

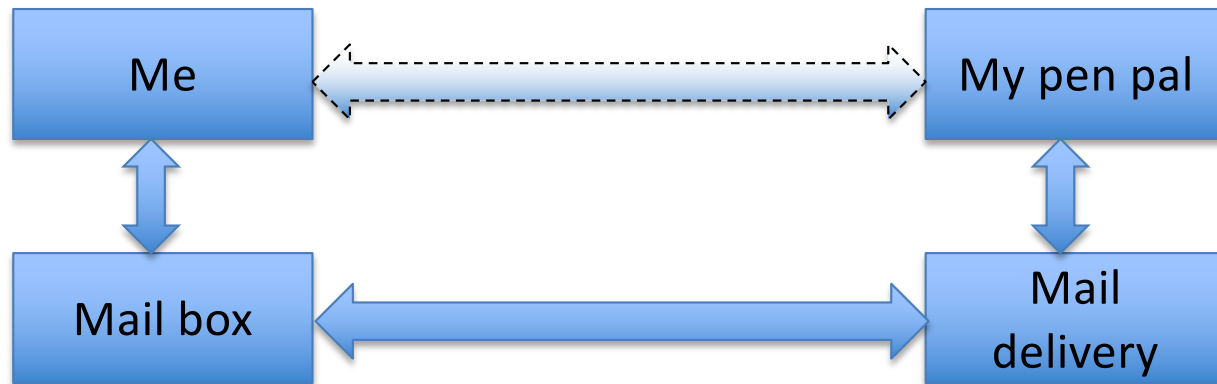
Networking

3/2/26

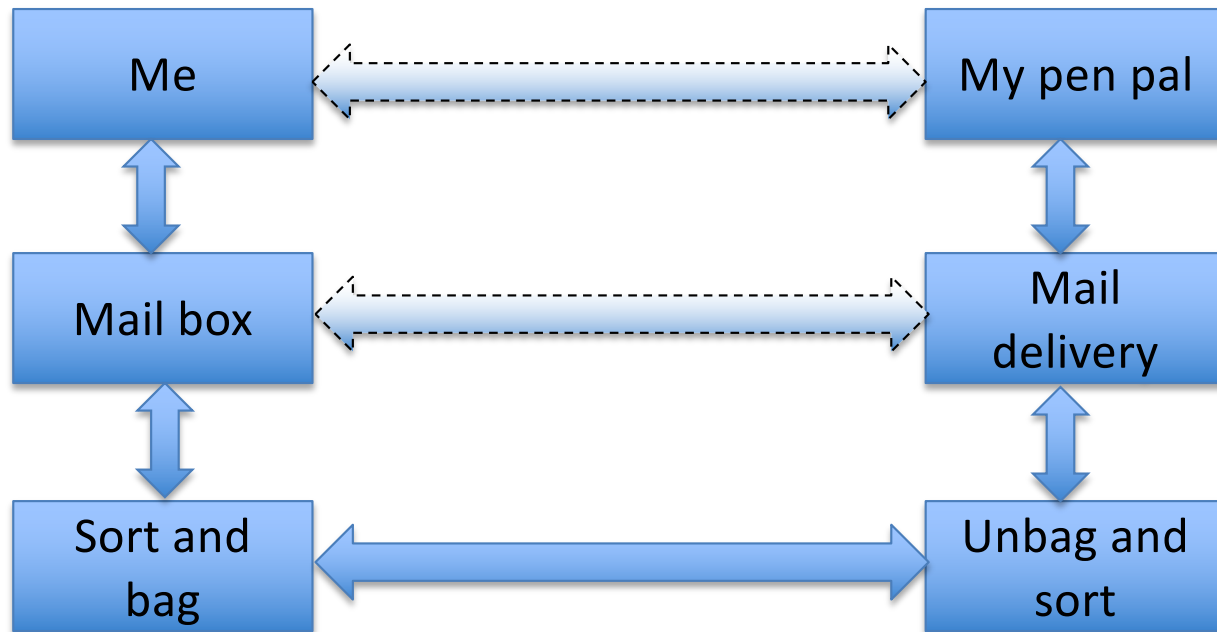
Idea of a protocol stack



Idea of a protocol stack



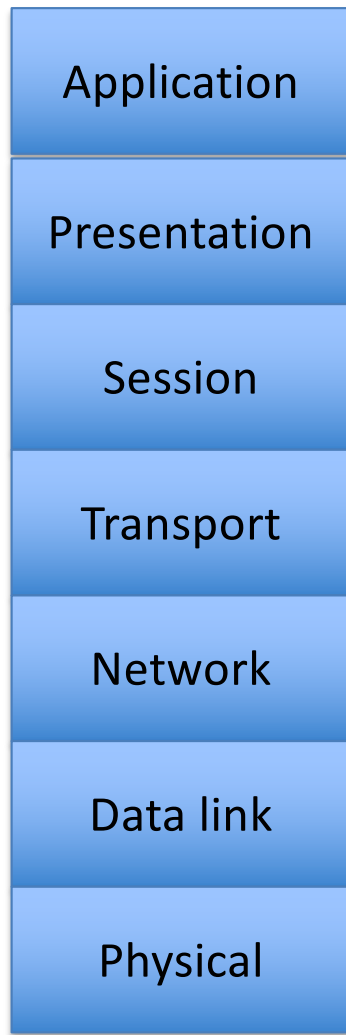
Idea of a protocol stack



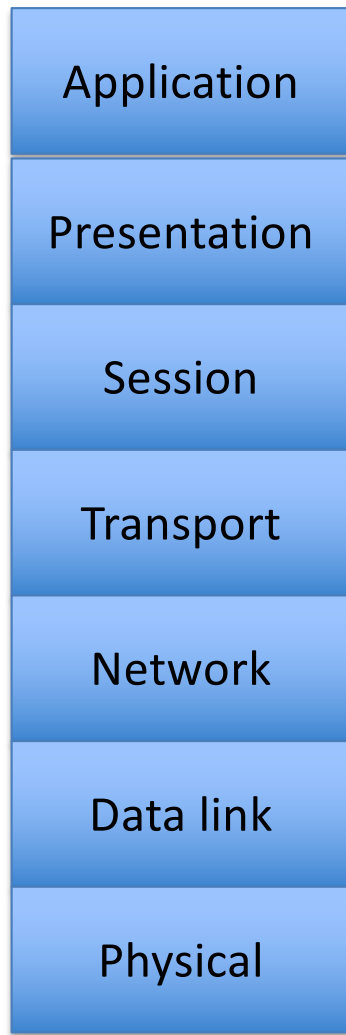
Which of the following advantages of using a protocol stack is most important?

- A. Makes layer algorithms easier to understand since each layer has limited responsibilities
- B. Simplifies layer implementation since each layer has limited responsibilities
- C. Allows the implementation of one layer to be changed without affecting the implementations of other layers
- D. Allows applications to choose which functionality they want by only using some layers
- E. Gives more material for networking courses

OSI reference model



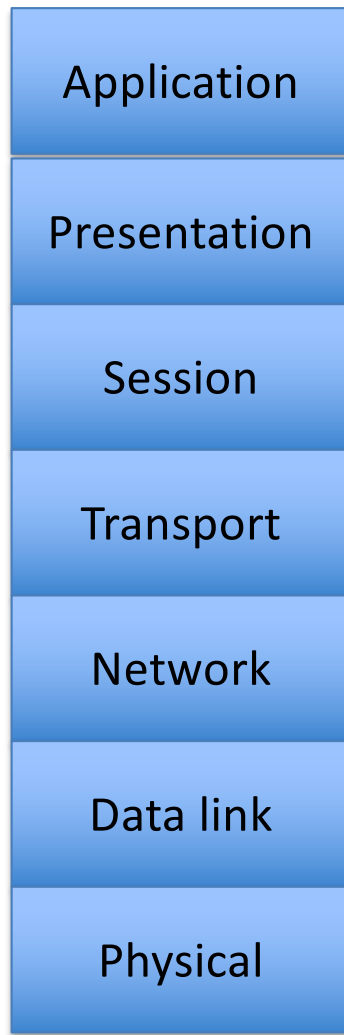
OSI reference model



Raw bits over a channel

How many volts represent 0/1? What is duration of a bit?

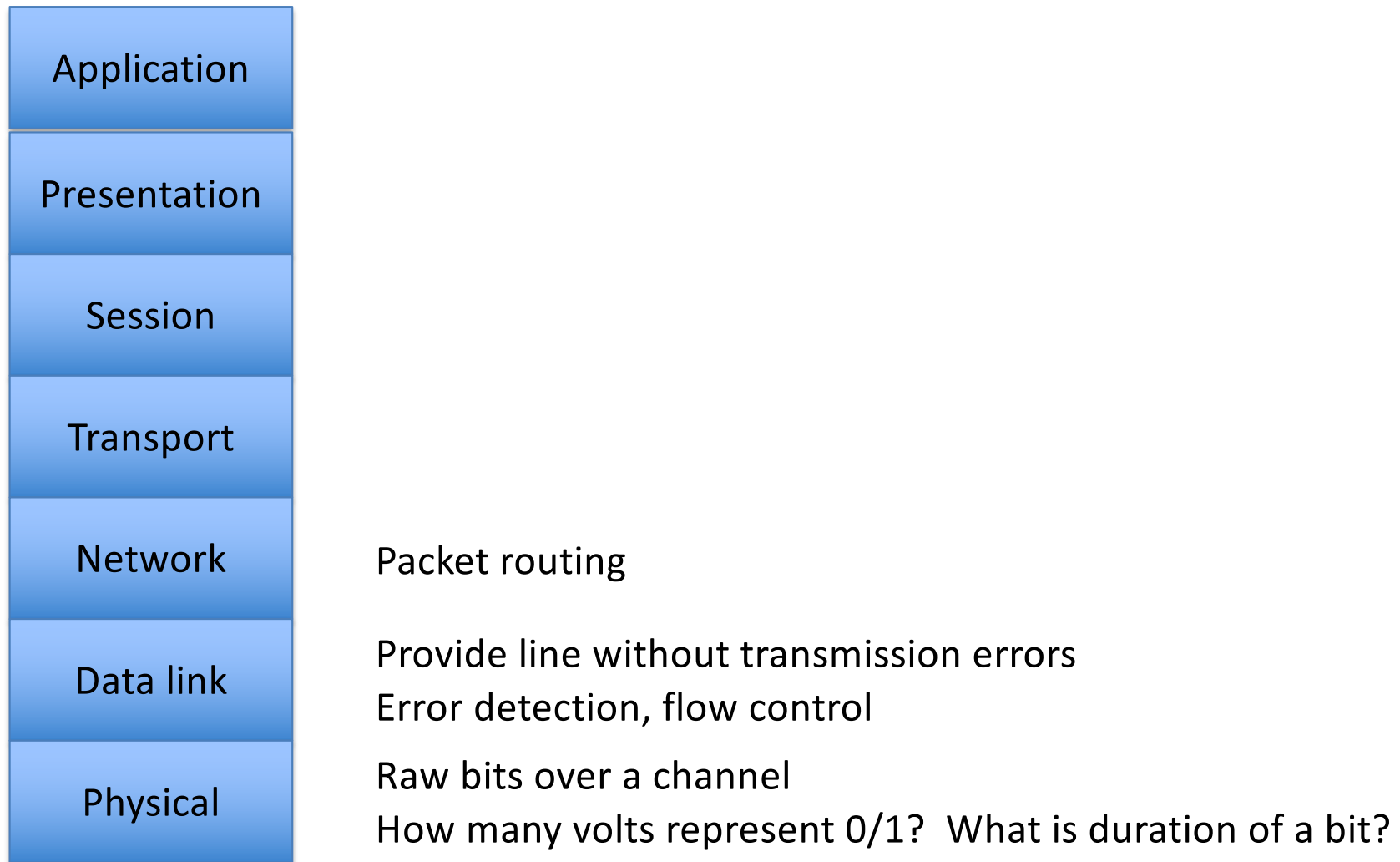
OSI reference model



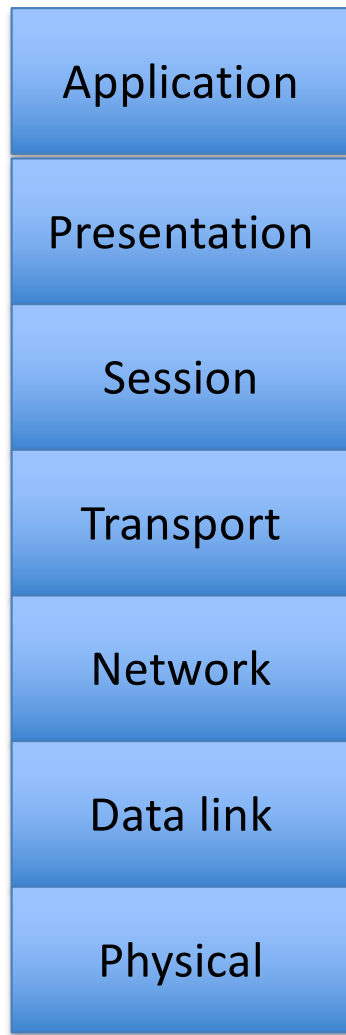
Provide line without transmission errors
Error detection, flow control

Raw bits over a channel
How many volts represent 0/1? What is duration of a bit?

OSI reference model



OSI reference model



Break messages into packets and ensures delivery standard
(Some overlap w/ data link, but for more than 1 channel)

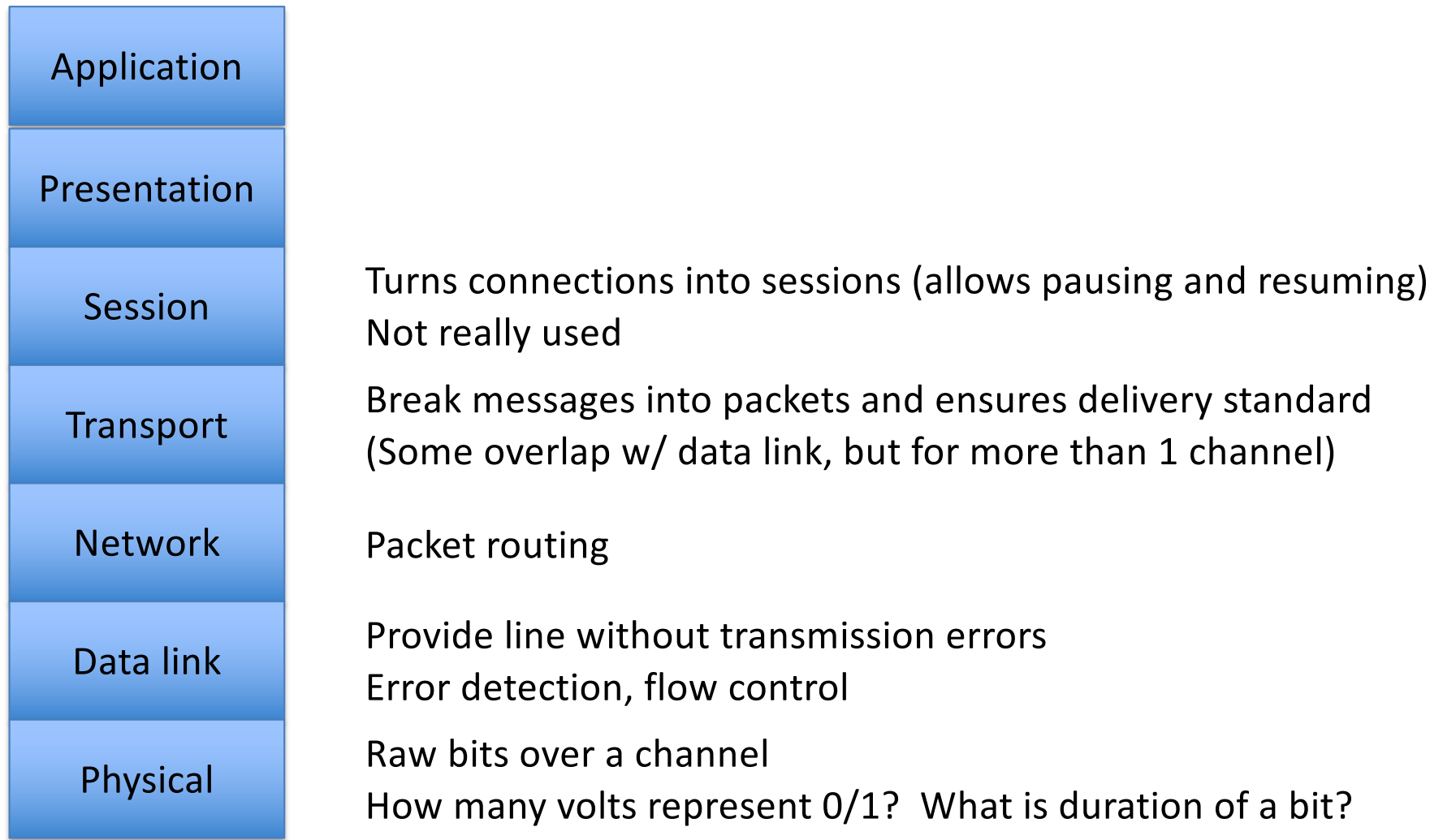
Packet routing

Provide line without transmission errors
Error detection, flow control

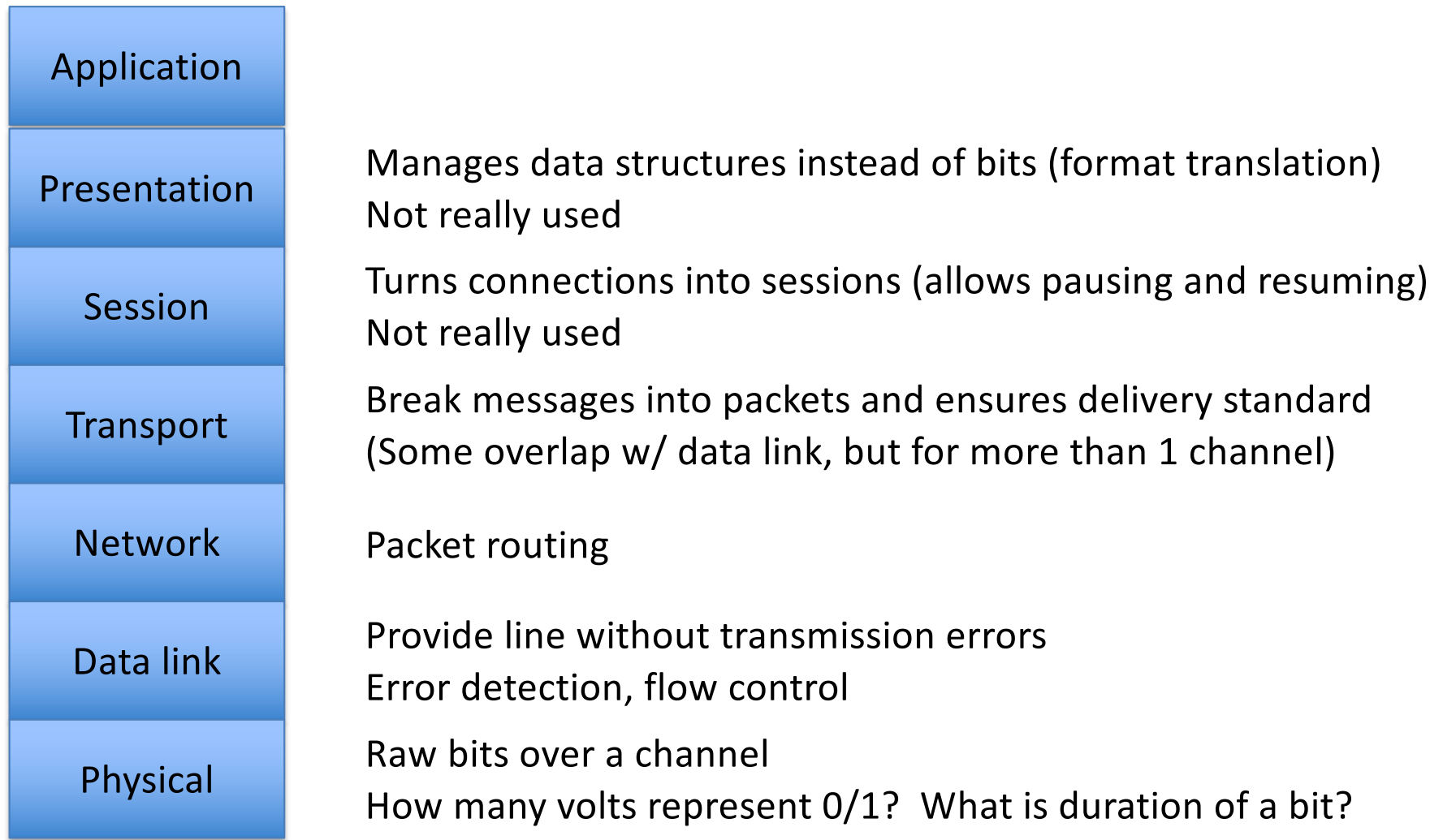
Raw bits over a channel

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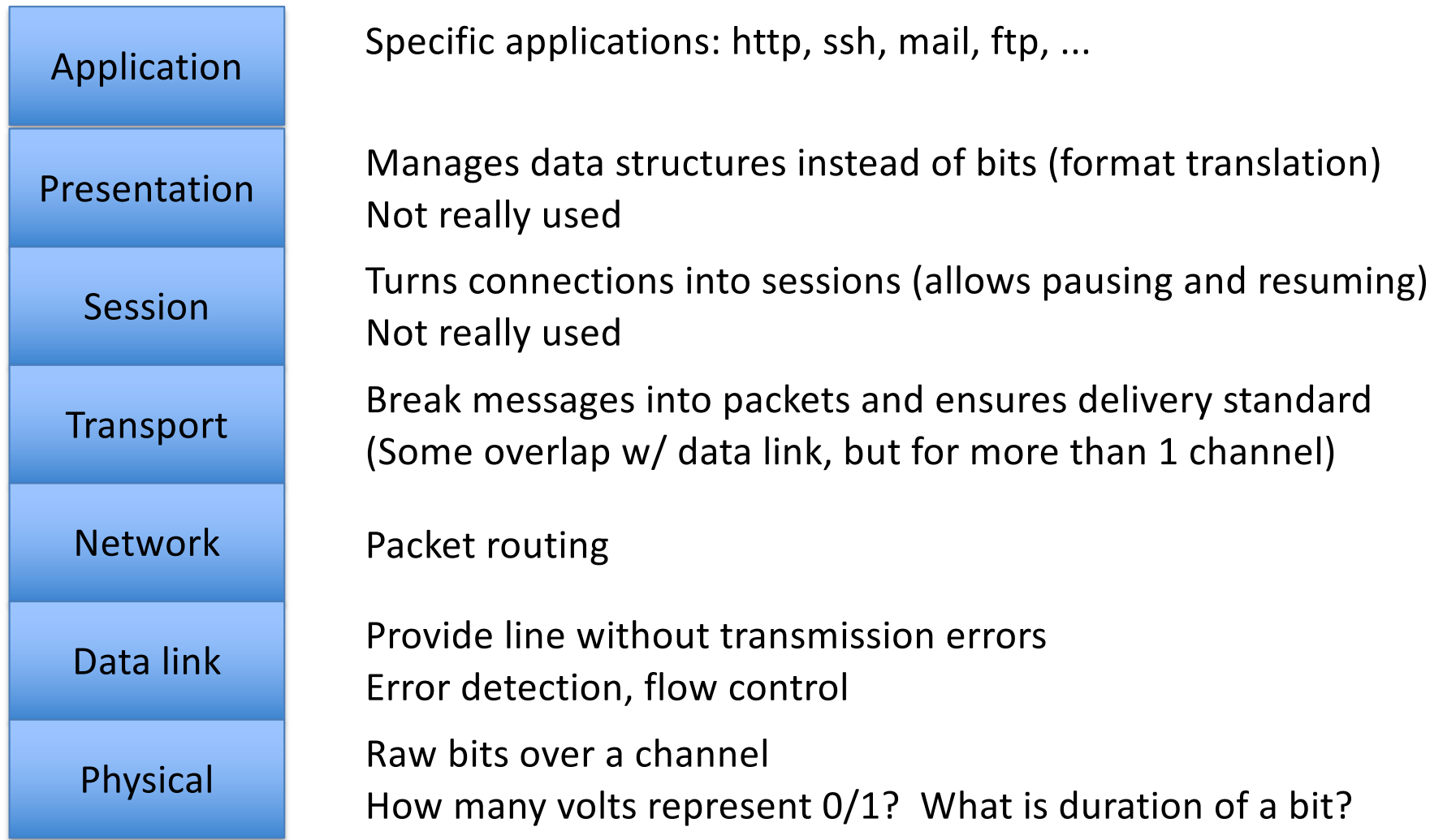
OSI reference model



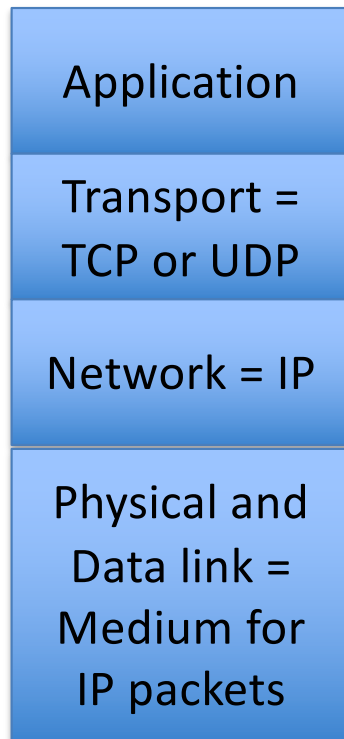
OSI reference model



OSI reference model



TCP/IP “reference model”



IP Addresses

- IPv4 address: 32-bit number

Written as 4 dot-separated bytes (byte = 8 bits):

123 . 45 . 0 . 6



Each part is 0-255

IP Addresses

- IPv4 address: 32-bit number

Written as 4 dot-separated bytes (byte = 8 bits):

123 . 45 . 0 . 6

Each part is 0-255

- IPv6 address: 128-bit number

Written as 8 colon-separated fields of hex digits:

1234 : 5678 : 90ab : cdef : : 12 : feed : beef

Omit leading zeros
(and all 0s)

How many of the following are IPv4 addresses?

aa:2890:3::7e30:d54:6e3f

198.46.57.153

euclid

2000:fdb8:::1:00ab:853c:39a1

www.knox.edu

260.18.5.2

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4 or more

How many of the following are IPv4 addresses?

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