**3GPP TSG- Meeting #S4-230861**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | 0065 | **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)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** |  | | | | | | | | | |
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| ***Source to WG:*** | Cloud | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
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| ***Work item code:*** |  | | | | |  | ***Date:*** | | | 2023-05-16 |
|  |  | | | |  | |  | | |  |
| ***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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Adds the service point descriptions for uplink streaming | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The CR addresses the above objectives by adding   * Adding dynamic policy control in Table 4.0.1-1. * Adding Service Operation Points to the Service Access Information of Uplink in 4.3.3. * Adding a new clause 6.9 for the use of service operation points with uplink streaming. | | | | | | | | |
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| ***Consequences if not approved:*** | | Work Item objectives not complete  Poor understanding of specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.0.1-1, 4.3.3, 6.9 (new)  Note: 4.0.1-1 is provided by 0044 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

**===== CHANGE =====**

# 4 Media Streaming architecture

## 4.0 Media Streaming features

### 4.0.1 Introduction

This clause defines a set of high-level features for supporting enhanced media streaming in the 5G System. The functional architecture of this 5G Media Streaming (5GMS) System is defined in clause 4.1 and is further specialised for downlink media streaming (clause 4.2) and uplink media streaming (clause 4.3). Procedures for downlink media streaming are defined in clause 5 and those for uplink media streaming in clause 6. Detailed procedures, protocols and APIs for 5G Media Streaming are specified in TS 26.512 [26512]. Codecs and formats for 5G Media Streaming and profiles thereof are specified in TS 26.511 [26].

In the context of the present document, streaming is defined as the delivery of time-continuous media as the predominant media. Streaming points to the fact that the media is predominantly sent only in a single direction and consumed as it is received. Additionally, the media content may be streamed as it is produced, referred to as live streaming. If content is streamed that is already produced, it is referred to as on-demand streaming.

NOTE: References to Dynamic Adaptive Streaming over HTTP (MPEG‑DASH) [29] in the present document apply equally to HTTP Live Streaming (HLS) [28] except where noted otherwise. The term *Media Entry Point* is used to refer generically to an MPEG-DASH Media Presentation Description (MPD), but can be taken to apply equally to alternative media presentation description formats such as an HLS master playlist, unless noted otherwise.

Table 4.0.1‑1 lists the principal features of the 5GMS architecture along with cross-references to relevant clauses defining its functions and procedures.

Table 4.0.1‑1: 5G Media Streaming feature index

|  |  |  |  |
| --- | --- | --- | --- |
| Feature | Functional description clause | Procedure definition clause(s) | |
| Downlink media streaming | Uplink media streaming |
| Content hosting | 4.0.2 | 5.4 | Not applicable |
| Content publishing | 4.0.3 | Not applicable | 6.2.3 |
| Content preparation | 4.0.4 | For future study | For future study |
| Network assistance | 4.0.5 | 5.9 | 6.5, 6.7 |
| Dynamic policies | 4.0.6 | 5.8, 5.7.6 | 6.9 |
| Remote control | 4.0.7 | Not applicable | 6.6 |
| Consumption reporting | 4.0.8 | 5.6 | For future study |
| QoE metrics reporting | 4.0.9 | 5.5 | For future study |

**===== CHANGE =====**

### 4.3.3 Service Access Information for Uplink Media Streaming

The Service Access Information is the set of parameters and addresses which are needed by the 5GMSu Client to activate and control the uplink streaming session.

The Service Access Information may be provided by the 5GMSu Application Provider to the 5GMSu-Aware Application together with other service announcement information using M8u. Alternatively, the 5GMSu Client fetches the Service Access Information from the 5GMSu AF at reference point M5u. Regardless of how it is provided, the Service Access Information contains different information, depending on the collaboration model between the 5GMS System and the 5GMSu Application Provider (which are assumed to be independent entities), and also depending on offered features. Baseline parameters are listed in table 4.3.3‑1 below:

Table 4.3.3-1: Parameters of baseline service access information

|  |  |
| --- | --- |
| Parameters | Description |
| Provisioning Session identifier | Unique identification of the M1u Provisioning Session. |

The parameters from table 4.3.3-2 below shall also be present.

Table 4.3.3-2: Streaming Access parameters

|  |  |
| --- | --- |
| Parameters | Description |
| Media entry points | A set of entry points. Each entry point consists of one of the followings:  a. An URL endpoint on the 5GMSu AS to which media can be streamed directly at M4u and its associated data, or  b. The URL of a document that can be downloaded from the 5GMSu AS which contains the parameters for uplink media streaming at M4u. |
| Service Operation Points | Sets of media streaming parameters, such as bit rate and target latency, each set being associated with a provisioned Policy Template and with a Service Description in a Media Player Entry document. |

Each entry point is defined by its parameters and identifiers. The set shall have at least one member.

When the dynamic policy invocation feature is activated for an uplink streaming session the parameters from table 4.3.3‑3 below are additionally present.

Table 4.3.3-3: Parameters for dynamic policy invocation configuration

|  |  |
| --- | --- |
| Parameters | Description |
| Server address | A list of 5GMSu AF addresses (in the form of opaque URLs) which offer the APIs for dynamic policy invocation sent by the 5GMS Media Session Handler. |
| Valid Policy Template Ids | A list of Policy Template identifiers which the 5GMSu Client is authorized to use. |
| Service Data Flow Methods | A list of recommended Service Data Flow description methods (descriptors), e.g. 5-Tuple, ToS, 2-Tuple, etc, which should be used by the Media Session Handler to describe the Service Data Flows for the traffic to be policed. |
| External reference | Additional identifier for this Policy Template, unique within the scope of its Provisioning Session, that can be cross-referenced with external metadata about the streaming session. |

When 5GMSu AF-based Network Assistance is activated for an uplink streaming session the parameters from table 4.3.3‑4 below shall be additionally present.

Table 4.3.3-4: Parameters for 5GMSu AF-based Network Assistance configuration

|  |  |
| --- | --- |
| Parameters | Description |
| Server address | 5GMSu AF address that offers the APIs for 5GMSu AF-based Network Assistance, accessed by the 5GMSu Media Session Handler. The server address shall be an opaque URL, following the 5GMS URL format. |

**==== CHANGE =====**

### 6.9 Use of dynamic Policy selection based on Service Operation Point signalling in uplink streaming

This clause provides an extension to the general call flow in clause 6.2.3 in order to address the usage of Service Descriptions and Service Operation Points in uplink 5G Media Streaming services. Details are shown in figure 6.9‑1.



Figure 6.9-1: High-level procedure for Service Operation Point handling for uplink media streaming

Steps:

1: Policy Templates are provisioned in the 5GMSd AF and various configurations are performed.

2: Either the 5GMSu-Aware Application acquires Service Access Information from the 5GMSu Application Provider via reference point M8u, or else Service Access Information is acquired by the 5GMSu Client from the 5GMSu AF via reference poont M5u (as defined in steps 7–11 of figure 6.2.2.2-1).

3: The 5GMSu Client acquires the Media Entry Point from the 5GMSu AS.

4: The 5GMSu Client processes the Media Entry Point to discover the set of available Service Descriptions.

5: The 5GMSu Client notifies the 5GMSu Application about the available Service Descriptions.

6: The 5GMSu Application selects a Service Description and notifies the 5GMSu Client.

7: The 5GMSu Client selects a Dynamic Policy based on the Service Operation Point parameters that are associated with the Service Description, using an identifier to correlate the two.

8: The 5GMSu Client configures its capture and encoding according to the selected Service Description.

9: A transport session is established by the 5GMSu Client for uplink media streaming.

10: Media is streamed to the 5GMSu AS via the uplink.