

Thesis
B.Sc.

Thesis
M.Sc.

IDP,
Guided
Research

Flexible Precise Path Property Emulation

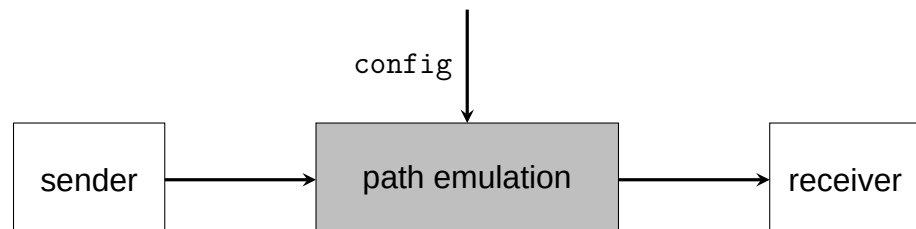
Introduction

In our chair's testbed we perform high-precision measurements of network functions under lab conditions. To assess reliability characteristics of, e.g., transport or forward error correction protocols, it is necessary to emulate non-ideal characteristics of real-world paths. They are commonly modeled with (variable) forwarding delay, (bursty) loss patterns, and limited capacity. While, e.g., Linux includes `netem`, to achieve some of this functionality it has limited precision, flexibility, and performance.

Topic

The goal of this thesis is to develop and study a high-performance, high-precision, and configurable path property emulation functionality included into the packet generator MoonGen. The work is based on previous work in the realm of traffic generation and packet buffering.

Figure



Tasks

- identify and implement the most relevant stochastic loss processes
- analyze the feasibility of emulating delay
- assess options for capacity emulation
- assure functionality, performance, and precision through measurements

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