**3GPP TSG-WG SA4 Meeting # 108-e *S4-200627***

**e-meeting, 6th - 10th April revision of S4-200541**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **26.501** | **CR** | **0014** | **rev** | **-** | **Current version:** | **16.3.1** |  |
|  |
| *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:***  | Corrections to Stage 2 Ingest Configuration Procedures |
|  |  |
| ***Source to WG:*** | Qualcomm |
| ***Source to TSG:*** | S4 |
|  |  |
| ***Work item code:*** | 5GMSA |  | ***Date:*** | <Res\_date> |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | <Release> |
|  | *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:*** | This CR corrects the name of the Ingest procedure and API. It also clarifies the set of parameters that are offered for configuration. |
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| ***Summary of change:*** | This change fixes the Ingest Configuration procedure name and clarifies the configuration parameters. |
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| ***Consequences if not approved:*** | The specification will be inconsistent and key configuration parameters will be missing. |
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| ***Clauses affected:*** | 5.3.2, 5.4 |
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|  | **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:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **First Change** |

### 5.3.2 Baseline provisioning procedure

The present clause describes the baseline procedure to provision the features using the 5GMS System. SLA negotiations between 5GMSd Application Provider with the 5GMS System provider is outside the scope of this document and is reported here for illustration.



Figure 5.3-1: High Level Procedure for provisioning the 5GMS System for downlink streaming sessions

Steps

1. The 5GMSd Application Provider discovers the address (URL) of the 5GMSd AF (M1d) for Session Provisioning.

2. The 5GMSd Application Provider authenticates itself with the system. This procedure reuses existing authentication/authorization procedures, e.g. as defined for CAPIF.

3. The 5GMSd Application Provider creates a provisioning session, providing its 5GMSd Application Provider ID as input. 5GMSd Application Provider queries the capabilities and authorized features.

4. The 5GMSd Application Provider provisions one or more 5GMSA features. A set of authorized features are activated, such as QoE Reporting, Consumption Reporting, Dynamic Policy, Network Assistance and Content Hosting (incl. Ingest). When Content Hosting is offered and selected, the 5GMS Application provider selects the ingest format and configures the Content Hosting behavior of the 5GMSd AS. Content Hosting behavior includes caching (i.e. storage of objects) and proxying, content preparation, access protection (e.g. URL signing), and distribution area (e.g. through geo-fencing).

When Dynamic Policy is offered and selected, the 5GMSd Application provider selects a set of policies, which can be invoked for the unicast downlink streaming session. The UE becomes aware of the selected policies in form of a list of valid Policy Template Ids.

When Consumption Reporting is offered and selected, the 5GMS Application provider provides input on the desired reporting interval. When the 5GMSd Application Provider delegates the service access information handling to the 5GMS System, then also location reporting is selected or de-selected.

When QoE reporting is offered and selected, the 5GMS Application provider provides configuration input on the QoE post processing. When the 5GMSd Application Provider delegates the service access information handling to the 5GMS System, then more detailed QoE reporting is configured.

5. When content hosting is offered and has been selected in step 4, the 5GMSd AF interacts with the 5GMSd AS to allocate M2d resources and configure the ingest format. Then the 5GMSd AS responds with the M2d address. The 5GMSd AF selects the desired ingest format.

6. The 5GMSd AF compiles the service access information. The Service Access Information contains access details and options such as 5GMSd Application Configuration Id, M5d (Media Session Handling) Addresses for Consumption Reporting, QoE Reporting, Dynamic policy, Network Assistance, etc. When content hosting is offered and has been selected in step 4, then also M4d (Media Streaming) information such as the DASH MPD is included.

7. The 5GMSd AF provides the results to the 5GMSd Application Provider.

- When the 5GMSd Application provider selected the full service access information, then the results are provided in form or addresses and configurations for M2d (Ingest), M5d (Media Session Handling) and M4d (Media Streaming)

- When the 5GMSd Application Provider delegated the service access information handling to the 5GMS System, then a reference to the service access information (e.g. an URL) is provided. The Media Session Handler fetches the full service access information later from the 5GMSd AF.

8. When Content Hosting is offered and has been selected in step 4, the 5GMSd Application provider can start ingesting content, using the M2d API address. In case of progressive download or on-demand DASH Sessions, the 5GMSd Application provider uploads the content assets. In case of Live DASH streaming sessions, the content provider starts ingesting the live content.

9. The 5GMSd Application Provider executes Service Announcement and updates the UEs (during lifetime of the provisioning session).

Optional

10. The 5GMSd Application Provider may update the provisioning session.

According Provisioning

11. The 5GMSd AF may send event related or periodic notifications to the 5GMS Application Provider.

According to Schedule or upon request

12. The 5GMSd Application Provider may manually terminate the Provisioning Session (at any time). All associated resources are released. Content may be removed from the 5GMSd AS. The 5GMSd Provider may configure a schedule for Provisioning Session termination.

13. The 5GMSd AF sends a notification upon Provisioning Session termination.

The 5GMSd AF may request the creation or reuse of one or more network slices for the distribution of the content of the provisioned session.

If more than one network slices are provisioned for the distribution of the content of a session, the list of allowed S-NSSAIs shall be conveyed to the target UEs (e.g. through URSP or through M5d or M8d).

NOTE: The 5GMSd AS(s) serving the content are only accessible through the DNN(s) used by the network slice(s) provisioned for the distribution of that content.

## 5.4 Content Hosting Configuration

The 5G Media Streaming architecture defines an interface for provisioning, which offers the procedures to configure content ingest for downlink media streaming over 5G. Once a Provisioning Session is established, content hosting can be configured. The control part of the ingest interface may be performed through the NEF. After media ingest is started, the content is accessible from the 5GMSd AS through a new location identifier.

The interface supports the ingest of the following types of content:

- Live streaming content

- On demand streaming content

- Static files such as images, scene description files, etc.

The interface provides an API that allows a 5GMSd AS to create/update/delete an Ingest aconfiguration. An Ingest configuration contains all the parameters and configurations to a particular content ingest setup.

NOTE 1: In the current version of the present document, the ingest interface only supports Unicast downlink streaming.

The media ingest procedure is as follows:



Figure 5.4-1: Media Ingest procedure

The steps are explained as follows:

1: Initialization: the 5GMS Application Provider discovers the entry point, gets authorization and authentication.

2: Create Ingest configuration: the external 5GMSd AS creates a new Ingest configuration for its content. The 5GMS AF associates the Ingest Configuration with a domain name, supplies the certificate for HTTPS access to the content, sets the caching rules per media type, the distribution area (e.g through geo-fencing), distribution protocol, the desired content processing, URL signing, etc. Upon successful configuration, the 5GMSd AF will respond with the Ingest configuration ID, and the location of the 5GMSd AS to which to send the content (if using the push mode).

3: Provision 5GMSd AS(s): The 5GMSd AF configures the related 5GMSd AS(s) to prepare for media ingest for that particular Ingest configuration. This step may involve instructing the 5GMSd AS(s) to set the appropriate caching rule, perform URL-signing checking, and limit access through geo-fencing.

4: Update configuration information: the 5GMSd AF communicates the Ingest configuration of the 5GMSd AS(s) to the External Media Application Servers for further Media push or pull. The 5GMS AF may then publish the content entry point to the UE, to enable access to the content.

5: Media Ingest: the 5GMSd AS(s) may start pulling or receiving (if using push mode) media data from the 5GMS AP. The 5GMSd AS performs the requested content preparation prior to providing access to the content.

NOTE 2: Pull of Media content from the external 5GMSd AS(s) may be triggered by a request from the 5MGS Client.

A 5GMSd Application Provider may perform updates to the Ingest Configuration to modify different distribution parameters. The allowable updates may be limited by the 5GMS AF.