A taxonomy of the parameters used by decision methods for adaptive video transmission

Eugen Dedu · Wassim Ramadan · Julien Bourgeois

Abstract Nowadays, video data transfers account for much of the Internet traffic and a huge number of users use this service on a daily base. Even if videos are usually stored in several bitrates on servers, the video sending rate does not take into account network conditions which are changing dynamically during transmission. Therefore, the best bitrate is not used which causes sub-optimal video quality when the video bitrate is under the available bandwidth or packet loss when it is over it. One solution is to deploy adaptive video, which adapts video parameters such as bitrate or frame resolution to network conditions. Many ideas are proposed in the literature, yet no paper provides a global view on adaptation methods in order to classify them. This article fills this gap by discussing several adaptation methods through a taxonomy of the parameters used for adaptation. We show that, in the research community, the sender generally takes the decision of adaptation whereas in the solutions supported by major current companies the receiver takes this decision. We notably suggest, without evaluation, a valuable and realistic adaptation method, gathering the advantages of the presented methods.

Keywords Video content adaptation · Rate control · Congestion control · Video streaming

1 Introduction

In recent years, the number of videos pre-encoded in several bitrates has significantly increased to become accessible to everybody such that video service providers like YouTube

E. Dedu (✉) · W. Ramadan · J. Bourgeois
FEMTO-ST institute, DISC department, 4 pl. Tharradin, 25200 Montbéliard, France
e-mail: Eugen.Dedu@pu-pm.univ-fcomte.fr

W. Ramadan
e-mail: Wassim.Ramadan@pu-pm.univ-fcomte.fr

J. Bourgeois
e-mail: Julien.Bourgeois@pu-pm.univ-fcomte.fr

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