A proposal for improving MPTCP initialization

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Outline

Introduction

Benefits of proposal

Realizing the proposal

Conclusion
Our proposal

- **Duplicate control packets** to improve the MPTCP initialization
- Expect **more reliable and faster** initialization
Current Initialization (i.e., Default)

- Limitation in the selection of initialization path
- Have been proofed by theoretical analysis\(^1\) and measurement\(^2\)
- **Duplication:** a potential method for improvement


In a normal case (i.e., without loss)

**Default:**
- Sequencing initializations (e.g., subflow1 then subflow2)

**Proposal:**
- Concurrent initializations, hence shortening MPTCP initialization time
In a case of loss SYN or SYN/ACK

- **Default**: waiting for TCP_SYN_RETRIES and TCP_SYNACK_RETRIES for retries of sending SYN or SYN/ACK
- **Proposal**: data transmission starts after the first successful subflow initialization
Modifying sending process

- A subflow can be uniquely determined by $(IP_{src}, IP_{dst}, Port_{src}, Port_{dst})$

- Two SYN packets, which share $(IP_{dst}, Port_{src}, Port_{dst})$, belong to a MPTCP connection

- A sender needs to be equipped the ability of sending the two SYNs
Conclusion

- We propose an enhancement of the MPTCP’s initialization by duplicating SYNs via different paths.

- The proposal potentially improves resilience and shortens initialization time.

- The proposal requires a modification in the sending processes.
Thank You & Questions?

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