Communication Networks 2

SS 2021

Assignment 2

Group 06

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1 Task description

The task of this assignment is to set up a Voice over IP (VoIP) Client and compare the influence of multimedia codecs on the Quality of Service (QoS) of video calls. Furthermore, the signaling messages of the Session Initiation Protocol (SIP) shall be analyzed to verify the correct behavior and to find a secret message of the registrar.

The comparison of the QoS is to be done once subjectively and once on the basis of self-selected network parameters, which are also to be visualized graphically.

2 Procedure

2.1 Linphone setup and SIP registration

- welche zugangsdaten ...

- Signaling (Sequenzdiagramm) des Registrierungsvorgangs + Secret message

2.2 Capturing process

This year because of the COVID-19 pandemic it was only possible to access the lab PCs remotely. This is most of the time no problem but to compare the video and audio quality of SIP calls it is important to have direct access, because the VNC connection influences the subjective impressions. To overcome this problem a command line tool called `cn2_sbs_capture` has been provided, which captures the incoming audio and video and the outgoing video. Because the camera and microphone of the lab PC could not be used the same video was played each call.

To capture a call, the selected codecs were first set in the Linphone settings. Then `cn2_sbs_capture` was executed with the default settings and the Wireshark capture was started. After that a one-minute-long call was made. Table 1 shows all captured calls and the chosen codecs.

- Wie sind wir vorgegangen um alle unterschiedlichen Codecs zu capturen... (+cn2_sbs_capture tool)

2.3 SIP signaling and SDP

- SIP Signaling mit Sequenzdiagramm beschreiben "verify that both, signaling and media work correctly."

- SDP genauer anschauen (stehen die ausgewählten codecs drinnen...)

2.4 Audio codec quality comparison

- Audio codecs subjektiv vergleichen (vielleicht nach der Mean Opinion Score)

- RTP Analyse + Grafen

2.5 Video codec quality comparison

- Video codecs subjektiv vergleichen

z.B. `https://en.wikipedia.org/wiki/Subjective_video_quality`

Das ist so ähnlich wie MOS: https://www.irisa.fr/armor/lesmembres/Mohamed/Thesis/node146.html

- RTP Analyse + Grafen

Table 1: Captured calls

No.	connection type	video codec	audio codec
1	landline	VP8	OPUS
2	satellite	VP8	OPUS
3	landline	MP4V_ES	speex 16 kbit
4	satellite	MP4V_ES	speex16 kbit
5	landline	MP4V_ES	PCMU
6	satellite	MP4V_ES	PCMU
7	satellite	H.263-1998_ES	GSM
8	satellite	H.263	speex 8 kbit

3 Conclusion

Was sind die besten Codecs für welche Situation.