

# OSI Reference Model

7 Application

6 Presentation

5 Session

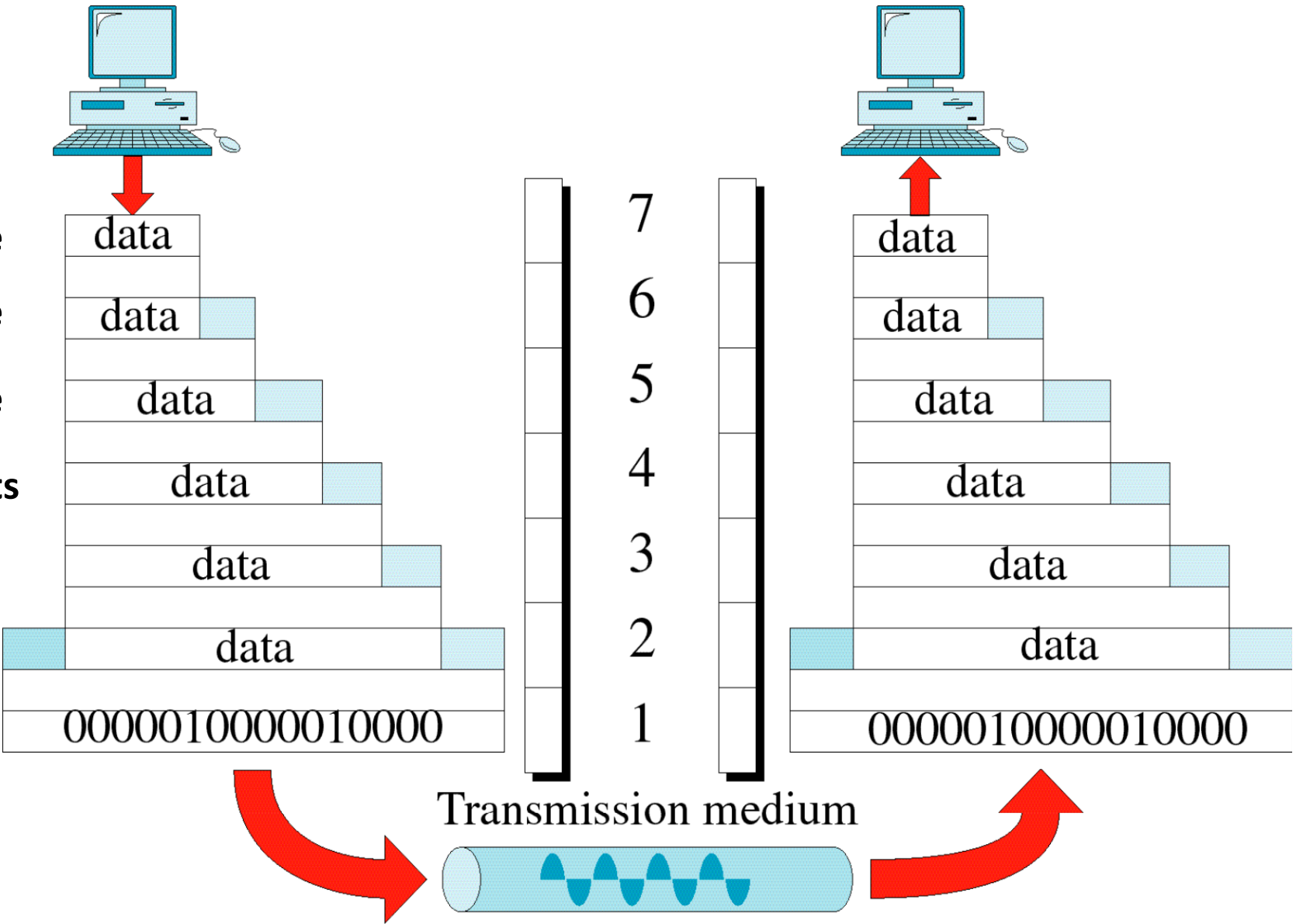
4 Transport

3 Network

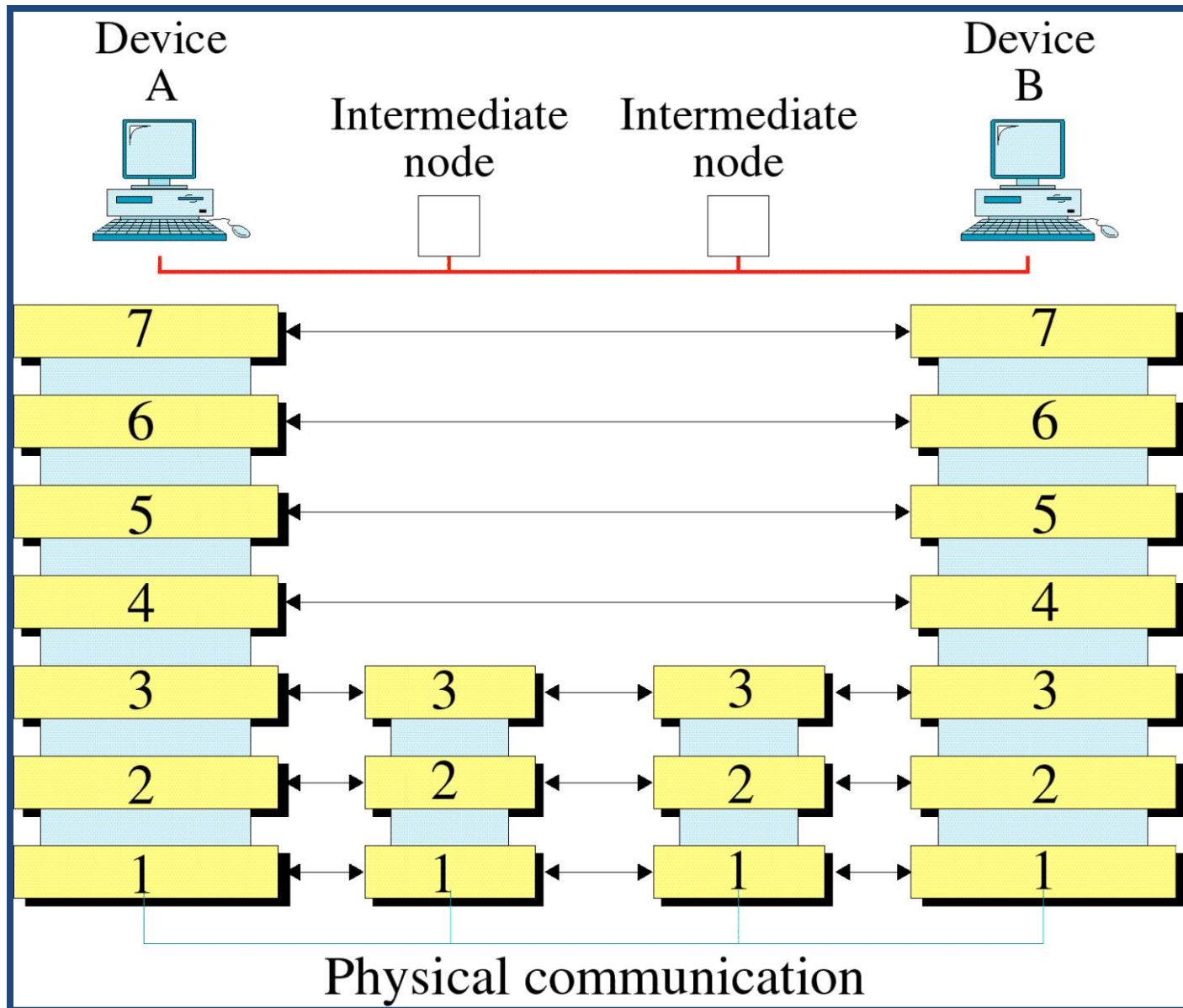
2 Data link

1 Physical

## An Exchange Using the OSI Model



# PEER-to-PEER Process Communications



# Physical Layer

This layer is responsible for physical mechanics of a network connection which includes the following:-

- The type of interface used on the network device
- The type of cable used for connecting devices
- The connectors used on each end of the cable
- The pin patterns used for each of the connections on the cable
- The encoding of a message on a signal by converting binary digits to physical representation based on the media type, such as electrical for copper, light for fibre or a radio wave for wireless.

The physical layer is also responsible for how binary information is converted to a physical layer signal and vice-versa.

The physical layer defines properties for connections and communications, including wires (UTP & fibre) and connectors (RJ-45 and DB-9).

# Data Link Layer

This layer is responsible for the following:-

- Define the **MAC or Hardware address**
- Define the physical or hardware topology for connections
- Define how the network layer protocol is encapsulated in the data link layer frame.
- Providing both connectionless and connection oriented services.

# Network Layer

This layer is responsible for three main functions:-

- Defines **logical address** used at layer 3
- Find paths based on the network numbers of logical addresses, to reach destination components.
- Connects different data link layer types together, such as Ethernet, Fibre Distributed Data Interface (FDDI) , Serial and Token ring.

# Transport Layer

- This layer has five main functions:-
- It sets up, maintains and tears down a session connection between two components.
- It can provide for the reliable and unreliable delivery of data across this connection.
- It segments data into smaller, more manageable sizes.
- It multiplexes connections , allowing multiple applications to send and receive data simultaneously on the same networking device.
- It can implement flow control through ready, not ready signals or windowing to ensure one component does not overflow another.



# Session Layer

This layer is responsible for :-

- Setting up a network connection
- Maintaining a network connection
- Tearing down network connection
- Examples:- RPCs and NFS.

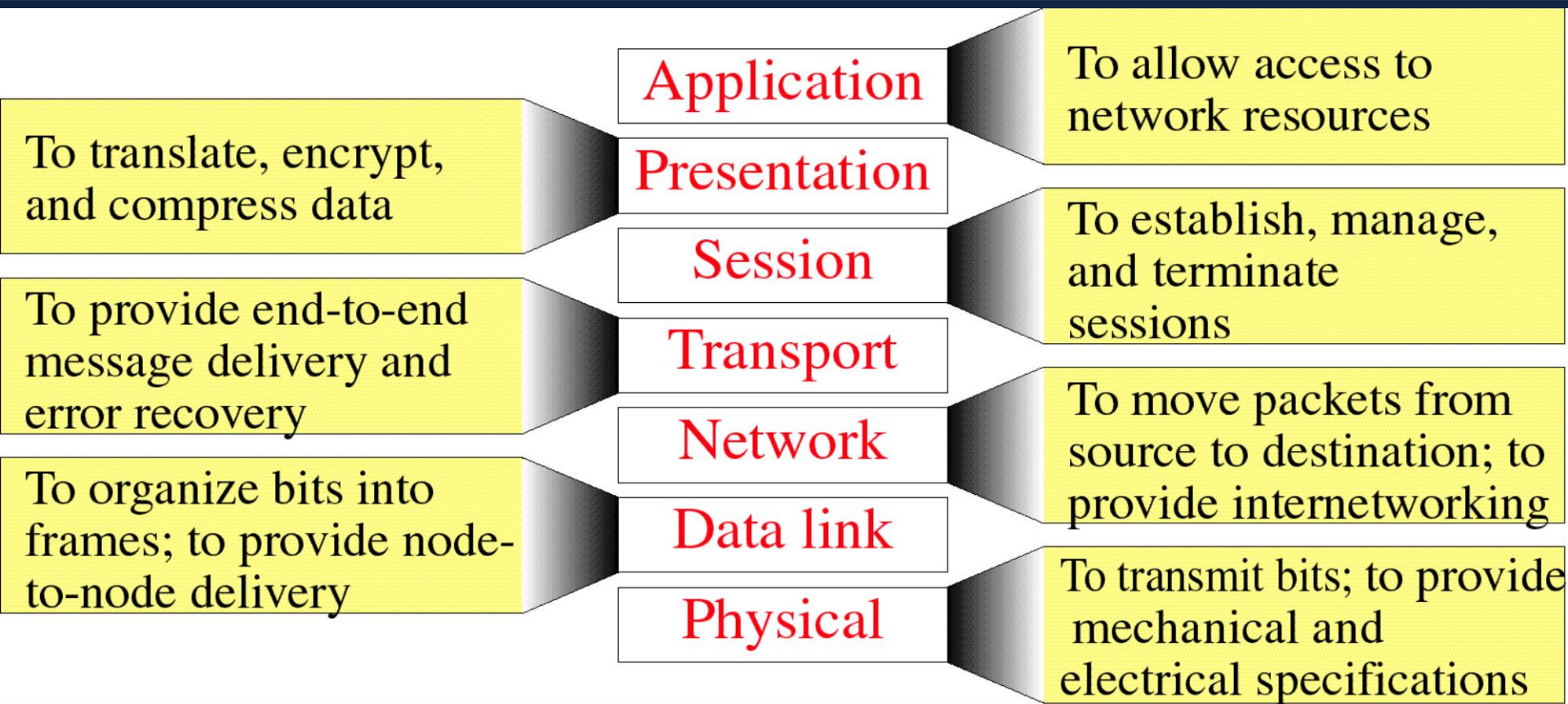
# Presentation Layer

- This layer determines how data is transmitted and represented to the user.
- This layer defines how various forms of text, graphics, audio/video information is transmitted and used correctly by the application layer.
- Examples of presentation layer protocols and standards include ASCII, BMP, JPEG, AVI, WAV, GIF and MPEG.

# Application Layer

- It provides the interface that a person uses to interact with the application. This interface can be command line based or graphics based.
- Common examples of application layer protocols are **Telnet, Secure Shell (SSH), File Transfer Protocol (FTP), Email etc.**

# Summary of the Layer Functions



The End