

Tribler Download Core Improvement

Initial Project Planning

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Abstract

This document outlines the planning of the Tribler Download Core Improvement project. The project starts in the week of April 30th and will take about ten weeks to complete. It comprises the following phases: analysis, design, implementation, and evaluation. Its goal is to improve the download performance of the Tribler client while making sure related research topics are not hindered by it.

1 Project Description

1.1 Motivation and Goal

Tribler is a social-based peer-to-peer file sharing client, built on top of the BitTorrent protocol. The idea behind the social aspect of Tribler is to exploit certain social phenomena to increase its usability and performance [2].

However, the download performance of the current Tribler client leaves some room for improvement. It is why the decision was made to do research on this subject. The goal of this project is to either enhance the download core or to replace it with an existing open source implementation, so Tribler will be one of the fastest clients.

1.2 Demands

This project should lead to a faster Tribler client. However, the enhanced or new download core should not hinder any other research topics on Tribler.¹ This means that the download core should remain as flexible as possible.

1.3 Supervisor

The project will be supervised by Johan Pouwelse. Progress will be monitored weekly in person.

1.4 Human Resources

The project will be carried out by Rick van Hattem and Raynor Vliendhart.

¹For a list of related research topics, see <https://www.tribler.org/DownloadPerformance>.

1.5 Deliverables

The following documents and software should be produced:

- Measurement plan to measure download performance
- Performance measurement report on the current Tribler client compared to other popular BitTorrent clients
- Analysis report on download algorithms of popular BitTorrent clients
- Design document of new download core
- Evaluation report on the performance of the new download core

These documents will be kept on a SVN server for version control and team collaboration. More details on these documents and software are presented in the schedule section.

1.6 Risks

The project is estimated to take about ten weeks. To cope with risks related to wrong estimations, twelve weeks has been allotted. The most difficult risk to account for, is that the new or enhanced download core will not perform as well as hoped for. May this be the case, there will most likely not be enough time to redesign the download core again. In this case the performance should be analyzed and the cause of the low performance should be documented in the evaluation report.

2 Schedule

ID	Task Name	Week	Start	May 2007				June 2007				July 2007			
				23-4	30-4	7-5	14-5	21-5	28-5	4-6	11-6	18-6	25-6	2-7	9-7
1	Problem Analysis Phase	1-4	30-4-2007												
2	Reading BitTyrant Paper	1	30-4-2007												
3	Writing Measurement Plan	1	30-4-2007												
4	Performance Measuring	2	7-5-2007												
5	Analysis Download Algorithms	2-4	7-5-2007												
6	Design Phase	5-6	28-5-2007												
7	Study of Produced Results	5	28-5-2007												
8	Writing Design Document	6	4-6-2007												
9	Implementation Phase	7-9	11-6-2007												
10	Improve/Replace Download Core	7-9	11-6-2007												
11	Evaluation Phase	10	2-7-2007												
12	Measuring Performance	10	2-7-2007												

2.1 Phases

The project will know four different phases. Analysis, design, implementation and evaluation will need to be performed to reach the project's goal.

2.1.1 Problem Analysis

This phase will take about four weeks. During this phase we will perform two different kinds of tasks, performance measuring and analysis of algorithms. To measure performance, we will first have to write a measurement plan (*week 1*) before we can do the actual measuring (*week 2*).

Analysis of algorithms will be done by studying BitTyrant's algorithm[1] in the first week and studying the source code of the following popular BitTorrent clients:

- Azureus 2.5.0.4
- BitTorrent 5.0.7
- libtorrent 0.11

and also:

- Boudewijn BT core²

This analysis is to be done in the week 2 and 4.

Documents to be produced:

- Measurement plan
- Performance measurement report
- Analysis report on download algorithms

2.1.2 Design

In the fifth and sixth week we will focus on the designing the new download core. The design will depend heavily on the analysis done in the previous phase.

Documents to be produced:

- Design documents

2.1.3 Implementation

For the actual implementation, we have allotted three weeks. At the moment of writing, it is unknown if this estimation is a fair one. In the phases before this phase we can get more insight in the complexity of enhancing or replacing the download core. If needed, we can adjust the project's schedule in time.

Software to be produced:

- New download core

2.1.4 Evaluation

The last week of the project will be the evaluation phase. For this phase we only have to do the performance measurement again, but this time with an improved client.

Documents to be produced:

- Evaluation report

References

- [1] PIATEK, M., ISDAL, T., ANDERSON, T., KRISHNAMURTHY, A., AND VENKATARAMANI, A. Do incentives build robustness in BitTorrent?, 2006.
- [2] POWELSE, J., GARBACKI, P., WANG, J., BAKKER, A., YANG, J., IOSUP, A., EPEMA, D., REINDERS, M., VAN STEEN, M., AND SIPS, H. Tribler: A social-based peer-to-peer system. *Concurrency and Computation (to appear)* (2007). Accepted for publication.

²<https://www.tribler.org/browser/abc/branches/boudewijn>