

Master's Thesis

# Implementation and Analysis of P4-based 5G User Plane Function

The 5G cellular networks are the state-of-the-art cellular networks for the coming 10 years. One of the critical network functions in the 5G core system is the evolved packet gateway or User Plane Function (UPF). The UPF is responsible for carrying the users' packets from the base stations to the data network (like the internet).

On the other hand, P4 is a promising language for programming packet processors. It can be used to program different networking devices (Software/FPGAs/ASICs/...).

Using P4 to implement the UPF has many advantages in terms of flexibility and scalability. In this work, the student will realize/implement the UPF in P4 language. Then, the advantages of this approach, especially in terms of performance gains, will be evaluated.

## Prerequisites

- Good programming skills
- Basic Linux knowledge
- Motivation and critical thinking
- Knowledge about LTE, 5G, or P4 is a plus.

## Advisors

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