We Need to Talk, Again (Instructor Version)

Instructor Note: Red font color or Gray highlights indicate text that appears in the instructor copy only.

Objectives

Explain how transport layer protocols and services support communications across data networks.

- Given a scenario, students will determine whether high-reliability messaging should be used. They will focus on whether the final message was complete, correct and delivered in a timely manner.

Background /Scenario

(Note: It is important that the students have completed the Introductory MA for this chapter. This activity works best in medium-sized groups of 6 to 8 students.)

The instructor will whisper a complex message to the first student in a group. An example of the message might be "We are expecting a blizzard tomorrow. It should be arriving in the morning and school will be delayed 2 two hours so bring your homework."

That student whispers the message to the next student in the group. Each group follows this process until all members of each group have heard the whispered message. Here are the rules you are to follow:

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- You can whisper the message in short parts to your neighbor AND you can repeat the message parts after verifying your neighbor heard the correct message.
- Small parts of the message may be checked and repeated again (clockwise OR counter-clockwise to ensure accuracy of the message parts) by whispering. A student will be assigned to time the entire activity.
- When the message has reached the end of the group, the last student will say aloud what she or he heard. Small parts of the message may be repeated (i.e., re-sent), and the process can be restarted to ensure that ALL parts of the message are fully delivered and correct.
- The Instructor will restate the original message to check for quality delivery.

Instructor Note: Please initiate discussion about what happened in the Activity. Focus on these three questions:

1. Was the message complete when it reached the last student?
2. Was the message correct as delivered to the last person?
3. Did it take very long for the message to get to the last student?

If you were depending on this message to drive your personal/business calendar, studying schedule, etc., would the contents of this message need to be clear and correct when you received them?

Would the length of time taken to deliver the message be important to the sender and recipient?

Compare the Introductory MA of this chapter to the Review MA (this activity). What differences do you notice about the delivery of the message?

Please remind students that TCP and UDP protocols ensure that:

- Network communications with different levels of importance are sent and received according to their levels of importance.
- The type of data will affect whether TCP or UDP will be used as the method of delivery.
- The time in which the message must be delivered will affect whether TCP or UDP will be used as the method of delivery.

Reflection

1. Would the contents of this message need to be clear and correct when you received them, if you were depending on this message to drive your personal/business calendar, studying schedule, etc.,?

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   The importance of full messages being delivered fully from sender to recipient – TCP guarantees full delivery.

2. Would the length of time taken to deliver the message be an important factor to the sender and recipient?

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   The importance of **timing** – to the details of the message and to the date/time needed to take action on the message is important to all facets of data transmission – windowing and sliding windows takes care of this in TCP – UDP does not.

3. Compare the Introductory MA of this chapter to this activity. What differences do you notice about the delivery of the message?

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   Representative (discussion) answers may look like the following suggestions:

   The message took a lot longer to get from the initiator to the last recipient.

   - More (if not all) of the message arrived and the content was probably better (if not completely accurate)

   Identify elements of the model that map to IT-related content:

   - Establishing a method of transporting information over a network is important to obtain complete delivery of network data (TCP is guaranteed – UDP is not).
   - Ensuring quality of delivery of data over a network is affected by the type of transport used. TCP will check for checksum errors and will acknowledge and synchronize each segment. In contrast, UDP has no error correction.
   - Selecting TCP or UDP based on a time-factor for delivery of data over a communications system. Windows are set and adjusted in TCP if congestion is found on the network; whereas, UDP keeps transmitting.
   - While unreliable, UDP has its value: the message in first activity was delivered much faster than in the second. If the message was simpler (such as a message consisting of a single digit, for example), the first transport method (UDP) could prove itself much better than the second (TCP).