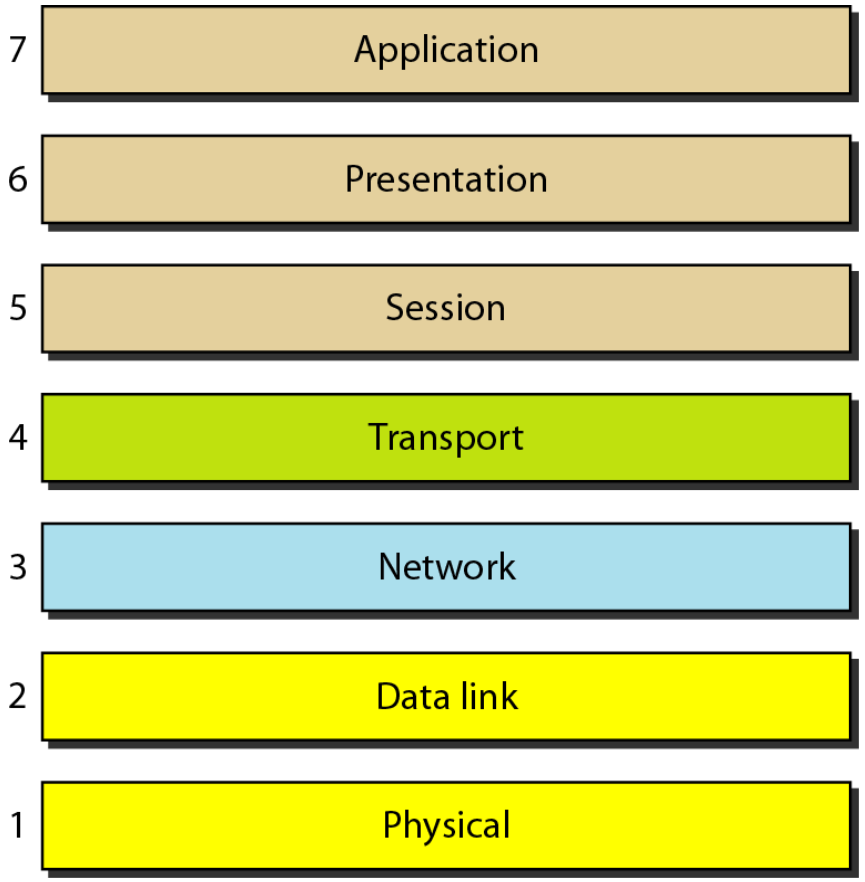
OSI Model

OSI

- OSI stands for **Open Systems Interconnection**.
- It has been developed by ISO – '**International Organization for Standardization**'.
- It is a 7 layer architecture with each layer having specific functionality to perform.
  - Outlines **WHAT** needs to be done to send data from one computer to another.
  - Not **HOW** it should be done.
  - Protocols stacks handle how data is prepared for transmittal (to be transmitted)

Seven Layers of the OSI model

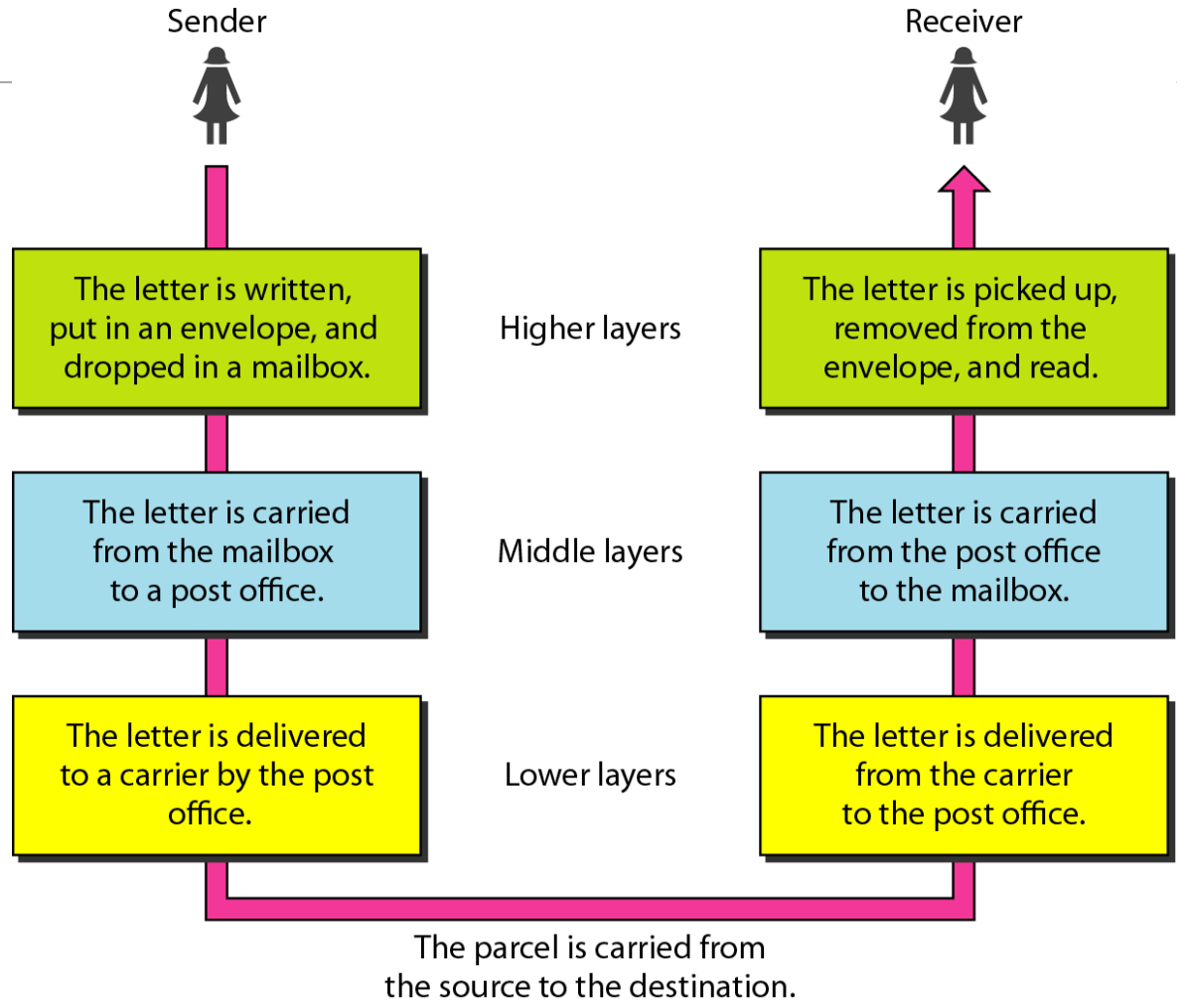


Why a layered model?

- Easier to teach communication process.
- Speeds development, changes in one layer does not affect how the other levels works.
- Standardization across manufactures.
- Allows different hardware and software to work together.
- Reduces complexity

LAYERED TASKS

Tasks involved in sending a letter



What is “THE MODEL?”

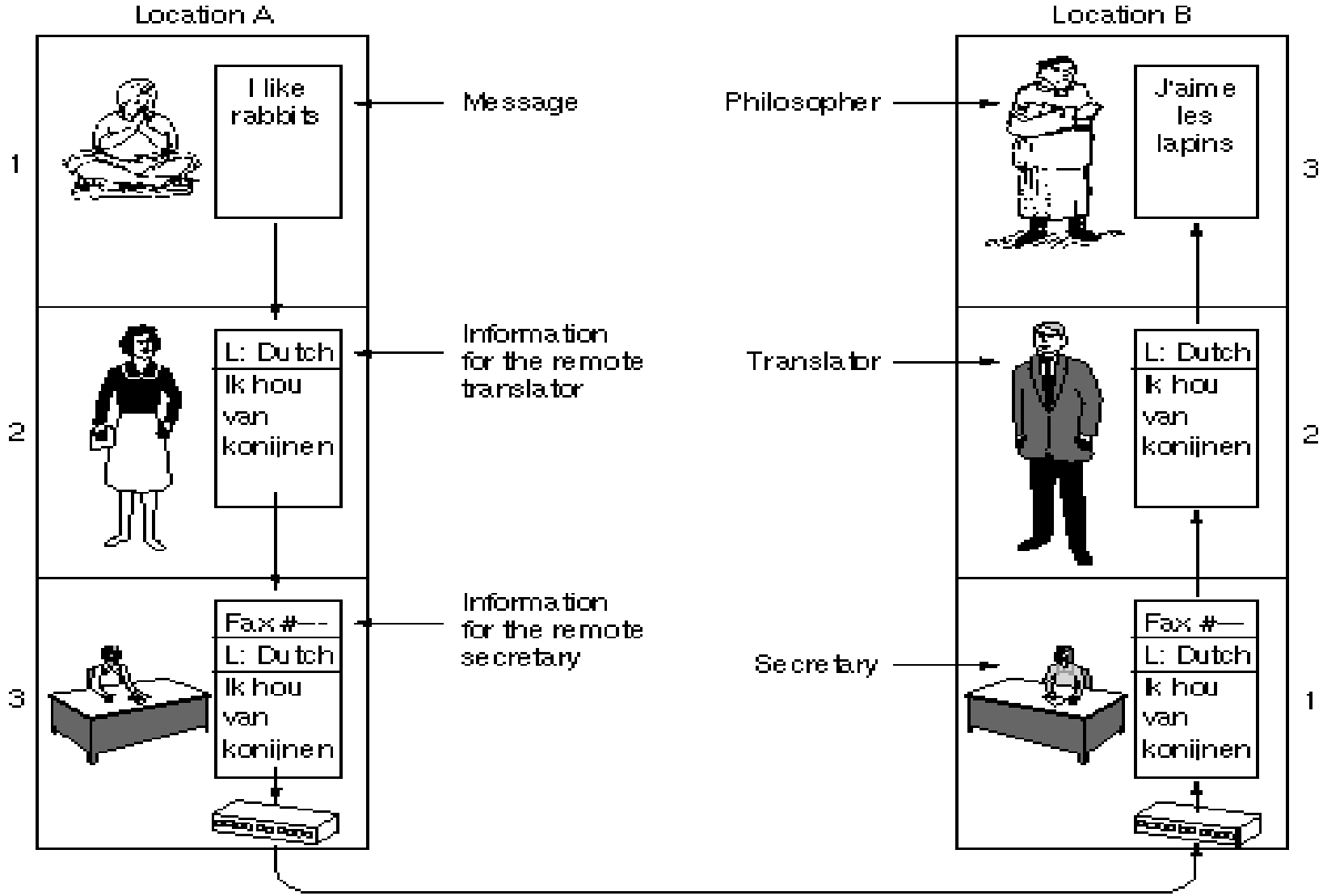
- Commonly referred to as the OSI reference model.

- The OSI model
  - is a theoretical blueprint that helps us understand how data gets from one user’s computer to another.
  - It is also a model that helps develop standards so that all of our hardware and software talks nicely to each other.

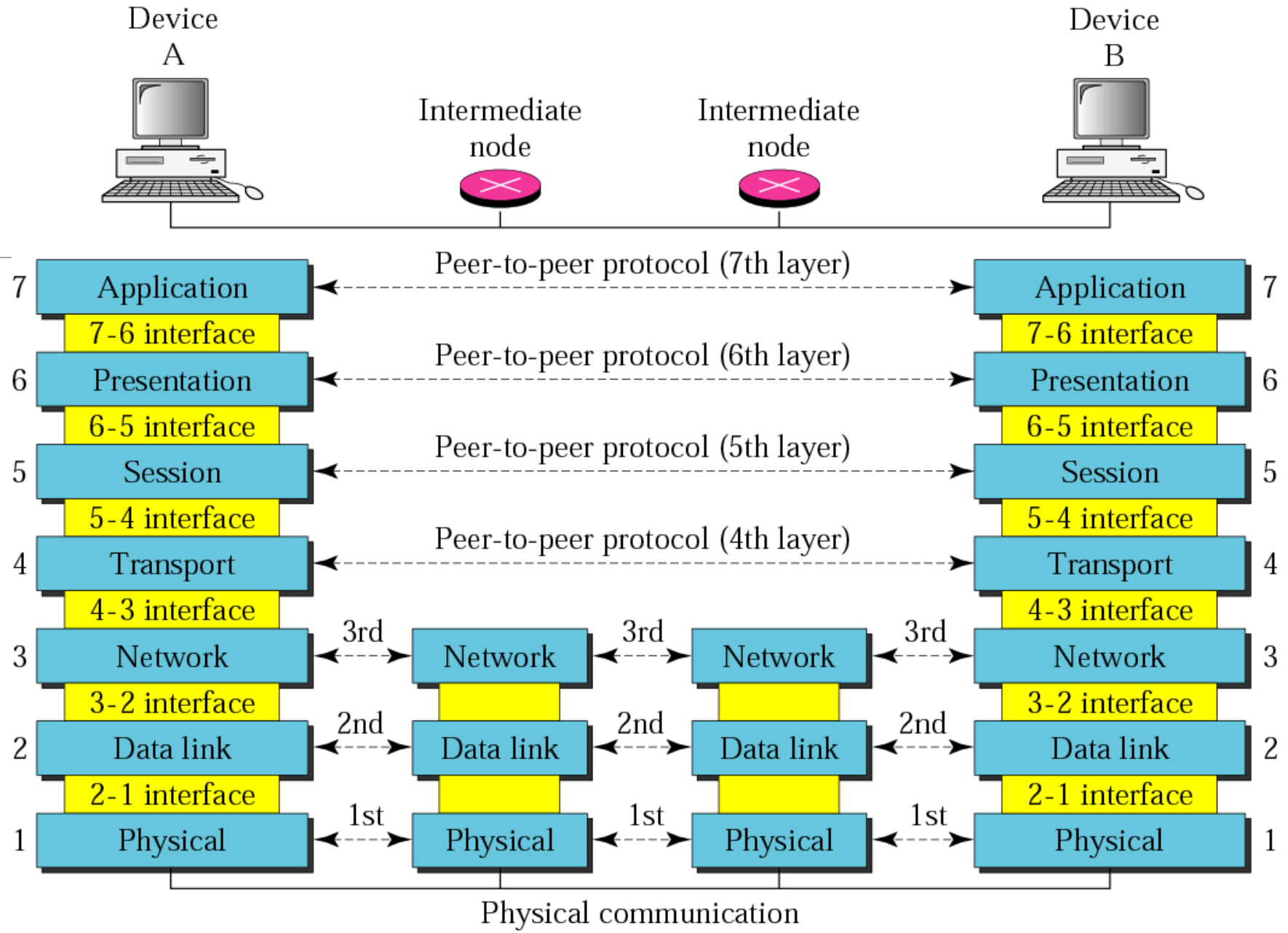
Why use a reference model?

- Serves as an outline of rules for how protocols can be used to allow communication between computers.
- Each layer has its own function and provides support to other layers.

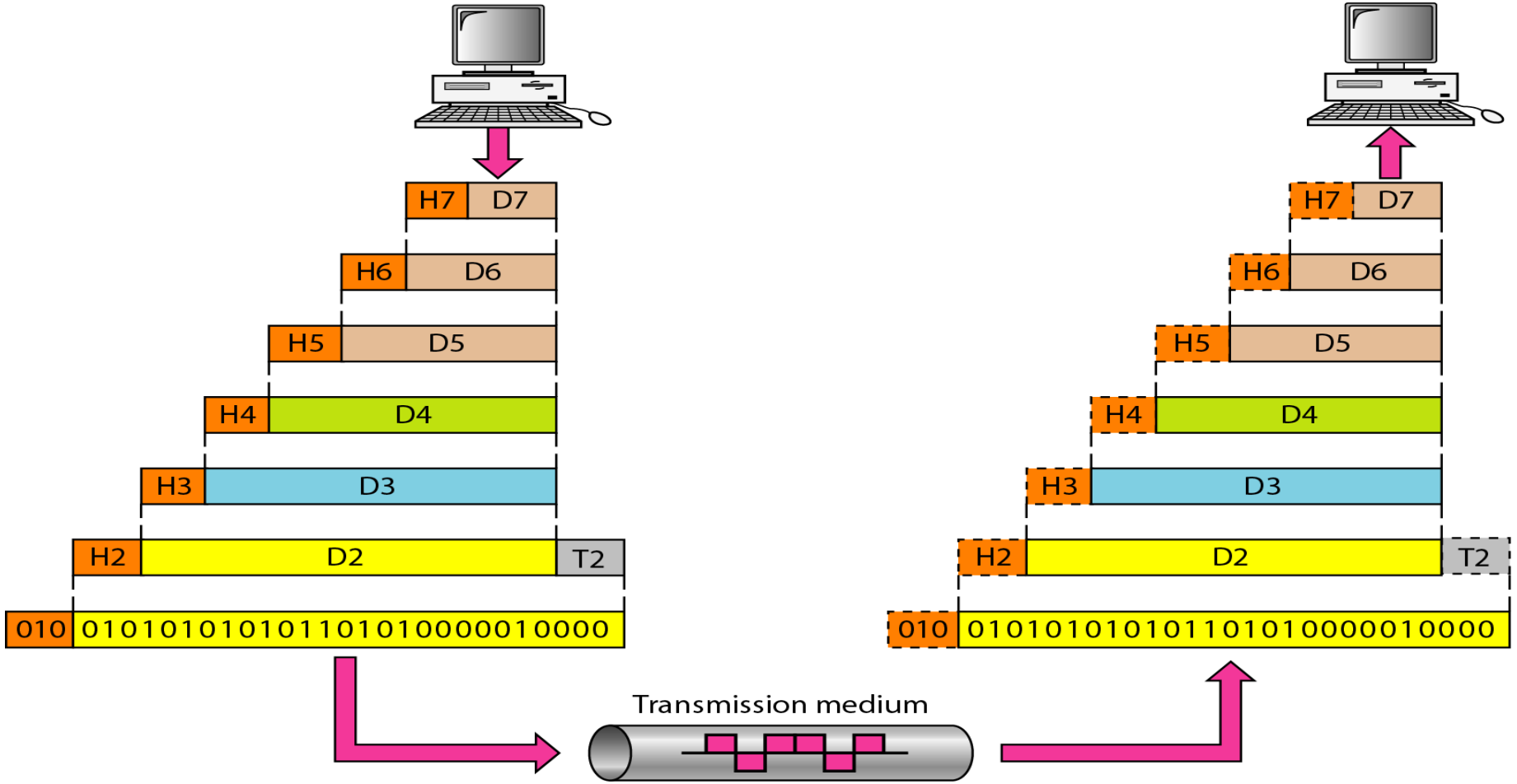
PHILOSOPHER TRANSLATOR SECRETARY ARCHITECTURE



OSI Model


Device A
Device B
Intermediate node
Intermediate node
Peer-to-peer protocol (7th layer)
Peer-to-peer protocol (6th layer)
Peer-to-peer protocol (5th layer)
Peer-to-peer protocol (4th layer)
7 Application
7-6 interface
6 Presentation
6-5 interface
5 Session
5-4 interface
4 Transport
4-3 interface
3 Network
3-2 interface
2 Data link
2-1 interface
1 Physical
3rd
2nd
1st
Physical communication

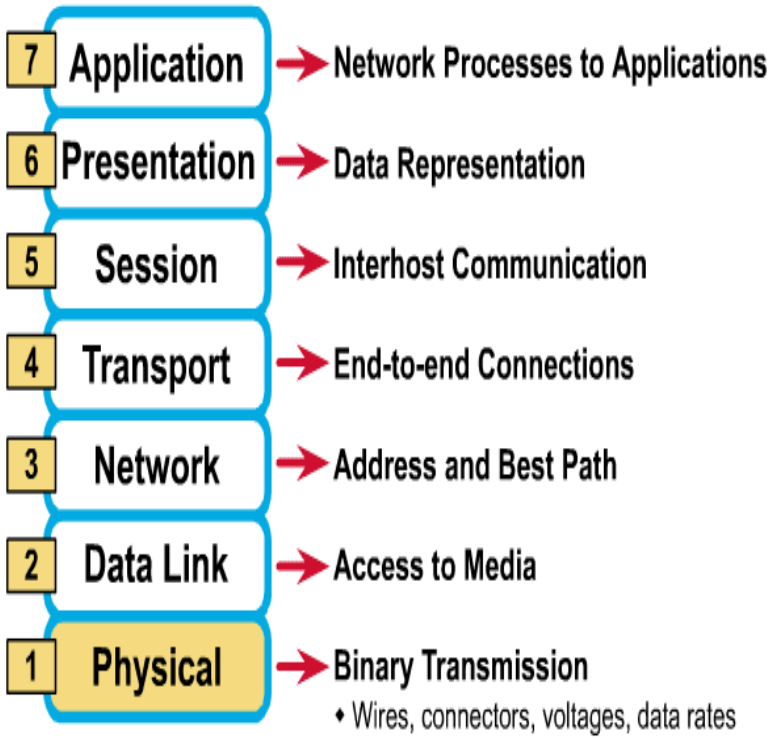
An exchange using the OSI model



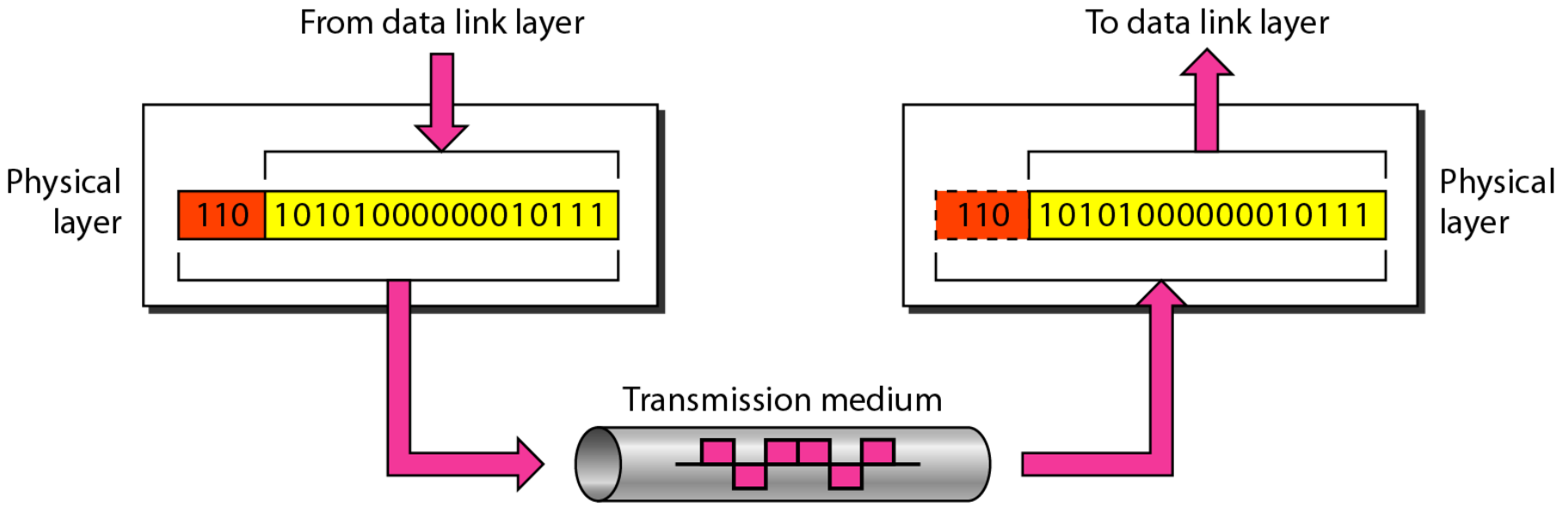
Physical Layer

Determines the specs for all physical components

- Cabling
- Physical topology
- Representation of bits
- Electrical properties
- Transmission mode



Physical layer

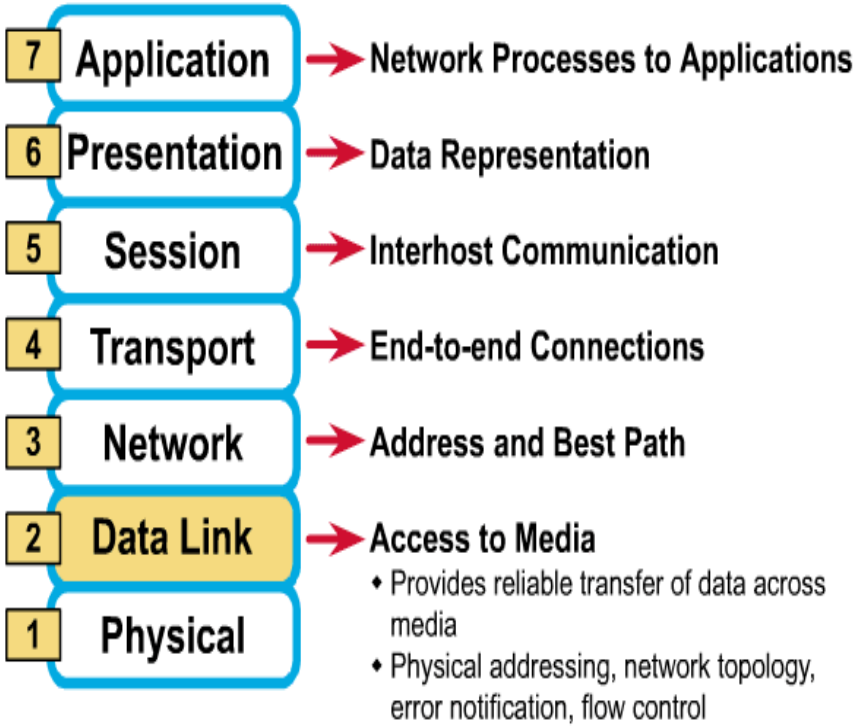


Note

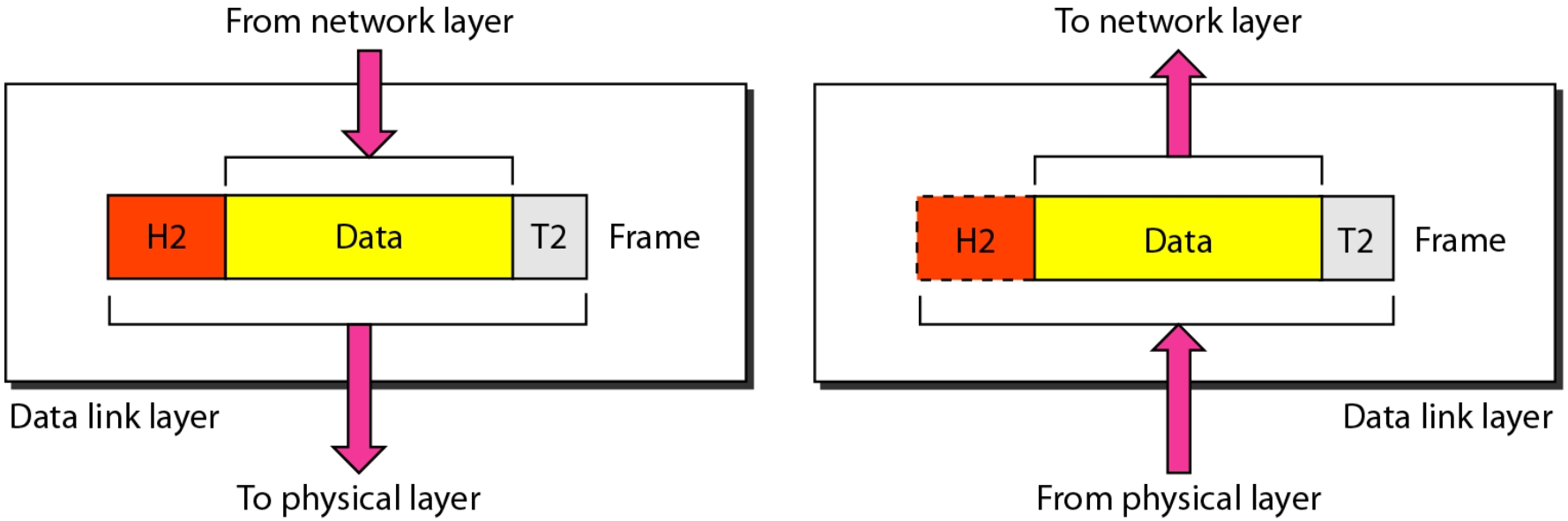
The physical layer is responsible for movements of individual bits from one hop (node) to the next.

Data Link Layer

- Physical Addressing
- Flow control
- Error control



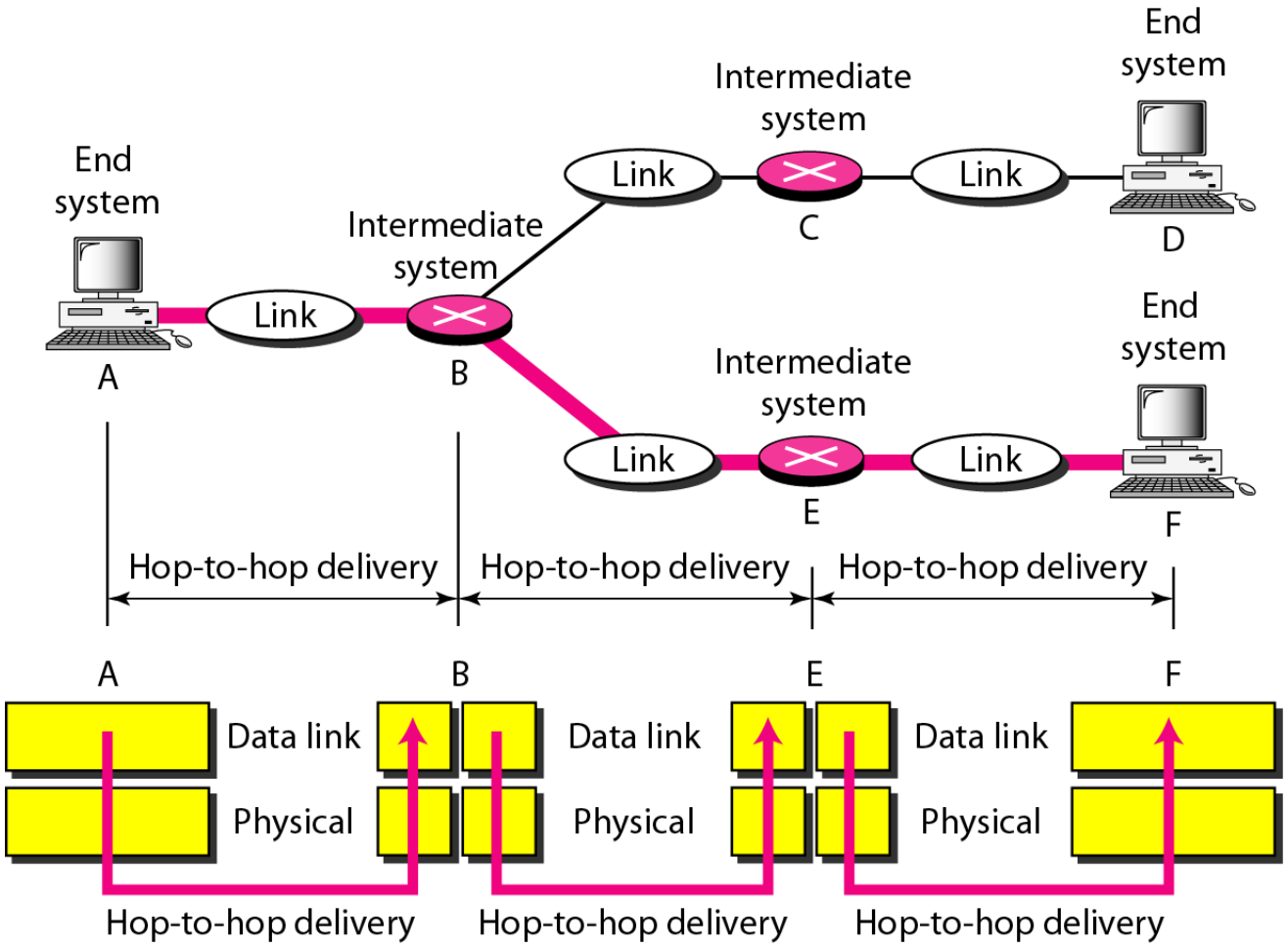
Data link layer



Note

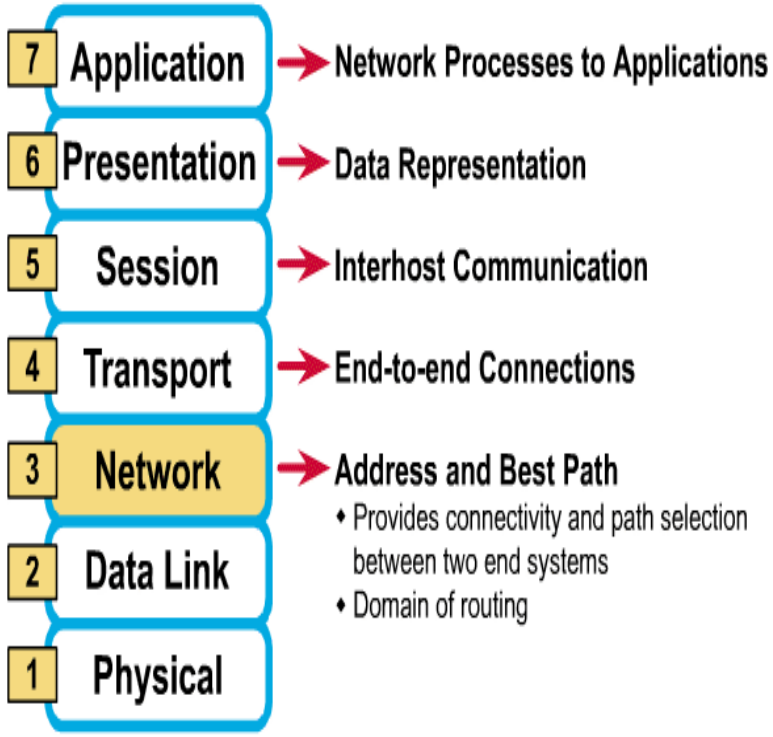
The data link layer is responsible for moving frames from one hop (node) to the next.

Hop-to-hop delivery

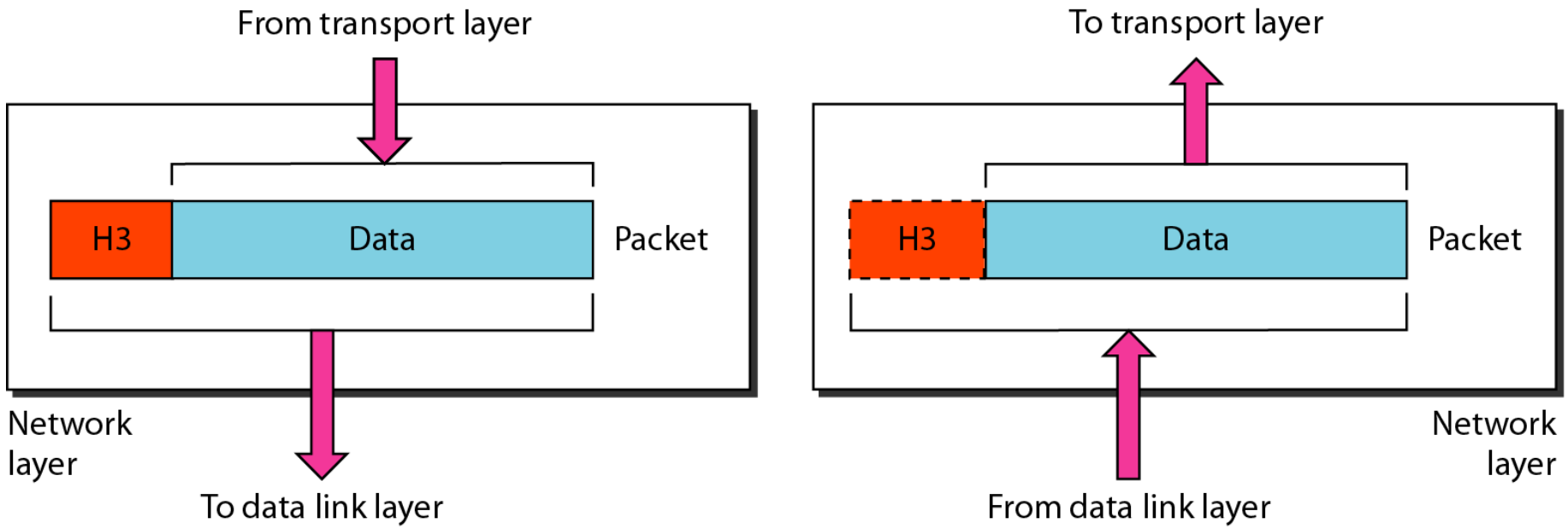


Network Layer

- Logical Addressing
- Routing



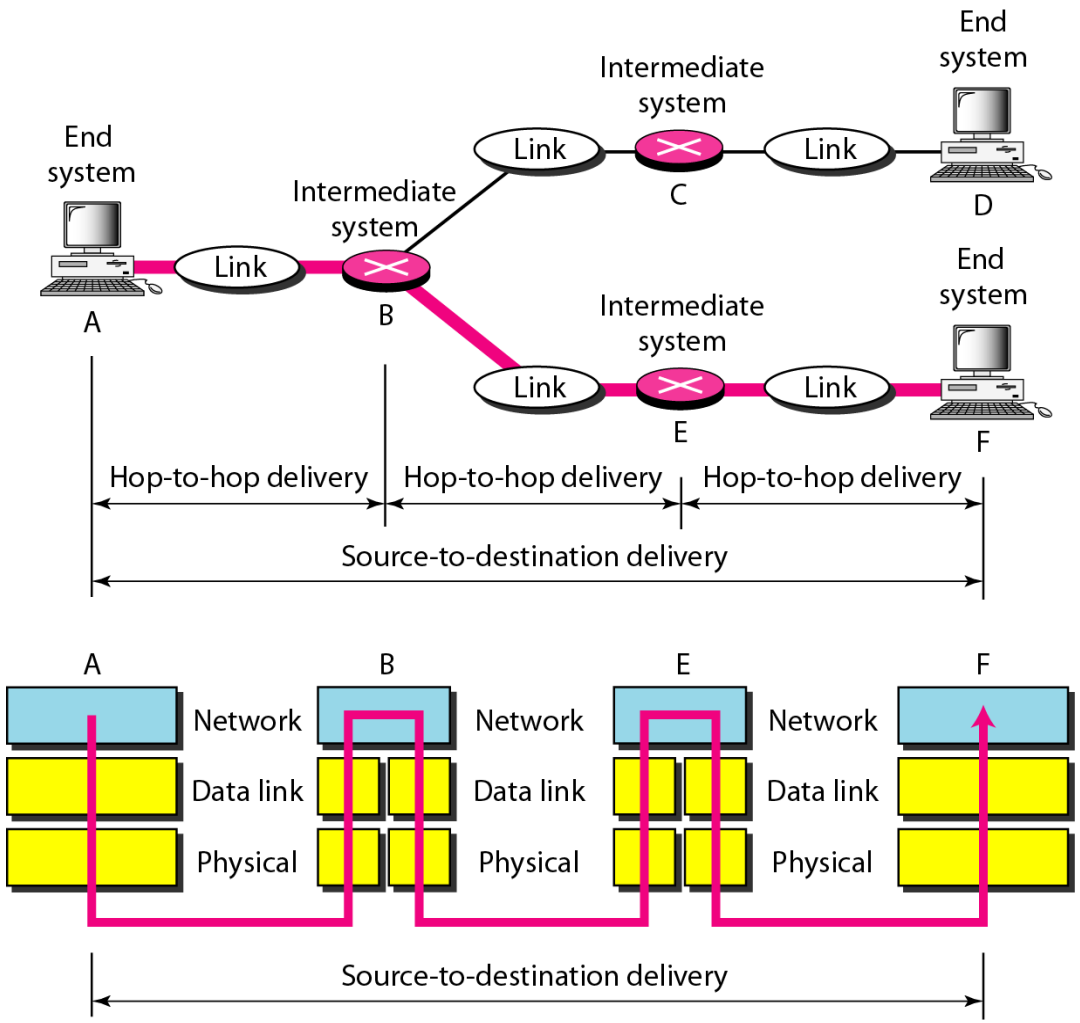
Network layer



Note

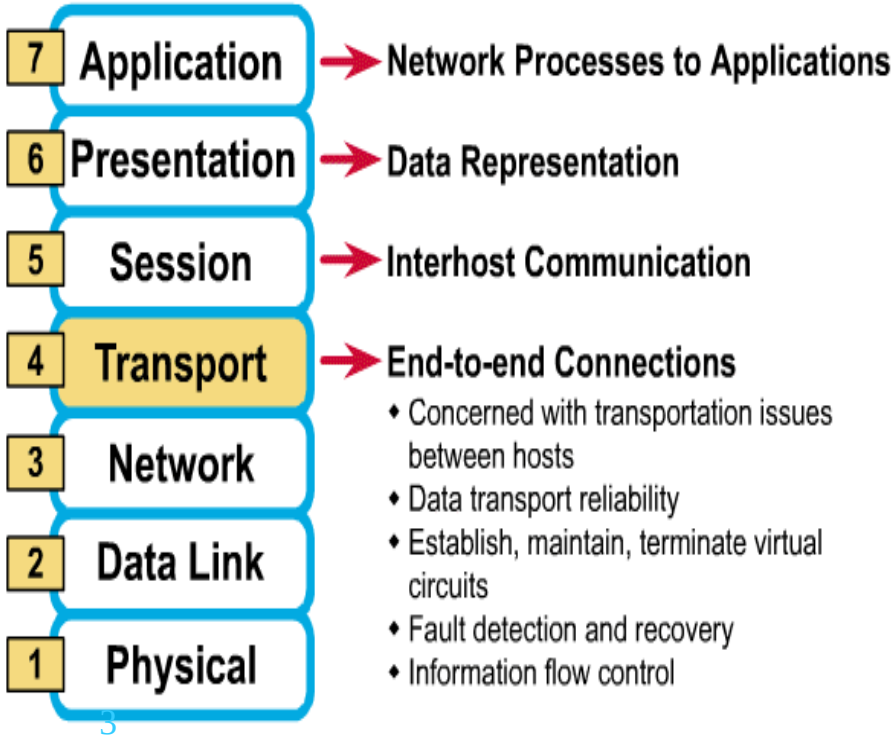
The network layer is responsible for the delivery of individual packets from the source host to the destination host.

Source-to-destination delivery

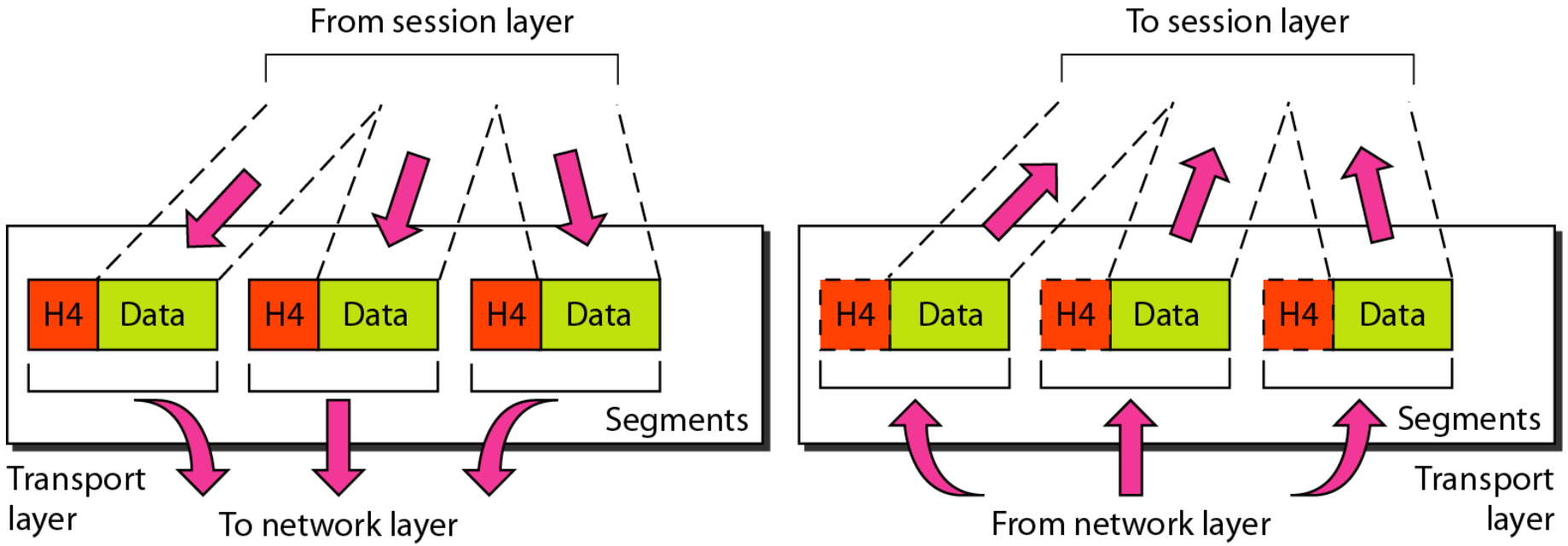


Transport Layer

- Service Point Addressing
- Segment and reassembly
- Flow Control
- Error Control
- Connection Control



Transport layer



Note

The transport layer is responsible for the delivery of a message from one process to another.

Reliable process-to-process delivery of a message