AT , E-ICT , EMA , EMK , EMO , OP

STUDENT

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Titel bachelorproef
(definitieve)

Utilize Docker container and Selenium Grid technology to improve resource efficiency in the runtime of a Software Deployment & Testing Framework (SDTF).

BEDRIJF / INSTELLING | VASCO Data Security

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GEGEVENS Bachelorproef

Omschrijving Probleem

Today VASCO's software deployment and testing framework (SDTF) runs on a windows test control host. By migrating its runtime to a microservice based architecture based on Docker container technology, and by utilizing Selenium Grid technology in the execution of web-based tests, a significant reduction in required computing resources and runtime would be realized. This would lead to a more cost-effective system and the possiblity to run more tests in parallel reducing the overall turnaround time for test execution. This thesis will investigate how to realize the implementation of these technologies in the SDTF testing infrastructure and document the resulting advantages.

Doelstellingen van de bachelorproef (kwantitatief en moeten meetbaar zijn)

Defining the deployment architecture
- Utilize Docker container technology (i.e. microservice architecture) in its runtime
- Utilize Selenium Grid technology in the execution of web-based test suites

Defining a set of test suites to run
- Define the impacted test suites
- Document the changes to the affected test suites.
- Migrate the existing suites to the defined architecture
- Create a working demo running these suites on VASCO's test infrastructure

Document the findings
- Document the advantages and disadvantages of the proposed changes
- Include a discussion on the difficulties encountered with the solution/technologies
- Quantify the proposed solution's impact in terms of saved resources and execution time

Gewenste resultaat (Wat moet er (minimaal) opgeleverd worden?)

Defining the deployment architecture
- Utilize Docker container technology (i.e. microservice architecture) in its runtime
  - Investigate a single SDTF container for executing multiple SDTF suites in parallel
  - Investigate how to deploy SDTF container dynamically
- Utilize Selenium Grid technology in the execution of web-based test suites
  - realize all browsers as end nodes to Selenium Grid (headless mode, including IE)

Defining a set of IAS WebAdmin test suites to run
- Define a set of impacted suites
- Document the changes necessary, including the following considerations:
  - Datasets [..., ..., etc]
  - TestSuite setup(), primitives(), teardown()
  - TestCase setup(), primitives(), testdown()
- Migrate the existing suites to the defined architecture
- Create a working demo running these suites on VASCO's test infrastructure

Document the findings
- Document the advantages and disadvantages of the proposed changes
- Include a discussion on the difficulties encountered with the solution/technologies
- Quantify the proposed solution's impact in terms of saved resources and execution time

Stretch goals include
- Deployment:
  - Realize dynamically allocating an SDTF container
  - Realize broswer end nodes in non-headless mode
- IAS Build Intake suite
  - Necessary client containers defined
- IAS Radius Authentication suite
  - Radius client containerized .

Opmerking : alle bijzondere kosten gemaakt buiten het bedrijf en/of hogeschool, evenals de verplaatsingskosten zijn ten laste van de student, tenzij anders overeengekomen.

In het bedrijf is er [*] ~~familie~~ / [*] **geen familie** van de student die deel uitmaken van de begeleiding van de student.
[*] Doorhalen wat niet van toepassing is.

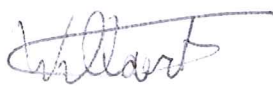**Opgemaakt te** | Strombeek-Bever | **op** | 06/03/2019

Handtekeningen :

Bedrijfspromotor	Schoolpromotor	Student 1	Student 2

Christopher Forbes.

PANDORA DEGREEF

ARNO WILLAERT