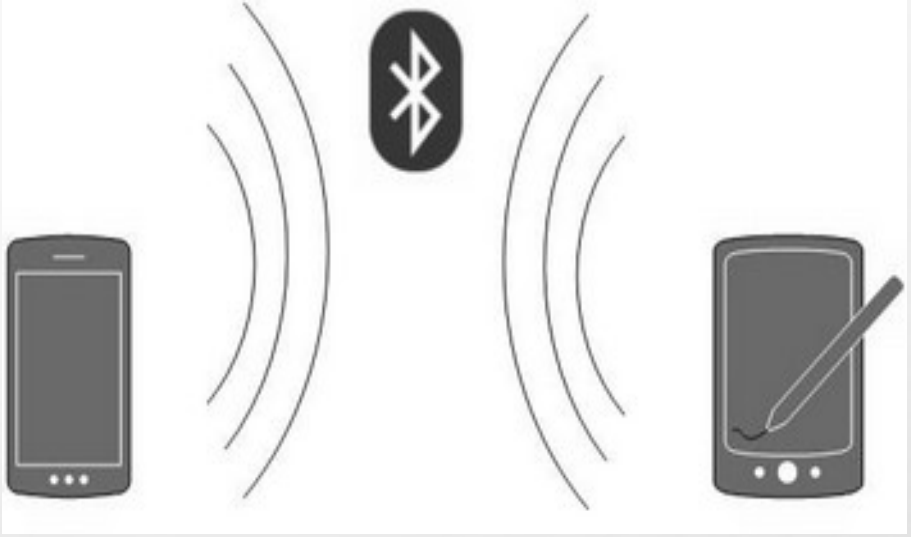
Introduction

- A network can be as small as distance between your mobile phone and its Bluetooth headphone and as large as the internet itself, covering the whole geographical world.
- Types of Computer Network:

1. PAN
2. LAN
3. MAN
4. WAN
5. VLAN

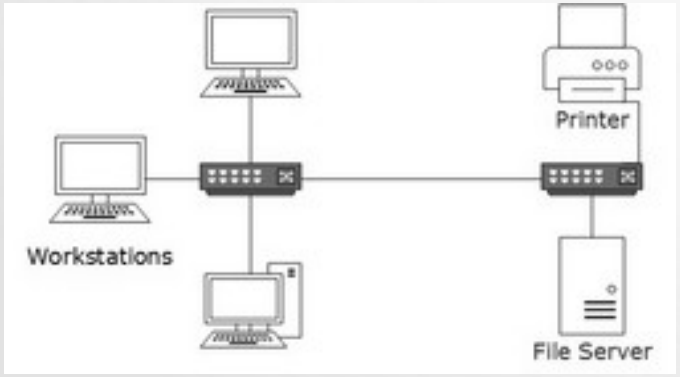
PAN

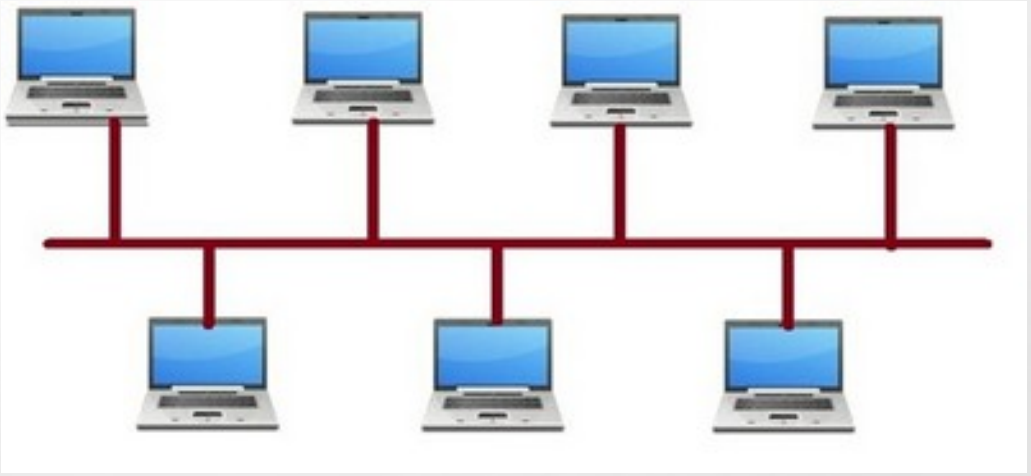
- A Personal Area Network (PAN) is smallest network which is very personal to a user.
- This may include Bluetooth enabled devices or infra-red enabled devices. PAN has connectivity range up to 10 meters.
- PAN may include wireless computer keyboard and mouse, Bluetooth enabled headphones, wireless printers, and TV remotes.
- For example, Piconet is Bluetooth-enabled Personal Area Network which may contain up to 8 devices connected together in a master-slave fashion.



LAN

- LAN (local area network) is a group of computers and network devices connected together, usually within the same building.
- **LAN broadcast their message to all the hosts on that LAN.**
- The main reason for designing a LAN is to share resources such as disks, printers, programs and data.
- LAN uses star, bus or ring topology.
- The bus topology is popular in the **Ethernet LANs and Token Bus LANs.**
- Ring topology is popular in **Token Ring,** modified version is FDDI – Fiber Distributed Data Interface.



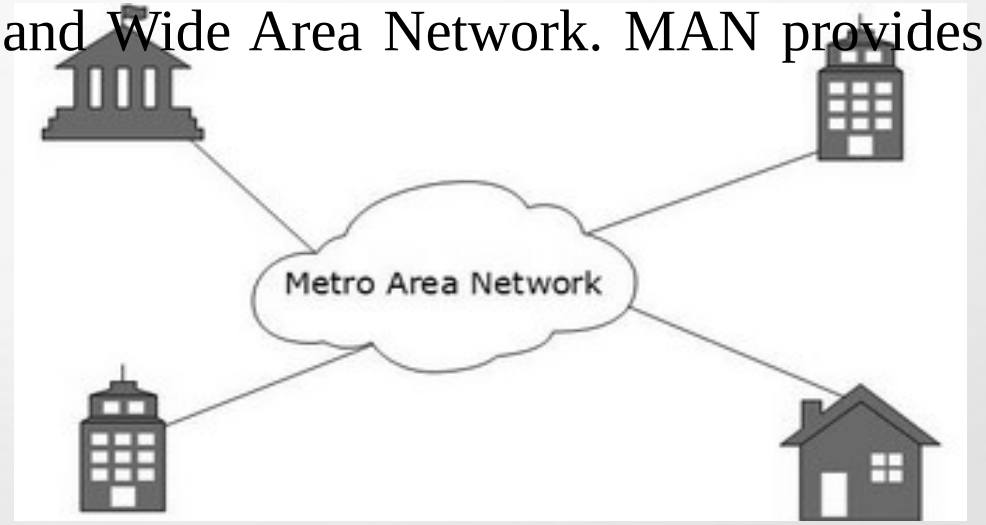


LAN

- While transmission on LAN address in the packet or frame enables destination host to receive that packet, while other hosts ignores it.
- Packets are transmitted on network through **static or dynamic method.**
- In **static** method **each host is given a fixed time slot to send a frame**. Similar to **TDM** – which means if a host does not have anything to send than that time slot is wasted.
- In **dynamic** method, a host can send frame any time. Thus if two hosts send a frame at the same time the two frames could collide(accident) with each other. To solve this problem there is a protocol called **MAC – Media Access Control** which performs this job & decides which node can access medium and when.
- Dynamic method is further divided into types:
  - Centralized: there is single entity, for example- a bus – which decides who can send data next. Master-slave method. A host want to send data have to request this unit and alternatively master asks the slave whether any one of them to send or not.
  - Decentralized: does not require any external master. This method is more efficient and more popular.

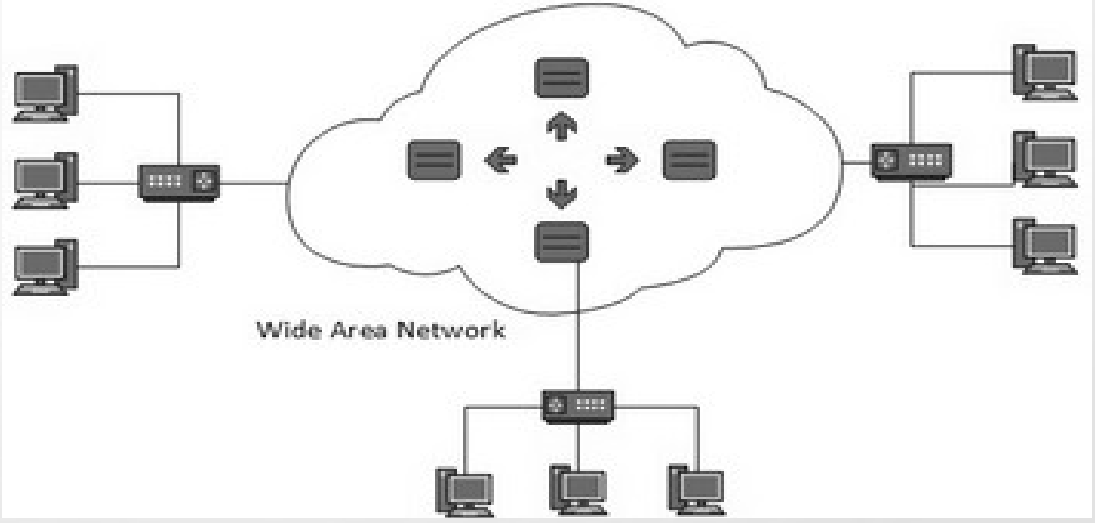
MAN

- The Metropolitan Area Network (MAN) generally expands throughout a city such as cable TV network.
- It can be in the form of Ethernet, Token-ring, ATM, or Fiber Distributed Data Interface (FDDI).
- Metro Ethernet is a service which is provided by ISPs. This service enables its users to expand their Local Area Networks
- For example, MAN can help an organization to connect all of its offices in a city.
- Backbone of MAN is high-capacity and high-speed fiber optics. MAN works in between Local Area Network and Wide Area Network. MAN provides uplink for LANs to WANs or internet.



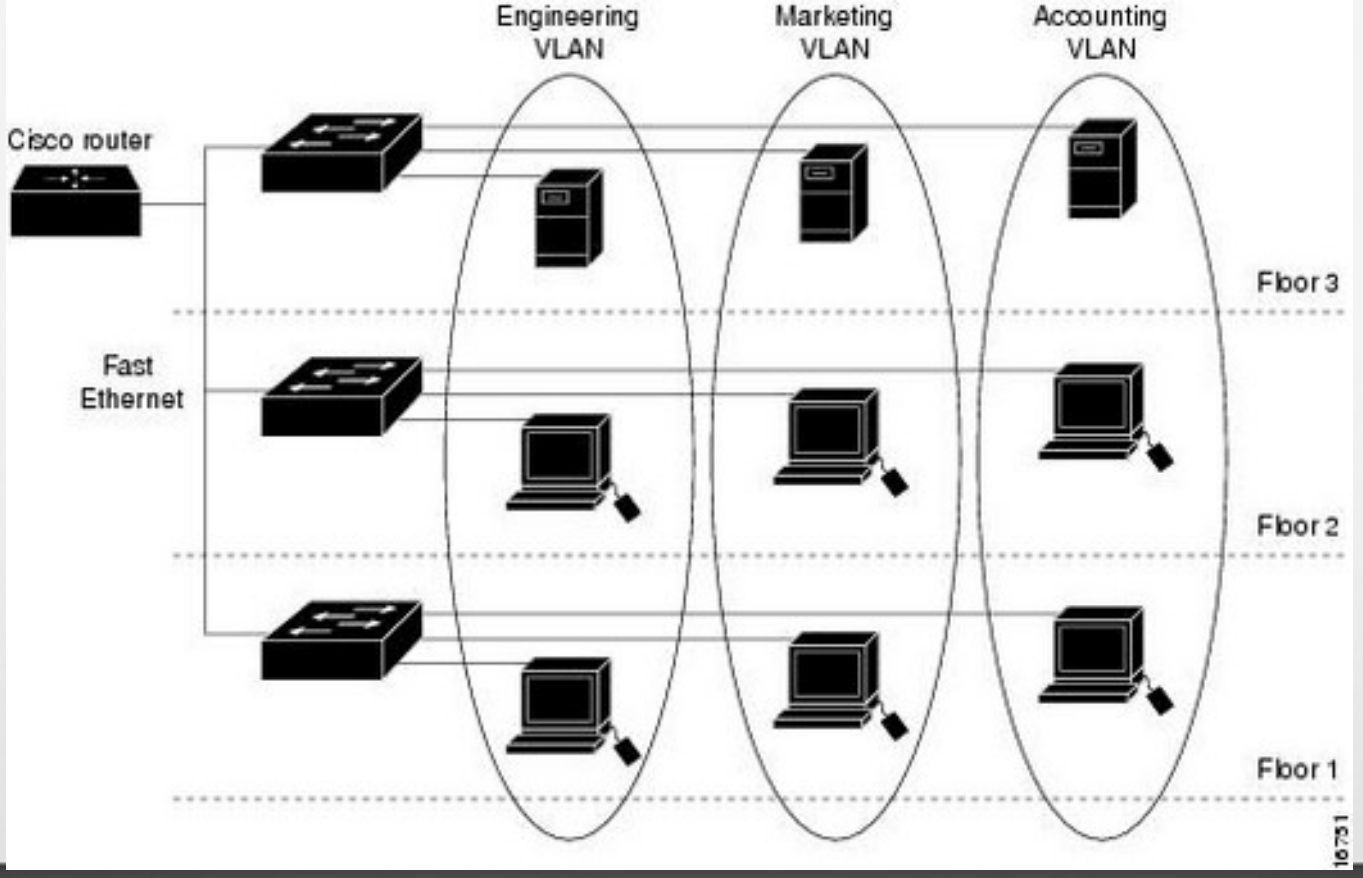
WAN

- As the name suggests, the Wide Area Network (WAN) covers a wide area which may span across provinces and even a whole country.
- Generally, telecommunication networks are Wide Area Network. These networks provide connectivity to MANs and LANs.
- Since they are equipped with very high speed backbone, WANs use very expensive network equipment.
- WAN may use advanced technologies such as Asynchronous Transfer Mode (ATM), Frame Relay, and Synchronous Optical Network (SONET). WAN may be managed by multiple administration.



VLAN

- A VLAN is a group of devices on one or more LANs that are configured to communicate as if they were attached to the same wire, when in fact they are located on a number of different LAN segments. Because VLANs are based on logical instead of physical connections, they are extremely flexible.



LAN V/S VLAN

- LAN stands for Local Area Network is a group of network devices which allow the communication between connected devices. On the other hand VLAN stands for Virtual Local Area Network which is used to enhance the performance of LANs.

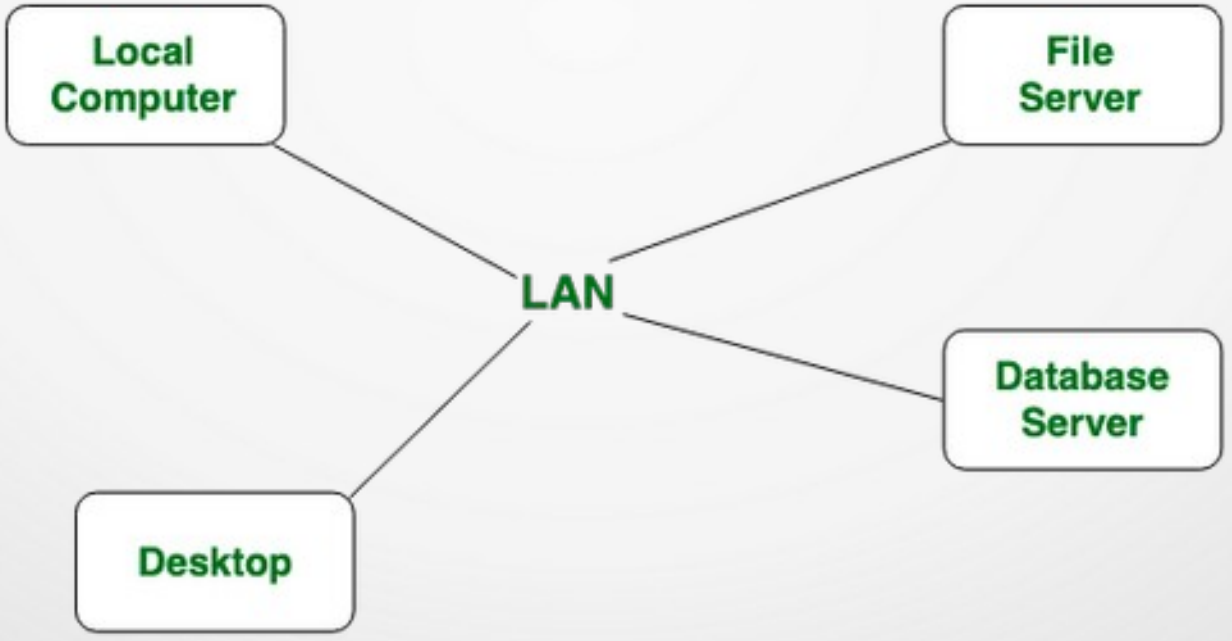
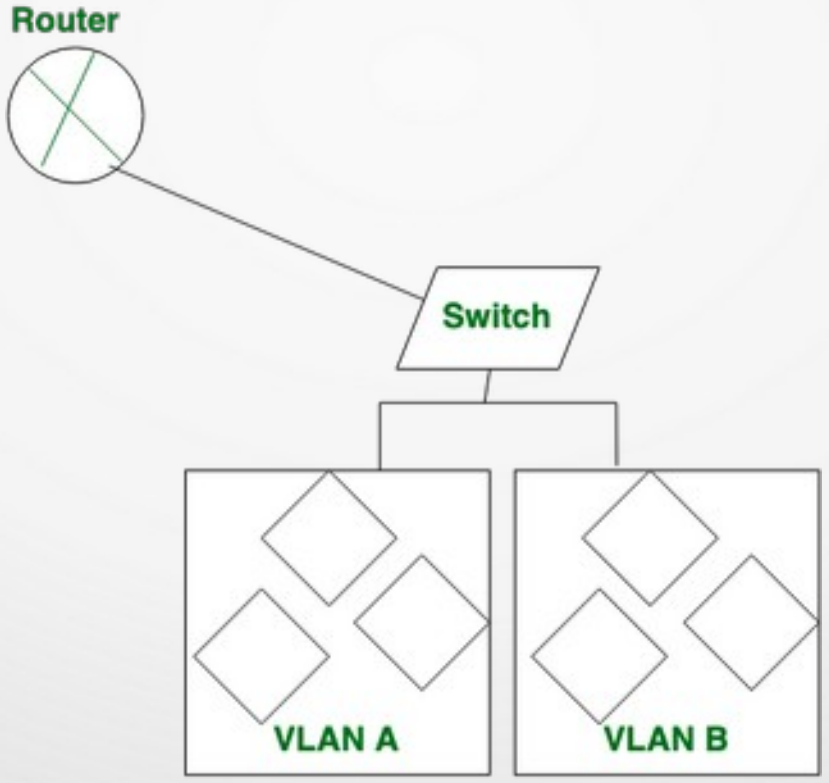


Figure of LAN

LAN V/S VLAN

- The main difference between LAN and VLAN is that LAN work on single broadcast domain on the other hand VLAN works on multiple broadcast domain and In local are network, the Packet is advertised to each device while In virtual local are network, packet is send to specific broadcast domain.



LAN V/S VLAN

LAN	VLAN
LAN stands for Local Area Network.	VLAN stands for Virtual Local Area Network.
The cost of Local Area Network is high.	The cost of Virtual Local Area Network is less.
The devices which are used in LAN are: Hubs, Routers and switch.	The devices which are used in VLAN are: Bridges and switch.
In local are network, the Packet is advertised to each device.	In virtual local are network, packet is send to specific broadcast domain.
Local are network is less efficient than virtual local are network.	Virtual local are network is greater efficient than local are network.