

Improvement of the client-centric approach for broadcasting popular videos

Hsiang-Fu Yu

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Abstract Periodic broadcast is a cost-effective solution for large-scale distribution of popular videos. Regardless of the number of video requests, this strategy guarantees constant worst service latency to all clients. An essential periodic broadcast method is the client-centric approach (CCA), which allows clients to use smaller receiving bandwidth to download broadcast data. An enhanced version, namely CCA+, was proposed to yield a shorter waiting time. This work further improves CCA+ by leveraging client bandwidth for more efficient video broadcast. The new scheme reduces the broadcast latency by as much as 39% when compared to CCA+ and 78% when compared to CCA. We prove the applicability of this new scheme and provide an analytical evaluation to demonstrate the performance advantage, as compared with particular schemes.

Keywords Periodic broadcast · Near video-on-demand (VOD) · Waiting time · Multimedia communications

1 Introduction

Video-on-demand (VOD) services have become popular due to advances in network and computer technology. However, a VOD system may easily run out of bandwidth because the growth in bandwidth can never keep up with the growth in the number of clients. One approach to alleviate the problem is to broadcast only popular videos. This method is feasible because relatively few highly popular videos constitute 80% of viewer requests [4]. Related work in wireless video broadcasting includes [2, 3, 5, 12, 14, 17]. The study in [14] proposes a distributed resource management algorithm, and discusses the tradeoff between the cost of the required information exchange and the learning efficiency. To address the issue on streaming over multi-channel multi-radio multihop wireless networks, [17] proposes fully distributed scheduling schemes

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H.-F. Yu (✉)

Department of Computer Science, National Taipei University of Education, Taipei, Taiwan
e-mail: yu@tea.ntue.edu.tw