



# Open System Interconnection (OSI) Specifications



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# What is OSI Reference Model?



# What is OSI Reference Model?

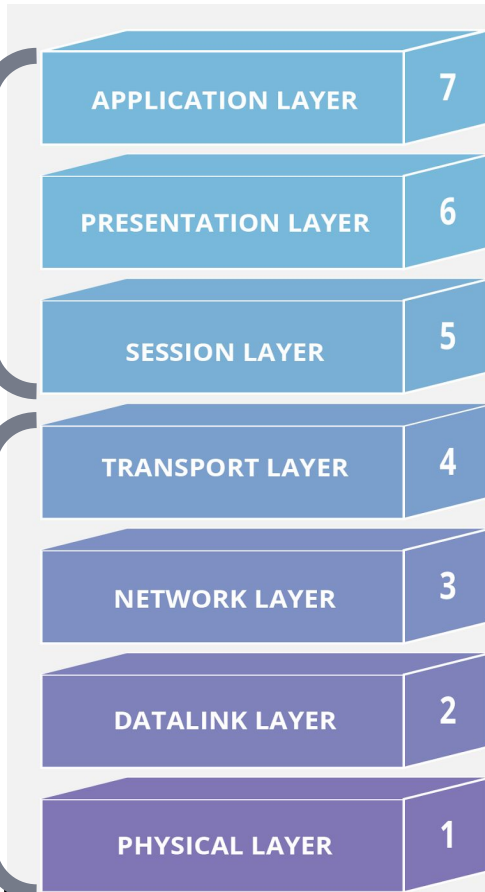
The **OSI** provides a standard for different computer systems to be able to communicate with each other

Developed by ISO in 1984

# What is OSI Reference Model?



Lower Layers (Network)  
Upper Layers (OS)



- Human-computer interaction layer, where applications can access the network services
- Ensures that data is in a usable format and is where data encryption occurs
- Maintains connections and is responsible for controlling ports and sessions
- Transmits data using transmission protocols including TCP and UDP
- Decides which physical path the data will take
- Defines the format of the data on the network
- Transmits raw bit stream over the physical medium



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# Layers of the OSI Model

Physical Layer

Data Link Layer

Network Layer

Transport Layer

Session Layer

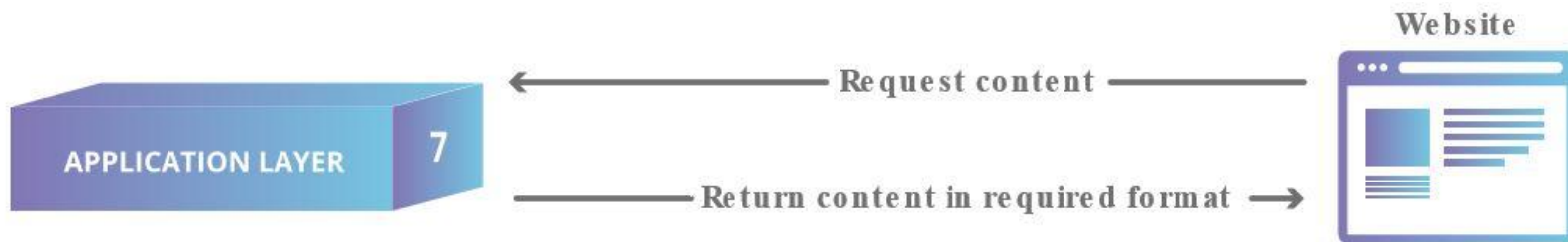
Presentation Layer

Application Layer



# Application Layer (Layer 7)

- Directly interacts with data from the user
- Software applications (web browsers, email clients, etc.) rely on the application layer to initiate communications





# Presentation Layer (Layer 6)

- Primarily responsible for preparing data
- Translates, encrypts, and compresses data







# Session Layer (Layer 5)

- Responsible for opening and closing communication between the two devices
- The time between when the communication is opened and closed is known as the session
- Synchronizes data transfer



Session of communication



# Transport Layer (Layer 4)

- Responsible for end-to-end communication between the two devices
- Takes data (from upper layer) and breaks into segments
- Responsible for flow control and error control





# Network Layer (Layer 3)

- Facilitates data transfer between two different networks
- Takes data segments (from upper layer) and breaks into packets





# Data Link Layer (Layer 2)

- Facilitates data transfer between two devices on the same network
- Takes data packets (from upper layer) and breaks into frames
- Responsible for flow control and error control



Frame Creation



Transport



Transfer frames between  
network nodes



# Physical Layer (Layer 1)

- Includes physical equipment

cables

transceivers

etc.

repeaters

media converters

modems

hubs

- Data is converted into bit streams





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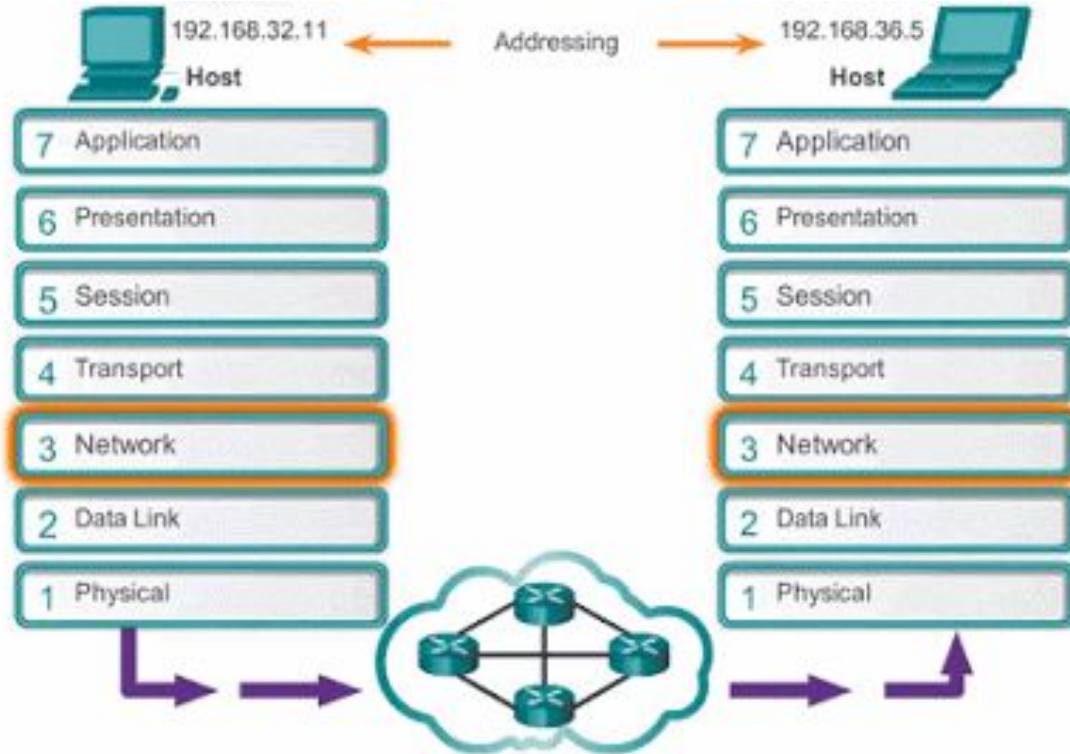
# Data Encapsulation



# Data Encapsulation

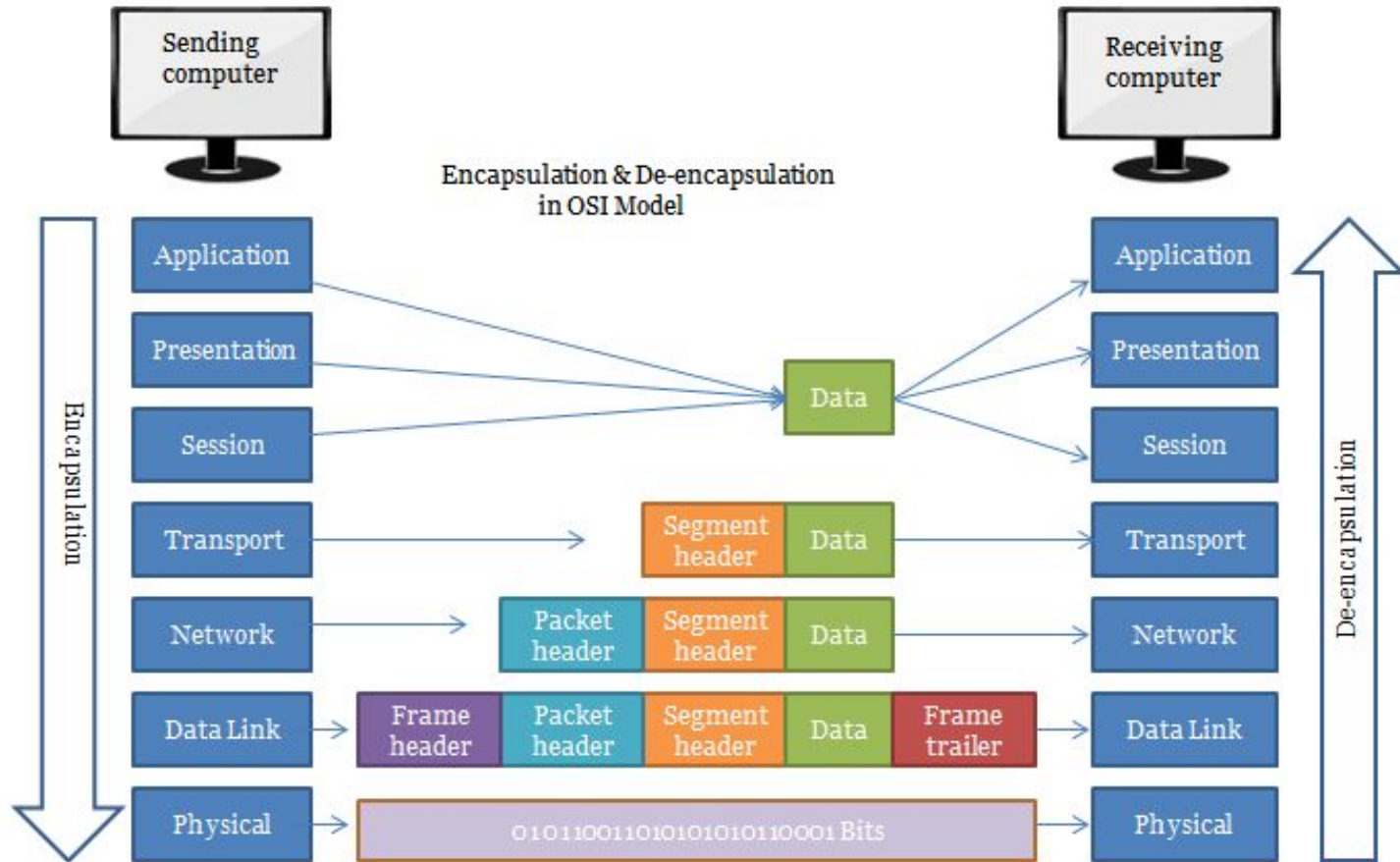
- For two nodes communicate they must use the same protocol
- Each layer (*OSI or DoD*) communicates with its equivalent layer on the other node via the lower layers of the model
- Each layer provides services for the layer above and uses the services of the layer below

# Data Encapsulation





# Data Encapsulation





# THANKS!

## Any questions?

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