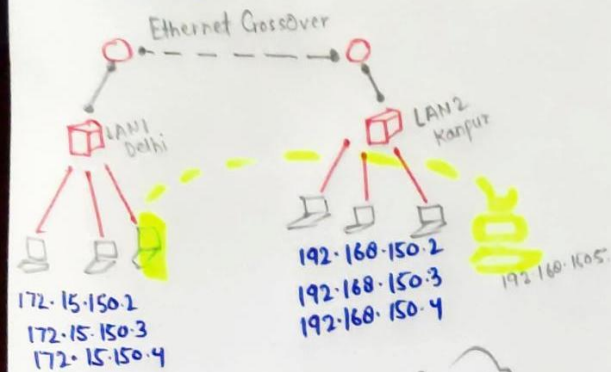


IP ADDRESSING

- IP stands for Internet Protocol.
- Every node in the computer network is identified with the help of IP address.



* It is Logical Address.

* Can change based on location of the device

* Assigned by Manually or dynamically

* Represented in decimal & it has 4 octets (x.x.x.x)

* 0.0.0.0 to 255.255.255.255 (32 bits)

[Since the IP addresses can be changed based on the logic or the location we call IP address as logical Address.

How to See IP Address in Real Device

Start → cmd → type **ipconfig**

IPV4
IPV6

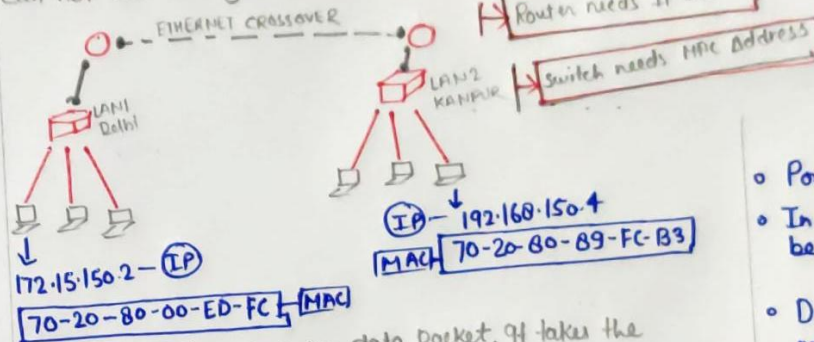
MAC ADDRESSING

- MAC stands for Media Access Control
- Every node in the LAN is identified with the help of MAC Address.

IP Address = Location of a Person.

MAC Address = Name of the Person.

for a person, its location may change but its name can not be changed.



When the Router receives the data packet, it takes the forwarding decision based on IP address.

Once the data is received by the Switch, it is responsibility of the Switch to deliver the data to right destination based on MAC address.

Every Switch will maintain a MAC address table.

It is Physical Address or Hardware Address.

Unique

Can not be changed.

Assigned by manufacturer.

Represented in hexadecimal.

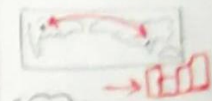
Example: 70-20-80-00-ED-FC (48 bits)

Separator hyphen(-), period(.), colon(:).

How to See MAC Address in real Device.

Start → cmd → type **ipconfig/all**

PORT ADDRESSING



Port number.

In a node, many processes will be running.

Data which are sent/received must reach the right process.

Every Process in a node is uniquely identified using port numbers.

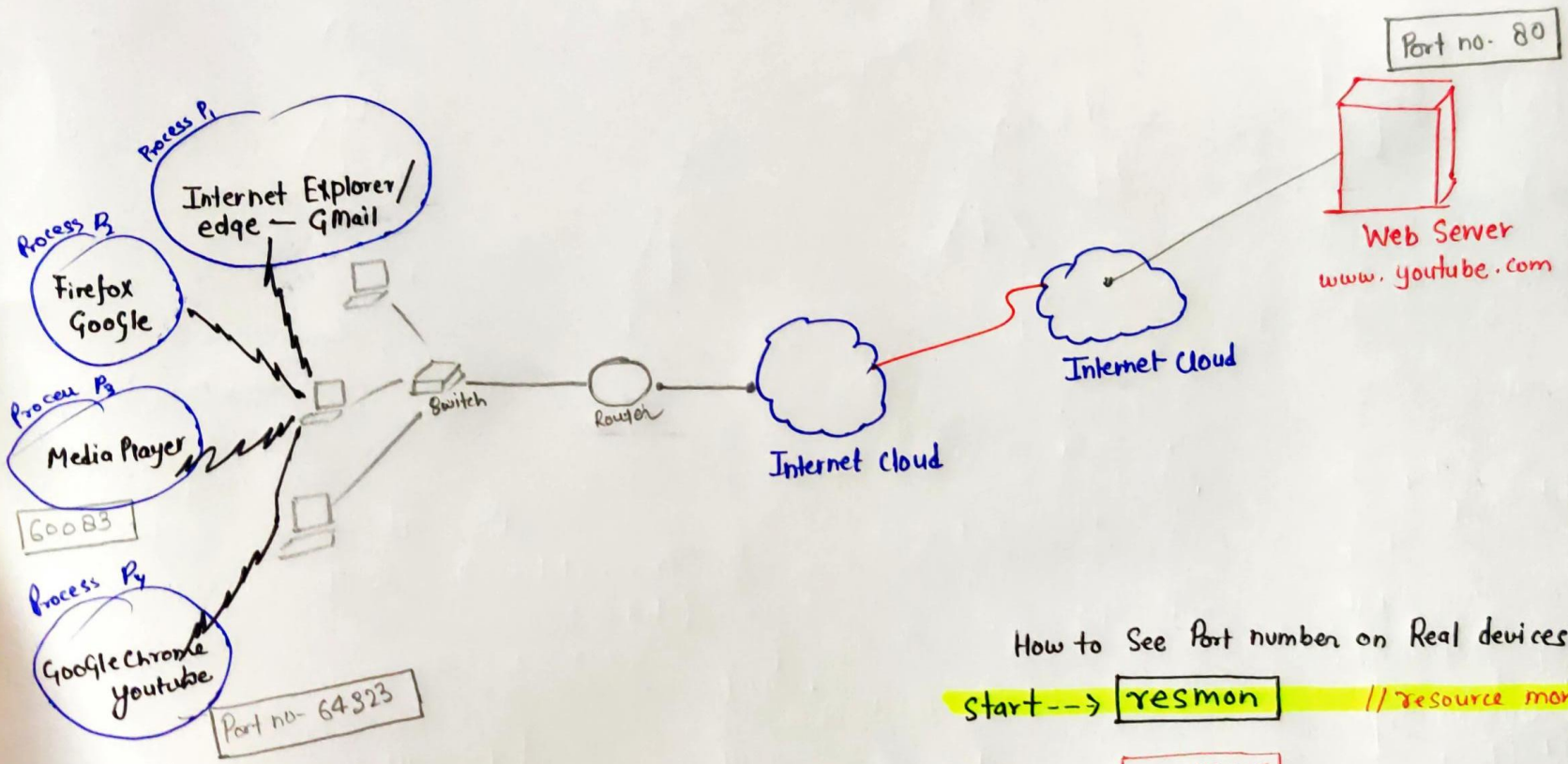
Port = Communication End Point.

Fixed port numbers and dynamic port number

0-65535

Fixed Port number - 25,80

OS assigned dynamic Port number = 62414



How to See Port number on Real devices

start --> **resmon** // resource monitoring

0- 65535

3 Key points to Ponder

Before Sending the data, any node must

- * Attach Source IP address & destination IP address.
- * Attach Source MAC address & destination MAC address.
- * Attach Source Port number & destination Port number.

Router

Switch/
LAN

Process
/ OS

C:\Users\HP>help

For more information on a specific command, type HELP command-name

ASSOC	Displays or modifies file extension associations.
ATTRIB	Displays or changes file attributes.
BREAK	Sets or clears extended CTRL+C checking.
BCDEDIT	Sets properties in boot database to control boot loading.
CACLS	Displays or modifies access control lists (ACLs) of files.
CALL	Calls one batch program from another.
CD	Displays the name of or changes the current directory.
CHCP	Displays or sets the active code page number.
CHDIR	Displays the name of or changes the current directory.
CHKDSK	Checks a disk and displays a status report.
CHKNTFS	Displays or modifies the checking of disk at boot time.
CLS	Clears the screen.
CMD	Starts a new instance of the Windows command interpreter.
COLOR	Sets the default console foreground and background colors.
COMP	Compares the contents of two files or sets of files.
COMPACT	Displays or alters the compression of files on NTFS partitions.
CONVERT	Converts FAT volumes to NTFS. You cannot convert the current drive.
COPY	Copies one or more files to another location.
DATE	Displays or sets the date.
DEL	Deletes one or more files.
DIR	Displays a list of files and subdirectories in a directory.
DISKPART	Displays or configures Disk Partition properties.
DOSKEY	Edits command lines, recalls Windows commands, and creates macros.
DRIVERQUERY	Displays current device driver status and properties.
ECHO	Displays messages, or turns command echoing on or off.
ENDLOCAL	Ends localization of environment changes in a batch file.
ERASE	Deletes one or more files.
EXIT	Quits the CMD.EXE program (command interpreter).
FC	Compares two files or sets of files, and displays the differences between them.
FIND	Searches for a text string in a file or files.
FINDSTR	Searches for strings in files.
FOR	Runs a specified command for each file in a set of files.
FORMAT	Formats a disk for use with Windows.
FSUTIL	Displays or configures the file system properties.
FTYPE	Displays or modifies file types used in file extension associations.
GOTO	Directs the Windows command interpreter to a labeled line in a batch program.



Type here to search



22:55

24-02-2022

GO TO	Directs the Windows command interpreter to a labeled line in a batch program.
GPRESULT	Displays Group Policy information for machine or user.
GRAFTABL	Enables Windows to display an extended character set in graphics mode.
HELP	Provides Help information for Windows commands.
ICACLS	Display, modify, backup, or restore ACLs for files and directories.
IF	Performs conditional processing in batch programs.
LABEL	Creates, changes, or deletes the volume label of a disk.
MD	Creates a directory.
MKDIR	Creates a directory.
MKLINK	Creates Symbolic Links and Hard Links
MODE	Configures a system device.
MORE	Displays output one screen at a time.
MOVE	Moves one or more files from one directory to another directory.
OPENFILES	Displays files opened by remote users for a file share.
PATH	Displays or sets a search path for executable files.
PAUSE	Suspends processing of a batch file and displays a message.
POPD	Restores the previous value of the current directory saved by PUSH.D.
PRINT	Prints a text file.
PROMPT	Changes the Windows command prompt.
PUSH.D	Saves the current directory then changes it.
RD	Removes a directory.
RECOVER	Recovers readable information from a bad or defective disk.
REM	Records comments (remarks) in batch files or CONFIG.SYS.
REN	Renames a file or files.
RENAME	Renames a file or files.
REPLACE	Replaces files.
RMDIR	Removes a directory.
ROBOCOPY	Advanced utility to copy files and directory trees
SET	Displays, sets, or removes Windows environment variables.
SETLOCAL	Begins localization of environment changes in a batch file.
SC	Displays or configures services (background processes).
SCHTASKS	Schedules commands and programs to run on a computer.
SHIFT	Shifts the position of replaceable parameters in batch files.
SHUTDOWN	Allows proper local or remote shutdown of machine.
SORT	Sorts input.
START	Starts a separate window to run a specified program or command.
SUBST	Associates a path with a drive letter.
SYSTEMINFO	Displays machine specific properties and configuration.
TASKLIST	Displays all currently running tasks including services.

TASKLIST	Displays all currently running tasks including services.
TASKKILL	Kill or stop a running process or application.
TIME	Displays or sets the system time.
TITLE	Sets the window title for a CMD.EXE session.
TREE	Graphically displays the directory structure of a drive or path.
TYPE	Displays the contents of a text file.
VER	Displays the Windows version.
VERIFY	Tells Windows whether to verify that your files are written correctly to a disk.
VOL	Displays a disk volume label and serial number.
XCOPY	Copies files and directory trees.
WMIC	Displays WMI information inside interactive command shell.

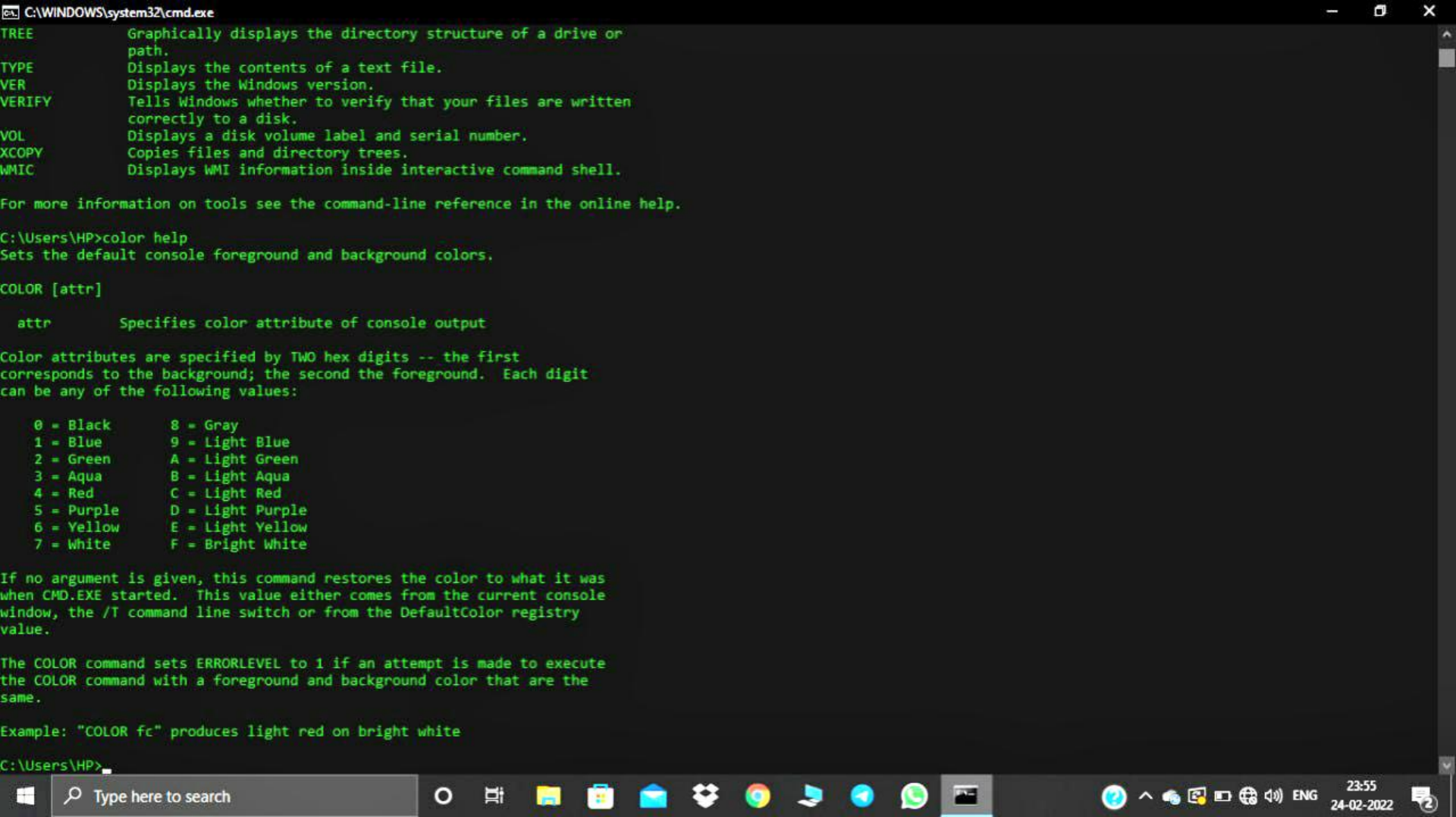
For more information on tools see the command-line reference in the online help.

C:\Users\HP>



Type here to search





C:\WINDOWS\system32\cmd.exe

RecyC:\Users\HP>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet 2:

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 Local Area Connection* 1:

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

Ethernet adapter Bluetooth Network Connection:

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

Wireless LAN adapter Wi-Fi:

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

BOOKS

sda

HISTORY_B...

himanshus...

Six main

Pranayam ...

Quick Heal

Google Meet

car_det

settings_per

HISTORY_B...

pdfpcs_202...

Trip to Ujjain

vicrant bh...

2019_GK_B...

- Shortcut

YouTube



Type here to search



01:23

25-02-2022



C:\Users\HP>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet 2:

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 Local Area Connection* 1:

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

Ethernet adapter Bluetooth Network Connection:

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

Wireless LAN adapter Wi-Fi:

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

C:\Users\HP>_

C:\Users\HP>ipconfig/all

Windows IP Configuration

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

Ethernet adapter Ethernet 2:

Media State : Media disconnected
Connection-specific DNS Suffix . :
Description : Realtek PCIe GBE Family Controller #2
Physical Address. : 3C-52-82-0E-1E-36
DHCP Enabled. : Yes
Autoconfiguration Enabled : Yes

Wireless LAN adapter Local Area Connection* 2:

Media State : Media disconnected
Connection-specific DNS Suffix . :
Description : Microsoft Wi-Fi Direct Virtual Adapter
Physical Address. : 3C-F8-62-41-F0-BF
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 #2
Physical Address. : 3E-F8-62-41-F0-BE
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. : 3C-F8-62-41-F0-C2

Processes with Network Activity

<input type="checkbox"/> Image	PID	Send (B/sec)	Receive (B/sec)	Total (B/sec)

Network Activity

0 Kbps Network I/O

0% Network Utilization

TCP Connections

Listening Ports

Image	PID	Address	Port	Protocol	Firewall Status
svchost.exe (RPCSS -p)	1048	IPv6 unspecified	135	TCP	Allowed, restri...
svchost.exe (RPCSS -p)	1048	IPv4 unspecified	135	TCP	Allowed, restri...
System	4	IPv6 unspecified	445	TCP	Not allowed, n...
System	4	IPv4 unspecified	445	TCP	Not allowed, n...
svchost.exe (netsvc -p)	3348	IPv6 unspecified	500	UDP	Allowed, restri...
svchost.exe (netsvc -p)	3348	IPv4 unspecified	500	UDP	Allowed, restri...
svchost.exe (LocalServiceAndNo...	8960	IPv6 loopback	1900	UDP	Allowed, not r...
svchost.exe (LocalServiceAndNo...	8960	IPv4 loopback	1900	UDP	Allowed, not r...
svchost.exe (netsvc -p)	3348	IPv6 unspecified	4500	UDP	Allowed, restri...
svchost.exe (netsvc -p)	3348	IPv4 unspecified	4500	UDP	Allowed, restri...
svchost.exe (LocalService -p)	6908	IPv4 unspecified	5040	TCP	Allowed, restri...
svchost.exe (LocalService -p)	6908	IPv4 unspecified	5050	UDP	Allowed, restri...
svchost.exe (NetworkService -p)	3168	IPv6 unspecified	5353	UDP	Allowed, restri...
mDNSResponder.exe	4420	IPv4 loopback	5353	UDP	Allowed, not r...
svchost.exe (LocalServiceNetwo...	4128	IPv4 unspecified	5353	UDP	Allowed, restri...
mDNSResponder.exe	4420	IPv4 loopback	5354	TCP	Allowed, not r...
System	4	IPv4 loopback	8092	TCP	Allowed, not r...
HDLumpStartBridge.exe	3696	IPv6 unspecified	8733	TCP	Not allowed, n...

Views

Network 1 Mbps



60 Seconds

TCP Connections



Ethernet 2 100%



Local Area Connection* 2 100%



Local Area Connection* 1 100%

