DRONACHARYA
College of Engineering

Computer Science & Engineering

Data Communication and Computer Networks

(MTCSE-101-A)

OSI
Model

- **The model**
- **Functions of the layers**

Open Systems Interconnection (OSI) Model

- **International standard organization (ISO) established a committee in 1977 to develop an architecture for computer communication.**

- **Open Systems Interconnection (OSI) reference model is the result of this effort.**

- **In 1984, the Open Systems Interconnection (OSI) reference model was approved as an international standard for communications architecture.**

- **Term "open" denotes the ability to connect any two systems which conform to the reference model and associated standards.**

OSI Model
Layered Architecture

7	Application
6	Presentation
5	Session
4	Transport
3	Network
2	Data link
1	Physical
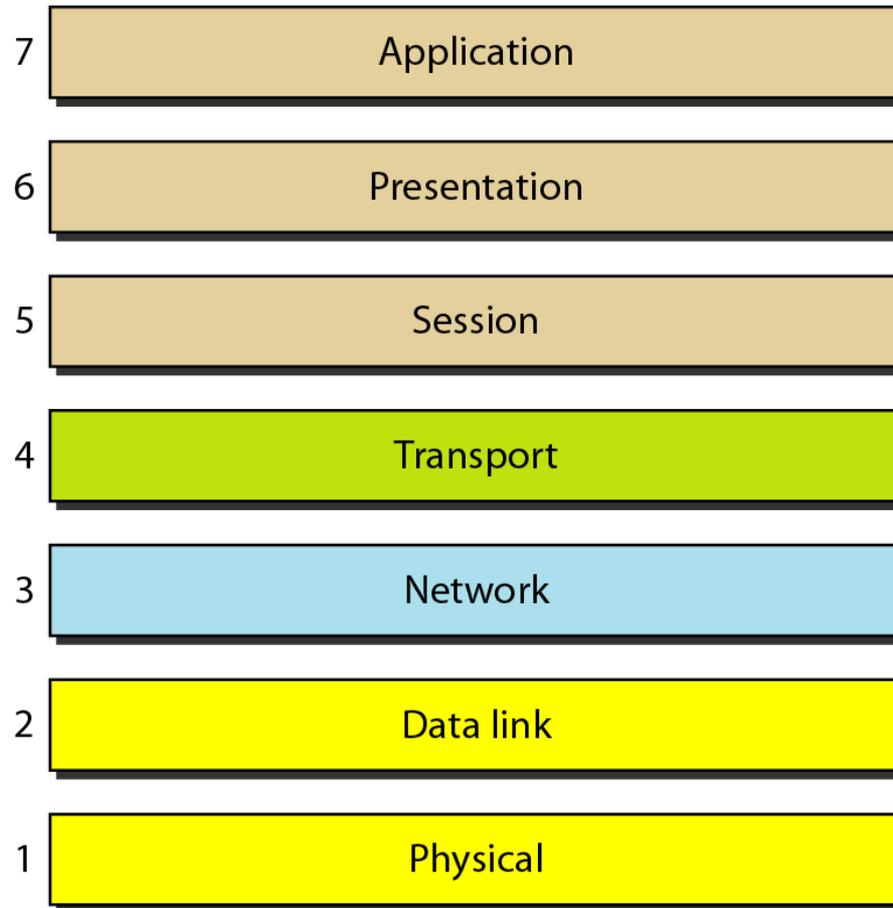
Benefits of layered Architecture

- **Layer architecture simplifies the network design.**

- **It is easy to debug network applications in a layered architecture network.**

- **The network management is easier due to the layered architecture.**

- **Network layers follow a set of rules, called protocol.**

- **The protocol defines the format of the data being exchanged, and the control and timing for the handshake between layers.**

Organization of the Layers

The Seven layer can be belong from three Subgroups.

Layer 1 (Physical Layer)
Layer 2 (Data Link Layer) — Network support layers
Layer 3 (Network Layer)
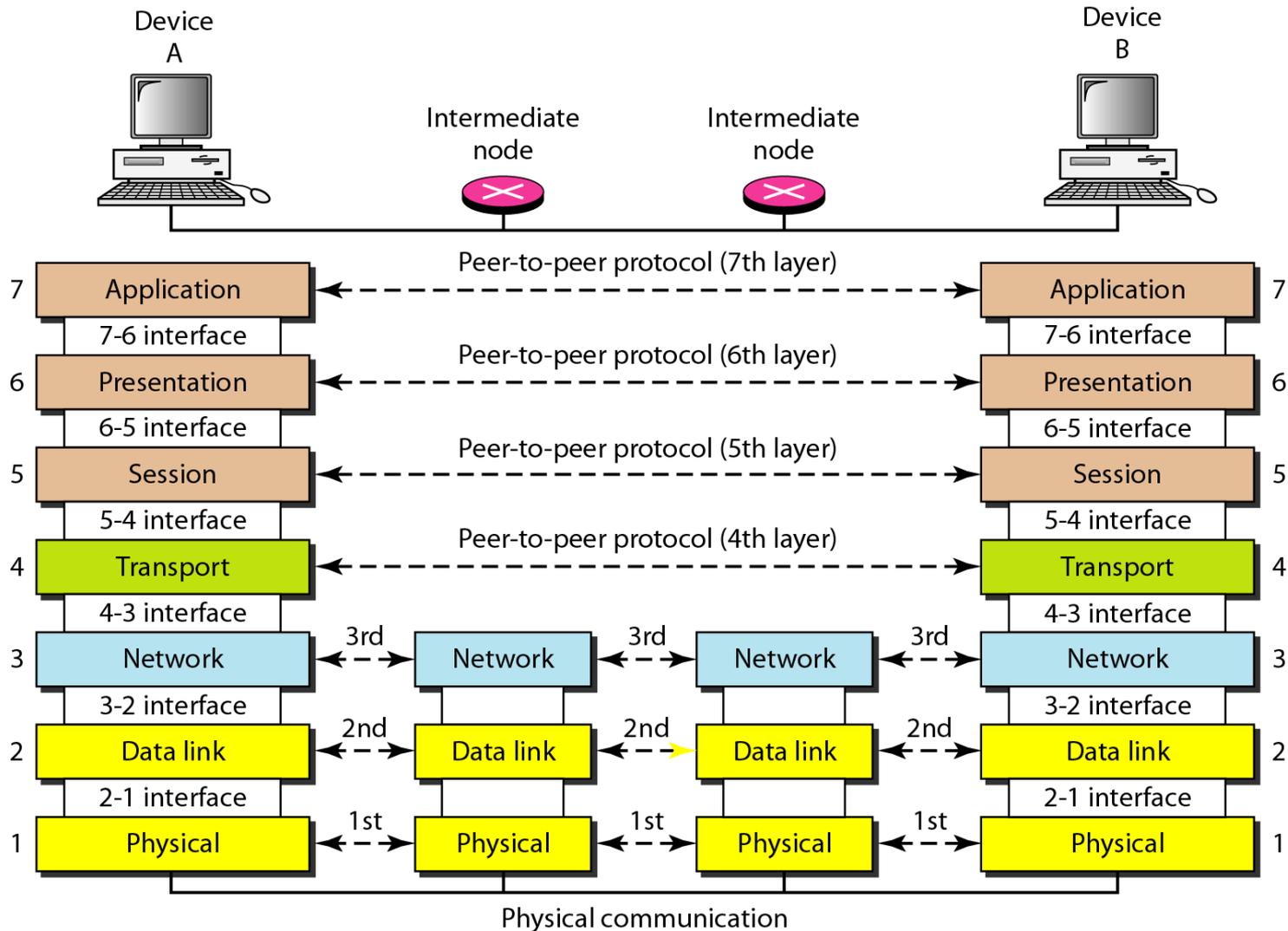
Layer 4 (Transport Layer)

Layer 5 (Session Layer)
Layer 6 (Presentation Layer) — User support layers
Layer 7 (Application Layer)

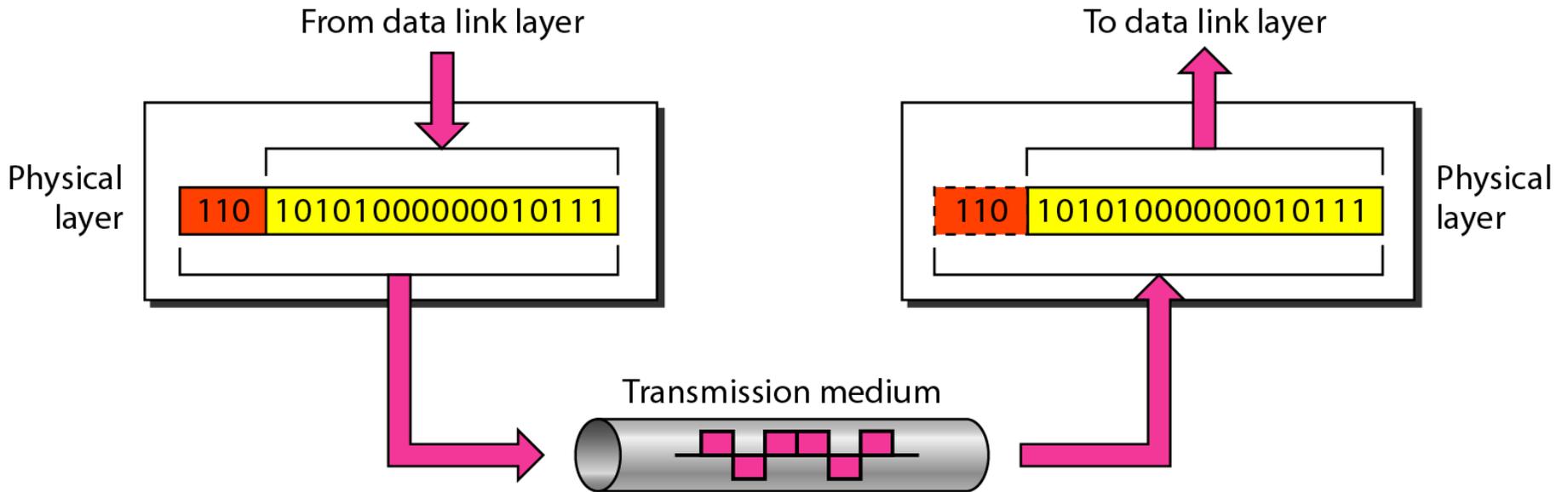# The interaction b/w layers in the OSI model

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An Exchange Using the OSI Model

Transmission medium

Physical Layer

From data link layer

To data link layer

Physical layer

110 | 10101000000010111

110 | 10101000000010111

Physical layer

Transmission medium

The physical layer is responsible for movements of individual bits from one hop (node) to the next.

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Physical Layer

The physical layer is concerned with the following

1. Physical characteristics of interface and medium
2. Representation of bit
3. Data Rate
4. Synchronization of bits
5. Line configuration (Type of connection)
6. Physical topology
7. Transmission mode

Data Link Layer
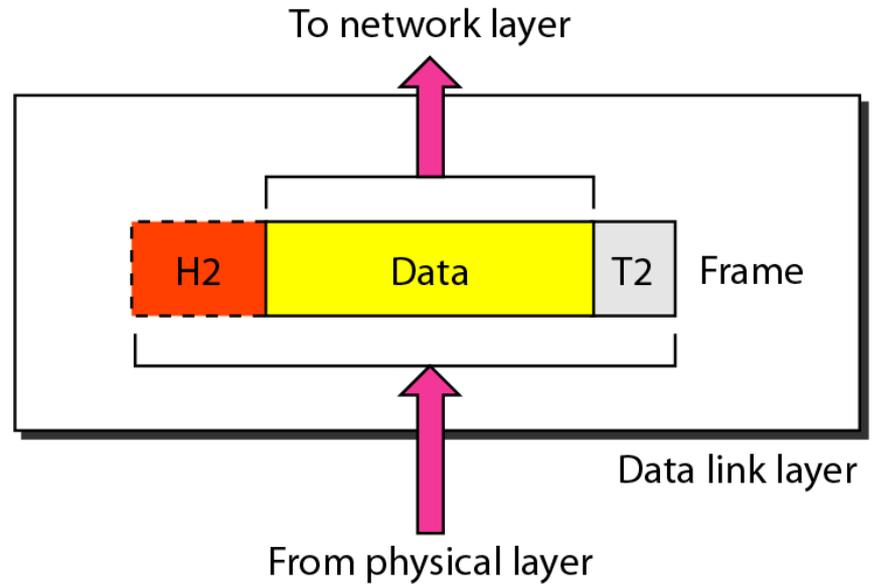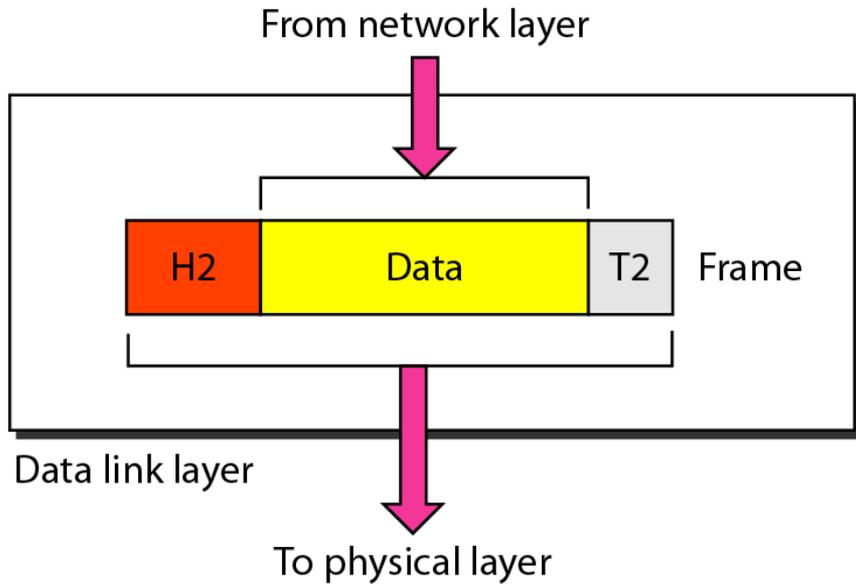
The data link layer is responsible for moving
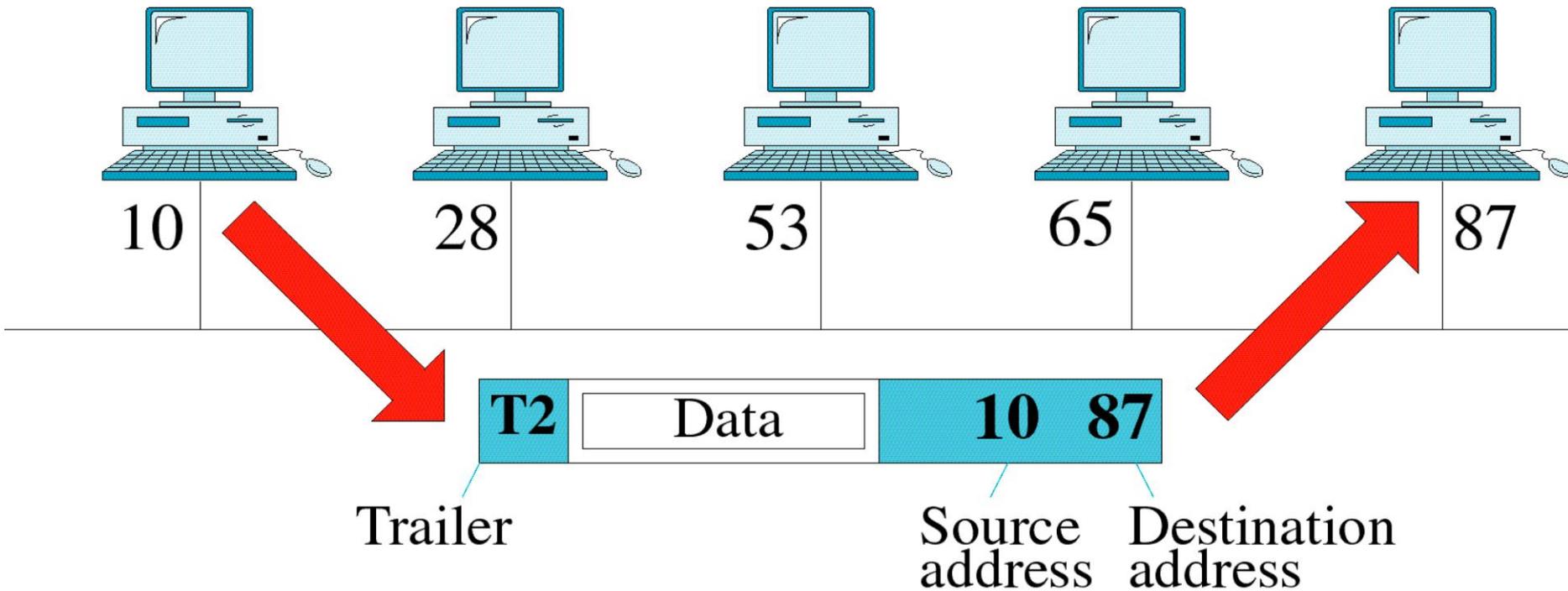frames from one hop (node) to the next.
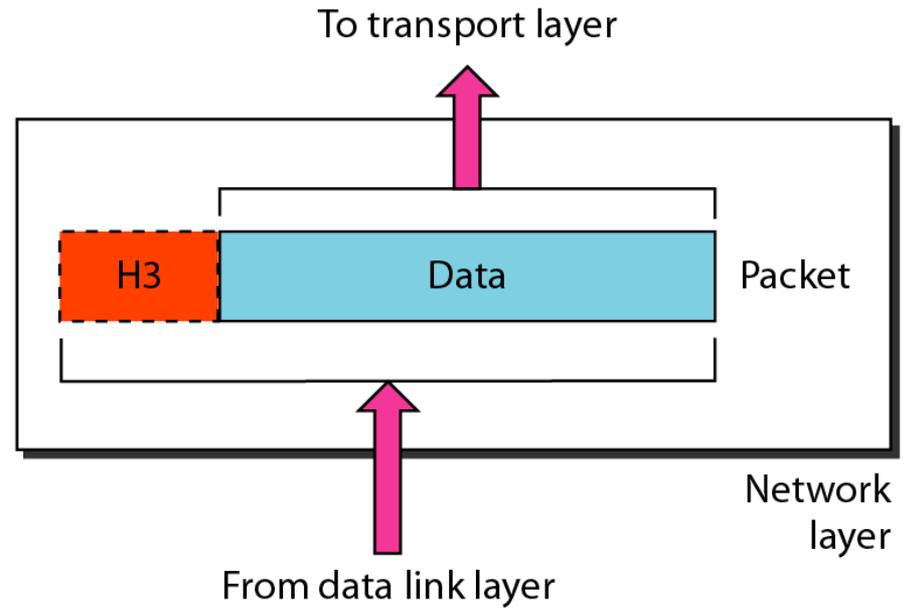
Hop-to-hop delivery
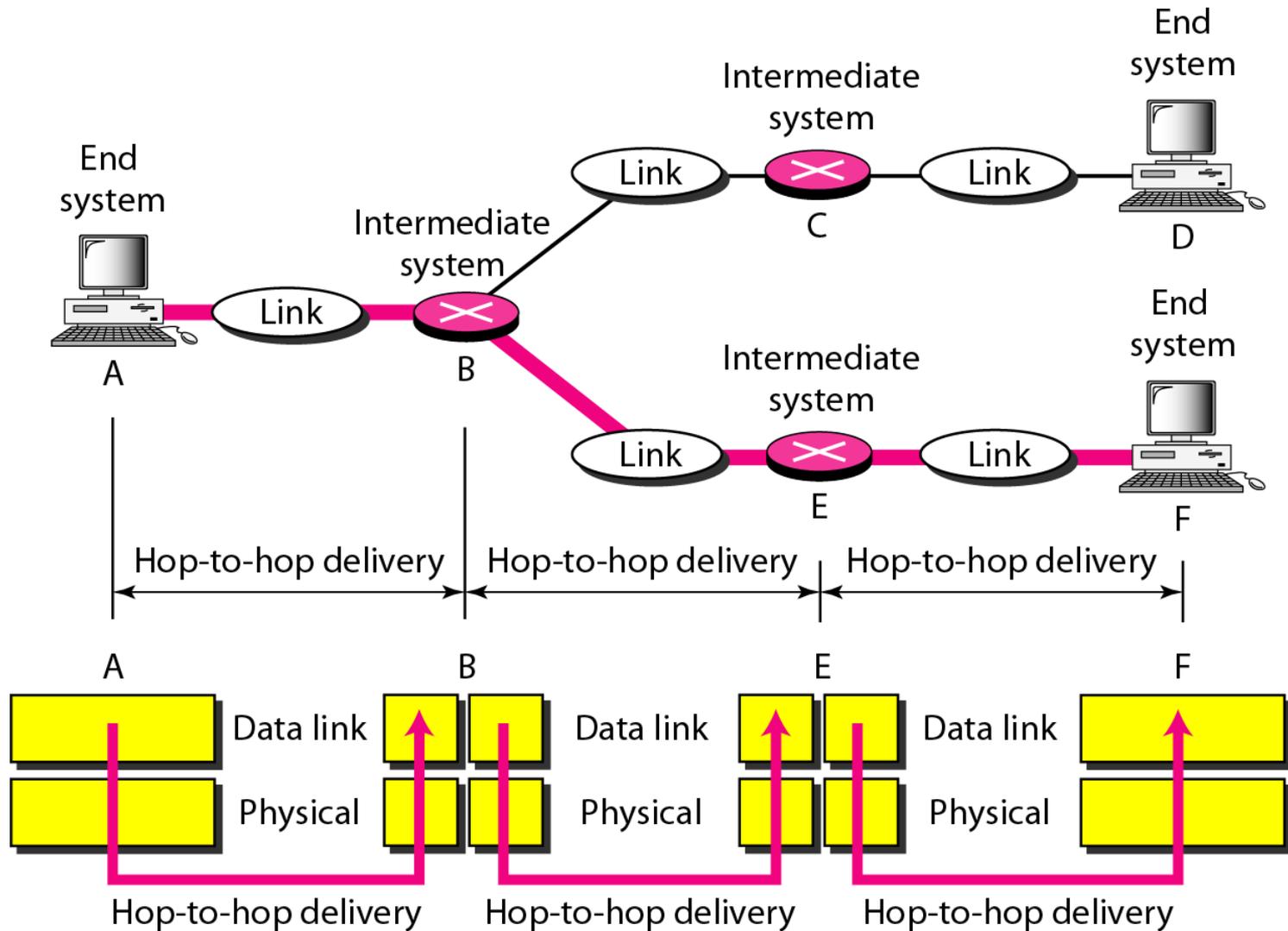
Data Link Layer
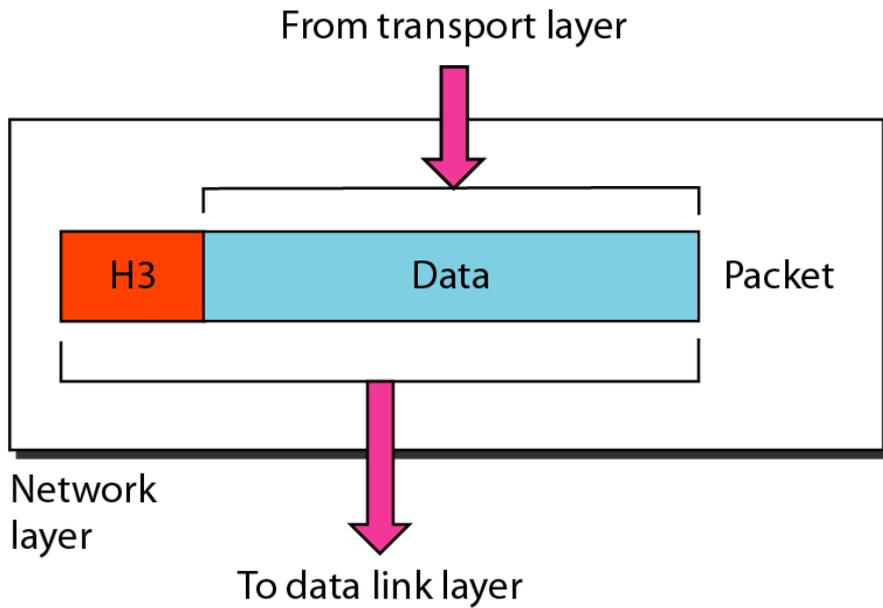
Responsibilities of data link layer

1. Framing
2. Physical address
3. Flow Control
4. Error Control
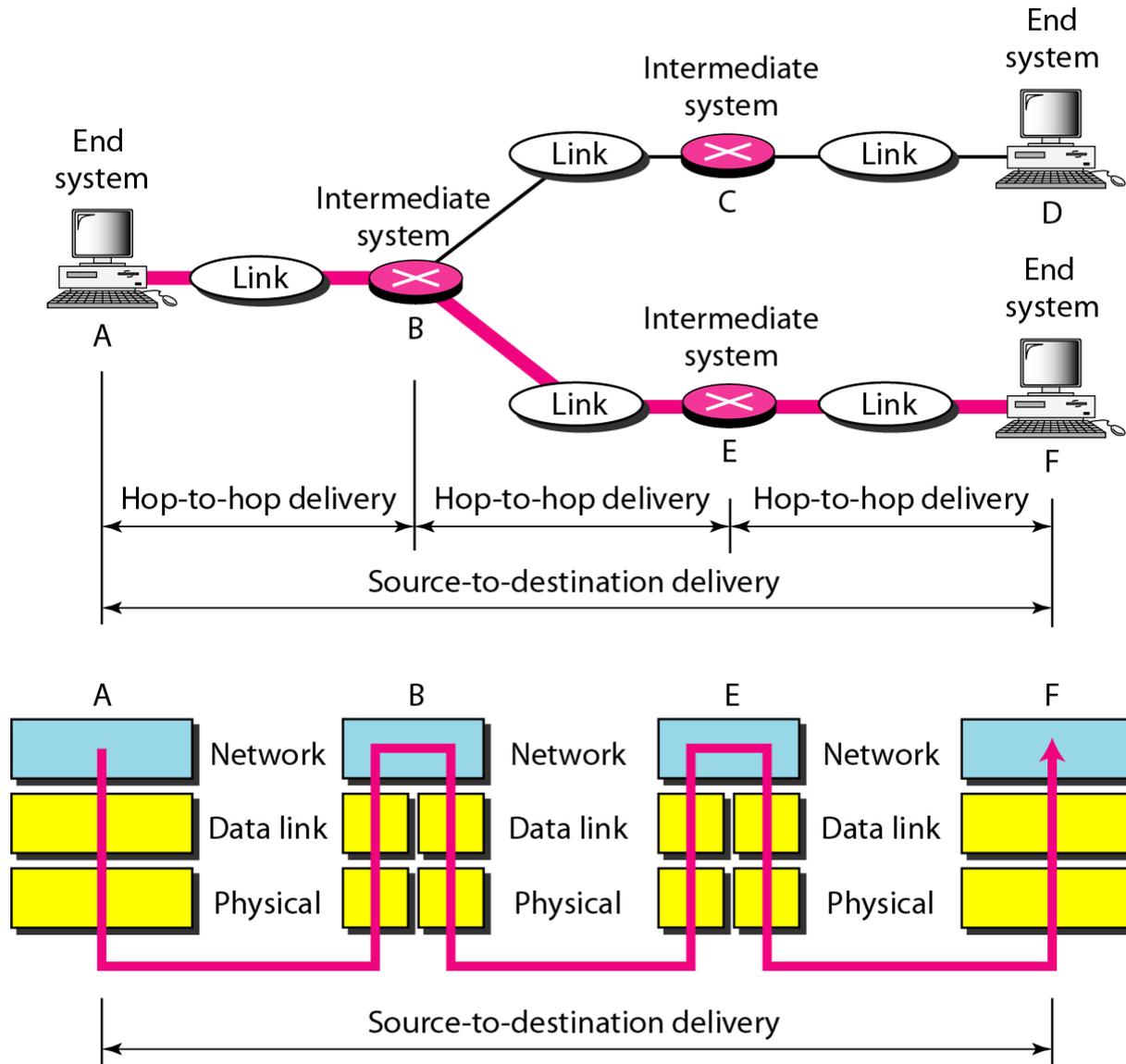5. Access control

Data Link Layer Example

10   28   53   65   87

T2   Data   **10   87**

Trailer   Source   Destination
           address   address

Network Layer

The network layer is responsible for the delivery of individual packets from the source host to the destination host.

Source-to-destination delivery

Network Layer

Responsibility of the network layer

▣ Implements routing of frames (packets) through the network.

▣ Defines the most optimum path the packet should take from the source to the destination

▣ Defines logical addressing so that any endpoint can be identified.

▣ Handles congestion in the network.

▣ The network layer also defines how to fragment a packet into smaller packets to accommodate different media.