Computer Networks Notes

B.Tech. CSE

Anant Srivastava

Instructor:
Mrs. Shubhani Agarwal

Contents

1 Computer Networks

1.1 Data Communication:

the exchange of information between two devices via some form of transmission medium, such as wired cable. The 4 fundamental characteristics of this are:

- Delivery
- Accuracy
- Time
- Jitter (variation in packet delivery time)

1.2 Components of data communication:

There are 5 components in data communication:

- Sender
- Reciever
- Message (the data to be transferred)
- Transmission medium
- Protocol(the rules and regulations to be send)

1.3 Data representation:

how we can represent data. It represents in the form of text, numbers, image, audio and video.

1.4 Components of CN:

There are 5 types of data flow:

- IP address

  The node address connected to a network for communication.

- Node

  Connection point inside a network that can recieve or that can send or store data.

- Router

  It is physical device that sends in datapackets between networks.

- Switch

  Device that connects other devices and manages node to node communication.

  - 1.Circuit Switching
  - 2.Message Switching
  - 3.Packet Switching

- Newtwork cable
  - 1.Coaxial cable
  - 2.Twisted cable
  - 3.Optic fibre cable

1.5 Data flow:

There are 3 types of data flow:

- Simplex

  One way: sender stays sender and reciever stays reciever. Unidirectional.

- Half-Duplex

  The direction can be changed but at a time there can only be one directional travel. Each station can both transmit and receive but not at the same time.

- Duplex

  Simultaneous Data transfer over both nodes. Both stations can transmit and receive simultaneously.

1.6 Goals of Computer Networks:

Network is a set of devices connected by communication links. A network must be able to meet a certain number of criteria. These are:

- Resource Sharing
- High Reliability
- flexible access
- Scalability
- Network Performance
- Saving Money

1.7 Types of CN:

There are 3 types of data flow:

- LAN(Local Area Network)

  It Connects over a short distance.

- MAN (Metropolitan area network)

  It is larger than then LAN but smaller than WAN.

- WAN(Wide Area Network)

  Connects computers over a Wide area.

1.8 OSI model

1. Physical layer
   It is either Analog or Digital.
   It is a kind of continuous wave form that changes over time. What matters in this is: For Analog:

   - Amplitude
   - Frequency
   - Phase

   For Digital:

   - Bitrate
   - Bit interval

1.9 Layers of OSI model