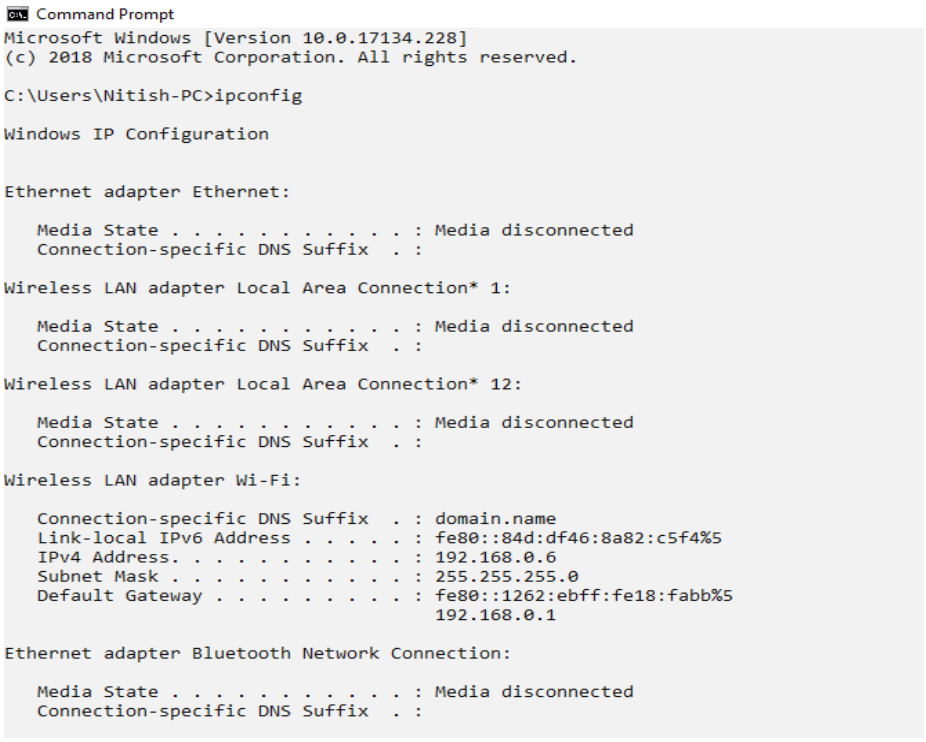
Dos Network Commands

ipconfig: Ipconfig is a Console Command which can be issued to the Command Line Interpreter (or command prompt) to display the network settings currently assigned to any or all network adapters in the machine. This command can be utilised to verify a network connection as well as to verify your network settings.
Basic Use: Finding Your IP Address and Default Gateway



ipconfig /all – displays more information about the network setup on your systems including the MAC address.

```
C:\Users\Nitish-PC>ipconfig/all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : DESKTOP-4BPN6VF
   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. . . . . . . . . : 54-E1-AD-6C-7C-50
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 1:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
   Physical Address. . . . . . . . . : CC-2F-71-6B-A3-A1
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 12:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
   Physical Address. . . . . . . . . : CE-2F-71-6B-A3-A0
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Ethernet adapter Bluetooth Network Connection:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Bluetooth Device (Personal Area Network)
   Physical Address. . . . . . . . . : CC-2F-71-6B-A3-A4
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Wi-Fi:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . : domain.name
   Description . . . . . . . . . . . : Intel(R) Dual Band Wireless-AC 3165
   Physical Address. . . . . . . . . : CC-2F-71-6B-A3-A0
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
```

ipconfig /release – release the current IP address.

```
C:\Users\Nitish-PC>ipconfig/release

Windows IP Configuration

No operation can be performed on Ethernet while it has its media disconnected.
No operation can be performed on Local Area Connection* 1 while it has its media disconnected.
No operation can be performed on Bluetooth Network Connection while it has its media disconnected.

Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 1:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::84d:df46:8a82:c5f4%5
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Local Area Connection* 12:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::c801:5af6:38c3:5335%10
   IPv4 Address. . . . . . . . . . . : 192.168.137.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Ethernet adapter Bluetooth Network Connection:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
```

ipconfig /renew – renew IP address.

```
C:\Users\Nitish-PC>ipconfig/renew

Windows IP Configuration

No operation can be performed on Ethernet while it has its media disconnected.
No operation can be performed on Local Area Connection* 1 while it has its media disconnected.
No operation can be performed on Bluetooth Network Connection while it has its media disconnected.

Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 1:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . : domain.name
   Link-local IPv6 Address . . . . . : fe80::84d:df46:8a82:c5f4%5
   IPv4 Address. . . . . . . . . . . : 192.168.0.6
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.0.1

Wireless LAN adapter Local Area Connection* 12:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::c801:5af6:38c3:5335%10
   IPv4 Address. . . . . . . . . . . : 192.168.137.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Ethernet adapter Bluetooth Network Connection:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
```

Ping:

Helps in determining TCP/IP Networks IP address as well as determine issues with the network and assists in resolving them .

```
C:\Users\student>ping www.google.com

Pinging www.google.com [172.217.163.132] with 32 bytes of data:
Reply from 172.217.163.132: bytes=32 time=41ms TTL=53
Reply from 172.217.163.132: bytes=32 time=41ms TTL=53
Reply from 172.217.163.132: bytes=32 time=40ms TTL=53
Reply from 172.217.163.132: bytes=32 time=41ms TTL=53

Ping statistics for 172.217.163.132:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 40ms, Maximum = 41ms, Average = 40ms
```

ping <address> -t – Use the -t option to ping any address until you cancel it by pressing **Ctrl+C.**

```
C:\Users\student>ping www.google.com -t

Pinging www.google.com [172.217.163.132] with 32 bytes of data:
Reply from 172.217.163.132: bytes=32 time=40ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
Reply from 172.217.163.132: bytes=32 time=44ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
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Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
Reply from 172.217.163.132: bytes=32 time=40ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
Reply from 172.217.163.132: bytes=32 time=40ms TTL=52

Ping statistics for 172.217.163.132:
    Packets: Sent = 30, Received = 30, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 39ms, Maximum = 44ms, Average = 39ms
Control-C
^C
```

ping <address> -a – Resolve addresses to hostnames.

```
C:\Users\student>ping www.google.com -a

Pinging www.google.com [172.217.163.132] with 32 bytes of data:
Reply from 172.217.163.132: bytes=32 time=40ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52
Reply from 172.217.163.132: bytes=32 time=39ms TTL=52

Ping statistics for 172.217.163.132:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 39ms, Maximum = 40ms, Average = 39ms

C:\Users\student>ping localhost -a

Pinging ETLLAB503E-22 [::1] with 32 bytes of data:
Reply from ::1: time<1ms
Reply from ::1: time<1ms
Reply from ::1: time<1ms
Reply from ::1: time<1ms

Ping statistics for ::1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Tracert:

The tracert command is used to visually see a network packet being sent and received and the amount of hops required for that packet to get to its destination.

```
C:\Users\student>tracert ipu.ac.in

Tracing route to ipu.ac.in [164.100.158.96]
over a maximum of 30 hops:

  1     2 ms    <1 ms    <1 ms  10.102.20.1
  2     6 ms     9 ms    12 ms  10.101.1.27
  3    <1 ms    <1 ms    <1 ms  10.102.6.1
  4    <1 ms    <1 ms    <1 ms  10.118.247.65
  5     2 ms     2 ms     2 ms  10.1.205.233
  6     3 ms     2 ms     2 ms  10.119.234.162
  7     2 ms     2 ms     2 ms  10.255.224.232
  8     *        2 ms     2 ms  10.248.26.62
  9     2 ms     3 ms     3 ms  10.248.16.148
 10     4 ms     5 ms     3 ms  164.100.158.96

Trace complete.
```

Pathping :- PathPing tool is a utility that combines the best aspects of Tracert and Ping.

Entering the PathPing command followed by a host name initiates what looks like a somewhat standard Tracert process. Once this process completes however, the tool takes 300 seconds (five minutes) to gather statistics, and then reports latency and packet loss statistics that are more detailed than those provided by Ping or Tracert.

```
C:\Users\student>pathping www.google.com

Tracing route to www.google.com [172.217.163.132]
over a maximum of 30 hops:
  0  ETLLAB503E-22 [10.102.20.87]
  1  10.102.20.1
  2  10.101.1.27
  3  10.102.6.1
  4  10.118.247.65
  5  10.1.205.233
  6  10.119.234.162
  7  72.14.194.160
  8  108.170.251.114
  9  108.170.227.215
 10  74.125.242.129
 11  216.239.43.77
 12  maa05s04-in-f4.1e100.net [172.217.163.132]

Computing statistics for 300 seconds...
            Source to Here   This Node/Link
Hop  RTT    Lost/Sent = Pct  Lost/Sent = Pct  Address
  0                                           ETLLAB503E-22 [10.102.20.87]
                                     0/ 100 =  0%   |
  1    1ms     0/ 100 =  0%      0/ 100 =  0%  10.102.20.1
                                     0/ 100 =  0%   |
  2    0ms     0/ 100 =  0%      0/ 100 =  0%  10.101.1.27
                                     0/ 100 =  0%   |
  3    0ms     0/ 100 =  0%      0/ 100 =  0%  10.102.6.1
                                     0/ 100 =  0%   |
  4    0ms     0/ 100 =  0%      0/ 100 =  0%  10.118.247.65
                                     0/ 100 =  0%   |
  5   ---    100/ 100 =100%    100/ 100 =100%  10.1.205.233
                                     0/ 100 =  0%   |
  6    2ms     0/ 100 =  0%      0/ 100 =  0%  10.119.234.162
                                     0/ 100 =  0%   |
  7    2ms     0/ 100 =  0%      0/ 100 =  0%  72.14.194.160
                                     0/ 100 =  0%   |
  8    3ms     0/ 100 =  0%      0/ 100 =  0%  108.170.251.114
                                     0/ 100 =  0%   |
  9   ---    100/ 100 =100%    100/ 100 =100%  108.170.227.215
                                     0/ 100 =  0%   |
 10   ---    100/ 100 =100%    100/ 100 =100%  74.125.242.129
                                     0/ 100 =  0%   |
 11   ---    100/ 100 =100%    100/ 100 =100%  216.239.43.77
                                     0/ 100 =  0%   |
 12   39ms     0/ 100 =  0%      0/ 100 =  0%  maa05s04-in-f4.1e100.net [172.217.163.132]

Trace complete.
```

ARP:

The ARP command corresponds to the **Address Resolution Protocol**. Although it is easy to think of network communications in terms of IP addressing, packet delivery is ultimately dependent on the Media Access Control (MAC) address of the device's network adapter. This is where the Address Resolution Protocol comes into play. Its job is to map IP addresses to MAC addresses.
Windows devices maintain an ARP cache, which contains the results of recent ARP queries. You can see the contents of this cache by using the ARP -A command. If you are having problems communicating with one specific host, you can append the remote host's IP address to the ARP -A command.

```
C:\Users\student>arp -a

Interface: 10.102.20.87 --- 0x4
  Internet Address      Physical Address      Type
  10.102.20.1           ec-c8-82-d6-23-44     dynamic
  10.102.20.255         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
```

GETMAC:

Every device that's compliant with IEEE 802 standards has a unique MAC address (Media Access Control). MAC addresses are assigned by the manufacturer and are stored in the device's hardware. Some people use MAC addresses to **limit which devices can connect to the network**.

```
C:\Users\student>getmac

Physical Address    Transport Name
=================== ==========================================================
C8-9C-DC-A0-B7-47   \Device\Tcpip_{5102B3CA-2CE4-427A-A210-90FB104DBF49}

C:\Users\student>
```

NSLOOKUP:

nslookup stands for Name Server Lookup. It's a nifty utility that's packed with a lot of power, but most users don't need all of that power. For regular folks like you and me, its main use is finding out the IP address behind a certain domain name.

```
C:\Users\student>nslookup www.ipu.ac.in
Server:  NKNanycast.delhi.nic.in
Address:  14.139.5.5

Non-authoritative answer:
Name:    www.ipu.ac.in
Address:  164.100.158.96


C:\Users\student>nslookup www.youtube.com
Server:  NKNanycast.delhi.nic.in
Address:  14.139.5.5

Non-authoritative answer:
Name:    youtube-ui.l.google.com
Addresses:  2404:6800:4002:80b::200e
          172.217.166.238
          216.58.196.206
          172.217.161.14
          172.217.160.238
          172.217.24.238
          172.217.167.14
          172.217.167.46
          172.217.166.206
          172.217.31.14
          216.58.221.46
Aliases:  www.youtube.com
```

NETSTAT:

netstat is a tool for network statistics, diagnostics, and analysis. It's powerful and complex, but can be simple enough if you ignore the advanced aspects that you don't need to know about (assuming you aren't managing a massive business or campus network, for example).

```
C:\Users\student>netstat

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    10.102.20.87:54030     52.230.85.180:https    ESTABLISHED
  TCP    10.102.20.87:54348     del03s14-in-f2:https   TIME_WAIT
  TCP    10.102.20.87:54352     del03s14-in-f3:https   TIME_WAIT
  TCP    10.102.20.87:54387     104.244.46.103:https   ESTABLISHED
  TCP    10.102.20.87:54388     a104-65-224-32:http    ESTABLISHED
  TCP    10.102.20.87:54391     10.102.7.25:5052       TIME_WAIT
  TCP    10.102.20.87:54392     52.230.7.59:https      ESTABLISHED
  TCP    10.102.20.87:54393     ec2-52-20-27-246:https  ESTABLISHED

C:\Users\student>
```

NETSH: netsh stands for Network Shell. It's a command that lets you view and configure pretty much every network adapter on your system, in more detail and granularity than any of the preceding commands.Running the netsh command on its own will shift the Command Prompt into network shell mode. There are several different "contexts" within this shell, including one for routing-related commands, one for DHCP-related commands, and one for diagnostics, among others. But you can use it to run individual commands, too.

```
C:\Users\student>netsh wlan /?

The following commands are available:

Commands in this context:
?               - Displays a list of commands.
add             - Adds a configuration entry to a table.
connect         - Connects to a wireless network.
delete          - Deletes a configuration entry from a table.
disconnect      - Disconnects from a wireless network.
dump            - Displays a configuration script.
export          - Saves WLAN profiles to XML files.
help            - Displays a list of commands.
refresh         - Refresh hosted network settings.
reportissues    - Generate WLAN smart trace report.
set             - Sets configuration information.
show            - Displays information.
start           - Start hosted network.
stop            - Stop hosted network.

To view help for a command, type the command, followed by a space, and then
 type ?.


C:\Users\student>netsh start /?
The following command was not found: start /?.

C:\Users\student>netsh /start
The following command was not found: /start.

C:\Users\student>netsh wlan start /?

The following commands are available:

Commands in this context:
start hostednetwork - Start hosted network.

C:\Users\student>
```

HOSTNAME: The previously discussed NbtStat command can provide you with the host name that has been assigned to a Windows device, if you know which switch to use with the command. However, if you're just looking for a fast and easy way of verifying a computer's name, then try using the Hostname command. Typing Hostname at the command prompt returns the local computer name.

```
C:\Users\student>hostname
ETLLAB503E-22
```