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
Use cases

• 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