active TCP connections and the TCP and UDP ports on which the computer is listening.

```

vvdn-user@vvdn-user: ~
unix 3 [] [] STREAM CONNECTED 52576 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 22211
unix 3 [] [] STREAM CONNECTED 21766
unix 3 [] [] STREAM CONNECTED 21568 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 21538 @/tmp/.X11-unix/X0
unix 3 [] [] STREAM CONNECTED 17294
unix 3 [] [] STREAM CONNECTED 22416
unix 3 [] [] STREAM CONNECTED 22207 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 21767 @/tmp/.X11-unix/X0
unix 3 [] [] STREAM CONNECTED 20129
unix 2 [] [] DGRAM CONNECTED 16893 /run/systemd/journal/stdout
unix 3 [] [] STREAM CONNECTED 67670 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 22152
unix 3 [] [] STREAM CONNECTED 22078
unix 3 [] [] STREAM CONNECTED 21898 /run/systemd/journal/stdout
unix 3 [] [] STREAM CONNECTED 12730
unix 3 [] [] STREAM CONNECTED 23281 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 20078
unix 3 [] [] STREAM CONNECTED 52575
unix 3 [] [] STREAM CONNECTED 22206
unix 3 [] [] STREAM CONNECTED 21825 @/tmp/dbus-jKJfbySw3g
unix 3 [] [] STREAM CONNECTED 21921
unix 3 [] [] STREAM CONNECTED 23282 /run/systemd/journal/stdout
unix 3 [] [] STREAM CONNECTED 20077
unix 3 [] [] STREAM CONNECTED 22233 @/tmp/dbus-6KkDd6hXYK
unix 3 [] [] STREAM CONNECTED 22134 @/tmp/dbus-6KkDd6hXYK
unix 3 [] [] STREAM CONNECTED 21774
unix 3 [] [] STREAM CONNECTED 20252 @/tmp/dbus-6KkDd6hXYK
unix 3 [] [] STREAM CONNECTED 22208 @/tmp/dbus-6KkDd6hXYK
unix 3 [] [] STREAM CONNECTED 21874 @/tmp/dbus-6KkDd6hXYK
vvdn-user@vvdn-user: ~$

```

2.2.netstat -e:

Displays Ethernet statistics, such as the number of bytes and packets sent and received.

```

vvdn-user@vvdn-user: ~
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address Foreign Address State User Inode
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags Type State I-Node Path
unix 2 [] [] DGRAM 19738 /run/user/1000/systemd/notify
unix 18 [] [] DGRAM 12047 /run/systemd/journal/dev-log
unix 2 [] [] DGRAM 12048 /run/systemd/journal/syslog
unix 8 [] [] DGRAM 12050 /run/systemd/journal/socket
unix 3 [] [] DGRAM 12032 /run/systemd/notify
unix 2 [] [] DGRAM 12415
unix 3 [] [] STREAM CONNECTED 22308
unix 3 [] [] STREAM CONNECTED 22151
unix 3 [] [] STREAM CONNECTED 20294
unix 3 [] [] STREAM CONNECTED 19933
unix 3 [] [] STREAM CONNECTED 54295
unix 3 [] [] STREAM CONNECTED 22396
unix 3 [] [] STREAM CONNECTED 21931
unix 3 [] [] STREAM CONNECTED 22681 @/tmp/.X11-unix/X0
unix 3 [] [] STREAM CONNECTED 22201
unix 3 [] [] STREAM CONNECTED 20298
unix 3 [] [] STREAM CONNECTED 54297 /run/systemd/journal/stdout
unix 3 [] [] STREAM CONNECTED 22121 /run/systemd/journal/stdout
unix 3 [] [] STREAM CONNECTED 21142 /run/systemd/journal/stdout
unix 3 [] [] STREAM CONNECTED 22138
unix 3 [] [] STREAM CONNECTED 20295 @/tmp/.X11-unix/X0
unix 3 [] [] STREAM CONNECTED 20247
unix 3 [] [] STREAM CONNECTED 54296
unix 3 [] [] STREAM CONNECTED 22379
unix 3 [] [] STREAM CONNECTED 21933 /run/systemd/journal/stdout
unix 3 [] [] STREAM CONNECTED 20203
unix 3 [] [] STREAM CONNECTED 21531

```

2.3.netstat -n:

Displays active TCP connections, however, addresses and port numbers are expressed numerically and no attempt is made to determine names.

```

vvdn-user@vvdn-user: ~
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags   Type       State         I-Node    Path
unix  2      [ ]     DGRAM     19738         /run/user/1000/systemd/notify
unix  18      [ ]     DGRAM     12047         /run/systemd/journal/dev-log
unix  2      [ ]     DGRAM     12048         /run/systemd/journal/syslog
unix  8      [ ]     DGRAM     12050         /run/systemd/journal/socket
unix  3      [ ]     DGRAM     12032         /run/systemd/notify
unix  2      [ ]     DGRAM     12415
unix  3      [ ]     STREAM    CONNECTED    22308
unix  3      [ ]     STREAM    CONNECTED    22151
unix  3      [ ]     STREAM    CONNECTED    20294
unix  3      [ ]     STREAM    CONNECTED    19933
unix  3      [ ]     STREAM    CONNECTED    54295
unix  3      [ ]     STREAM    CONNECTED    22396
unix  3      [ ]     STREAM    CONNECTED    21931
unix  3      [ ]     STREAM    CONNECTED    22681
unix  3      [ ]     STREAM    CONNECTED    22201
unix  3      [ ]     STREAM    CONNECTED    20298
unix  3      [ ]     STREAM    CONNECTED    54297
unix  3      [ ]     STREAM    CONNECTED    22121
unix  3      [ ]     STREAM    CONNECTED    21142
unix  3      [ ]     STREAM    CONNECTED    22138
unix  3      [ ]     STREAM    CONNECTED    20295
unix  3      [ ]     STREAM    CONNECTED    20247
unix  3      [ ]     STREAM    CONNECTED    54296
unix  3      [ ]     STREAM    CONNECTED    22379
unix  3      [ ]     STREAM    CONNECTED    89229
unix  3      [ ]     STREAM    CONNECTED    21933
unix  3      [ ]     STREAM    CONNECTED    20203
:

```

2.4.netstat -o:

Displays active TCP connections and includes the process ID (PID) for each connection. You can find the application based on the PID on the Processes tab in Windows Task Manager.

```
vddn-user@vddn-user: ~
Active Internet connections (w/o servers)
Proto RefCnt Flags Type State I-Node Path Foreign Address State Timer
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags Type State I-Node Path Foreign Address State Timer
unix 2 [ ] DGRAM 19738 /run/user/1000/systemd/notify
unix 18 [ ] DGRAM 12047 /run/systemd/journal/dev-log
unix 2 [ ] DGRAM 12048 /run/systemd/journal/syslog
unix 7 [ ] DGRAM 12050 /run/systemd/journal/socket
unix 3 [ ] DGRAM 12032 /run/systemd/notify
unix 2 [ ] DGRAM 12415
unix 3 [ ] STREAM 22308 CONNECTED
unix 3 [ ] STREAM 22151 CONNECTED
unix 3 [ ] STREAM 20294 CONNECTED
unix 3 [ ] STREAM 19933 CONNECTED
unix 3 [ ] STREAM 54295 CONNECTED
unix 3 [ ] STREAM 22396 CONNECTED
unix 3 [ ] STREAM 21931 CONNECTED
unix 3 [ ] STREAM 22681 CONNECTED
unix 3 [ ] STREAM 22201 CONNECTED
unix 3 [ ] STREAM 20298 CONNECTED
unix 3 [ ] STREAM 54297 /run/systemd/journal/stdout
unix 3 [ ] STREAM 22121 /run/systemd/journal/stdout
unix 3 [ ] STREAM 21142 /run/systemd/journal/stdout
unix 3 [ ] STREAM 22138 CONNECTED
unix 3 [ ] STREAM 20295 CONNECTED
unix 3 [ ] STREAM 20247 @/tmp/.X11-unix/X0
unix 3 [ ] STREAM 54296 CONNECTED
unix 3 [ ] STREAM 22379 CONNECTED
unix 3 [ ] STREAM 21933 /run/systemd/journal/stdout
unix 3 [ ] STREAM 20203 CONNECTED
unix 3 [ ] STREAM 21531 CONNECTED
```

2.5.netstat -p:

Shows connections for the protocol specified by Protocol.

```

vwdn-user@vwdn-users: ~
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address
Active UNIX domain sockets (w/o servers)
Proto Refcnt Flags Type State I-Node PID/Program name Path
unix 2 [ ] DGRAM 19388 1214/systemd /run/user/1000/systemd/notify
unix 17 [ ] DGRAM 12047 - /run/systemd/journal/dev-log
unix 2 [ ] DGRAM 12048 - /run/systemd/journal/sylog
unix 3 [ ] DGRAM 12050 - /run/systemd/journal/socket
unix 3 [ ] DGRAM 12032 - /run/systemd/notify
unix 2 [ ] DGRAM 22308 -
unix 3 [ ] STREAM CONNECTED 22308 1830/evolution-cale
unix 3 [ ] STREAM CONNECTED 22151 1737/evolution-cale
unix 3 [ ] STREAM CONNECTED 20294 1420/banrdaemon
unix 3 [ ] STREAM CONNECTED 19933 1309/dbus-daemon
unix 3 [ ] STREAM CONNECTED 20295 5787/gnome-terminal
unix 3 [ ] STREAM CONNECTED 22390 1926/zeitgeist-fts
unix 3 [ ] STREAM CONNECTED 21331 -
unix 3 [ ] STREAM CONNECTED 22081 - @/tmp/.X11-unix/X0
unix 3 [ ] STREAM CONNECTED 22291 1663/compiz
unix 3 [ ] STREAM CONNECTED 20298 1420/banrdaemon
unix 3 [ ] STREAM CONNECTED 54297 - /run/systemd/journal/stdout
unix 3 [ ] STREAM CONNECTED 22121 - @/tmp/.X11-unix/X0
unix 3 [ ] STREAM CONNECTED 21142 - /run/systemd/journal/stdout
unix 3 [ ] STREAM CONNECTED 22138 1663/compiz
unix 3 [ ] STREAM CONNECTED 20295 - /run/systemd/journal/stdout
unix 3 [ ] STREAM CONNECTED 20297 1392/lbus-x11
unix 3 [ ] STREAM CONNECTED 54296 5787/gnome-terminal
unix 3 [ ] STREAM CONNECTED 22379 1915/sh
unix 3 [ ] STREAM CONNECTED 89500 10528/gnome-screens
unix 3 [ ] STREAM CONNECTED 21933 - /run/systemd/journal/stdout

```

2.6.netstat -s:

Displays statistics by protocol. By default, statistics are shown for the TCP, UDP, ICMP, and IP protocols.

```
vvdn-user@vvdn-user: ~  
ip: 61727 total packets received  
    2 with invalid addresses  
    0 forwarded  
    0 incoming packets discarded  
61725 incoming packets delivered  
42995 requests sent out  
40 outgoing packets dropped  
Icmp: 267 ICMP messages received  
      0 input ICMP message failed.  
      ICMP input histogram:  
        destination unreachable: 85  
        echo replies: 182  
      267 ICMP messages sent  
      0 ICMP messages failed  
      ICMP output histogram:  
        destination unreachable: 85  
        echo request: 182  
IcmpMsg:  InType0: 182  
          InType3: 85  
          OutType3: 85  
          OutType8: 182  
Tcp: 574 active connections openings  
      1 passive connection openings  
      7 failed connection attempts  
      24 connection resets received  
      0 connections established  
59570 segments received
```

2.7.netstat -r:


Displays the contents of the IP routing table. This is equivalent to the route print command.

```
vvdn-user@vvdn-user: ~  
unix 3      [ ]          STREAM     CONNECTED  20077  
unix 3      [ ]          STREAM     CONNECTED  22233  
unix 3      [ ]          STREAM     CONNECTED  22134    @/tmp/dbus-6KkDd6hXYK  
unix 3      [ ]          STREAM     CONNECTED  21774    @/tmp/dbus-6KkDd6hXYK  
unix 3      [ ]          STREAM     CONNECTED  20252  
unix 3      [ ]          STREAM     CONNECTED  22208    @/tmp/dbus-6KkDd6hXYK  
unix 3      [ ]          STREAM     CONNECTED  21874    @/tmp/dbus-6KkDd6hXYK  
vvdn-user@vvdn-user:~$ netstat -e | less  
[7]+  Stopped                  netstat -e | less  
vvdn-user@vvdn-user:~$ netstat -n | less  
[8]+  Stopped                  netstat -n | less  
vvdn-user@vvdn-user:~$ netstat -o | less  
[9]+  Stopped                  netstat -o | less  
vvdn-user@vvdn-user:~$ netstat -p | less  
[10]+ Stopped                  netstat -p | less  
vvdn-user@vvdn-user:~$ netstat -s | less  
[11]+ Stopped                  netstat -s | less  
vvdn-user@vvdn-user:~$ netstat -r | less  
[12]+ Stopped                  netstat -r | less  
vvdn-user@vvdn-user:~$ netstat -r  
Kernel IP routing table  
Destination Gateway Genmask Flags MSS Window irtt Iface  
default    10.0.2.2  0.0.0.0 UG      0 0 0 enp0s3  
10.0.2.0   *        255.255.255.0 U      0 0 0 enp0s3  
link-local *        255.255.0.0 U      0 0 0 enp0s3  
vvdn-user@vvdn-user:~$
```

3.NSLOOKUP:

Nslookup (Name Server lookup) is a UNIX shell command to query Internet domain name servers.

To find out a record of domain:

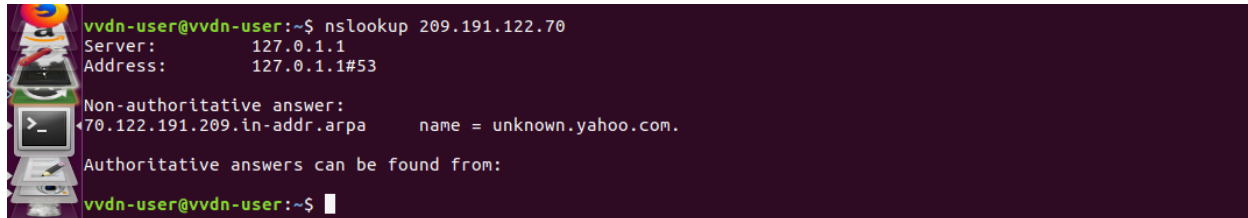
A terminal window with a dark purple background and a sidebar of application icons on the left. The terminal shows the command 'nslookup www.google.com' being executed. The output displays the server address as 127.0.1.1 and the domain's IP address as 216.58.200.132.

```
vvdn-user@vvdn-user:~$ nslookup www.google.com
Server:      127.0.1.1
Address:     127.0.1.1#53

Non-authoritative answer:
Name:   www.google.com
Address: 216.58.200.132

vvdn-user@vvdn-user:~$
```

To find out reverse domain lookup:

A terminal window showing the command 'nslookup 209.191.122.70'. The output shows the reverse lookup for the IP address, identifying it as 70.122.191.209.in-addr.arpa with an unknown name.

```
vvdn-user@vvdn-user:~$ nslookup 209.191.122.70
Server:      127.0.1.1
Address:     127.0.1.1#53

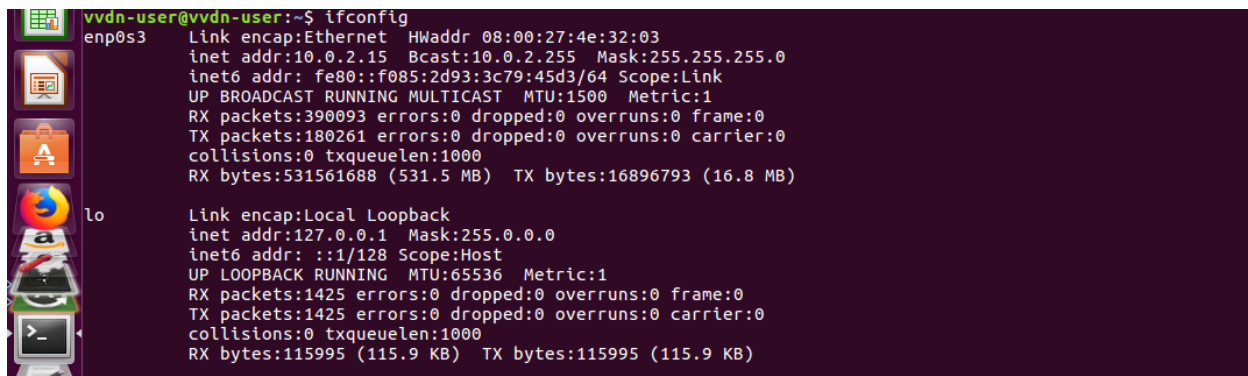
Non-authoritative answer:
70.122.191.209.in-addr.arpa      name = unknown.yahoo.com.

Authoritative answers can be found from:

vvdn-user@vvdn-user:~$
```

4.IFCONFIG:

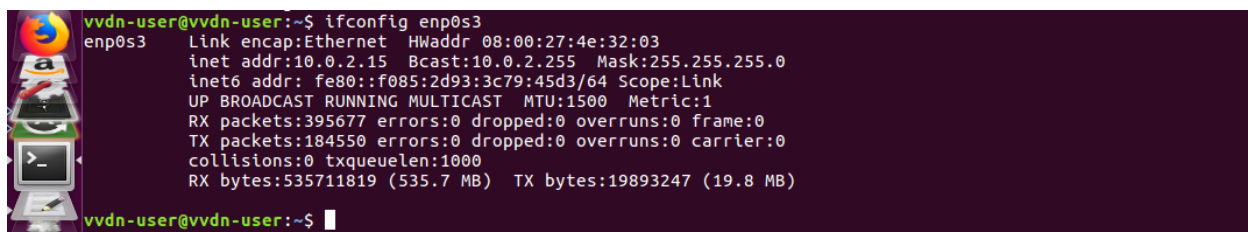
ifconfig (interface configurator) command is use to initialize an interface, assign IP Address to interface and enable or disable interface on demand. With this command you can view IP Address and Hardware / MAC address assign to interface and also MTU (Maximum transmission unit) size.

A terminal window showing the command 'ifconfig'. The output lists details for the 'enp0s3' Ethernet interface and the 'lo' loopback interface, including IP addresses, MAC addresses, MTU, and packet statistics.

```
vvdn-user@vvdn-user:~$ ifconfig
enp0s3  Link encap:Ethernet  HWaddr 08:00:27:4e:32:03
        inet addr:10.0.2.15  Bcast:10.0.2.255  Mask:255.255.255.0
        inet6 addr: fe80::f085:2d93:3c79:45d3/64 Scope:Link
        UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
        RX packets:390093 errors:0 dropped:0 overruns:0 frame:0
        TX packets:180261 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:531561688 (531.5 MB)  TX bytes:16896793 (16.8 MB)

lo      Link encap:Local Loopback
        inet addr:127.0.0.1  Mask:255.0.0.0
        inet6 addr: ::1/128 Scope:Host
        UP LOOPBACK RUNNING  MTU:65536  Metric:1
        RX packets:1425 errors:0 dropped:0 overruns:0 frame:0
        TX packets:1425 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:115995 (115.9 KB)  TX bytes:115995 (115.9 KB)
```

ifconfig with interface (enp0s3) command only shows specific interface details like IP Address, MAC Address etc.

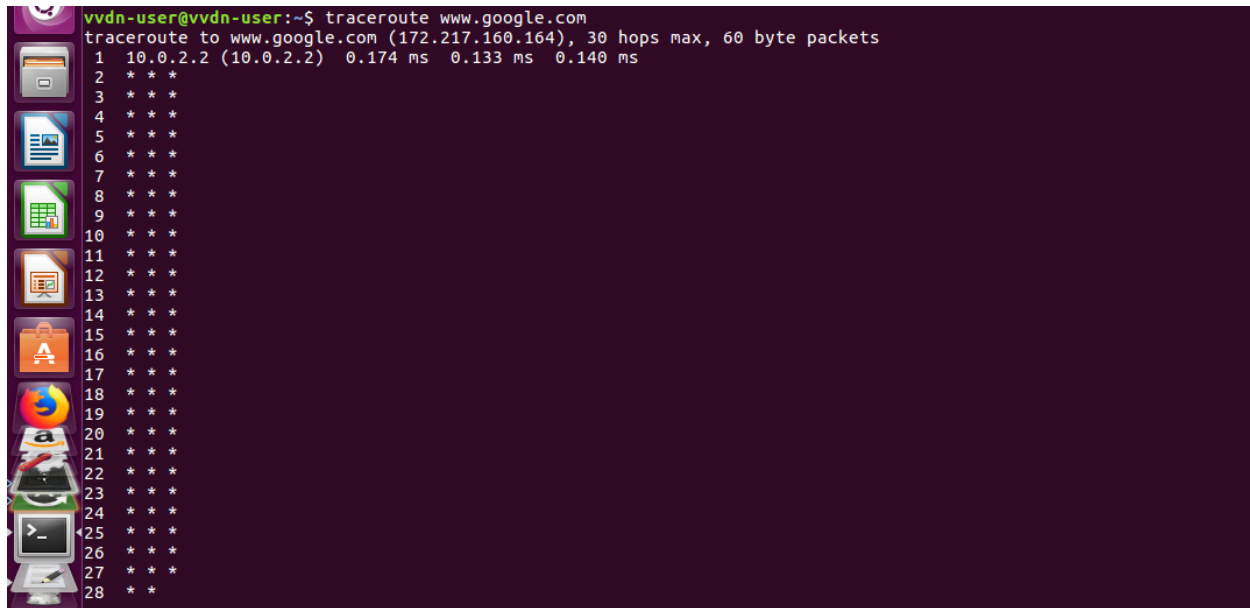
A terminal window showing the command 'ifconfig enp0s3'. The output displays detailed information for the 'enp0s3' interface, including its IP address, MAC address, and network statistics.

```
vvdn-user@vvdn-user:~$ ifconfig enp0s3
enp0s3  Link encap:Ethernet  HWaddr 08:00:27:4e:32:03
        inet addr:10.0.2.15  Bcast:10.0.2.255  Mask:255.255.255.0
        inet6 addr: fe80::f085:2d93:3c79:45d3/64 Scope:Link
        UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
        RX packets:395677 errors:0 dropped:0 overruns:0 frame:0
        TX packets:184550 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:535711819 (535.7 MB)  TX bytes:19893247 (19.8 MB)

vvdn-user@vvdn-user:~$
```


5. TRACEROUTE:

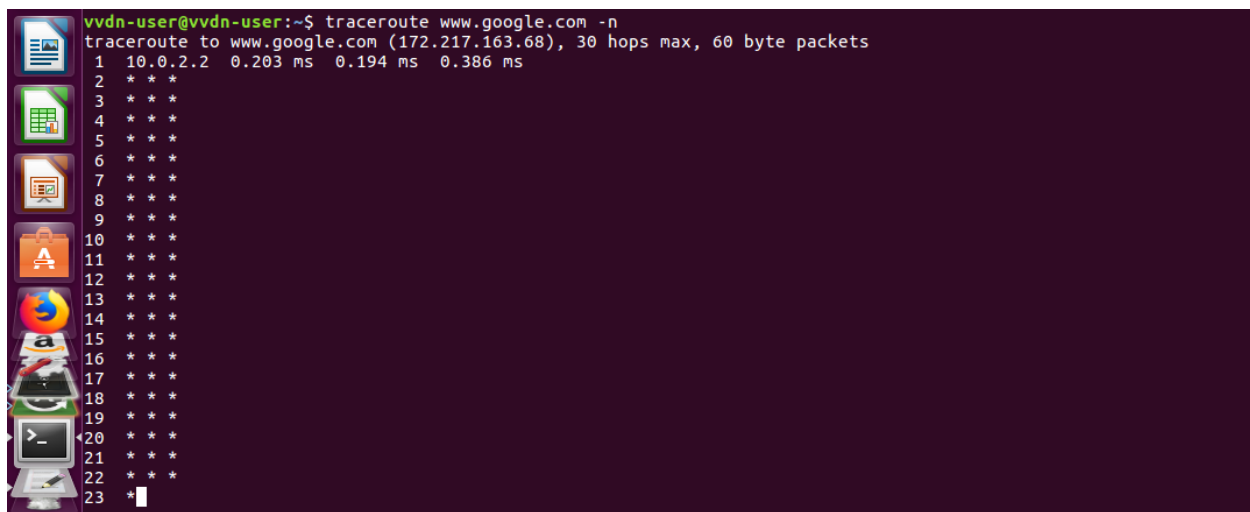
The `tracert` command is used to see a network packet being sent and received, as well as the number hops required for that packet to get to its destination.

A terminal window with a dark purple background and a vertical sidebar of application icons on the left. The terminal shows the command `tracert www.google.com` being executed. The output displays the path from the local host to the destination, with hop numbers 1 through 28. Hop 1 shows the IP address 10.0.2.2 and its three round-trip times. Hops 2 through 28 are marked with three asterisks, indicating that the destination was reached.

```
vvdn-user@vvdn-user:~$ tracert www.google.com
tracert to www.google.com (172.217.160.164), 30 hops max, 60 byte packets
 1  10.0.2.2 (10.0.2.2)  0.174 ms  0.133 ms  0.140 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
24  * * *
25  * * *
26  * * *
27  * * *
28  * * *
```

5.1. `tracert -n`:

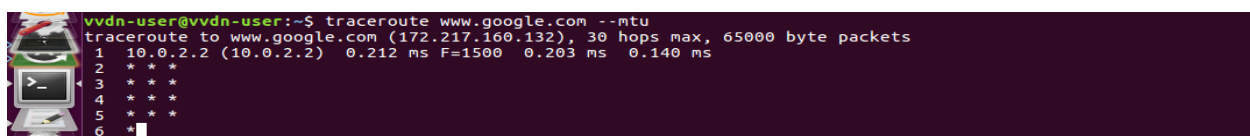
Do not resolve IP addresses to their domain names.

A terminal window showing the command `tracert www.google.com -n`. The output shows the first hop with IP addresses and round-trip times, while subsequent hops (2-23) are marked with asterisks, indicating that domain names were not resolved.

```
vvdn-user@vvdn-user:~$ tracert www.google.com -n
tracert to www.google.com (172.217.163.68), 30 hops max, 60 byte packets
 1  10.0.2.2  0.203 ms  0.194 ms  0.386 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
```

5.2. `tracert -mtu`:

Discover the MTU along with the path traced.

A terminal window showing the command `tracert www.google.com --mtu`. The output shows the first hop with IP addresses, round-trip times, and the MTU value (F=1500). Subsequent hops (2-6) are marked with asterisks.

```
vvdn-user@vvdn-user:~$ tracert www.google.com --mtu
tracert to www.google.com (172.217.160.132), 30 hops max, 65000 byte packets
 1  10.0.2.2 (10.0.2.2)  0.212 ms F=1500  0.203 ms  0.140 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
```

5.3.traceroute -r:

Bypass the normal routing and send directly to a host on an attached network.

```
vvdn-user@vvdn-user:~$ traceroute www.google.com -r
traceroute to www.google.com (172.217.160.132), 30 hops max, 60 byte packets
```

5.4.traceroute -- back:

Guess the number of hop in the backward path and print if it differs.

```
vvdn-user@vvdn-user:~$ traceroute www.google.com --back
traceroute to www.google.com (172.217.160.164), 30 hops max, 60 byte packets
 1  10.0.2.2 (10.0.2.2)  0.963 ms  0.948 ms  0.357 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
```

6.WGET:

Wget is a command-line utility for downloading files from the web. With Wget, you can download files using HTTP, HTTPS, and FTP protocols.

```
vvdn-user@vvdn-user:~$ wget https://images.app.goo.gl/WoPU1eGRqKB6oaSS6
--2020-12-03 18:42:43-- https://images.app.goo.gl/WoPU1eGRqKB6oaSS6
Resolving images.app.goo.gl (images.app.goo.gl)... 216.58.197.78, 2404:6800:4007:812::200e
Connecting to images.app.goo.gl (images.app.goo.gl)|216.58.197.78|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://www.google.com/imgres?imgurl=https://images.pexels.com/photos/338515/pexels-photo-338515.jpeg?auto%3Dcompress%26cs%3Dtinysrgb%26dpr%3D1%26w%3D500&imgrefurl=https://www.pexels.com/search/paris/&tbid=SCa904e8dnQFPM&vet=1&docid=VvSI2FVaJB-uaM&w=500&h=333&source=sh/x/im [following]
--2020-12-03 18:42:44-- https://www.google.com/imgres?imgurl=https://images.pexels.com/photos/338515/pexels-photo-338515.jpeg?auto%3Dcompress%26cs%3Dtinysrgb%26dpr%3D1%26w%3D500&imgrefurl=https://www.pexels.com/search/paris/&tbid=SCa904e8dnQFPM&vet=1&docid=VvSI2FVaJB-uaM&w=500&h=333&source=sh/x/im
Resolving www.google.com (www.google.com)... 172.217.160.164, 2404:6800:4007:80c::2004
Connecting to www.google.com (www.google.com)|172.217.160.164|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [text/html]
Saving to: 'WoPU1eGRqKB6oaSS6'


WoPU1eGRqKB6oaSS6      [ <=> ] 28.05K  --.-KB/s   in 0.04s

2020-12-03 18:42:45 (654 KB/s) - 'WoPU1eGRqKB6oaSS6' saved [28724]

vvdn-user@vvdn-user:~$
```

7.TCPDUMP:


Tcpdump is a command line utility that allows you to capture and analyze network traffic going through your system . It is often used to help troubleshoot network issues, as well as a security tool.



```
vvdn-user@vvdn-user:~$ sudo tcpdump
[sudo] password for vvdn-user:
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp0s3, link-type EN10MB (Ethernet), capture size 262144 bytes
18:27:34.883692 IP 10.0.2.15.40256 > pugot.canonical.com.ntp: NTPv4, Client, length 48
18:27:34.924441 IP 10.0.2.15.51965 > jiofi.local.html.domain: 30299+ PTR? 4.94.189.91.in-addr.arpa. (42)
18:27:35.431650 IP pugot.canonical.com.ntp > 10.0.2.15.40256: NTPv4, Server, length 48
21:36:12.988595 IP jiofi.local.html.domain > 10.0.2.15.51965: 30299 1/0/0 PTR pugot.canonical.com. (75)
21:36:12.988995 IP 10.0.2.15.51965 > jiofi.local.html.domain: 12881+ PTR? 15.2.0.10.in-addr.arpa. (40)
21:36:13.026070 IP jiofi.local.html.domain > 10.0.2.15.51965: 12881 NXDomain* 0/1/0 (99)
21:36:13.034555 IP 10.0.2.15.51965 > jiofi.local.html.domain: 39180+ PTR? 1.225.168.192.in-addr.arpa. (44)
21:36:13.038523 IP jiofi.local.html.domain > 10.0.2.15.51965: 39180* 1/0/0 PTR jiofi.local.html. (74)
21:36:17.363779 ARP, Request who-has 10.0.2.2 tell 10.0.2.15, length 28
21:36:17.364021 ARP, Reply 10.0.2.2 is-at 52:54:00:12:35:02 (oui Unknown), length 46
21:36:17.364484 IP 10.0.2.15.51965 > jiofi.local.html.domain: 38524+ PTR? 2.2.0.10.in-addr.arpa. (39)
21:36:17.426870 IP jiofi.local.html.domain > 10.0.2.15.51965: 38524 NXDomain* 0/1/0 (98)
```


7.1.tcpdump -c:

Displays the packet captures with respect to the count mentioned.



```
vvdn-user@vvdn-user:~$ sudo tcpdump -c 5
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp0s3, link-type EN10MB (Ethernet), capture size 262144 bytes
21:41:13.257687 IP 10.0.2.15.59899 > golem.canonical.com.ntp: NTPv4, Client, length 48
21:41:13.259889 IP 10.0.2.15.51965 > jiofi.local.html.domain: 43106+ PTR? 199.89.189.91.in-addr.arpa. (44)
21:41:13.756294 IP jiofi.local.html.domain > 10.0.2.15.51965: 43106 1/0/0 PTR golem.canonical.com. (77)
21:41:13.756704 IP 10.0.2.15.51965 > jiofi.local.html.domain: 20701+ PTR? 15.2.0.10.in-addr.arpa. (40)
21:41:13.760219 IP jiofi.local.html.domain > 10.0.2.15.51965: 20701 NXDomain 0/0/0 (40)
5 packets captured
7 packets received by filter
0 packets dropped by kernel
vvdn-user@vvdn-user:~$
```


7.2.tcpdump -n:



```
vvdn-user@vvdn-user:~$ sudo tcpdump -n
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp0s3, link-type EN10MB (Ethernet), capture size 262144 bytes
21:43:32.006361 IP 10.0.2.15.38229 > 91.189.89.198.123: NTPv4, Client, length 48
21:43:32.372891 IP 91.189.89.198.123 > 10.0.2.15.38229: NTPv4, Server, length 48
21:43:37.171685 ARP, Request who-has 10.0.2.2 tell 10.0.2.15, length 28
21:43:37.171876 ARP, Reply 10.0.2.2 is-at 52:54:00:12:35:02, length 46
21:45:40.506267 IP 10.0.2.15.35894 > 91.189.89.198.123: NTPv4, Client, length 48
21:45:41.010000 IP 91.189.89.198.123 > 10.0.2.15.35894: NTPv4, Server, length 48
21:45:45.684207 ARP, Request who-has 10.0.2.2 tell 10.0.2.15, length 28
21:45:45.684397 ARP, Reply 10.0.2.2 is-at 52:54:00:12:35:02, length 46
21:46:45.256268 IP 10.0.2.15.51943 > 91.189.89.198.123: NTPv4, Client, length 48
21:46:45.484420 IP 91.189.89.198.123 > 10.0.2.15.51943: NTPv4, Server, length 48
21:46:50.451929 ARP, Request who-has 10.0.2.2 tell 10.0.2.15, length 28
21:46:50.452142 ARP, Reply 10.0.2.2 is-at 52:54:00:12:35:02, length 46
21:47:17.506269 IP 10.0.2.15.59704 > 91.189.89.198.123: NTPv4, Client, length 48
21:47:49.756388 IP 10.0.2.15.59704 > 91.189.89.198.123: NTPv4, Client, length 48
```

7.3.tcpdump -D:

Displays all the interface for tcpdump.



```
vvdn-user@vvdn-user:~$ sudo tcpdump -D
1.enp0s3 [Up, Running]
2.any (Pseudo-device that captures on all interfaces) [Up, Running]
3.lo [Up, Running, Loopback]
4.nflog (Linux netfilter log (NFLOG) interface)
5.nfqueue (Linux netfilter queue (NFQUEUE) interface)
6.usbmon1 (USB bus number 1)
vvdn-user@vvdn-user:~$
```