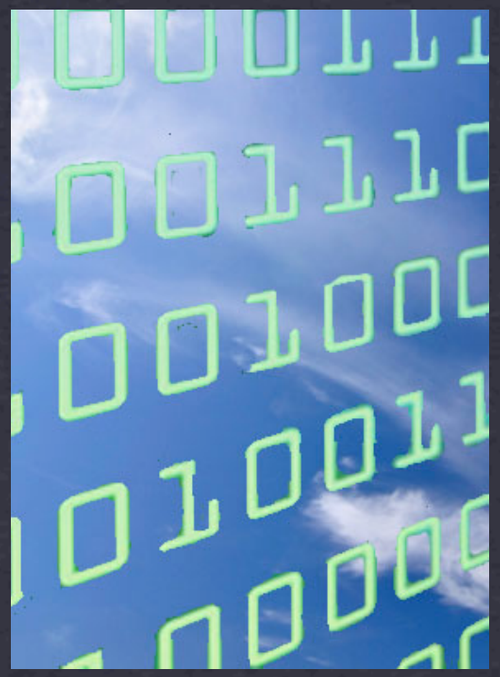
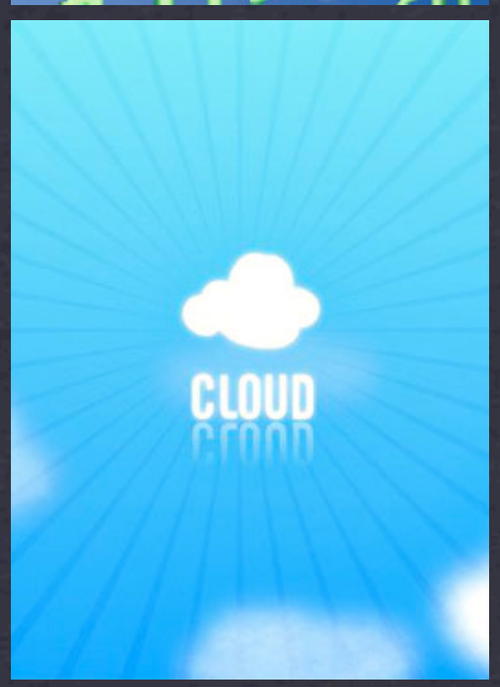




PROJECT

KOMUNIKASI DATA (WEEK 4)

S. INDRIANI L., M.T

DATE

GENAP 2012/2013

CLIENT

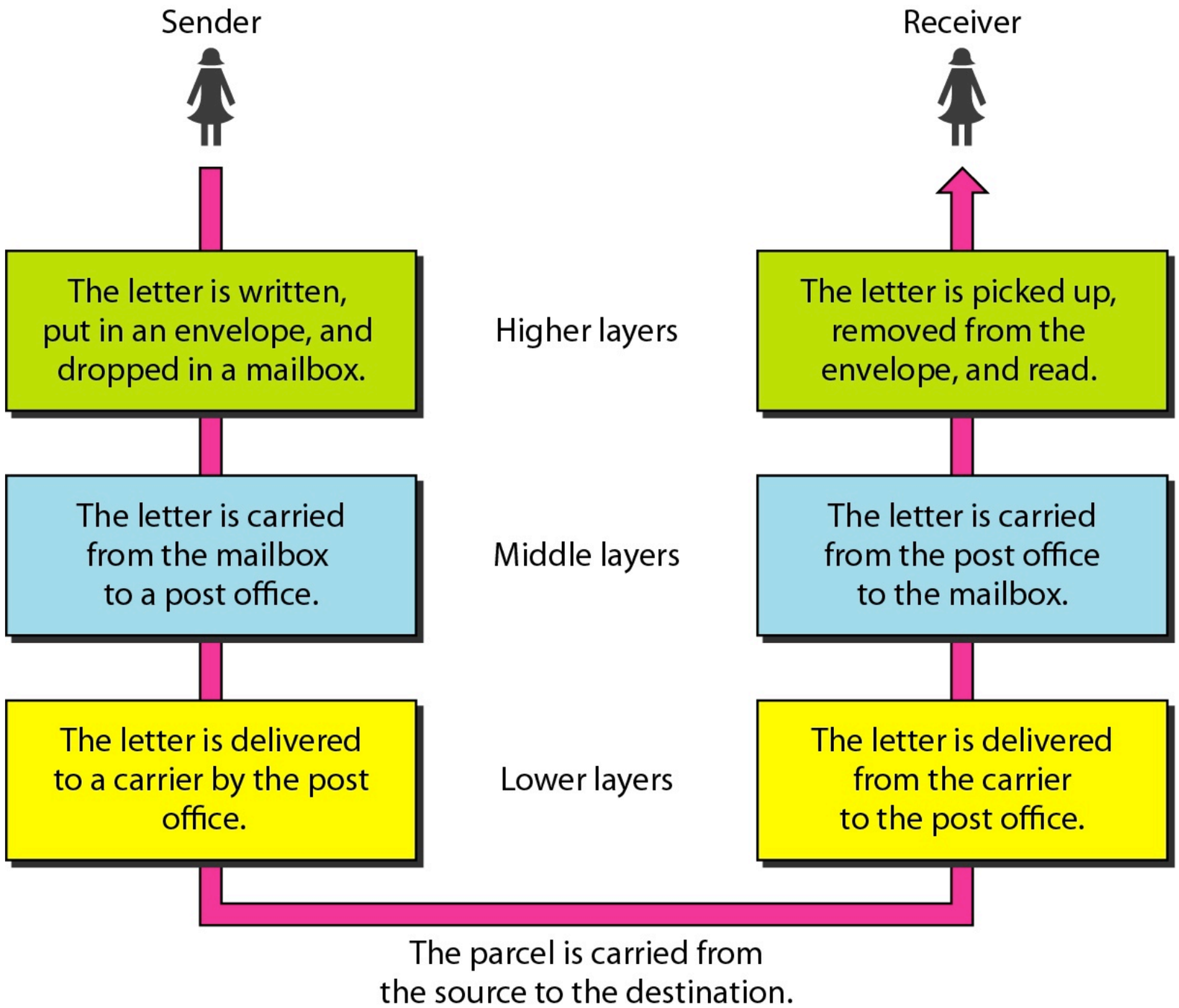
JURUSAN SISTEM KOMPUTER (S1)

Network Models

- A network is a combination of hardware and software that sends data from one location to another.
- The hardware consists of the physical equipment that carries signal from one point of the network to another.
- The software consists of instruction sets that make possible the services that we expect from a network

Layered Tasks

Tasks involved in sending a letter



OSI Model

Established in 1947, the International Standards Organization (ISO) is a multinational body dedicated to worldwide agreement on international standards.

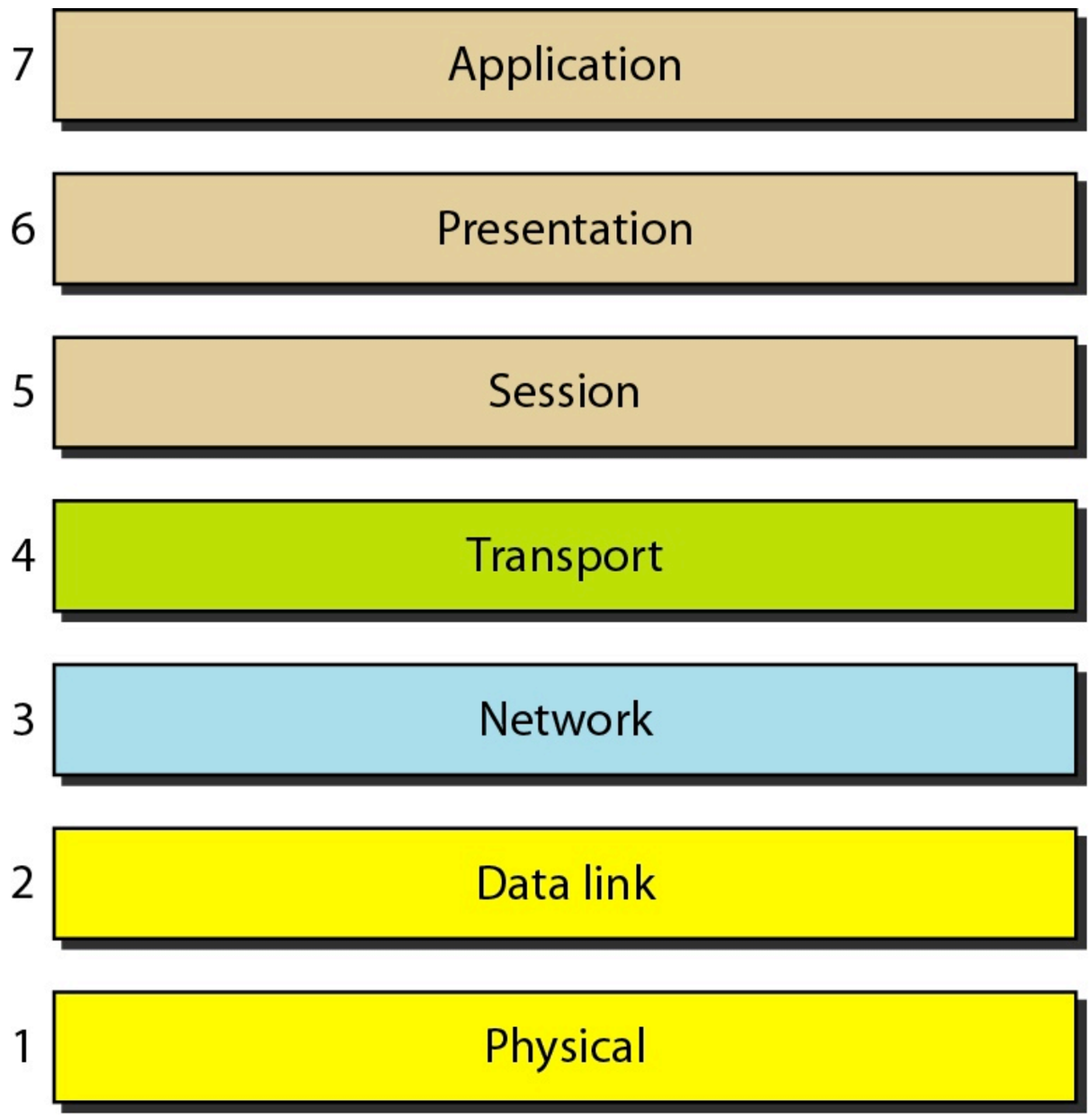
An ISO standard that covers all aspects of network communications is the Open Systems Interconnection (OSI) model. It was first introduced in the late 1970s.

The purpose of the OSI Model is to show how to facilitate communication between different systems without requiring changes to the logic of the underlying hardware and software.

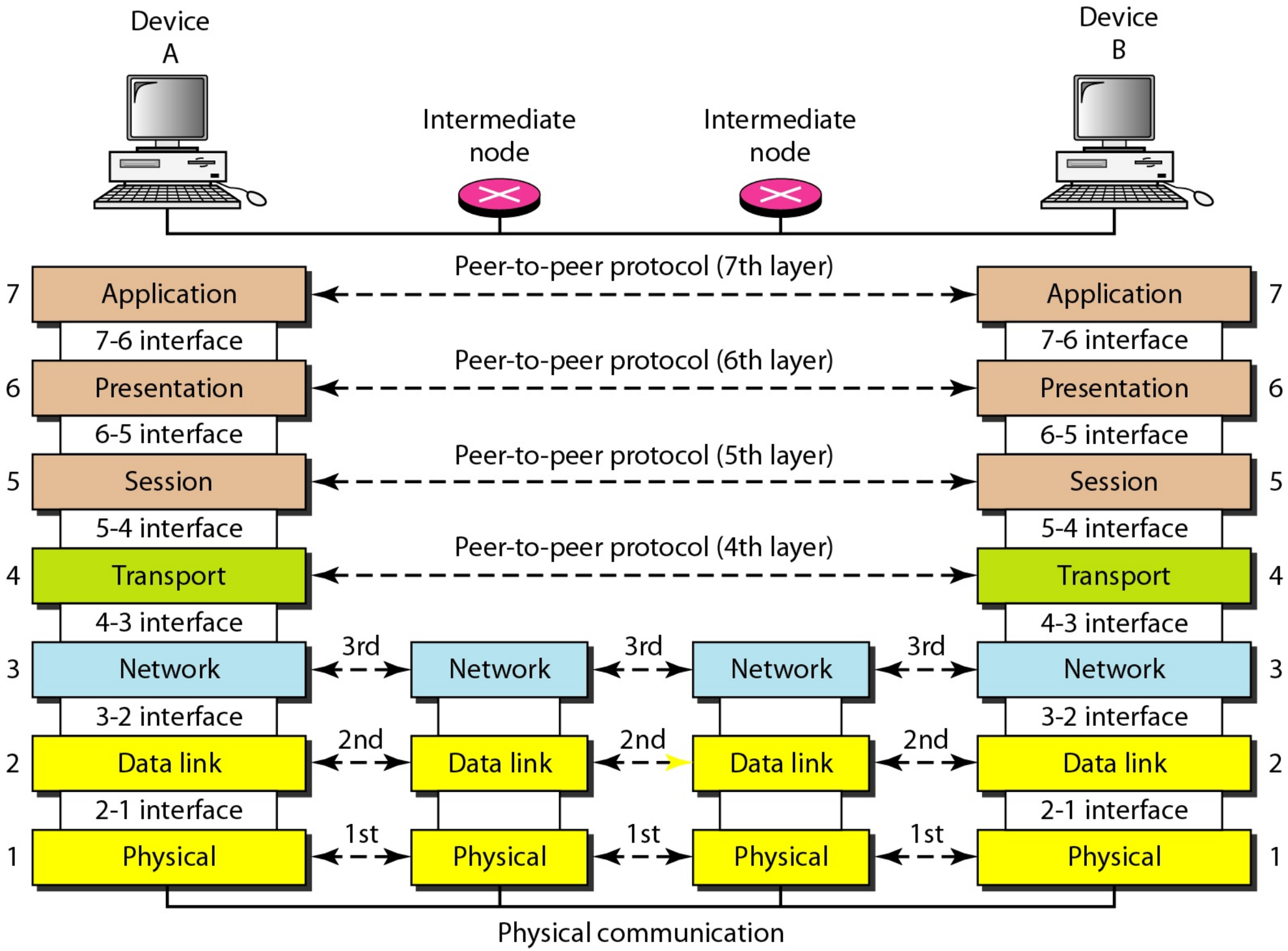
The OSI Model is not a protocol; it is a model for understanding and designing a network architecture that is flexible, robust, and interoperable

- The OSI Model is a layered framework for the design of network system that allows communication between all types of computer systems.
- An understanding of the fundamental of the OSI model provides a solid basis for exploring data communications.

7 layers of the OSI Model



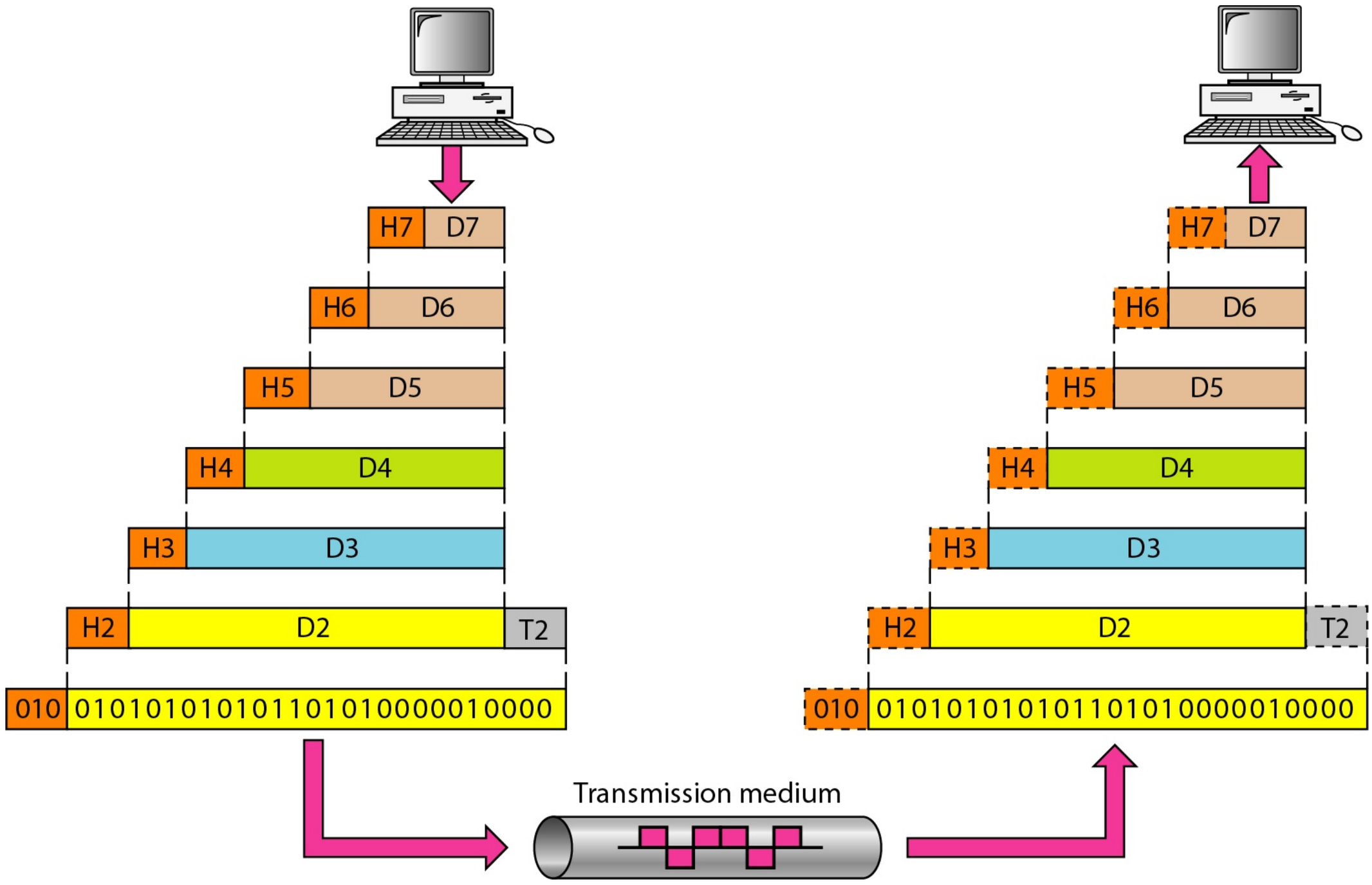
The interaction between layers in the OSI Model



Interfaces Between Layers

- The passing of the data and network information down through the layers of the sending device and back up through the layers of the receiving device is made possible by an interface between each pair of adjacent layers.
- Each interface defines the information and services a layer must provide for the layer above it.
- Well-defined interfaces and layer functions provide modularity to a network. As long as a layer provides the expected services to the layer above it, the specific implementation of its functions can be modified or replaced without requiring changes to the surrounding layers

An exchange using the OSI Model

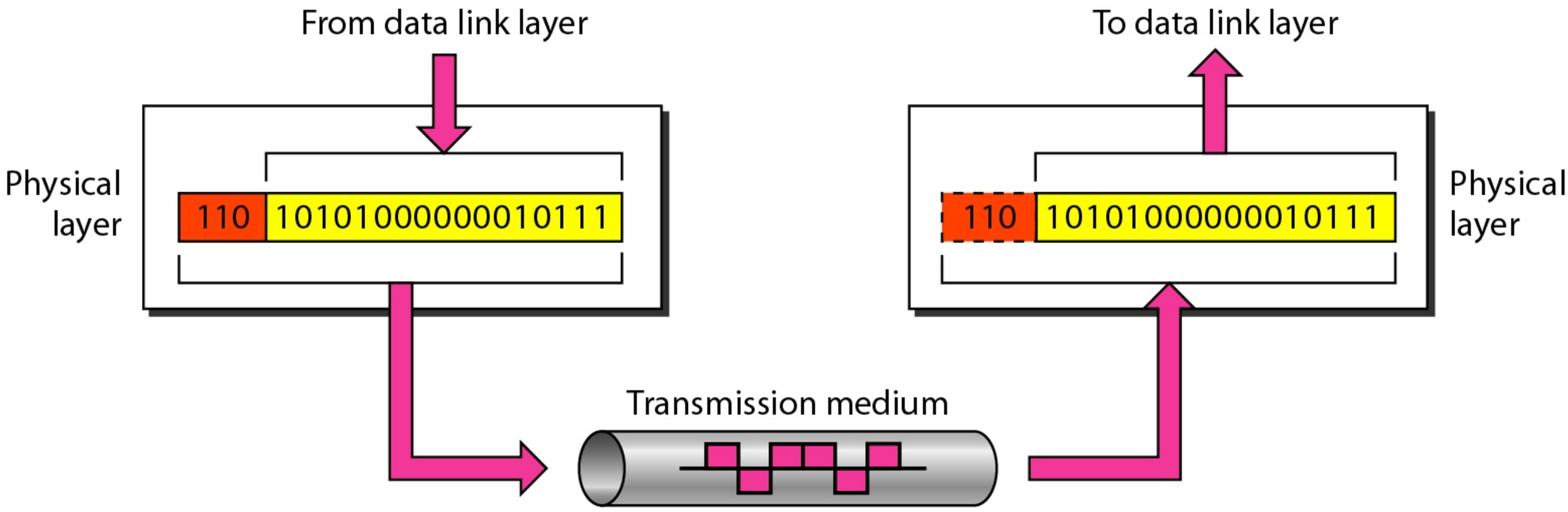


Layers in The OSI Model

- In this section we briefly describe the functions of each layer in the OSI model.

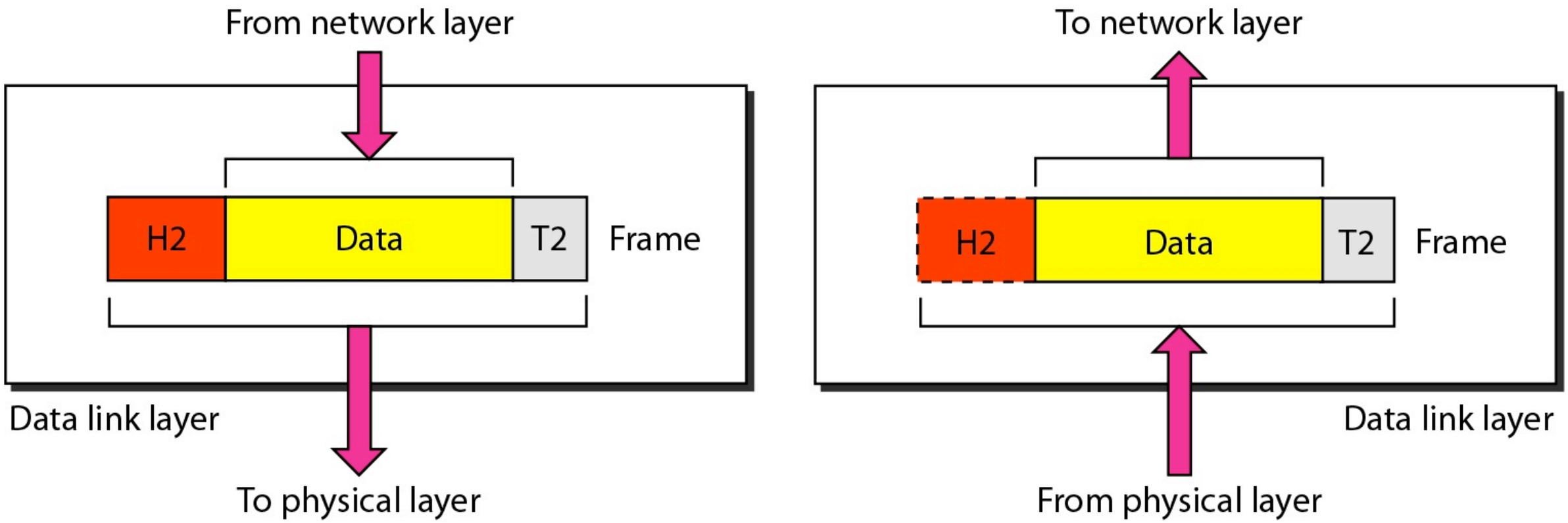
Physical Layer
Data Link Layer
Network Layer
Transport Layer
Session Layer
Presentation Layer
Application Layer

Physical Layer



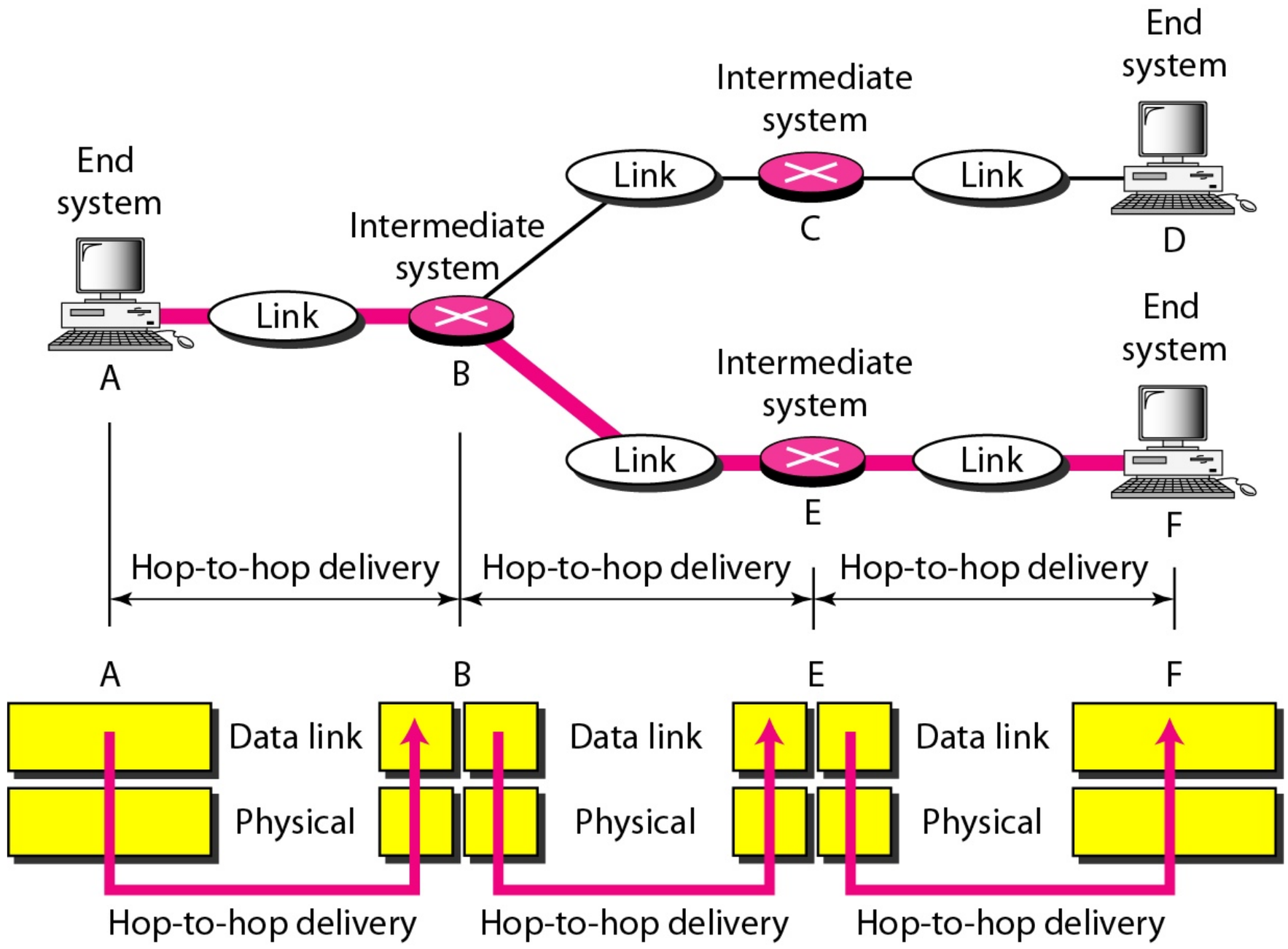
The physical layer is responsible for movements of individual bits from one hop (node) to the next.

Data Link Layer

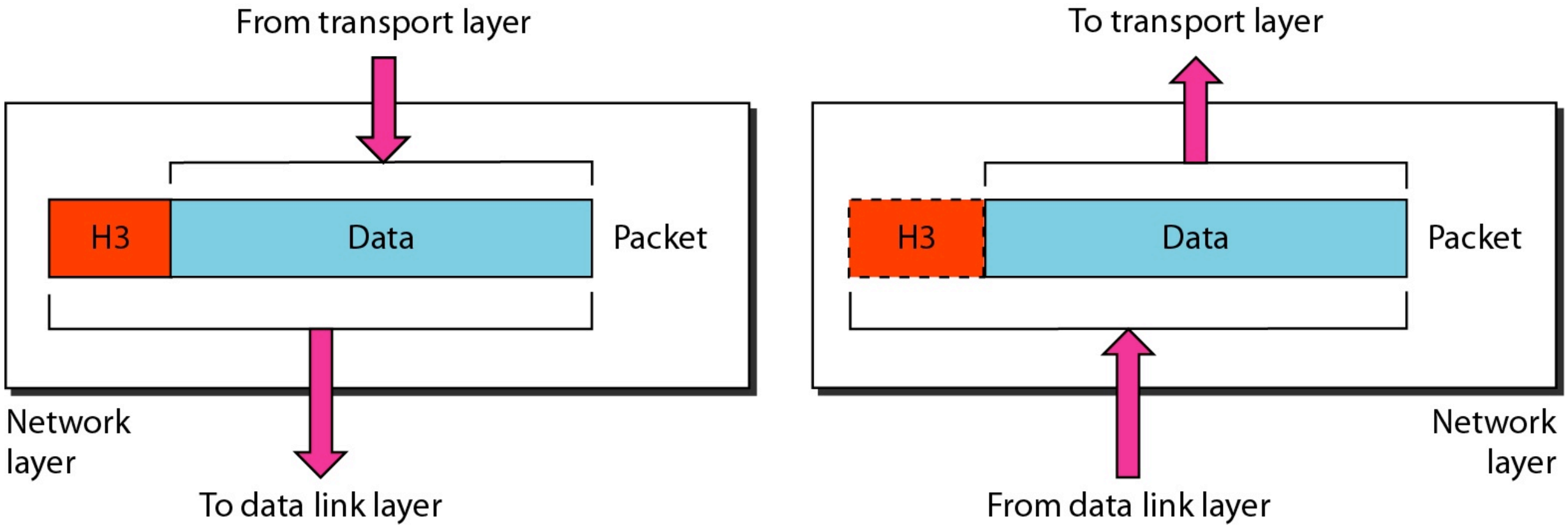


The data link layer is responsible for moving frames from one hop (node) to the next.

Hop-to-hop delivery

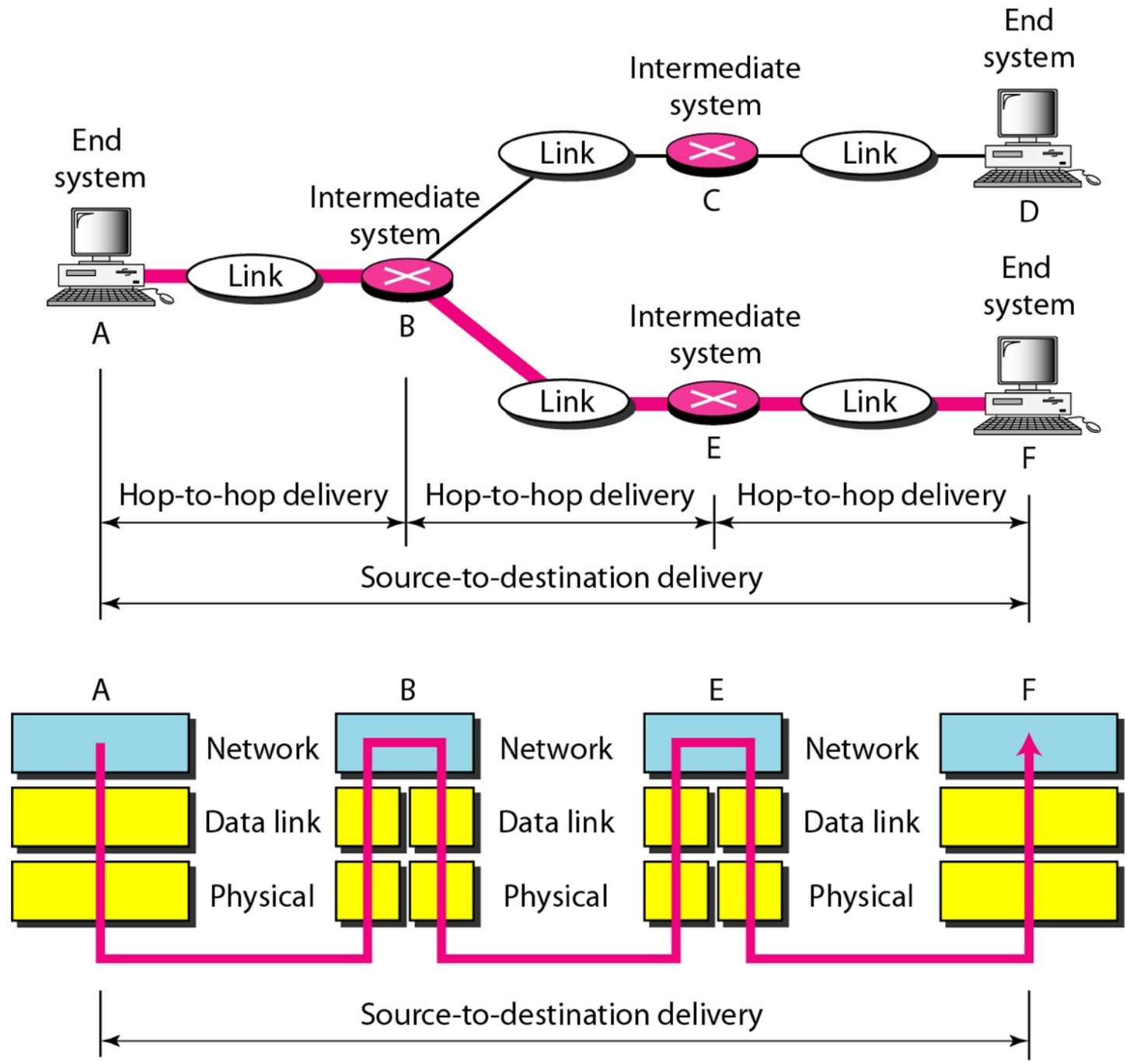


Network Layer

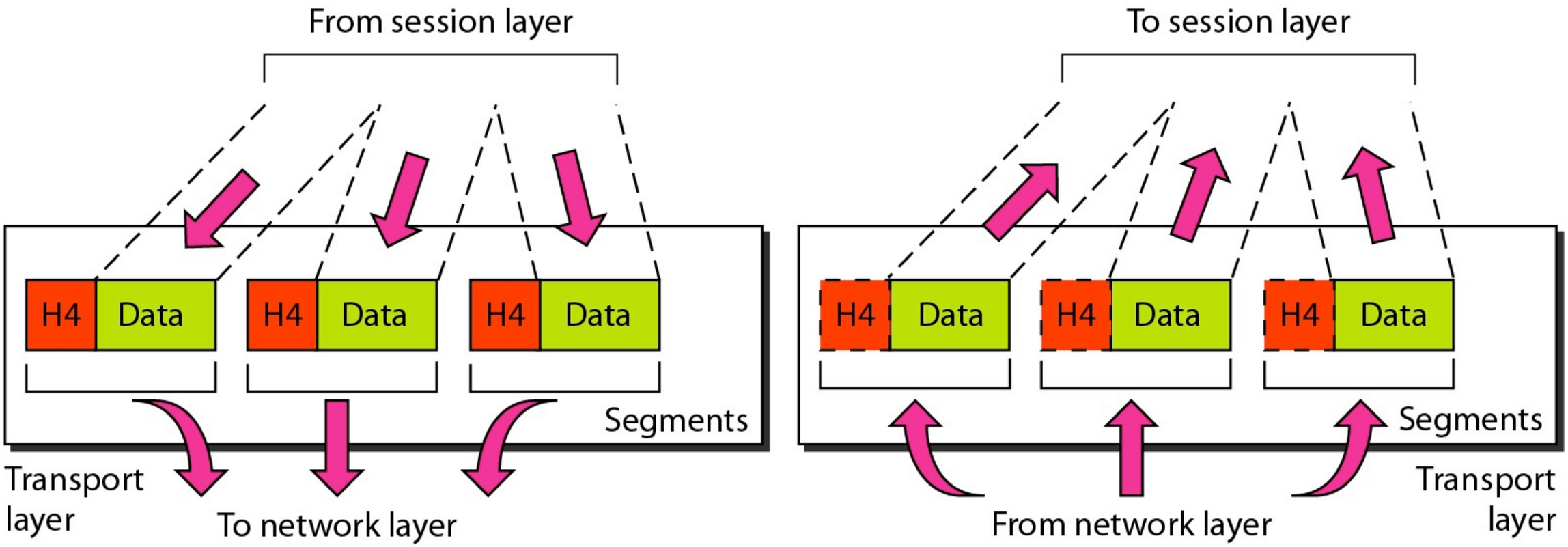


The network layer is responsible for the delivery of individual packets from the source host to the destination host.

Source-to-destination delivery

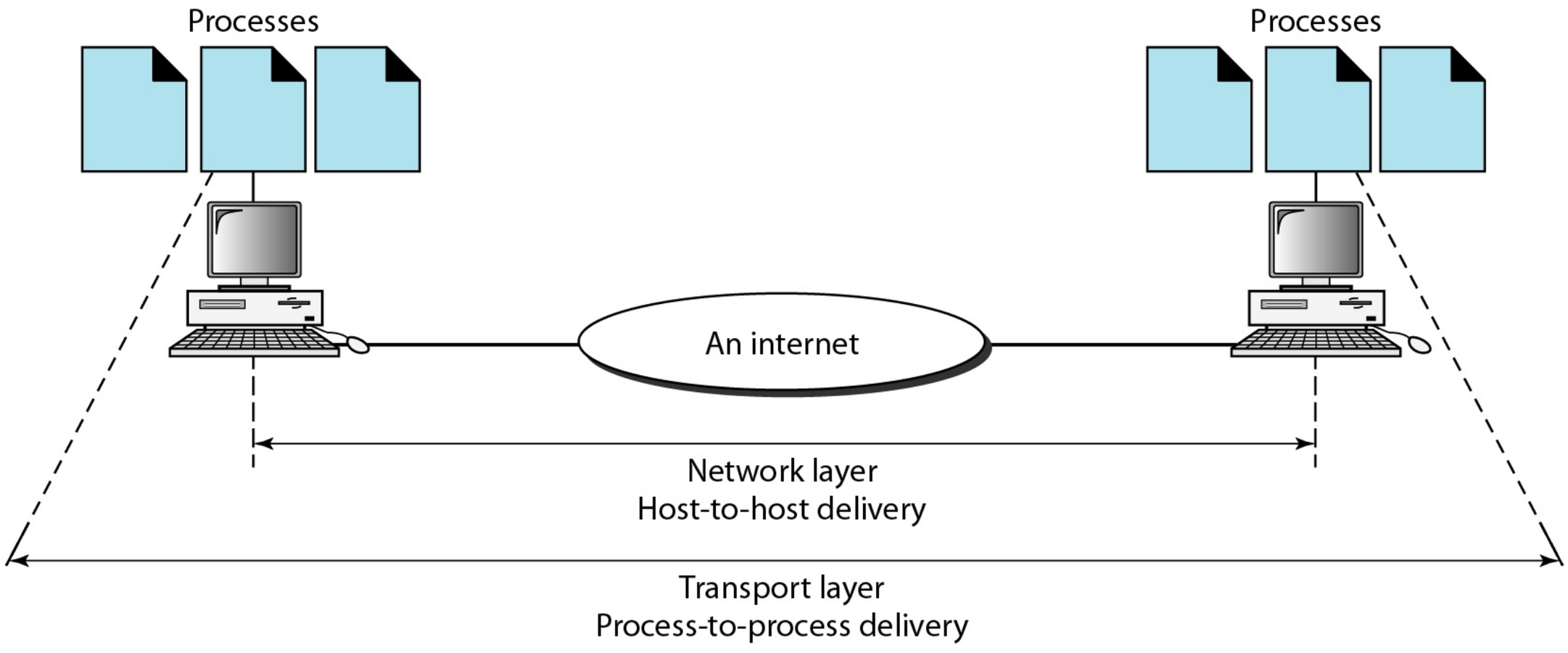


Transport Layer

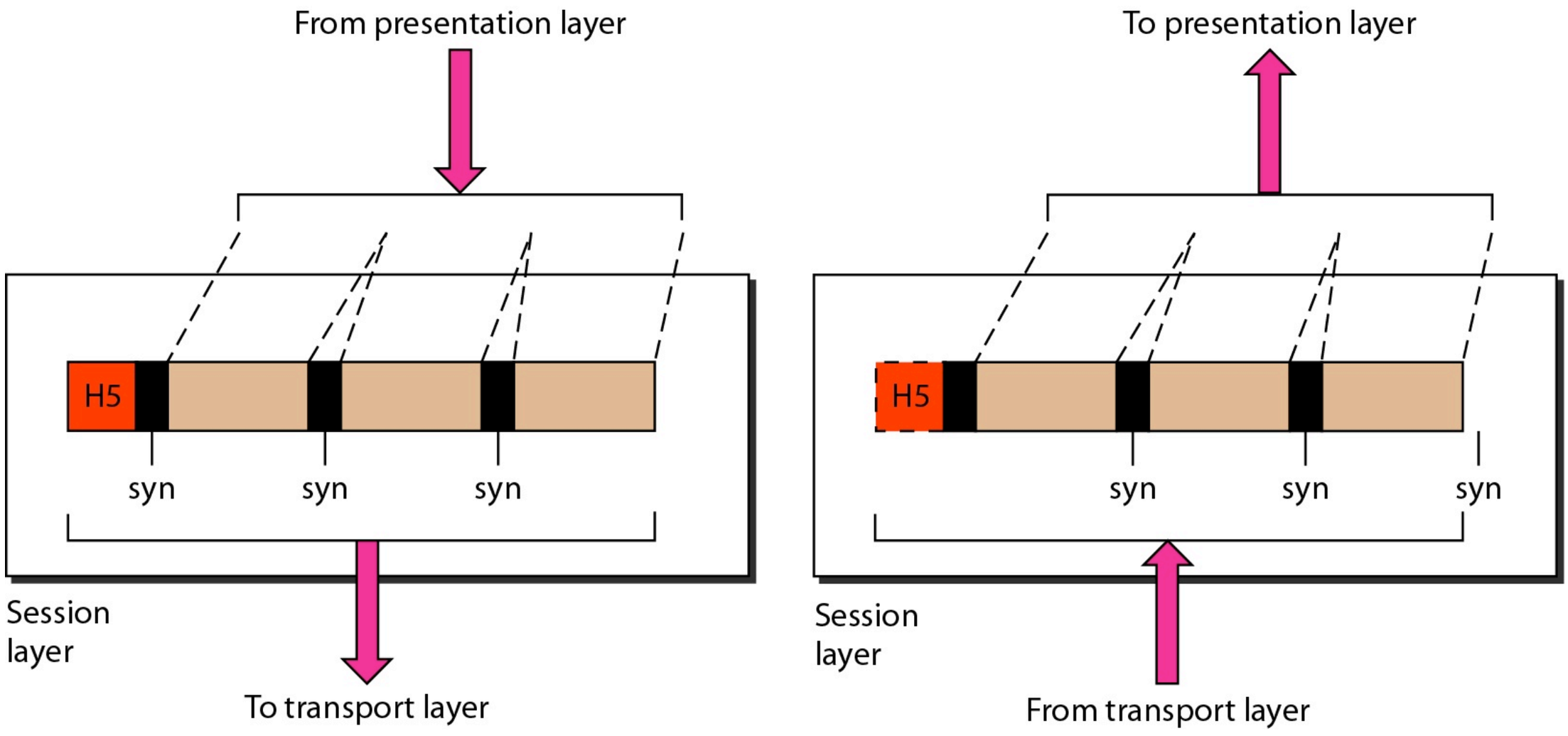


The transport layer is responsible for the delivery of a message from one process to another.

Reliable process-to-process delivery of a message

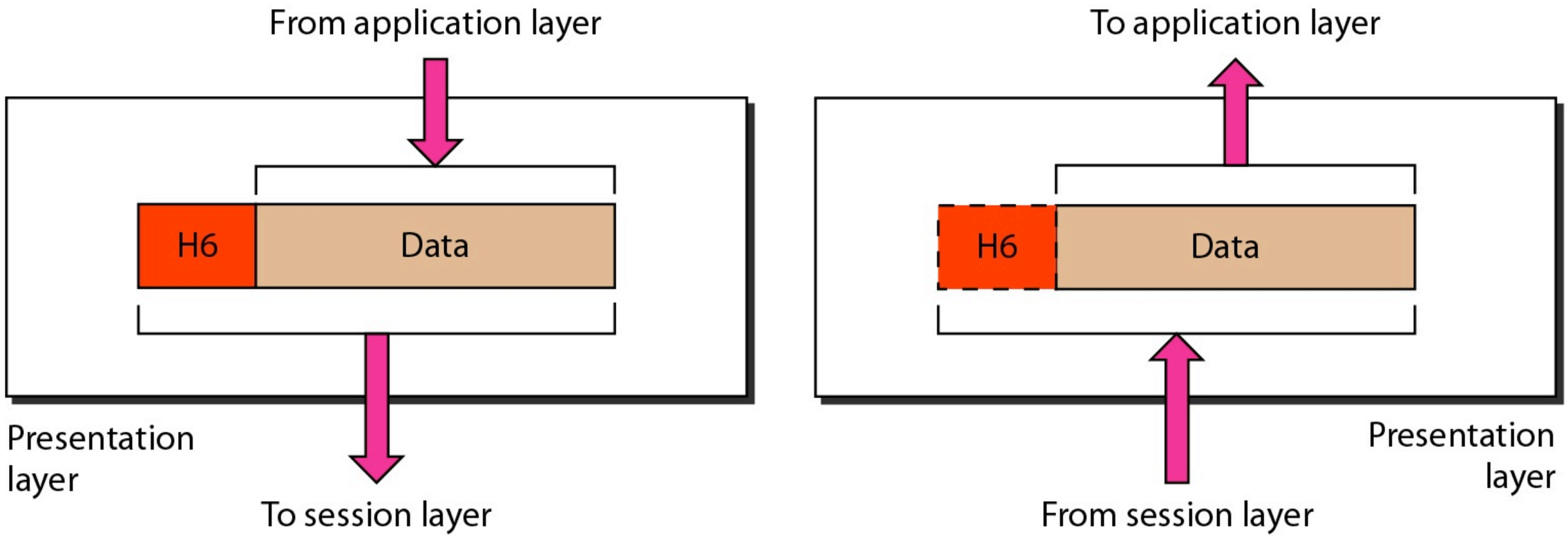


Session Layer



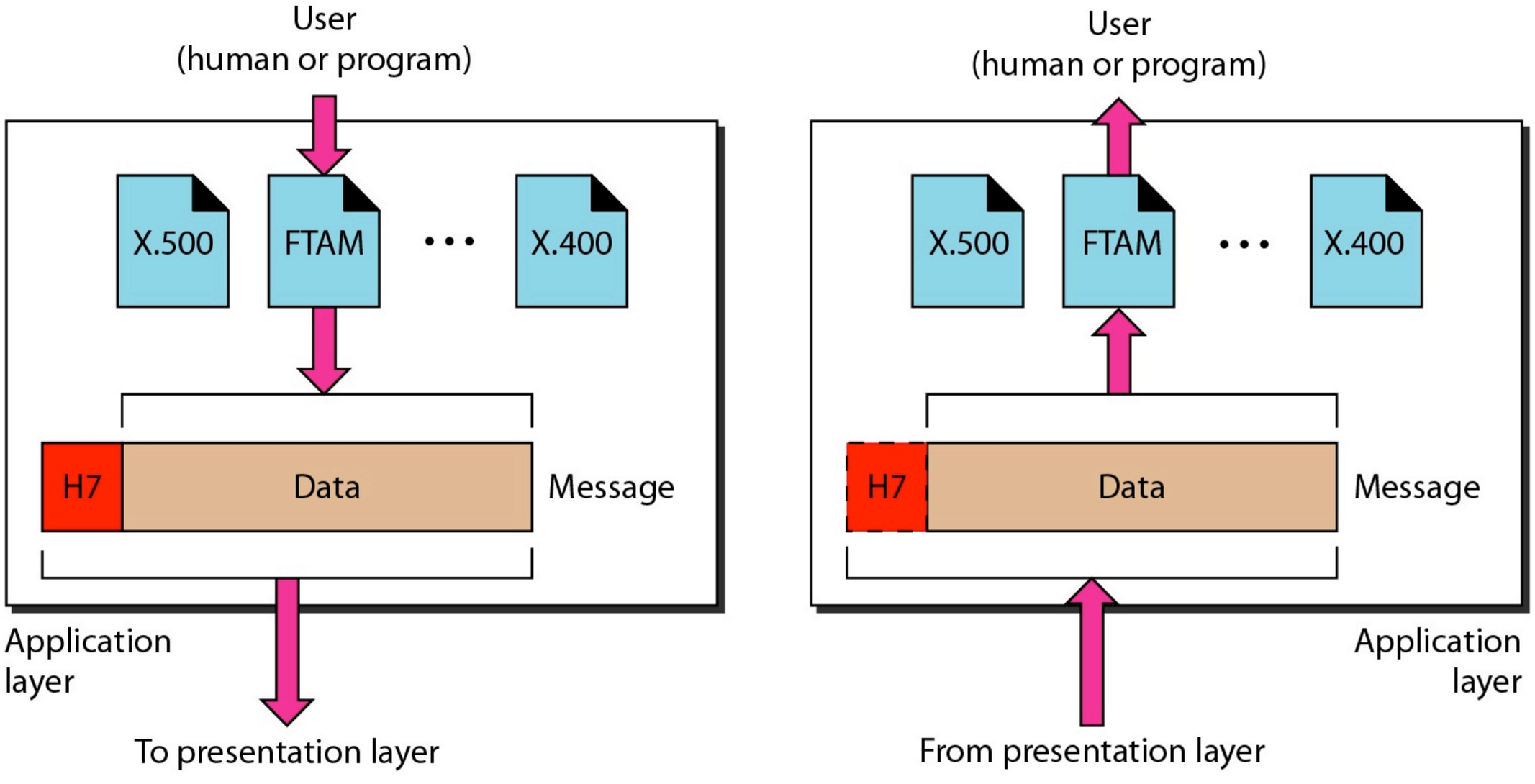
The session layer is responsible for dialog control and synchronization.

Presentation Layer



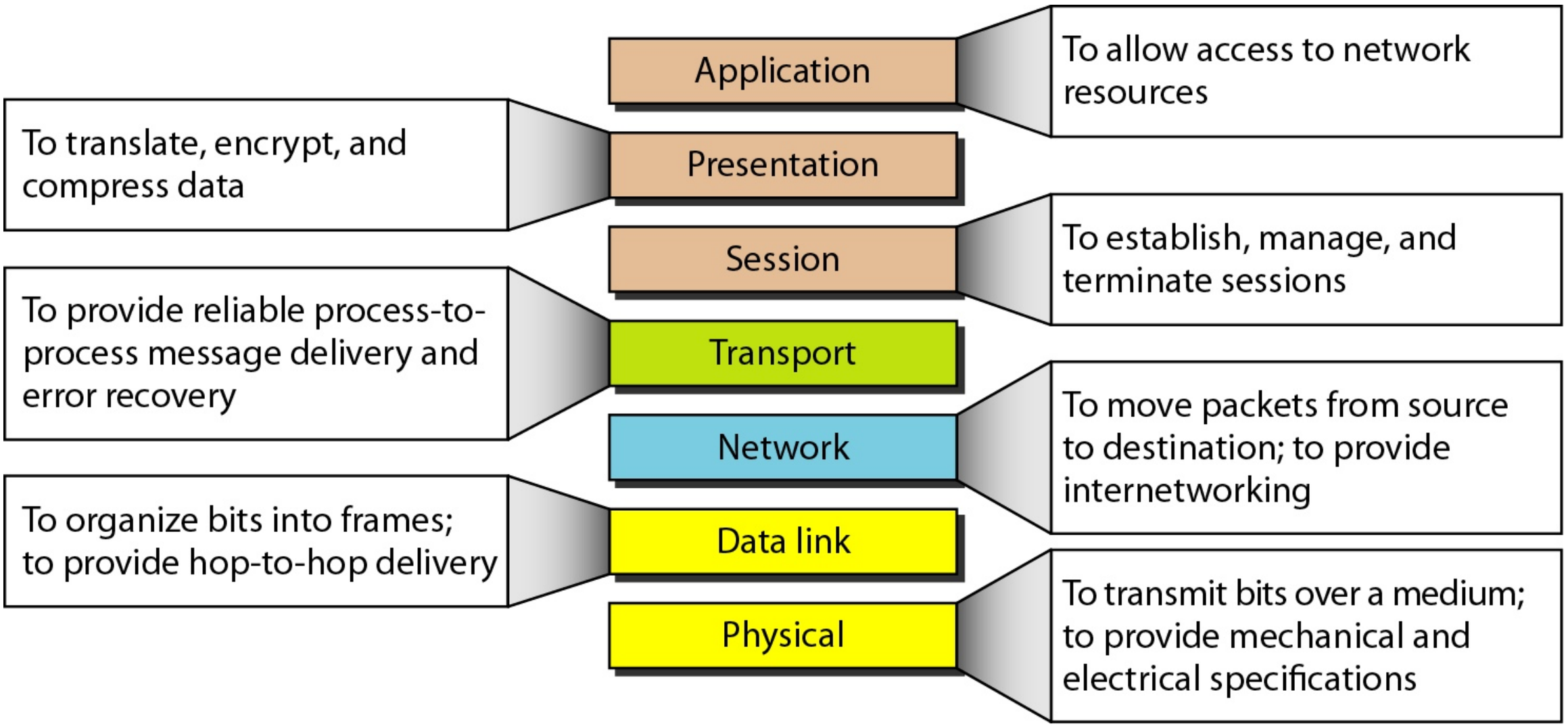
The presentation layer is responsible for translation, compression, and encryption.

Application Layer



The application layer is responsible for providing services to the user.

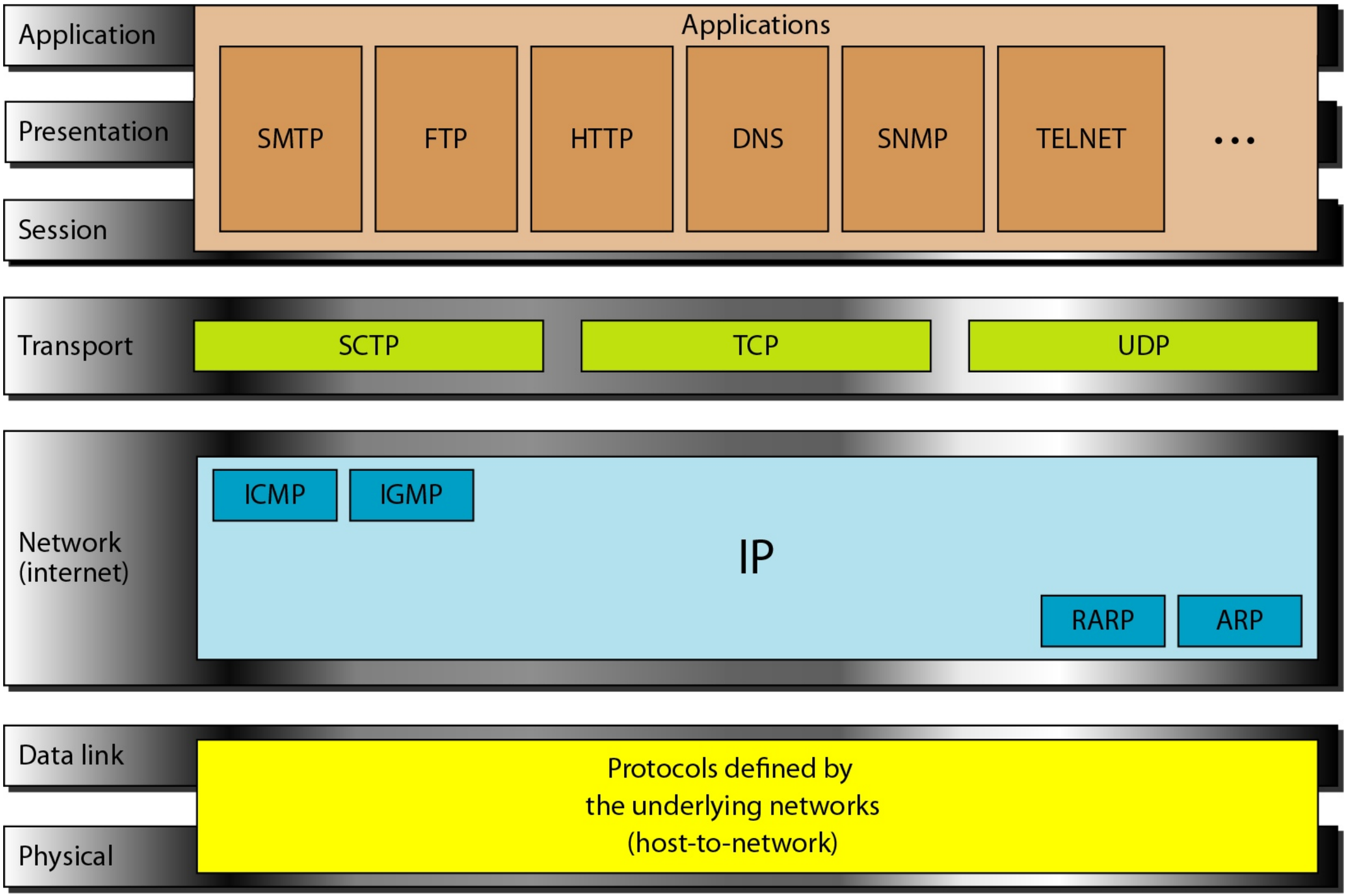
Summary of Layers



TCP/IP Protocol Suite

The layers in the TCP/IP protocol suite do not exactly match those in the OSI model. The original TCP/IP protocol suite was defined as having four layers: host-to-network, internet, transport, and application. However, when TCP/IP is compared to OSI, we can say that the TCP/IP protocol suite is made of five layers: physical,

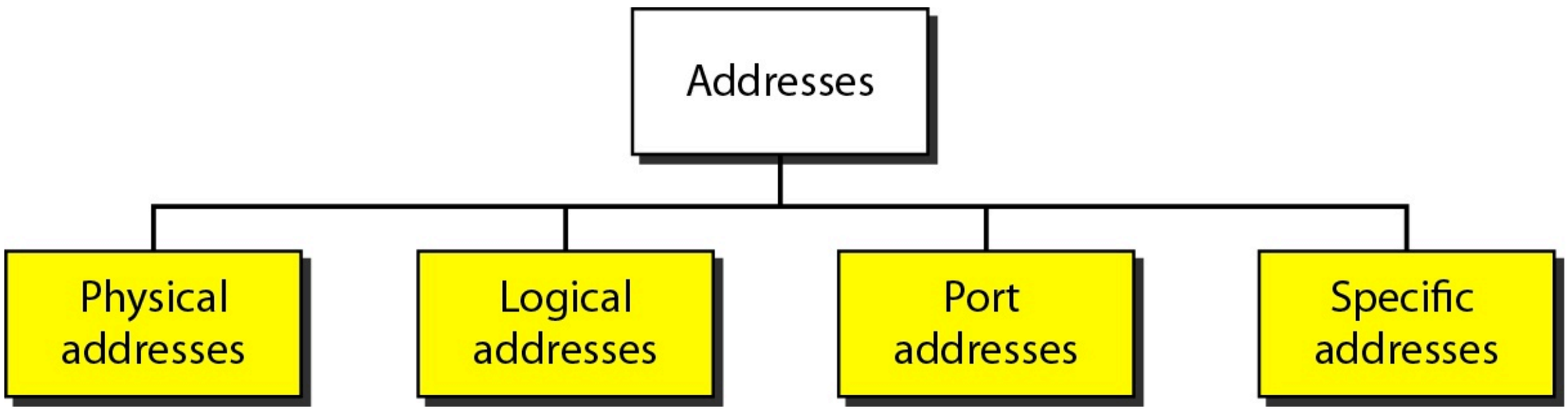
TCP/IP and OSI Model



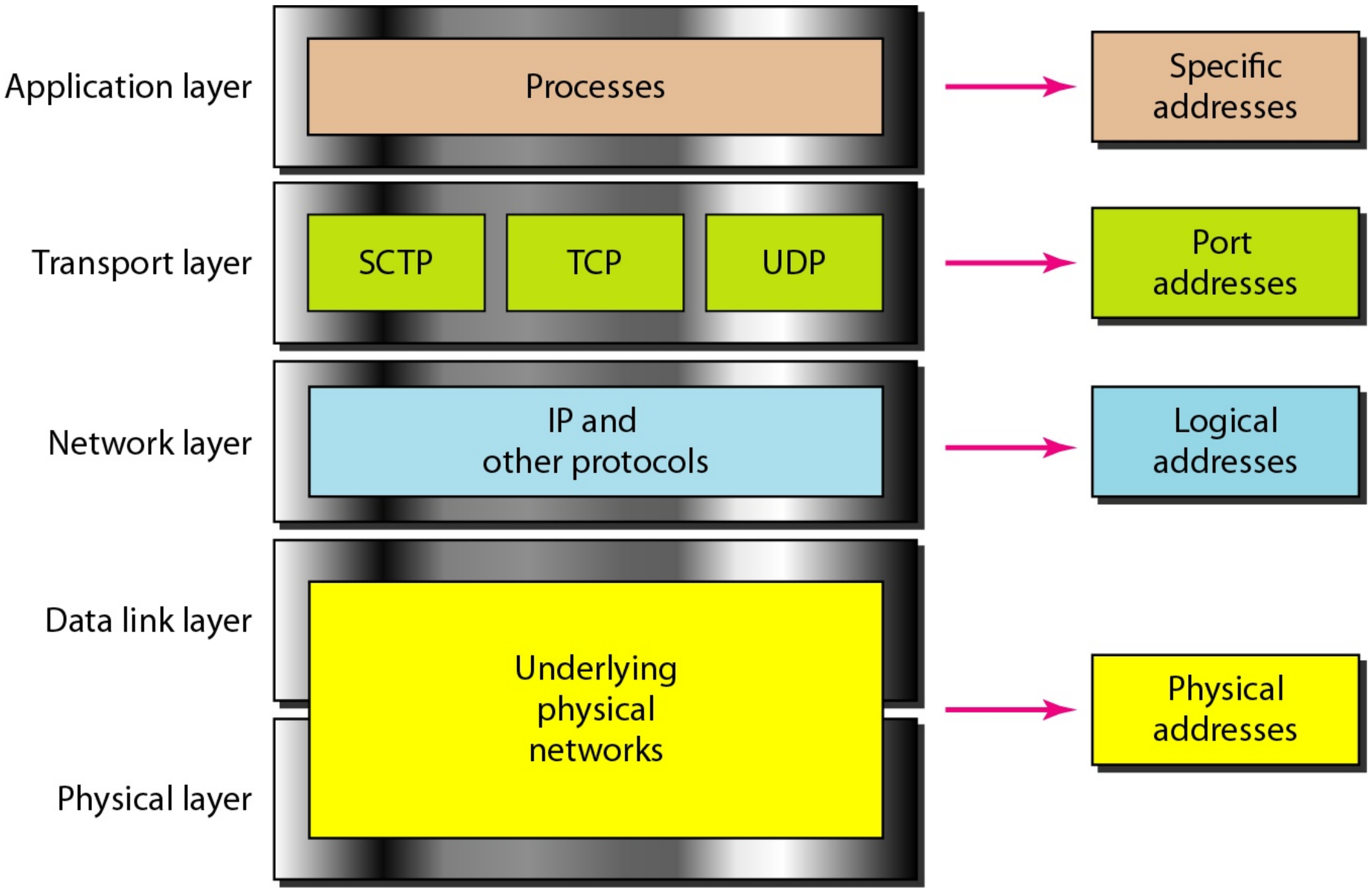
Addressing

- Four level of Address are used in an internet employing the TCP/IP protocols:

  physical (link) address, logical (IP) address, port address, and specific address

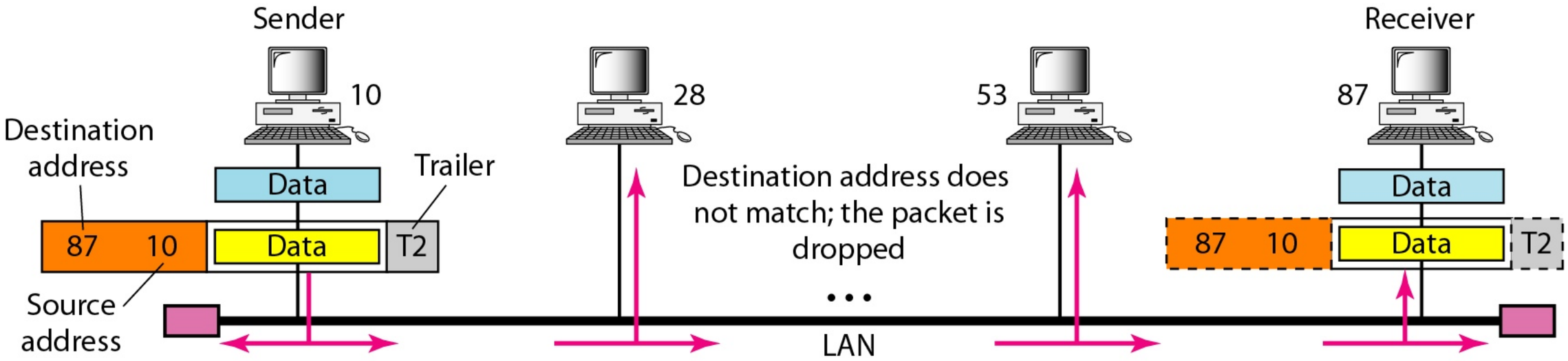


Relationship of layers and addresses in TCP/IP



Physical Addresses

The physical address, also known as the link address, is the address of a node as defined by its LAN or WAN



In Figure, a node with physical address 10 sends a frame to a node with physical address 87. The two nodes are connected by a link (bus topology LAN). As the figure shows, the computer with physical address 10 is the sender, and the computer with physical address 87 is the receiver.

As we will see in Chapter 13, most local-area networks use a 48-bit (6-byte) physical address written as 12 hexadecimal digits; every byte (2 hexadecimal digits) is separated by a colon, as shown below:

07:01:02:01:2C:4B

A 6-byte (12 hexadecimal digits) physical address.

IP Addresses

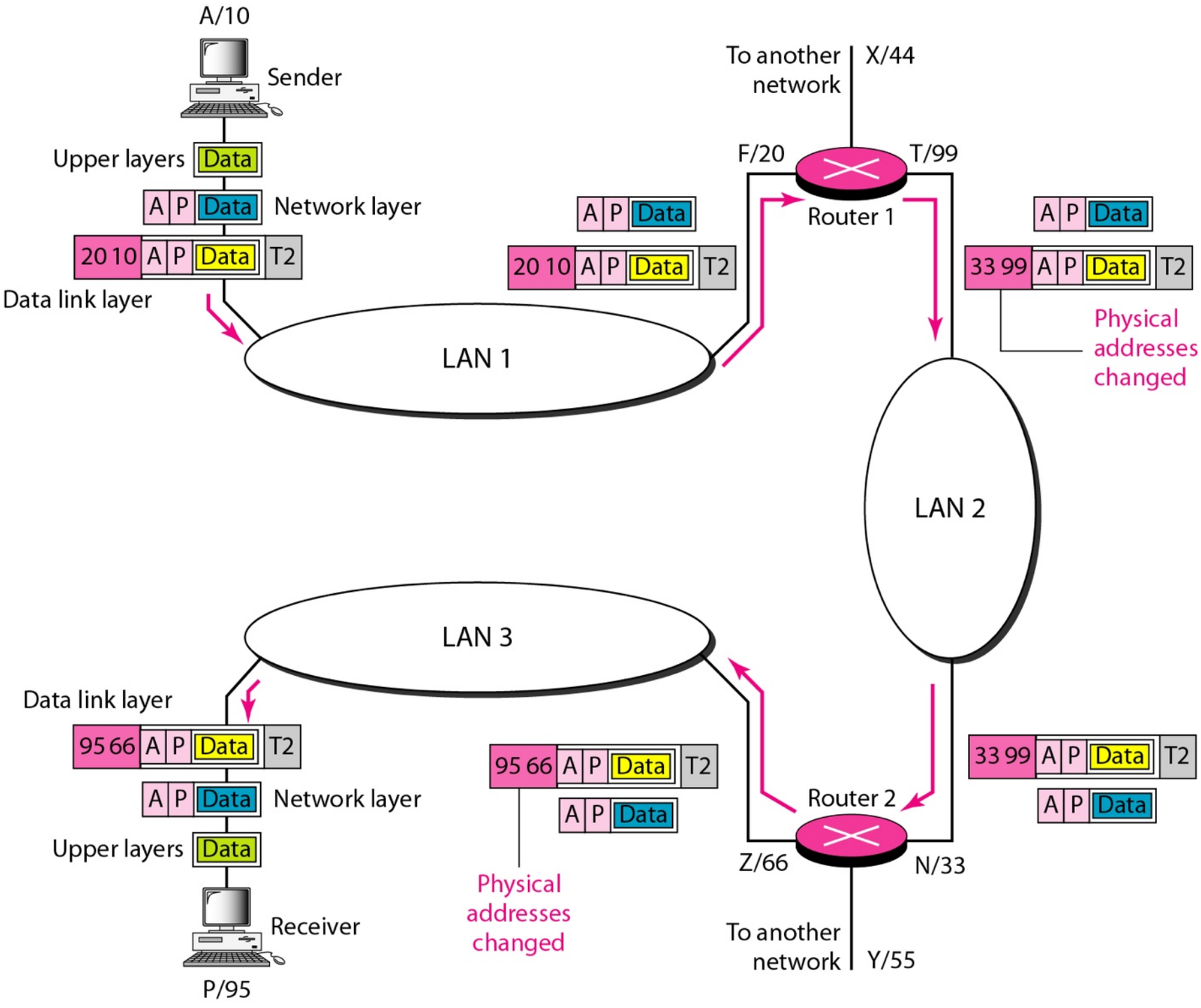
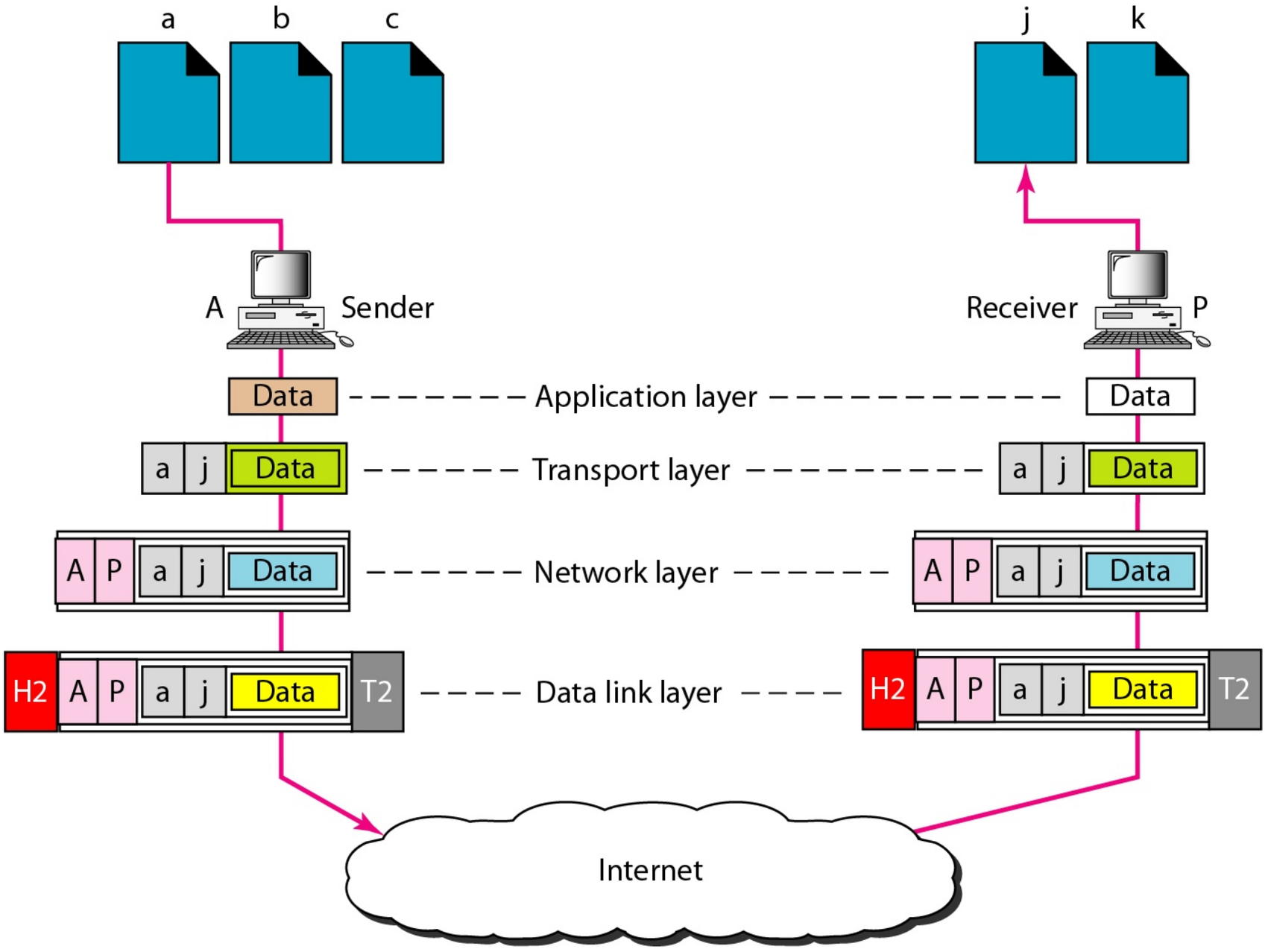


Figure 2.21 shows two computers communicating via the Internet. The sending computer is running three processes at this time with port addresses a, b, and c. The receiving computer is running two processes at this time with port addresses j and k. Process a in the sending computer needs to communicate with process j in the receiving computer. Note that although physical addresses change from hop to hop, logical and port addresses remain the same from the source to destination.

Port Addresses



The physical addresses will change from hop to hop, but the logical addresses usually remain the same.

a port address is a 16-bit address represented by one decimal number as shown

753

A 16-bit port address represented as one single number.

The physical addresses change from hop to hop, but the logical and port addresses usually remain the same.