

# Command Line Utilities

Group members:-

Nakul Garg 2022309 ECE

Mehraz Abedin Raz 2022293 CSD

## 1. ipconfig:-

```
nakul@nakul-VirtualBox:~$ ifconfig
docker0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255
    ether 02:42:0b:f7:e9:b3 txqueuelen 0 (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

enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::a00:27ff:fea0:2e4f prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:a0:2e:4f txqueuelen 1000 (Ethernet)
    RX packets 23493 bytes 20139912 (20.1 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 18642 bytes 7268280 (7.2 MB)
    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 1926 bytes 205274 (205.2 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1926 bytes 205274 (205.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

## 2.ipconfig -a

```
nakul@nakul-VirtualBox:~$ ifconfig -a
docker0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255
    ether 02:42:0b:f7:e9:b3 txqueuelen 0 (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

enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::a00:27ff:fea0:2e4f prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:a0:2e:4f txqueuelen 1000 (Ethernet)
    RX packets 5104 bytes 4669127 (4.6 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 3788 bytes 891082 (891.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 676 bytes 74095 (74.0 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 676 bytes 74095 (74.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

### 3.ping

```
nakul@nakul-VirtualBox:~$ ping www.twitter.com
PING twitter.com (104.244.42.65) 56(84) bytes of data.
64 bytes from 104.244.42.65: icmp_seq=1 ttl=48 time=183 ms
64 bytes from 104.244.42.65: icmp_seq=2 ttl=48 time=171 ms
64 bytes from 104.244.42.65: icmp_seq=3 ttl=48 time=167 ms
64 bytes from 104.244.42.65: icmp_seq=4 ttl=48 time=167 ms
64 bytes from 104.244.42.65: icmp_seq=5 ttl=48 time=163 ms
64 bytes from 104.244.42.65: icmp_seq=6 ttl=48 time=186 ms
64 bytes from 104.244.42.65: icmp_seq=7 ttl=48 time=166 ms
64 bytes from 104.244.42.65: icmp_seq=8 ttl=48 time=175 ms
64 bytes from 104.244.42.65: icmp_seq=9 ttl=48 time=189 ms
64 bytes from 104.244.42.65: icmp_seq=10 ttl=48 time=167 ms
64 bytes from 104.244.42.65: icmp_seq=11 ttl=48 time=187 ms
64 bytes from 104.244.42.65: icmp_seq=12 ttl=48 time=167 ms
64 bytes from 104.244.42.65: icmp_seq=13 ttl=48 time=165 ms
^C
--- twitter.com ping statistics ---
13 packets transmitted, 13 received, 0% packet loss, time 21361ms
rtt min/avg/max/mdev = 163.197/173.223/188.570/9.075 ms
```

### 4. Ping -c

```
nakul@nakul-VirtualBox:~$ ping -c 5 twitter.com
PING twitter.com (104.244.42.65) 56(84) bytes of data.
64 bytes from 104.244.42.65: icmp_seq=1 ttl=48 time=163 ms
64 bytes from 104.244.42.65: icmp_seq=2 ttl=48 time=172 ms
64 bytes from 104.244.42.65: icmp_seq=3 ttl=48 time=178 ms
64 bytes from 104.244.42.65: icmp_seq=4 ttl=48 time=169 ms
64 bytes from 104.244.42.65: icmp_seq=5 ttl=48 time=199 ms

--- twitter.com ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 13322ms
rtt min/avg/max/mdev = 163.389/176.136/198.648/12.179 ms
```

## 5. Ping -i

```
nakul@nakul-VirtualBox:~$ ping -i 5 twitter.com
PING twitter.com (104.244.42.65) 56(84) bytes of data.
64 bytes from 104.244.42.65: icmp_seq=1 ttl=48 time=179 ms
64 bytes from 104.244.42.65: icmp_seq=2 ttl=48 time=165 ms
64 bytes from 104.244.42.65: icmp_seq=3 ttl=48 time=196 ms
64 bytes from 104.244.42.65: icmp_seq=4 ttl=48 time=172 ms
64 bytes from 104.244.42.65: icmp_seq=5 ttl=48 time=163 ms
64 bytes from 104.244.42.65: icmp_seq=6 ttl=48 time=163 ms
64 bytes from 104.244.42.65: icmp_seq=7 ttl=48 time=164 ms
^Z
[1]+  Stopped                  ping -i 5 twitter.com
```

## 6. Ping -s

```
nakul@nakul-VirtualBox:~$ ping -s 1000 twitter.com
PING twitter.com (104.244.42.65) 1000(1028) bytes of data.
1008 bytes from 104.244.42.65: icmp_seq=1 ttl=48 time=163 ms
1008 bytes from 104.244.42.65: icmp_seq=2 ttl=48 time=163 ms
1008 bytes from 104.244.42.65: icmp_seq=3 ttl=48 time=164 ms
1008 bytes from 104.244.42.65: icmp_seq=4 ttl=48 time=203 ms
1008 bytes from 104.244.42.65: icmp_seq=5 ttl=48 time=173 ms
1008 bytes from 104.244.42.65: icmp_seq=6 ttl=48 time=171 ms
1008 bytes from 104.244.42.65: icmp_seq=7 ttl=48 time=162 ms
1008 bytes from 104.244.42.65: icmp_seq=8 ttl=48 time=168 ms
1008 bytes from 104.244.42.65: icmp_seq=9 ttl=48 time=163 ms
```

## 7. Ping -I enp0s3

```
nakul@nakul-VirtualBox:~$ ping -I enp0s3 google.com
PING google.com (142.250.206.174) from 10.0.2.15 enp0s3: 56(84) bytes of data.
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=1 ttl=113 time=30.5 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=2 ttl=113 time=43.2 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=3 ttl=113 time=44.7 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=4 ttl=113 time=28.8 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=5 ttl=113 time=53.5 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=6 ttl=113 time=28.8 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=7 ttl=113 time=30.7 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=8 ttl=113 time=32.8 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=9 ttl=113 time=30.2 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=10 ttl=113 time=29.5 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=11 ttl=113 time=29.8 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=12 ttl=113 time=30.5 ms
64 bytes from del11s22-in-f14.1e100.net (142.250.206.174): icmp_seq=13 ttl=113 time=79.1 ms
^Z
[4]+  Stopped                  ping -I enp0s3 google.com
```

## 8. Traceroute

```
nakul@nakul-VirtualBox:~$ traceroute twitter.com
traceroute to twitter.com (104.244.42.65), 30 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  1.965 ms  1.924 ms  1.902 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  * * *
29  * * *
30  * * *
```

## 9.traceroute -m

```
nakul@nakul-VirtualBox:~$ traceroute -m 10 twitter.com
traceroute to twitter.com (104.244.42.65), 10 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  0.564 ms  0.530 ms  0.503 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
```

## 10.netstat

```
nakul@nakul-VirtualBox:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 nakul-VirtualBox:43796  del11s20-in-f14.1:https ESTABLISHED
tcp        0      0 nakul-VirtualBox:45814  93.243.107.34.bc.:https ESTABLISHED
tcp        0      0 nakul-VirtualBox:36304  del12s01-in-f14.1:https TIME_WAIT
tcp        0      0 nakul-VirtualBox:52980  del11s22-in-f10.1:https ESTABLISHED
udp        0      0 nakul-VirtualBox:bootpc _gateway:bootps         ESTABLISHED

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags   Type       State         I-Node  Path
unix   2      [ ]     STREAM    CONNECTED    17433
unix   3      [ ]     STREAM    CONNECTED    13937    /run/dbus/system_bus_socket
unix   3      [ ]     STREAM    CONNECTED    13900    /run/systemd/journal/stdout
unix   3      [ ]     STREAM    CONNECTED    13001    /run/dbus/system_bus_socket
unix   3      [ ]     STREAM    CONNECTED    16541
unix   3      [ ]     STREAM    CONNECTED    15666
unix   3      [ ]     STREAM    CONNECTED    14946    /run/user/1000/bus
unix   3      [ ]     STREAM    CONNECTED    15279    /run/user/1000/bus
unix   3      [ ]     STREAM    CONNECTED    10240
unix   3      [ ]     STREAM    CONNECTED    15286    /run/user/1000/bus
unix   3      [ ]     STREAM    CONNECTED    13680
unix   3      [ ]     STREAM    CONNECTED    13395
unix   3      [ ]     STREAM    CONNECTED    16607
unix   3      [ ]     STREAM    CONNECTED    16597    /run/systemd/journal/stdout
unix   3      [ ]     STREAM    CONNECTED    13248    /run/systemd/journal/stdout
unix   3      [ ]     STREAM    CONNECTED    15272
unix   3      [ ]     STREAM    CONNECTED    7002     /run/systemd/journal/stdout
unix   3      [ ]     STREAM    CONNECTED    14041
unix   3      [ ]     STREAM    CONNECTED    15316    /home/nakul/.cache/ibus/dbus-vmmNS8DD
unix   3      [ ]     STREAM    CONNECTED    13660
unix   3      [ ]     STREAM    CONNECTED    17409    /run/systemd/journal/stdout
unix   3      [ ]     STREAM    CONNECTED    15354
unix   3      [ ]     STREAM    CONNECTED    11885    /run/systemd/journal/stdout
unix   3      [ ]     STREAM    CONNECTED    17526    /run/user/1000/bus
unix   3      [ ]     STREAM    CONNECTED    33089
unix   3      [ ]     STREAM    CONNECTED    15257
unix   3      [ ]     STREAM    CONNECTED    14092
unix   3      [ ]     STREAM    CONNECTED    15355    /run/dbus/system_bus_socket
unix   3      [ ]     STREAM    CONNECTED    15683
unix   3      [ ]     STREAM    CONNECTED    13697
unix   3      [ ]     STREAM    CONNECTED    15697    /run/user/1000/bus
unix   3      [ ]     STREAM    CONNECTED    9305
unix   3      [ ]     STREAM    CONNECTED    15291
```



### 11.nslookup

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

Non-authoritative answer:
www.twitter.com canonical name = twitter.com.
Name:   twitter.com
Address: 104.244.42.129
```

### 12.nslookup

```
nakul@nakul-VirtualBox:~$ nslookup facebook.com
Server:          127.0.0.53
Address:         127.0.0.53#53

Non-authoritative answer:
Name:   facebook.com
Address: 163.70.144.35
Name:   facebook.com
Address: 2a03:2880:f188:181:face:b00c:0:25de

nakul@nakul-VirtualBox:~$ nslookup 163.70.144.35
35.144.70.163.in-addr.arpa      name = edge-star-mini-shv-02-bom2.facebook.com.

Authoritative answers can be found from:
```

### 13. dig

```
nakul@nakul-VirtualBox:~$ dig www.twitter.com

; <<>> DiG 9.18.28-0ubuntu0.24.04.1-Ubuntu <<>> www.twitter.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 64971
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;www.twitter.com.                IN      A

;; ANSWER SECTION:
www.twitter.com.                128     IN      CNAME   twitter.com.
twitter.com.                    531     IN      A       104.244.42.129

;; Query time: 7 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Tue Aug 27 19:42:20 IST 2024
;; MSG SIZE rcvd: 74
```

### 14. Dig (DNS-specific)

```
nakul@nakul-VirtualBox:~$ dig @8.8.8.8 twitter.com

; <<>> DiG 9.18.28-0ubuntu0.24.04.1-Ubuntu <<>> @8.8.8.8 twitter.com
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 25814
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; QUESTION SECTION:
;twitter.com.                    IN      A

;; ANSWER SECTION:
twitter.com.                    1181    IN      A       104.244.42.1

;; Query time: 29 msec
;; SERVER: 8.8.8.8#53(8.8.8.8) (UDP)
;; WHEN: Tue Aug 27 19:43:43 IST 2024
;; MSG SIZE rcvd: 56
```



## 15. Dig -x

```
nakul@nakul-VirtualBox:~$ dig -x 8.8.8.8

; <<>> DiG 9.18.28-0ubuntu0.24.04.1-Ubuntu <<>> -x 8.8.8.8
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 13919
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;8.8.8.8.in-addr.arpa.      IN      PTR

;; ANSWER SECTION:
8.8.8.8.in-addr.arpa.    14342   IN      PTR      dns.google.

;; Query time: 50 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Tue Aug 27 19:44:18 IST 2024
;; MSG SIZE rcvd: 73
```