Data Communication and Networking

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Course : BCAC603

Subject : Networking

Introduction to Data Communication

- Data communication is the exchange of data between two or more network devices.
- It involves transmission of digital or analog data over a communication channel.
- It is the basic foundation of computer networking.
- Efficient data communication ensures reliable and fast information transfer.

Components of Data Communication

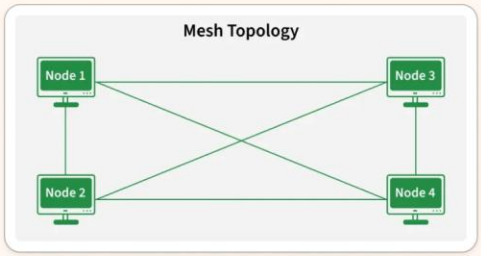
- **Sender** – Device that originates the data.
- **Receiver** – Device that receives the data.
- **Message** – Information to be transmitted.
- **Transmission Medium** – Physical or wireless path for data.
- **Protocol** – Set of rules for communication.

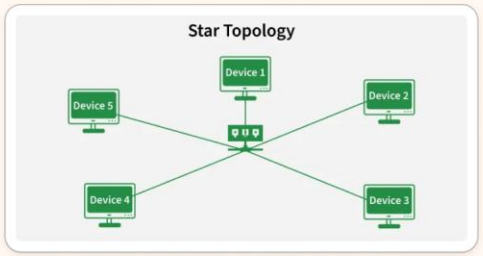
Modes of Communication

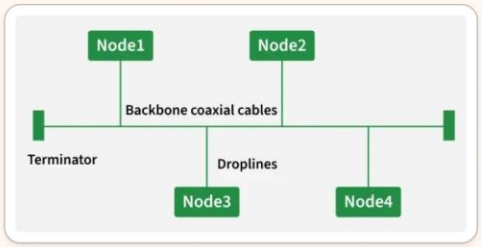
- **Simplex:**
  - One-way communication.
  - **Sender** Sends **Only** and **Receiver** Only **Receives**. (*Cannot be Reversed*)
  - **Example**: **Keyboard** to a **PC**.
- **Half Duplex:**
  - Two-way but one direction at a time
  - **Not** at the **Same** time **Only one** can **send data** then the **receiver** can send **data** to the **sender**
  - **Example**: **Walkie-talkie**.
- **Full Duplex:**
  - Two-way simultaneous communication
  - **Both** can **send data** at the **same time**.
  - **Example**: **Telephone**.

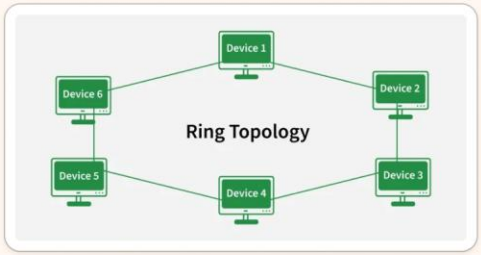
Fundamental Characteristics

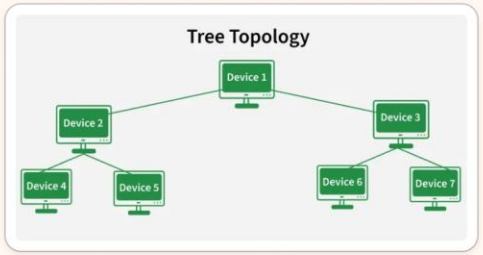
- **Delivery** – Data must reach the correct destination.
- **Accuracy** – Data must be error-free.
- **Timeliness** – Data must arrive on time.
- **Jitter** – Variation in packet arrival time should be minimal.

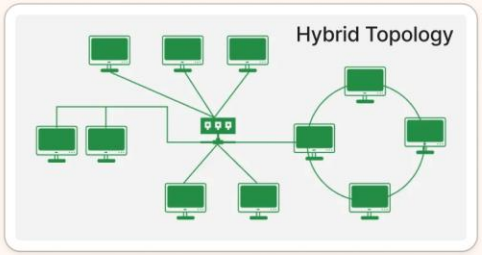












Physical Structure – Network Topology

THANKYOU