An Efficient Peer Collaboration Strategy for Optimizing P2P Services in BitTorrent-Like File Sharing Networks

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Abstract

Peer-to-Peer (P2P) model has become a very popular paradigm for developing Internet-scale systems. BitTorrent is an example of a P2P system for sharing resources, including files and documents. Peers are not locality aware and are therefore unable to determine which Internet Service Providers (ISP) their neighbors belong to. Therefore, file sharing results in much cross-ISP traffic (about 70%). ISPs often control BitTorrent traffic by limiting the bandwidth to reduce cross-ISP traffic. In this paper, we propose an adaptive peer collaboration strategy to reduce cross-ISP traffic without additional equipment and backup mechanisms, which gives decreased equipment cost. Internal peers can collaborate indirectly. In our peer collaboration strategy, a peer chooses most of its neighbors from the internal ISP, and only a few external ISPs to reduce transfer of cross-ISP by biased neighbor selection. Second, in order to avoid redundancy, we employ Advanced Tracker (AT) to record the information held by each ISP.
Finally, we adopt dynamic priority allocation for improving the file download time. Experimental results show that our peer collaboration strategy outperforms the original BitTorrent and other previous approaches, decreases redundancy and decreases the file download time.

Keyword：Peer-to-Pee, Cross-ISP traffic, Peer collaboration strategy, Redundancy, Dynamic priority allocation.