IETF 93 – MPTCP WG

KT's GiGA LTE

- Commercial Mobile MPTCP Proxy service launch
- Collaboration with handset manufacturers

SungHoon Seo (sh.seo@kt.com)

Infra. Laboratory, Institute of Convergence Technology

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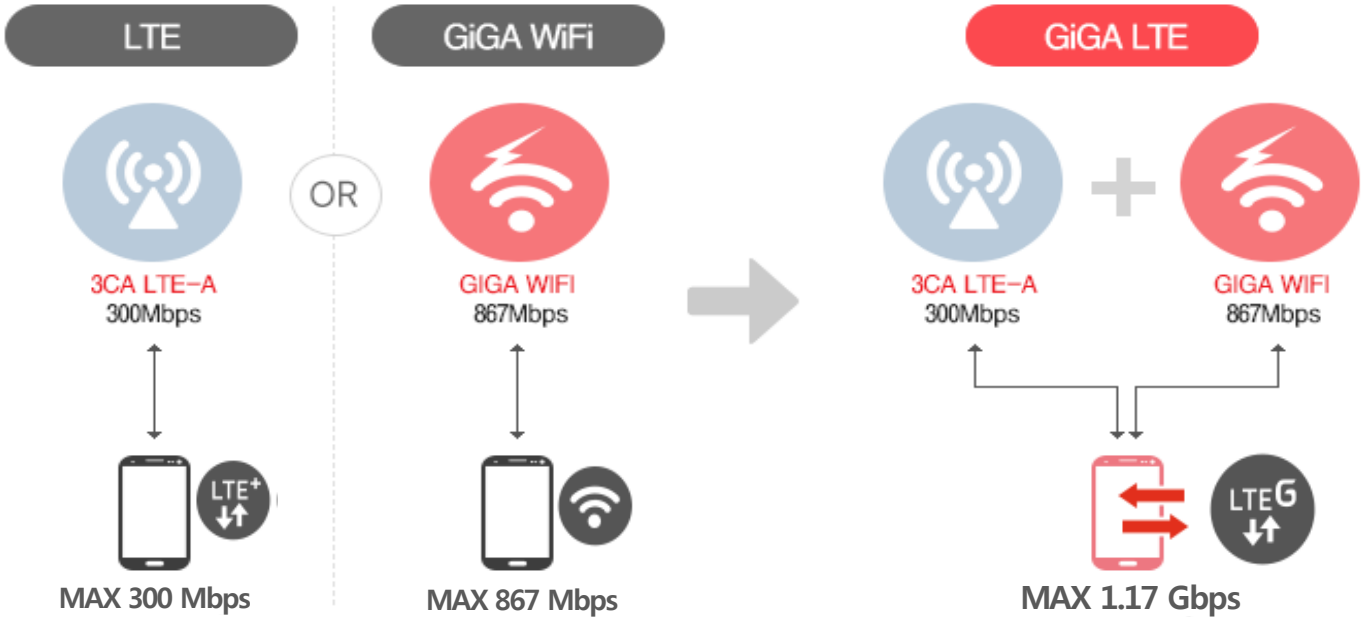
01 Updates

KT started launching mobile MPTCP proxy service in commercial since June 2015
It's world 1st commercialization!

- **GiGA LTE (a.k.a., GiGA Path, mobile MPTCP proxy)**
  - Premium service providing the fastest mobile data speed (theoretically LTE + WiFi combined giga bps)
  - Deploy mobile MPTCP proxy GWs w/ UE support (national-wide LTE/3G and public/private WiFi coverage)
  - Collaboration with handset manufacturers (Samsung Electronics, etc) – now Galaxy S6/S6 Edge works



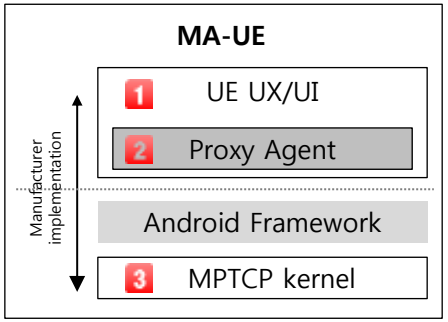
※ Theoretical maximum speed. Practical combined throughput in the real field may vary according to network conditions.

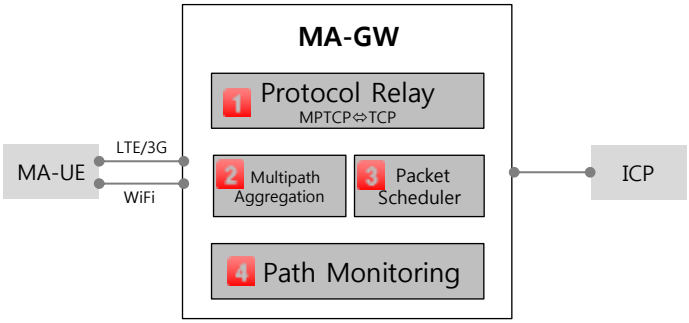
02 Deployment status

Both mobile MPTCP proxy gateway and UE are ready to work for every applications

- **Protocol and basic functionalities**
  - GW (x86) and UE (android) are ported MPTCP kernel v0.89 from multipath-tcp.org
    - 2 subflows maintained per session : LTE for MP_CAPABLE and WiFi for MP_JOIN
    - Default packet scheduler with fullmesh path manager, mptcp_checksum=off
    - Well known proxy protocol basis : SOCKSv5
    - UE's traffic redirected to the GW (both up/downlink, and UDP as well)
  - Turns on "GiGA LTE" button on UE, that's all subscribers to do
    - All application using TCP works via mobile MPTCP proxy
    - Subscriber should have enough billing plan required for GiGA LTE service

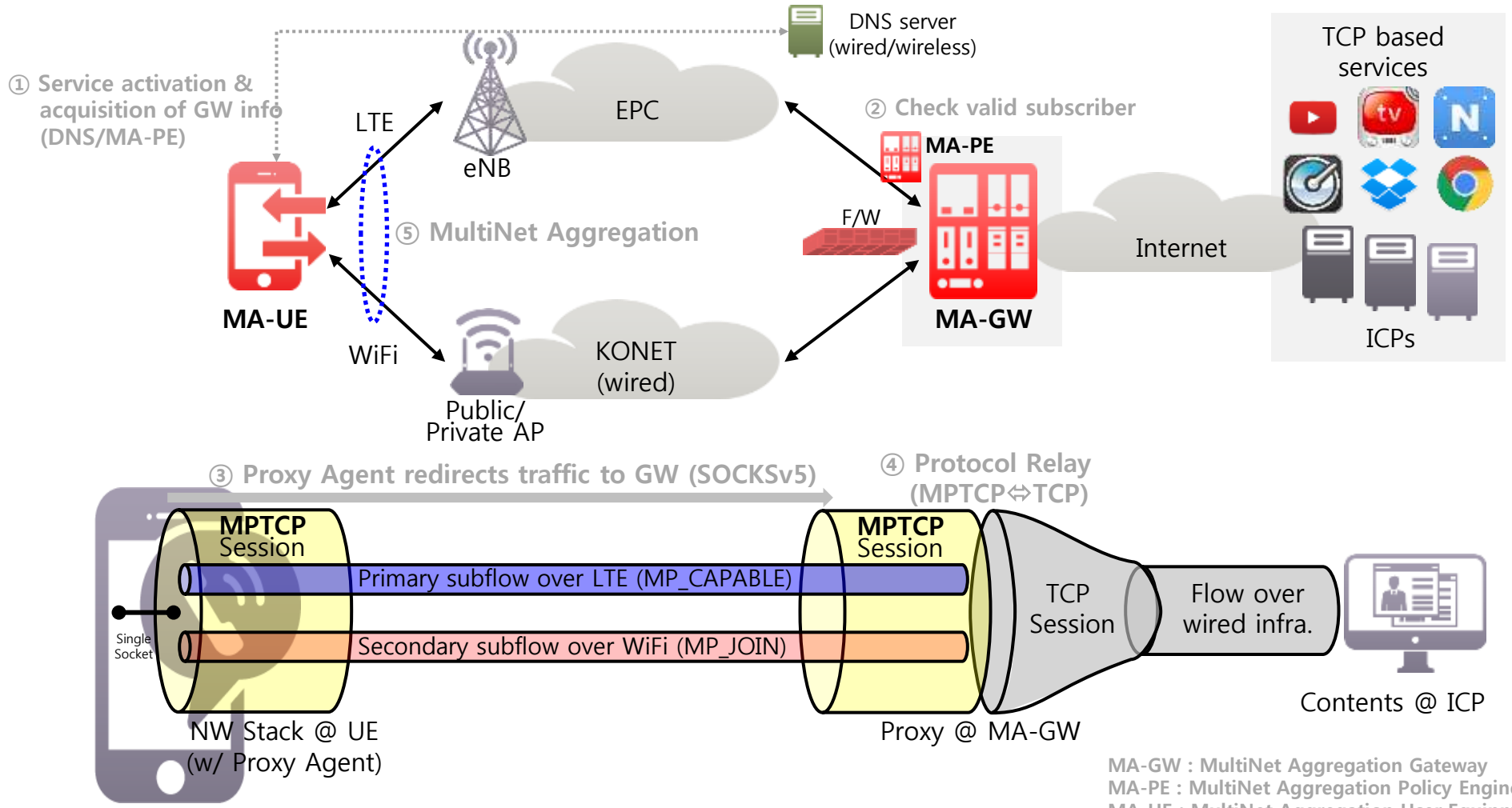
MA-UE (mobile MPTCP handset)	MA-GW (mobile MPTCP proxy gateway)
(1) UE UX/UI : service scenario, on/off GUI (2) Proxy Agent : traffic redirection to MA-GW (3) MPTCP kernel : support MPTCP/IP networking stack	(1) Protocol Relay : MPTCP-to-TCP session relayed forwarding (2) Multipath Aggregation : MPTCP based multi-net support (3) Packet Scheduler : schedule per-DS level pkt according to nw env (4) Path Monitoring : detect and bypass when WiFi path going down





03 Mobile MPTCP Proxy System Deployment

How GiGA LTE works? Explicit proxy deployment model



MA-GW : MultiNet Aggregation Gateway
MA-PE : MultiNet Aggregation Policy Engine
MA-UE : MultiNet Aggregation User Equipment
ICP : Internet Content Provider

04 Future Works

- Possible IETF work
  1. Contribute implementation and experience on mobile MPTCP proxy topic
- Enhancement of MA-GW features
  1. Roaming support (for outbound and/or inbound roaming users)
  2. Packet scheduling with fine-grained bandwidth throttling
  3. MPTCP aware Load balancer
  4. IPv4/IPv6 dual-stack

Thank you