State Exchange in Distributed Applications

ABSTRACT

This assignment is part of the TRAMP Real-time Application Mobility Platform (TRAMP) project with focus on distributed multimedia applications with real-time requirements. The goal of the assignment is to design and implement at least two components (producer and consumer) of a real-time application (such as a media player) and evaluate the provided distribution framework with respect to delay, throughput and other relevant metrics. Above is an overview of the provided framework. Your objective is to design and implement the pro- ducer and consumer application parts (the two gray components). The producer/consumer duo can run locally on one machine or be distributed over a network. In addition, multiple consumers can subscribe to the same produced data and receive identical copies.

Categories and Subject Descriptors

H.4 [**Information Systems Applications**]: Miscellaneous

General Terms

Design, Experimentation, Performance, Measurement

1. INTRODUCTION

In our assignment we were to use the Real-time Application Mobility Platform (TRAMP). This is a project developed by the Distributed Multimedia Systems (DMMS) group at the University of Oslo.

This is a assignment given to us in the course INF5090 - Advanced Topics in Distributed Systems which is a course given by the University of Oslo, as well as Lancaster University in England and University of Mannheim in Germany. The teachers are Thomas Plagemann and Vera Goebel with their teaching assistants Piotr Kaminski and Hans Vatne Hansen. These are also the people that developed the TRAMP framework together with some other developers all from the University of Oslo.

The TRAMP project was started in late 2011, the goal of the framework is to "make a migration system for real-time applications, such as Spotify and Skype, where users can take applications with them when they move." [1]

Lets say you sit on your computer talking to a friend on skype. You need to go, but you got more to say to him/her. TRAMP will let you stream the conversation to your phone seamlessly and when you get to work, you can then transfer the conversation to your work computer.

2. RELATED WORK
3. SYSTEM DESIGN
4. THE CHOICE OF STREAMER

FFMPEG is a complete cross-platform solution to record, convert and stream video and audio. It is a free software licensed under the LGPL or GPL (dependent on the configuration), and is the leading multimedia framework today. FFMPEG provides tools for converting, streaming, playing and analysing multimedia, as well as a full developers library with the possibility to create allmoast anything you want. Big projects such as QStream, VLC, GStreamer and Google Chrome has used the framework.

In our assignment we decided that this would be best to implement for streaming over the TRAMP platform, but due to time constraints we chose we did not have enough time to implement this framework. We instead decided to implement a streamer that copied over one big file by chunking the big file into small bits, sending them and putting them back together on the other side. This will in our eyes show the capabilities of TRAMP just as well as a more sophisticated streamer like the FFMPEG solution we had planned.

5. PROPOSED OPTIMIZATIONS
6. EVALUATION
7. CONCLUSIONS
8. REFERENCES

[1] Tramp-project homepage. April 2012.