Classification of Computer Networks

Mr. Sumedrao M. Gaikwad
Department of Computer Studies (MCA)
Vivekanand College, Kolhapur

12 July 2025

Agenda

Introduction to Computer Networks

A computer network is a set of interconnected computers and devices that facilitate communication and resource sharing.

Key benefits:

- Resource sharing
- Data communication
- Collaboration

Classification by Geographical Spread

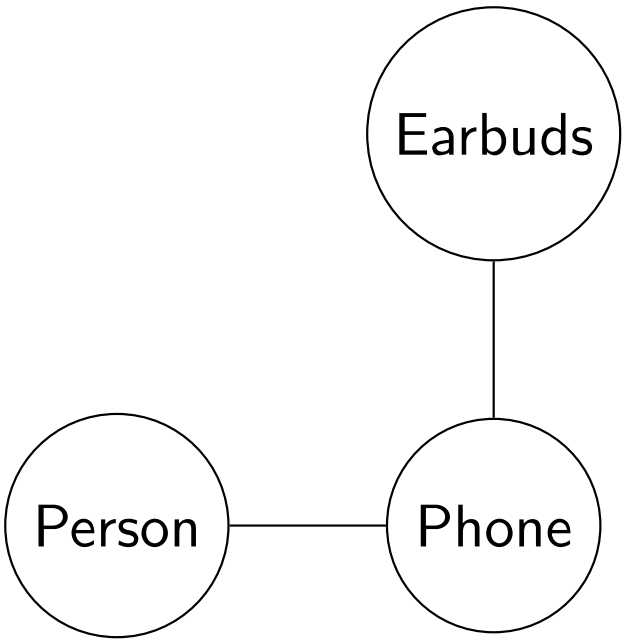
Networks are classified based on the area they cover:

- Personal Area Network (PAN)
- Local Area Network (LAN)
- Metropolitan Area Network (MAN)
- Wide Area Network (WAN)

Personal Area Network (PAN)

Covers a small area, typically within 10 meters.

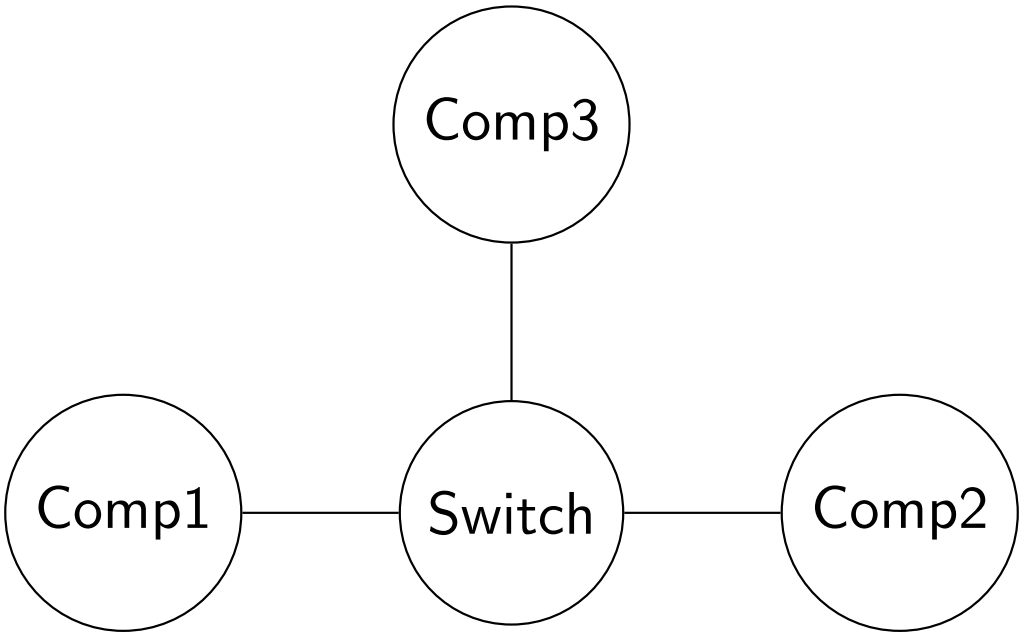
Examples: Bluetooth connections between devices.



Local Area Network (LAN)

Covers a building or campus, up to a few kilometers.

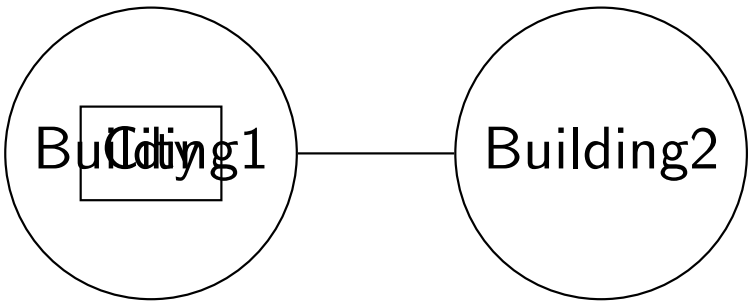
Examples: Home Wi-Fi, office networks.



Metropolitan Area Network (MAN)

Covers a city or metropolitan area, 5-50 km.

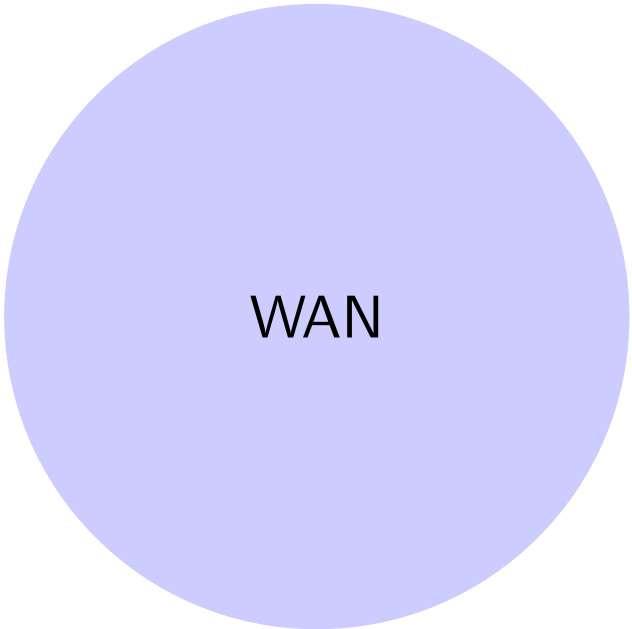
Examples: City-wide networks.



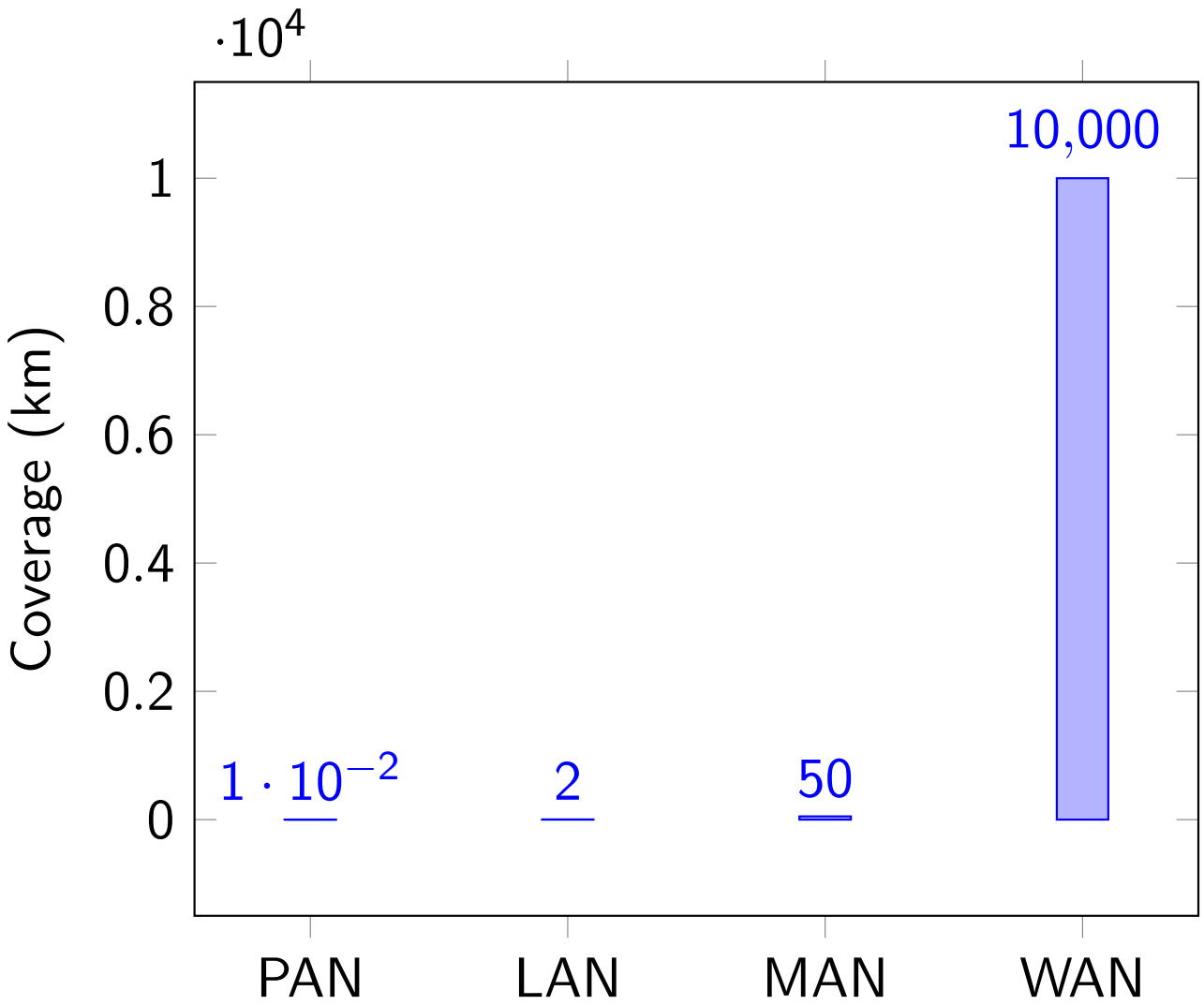
Wide Area Network (WAN)

Covers large geographical areas, countries or continents.

Examples: The Internet.



Comparison of Geographical Networks



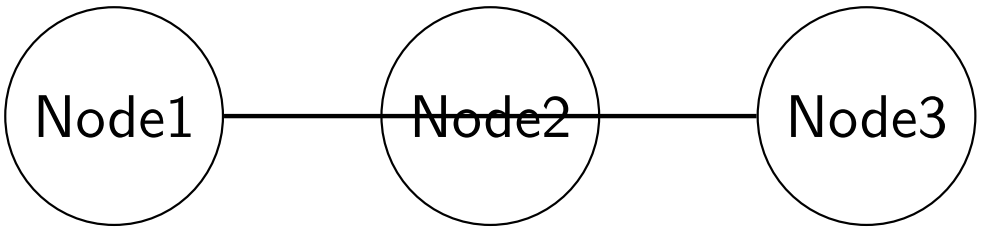
Classification by Topology

Topology refers to the physical or logical arrangement of nodes.
Common topologies:

- Bus
- Star
- Ring
- Mesh

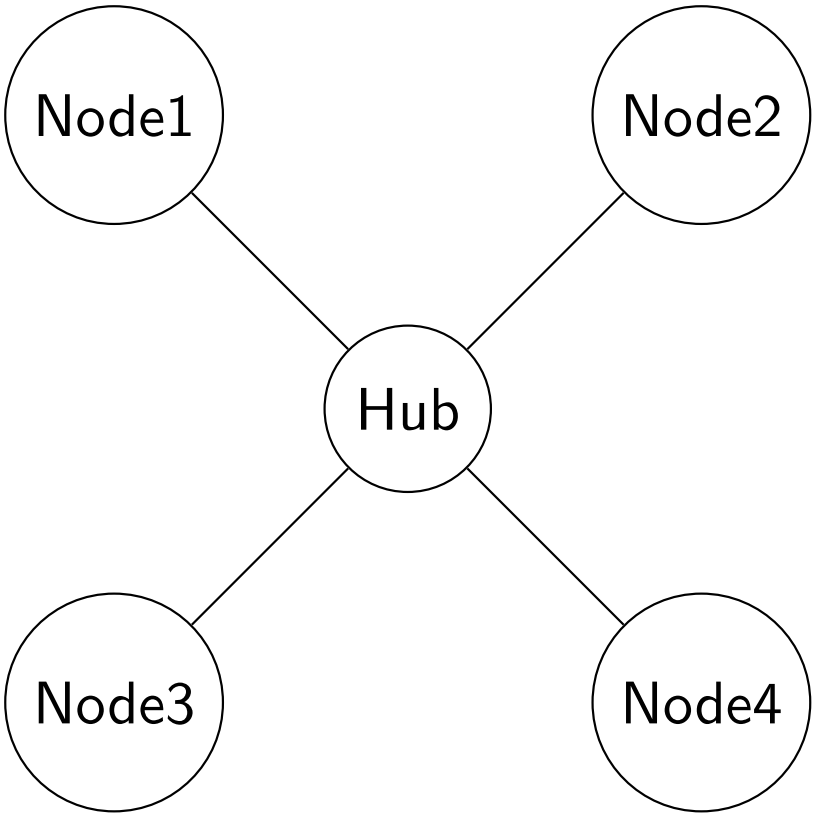
Bus Topology

All devices connected to a single cable.



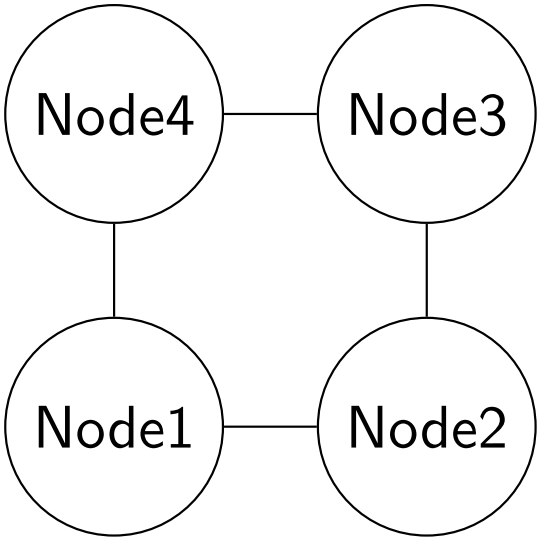
Star Topology

All devices connected to a central hub.



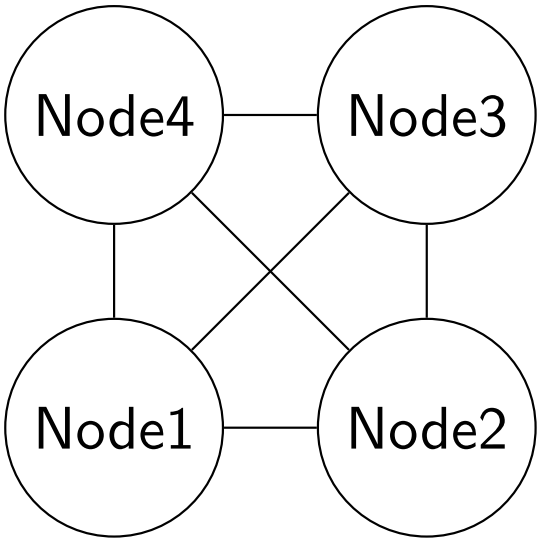
Ring Topology

Devices connected in a circular fashion.



Mesh Topology

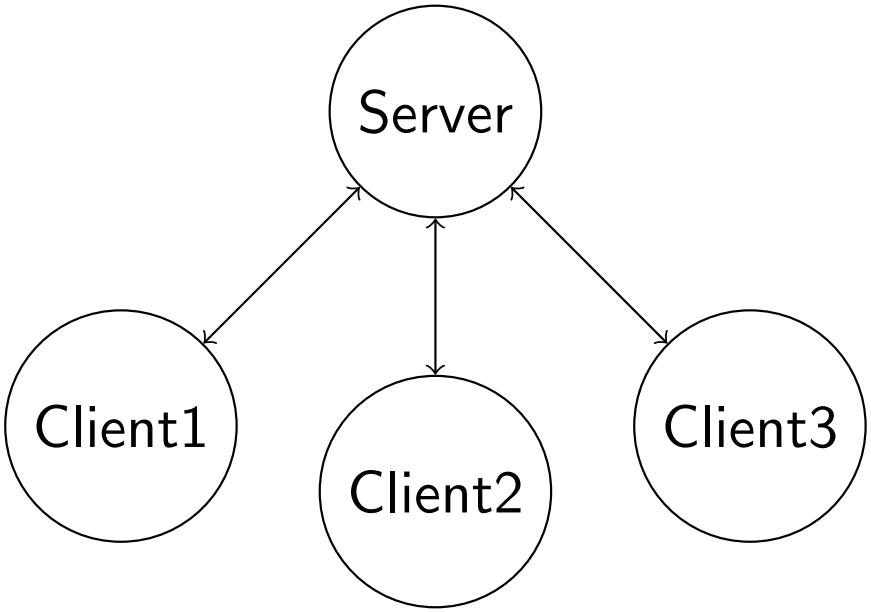
Every device connected to every other device.



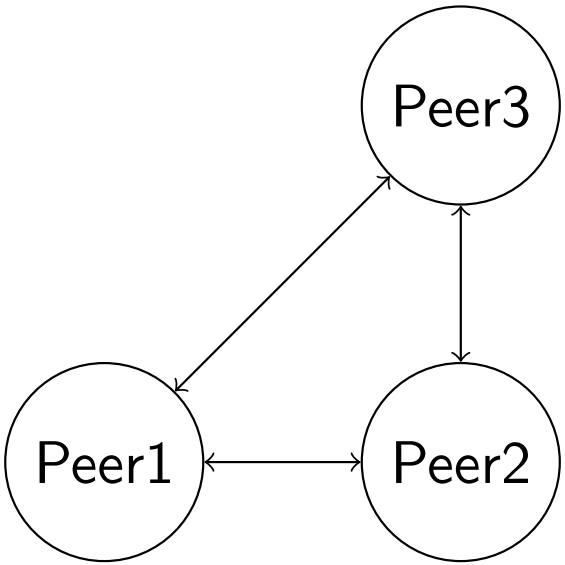
Classification by Architecture

- Client-Server: Central server provides resources to clients.
- Peer-to-Peer: All devices are equal, share resources directly.

Client-Server Architecture



Peer-to-Peer Architecture



Classification by Ownership

- Private: Owned by a single entity, restricted access.
- Public: Open to the public.
- Hybrid: Combination of private and public.

Conclusion

Computer networks are classified in various ways to suit different needs. Understanding these classifications helps in designing efficient networks.

References

- GeeksforGeeks: Types of Computer Networks
- Simplilearn: Different Types of Networks
- Medium: Network Classification