**3GPP TSG- Meeting #139E *S2-2004228***

**1 - 12 June, 2020, Electronic Meeting**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **1** | **CR** | **2379** | **rev** | **-** | **Current version:** | **16.4.0** |  |
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| *For* [***HELP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **x** | Core Network | **X** |

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| ***Title:***  | Capability for HPLMN to understand whether or not the NG-RAN node supports Alternative QoS Profiles  |
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| ***Source to WG:*** | Vodafone |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | eV2XARC |  | ***Date:*** | 2020-05-22 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | RAN3 has informed SA2 in the LS R3-202856 / S2-2003578 that RAN3 has made the Working Assumption (WA) to proceed with stage 3 design as shown in CRs in R3-202847 and R3-202848. However, with these CRs it is not possible to differentiate between a gNB that does not support the AQP feature, and, a gNB that does support the feature but cannot fulfill even the least preferred AQPThis impacts AF/PCF behaviour as:* + with an gNB supporting AQP feature, the AF/PCF can just wait for the RAN to upgrade ASAP;
	+ with a Rel-15 gNB, AF needs to successively send PDU modification requests (setting their Requested QoS Profile to the next best AQP) until the gNB accepts one (or none) of them.

RAN 3 seemed to believe that per cell configuration data in CN could solve this. However, that approach requires the SMF/PCF in the HPLMN to be configured with data on all the gNBs in every VPLMN and that is unrealistic. Expecting homogeneous support of “Alt QoS” within all NG-RAN nodes within a VPLMN is also unrealistic as:* network sharing in parts of the VPLMN can leave the VPLMN without full control of the features enabled on a RAN operated by a different commercial entity;
* the VPLMN might choose to only purchase the feature for a subset of NG-RAN nodes.

Irrespective of the roaming aspects, per-cell configuration on the AMF is undesirable, and, highly undesirable on the SMFs. |
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| ***Summary of change:*** | More detail added to the existing requirements on AQP. |
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| ***Consequences if not approved:*** | For any application using Alternative GBR QoS profiles, whenever the AF/PCF receives a notification without an indication of the new Alt QoS level, the AF/PCF will have to assume that the NG-RAN node does not support the feature and issue multiple Session Management commands to establish whether any of the Alt QoS Profiles can be fulfilled. Subsequently, much more SM signalling is then needed to upgrade back to the original requested QoS. |
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| ***Clauses affected:*** | 5.7.1.2a |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* \* Start of Changes \* \* \* \*

#### 5.7.1.2a Alternative QoS Profile

The Alternative QoS Profile(s) can be optionally provided for a GBR QoS Flow with Notification control enabled. If the corresponding PCC rule contains the related information (as described in TS 23.503 [45]), the SMF shall provide, in addition to the QoS profile, a prioritized list of Alternative QoS Profile(s) to the NG-RAN. If the SMF provides a new prioritized list of Alternative QoS Profile(s) to the NG-RAN (if the corresponding PCC rule information changes), the NG-RAN shall replace any previously stored list with it.

An Alternative QoS Profile represents a combination of QoS parameters to which the application traffic is able to adaptand has the same format as the QoS profile for that QoS Flow.

When the NG-RAN sends a notification to the SMF that the QoS profile is not fulfilled, the NG-RAN shall, if the currently fulfilled values match an Alternative QoS Profile, include also the reference to the Alternative QoS Profile to indicate the QoS that the NG-RAN currently fulfils (see clause 5.7.2.4). The NG-RAN shall enable the SMF to determine that an NG-RAN node cannot fulfill even the least preferred Alternative QoS Profile.

\* \* \* \* End of Changes \* \* \* \*