

# ASSIGNMENT

**NETWORKING&SYSTEM ADMINISTRATION LAB**

Submitted by:

Jisha Chacko

S2RMCA:A batch

Rollno:44

1. Try out these network commands in Windows as well as in Linux and perform at least 4 options with each command: ping route traceroute, nslookup, Ip Config, NetStat

### Ipconfig

```
Command Prompt - NetStat
C:\Users\micromedia02>IPConfig

Windows IP Configuration

Ethernet adapter Ethernet:

   Media State . . . . . : Media disconnected
   Connection-specific DNS Suffix . . : 
Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix . . : 
   Link-local IPv6 Address . . . . . : fe80::916d:54ef:c3d6:57b3%13
   IPv4 Address. . . . . : 192.168.56.1
   Subnet Mask . . . . . : 255.255.255.0
   Default Gateway . . . . . : 
Wireless LAN adapter Local Area Connection* 1:

   Media State . . . . . : Media disconnected
   Connection-specific DNS Suffix . . : 
Wireless LAN adapter Local Area Connection* 2:

   Media State . . . . . : Media disconnected
   Connection-specific DNS Suffix . . : 
Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix . . : 
   IPv6 Address. . . . . : 2409:4073:4e09:8072:a83c:cd31:7f17:8b0c
   Temporary IPv6 Address. . . . . : 2409:4073:4e09:8072:5464:c3eb:9f04:edfb
   Link-local IPv6 Address . . . . . : fe80::a83c:cd31:7f17:8b0c%17
   IPv4 Address. . . . . : 192.168.43.220
   Subnet Mask . . . . . : 255.255.255.0
   Default Gateway . . . . . : fe80::84a6:bcff:fe2e:3ce7%17
   192.168.43.1
Ethernet adapter Bluetooth Network Connection:

   Media State . . . . . : Media disconnected
   Connection-specific DNS Suffix . . : 
C:\Users\micromedia02>NetStat
```

```
Command Prompt
C:\Users\micromedia02>ipconfig/all

Windows IP Configuration

   Host Name . . . . . : LAPTOP-HIRSTON1
   Primary Dns Suffix . . . . . : 
   Node Type . . . . . : Hybrid
   IP Routing Enabled. . . . . : No
   WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet:

   Media State . . . . . : Media disconnected
   Connection-specific DNS Suffix . . : 
   Description . . . . . : Realtek PCIe GbE Family Controller
   Physical Address. . . . . : 80-EB-2C-8D-21-99
   DHCP Enabled. . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix . . : 
   Description . . . . . : VirtualBox Host-Only Ethernet Adapter
   Physical Address. . . . . : 0A-00-27-00-00-00
   DHCP Enabled. . . . . : No
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::916d:54ef:c3d6:57b3%13(Preferred)
```

### ifconfig

```
jisha@jisha-VirtualBox:~$ sudo ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::f7c3:6a7a:9d6b:876a prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:3b:54:e4 txqueuelen 1000 (Ethernet)
    RX packets 206 bytes 211656 (211.6 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 214 bytes 20590 (20.5 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 679 bytes 51978 (51.9 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 679 bytes 51978 (51.9 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

jisha@jisha-VirtualBox:~$
```

```

jisha@jisha-VirtualBox:~$ ifconfig -a
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::f7c3:6a7a:9d6b:876a prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:3b:54:e4 txqueuelen 1000 (Ethernet)
    RX packets 44 bytes 5759 (5.7 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 112 bytes 12865 (12.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 152 bytes 13406 (13.4 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 152 bytes 13406 (13.4 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

jisha@jisha-VirtualBox:~$ ifconfig -s

```

Iface	MTU	RX-OK	RX-ERR	RX-DRP	RX-OVR	TX-OK	TX-ERR	TX-DRP	TX-OVR	Flg
enp0s3	1500	44	0	0	0	112	0	0	0	BMRU
lo	65536	152	0	0	0	152	0	0	0	LRU

```

jisha@jisha-VirtualBox:~$ ifconfig -v
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::f7c3:6a7a:9d6b:876a prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:3b:54:e4 txqueuelen 1000 (Ethernet)
    RX packets 44 bytes 5759 (5.7 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 112 bytes 12865 (12.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

jisha@jisha-VirtualBox:~$ ifconfig --help
Usage:
    ifconfig [-a] [-v] [-s] <interface> [[<AF>] <address>]
    [add <address>[/<prefixlen>]]
    [del <address>[/<prefixlen>]]
    [[-]broadcast <address>] [[-]pointopoint <address>]
    [netmask <address>] [dstaddr <address>] [tunnel <address>]
    [outfill <NN>] [keepalive <NN>]
    [hw <HW> <address>] [mtu <NN>]
    [[-]trailers] [[-]arp] [[-]allmulti]
    [multicast] [[-]promisc]
    [mem_start <NN>] [io_addr <NN>] [irq <NN>] [media <type>]
    [txqueuelen <NN>]
    [[-]dynamic]
    [up|down] ...

<HW>=Hardware Type.
List of possible hardware types:
    loop (Local Loopback) slip (Serial Line IP) cslip (VJ Serial Line IP)
    slip6 (6-bit Serial Line IP) cslip6 (VJ 6-bit Serial Line IP) adaptive (Adaptive
    ash (Ash) ether (Ethernet) ax25 (AMPR AX.25)
    netrom (AMPR NET/ROM) rose (AMPR ROSE) tunnel (IPIP Tunnel)
    ppp (Point-to-Point Protocol) hdlc ((Cisco)-HDLC) lapb (LAPB)
    arcnet (ARCnet) dlci (Frame Relay DLCI) frad (Frame Relay Access Device)
    sit (IPv6-in-IPv4) fddi (Fiber Distributed Data Interface) hippi (HIPPI)
    irda (IrLAP) ec (Econet) x25 (generic X.25)
    eui64 (Generic EUI-64)
<AF>=Address family. Default: inet
List of possible address families:
    unix (UNIX Domain) inet (DARPA Internet) inet6 (IPv6)

```

Netstat

```

Command Prompt
Connection-specific DNS Suffix . :
C:\Users\micromedia02>NetStat

Active Connections

Proto Local Address           Foreign Address         State
TCP    192.168.43.220:49585    137:https               TIME_WAIT
TCP    192.168.43.220:49552    20.197.71.89:https      ESTABLISHED
TCP    192.168.43.220:49663    ec2-52-202-128-45:https TIME_WAIT
TCP    192.168.43.220:49723    ec2-52-45-61-27:https  TIME_WAIT
TCP    192.168.43.220:49899    76:https               TIME_WAIT
TCP    192.168.43.220:50259    ma05x21-in-f4:https    TIME_WAIT
TCP    192.168.43.220:50328    40.119.205.193:https    TIME_WAIT
TCP    192.168.43.220:50444    ec2-52-202-128-45:https TIME_WAIT
TCP    192.168.43.220:50584    a97adde81b00f2ca4:https TIME_WAIT
TCP    192.168.43.220:51178    ec2-52-221-144-69:https TIME_WAIT
TCP    192.168.43.220:51271    90:https               TIME_WAIT
TCP    192.168.43.220:52050    ec2-52-45-61-27:https  TIME_WAIT
TCP    192.168.43.220:52345    ec2-52-45-61-27:https  TIME_WAIT
TCP    192.168.43.220:52727    204.79.197.222:https    ESTABLISHED
TCP    192.168.43.220:52729    20.30.0.3:https         ESTABLISHED
TCP    192.168.43.220:52730    117.18.237.29:https     ESTABLISHED
TCP    192.168.43.220:52731    13.107.6.254:https      ESTABLISHED
TCP    192.168.43.220:52966    ec2-34-235-197-155:https TIME_WAIT
TCP    192.168.43.220:53793    ma05x19-in-f6:https    TIME_WAIT
TCP    192.168.43.220:54843    111:https              TIME_WAIT
TCP    192.168.43.220:55949    ec2-52-45-61-27:https  TIME_WAIT
TCP    192.168.43.220:56201    121:https              TIME_WAIT
TCP    192.168.43.220:56495    server-13-225-255-71:https TIME_WAIT
TCP    192.168.43.220:56839    server-13-225-255-71:https TIME_WAIT
TCP    192.168.43.220:57288    51.104.167.255:https    TIME_WAIT
TCP    192.168.43.220:57289    20.198.162.76:https     ESTABLISHED
TCP    192.168.43.220:58705    ec2-3-222-213-29:https  TIME_WAIT
TCP    192.168.43.220:58953    ma05x21-in-f4:https    TIME_WAIT
TCP    192.168.43.220:59313    ec2-34-235-197-155:https TIME_WAIT
TCP    192.168.43.220:60049    ec2-52-45-61-27:https  TIME_WAIT
TCP    192.168.43.220:60111    ma03s43-in-f2:https    TIME_WAIT
TCP    192.168.43.220:60251    ec2-3-215-64-185:https  TIME_WAIT
TCP    192.168.43.220:60465    ec2-3-222-213-29:https  TIME_WAIT
TCP    192.168.43.220:60969    ec2-52-45-61-27:https  TIME_WAIT
TCP    192.168.43.220:61126    ma03s43-in-f2:https    TIME_WAIT
TCP    192.168.43.220:61570    ec2-3-215-64-185:https  TIME_WAIT
TCP    192.168.43.220:61658    ec2-34-235-197-155:https TIME_WAIT
TCP    192.168.43.220:62024    121:https              TIME_WAIT
TCP    192.168.43.220:62800    ec2-3-222-213-29:https  TIME_WAIT
TCP    192.168.43.220:62801    20.44.10.123:https      ESTABLISHED
TCP    192.168.43.220:62803    ec2-52-45-61-27:https  TIME_WAIT
TCP    192.168.43.220:63358    ec2-3-222-213-29:https  ESTABLISHED
TCP    192.168.43.220:63634    60.70.197.35:https      ESTABLISHED

```

```

C:\Users\micromedia02>netstat -n

Active Connections

Proto Local Address           Foreign Address         State
TCP    192.168.43.220:51178    20.197.71.89:443        ESTABLISHED
TCP    192.168.43.220:62193    20.198.162.78:443       ESTABLISHED
TCP    [2409:4073:204:4e78:e53d:e792:1e6c:ce5d]:59696 [2606:2800:147:120f:30c:1ba0:fc6:265a]:443 ESTABLISHED
TCP    [2409:4073:204:4e78:e53d:e792:1e6c:ce5d]:59698 [2606:2800:147:120f:30c:1ba0:fc6:265a]:443 ESTABLISHED

C:\Users\micromedia02>netstat -n 5

Active Connections

Proto Local Address           Foreign Address         State
TCP    192.168.43.220:51178    20.197.71.89:443        ESTABLISHED
TCP    192.168.43.220:62193    20.198.162.78:443       ESTABLISHED
TCP    [2409:4073:204:4e78:e53d:e792:1e6c:ce5d]:59696 [2606:2800:147:120f:30c:1ba0:fc6:265a]:443 ESTABLISHED
TCP    [2409:4073:204:4e78:e53d:e792:1e6c:ce5d]:59698 [2606:2800:147:120f:30c:1ba0:fc6:265a]:443 ESTABLISHED

Active Connections

Proto Local Address           Foreign Address         State
TCP    192.168.43.220:51178    20.197.71.89:443        ESTABLISHED
TCP    192.168.43.220:62193    20.198.162.78:443       ESTABLISHED
TCP    [2409:4073:204:4e78:e53d:e792:1e6c:ce5d]:59696 [2606:2800:147:120f:30c:1ba0:fc6:265a]:443 ESTABLISHED
TCP    [2409:4073:204:4e78:e53d:e792:1e6c:ce5d]:59698 [2606:2800:147:120f:30c:1ba0:fc6:265a]:443 ESTABLISHED

Active Connections

Proto Local Address           Foreign Address         State
TCP    192.168.43.220:51178    20.197.71.89:443        ESTABLISHED
TCP    192.168.43.220:62193    20.198.162.78:443       ESTABLISHED

```

```
C:\Users\micromedia02>netstat -a
```

#### Active Connections

Proto	Local Address	Foreign Address	State
TCP	0.0.0.0:135	LAPTOP-HIRSTON1:0	LISTENING
TCP	0.0.0.0:445	LAPTOP-HIRSTON1:0	LISTENING
TCP	0.0.0.0:5040	LAPTOP-HIRSTON1:0	LISTENING
TCP	0.0.0.0:49664	LAPTOP-HIRSTON1:0	LISTENING
TCP	0.0.0.0:49665	LAPTOP-HIRSTON1:0	LISTENING
TCP	0.0.0.0:49666	LAPTOP-HIRSTON1:0	LISTENING
TCP	0.0.0.0:49667	LAPTOP-HIRSTON1:0	LISTENING
TCP	0.0.0.0:49669	LAPTOP-HIRSTON1:0	LISTENING
TCP	127.0.0.1:5939	LAPTOP-HIRSTON1:0	LISTENING
TCP	127.0.0.1:27017	LAPTOP-HIRSTON1:0	LISTENING
TCP	127.0.0.1:37014	LAPTOP-HIRSTON1:0	LISTENING
TCP	127.0.0.1:37114	LAPTOP-HIRSTON1:0	LISTENING
TCP	192.168.43.220:139	LAPTOP-HIRSTON1:0	LISTENING
TCP	192.168.43.220:51178	20.197.71.89:https	ESTABLISHED
TCP	192.168.43.220:62193	20.198.162.78:https	ESTABLISHED
TCP	192.168.56.1:139	LAPTOP-HIRSTON1:0	LISTENING
TCP	:::135	LAPTOP-HIRSTON1:0	LISTENING
TCP	:::445	LAPTOP-HIRSTON1:0	LISTENING
TCP	:::49664	LAPTOP-HIRSTON1:0	LISTENING
TCP	:::49665	LAPTOP-HIRSTON1:0	LISTENING
TCP	:::49666	LAPTOP-HIRSTON1:0	LISTENING
TCP	:::49667	LAPTOP-HIRSTON1:0	LISTENING
TCP	:::49669	LAPTOP-HIRSTON1:0	LISTENING
TCP	:::1:49668	LAPTOP-HIRSTON1:0	LISTENING
TCP	[2409:4073:204:4e78:e53d:e792:1e6c:ce5d]:59696	[2606:2800:147:120f:30c:1ba0:fc6:265a]:ht	
TCP	[2409:4073:204:4e78:e53d:e792:1e6c:ce5d]:59698	[2606:2800:147:120f:30c:1ba0:fc6:265a]:ht	
UDP	0.0.0.0:3702	*.*	
UDP	0.0.0.0:3702	*.*	
UDP	0.0.0.0:5050	*.*	

#### Netstat in linux

```
jisha@jisha-VirtualBox:~$ sudo netstat
[sudo] password for jisha:
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 0 jisha-VirtualBox:bootpc _gateway:bootpc        ESTABLISHED

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags   Type       State         I-Node  Path
unix  2      [ ]     DGRAM          25065      /run/user/1000/systemd/notify
unix  2      [ ]     DGRAM          15163      /run/systemd/journal/syslog
unix  16     [ ]     DGRAM          15173      /run/systemd/journal/dev-log
unix  8      [ ]     DGRAM          15177      /run/systemd/journal/socket
unix  3      [ ]     DGRAM          15149      /run/systemd/notify
unix  3      [ ]     STREAM        CONNECTED   31986
unix  3      [ ]     STREAM        CONNECTED   28502      /run/user/1000/bus
unix  3      [ ]     STREAM        CONNECTED   30760
unix  3      [ ]     STREAM        CONNECTED   32000
unix  3      [ ]     STREAM        CONNECTED   29165
unix  3      [ ]     STREAM        CONNECTED   25890      /run/systemd/journal/stdout
unix  3      [ ]     STREAM        CONNECTED   31917
unix  3      [ ]     STREAM        CONNECTED   25837
unix  3      [ ]     STREAM        CONNECTED   30547
unix  3      [ ]     STREAM        CONNECTED   29168      /run/dbus/system_bus_socket
unix  3      [ ]     STREAM        CONNECTED   28905      /run/systemd/journal/stdout
unix  3      [ ]     STREAM        CONNECTED   31987      /run/systemd/journal/stdout
unix  2      [ ]     DGRAM          25832
unix  3      [ ]     STREAM        CONNECTED   30736      /run/dbus/system_bus_socket
unix  3      [ ]     STREAM        CONNECTED   31697      /run/user/1000/bus
unix  3      [ ]     STREAM        CONNECTED   28904      /run/systemd/journal/stdout
unix  3      [ ]     STREAM        CONNECTED   18638
unix  3      [ ]     STREAM        CONNECTED   31030      /run/systemd/journal/stdout
```

```
jisha@jisha-VirtualBox:~$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:mysql         0.0.0.0:*               LISTEN
tcp        0      0 localhost:domain       0.0.0.0:*               LISTEN
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp6       0      0 [::]:http               [::]:*                  LISTEN
tcp6       0      0 ip6-localhost:ipp      [::]:*                  LISTEN
udp        0      0 0.0.0.0:631             0.0.0.0:*               LISTEN
udp        0      0 localhost:domain       0.0.0.0:*               LISTEN
udp        0      0 jisha-VirtualBox:bootpc _gateway:bootps        ESTABLISHED
udp        0      0 0.0.0.0:mdns            0.0.0.0:*               LISTEN
udp        0      0 0.0.0.0:50518           0.0.0.0:*               LISTEN
udp6       0      0 [::]:56526              [::]:*                  LISTEN
udp6       0      0 [::]:mdns                [::]:*                  LISTEN
raw6       0      0 [::]:ipv6-icmp          [::]:*                  LISTEN
7

Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type       State      I-Node  Path
unix   2      [ ACC ] STREAM    LISTENING   27744   @/tmp/.ICE-unix/1104
unix   2      [ ACC ] SEQPACKET LISTENING   15174   /run/udev/control
unix   2      [ ACC ] STREAM    LISTENING   15147   /run/systemd/private
unix   2      [ ]       DGRAM      24942      /run/user/1000/systemd/notify
unix   2      [ ACC ] STREAM    LISTENING   15149   /run/systemd/userdb/io.systemd.DynamicUser
unix   2      [ ACC ] STREAM    LISTENING   24945   /run/user/1000/systemd/private
unix   2      [ ACC ] STREAM    LISTENING   24971   /run/user/1000/bus
unix   2      [ ]       DGRAM      15158      /run/systemd/journal/syslog
unix   2      [ ACC ] STREAM    LISTENING   15160   /run/systemd/fsck.progress
unix   2      [ ACC ] STREAM    LISTENING   24972   /run/user/1000/gnupg/S.dirmgr

jisha@jisha-VirtualBox:~$ netstat -t
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
jisha@jisha-VirtualBox:~$ netstat -l
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:mysql         0.0.0.0:*               LISTEN
tcp        0      0 localhost:domain       0.0.0.0:*               LISTEN
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp6       0      0 [::]:http               [::]:*                  LISTEN
tcp6       0      0 ip6-localhost:ipp      [::]:*                  LISTEN
udp        0      0 0.0.0.0:631             0.0.0.0:*               LISTEN
udp        0      0 localhost:domain       0.0.0.0:*               LISTEN
udp        0      0 0.0.0.0:mdns            0.0.0.0:*               LISTEN
udp        0      0 0.0.0.0:50518           0.0.0.0:*               LISTEN
```

```
jtsna@jtsna-virtualbox:~$ netstat -s
```

Ip:

```
Forwarding: 2
258 total packets received
1 with invalid addresses
0 forwarded
0 incoming packets discarded
255 incoming packets delivered
269 requests sent out
20 outgoing packets dropped
```

Icmp:

```
40 ICMP messages received
0 input ICMP message failed
ICMP input histogram:
    destination unreachable: 40
40 ICMP messages sent
0 ICMP messages failed
ICMP output histogram:
    destination unreachable: 40
```

IcmpMsg:

```
InType3: 40
OutType3: 40
```

Tcp:

```
7 active connection openings
0 passive connection openings
2 failed connection attempts
1 connection resets received
0 connections established
```

## Traceroute

```
Address: fec0:0:0:1::1
```

>

```
C:\Users\micromedia02>tracert
```

```
Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
          [-R] [-S srcaddr] [-4] [-6] target_name
```

Options:

-d	Do not resolve addresses to hostnames.
-h maximum_hops	Maximum number of hops to search for target.
-j host-list	Loose source route along host-list (IPv4-only).
-w timeout	Wait timeout milliseconds for each reply.
-R	Trace round-trip path (IPv6-only).
-S srcaddr	Source address to use (IPv6-only).
-4	Force using IPv4.



```
C:\Users\micromedia02>tracert -R
```

```
A target name or address must be specified.
```

```
Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
              [-R] [-S srcaddr] [-4] [-6] target_name
```

```
Options:
```

-d	Do not resolve addresses to hostnames.
-h maximum_hops	Maximum number of hops to search for target.
-j host-list	Loose source route along host-list (IPv4-only).
-w timeout	Wait timeout milliseconds for each reply.
-R	Trace round-trip path (IPv6-only).
-S srcaddr	Source address to use (IPv6-only).
-4	Force using IPv4.
-6	Force using IPv6.

```
C:\Users\micromedia02>tracert -S
```

```
A value must be supplied for option -S.
```

```
C:\Users\micromedia02>tracert -D
```

```
-D is not a valid command option.
```

```
Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
              [-R] [-S srcaddr] [-4] [-6] target_name
```

```
Options:
```

-d	Do not resolve addresses to hostnames.
-h maximum_hops	Maximum number of hops to search for target.
-j host-list	Loose source route along host-list (IPv4-only).
-w timeout	Wait timeout milliseconds for each reply.
-R	Trace round-trip path (IPv6-only).
-S srcaddr	Source address to use (IPv6-only).
-4	Force using IPv4.
-6	Force using IPv6.

```
C:\Users\micromedia02>
```



```

C:\Users\micromedia02>tracert -j
A target name or address must be specified.

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
              [-R] [-S srcaddr] [-4] [-6] target_name

Options:
    -d                Do not resolve addresses to hostnames.
    -h maximum_hops   Maximum number of hops to search for target.
    -j host-list       Loose source route along host-list (IPv4-only).
    -w timeout         Wait timeout milliseconds for each reply.
    -R                Trace round-trip path (IPv6-only).
    -S srcaddr         Source address to use (IPv6-only).
    -4                Force using IPv4.
    -6                Force using IPv6.

C:\Users\micromedia02>tracert -w
A value must be supplied for option -w.

C:\Users\micromedia02>tracert -R
A target name or address must be specified.

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
              [-R] [-S srcaddr] [-4] [-6] target_name

Options:
    -d                Do not resolve addresses to hostnames.
    -h maximum_hops   Maximum number of hops to search for target.
    -j host-list       Loose source route along host-list (IPv4-only).
    -w timeout         Wait timeout milliseconds for each reply.
    -R                Trace round-trip path (IPv6-only).
    -S srcaddr         Source address to use (IPv6-only).
    -4                Force using IPv4.
    -6                Force using IPv6.

C:\Users\micromedia02>tracert -S
A value must be supplied for option -S.

```

Traceroute in linux

```
jisha@jisha-VirtualBox:~$ traceroute www.google.com
traceroute to www.google.com (142.250.182.4), 30 hops max, 60 byte packets
 1 _gateway (10.0.2.2)  1.613 ms  1.635 ms  1.620 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 * * *
```

```
jisha@jisha-VirtualBox:~$ traceroute -4 google.com
traceroute to google.com (142.250.196.14), 30 hops max, 60 byte packets
 1 _gateway (10.0.2.2)  1.864 ms  1.821 ms  1.799 ms
 2 * * *
 3 * * *
 4 * * *
 5 * * *
 6 * * *
 7 * * *
 8 * * *
 9 * * *
10 * * *
11 * * *
12 * * *
13 * * *
14 * * *
15 * * *
16 * * *
17 * * *
18 * * *
19 * * *
20 * * *
21 * * *
22 * * *
23 *^C
jisha@jisha-VirtualBox:~$ traceroute -4 google.com
```

```

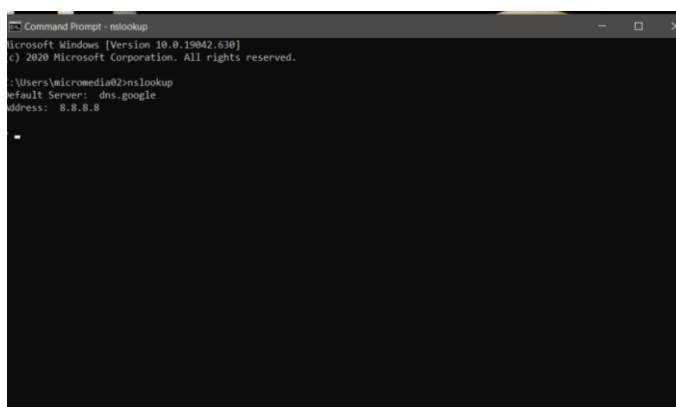
jisha@jisha-VirtualBox:~$ traceroute -F google.com
traceroute to google.com (142.250.196.14), 30 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  1.334 ms  1.376 ms  1.328 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * ^C

jisha@jisha-VirtualBox:~$ traceroute -N google.com
Cannot handle '-N' option with arg 'google.com' (argc 2)
jisha@jisha-VirtualBox:~$ traceroute -n google.com
traceroute to google.com (142.250.196.14), 30 hops max, 60 byte packets
 1  10.0.2.2  0.583 ms  0.534 ms  0.513 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *

jisha@jisha-VirtualBox:~$ traceroute --help
Usage:
  traceroute [ -4dFITnreAUDV ] [ -f first_ttl ] [ -g gate,... ] [ -i device ] [ -m max_ttl ] [ -w_label ] [ -w MAX,HERE,NEAR ] [ -q nqueries ] [ -s src_addr ] [ -z sendwait ] [ --fwmark=num ] h
Options:
  -4                      Use IPv4
  -6                      Use IPv6
  -d --debug              Enable socket level debugging
  -F --dont-fragment      Do not fragment packets
  -f first_ttl --first=first_ttl
                          Start from the first_ttl hop (instead from 1)
  -g gate,... --gateway=gate,...
                          Gateway to use to reach the next hop

```

## Nslookup



```

Command Prompt - nslookup
Microsoft Windows [Version 10.0.19042.630]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\micromedia2>nslookup
Default Server: dns.google
Address: 8.8.8.8

```

```
C:\Users\micromedia02>nslookup google.co
Server:  dns.google
Address:  8.8.8.8

Non-authoritative answer:
Name:     google.com
Addresses: 2404:6800:4007:829::200e
          172.217.163.174
```

#### Nslookup in linux

```
jisha@jisha-VirtualBox:~$ nslookup google.com
Server:          127.0.0.53
Address:         127.0.0.53#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.196.14
Name:   google.com
Address: 2404:6800:4007:823::200e

jisha@jisha-VirtualBox:~$
```

```
jisha@jisha-VirtualBox:~$ nslookup -type=ns google.com
Server:          127.0.0.53
Address:         127.0.0.53#53

Non-authoritative answer:
google.com      nameserver = ns4.google.com.
google.com      nameserver = ns1.google.com.
google.com      nameserver = ns3.google.com.
google.com      nameserver = ns2.google.com.

Authoritative answers can be found from:

jisha@jisha-VirtualBox:~$ nslookup -type=mx google.com
Server:          127.0.0.53
Address:         127.0.0.53#53

Non-authoritative answer:
google.com      mail exchanger = 50 alt4.aspmx.l.google.com.
google.com      mail exchanger = 20 alt1.aspmx.l.google.com.
google.com      mail exchanger = 10 aspmx.l.google.com.
google.com      mail exchanger = 30 alt2.aspmx.l.google.com.
google.com      mail exchanger = 40 alt3.aspmx.l.google.com.

Authoritative answers can be found from:

jisha@jisha-VirtualBox:~$ nslookup -type=txt google.com
;; Truncated, retrying in TCP mode.
Server:          127.0.0.53
```

## Route

```
Command Prompt
C:\Users\micromedia02>route

Manipulates network routing tables.

ROUTE [-f] [-p] [-4|-6] command [destination]
                                [MASK netmask] [gateway] [METRIC metric] [IF interface]

-f          Clears the routing tables of all gateway entries. If this is
            used in conjunction with one of the commands, the tables are
            cleared prior to running the command.

-p          When used with the ADD command, makes a route persistent across
            boots of the system. By default, routes are not preserved
            when the system is restarted. Ignored for all other commands,
            which always affect the appropriate persistent routes.

-4          Force using IPv4.

-6          Force using IPv6.

command    One of these:
            PRINT    Prints a route
            ADD      Adds a route
            DELETE   Deletes a route
            CHANGE   Modifies an existing route

destination Specifies the host.

MASK        Specifies that the next parameter is the 'netmask' value.

netmask     Specifies a subnet mask value for this route entry.
            If not specified, it defaults to 255.255.255.255.

gateway     Specifies gateway.

interface   the interface number for the specified route.

METRIC      specifies the metric, ie. cost for the destination.

All symbolic names used for destination are looked up in the network database
file NETWORKS. The symbolic names for gateway are looked up in the host name
database file HOSTS.

If the command is PRINT or DELETE, Destination or gateway can be a wildcard,
(wildcard is specified as a star '*'), or the gateway argument may be omitted.

If Dest contains a * or ?, it is treated as a shell pattern, and only
matching destination routes are printed. The '*' matches any string,
and '?' matches any one char. Examples: 157.*.1, 157.*, 127.*, *224*.

Pattern match is only allowed in PRINT command.

Diagnostic Notes:
  Invalid MASK generates an error, that is when (DEST & MASK) != DEST.
  Example> route ADD 157.0.0.0 MASK 155.0.0.0 157.55.80.1 IF 1
  The route addition failed: The specified mask parameter is invalid. (Destination & Mask) != Destination.
```

```
C:\Users\micromedia02>route -n
```

Manipulates network routing tables.

```
ROUTE [-f] [-p] [-4|-6] command [destination]
                                [MASK netmask] [gateway] [METRIC metric] [IF interface]

-f          Clears the routing tables of all gateway entries. If this is
            used in conjunction with one of the commands, the tables are
            cleared prior to running the command.

-p          When used with the ADD command, makes a route persistent across
            boots of the system. By default, routes are not preserved
            when the system is restarted. Ignored for all other commands,
            which always affect the appropriate persistent routes.

-4          Force using IPv4.

-6          Force using IPv6.

command    One of these:
            PRINT    Prints a route
            ADD      Adds a route
            DELETE   Deletes a route
            CHANGE   Modifies an existing route

destination Specifies the host.

MASK        Specifies that the next parameter is the 'netmask' value.

netmask     Specifies a subnet mask value for this route entry.
            If not specified, it defaults to 255.255.255.255.

gateway     Specifies gateway.

interface   the interface number for the specified route.

METRIC      specifies the metric, ie. cost for the destination.
```

All symbolic names used for destination are looked up in the network database file NETWORKS. The symbolic names for gateway are looked up in the host name

```
C:\Users\micromedia02>route -cn
```

Manipulates network routing tables.

```
ROUTE [-f] [-p] [-4|-6] command [destination]
      [MASK netmask] [gateway] [METRIC metric] [IF interface]

-f          Clears the routing tables of all gateway entries. If this is
            used in conjunction with one of the commands, the tables are
            cleared prior to running the command.

-p          When used with the ADD command, makes a route persistent across
            boots of the system. By default, routes are not preserved
            when the system is restarted. Ignored for all other commands,
            which always affect the appropriate persistent routes.

-4          Force using IPv4.

-6          Force using IPv6.

command     One of these:
            PRINT    Prints a route
            ADD      Adds a route
            DELETE   Deletes a route
            CHANGE   Modifies an existing route

destination Specifies the host.
MASK          Specifies that the next parameter is the 'netmask' value.
netmask       Specifies a subnet mask value for this route entry.
            If not specified, it defaults to 255.255.255.255.
gateway       Specifies gateway.
interface     the interface number for the specified route.
METRIC        specifies the metric, ie. cost for the destination.
```

All symbolic names used for destination are looked up in the network database file NETWORKS. The symbolic names for gateway are looked up in the host name database file HOSTS.

If the command is PRINT or DELETE. Destination or gateway can be a wildcard, (wildcard is specified as a star '\*'), or the gateway argument may be omitted.

If Dest contains a \* or ?, it is treated as a shell pattern, and only matching destination routes are printed. The '\*' matches any string, and '?' matches any one char. Examples: 157.\*.1, 157.\*, 127.\*, \*224\*.

Pattern match is only allowed in PRINT command.

Diagnostic Notes:

Invalid MASK generates an error, that is when (DEST & MASK) != DEST.

Example> route ADD 157.0.0.0 MASK 155.0.0.0 157.55.80.1 IF 1

## Route in linux

```
jisha@jisha-VirtualBox:~$ sudo route
```

Kernel IP routing table

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
default	_gateway	0.0.0.0	UG	100	0	0	enp0s3
10.0.2.0	0.0.0.0	255.255.255.0	U	100	0	0	enp0s3
link-local	0.0.0.0	255.255.0.0	U	1000	0	0	enp0s3

```
jisha@jisha-VirtualBox:~$
```

```
jisha@jisha-VirtualBox:~$ route -n
```

Kernel IP routing table

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
0.0.0.0	10.0.2.2	0.0.0.0	UG	100	0	0	enp0s3
10.0.2.0	0.0.0.0	255.255.255.0	U	100	0	0	enp0s3
169.254.0.0	0.0.0.0	255.255.0.0	U	1000	0	0	enp0s3

```
jisha@jisha-VirtualBox:~$ route -cn
```

route: invalid option -- 'c'

Usage: route [-nNvee] [-FC] [<AF>] List kernel routing tables  
route [-v] [-FC] {add|del|flush} ... Modify routing table for AF.

```
jisha@jisha-VirtualBox:~$ route -cn
route: invalid option -- 'c'
Usage: route [-nNvee] [-FC] [<AF>]           List kernel routing table
       route [-v] [-FC] {add|del|flush} ...   Modify routing table for
                                              <AF>
       route {-h|--help} [<AF>]             Detailed usage syntax for
       route {-V|--version}                 Display version/author and
                                              copyright
Options:
  -v, --verbose           be verbose
  -n, --numeric           don't resolve names
  -e, --extend            display other/more information
  -F, --fib               display Forwarding Information Base (FIB)
  -C, --cache             display routing cache instead of FIB

<AF>=Use -4, -6, '-A <af>' or '--<af>'; default: inet
List of possible address families (which support routing):
  inet (DARPA Internet) inet6 (IPv6) ax25 (AMPR AX.25)
  netrom (AMPR NET/ROM) ipx (Novell IPX) ddp (Appletalk DDP)
```

## Ping

```
> route delete 3110.72
C:\Users\micromedia02>ping
Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS]
          [-r count] [-s count] [[-j host-list] | [-k host-list]]
          [-w timeout] [-R] [-S srcaddr] [-c compartment] [-p]
          [-4] [-6] target_name
Options:
  -t           Ping the specified host until stopped.
               To see statistics and continue - type Control-Break;
               To stop - type Control-C.
  -a           Resolve addresses to hostnames.
  -n count     Number of echo requests to send.
  -l size      Send buffer size.
  -f           Set Don't Fragment flag in packet (IPv4-only).
  -i TTL       Time To Live.
  -v TOS       Type Of Service (IPv4-only. This setting has been deprecated
               and has no effect on the type of service field in the IP
               Header).
  -r count     Record route for count hops (IPv4-only).
  -s count     Timestamp for count hops (IPv4-only).
  -j host-list Loose source route along host-list (IPv4-only).
  -k host-list Strict source route along host-list (IPv4-only).
  -w timeout   Timeout in milliseconds to wait for each reply.
  -R           Use routing header to test reverse route also (IPv6-only).
  -S           Per RFC 5095 the use of this routing header has been
               deprecated. Some systems may drop echo requests if
               this header is used.
  -S srcaddr   Source address to use.
  -c compartment Routing compartment identifier.
  -p           Ping a Hyper-V Network Virtualization provider address.
  -4           Force using IPv4.
  -6           Force using IPv6.
```



```

C:\Users\micromedia02>ping /t
IP address must be specified.

C:\Users\micromedia02>ping /t 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:
Reply from 8.8.8.8: bytes=32 time=166ms TTL=112
Reply from 8.8.8.8: bytes=32 time=153ms TTL=112
Reply from 8.8.8.8: bytes=32 time=171ms TTL=112
Reply from 8.8.8.8: bytes=32 time=64ms TTL=112
Reply from 8.8.8.8: bytes=32 time=54ms TTL=112
Reply from 8.8.8.8: bytes=32 time=50ms TTL=112
Reply from 8.8.8.8: bytes=32 time=62ms TTL=112
Reply from 8.8.8.8: bytes=32 time=80ms TTL=112
Reply from 8.8.8.8: bytes=32 time=48ms TTL=112
Reply from 8.8.8.8: bytes=32 time=41ms TTL=112
Reply from 8.8.8.8: bytes=32 time=59ms TTL=112
Reply from 8.8.8.8: bytes=32 time=45ms TTL=112
Reply from 8.8.8.8: bytes=32 time=68ms TTL=112

Ping statistics for 8.8.8.8:
    Packets: Sent = 13, Received = 13, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 41ms, Maximum = 171ms, Average = 81ms
Control-C
^C
C:\Users\micromedia02>ping /v 8.8.8.8

```

## Ping in linux

```

jisha@jisha-VirtualBox:~$ ping www.google.com
PING www.google.com (142.250.195.196) 56(84) bytes of data.
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=1 ttl=111 time=193 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=2 ttl=111 time=63.4 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=3 ttl=111 time=108 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=4 ttl=111 time=80.1 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=5 ttl=111 time=77.2 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=6 ttl=111 time=270 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=7 ttl=111 time=91.7 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=8 ttl=111 time=63.1 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=9 ttl=111 time=83.4 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=10 ttl=111 time=95.7 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=11 ttl=111 time=87.9 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=12 ttl=111 time=76.0 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=13 ttl=111 time=84.9 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=14 ttl=111 time=67.8 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=15 ttl=111 time=61.7 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=16 ttl=111 time=58.2 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=17 ttl=111 time=55.4 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=18 ttl=111 time=60.1 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=19 ttl=111 time=66.9 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=20 ttl=111 time=67.7 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=21 ttl=111 time=83.8 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=22 ttl=111 time=53.6 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=23 ttl=111 time=58.7 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=24 ttl=111 time=89.0 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=25 ttl=111 time=64.1 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=26 ttl=111 time=92.1 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=27 ttl=111 time=91.0 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=28 ttl=111 time=102 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=29 ttl=111 time=57.8 ms
64 bytes from maa03s42-in-f4.1e100.net (142.250.195.196): icmp_seq=30 ttl=111 time=81.8 ms

```

```
jisha@jisha-VirtualBox:~$ ping google.com
PING google.com (172.217.163.206) 56(84) bytes of data.
64 bytes from maa05s06-in-f14.1e100.net (172.217.163.206): icmp_seq=1 ttl=112 time=22
64 bytes from maa05s06-in-f14.1e100.net (172.217.163.206): icmp_seq=2 ttl=112 time=56
64 bytes from maa05s06-in-f14.1e100.net (172.217.163.206): icmp_seq=3 ttl=112 time=73
64 bytes from maa05s06-in-f14.1e100.net (172.217.163.206): icmp_seq=4 ttl=112 time=53
64 bytes from maa05s06-in-f14.1e100.net (172.217.163.206): icmp_seq=5 ttl=112 time=51
64 bytes from maa05s06-in-f14.1e100.net (172.217.163.206): icmp_seq=6 ttl=112 time=50
64 bytes from maa05s06-in-f14.1e100.net (172.217.163.206): icmp_seq=7 ttl=112 time=83
64 bytes from maa05s06-in-f14.1e100.net (172.217.163.206): icmp_seq=8 ttl=112 time=53
64 bytes from maa05s06-in-f14.1e100.net (172.217.163.206): icmp_seq=9 ttl=112 time=48
^C
--- google.com ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8012ms
rtt min/avg/max/mdev = 48.589/76.725/220.185/51.917 ms
jisha@jisha-VirtualBox:~$ ping 0
PING 0 (127.0.0.1) 56(84) bytes of data.
64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.021 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.043 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.053 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.032 ms
64 bytes from 127.0.0.1: icmp_seq=5 ttl=64 time=0.070 ms
64 bytes from 127.0.0.1: icmp_seq=6 ttl=64 time=0.064 ms
64 bytes from 127.0.0.1: icmp_seq=7 ttl=64 time=0.060 ms
64 bytes from 127.0.0.1: icmp_seq=8 ttl=64 time=0.101 ms
64 bytes from 127.0.0.1: icmp_seq=9 ttl=64 time=0.064 ms
64 bytes from 127.0.0.1: icmp_seq=10 ttl=64 time=0.050 ms
64 bytes from 127.0.0.1: icmp_seq=11 ttl=64 time=0.061 ms
64 bytes from 127.0.0.1: icmp_seq=12 ttl=64 time=0.065 ms
```

```
jisha@jisha-VirtualBox:~$ ping -c
ping: option requires an argument -- 'c'

Usage
  ping [options] <destination>

Options:
  <destination>      dns name or ip address
  -a                  use audible ping
  -A                  use adaptive ping
  -B                  sticky source address
  -c <count>          stop after <count> replies
  -D                  print timestamps
  -d                  use SO_DEBUG socket option
  -f                  flood ping
  -h                  print help and exit
  -I <interface>      either interface name or address
  -i <interval>        seconds between sending each packet
  -L                  suppress loopback of multicast packets
```

2. Identify and perform 5 more network commands and it's working

### Getmac

```
C:\Users\micromedia02>getmac

Physical Address    Transport Name
-----
DC-F5-05-F4-B5-11  \Device\NPF{D6C3EBFF-6ED4-430D-82F5-FCB3D45A5BE3}
88-E8-2C-8D-21-99  Media disconnected
DC-F5-05-F4-B5-10  Media disconnected
8A-00-27-00-00-00  \Device\NPF{A42D1934-E311-4A22-8455-4E4C696D5120}
```

## Hostname

```
C:\Users\micromedia02>getmac

Physical Address      Transport Name
-----
DC-F5-05-F4-B5-11    \Device\NPF{D6C3EBFF-6ED4-4300-82F5-FCB3D45A5B3}
80-E8-2C-8D-21-99    Media disconnected
DC-F5-05-F4-B5-10    Media disconnected
8A-00-27-00-00-00    \Device\NPF{A42D1934-E311-4A22-8455-4E4C696D5120}

C:\Users\micromedia02>hostname
LAPTOP-HIRSTON1

C:\Users\micromedia02>
```

## ARP

```
C:\Users\micromedia02>arp

Displays and modifies the IP-to-Physical address translation tables used by
address resolution protocol (ARP).

ARP -s inet_addr eth_addr [if_addr]
ARP -d inet_addr [if_addr]
ARP -a [inet_addr] [-N if_addr] [-v]

-a          Displays current ARP entries by interrogating the current
            protocol data. If inet_addr is specified, the IP and Physical
            addresses for only the specified computer are displayed. If
            more than one network interface uses ARP, entries for each ARP
            table are displayed.
-g          Same as -a.
-v          Displays current ARP entries in verbose mode. All invalid
            entries and entries on the loop-back interface will be shown.
inet_addr   Specifies an internet address.
-N if_addr  Displays the ARP entries for the network interface specified
            by if_addr.
-d          Deletes the host specified by inet_addr. inet_addr may be
            wildcarded with * to delete all hosts.
-s          Adds the host and associates the Internet address inet_addr
            with the Physical address eth_addr. The Physical address is
            given as 6 hexadecimal bytes separated by hyphens. The entry
            is permanent.
eth_addr     Specifies a physical address.
if_addr     If present, this specifies the Internet address of the
            interface whose address translation table should be modified.
            If not present, the first applicable interface will be used.

Example:
> arp -s 157.55.85.212 00-aa-00-02-c6-09 .... Adds a static entry.
> arp -a .... Displays the arp table.

C:\Users\micromedia02>
```

## Systeminfo

```
Command Prompt
C:\Users\micromedia02>systeminfo

Host Name: LAPTOP-HIRSTON1
OS Name: Microsoft Windows 10 Home Single Language
OS Version: 10.0.19042 N/A Build 19042
OS Manufacturer: Microsoft Corporation
OS Configuration: Standalone Workstation
OS Build Type: Multiprocessor Free
Registered Owner: micromedia02
Registered Organization: HP
Product ID: 00327-35142-31596-AAOEM
Original Install Date: 23-08-2021, 15:54:34
System Boot Time: 31-08-2021, 16:27:21
System Manufacturer: HP
System Model: HP Laptop 15-da0xxx
System Type: x64-based PC
Processor(s): 1 Processor(s) Installed.
               [01]: Intel(R) Core(TM) i7-1065G7 Processor ~2300 Mhz
BIOS Version: Insyde F.21, 25-07-2019
Windows Directory: C:\WINDOWS
System Directory: C:\WINDOWS\system32
Root Device: \Device\HarddiskVolume1
System Locale: en-us;English (United States)
Input Locale: 00000409
Time Zone: (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi
Total Physical Memory: 4,007 MB
Available Physical Memory: 714 MB
Virtual Memory: Max Size: 7,847 MB
Virtual Memory: Available: 2,546 MB
Virtual Memory: In Use: 5,301 MB
Page File Location(s): C:\pagefile.sys
Domain: WORKGROUP
Logon Server: \\LAPTOP-HIRSTON1
Hotfix(s): 6 Hotfix(s) Installed.
            [01]: KB4578068
            [02]: KB4562838
            [03]: KB4570334
            [04]: KB4580325
            [05]: KB4586864
            [06]: KB4586781
Network Card(s): 4 NIC(s) Installed.
                  [01]: Realtek RTL8723DE 802.11b/g/n PCIe Adapter
                        Connection Name: Wi-Fi
                        DHCP Enabled: Yes
                        DHCP Server: 192.168.43.1
                        IP address(es)
                        [01]: 192.168.43.220
                        [02]: fe80:a83c:cd31:7f17:8b0c
                        [03]: 2409:4873:4e09:8072:5464:c3cb:9f04:e6fb
                        [04]: 2409:4873:4e09:8072:a83c:cd31:7f17:8b0c
```

## Pathping

```
C:\Users\micromedia02>pathping

Usage: pathping [-g host-list] [-h maximum_hops] [-i address] [-n]
               [-p period] [-q num_queries] [-w timeout]
               [-4] [-6] target_name

Options:
  -g host-list      Loose source route along host-list.
  -h maximum_hops   Maximum number of hops to search for target.
  -i address         Use the specified source address.
  -n                Do not resolve addresses to hostnames.
  -p period          Wait period milliseconds between pings.
  -q num_queries     Number of queries per hop.
  -w timeout         Wait timeout milliseconds for each reply.
  -4                Force using IPv4.
  -6                Force using IPv6.

C:\Users\micromedia02>systeminfo

Host Name:                LAPTOP-HIR5TON1
OS Name:                  Microsoft Windows 10 Home Single Language
OS Version:               10.0.19042 N/A Build 19042
OS Manufacturer:         Microsoft Corporation
OS Configuration:        Standalone Workstation
OS Build Type:             Multiprocessor Free
```

## Net

```
C:\Users\micromedia02>netstat
Connection Name: VirtualBox Host-Only Network
DHCP Enabled:      No
IP address(es):
[01]: 192.168.56.1
[02]: fe80::91dd:54ef:c3d6:57b3

Hyper-V Requirements:  VM Monitor Mode Extensions: Yes
                      Virtualization Enabled In Firmware: Yes
                      Second Level Address Translation: Yes
                      Data Execution Prevention Available: Yes

C:\Users\micromedia02>netstat
'netstat' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\micromedia02>net
The syntax of this command is:

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

C:\Users\micromedia02>
```

## Nbtstat

```
C:\Users\micromedia02>netstat
Type "TASKKILL /?" for usage.

C:\Users\micromedia02>nbtstat
Displays protocol statistics and current TCP/IP connections using NBT
(NetBIOS over TCP/IP).

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

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

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

C:\Users\micromedia02>
```

## Linux commands

### ls

```
jisha@jisha-VirtualBox:~$ ls
allfiles.txt  appu      books     dai.txt   Documents  ha.pub    ht.txt    minnu     Pictures   Videos
allfolder    appu.txt  BOOKS     Desktop  Downloads  hello     h.txt     Music     Public    wordpress
ammu.txt     archive.tar  class.txt  de.txt   ha         hello.txt latest.tar.gz  number.txt Templates  work
```

```
jisha@jisha-VirtualBox:~$ history
```

```
1  ls
2  pwd
3  history
4  man
5  man ls
6  cd
7  cd .
8  cd /
9  ls
10 mkdir jisha
11 mkdir ammu
12 mkdir -p jisha
13 mkdir
14 mkdir -m ammu
15 mkdir jisha
16 cd jisha
17 cd desktop
18 cd --
19 mkdir minnu
20 cd minnu
21 rmdir minnu
22 mkdir minnu
```

```
jisha@jisha-VirtualBox:~$ touch test1.txt
jisha@jisha-VirtualBox:~$ mkdir book
jisha@jisha-VirtualBox:~$ ls
allfiles.txt  appu      book      class.txt  de.txt    ha        hello.txt  latest.tar.gz  number.txt  Templates  wordpress
allfolder    appu.txt  book      dal.txt    Documents ha.pub    hi.txt     minnu        Pictures    test1.txt  work
ammu.txt     archive.tar  BOOKS    Desktop    Downloads hello     h.txt     Music        Public      Videos
jisha@jisha-VirtualBox:~$ pwd
/home/jisha
jisha@jisha-VirtualBox:~$ sudo hostname
jisha-VirtualBox
```

dig

```
jisha@jisha-VirtualBox:~$ dig google.com
```

```
; <<>> DiG 9.16.1-Ubuntu <<>> google.com
;; global options: +cmd
;; Got answer:
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 38604
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

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

;; ANSWER SECTION:
google.com.                 224     IN      A       142.250.205.238

;; Query time: 71 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Sun Sep 12 14:41:33 IST 2021
;; MSG SIZE  rcvd: 55
```

arp

```
jisha@jisha-VirtualBox:~$ arp -e
Address          HWtype  HWaddress      Flags Mask    Iface
_gateway         ether    52:54:00:12:35:02  C             enp0s3
jisha@jisha-VirtualBox:~$
```

host

```
-o use IPv6 query transport only
jisha@jisha-VirtualBox:~$ host google.com
google.com has address 142.250.205.238
google.com has IPv6 address 2404:6800:4007:808::200e
google.com mail is handled by 10 aspmx.l.google.com.
google.com mail is handled by 20 alt1.aspmx.l.google.com.
google.com mail is handled by 30 alt2.aspmx.l.google.com.
google.com mail is handled by 50 alt4.aspmx.l.google.com.
google.com mail is handled by 40 alt3.aspmx.l.google.com.
jisha@jisha-VirtualBox:~$
```