Associate Professorship of Embedded Systems and Internet of Things
Department of Electrical and Computer Engineering
Technical University of Munich

Application of Per-Stream Filtering and Policing Algorithm in TSN

Description of Topic

January 28, 2022

Title: "Application of Per-Stream Filtering and Policing Algorithm in TSN"
Supervisor: Rubi Debnath

Context

Time-Sensitive Networking is a layer-2 technology standardized by the IEEE 802.1 to provide quality-of-service, bounded latency, and deterministic guarantees. There are multiple sub-standards and amendments in the IEEE 802.1 standard. IEEE 802.1Qci known as Per Stream Filtering and Policing (PSFP) performs filtering and policing decisions on a per-stream basis. In this topic, our goal is to implement the PSFP algorithm and afterward a performance analysis. We then perform an in-depth analysis of PSFP filtering decisions on different traffic types. PSFP can limit the bandwidth or timing resources used by a stream of flows. We will look into the different use-cases of PSFP and compare them with the state-of-the-art shaping algorithms.

Requirements

- **Knowledge of computer networks.**
- **Good programming skills in C++.**
- **Experience with OMNeT++ or NS-3 simulation.**
- **Knowledge of Python.**
- Basic understanding of Time Sensitive Networking.
- Independent and motivated to work on networking problems.

Contact

If you are interested in this topic, please send your full application (CV, transcript of records, research interests, possible start dates) to Rubi Debnath (rubi.debnath@tum.de).