

# Communications and Computer Networks

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## Exercise 5

**Information:** If necessary, remove the suffix *.sec* of files downloaded from ILIAS.

### 1 Transport layer

1. What are the main tasks of the transport layer?

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2. What are relevant protocols of the transport layer?

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3. Sketch the individual fields of an UDP segment and explain their meaning.

4. Sketch the individual fields of an TCP datagram and explain their meaning.

5. Read the RFC 2883 - An Extension to the Selective Acknowledgement (SACK) Option for TCP and explain the relevant problem which led to the standard and explain the implementation idea.
6. What is the needed Windows size in Byte to get the wanted transmission rates in KBit/s?

Transmission rate	RTT	Windows Size
100	10ms	
100	100ms	
1500	7ms	
1500	506ms	
4000	3ms	
4000	640 ms	
11.500	300 ms	
20.000	2 ms	
40.000	388 ms	
650.000	50 ms	

7. What do the Sequence and Acknowledgement numbers in the TCP header mean?

8. A TCP packet has the values shown in the header:

IPv4, Src Addr: 193.25.22.84, Dst Addr: 172.22.144.91

TCP, Src Port: 21, Dst Port: 1188, Seq: 124, Ack: 31, Len: 27

What must be the values for the Seq-No. and the Ack-No. of the response packet?

9. A TCP segment with 3000 bytes of user data is sent over a standard Ethernet (MTU = 1500 bytes). How large are the associated Ethernet frames?

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10. Analyse the pcap-file ports.pcap and try to detect the used protocols.

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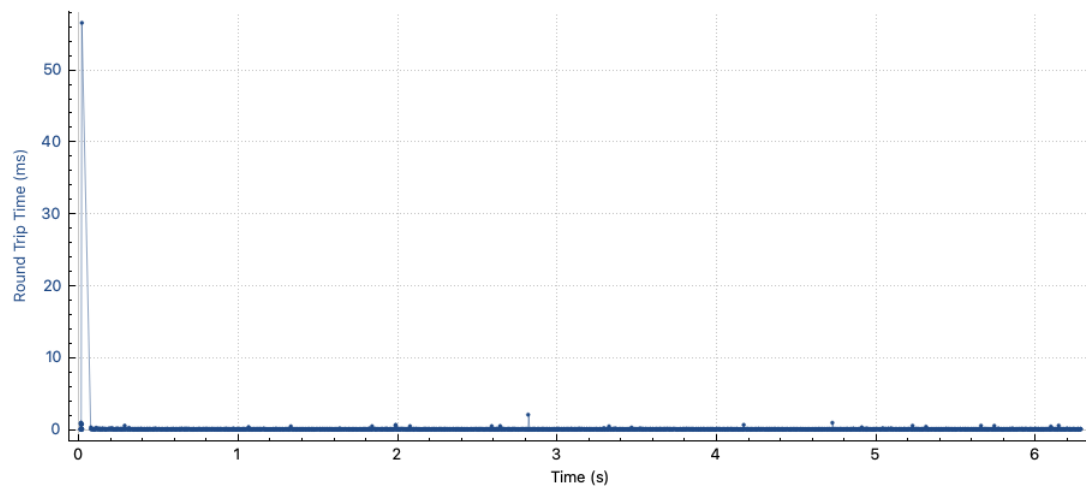
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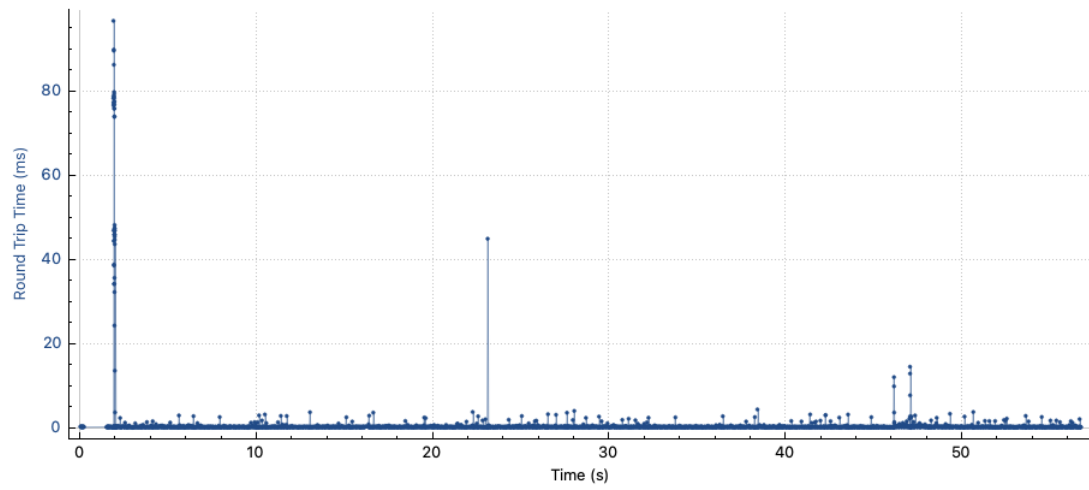
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11. You have the two graphs of a data transmission. Both show the transfer of the same file, but from different systems. What can you say regarding the hosting system?





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