A MULTIPATH EXTENSION TO THE QUIC MODULE IN NS-3

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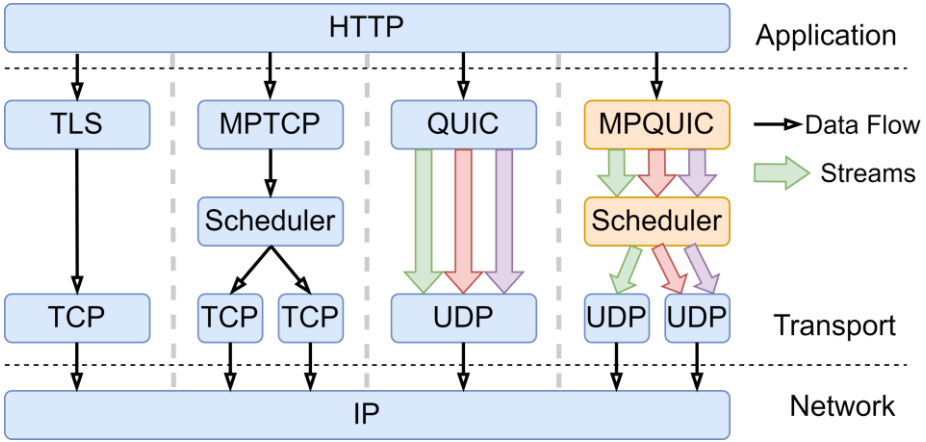
CURRENT PROBLEMS & MOTIVATION



MPTCP:

- Throughput Aggregation
- Congestion Shift

Issues:

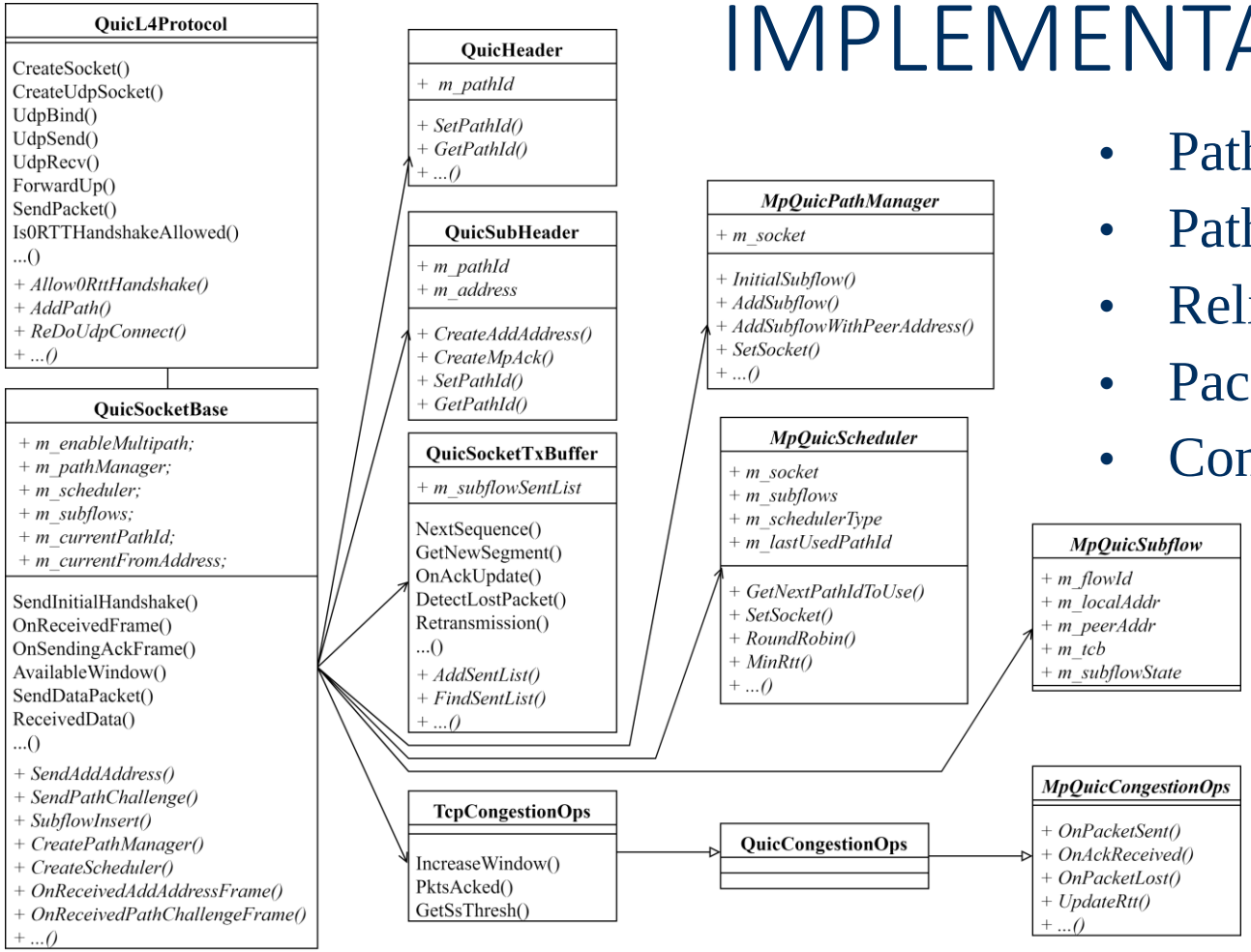
- Connection Breakage
- Head-of-Line Blocking
- …

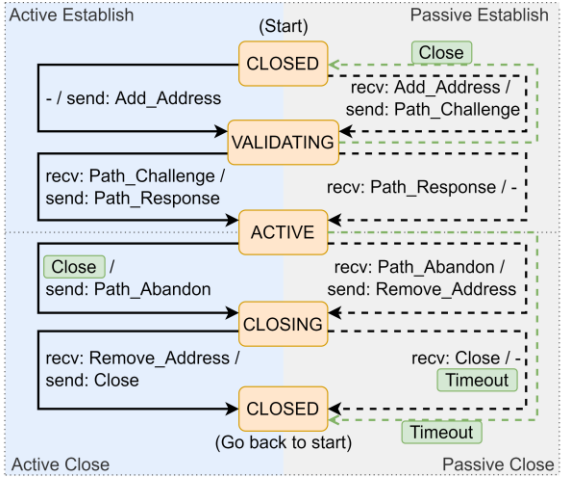
QUIC:

- 0-RTT Handshake
- Stream Multiplexing
- Frame Structure

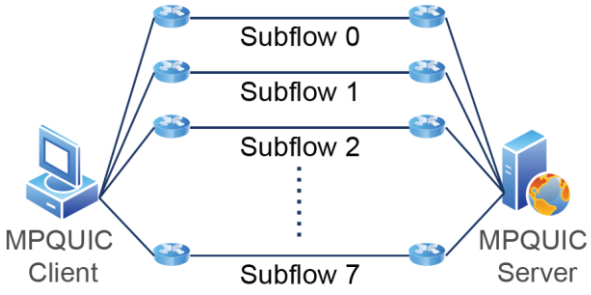
IMPLEMENTATION

- Path Identification
- Path Management
- Reliable Data Transmission
- Packet Scheduling
- Congestion Control

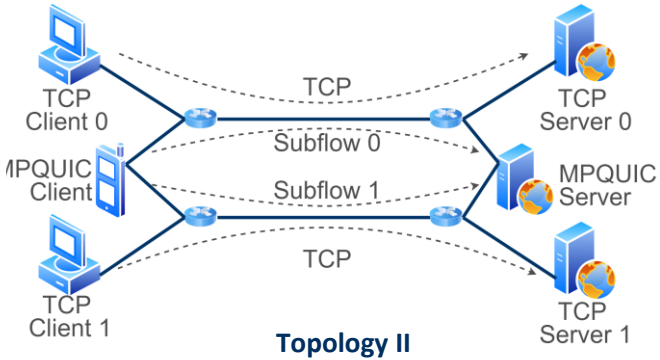




RESULTS



Topology I



Topology II

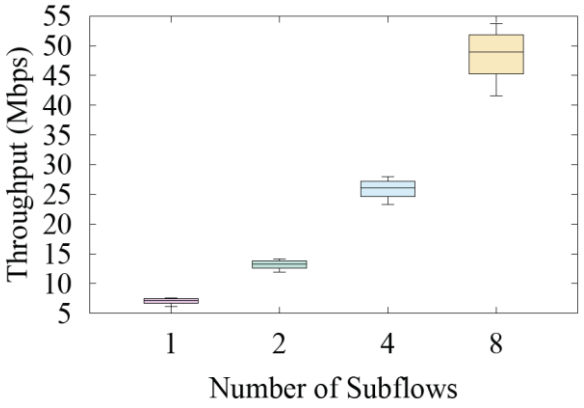


Fig. 1

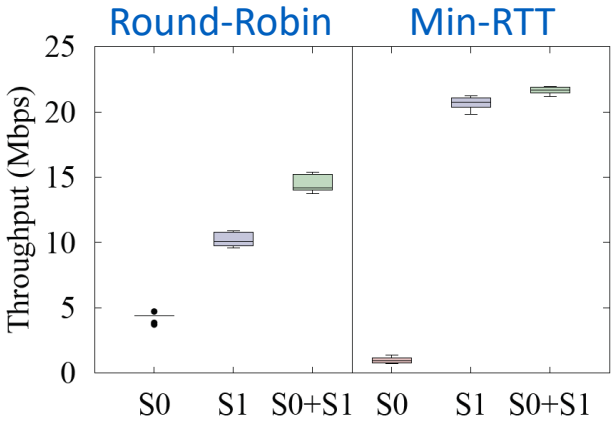


Fig. 2

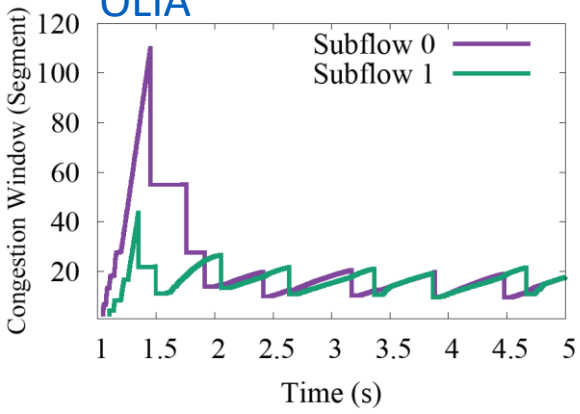


Fig. 3

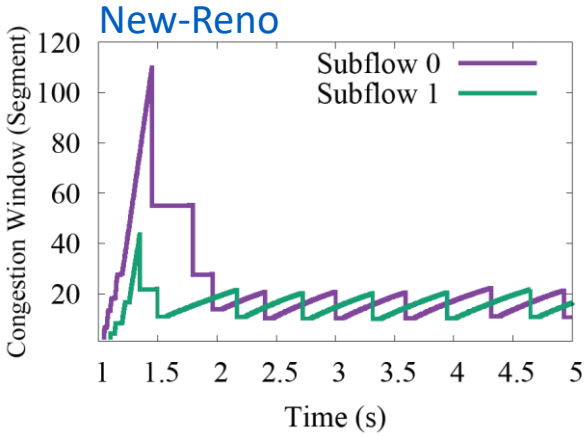


Fig. 4

CONCLUSION & FUTURE IMPROVEMENT

- Presented an ns-3 implementation of MPQUIC
- Overcome the challenges of advertising multiple addresses, separating transmission paths, and extending the structure of algorithms
- Verify the correctness, scalability, flexibility, extensibility

- Implement the currently missing features and keep updating in the future
- Explore better scheduling and congestion control algorithms

THANK YOU FOR LISTENING!
& ANY QUESTIONS?