Thesis B.Sc.

IDP, Guided Research

# Implementation and Comparison of TSN Network Calculus Models

Motivation

Network Calculus (NC) is a mathematical framework for the computation of worst-case latencies in computer and communication networks [1]. A crucial part of the framework is the description of scheduling algorithms that can the be deployed on network nodes. Those scheduling algorithms influence the end-to-end latencies.

Time Sensitive Networking (TSN) is a set of standars

that aim to provide deterministic service over Ethernet. This includes specialized schedulers and shapers, such as a Cerdit Based Shaper or Time Aware Scheduling. Those can be modeled in NC. Multiple different approaches exist on how to model them.

The goal of this thesis is to implement the NC models of different approaches and compare the results.
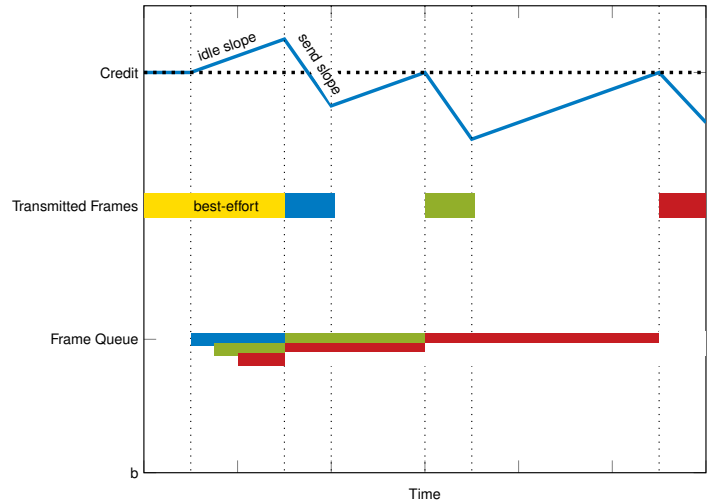
[1] https://en.wikipedia.org/wiki/Network_calculus
[2] https://en.wikipedia.org/wiki/Time-Sensitive_Networking

Your Task

- Familiarize with Deterministic Network Calculus and TSN
- Collect proposed NC models of TSN functionalities
- Implement a set of different models
- Compare the results of the different models

Requirements

- Experience in either Python, Go, Rust, or Java
- Experience working with Linux and bash (or similar)

Contact

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