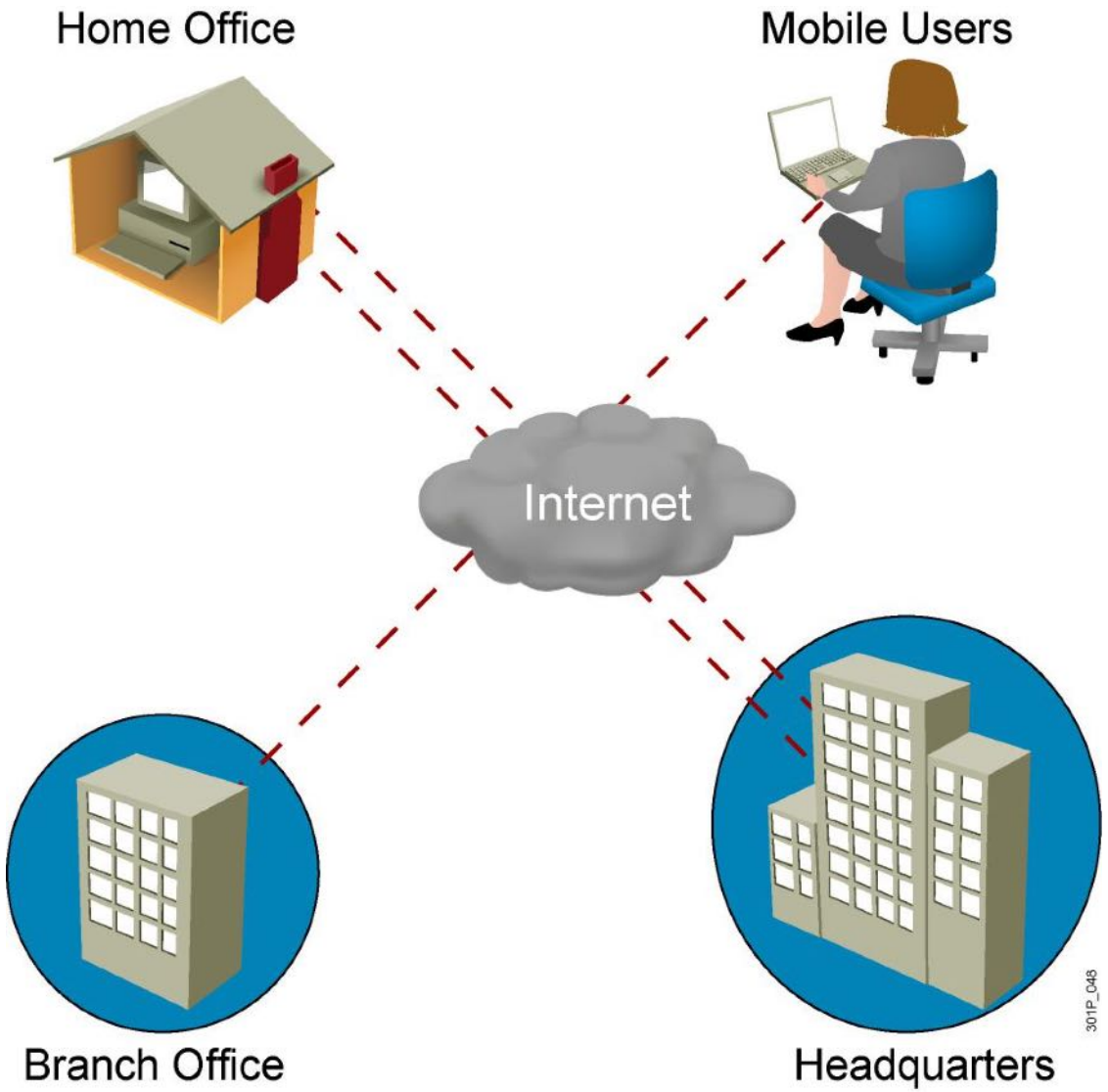
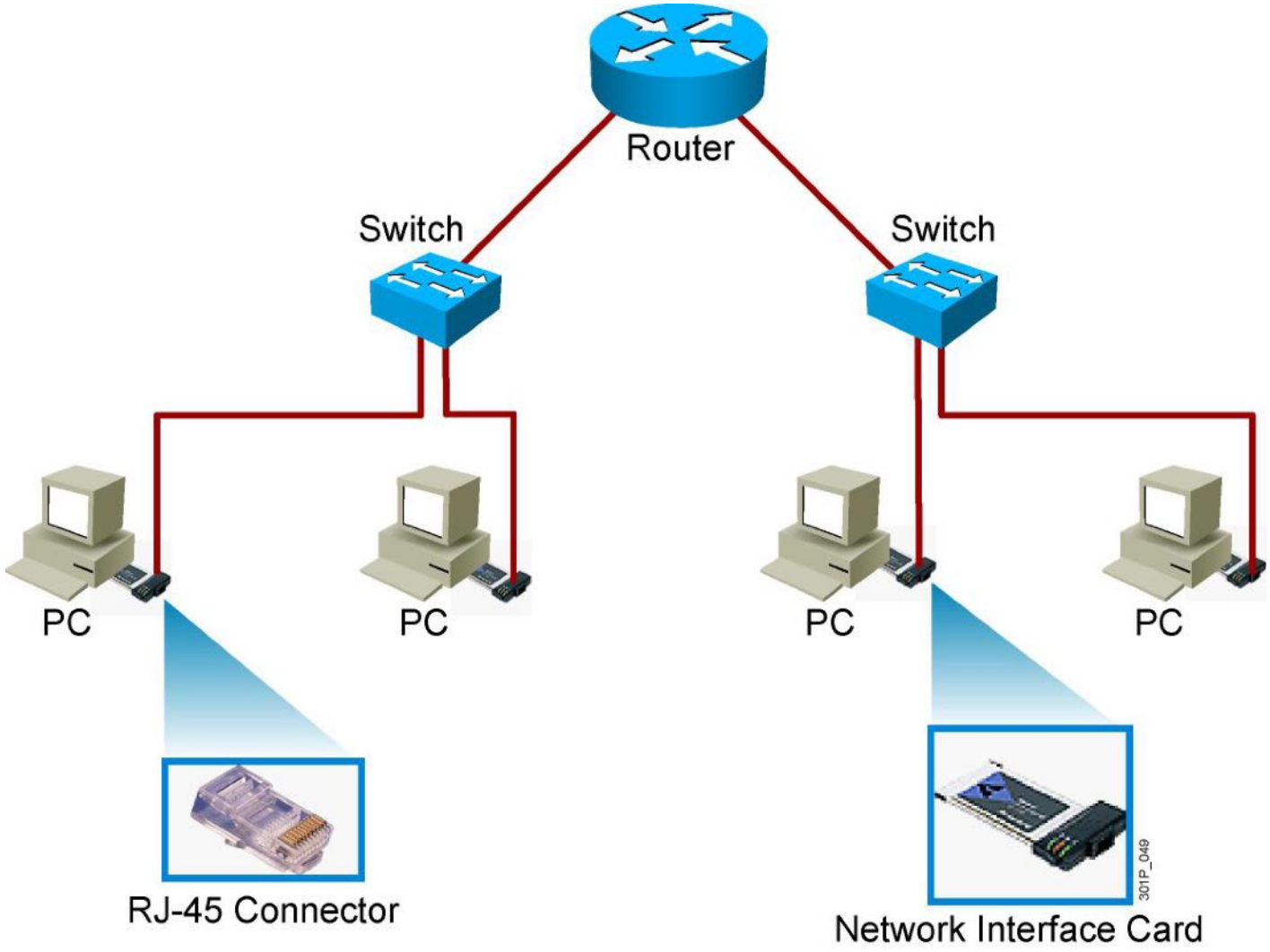
Exploring the Functions of Networking

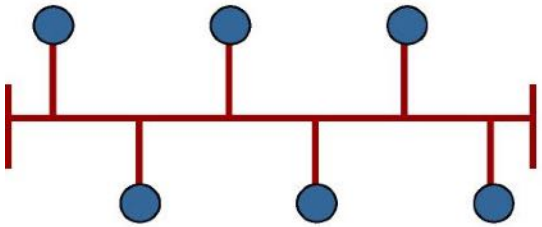
What Is a Network?



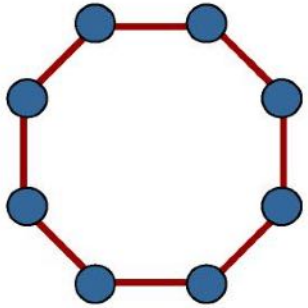
Common Physical Components of a Network



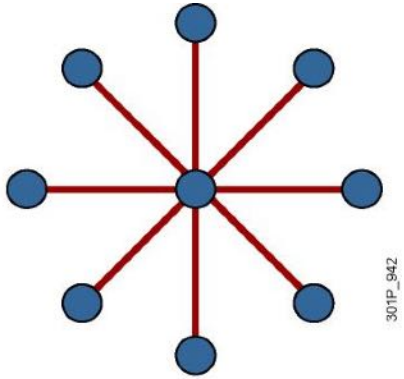
Physical Topology Categories



Bus Topology

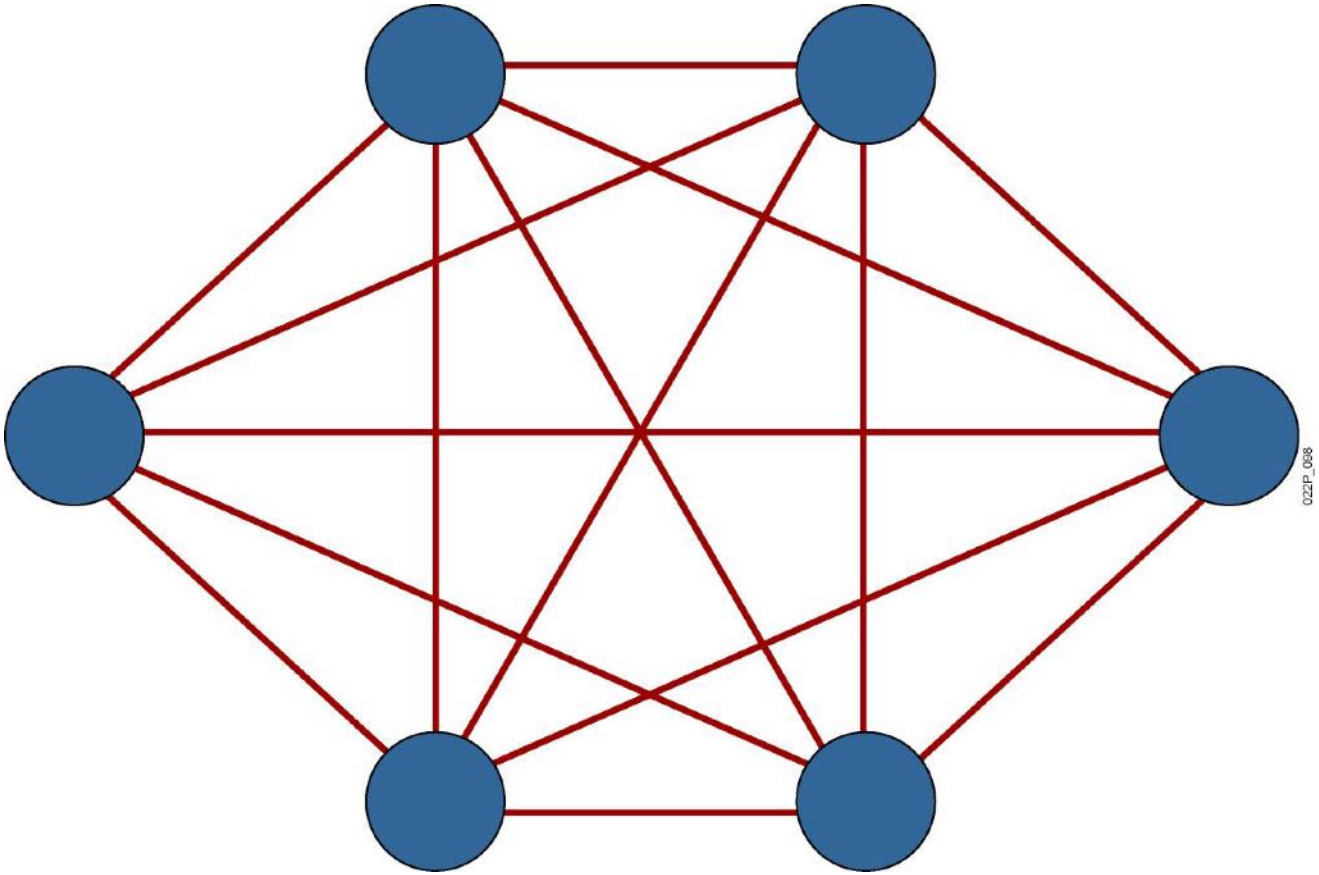


Ring Topology



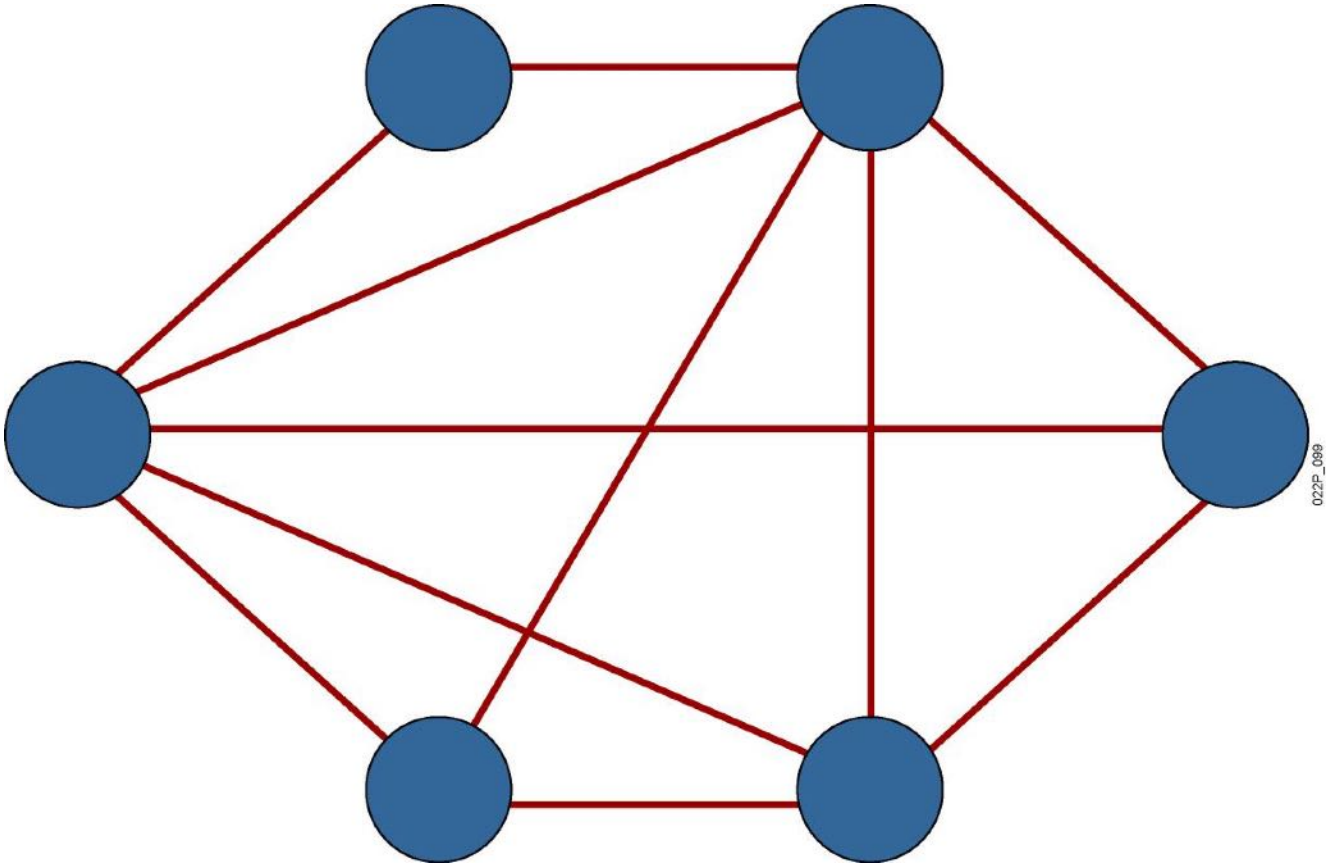
Star Topology

Full-Mesh Topology



- Highly fault-tolerant
- Expensive to implement

Partial-Mesh Topology

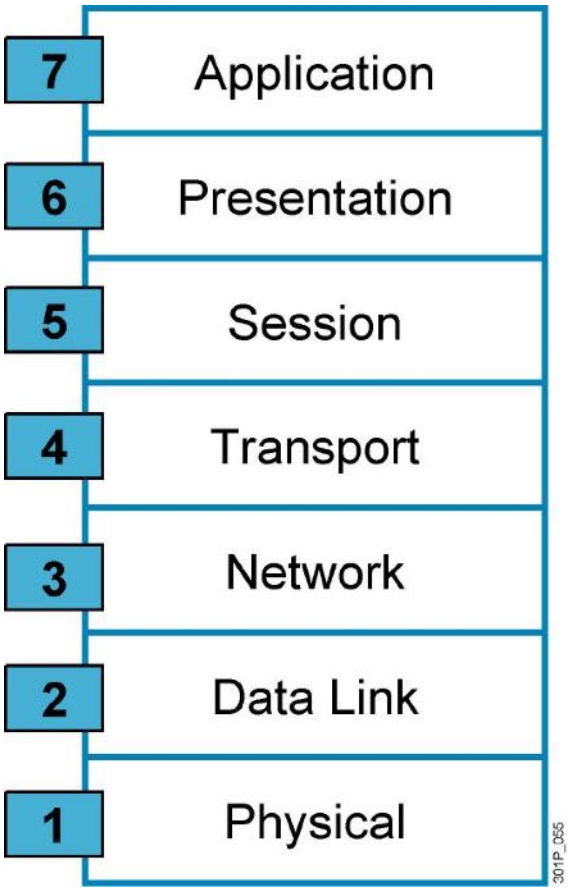


- Trade-off between fault tolerance and cost

Understanding Host-to-Host Communications

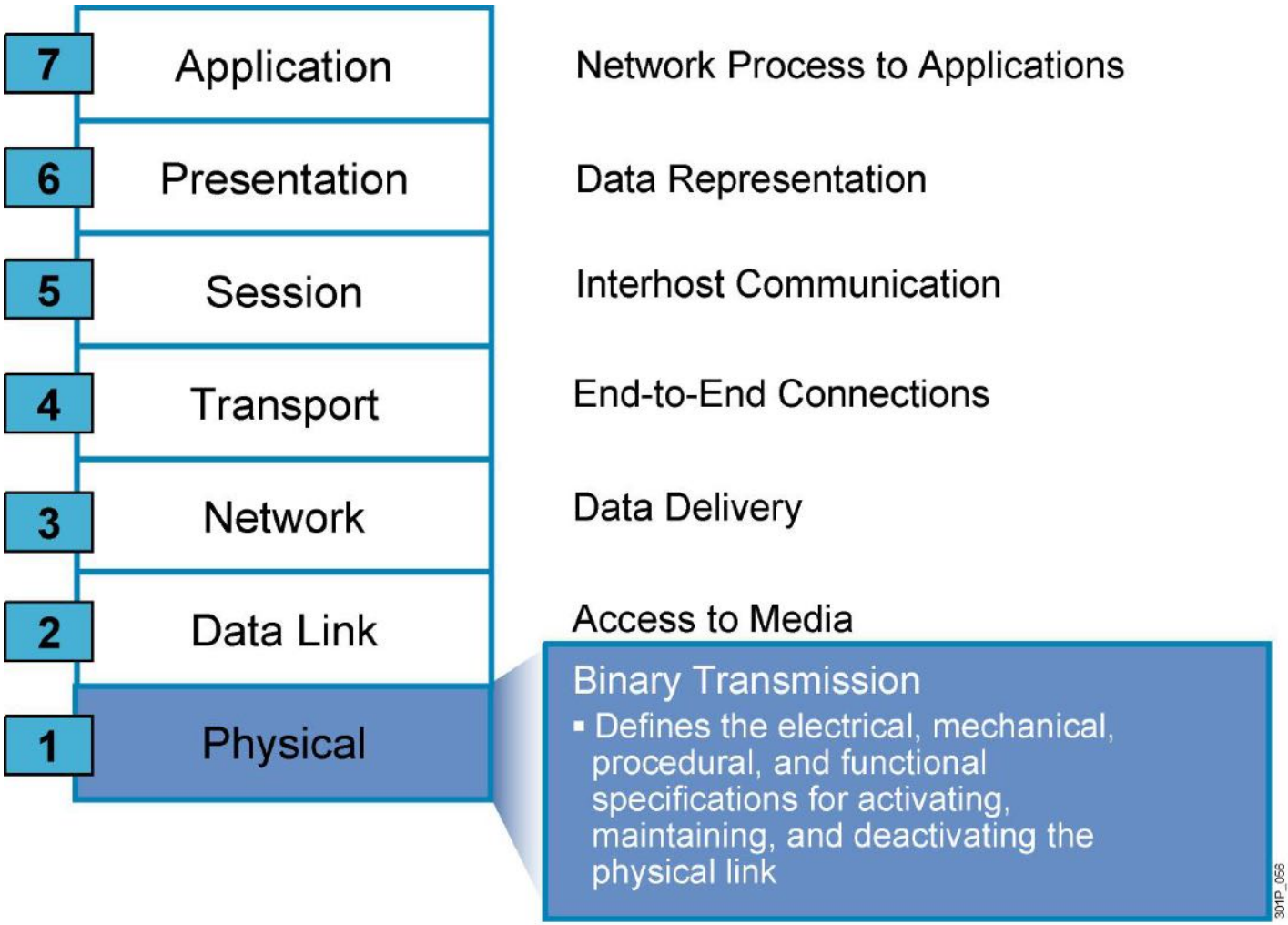
- Older model
  - Proprietary
  - Application and combinations software controlled by one vendor
- Standards-based model
  - Multivendor software
  - Layered approach

Why a Layered Network Model?

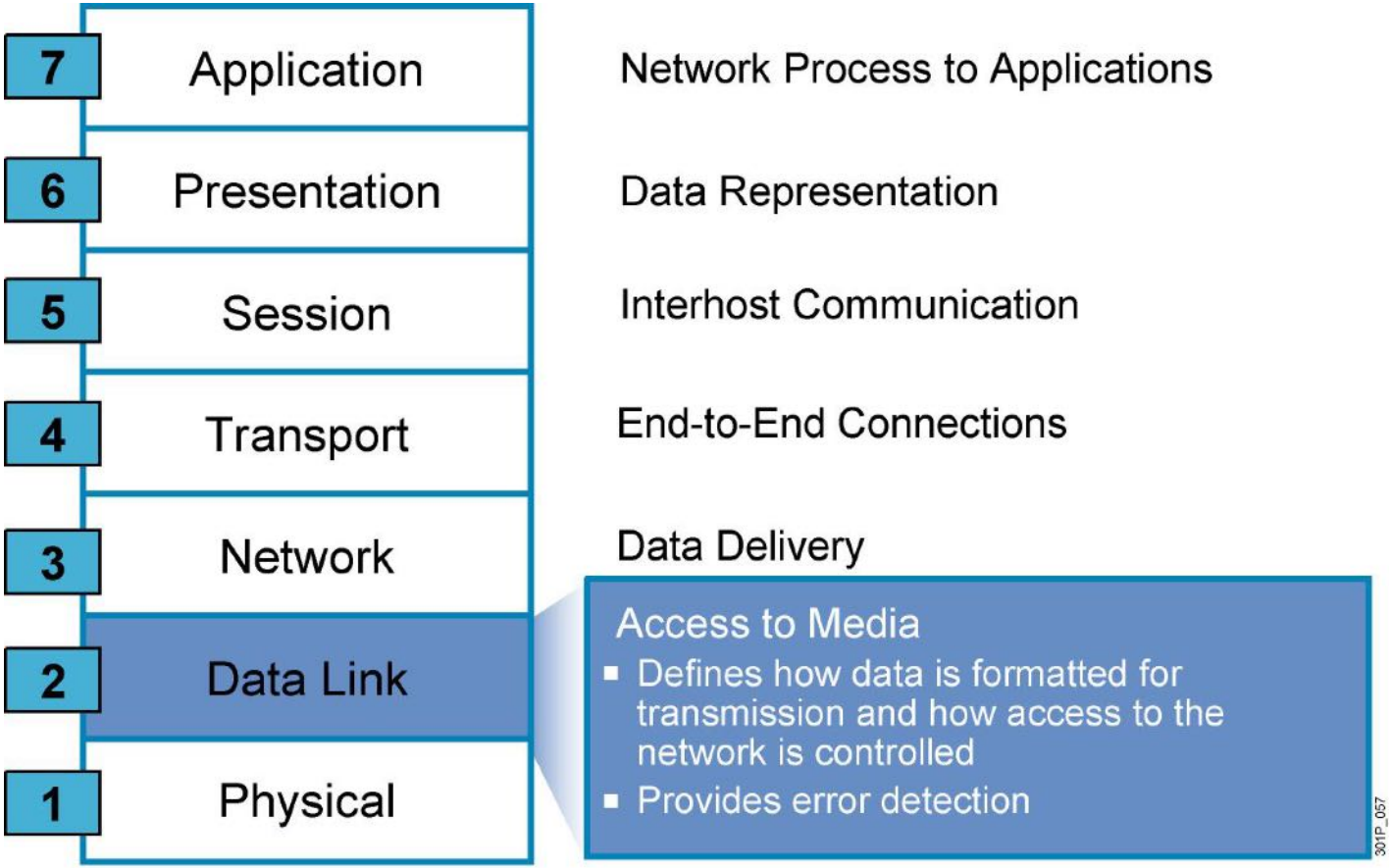


- Reduces complexity
- Standardizes interfaces
- Facilitates modular engineering
- Ensures interoperable technology
- Accelerates evolution
- Simplifies teaching and learning

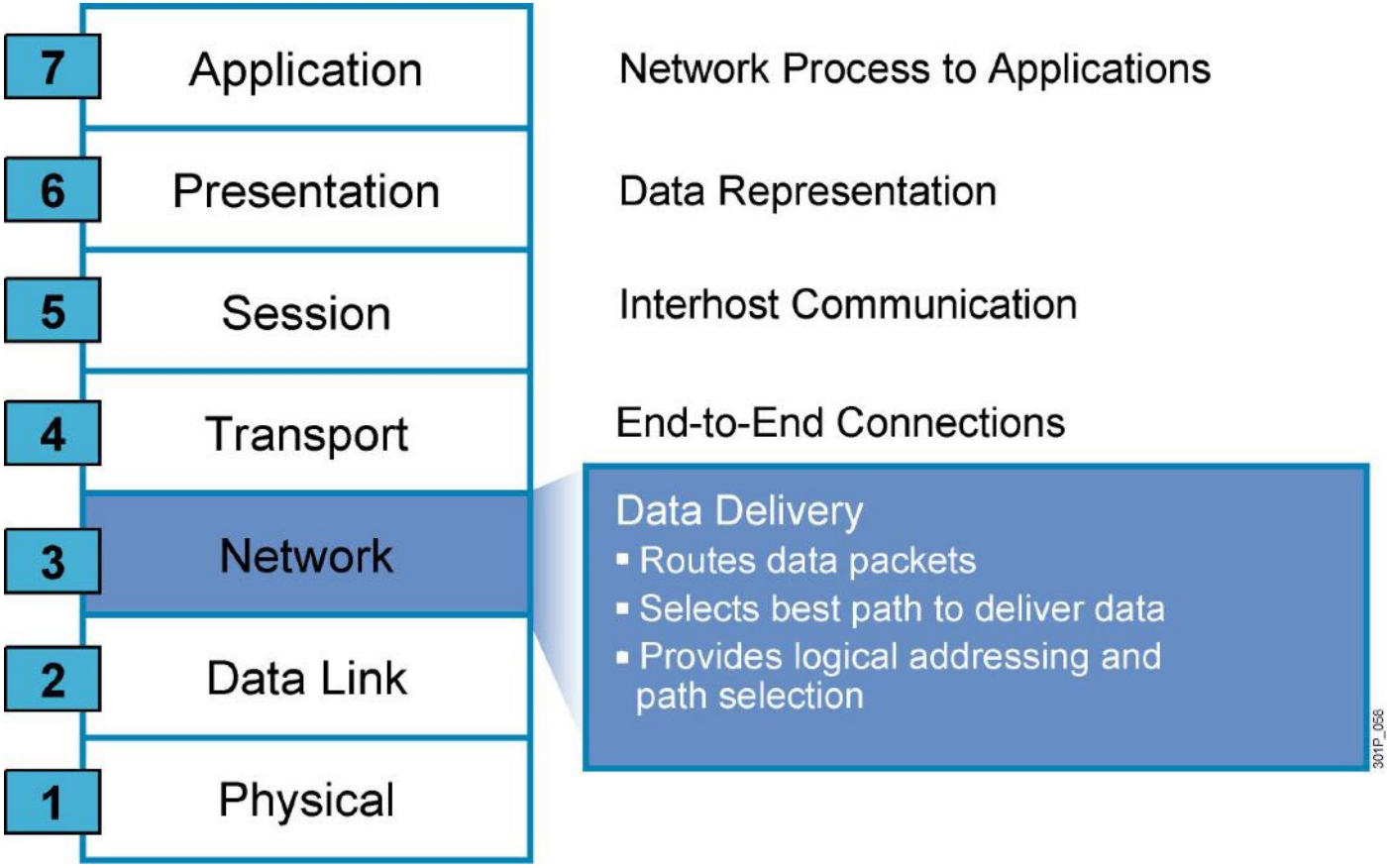
The Seven Layers of the OSI Model



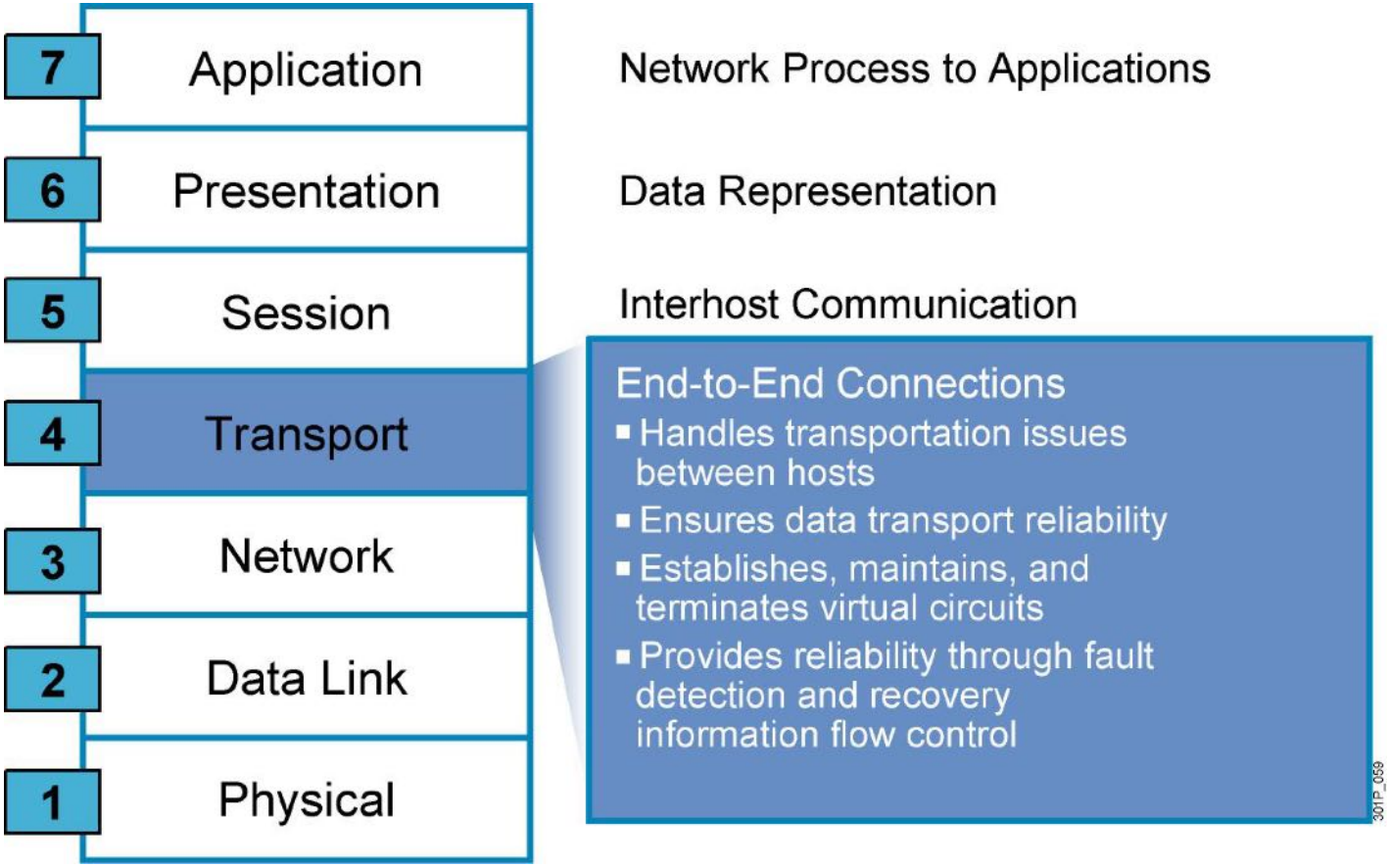
The Seven Layers of the OSI Model (Cont.)



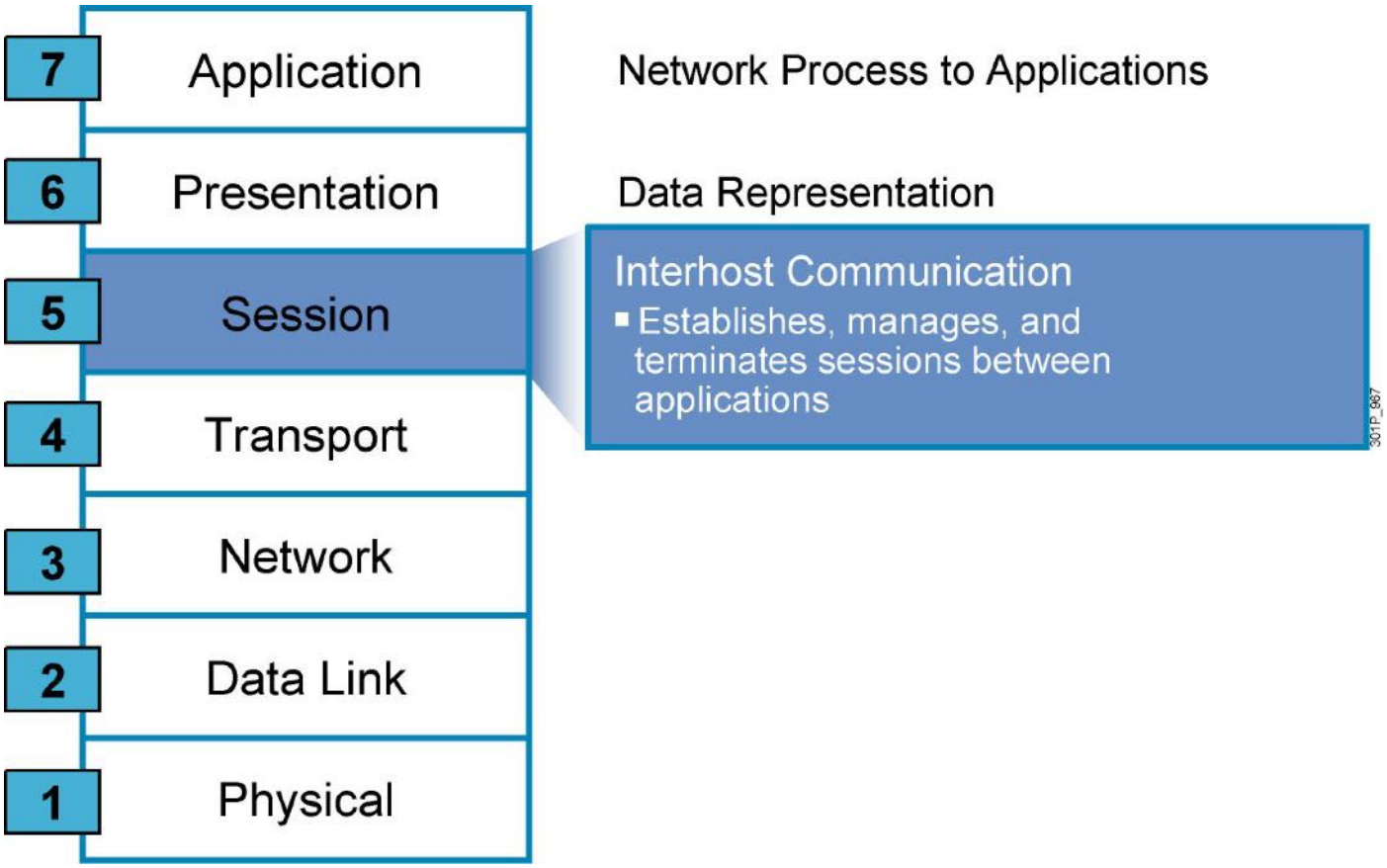
The Seven Layers of the OSI Model (Cont.)



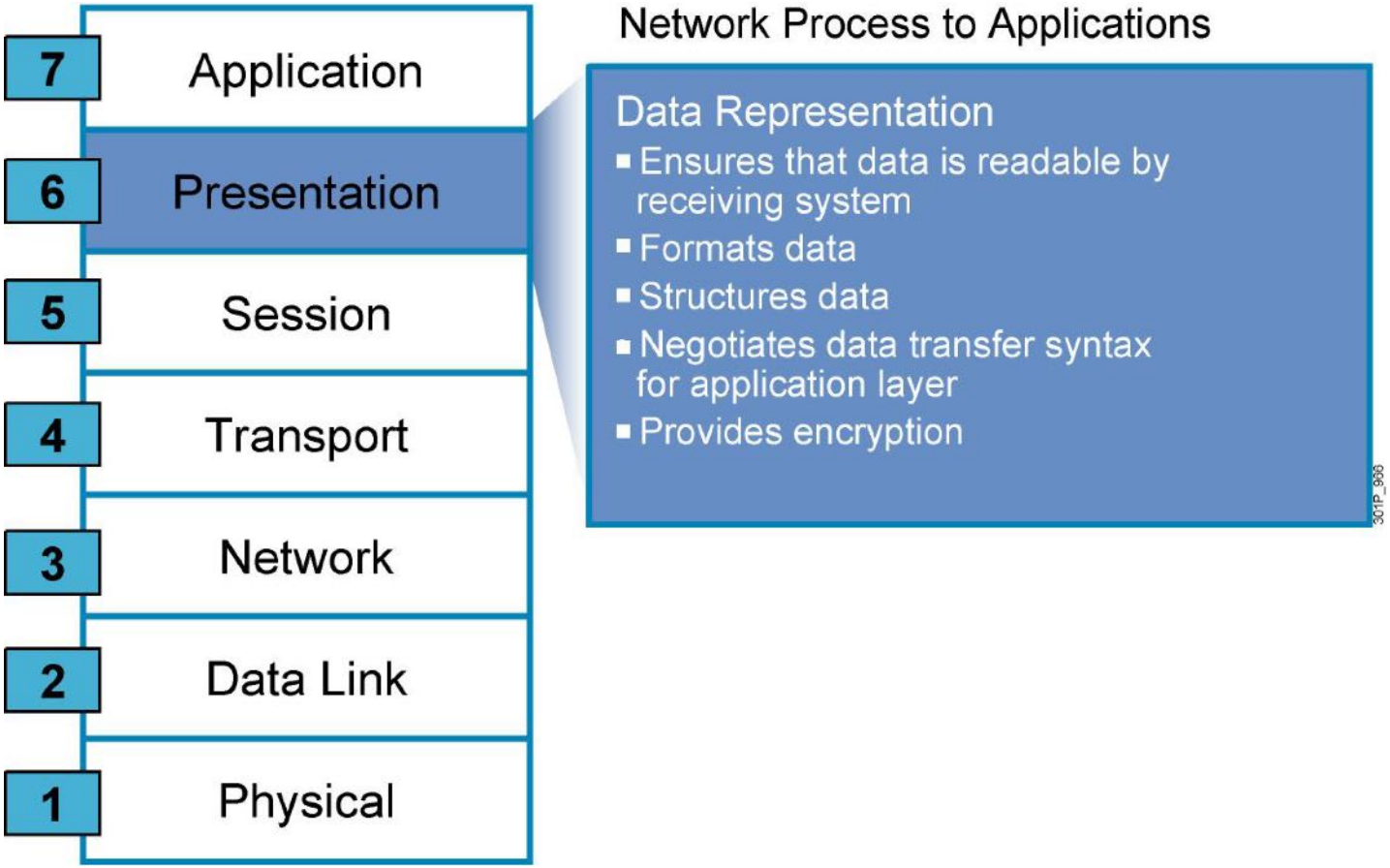
The Seven Layers of the OSI Model (Cont.)



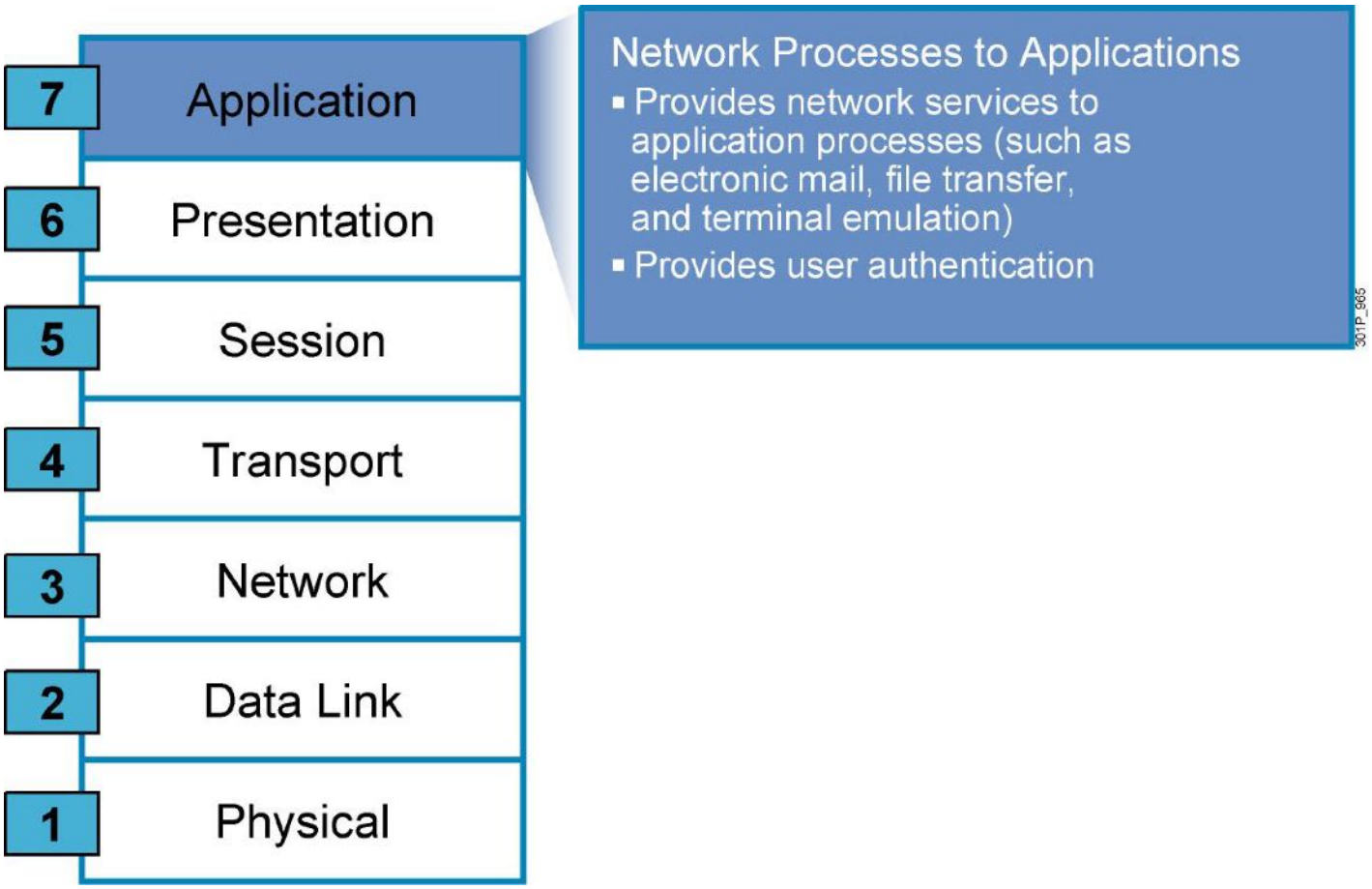
The Seven Layers of the OSI Model (Cont.)



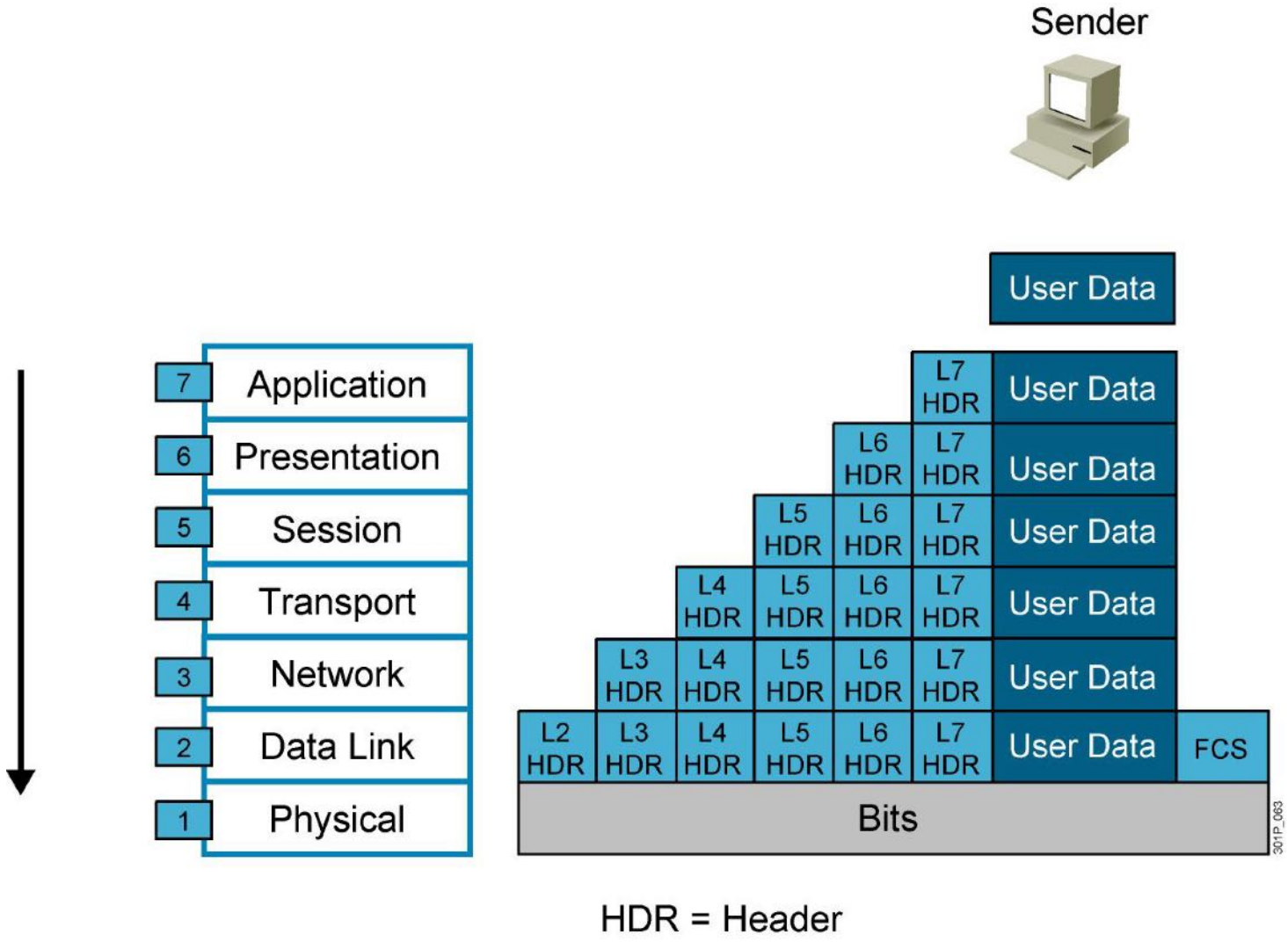
The Seven Layers of the OSI Model (Cont.)



The Seven Layers of the OSI Model (Cont.)

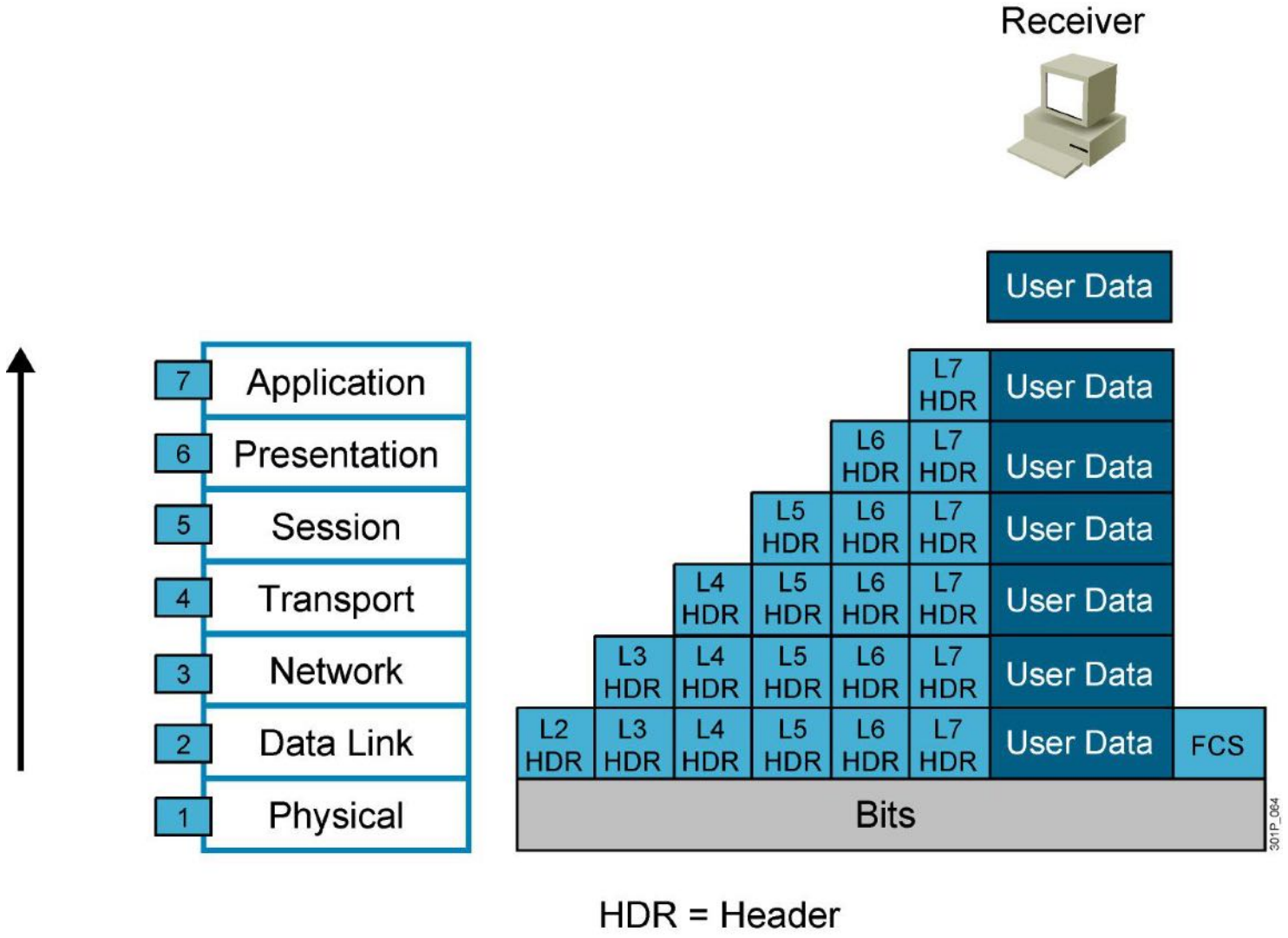


Data Encapsulation



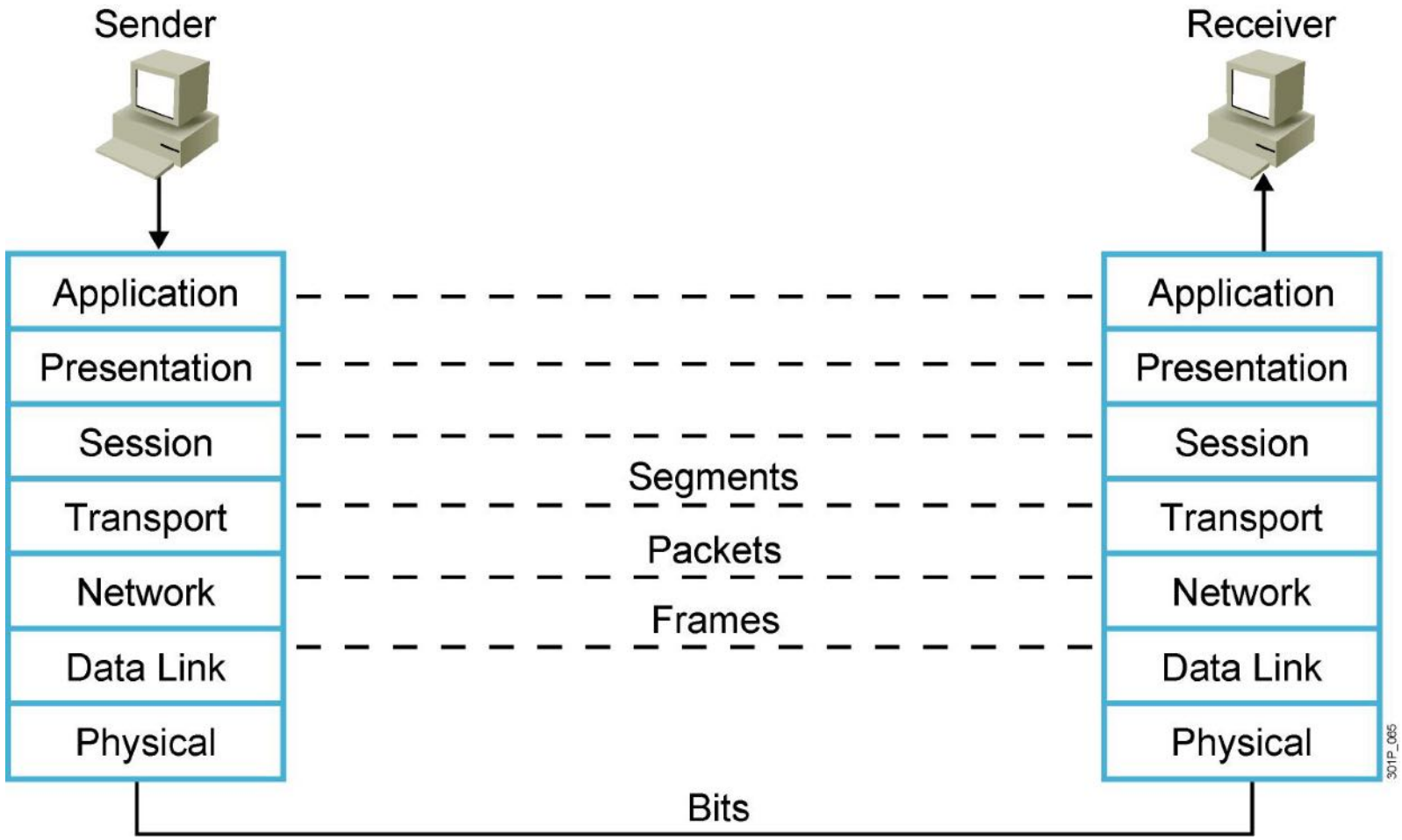
HDR = Header

Data De-Encapsulation



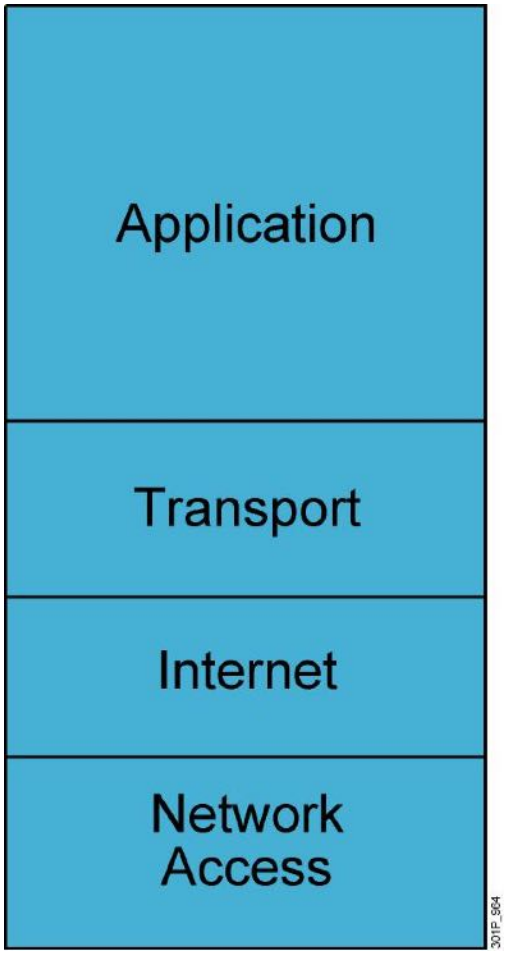
HDR = Header

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