**3GPP TSG SA WG4#113-e** ***S4-210617***

**E-meeting, 6th-14th April, 2021 A revision of *S4-210495***

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| *CR-Form-v12.0* | | | | | | | | |
| **PSEUDO CHANGE REQUEST** | | | | | | | | |
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|  | **TR 26.802** | **CR** | **–** | **rev** | **–** | **Current version:** | **1.0.8** |  |
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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 |  | Radio Access Network |  | Core Network |  |

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| ***Title:*** | pCR to TR26.802 on 5GS Broadcast-Multicast User Service | | | | | | | | | |
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| ***Source to WG:*** | TELUS | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_5GMS\_Multicast | | | | |  | ***Date:*** | | | 2021-04-07 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **D** |  | | | | | ***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)*. | | | | | | | |  | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Added potential standardization areas and solutions | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.2 and 7.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | Changes against baseline document TR 26.802 v0.3.0 | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

FIRST CHANGE

[26] 3GPP TS 23.247, v0.1.0: "Architectural enhancements for 5G multicast-broadcast services; Stage 2;" Release 17.

## 3.1 Terms

**Broadcast MBS Session:** See TS 23.247 [26].

**Multicast MBS Session:** See TS 23.747 [26].

**MBS Session:** See TS 23.747 [26].

**Note: I would add the term MBS Service (used in T2 23.747 but not defined). We used the term 5MBS user service. I would harmonise the term.**

NEXT CHANGE

## 6.2 Potential Standardization Areas

### 6.2.1 Introduction

Initially, the following areas are identified as potential standardization areas:

* Create a 5GMS-independendent 5MBS User Service Architecture.
* Make 5GMS + MBS one scenario.
* Define the interfaces and functions independent of 5GMS.
* Expect to have a new spec TS 26.502 for 5MBS User Service Architecture.

### 6.2.2 5MBS User Service Architecture

Figure 6.2-1 provides a view of the network architecture for 5MBS User Service. In this figure, two potential standardization areas are identified:

1. How User Service AF and MBSF interact to support MBS session operations and transport (i.e. xMB-C and MB2-C reference points).

2. How to provide MBSTF functionality related to MBS data handling (e.g. encoding) via xMB-U and MB2-U interfaces. Based on the definition in TS 23.247, MBSTF performs generic packet transport functionalities available to any IP multicast enabled application such as framing, multiple flows, packet FEC (encoding). It also performs multicast/broadcast delivery of input files as objects or object flows. If needed, MBSTF provides a media anchor for MBS data fraffic and sourcing of IP multicast.



Figure 6.2-1: Network Architecture for 5MBS User Service

User service is an entity that is used in presenting a complete service offering to the end-user and allowing the end-user to activate or deactivate the service. For example, 5G Multicast ABR media streaming service could be a user service. The user service includes DASH downlink streaming defined in TS 26.501. It also includes the use of MBS session to deliver the DASH segments in multicast.

The 5MBS User Service architecture that is 5GMS-independendent. But it also provides the scenario that 5GMS is the northbound application function, as depicted in Clause 5.4 where four different deployment models are presented.

NEXT CHANGE

# 7 Potential Solutions

## 7.1 General

This clause provides potential solutions for the standardization areas identified in clause 6.

## 7.2 Support of multicast ABR in 5G Media Streaming Architecture

(SNIPPED)

## 7.3 Multicast-Broadcast User Service

An “MBMS user service”-like layer is expected to be provided by MBSF and MBSTF. The 5MBS User Service enables applications. It presents a complete service offering, or a set of APIs to the end-user and allows the end-user to activate or deactivate reception of the service. When delivering content to a 5MBS Client, the MBSTF uses one or more 5MBS Delivery Functions.

Figure 7.3-1 depicts a potential solution for functional entities in MBSF and MBSTF to support Multicast-Broadcast user service.



Figure 7.3-1: 5GS multicast-broadcast user service functional entities

In MBSF, the following functions to support 5GMBS is going to be defined in 3GPP TS 23.247 [26]

- Interacting with MB-SMF for MBS session operations, determination of transport parameters, and session transport (via interface Nx1)

- Selection of serving MB-SMF for an MBS Session (via interface Nx1)

- Interacting with PCF (via interface Nx3)

The following MBSF functionality and procedures related to service and MBS data handling is studied in this document to support Multicast-Broadcast user service

* Determination of sender IP multicast address for the MBS session if IP multicast address is sourced by MBSTF (via interface Nx2)
* Interacting with AF and NEF via xMB-C/MB2-C (to discuss: *SA4’s view is that the interface between NEF and AF is N33*?)

Editor’s Note: At this stage, MB2-C interface will leave as is, as specified in 3GPP TS 29.468 [18] and RFC 6733 [20]

* The User Service Discovery/Announcement provides service description information, which is necessary to initiate a 5MBS user service. The service description information is presented to the end-user, as well as application parameters used in providing service content to the end-user.

In MBSTF, the use of N6 interface in providing IP multicast traffic and managing 5MBS sessions is described in detail in 3GPP TS 23.247 [26].

A set of 5MBS Delivery Functions is provided in MBSTF. These functions or methods provide functionality such as security and key distribution, reliability control (by means of forward-error-correction techniques) and associated delivery procedures. Initially, the following delivery methods/functions are going to be studied.

***- Download delivery function:*** This includes file distribution (both carousel and download). Functionally, this is equivalent to the “Download Delivery Method” in TS 26.346 [16].

Figure 5.3.1.1-1 provides a view where a simplified user plane model for FLUTE as a MBSTF function.

Editor’s Note: the protocol to support Download delivery function is FFS.

***- Media segment delivery function:*** This should support ABR and chunked segment streaming for low latency. A typical use case is to deliver segmented real-time media encapsulated in the delivery units of a multicast media transport protocol.

Editor’s Note: The Media segment delivery function might use the generic download delivery function.

***- Transparent delivery function:*** This supports the IP streaming use cases, for which UDP payloads (also referred to as Application Data units) are distributed as part of UDP or IP flows carried to the UE over an MBS session. Examples for higher layer protocols are RTP, packetized MPEG-2 TS or other UDP-based streams.

***- Group Communication delivery function:*** This delivers a multicast UDP/IP packet flow to the UE.

Editor’s Note: Transparent delivery function and Group Communication delivery function are FFS.Other delivery methods may be added beyond the current release.

The above Delivery Functions may use either a multicast or broadcast session to deliver content to a receiving application, and may also make use of a set of 5MBS associated procedures. MBS session refers to a multicast session or a broadcast session, as defined in TS 23.247 [26]. In Multicast MBS session, an MBS session is to deliver the multicast communication service. A multicast MBS session is characterised by the content to send, by the list of UEs that may receive the service and optionally by a multicast area where to distribute it. In Broadcast MBS session, an MBS session delivers the broadcast communication service. A broadcast MBS session is characterised by the content to send and the geographical area where to distribute it.



Figure 7.3-2: 5G multicast media streaming user service functional entities

Figure 7.3-2 depicts a deployment for 5G media streaming user service delivery over multicast. The 5GMSd Application Provider is an external application or some content-specific media functionality (e.g. media creation, encoding and formatting) that uses 5GMSd to stream media to a 5GMSd-Aware Application.

The 5GMS AF provides 5G media streaming user service provisioning, and various control functions to the Media Session Handler. It may relay or initate a request for different PCF treatment.

In the deployment of Figure 7.3-2, the AF and MBSF are fully separated. Alternatively, as depicted in Figure 5.4.2-1, MBSF is integrated within the 5G MS user service AF. MBSF/AF uses the newly developed Nx2 API (?) to configure and control the multicast delivery functions.

Detailed MBSF and MBSTF deployment options in UE are described in Clause x.y.z

Editor’s Note: how to use the 5GS broadcast-multicast user service to address key issues 1 and 4 is FFS.

END OF CHANGES