**3GPP TSG- Meeting #**

**, , - revision of S4aI240100**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
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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:***  |  |
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| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
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| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | The MBS User Service architecture and protocol follows the modern design philosophies of the 5G System with separation of user services from transport, a service-based architecture and RESTful APIs. At the same time, eMBMS and enTV as used for LTE-based 5G Broadcast support a transparent delivery mode. While interworking in between MBMS and MBS is addressed in TS 23.247, interworking between these two systems at the User Service level is not addressed. In order for MBMS and LTE-based 5G broadcast to leverage MBS User Service technologies, a study is warranted to identify the gaps to fully support this functionality. |
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| ***Summary of change:*** | Addresses the work item objectives for this key issue* Documents the key issue in more detail, in particular how they relate to the 3GPP Media Delivery architecture and/or the MBS User Service architecture
* Studies collaboration scenarios between the Application Service Provider and the 5G System and for each of the key topics.
* Based on existing architectures, provides one or more deployment architectures that address the key topics and the collaboration models.
* Maps the key topics to basic functions and develop high-level call flows.
* Identifies the issues that need to be solved.
* Provides candidate solutions including call flows, protocols and APIs for each of the identified issues.

Identifies gaps and recommend potential normative work for stage-2 and stage-3, including which existing specifications would be impacted and/or if any new specifications would preferably be developed. |
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| ***Consequences if not approved:*** |  |
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| ***Clauses affected:*** | 5.10 (new) |
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|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TR 26.802 CR 0001 |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** | Updated scope, references and abbreviations are in CR 0001**References**[103720] ETSI TS 103 720, 5G Broadcast System for linear TV and radio services; LTE-based 5G terrestrial broadcast system[23247] 3GPP TS 23.247, 3GPP TS 23.247: "Architectural enhancements for 5G multicast-broadcast services; Stage 2".[26502] 3GPP TS 26.502, 5G multicast-broadcast services; User service architecture**Abbrevations**:XXX XXXX |
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| ***This CR's revision history:*** |

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| [**S4aI240100**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/3GPP_SA4_AHOC_MTGs/SA4_MBS/Docs/S4aI240100.zip) | [FS\_AMD] MBS User Service and Delivery Protocols for eMBMS | Qualcomm Germany | Thomas Stockhammer |

**Revisions**: none**Presenter**: Thomas Stockhammer**Online Discussion**: * Thomas: only one comment, which was reference to ETSI document added.
* Richard: I think it will be good to refer 26.502.
* Thomas: ok, i will check.

**Decision**: endorsed. [S4aI240100](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/3GPP_SA4_AHOC_MTGs/SA4_MBS/Docs/S4aI240100.zip) is **Endorsed**.E-Mail comment:Just one small suggestion: you might find TS 26.502 figure 4.9-1 slightly preferable to TS 23.247 figure 5.2-1 as background, although they should be functionally identical. It's a useful reminder that SA4 already has a clause in TS 26.502 that forms the basis for specifying the interworking between MBS and eMBMS.I suppose in Rel-17/Rel-18 the MBSF supports the provisioning of only a subset of eMBMS features. Are you planning to do a comprehensive feature support matrix to identify gaps as a first step in expanding this contribution?This document progresses the work. The CR is submitted for endorsement. |

## ===== CHANGE =====

## 2 References

[103720] ETSI TS 103 720: "LTE-based 5G Broadcast System".

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## 5.10 Key Issue #9: MBS User Service and Delivery Protocols for eMBMS

### 5.10.1 Description

The MBS User Service architecture and protocol follows the modern design philosophies of the 5G System with separation of user services from transport, a service-based architecture and RESTful APIs. At the same time, eMBMS and enTV (as used for LTE-based 5G Broadcast) support transparent delivery mode and group communication. While interworking between MBMS and MBS is addressed in clause 5.2 of TS 23.247 [23247] and clause 4.9 of TS 26.502 [26502], interworking between these two systems at the User Service level is not addressed. In order for MBMS and LTE-based 5G broadcast as defined in ETSI TS 103 720 [103720] to leverage MBS User Service technologies, a study is warranted to identify the gaps to fully support this functionality.

Figure 5.10.1-1 provides the MBS–eMBMS interworking system architecture as documented in TS 26.502 [26502], figure 4.9-1. The functional elements that fall within the scope of [26502] are highlighted in green.



Figure 5.10.1‑1: MBS–eMBMS interworking system architecture (see TS 26.502 [26502], figure 4.9-1)

The interworking architecture defined in clause 4.9 of [26502] addresses the following functionalities:

1. Using MBS northbound interfaces at reference point Nmb10 for MBS, and using eMBMS northbound interfaces at reference point xMB-C or MB2-C for eMBMS.

2. Potential dynamic switching between MBS and eMBMS reception, if a UE implements both an MBS Client and an eMBMS Client.

3. Common ingest of content through reference point Nmb8/xMB-U, if these reference points are compatible.

4. Common MBS User Services distribution and eMBMS delivery methods such that the same ingested content can be delivered to an MBS Client and to an eMBMS Client. UEs supporting only eMBMS are served by this architecture as well.

However, there is no guarantee that 3 and 4 can generally be achieved in practice.

### 5.10.2 Collaboration scenarios and architecture mapping

A more common interest is the ability to deploy a system for which MBS User Services are distributed via eMBMS. This would allow a single, common User Service specification for MBS and eMBMS/5G Broadcast to be maintained going forward. A modification of the architecture is shown in figure 5.10.2-1, in which:

- Only the MBS northbound reference points Nmb10 and Nmb8 are exposed respectively by the MBSF and MBSTF. These are extended as required to support eMBMS transport (as those are extended, they are marked with an asterik).

- The UE in the 5G System is extended to support eMBMS reception, for example an LTE-based 5G Broadcast profile as defined in ETSI TS 103 720 [103720]. Such an approach permits a single middleware client with unified APIs, etc. to be deployed in the UE that is capable of both MBS User Service reception and eMBMS User Service reception.



Figure 5.10.2‑1: MBS User Services on top of eMBMS

A further variant of the architecture is shown in figure 5.10.2-2, in which case MBS delivery is not even in scope, but the MBS User Service is used to deliver only eMBMS traffic.



Figure 5.10.2‑2: MBS User Services on top of eMBMS

Editor’s Note: Study collaboration scenarios between the 5G System and Application Provider for each of the key topics.

Editor’s Note: Another possible architecture would be the use of MB2-U southbound of MBSTF and keep the BM-SC basics to communicate EPS.

### 5.10.3 High-level call flow

Editor’s Note: Map the key topics to basic functions and develop high-level call flows.

### 5.10.4 Gap analysis and requirements

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

### 5.10.5 Candidate solutions

Editor’s Note: Provide candidate solutions including call flows, protocols and APIs for each of the identified issues.

### 5.10.6 Summary and conclusions