ETH
Eidgenössische Technische Hochschule Zürich
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Distributed Computing

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Master/Group Thesis:

Tampering with Distributed Hash Tables

BitTorrent[1] is a widely popular protocol for content dissemination based on the peer-to- peer (p2p) paradigm. The peers interested in the same content form so-called swarms in which blocks of the content are exchanged.

BitThief[2] is a free riding BitTorrent client, that is, it downloads from BitTorrent swarms without contributing any resources itself. As such it proved that the BitTorrent protocol fails to prevent uncooperative behavior as it does not provide any countermeasures against free riding clients.

Exchanging peers is usually done via separate, centralized tracker software that keeps record of all peers participating in one swarm. To overcome this single point of failure, several BitTorrent clients implement support for a distributed hash table (DHT). It serves as means to exchange not only peers, but also meta data about the archive to be downloaded (the *.torrent*-file). This way, distribution of content via BitTorrent no longer requires the exchange of a meta data file, but merely a value indexing a resource in the DHT.

The goal of this thesis is to implement support for trackerless operation using the DHT technique into BitThief. This will also enable support for the popularity-gaining *Magnet-Links*[3] and other trackerless torrents. Then, you should find interesting ways to (ab)use the DHT, for example to improve overall network performance.

Goals

- Implement DHT support into BitThief.
- Analyze how the DHT is used by other peers.
- Use the DHT in non-standard ways.

Requirements

- Good Java Programming skills.
- Creative thinking to come up with interesting "uses" for the DHT.

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[1] http://bittorrent.org/
[2] http://bitthief.ethz.ch/
[3] http://en.wikipedia.org/wiki/Magnet_URI_scheme