Implementation of Network Traffic Models

In order to evaluate new concepts and prototypes of network systems, often synthetically generated traffic is used. For some use cases minimum-sized packets at line-rate are sufficient. However, real-world traffic has different properties and several theoretical models are existing that aim to describe network traffic e.g. as stochastic processes. Those models can be used with a set of parameters to generate traffic with known properties. This traffic could be either generated offline and stored as a packet dump for replay to a device under test or a scriptable traffic generator such as MoonGen could be used to generate those data and provide them live to a device under test.

- General interest in computer networks
- Some programming experience
  - **Plus:** Experience with Python, Lua, C(++) and Linux

**Your Tasks**

- Literature survey on network traffic generation models
- For a subset of those models identify parameters to e.g. describe periodic packet bursts, request/response patterns, packet loss or jitter.
- Define a text-based data format for those (e.g. JSON, YAML or XML based)
- Optional: Conduct an overview of available packet generators and their capabilities.
- Implement some of those models offline (generate PCAP files).
- Optional: Develop a library for MoonGen that make your models available for online packet generation.
- Optional: Compare your approach with other available packet generators.

**Literature**


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