User Plane Protocol and Architectural Analysis on 3GPP 5G System
draft-hmm-dmm-5g-uplane-analysis-02

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Background

- This work is Related to User Plane Protocol Study in 3GPP CT4.

  => A part of LS-IN to 3GPP CT4 (https://datatracker.ietf.org/liaison/1590/)

- Motivations:
  - Unifying understanding of IETF to specifications on U-Plane of 3GPP 5G System
  - Showing to 3GPP that IETF has enough knowledge about 5G specs

- Way to work:
  - Analyzed GTP-U and architectural requirements for 5G user plane
    - GTP-U Specifications (TS29.281)
    - 5GS Architecture Specs (TS23.501, 502, 503, etc.)
  - Provided some evaluate aspects for candidate protocols

History

- 26th Jun. 2018: v00 was published
- 4th & 17th Jul. 2018: Presented at 3GPP CT4#85-bis and IETF 102 meetings
- 27th Jul. 2018: Sent as a part of LS-IN from IETF DMM-WG to 3GPP CT4
- 10th Aug. 2018: Updated for reflecting LS-OUT from 3GPP CT4
- 22nd Oct. 2018: Updated for reflecting discussion on ML

Updates since the last IETF meeting

Major Updates

Object	Ver.	Update Details
[GTP-U-1] Behavior as P2P tunneling protocol	01	• Referred implementation to allow the same TEID be used as the destination endpoint from multiple sources.
[GTP-U-6] Supporting IPv6 flow label for LB	01	• Mentioned no definition about load balancing with IPv6 flow label in TS29. 281.
[GTP-U-10] The order of extension header	01	• Referred the note, described in TS29. 281, to recommend putting QFI as the first header.
[Eval-Aspect-7] Specs of slice in 3GPP	01	• Added TS28. 531~533 as references about network slicing specifications and definitions.
[GTP-U-1] Interfaces with GTP-U tunnels	02	• Added information about interfaces with GTP-U in 5GC - N3: between gNB and UPF - N9: between different UPFs
[Section 3.5] GTP-U packet format	02	• Added description about processes on DSCP marking of outer IPv6 header. • Added PPP/PPI field in PDU Session Container based on update of TS 38.415

Major Updates (Cont.)

Object	Ver.	Update Details
[Arch-Req-2] Considera-tion on IP connectivity	01	• Added recommendation to use IPv6 for building network and consideration on interoperability with legacy networks.
[Arch-Req-4] Possibility of effective routing	01	• Described possibility of optimizing routing by connecting UPFs distributed geographically.
[Arch-Req-6] Process of DSCP marking of outer IP	01	• Complemented DSCP marking process: - QFI is indicated from SMF to UPF - UPF marks outer DSCP based on QFI contained EH
[Arch-Req-7] Overview of slicing arch in 3GPP	01	• Added overview of slicing architecture in 3GPP: - Slice is composed of SMF, RANs, UPFs, and DNs. - Transport network is out of scope

Status & Next Steps

- Caught up feedback from both IETF and 3GPP

  => Welcome further discussion and feedback if needed.

- Would like to request WG adoption.

- Does it make sense to propose this as informational RFC?

Thanks!
Questions?