## **Source: Samsung Electronics Co., Ltd.**

## **Title: [FS\_5G\_RTP\_Ph2] KI#14 – MID Packet filtering**

## **Document for: Discussion and Agreement**

## **Agenda Item: 10.6**

1. **Introduction**

Key Issue #14 was raised to figure out how to identify different PDU sets from the individual streams at UPF and RAN nodes. Based on the various configuration of RTP streams over multiple media streams, it occurs a RTP session may be split into multiple QoS flows or multiple RTP streams may be multiplexed into a single QoS flow. Thus, it is essential to identify each of RTP media stream from a mix of traffic in one QoS flow at UPF and RAN nodes, so that they can configure the appropriate QoS handling for particular PDU sets.

This contribution provides the potential solution for this KI#14.

1. **Proposal**

We propose to include the context of the clause 3 in this document into clause 6.X (Solutions) of TR 26.822.

1. **Solution for KI#14: MID Packet Filtering**

When multiple RTP streams are associated and multiplexed into a single RTP session, they can be grouped together called BUNDLE. IETF RFC 9143 [1] provides SDP BUNDLE framework using SDP offer/answer mechanism to negotiate which "m=" sections will become part of a BUNDLE group. In this framework, each "m=" section is associated with its identification-tag (the values of "mid" attribute) and a BUNDLE group is defined as the SDP 'group:BUNDLE' attribute having identification-tag list. All RTP-based media within a single BUNDLE group belong to a single RTP session. It means that all "m=" sections representing RTP-based media within a BUNDLE group share a single synchronization source (SSRC) numbering space. Additional rules and restrictions to be applied on that single RTP session are given in the section 9.1 of RFC 9143 [1].

IETF RFC 7941 [2] provides the RTP header extension method for the RTCP Source Description (SDES) items. The Figure 1 and 2 show the format of 1-byte and 2-byte extended headers, respectively. IETF RFC 9143[1] defines the MID RTP HE registered by IANA in the "RTP SDES Compact Header Extensions" subregistry and carrying the identification-tag of the associated "m=" section. The MID RTP HE enables a receiver to associate each RTP stream with a specific "m=" section.

0 1 2 3

0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| ID | len | SDES item text value ... |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

Figure 1. One-byte Header extension format for SDES items

0 1 2 3

0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| ID | len | SDES item text value ... |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

Figure 2. Two-byte Header extension format for SDES items

Figure 3 shows an example of SDP answer when the answerer accepts the creation of the bundle group. In this example, three RTP media streams are bundled together by announcing from "a=group:BUNDLE" and each of stream is identified by using "a=mid:XXX".



Figure 3. Example of SDP for bundled media streams

As addressed above, MID value which was exchanged in SDP negotiation can be inserted into the extended header of each RTP packet, it can be used to identify how each of RTP packets are associated with the RTP media stream. Figure 4 illustrates the QoS mapping structure using MID packet filter which maps and video streams (RTP stream 1 & 2) to QoS Flow 1 and an audio stream (RTP stream 3) to QoS Flow 2, respectively.



Figure 4. QoS flow mapping by MID packet filtering

Editor’s Note: TR 23.700-70 [3] has the interim agreements on the additional packet filter to identify each media flow. Therefore, it is desired to have a coordination with SA2 for normative work.

1. **References**

[1] IETF RFC 9143 (2022): “Negotiating Media Multiplexing Using the Session Description Protocol (SDP)”.

[2] IETF RFC 7941 (2016): “RTP Header Extension for the RTP Control Protocol (RTCP) Source Description Items”.

[3] 3GPP TR 23.700-70: Study on architecture enhancement for Extended Reality and Media service (XRM); Phase 2.