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)

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***.

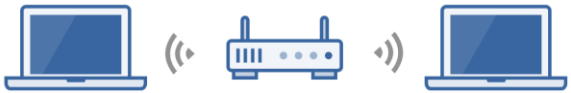
Types of Computer Networks (by Size)

- Personal Area Network (PAN)
- Local Area Network (LAN)
- Wireless Local Area Network (WLAN)
- Campus Area Network (CAN)
- Metropolitan Area Network (MAN)
- Wide Area Network (WAN)

Network Architecture

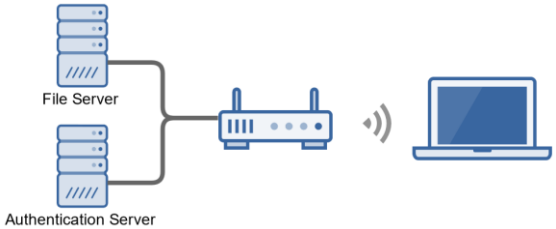
Peer-to-Peer

- All computers on the network are peers
  - No dedicated servers
  - There's no centralized control over shared resources
- Any device can share its resources as it pleases
- All computers can act as either a client or a server
- Easy to set-up, and common in homes and small businesses



Client-Server

- The network is composed of client and servers
  - Servers provide resources
  - Clients receive resources
- Servers provide centralized control over network resources (files, printers, etc.)
- Centralizes user accounts, security, and access controls to simplify network administration
- More difficult to setup and requires an IT administrator



Why Build a Computer Network?

- Before computer networks, people sent and received information by hand, using the postal service. This is slow and can be unreliable.
- Computer networks enable faster, more efficient modes of communication, i.e., email, video conferencing, etc.
- Computer networks and the sharing of electronic data encourage the use of standard policies and procedures.
- Computer networks provide backup and recovery support for our data, i.e., redundancy.
- Computer networks lead to cost savings.