**F3GPP TSG SA WG4 113-e *S4-210479***

**06-14 April 2021**

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| *CR-Form-v12.0* | | | | | | | | |
| **Pseudo CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **26.804** | **CR** | **<CR#>** | **rev** | **-** | **Current version:** | **0.1.1** |  |
|  | | | | | | | | |
| *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 | | | | | | | | | |
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| ***Source to WG:*** | Tencent | | | | | | | | | |
| ***Source to TSG:*** | SA4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_5GMS-EXT | | | | |  | ***Date:*** | | | 2021-01-25 |
|  |  | | | |  | |  | | |  |
| ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The study item description identifies the key topic “Uplink Streaming”. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adding call flows for Collaboration Scenario 5, related open issues and potential solutions | | | | | | | | |
|  | |  | | | | | | | | |
| ***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 =====**

### 5.5.4 Mapping to 5G Media Streaming and High-Level Call Flows

#### 5.5.4.1 Collaboration scenario 5 call flow



Figure 5.5.4.1-1: Collaboration scenario 5 Call flow

Steps:

1. The 5GMSu Application Provider creates a Provisioning Session with the 5GMSu AF.

2. The 5GMSu Application Provider requests the 5GMSu AF to create one Content Publishing Configuration that defines the instructions for content egest (M1u).

3. The 5GMSu AF, based on the received Content Publishing Configuration, requests the 5GMSu AS to confirm the availability of content resources for egest.

NOTE 1: M3u procedures between the 5GMS AF and the 5GMS AS are outside the scope of TS 26.512 [?].

4. The 5GMSu AF acknowledges to the 5GMSu Application Provider the successful creation of the Content Publishing Configuration (M1u).

5. The 5GMSu Application Provider optionally provides Service Access Information to the 5GMS-Aware Application (M8, out of scope).

6. The 5GMS-Aware Application requests the 5GMSu Client to start an uplink streaming session (M6/7u).

7. The 5GMSu client optionally (and in the case step 5 was not performed) requests service access information from the 5GSMu AF (M5u).

8. The 5GMSu Client requests start of the uplink streaming session from the 5GSMu AF (M5u).

9. The 5GMSd AF requests instantiation of the content preparation process (M3u).

10. The 5GMSd AS instantiates the content preparation process if is not already running (M3u).

11. The 5GMSd AF acknowledges the instantiation of the content preparation process (M3u).

12. Uplink media streaming starts from the 5GMSu Client to the 5GMSu AS (M4u).

13. Media streaming egest starts from the 5GMSu AS to the 5GMSu Application Provider (M2u).

14. The 5GMSu AS releases its resources after observing a period of interactivity.

NOTE: This step is implementation dependent.

As is shown, a new resource type, the Content Publishing Configuration is added. This describes the configuration of the egest (M2u) used in step 13.

### 5.5.5 Potential open issues

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

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).

### 5.5.6 Candidate Solutions

Since TS 26.512 [?] already defines solutions for the content ingest concerning the open issues of 5.5.5, one possible approach is to allow similar data structures, APIs, and protocols for content egest.

NOTE: The candidate solution provided in the present document merely shows the desired features (by mirroring the distribution features) and is not intended as a proposed solution.

#### 5.5.6.1 Content egest protocols

The existing ingest protocols can be used for egest.

Table 5.5.6.1-1: Adding egest content protocols

| Description | Term identifier | Clause |
| --- | --- | --- |
| Content ingest protocols at interface M2d | | |
| HTTP pull-based content ingest protocol | urn:3gpp:5gms:content-protocol:http-pull-ingest | 8.2 |
| DASH-IF push-based content ingest protocol | urn:3gpp:5gms:content-protocol:dash-if-ingest | 8.3 |
| **Content egest protocols at interface M2u** | | |
| HTTP pull-based content ingest protocol | urn:3gpp:5gms:content-protocol:http-pull-ingest | 8.2 |
| DASH-IF push-based content ingest protocol | urn:3gpp:5gms:content-protocol:dash-if-ingest | 8.3 |

The highlighted rows indicate the added protocols.

#### 5.5.6.2 Content Publishing Configuration API

An M1u API, similar to the M1d Content Hosting Configuration API as used for content ingest, can be defined for content egest.

Table 2: Operations supported by the Content Egest Configuration API

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Sub‑resource path | Allowed HTTP method(s) | Description |
| Create Content Publishing Configuration | content-publishing-configuration | POST | Used to create a Content Publishing Configuration resource. |
| Retrieve Content Publishing Configuration | GET | Used to retrieve an existing Content Publishing Configuration. |
| Update Content Egest Configuration | PUT,  PATCH | Used to modify an existing Content Egest Configuration. |
| Delete Content Publishing Configuration | DELETE | Used to delete an existing Content Publishing Configuration. |
| Purge Content Publishing Configuration cache | content-publishing-configuration/purge | POST | This operation is used to invalidate some or all cached media resources associated with this Content Publishing Configuration. |

As is shown in the table, the sub-resource path in particular is changed for this resource, and other aspects remain identical to Content Hosting Configuration API.

### 5.5.6.2 Content Publishing Configuration Template

The Content Publishing Configuration resource, modelled after the Content Hosting Configuration resource, is shown in Table 5.5.6.2-1.

Table 5.5.6.2-1: Definition of Content Publishing Configuration resource

| Property name | Data Type | Cardinality | Description |
| --- | --- | --- | --- |
| name | String | 1..1 | A name for this Content Publishing Configuration. |
| PublishingConfiguration | Object | 1..1 | Describes the 5GMSu Application Provider's origin server to which media resources will be egested via interface M2u. |
| path | String | 1..1 | The relative path which will be used to address the media resources at interface M2u.  This path is provided by the 5GMSu AF in the case of pull-based egest. |
| pull | Boolean | 1..1 | Indicates whether to the 5GMSu AS shall use Pull or Push for egesting the content. |
| protocol | URI String | 1..1 | A fully-qualified term identifier allocated in the name space urn:3gpp:5gms:content-protocol that identifies the content egest protocol.  The set of supported protocols is defined in Table XXX. |
| entryPoint | String | 1..1 | An entry point to egest the content. The semantics of the entry point are dependent on the selected egest protocol.  In the case of Pull ingest (pull flag is set to True), this parameter is returned by the 5GMSu AF to the 5GMSu Application Provider and indicates the entry point for pulling the content. In this case, the *entryPoint* shall be used as the base URL. In this case, the relative URL content address is provided out of band (e.g. with a manifest through M8u) to the 5GMSu Application Provider.  In case of Push (pull flag is set to false), the entryPoint shall be provided to the 5GMSu AF to indicate the location to which content is to be pushed. In this case, the *entryPoint* shall be used as the base URL. |
| ContributionConfigurations | Object | 1..N | Specifies content preparation for the egested content. |
| contentPreparationTemplateId | String | 0..1 | Indicates that content preparation prior to egest is requested by the 5GMSu Application Provider. |
| canonicalDomainName | String | 1..1 | All resources of the upload shall be accessible through this default FQDN assigned by the 5GMSu AF. |
| certificateId | String | 0..1 | When content is distributed using TLS [16], the X.509 certificate for the origin domain is shared with the 5GMSd AF so that it can be presented by the 5GMSd AS in the TLS handshake at M2d. This attribute indicates the identifier of the certificate to use. |

Note that in the above table:

1. The Pull mode is defined when the Application Service Provider pulls the content from the 5GMSu AS, and conversely, the Push mode is defined when the 5GMSu AS pushed the content to Application Service Provider.

2. Each parameter description is updated based on item 1.

3. Since in the Pull mode, the Application Service Provider needs to have the content URL addresses, it is assumed that that information is provided by other means (e.g. through M8u by the 5GMSu Aware Application).

4. The DistributionConfigurations property in the Content Hosting Configuration resource for M1d is here replaced by the ContributionConfigurations property.

5. The ContributionConfigurations.contentPreparationTemplateId property identifies the Content Preparation Template to be used. Like the Content Preparation Template resource as defined for downlink streaming in TS 26.512 [?], the data model of this resource is determined by its MIME content type.