# COMPUTER NETWORKS

A computer network is a group of two or more computers that are linked together.


Networks are usually used to share resources, exchange files or communicate with other users.

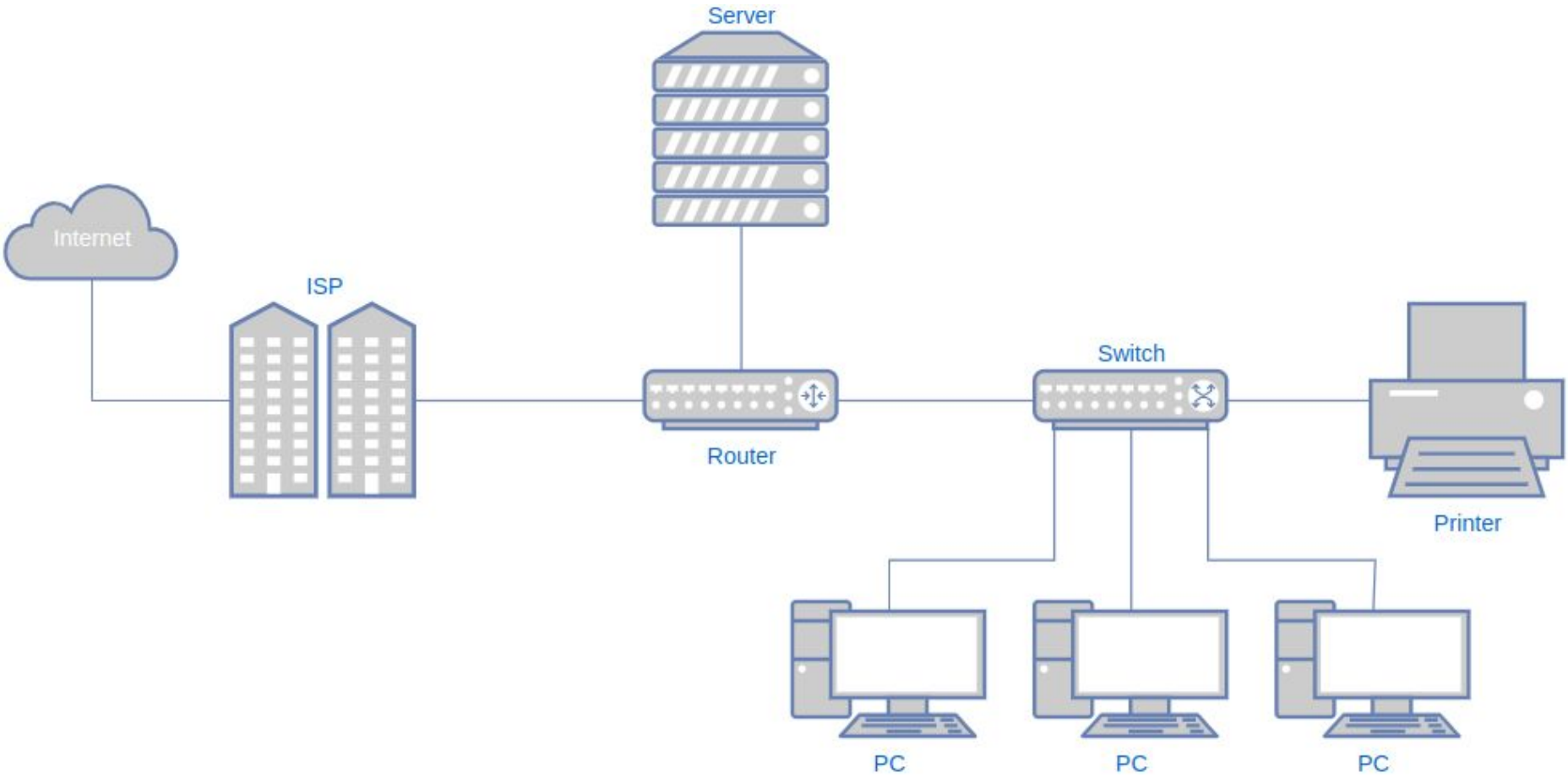
https://en.wikipedia.org/wiki/Computer_network

Devices connected to a computer network can be classified into two types:

- Network node: manages access and communications on a network (hub, switch, wireless access point, router, etc).
- Terminal node: connects to the network to use it (computer, smartphone, tablet, printer, etc).

A transmission medium (network link) is a physical path between the transmitter and the receiver, there are two types:

- Guided: signals being transmitted are directed and confined in a narrow pathway by using physical links (electrical cable and optical fiber).
- Unguided: wireless communication that transmits signal by broadcasting it through the air (Bluetooth and Wi-Fi).


Server
Internet
ISP
Router
Switch
Printer
PC
PC
PC

A local area network (LAN) is a computer network in a small area like a home, office, or school.

Ethernet is a technology that allows devices to communicate and share data over a local area network (LAN).

Wi-Fi is a technology that allows electronic devices to connect to a LAN through a wireless access point (WAP).

A communication protocol refers to the set of rules that computers use to communicate with each other. The protocol defines the signals that the computers will give each other, and other details such as how communication begins and/or ends.

TCP/IP is a suite of protocols that specify communications standards between computers and detail conventions for routing and interconnecting networks. It is used extensively on the Internet and consequently allows research institutions, colleges and universities, government, and industry to communicate with each other.

https://en.wikipedia.org/wiki/Local_area_network

The term host is used to refer to computers or other devices connected to a network that provide or use network services. Network nodes are not considered hosts.

Hosts and some network nodes have an associated network address (IP address) and a domain name (host name).

However an IP address alone is not sufficient for running network applications, as a computer can run multiple applications and/or services. Just as the IP address identifies the computer, the port identifies the application or service running on the computer. For example: in real world a large building contains many apartments, each apartment is assigned an individual number that only has significance to that building, an apartment's postal address is globally unique and can be reached anywhere in the world, a port number is similar to an apartment number, while an IP address is similar to a postal address of the building, when a packet needs to reach an apartment it must first arrive at the building before reaching the apartment.

https://en.wikipedia.org/wiki/IP_address
https://en.wikipedia.org/wiki/Port_(computer_networking)

The client–server model is a distributed application structure that partitions tasks or workloads between the providers of a resource or service, called servers, and service requesters, called clients. Both must be terminal nodes: computer, smartphone, tablet, printer, etc.

A server host runs one or more server programs, which share their resources with clients. A client usually does not share any of its resources, but it requests content or service from a server. Clients, therefore, initiate communication sessions with servers, which await incoming requests.

Often clients and servers communicate over a computer network on separate hardware, but both client and server may reside in the same system.

Examples of computer applications that use the client–server model are World Wide Web, email, and network printing.

https://en.wikipedia.org/wiki/Client%E2%80%93server_model

# Web Client-Server Communication