Networking Facts

A *network* is a group of computers (often called *nodes* or *hosts*) that can share information through their interconnections. A network is made up of the following components:

- Computer systems (nodes or hosts).
- The *transmission medium* provides a path for electrical signals between devices.
- *Network interfaces* are devices that send and receive electrical signals.
- *Protocols* are rules or standards that describe how hosts communicate and exchange data.

Despite the costs of implementation and maintenance, networks actually save organizations money by allowing them to:

- Consolidate (centralize) data storage
- Share peripheral devices like printers
- Increase internal and external communications
- Increase productivity and collaboration

One way to classify networks is based on the role network devices play:

Network Type	Description
Peer-to-peer	In *peer-to-peer* networking (also called *workgroups*), each computer controls access to its own resources. Security controls on each computer identify who can have access to the computer's resources. Advantages of peer to peer networks include: • Easy implementation • Inexpensive Disadvantages of peer to peer networks include: • Difficult to expand (not scalable) • Difficult to support • Lack centralized control • No centralized storage Windows 7 includes a new feature called a HomeGroup. The HomeGroup is a simple way to create a peer-to-peer network for sharing files and printers.
Client/server	In *client/server* networking, shared resources reside on special computers called *servers*. Other computers, called *clients* connect to the server to access resources. Security controls on the server identify which clients can have resource access. Advantages of client/server networks include: • Easily expanded (scalable) • Easy support • Centralized services • Easy to backup Disadvantages of client/server networks include: • Server operating systems are expensive • Requires extensive advanced planning Windows computers use the concept of a *domain* for client/server networking. The

	domain identifies a group of computers with the same security and administrative boundaries. Active Directory is a service that provides a centralized database of resources within a domain.

Another way to classify networks is based on size.

- A Local Area Network (LAN) is a network in a small geographic area, like in an office. A series of connected LANs, or a LAN connected across several buildings or offices, is called an *internetwork*.
- A Wide Area Network (WAN) is a group of LANs that are geographically isolated but connected to form a large internetwork.

The network *bandwidth* is a rating of how much data can be sent over a network. In general, LANs have higher bandwidth, while WANs have lower bandwidth (slower speeds) because of the distances involved.