

1)ping

PING (Packet Internet Groper) command is used to check the network connectivity between host and server/host.

```
sudharshan@sudharshan_b190512cs:~$ ping www.cisco.com
PING www.cisco.com (g2600-140f-0400-0186-0000-0000-0000-0b33.deploy.static.akamaitechnologies.com (2600:140f:400:186::b33)) 56 data byte
s
64 bytes from g2600-140f-0400-0186-0000-0000-0000-0b33.deploy.static.akamaitechnologies.com (2600:140f:400:186::b33): icmp_seq=1 ttl=56
time=89.1 ms
64 bytes from g2600-140f-0400-0186-0000-0000-0000-0b33.deploy.static.akamaitechnologies.com (2600:140f:400:186::b33): icmp_seq=2 ttl=56
time=85.9 ms
64 bytes from g2600-140f-0400-0186-0000-0000-0000-0b33.deploy.static.akamaitechnologies.com (2600:140f:400:186::b33): icmp_seq=3 ttl=56
time=96.7 ms
64 bytes from g2600-140f-0400-0186-0000-0000-0000-0b33.deploy.static.akamaitechnologies.com (2600:140f:400:186::b33): icmp_seq=4 ttl=56
time=85.5 ms
64 bytes from g2600-140f-0400-0186-0000-0000-0000-0b33.deploy.static.akamaitechnologies.com (2600:140f:400:186::b33): icmp_seq=5 ttl=56
time=74.8 ms
64 bytes from g2600-140f-0400-0186-0000-0000-0000-0b33.deploy.static.akamaitechnologies.com (2600:140f:400:186::b33): icmp_seq=6 ttl=56
time=84.1 ms
64 bytes from g2600-140f-0400-0186-0000-0000-0000-0b33.deploy.static.akamaitechnologies.com (2600:140f:400:186::b33): icmp_seq=7 ttl=56
time=84.1 ms
64 bytes from g2600-140f-0400-0186-0000-0000-0000-0b33.deploy.static.akamaitechnologies.com (2600:140f:400:186::b33): icmp_seq=8 ttl=56
time=61.5 ms
^C
--- www.cisco.com ping statistics ---
8 packets transmitted, 8 received, 0% packet loss, time 7009ms
rtt min/avg/max/mdev = 61.481/82.697/96.668/9.819 ms
sudharshan@sudharshan_b190512cs:~$ ^C
sudharshan@sudharshan_b190512cs:~$
```

2)traceroute

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

```
sudharshan@sudharshan_b190512cs:~$ traceroute cisco.com
traceroute to cisco.com (72.163.4.185), 30 hops max, 60 byte packets
 1  * * *
 2  * * *
 3  10.72.171.74 (10.72.171.74) 46.528 ms 47.004 ms 47.923 ms
 4  172.25.124.208 (172.25.124.208) 46.464 ms 47.543 ms 172.25.124.212 (172.25.124.212) 46.436 ms
 5  192.168.104.171 (192.168.104.171) 46.426 ms 46.437 ms 172.25.124.211 (172.25.124.211) 47.471 ms
 6  172.26.100.68 (172.26.100.68) 46.368 ms 35.074 ms 35.570 ms
 7  172.26.100.82 (172.26.100.82) 35.543 ms 172.26.100.83 (172.26.100.83) 43.785 ms 172.26.100.82 (172.26.100.82) 43.839 ms
 8  192.168.59.112 (192.168.59.112) 41.850 ms 192.168.59.114 (192.168.59.114) 41.729 ms 192.168.59.110 (192.168.59.110) 41.820 ms
 9  192.168.59.111 (192.168.59.111) 47.462 ms 192.168.59.113 (192.168.59.113) 47.701 ms 192.168.59.115 (192.168.59.115) 44.051 ms
10  172.31.2.71 (172.31.2.71) 60.538 ms 59.952 ms 59.919 ms
11  103.198.140.176 (103.198.140.176) 65.154 ms 103.198.140.174 (103.198.140.174) 59.343 ms 103.198.140.176 (103.198.140.176) 61.445 ms
12  103.198.140.29 (103.198.140.29) 158.238 ms 103.198.140.107 (103.198.140.107) 163.231 ms 161.401 ms
13  103.198.140.56 (103.198.140.56) 178.019 ms 103.198.140.27 (103.198.140.27) 166.936 ms 163.769 ms
14  103.198.140.107 (103.198.140.107) 103.321 ms be2751.ccr31.mrs02.atlas.cogentco.com (154.54.37.250) 155.815 ms 155.783 ms
15  hu0-7-0-11.ccr21.mrs01.atlas.cogentco.com (149.14.125.1) 167.348 ms ae-24.edge4.Marseille1.Level3.net (4.68.111.245) 168.133 ms 163.067 ms
16  ae-4-15.edge5.Dallas3.Level3.net (4.69.208.233) 281.345 ms be2751.ccr31.mrs02.atlas.cogentco.com (154.54.37.250) 189.408 ms ae-4-15.edge5.Dallas3.Level3.net (4.69.208.233) 280.377 ms
17  ae-24.edge4.Marseille1.Level3.net (4.68.111.245) 165.207 ms CISCO-SVSTE-edge5.Dallas3.Level3.net (4.59.34.66) 280.673 ms 280.357 ms
18  ae-4-15.edge5.Dallas3.Level3.net (4.69.208.233) 304.612 ms 128.107.2.5 (128.107.2.5) 282.556 ms ae-4-15.edge5.Dallas3.Level3.net (4.69.208.233) 282.506 ms
19  72.163.0.98 (72.163.0.98) 276.675 ms CISCO-SVSTE-edge5.Dallas3.Level3.net (4.59.34.66) 287.509 ms 286.747 ms
20  rcdn9-cd2-dnzdcc-gw2-por2.cisco.com (72.163.0.190) 288.583 ms 292.462 ms 128.107.2.5 (128.107.2.5) 278.264 ms
21  72.163.0.98 (72.163.0.98) 288.974 ms rcdn9-br07-fab1-sw3812-dnzdcc2uplink.cisco.com (72.163.3.6) 414.030 ms 72.163.0.98 (72.163.0.98) 414.488 ms
22  * rcdn9-cd2-dnzdcc-gw2-por2.cisco.com (72.163.0.190) 281.418 ms rcdn9-cd1-dnzdcc-gw1-por1.cisco.com (72.163.0.178) 306.130 ms
23  rcdn9-br07-fab1-sw3811-dnzdcc2uplink.cisco.com (72.163.3.2) 300.570 ms * *
24  * * *
25  * * *
26  * * *
27  * * *
28  * * *
29  * * *
30  * * *
```

3)ifconfig

ifconfig(interface configuration) command is used to configure the kernel-resident network interfaces. It is used at the boot time to set up the interfaces as necessary.

```
sudharshan@sudharshan_b190512cs:~$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.56.1 netmask 255.255.255.0 broadcast 192.168.56.255
    inet6 fe80::8418:a8af:36b7:7674 prefixlen 64 scopeid 0xfd<compat,link,site,host>
    ether 0a:00:27:00:00:0e (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 1500
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0xfe<compat,link,site,host>
    loop (Local Loopback)
    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

wif10: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.129.250 netmask 255.255.255.0 broadcast 192.168.129.255
    inet6 2409:4070:2083:4eb:81f0:e19b:d79d:731b prefixlen 64 scopeid 0x0<global>
    inet6 2409:4070:2083:4eb:bc3e:6d75:5da2:e314 prefixlen 128 scopeid 0x0<global>
    inet6 fe80::81f0:e19b:d79d:731b prefixlen 64 scopeid 0xfd<compat,link,site,host>
    ether 14:f6:d8:3e:b8:22 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
```

4)dig/nslookup/host

These are used for retrieving information about DNS name servers. These are used for verifying and troubleshooting DNS problems and to perform DNS lookups.

```
sudharshan@sudharshan_b190512cs:~$ nslookup cisco.com
Server:      192.168.129.230
Address:     192.168.129.230#53

Non-authoritative answer:
Name:   cisco.com
Address: 72.163.4.185
Name:   cisco.com
Address: 2001:420:1101:1::185

sudharshan@sudharshan_b190512cs:~$ nslookup 72.163.4.185
185.4.163.72.in-addr.arpa      name = redirect-ns.cisco.com.

Authoritative answers can be found from:

sudharshan@sudharshan_b190512cs:~$
```

```
sudharshan@sudharshan_b190512cs:~$ dig 72.163.4.185

; <<>> DiG 9.16.1-Ubuntu <<>> 72.163.4.185
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 11628
;; flags: qr aa rd ra ad; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 0

;; QUESTION SECTION:
;72.163.4.185.                IN      A

;; ANSWER SECTION:
72.163.4.185.                0       IN      A      72.163.4.185

;; Query time: 5 msec
;; SERVER: 192.168.129.230#53(192.168.129.230)
;; WHEN: Sun Jan 16 17:34:13 IST 2022
;; MSG SIZE rcvd: 46

sudharshan@sudharshan_b190512cs:~$

sudharshan@sudharshan_b190512cs:~$ host cisco.com
cisco.com has address 72.163.4.185
cisco.com has IPv6 address 2001:420:1101:1::185
cisco.com mail is handled by 10 alln-mx-01.cisco.com.
cisco.com mail is handled by 20 rcdn-mx-01.cisco.com.
cisco.com mail is handled by 30 aer-mx-01.cisco.com.
sudharshan@sudharshan_b190512cs:~$ host 72.163.4.185
185.4.163.72.in-addr.arpa domain name pointer redirect-ns.cisco.com.
sudharshan@sudharshan_b190512cs:~$
```

5)whois

Used to know all info about given ip address.

```
sudharshan@sudharshan_b190512cs:~$ whois cisco.com
Domain Name: CISCO.COM
Registry Domain ID: 4987030_DOMAIN_COM-VRSN
Registrar WHOIS Server: whois.markmonitor.com
Registrar URL: http://www.markmonitor.com
Updated Date: 2019-06-21T15:11:31Z
Creation Date: 1987-05-14T04:00:00Z
Registry Expiry Date: 2022-05-15T04:00:00Z
Registrar: MarkMonitor Inc.
Registrar IANA ID: 292
Registrar Abuse Contact Email: abusecomplaints@markmonitor.com
Registrar Abuse Contact Phone: +1.2083895740
Domain Status: clientDeleteProhibited https://icann.org/epp#clientDeleteProhibited
Domain Status: clientTransferProhibited https://icann.org/epp#clientTransferProhibited
Domain Status: clientUpdateProhibited https://icann.org/epp#clientUpdateProhibited
Domain Status: serverDeleteProhibited https://icann.org/epp#serverDeleteProhibited
Domain Status: serverTransferProhibited https://icann.org/epp#serverTransferProhibited
Domain Status: serverUpdateProhibited https://icann.org/epp#serverUpdateProhibited
Name Server: NS1.CISCO.COM
Name Server: NS2.CISCO.COM
Name Server: NS3.CISCO.COM
DNSSEC: unsigned
URL of the ICANN Whois Inaccuracy Complaint Form: https://www.icann.org/wicf/
>>> Last update of whois database: 2022-01-15T08:31:29Z <<<

For more information on Whois status codes, please visit https://icann.org/epp
```

6)route

route command in Linux is used when we want to work with the IP/kernel routing table. It is mainly used to set up static routes to specific hosts or networks via an interface. It is used for showing or update the IP/kernel routing table.

```
sudharshan@sudharshan_b190512cs:~$ route
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
192.168.56.0 0.0.0.0 255.255.255.0 U 256 0 0 eth0
192.168.56.1 0.0.0.0 255.255.255.255 U 256 0 0 eth0
192.168.56.255 0.0.0.0 255.255.255.255 U 256 0 0 eth0
224.0.0.0 0.0.0.0 240.0.0.0 U 256 0 0 eth0
255.255.255.255 0.0.0.0 255.255.255.255 U 256 0 0 eth0
127.0.0.0 0.0.0.0 255.0.0.0 U 256 0 0 lo
127.0.0.1 0.0.0.0 255.255.255.255 U 256 0 0 lo
127.255.255.255 0.0.0.0 255.255.255.255 U 256 0 0 lo
224.0.0.0 0.0.0.0 240.0.0.0 U 256 0 0 lo
255.255.255.255 0.0.0.0 255.255.255.255 U 256 0 0 lo
0.0.0.0 192.168.129.230 255.255.255.255 U 0 0 0 wifi0
224.0.0.0 0.0.0.0 240.0.0.0 U 256 0 0 wifi0
255.255.255.255 0.0.0.0 255.255.255.255 U 256 0 0 wifi0
192.168.129.255 0.0.0.0 255.255.255.255 U 0 0 0 wifi0
192.168.129.0 0.0.0.0 255.255.255.0 U 0 0 0 wifi0
192.168.129.250 0.0.0.0 255.255.255.255 U 0 0 0 wifi0
```

7)tcpdump

It is used to capture, filter, and analyze network traffic such as TCP/IP packets going through our system.


```

sudharshan@sudharshanb190512cs1:~$ sudo tcpdump
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on emps3, link-type EN10MB (Ethernet), capture size 262144 bytes
18:23:49.198173 IP 192.168.129.250.52732 > 239.255.255.250: UDP, length 174
18:23:49.192157 IP sudharshanb190512cs.49562 > _gateway.domain: 16820+ PTR? 250.255.255.239.in-addr.arpa. (46)
18:23:49.387903 IP _gateway.domain > sudharshanb190512cs.49562: 16828 NXDomain 0/1/0 (103)
18:23:49.388840 IP sudharshanb190512cs.36367 > _gateway.domain: 14297+ PTR? 250.129.168.192.in-addr.arpa. (46)
18:23:49.436246 IP _gateway.domain > sudharshanb190512cs.36367: 14297 NXDomain* 0/1/0 (105)
18:23:49.437764 IP sudharshanb190512cs.58365 > _gateway.domain: 59766+ PTR? 230.129.168.192.in-addr.arpa. (46)
18:23:49.495142 IP _gateway.domain > sudharshanb190512cs.58365: 59766 NXDomain* 0/1/0 (105)
18:23:49.496787 IP sudharshanb190512cs.58758 > _gateway.domain: 61321+ PTR? 183.129.168.192.in-addr.arpa. (46)
18:23:49.553118 IP _gateway.domain > sudharshanb190512cs.58758: 61321 NXDomain* 0/1/0 (105)
18:23:50.191325 IP 192.168.129.250.52732 > 239.255.255.250: UDP, length 174
18:23:51.191985 IP 192.168.129.250.52732 > 239.255.255.250: UDP, length 174
18:23:51.638558 ARP, Request who-has 192.168.129.250 tell _gateway, length 46
18:23:52.192840 IP 192.168.129.250.52732 > 239.255.255.250: UDP, length 174
18:23:56.157199 IP sudharshanb190512cs.51408 > server-99-86-14-107.blr50.r.cloudfront.net.https: Flags [..], ack 2931192366, win 501, options [nop,nop,TS val 3932293814 ecr 734706404], length 0
18:23:56.158590 IP sudharshanb190512cs.44922 > _gateway.domain: 58170+ PTR? 107.14.86.99.in-addr.arpa. (42)
18:23:56.328750 IP _gateway.domain > sudharshanb190512cs.44922: 58170 1/0/0 PTR server-99-86-14-107.blr50.r.cloudfront.net. (99)
18:23:57.632751 IP sudharshanb190512cs.39758 > whatsapp-cdn-shv-01-maa2.fbcdn.net.https: Flags [P..], seq 2802812060:2802812100, ack 3200177375, win 13954, options [nop,nop,TS val 3155923438 ecr 157242103], length 40
18:23:57.835545 IP sudharshanb190512cs.42343 > _gateway.domain: 55117+ PTR? 7.6.1.0.0.0.0.0.0.0.b.e.c.a.f.6.c.0.0.7.3.2.f.0.8.8.2.3.0.a.2.ip6.arpa. (90)
18:23:57.916662 IP whatsapp-cdn-shv-01-maa2.fbcdn.net.https > sudharshanb190512cs.39758: Flags [..], ack 40, win 542, options [nop,nop,TS val 157266069 ecr 3155923438], length 0
18:23:57.966227 IP _gateway.domain > sudharshanb190512cs.42343: 55117 1/0/0 PTR whatsapp-cdn-shv-01-maa2.fbcdn.net. (139)
18:23:57.968116 IP sudharshanb190512cs.40231 > _gateway.domain: 41213+ PTR? c.f.8.e.6.f.6.0.8.1.8.b.5.4.6.e.b.e.4.0.3.8.0.2.0.7.0.4.9.0.4.2.ip6.arpa. (90)
18:23:58.016252 IP _gateway.domain > sudharshanb190512cs.40231: 41213 NXDomain 0/1/0 (178)
18:23:58.196950 IP whatsapp-cdn-shv-01-maa2.fbcdn.net.https > sudharshanb190512cs.39758: Flags [P..], seq 1:40, ack 40, win 542, options [nop,nop,TS val 157266261 ecr 3155923438], length 47
18:23:58.198410 IP sudharshanb190512cs.39758 > whatsapp-cdn-shv-01-maa2.fbcdn.net.https: Flags [..], ack 48, win 13954, options [nop,nop,TS val 3155923795 ecr 157266281], length 0
^C
25 packets captured
25 packets received by filter
0 packets dropped by kernel
sudharshan@sudharshanb190512cs1:~$

```

8)netstat

Netstat command displays various network related information such as network connections, routing tables, interface statistics, masquerade connections, multicast memberships etc.,

```

sudharshan@sudharshanb190512cs1:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 sudharshanb190512:51408 server-99-86-14-107:https TIME_WAIT
tcp        0      0 sudharshanb190512:38268 201.181.244.35.bc:https ESTABLISHED
tcp        0      0 sudharshanb190512:41296 123.208.120.34.bc:https ESTABLISHED
tcp        0      0 sudharshanb190512:54600 36.75.98.34.bc:go:https ESTABLISHED
tcp        0      0 sudharshanb190512:49266 84.176.224.35.bc:gr:htp SYN_SENT
tcp        0      0 sudharshanb190512:34528 ec2-44-237-168-23:https ESTABLISHED
tcp        0      0 sudharshanb190512:36228 117.18.237.29:htp      ESTABLISHED
tcp6       0      0 sudharshanb190512:39758 whatsapp-cdn-shv:https ESTABLISHED
tcp6       0      0 sudharshanb190512:51818 2060:9000:215c:4c:https ESTABLISHED
udp        0      0 sudharshanb19051:bootpc _gateway:bootps        ESTABLISHED

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags               Type               State         I-Node   Path
unix  3      [ ]          DGRAM              16240            /run/systemd/notify
unix  2      [ ]          DGRAM              34970            /run/user/1000/systemd/notify
unix  2      [ ]          DGRAM              16254            /run/systemd/journal/syslog
unix  17     [ ]          DGRAM              16264            /run/systemd/journal/dev-log
unix  8      [ ]          DGRAM              16268            /run/systemd/journal/socket
unix  3      [ ]          STREAM             CONNECTED        46208            /run/user/1000/bus
unix  3      [ ]          STREAM             CONNECTED        35998
unix  3      [ ]          STREAM             CONNECTED        35954
unix  3      [ ]          STREAM             CONNECTED        28669
unix  3      [ ]          STREAM             CONNECTED        36181
unix  2      [ ]          DGRAM              34186
unix  3      [ ]          STREAM             CONNECTED        82673
unix  3      [ ]          STREAM             CONNECTED        83795            @/tmp/.X11-unix/X0
unix  3      [ ]          STREAM             CONNECTED        36100            @/tmp/.X11-unix/X0
unix  3      [ ]          STREAM             CONNECTED        36091            /run/systemd/journal/stdout
unix  3      [ ]          STREAM             CONNECTED        37827            /run/systemd/journal/stdout
unix  2      [ ]          DGRAM              32874
unix  3      [ ]          DGRAM              18688
unix  3      [ ]          STREAM             CONNECTED        32685
unix  3      [ ]          STREAM             CONNECTED        32326
unix  3      [ ]          STREAM             CONNECTED        36778
unix  3      [ ]          STREAM             CONNECTED        22286
unix  2      [ ]          DGRAM              21862
unix  3      [ ]          STREAM             CONNECTED        85272            /run/dbus/system_bus_socket
unix  3      [ ]          STREAM             CONNECTED        85041
unix  3      [ ]          STREAM             CONNECTED        22037            /run/systemd/journal/stdout
unix  3      [ ]          SEQPACKET          CONNECTED        85036
unix  3      [ ]          STREAM             CONNECTED        37320
unix  3      [ ]          STREAM             CONNECTED        36962            /run/systemd/journal/stdout
unix  3      [ ]          STREAM             CONNECTED        24362
unix  3      [ ]          STREAM             CONNECTED        26086            /run/dbus/system_bus_socket
unix  3      [ ]          STREAM             CONNECTED        33218            /run/systemd/journal/stdout
unix  3      [ ]          STREAM             CONNECTED        28580            /run/dbus/system_bus_socket
unix  3      [ ]          STREAM             CONNECTED        38184            @/tmp/dbus-0PFCOLs1s1
unix  3      [ ]          STREAM             CONNECTED        21409
unix  3      [ ]          STREAM             CONNECTED        41215            /run/user/1000/bus
unix  3      [ ]          STREAM             CONNECTED        32453
unix  3      [ ]          STREAM             CONNECTED        33136            /run/systemd/journal/stdout
unix  3      [ ]          STREAM             CONNECTED        48407
unix  3      [ ]          STREAM             CONNECTED        39369
unix  3      [ ]          STREAM             CONNECTED        38168

```

9)dstat

dstat is a tool that is used to retrieve information or statistics from components of the system such as network connections, IO devices, or CPU, etc.

```
sudharshan@sudharshan_b190512cs:~$ dstat
You did not select any stats, using -cdngy by default.
Module dstat_disk24_old failed to load. (No suitable block devices found to monitor)
--total-cpu-usage-- -net/total- ---paging-- ---system--
usr sys idl wai stl| recv send| in out| int csw
 2  3 95  0  0|   0   0|   0   0|  53  29
 1  2 97  0  0|   0   0|   0   0|   0   0
 2  3 95  0  0|   0   0|   0   0|   0   0
 1  1 98  0  0|   0   0|   0   0|   0   0
 2  3 95  0  0|   0   0|   0   0|   0   0
 0  2 97  0  0|   0   0|   0   0|   0   0
 1  3 96  0  0|   0   0|   0   0|   0   0
 1  3 95  0  0|   0   0|   0   0|   0   0
 1  2 97  0  0|   0   0|   0   0|   0   0
 1  2 98  0  0|   0   0|   0   0|   0   0
 0  1 99  0  0|   0   0|   0   0|   0   0
 1  3 96  0  0|   0   0|   0   0|   0   0
^C
sudharshan@sudharshan_b190512cs:~$
```

10)ifstat

This command prints network interface statistics.

```
sudharshan@sudharshan_b190512cs:~$ ifstat
eth0          wifi0
KB/s in  KB/s out  KB/s in  KB/s out
0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00
^C
sudharshan@sudharshan_b190512cs:~$
```

11)wget

Wget is the non-interactive network downloader which is used to download files from the server and it can work in the background without hindering the

current process.

```
sudharshan@sudharshan_b190512cs: ~$ wget google.com
--2022-01-16 17:02:30-- http://google.com/
Resolving google.com (google.com)... 2404:6800:4009:815::200e, 142.250.182.206
Connecting to google.com (google.com)|2404:6800:4009:815::200e|:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: http://www.google.com/ [following]
--2022-01-16 17:02:30-- http://www.google.com/
Resolving www.google.com (www.google.com)... 2404:6800:4009:80c::2004, 216.58.196.164
Connecting to www.google.com (www.google.com)|2404:6800:4009:80c::2004|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [text/html]
Saving to: 'index.html'

index.html           [ <=>                ] 16.00K  --.-KB/s    in 0.009s

2022-01-16 17:02:31 (1.74 MB/s) - 'index.html' saved [16382]

sudharshan@sudharshan_b190512cs: ~$
```

12)tracpath

tracpath command in Linux is used to trace the path to destination discovering MTU along this path.similar to traceroute but don't require super user privileges.

```
sudharshan@sudharshan_b190512cs: ~$ tracpath cisco.com
17: [LOCALHOST] 0.023ms pmtu 1500
 1: no reply
 2: 2405:200:393:a161:4::ff10 150.569ms asymm 3
 3: 2405:200:801:700::a7b 46.441ms asymm 4
 4: 2405:200:801:700::a7b 52.405ms asymm 5
 5: no reply
 6: no reply
 7: 2405:100:0:901:103:198:140:174 150.595ms
 8: no reply
 9: ae-21.r00.nycny17.us.bb.gin.ntt.net 402.092ms asymm 8
10: ae-2.r20.nrkj103.us.bb.gin.ntt.net 299.842ms
11: ae-0.a00.nycny17.us.bb.gin.ntt.net 354.097ms
12: 2001:1890:1fff:11b:192:205:32:225 378.724ms
13: n54ny22crs.ipv6.att.net 607.922ms
14: uswdc22crs.ipv6.att.net 815.342ms
15: attga21crs.ipv6.att.net 598.679ms asymm 13
16: d1sta22crs.ipv6.att.net 401.915ms asymm 14
17: d1sta40wv9.ipv6.att.net 332.204ms asymm 12
18: 2001:1890:c02:c0b::1143:6b10 507.272ms asymm 12
19: 2001:420:80:2:: 345.958ms asymm 12
20: 2001:420:1108:1d::1 308.289ms asymm 14
21: rcdn0-c02-dn0dc-gw2-por1.cisco.com 307.514ms asymm 15
22: 2001:420:1108:116:1 715.526ms asymm 16
23: 2001:420:1103::2 606.728ms asymm 16
24: no reply
25: no reply
26: no reply
27: no reply
28: no reply
29: no reply
30: no reply
Too many hops: pmtu 1500
Resume: pmtu 1500
sudharshan@sudharshan_b190512cs: ~$
```