**3GPP TSG-SA WG6 Meeting #46-e S6-212576**

**e-meeting, 15th – 23rd November 2021 (revision of S6-21xxxx)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.289** | **CR** | 0017 | **rev** |  | **Current version:** | 17.0.0 |  |
|  | | | | | | | | |
| *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:*** | Request to activate or de-activate multicast MBS sessions | | | | | | | | | |
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| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | S6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | MCOver5MBS | | | | |  | ***Date:*** | | | 2021-11-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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:*** | | Based on the work done in TS 23.247, the MC service server is capable of activating or de-activating an already established multicast MBS sessions, which reflects the activation and de-activation of the corresponding NG-RAN resources, respectively. | | | | | | | | |
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| ***Summary of change:*** | | A general description of multicast session activation and deactivation importance is added. Furthermore, the activation and deactivation procedures triggered by the MC service server are included. | | | | | | | | |
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| ***Consequences if not approved:*** | | No information or content regarding the capabilities of the MC service server on triggering the activation or de-activation procedures of multicast MBS sessions. | | | | | | | | |
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| ***Clauses affected:*** | | 7.x.y (new), 7.x.y.1 (new), 7.x.y.2 (new), 7.x.y.3 (new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \* \* \* \*

#### 7.x.3.x Request to activate / de-activate multicast MBS sessions

###### 7.x.3.x.1 General

In case of multicast MBS sessions, the members affiliated to a certain MC group need to initiate a UE session join request towards the 5GC in order to receive the MC media sent via the associated MBS session. The UE session join request enables the reservation of NG-RAN resources for the members of the MC group. However, it is not necessary that the MC media is delivered over the whole time the multicast MBS session is associated to the group under consideration. Therefore, the MC service server is able to efficiently utilize and control the reservation of radio resources based on the availability of MC data to be delivered via the activation and de-activation procedure. This presents more flexibility and efficient use of resources different from LTE.

The most suitable scenario to activate/de-activate a certain multicast MBS session is based on whether there is an MC group call, e.g., MCPTT group call, taking place over that associated session to the MC group. In this manner, the MC service server can activate the associated multicast session once an MC group call takes place, then deactivate it once the MC group call is over. Whether the multicast session is activated (i.e., in an active state), or de-activated (in an inactive state), the MC group is associated to the multicast session and its members are within a UE session join.

The activation or de-activation request is triggered by the MC service server either directly towards the MB-SMF or indirectly via NEF/MBSF.

NOTE 1: The activation of de-activation procedure may also be triggered by MB-SMF based on receiving notification from MB-UPF based on the availability of MC data to be transmitted.

##### 7.x.3.X.2 Multicast MBS session activation procedure

The procedure shown in figure 7.x.3.X.2-1 presents the multicast MBS session activation procedure triggered by the MC service server.

Pre-conditions:

- MC service clients are attached to the 5GS, registered and affiliated to the same MC service group X.

- The MC service server has directly performed (or via NEF/MBSF) an MB-SMF discovery and selection, unless the corresponding information is locally configured.

- The MC service server has decided to use a multicast MBS session for MC service group communications associated to MC service group X.

- The MBS session is created and announced to address MC group communication related to the associated MC service group X with certain service requirements and optionally with a certain service area.



Figure 7.x.y.2-1: Multicast MBS session activation procedure.

1. The multicast MBS session is established as the first UE session join request, which is initiated by the first MC service UE towards 5GC, is granted. At this stage, the multicast MBS session is established with an inactive state.

2. The MC service server decides to activate the multicast MBS session as MC data is needed to be transmitted over the session to the MC group X, as an MC group communication (e.g., MCPTT group call) is to take place over the associated MBS session.

3. The MC service sends an MBS session activation request towards the 5GC, either directly to the MB-SMF or via NEF/MBSF, indicating the TMGI to be activated.

4. The 5GC changes the session status to “active” and finds the list of joined MC service UEs associated with the session and activate the NG- RAN resources for MC data delivery.

5. The 5GC may send an MBS session activation response to the MC service server indicating that the requested multicast MBS session has been activated.

##### 7.x.3.x.3 Multicast MBS session de-activation procedure

The procedure shown in figure 7.x.3.x.3-1 presents the multicast MBS session activation procedure triggered by the MC service server.

Pre-conditions:

- MC service clients are attached to the 5GS, registered and affiliated to the same MC service group X.

- The MC service server has directly performed (or via NEF/MBSF) an MB-SMF discovery and selection, unless the corresponding information is locally configured.

- A multicast MBS session is created and announced to address the corresponding MC service group with certain service requirements and optionally with a certain multicast service area.

- The MC service clients have already joined the multicast MBS session and are able to receive the MC data over the associated MBS session.



Figure 7.x.3.x.3-1: Multicast MBS session deactivation procedure.

1. The group communication associated with MC service group X takes place, and the corresponding MC data is delivered over the associated multicast MBS session, hence the MBS session has an active state.

2. The MC service server decides to deactivate the multicast MBS session, as no further MC data to be delivered to the associated group, as the MC group call is over, and no further MC media is to be delivered.

3. The MC service server sends an MBS session deactivation request towards the 5GC, either directly to the MB-SMF or via NEF/MBSF, indicating the TMGI to be deactivated.

4. The 5GC changes the session state to “inactive” and deactivate the radio resources associated with the joined MC service UEs.

5. The 5GC may send an MBS deactivation response to the server indicating that the requested multicast MBS session has been inactivated.