IETF104 Hackathon Project SRv6 Mobile User Plane
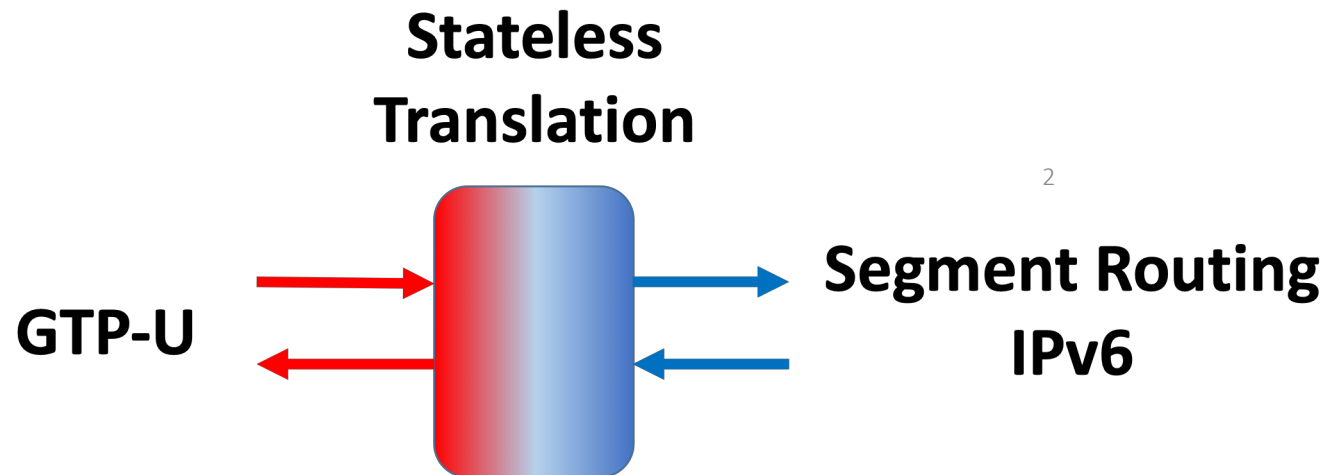
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Hackathon Plan

- Implements the key SRv6 functions defined by "I-D.ietf-dmm-srv6-mobile-uplane"
  - Target Platform: VPP (VPP or eBPF) + P4 (NEW)
  - Target Functions: TBD
  - Try to hack the missing features already known.

Stateless Translation

2

GTP-U → | | → **Segment Routing IPv6**

What got done

- A new VPP plugin from scratch for "SRv6 -> GTP-U"
  - Existing code has been modified for "GTP-U -> SRv6".
- Two target functions are implemented in P4.

Target Function	Description
End.MAP	Forwards the receiving IPv6 packet and update the IPv6 DA with mapped SID.
End.M.GTP6.D	Decap the receiving GTP/UDP/**IPv6** packet and encap with IPv6 header, or IPv6 header with SRH based on the address/ID mapping rule and binding SR-Policy
End.M.GTP6.E	Decap the receiving IPv6+SRH packet and encap with **IPv6**/UDP/GTP-U header based on the address/ID mapping rule.
End.M.GTP4.E (SRv6 -> GTP-U)	Decap the receiving IPv6+SRH packet and encap with **IPv4**/UDP/GTP-U header base on the address/ID mapping rule.
T.M.Tmap (GTP-U -> SRv6)	Decap the receiving GTP/UDP/**IPv4** packet and encap with IPv6 header, or IPv6 header with SRH based on the address/ID mapping rule and binding SR-Policy.
End.Limit	Limit the throughput of the packet flow with mapped SID.
NEW	Translate GTP-U Echo Request to ICMP Echo Request and vice versa
NEW	Translate GTP-U Echo Reply to ICMP Echo Request and vice versa
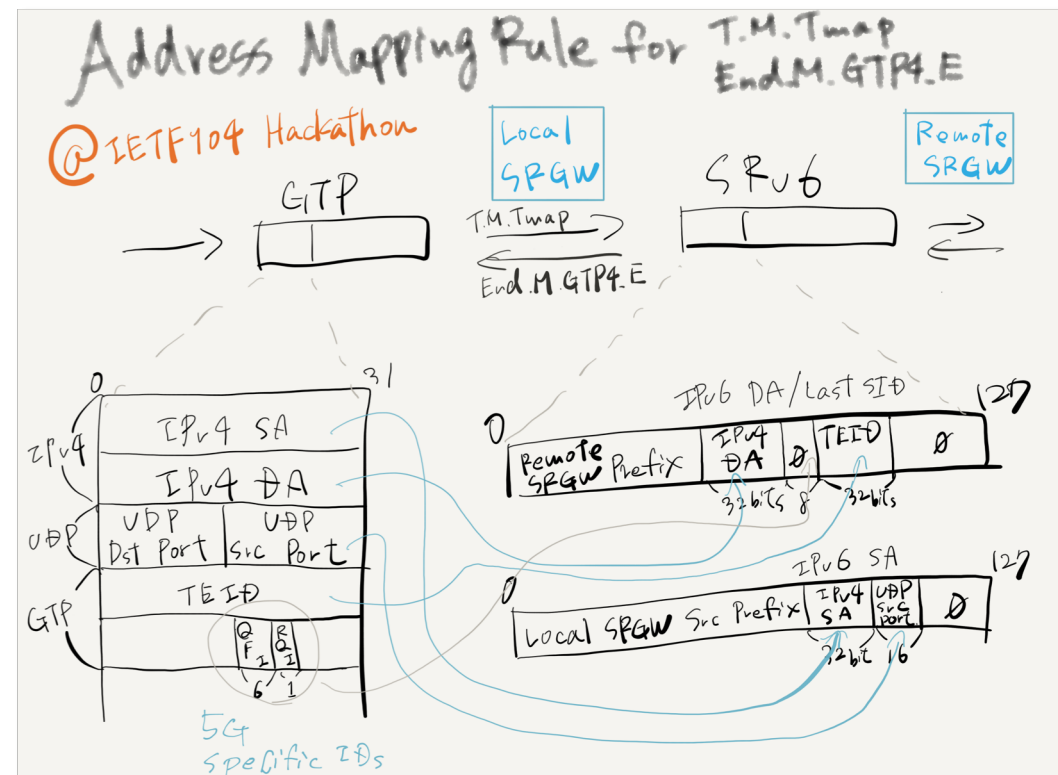
What we learned

- The SRv6 coding is fun to find applications (e.g: cellular tunnel) in the Segment ID. ☺

- Mapping rule between GTP-U and SRv6 has been studied.
  - Offset size to put IPv4 SA and UDP Src port in IPv6 SA., etc.,

Wrap Up

Team members:

- Satoru Matsushima
- Kentaro Ebisawa
- Andrej Kozemčák
- Filip Varga
- Ahmed Abdelsalam
- Pablo Camarillo
- Cheng Li
- Masakazu Asama (remote)

First timers @ IETF/Hackathon:

- All of us. ☺

- The codes are available on following URLs:

  - https://github.com/filvarga/srv6-mobile
  - https://github.com/ebiken/p4srv6/tree/ietf104/demo/srv6/ietf104

Thanks!