

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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# 1 Introduction

In recent years the web service landscape has exploded with users and available services. Every aspect of our lives has been infiltrated by apps and web services to an extent that brick and mortar businesses are rapidly declining and have to reinvent them selves (VERIFYING light SOURCE!). Finally the promises given in before the Dot Com bubble burst in the end of the 20th century have delivered.

The rapid expansion and at times as fast decline of web services need a matching architecture to meet these very specific needs. Monoliths have served us well but the time has come to evolve with the customer needs.

Microservice Architecture (MSA) differs in many ways from the more tradition Monolith Architecture (MA). This shift entails very specific security issues.

In this thesis the MSA and security literature is evaluated and the main differences between MA and MSA security aspects are found.

## 2 Definitions

In this thesis the following definitions are used.

### 2.1 Architecture

TODO

### 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

TODO

## **2.4 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 disclosed to authorized users. The authorized users can consist of persons, processes or entities to whom the information or property can be disclosed.

## **3 Random text**

Developing software using the MA 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 single unit or multiple modules. In contrast to this a service implemented by using a 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.