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)
flow prioritization: audio over video over data
Model architecture
Realized features

realized

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

not realized (so far)

- 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

Bottleneck: 1 Mbit/s

Throughput (Mbit/s)

Duration (s)

Peer 1  Peer 2
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!