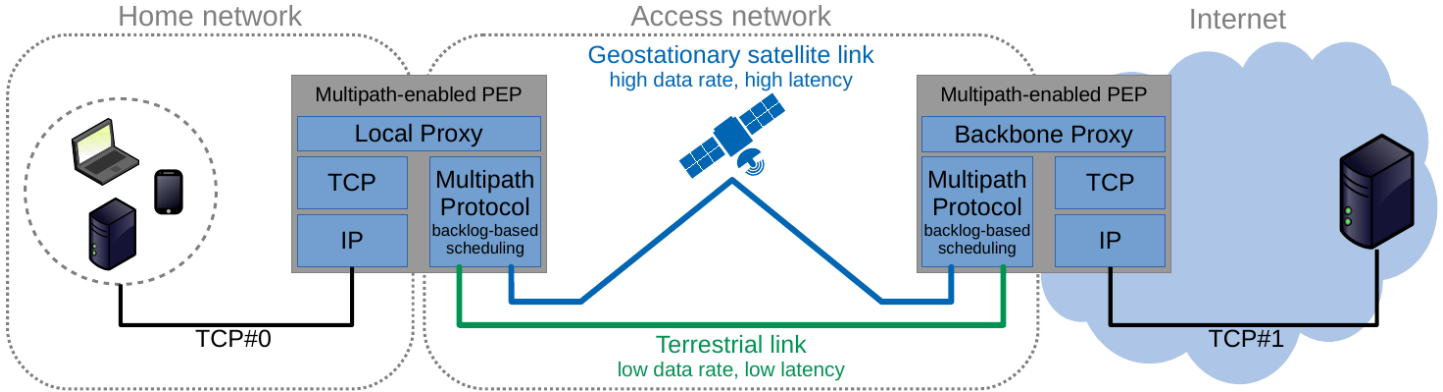
Satellite / Terrestrial Multipath Communication

- **Motivation**
  - combine two sub-optimal access links to provide a good one
    - 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**



  - scheduling: switch frequently among heterogeneous links
    - connection setup / requests → terrestrial link; large chunks of data → satellite link; small data → terrestrial link, etc.
    - requires availability and knowledge of both paths at the same time

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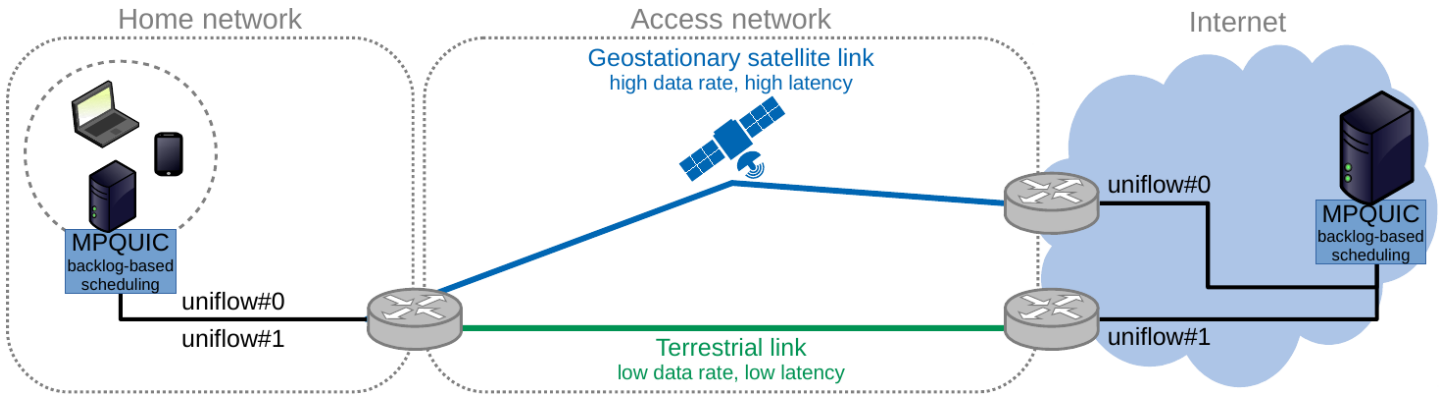
- **QUIC → no PEPs → end-to-end multipath → MPQUIC**
  - good (single-path) QUIC performance over satellite link
  - fine-grained scheduling and frequently switching among heterogeneous paths realizable with connection migration?
  - quick (0-RTT) connection setup for both links?
  - implementation and performance tests work in progress
- **Future (MPQUIC) architecture without PEPs?**



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- **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

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- **Performance results with current (TCP) architecture**
  - Linux-based prototype implementation (preliminary!)
    Browsertime v10.1.0