# Small Degree BitTorrent

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It is well-known that the BitTorrent file sharing protocol is responsible for a significant portion of the Internet traffic. A large amount of work has been devoted to reducing the footprint of the protocol in terms of the amount of traffic [1], however, its flow level footprint has not been studied in depth. We argue in this paper that the large amount of flows that a BitTorrent client maintains will not scale over a certain point. To solve this problem, we first examine the flow structure through realistic simulations. We find that only a few TCP connections are used frequently for data transfer, while most of the connections are used mostly for signaling. This makes it possible to separate the data and signaling paths. We propose that, as the signaling traffic provides little overhead, it should be transferred on a separate dedicated small degree overlay while the data traffic should utilize temporal TCP sockets active only during the data transfer. Through simulation we show that this separation has no significant effect on the performance of the BitTorrent protocol while we can drastically reduce the number of actual flows.

**Keywords:** peer-to-peer; BitTorrent; small degree overlay; TCP

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### References

[1] M. Slot, P. Costa, G. Pierre and V. Rai: Zero-Day Reconciliation of BitTorrent Users with Their ISPs, *Euro-Par 2009 Parallel Processing*, 2009.