

Bachelor / Master-Thesis:

Analysis of a distributed Cloudplatform in a WAN Environment

Context:

Cloud computing is currently a highly relevant topic in different fields of data processing. Besides a reduction of costs due to the omission of on-premise infrastructure cloud computing also leads to a more efficient usage of hardware, better scalability and improved robustness of applications. In power engineering cloud computing gains more and more popularity as the degree of automation in power systems is increasing continuously causing also an increased demand for computing resources.

In the framework of the research project *ENSURE*, the Institute for ACS concentrates on the development of a cloud platform for the utilization flexibilities in power generation and consumption. This Flexibility Cloud Platform is based on Kubernetes, an open-source project, which was i. a. grounded by Google and is applied for so-called *container orchestration*.

Tasks:

The developed flexibility platform is executed on computing resources located in the ACS lab. In a real world application the single parts of the platform and connected devices might be distributed. Hence, a Wide Area Network (WAN) between compute nodes should be emulated. By doing that one can determine the effect of high latencies or packet error rate on the system. The thesis therefore includes following tasks:

- Getting familiar with Kubernetes and the Flexibility Cloud Platform
- Getting familiar with the used virtualization techniques and WANem
- Development of an evaluation framework (scripts etc.) for the execution of test scenarios for validating the usability of the Flexibility Cloud Platform within a WAN environment

Your Profile:

For this thesis you need good Linux skills. Knowledge of virtualization techniques and Kubernetes as well as a script language such as Python would be helpful but can also be gained during the thesis.

We are looking forward to receiving your mail to the mail addresses as listed below.

Contact:

Dipl.-Inform. Lukas Razik, Stefan Dähling, M.Sc.ACS | Institute for Automation of Complex Power Systems
Tel.: +49 (0) 241 / 80 - 49720
{LRazik, SDAehling}@eonerc.rwth-aachen.de

E.ON Energy Research Center
RWTH Aachen University
Mathieustr. 10, 52074 Aachen, Germany