

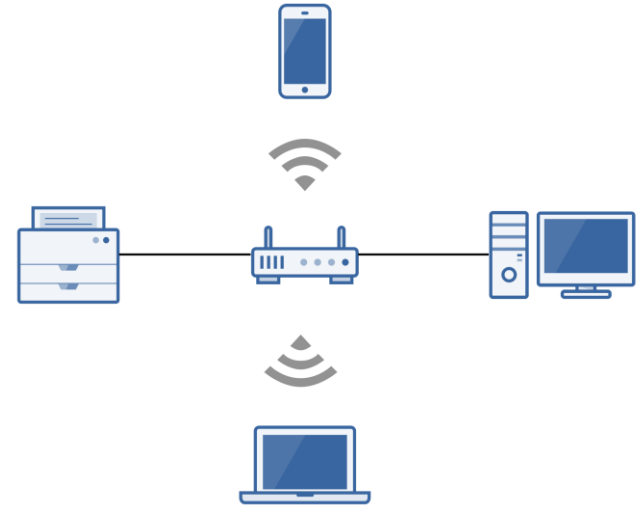
Personal Area Network (PAN)

- Ultra-small networks used for personal use to share data from one device to another.
- Can be wired (PAN) or wireless (WPAN):
 - USB
 - Bluetooth
 - NFC
 - ANT+
- Examples:
 - Smart Phone to Laptop
 - Smart Watch to Smart Phone
 - Smart Phone Hands-Free Car Calling
 - Heart Rate Monitor to Smart Phone



Local Area Network (LAN)

- A computer network within a small geographical area, such as a single room, building or group of buildings.
- Considered to be self-contained:
 - All devices are directly connected via cables and/or short-range wireless technology.
 - Doesn't require a leased telecommunications line from an Internet Service Provider (ISP).
- Examples:
 - Home Network
 - Small Business or Office Network



Wireless Local Area Network (WLAN)

- A LAN that's dependent on wireless connectivity or one that extends a traditional wired LAN to a wireless LAN.
- Most home networks are WLANs.



Campus Area Network (CAN)

- A computer network of multiple interconnected LANs in a limited geographical area, such as a corporate business park, government agency, or university campus.
- Typically owned or used by a single entity.



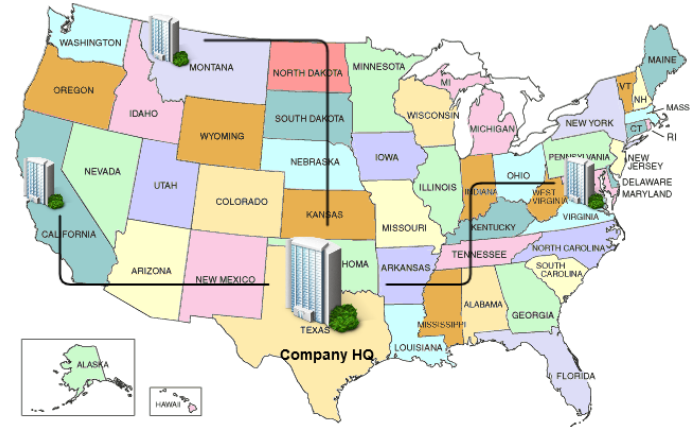
Metropolitan Area Network (MAN)

- A computer network that interconnects users with computer resources in a city.
- Larger than a campus area network, but smaller than a wide area network.



Wide Area Network (WAN)

- A computer network that extends over a large geographical distance, typically multiple cities and countries.
- WANs connect geographically distant LANs.
- Typically use leased telecommunications lines from ISPs.
- Examples:
 - The Internet
 - Corporate Offices in Different States



Some Basic Networking Rules

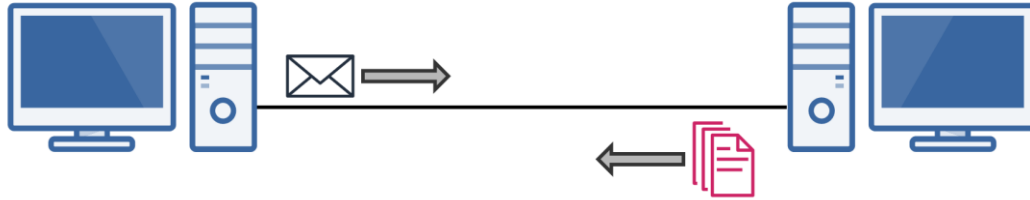
- The computers in a network must use the same procedures for sending and receiving data. We call these **communication protocols**.
- Data must be delivered uncorrupted. If it is corrupted, it's useless. (There are Exceptions)
- Computers in a network must be capable of determining the **origin** and **destination** of a piece of information, i.e., its **IP** and **Mac Address**.

What is a Network?



- In its simplest form, a network is nothing more than “two connected computers sharing resources with one another.”
- It is composed of two main aspects:
 - **Physical Connection** (wires, cables, wireless media)
 - **Logical Connection** (data transporting across the physical media)

Computer Networking Protocols



- Computers communicate with each other with network protocols.
- Protocols are rules governing how machines exchange data and enable effective communication.
- **Some Everyday Examples**
 - When you call somebody, you pick up the phone, ensure there is a dial tone, and if there is, you dial the number.
 - When you drive your car, you obey the rules of the road.

Protocols Continued

- **Physical Protocols:** describe the medium (wiring), the connections (RJ-45 port), and the signal (voltage level on a wire).
- **Logical Protocols:** software controlling how and when data is sent and received to computers, supporting physical protocols.
- Computer networks depend on many different types of protocols in order to work properly.
- Example Common TCP/IP Suite of Protocols:
 - **Web Communication:** HTTP
 - **E-mail:** POP3, SMTP, IMAP
 - **File Transfers:** FTP