

# ON BITTORRENT MEDIA DISTRIBUTION

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## ABSTRACT

Large-scale, real-time multimedia distribution over the Internet has been the subject of research for a substantial amount of time. A large number of mechanisms, policies, methods, and schemes have been proposed for media coding, scheduling, and distribution. Internet Protocol (IP) multicast was expected to be the primary transport mechanism for this, though it was never deployed to the expected extent. Recent developments in overlay networks have reactualised the research on multicast, with the consequence that many of the previous mechanisms and schemes are being re-evaluated.

This thesis provides a brief overview of several

important techniques for media broadcasting and stream merging, as well as a discussion of traditional IP multicast and overlay multicast. Additionally, we propose a number of modifications and extensions to the BitTorrent (BT) distribution and replication system to make it suitable for use in providing a streaming video delivery service, and implement parts of these in a simulator. Also, we report on a simulation study of the implemented extensions to the BT system, as well as a detailed validation study of the BT simulator itself. Furthermore, we present a comprehensive set of BT models for several important traffic characteristics, at both session and message levels.

