

Tribler Download Core Improvement Measurement Plan

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Abstract

This document presents the methods used to quantify the download performance of BitTorrent clients. Tests will be performed on real-life swarms using slightly modified clients to measure the download progress and discovered peers over time.

1 Measuring Download Performance

The download performance of a P2P client is important. Some clients are faster than others. To improve the speed of one client one has to understand why others are faster. It's suggested that peer discovery is related to performance, so this document presents methods to measure the download performance and peer discovery of clients.

1.1 Tested Reference Clients

- Azureus 2.5.0.4
- Mainline BitTorrent 5.0.7
- LibTorrent 0.11
- Boudewijn BitTorrent core¹

1.2 Measured quantities

The following quantities are to be measured over time:

- Download progress
- Number of connected peers
- Number of optimistic unchokes

1.3 Swarms

The tests will be performed on real-life swarms. These swarms have to be “healthy” enough, so they won't be a performance bottleneck. Furthermore, the downloaded file has to be large enough so the speedtest will take some time to complete.

- File size should be something like 1 GB for a 300 KB/s connection. Downloading the file would then take about an hour.
- Swarm should be at least contain 250 peers.
- Seed/peer ratio should be at least 1:4.

¹<https://www.tribler.org/browser/abc/branches/boudewijn>

1.4 Test configurations

We will test the clients with the following configurations:

1.4.1 Bandwidth

- Low-end ADSL. Bandwidth capped at 300 KB/s down and 60 KB/s up.
- High-end 10/1 Mbit. Bandwidth capped at 1.25 MB/s down and 128 KB/s up.

1.4.2 Peer discovery

- DHT and peer exchange options turned off.
- DHT and peer exchange options turned on.

1.5 Procedure

Initial setup:

- Add logging code to the clients.
- Install each client on a separate computer, each with a separate IP.

For each test:

- Choose a healthy swarm as specified in 1.3.
- Choose a test configuration (1.4) and configure the clients accordingly.
- Start the download for all clients.
- The test ends when all clients have downloaded the file.
- Collect the measured data and write a measurement report.

2 Measurement Report

This section describes the contents of a measurement report.

2.1 Test Environment

A measurement report has to describe in which environment the test took place. At least the following information needs to be included:

- Date and time of when the test started.
- Tested configuration.
- A list of the tested clients.
- Number of seeds and peers of the swarm when the test started.
- Filesize of the downloaded file.

2.2 Measured Data

A measurement report displays the measured data in a comprehensible way (i.e. graphs). It is not necessary to include the raw logs in a report.