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CMPE 150/150L

Pre-Lab 3

Basics

1) The network layer is below the transport layer
2) The application layer is above the transport layer
3) The name of the transport layer address is a port number. The reason why we need transport layer addresses in addition to network layer addresses is because the network layer addresses help find the host while the transport layer address help find a certain application running inside that host.
4) TCP has a mechanism called a window (window, door). This allows TCP to send (send, acknowledge) groups of packets at a time.
5) TCP should be used in applications such as online banking (movie streaming, online banking) because it performs reliable (reliable, best effort) data delivery.

Theory

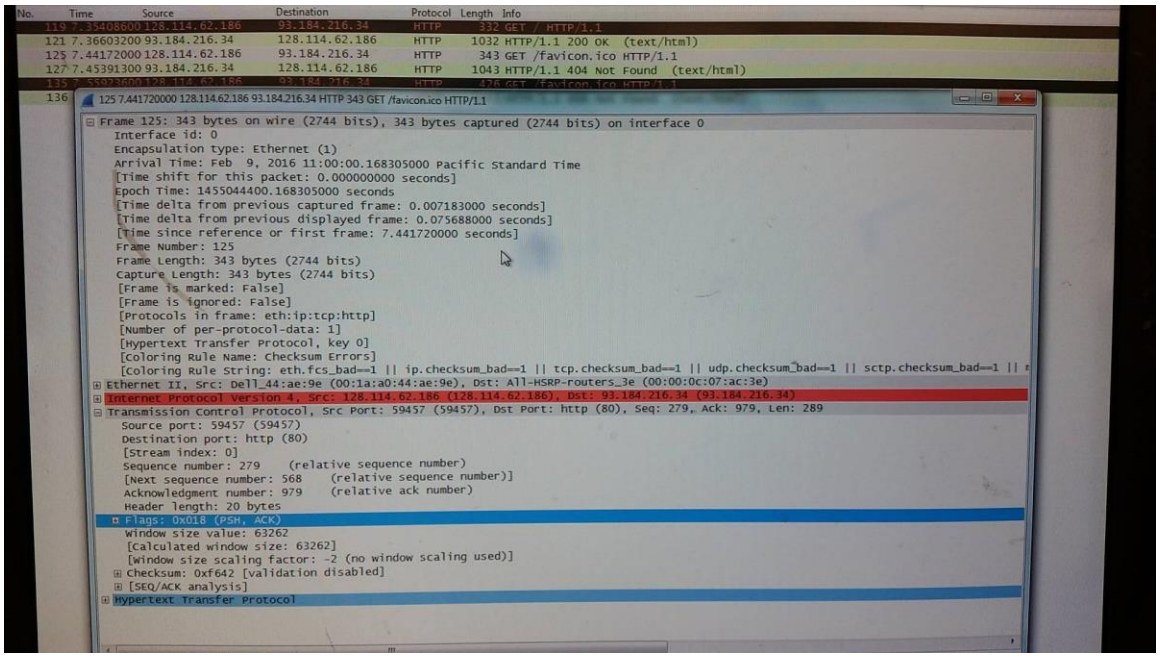
1) False, the size of MSS is always less than or equal to the size of MTU
2) The MSS and MTU belong to the Transport Layer
3) Path Discovery is a technique to figure out the maximum transmission unit size on a network path between two IP hosts. This is usually done, in order to avoid IP fragmentation. This is how Path Discovery is related to MTU. It is related to TCP because part of the size of MTU is for the TCP header.
4) If a packet size is larger than the MTU, IP fragmentation occurs which basically splits the packet into multiple smaller packets. Each of these smaller packets will still have the IP header and TCP header.

Technical Questions

1) The tcp_tw_recycle variable allows us to reuse a socket prior to the socket timeout value expiring
2) The default time between keep-alive probes is 2 hours
3) An orphan in TCP is a socket that is currently not attacked to a socket descriptor in any user processes, but is still required to maintain state in order to complete the transport protocol. If there are more orphans than sockets allowed, then the sockets will not be able to be used making them unusable.
4) The tcp_moderate_rcvbuf variable is the TCP variable that I would increase

BE301A Lab Questions

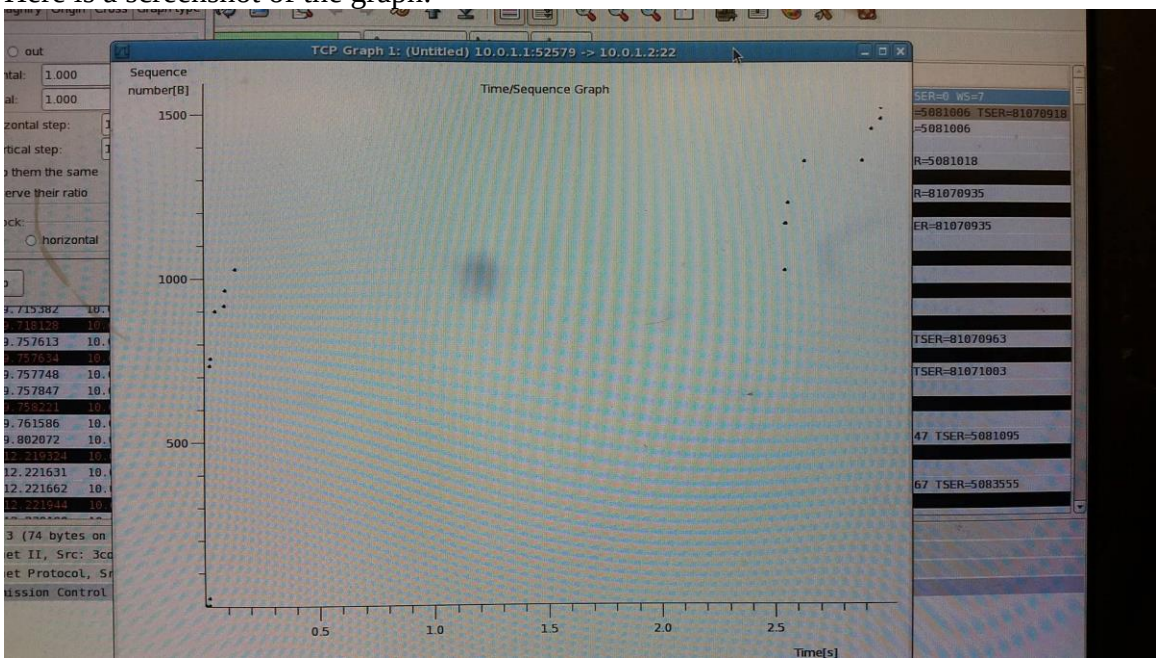
1) Screenshot is below:
   (scroll down to see)



As it can be seen in this picture this packet contains a TCP segment because of its size and is also piggybacking an ACK as I have highlighted in the screenshot

2) A) It took about $2/10^{th}$ of a second to transfer the file
   B) The source port number is 59497 and the destination port number is port 80
   C) I used TCP to transfer the file. The can be seen because the initial handshake was done.

3) Here is a screenshot of the graph:



This graph describes the sequence number of the packet being sent to PC2 and the time at which the packet is sent. The Y-axis shows the sequence number of the

packet and the x-axis shows the time in seconds. Me and Brian have this same picture because we have worked together on this section of the lab.