**SA WG2 Meeting #S2-162 S2-2404974r1**

**15 – 19 April, 2024, Changsha, China resub- S2-2402993(+4883,4984)**

**Source:** **Meta USA, Xiaomi, Interdigital**

**Title: KI#5, Sol#16 update: Removal of Editor's notes + conclusion proposal**

**Document for: Approval**

**Agenda Item: 19.3**

**Work Item / Release: FS\_XRM Ph2 / Rel-19**

*Abstract of the contribution: Update solution 16 to address the ENs.*

# Discussion

The following ENs were added at last meeting:

3. UPF, based on the expediate request received from AS and operator policy, invokes Reflective QoS feature as defined in clause 5.7.5 of TS 23.501 [2] by selecting a higher quality 5QI/QFI (e.g. 5QI-6) to perform the subsequent UL/DL transfer.

Editor's note: What is meant by UPF invoking Reflective QoS is FFS.

Editor's note: Need for the operator (through PCF/SMF) to authorize change of 5QI is FFS.

For both of these ENs, UPF invokes Reflective QoS based on instruction from SMF as defined in TS 23.501, section 5.7.5.3:

*When the 5GC determines to use Reflective QoS for a specific SDF, the SMF shall ensure that the UPF applies the RQI marking (e.g. by setting the indication to use Reflective QoS in the QER associated with the DL PDR if not already set) for this SDF. The SMF shall also ensure that the uplink packets for this SDF can be received by the UPF from the QoS Flow to which the DL PDR of the SDF is associated with as specified in TS 29.244 [65], e.g. by generating a new UL PDR for this SDF for that QoS Flow and providing it to the UPF.*

However, **in addition to the above**, the Reflective QoS Control parameter in the PCC rule is enhanced with the option to apply reflective QoS of this SDF only when *the UPF detects the “expediate request” from AS via N6.*

In other words, the activation/authorization of using the reflective QoS feature is maintained based on existing TS 23.501. The only new addition is that the trigger for this RQI marking is based on the inband signalling “ *expediate request*” detection from N6.

For the following EN:

Editor's note: Protocol to be used for including the metadata is FFS.

The protocol to be used to carry this extra bit of inband information from AS via N6 should also be depended on the protocol selection for KI#2 for handling encrypted PDU set information (e.g,. see Sol#26/#24 with connect-UDP). The resolution of this EN can be deferred until selection for KI#2 is clearer.

+ merging key points from tdoc x4883 and x4984, highlighted in comments field below.

*Begin*

## 6.16 Solution #16: AS based trigger of data boost handling with reflective QoS

### 6.16.1 Key Issue mapping

This solution is for Key Issue #5, to support dynamic change (via user plane) in traffic characteristics provided by the application in the DN.

### 6.16.2 Description

The xR traffic patterns, based on user interactions may vary greatly. For example, an xR application may require the UE to send a picture/video (10MB file), a short speech (100kB file), and locality info like geolocation/temperature/time (10kB file) to the AS. While in other cases, only a short speech (100kB file) and locality information (10kB file) are needed by the application in the AS.

In this proposal, a AS based trigger of reflective QoS is used to expedite the transfer of larger payload for xR application.

The assumption here is that by default, the xR application uses a lower quality 5QI like 5QI=10. The reflective QoS will upgrade the transfer of the payload with higher quality 5QI like 5QI=6.

A new 5QI with better QoS handling can also be defined for this type of usage.

### 6.16.3 Procedures

Figure 6.16.3.1-1: AS requests 5GS to upgrade QoS using reflective QoS feature

0. UE and Network support Reflective QoS feature as defined in current specification (clause 5.7.5 of TS 23.501 [2]). In this example, existing Rel-18 procedures will be used by the SMF to request UPF to apply RQI marking. The PCC rule is enhanced with the indication that the UPF only apply the RQI marking in the DL packets of the service data flow when the “expediate request” (e.g. rendition ID) is also detected.

The AF provides the QoS Requirement for a target media flow, and indicates the support of data boost handling with reflective QoS (e.g. the higher quality 5QI can be used). The PCF authorizes the service data flow in the PCC rule including the data boost handling with reflective QoS.

1. UE uses default non-GBR (e.g. 5QI-10) to send uplink data to AS.

2. Based on application requirements in the AS, AS instructs UE to send a higher resolution data file (e.g. video/jpeg). Because AS is aware that the data size from the UE is expected to be large and timeliness to receive this information is crucial for the application, AS includes the request to expediate this transfer to the 5GS in the metadata.

The request to expedite the transfer from AS may also include an “Rendition ID”. This allows further QoS tuning in 5GS (e.g, treatment of the QoS Flow by RAN that is adjusted based on the Rendition ID).

3. UPF, based on the expediate request received from AS and the authorization of data boost handling with reflective QoS, and N4 rules from SMF (see 5.7.5.3 of TS 23.501 [2]), invokes Reflective QoS feature by selecting a higher quality 5QI/QFI (e.g. 5QI-6) to perform the subsequent UL/DL transfer.

4-5 Application in the UE receives the instructions from AS to capture additional data/payload and send back to AS using Reflective QoS feature.

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### 6.16.4 Impacts on services, entities and interfaces

**AS/AF:**

- Based on application requirements, include expediate request in the metadata to 5GC over N6.

**UPF:**

- Based on metadata received from AS/AF via N6 and N4 rules, invoke Reflective QoS feature with a higher quality QFI/5QI.

**PCC/SMF:**

- Reflective QoS Control parameter in the PCC rule is enhanced with the option that the UPF only apply the RQI marking in the DL packets of the service data flow when the “expediate request” is also detected.**N6:**

- Protocol to include this information.Editor's note: Protocol to be used for including the metadata is dependent with solution selected for KI#2.

*END OF CHANGE*

*NEXT CHANGE*

# 8 Conclusions

For KI#5 related to support dynamic change, Sol#16 is selected as basis for normative phase.

Editor’s note: Feedback from SA4/RANx may change this conclusion.

*END OF CHANGE*