Network scale

Inter-processor distance	Processors located in same	Example
1 m	Square meter	Personal area network
10 m	Room	Local area network
100 m	Building	Local area network
1 km	Campus	Local area network
10 km	City	Metropolitan area network
100 km	Country	Wide area network
1000 km	Continent	Wide area network
10000 km	Planet	The Internet

Local area network

▶ LAN can classified into:
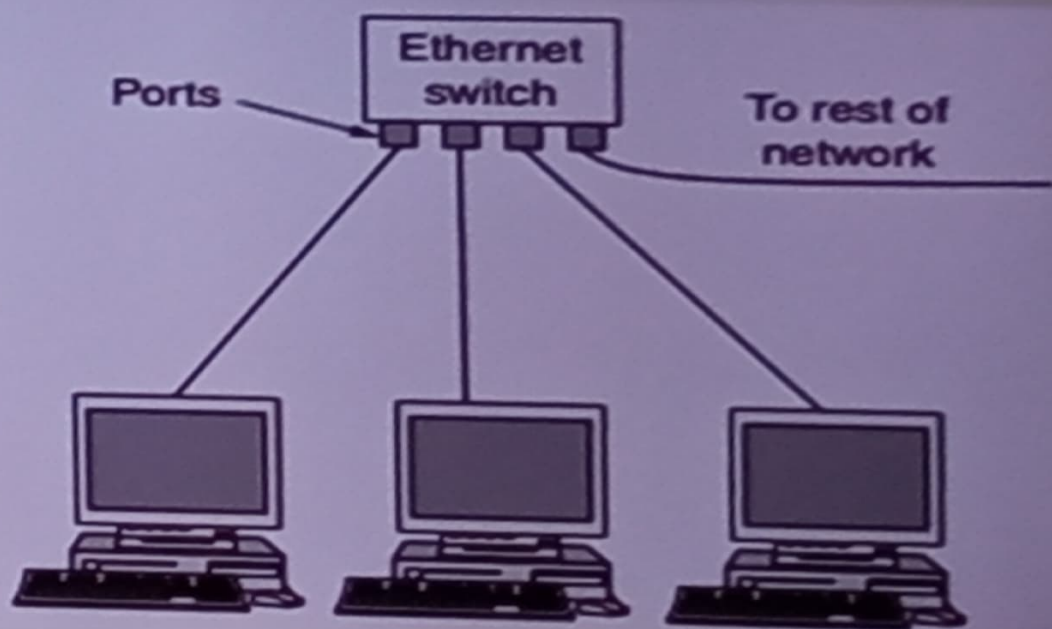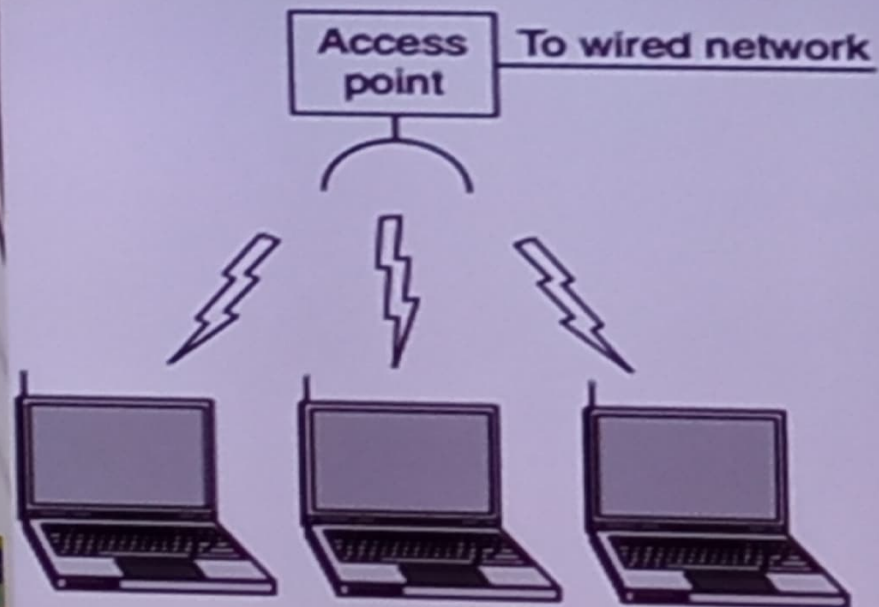
Local area network

▶LAN (wired or wireless) can classified into:

    ▶Static allocation

    ▶Dynamic allocation

▶Large physical LAN can be divided into two smaller logical LANs
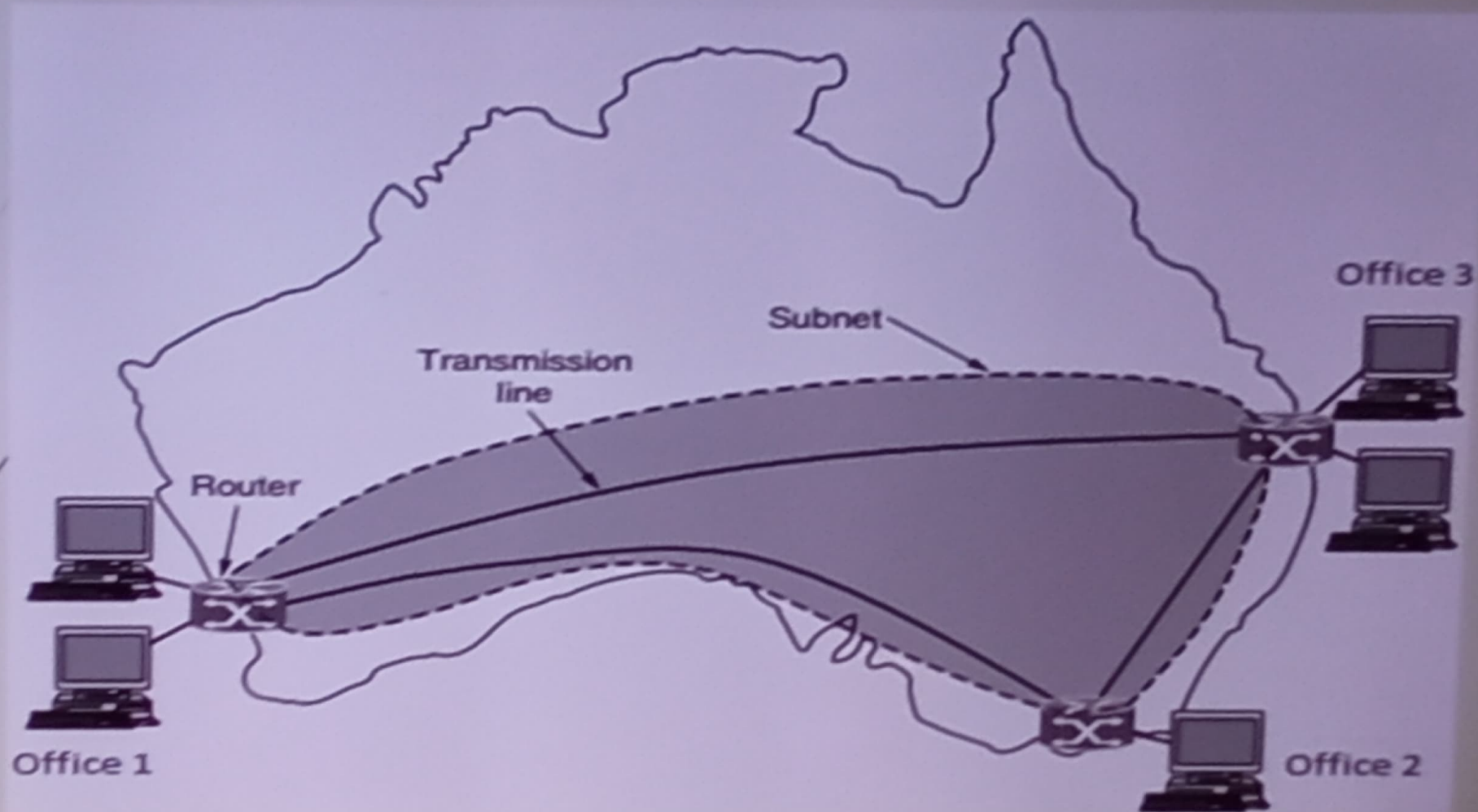
    ▶Each of them called Virtual LAN (VLAN).

Metropolitan area network

► MAN covers a city.

► Describe the interconnection of several LANs.

Wide area network

WANs can be classified into:

Wired WANs

Wireless WANs

Wired WAN example

Topics covered

➡️➡️1.1 What is computer network?

➡️ 1.2 Network hardware

➡️**1.3 Network configuration**

Network configuration

➡ All networks have:

    ➡ Servers.

    ➡ Clients.

    ➡ Media.

    ➡ Shared data.

    ➡ Shared printers and other peripherals.
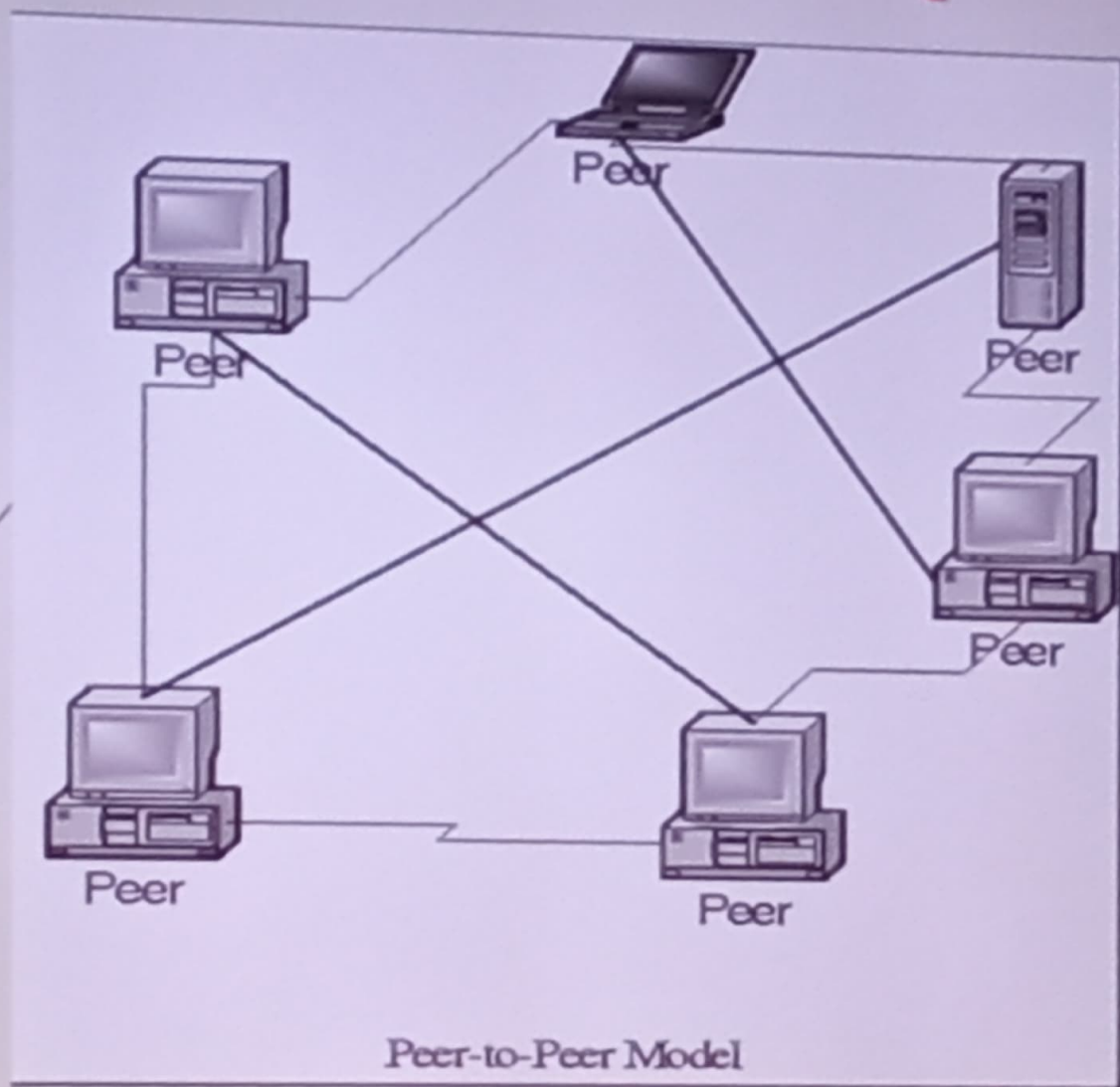
    ➡ Resources.

Network configuration

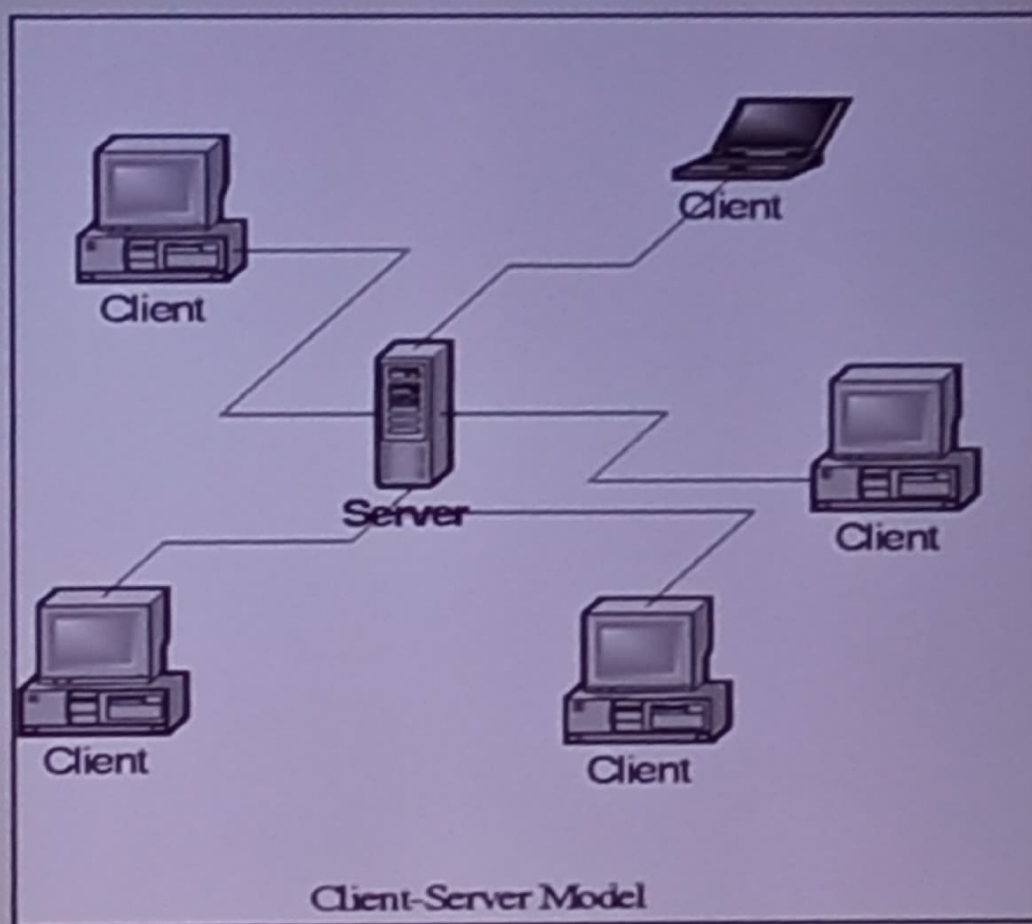▶ Networks can classified into:

▶ Peer-to-peer

▶ Client-server

Peer-to-peer

Peer-to-Peer Model

Client-server

Client-Server Model

Comparison of network types

Consideration	Peer-to-Peer Network	Server-Based Network
Size	Good for 10 or fewer computers	Limited only by server and network hardware
Security	Security established by the user of each computer	Extensive and consistent resource and user security
Administration	Individual users responsible for their own administration. no full-time administrator necessary	Centrally located for network control. requires at least one experience administrator
Cost	Less expensive	More expensive that p2p
Operating systems	built into many OSs, so no additional software is required to set up this network	Advanced server OSs are required to set up this network.
Availability	Service availability does not depend on one machine and does not require the development of any high availability solution.	Service availability depend on server. This requires the development of high availability solution.

5- Network Types

- **LAN** (Local Area Network):
  - ✓ It is a group of network components that work within small area.
  - ✓ It characterized by high data speeds (up to 10Gbps) using: Ethernet, Fast Ethernet, GigaEthernet, 10Gigabit Ethernet and ATM.

- **MAN** (Metropolitan Area Network):
  - ✓ It is a group of LANs that are interconnected within small area.
  - ✓ It characterized by very high data speeds (up to 40Gbps) using: Metro Ethernet, ATM over SONET and SDH.

- **WAN** (Wide Area Network):
  - ✓ It is a group of LANs that are interconnected within large area
  - ✓ It characterized by slow data speeds (up to 155Mbps & 622Mbps using: analog dial-up, digital dial-up (ISDN), leased lines, X.25, DSL, Frame-Relay & ATM.

Network Types

- Define Wide Area Networks (WANs)

    - LANs separated by geographic distance are connected by a
    network known as a Wide Area Network (WAN)