

MPTCP proxy for mobile networks

multi-homing in 3GPP networks

- Motivation
 - Intelligent network selection for better accommodation
 - Seamless network handover for better mobility
 - Resource pooling across networks for better performance
- Roadmap
 - R6: GAN, interfaces for non-3GPP RATs through GERAN simulation.
 - R7: I-WLAN, interworking of PLMN with WLAN RAT.
 - R8: shared anchor for both I-WLAN and PS RATs, yielding seamless handover.
 - R8-10: EPS's mobility support for simultaneous multiple RATs through different PDN connections (MAPCON)
 - R10: EPS's mobility support for simultaneous multiple RATs through a single PDN connection (IFOM)
- What is still missing
 - Pooling resources from different RATs for the use of a single IP flow.

Where does MPTCP fit in?

- MPTCP offers
 - transparent wireless resource pooling for a single "IP flow" for multi-homing UEs with least network complications
 - automatic selection/handover/pooling
- E2E MPTCP deprives
 - network's control over service/RAT preference
 - compatibility with legacy SPs reluctant to support MPTCP
- MPTCP proxy as a compromise
 - benefit multihoming UEs without SP's MPTCP deployment
 - maintain operator's policy enforcement point

Usecases

- Enhanced experience
 - in addition to static policies
 - flexible traffic loading base on network status
 - resource pooling for enhanced QoE/mobility
- Reduced expenses
 - aided by subscription/charging information
 - guide the consumption of compound bandwidth package in a more economic way
 - resource pooling for reduced expense for user/operator

Requirements for MPTCP proxy

- Protocol transition
 - Detection of UE's MPTCP capability
 - Negotiation with MPTCP UE on behalf of non-MPTCP SP
 - Transcoding between TCP and MPTCP connections
- Traffic mediation
 - Anchoring of subflow traffic
 - sitting directly on the shared path of or
 - have explicit anchoring over MPTCP subflows
 - Mediation of subflow traffic
 - policy driven mediation
 - management driven mediation