Communicating over the Network

Network Fundamentals – Chapter 2

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Network Structure

- Define the elements of communication
  - 3 common elements of communication
    - message source
    - the channel
    - message destination

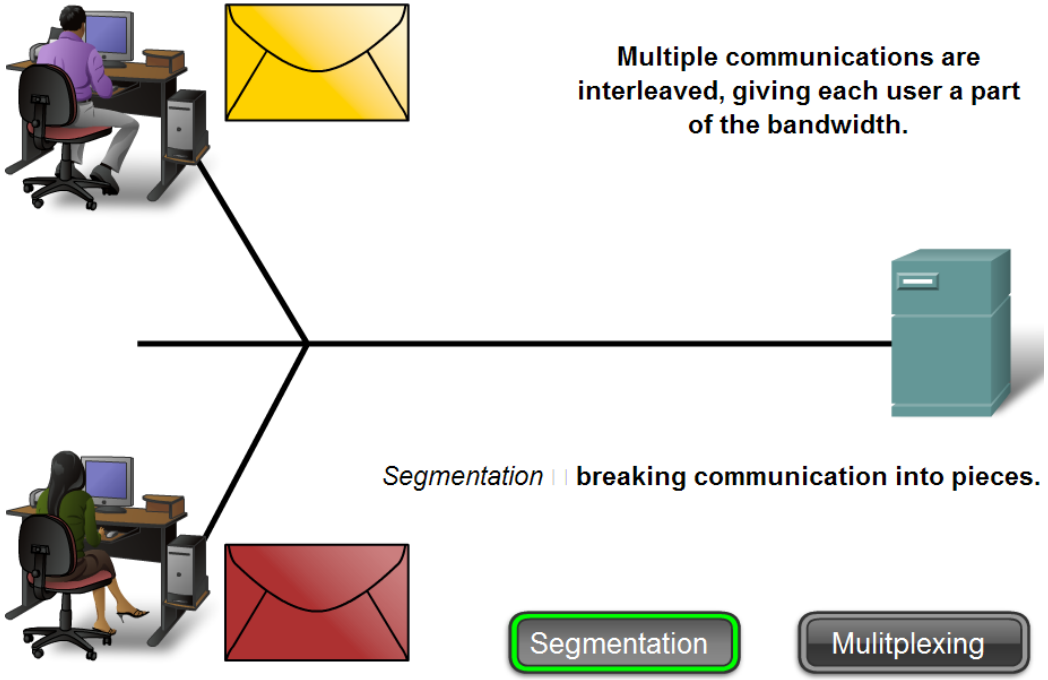
- Define a network

  data or information networks capable of carrying many different types of communications

Network Structure

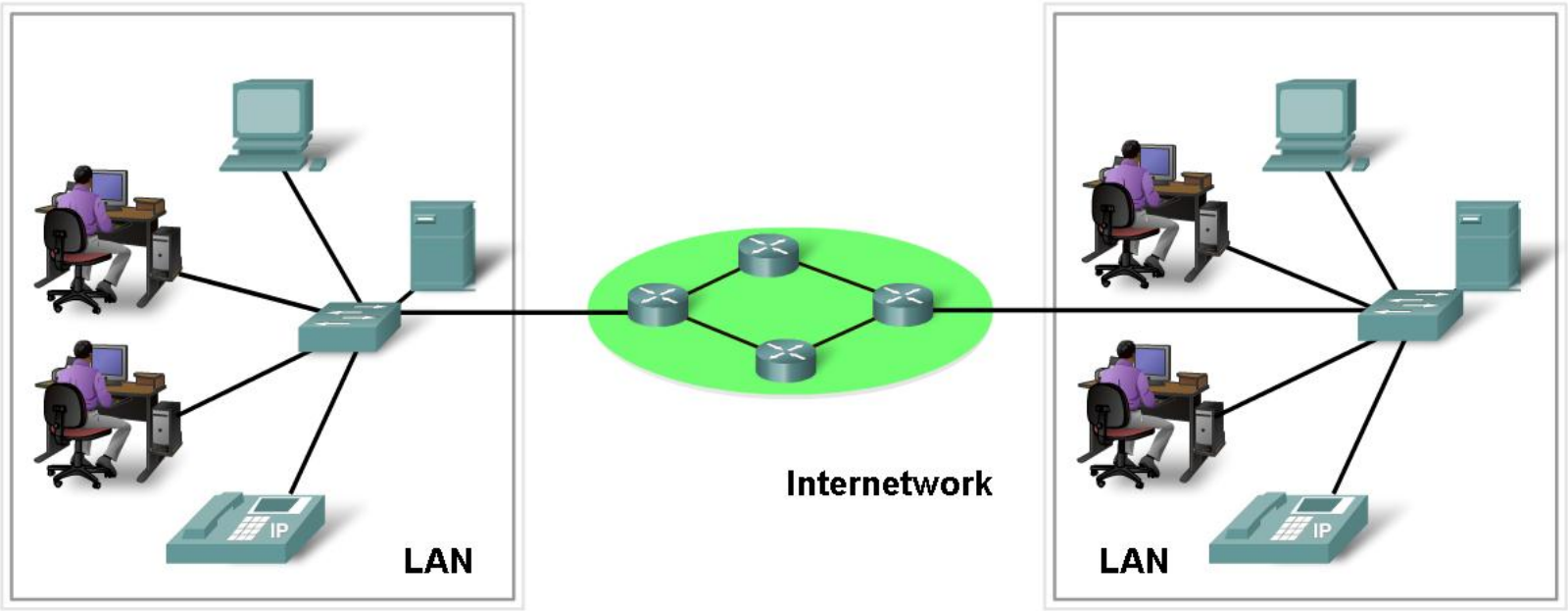
- Describe how messages are communicated

  Data is sent across a network in small “chunks” called segments



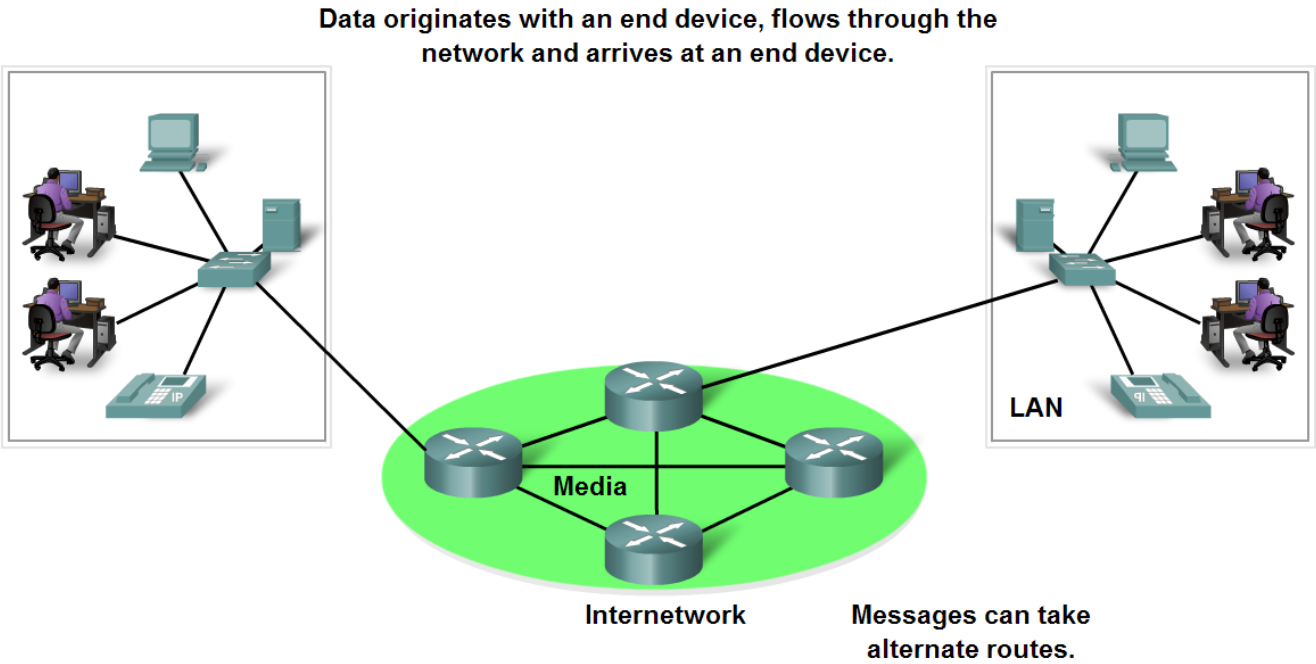
Network Structure

- Define the components of a network
  - Network components
    - hardware
    - software



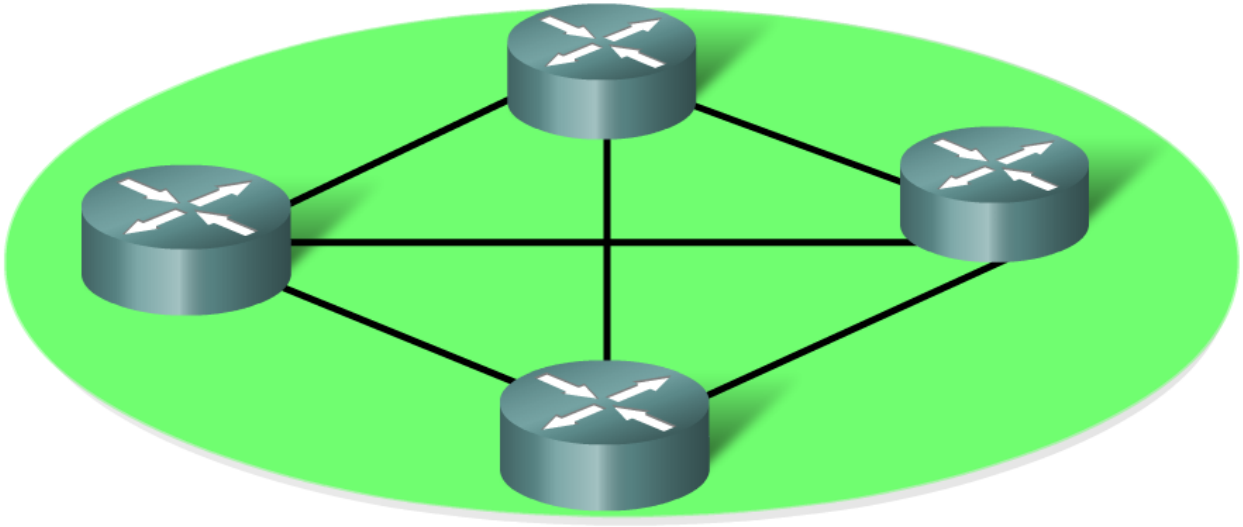
Network Structure

- End Devices and their Role in the Network
  - –End devices form interface with human network & communications network
  - –Role of end devices:
    - client
    - server
    - both client and server



Network Structure

- Identify the role of an intermediary device in a data network and be able to contrast that role with the role of an end device
  - Role of an intermediary device
    - provides connectivity and ensures data flows across network



Network Structure

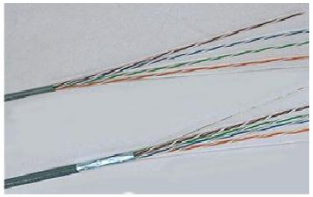
- Define network media and criteria for making a network media choice

  Network media

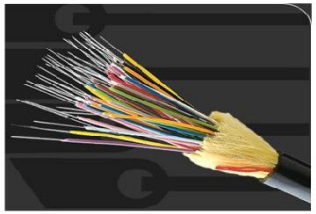
  this is the channel over which a message travels

Network Media

Copper



Fiber Optics

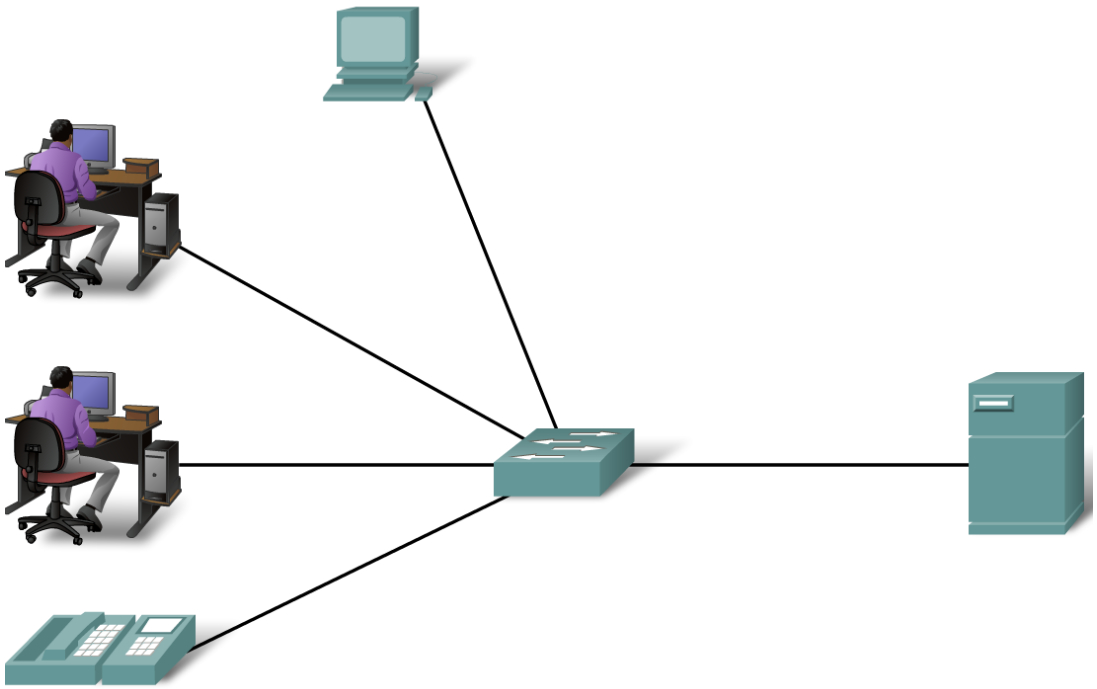


Wireless

Network Types

- Define Local Area Networks (LANs)

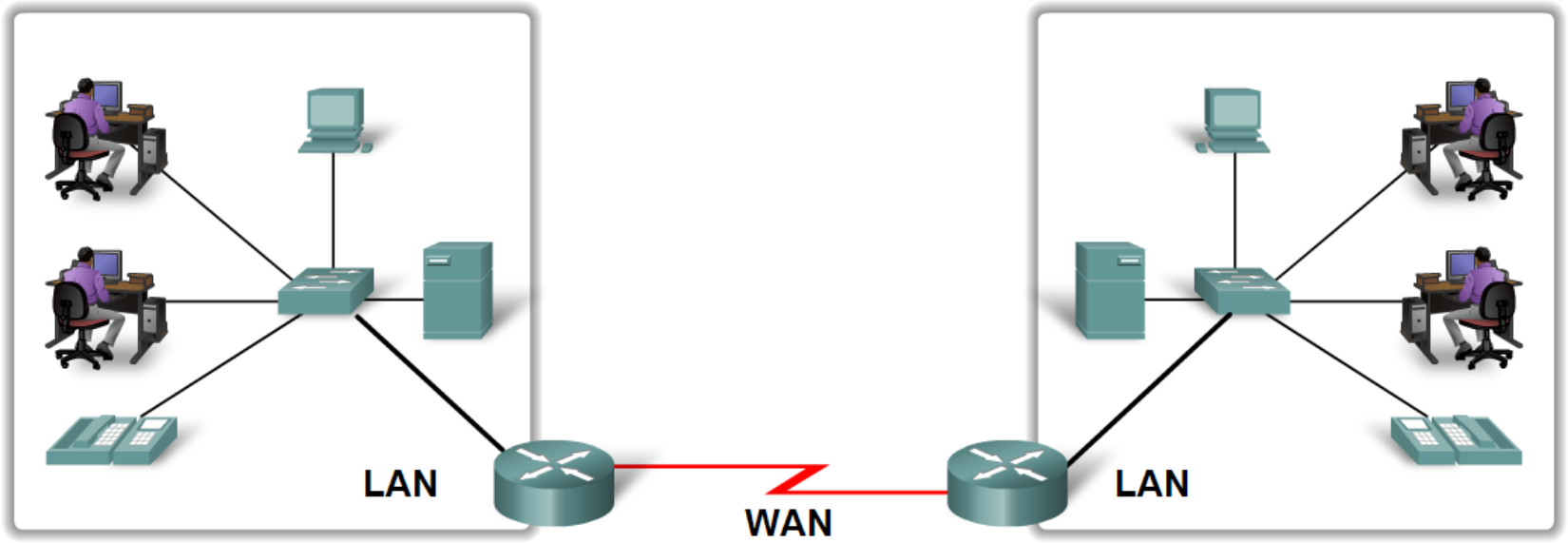
  - A network serving a home, building or campus is considered a Local Area Network (LAN)



Network Types

- Define Wide Area Networks (WANs)

  - LANs separated by geographic distance are connected by a network known as a Wide Area Network (WAN)

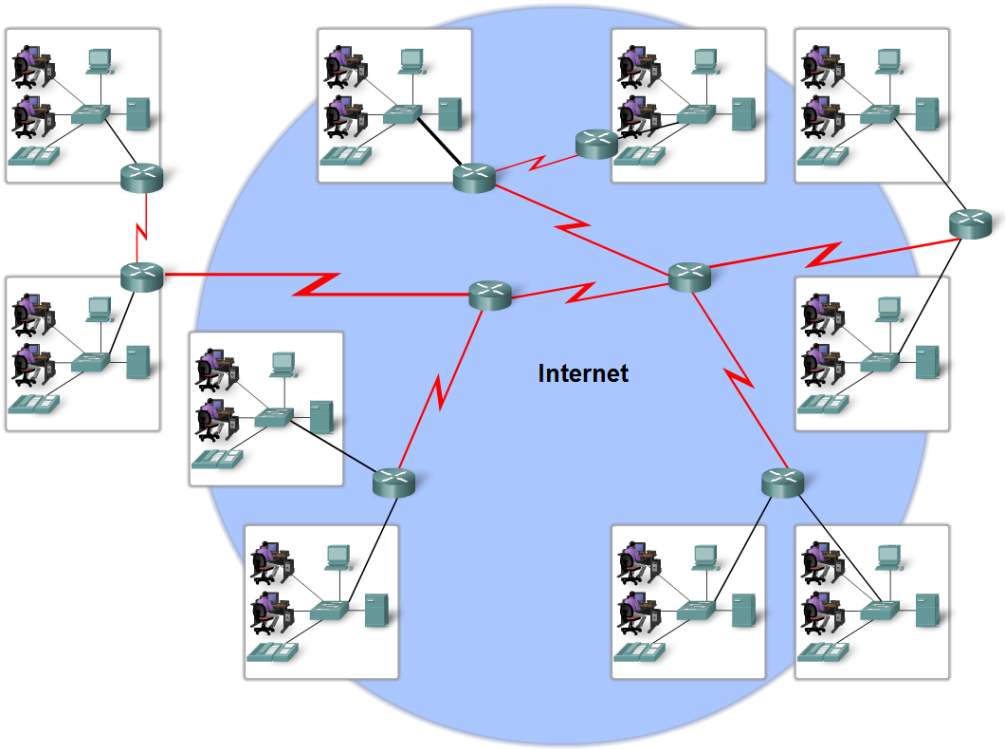


Network Types

- Define the Internet

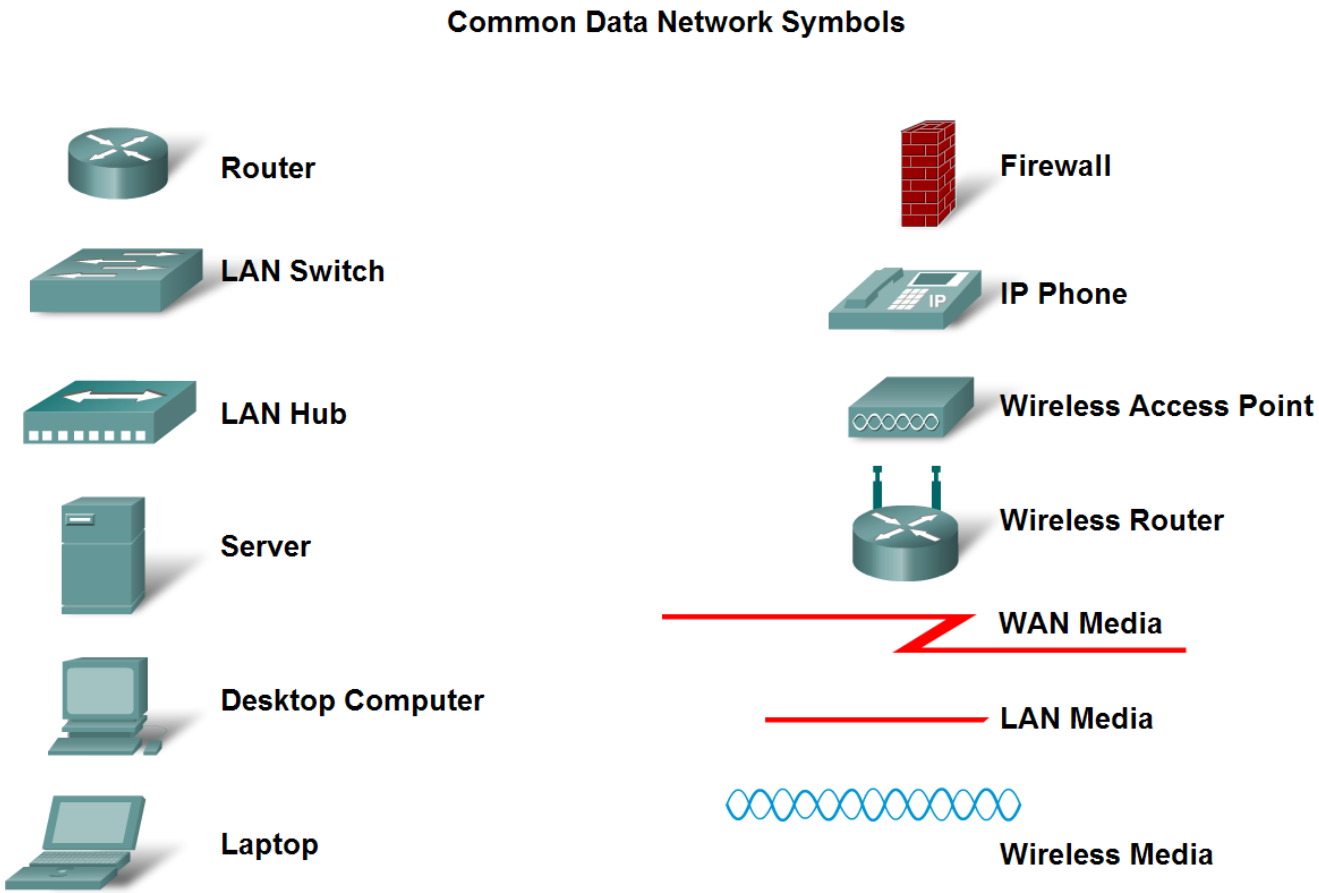
  The internet is defined as a

  global mesh of interconnected networks



Network Types

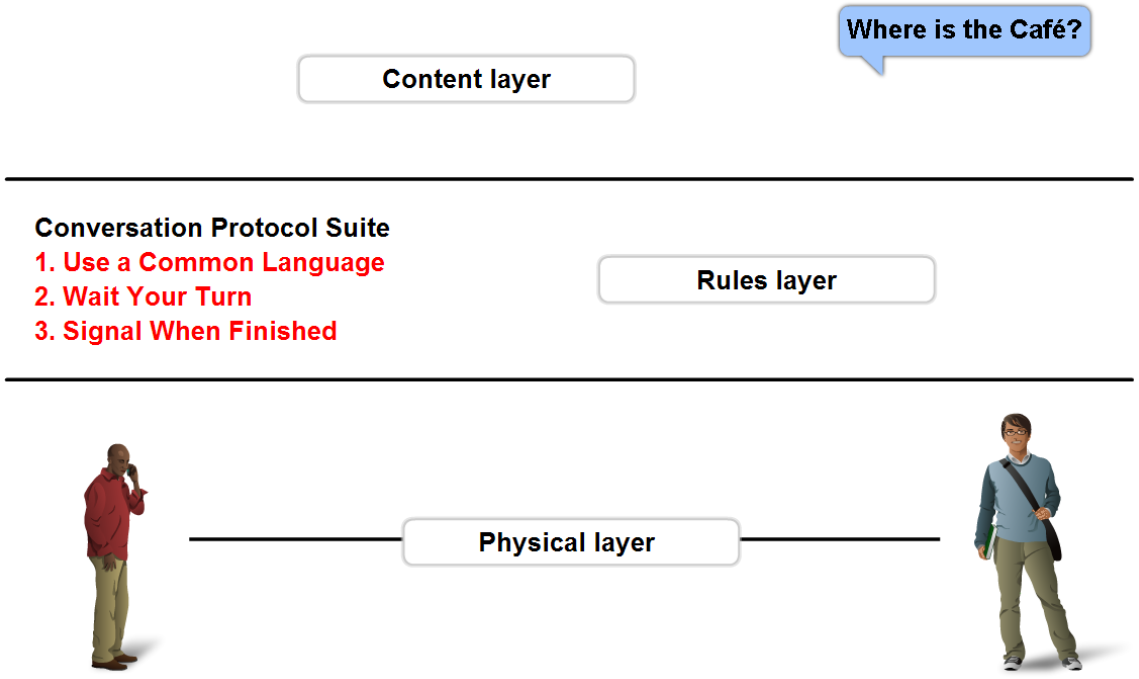
- Describe network representations



Function of Protocol in Network Communication

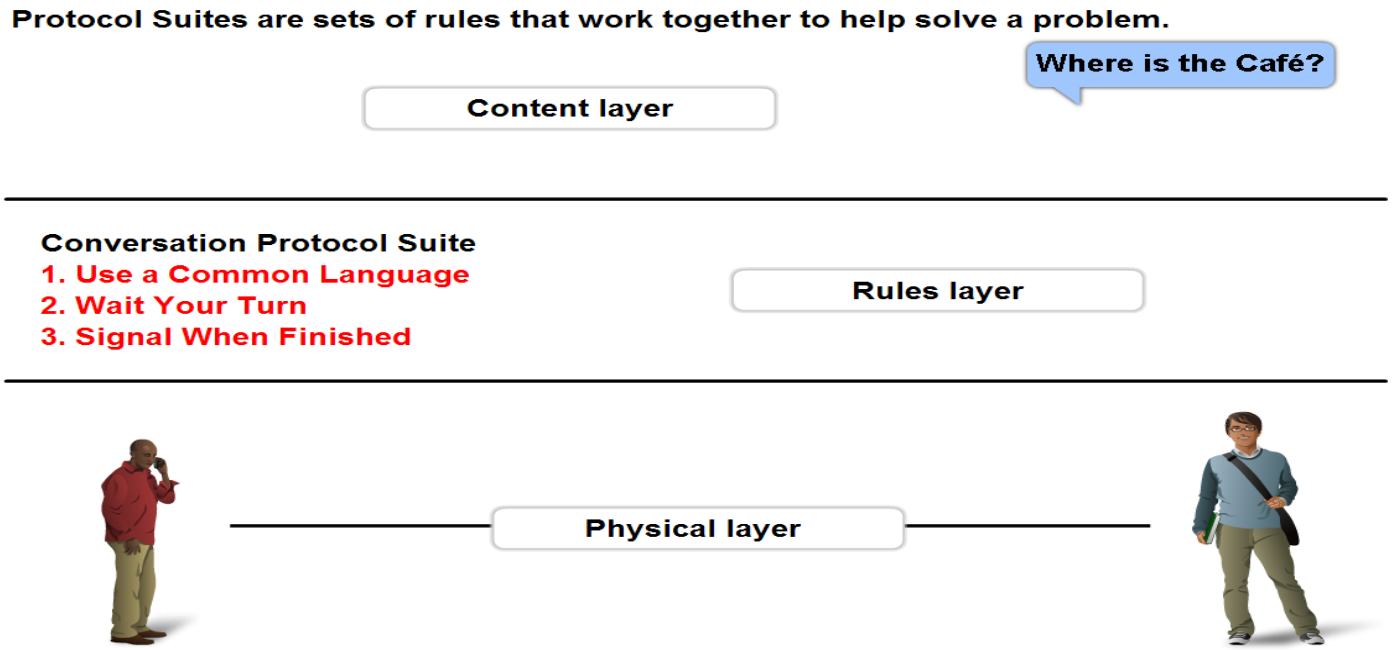
- The importance of protocols and how they are used to facilitate communication over data networks

  A protocol is a set of predetermined rules



Function of Protocol in Network Communication

- Describe Protocol suites and industry standards

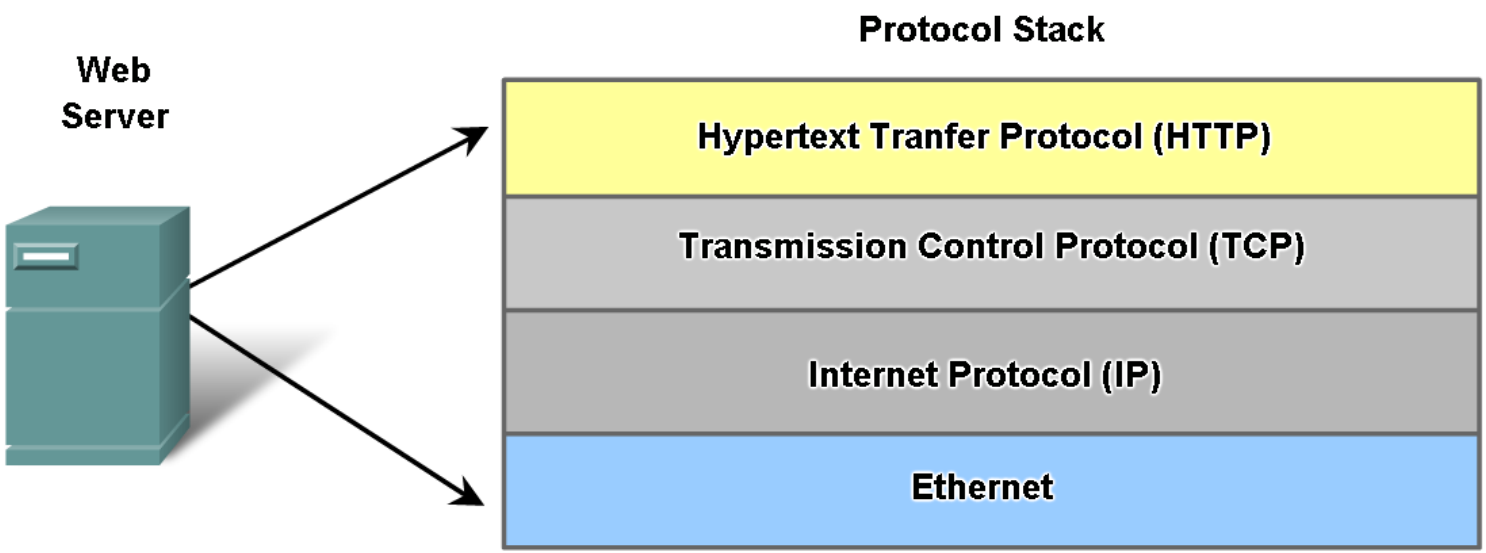


A standard is

a process or protocol that has been endorsed by the networking industry and ratified by a standards organization

Function of Protocol in Network Communication

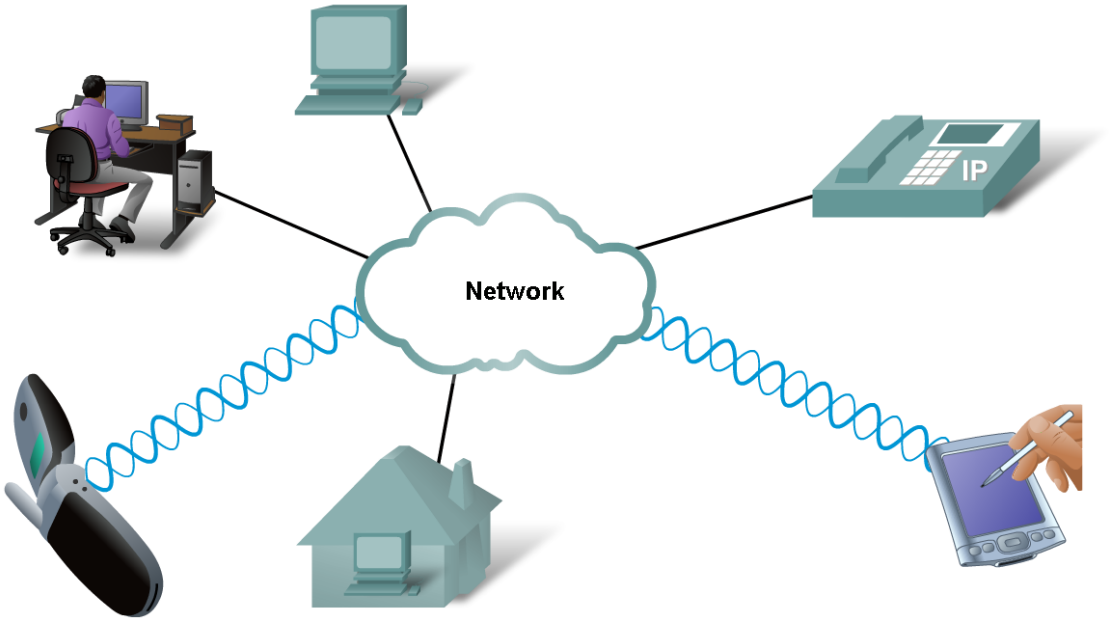
- Define different protocols and how they interact



Function of Protocol in Network Communication

- Technology independent Protocols

  -Many diverse types of devices can communicate using the same sets of protocols. This is because protocols specify network functionality, not the underlying technology to support this functionality.



Layers with TCP/IP and OSI Model

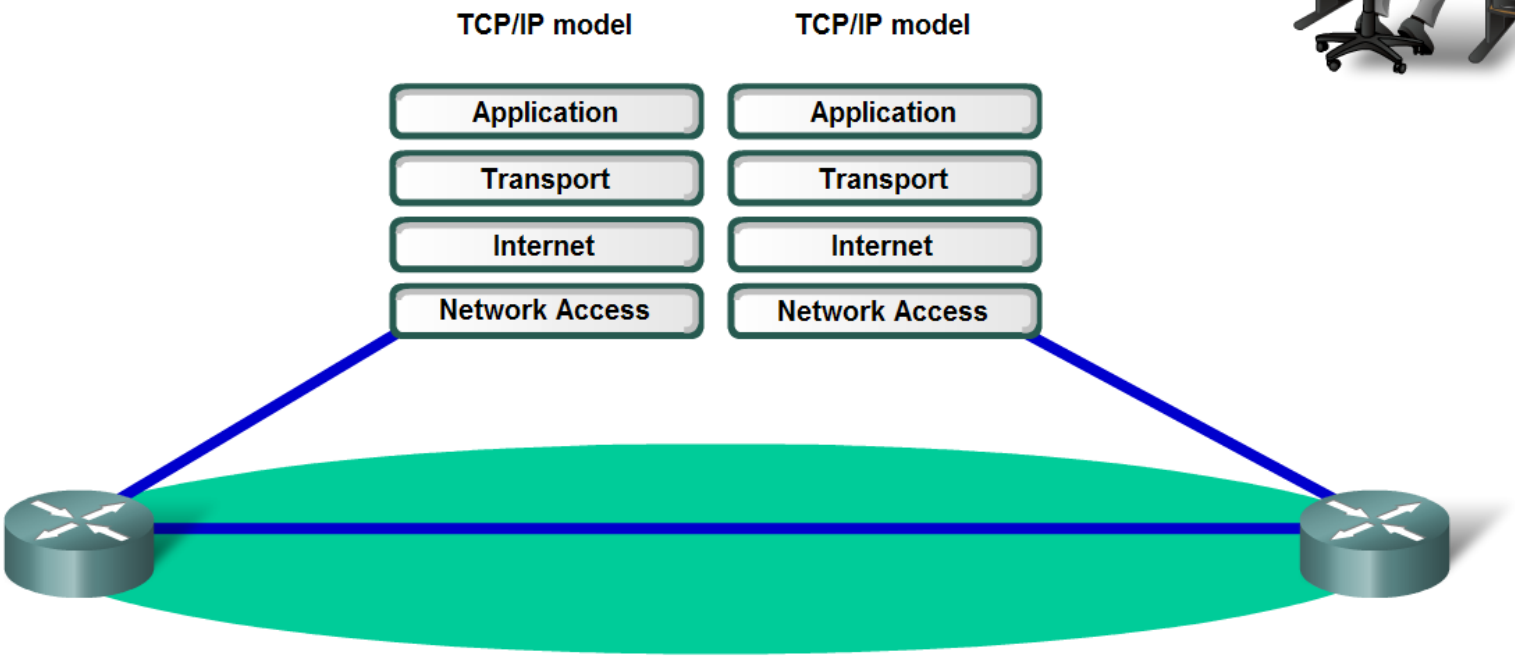
- Describe TCP/IP Mode

TCP/IP Model

Application	Represents data to the user plus encoding and dialog control.
Transport	Supports communication between diverse devices across diverse networks.
Internet	Determines the best path through the network.
Network Access	Controls the hardware devices and media that make up the network.

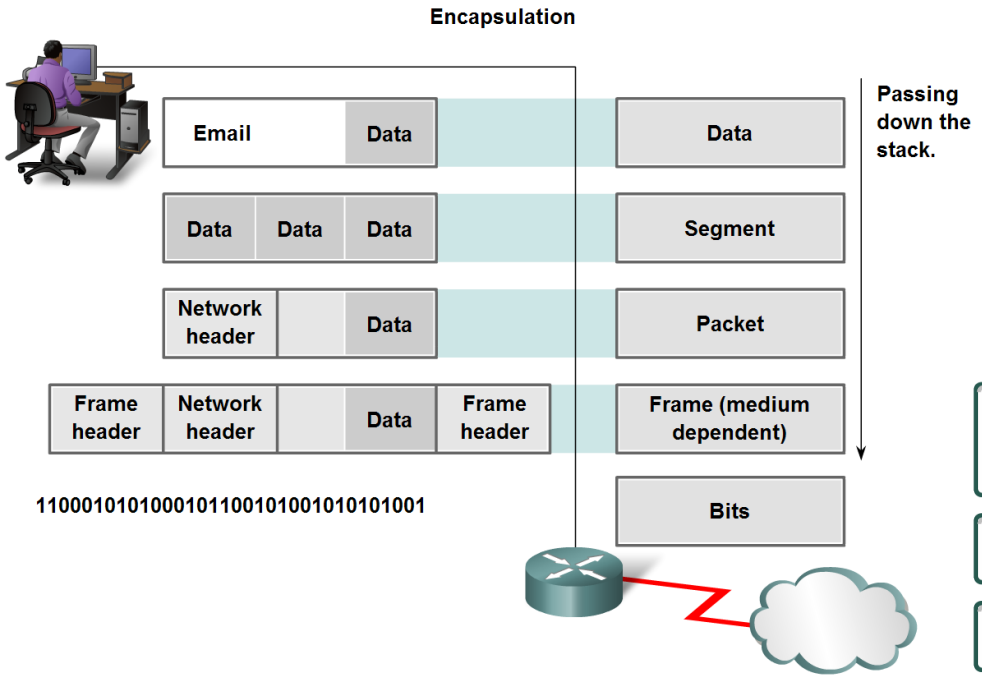
Layers with TCP/IP and OSI Model

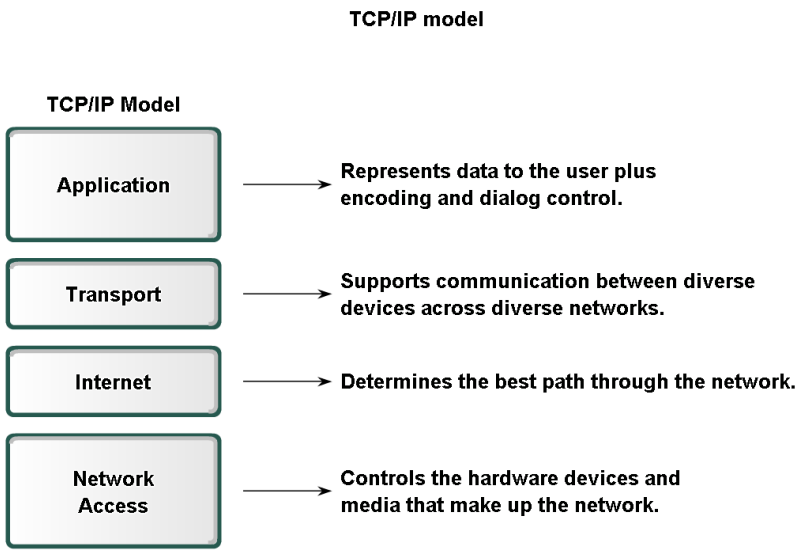
- Describe the Communication Process



Layers with TCP/IP and OSI Model

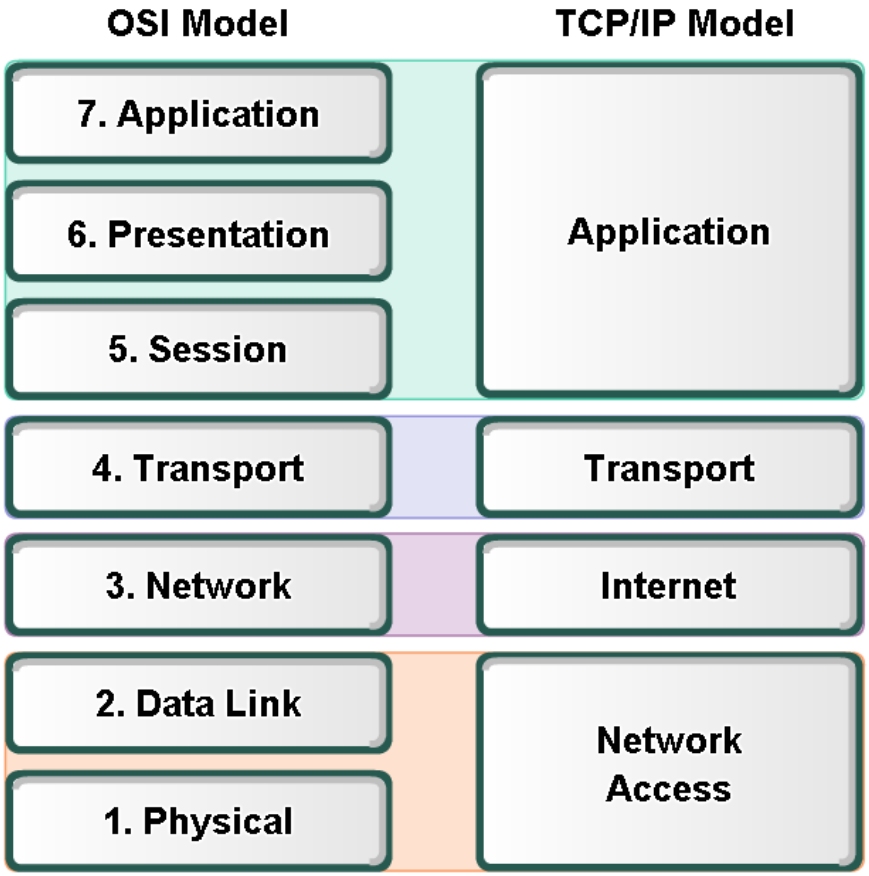
- Explain protocol data units (PDU) and encapsulation





Layers with TCP/IP and OSI Model

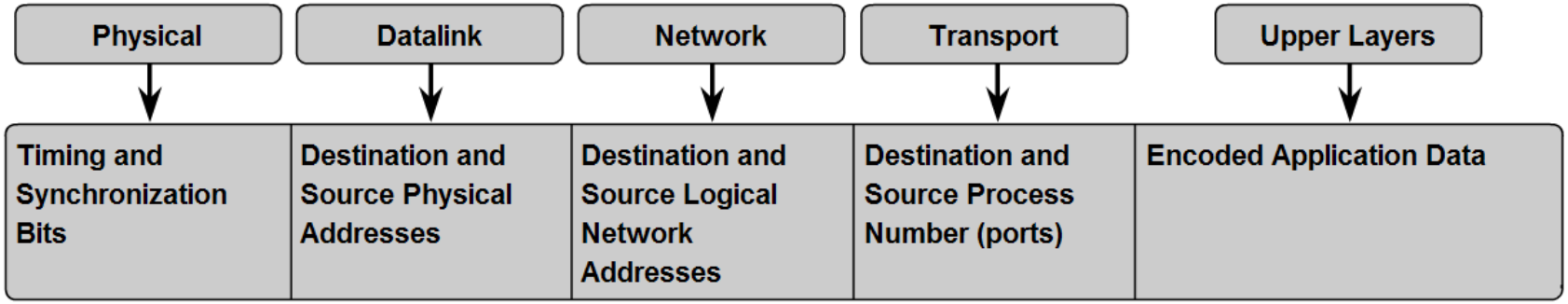
- Compare OSI and TCP/IP model



The key parallels are in the Transport and Network layers.

Addressing and Naming Schemes

- Explain how labels in encapsulation headers are used to manage communication in data networks



Addressing and Naming Schemes

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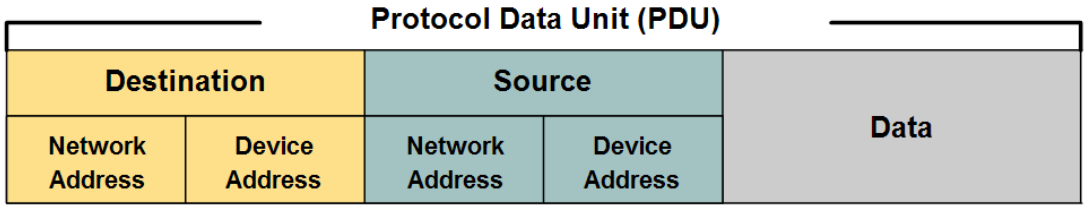

The Protocol Data Unit header also contains the network address.