

Telecommunications and Networking

- I. What is a computer network?
 - A. System that connects computers and other devices via channels so data can be transmitted among them
 - B. Types of networks
 1. Local Area Network (LAN)
 - a) Connects two or more devices in close proximity
 2. Wide Area Network (WAN)
 - a) connects many devices over a wide geographic area
 3. Enterprise Network
 - a) Connects multiple LANs or WANs together
 4. Boundaries
 - a) Intranet- secure network inside an organization that can use internet infrastructure
 - (1) Virtual Private Networking (VPN) creates a private network connecting two computers together; strong security
 - (a) A method, not a type of network
 - (b) Goes through the internet
 - (c) Intranets can be accessed via VPN, but don't have to be
 - b) Extranet- parts of intranets of multiple companies/locations together
 - C. Fundamentals
 1. IP address (Internet Protocol) uniquely identifies computers on network
 - a) IP addresses map to domains where resources are located
 - b) What's my IP address?
 - c) What happens if I "visit" my own IP address?
 2. Processing
 - a) Client/Server computer
 - b) Peer-to-peer computing
- II. Network Fundamentals
 - A. Wireline Media Channels
 1. Bandwidth
 - a) Narrowband
 - (1) Twisted pair wire
 - b) Broadband
 - (1) Coaxial Cables
 - (2) Fiber Optic
 2. Wireless LANs (Wi-Fi)
 - a) Radio signals < 300 ft
 - b) Connect to PCs to networks within home, building
 3. Bluetooth
 - a) Radio signals < 30 feet
 - b) To connect PC to peripherals such as printers
 4. RFID
 - a) Radio signals < 300 feet
 - (1) Tags and readers identify mobile objects (merchandise, packages, animals)
 5. Terrestrials Microwaves
 - a) Earthbound; transmit high-speed radio signals in a line-of-sight path
 - b) Between relay systems spaced approximately 30 miles apart

6. Communications satellites
 - a) Satellite serves as relay station for communications signals
 - b) Use microwave signals
7. Cellular
 - a) Divide the geographic area into small areas or cells
 - b) Each cell has transmitter or radio relay antenna to send message from one cell to another