LAN vs. WAN
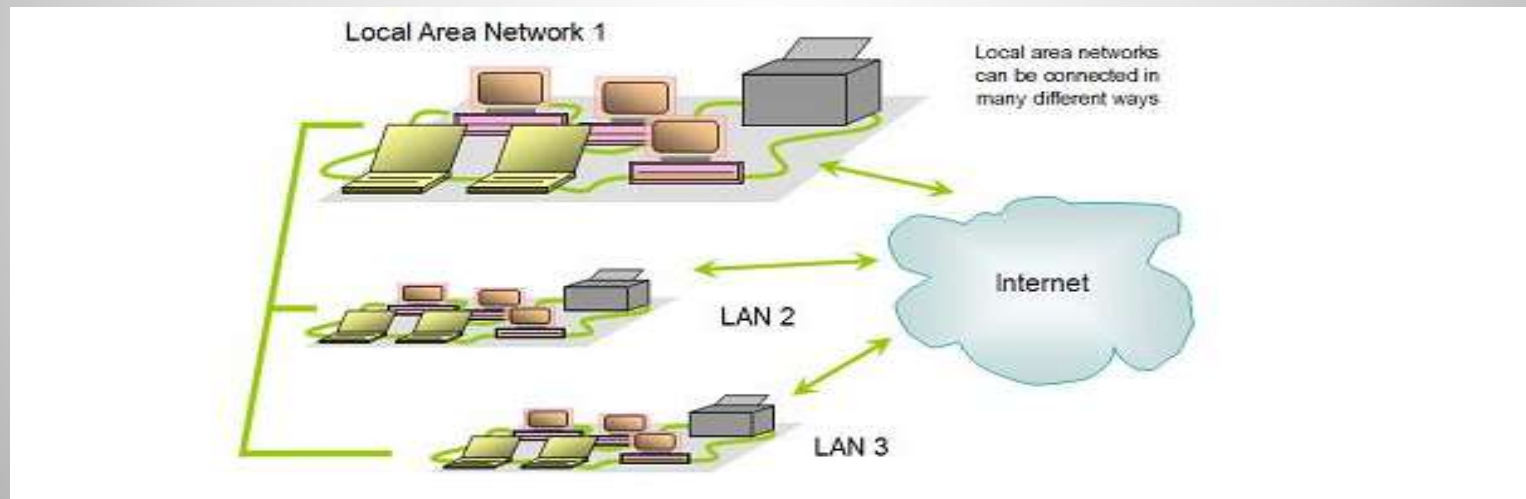
Networking Basics
8th Grade

Networks

- Advantages:
  - Enable people to work together
  - Reduce costs from sharing networked hardware and software
  - Increase productivity by sharing data
  - Provide access to a wide range of services and specialized peripheral devices

- Disadvantages:
  - Unavailable resources when network malfunctions
  - More vulnerable to unauthorized access than stand alone computers
  - Susceptible to an increased number of worms, Trojan horses, and blended threats

- Network of computers located in a single location, like a home, school, or office building
- Can share connection with other LANS and with the internet

Local Area Network 1

Local area networks can be connected in many different ways
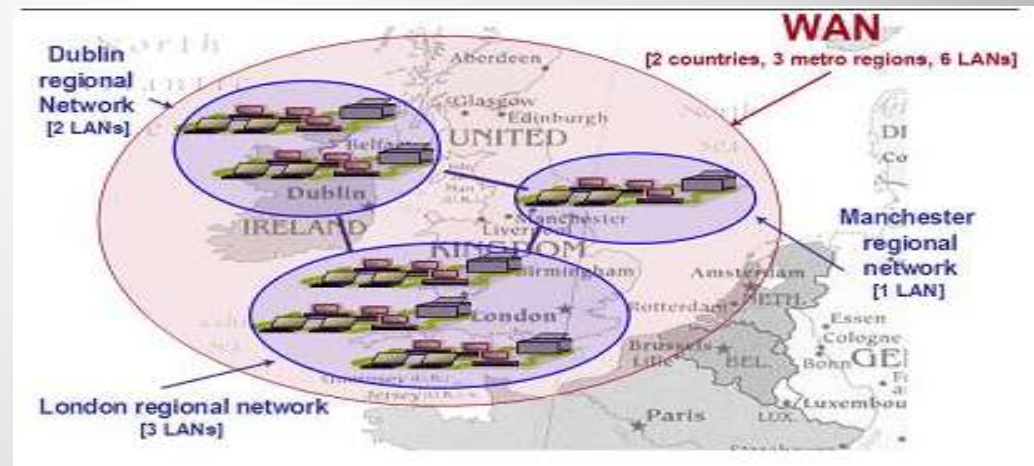
LAN 2

LAN 3

Internet

Local Area Network (LAN)

- Local area network
- Relatively limited in size
- Computers connected in small areas
- Same office
- True peer-to-peer
- Can support limited number of nodes

Characteristics of a LAN?

- Network over a large area like a city, a country, or multiple countries
  - Connects multiple LANs together
- Generally utilizes different and much more expensive networking equipment than LANs
- The internet is the most popular WAN

Wide Area Network (WAN)

- Campus Area Network – limited geographic area
- Metropolitan Area Network – towns and cities
- Home Area Network – home setups
- Global Area Network – uses satellites to link networks
- Storage Area Network – stores large amounts of data

Types of WANs

Wiring in Computer Networks

There are many different wires and cables that are used to create a network

- Ethernet cable - often used to connect computers

- Phone or cable TV lines – connect LAN to an **internet service provider (ISP)**

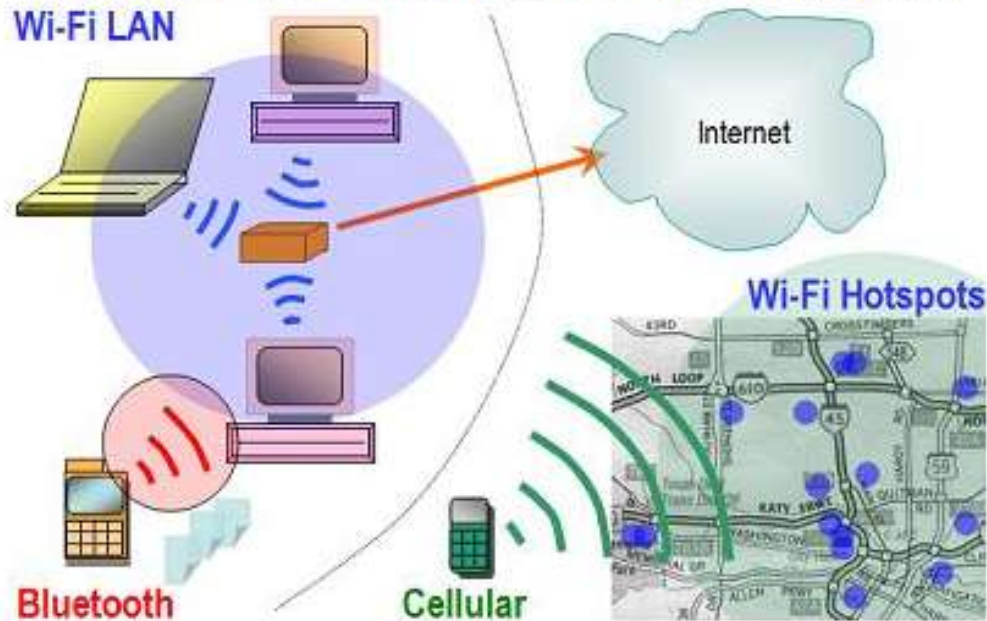- Fiber optic cable – used by much of the internet to send data quickly over long distances underground

- A wired network uses cables to connect network devices
- Wired networks are fast, secure, and simple to configure
- Devices tethered to cables have limited mobility

Wired Network

- A network is considered wireless when data is transmitted from one device to another without cables or wires
- Tend to be slower than wired networks
- Have more security issues
- Common wireless terms:
  - **Wi-Fi** - common standard technology for building home networks and other LANs
  - **Hotspots** – many businesses use Wi-Fi technology to allow the public an access point to a wireless network
  - **Bluetooth** – allows handhelds, cell phones, and other peripherals to communicate over short ranges

Wireless Networking

Wireless Networking…Cont'd