Brno University of Technology
Faculty of Information Technology

Department of Information Systems (DIFS) Academic year 2021/2022

Master's Thesis Specification

Student: **Vasiljević Nemanja, Bc.**
Programme: Information Technology
Field of study: Information Systems and Databases
Title: **Monitoring the OpenStack Swift Object Store Using Beanstalk Events**
Category: Databases
Assignment:

1. Explore OpenStack Swift object storage, especially its architecture and activities. Study also MinIO object storage. Learn about the object storage OpenIO Software Defined Storage and in which way it uses Beanstalk to monitor and distribute events over the storage.
2. Design a service that will monitor activities in OpenStack Swift and, following the pattern of OpenIO, publish Swift events using the Beanstalk protocol. Consider also the ability to monitor and publish events from MinIO.
3. After consulting with the supervisor, implement the proposed service over OpenStack Swift/MinIO so that compatibility with OpenIO is guaranteed. For verification, also implement a sample client that will be able to subscribe to events using Beanstalk from both OpenIO and OpenStack Swift/MinIO.
4. Test the solution, evaluate and discuss the results. Publish the resulting software as open-source.

Recommended literature:

- Raúl GRACIA-TINEDO, Josep SAMPÉ, Gerard PARÍS, Marc SÁNCHEZ-ARTIGAS, Pedro GARCÍA-LÓPEZ and Yosef MOATTI: Software-defined object storage in multi-tenant environments. *Future Generation Computer Systems*. 99, 54-72, 2019. ISSN 0167-739X. Available at [https://doi.org/10.1016/j.future.2019.03.020]
- OpenStack Docs: Object Storage monitoring. The OpenStack project [online]. 2021 [seen 2021-09-29]. Available at [https://docs.openstack.org/swift/ussuri/admin/objectstorage-monitoring.html]
- Send notifications on PUT/POST/DELETE requests - swift-specs 0.0.1.dev82 documentation. OpenStack Foundation [online]. 2016 [seen 2021-09-29]. Available at [https://specs.openstack.org/openstack/swift-specs/specs/in_progress/notifications.html]

Requirements for the semestral defence:

- Items 1 and 2 finished and item 3 in progress.

Detailed formal requirements can be found at https://www.fit.vut.cz/study/theses/

Supervisor: **Rychlý Marek, RNDr., Ph.D.**
Head of Department: Kolář Dušan, doc. Dr. Ing.
Beginning of work: November 1, 2021
Submission deadline: May 18, 2022
Approval date: October 21, 2021