Bachelor/Master Thesis
Automation of an emulation environment within OpenStack

2019-04-25

Context

To verify resource scheduling algorithms, new services or features, protocols in a cloud data centre, using an emulator or simulator has become an indispensable part of the testing process. However, simulation model is based on assumptions and simplifications that might not fully represent all the characteristics of interest of the actual cloud. Moreover, to develop new features for OpenStack cloud middleware, one must test the features in a simulation environment that mimic the middleware to a great extent. A recent work has been done on creating an OpenStack based emulator [1]

Scope of the Thesis

1. Develop a language to describe a large data centre.
2. Describe the physical infrastructure.
3. Create VMs with behaviour such as uniformly distributed, randomly placed etc.
4. Discuss the limitation of the approach.
5. Compare the emulator to a simulator to check if the emulator is a valid alternative to simulation

Requirements and Comments

1. Good knowledge in programming language such as Java, C, C++ is a must.
2. Knowledge about cloud data centre, resource management and virtualisation

Reference
1. https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7983169

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