Advanced Computer Networking (ACN)

Router Project – Problem 4

Prof. Dr.-Ing. Georg Carle, Sebastian Gallenmüller

Chair of Network Architectures and Services
School of Computation, Information and Technology
Technical University of Munich

Router Project — Problem 4

Performance measurement

- Test **your own router** under load
- Alternative: Test **the Linux router**
- Load generator: iperf3 (not iperf2!)
  - Test with different packet sizes
  - Test at different packet rates
- After testing plot your results in a Jupyter notebook
- Template for Jupyter notebook available in `template` repository
- Describe the results

Router Project — Problem 4

pos experiment, Problem 4 a)

- Problem 1: scripts to setup experiment nodes
- Problem 4: scripts to benchmark the software router
- Added files:
  - `client1-measurement.sh`
  - `client2-measurement.sh`
  - `router-measurement.sh`
  - `loop-variables.yml`
- You can reuse/extend the code from Problem 1
- Useful content: lecture on reproducible experiments, `pos-examples` repository

Evaluation of experiment, Problem 4 b)

- Jupyter notebook for evaluation (template available)
- New image for testbed called `debian-trixie-evaluator` with Jupyter already preinstalled
- Image should only be used on router experiment node (clients may have too little RAM)
- SSH tunnel is necessary to access Jupyter on router experiment node (see updated description)

Router Project — Problem 4
Example Measurement

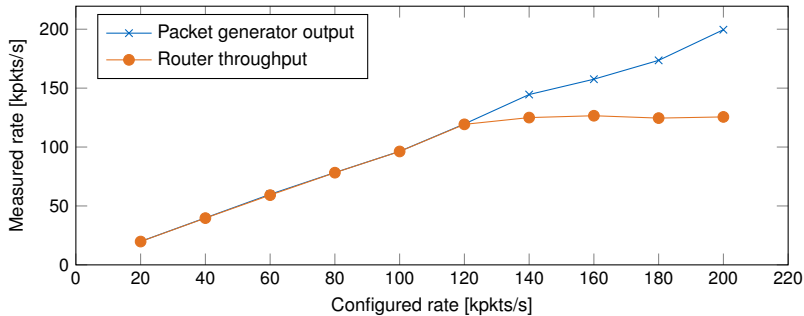

Figure 1: Graph showing the packet rates generated by packet generator and forwarded through a router

- Please note that the graph uses pkt/s not bit/s

Router Project — Problem 4
Packet Rate vs. Throughput

Definitions

- Packet rate: number of packets processed per second [pkt/s]
- Throughput: amount of data processed per second [bit/s], sometimes also [byte/s]

What is the better performance indicator for routers?

- Routers typically process packet headers but typically do not care about payload
- Therefore, small packets (64 B) and large packets (1500 B) have almost the same costs
- Worst-case scenario for routers: many headers, i.e., many packets
- Packet rate describes router performance more adequately than throughput