YouTube Redundant Traffic

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ABSTRACT

Content:

- Comparison of measurement results and optimal solution for the average played video resolution.

1. INTRODUCTION

mot1: growth of (adaptive) video streaming

mot2: with the growing competition in video streaming services, user expectations are also growing. Further, it is well known that stalling events and the video encoding bitrate (i.e. the video resolution) have a significant impact on the Acceptance Rate and the QoE [1].

what:

how

main contribution: we show there there is a lot of room for optimization for the used adaptation algorithms. Even if we completely avoid stalling events, a higher mean video quality is achievable in most cases. The number of resolution switches can be reduced.

structure

2. RELATED WORK

3. SYSTEM MODEL

4. RESULTS

4.1 optimal adaptation

Idea: calculate the highest resolution that could have been achieved. compare it to measurement data. How much can still be gained? opt was calculated according to the optimization problem in [2]. The calculations were done using the Gurobi Optimizer[1].

In figure 1 we see the CDF of the mean video quality in the measurement runs and highest achievable mean video quality according to the optimization problem. In addition, we added an estimation of the avg. quality level that is possible based on downloaded data that was done in [BIEBnetworking2016]. While stalling events occured frequently during the original measurement, stalling events are not allowed to occur in the optimization problem. Therefore, we consider two sets of input for the opt. prob. for each measurement run: First, we only consider the available bandwidth during the video download. Second, we also respect the stalling events that occured. The sum of stalling was then added as initial delay during which the video was downloaded. In contrast to the YouTube measurement data where the video buffer does not contain more than 50s of video content at a time, in the calculations of the optimal adaptation we assumed that the video buffer is not limited.

5. CONCLUSION

References

1. P. Casas, A. Sackl, S. Egger, *et al.*, "Youtube & facebook quality of experience in mobile broadband

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[1] http://www.gurobi.com/

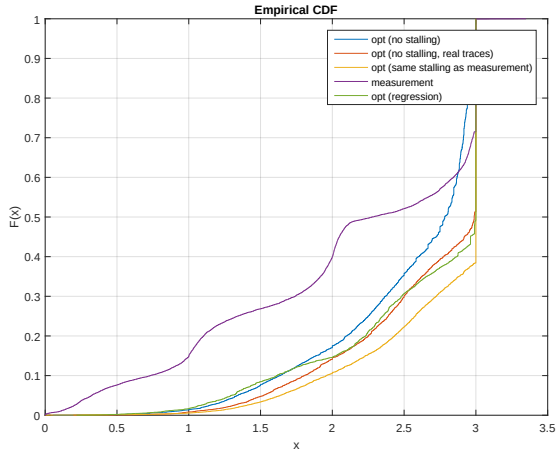

Figure 1: CDF of the mean video quality in the measurement runs and highest achievable mean video quality according to the optimization problem in [2]. Remake figure!

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2. T. Hoßfeld, M. Seufert, C. Sieber, *et al.*, "Identifying qoe optimal adaptation of http adaptive streaming based on subjective studies," *Computer Networks*, vol. 81, pp. 320–332, 2015.