**SA WG2 Meeting #152E e-meetingS2-2207689r03**

**Elbonia, Aug 17 – 26, 2022 *(was S2-220xxxx)***

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.247** | **CR** | **xxx** | **rev** | **-** | **Current version:** | **17.3.0** |  |
|  | | | | | | | | |
| *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:*** | Allignment with SA4 work on MBS service announcements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai-Bell | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5MBS | | | | |  | ***Date:*** | | | 2022-08-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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:*** | | SA4 3GPP TS 26.346: "MBMS: Protocols and Codecs" is being referenced for USD. However, this specification is not applicable for MBS, where SA4 is specifying comparable information in 3GPP TS 26.502: “5G multicast–broadcast services; User Service architecture”, and 3GPP TS 26.517: “5G Multicast-Broadcast User Services; Protocols and Formats”.  The relationship of those specifications to the information about service information in Clause 6.11 also needs to be clarified. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Remove reference to TS 26.346 and add references to TS 26.502 and TS 26.517.  The Service Announcement may be encoded as defined in TS 26.517 or use application specific formats outside the scope of 3GPP.  User Service Announcement information may be delivered to the UE via application specific means or as defined in TS 26.502. | | | | | | | | |
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| ***Consequences if not approved:*** | | Misalignment with SA4 work on 5MBS and reference to wrong SA4 specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2; 6.11; 7.3.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* \* First change \* \* \* \*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.146: "Multimedia Broadcast/Multicast Service (MBMS); Stage 1".

[3] 3GPP TS 22.246: "Multimedia Broadcast/Multicast Service (MBMS) user services; Stage 1".

[4] 3GPP TS 22.261: "Service requirements for the 5G system".

[5] 3GPP TS 23.501: "System architecture for the 5G System (5GS)".

[6] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[7] 3GPP TS 23.503: "Policy and charging control framework for the 5G System (5GS); Stage 2".

[8] 3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS); Architecture and functional description".

[9] 3GPP TS 38.300: "NR; Overall description; Stage-2".

[10] 3GPP TS 23.468: "Group Communication System Enablers for LTE (GCSE\_LTE)".

[11] 3GPP TS 26.348: "Northbound Application Programming Interface (API) for Multimedia Broadcast/Multicast Service (MBMS) at the xMB reference point".

[12] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[13] Void [14] Void.

[15] 3GPP TS 38.413: "NG Application Protocol (NGAP)".

[16] 3GPP TS 38.401: "NG-RAN; Architecture description".

[17] 3GPP TS 29.244: "Interface between the Control Plane and the User Plane Nodes; Stage 3".

[18] 3GPP TS 26.502: "5G Multicast-Broadcast User Service Architecture".

[19] 3GPP TS 29.510: "Network Function Repository Services; Stage 3".

[20] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

[x] 3GPP TS 26.502: "5G multicast–broadcast services; User Service architecture".

[y] 3GPP TS 26.517: "5G Multicast-Broadcast User Services; Protocols and Formats".

\* \* \* \* Second change \* \* \* \*

## 6.11 Service Announcement

Service Announcement provides the UE with descriptions specifying the multicast or broadcast services to be delivered as part of MBS Session.

The Service Announcement may be encoded as defined in TS 26.517 [y] or use application specific formats outside the scope of 3GPP.

User Service Announcement information may be delivered to the UE via application specific means or as defined in TS 26.502 [x], using one of the following methods:

* via an MBS Session; or
* via a regular PDU Session.
* the information contained in Service Announcement may also be pre-configured in UE.

User Service Announcement information received from the network takes precedence over Service Announcement information pre-configured in the UE.

The Service Announcement includes the MBS Session ID(s), which is represented by TMGI or a Source Specific IP Multicast Address, for the service. When the MBS Session ID is Source Specific IP Multicast Address, the Service Announcement may include the PLMN ID of the PLMN and NID for an SNPN in which the service is delivered.

The Service Announcement includes an MBS Service Type, which indicates whether the MBS Session for the service is multicast or broadcast.

NOTE 1: A Source Specific IP Multicast Address as MBS Session ID indicates a multicast session.

For local MBS service, the Service Announcement may include the MBS service area. The MBS service area used by AF can be Cell ID list, TAI list, geographical area information or civic address information. Amongst them, Cell ID list and TAI list shall only be used by AFs who reside in trust domain, and when the AFs are aware of such information.

If the MBS Session is multicast, the Service Announcement may include the DNN and S-NSSAI of the PDU Session to indicate which PDU Session is associated with the MBS Session.

NOTE 2: For multicast, AF or MBSF provides Service Announcement only after the MBS information is available to 5GC or the start time need be included, to avoid potential rejection sent by SMF of the MBS session join request.

NOTE 3: The MBS Service related information, e.g. default PLMN ID, DNN and S-NSSAI can be pre-configured in the UE.

NOTE 4: If DNN and S-NSSAI information is not provided in the service announcement or pre-configured, how UE determines the PDU session to join the MBS Session is implementation specific.

If the MBS Session is broadcast, the Service Announcement may include the MBS FSA ID(s) and optional frequency information associated with the broadcast MBS session.

The Service Announcement may be provided to a UE by AF or MBSF, or may be retrieved by the UE from those entities.

NOTE 5: How the UE can get the Service Announcement from other entities is not specified.

\* \* \* \* Fourth change \* \* \* \*

### 7.3.1 MBS Session Start for Broadcast

The Broadcast Session Start follows the common procedure specified in clause 7.1.1.2 or clause 7.1.1.3, which consist of TMGI Allocation and MBS Session Create. It is possible for AF to allocate TMGI once but create the MBS Session for multiple times. A combined procedure to perform both TMGI allocation and MBS Session Create is available.

The TMGI Allocation is used by AF to obtain the TMGI as MBS Session ID (i.e. TMGI) and perform service announcement towards UEs.

The MBS Session Create (with MBS service type set to broadcast service) is used by the AF to indicate the impending start of the transmission of MBS data, and to provide the session attributes, so that resources for the MBS Session are set up in the MB-UPF and in the NG-RAN for 5GC Shared MBS traffic delivery. The MBS Session Create can be used if TMGI has not been allocated. In this case, MB-SMF will allocate a unique TMGI for the AF and then start the MBS Session.

NOTE 1: When the multicast transport between NG-RAN and MB-UPF is described below, source specific multicasting is assumed.

To receive the data of broadcast communication service, the UE needs to obtain the service announcement information using the methods defined in clause 6.11..



Figure 7.3.1-1: MBS Session Establishment for Broadcast

0 Based on OAM configuration, RAN nodes announce in SIBs over the radio interface information about the MBS FSA IDs and frequencies of neighbouring cells.

1. To establish broadcast MBS session, the AF performs TMGI allocation and MBS session creation as specified in clause 7.1.1.2 or 7.1.1.3. The MBS service type indicates to be broadcast service. The MBS FSA ID(s) of a broadcast MBS session are communicated in the service announcement towards the UE. The UE compares those MBS FSA IDs(s) with the MBS FSA ID(s) in SIBs for frequency selection.

2. The MB-SMF may use NRF to discover the AMF(s) supporting MBS based on the MBS service area and select the appropriate one(s). Then the MB-SMF sends the Namf\_MBSBroadcast\_ContextCreate (TMGI, N2 SM information ([LL SSM], 5G QoS Profile), MBS service area, [MBS FSA ID(s)]) messages to the selected AMF(s) in parallel if the service type is broadcast service. The MB-SMF may include a maximum response time in the request.

3. The AMF transfers the MBS Session Resource Setup Request message, which contains the N2 SM information in the received Namf\_MBSBroadcast\_ContextCreate Request to all NG-RANs which support MBS in the MBS service area. The AMF may include the MBS service area.

4. NG-RAN creates a Broadcast MBS Session Context and stores the TMGI and the QoS Profile in the MBS Session Context. The LL SSM are optional parameters and only provided by MB-SMF to NG-RAN if N3mb multicast transport is configured to be used in the 5GC. If MBS FSA ID(s) were received, the NG-RAN may use those MBS FSA ID(s)s to determine cells/frequencies within the MBS service area to broadcast MBS session data based on OAM configuration about the MBS FSA IDs and related frequencies.

5. If NG-RAN prefers to use N3mb multicast transport (and if LL SSM is available in NG-RAN), the NG-RAN joins the multicast group (i.e. LL SSM).

If NG-RAN prefers to use N3mb point-to-point transport (or if the LL SSM is not available in NG-RAN) between the NG-RAN and MB-UPF, NG-RAN provides its N3mb DL Tunnel Info.

6. The NG-RAN reports successful establishment of the MBS Session resources (which may include multiple MBS QoS Flows) by sending MBS Session Resource Setup Response (TMGI, N2 SM information ([N3mb DL Tunnel Info])) message(s) to the AMF. N3mb DL Tunnel Info is only available when point-to-point transport applies between MB-UPF and NG-RAN. For more details, refer to TS 38.413 [15].

7. The AMF transfers the Namf\_MBSBroadcast\_ContextCreate Response () to the MB-SMF. The AMF should respond success when it receives the first success response from the NG-RAN(s). And if all NG-RAN(s) report failure, the AMF should respond failure. The MB-SMF stores the AMF(s) which responds success in the MBS Session Context as the downstream nodes. If the AMF receives the NG-RAN response(s) from all involved NG-RAN(s), the AMF should include an indication of completion of the operation in all NG-RANs.

8. If N3mb point-to-point transport is to be used (i.e. N3mb DL Tunnel Info is present in the Namf\_MBSBroadcast\_ContextCreate Response message from AMF), the MB-SMF sends an N4mb Session Modification Request to the MB-UPF to allocate the N3mb point-to-point transport tunnel for a replicated MBS stream for the MBS Session. Otherwise, step 8 can be skipped.

9. NG-RAN broadcasts the TMGI representing the MBS service over radio interface. Step 9 can take place in parallel with step 6.

10. Another NG-RAN may report successful establishment of the MBS Session resources (which may include multiple MBS QoS Flows) by sending MBS Session Resource Setup Response (TMGI, N2 SM information ([N3mb DL Tunnel Info])) message after the AMF transferred the Namf\_MBSBroadcast\_ContextCreate Response () to the MB-SMF.

11. The AMF transfers the Namf\_MBSBroadcast\_ContextStatusNotify request () to the MB-SMF. When the AMF receives the response from all NG-RAN nodes, the AMF includes an indication of the completion of the operation. If the AMF does not receive responses from all NG-RAN nodes before the maximum response time elapses since the reception of the Namf\_MBSBroadcast\_ContextCreate Request, then the AMF should transfer the Namf\_MBSBroadcast\_ContextStatusNotify request () which indicates partial success or failure.

12. If N3mb point-to-point transport is to be used (i.e. N3mb DL Tunnel Info is present in the MBS Session Start Response message from AMF), the MB-SMF sends an N4mb Session Modification Request to the MB-UPF to allocate the N3mb point-to-point transport tunnel for a replicated MBS stream for the MBS Session. Otherwise, step 12 can be skipped.

13. The AF starts transmitting the DL media stream to MB-UPF using the N6mb Tunnel, or optionally un-tunnelled i.e. as an IP multicast stream using the HL MC address.

14. The MB-UPF transmits the media stream to NG-RAN via N3mb multicast transport or point-to-point transport.

15. The NG-RAN transmits the received DL media stream using DL PTM resources.

NOTE 2: Step 6-8 and 2-4 are comparable to step 2-5 and 6-7 in clause 7.2.1.4, respectively.

\* \* \* \* End of changes \* \* \* \*