Diplomarbeit / Master Thesis

**Generic Resource Organizer**

Topology and Orchestration Specification for Cloud Applications (TOSCA) is a new standard to define structure and management of cloud applications. Topology of an application consists of different nodes and relationships between these nodes. In general the nodes represent available resources in a cloud-computing environment. These TOSCA models can be collected in CSARs, which are later on deployed on a TOSCA container for initialization of the corresponding cloud application. The generation of CSARs can be a time consuming activity.

The goals of the thesis are:

- Investigation of a minimal service interface for lifecycle operations
- Based on the service interface generation of automated plans for deploying nodes
- Creation of deployment ready CSARs for a topology.
- A prototypical implementation which exploits available TOSCA technologies

For the TOSCA run-time, OpenTOSCA container and for TOSCA type management Winery will be used. The target cloud infrastructure is based on OpenStack.

**Requirements**

The applicant should be fluent in Java and be willing to apply theoretic concepts in practice. Knowledge of workflow languages is desirable.

**Benefits**

When finishing the thesis, you will have deep knowledge in the industry standards and technologies such as BPMN/BPEL and OASIS TOSCA. Moreover, the students will gather experience about Amazon Cloud Services or OpenStack, which is a key standardization effort supported by industry leaders, e.g., IBM, HP, Red Hat, Canonical, SUSE, etc.

**Formal Requirements**

The student has to manage his schedule including the work packages and milestones for himself. The preferred language of the work is English.

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