QUIC measurements spindump
IETF Hackathon

IETF 108
**July 20-24, 2020**
Online

QUIC Measurements: Goals

- Provide tools and ideas for traffic measurement in the era of encrypted transports
  - Debugging
  - Research
  - Network health monitoring
  - Optimization and network management adjustment

- Updates to the spindump tool github.com/EricssonResearch/spindump

What got done

- Traffic classification
  - What % of my traffic goes to FB etc?
- Model generation for simulation
- Giving the power for observations to clients
  - Per-UE measurement agents (HotRFC-Presentation)
- Measuring SRT (draft-sharabayko-mops-srt)
- Qlog (draft-marx-qlog-main-schema)
  - Write a converter for netlog->qlog
- Explicit packet loss measurement (draft-cfb-ippm-spinbit-measurements)
  - Using sQuare bit (Q-bit) and Reflection square bit (R-bit)
- Maintenance, new versions
  - Fixes for OSs (Ubuntu 20.04, MacOS)
  - Use ideas from QUIC, add support in tools
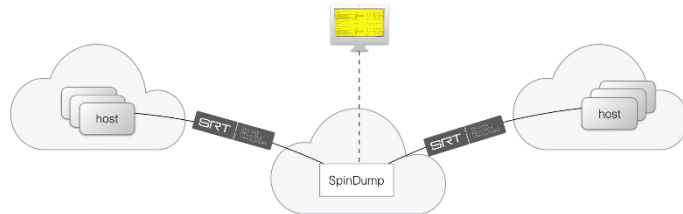
Model generation

- Connection statistics – RTT histogram (logarithmic histogram)
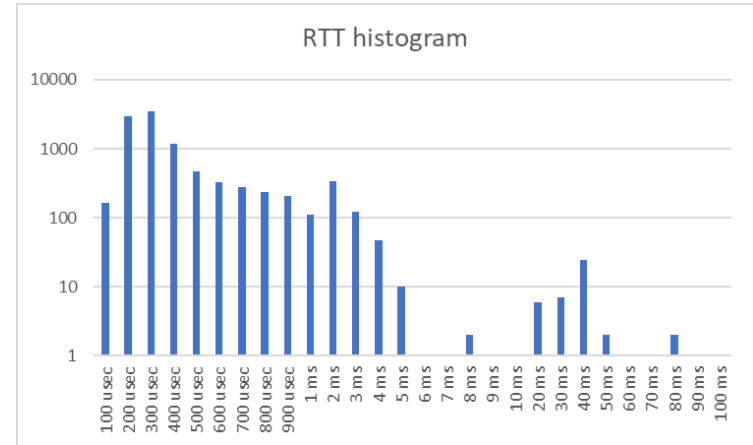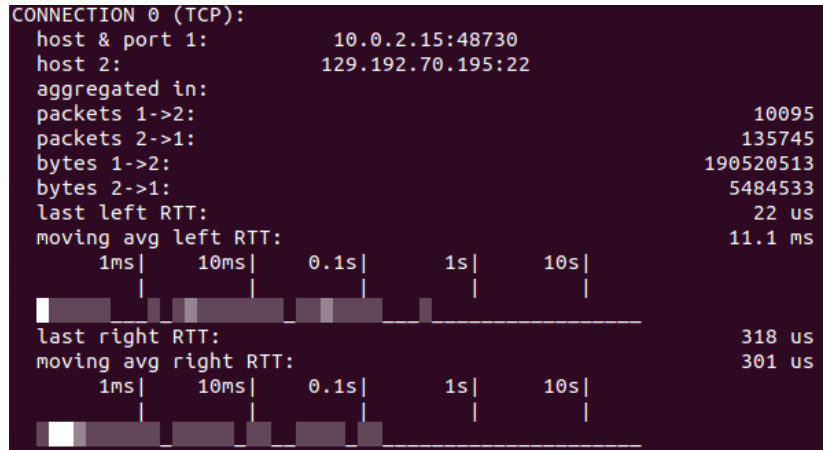
Measuring SRT | Haivision

During the hackathon:

- Getting familiar with the tool

- Submitting PR 213 to address minor issues while building on MacOS

- Next step will be to learn the code and architecture better, and to estimate an effort required to add the SRT protocol support in spindump

For more info:
- SRT RFC Draft Proposal
  https://datatracker.ietf.org/doc/
  draft-sharabayko-mops-srt/
- SRT Technical Overview
  https://github.com/Haivision/srt/files/2489142/
  SRT_Protocol_TechnicalOverview_DRAFT_2018-10-17.pdf
- SRT Open-source Library
  https://github.com/Haivision/srt
- SRT Alliance
  https://www.srtalliance.org/
- SRT Slack Channel
  https://srtalliance.slack.com/

SRT SECURE RELIABLE TRANSPORT

*"Enabling **low-latency video** contribution & distribution and **fast file transfer** over unpredictable networks."*

Explicit packet loss measurement

During the hackathon:

- Implementation of the observer inside Spindump

- Testing of the methodology using quic-go to generate traffic

- Next step: comparison with other explicit packet loss methodologies

For more info:

- Explicit measurements IPPM draft https://tools.ietf.org/html/draft-cfb-ippm-spinbit-measurements-02

- QR-bits quic-go implementation https://github.com/fabiobulgarella/quic-go/tree/tim-pl2-qr

The Client generates the Q-bit signal and reflects the received Q-bit signal using the R-bit signal:

The Server does the same in the opposite direction.

The sizes of the generated R-bit blocks are the **"average sizes"** of the received Q-bit blocks.

Wrap Up

Team members:
Mauro Cociglio (Telecom Italia - TIM)
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Maxim Sharabayko (Haivision)
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Ferenc Fejes (Ericsson)
Mirja Kühlewind (Ericsson)
Jari Arkko (Ericsson, driver)

+ few other interested ones, on vacation or busy this week

github.com/EricssonResearch/spindump