**3GPP TSG-SA4 Meeting #109-e *S4-200824***

**Electronic, The Internet, - 3.6.2020**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **Draft CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **x** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Correction of 5GMSd AF-based Network Assistance (Stage 2) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson LM | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | There are some inconsistences and error in the 5GMSd based Network assistance section. The figure depicts the NEF as a network function, but the text only mentions Npcf as API. Further, there is some redundant text. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The figure is corrected, moving the label “5GMSd AF based Network Assistance to the correct interface”. The dotted line between RAN and 5GMSd AF is removed. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  |  | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\* First Change \*\*\*\*

### 5.9.1 Introduction

The Network Assistance (NA) feature enables a UE that is receiving a downlink media stream to improve the QoE of the media streaming session, by being able to make use of two distinct facilities.

The first facility is **throughput estimation**. This enables the UE to start a downlink streaming session at the most appropriate bit rate for the network conditions at hand, or to obtain a recommendation from the network for an upcoming nominal time period during a media streaming session. This function is provided as an additional tool to support the UE, in addition to the common approach of the UE performing its own estimation based on measurement of the downlink traffic in the past.

The second facility is the **delivery boost**. The 5GMS Client uses this function to indicate to the network that a temporary boost, i.e. a temporary increase of network throughput for this client, would be needed in order to avoid the risk of media playback stalling due to buffer under-run, which could otherwise occur during the next media segment or soon after. Throughput boosting may also be used at the start of a playback session to shorten the time to start media playback, giving a better experience for the user.

Network Assistance may be offered to the UE in one of two ways:

* Based on interaction between the UE and the 5GMSd AF, with a subsequent interaction between the 5GMSd AF and the Network, e.g. the PCF or the NEF;
* Based on interaction between the UE and the RAN, re-using the ANBR RAN-layer signalling.

The UE shall not use both approaches on the same network assistance session.

Figure 5.9.1-1 depicts the Network Assistance feature in the context of the 5GMS architecture, showing the scope of both approaches.

**Figure 5.9.1-1: Downlink Network Assistance alternative approaches**

### 5.9.2 5GMSd AF-based downlink Network Assistance

The Network Assistance (NA) feature enables a UE to receive a downlink bit rate recommendation from the 5GMSd AF that provides the NA server function. The 5GMSd AF provides the response with an estimation of throughput, or the recommend­ation of a bit rate, for the ensuing nominal time period. The UE uses this estimation to derive the most suitable bit rate for its downlink content session from the versions that might be available. The network is expected to commit resources to be able to fulfill the recommendation, although no guarantee for the bandwidth estimation can be assumed. The 5GMSd Client may provide additional information, such as available media versions, in terms of the required bit rates, to the 5GMSd AF.

The second facility is the delivery boost. The 5GMSd Client uses this function to indicate to the network that a temporary boost, i.e. a temporary increase of network throughput for this client, is needed.

Each interaction for the 5GMSd AF-based downlink Network Assistance procedures consists of two steps in sequence:

1. Between the UE (Media Session Handler) and the 5GMSd AF using a 5GMS API at interface M5d;

2. Between the 5GMSd AF and the PCF or a NEF:

- using the Npcf\_PolicyAuthorization procedure or Nnef\_AFSessionWithQoS procedure to request modification of the PDU session with the requested QoS information

- the Npcf\_PolicyAuthorization notification service or Nnef Monitoring Event procedure to receive QoS changes.

Network Assistance is performed within dedicated NA sessions that are a part of the Media Session Handler procedures. Only 5GMSd Clients that have been granted an NA session by the 5GMSd AF may execute the NA bit rate recommendation and boost request procedures. This enables the 5GMSd AF to enforce policies that could include the access to NA by certain 5GMS Clients only, such that authorisation to use NA facilities can be verified once at the granting of an NA session, and does not need to be verified for each NA request from the 5GMSd Client.

The procedures for 5GMSd AF-based downlink Network Assistance are:

1. NA session intiation. The 5GMSd client requests to initiate an NA session with the 5GMSd AF. If the request fulfils any pre-requisites for access to NA functionality, for example policy and charging, then the 5GMSd AF responds with a confirmation that the NA session has been established.

2. NA throughput estimation. The 5GMSd Client requests a throughput estimation for a downlink media session from the 5GMSd AF. A unique identifier for the downlink media session is provided by the 5GMSd Client.

If the set of available bit rates in the downlink media session is provided with the request then the 5GMSd AF responds with the recommended bit rate based on its throughput estimation. If the throughput estimation is lower than the lowest value from the set of available bit rates, then the actual throughput estimation is provided.

If no set of available bit rates is provided with the request then the 5GMSd AF responds with the throughput estimation.

3. NA delivery boost. The 5GMSd Client requests from the AF a downlink delivery boost. A unique identifier for the downlink media session is provided by the 5GMSd Client.

4. NA session termination. The 5GMS Client requests to terminate an NA session with the 5GMSd AF. The unique identifier of the NA session to be terminated is provided by the 5GMS client.

The AF responds positively if the indicated session could be terminated, and negatively otherwise.

\*\*\*\* Last Change \*\*\*\*