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Abstract
The purpose of this study is to investigate dynamic buffering mechanism for Video-on-Demand (VoD) streaming on a Peer-to-Peer (P2P) network. In general, peers have sufficient storage and bandwidth to cache and deliver the initial part of the video to other peers. However, the buffer size of peers is typically limited and also make a great impact on the scalability of the overall system. The key challenge is how to keep the initial part of the video in a peer's buffer as long as possible, which affects the robustness of service capacity of a peer and the scalability of the VoD system. Thus, we apply multiple description coding (MDC) technique, which can provide videos of various quality levels commensurate with peers' download bandwidth. Moreover, in order to more effectively use system resources, we also address the issue of resource balancing and propose Dynamic Buffering mechanism. It relies on the feature of MDC to dynamically adjust the video content cached in a peer's buffer. It is crucial to extend the available time of the initial part of the video, and thus the servicing time for a new peer is increased. Our simulation experiments show that Dynamic Buffering is suitable for videos with various popularity.
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