Combined Scheduling of PSFP and TAS

Time Sensitive Networking (TSN) provides a variety of different mechanisms providing real-time communication. Especially, TSN is able to transmit periodic time-triggered traffic with strict real-time requirements.

This thesis focuses on the time-aware shaper (TAS) standardized in IEEE 802.1Qbv and the per-stream filtering and policing (PSFP) mechanism defined in IEEE 802.1Qci. The goal is to develop an algorithm combining a TAS and a PSFP schedule. The TAS schedule should be secured by a time-based PSFP schedule. The PSFP schedule should drop frames or reduce their priority which are not matching the expected arrival interval. The algorithm has to be evaluated in a testbed considering traffic scenarios with multiple time-triggered streams.

Advisors

Yash Deshpande, Laura Becker
Manuel Eppler (Siemens AG)