Brno University of Technology - Faculty of Information Technology

Department of Intelligent Systems | Academic year 2017/2018

Master's Thesis Specification

For: **Stejskal Jakub, Bc.**
Branch of study: Information Systems
Title: **Performance Testing and Analysis of Qpid Dispatch Router**
Category: Software analysis and testing

Instructions for project work:

1. Study the principles of performance testing and, in particular, specific methods focusing on message sending systems and their routing. Study related work used for testing performance (i.e. msg-perf-tool, SpecJMS, or other open source tools) and point out their properties.
2. Design testing process, criteria and metrics suitable for performance analysis. Describe each criterion and its importance.
3. Design extension of msg-perf-tool and a tool for topology generation, which will enable performance testing of Qpid Dispatch Router based on proposed testing process and criteria.
4. Implement the proposed extension.
5. Demonstrate the functionality of the resulting implementation by performance testing of Qpid Dispatch Router based on set of created performance tests. Discuss and analyze the results.
6. Evaluate the overall results and propose possibilities of future extensions of the project.

Basic references:

- Qpid Dispatch Router project: https://qpid.apache.org/components/dispatch-router/index.html
- msg-perf-tool repository: https://github.com/orpiske/msg-perf-tool
- Levente Erős: Performance Testing and Performance Improvement Methods for Communicating Systems, 2012 https://db.bme.hu/~eros/diss.pdf

Requirements for the semestral defense:
Items 1 to 3.

Detailed formal specifications can be found at http://www.fit.vutbr.cz/info/szz/

The Master's Thesis must define its purpose, describe a current state of the art, introduce the theoretical and technical background relevant to the problems solved, and specify what parts have been used from earlier projects or have been taken over from other sources.

Each student will hand-in printed as well as electronic versions of the technical report, an electronic version of the complete program documentation, program source files, and a functional hardware prototype sample if desired. The information in electronic form will be stored on a standard non-rewritable medium (CD-R, DVD-R, etc.) in formats common at the FIT. In order to allow regular handling, the medium will be securely attached to the printed report.

Supervisor: **Fiedor Tomáš, Ing.**, DITS FIT BUT
Beginning of work: November 1, 2017
Date of delivery: May 23, 2018

Petr Hanáček
Associate Professor and Head of Department