**3GPP SA4#114-eS4-210767**

**19-28 May 2021**

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| *CR-Form-v12.0* |
| **Pseudo CHANGE REQUEST** |
|  |
|  | **26.804** | **CR** | **<CR#>** | **rev** | **-** | **Current version:** | **0. 2.1** |  |
|  |
| *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:***  | [FS\_5GMS-EXT] Updated text for uplink streaming: additional gap analysis |
|  |  |
| ***Source to WG:*** | Tencent |
| ***Source to TSG:*** | SA4 |
|  |  |
| ***Work item code:*** | FS\_5GMS-EXT |  | ***Date:*** | 2021-05-10 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-17 |
|  | *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:*** | The study item description identifies the key topic “Uplink Streaming”. |
|  |  |
| ***Summary of change:*** | Adding additional gap analysis |
|  |  |
| ***Consequences if not approved:*** | Key topic not addressed |
|  |  |
| ***Clauses affected:*** |  |
|  |  |
|  | **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:*** |  |
| ***56***  |  |
| ***This CR's revision history:*** |  |

**===== CHANGE 1 =====**

### 5.5.5 Potential open issues

#### 5.5.5.1 Potential open issues in 5G Media Streaming stage 3

The following open issues seem to exist in TS 26.512 [16]:

1. Lack of a template (or clear reference on how to use an existing template) for Content Publishing Configuration,

2. Lack of definition of egest protocols (or clear reference on how to use the existing ingest protocols).

3. Lack of content publishing API (or clear reference on how to use the existing ingest API).

4. Lack of Service Access Information for uplink streaming.

For downlink streaming, TS 26.512 [16] defines a StreamingAccess object as part of the Service‌Access‌Infromation resource. The StreamingAccess object includes a URL string that points to a media download resource or a manifest that describes a media presentation. In the case of uplink streaming, TS 26.512 does not yet specify which uplink egest protocols are supported (see issue 2 above). Furthermore, it is not clear how the Media Session Handler would retrieve the entry point for streaming (e.g. a URL for posting media segments to the 5GMSu AS).

#### 5.5.5.2 Potential open issues compared with FLUS

Clause 5.5.3 describes the uplink streaming features from TS 26.238 [X] that are missing from TS 26.512 [16]. This section translates these missing FLUS features into potential new 5G Media Streaming features.

1. The FLUS Control Source may discover multiple FLUS sinks => The 5GMSu Client may discover multiple 5GMSu AS instances.

2. The FLUS Control Source may discover the capabilities of each discovered FLUS Sink, including its network-based media processing capabilities => The 5GMSu Client may discover the capabilities of each discovered 5GMSu AS.

The FLUS Discovery Server provides the means for a FLUS Control Source to discover multiple FLUS sinks and their capabilities. In the 5GMS architecture, various 5GMSd AS instances might have different capabilities. However, TS 26.512 does not provide a framework for describing 5GMS AS capabilities or any capability-based discovery mechanism.

3. The FLUS Control Source may also request a FLUS Sink to perform media processing => The UE may also request the 5GMSu AS to perform media processing.

The request for media processing is performed by a FLUS Control Source by including a media processing document in its request to FLUS Control Sink. Since in this study, the content preparation is addressed for uplink collaboration streaming (5.2.4.2), the content preparation can also be used for media processing. If the content preparation template allows a generic media processing description such as NBMP, then the content preparation can be used to provide an equivalent functionality of the FLUS specification.

NOTE: The 5GMS Content Preparation Template is provisioned through the M1 interface whereas in FLUS, the media processing is provisioned using the equivalent of the M5u interface. This is discussed further in clause 5.5.6.5 below.

4. The UE capabilities (formats, connectivity protocol, remote control) may be discovered by a FLUS Control Sink => The 5GMSu Client capabilities may be discovered by 5GMSu AF.

In the 5GMS architecture, the session is generally provisioned by the 5GMSu Application Provider. The Application Provider may already know the 5GMSu Client’s capabilities, for example through information in a user profile, or provided by the 5GMSu-Aware Application via M8u. Therefore, the need for the 5GMSu AF to discover the 5GMSu Client capabilities through M5u seems unnecessary.

**===== CHANGE 2 =====**

### **(**5.5.6 Candidate Solutions)

#### 5.5.6.3 Uplink entry point

The StreamingAccess object can be extended to support both downlink and uplink streaming entry points. This object may include the following information:

* One or more URNs defining the protocol (e.g MPD, HLS, DASH-IF ingest profile 1 or profile 2)
* The entry URL for the above service.

Additionally, the StreamingAccess object may include alternative protocols for the same session. For instance, a StreamingAccess object may include an MPEG‑DASH MPD as well as HLS m3u8 for the same downlink streaming Service Access Information, or two entry points in the Service Access Information for uplink streaming using DASH-IF ingest profile 1 and profile 2. An example of such extension is shown in the following tables.

Table 11.2.3.1‑1: Definition of ServiceAccessInformation resource
(extract from TS 26.512 )

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Property name | Type | Cardinality | Usage | Description |
| provisioningSessionId | String | 1..1 | RO | Unique identification of the M1d Provisioning Session. |
| … |
| StreamingAccess | Array(Object) | 0..N | RO |  |
| mediaEntryType | Urn | 0..1 | RO | A fully-qualified term identifier from the controlled vocabulary urn:3gpp:5gms:content-protocol, as specified in clause 8, indicating the type of media service available at mediaEntry. |
| mediaStreamerEntry | Object area | 0..1 | RO | A document or a pointer to a document that defines a media presentation e.g. MPD for DASH content or URL to a video clip file. |
| … |

#### 5.5.6.4 Discovery of various 5GMSu AS instances and their capabilities

FS\_EMSA proposes an Edge-enabled 5GMS architecture for discovering EAS-enhanced 5GMSd AS instances and their capabilities by an edge-enabled client using EAS discovery filters. One possible way to discover 5GMSu AS capabilities and/or instantiate a new 5GMSu AS with the desired capabilities is to use the procedure described in TS 26.803 [Y] for 5GMSu AS. This approach requires that the 5GMSu Client’s Media Session Handler supports the EEC logical function, the 5GMSu AF supports the EES logical function, and the 5GMSu AS supports the EAS logical function, as defined by TS 26.558 [Z].

### 5.5.6.5 UE request to the 5GMSu AS for media processing

In the 5GMS architecture, the Content Preparation Template is provisioned through the M1 interface. To provide the UE with the ability to provision Content Preparation Templates, the following are possible options:

A. The 5GMSu-Aware Application provides the desired Content Preparation Template to the 5GMSu Application Provider via M8u and then the Application Provider requests provisioning of the Content Preparation Template through M1u, or

B. The Media Session Handler in the 5GMSu Client requests the setting up of a Content Preparation Template by direct interaction with the 5GMSu AF at M5u. In this case, M5u needs to be extended to support Content Preparation Template provisioning requests from the Media Session Handler.

Option B seems not to provide significant benefits since the 5GMSu Application Provider initially provisions the session including provisioning of the Content Preparation Template based on the UE capabilities. If the UE happens to have a subset of capabilities available, then the 5GMSu-Aware Application may inform the Application Provider through M8u and then the Application Provider updates the Content Preparation Template accordingly.