Name: Group:

W4 - TCP

Capture filename:

1. Capturing a bulk TCP transfer from your computer to a remote server.

   No questions here :). Read the *W4_TCP_readme.pdf* carefully.

2. A first look at the captured trace.

   1. What is the IP address and TCP port number used by the client computer (source) that is transferring the alice.txt file to gaia.cs.umass.edu? To answer this question, find and use the HTTP POST message and explore the details of the TCP packet used to carry this HTTP message, using the "details of the selected packet header window" (refer to Figure 2 in the "Getting Started with Wireshark" Lab if you're uncertain about the Wireshark windows). – 0.5 pts.

      Pckg. nr.:

      Internet address:

      TCP port number:

   2. What is the IP address of gaia.cs.umass.edu? On what port number is it sending and receiving TCP segments for this connection? (use the same package as in question 1) – 0.5 pts.

      Pckg. nr.:

      Internet address:

      TCP port number:

3. TCP Basics.

   3. What is the relative sequence number of the TCP SYN segment that is used to initiate the TCP connection between the client computer and gaia.cs.umass.edu? (Note: this is the sequence number carried in the TCP segment itself; it is NOT the packet # in the "No." column in the Wireshark window. Remember there is no such thing as a "packet number" in TCP or UDP; as you know, there are sequence numbers in TCP and that's what we're after here. – 1 pts.

      Pckg. nr.:

      Relative sequence number:

      What is it in this TCP segment that identifies the segment as a SYN segment? (Leave/Set the field(s) empty if you don't need it)

      Field/flag name:

      Field/flag value:

Field/flag name:

Field/flag value:

Field/flag name:

Field/flag value:

4. What is the relative sequence number of the SYNACK segment sent by gaia.cs.umass.edu to the client computer in reply to the SYN? What is the value of the Acknowledgement field in the SYNACK segment? – 1 pts.

Pckg. nr.:

Relative sequence number:

Acknowledgement field value:

What is it in the segment that identifies the segment as a SYNACK segment? (Leave/Set the field(s) empty if you don't need it)

Field/flag name:

Field/flag value:

Field/flag name:

Field/flag value:

Field/flag name:

Field/flag value:

5. What is the relative sequence number of the TCP segment containing the header of the HTTP POST command? Note that in order to find the POST message header, you'll need to dig into the packet *content field* at the bottom of the Wireshark window, looking for a segment with the ASCII text "POST" within its DATA field. – 1 pts.

Pckg. nr.:

Relative sequence number:

How many bytes of data are contained in the payload (data) field of this TCP segment?

Number of bytes (e.g. 15):

Did all of the data in the transferred file alice.txt fit into this single segment?

Answer:

6. Consider the TCP segment containing the HTTP "POST" as the *first* segment in the data transfer part of the TCP connection. What are the package and relative sequence numbers of the first four segments in the TCP connection (including the segment containing the HTTP POST)? – 1 pts.

Pckg. numbers (e.g.: 15, 18, 20, ...):

Relative sequence numbers (e.g.: 1, 505, 1232, ...):

What are the package and acknowledgement numbers of the packages containing the ACKs? (Note: in some cases there are more than 3-4 ACKs – if the outgoing segment sizes are greater than 1500 bytes – list all ACKs related to the previous first four outgoing segments) – 1 pts.

Pckg. numbers (e.g. 15, 18, 20, ...):

ACK numbers (e.g. 1, 505, 1232, ...):

7. What is the length (header plus payload) of each of the first four data-carrying TCP segments? – 1 pts.

    1. pckg. nr.:   Segment length:

    2. pckg. nr.:   Segment length:

    3. pckg. nr.:   Segment length:

    4. pckg. nr.:   Segment length:

8. -

9. Are there any retransmitted segments in the trace file? If so, provide an example, otherwise leave blank. – 1 pts.

Pckg. nr. of retransmitted segment (only *one* example):

10. How much data does the receiver typically acknowledge in an ACK? Give an example where the ACK acknowledges a single segment. – 1 pts.

Pckg. nr. of ACK:

Pckg. nr. acknowledged segment:

Number of acknowledged bytes:

Can you identify cases where the receiver is ACKing every other received segment (see Table 3.2 in the text – page 244)? If the answer is no, leave the fields blank. – 1 pts.

Pckg. nr. of ACK:

Pckg. nrs of acknowledged segments (e.g.: 25, 27, 28):

Total number of acknowledged bytes:

11. -

4. TCP congestion control in action.

No questions here :). However you can find questions in the readme. We recommend to check them and think about the answers.