**3GPP TSG-WG SA6 Meeting #45-bis-e *S6-212xxx***

**e-meeting, October 11 – 19, 2021 (revision of S6-212331)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.289** | **CR** | **0008** | **rev** | **1** | **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:*** | Call connect and disconnect over 5G MBS in MCPTT context | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | SA6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | MCOver5MBS | | | | |  | ***Date:*** | | | 2021-10-05 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | In TR, the Call connect and disconnect over 5G MBS in MCPTT context were discussed and it is an important feature for MCX over 5G MBS.  It is worthwhile to include MCPTT related procedures in a holistic view among MCPTT server and the clients.  This CR is to add the related solution for Call connect and disconnect over 5G MBS in MCPTT context, based on TR conclusion on this topic. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Adding general description about Call connect and disconnect over 5G MBS in MCPTT context 2. Adding procedures and the associated Information flows for Call connect and disconnect over 5G MBS in MCPTT context. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | No related content about Call connect and disconnect over 5G MBS in MCPTT context in current TS. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 7.X (new), 7.x.y (new), 7.x.y.1 (new), 7.x.y.2 (new), 7.x.y.2.1 (new), 7.x.y.2.2 (new), 7.x.y.2.2.1 (new), 7.x.y.2.2 (new), 7.x.y.2.2.1 (new), 7.x.y.2.2.2 (new), 7.x.y.2.3 (new), 7.x.y.2.3.1 (new), 7.x.y.2.3.2 (new), 7.x.y.2.3.3 (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 MC service over 5G MBS

### 7.X.Y MBS transmission in MCPTT

#### 7.X.Y.1 General

The application layer signalling such as the floor control messages may be transmitted along with the MC media over the same MBS session however with different QoS requirements, or over other means such as unicast downlink or a different MBS session.

For broadcast MBS sessions:

* MCPTT may use pre-configured broadcast MBS session for the different types of MCPTT group calls. Both pre-arranged group calls and chat group calls can use the pre-configured broadcast MBS session for distributing the DL media. The broadcast MBS session can be used by any MCPTT group. Depending on the capacity of the MBS session, the broadcast MBS session can be used to broadcast one or more group calls in parallel.

For multicast MBS session:

* Multicast MBS session can be only used by one MCPTT group at a time. The MCPTT service shall support the procedure for using pre-configured MBS sessions.
* MCPTT may use dynamic MBS session establishment for the different types of MCPTT group calls. Both pre-arranged group calls and chat group calls can use the dynamic MBS session for distributing the DL media. The MCPTT service shall support the procedure for using dynamic MBS sessions.
* In order to receive the corresponding MC media, the MCPTT UE initiates the session join towards the 5GS, when it is aware of via the service announcement. After the MC media transmission is over, if the MCPTT server decides to stop the corresponding MBS session, it sends an MBS session release request towards the 5GS, where the latter removes the joined MCPTT UEs from the corresponding MBS session in case of multicast sessions.

When using the procedures for pre-configured or dynamic MBS session establishment for MCPTT, the MCPTT server performs the procedure of call connect and disconnect over MBS session at the group communication session establishment phase.

#### 7.X.Y.2 Call connect and disconnect over MBS session procedures

##### 7.X.Y.2.1 General

MBS session can be used for MCPTT group calls. One MBS session may be not permanently associated to one specific group or group call.

NOTE X: It is implementation-specific that one MBS session can be re-assigned to different groups, or is associated to only one group.

The procedure in clause 7.X.Y.2.2 requires that the group session is setup before the media transmission starts. This eliminates the need for the receiving clients to continuously use a unicast session. Prior to this, the MBS session is activated and announced to the MCPTT clients.

##### 7.X.Y.2.2 Procedure

###### 7.X.Y.2.2.1 Group call connect over MBS session

Pre-conditions:

- The MCPTT clients 1 to n are attached to the 5GS, registered and affiliated to the same MCPTT group X.

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

- The MCPTT server has decided to use an MBS session for the MCPTT service group call associated with to the MCPTT group X.

- The MCPTT clients 2 to n are within the MBS service area (if the session is limited to an area) where the MBS session is configured.



Figure  7.X.Y.2.2.1-1: Group call connect over broadcast and multicast MBS sessions.

1 An MBS session is configured with the required QoS requirements announced and established.

NOTE: In case of broadcast MBS sessions, the session is established as part of session configuration procedures as described in TS 23.247 [x]. In case of multicast MBS sessions, the session is established as specified in step 2.

2 In the case of multicast MBS sessions, the MCPTT UE initiates a UE session join towards the 5GS based on the session information provided to the MCPTT UE during the service announcement step. This step is essential in order to receive the corresponding MC media. The multicast MBS session is hence established once the first initiated UE session join is accepted as indicated in 3GPP TS 23.247 [x].

3 MCPTT client 1 initiates a group call by sending an initial floor request over a unicast PDU session towards the MCPTT server.

4 The MCPTT server sends a MapGroupToSessionStream including the necessary stream information for the MCPTT clients 2 to n to receive the MC media related to the group call which is taken place within the associated MBS session.

5 The MCPTT clients 2 to n process the MapGroupToSessionStream information and may send a MapGroupToSessionStream Ack back to the MCPTT server if required.

6 The MCPTT server grants MCPTT client 1 the right to transmit media over the associated MBS session and sends a floor granted message to client 1 over a unicast PDU session.

7 A floor taken message is sent from the MCPTT server to MCPTT clients 2 to n indicating the MCPTT ID of the transmitting client, i.e., MCPTT client 1 and the associated MCPTT group ID. The floor taken message is transmitted over the associated MBS session.

8 MCPTT client 1 sends the MC media over uplink unicast PDU session towards the MCPTT server.

9 The MCPTT server sends the MC media over the indicated stream within the associated MBS session to the MCPTT clients 2 to n.

###### 7.X.Y.2.2.2 Group call disconnect from MBS session

Figure 7.X.Y.2.2.2-1 presents the procedure for a group communication call disconnect over broadcast and multicast MBS sessions.



Figure 7.X.Y.2.2-2: Group call disconnect over broadcast and multicast MBS sessions.

1 The MC group communication is taking place over the associated MBS session. MCPTT client 1 is sending the MC media over a unicast PDU session to the MCPTT server.

2 The MCPTT server sends the MC media over the associated MBS session to MCPTT clients 2 to n.

3 After the MC media transmission is over, i.e., no further media to be sent over the group communication, the MCPTT server sends an UnMapGroupFromSessionStream to de-associate the group call from the MBS session.

4 The MCPTT server may decide to release the MBS session by sending an MBS session release request towards the 5GS indicating the MBS session ID to be released as specified in 3GPP TS 23.247 [x].

NOTE: In case of multicast MBS sessions, the 5GS removes the MCPTT UEs 2 to n from the multicast MBS session as a response to the session release request. Hence, the resources in both NG-RAN and 5GC are released.

##### 7.X.Y.2.3 Information flows for MBS transmission

###### 7.X.Y.2.3.1 MapGroupToMBSsession.

The MCPTT server provides the MCPTT clients with the necessary information to map a specific group with the stream to be utilized within the announced and established broadcast or multicast MBS session. Such information can be provided via the MapGroupToSessionStream message.

Table 7.X.Y.2.3-1 defines the MapGroupToSessionStream to be sent from the MCPTT server to MCPTT clients to provide specific required information to receive the media related to a group communication within an MBS session.

Table 7.X.Y.2.3.1-1: MapGroupToSessionStream

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MCPTT group ID | M | This element identifies the MCPTT group related to a group communication to be delivered over the MBS session |
| Media stream identifier | M | This element identifies the media stream of the SDP used for the group communication within the MBS session |
| MBS session ID | O | Indicating the MBS session ID, if the MapGroupToSessionStream is not sent over the same MBS session |

###### 7.X.Y.2.3.2 UnmapGroupFromMBSsession

Table 7.X.Y.2.3.2-1 describes the information flow to disconnect a MCPTT group call from a MBS session. It is sent from the MCPTT server to the MCPTT client.

Table 7.X.Y.2.3.2-1: UnmapGroupFromMBSsession

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MCPTT group ID | M | This element identifies the MCPTT group related to a group call to be dissociated over the MBS session |
| Media stream identifier | M | This element identifies the media stream of the SDP, which is no longer used for the group call within the MBS session |
| MBS session ID | O | Indicating the MBS session ID, if the information is sent over another MBS session or unicast path |

###### 7.X.Y.2.3.3 MapGroupToMBSsession ACK

Refer to the general case of media delivery over multicast MBS session, with the following clarifications:

- The MC service client is the MCPTT client;

- The MC service server is the MCPTT server; and

- The MC service group ID is the MCPTT group ID.

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