

Internet Technology

03r. Assignment 2 Review

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Spring 2016

Question 1

What is the difference between network architecture and application architecture?

- Network architecture
 - Refers to the organization of the communication process into layers
- Application architecture
 - Designed by an application developer
 - Defines the structure of the application (e.g., peer-to-peer)

Question 2

Suppose you wanted to do a transaction from a remote client to a server as fast as possible. Would you use UDP or TCP? Why?

- You would use UDP
- A transaction can be completed in one round-trip time (RTT)
 - Client sends the transaction request to the server
 - Server sends a response back
- With TCP
 - You need a minimum of two RTTs
 1. Set up the TCP connection
 2. Send the request & get the response

Question 3

We have seen that Internet TCP sockets treat the data being sent as a byte stream but UDP sockets recognize message boundaries.

What is one advantage and one disadvantage of byte-oriented API versus having the API explicitly recognize and preserve application-defined message boundaries?

- Advantage:
 - Applications that read/write byte streams, such as *http*, *smtp*, *ssh*, or *telnet*, have no notion of message boundaries so a byte stream protocol makes the most sense.
- Disadvantage:
 - Protocols that send a sequence of distinct messages would need a way to distinguish the end of one message and the start of the next one. Since TCP does not have a way to indicate message boundaries, the application needs to create its own mechanism for identifying them.

Question 4

The end-to-end principle is a core design principle of the Internet. What is the end-to-end principle?

"whenever possible, communications protocol operations should be defined to occur at the end-points of a communications system, or as close as possible to the resource being controlled."

– *Core Internet Values*

http://coreinternetvalues.org/?page_id=1415

The end