



Considerations for MPTCP operation in 5G
draft-purkayastha-mptcp-considerations-for-nextgen-00

<https://www.ietf.org/id/draft-purkayastha-mptcp-considerations-for-nextgen-00.txt>

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Background

- MPTCP is currently deployed in devices which have multiple interfaces to different networks
- MPTCP takes advantage of these multiple interfaces to improve user experience by
 - Bandwidth aggregation, redundancy, and increased reliability by having a fallback option
- MPTCP assumes that a given interface (e.g. WiFi, Cellular) on a device is associated to only one IP address

Mobility management protocol

- “Mobility management” enables session continuity as the IP address of a mobile node changes as it moves around a cellular network
- Classic network-layer mobility protocols (e.g., Mobile IP) employ a centralized mobility anchor in the Core Network
- 3GPP has, however, adopted a distributed approach for 5G
 - Mobility anchor is pushed towards the edge of the network

Mobility Handling in 5G

- Design goal: Traffic for a given device should avoid traversing a single mobility anchor, far from the optimal route
- Mobility anchors are thus distributed and pushed towards the edge
 - Positioned closer to the user
 - Mobility management function could be collocated with the first-hop router

Mobility Handling in 5G

- A PDU (Packet Data Unit) session for a device:
 - May be associated with multiple flows with more than one IPv6 prefix
 - Access to multiple Data Networks is provided via more than one PDU (IPv6) anchor
- Multiple IPv6 flows from a single device meet at a "common" UPF (User Plane Function) a.k.a "Branching Point"
- The Branching Point (BP)
 - Forwards uplink traffic towards different PDU anchors
 - Merges downlink traffic to a given mobile device

5G Considerations for MPTCP

- MPTCP operation may need to consider the possibility of multiple IP addresses assignment on the same interface for a given device
- Currently, MPTCP interprets multiple IP addresses as separate distinct network interfaces
 - This may lead to not realizing fully the benefit of MPTCP applications such as bandwidth aggregation, redundancy, and reliability in 5G systems

Next steps

- Any feedback from WG on the issue highlighted?
- Gauge interest in working to preserve MPTCP efficiency while deployed on 5G network