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PERFORMANCE MODELING OF P2P VIDEO-ON-DEMAND

The fundamental P2P principle that downloading peers help other peers can be applied in the context of video-on-demand. This represents a demanding application combining aspects of other well-known P2P applications, i.e., live streaming and traditional file sharing. We seek to provide insight on fundamental questions about the performance and scalability of the system. A deterministic fluid model is derived that explicitly takes into account the video transfer and playback phases. The analytical results are complemented with simulations from the corresponding stochastic model, as well as traces from a more realistic BitTorrent simulator. Our results show that to achieve a piece retrieval rate exceeding the video viewing rate, the efficiency of the piece exchange plays a central role.