Network Reference Models

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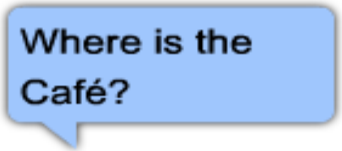
Reference Models

Protocol Suites are sets of rules that work together to help solve a problem.



Content layer

Conversation Protocol Suite

1. Use a Common Language
2. Wait Your Turn
3. Signal When Finished

Rules layer

Physical layer

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Reference Models

- a framework (guideline) for network implementation and troubleshooting
- divides complex functions into simpler components
- Importance of reference model:
  - ✓Vendor interoperability “standardization”.
  - ✓Better understanding of data transfer
- Reference model types :
  - ✓OSI (Open System Interconnection).
  - ✓TCP/IP (DOD Model).
  - ✓Other Models.

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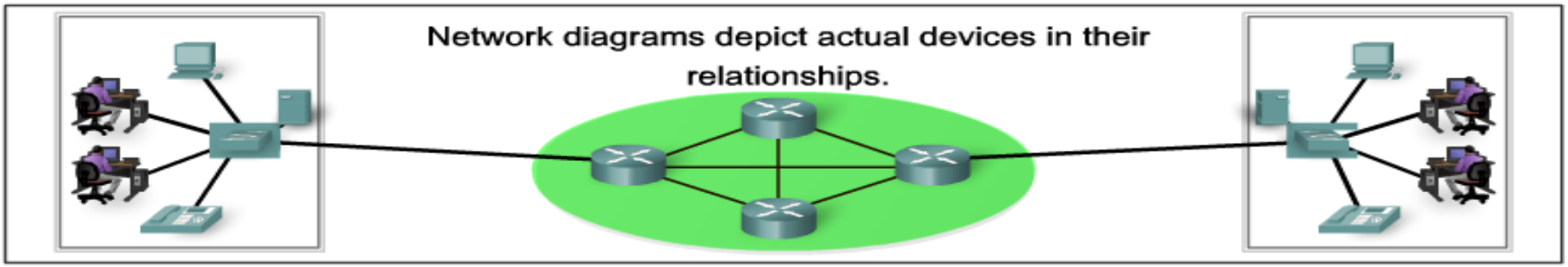
Reference Models

Models Provide Guidance



OSI Model

- Application
- Presentation
- Session
- Transport
- Network
- Data Link
- Physical

A networking model is only a representation of network operation. The model is not the actual network.

TCP/IP Model

- Application
- Transport
- Internet
- Network Access

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Physical

The Physical layer protocols describe the mechanical, electrical, functional, and procedural means to activate, maintain, and de-activate physical-connections for bit transmission to and from a network device.

Roll over a layer for a description

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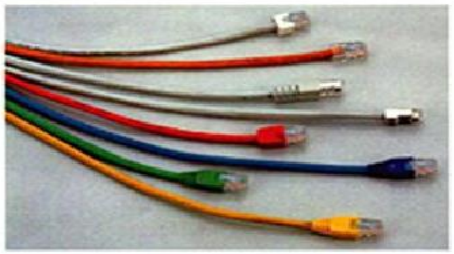
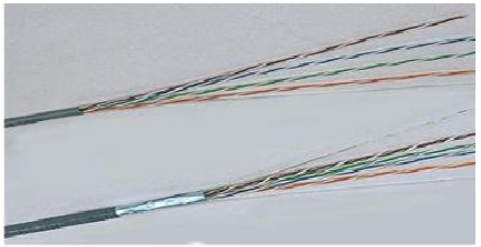
Network media

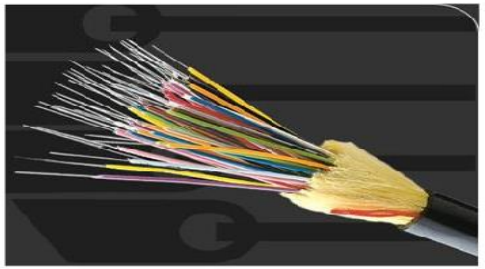
Network Media



Copper



Fiber Optics



Wireless

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Data Link

The Data Link layer protocols describe methods for exchanging data frames between devices over a common media.

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Network

The Network layer provides services to exchange the individual pieces of data over the network between identified end devices.

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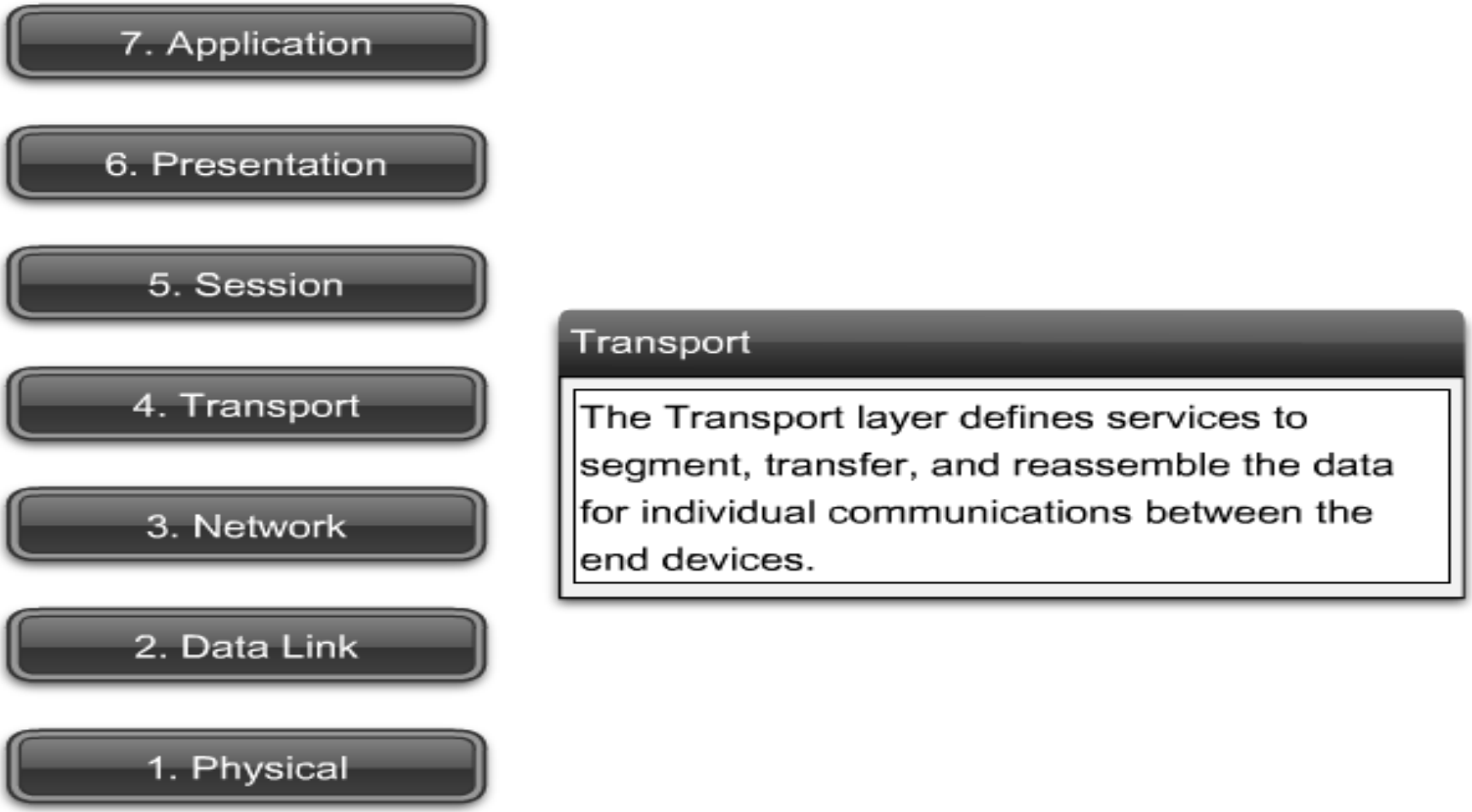

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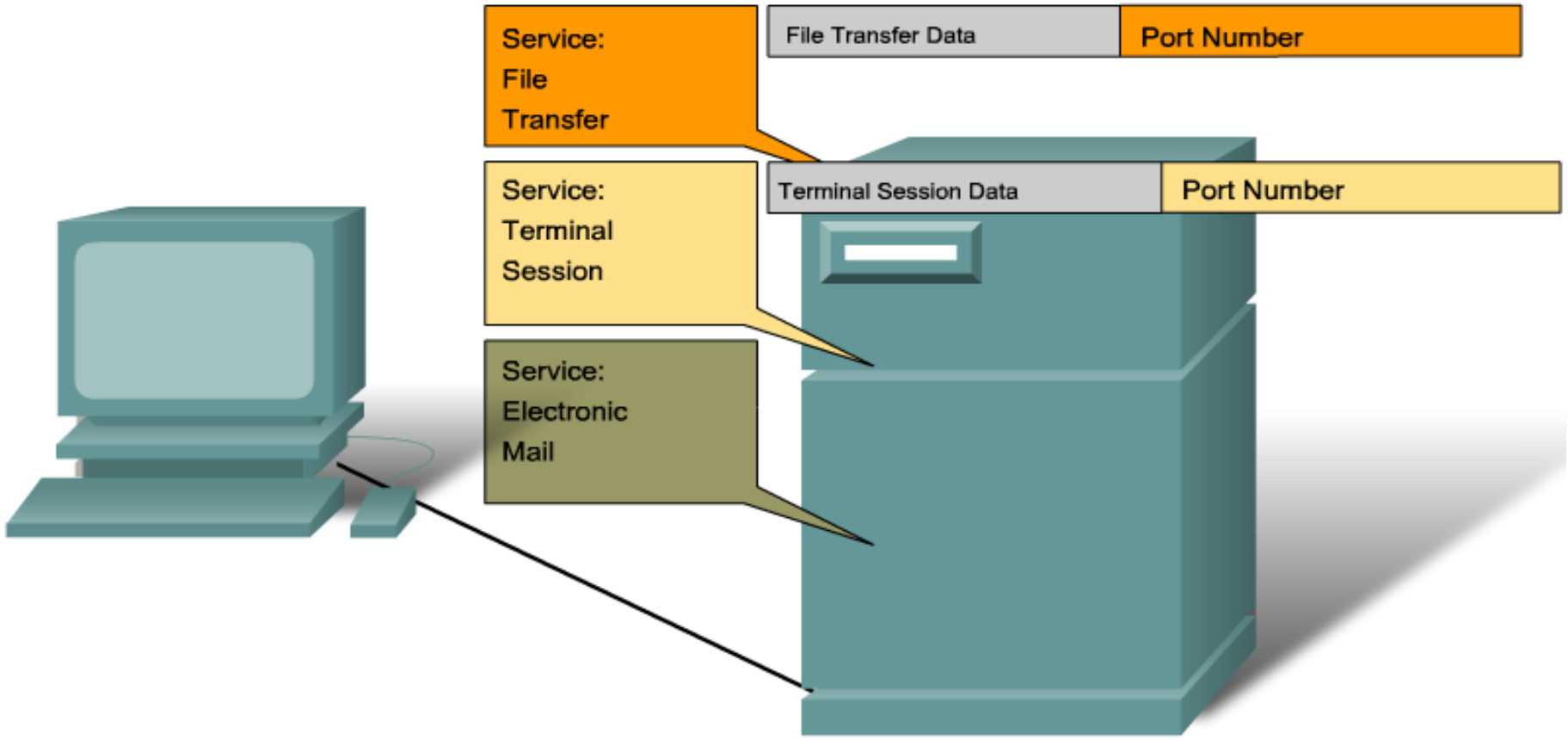
At the end device, the service port number directs the data to the correct conversation.



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Session

The Session layer provides services to the Presentation layer to organize its dialogue and to manage data exchange.

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Presentation

The Presentation Layer provides for common representation of the data transferred between Application layer services.

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Application

The Application layer provides the means for end-to-end connectivity between individuals in the human network using data networks.

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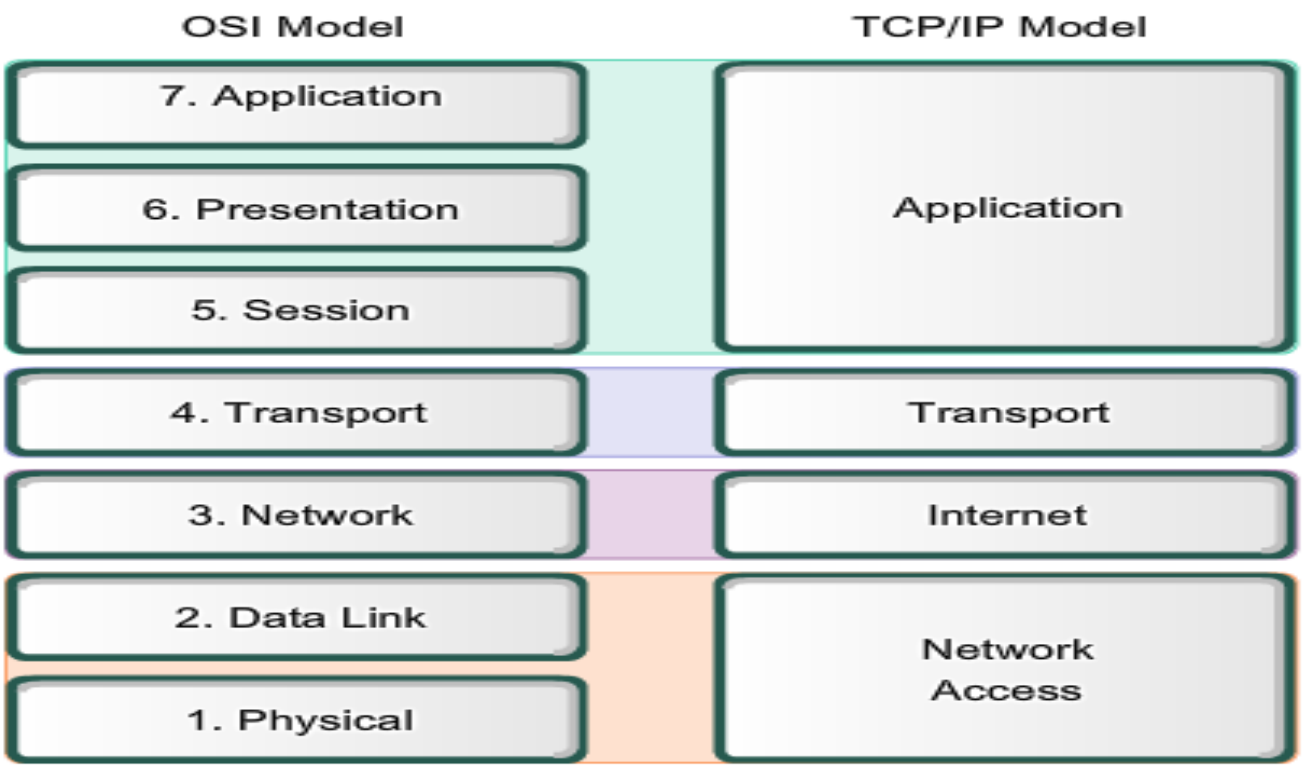
Reference Models

Comparing the OSI and TCP/IP models



The key parallels are in the Transport and Network layers.

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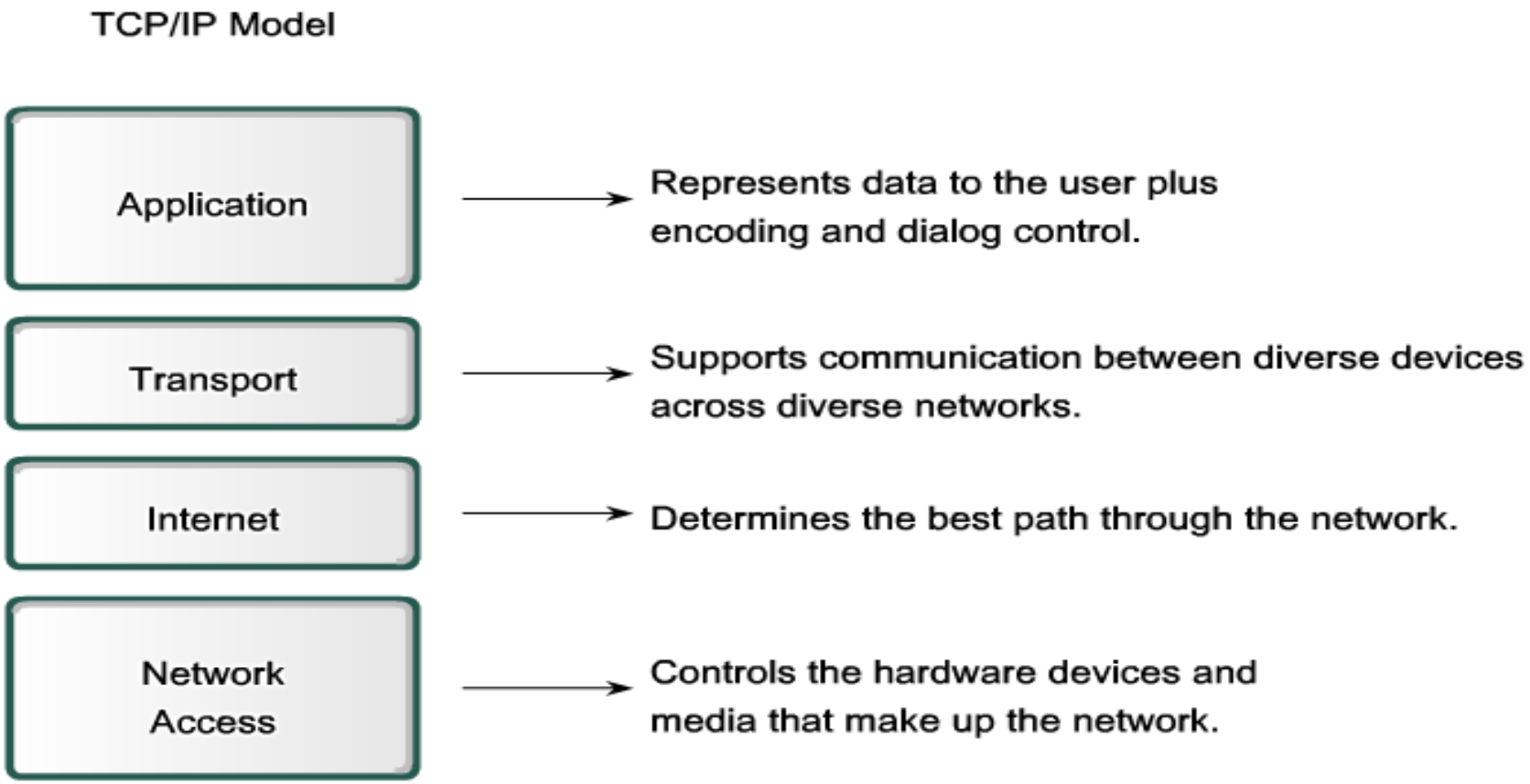
TCP/IP model



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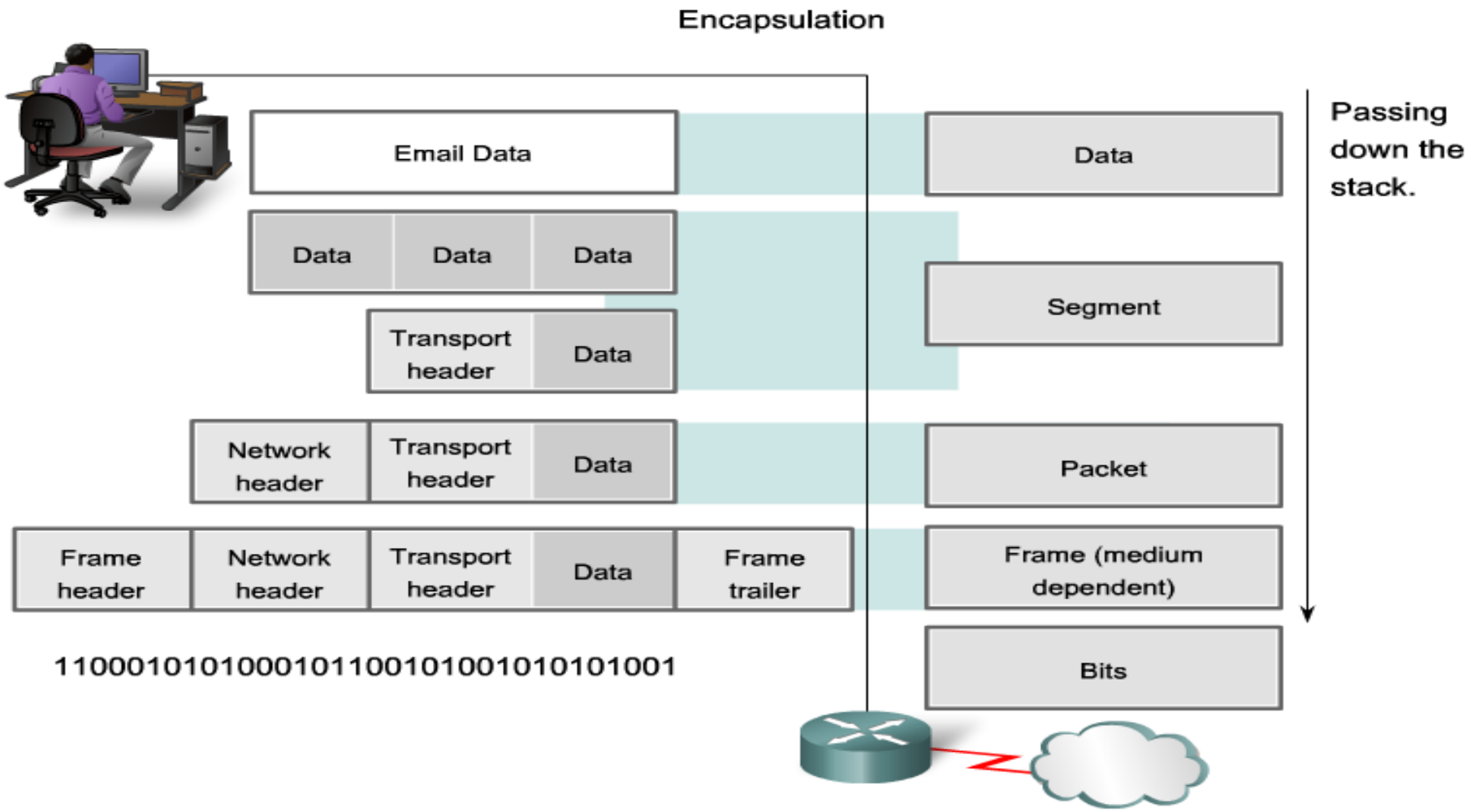

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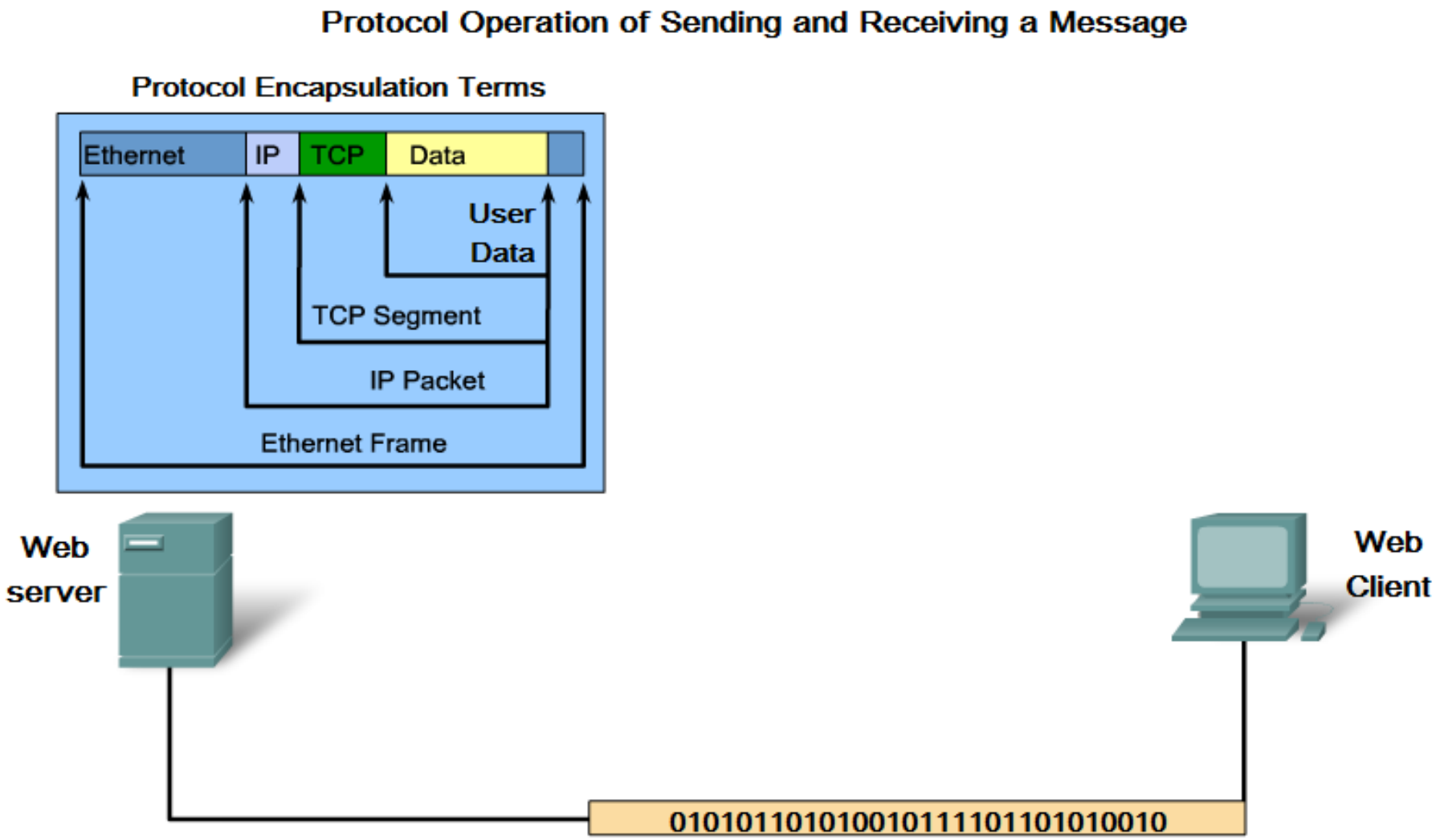

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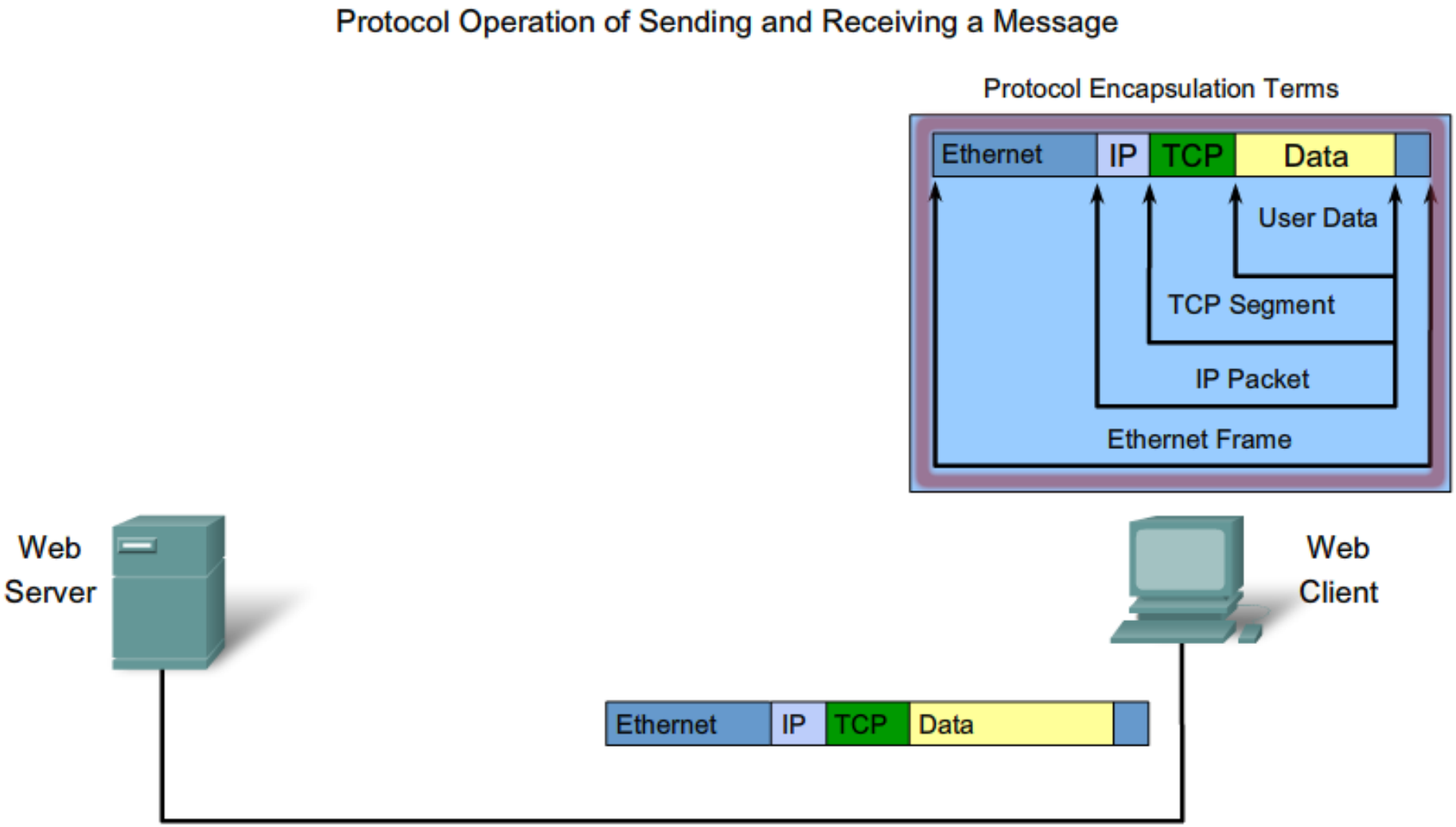

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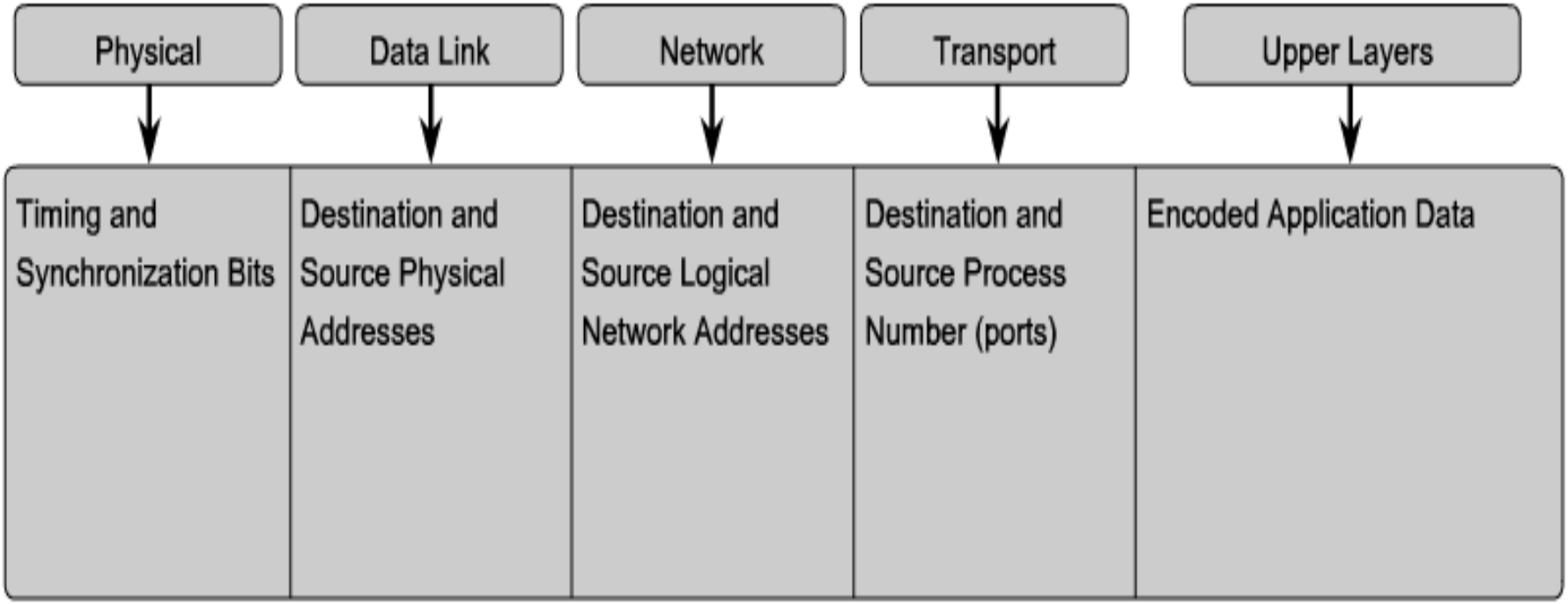

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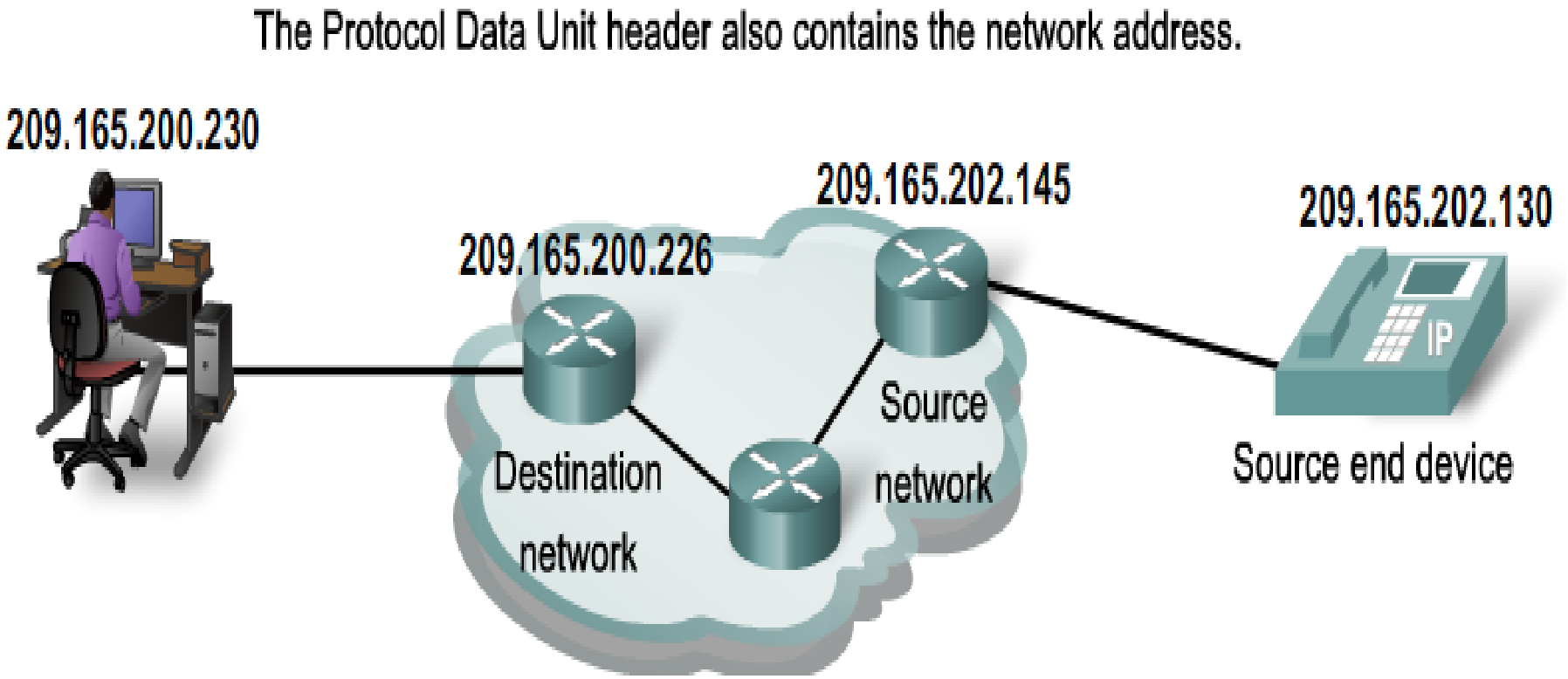

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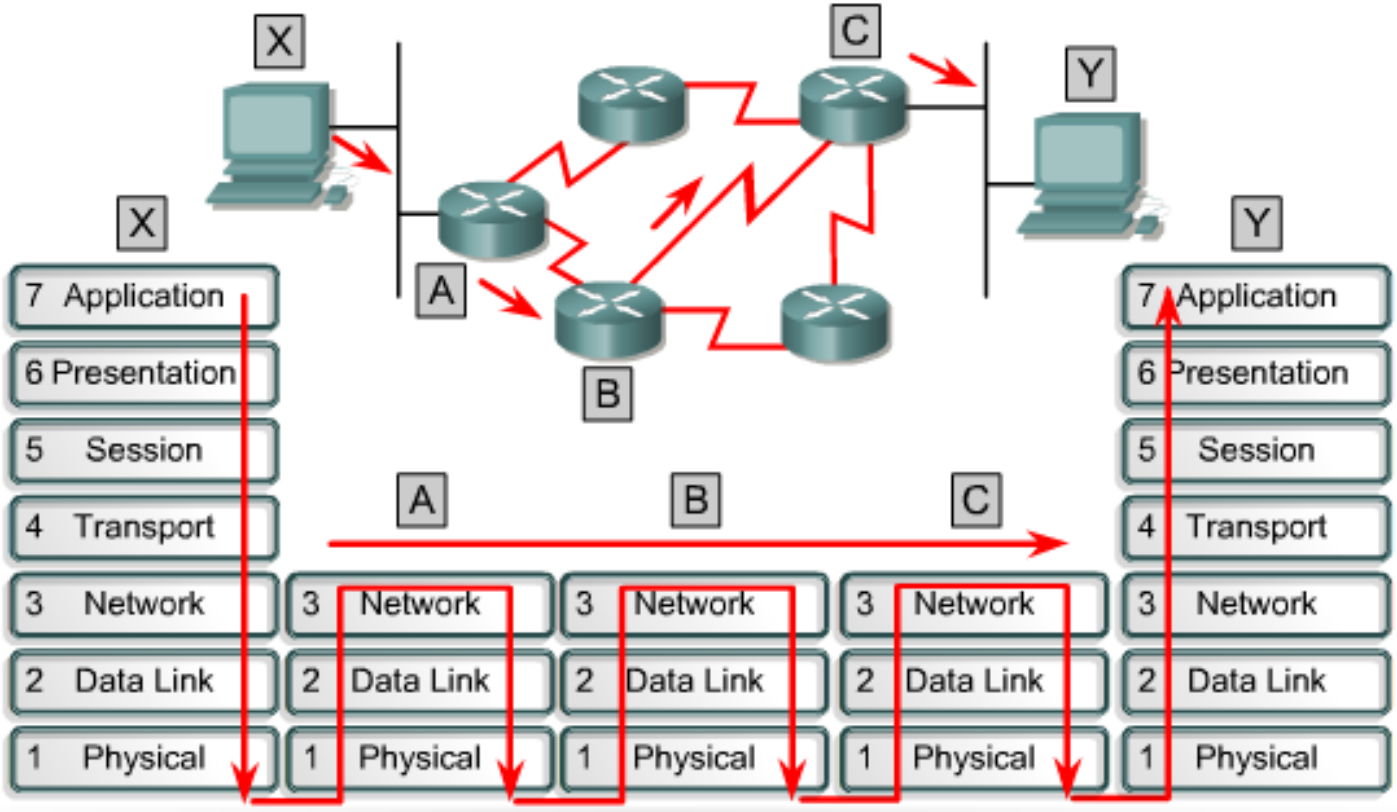
Transmission Example



Each router provides its services to support upper-layer functions.

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