**F3GPP TSG SA WG4 113-e *S4-210477***

**06-14 April 2021 revision of S4al201154**

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| *CR-Form-v12.0* | | | | | | | | |
| **Pseudo CHANGE REQUEST** | | | | | | | | |
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|  | **26.804** | **CR** | **<CR#>** | **rev** | **-** | **Current version:** | **0.1.1** |  |
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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] Updated text for Content Preparation | | | | | | | | | |
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| ***Source to WG:*** | Tencent | | | | | | | | | |
| ***Source to TSG:*** | SA4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_5GMS-EXT | | | | |  | ***Date:*** | | | 2021-03-30 |
|  |  | | | |  | |  | | |  |
| ***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 “Content Preparation”. | | | | | | | | |
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| ***Summary of change:*** | | Call flows for all collaboration scenarios | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Key topic not addressed | | | | | | | | |
|  | |  | | | | | | | | |
| ***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 =====**

### 5.2.5 Deployment Architectures

The deployment architectures of TS 26.501 [?] Annex B would also be applicable to this topic with no change.

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

#### 5.2.6.1 Call flow for content preparation before downlink streaming

The call flow is shown in Figure 5.2.6.1-1.



Figure 5.2.6.1-1: High-level call flow for content preparation before downlink streaming

Steps:

1. The 5GMSd Application Provider creates a Provisioning Session with the 5GMSd AF (M1d).

2. The 5GMSd Application Provider creates one or more Content Preparation Templates defining instructions for content preparation, as well as the required output format(s) (M1d).

3. The 5GMSd AF, based on the received Content Preparation Templates, (optionally discovers and) requests the 5GMSd AS to verify availability of resources for content preparation (M3d, procedures not specified):

a. Syntax checking of Content Preparation Template(s).

b. Semantic validation of Content Preparation Template(s).

c. Basic assessment of 5GMSd AS resource availability implied by the Content Preparation Template(s).

4. The 5GMSd AF acknowledges to the 5GMSd Application Provider the successful creation of Content Preparation Templates (M1d).

5. The 5GMSd Application Provider creates a Content Hosting Configuration that references one or more Content Preparation Templates created in step 2 above (M1d).

6. The 5GMSd AF, based on the received Content Hosting Configuration, requests the 5GMSd AS to confirm the availability of distribution resources (M3d, procedures not specified).

7. The 5GMSd AF acknowledges to the 5GMSd Application Provider the successful creation of the Content Hosting Configuration (M1d).

8. The 5GMSd Application Provider feeds the content to the 5GMSd AS (M2d).

9. The 5GMSd Application Provider announces the availability of the services to the 5GMS-Aware Application (M8d, out of scope)

If needed, steps 10–14 may optionally be executed:

10. The 5GMSd-Aware Application requests the 5GMSd Application Provider to use the service (M8d).

11. The 5GMSd Application Provider provides the 5GMSd AF with updated Content Preparation Template(s) (M1d).

12. The 5GMSd AF, based on the modified Content Preparation Template(s), requests an updated confirmation of downlink streaming resource availability (M3d).

13. The 5GMSd AF acknowledges to the the 5GMSd Application Provider that the Content Preparation Template(s) have been successfully updated (M1d).

14. The 5GMSd Application Provider acknowledges to the 5GMSd AF the use of the service (M8d).

The rest of the call flow is identical to the 5GMS downlink streaming process, with the exception that content processing runs on the 5GMSd AS per the following steps:

18. The 5GMSd AF requests instantiation of the content preparation process (M3d).

19. The 5GMSd AS instantiates the media preparation process if it (or any of its parts) are not already running.

20. The 5GMSd AF acknowledges the instantiation of the content preparation process (M3d).

Steps 18–20 are not needed if another user has already requested the content and therefore the content preparation process is already running on the 5GMS AS, or if this process was instantiated in earlier steps of the workflow (e.g. in step 3 or step 12).

One use-case for steps 18–20 is when a user requests a content format that is not included in the previously instantiated content preparation process. In this case, 5GMSd AS may add new processes to the content preparation processing to provide the requested content format.

Finally:

24. The 5GMSd AS releases its resources after observing a period of interactivity.

NOTE 2: This is implementation-dependent.

### 5.2.6.2 Call flow for content preparation after uplink ingest streaming

The call flow is shown in Figure 5.2.6.2-1.



Figure 5.2.6.2-1: Call flow for content preparation after uplink ingest streaming

Steps:

1. The 5GMSu Application Provider creates a Provisioning Session with the 5GMSu AF (M1u).

2. The 5GMSu Application Provider creates one or more Content Preparation Templates defining instructions for content preparation, as well as the required output format(s) (M1u).

3. The 5GMSu AF, based on the received Content Preparation Templates (optionally discovers and) requests the 5GMSu AS to verify availability of content preparation and contribution resources, e.g. to allocate 5GMSu content ingest and contribution egest resources. (M3u, procedures not specified):

a. Syntax checking of Content Preparation Template.

b. Semantic validation of Content Preparation Template.

c. Basic assessment of 5GMSu AS resource availability implied by the Content Preparation Template.

4. The 5GMSu AF acknowledges to the 5GMSu Application Provider the successful creation of Content Preparation Templates, as well as successful provisioning of content preparation (M1u).

5. The 5GMSu Application Provider announces the availability of the services to the 5GMS-Aware Application (M8, out of scope)

If needed, steps 6–10 may optionally be executed.

6. The 5GMSu-Aware Application requests the 5GMSu Application Provider to use the service (M8u)

7. The 5GMSu Application Provider provides the 5GMSu AF with updated Content Preparation Template(s) (M1u).

8. The 5GMSu AF, based on the modified Content Preparation Templates, requests an updated confirmation of uplink streaming resource availability (M3u).

9. The 5GMSu AF acknowledges to the 5GMSu Application Provider that the Content Preparation Templates have been successfully updated (M1u).

10. The 5GMSu Application Provider acknowledges to the 5GMSu AF the use of the service (M8u).

The rest of the call flow concerns the 5GMS uplink streaming process:

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

12. The 5GMSu Client optionally requests Service Access Information from the 5GSMu AF (M5u).

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

NOTE 1: Although the above step is defined by the stage 2 design in TS 26.501 [?], it is not realised in Release 16 by stage 3 procedures defined in TS 26.512 [?].

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

15. The 5GMSd AS instantiate the media preparation process if it has not started before (M3u).

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

Steps 14–16 may not be needed if the content preparation process has been instantiated during earlier steps in the call flow (such as between 3 and 8).

17. Uplink media streaming from the 5GMSu Client to the 5GMSu AS commences (M4u).

18. Media streaming egest from the 5GMSu AS to the 5GMSu Application Provider (M2u) commences.

Finally:

19. The 5GMSu AS releases its resources after observing a period of interactivity. Note that this is implementation dependent.

NOTE 2: The 5GMSu Application Provider also sets up the M2u configuration during the provisioning section. The details of such set-up are not shown in the above call flow.

Editor’s Note: The M2 configuration process is the subject of the uplink streaming topic of this study.

### 5.2.6.3 Baseline call flow for content between uplink ingest and downlink streaming

Figure 5.2.6.3-1 shows the call flow for this scenario.



Figure 5.2.6.3-1: High-level call flow for content preparation between uplink ingest and downlink streaming

Steps:

1. Identical to steps 1–7 in 5.2.6.1-1.

2. The 5GMSu Application Provider creates a Provisioning Session with the 5GMSu AF (M1u).

3. The 5GMSu AF requests the 5GMSu AS to confirm the uplink resources availability. (M3u, procedures not specified).

4. The 5GMSu AF acknowledges to the 5GMSu Application Provider the successful provisioning (M1u).

5. The 5GMSu Application Provider announces the availability of the services to the 5GMSu-Aware Application (M8u, out of scope)

Steps 6-9 for uplink ingest streaming are as described in TS 26.501 [?].

1. The 5GMSu AS streams the content to the 5GMSd AS (I2, not specified).

11. The 5GMSd Application Provider announces the availability of the services to the 5GMSd-Aware Application (M8d, out of scope)

12. Identical to steps 10–14 in 5.2.6.1-1.

13. Identical to steps 15–21 in 5.2.6.1-1.

14. The 5GMSu AS releases its resources after observing a period of interactivity. Note that this is implementation dependent.

15. The 5GMSd AS releases its resources after observing a period of interactivity. Note that this is implementation dependent.

### 5.2.7 Potential open issues

Editor’s Note: Identify the issues that need to be solved.

### 5.2.8 Candidate Solutions

Editor’s Note: Provide candidate solutions (including call flows) for each of the identified issues.