Performance Gain with SYN Duplication in MPTCP

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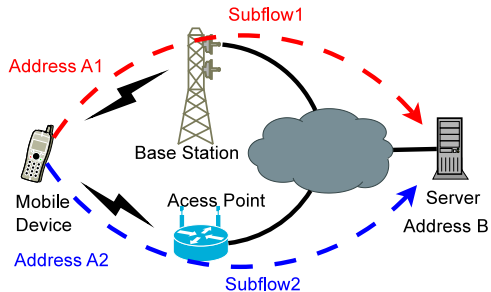IETF 98, 30 March 2017, Chicago, USA

Outline

Introduction
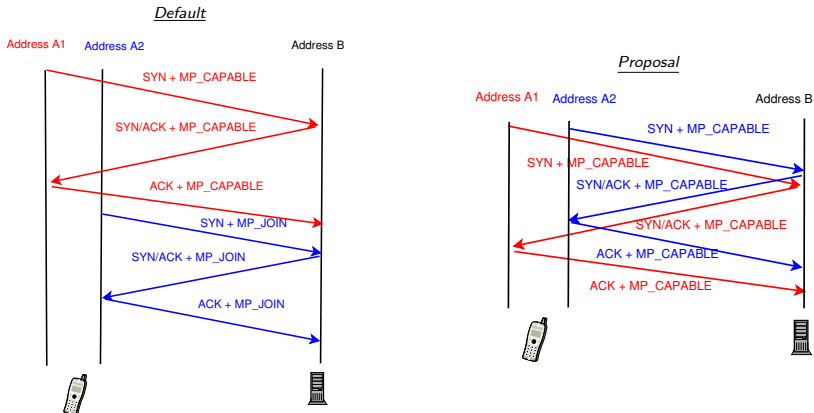
Evaluation

Conclusion

MPTCP Initialization

Example use case: MPTCP on mobile device

- MPTCP performance is affected by the selection of initialization path
- We propose to duplicate SYN for improving the default MPTCP initialization

Our proposal vs. Default

- *Default:* Sequential initializations (sending the first SYN through a default gateway)
- *Proposal:* Concurrent initializations (relaxing the dependence on the default gateway)
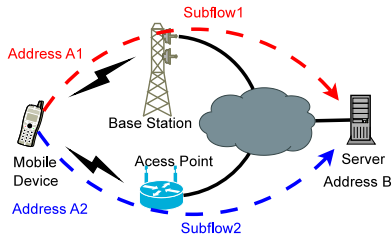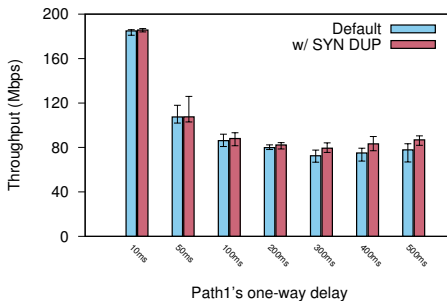
Evaluation

Table : Path parameters

|	Delay(ms)	Jitter(ms)	Bandwidth(Mbps)
Path1	10, 50, 100, 200, 300, 400, 500	10% Delay	100
Path2	10	1	100

- Implementing the proposal on Linux kernel v4.1.26 with MPTCP v0.91
- Comparing MPTCP in two scenarios: *uplink* and *downlink* (the default gateway on path1)
  - *Uplink*: 10 second-iperf
  - *Downlink*: download a file from server

Uplink Scenario

- (Considerably) long/average flows
- Enhancing throughput with the SYN duplication

Downlink Scenario
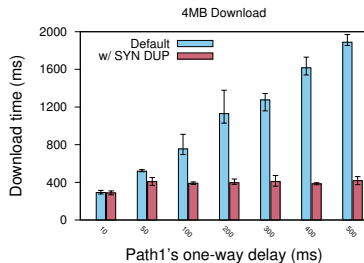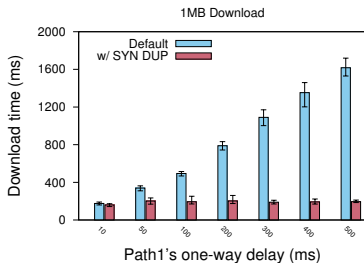
- Short flows
- Significant reduction of download time

Conclusion

- We introduce the proposal of duplicating the first SYN in the MPTCP's initialization phase

- We implement and evaluate the proposal in a comparison to the default MPTCP

- The evaluation results show that the performance gain in both the uplink and downlink scenarios

Thank You!

Questions & Comments?

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