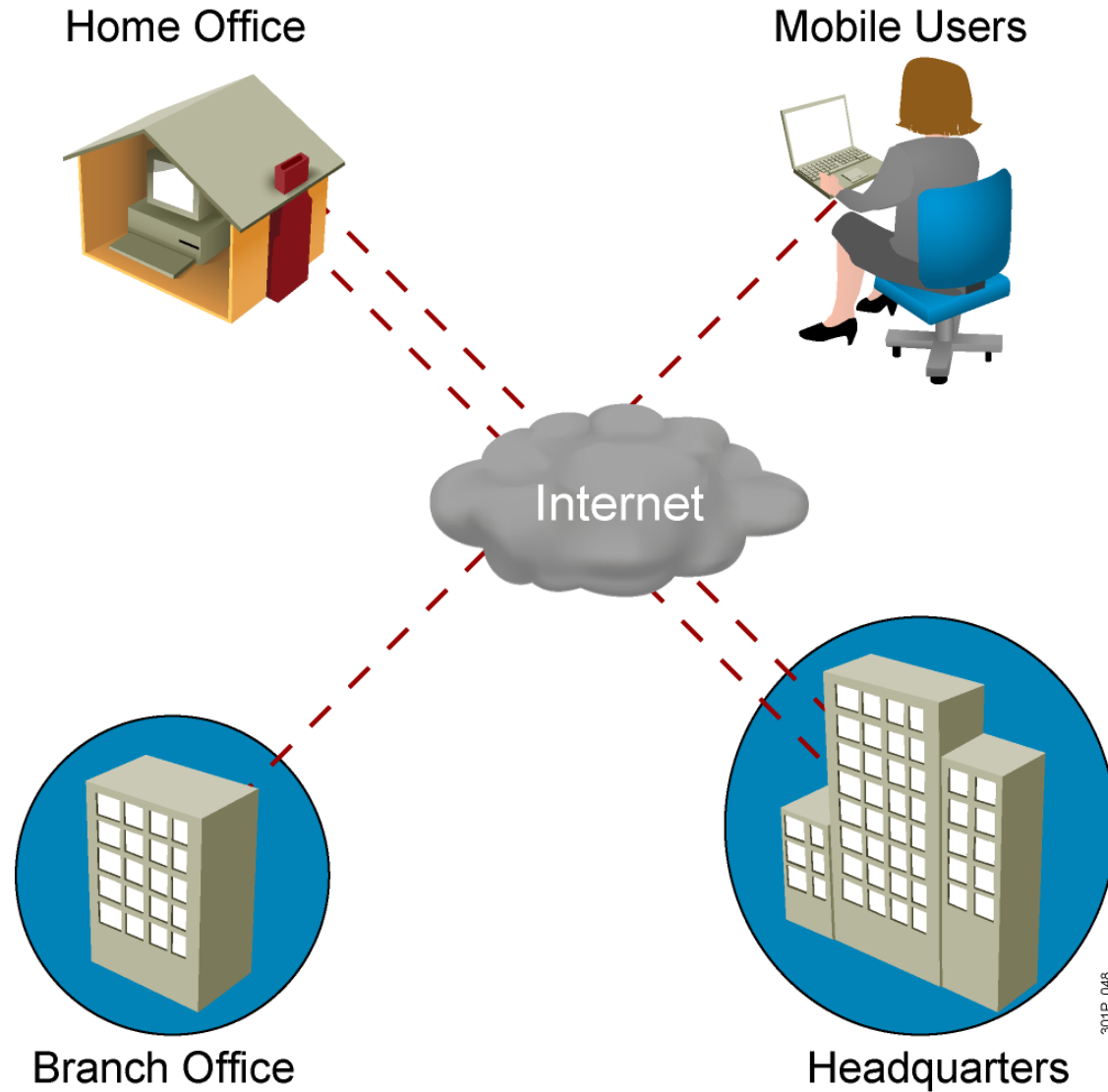


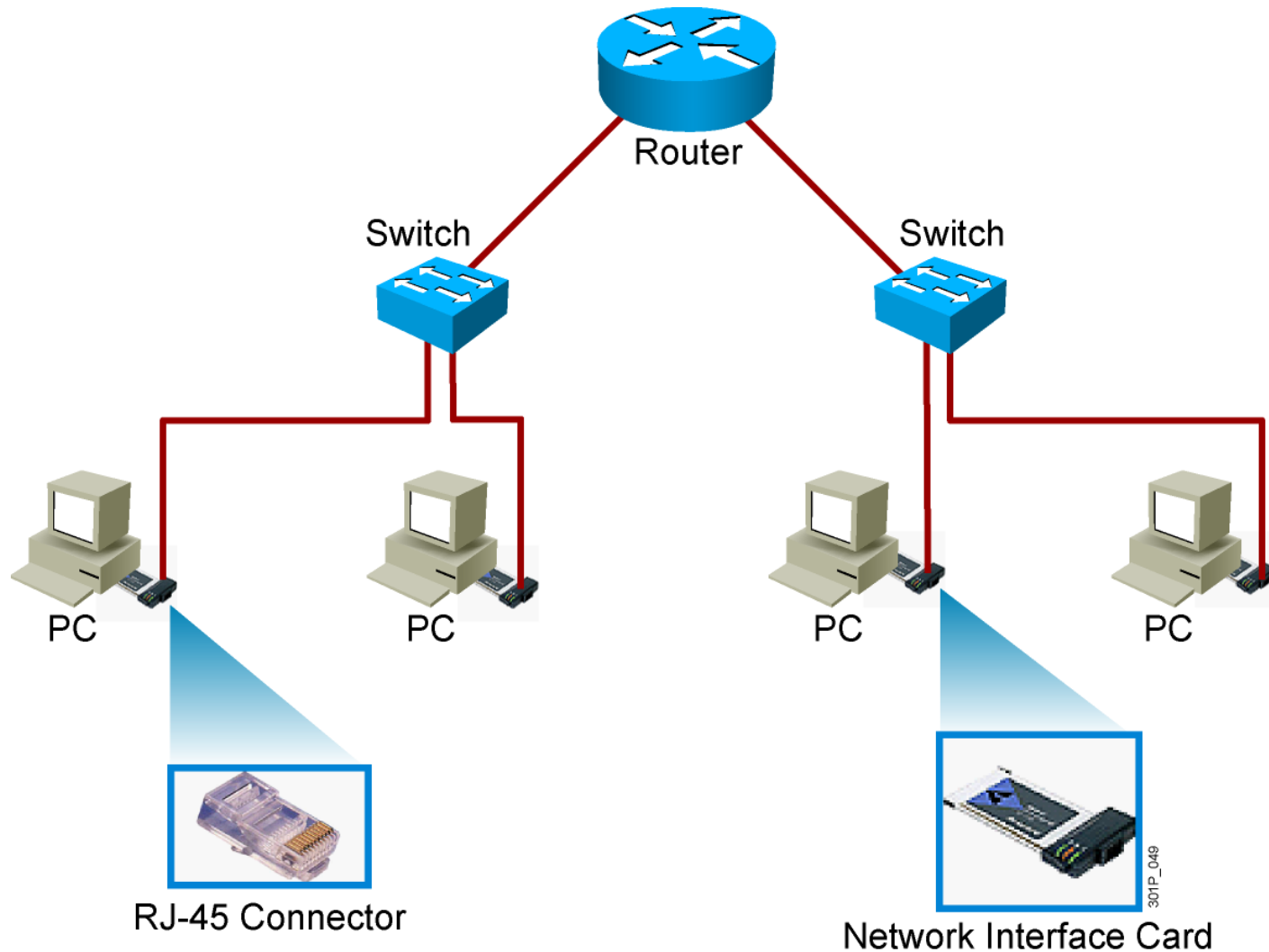


Network Basic

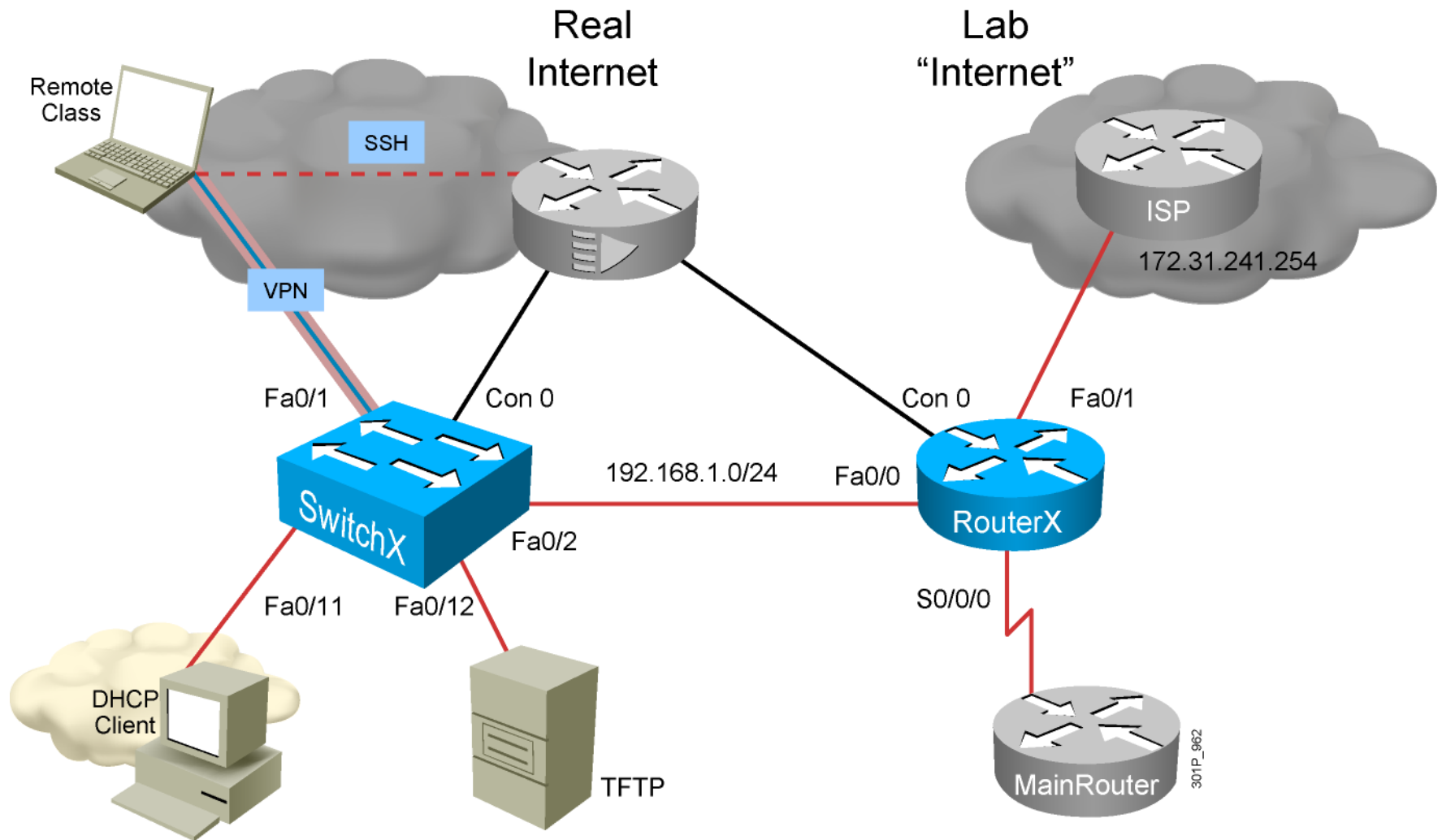
What Is a Network?



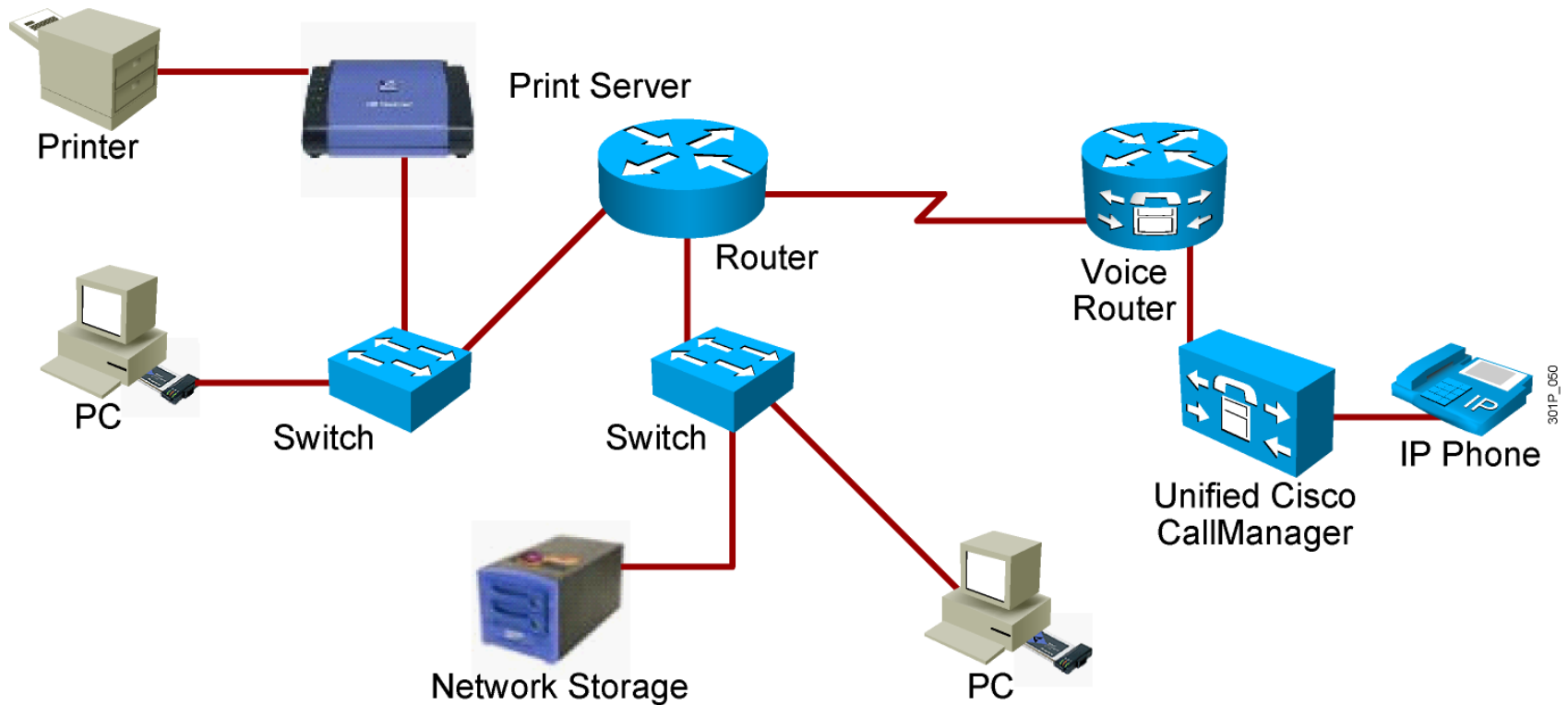
Common Physical Components of a Network



Interpreting a Network Diagram



Resource-Sharing Functions and Benefits



- **Data and applications**
- **Resources**
- **Network storage**
- **Backup devices**

Characteristics of a Network

- **Speed**
- **Cost**
- **Security**
- **Availability**
- **Scalability**
- **Reliability**
- **Topology**



OSI Model

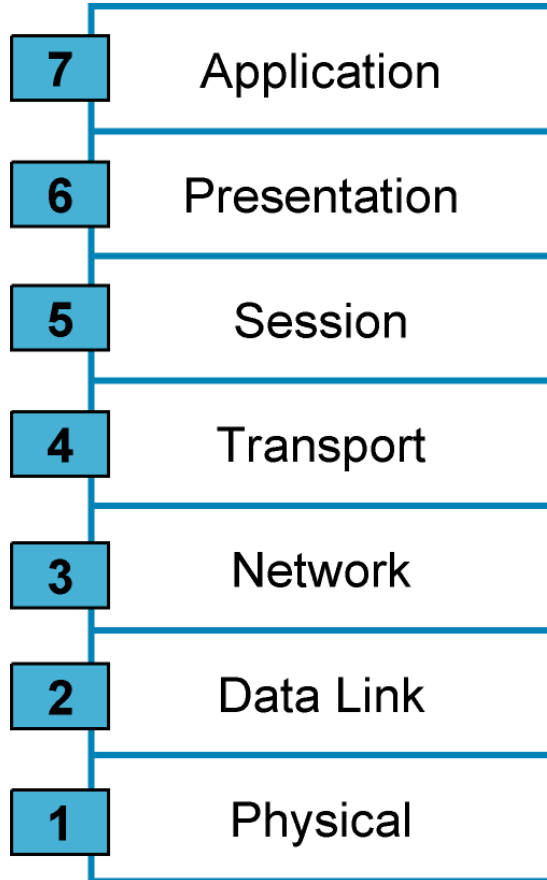
TCP/IP

Understanding Host-to-Host Communications



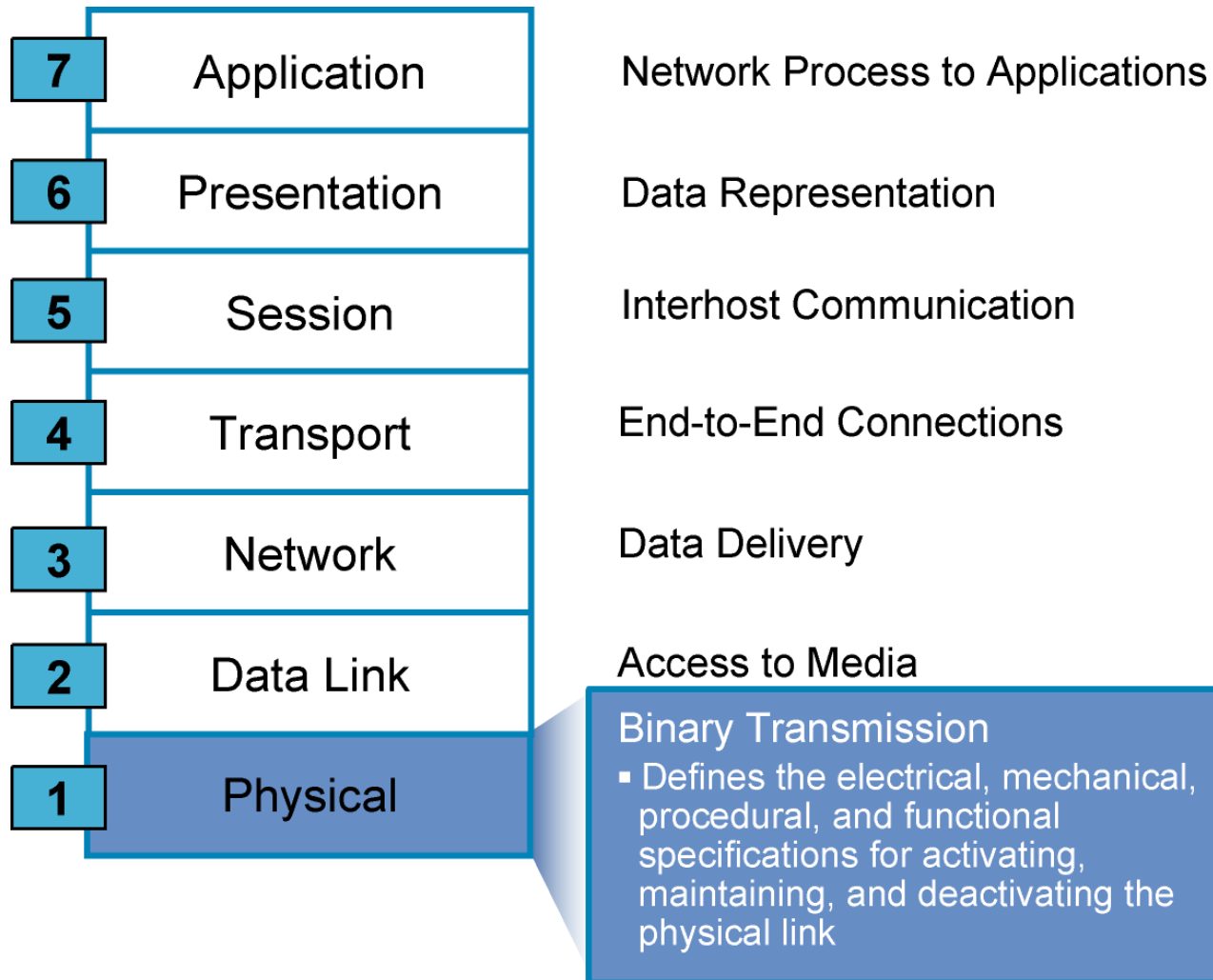
- **Older model**
 - Proprietary
 - Application and combinations software controlled by one vendor
- **Standards-based model**
 - Multivendor software
 - Layered approach

Why a Layered Network Model?

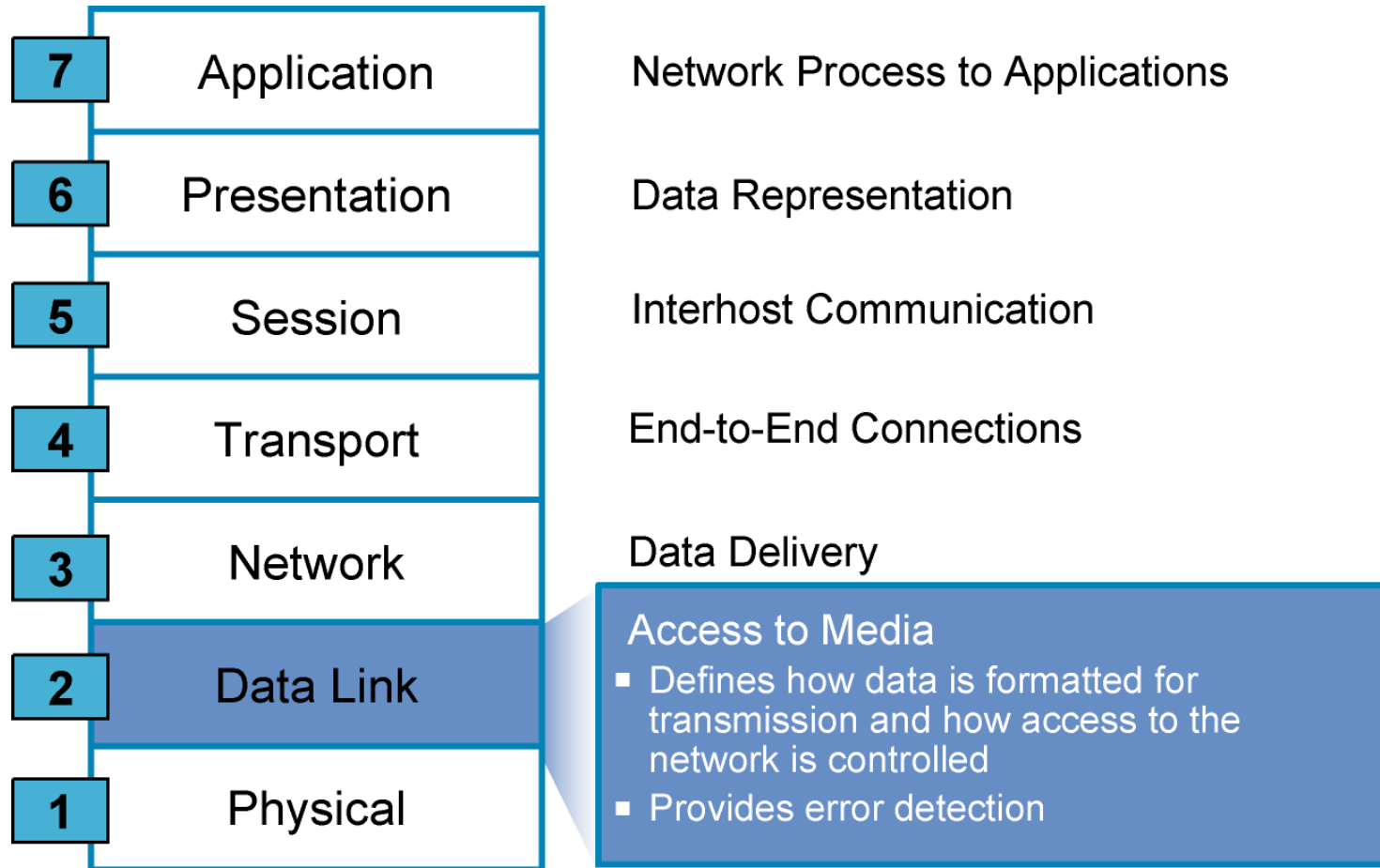


- Reduces complexity
- Standardizes interfaces
- Facilitates modular engineering
- Ensures interoperable technology
- Accelerates evolution
- Simplifies teaching and learning

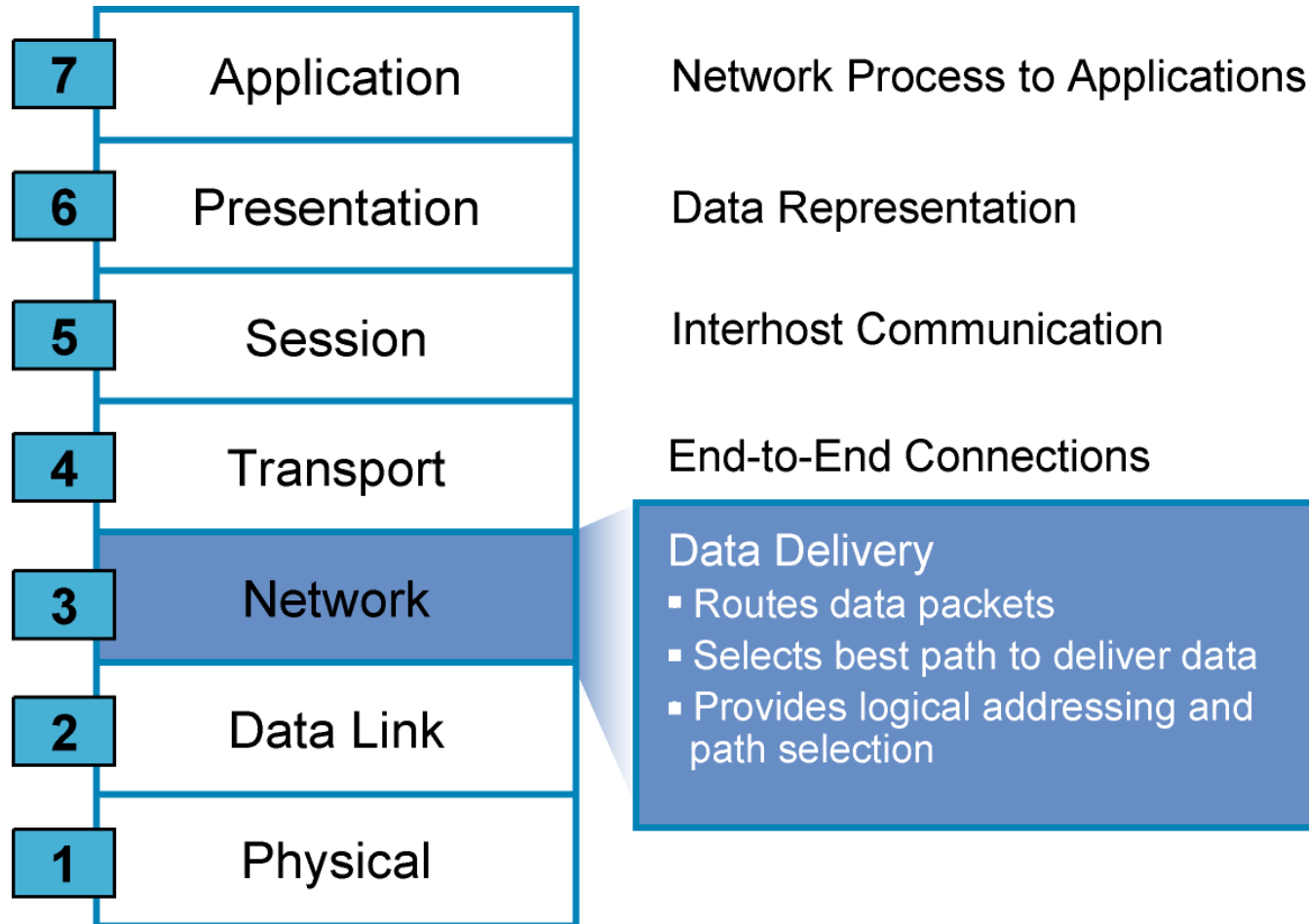
The Seven Layers of the OSI Model



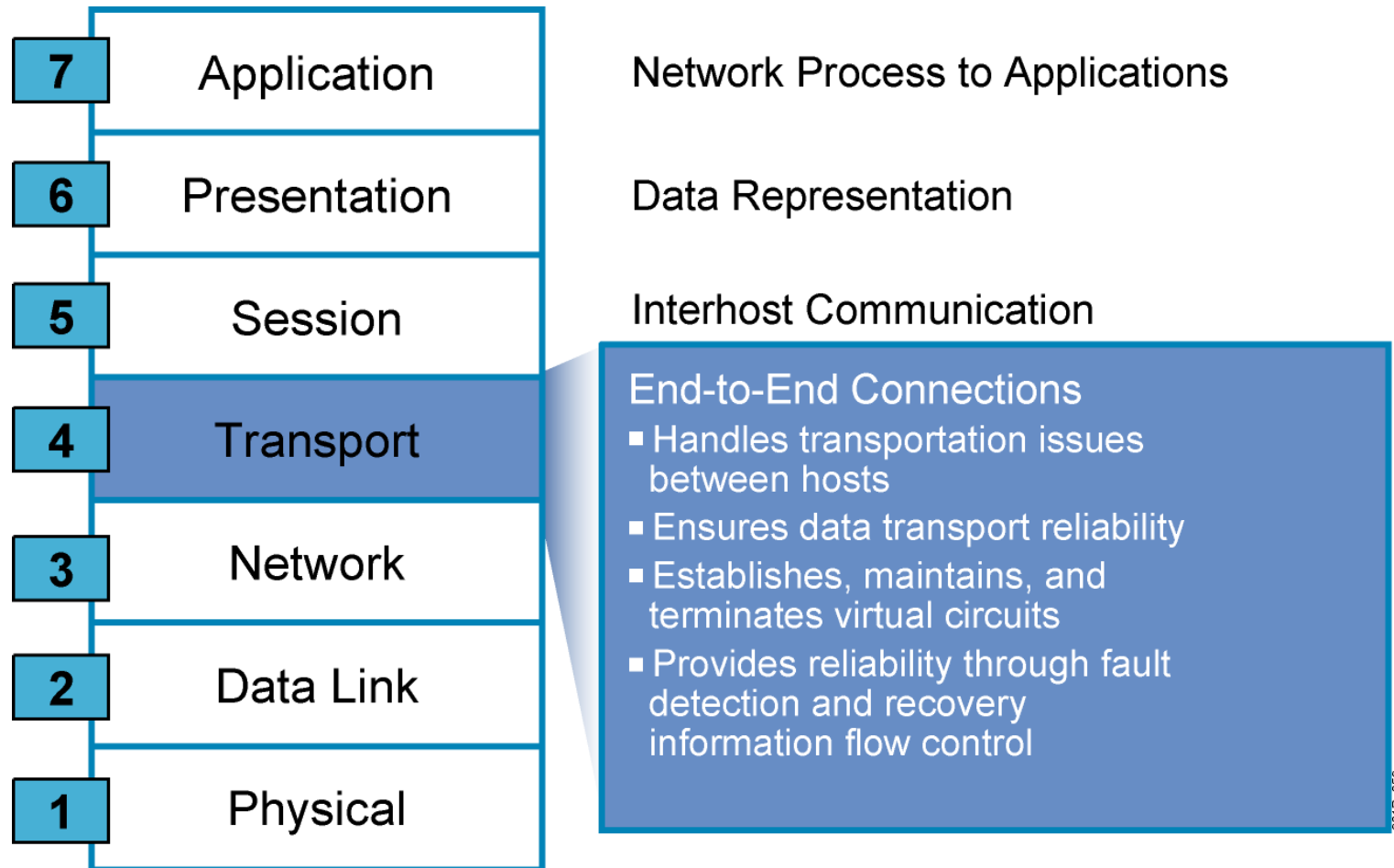
The Seven Layers of the OSI Model (Cont.)



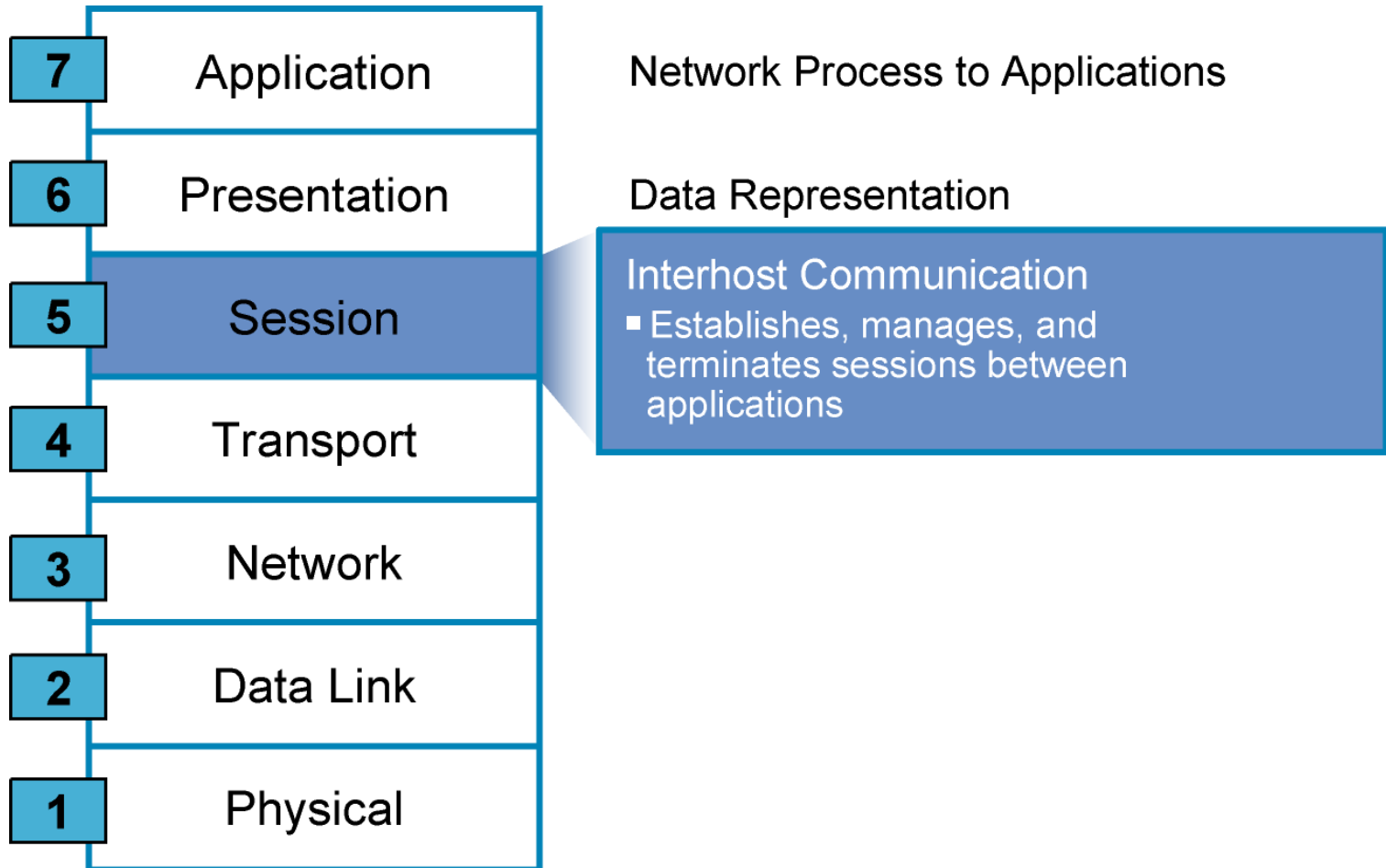
The Seven Layers of the OSI Model (Cont.)



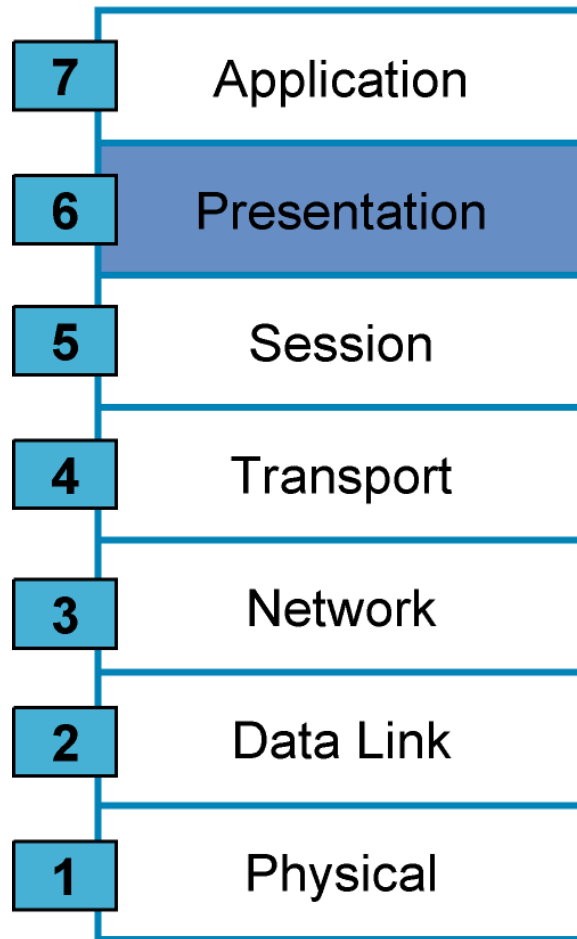
The Seven Layers of the OSI Model (Cont.)



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The Seven Layers of the OSI Model (Cont.)

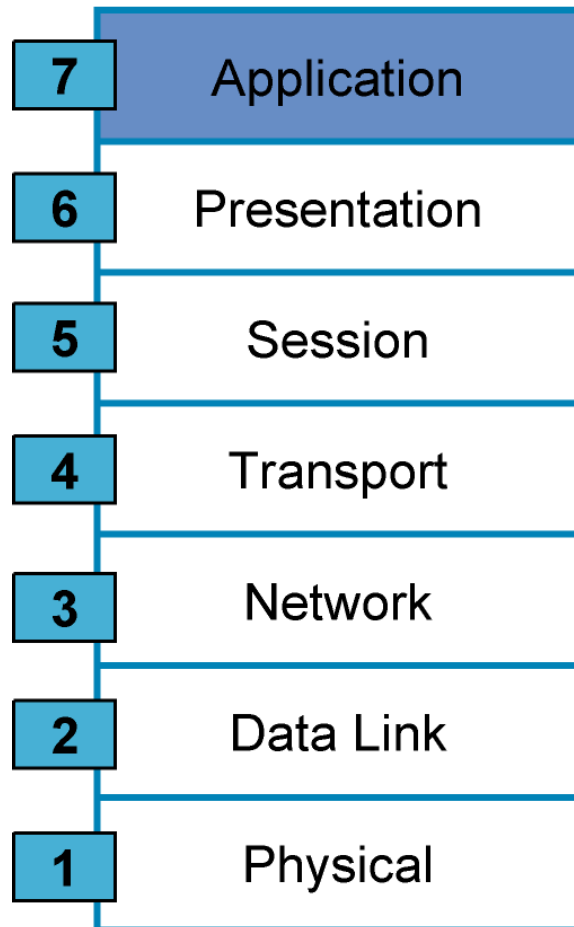


Network Process to Applications

Data Representation

- Ensures that data is readable by receiving system
- Formats data
- Structures data
- Negotiates data transfer syntax for application layer
- Provides encryption

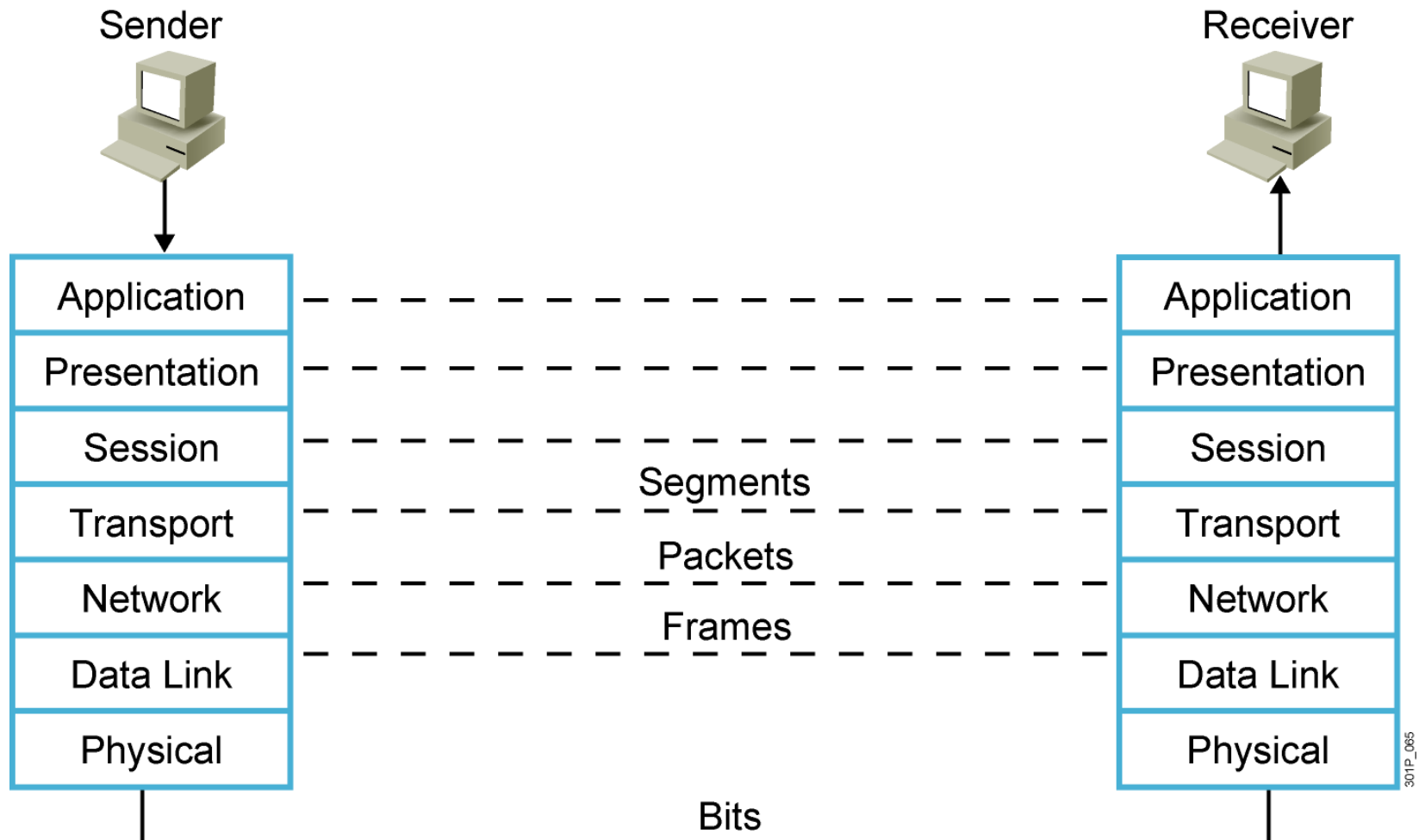
The Seven Layers of the OSI Model (Cont.)



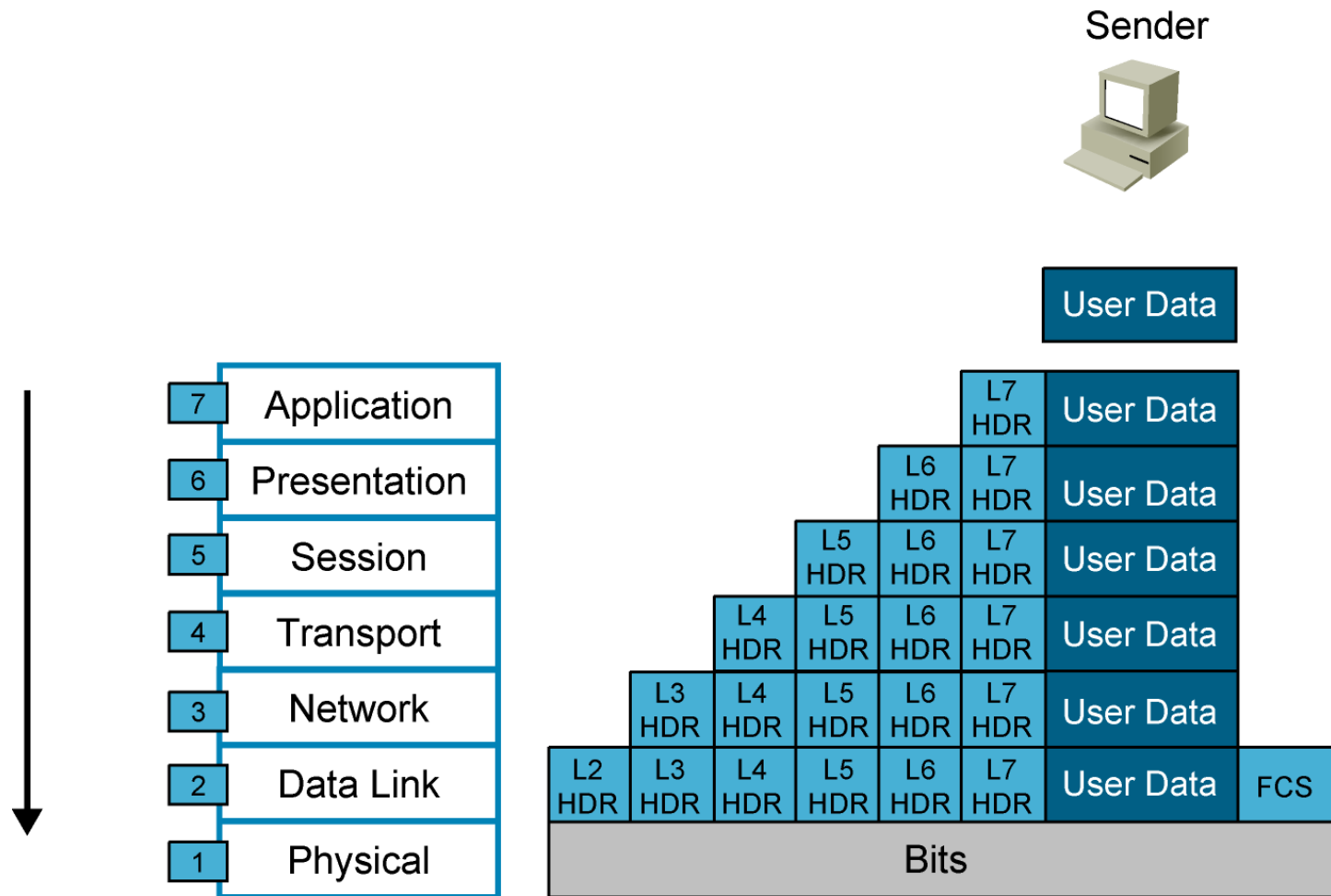
Network Processes to Applications

- Provides network services to application processes (such as electronic mail, file transfer, and terminal emulation)
- Provides user authentication

Peer-to-Peer Communication

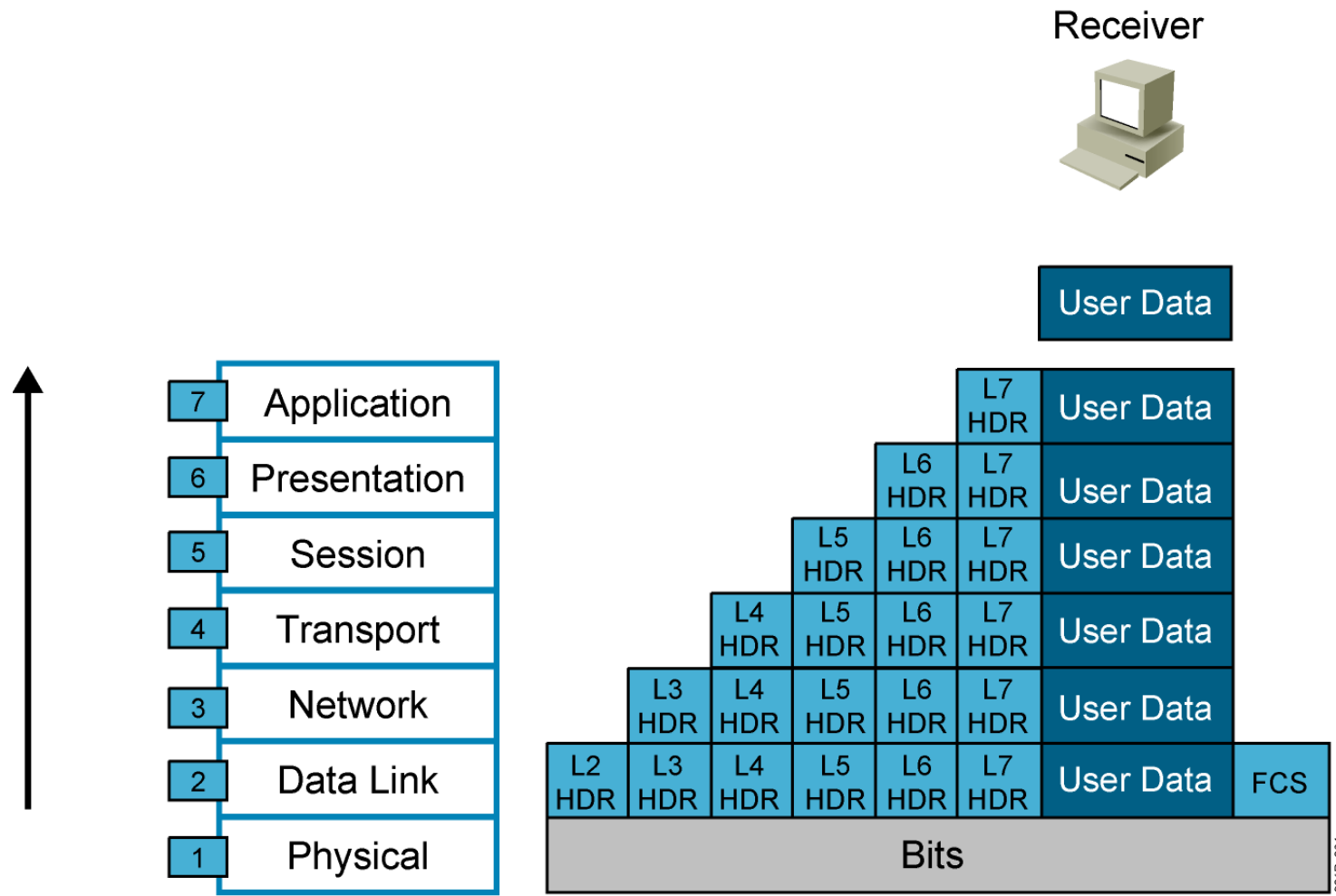


Data Encapsulation



HDR = Header

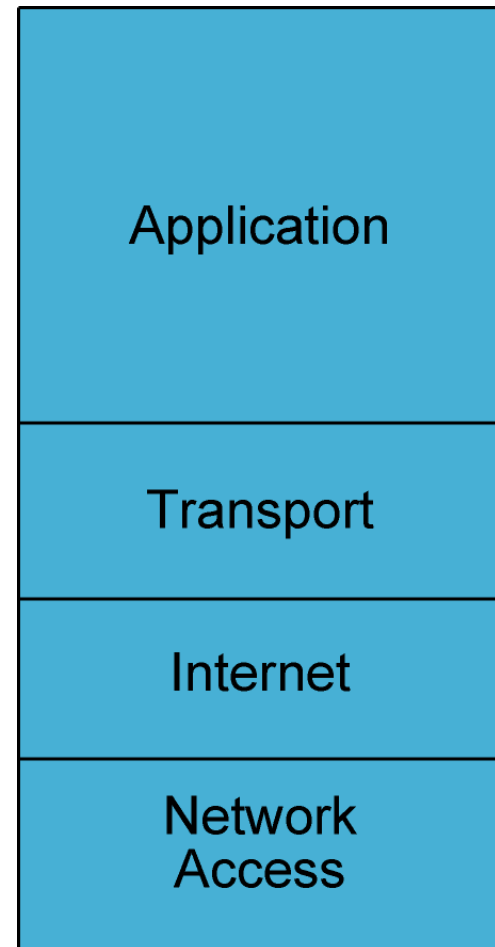
Data De-Encapsulation



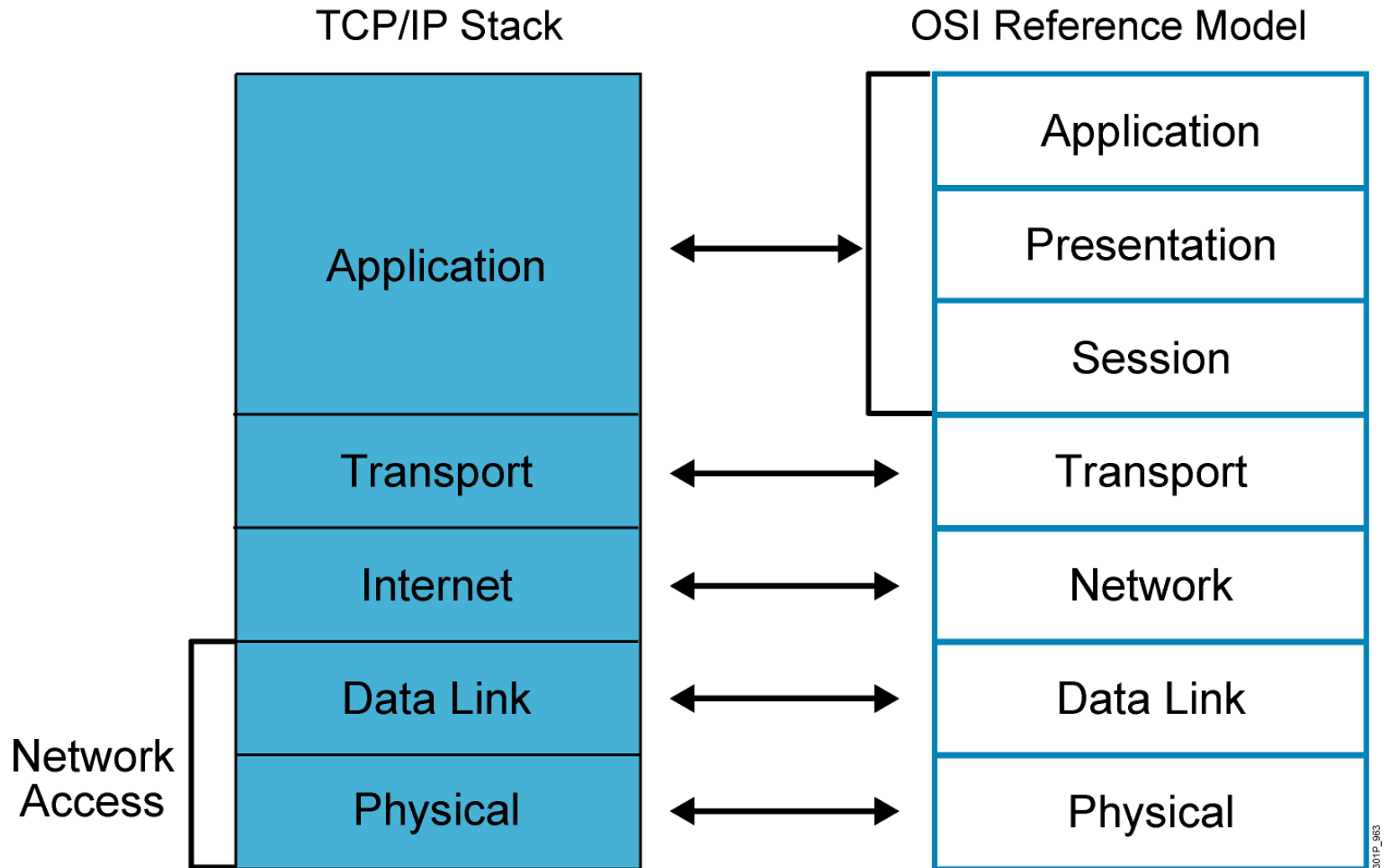
HDR = Header

TCP/IP Stack

- **Defines four layers**
- **Uses different names for Layers 1 through 3**
- **Combines Layers 5 through 7 into single application layer**



TCP/IP Stack vs. the OSI Model

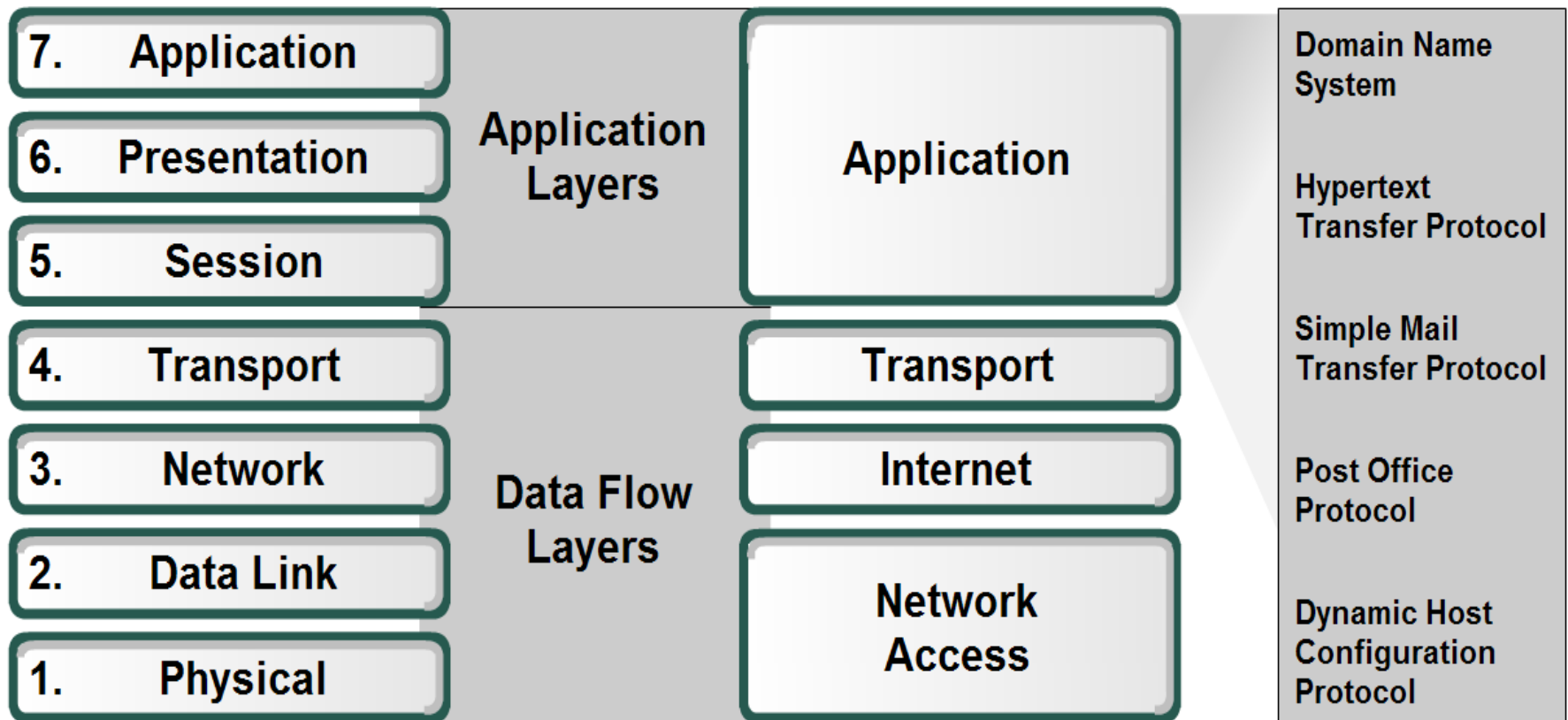


Applications

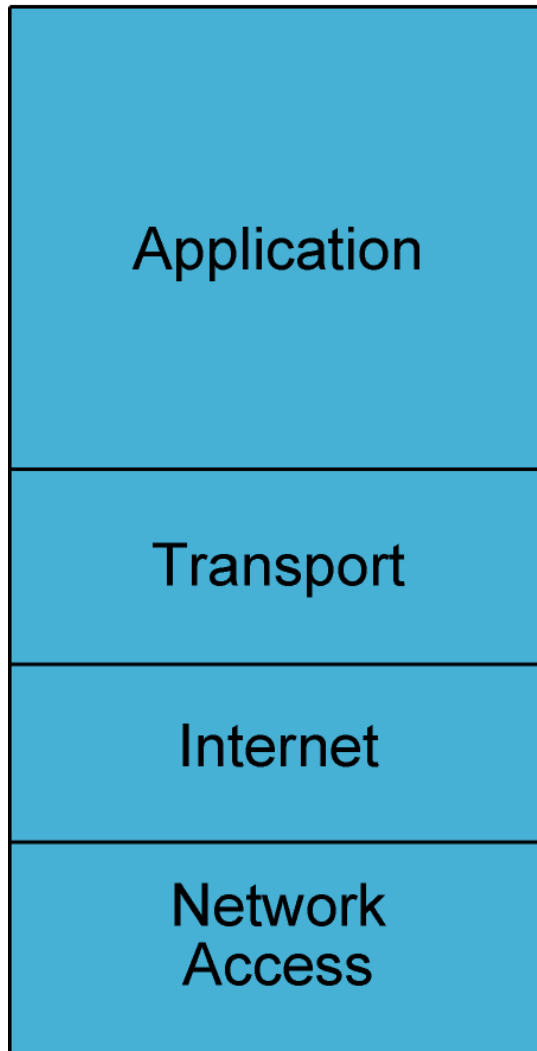


OSI Model

TCP/IP Model



TCP/IP Application Layer Overview



301P_955

- **File transfer**
 - FTP
 - TFTP
 - Network File System
- **E-mail**
 - Simple Mail Transfer Protocol
- **Remote login**
 - Telnet
 - rlogin
- **Network management**
 - Simple Network Management Protocol
- **Name management**
 - Domain Name System

