**3GPP TSG-SA WG4 Meeting #118e *S4-220471r03***

**, 6 - 14 April 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **Pseudo CHANGE REQUEST** | | | | | | | | |
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|  | **26.517** | **CR** |  | **rev** | **-** | **Current version:** | **1.0.0** |  |
|  | | | | | | | | |
| *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:*** | [5MBP3]: Stage 3 Proposal for Clause 6 (Object Distribution Method) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson LM | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5MBP3 | | | | |  | ***Date:*** | | | 31.3.2022 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***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 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | |  | | | | | | | | |
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| ***Summary of change:*** | | This pCR starts proposing Stage 3 text for the Object Distribution Method, based on existing text in TS 26.346 | | | | | | | | |
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| ***Consequences if not approved:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | |  | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  |  | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\* First Change \*\*\*\*

# 6 Object Distribution Method

Editor’s Note:

* Specify the stage 3 protocols for the MBS distribution methods (between MBSTF andMBS Client) based on existing MBMS delivery methods.
  + Object distribution method, based on or reference to clause 7 of TS 26.346.
* Agreements per S4-220023
* Object delivery Method that includes:
  + Download delivery method, File Delivery as defined in TS 26.346, clause 7.
  + DASH/HLS over MBMS as defined in TS 26.346, clause 5.6 and 5.7.
* For the object delivery method, it is proposed to differentiate two different cases.
  + Non-real-time file delivery including Carouselling
    - Selected properties of this mode include
      * Scheduled delivery
      * File repair
      * Carousel (for example supporting functionalities defined in DSM-CC)
      * Post-delivery reporting
      * File delivery QoS
      * Usage of FEC for file delivery
      * Support of single large file distribution
    - On stage-3 it is expected that we use FLUTE as defined in TS 26.346 with the following proposal:
      * Upgrade to the latest version of ALC, FLUTE and LCT
      * Keep a legacy version
      * Profile/remove any non-used functionalities based on MBMS Download Profile in TS 26.346, Annex L.4
  + Object Streaming addressing DASH/HLS
    - Selected properties of this mode include
      * Timed delivery
      * Object deadline that is relevant for proper application operation.
      * Concurrent metrics reporting
      * Usage of FEC for object delivery
      * Sequence of multiple objects
      * Possibly multiple flows
      * Limited size
      * Partial objects
    - Enhancements are needed beyond the existing FLUTE.
      * Resolve and address object timing model (stage-3).

## Agreement from offline

1: Avoid Copying, work with reference

2: extend 26.346, adding a terminology mapping sections, this is ffs

3: extend 26.346, adding a new 2022 FDT schema, which removes all the profiled out elements (Annex L.4) from the schema

4: 26.517 should reference 26.346, offering a fully backward compatible solution, and this new schema.

5: 26.517 may need to define a new SDP line for MBS Service Type.

6: SDP & QOS, hmmm

7: Similar “referencing” for Packet Distribution

## 6.1 General

## The FLUTE based Object Distribution Method is based on the MBMS Download Profile as defined in Clause L.4 of TS 26.346 [x]. The Object Distribution Method supports the transmission of media segments, e.g. CMAF segments [x] and also non-real-time content. 6.2 Usage of FLUTE for Object Distribution Method

### 6.2.1 General

The FLUTE based Object Distribution Method is based on the MBMS Download Profile as defined in Clause L.4 of TS 26.346 [x]. The Object Distribution Method supports the transmission of media segments, e.g. CMAF media segments [x] and also non-real-time content.

In order to fetch missing portions of an object, the MBS Client may use the Object Repair services. The Object Repair service is realized as a Byte-Range based File Repair, as specified in clause 9.3.6.2 of TS 26.346 [x].

Editor’s Note: The usage of Alternate-Content-Location-1 and Alternate-Content-Location-2 elements should be supported for backward compatibility.

For MB Sessions, the MBSTF may use the Reduced FDT Schema according to Clause L.6.

### 6.2.3 Session Description

#### 6.2.3.1 General

The Session Description metadata unit contains the needed information to activate the reception of an Object Distribution Method. The Session Description metadata unit is formatted according to the Session Description Protocol [y]. The Session Description metadata unit for the Object Distribution Method is based on the Session Description parameters as defined in Clause 7.3 of TS 26.346 [x] with the following restrictions and extensions.

Restrictions:

- The “Mode of MBMS bearer per media” parameter (Clause 7.3.2.7 of [x]) shall not be used.

- The “QoE Metrics” (as defined in sub-clauses 7.3.2.0 of [x]) shall not be used

- The “Service-language(s) per media” (Clause 7.3.2.9 of [x]) shall not be used. It is assumed, that the service languages are described within an application manifest.

Editor’s Note: The relaxation of the number of FLUTE Sessions as defined in Clause 7.3.2.4 is ffs. An alternative / better way would be to allow multiple Object Distribution Sessions within one USD and use a baseUrl for binding.

Editor’s Note: The usage of Alternative TMGI is ffs. A very large network may use multiple PLMN IDs. As a result, the same service may be offered using different TMGIs within the according area.

Extensions:

- When an the MBS Session is of MBS Service Type *Broadcast* or when the Multicast MBS Session Type uses a TMGI as MBS Session ID, the *MBS service type of MBS Session* declaration attribute as defined in Clause 6.2.3.2 shall be present in the Session Description.

#### 6.2.3.2 MBS service type of MBS Session

A new MBS service type declaration attribute is defined which results in, e.g.:

- a=mbs-servicetype:broadcast 123869108302929

- OR

- a=mbs-servicetype:multicast 123869108302929

The MBS service type declaration attribute shall be used in session description metadata unit using one or more MBS broadcast sessions or multicast MBS sessions.

The SDP apptibute shall be declared at session level. The session level attribute applies to all media entries without a media level occurrence of the "mbs-servicetype" attribute. The Session Description metadata unit shall include only a single instance of MBS service type declaration attribute.

Definition:

- mbs-service-type-declaration-line = "a=mbs-servicetype:" ("broadcast"/"multicast" SP tmgi) CRLF

- tmgi = 1\*15DIGIT

Note: Please find below an example of the building of the TMGI:

UK MCC = 234 (MCC Digit 1 = 2; MCC Digit 2 = 3 and MCC Digit 3 = 4)

Vodafone UK MNC = 15

Therefore, with padding, Vodafone UK MNC = 15F (MNC Digit 1 = 1; MNC Digit 2 = 5 and MNC Digit 3 = F)

MBS Service ID = 70A886

Therefore, TMGI = 70A886 32F451 (Hex)

Therefore, TMGI = 123869108302929 (Decimal)

The Temporary Mobile Group Identity (tmgi) information element is defined in TS 24.008 [x] including the coding of the fields. Octets 3 to 8 (MBS Service ID, MCC and MNC) shall be placed in the tmgi attribute of the MBS service type declaration line, and are encoded as a decimal number. Octet 3 is the most significant octet. As this is encoded as a decimal number, leading zeros of the MBS Service ID field may be omitted.

#### 6.2.3.3 SDP Examples for FLUTE Session

Here is a full example of SDP description describing a FLUTE session:

*v=0*

*o=user123 2890844526 2890842807 IN IP6 2201:056D::112E:144A:1E24*

*s=Object Distribution session example*

*i=More information*

*t=2873397496 2873404696*

*a=mbs-servicetype:broadcast* 123869108302929

*a=FEC-declaration:0 encoding-id=1*

*a=source-filter: incl IN IP6 \* 2001:210:1:2:240:96FF:FE25:8EC9*

*a=flute-tsi:3*

*m=application 12345 FLUTE/UDP 0*

*c=IN IP6 FF1E:03AD::7F2E:172A:1E24/1*

*b=1000*

*a=lang:EN*

*a=FEC:0*

Below is a second example of an SDP description describing a FLUTE session and which indicates that 25% redundant FEC protection is applied to the FEC encoding of the video Segments of the associated DASH-formatted content:

*v=0*

*o=user123 2890844526 2890842807 IN IP6 2201:056D::112E:144A:1E24*

*s=Object Distribution session carrying 2-hour DASH-encoded program*

*i=More information*

*t=3615124600 3615131800*

*a=mbs-servicetype:broadcast* 123869108302929

*a=FEC-declaration:0 encoding-id=1*

*a=FEC-redundancy-level:0 redundancy-level=25*

*a=source-filter: incl IN IP6 \* 2001:210:1:2:240:96FF:FE25:8EC9*

*a=flute-tsi:5*

*m=video 10111 FLUTE/UDP 0*

*c=IN IP6 FF1E:03AD::7F2E:172A:1E24/1*

*b=2048*

*a=lang:EN*

Below is a third example of an SDP description describing a FLUTE session with three TMGIs: one associated with the MBS Service type declaration attribute, and two others that are carried in the "alternative-tmgi" attribute:

*v=0*

*o=user123 2890844526 2890842807 IN IP6 2201:056D::112E:144A:1E24*

*s=*Object Distribution *session carrying 2-hour DASH-encoded program*

*i=More information*

*t=3615124600 3615131800*

*a=mbs-servicetype:broadcast* 123869108302929

*a=FEC-declaration:0 encoding-id=1*

*a=FEC-redundancy-level:0 redundancy-level=25*

*a=source-filter: incl IN IP6 \* 2001:210:1:2:240:96FF:FE25:8EC9*

*a=flute-tsi:5*

*a=alternative-tmgi:*123869108302899,123869108302915

*m=video 10111 FLUTE/UDP 0*

*c=IN IP6 FF1E:03AD::7F2E:172A:1E24/1*

*b=2048*

*a=lang:EN*

### 6.2.4 Object Distribution Profile

#### 6.2.4.1 Introduction

#### 6.2.4.2 Single object distribution mode

#### 6.2.4.3 Segment streaming profile

The segment streaming profile should be same as the Object Distribution except the following items

- Content-MD5 and File-ETag may be not presented

Editor’s Note: It should be clarified, what triggers the MBS Client to make an object or a partial object available.

\*\*\*\* Old Text \*\*\*\*

\*\*\*\* Last Change \*\*\*\*