NETWORKING & SYSTEM ADMINISTRATION LAB

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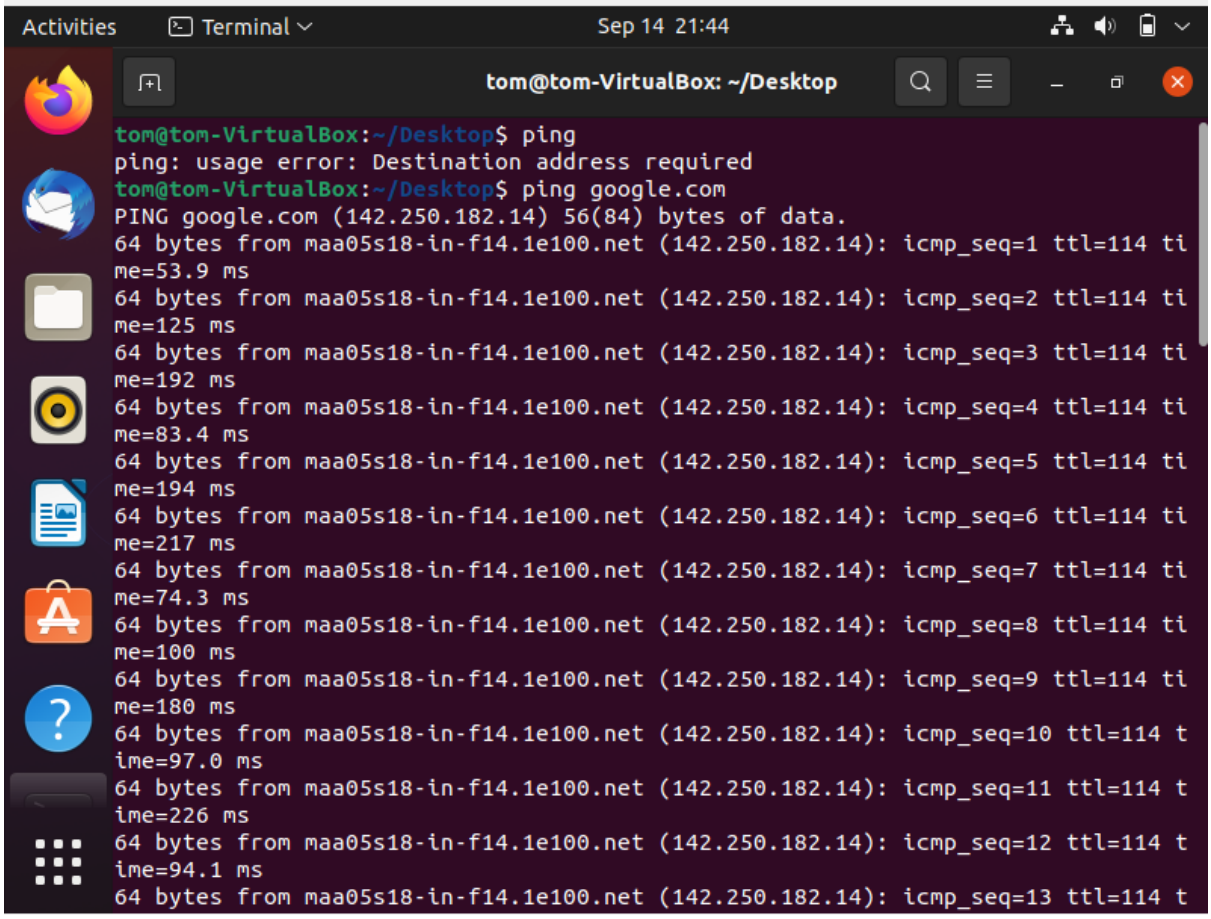
LINUX NETWORK COMMANDS

Ping Command

PING (Packet Internet Groper) command is used to check the network connectivity between host and server/host. This command takes as input the IP address or the URL and sends a data packet to the specified address with the message “PING” and get a response from the server/host this time is recorded which is called latency. Fast ping low latency means faster connection.



Route command

route command in Linux is used when you 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.

```
Setting up net-tools (1.60+git20181103.0eebece-1ubuntu2) ...
Processing triggers for man-db (2.9.4-2) ...
tom@tom-VirtualBox:~/Desktop$ 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
tom@tom-VirtualBox:~/Desktop$
```

```
ubuntu@ubuntu:~$ ip route show table local
broadcast 10.0.2.0 dev enp0s3 proto kernel scope link src 10.0.2.15
local 10.0.2.15 dev enp0s3 proto kernel scope host src 10.0.2.15
broadcast 10.0.2.255 dev enp0s3 proto kernel scope link src 10.0.2.15
broadcast 127.0.0.0 dev lo proto kernel scope link src 127.0.0.1
local 127.0.0.0/8 dev lo proto kernel scope host src 127.0.0.1
local 127.0.0.1 dev lo proto kernel scope host src 127.0.0.1
broadcast 127.255.255.255 dev lo proto kernel scope link src 127.0.0.1
ubuntu@ubuntu:~$
```

```
tom@tom-VirtualBox:~/Desktop$ ip route
default via 10.0.2.2 dev enp0s3 proto dhcp metric 100
10.0.2.0/24 dev enp0s3 proto kernel scope link src 10.0.2.15 metric 100
169.254.0.0/16 dev enp0s3 scope link metric 1000
tom@tom-VirtualBox:~/Desktop$
```

```
22  * * *
23  *^C
tom@tom-VirtualBox:~/Desktop$ 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
tom@tom-VirtualBox:~/Desktop$
```

Traceroute command

traceroute 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. Below image depicts how traceroute command is used to reach the Google(172.217.26.206) host from the local machine and it also prints detail about all the hops that it visits in between.

```
6 (traceproto) in auto mode
update-alternatives: using /usr/sbin/tcptraceroute.db to provide /usr/sbin/tcpt
raceroute (tcptraceroute) in auto mode
Processing triggers for man-db (2.9.4-2) ...
tom@tom-VirtualBox:~/Desktop$ traceroute  google.com
traceroute to google.com (142.250.182.14), 30 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  2.913 ms  2.869 ms  2.837 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
29  *
30  *
tom@tom-VirtualBox:~/Desktop$ traceroute -n  google.com
traceroute to google.com (142.250.182.14), 30 hops max, 60 byte packets
 1  10.0.2.2  0.670 ms  0.645 ms  0.630 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  *
28  * * *
29  * * *
30  * * *
tom@tom-VirtualBox:~/Desktop$ traceroute -q 1  google.com
traceroute to google.com (142.250.182.14), 30 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  0.332 ms
 2  *
 3  *
 4  *
 5  *
 6  *
 7  *
 8  *
 9  *
10  *
11  *
12  *
13  *
14  *
15  *
16  *
```

```
tom@tom-VirtualBox:~/Desktop$ traceroute  google.com 100
traceroute to google.com (142.250.182.14), 30 hops max, 100 byte packets
 1  _gateway (10.0.2.2)  1.607 ms  1.564 ms  1.332 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * *
```

Nslookup command

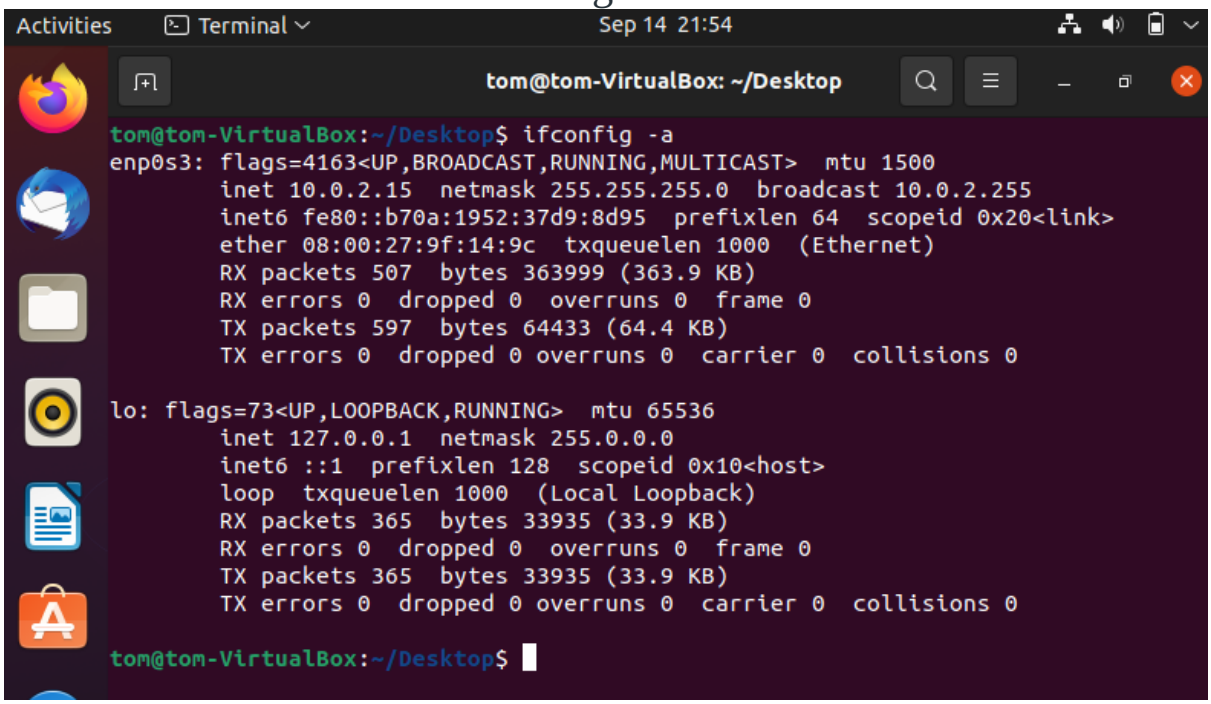
Nslookup (stands for “Name Server Lookup”) is a useful command for getting information from DNS server. It is a network administration tool for querying the Domain Name System (DNS) to obtain domain name or IP address mapping or any other specific DNS record.

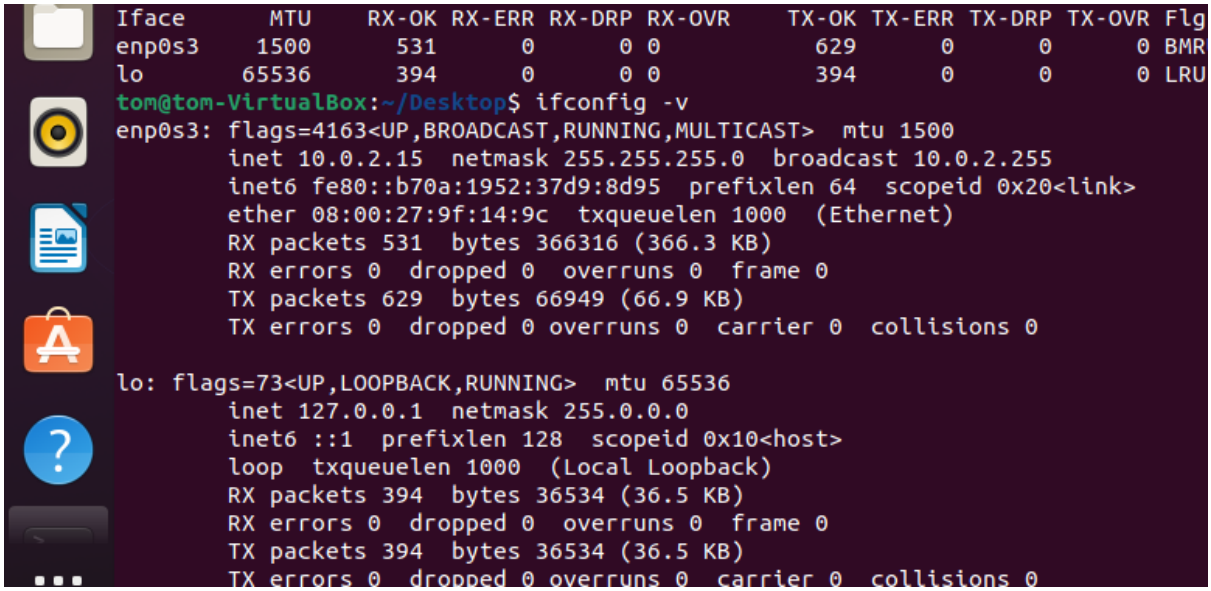
```
29  * * *
30  * * *
tom@tom-VirtualBox:~/Desktop$ S^C
tom@tom-VirtualBox:~/Desktop$ nslookup google.com
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.182.14
Name:   google.com
Address: 2404:6800:4007:819::200e

tom@tom-VirtualBox:~/Desktop$
```

```
File  Edit  View  Search  Terminal  Help
student@Comp9:~$ nslookup -type=any google.com
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
Name:   google.com
Address: 172.217.167.174
google.com      nameserver = ns4.google.com.
google.com      nameserver = ns3.google.com.
google.com
        origin = ns1.google.com
        mail addr = dns-admin.google.com
        serial = 225939750
        refresh = 900
        retry = 900
        expire = 1800
        minimum = 60
google.com      mail exchanger = 20 alt1.aspmx.l.google.com.
google.com      text = "docusign=05958488-4752-4ef2-95eb-aa7ba8a3bd0e"
Name:   google.com
Address: 2404:6800:4009:810::200e
google.com      rdata_257 = 0 issue "pki.goog"
```

ifconfig(interface configuration) command

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. After that, it is usually used when needed during debugging or when you need system tuning. Also, this command is used to assign the IP address and netmask to an interface or to enable or disable a given interface.





Netstat command

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

```
tom@tom-VirtualBox:~/Desktop$ netstat -at
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
tom@tom-VirtualBox:~/Desktop$
```

```
udp6       0      0 [::]:mdns               [::]:*
udp6       0      0 [::]:40775              [::]:*
tom@tom-VirtualBox:~/Desktop$ 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 localhost:domain        0.0.0.0:*
udp        0      0 tom-VirtualBox:bootpc   _gateway:bootps         ESTABLISHED
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp        0      0 0.0.0.0:631             0.0.0.0:*
udp        0      0 0.0.0.0:58207           0.0.0.0:*
udp6       0      0 [::]:mdns               [::]:*
udp6       0      0 [::]:40775              [::]:*
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ACC ]     STREAM     LISTENING     23132    /tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     23138    /tmp/.X11-unix/X1
unix  2      [ ACC ]     STREAM     LISTENING     18403    @/tmp/dbus-uVUTvLDD
```

```
unix  2      [ ACC ]     STREAM     LISTENING     18402    @/tmp/dbus-c0J7yMY
tom@tom-VirtualBox:~/Desktop$ netstat -au
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 localhost:domain        0.0.0.0:*
```

```
tcp6       0      0 [::]:http               [::]:*                  LISTEN
tcp6       0      0 ip6-localhost:ipp       [::]:*                  LISTEN
tom@tom-VirtualBox:~/Desktop$ 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 localhost:domain        0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp        0      0 0.0.0.0:631             0.0.0.0:*
udp        0      0 0.0.0.0:58207           0.0.0.0:*
udp6       0      0 [::]:mdns               [::]:*
udp6       0      0 [::]:40775              [::]:*
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7
Active UNIX domain sockets (only servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ACC ]     STREAM     LISTENING     23132    /tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     23138    /tmp/.X11-unix/X1
unix  2      [ ACC ]     STREAM     LISTENING     18403    @/tmp/dbus-uVUTvLDD
unix  2      [ ACC ]     STREAM     LISTENING     22617    @/tmp/.ICE-unix/1425
unix  2      [ ACC ]     STREAM     LISTENING     23131    @/tmp/.X11-unix/X0
```

WINDOWS COMMANDS

1. Ping & traceroute tests

Ping and Trace Route tests can help to identify any connection issues between your network and a specified server (or website) address.

PING test:

The PING command is used to test the connection and latency between two network connections. The PING command sends packets of information to a specified IP Address and then measures the time it takes to get a response from the specified computer or device.

```
Command Prompt
C:\Users\tomma>ping www.google.com

Pinging www.google.com [142.250.196.36] with 32 bytes of data:
Reply from 142.250.196.36: bytes=32 time=226ms TTL=115
Reply from 142.250.196.36: bytes=32 time=136ms TTL=115
Reply from 142.250.196.36: bytes=32 time=151ms TTL=115
Reply from 142.250.196.36: bytes=32 time=266ms TTL=115

Ping statistics for 142.250.196.36:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 136ms, Maximum = 266ms, Average = 194ms

C:\Users\tomma>S
```

Trace Route test:

The TRACERT command is used to conduct a similar test to PING, but instead of displaying the time it takes to connect, it looks at the exact server hops required to connect your computer to the server. You should already have the CMD prompt dialogue box open, after performing the PING test above.

1. **Nslookup**

Microsoft Windows includes a tool called NSLOOKUP that you can use via the command prompt. This tool can be used to check DNS records propagation and resolution using different servers, and perform other troubleshooting steps.

```
C:\Users\tomma>nslookup aesajce.in
Server:  UnKnown
Address:  192.168.43.1

Non-authoritative answer:
Name:    aesajce.in
Address:  103.120.179.46


C:\Users\tomma>_
```

- Type nslookup -q=XX where XX is a type of a DNS record. Some of the available types are MX, A, CNAME, and TXT. The records are then displayed, to exit the tool type exit

```
C:\Users\tomma>nslookup -type=ns aesajce.in
Server:  UnKnown
Address:  192.168.43.1

Non-authoritative answer:
aesajce.in      nameserver = ns2.aessas.com
aesajce.in      nameserver = ns2.ajcemca.in
aesajce.in      nameserver = ns1.ajcemca.in
aesajce.in      nameserver = ns1.aessas.com

C:\Users\tomma>
```

- To use **nslookup** as a troubleshooting tool, you can set the specific type of record to lookup for a domain by using the **-type=record_type** where **record_type** is A, CNAME, MX, PTR, NS, ANY.
  Type **nslookup -type=ns domain_name** where domain_name is the domain for your query and hit **Enter.** Now the tool will display the name servers for the domain you specified.

```
C:\Users\tomma>nslookup q=MX aesajce.in
Server:  UnKnown
Address:  103.120.179.46

*** UnKnown can't find q=MX: Server failed

C:\Users\tomma>
```

2. Netstat

On Windows 10, netstat (network statistics) has been around for a long time, and it's a command-line tool that you can use in Command Prompt to display statistics for all network connections. It allows you to understand open and connected ports to monitor and troubleshoot networking problems for system or applications.

```
C:\Users\tomma>netstat

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:53395        LAPTOP-OF9SBL90:65001  ESTABLISHED
  TCP    127.0.0.1:53396        LAPTOP-OF9SBL90:53407  ESTABLISHED
  TCP    127.0.0.1:53407        LAPTOP-OF9SBL90:53396  ESTABLISHED
  TCP    127.0.0.1:65001        LAPTOP-OF9SBL90:53395  ESTABLISHED
```

netstat -n

command to display active connections showing numeric IP address and port number instead of trying to determine the names .

netstat -n INTERVAL

In the command, make sure to replace INTERVAL for the number (in seconds) you want to redisplay the information.

```
Command Prompt - netstat -n 5
^C
C:\Users\tomma>netstat -n 5

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:53395        127.0.0.1:65001        ESTABLISHED
  TCP    127.0.0.1:53396        127.0.0.1:53407        ESTABLISHED
  TCP    127.0.0.1:53407        127.0.0.1:53396        ESTABLISHED
  TCP    127.0.0.1:65001        127.0.0.1:53395        ESTABLISHED
  TCP    192.168.43.170:49684   13.107.42.12:443       ESTABLISHED
  TCP    192.168.43.170:49685   20.44.229.112:443      ESTABLISHED
  TCP    192.168.43.170:49686   52.178.17.3:443        ESTABLISHED
  TCP    192.168.43.170:50126   204.79.197.200:443     TIME_WAIT
  TCP    192.168.43.170:50127   104.114.102.133:443    ESTABLISHED
  TCP    192.168.43.170:50128   52.173.134.115:443     ESTABLISHED
  TCP    192.168.43.170:50148   20.198.162.76:443      ESTABLISHED
  TCP    192.168.43.170:51304   204.79.197.219:443     TIME_WAIT
  TCP    192.168.43.170:53582   20.198.162.76:443      ESTABLISHED
  TCP    192.168.43.170:53590   13.88.181.35:443       ESTABLISHED
  TCP    192.168.43.170:54224   74.125.130.188:5228    ESTABLISHED
  TCP    192.168.43.170:55775   157.240.228.60:443     ESTABLISHED
  TCP    192.168.43.170:56326   142.250.183.227:443    TIME_WAIT
  TCP    192.168.43.170:56570   13.227.214.110:443     TIME_WAIT
  TCP    192.168.43.170:57037   204.79.197.200:443     ESTABLISHED
  TCP    192.168.43.170:62684   20.195.65.204:443      ESTABLISHED
  TCP    192.168.43.170:62928   35.201.64.102:443      TIME_WAIT
  TCP    192.168.43.170:64554   13.227.214.24:443      TIME_WAIT
  TCP    192.168.43.170:64555   13.107.42.12:443       ESTABLISHED
```

netstat -a

The netstat -a command displays all active and inactive connections, and the TCP and UDP ports the device is currently listening.

```
Command Prompt - netstat -a
C:\Users\tomma>netstat -a

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:135            LAPTOP-OF9SBL90:0      LISTENING
  TCP    0.0.0.0:445            LAPTOP-OF9SBL90:0      LISTENING
  TCP    0.0.0.0:808            LAPTOP-OF9SBL90:0      LISTENING
  TCP    0.0.0.0:5040           LAPTOP-OF9SBL90:0      LISTENING
  TCP    0.0.0.0:5357           LAPTOP-OF9SBL90:0      LISTENING
  TCP    0.0.0.0:49664          LAPTOP-OF9SBL90:0      LISTENING
  TCP    0.0.0.0:49665          LAPTOP-OF9SBL90:0      LISTENING
  TCP    0.0.0.0:49666          LAPTOP-OF9SBL90:0      LISTENING
  TCP    0.0.0.0:49667          LAPTOP-OF9SBL90:0      LISTENING
  TCP    0.0.0.0:49668          LAPTOP-OF9SBL90:0      LISTENING
  TCP    0.0.0.0:49670          LAPTOP-OF9SBL90:0      LISTENING
  TCP    0.0.0.0:59171          LAPTOP-OF9SBL90:0      LISTENING
  TCP    127.0.0.1:27017        LAPTOP-OF9SBL90:0      LISTENING
  TCP    127.0.0.1:53395        LAPTOP-OF9SBL90:65001  ESTABLISHED
  TCP    127.0.0.1:53396        LAPTOP-OF9SBL90:0      LISTENING
  TCP    127.0.0.1:53396        LAPTOP-OF9SBL90:53407  ESTABLISHED
  TCP    127.0.0.1:53407        LAPTOP-OF9SBL90:53396  ESTABLISHED
  TCP    127.0.0.1:55989        LAPTOP-OF9SBL90:0      LISTENING
  TCP    127.0.0.1:56989        LAPTOP-OF9SBL90:0      LISTENING
  TCP    127.0.0.1:65001        LAPTOP-OF9SBL90:0      LISTENING
  TCP    127.0.0.1:65001        LAPTOP-OF9SBL90:53395  ESTABLISHED
  TCP    192.168.43.170:139     LAPTOP-OF9SBL90:0      LISTENING
  TCP    192.168.43.170:49684   1drv:https             ESTABLISHED
  TCP    192.168.43.170:49685   20.44.229.112:https    ESTABLISHED
```

netstat -b

The netstat -b command lists all the executables (applications) associated with each connection. Sometimes, applications may open multiple connections.

netstat -e

The netstat -e command generates a statistic of the network interface, which shows information like the number of bytes, unicast and non-unicast sent and received packets. You can also see discarded packets and errors and unknown protocols, which can you troubleshoot networking problems.

```
C:\Users\tomma>netstat -e
Interface Statistics

                           Received            Sent

Bytes                     696836938       233255883
Unicast packets              892556          733208
Non-unicast packets             777            4767
Discards                          0               0
Errors                            0               0
Unknown protocols                 0
```

3. **ipconfig**

Displays all current TCP/IP network configuration values and refreshes Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) settings. Used without parameters, ipconfig displays Internet Protocol version 4 (IPv4) and IPv6 addresses, subnet mask, and default gateway for all adapters.

PARAMETERS:

/all: Displays the full TCP/IP configuration for all adapters. Adapters can represent physical interfaces, such as installed network adapters, or logical interfaces, such as dial-up connections.

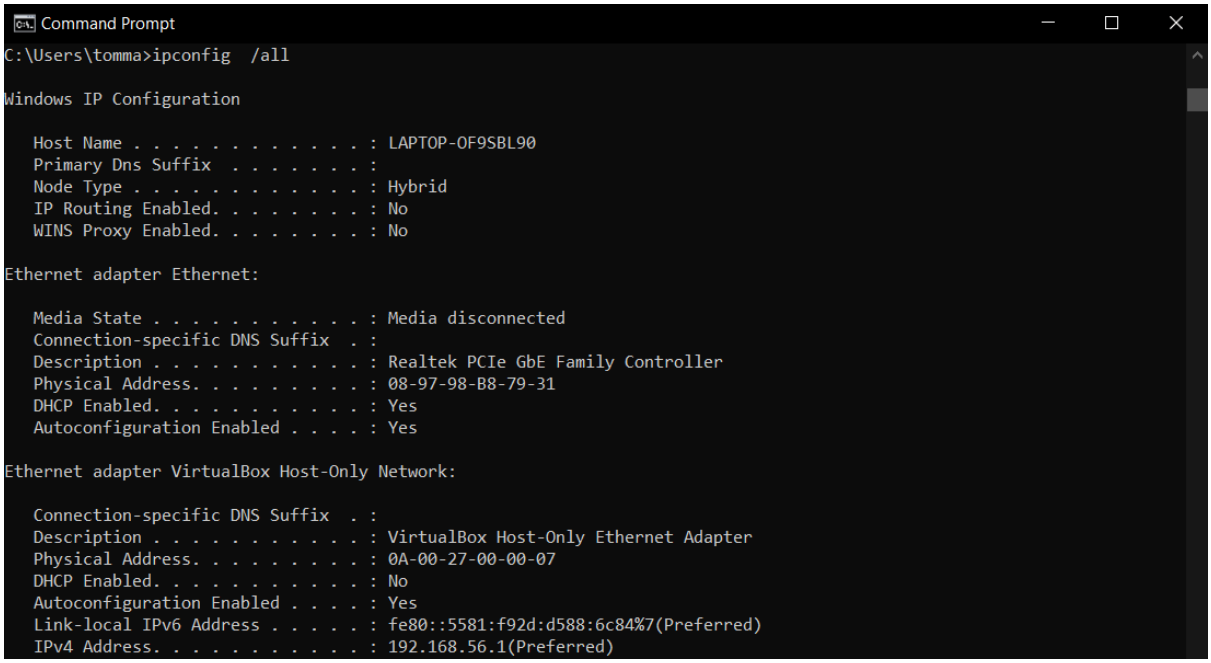
/displaydns: Displays the contents of the DNS client resolver cache, which includes both entries preloaded from the local Hosts file and any recently obtained resource records for name queries resolved by the computer. The DNS Client service uses this information to

resolve frequently queried names quickly, before querying its configured DNS servers.

/flushdns: Flushes and resets the contents of the DNS client resolver cache. During DNS troubleshooting, you can use this procedure to discard negative cache entries from the cache, as well as any other entries that have been added dynamically.

/registerdns: Initiates manual dynamic registration for the DNS names and IP addresses that are configured at a computer. You can use this parameter to troubleshoot a failed DNS name registration or resolve a dynamic update problem between a client and the DNS server without rebooting the client computer. The DNS settings in the advanced properties of the TCP/IP protocol determine which names are registered in DNS.

```
C:\Users\tomma>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::5581:f92d:d588:6c84%7
   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:
```



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

Windows IP Configuration

   Host Name . . . . . . . . . . . . : LAPTOP-OF9SBL90
   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. . . . . . . . . : 08-97-98-B8-79-31
   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-00-27-00-00-07
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::5581:f92d:d588:6c84%7(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.56.1(Preferred)
```

Other Networking Commands

1. Hostname Command

A very simple command that displays the host name of your machine. This is much quicker than going to the control **panel>system** route.

2. getmac Command

Another very simple command that shows the MAC address of your network interfaces

3.arp Command

This is used for showing the address resolution cache. This command must be used with a command line switch arp -a is the most common.

4. Nbtstat

Diagnostic tool for troubleshooting netBIOS problems.

5. Net Command

Used for managing users,service,shares etc..

```
H:\>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 ]

H:\>hostname
DESKTOP-ILB31AE

H:\>_
```

```
H:\>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 WINS
  -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 WINS and then, starts Refresh

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


H:\>
```

```
H:\>getmac

Physical Address    Transport Name
=================== ==========================================================
48-F1-7F-04-07-81   \Device\Tcpip_{083275F0-5D75-483E-9CA1-5D2B536909B7}
04-92-26-1D-65-3B   Media disconnected
48-F1-7F-04-07-85   Media disconnected
0A-00-27-00-00-11   \Device\Tcpip_{A74689BB-EA25-4EFA-8DC2-57AA7FC4E351}

H:\>arp -a

Interface: 192.168.1.33 --- 0x4
  Internet Address      Physical Address      Type
  192.168.1.1           14-a7-2b-83-03-34     dynamic
  192.168.1.255         ff-ff-ff-ff-ff-ff     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static

Interface: 192.168.56.1 --- 0x11
  Internet Address      Physical Address      Type
  192.168.56.255        ff-ff-ff-ff-ff-ff     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
```