

Designing Microservice-based Applications for Hybrid Cloud Edge Networks

Undergraduate Thesis

by

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Abstract

Edge computing has been the subject of much attention in the software development space over the last several years as the limitations of traditional cloud computing models continue to be exposed by an increasing number of connected IoT and internet-enabled devices that require real-time computing. As this new computing paradigm becomes more prevalent in the industry, it is important that software is developed effectively to take advantage of the benefits that edge computing brings to the table.

In this paper, we attempt to establish an understanding of core principles that will enable the effective design and development of distributed software systems that can be easily deployed and optimized for various configurations of computing models – primarily hybrid cloud edge networks.

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1 Introduction

2 Background and Related Work

3 Research Objectives

- To develop a demo application with the ability to conditionally and automatically self optimize in various network configurations.
- Using this demo application:
 - Determine the feasibility of using this approach in production environements
 - What type of application can be designed this way?
 - Is it possible to adapt existing applications to this framework?
 - Analyze the benefits provided by self optimization
 - Platform compatibility
 - Latency improvements
 - Analyze the tradeoffs compared to traditional software design paradigms
 - Additional development time
 - Added complexity in maintainence
 - Additional computing overhead
 - Determine suitable environements in which this may be desired (if any)

4 Methodology

In order to

5 Results

6 Discussion

7 Conclusions and Future Work

8 Reference List