CSE Hands-On 20161204

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Question1: What are the IP addresses of maple and willow on this network?

- Willo's IP Address is 128.30.4.222 and maple's IP is 128.30.4.223

Question2: How many kilobytes were transferred during this TCP session...

- 1572889/1024 = 1536KB , Time Cost is 2.8s, so the throughput is 1536/2.8 = 548.6KB/s

Question3: What is the round-trip time (RTT) in seconds, between willow...

- The time cost for based on packet 1473:2921 and its acknowledgment is 00:00:00.7822 and that based on 13057:14505 is 00:00:00.24381, which seems much larger than the former one.
- The reason is that for the packet 1473:2921 was sent in the beginning and it was one of the first packets to be sent. According to this, it was received by the receiver much quickly when it arrived at the receiver and an ack number was sent immediately to the sender. While for the packet 13057:14505, the packet had to wait for the queue of packets before it to be processed before the ack could be sent.

Question4: You may notice that the white arrows occur always close to...

- They occur to the right of these transitions.
- In my opinion, this is because when an ack number is received, sender will slide the window and then send more packets. So receiving an ack number allows the sender to be able to transmit more packets.

Question5: Find the lowest sequence number of a packet which was...

- 3 duplicate acks are received: 44000 - 46000

Question6: Find the lowest sequence number of a packet which was...

- Time out retransmission: 181000 - 184000

Question7: What aspect of TCP's behavior causes these white arr...

- Because the packets are sent at an constant rate when TCP finds its correct window value. When an ack number is received, a packet is sent as soon as possible. TCP sends out these packets in a linear order, since after the window has been fulfilled, more packets were sent out from the receiver than ack numbers the receiver obtains.

Question8: Can you provide an equation that relates the slope...

- The equation that relates the slope of the above line is **W / RTT**. **W** is the congestion window size and **RTT** is the round trip time.