Architecture Discussion on SRv6 Mobile User plane

draft-kohno-dmm-srv6mob-arch-06

27 March IETF116

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Agenda

• Objective - reviewed
• Architecture Overview
• Problem Definition
• 5G use cases
• Conclusion and Next step
Objective - reviewed

- This document discusses the solution approach and its architectural benefits of translating mobile session information into routing information, applying segment routing capabilities, and operating in a routing paradigm.

- It is meant to be an informational document to describe the motivations to the DMM SRv6 MUP works.
Architecture Overview

Conventional Mobile Architecture

SRv6 MUP
Converts Session information to Routing information, Applies SR capabilities and operates in Routing paradigm
Problem Definition

Conventional Mobile Architecture

- Non-optimal for any-to-any communication
- Non-optimal for edge/distributed computing
- Non-optimal for fixed and mobile convergence (FMC)
- No control of the underlay path
5G use cases – 1. Network Slicing

3GPP Network Slicing

- Necessary session info (SST, NSSAI, etc.) can be mapped to routing information (e.g. + colour)
- SR capabilities for SLA-aware logical separation can be naturally applied

MUP-converting session information to routing information and operating it in a routing paradigm

As it is, it cannot be mapped to a “transport” slice

draft-ali-teas-spring-ns-building-blocks
5G use cases – 2. Edge Computing

3GPP Edge Computing

MUP - converting session information to routing information and operating it in a routing paradigm

- With Tunnel Session based architecture, Edge Server Selection and UPF Selection is done by Session signaling
- Routing paradigm naturally enables ubiquitous computing
5G use cases – 3. URLLC

3GPP URLLC (Ultra Reliability Low Latency Communication)

MUP - converting session information to routing information and operating it in a routing paradigm

- GTP-U tunnel has no underlay control
- In order to ensure ultra reliability, to have redundant paths is considered.
- But still, there is no way to ensure that such redundant paths don’t share risks

3GPP TR 23.725 Fig. 6.4.1-2 Two N3 and N9 tunnels between NG-RAN and UPF for redundant transmission

- Routing paradigm has a mechanism to control underlay in many ways
- < 50msec Fast Protection by TI-LFA, which can be color-aware/slice-aware, for instance
Conclusion and Next step

- Despite the twists and turns, the essence of MUP is to convert session information into routing information, and this document has simply focused on that.

- It is meant to be an informational document to describe the motivations to the DMM SRv6 MUP works.

- We’d like to ask WG adoption. Thank you!