**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 |
| ***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:*** |  |
|  |  |
| ***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

The user-generated live streaming use case covers scenarios where various processing may occur depending on the requested class of service. In many sessions, the processing may occur in the cloud or at an edge close to the capturing device. In this use case, the 5GMS Application Provider provisions various classes of service referred to as Service Classes (SC).

Each Service Class provides a subset of specific features from the list below:

1. Quality improvement such as:

a. Upscaling.

b. Light correction.

c. Stabilization.

d. Audio quality improvement.

2. Enriching and adding interactivity features such as:

a. Multilingual dubbing and captioning.

b. Overlaying and tagging.

c. Indexing and key feature detection.

d. Navigation improvements.

3. Multirate 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

For each Service Class, the 5GMS Application Provider defines a ~~set of Service Class Requirements (SCR)~~ resource template for the 5GMS AS supporting the service, which 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. Bandwidth.

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.

Note: The translation of a service class to the resource template is the task of the Application Provider.

The 5GMS Application Provider assigns one of the predefined service classes to each user.

~~For each user, the 5GMS Application Provider maintains three descriptor objects:~~

~~1. Service Class (SC).~~

~~2. Service Class Requirements (SCR).~~

~~3. The audience Scale and Geographical Distribution (SGD).~~

~~While SC and SCR are static, the SGD gets updated with each use of service.~~

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



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

The steps are:

1. The 5GMS Application Provider provisions a service class (SC) of user-generated live streaming service and a linked content hosting and distribution service.

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

3. The 5GMS Application Provider, using the user’s current location and service class, creates an EAS Profile (as defined in clause 8.2.4 of TS 23.558 [X]) and include it in the Service Access Information it returns to the 5GMS-Aware Application.

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

5. A new 5GMSu AS is instantiated and provisioned 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 Service Class and the UE location.

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

## A.X.2 Service relocation

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 service class 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 service class | The Application/MSH/EEC |