Multipath Steering Modes in 3GPP ATSSS

“3GPP Access Traffic Steering Switching and Splitting (ATSSS)”

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Disclaimers and References

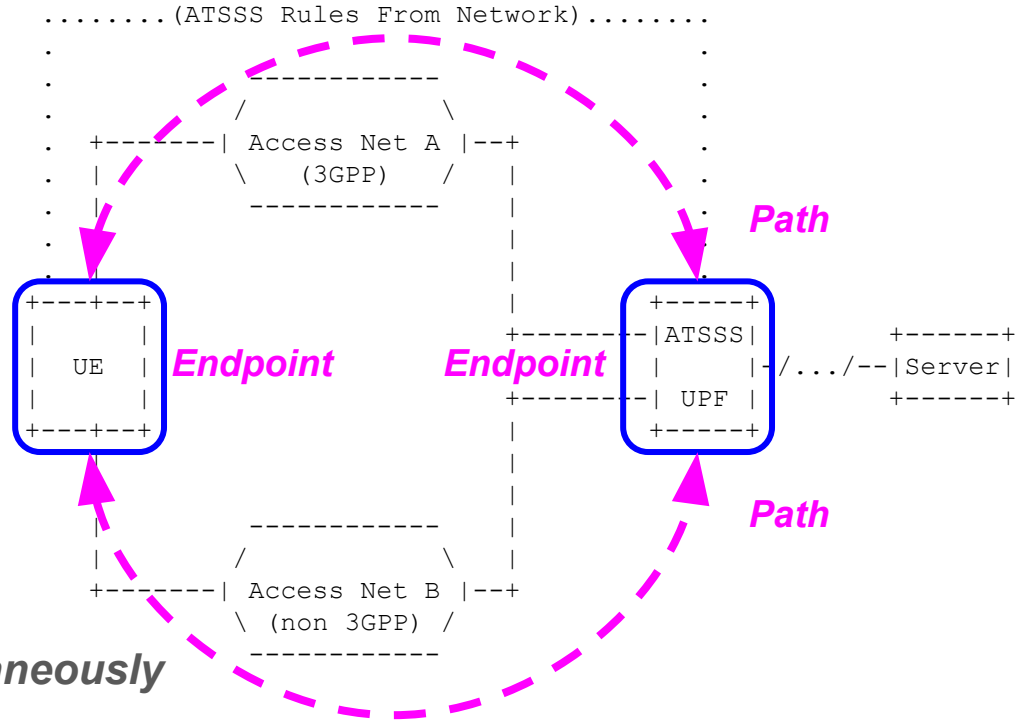
This presentation is only on ATSSS steering modes
ATSSS, 5G, and 3GPP are a LOT bigger than what I'm talking about now.

*This presentation is **my** understanding, wearing no 3GPP or IETF hats*

ATSSS Phase One is documented here
ATSSS Phase Two Study is documented here
ATSSS Overview for IETF Participants is documented here
I gave a presentation at IETF 108 based on that Overview, available here

3GPP reference model in IETF terminology

- *ATSSS uses only two paths*
  - *“One 3GPP, one non-3GPP”*
  - *E.g. Cellular + WiFi/wireline*
- *Network provides ATSSS rules*
  - *Modes assigned “per flow”*
- *“Steering”*
  - *Selecting a path*
- *“Switching”*
  - *Selecting a different path*
- *“Splitting”*
  - *Using multiple paths **simultaneously***



ATSSS Phase 1 steering modes in Release 16

- "Active-Standby" *(could work in QUICv1 using migration)*
  - Forward traffic via “active access” when available, switching to “standby”
- "Smallest Delay" *(could work in QUICv1 using migration)*
  - Forward traffic on access with the smallest RTT measured by UE/UPF
- "Load-Balancing" *(multipath QUIC required to enable traffic splitting)*
  - Forward traffic distributed among available access networks (“30%/70%”)
- "Priority-based" *(could work in QUICv1 using migration)*
  - Assign priorities to accesses
  - Forward traffic on “high priority” path until congestion is encountered
  - *(multipath QUIC required to enable traffic splitting across accesses)*

ATSSS Phase 2 steering all require multipath QUIC

- "Autonomous"/"advanced PMF"*(QUICv1 uses one path at a time)*
  - Allow UE and UPF to change access splitting weights dynamically
  - "Advanced PMF" adds measurement for per-QoS RTT, loss ratio, jitter
- "Redundant" *(QUICv1 uses one path at a time)*
  - Adds capability to forward on both accesses only when necessary
- "RTT Difference" *(QUICv1 uses one path at a time)*
  - Allow use of both accesses if RTT difference is below a threshold
- "UE-assisted" *(QUICv1 uses one path at a time)*
  - UE makes decisions about uplink access on its own
  - Reasons to choose an access include battery, energy consumption, etc.

Questions and Comments?