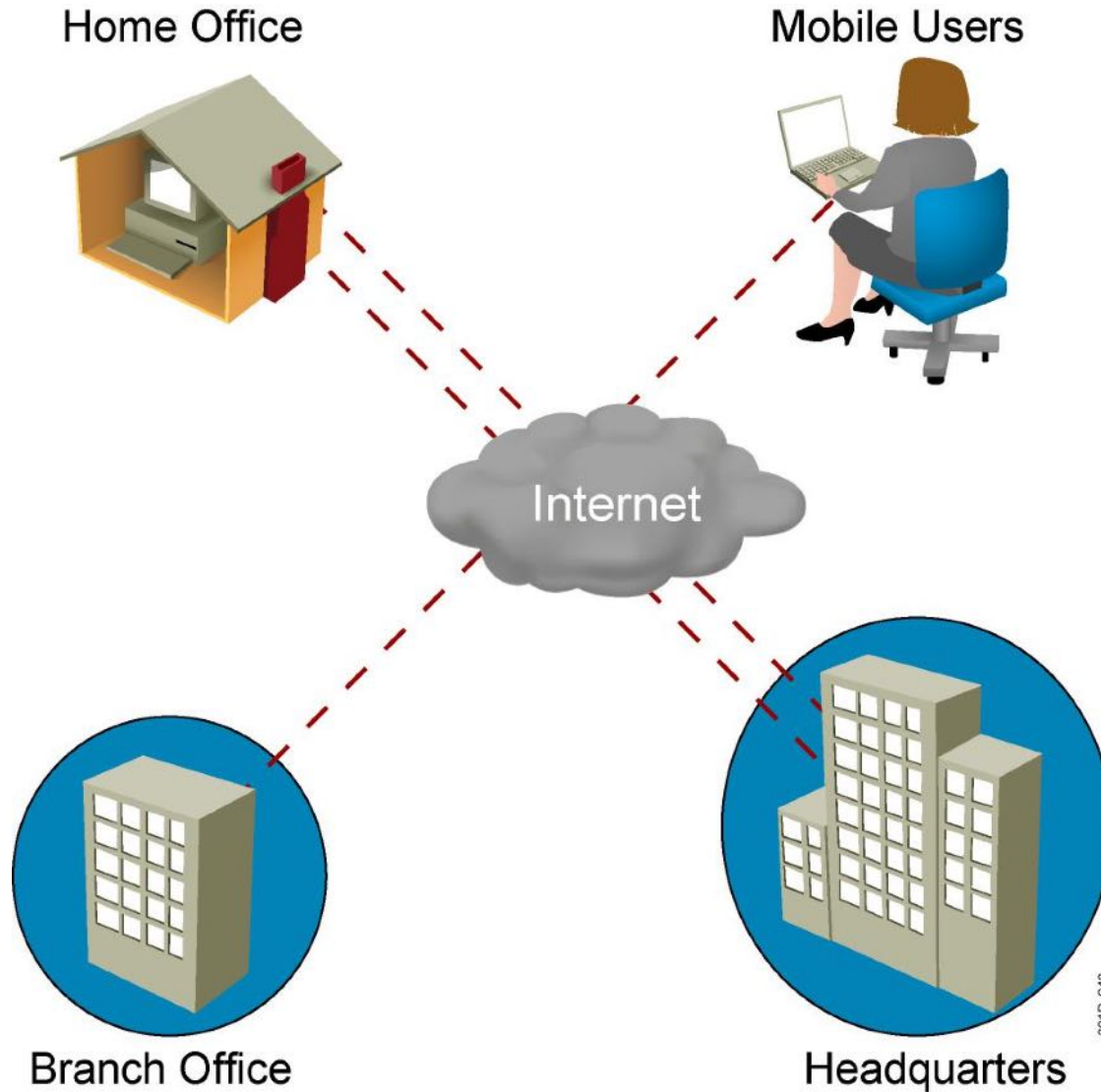


Exploring the Functions of Networking

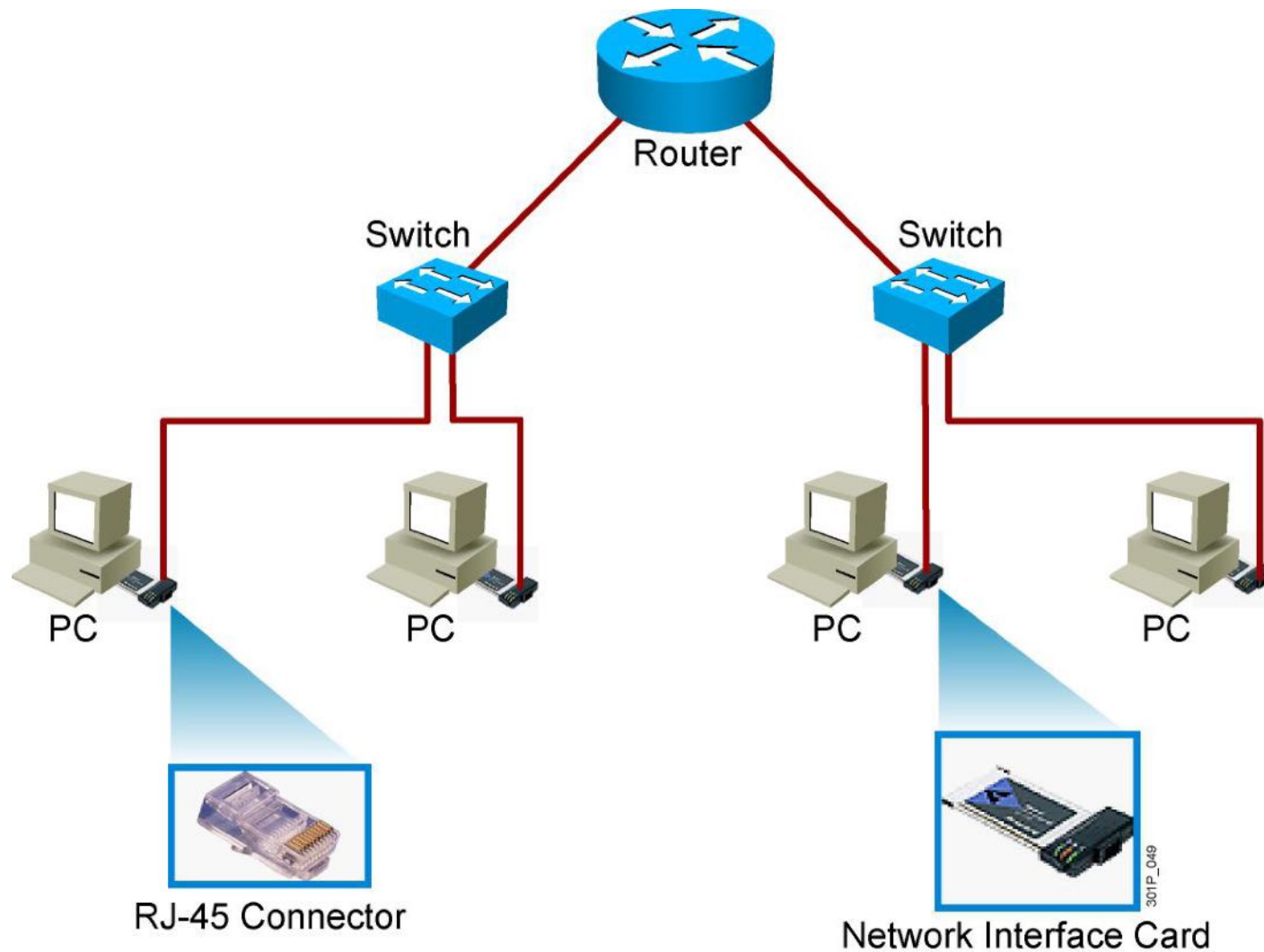


What Is a Network?

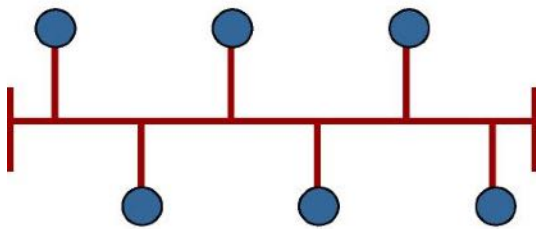


301P_048

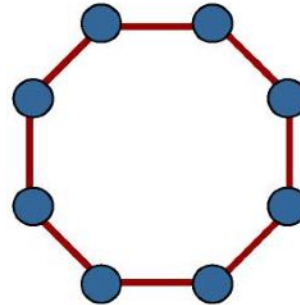
Common Physical Components of a Network



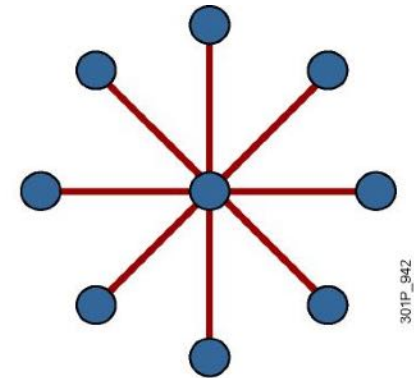
Physical Topology Categories



Bus Topology



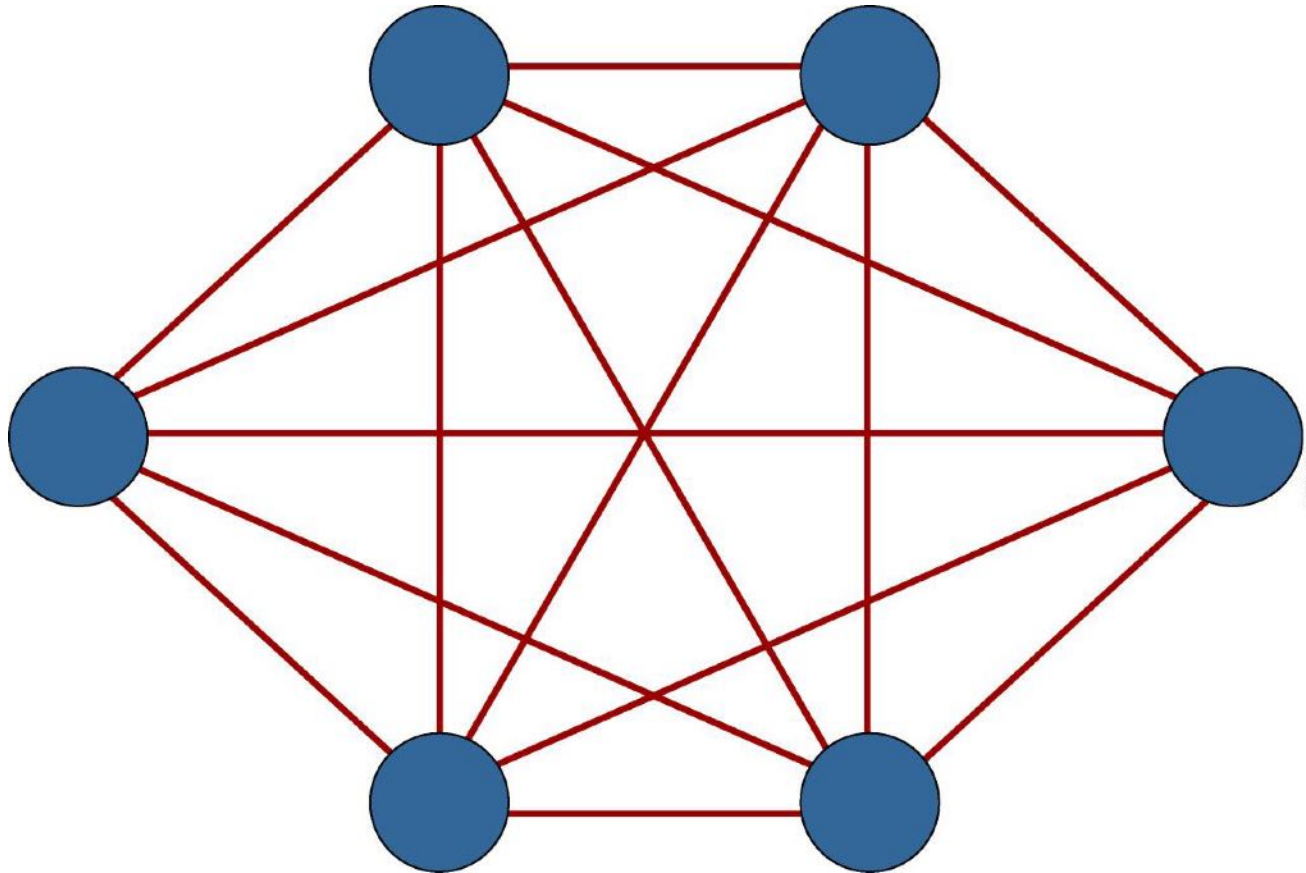
Ring Topology



Star Topology

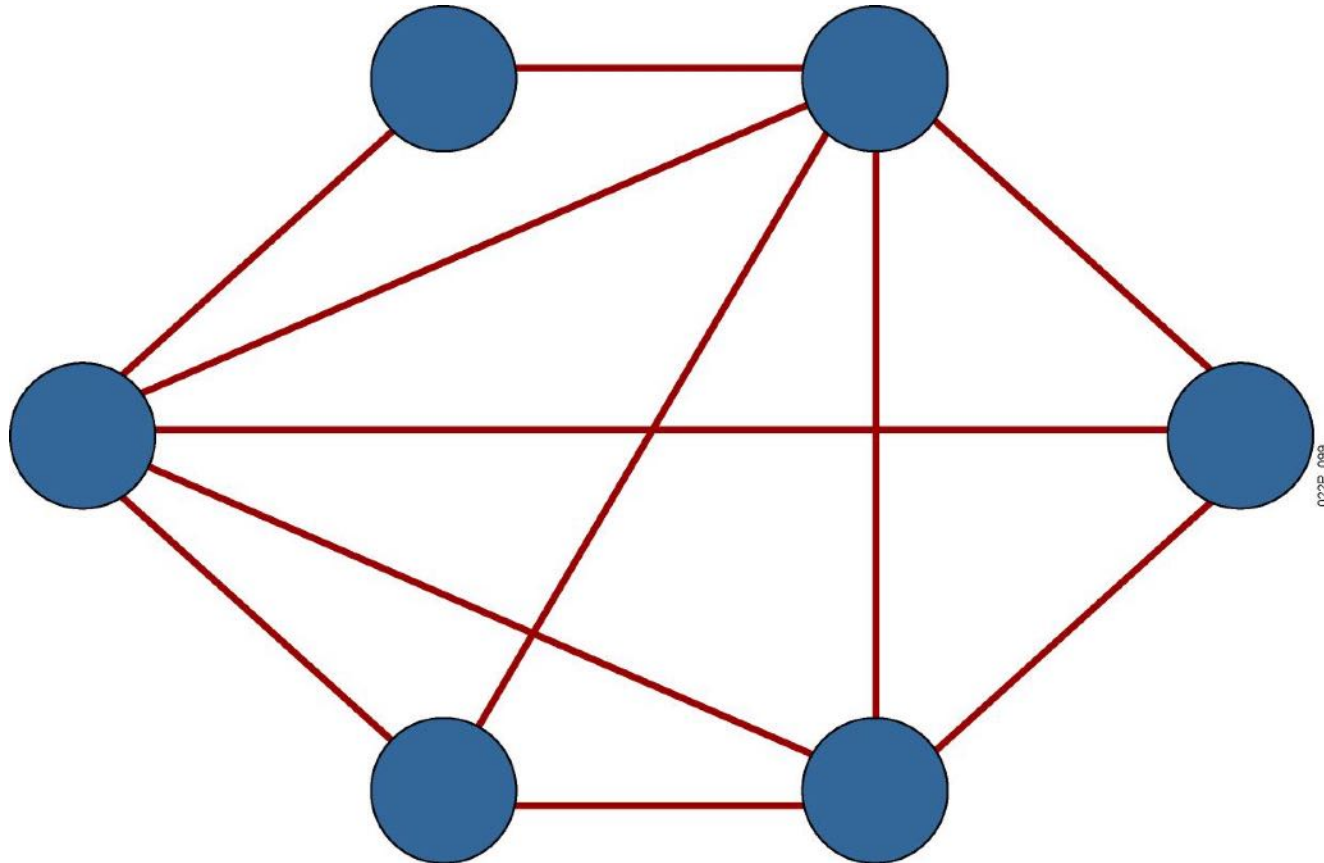
301P_94Z

Full-Mesh Topology



- Highly fault-tolerant
- Expensive to implement

Partial-Mesh Topology



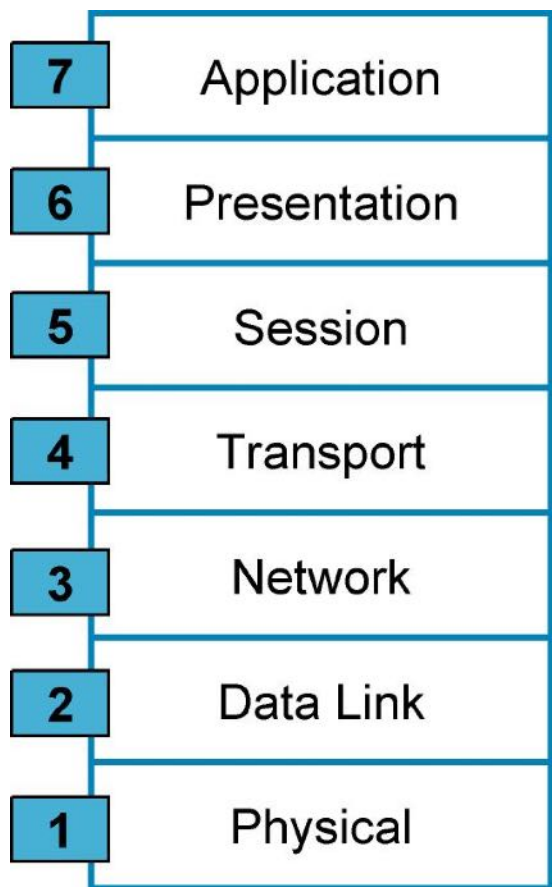
- Trade-off between fault tolerance and cost

Understanding Host-to-Host Communications



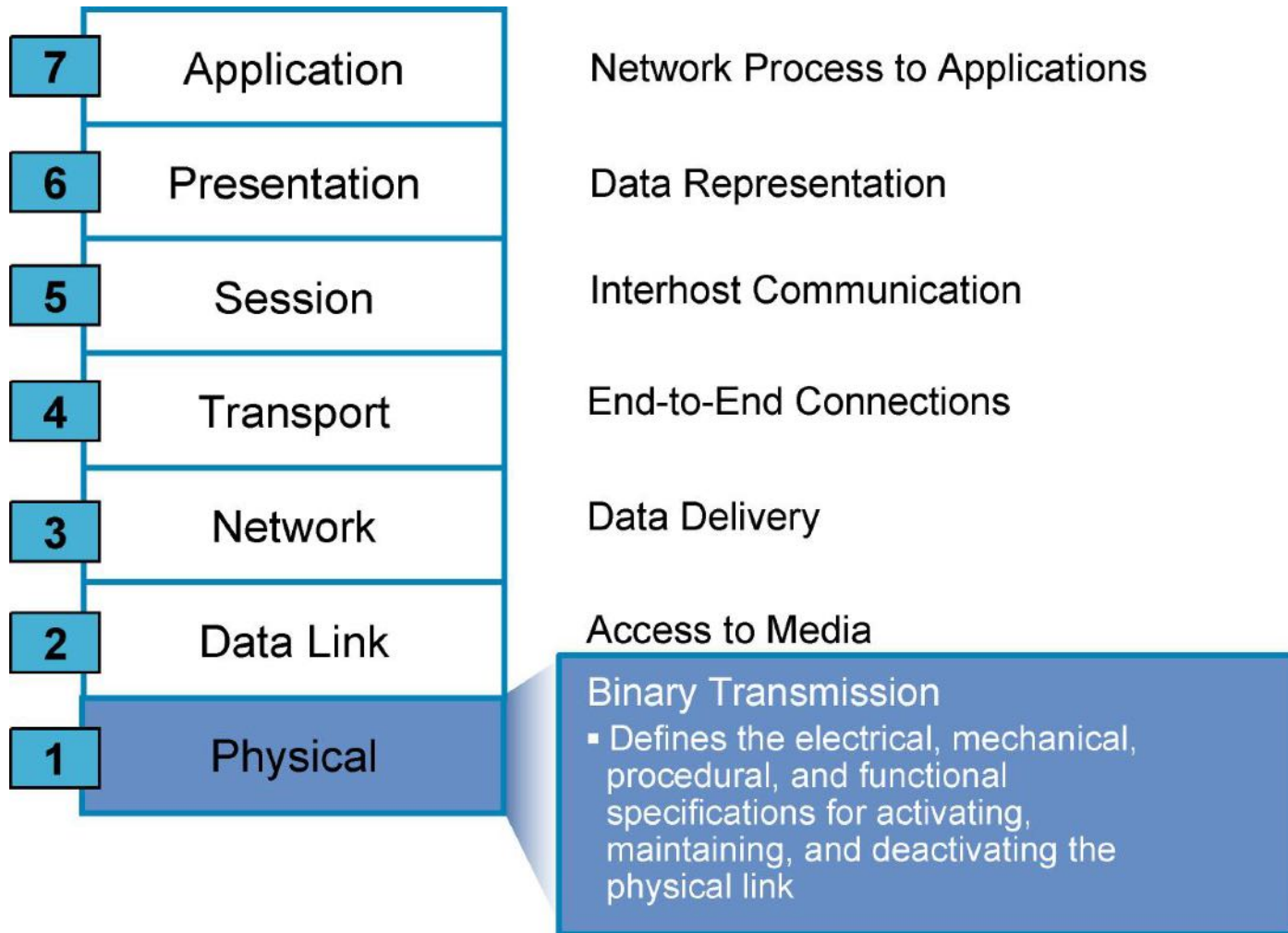
- Older model
 - Proprietary
 - Application and combinations software controlled by one vendor
- Standards-based model
 - Multivendor software
 - Layered approach

Why a Layered Network Model?

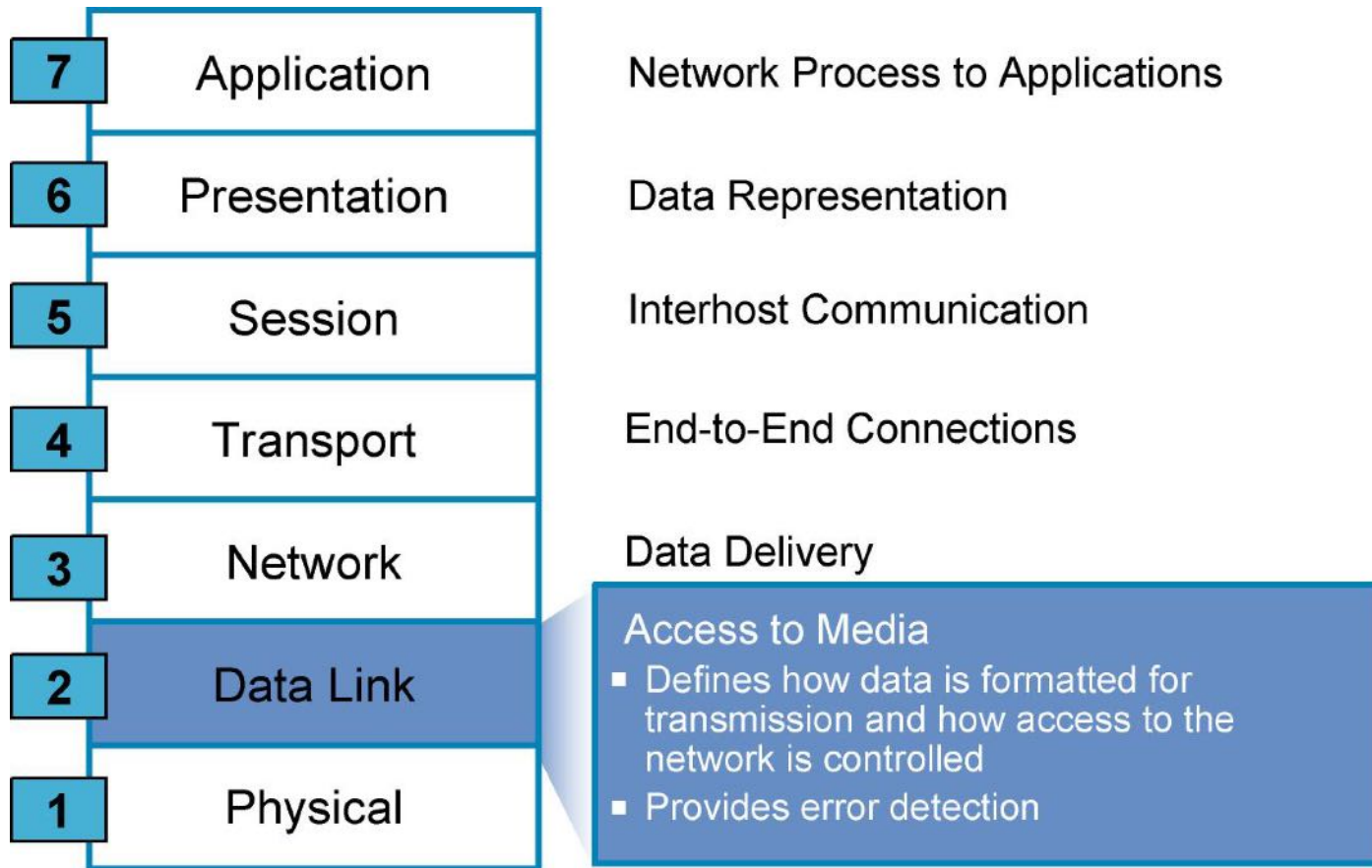


- Reduces complexity
- Standardizes interfaces
- Facilitates modular engineering
- Ensures interoperable technology
- Accelerates evolution
- Simplifies teaching and learning

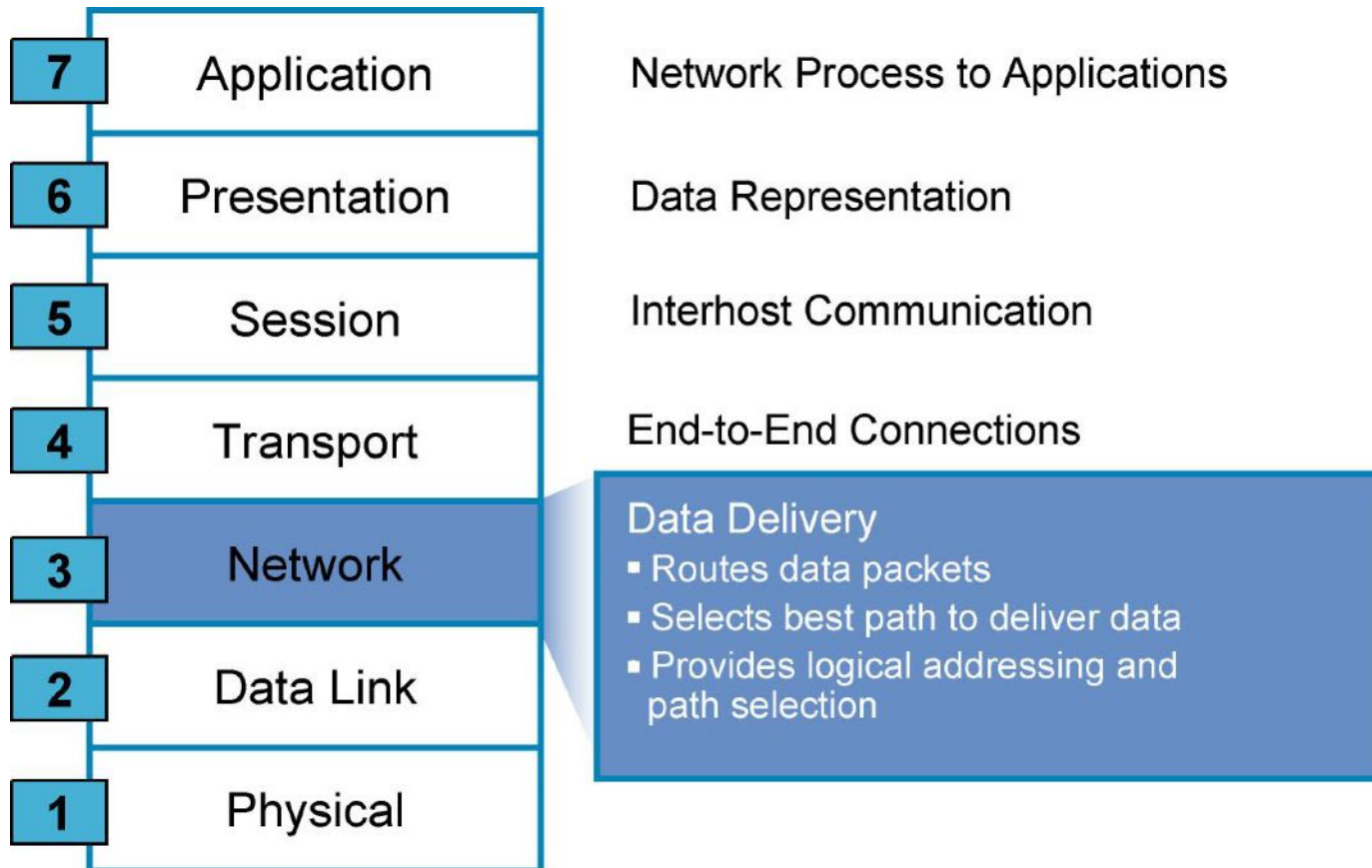
The Seven Layers of the OSI Model



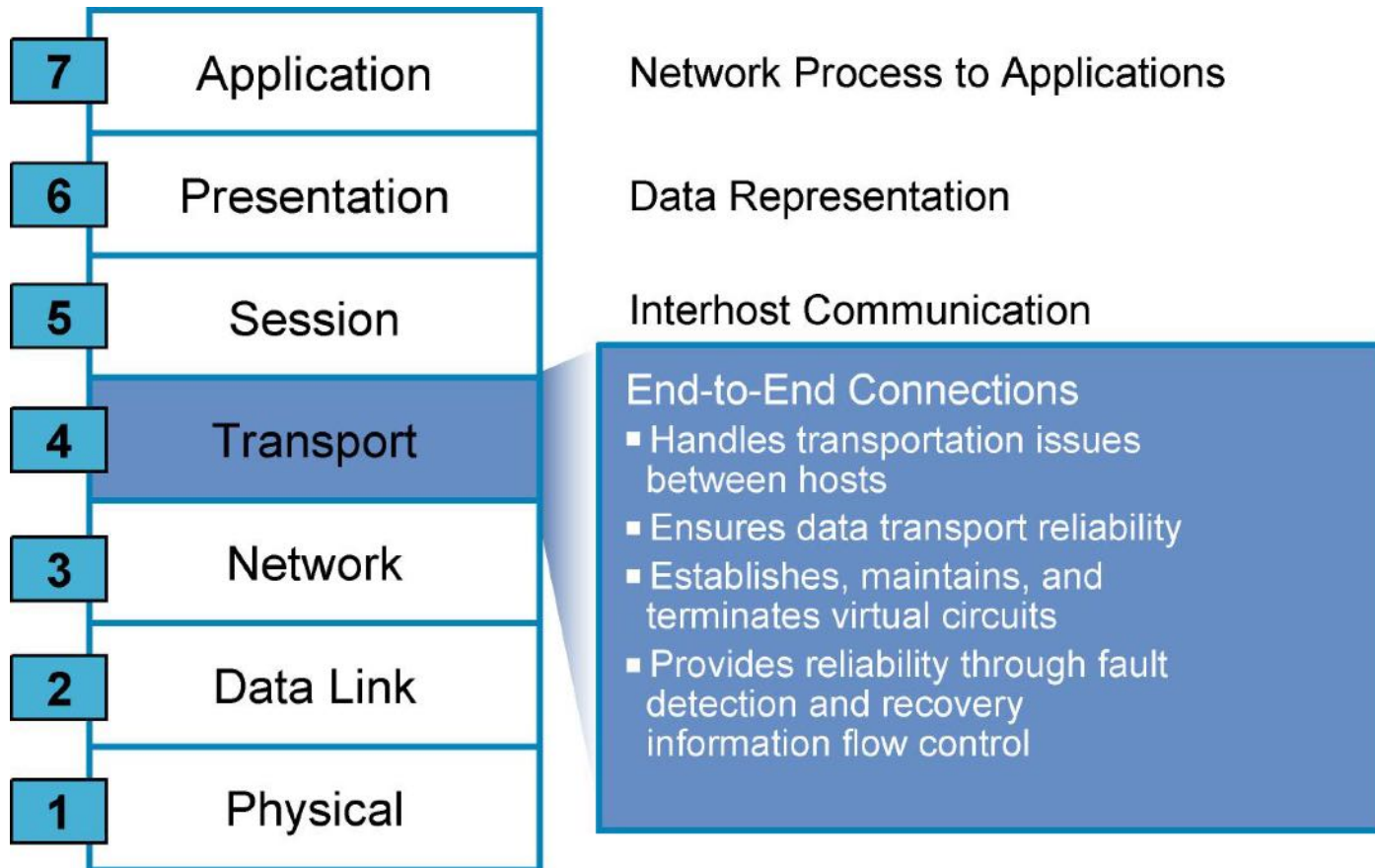
The Seven Layers of the OSI Model (Cont.)



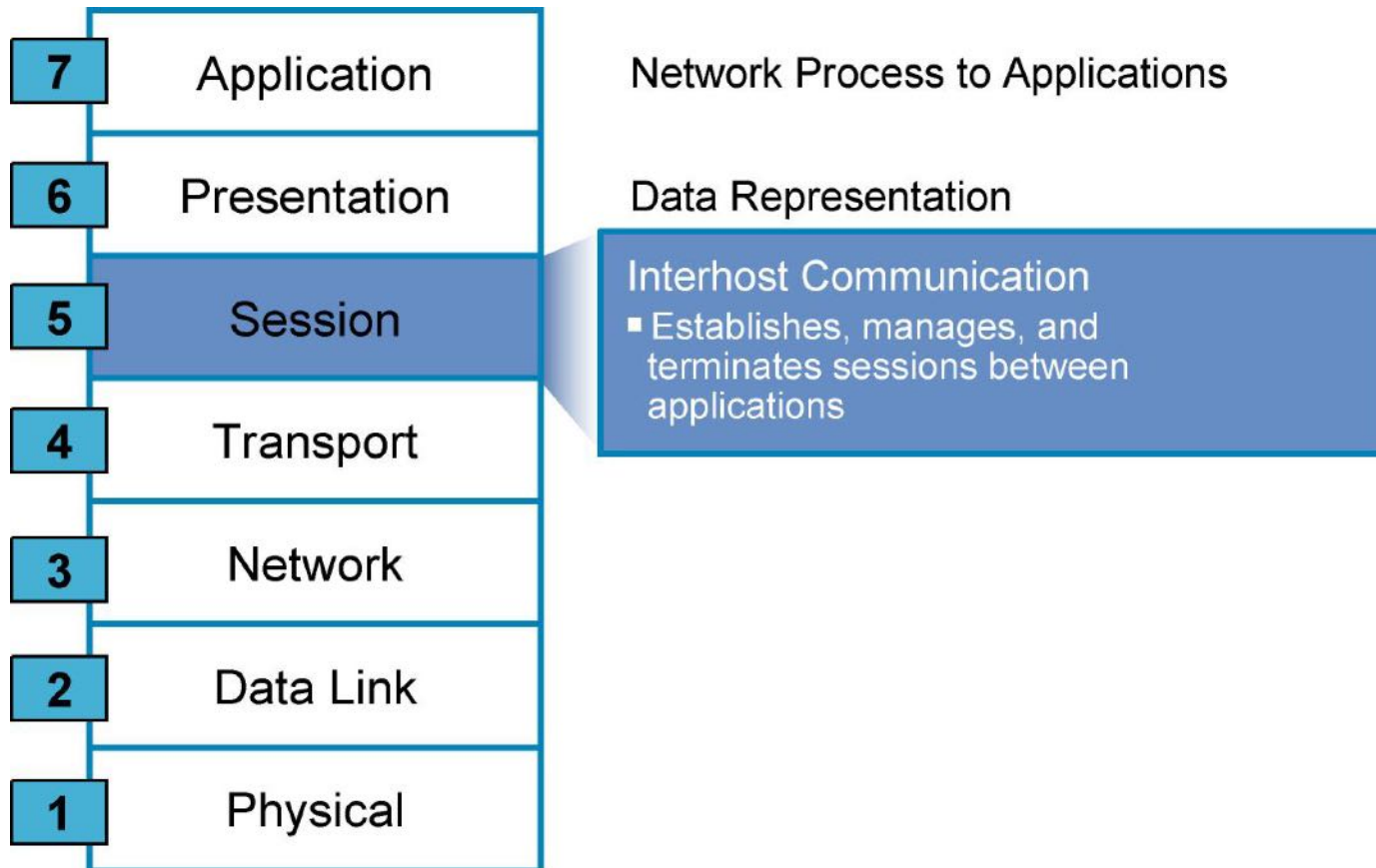
The Seven Layers of the OSI Model (Cont.)



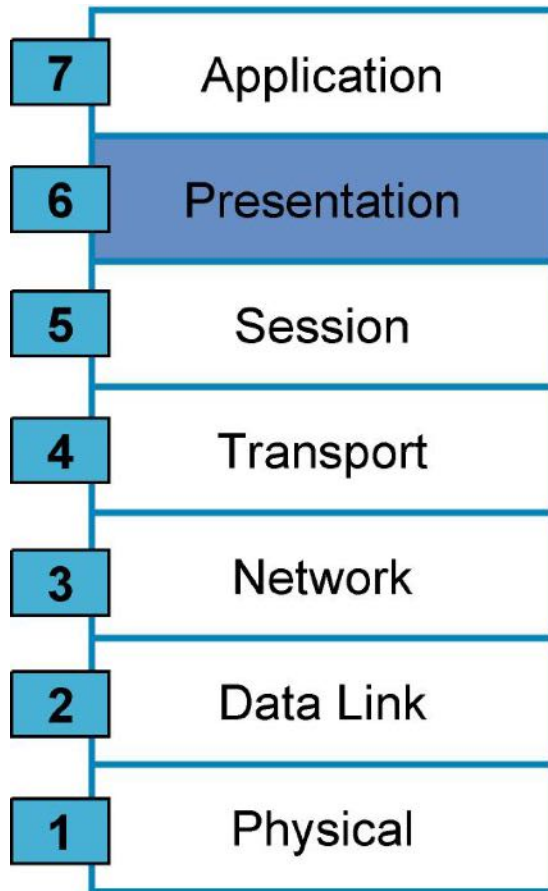
The Seven Layers of the OSI Model (Cont.)



The Seven Layers of the OSI Model (Cont.)



The Seven Layers of the OSI Model (Cont.)



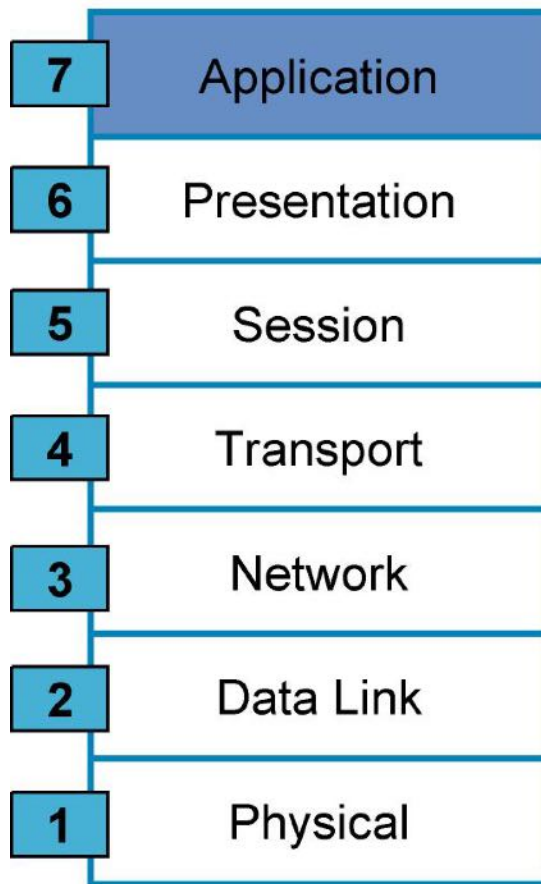
Network Process to Applications

Data Representation

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

301P_996

The Seven Layers of the OSI Model (Cont.)



Network Processes to Applications

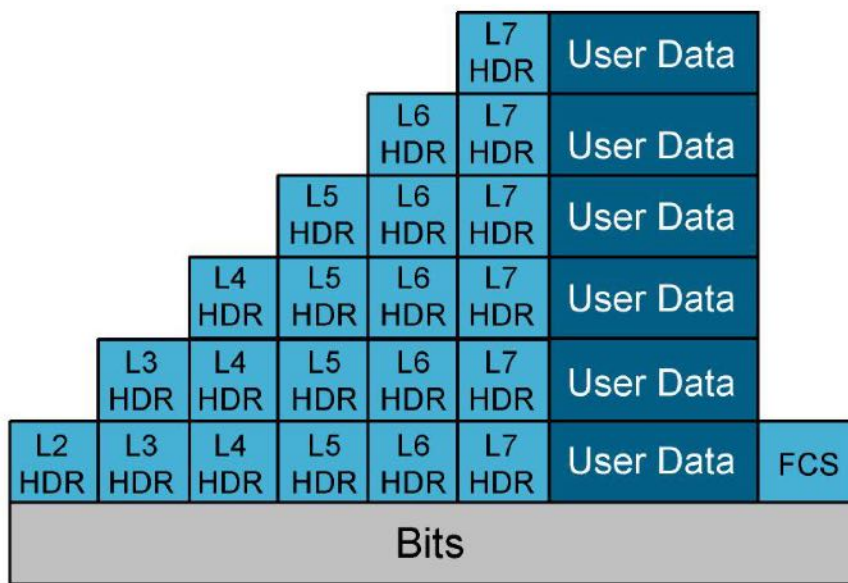
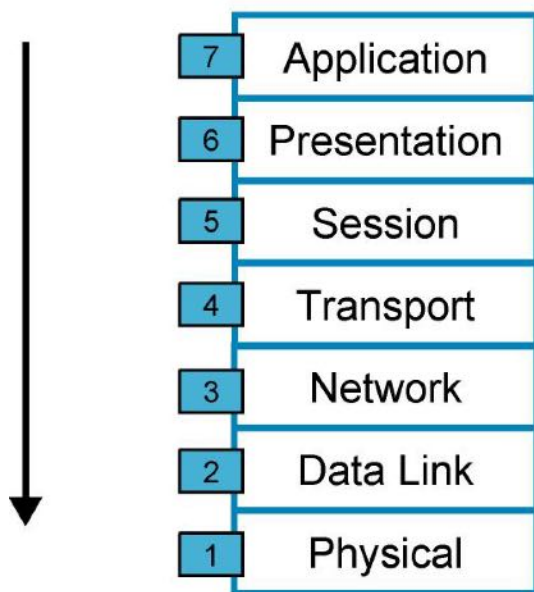
- Provides network services to application processes (such as electronic mail, file transfer, and terminal emulation)
- Provides user authentication

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Data Encapsulation



User Data



HDR = Header

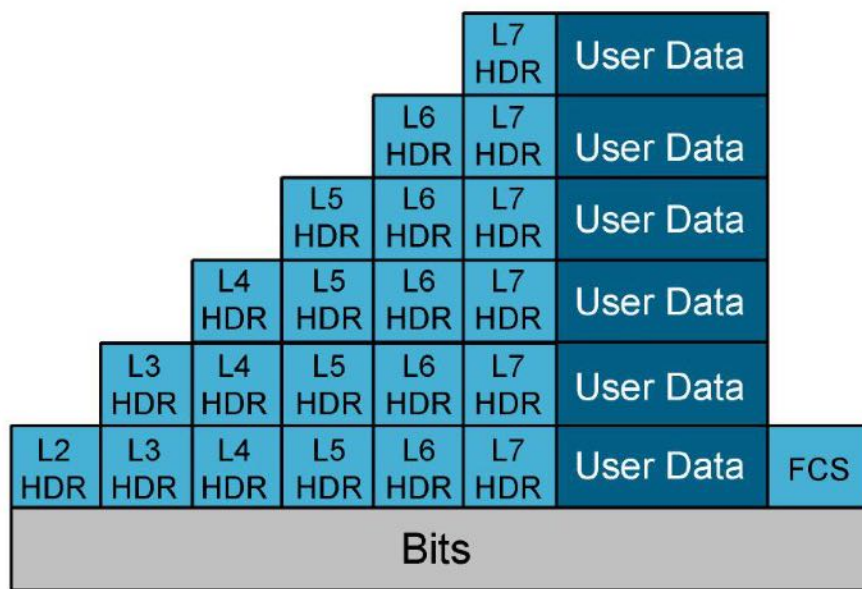
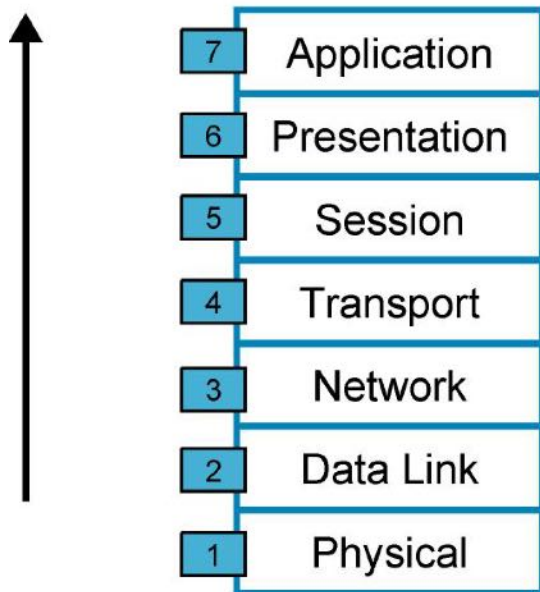
301P_063

Data De-Encapsulation

Receiver

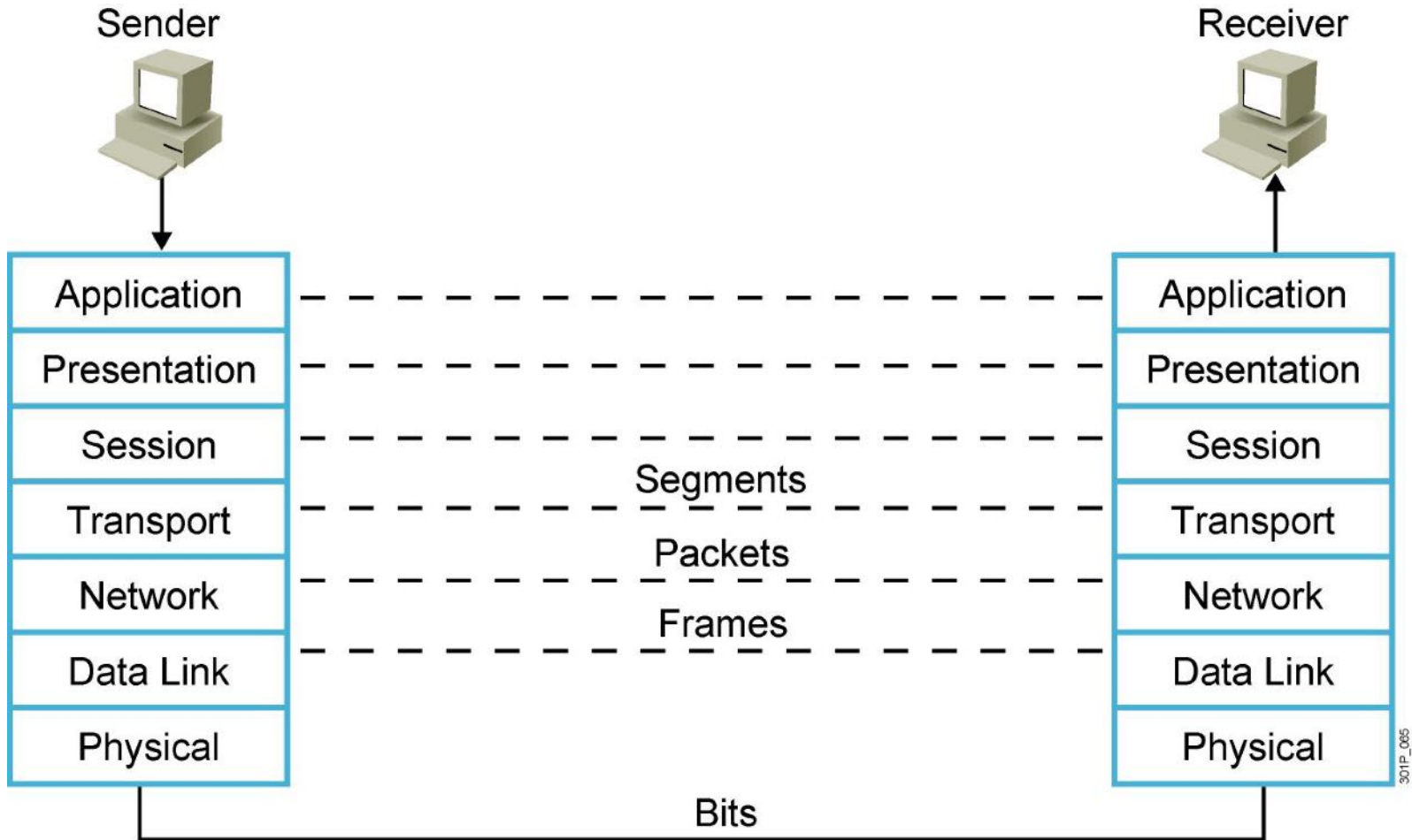


User Data



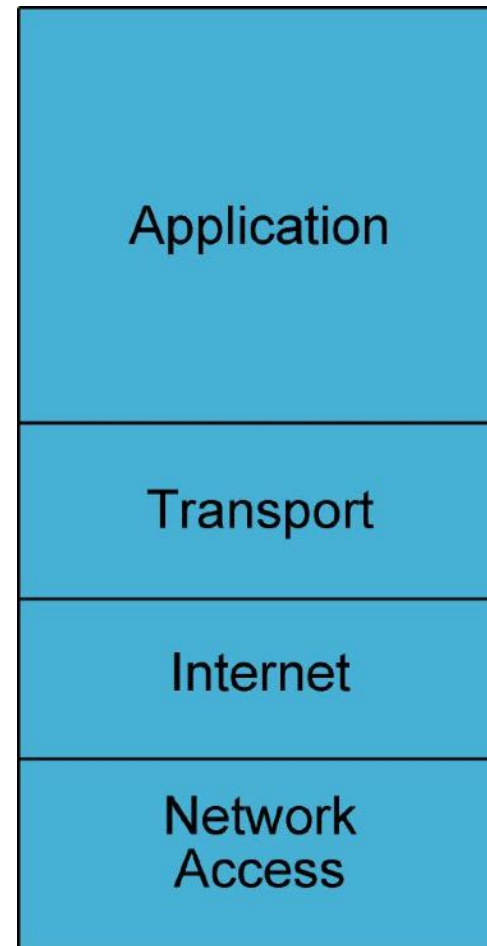
HDR = Header

Peer-to-Peer Communication



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

