Master Thesis –
Real Time Application Scalability Based on Resource Availability in Kubernetes

Background
One of the principles when moving towards a cloud-based RAN is to decouple the microservices from the compute resources that are provided. This will put constraints on the services to specify minimum requirements or to be able to cope with limited resources, in practice probably a combination. This thesis is about describing and exploring how to describe these requirements and what is required from a resource bound microservice to be able to provide service when limited resources are provided.

Thesis Description
The following steps are part of the thesis work:

- Explore and describe existing mechanisms and strategies to express resource requirements for a Kubernetes microservice.
- Create a CPU intense microservice, either by modifying parts of Ericsson RAN application or develop a dedicated load generator.
- Define a strategy for making the microservice to run under different resource constraints.
- Evaluate the microservice ability to provide service when varying the available resources.

The thesis will be concluded with a presentation for the Ericsson development team.

Qualifications
This project aims at students in electrical engineering, computer science, computer engineering or similar.

Extent
1-2 students, 30hp each

Location
Ericsson AB Mjärdevi, Linköping

Preferred Starting Date
Spring 2022

Keywords
Docker, Kubernetes, Mobile Telecommunication, Optimization

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