

Communication Networks 2

Exercise 8 - Streaming



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Problem 1 RTP / RTCP

What does RTP/RTCP stand for and how do the 2 protocols interact? What is RTP used for? Why is there no retransmission mechanism integrated in RTP?

Problem 2 Traditional Download VS. Streaming

What is the main idea behind streaming of media content? How does HTTP Streaming work?

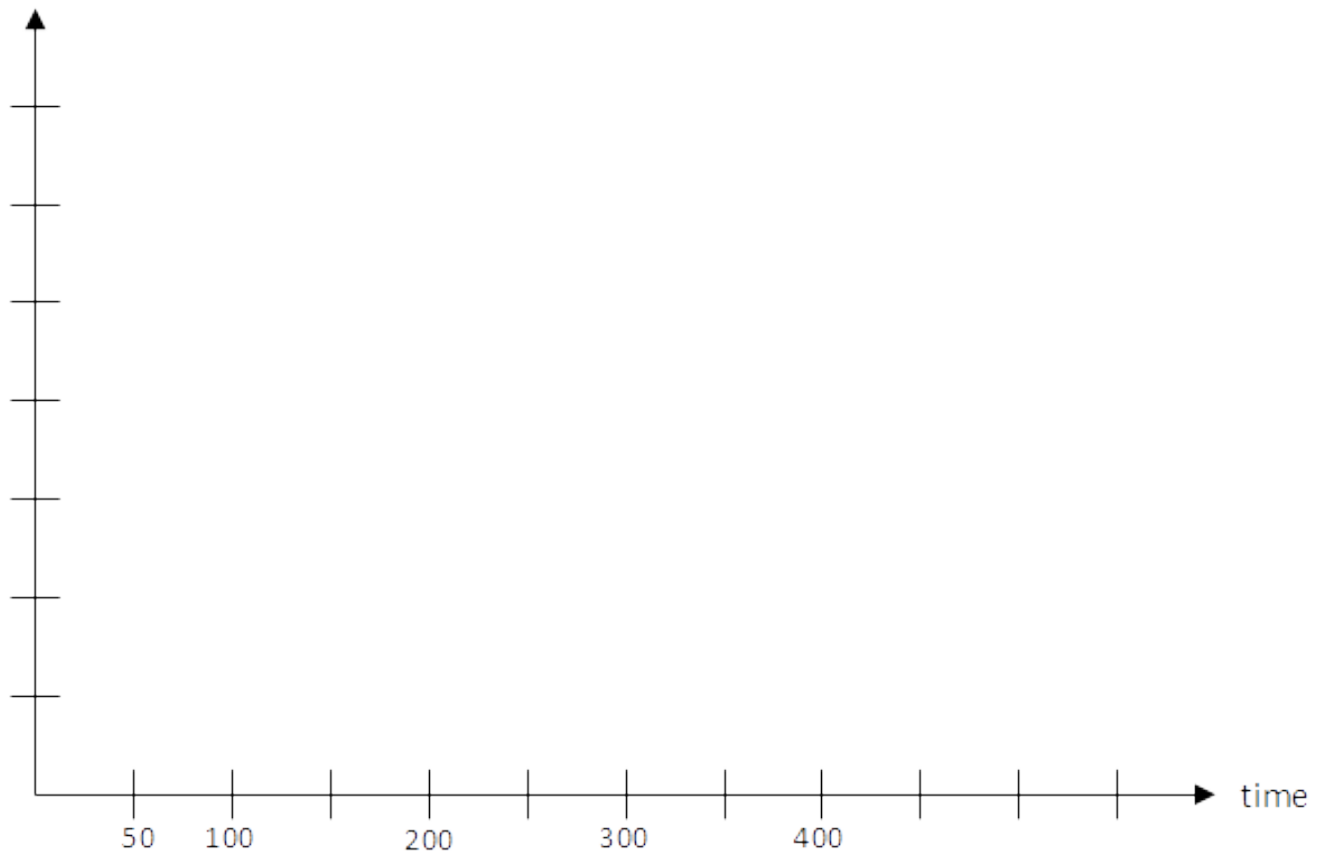
Problem 3 Playout Schedule

Fill out the playout graphic below by completing the following steps:

- Packages are generated every 50ms starting at 50ms, add these to the graph
- The delay for the packets is given in the table below. Add the times at which the packets are received to the graph. *Note: It might be helpful to first fill out the table below.*
- There are two playout schedules to be considered in this task, one with a fixed delay of 150ms, the other with a fixed delay of 300ms. Add their representation to the graph.

Packet No	Send At	Delay (ms)	Receipt
1	50	139	
2	100	139	
3	150	115	
4	200	177	
5	250	140	
6	300	128	

packets



With the help of the playout graphic, answer the following questions:

- Are all packets received in time for both playout schedules?
- Assuming a fixed playout delay of 300ms, what kind of user experience would you expect given no packet loss?
- What is the main difference between a fixed playout delay and an adaptive playout delay?

Problem 4 SIP

What are the 5 facets of SIP?

Problem 5 Speech Quality

What are the two basic approaches to measuring Speech Quality? Give an example for both approaches.

Problem 6 Recovery from packet loss

Name and explain the three options to recover from packet loss you know.

Problem 7 RTP

Which of the following Transport Protocols is typically used by RTP?

- ☐ (A) IP
- ☐ (B) UDP
- ☐ (C) TCP
- ☐ (D) SCTP
- ☐ (E) SIP

Problem 8 RTP-Cont.

RTP provides means for :

I: reservation and checksums

II: synchronization of media streams

III: real-time compression of data

IV: splitting of media streams in PDUs

- ☐ (A) Only I
- ☐ (B) I and IV
- ☐ (C) II and III
- ☐ (D) Only III
- ☐ (E) II and IV

Problem 9 RTP Header

Which of the following fields are part of the RTP header?

I: CSRC Count

II: Urgent Pointer

III: Checksum

IV: Congestion Window

V: Timestamp

- ☐ (A) Only I
- ☐ (B) II and V
- ☐ (C) II and III
- ☐ (D) IV and V
- ☐ (E) I and V

Problem 10 RTCP

RTCP **does not** provide :

- ☐ (A) quality control
- ☐ (B) periodic control packets
- ☐ (C) cryptographic mechanisms
- ☐ (D) a participant list
- ☐ (E) sender reports

Problem 11 RTSP

Which of the following statements are true?

I: RTSP assumes a state-full server.

II: Both an RTSP server and client can issue requests.

III: RTSP maintains a connection between client and server.

IV: RTSP acts as a "network remote control" for multimedia servers.

V: RTSP defines how media streams are split up in packets.

- ☐ (A) I, II, III
- ☐ (B) I, II, IV
- ☐ (C) I, II, V
- ☐ (D) I, III, IV
- ☐ (E) II and III