**3GPP SA4#115-eS4-211096**

**18-27 Aug 2021**

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| *CR-Form-v12.0* | | | | | | | | |
| **Pseudo CHANGE REQUEST** | | | | | | | | |
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|  | **26.804** | **CR** | **<CR#>** | **rev** | **-** | **Current version:** | **0. 2.1** |  |
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| *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] Uplink Streaming: Contribution Reporting | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Tencent | | | | | | | | | |
| ***Source to TSG:*** | SA4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_5GMS-EXT | | | | |  | ***Date:*** | | | 2021-08-12 |
|  |  | | | |  | |  | | |  |
| ***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 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)* | |
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| ***Reason for change:*** | | The study item description identifies the key topic “Uplink Streaming”. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adding additional gap analysis: contribution reporting | | | | | | | | |
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| ***Consequences if not approved:*** | | Key topic not addressed | | | | | | | | |
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| ***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 standard template (or clear reference on how to use an existing standard template) for inclusion in a Content Publishing Configuration, i.e. to be able to provide content preparation instructions in a defined, interoperable format that the 5GMS AF supports through M1.

2. Lack of definition of protocols for media egest from the 5GMSu AS to the 5GMSu Application Provider via M2u.

NOTE: The Content Protocols Discovery APIs allows the 5GMSu Application Provider to discover the supported egest protocols by 5GMSu AS. However, clause 8.1 of TS 26.512 does not currently list any specific egest protocols alongside those for downlink ingest streaming.

3. Lack of content publishing API, i.e. a similar functionality to Content Hosting Configuration in downlink streaming, for provisioning the uplink streaming through M1u.

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 streaming protocols are supported in M5u. Furthermore, it is not clear how the Media Session Handler would retrieve the entry point for uplink streaming to the 5GMSu AS.

5. Lack of Contribution Reporting for uplink streaming.

For downlink streaming, TS 26.501 [15] and TS 26.512 [16] define Consumption Reporting for 5GMSd by which downlink media streaming clients can be provisioned to report their media consumption. The consumption report may include information such as media player entry point (e.g. URL of the DASH MPD), the consumed media (e.g. the AdaptationSet@id attribute in DASH MPD that is currently selected for playback), start and duration of media playback, and the UE’s location. The feature can be configured so that the Media Session Handler submits reports to one or more specific 5GMSd AF instances at specific reporting intervals for some sample percentage of UEs, optionally including the location of the UE.

For uplink media streaming, TS 26.501 [15] and TS 26.512 [16] do not currently define Contribution Reporting which could potentially include information such as the media entry address (and media entry type), start and duration of media uplink streaming, and the UE’s location. Similar to Consumption Reporting, Contribution Reporting could be configured for reports to be sent to one or more 5GMSu instances, with a specific interval between two consecutive reports, for some sample percentage of UEs that perform unlink streaming and optionally requesting including the locations of the UE.

Note: While many aspects of the uplink streaming can be captured and reported by AS, there are two sets of parameters that the Media Session Handler is capable of reporting: 1) the interactive actions by the user or application, such as pause and resume, and 2) the location of UE.

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

### 5.5.6 Candidate Solutions

#### 5.5.6.5 Uplink contribution reporting

The uplink contribution reporting procedure is shown in the following figure.



Figure 5.5.6.5-1: Consumption reporting

Steps:

The first phase is the initialisation phase:

1: The 5GMSu-Aware Application is started.

2: The 5GMSu-Aware Application initiates capture of media.

3: The 5GMSu-Aware Application triggers the Media Session Handler to start content uplink streaming. The Media Entry is provided.

4: The MSH acquires the Service Access Information from the 5GMSu AF including the parameters for the contribution reporting configuration.

5: The Media Session Handler triggers contribution reporting.

6: The Media Session Handler starts the Media Streamer with the Media Entry.

If the user preferences may be changed (steps 7-8):

7: The 5GMSu-Aware Application provides the user preferences changes to the Media Steamer.

8: The 5GMSu-Aware Application also provides the user preferences changes to the Media Session Handler.

If the contribution reporting parameters are updated:

9: The 5GMSu AF updates the contribution reporting parameters.

Media uplink streaming (looping):

10: The Media Streamer streams media content to the 5GMSu AS.

11: The Media Session Handler regularly sends contribution report(s) to the 5GMSu AF.

At the end of the uplink media streaming session:

12: The 5GMSu-Aware Application triggers the Media Session Handler to stop uplink streaming.

13: The Media Session Handler stops contribution reporting.

14: The Media Session Handler may send final contribution report(s) to the 5GMSu AF.

15: The Media Session Handler stops the Media Streamer.

Table 4.2.3‑2 of TS 26.501 [15] describes the parameters used in the consumption reporting for downlink streaming. In contrast, TS 26.501 does not address the contribution reporting for uplink streaming. Therefore, a similar table as Table 4.2.3‑2 can be added to TS 26.501 (in a new subclause of clause 6). Such table is shown as Table 5.5.6.5-1.

Table 5.5.6.5-1: Parameters for contribution reporting configuration

|  |  |
| --- | --- |
| Parameters | Description |
| Reporting interval | Identifies the interval between contribution reports being sent by the Media Session Handler. |
| Server address | A list of 5GMSu AF addresses where the contribution reports are sent by the Media Session Handler. |
| Sample percentage | The proportion of clients that shall report media contribution.  If not specified, all clients shall send reports. |
| Location reporting | Identify whether the Media Session Handler provides location data to the 5GMSu AF (in case of MNO or trusted third parties) |

Additionally, similar to the case of consumption reporting for downlink streaming, a new table can be added to TS 26.512 to indicate the additional parameters for the contribution reporting in uplink streaming. The proposed table is shown in Table 5.5.6.5-2.

Table 5.5.6.5-2: Additional contribution reporting parameters

|  |  |
| --- | --- |
| Parameters | Description |
| Media Entry Type | A fully-qualified term identifier from the controlled vocabulary urn:3gpp:5gms:content-protocol, as specified in clause 8, indicating the type of media at Media Entry. |
| Media Entry | Depending on the type of media entry indicated in Media Entry Type, either a URL endpoint on the 5GMSu AS to which media can be streamed directly at M4u, or else the URL of a document that can be downloaded from the 5GMSu AS which contains the parameters for uplink media streaming at M4u. |
| Contribution reporting client ID | Identifier of the UE contributing media. |
| Location type | UE location type.  This parameter is only used when location reporting is enabled for the UE or for the Uplink Streaming session, and when the UE allows its location to be shared within the Nework Operator’s trust domain.  The location type can be CGI, ECGI or NCGI as defined in TS 23.003 [9]. |
| Location | UE location.  This parameter is only used when location reporting is enabled for the UE or for the Uplink Streaming session, and when the UE allows its location to be shared within the Network Operator’s trust domain. |
| Media contributed | Identifies the contributed media.  The Media Entry Type defines the scheme and possible values for this identifier. |
| Start time | The time when the media uplink streaming session started. |
| Duration | The duration of the media uplink streaming session relative to the above start time. |

The yellow highlighted text in the above tables shows the differences between this table and the consumption parameters tables of TS 26.501 [15].

Similar to consumption reporting provisioning API, the contribution reporting provisioning API can be a RESTful API accessed through the following URL base path:

{apiRoot}/3gpp-m1/v1/provisioning-sessions/{provisioningSessionId}/

Table 5.5.6.5-2 below specifies proposed operations and the corresponding HTTP methods that can be supported by this API. In each case, the Provisioning Session identifier is substituted into {provisioningSessionId} in the above URL template and the sub-resource path specified in the second column is appended to the URL base path.

Table 5.5.6.5-2: Operations supported by the Contribution Reporting Provisioning API

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Sub‑resource path | Allowed HTTP method(s) | Description |
| Activate Contribution Reporting procedure with a Contribution Reporting Configuration | contribution-reporting-configuration | POST | Activate the contribution reporting procedure for the indicated Provisioning Session and provide the Contribution Reporting Configuration. |
| Fetch Contribution Reporting Configuration | GET | Retrieve an existing Contribution Reporting Configuration. |
| Update Contribution Reporting Configuration | PUT,  PATCH | Modify an existing Contribution Reporting Configuration. |
| Delete Contribution Reporting Configuration | DELETE | Deactivate the Contribution reporting procedure for the indicated Provisioning Session. |

The proposed data model for contribution reporting configuration is identical to the consumption reporting provisioning resource in clause 7.7.3.1 of TS 26.512 [16].

An alternative approach would be to define the same API and resource for consumption and contribution reporting, i.e. reporting configuration which is used for provisioning of both downlink and uplink streaming sessions.