Multipath TCP Robust Session Establishment (RobE) Request for WG Adoption

draft-amend-tcpm-mptcp-robe

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Value of this draft for MPTCP/MPQUIC/MP-DCCP

- The optimizations in this draft are used to solve the problem of connection setup failure that is essentially caused by establishing a connection only on “default path” with unknown path status.
- This problem is a real problem and has been occurring during multipath protocol deployment and implementation.
- Even if the current document has a focus on MPTCP, it could be expanded towards (MP-)QUIC and MP-DCCP support which have similar initial path requirements.

Definition for Robust Session Establishment

1. MPTCP RobE [draft-amend-tcpm-mptcp-robe]* is a set of extensions to regular MPTCP [RFC6824] and MPTCP v1 [RFC8684]. It is designed to provide a more Robust Establishment (RobE) of MPTCP sessions.

2. RobE includes RobE_TIMER, RobE_SIM, RobE_eSIM and RobE_IPS. It also presents the design and protocol procedure for the combination scenario in addition to these stand-alone solutions, i.e. the combination of RobE_SIM and RobE_IPS, the combination of RobE_TIMER and RobE_IPS.

*originating from MPTCP WG. History at https://datatracker.ietf.org/doc/draft-amend-mptcp-robe/

Short Solution Recap

Regular MPTCP ☹

If the initial flow cannot be established, there is no connectivity!

RobE_SIM

Uses all path simultaneously.

RobE_TIMER

Uses SYN retransmission timer to try subsequent path.

RobE_IPS

Derives path quality from measurements and select promising path accordingly.

Status Recap-01

- Status updates since IETF 110
  - Negotiating with TCPM chairs the possibility for getting rid of IPR blocking issue towards adoption of MPTCP RobE
  - Criteria 1/ is something the authors can work on by talking to the other people who need the publication of the RFC and want an RFC. For instance, **a TCPM presentation from a network operator other than Deutsche Telekom** with test results of the suggested mechanisms would be interesting input to the TCPM working group. Alternatively, running code from a vendor not owning IPR would also proof that the IPR conditions are not a real-world problem. Deployment in major open source operating systems would also be very useful - specifically if included in the main tree. Support can also be stated off-list to the chairs if needed.
- ietf-110: draft-amend-mptcp-robe-01 was submitted and classifying license issue
- ietf-109: IPR Disclosures Concern → Updated IPR Disclosures with license, Request WG Adoption
  - https://datatracker.ietf.org/ipr/4312/
  - https://datatracker.ietf.org/ipr/4423/

Status Recap-02

- draft-amend-tcpm-mptcp-robe-00 was submitted and implementation demo was presented in ietf-108

  https://tools.ietf.org/html/draft-amend-tcpm-mptcp-robe-00
  https://github.com/markusa/ietf107hackathon-mptcp-robe/tree/master/testbed_results_july_2020

- “Evaluate MPTCP RobE at IETF107 hackathon” has been published (but ietf-107 hackathon was cancelled in COVID-19 times)

  https://tools.ietf.org/html/draft-amend-mptcp-robe
  https://trac.ietf.org/trac/ietf/meeting/wiki/107hackathon/mptcp-robe/testbed
  https://tools.ietf.org/html/rfc6824
  https://tools.ietf.org/html/draft-ietf-mptcp-rfc6824bis
  https://github.com/multipath-tcp/mptcp

- draft-amend-mptcp-robe-00 was submitted and presented in ietf-106

  https://www.ietf.org/proceedings/106/slides/slides-106-mptcp-multipath-tcp-extension-for-robust-session-establishment-00

Next Steps

- WG Adoption ?
- Next iteration of the draft document