Satellite / Terrestrial Multipath Communication

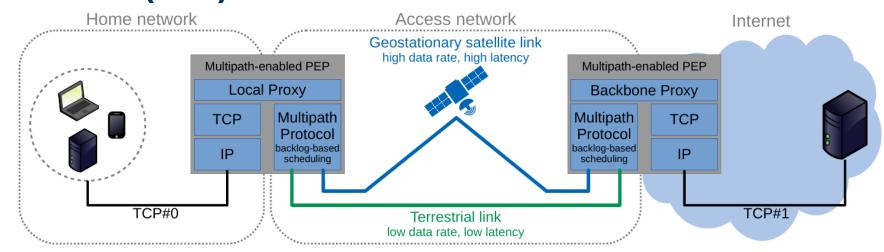




Motivation

- compensate high latency of geostationary satellite links
- vice versa: boost data rate of slow terrestrial links
- especially for (rural) areas with poor Internet connectivity

Current (TCP) architecture



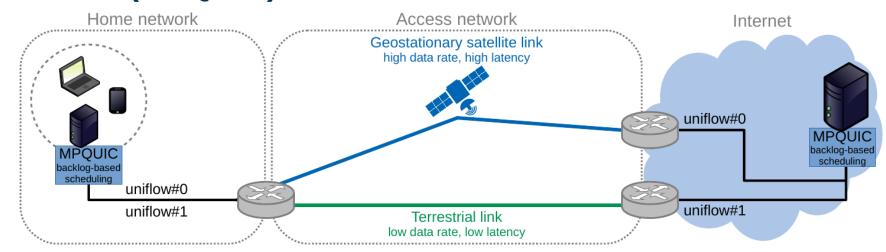
connection setup / reguests \rightarrow terrestrial link, large chunks of data \rightarrow satellite link, small data \rightarrow terrestrial link, etc.

Satellite / Terrestrial Multipath Communication





- QUIC → no PEPs → end-to-end multipath → MPQUIC
 - frequently switching among heterogeneous paths realizable with connection migration?
 - implementation and performance tests work in progress
- Future (MPQUIC) architecture without PEPs?



Satellite / Terrestrial Multipath Communication





- Variety of Internet access links a motivation for multipath?
 - DOCSIS, DSL, cellular, satellite (LEO, MEO, GEO), ...

More information

[1] Deutschmann J., Hielscher KS.J., German R. (2020)

An ns-3 Model for Multipath Communication with Terrestrial and Satellite Links https://doi.org/10.1007/978-3-030-43024-5_5 https://www7content.cs.fau.de/~deutschmann/2020_MMB_SatTerMultipath_paper.pdf

draft-deutschmann-sat-ter-multipath-00

Supported by:



on the basis of a decision by the German Bundestag

Appendix





Performance results with current (TCP) architecture

Linux-based prototype implementation (preliminary!)
 Browsertime v10.1.0

Alexa Top 50 DE Websites (20 iterations)

