Aalto University
School of Science
Bachelor's Programme in Science and Technology

Security in Microservice Architecture

- Impact of a Switch from Microservices to Monolith Architecture

Bachelor's Thesis

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Contents

1 Introduction

Microservice Architecture (MSA) differs in many ways from the more tradition Monolith Architecture (MA). In this thesis the security aspects when using MSA are investigated. This thesis studies current literature and finds the main differences between MA and MSA security aspects.

2 Definitions

2.1 Architecture

2.2 Microservice

A microservice is a service that: is independently deployable, is modeled around business domain, that owns the data that they need to operate, that communicates via network, is technology agnostic, that encapsulates data storage and retrieval and that has stable interface (Newman, 2019).

2.3 Monolith

2.3.1 Security

Security can be defined in multiple ways but in this thesis security and more specifically information security is defined as consisting of Confidentiality, Integrity, and Availability (CIA) as is stated in the pocket book on ISO/IEC 27001 -standard for information security (Calder, 2008).

The ISO/IEC 27001 standard defines confidentiality as such that information or property is available to the authorized user only. Integrity means that the data or property is safeguarded for accuracy and completeness. Availability in this web service context is defined as such that the property or information is only available or diclosed to authorized users. The authorized users can consist of persons, processes or entities to whom the information or property can be disclosed.

3 Unknown

One way of building software is to use a Monolith Architecture (MA). In this way of organizing the structure the whole application or service is usually deployed as a whole

and the program code can be compiled, tested and used as a unit. In contrast to this a service implementing a Microservice Architecture (MSA) can be deployed in single microservice units and thus a single service can be worked upon individually.

3.1 Microservice

4 Conclusion

References

A. Calder. *ISO27001 / ISO27002 A Pocket Guide*. IT Governance Publishing, Cambridgeshire, 2008. ISBN 978-1-84928-166-9.

S. Newman. *Monolith to Microservices. Evolutionary patterns to transform your monolith.* O'Reilly Media, Inc., 2019. ISBN 9781492047841. 1st edition.