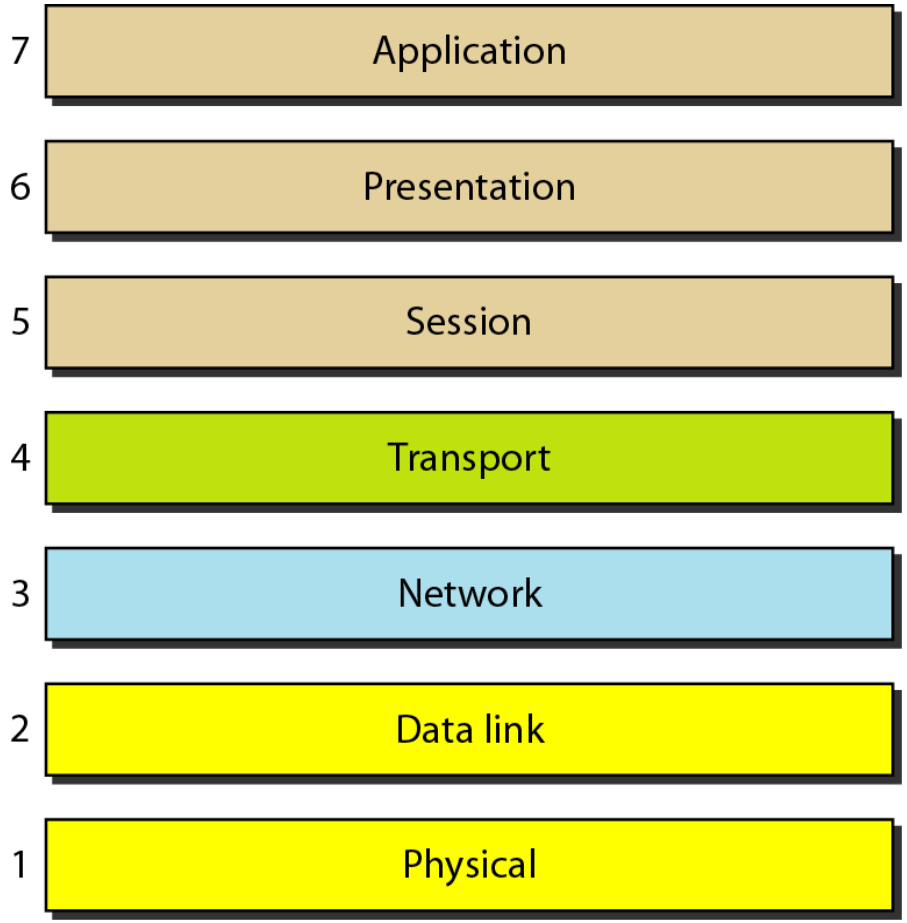
OSI
Model

- **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



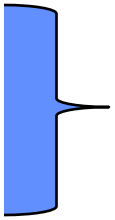
Benefits of layered Architecture

- **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.

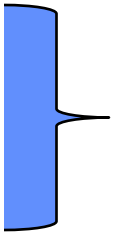
Layer 1 (Physical Layer)
Layer 2 (Data Link Layer)
Layer 3 (Network Layer)



Network support layers

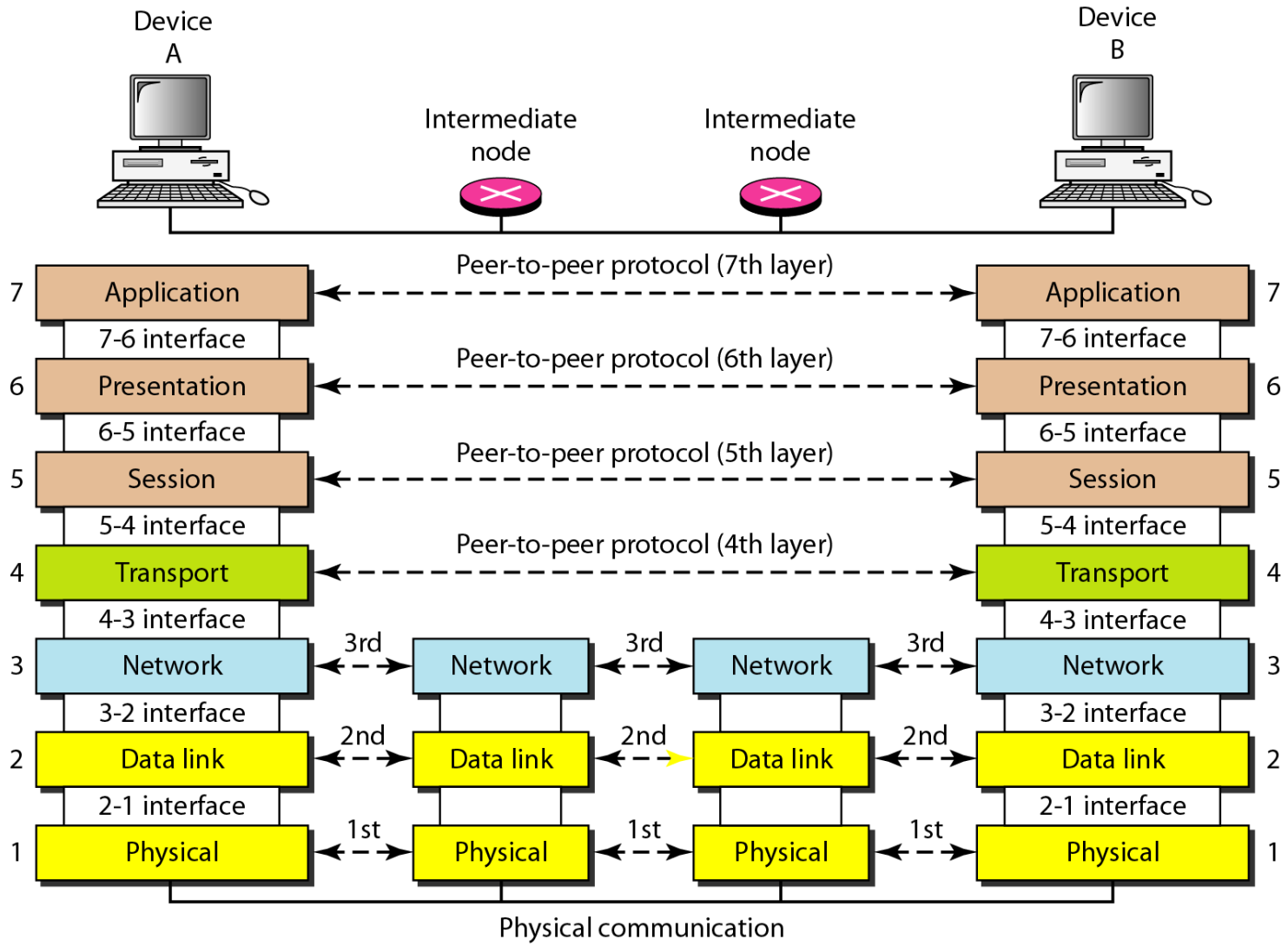
Layer 4 (Transport Layer)

Layer 5 (Session Layer)
Layer 6 (Presentation Layer)
Layer 7 (Application Layer)

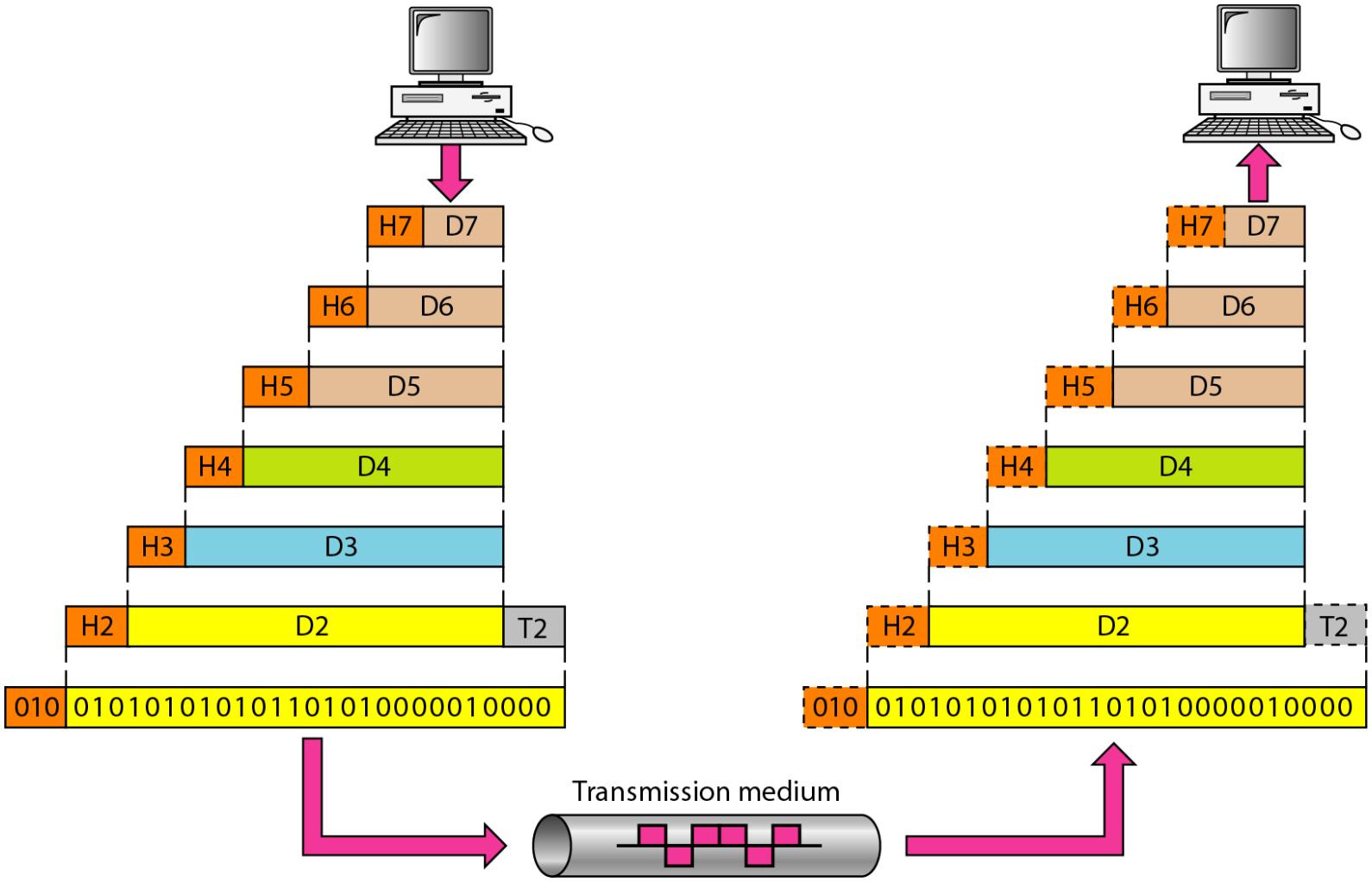


User support layers

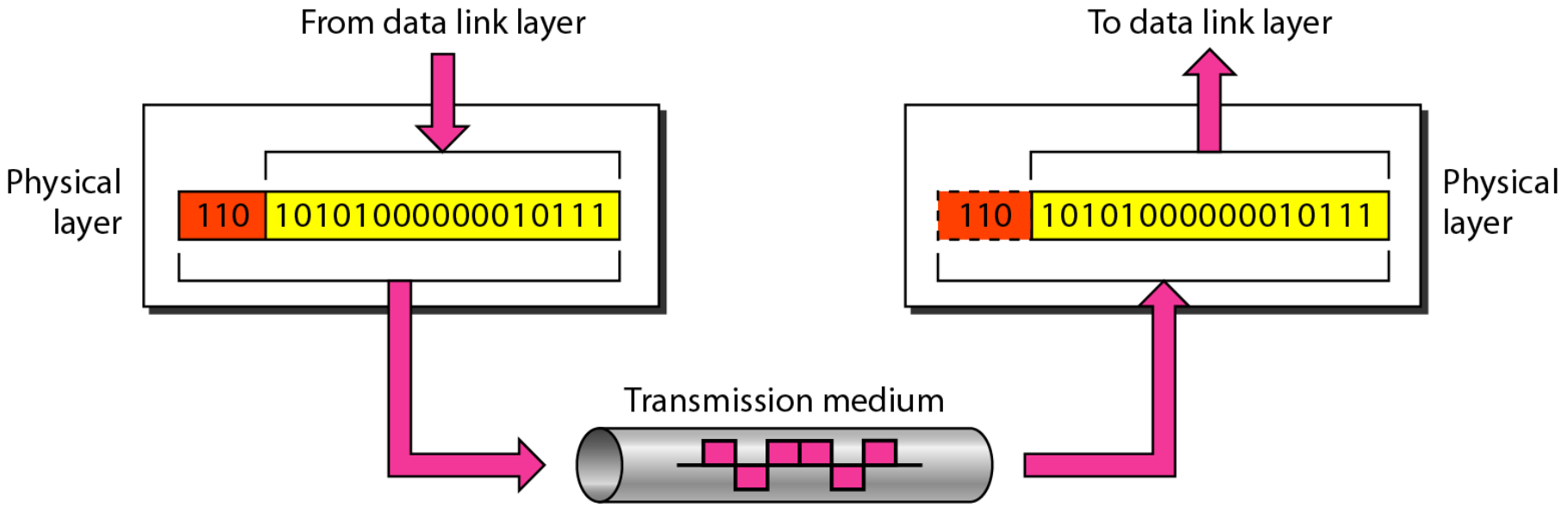
The interaction b/w layers in the OSI model



An Exchange Using the OSI Model



Physical Layer



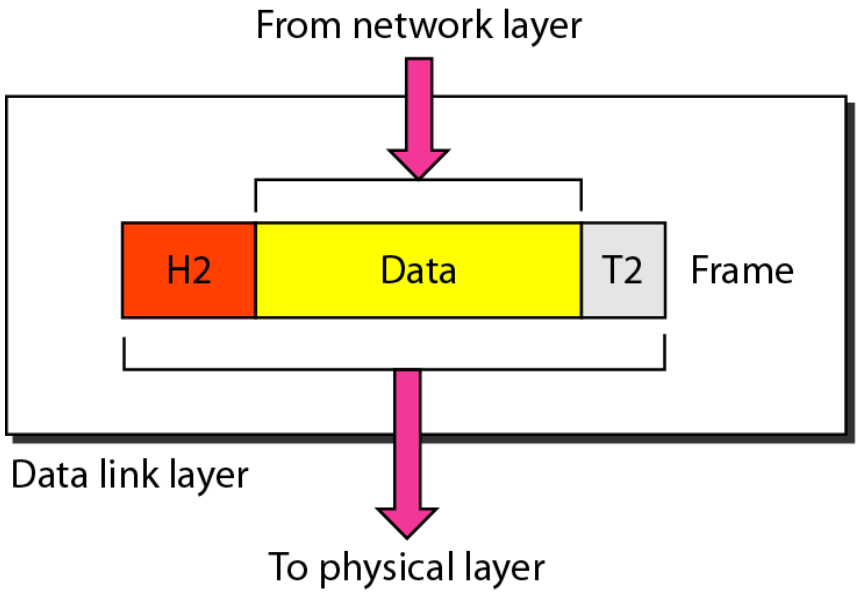
The physical layer is responsible for movements of individual bits from one hop (node) to the next.

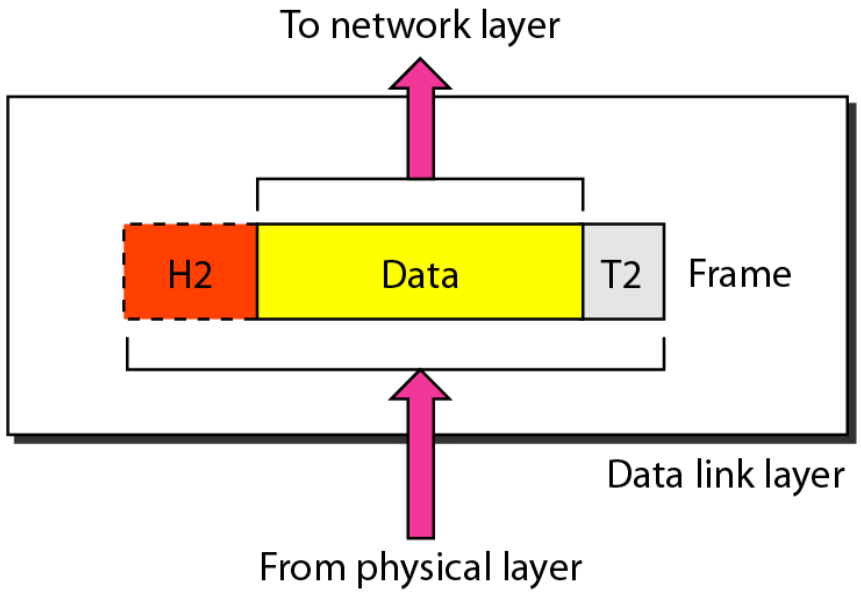
Physical Layer

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

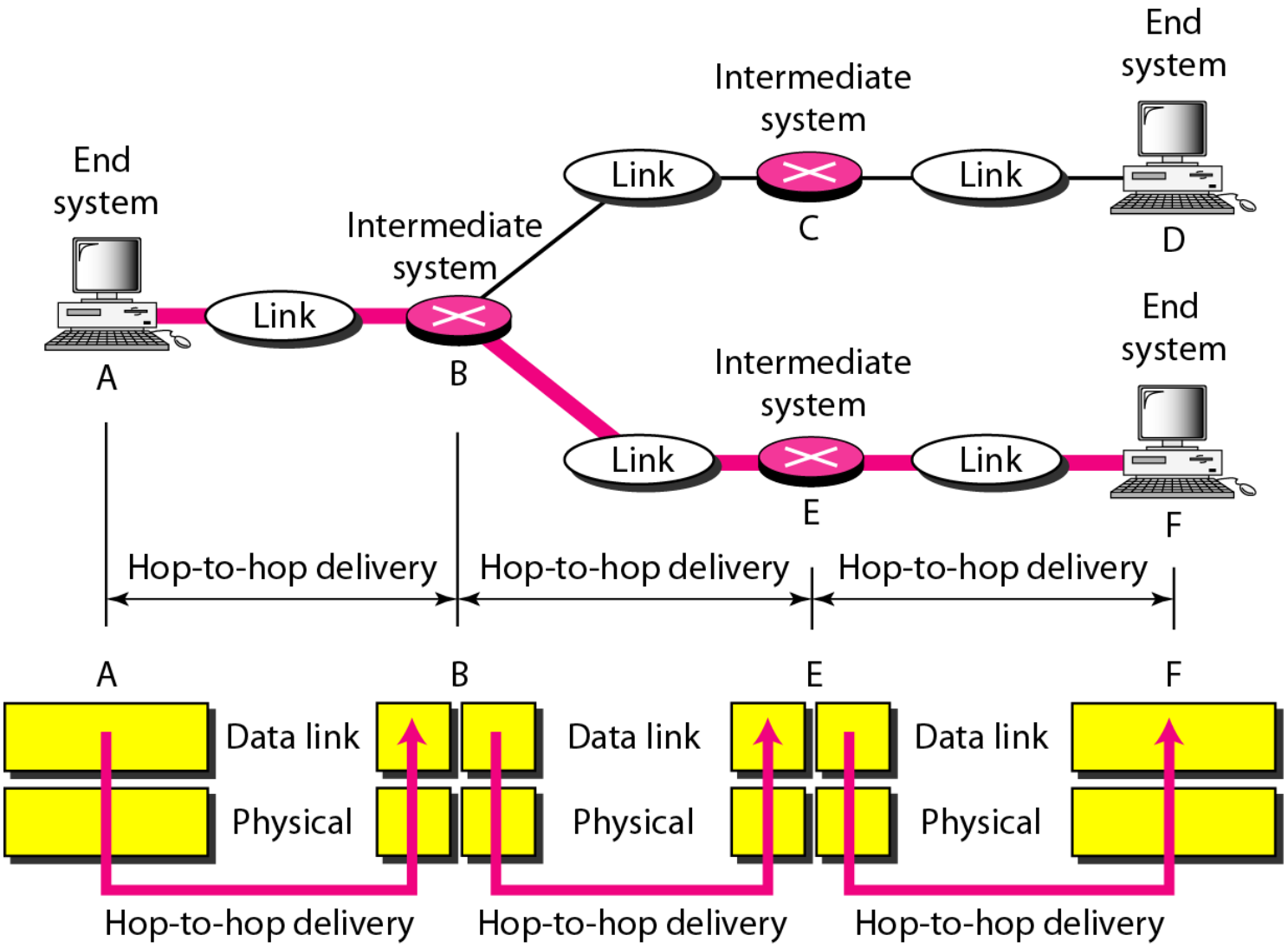
Data Link Layer





The data link layer is responsible for moving frames from one hop (node) to the next.

Hop-to-hop delivery

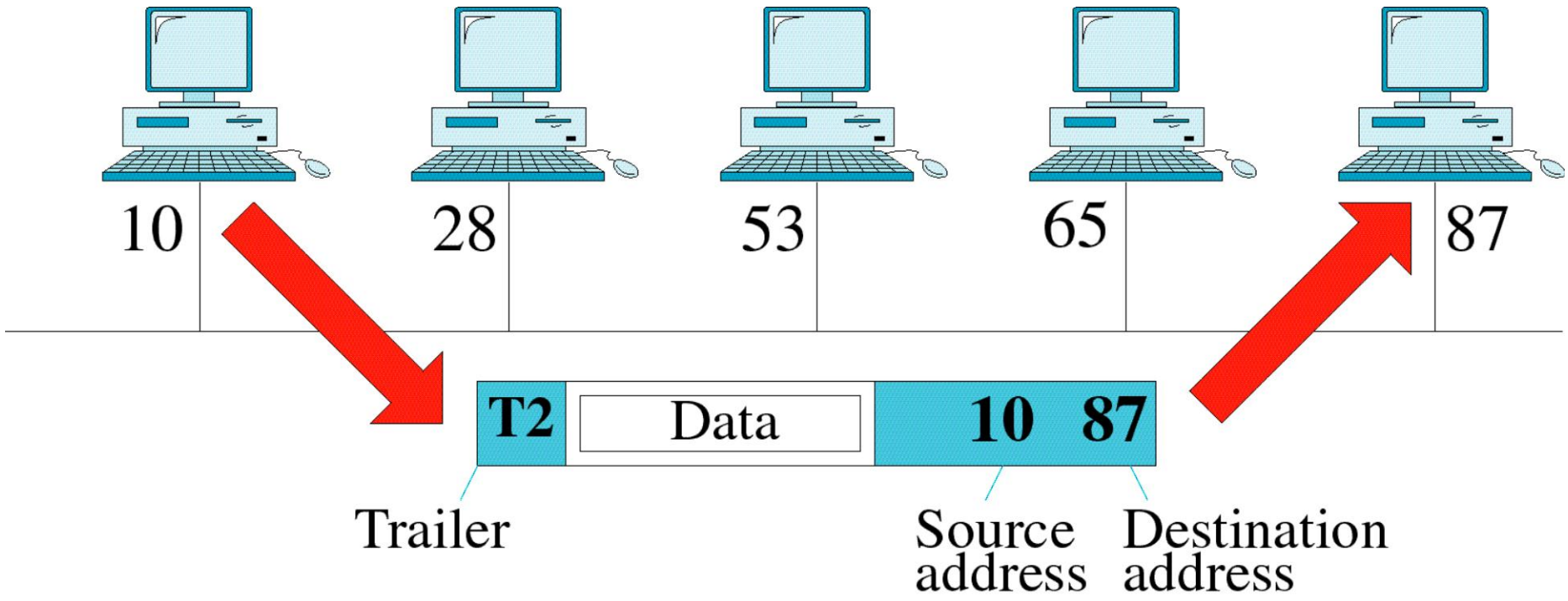


Data Link Layer

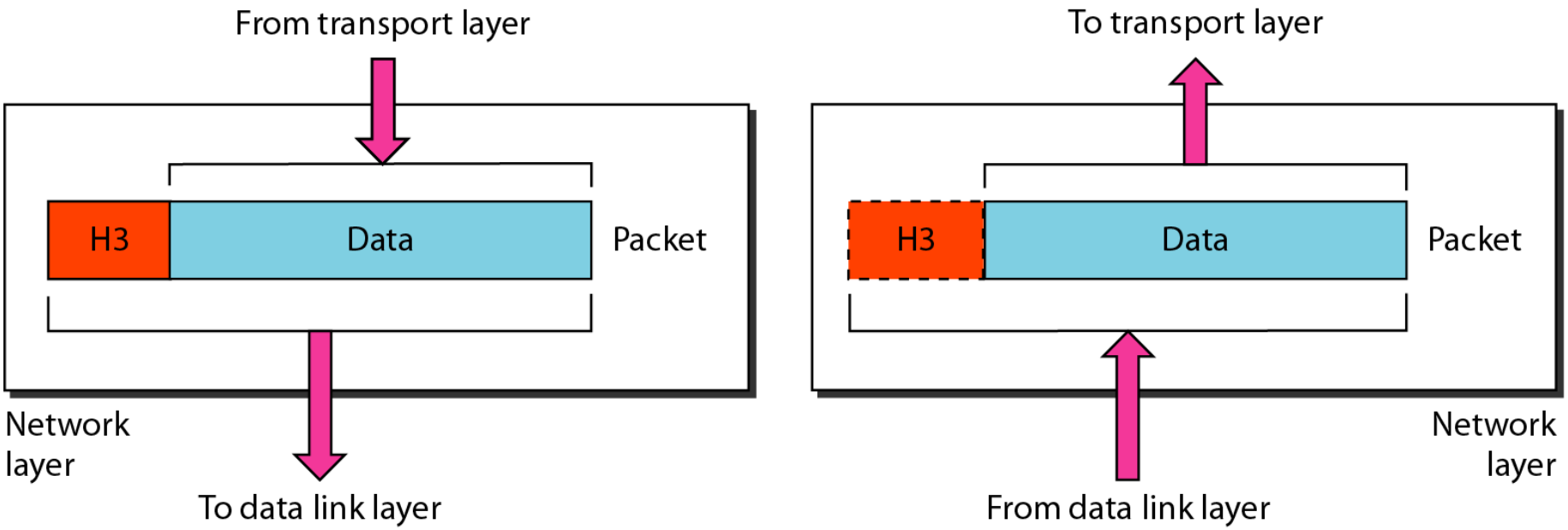
Responsibilities of data link layer

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

Data Link Layer Example

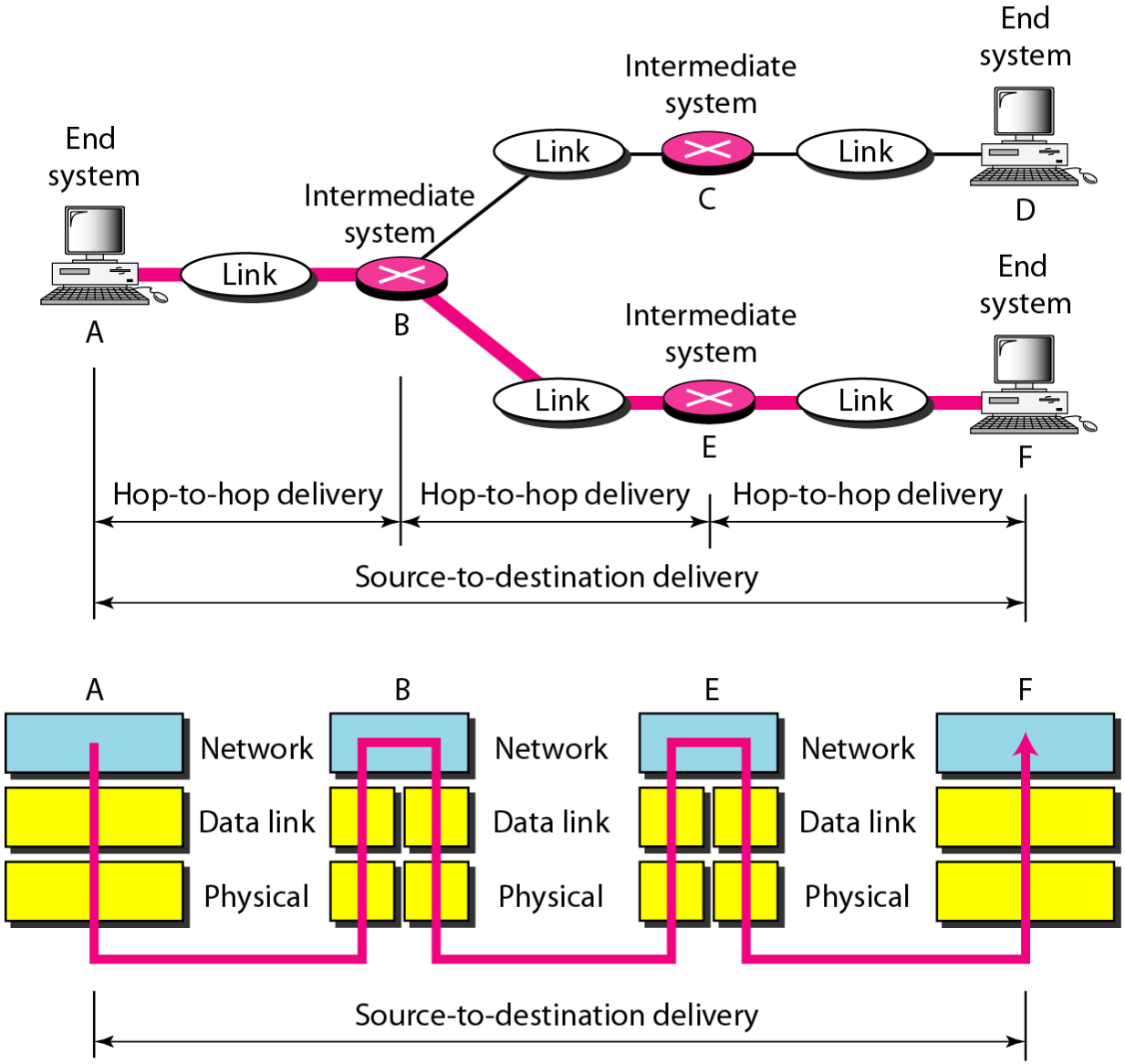


Network Layer



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.