A possible attempt to use sconepro for RTC scenario

IETF 120

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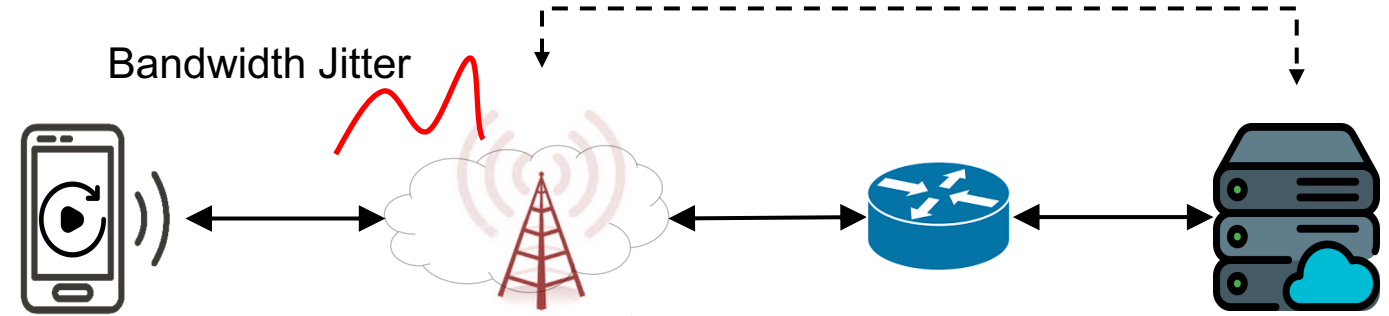
Vancouver, Canada

Latency of Real-time Communication



Long Latency

Bandwidth detection is too slow.

A feedback pathway is needed.

Reduce detection time and latency.

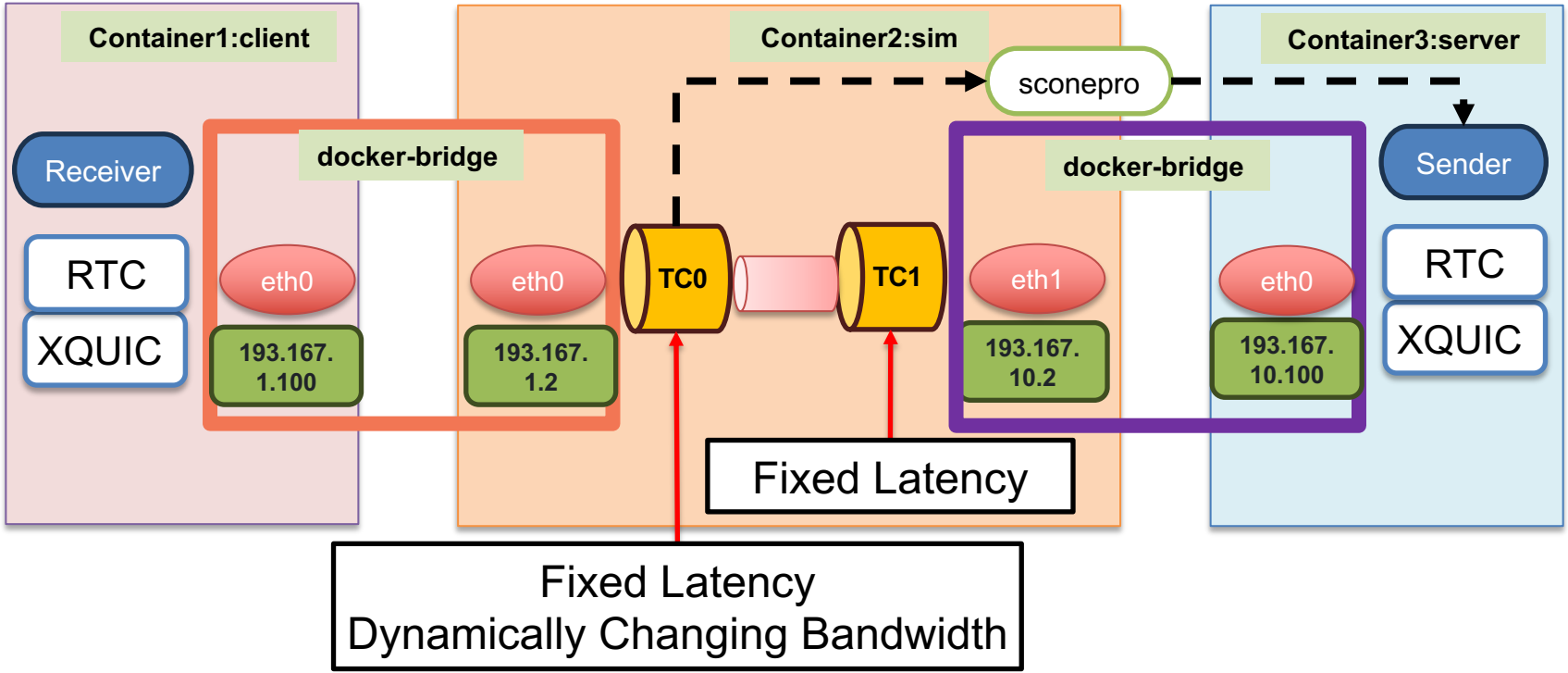
sconepro

- sconepro: Secure Communication of Network Properties
  - SCONEPRO is addressing a use-case wherein the network element does “intentional throttling”.
- Our Attempt
  - Identify feedback information
  - Flow Control Strategy of sender
  - Latency reduction effect evaluation

Sconepro-RTC Hackathon Plan

- Plan
  - Testing the latency of sconepro in RTC applications
- Software
  - XQUIC：a commonly used QUIC protocol stack
  - Docker and Linux tc：simulated network environment
- Test Repository
  - https://github.com/zhangjiaxingict/sconepro-rtc
  - https://github.com/zhangjiaxingict/sconepro-xquic

Sconepro-RTC Implementation



Feedback and Flow Control

- Feedback
  - Capacity: bandwidth capacity of AP
  - QLen: queue length of AP
- Flow Control

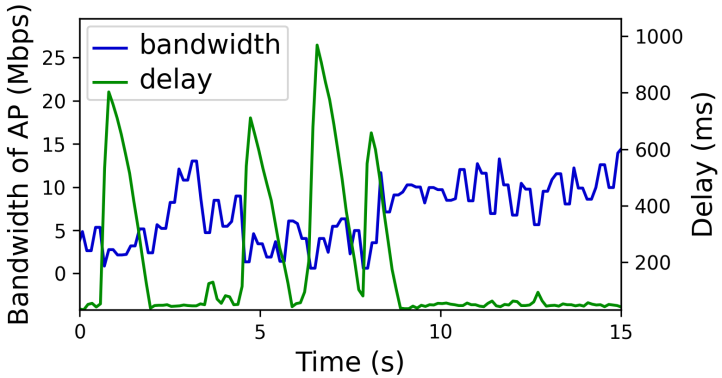
$$\text{SndRate} = \text{Capacity} \times 0.9 - \frac{QLen}{T_e}$$

T_e: empty time

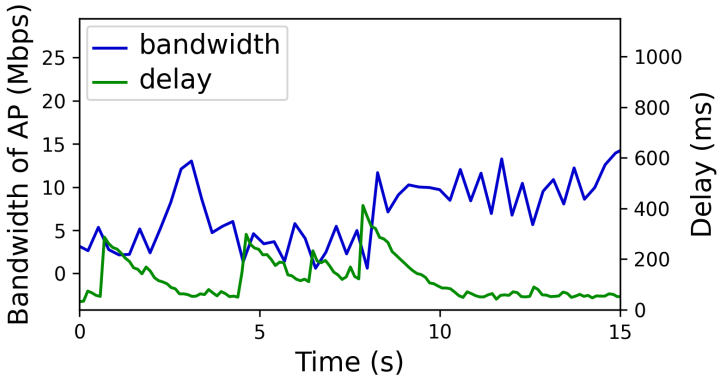
$$\text{BitRate} = \text{SndRate} - \frac{Queue(sender)}{T_e}$$

Results

Latency-aware Flow Control(COPA)



RTC with sconepro



Frame Latency	mean/ms	P90/ms	P99/ms
COPA	131.6	402.0	815.0
RTC with sconepro	72.4	120.5	248.0

Team members

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Thank You