Dynamic adaptive streaming via HTTP (DASH) has been widely disseminated over the Internet especially under the circumstances of the time varying network, which it is still the biggest challenge for providing smoothly video streaming with high quality. In DASH system, after the downloading process of a segment is completed, the player estimates the available network bandwidth by calculating the download throughput and adapting the video bitrate level based on its estimations. At client side, the DASH player uses an Adaptive Bitrate Algorithm (ABR) to choose the suitable bitrate for next segment based on current conditions. However, these adaptive algorithms discard the fact that the segment sizes greatly vary for a given video bitrate. Hence they may fail to predict the time needed for downloading the next segment. In this paper, an adaptive bitrate algorithm is proposed based on the video segment size as well as the network bandwidth estimation and the current buffer occupancy in order to accurately predict the time needed to download the next segment. Simulation results show that the proposed scheme is able to predict the download time. Also we compared the proposed scheme with other conventional schemes, we found that our proposed scheme outperforms others in
achieving high video bitrates, low number of video bitrate switches, minimize the other QoE metrics such as video convergence time and the number of bitrate switching events.

References

Index Terms

Computer Science  Information Systems

Keywords

Video streaming, video buffer, adaptive bitrate algorithm, DASH, ABR.