Asynchronous Traffic Shaping with Paternoster

Asynchronous Traffic Shaping (ATS) [3] is a new standard for Time Sensitive Networking (TSN) [1]. ATS guarantees per-hop bounded latencies for different priority classes without time synchronisation between different TSN nodes. ATS defines two algorithms for policing and scheduling of frames: UBS and Paternoster [3]. UBS can be used directly on Linux with the Linux Traffic Control tool `tc` [2]. For Paternoster, currently no implementation exists that we are aware of.

The goals of this thesis are to design a model on how to use Paternoster on Linux, to implement and evaluate a prototype, to describe and analyse the differences and potentials of using Paternoster compared using ATS with UBS, and to compare the results of both approaches.

Motivation

- General interest in computer networks
- Experience with C Programming
- Interest in Linux Kernel Programming

Your Profile

- Conducting research on ATS and TSN
- Model a possible approach for the implementation
- Implement a prototype
- Evaluate and discuss the results
- Compare the results to a proposed solution for UBS

Your Tasks

- Conducting research on ATS and TSN
- Model a possible approach for the implementation
- Implement a prototype
- Evaluate and discuss the results
- Compare the results to a proposed solution for UBS

Literature


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