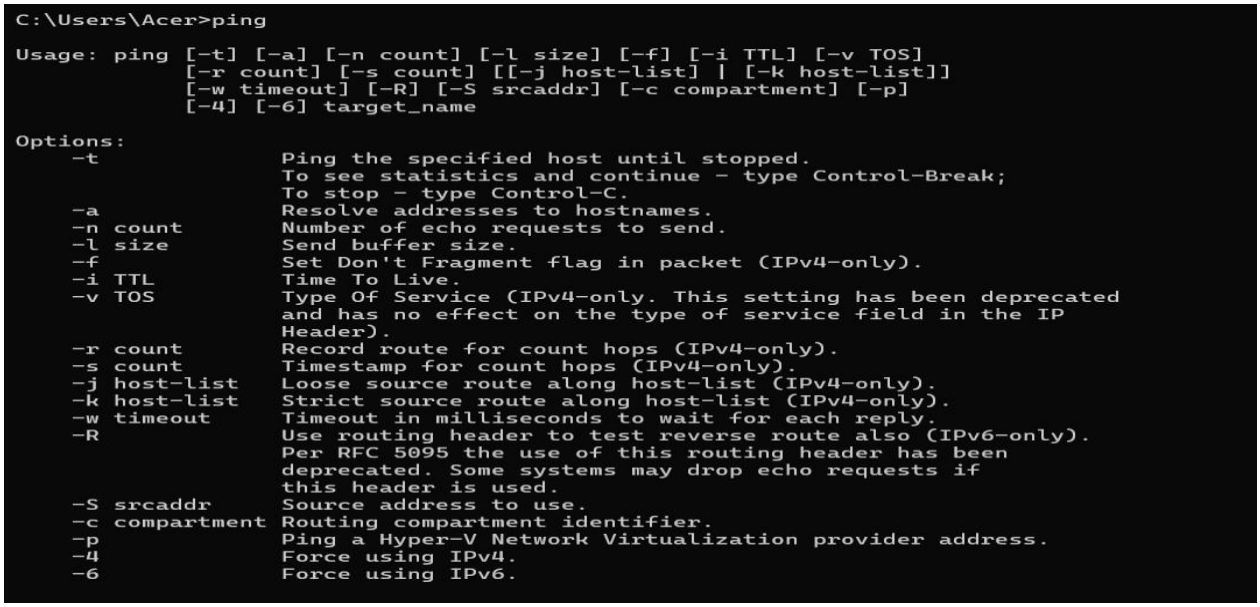
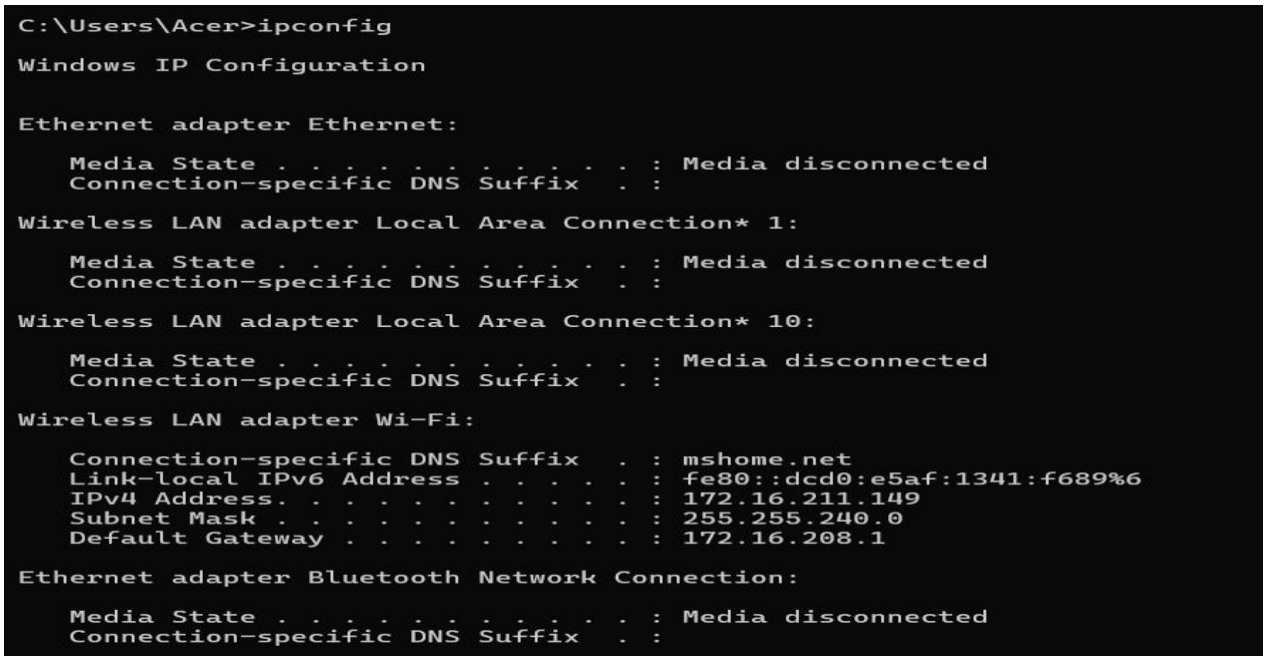
1. ping – command is one of the most often used networking utilities for detecting devices on a network and for troubleshooting network problems.

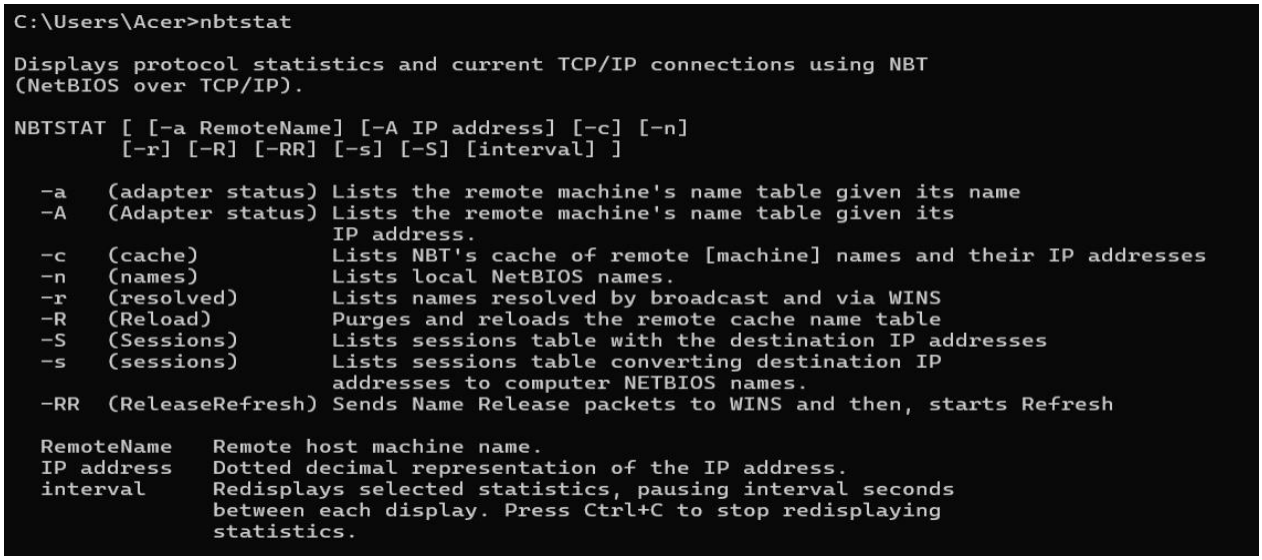



2. hostname – command that displays the hostname of your machine.


3. ipconfig – frequently used utility that is used for finding network information about your local machine like ip addresses, dns addresses etc.




4. nbtstat – diagnostic tool for troubleshooting NetBIOS problems.




5. netstat – used for displaying information about TCP and UDP connections and ports.

```
C:\Users\Acer>netstat

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    172.16.211.149:49889   4.213.25.241:https     ESTABLISHED
  TCP    172.16.211.149:49954   4.213.25.241:https     ESTABLISHED
  TCP    172.16.211.149:50015   40.74.78.229:https     CLOSE_WAIT
  TCP    172.16.211.149:50116   162.159.192.1:https    TIME_WAIT
  TCP    172.16.211.149:50125   a23-219-57-221:https   TIME_WAIT
  TCP    172.16.211.149:50126   a23-34-254-84:https    TIME_WAIT
  TCP    172.16.211.149:50131   20.50.73.9:https       ESTABLISHED
  TCP    172.16.211.149:50134   20.190.146.39:https    TIME_WAIT
  TCP    172.16.211.149:50136   20.190.146.39:https    TIME_WAIT
  TCP    172.16.211.149:50137   1drv:https             TIME_WAIT
  TCP    172.16.211.149:50140   52.109.56.3:https      TIME_WAIT
  TCP    172.16.211.149:50141   52.109.56.3:https      TIME_WAIT
  TCP    172.16.211.149:50142   52.109.56.3:https      TIME_WAIT
  TCP    172.16.211.149:50143   52.109.56.3:https      TIME_WAIT
  TCP    172.16.211.149:50145   13.89.179.9:https      TIME_WAIT
  TCP    172.16.211.149:50148   20.42.73.28:https      TIME_WAIT
  TCP    172.16.211.149:50149   a23-195-105-97:https   TIME_WAIT
  TCP    172.16.211.149:50150   52.109.56.129:https    TIME_WAIT
  TCP    172.16.211.149:50151   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50152   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50153   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50154   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50155   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50156   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50157   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50158   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50159   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50160   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50161   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50162   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50163   103.3.33.9:https       TIME_WAIT
  TCP    172.16.211.149:50164   1drv:https             TIME_WAIT
  TCP    172.16.211.149:50165   1drv:https             TIME_WAIT
  TCP    172.16.211.149:50166   1drv:https             TIME_WAIT
  TCP    172.16.211.149:50167   52.111.227.11:https    ESTABLISHED
  TCP    172.16.211.149:50168   1drv:https             TIME_WAIT
  TCP    172.16.211.149:50169   1drv:https             TIME_WAIT
  TCP    172.16.211.149:50170   1drv:https             TIME_WAIT
  TCP    172.16.211.149:50171   1drv:https             TIME_WAIT
  TCP    172.16.211.149:50172   1drv:https             TIME_WAIT
  TCP    172.16.211.149:50173   1drv:https             TIME_WAIT
```

6. getmac – command that shows the MAC address of your network interfaces.

```
C:\Users\Acer>getmac

Physical Address    Transport Name
=================== ==========================================================
08-97-98-DE-69-AE   Media disconnected
64-BC-58-3C-13-6F   \Device\Tcpip_{38D06656-FA21-4941-99DF-E2AD5267B328}
64-BC-58-3C-13-73   Media disconnected
```

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

```
C:\Users\Acer>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-00-62-c6-09  .... Adds a static entry.
  > arp -a                                    .... Displays the arp table.
```

8. tracert – command prints the path. If all routes on the path are functional, this command prints the full path.

```
C:\Users\Acer>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.
    -6                 Force using IPv6.
```

9. path - command specifies the location where ms-dos should look when it executes a command.

```
C:\Users\Acer>path
PATH=C:\WINDOWS\system32;C:\WINDOWS;C:\WINDOWS\System32\Wbem;C:\WINDOWS\System32\WindowsPowerShell\v1.0\;C:\WINDOWS\System32\OpenSSH\;C:\MinGW\bin;C:\Users\Acer\Downloads\python-3.13.1-amd64;C:\Program Files\nodejs\;C:\Program Files\Git\cmd;C:\Program Files\Cloudflare\Cloudflare WARP\;C:\Users\Acer\.local\bin;C:\Users\Acer\scoop\shims;C:\Users\Acer\AppData\Local\Programs\Python\Python313\Scripts\;C:\Users\Acer\AppData\Local\Programs\Python\Python313\;C:\Users\Acer\AppData\Local\Programs\Python\Launcher\;C:\Users\Acer\AppData\Local\Microsoft\WindowsApps;C:\Users\Acer\AppData\Local\Programs\Microsoft VS Code\bin;C:\Users\Acer\AppData\Local\Microsoft\WinGet\Packages\Schniz.fnm_Microsoft.Winget.Source_8wekyb3d8bbwe;C:\Users\Acer\AppData\Roaming\npm;C:\Program Files\nodejs;C:\Users\Acer\AppData\Local\Microsoft\WinGet\Packages\uutils.coreutils_Microsoft.Winget.Source_8wekyb3d8bbwe\coreutils-0.1.0-x86_64-pc-windows-msvc;C:\Users\Acer\AppData\Local\Programs\Ollama
```

10. route – command allows you to make manual entries into the network routing tables.

```
C:\Users\Acer>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.
```

11. pathping – after sending out packets from you to a given destination, it analyzes the route taken and computes packet loss on a per-hop basis.