

Abstract: Contribution and QoS-Aware Neighbor Selection for Peer-to-Peer Streaming

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Abstract

Peer-to-Peer (P2P) streaming is being considered as the most promising approach to deliver real-time video to large scale users over the Internet. Neighbor selection is one of the key components to construct overlay topology for P2P streaming systems. Currently the majority of QoS-aware neighbor selection approaches assume that the allocated bandwidth resources to individual peers are proportional to their incoming bandwidth rather than their outgoing bandwidth and don't suit for bandwidth resource scarce environments. In this paper, we incorporate taxation-based incentive mechanism into QoS-aware neighbor selection method to computer the allocated number of neighbors. The main contributions of this paper are: i) we incorporate linear taxation-model into SVC (Scalable Video Coding)-based layered streaming system to determine the connection number of peers and propose a distributed bandwidth resource allocation policy; ii) when selecting neighbors, existing peers' uplink capacity and source-to-peer's delay are considered as a whole to handle long cumulative latency caused by bandwidth aggregation in mesh-based system. Simulation results demonstrate that under resource constraint scene, our proposed method can receive good performance compared with fixed random neighbor selection method and Cont-Agnostic QoS-aware method on the metric of the chunk loss rate, the average chunk delivery delay, control overhead and PSNR.

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