Kardan University

BCS Faculty

Data Communication and Computer Network

OUTLINE

- What is Network, Internetwork
- Types of Network

NETWORK

- **A NETWORK is a set of devices (Nodes) connected by Communication Links.**
- **A NODE can be a computer, printer, switch, router and any other device that can send and receive message.**
- Or **A network is a collection of hardware devices and software protocols that connect computing devices.**
- **The main purpose of a network is sharing resources (resources can be data, internet, printer or other computational resources)**

INTERNETWORK

- We use Hubs, Bridges and switches to form a network.
- Internetwork on the other hand is the connection of two or more networks for the purpose of sharing resources.
- We used Routers to connect different networks and form an internetwork.

BENEFITS OF NETWORKS

- **Resource Sharing: Allows multiple devices to share resources like printers, files, reducing costs and increasing efficiency.**
- **Communication: Facilitates communication between users.**
- **Centralized Data Management: Data can be stored and accessed from a central location (server), making data management and backup more efficient.**

BENEFITS OF NETWORKS

- **Scalability: Networks can be easily expanded to add more devices or users without significant changes in infrastructure.**
- **Cost Efficiency: Reduces the need for multiple copies of the same resource, cutting down on hardware, software, and maintenance costs.**
- **Security: Offers centralized security measures (e.g., firewalls, encryption) to protect data and control access to resources.**

BENEFITS OF NETWORKS

Remote Access: Users can access files, applications, and systems remotely, increasing flexibility and enabling telecommuting.

- **Reliability: In case of failure of one device or network component, alternative pathways can ensure that the system remains functional.**
- **Backup and Recovery: Networked systems often allow for automated backups, reducing data loss risks and simplifying disaster recovery.**

TYPES OF NETWORK

- 1. Workgroup/Home-group Network or Peer to Peer network:
- In this network every computer it self is a server as well as a client. Every computer has its own choice to share its program or not.
- Advantages:
  - Easy to install and configure
  - Individual machines do not depend on a dedicated server
  - Individual users control their own shared resources
  - Peer to peer networking is inexpensive to purchase and operate
  - Requires no additional equipment/software other than operating system
  - No dedicated administrator is required to run the network

TYPES OF NETWORK

- 1. Workgroup Network or Peer to Peer network:
- Disadvantages:
  - Network security is applied to a single resource at a time
  - Users may be forced to use as many passwords as there are shared resources
  - Each machine must have to keep the backup to protect all shared data
  - There is no centralized organizational scheme to locate/control access to data
  - Its not working well with computers more than 10

TYPES OF NETWORK

- 2. Domain-Based or Client-Server Network:
- In which we have server and clients , the full control is with server and clients totally depend on server.
- Advantages:
  - Centralized user accounts, security and access control
  - simplify network administration
  - More efficient access to the network resources
  - A single password for network logon deliver access to all resource

TYPES OF NETWORK

- 2. Domain-Based or Client-Server Network:
- Disadvantages:
  - Server failure causes the entire network unusable.
  - Complex, special purpose server software requires allocation of expert staff and hence increased expenses.
  - Dedicated hardware and specialized software increases the cost.

THANK YOU