**3GPP TSG-S4 Meeting #114-eS4-210768**

**19-28 May 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **26.803** | **CR** |  | **rev** |  | **Current version:** | **1.2.0** |  |
|  |
| *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 |  | Radio Access Network |  | Core Network |  |

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| ***Title:***  | User-generated live streaming walkthrough |
|  |  |
| ***Source to WG:*** | Tencent, BBC |
| ***Source to TSG:*** | S4 |
|  |  |
| ***Work item code:*** | FS\_EMSA |  | ***Date:*** | 11 May 2021 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | Provides mapping of the user-generated live streaming use case to the EMSA call flows. |
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| ***Summary of change:*** |  |
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| ***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:*** |  |

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| **First Change** |

Annex <A> (informative):
Selected Use Case Mapping

# A.X User-generated live streaming

## A.X.1 Service provisioning

### A.X.1.1 Overview

The user-generated live streaming use case covers scenarios where various processing of uplinked media is required. This processing may occur in the cloud or at an edge close to the capturing device.

The set of media processing features needed by a particular application service is first provisioned in the 5GMS AF by the 5GMS Application Provider. The resource requirements of the corresponding 5GMS AS are expressed in a resource template that is part of the resulting Provisioning Session.

Having provisioned the desired set of media processing features and the resource template in the 5GMS AF, the 5GMS Application Provider points 5GMSu Clients at the Service Access Information corresponding to the appropriate Provisioning Session in order to initiate new uplink streaming sessions.

### A.X.1.2 Example media processing features

Examples of relevant media processing features include, but are not limited to:

1. Quality improvement such as:

a. Video upscaling.

b. Image light correction.

c. Picture stabilization.

d. Audio quality improvement.

2. Enriching and adding interactivity features such as:

a. Automated multilingual dubbing and captioning.

b. Overlaying and tagging.

c. Indexing and key feature detection.

d. Navigation improvements.

3. Multi-rate encoding of content:

a. Content-aware encoding.

b. Low-latency packaging.

c. Just-in-time encoding and transcoding.

d. Multi-path encoding for on-demand content.

4. Splicing and ad insertion:

a. Splicing content and manifest signaling.

b. Ad insertion queues and information.

c. Preferred language setting for ads and other service metadata.

5. Applying content protection and DRM

### A.X.1.2 Example resource template aspects

The resource template for the 5GMS AS supporting the application service may include one or more of the following aspects:

1. EAS type.

2. Hardware resources:

a. Compute.

b. Graphical compute.

c. Memory.

d. Storage.

3. Connectivity to the UE:

a. Bit rate.

b. Latency.

c. Maximum request rate.

d. Maximum response time.

4. Availability.

5. Functional support such as:

a. Accelerated encoders/transcoders.

b. Quality improvement functions.

c. Content enriching and adding interactivity.

d. Splicing and ad-insertion tools.

e. Stabilization.

6. The audience's geographical distribution and scale.

## A.X.2 High-level call flow

Figure A.X-1 shows the high-level call flow for this use-case, which is based on the client-driven edge discovery of clause 6.3.2.



Figure A.X-1: User-generated live streaming walkthrough

The steps are:

1. The 5GMS Application Provider creates a new Provisioning Session for“user-generated live streaming” linked to a content hosting and distribution configuration and a resource template for edge processing.

2. The 5GMSu-Aware Application requests Service Access Information from the 5GMS Application Provider via M8.

3. The 5GMS Application Provider, based on the requested service and the UE’s current location, creates an EAS Profile (as defined in clause 8.2.4 of TS 23.558 [3] and reproduced in table 4.2‑4 of the present document) and includes it in the Service Access Information it returns to the 5GMSu-Aware Application.

4. The 5GMSu-Aware Application uses the EES to locate instances of the 5GMS AS that can satisfy the requirements indicated in the EAS Profile acquired in step 3.

5. A new 5GMSu AS is instantiated and provisioned by the 5GMSu AF, if needed.

6. The EES returns a list of suitable 5GMSu AS instances (and associated information) to the EEC.

7. The AC/EEC selects the best 5GMSu AS instance based on the EAS Profile requirments and the current UE location.

8. Uplink streaming starts. Media is uplink streamed to the 5GMSu AS, the content is prepared according to the application service requirements and is delivered to a 5GMSd AS for distribution (CDN).

## A.X.3 Service relocation considerations

In this use case, relocation of the 5GMS AS may be needed for any of the following reasons:

1. Relocation of the UE.

2. Audience diversity/geographical change may require a rebalancing of edge processing resources.

3. Change of 5GMS Provisioning Session resource template which requires allocation of more computational resource to a 5GMS AS instance than is available on the current compute node.

In any of the above cases, the 5GMS AS supporting the application needs to be transferred to a different edge compute node. The relocation may be performed according to clause 6.4 using the ACR detection entity in Table A.X-1.

Table A.X-1: ACR detection entities for each relocation reason

|  |  |
| --- | --- |
| Relocation reason | ACR detection entity |
| UE relocation | MSH/EEC |
| AS load rebalancing | 5GMS AS/EAS |
| Change of resource template | Application/MSH/EEC |