

# Abstract

The purpose of this thesis is to present the basic principles of an architecture based on microservices, the advantages it brings but also when such an architecture is better than a monolithic architecture. Such an architecture can have a big impact on costs, resources and productivity. To exemplify these principles and the benefits of a microservices-based architecture, an application was developed in which users can pay bills from different providers.

The first and the second chapter are a general introduction and these chapters present basic terms that are important to know to understand the rest of the thesis. The third chapter presents what is a monolithic architecture and what are the advantages and the disadvantages of using it. The fourth chapter presents a brief introduction to service-based architecture and its basic principles, detailing four of them. The following chapter describes what microservices are, what are the differences between service-based architecture and microservice-based architecture, and the benefits and the disadvantages of using microservices. Furthermore, chapter five outlines the situations in which you should use a microservice-based architecture.

The sixth chapter is a case study on the Netflix transition to microservices. This chapter describes the entire process of changing a monolithic architecture in a microservice-based architecture. It also describes the reasons of changing, the benefits and costs, but also the final architecture of the application. This case study was made from the perspective of three people who worked at Netflix and made important decisions during this transition.

The seventh chapter describes a web application with a microservice-based architecture behind. The application is a platform where users can pay bill from different providers (for example: gas, electricity, etc.), and the providers can add invoices and generate reports. Furthermore, in this chapter, the structure of the application is analysed by Visual Studio, and the results prove that the microservice-based architecture is an excellent choice when you want to create a platform that is an intermediary between users and different providers with similar goals. The final chapter summarizes this thesis, concluding that a microservice-based architecture is often a good choice in application with high potential for development, and this type of architecture should always be considered as an option.

This work is the result of my own activity. I have neither given nor received unauthorized assistance in order to accomplish these results.

