**3GPP TSG SA WG4#117e S4-220020**

**E-meeting, 14th – 23rd February 2022**

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| *CR-Form-v12.0* |
| **DRAFT CHANGE REQUEST** |
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|  | **26**.**501** | **CR** | draft | **rev** |  | **Current version:** | **16.9.0** |  |
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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:***  | **[5MBUSA] 5GMS via eMBMS - Hybrid Services** |
|  |  |
| ***Source to WG:*** | Qualcomm Incorporated |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | 5MBUSA |  | ***Date:*** | 07/02/2022 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | 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-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:*** | See work item  |
|  |  |
| ***Summary of change:*** | Add 5GMS via eMBMS |
|  |  |
| ***Consequences if not approved:*** | Work Item objectives not complete |
|  |  |
| ***Clauses affected:*** | 5.10.5 (new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS/TR ... CR  |
| ***affected:*** |  |  |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** | This document assumes that the dCR in S4-220018 is agreed. |
|  |  |
| ***This CR's revision history:*** |  |

**===== CHANGE =====**

### 5.10.5 Procedures for Hybrid Services: 5GMS content delivery via 5G System and eMBMS

#### 5.10.5.1 General

Hybrid services refer to the case for which a basic service is available on eMBMS and at the same time on unicast. The service on unicast may be richer and extended, and may provide additional user experiences. For the hybrid use cases, it is expected that the content is statically provisioned on different delivery networks.

The call flow in Figure 5.10.5‑1 extends that defined in clause 5.6.1 to address generic hybrid use cases. Specific additional use cases are presented in the remainder of clause 5.10.5.



**Figure 5.10.5-1: High-level procedure for hybrid delivery of DASH content**

Steps:

1: The 5GMSd Application Provider triggers 5GMS provisioning and permits hybrid distribution of the media content.

2: As a consequence, the 5GMSd AF provisions MBMS delivery. The MBMS Delivery Session is set up.and the BM‑SC informs the 5GMS AF about the content ingest endpoints.

3: 5GMSd AS substitutes a modified MPD under the direction of the 5GMSd AF to indicate that content is available either on a the MBMS client’s server or on 5GMSd AS.

4: The modified presentation manifest and the ingest endpoints are provided to the 5GMSd Application Provider. The manifest may also be updated by the 5GMSd Application Service Provider.

5: The media content is announced to the 5GMSd-Aware Application and the application requests the entry points for the service.

6: The 5GMSd AS begins ingesting content from the 5GMSd Application Provider and the BM‑SC may, in turn, begin ingesting this content from the 5GMSd AS.

7: The BM‑SC starts one or more MBMS Delivery Sessions.

8: The media content is selected by the 5GMSd-Aware Application.

9: The application initiates the media streaming session through Media Session Handler.

10: The Media Session Handler initiates the MBMS streaming services.

11: The media session handler through the information from the MBMS Client informs the 5GMSd-Aware Application that the service is ready.

12: The 5GMSd-Aware Application starts media playback.

13: The media presentation manifest (MPD) is requested by the Media Player. The presentation manifest may be available from the local Media Server (populated by the MBMS Client) or from the 5GMSd AS , or even from both.

14: The Media Player processes the MPD and identifies that content is available from different sources (the local Media Server and the 5GMSd AS).

15: Under the control of the 5GMSd-Aware Application, the Media Player selects the content and different content options.

16: The Media Player continuously checks with the Media Session Handler – and possibly forwarded to the MBMS Cient if the MBMS User Service data is available – how to use the different content. This depends on the hybrid scenario. Different policies may be considered.

17: The Media Player requests initialization information either from the local Media Server or from the 5GMSd AS. The Media Player repeats this step for each required initialization segment.

18: The Media Player receives the initialization information.

19: The Media Player requests media segments according to the MPD either from the local Media Server or from the 5GMSd AS.

20: The Media Player receives media segments and puts the information into the appropriate media rendering pipeline.

Steps 13–20 are repeated according to the MPD information.

#### 5.10.5.2 Interactive service

In a specific hybrid scenario, an interactive service may be provided via 5GMS while the main media content resources are delivered via eMBMS exclusively. In this case, the following instantations apply:

- In step 2, the media presentation manifest (MPD) only points to content in the local Media Server.

- Step 13 as well as steps 17–20 are all terminated on the local Media Server.

#### 5.10.5.3 Session continuity

In a specific hybrid scenario, the service is made available via both 5GMS and eMBMS, but only one Representation of each Adaptation Set is provided via eMBMS. In this case, the following instantations apply:

- In step 2, one Representation is of each Adaptation Set is distributed via eMBMS.

- As long as the streaming service is accessible over eMBMS, the Media Player selects the media content in step 13 as well as steps 17–20 from the local Media Server; content is not available from the 5GMSd AS.

- If the streaming service becomes unavailable via eMBMS, the Media Player switches to accessing the media content in step 13 as well as steps 17–20 from the 5GMSd AS.

- Once the streaming service becomes available again via eMBMS, the Media Player switches back to accessing the media content in step 13 as well as steps 17–20 from the local Media Server.

#### 5.10.5.4 Time-shifted viewing

In a specific hybrid scenario, the service is made available via both 5GMS and eMBMS, butonly one Representation of each Adaptation Set is provided via eMBMS. The content is retained by the 5GMS AS for a period of time to support timeshifted access. In this case, the following instantations apply:

- In step 2, one Representation is of each Adaptation Set is distributed via eMBMS.

- If the streaming service is accessible via eMBMS and the user is consuming content at the live edge, the Media Player selects the media content in the step 13 as well as steps 17–20 from the local Media Server; content is not available from the 5GMSd AS.

- If the user switches to time-shift viewing mode or streaming service becomes unavailable via eMBMS, the Media Player switches to accessing the media content in the step 13 as well as steps 17–20 from the 5GMSd AS.

- Once the streaming service becomes available again via eMBMS and the user returns to the live edge, the Media Player switches back to accessing the media content in the step 13 as well as steps 17–20 from the local Media Server.

#### 5.10.5.5 Content or component replacement

In a specific hybrid scenario, the service is made available via both 5GMS and eMBMS, but only one Representation of selected Adaptation Sets is provided via eMBMS. Some Adaptation Sets are only available via 5GMS. In another case, two or more content alternatives may exist for a period of time, but only one alternative is provided over eMBMS.

In this case, the following instantations apply:

- In step 2, the MPD is generated to define the different content alternatives.

- If the streaming service is accessible over eMBMS and the user watches content available on broadcast, the Media Player selects the media content in step 13 as well as steps 17–20 from the local Media Server; content is not available from the 5GMSd AS.

- If the user switches content or content components, the Media Player switches to accessing the media content in the step 13 as well as steps 17–20 from the 5GMSd AS. If only a component is replaced, the Media Player accesses content via eMBMS and from the 5GMSd AS at the same time.