Design and Implementation of a Code-Staging Solution for WebMaDa Separating Testing-Stage from LIVE-System (MA)

Over several years a big IoT network called SecureWSN was established and continuously expended towards a trustworthy environmental monitoring framework for constrained networks. The network itself consists of 3 parts: (1) Data collection via constrained devices, (2) gateway component handling incoming data and managing the network called CoMaDa, and (3) a framework realizing backend and front-end for the end-user called WebMaDa. Several theses are available in those parts of SecureWSN.

Currently, any changes in WebMaDa can only be tested if the code is direct deployed into the live system. This situation is unacceptable, considering that WebMaDa is a LIVE system! This means that users, who manage their active networks in WebMaDa, have to accept restrictions in the service-line when test code goes online to verify it.

Thus, this thesis is looking for a solution separating LIVE-system from testing stage. In order to realize the solution the following tasks need to be performed:

- Analyze the current infrastructure and its dependencies.
- Develop an approach for decoupled testing infrastructure.
- Implementation of the infrastructure and a continuous integration process.

Finally, the complete solution needs to be evaluated and the report needs to be written. Further, a detailed documentation on how to install the solution in the Computing Cloud is required including how to create new testing-instances assuming several groups are developing new features in parallel. Depending on the results we will try to publish it on high ranked conferences and workshops.

As this work is based on different works and research results, a willingness to familiarize oneself with the existing system is expected.

Knowledge in network managing and cloud interaction, as well as in Java programming and little bit SQL, PHP, JavaScript, Angular would be an advantage. Since the main focus of this work is the design and implementation of a suitable DevOps and continuous integration approach, experience in this area and with tools like Docker, Ansible, Virtualization and Git are necessary or need to be picked up during the initial preparation for the thesis.

We will offer you:

- Access to existing installations of SecureWSN’s components
- Access to written theses of SecureWSN
- Smart working environment
- Deep contact to supervisors and a lot of discussions and knowledge exchange

If you are interested in this thesis contact us and let's discuss:

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