**3GPP TSG-SA2 Meeting # 147E** **(e-meeting) *S2-2107195r06***

**Elbonia, October 18 - 22, 2021 (revision of )**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.247** | **CR** | **0006** | **rev** | **-** | **Current version:** | **17.0.0** |  |
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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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Multicast MBS Session: resolving ENs and cleanup | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson, CATT, vivo, Nokia, Nokia Shanghai-Bell | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5MBS | | | | |  | ***Date:*** | | | 2021-10-08 |
|  |  | | | |  | |  | | |  |
| ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | #1 Clause 7.2.7 includes the following EN:  *Editor´s note: Whether this procedure can be combined with clause 7.2.6 will be addressed in the next meeting*  It is proposed to resolve the EN by combining 7.2.7 to 7.2.6 because they are the same procedure. Separating them may be interpreated that update of QoS in 7.2.6 and update of MBS service area 7.2.7 are different procedures that cannot be executed together executed separately, which is incorrect.  #2 For TMGI allocation and deallocation, the service operation names in MB-SMF are Nmbsmf\_ TMGI\_Allocate and Nmbsmf\_ TMGI\_Deallocate specified in clause 9.1.2, while the ones in NEF are Nnef\_ MBSTMGI\_Allocation and Nnef\_ MBSTMGI\_Deallocation specified in 9.4.2. It is proposed to use allocate/deallocate, which is more suitable in service operation naming. | | | | | | | | |
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| ***Summary of change:*** | | Merge clause 7.2.7 into clause 7.2.6, and corrections are also made to improve consisteny  In clause 9.4.2, update the service operation names to Nnef\_MBSTMGI\_Allocate and Nnef\_MBSTMGI\_Deallocate | | | | | | | | |
| ***-*** | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Risk of interpreting the update of QoS and update of MBS service area as separate procedure that are not executed together which is incorrect  Inconsistent service operation names. | | | | | | | | |
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| ***Clauses affected:*** | | 7.2.6, 7.2.7, 9.4.2.2, 9.4.2.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* START CHANGE \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 7.2.6 Multicast session update procedure

Multicast MBS session update procedure is invoked by the AF to update the service requirement (result in multicast QoS parameters update and/or multicast QoS flow addition/removal) and/or MBS Service Area for an ongoing multicast session. For the interaction between AF and MB-SMF, see clause 7.1.1.6 and 7.1.1.7.



Figure 7.2.6-1: Multicast MBS Session update procedure.

1. This procedure is triggered by the MB-SMF receiving the updated service requirement and/or MBS Service Area for a multicast MBS Session, see clauses 7.1.1.6 and 7.1.1.7.

2. The AF providing the updated service area may also inform UEs at application level about the new service area via a service announcement.

NOTE 1: If a UE is located in a cell which was previously outside the service area and is now inside the updated service area, the UE can join the multicast service as specified in clause 7.2.1.3.

For QoS updates steps 3 to 7 are performed.  
For MBS Service Area update steps 3 to 7 may be performed to allow NG-RAN to terminate data transmission in the area which is no longer in the MBS Service Area..

3. The MB-SMF invokes Namf\_MBSCommunication\_N2MessageTransfer service operation (MBS Session ID, [Area Session ID], N2 SM message container (TMGI, [QoS profile(s) for multicast MBS session], [MBS Service Area], [Area Session Id])) to the AMF(s).

4. The involved AMF sends N2 MBS session request (N2 SM message container) to NG-RAN nodes handling the multicast MBS session and possible Area Session ID based on the RAN node IDs stored in the AMF for the MBS session.

5. The NG-RAN node updates the QoS profile and/or MBS Service Area for the multicast MBS session based on the N2 MBS session request. If only QoS parameters are updated without multicast QoS flows added/removed, the NG-RAN may also update the QoS parameters of the associating PDU Sessions.

For MBS Service Area update, the NG-RAN updates the MBS session context with the updated MBS Service Area. The NG-RAN stops transmission of the related multicast data in the cell(s) which is within the old MBS Service Area but now outside the updated MBS Service Area. The NG-RAN also configures the UE not to receive the MBS data over the radio interface if the NG-RAN detects the UE(s) was in the previous MBS Service Area but is outside the updated MBS Service Area. If the NG-RAN node no longer serves any cells within the updated MBS service area, it requests to release shared delivery resource as defined in clause 7.2.2.4.

6. The NG-RAN node(s) acknowledges N2 MBS session request by sending an N2 MBS session Response message to the AMF.

7. The AMF invokes the Nmbsmf\_MBSSession\_ContextUpdate () to the MB-SMF.

8. The MB-SMF sends Nmbsmf\_MBSSession\_ContextStatusNotify request (MBS Session ID , [QoS profiles for multicast for MBS session], [MBS Service Area], [Area Session ID]) to the SMFs. For MBS Service Area updates, if an Area Session ID exists, the MB-SMF provides the MBS Service Area corresponding to the Area Session ID to the SMFs involved in the multicast MBS session. For QoS updates, the MB-SMF notifies SMFs handling all service areas.

9. The SMF determines the affected UEs it serves based on the the multicast MBS Session ID and Area Session ID (if provided) received in the step 8.

The subsequent steps 10 to 12 are executed for each affected UE. For QoS updates, steps 10 and 11 are skipped.

10. [Conditional] For an MBS Service Area update, if the SMF previously subscribed at the AMF to notifications about the UE moving in or out of a subscribed "Area Of Interest", the SMF updates the subscription with the new MBS Service Area as area of intrest.

11. [Optional] When the MBS Service Area is updated, if the SMF does not have the latest UE location, the SMF queries AMF which then query the NG-RAN for the current location of the UE to determine whether the UE is within the updated MBS Service Area.

12. [Conditional] For QoS Updates, if the 5GC Individual MBS traffic delivery is used, or if the associated QoS flows is to be added/removed, the SMF triggers PDU Session Modification procedure as defined in TS 23.502 [6].

For MBS Service Area update,

, the SMF triggers the PDU Session Modification procedure as defined in TS 23.502 [6] with the following enhancement:

The SMF also updates the PDU session resources associated to the multicast MBS session with the new MBS service area in an N2 container. The RAN node serving the PDU session starts or terminates transmission of multicast content in cells which are added or removed in the updated service area, respectively, and if necessary interacts with the MB-SMF to start or terminate the distribution of multicast data to the RAN node. For a local multicast session and a UE previously outside the service area but now inside the updated service area, the SMF may also add associated unicast QoS flows for the multicast MBS session to the PDU session resources. For Individual delivery and UEs previously inside the service area but now outside the updated service area, the SMF removes associated unicast QoS flows for the multicast MBS session- Towards the UE, the SMF provides the MBS service area in N1 SM container to the UE. For a UE previously inside the MBS service area but now outside the updated MBS service area of the multicast MBS session, the SMF may alternatively, based on operator policy, inform the UE in the N1 SM container that the UE has been removed from the multicast MBS session.

- Towards the NG-RAN, the SMF provides the updated MBS service area in N2 SM information. For a NG-RAN node supporting MBS, it starts transmission of multicast content in cells which are added in the updated MBS service area if UEs within the multicast session are within those cells, and if necessary, the NG-RAN interacts with the MB-SMF to start the distribution of multicast data to the RAN node. The RAN node stops transmission of multicast content in cells which are removed from the updated MBS service area, and if necessary, the NG-RAN interacts with the MB-SMF to terminate the distribution of multicast data to the RAN node

- . For a UE previously outside the MBS service area but now inside the updated MBS service area, the SMF adds associated unicast QoS flows for the multicast MBS session to the PDU session resources. For a UE previously inside the service area but now outside the updated MBS service area, the SMF removes associated unicast QoS flows for the multicast MBS session.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* NEXT CHANGES \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 7.2.7 Void

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* NEXT CHANGES \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

9.4.2.2 Nnef\_MBSTMGI\_Allocate service operation

**Service operation name:** Nnef\_ MBSTMGI\_Allocate

**Description:** This service is used by the NF Service Consumer to request allocation of TMGI(s), or to refresh the expiry time for already allocated TMGI(s).

**Inputs, Required:** Number of TMGIs (may be zero if only a refresh of expiry time is requested).

**Inputs, Optional:** TMGI(s) to be refreshed.

**Outputs, Required:** TMGIs, Expiry Time, Success or not.

**Outputs, Optional:** None.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* NEXT CHANGES \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

9.4.2.3 Nnef\_MBSTMGI\_Deallocate service operation

**Service operation name:** Nnef\_MBSTMGI\_Deallocate

**Description:** This service is used by the NF Service Consumer to request deallocation the TMGI(s).

**Inputs, Required:** TMGI(s).

**Inputs, Optional:** None.

**Outputs, Required:** Success or not.

**Outputs, Optional:** None.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* END CHANGES \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*