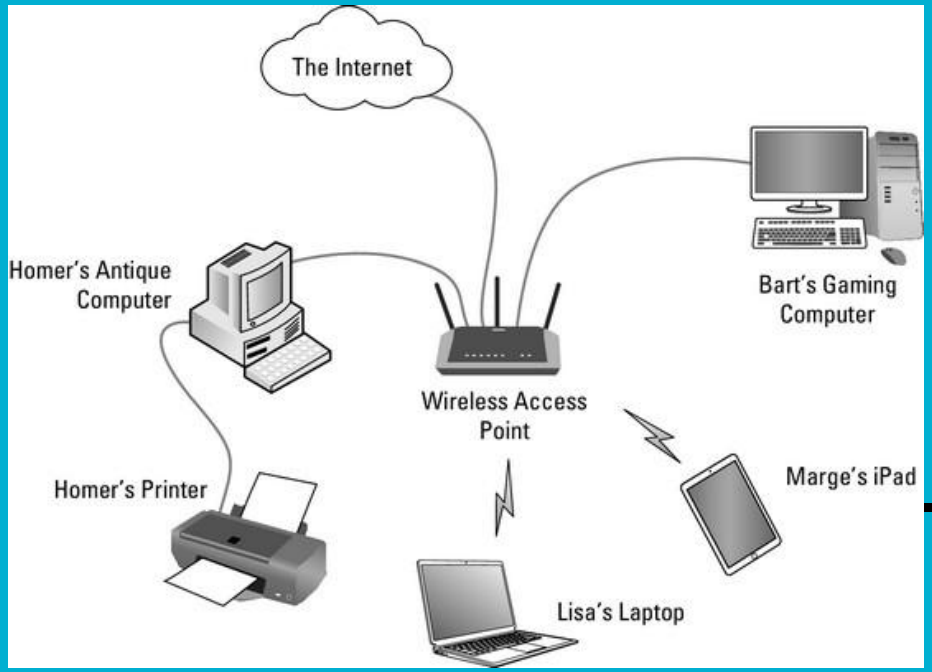
Basics of Networking

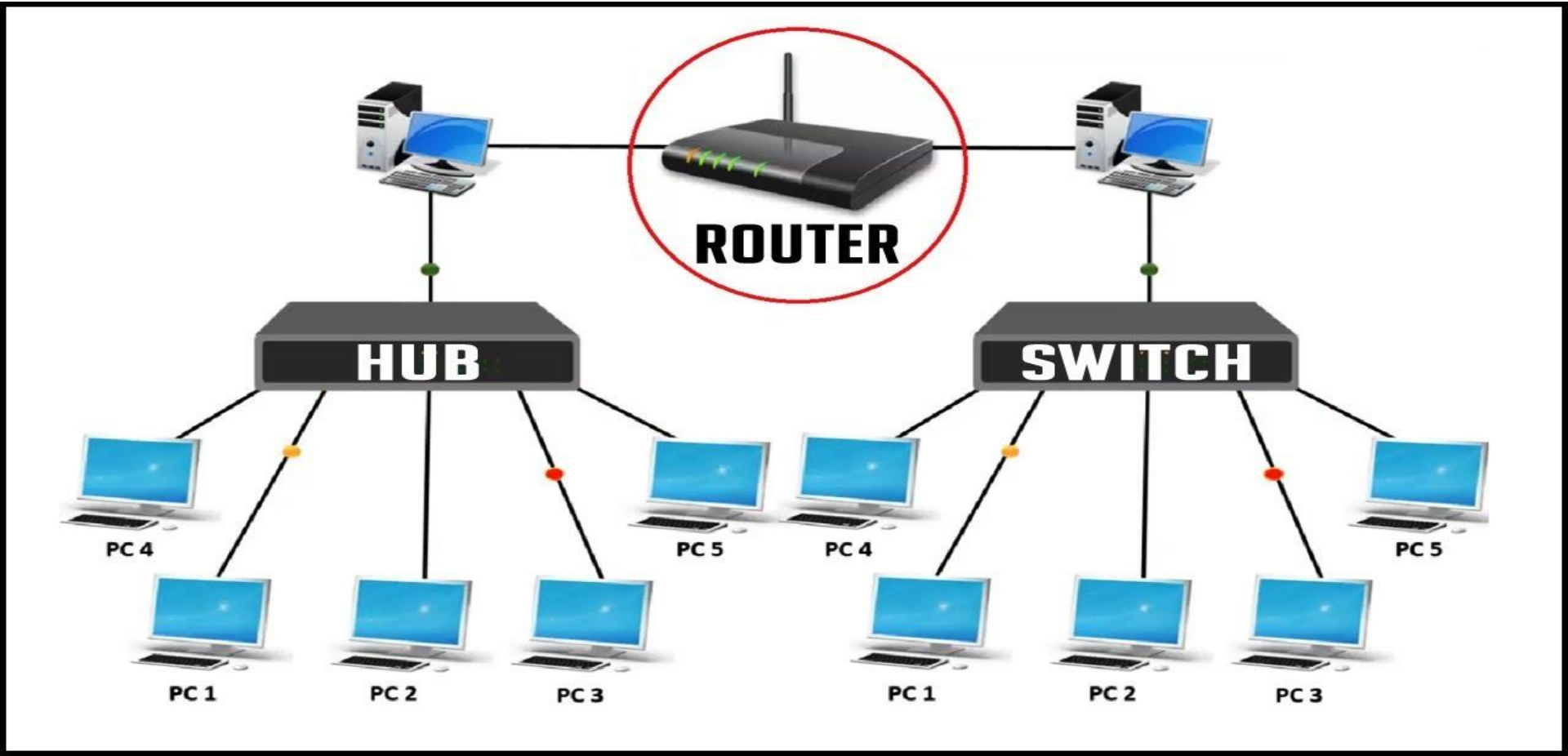
BY Madhu A M

What is Networking



A computer network is a set of computers sharing resources located on or provided by network nodes. The computers use common communication protocols over digital interconnections to communicate with each other.

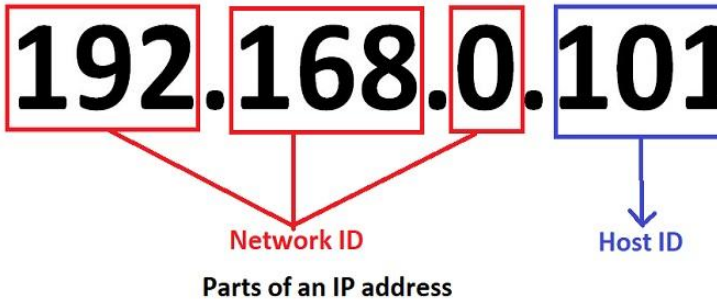
Hub ,Switch , Router



ROUTER	SWITCH	HUB
• Works on Layer-3 Network layer of the OSI Model	• Works on a layer-2(data link layer) of the OSI model	• Works on Layer-1 Physical Layer of OSI Model
• Use IP addresses to send data	• Use MAC addresses to send data	• It's has no storage to send data
• Used in all Networks LAN, MAN, WAN	• Only used in LAN Networks, for small networks	• Used for small Networks LAN as they are small devices
• It is an Intelligent Device	• Also an Intelligent Device	• Not an Intelligent Device
• Used to connect different Networks	• Used to create a Network	• Used to connect multiple devices
• Maintains Routing table to store Information of all network	• Maintains Switching Table to store Information	• Doesn't Maintain any Table fro storing Information
• Reads Packets to send data	• Reads Frames to send data	• It uses electrical signal orbits

What is an IP Address?

- Internet Protocol address is a numerical label assigned to each device (e.g., computer, printer) participating in a computer network that uses the Internet Protocol for communication.
- are binary numbers, but they are usually stored in text files and displayed in human-readable notations, such as 172.16.254.1



Parts of an IP address

Public IP

Public IP address of a system is the IP address which is used to communicate outside the network. Public IP address is basically assigned by the ISP (Internet Service Provider).

Example: 17.5.7.8

Private IP

A private IP address is a range of non-internet facing IP addresses used in an internal network. Private IP addresses are provided by network devices, such as routers, using network address translation.

Example: 192.168.1.10

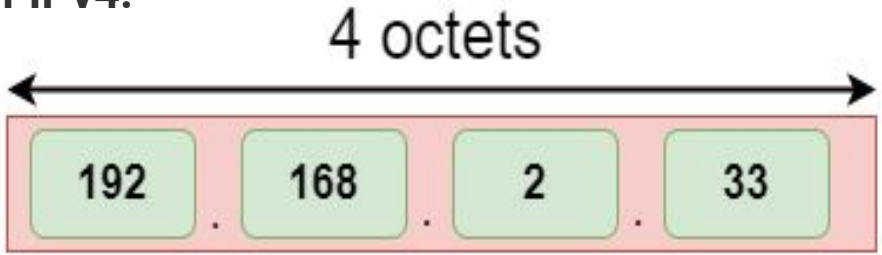
IPv4

IPv4 is a version 4 of IP. It is a current version and the most commonly used IP address. It is a 32-bit address written in four numbers separated by 'dot', i.e., periods. This address is unique for each device.

For example, **66.94.29.13**

Address format

The address format of IPv4:



IPv6

IPv4 produces 4 billion addresses, and the developers think that these addresses are enough, but they were wrong. IPv6 is the next generation of IP addresses. The main difference between IPv4 and IPv6 is the address size of IP addresses. The IPv4 is a 32-bit address, whereas IPv6 is a 128-bit hexadecimal address. IPv6 provides a large address space, and it contains a simple header as compared to IPv4.

Address format