International Standards Organization Open Systems Interconnect (OSI) Reference Model

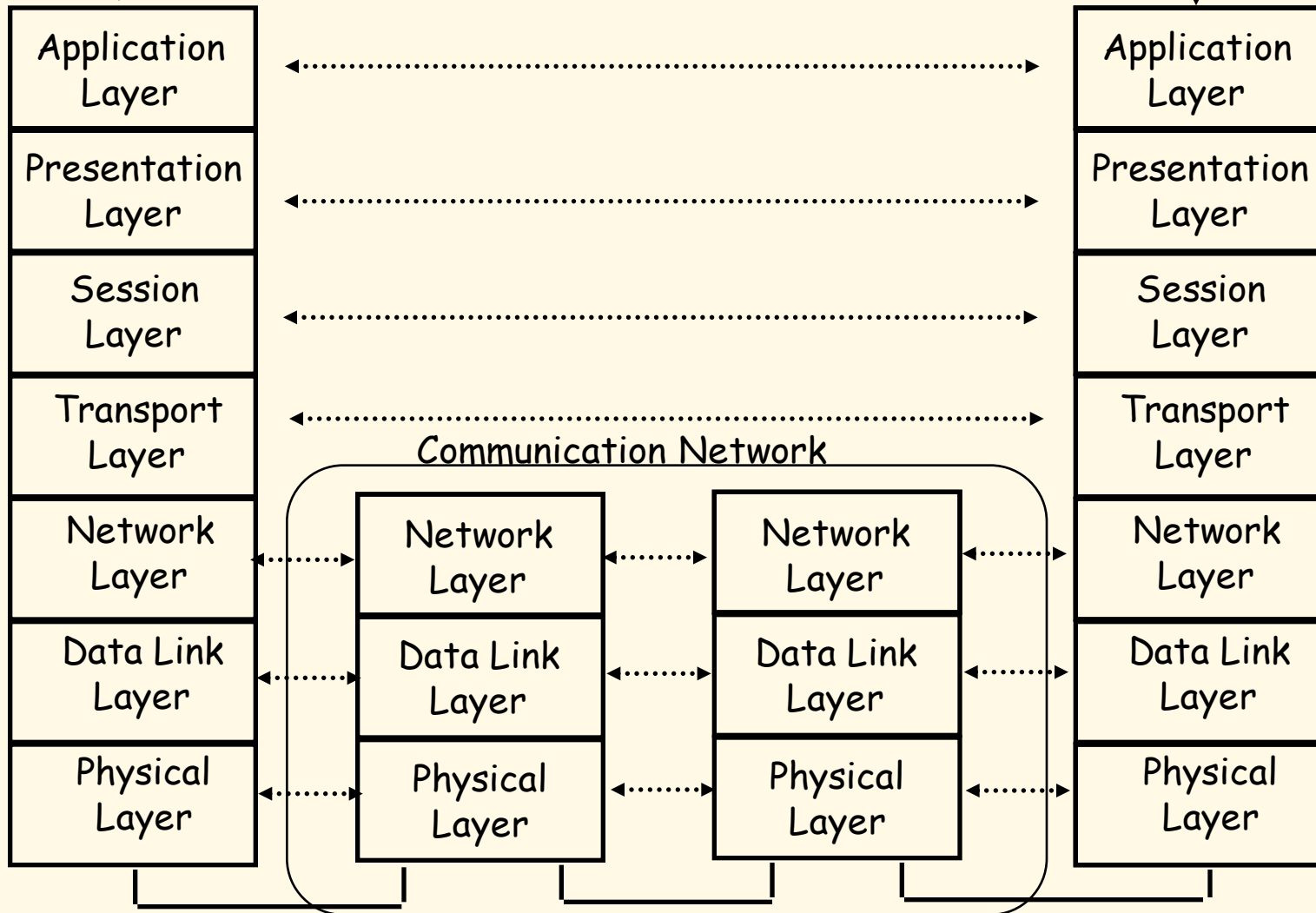# OSI Reference Model

Application A ↔ Application B
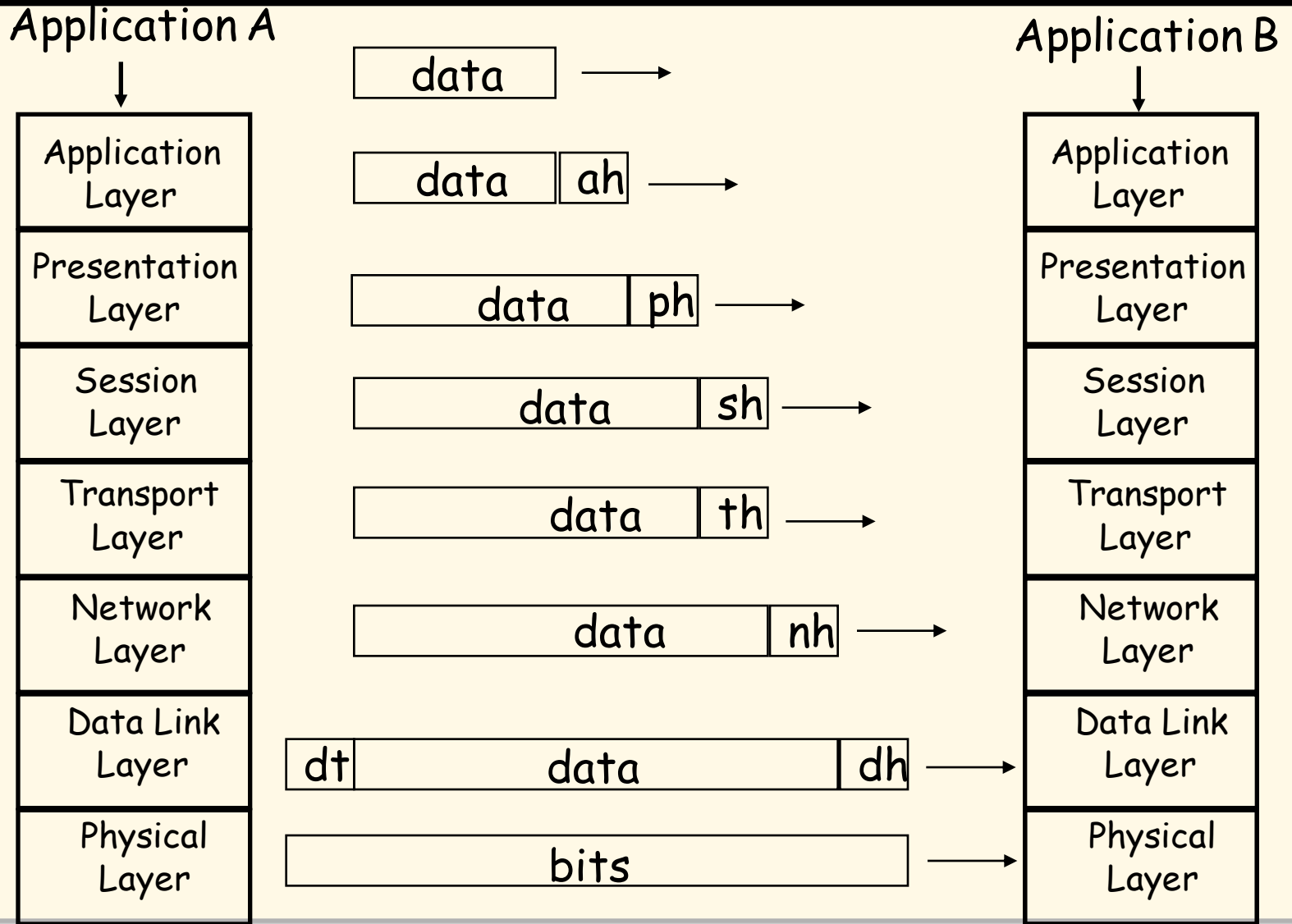
Application Layer ↔ Application Layer

Presentation Layer ↔ Presentation Layer

Session Layer ↔ Session Layer

Transport Layer ↔ Transport Layer

Communication Network

Network Layer ↔ Network Layer ↔ Network Layer ↔ Network Layer

Data Link Layer ↔ Data Link Layer ↔ Data Link Layer ↔ Data Link Layer

Physical Layer ↔ Physical Layer ↔ Physical Layer ↔ Physical Layer

Electrical and/or Optical Signals

OSI Reference Model

Application A

Application B

data →

| Application Layer | Application Layer |

data | ah →

| Presentation Layer | Presentation Layer |

data | ph →

| Session Layer | Session Layer |

data | sh →

| Transport Layer | Transport Layer |

data | th →

| Network Layer | Network Layer |

data | nh →

| Data Link Layer | Data Link Layer |

dt | data | dh →

| Physical Layer | Physical Layer |

bits →

Layer Encapsulation

HTTP Request

TCP Header contains source and destination port numbers

TCP Header	

Header contains source and destination IP addresses; transport protocol type

IP Header	

Header contains source and destination physical addresses; network protocol type

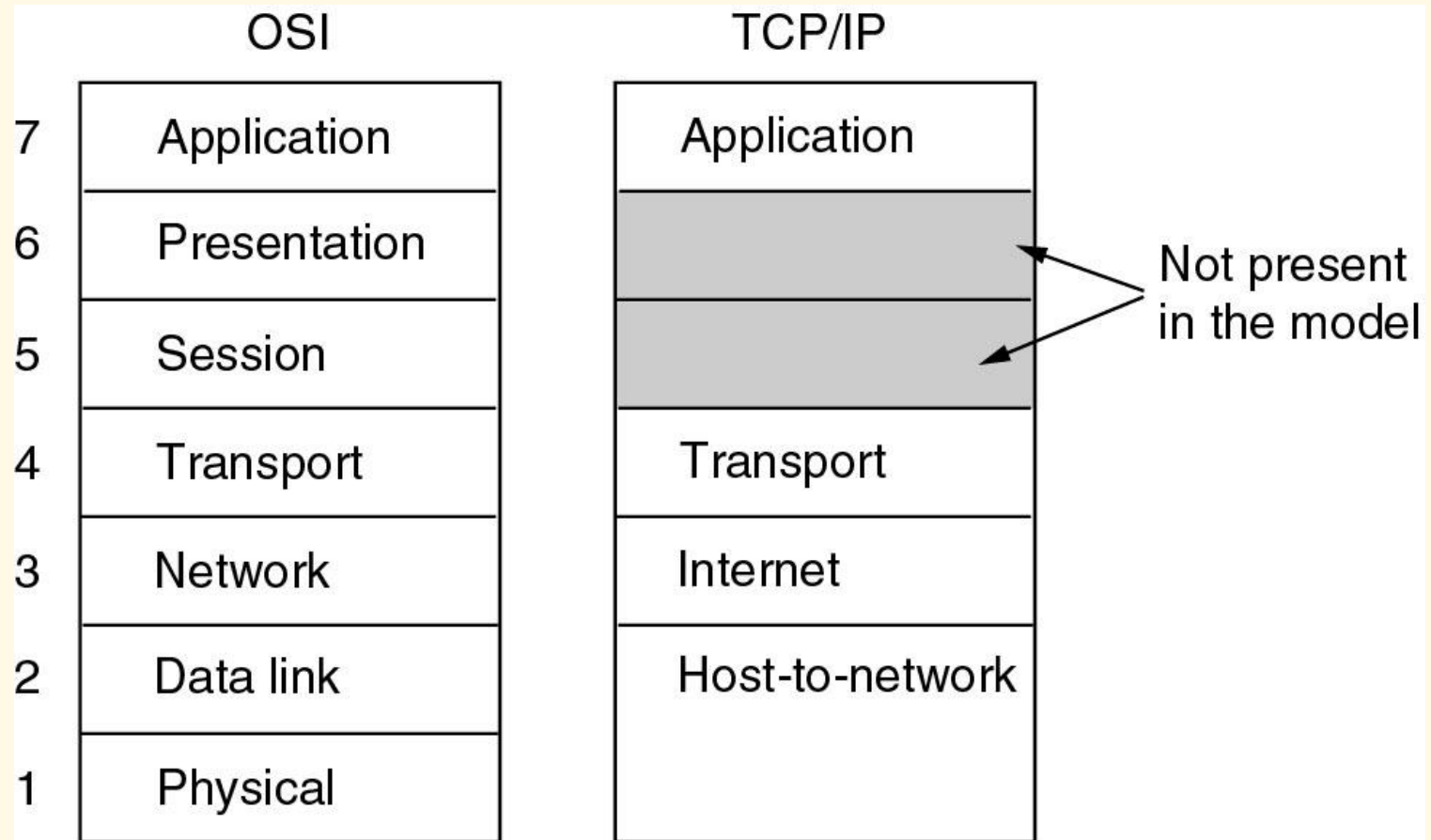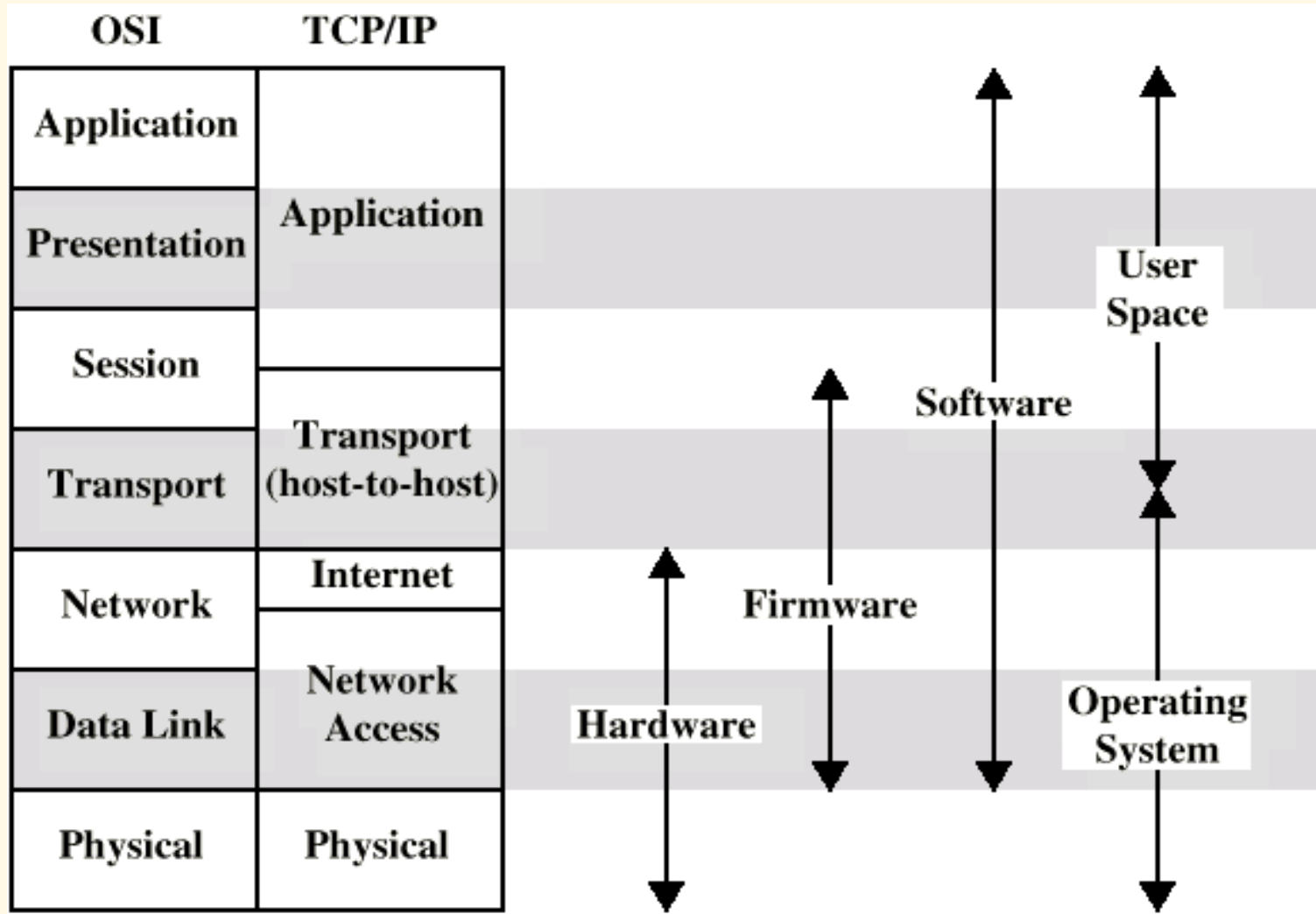| Ethernet Header		Frame Check Sequence

OSI versus TCP/IP

Figure 1-21. The TCP/IP reference model.

Tanenbaum

OSI versus TCP/IP

DCC 6th Ed., W. Stallings

Seven Layer OSI Model

Application Layer
Provides users access to the OSI environment and distributed information services.

Presentation Layer
Provides application processes independence from
differences in data representation (e.g. abstract syntax notation).

Session Layer
Provides the control structure for communicating between applications.

Establishes, manages and terminates session connections between cooperating applications.

Transport Layer
Provides reliable transparent transfer of data between end points.
Provides end-to-end flow control and error recovery.

Network Layer
Provides upper layers with independence from the data transmission, routing and switching
technologies used to connect systems. Responsible for establishing, managing and terminating connections.

Data Link Layer
Provides for reliable transfer of information across the physical layer.
Sends and receives frames with the necessary synchronization, flow control and error control.

Physical Layer
Concerned with transmission of an unstructured bit stream over a physical medium.
Deals with the mechanical, electrical, functional and procedural characteristics to access the physical medium.