**3GPP TSG- Meeting #**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **2** | **Current version:** |  |  |
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| *For* [***HE******LP***](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 | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | [5GMSA] | | | | | | | | | |
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| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
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| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***Release:*** | | |  |
|  | *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 can be 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | Inconsistencies in the description of ANBR-based network assistance; some clauses are missing the mention of two key features that were envisaged for stage 3. | | | | | | | | |
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| ***Summary of change:*** | | Add the decriptions for downlink boost request and uplink bitrate recommendation. | | | | | | | | |
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| ***Consequences if not approved:*** | | Stage 2 for ANBR-based network assistance is inconsistent in iteself and with AF-based network assistance. | | | | | | | | |
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| ***Clauses affected:*** | | 4.0.5, 6.7 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 26.501 V16.12.0 CR 0083 | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | | S4aI230162: Initial proposal for MBS ad hoc on 26/10/2023.  S4-231677: Revision for approval at SA4 #126.  S4-231901, CR Rev. 2: Cat. A CR; mirror of Rel-16 CR (S4-231704). | | | | | | | | |

### 4.0.5 Network assistance

The network assistance feature is applicable to both downlink media streaming and uplink media streaming. It enables the 5GMS Client in the UE to interrogate or manipulate the network Quality of Service for an ongoing media streaming session.

High-level procedures for this feature are defined in clause 5.9 (downlink media streaming) and in clauses 6.1, 6.5 and 6.7 (uplink media streaming). The network assistance feature is not explicitly provisioned by the 5GMS Application Provider. It is either available for a particular media streaming session or not, depending on system pre-configuration and/or policy.

Two mechanisms for obtaining network assistance are defined in the present document: one based on interactions with the PCF via network-based components of the 5GMS System (*AF-based network assistance*), the other based on ANBR signalling interactions between the UE modem and the RAN (*ANBR-based network assistance*).



Figure 4.0.5‑1: High-level arrangement for network assistance feature

The following network assistance sub-features are defined in this release for both the AF-based and ANBR-based mechanisms:

1. *Bit rate recommendation (or throughput estimation).* The 5GMS Client requests an estimate from a network-side component of the 5GMS System of the bit rate that can currently be offered by a media streaming session. The network-side component interrogates the PCF on behalf of the 5GMS Client to obtain this information about the PDU session corresponding to the media streaming session.

The 5GMS Client uses this information to adjust its own streaming bit rate to fit within the Quality of Service (QoS) envelope that the network is able to offer, for example by switching to a different representation listed in its Media Entry Point, or by adjusting the encoding bit rate for uplink streaming to fit within this bit rate budget. The media streaming Quality of Experience (QoE) is more stable and consistent as a consequence.

2. *Delivery boost.* The 5GMS Client speculatively requests a temporary boost to the bit rate of a media streaming session from a network-side component of the 5GMS System. The network-side component requests a modification to the PDU session corresponding to the media streaming session from the PCF on behalf of the 5GMS Client. If there is sufficient spare network capacity to accommodate the requested bit rate, it is granted by the 5GMS System on a temporary basis.

The 5GMS Client uses this temporary boost to speed up media streaming data transfer, for example to replenish a depleted downlink streaming buffer or to complete a download/upload faster than would otherwise be possible.

In addition, the use of network assistance by 5GMS Clients is logged by the 5GMS System and, if suitably provisioned, is exposed by it to subscribing 5GMS Application Providers in the form of events (see also clause 4.0.12).

## 6.7 RAN Signalling based Support for Uplink Network Assistance

Figure 6.7-1 depicts an uplink streaming architecture where RAN signalling is employed to support uplink Network Assistance functionality.

The RAN in the architecture contains control plane and user plane entities that interact with peer control and user plane entities in the UE, in the request/response for uplink bit rate recommendations, or boost of the uplink streaming data rate, and subsequent media transport. The user plane functionality as shown in Figure 6.7-1 (solid line going from UE to RAN to 5GMSu AS) illustrates the scheduling/passthrough functionality associated with user plane communications, governed by the RAN, as result of the uplink assistance messaging over the control plane (shown by dotted line between the UE and RAN). It is assumed in this case that 5GMSu AF-based Network Assistance is not utilized.

It should be noted that although the 5GMSu AF is not utilized when RAN signalling based network assistance is performed, it is assumed that there is a higher-level network entity which coordinates and tracks network assistance performed using RAN signalling versus application signalling for individual UEs.



Figure 6.7-1: RAN Signalling based Uplink Network Assistance