Integration of RTMFP in the OMNeT++ Simulation Environment

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Outline

- introduction to RTMFP and its key features
- OMNeT++/INET model and its architecture
- validation
- ongoing work

Overview

- Real Time Media Flow Protocol
- developed by Adobe Systems
- integrated in Adobe Flash since 10/2008
- used for P2P Audio-Video-Communication
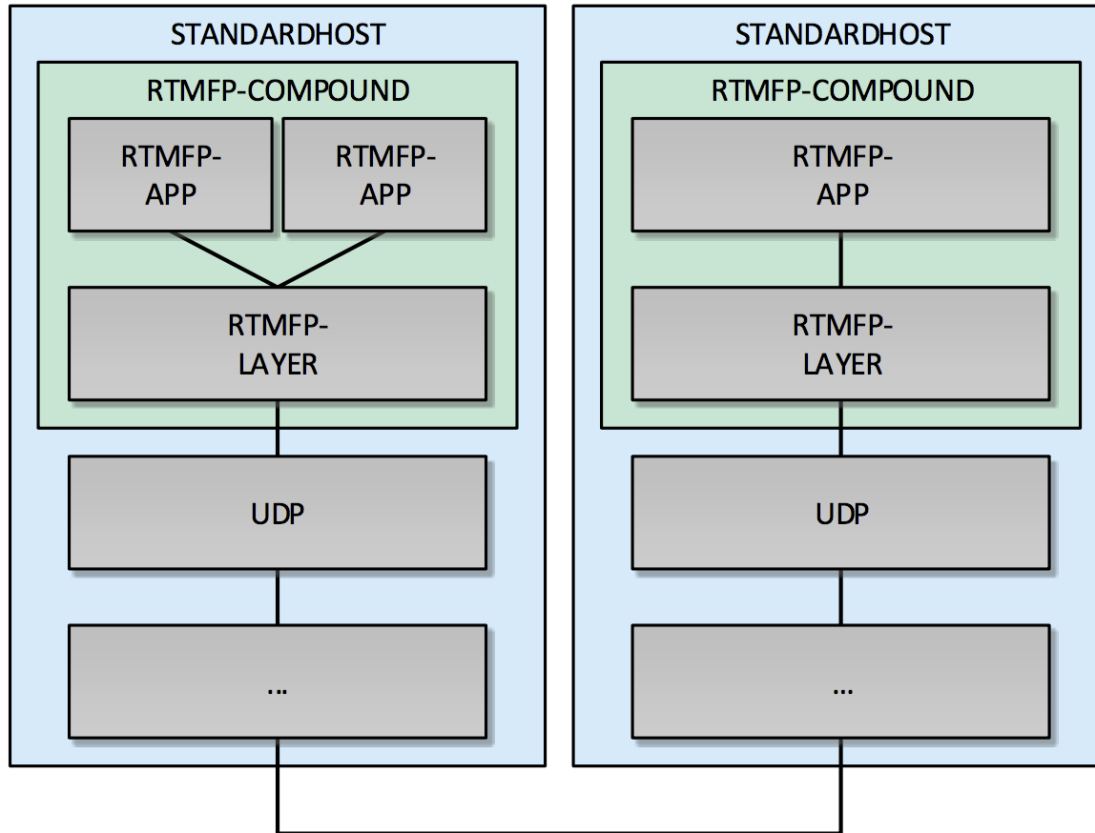- RFC 7016 (11/2013) and RFC 7425 (12/2014)

Key features

- message orientation
- encryption
- 4-way-handshake
- NAT-traversal
- multiplexing (sessions and flows)
- IP mobility
- tcp friendly congestion control (per session)
- flow control (per flow)

Sessions and Flows
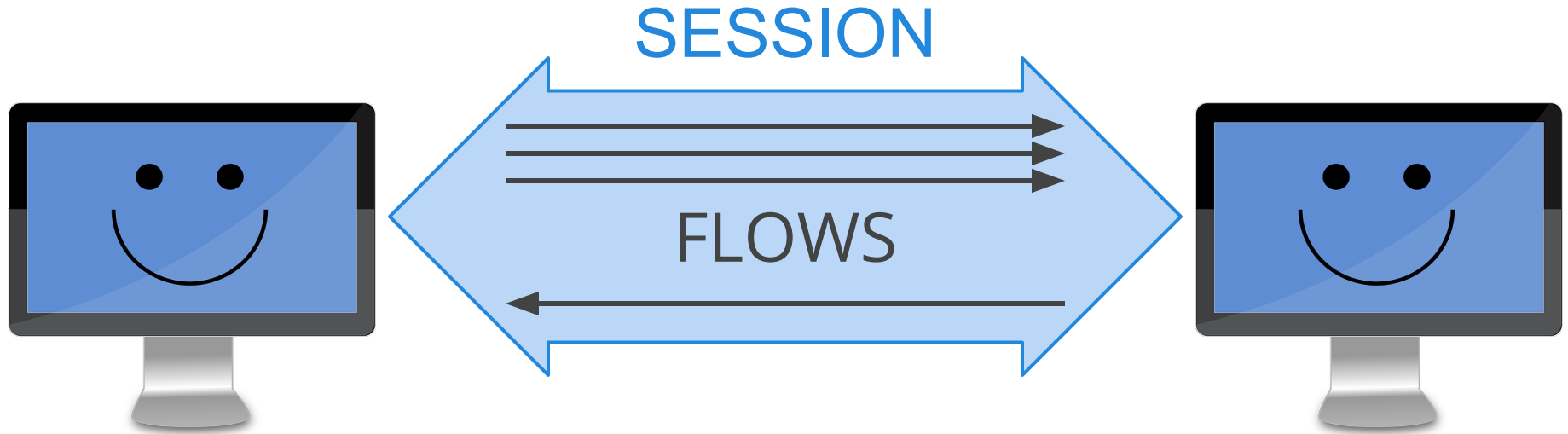
flow prioritization: audio over video over data

Model architecture

Realized features

realized

not realized (so far)

- 4-way-handshake
- flow control
- congestion control
- multiplexing
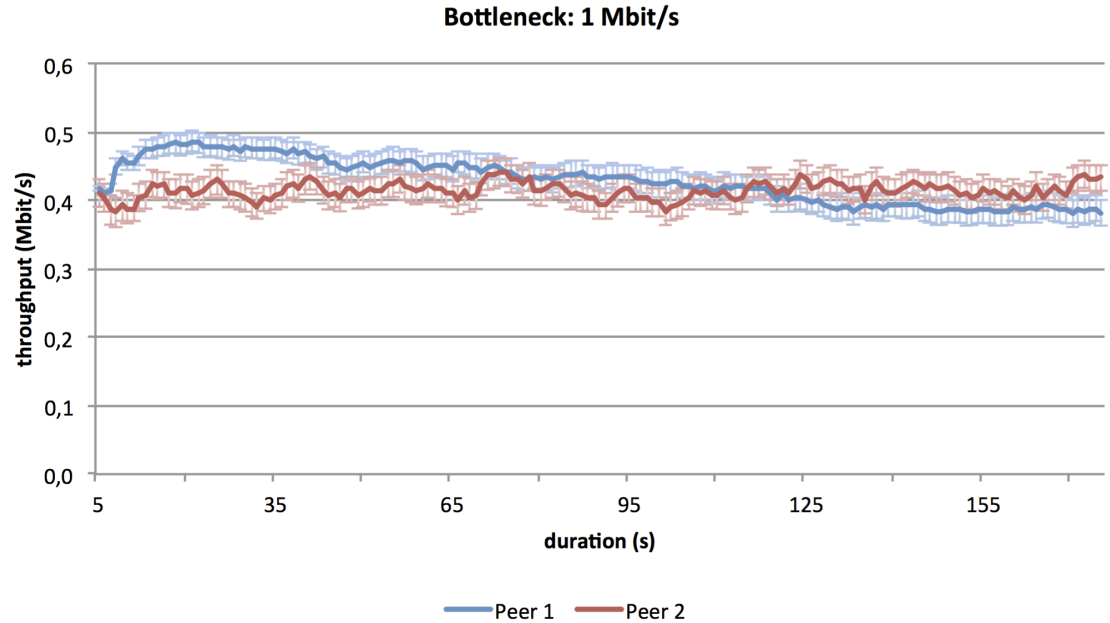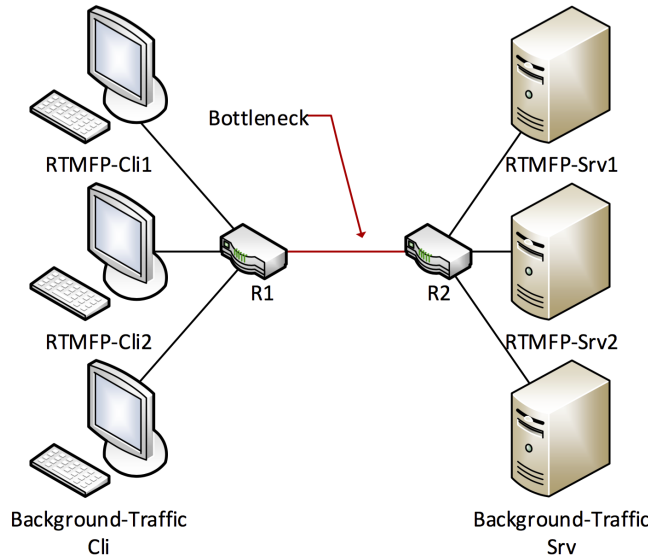- bundling

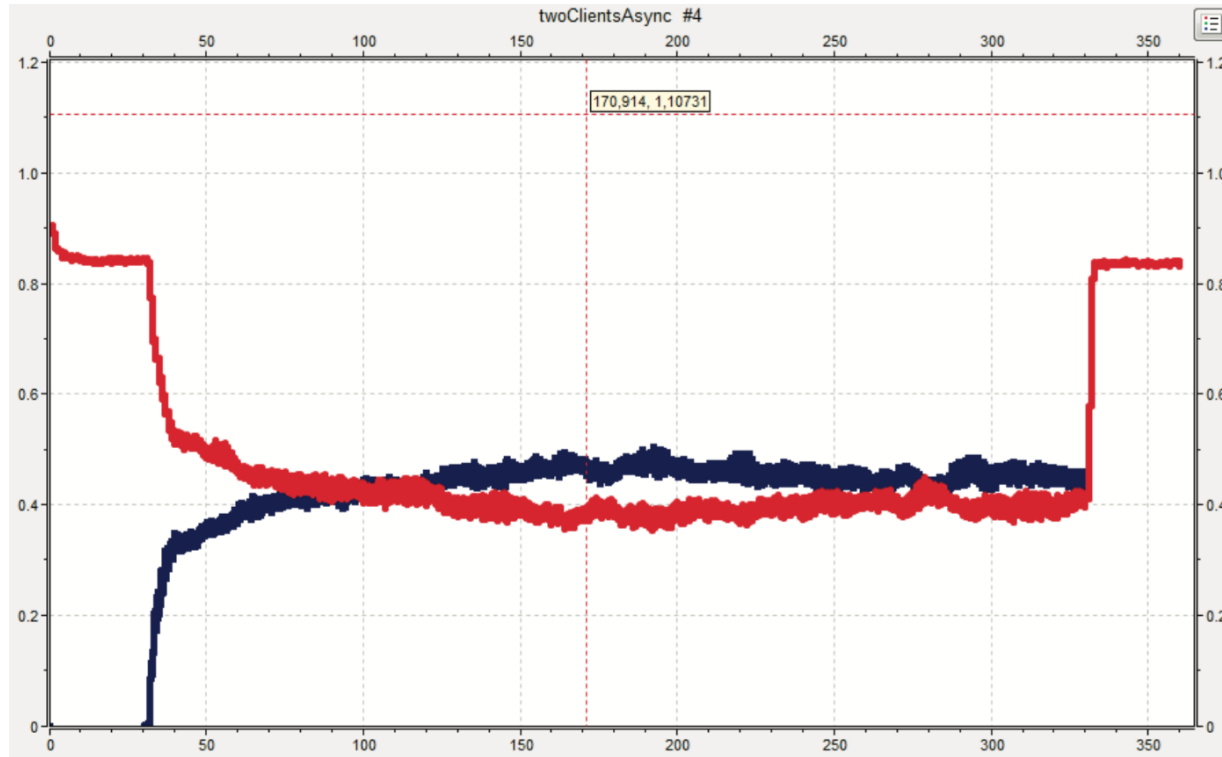- encryption
- NAT traversal
- IP mobility

Model validation

- only commercial implementations available
- bandwidth-delay product
- packet loss
- fairness to other RTMFP flows
- fairness to SCTP flows

Model validation

Model validation

RTMFP flow vs SCTP (TCP friendly) flow

Ongoing and future work

- compare RTMFP with WebRTC
- focus on congestion-controls
- build generic traffic generators

Conclusion

- major features realized
- congestion control is TCP friendly
- still some work and research to do
- sources will be published on GitHub

Thank you for your attention!