

◦  
◦  
◦

1

---

# Chapter 1

Introduction to Networks  
and  
Networking Concepts

◦ ◦ ◦ ◦ ◦ ◦ ◦ ◦

◦  
◦  
◦

1

---

# What is Networking?

Connecting computers  
to form a  
Local Area Network  
( LAN )

◦ ◦ ◦ ◦ ◦ ◦ ◦ ◦

## Device Sharing

Sharing of:

- Hardware
- Software
- Information

## Networking Fundamentals

- Quickly & efficiently share:
- Data
- Peripherals

## Data Sharing

Allows groups of users to:

- Exchange Information
- Route data from user to user
- Use E-mail to communicate

## Device Sharing

Sharing peripheral devices:

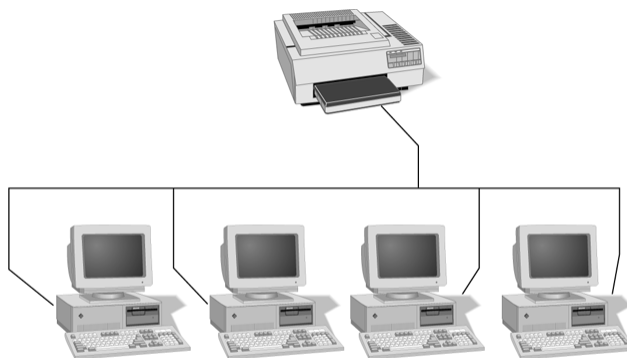
- Printers
- Scanners
- Fax
- Saves \$

# Standalone Computer



**Figure 1-1** A standalone computer

# A Simple Network



**Figure 1-2** A simple network

## Local Area Network (LAN)

- A single collection of machines & peripherals
- Less than 100 computers
- Distance spanned less than 1000 feet
- Basic building block for larger networks-Internetworks

## Internetworks

- A network of networks
- A networked collection of LANs
- More than one floor in a business
- Multiple buildings
- Campus environment

## Wide Area Networks (WAN)

- Spans miles of distance
- Two or more separate locations
- Down the road or across the world
- Microsoft, Federal Express

## The Internet

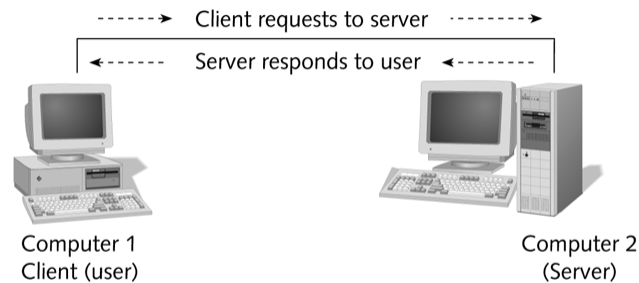


- A WAN internetwork
- Millions of machines worldwide
- The World Wide Web (WWW)

## Networking Terminology

- Client/Server relationship
- Client requests shared resources
- Server responds & shares resources

## Networking Terminology



**Figure 1-3** A client/server relationship

## Network Types

- Server-based
  - Machines are pure server or pure client
- Peer to Peer
  - Machines operate in both roles
- Based on division of labor

## Specialized Servers

- Individual services supplied
  - Application Servers
  - Communication Servers
  - Domain Controllers/Directory Servers
  - Fax Servers

## Specialized Servers (cont.)

- Mail Servers
- Web Servers
- File & Print Servers

## Network Medium (media)

- Carries network messages
- Connects machines together on network
- Three types:
  - Metallic cable
    - twisted pair & coaxial
  - Fiber optic cable
  - Wireless

## Network Interface Card

- (NIC)
- Physical link between machine & network
- Connection between machine & medium
- Also known as network adapter

## Network Protocols

- Common set of communication rules
- Identify ‘oneself’ & others on network
- Interpret signals
- Begin & end network communication
- Manage network information exchange

## Protocol Examples

- TCP/IP
  - for the Internet
- IPX/SPX & NWLINK
  - for Novell
- NetBEUI
  - for Microsoft

## Functional layering

