**3GPP TSG-SA WG6 Meeting #39-bis-e S6-201910**

**e-meeting, 12th – 20th October 2020 (revision of S6-201729)**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.379** | **CR** | **0279** | **rev** | **1** | **Current version:** | **17.4.0** |  |
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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 | **x** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | Authorized user being notified about other users floor queue status | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Samsung | | | | | | | | | |
| ***Source to TSG:*** | S6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | enh3MCPTT | | | | |  | ***Date:*** | | | 2020-10-06 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The stage 2 has the architecture requirement and procedure for floor request cancellation from the floor request queue by authorized user or floor control server. To realize this procedure the aurthorized user should learn about the queued floor request status of other users. As per the stage 1 requirement the one or more authorized users are notified when a communication is queued, when a communication is rejected, when communications has started after being de-queued. Corresponding requirements from stage 1 (TS 22.280):  [R-6.19.1.1-003] The MCX Service shall notify the requesting MCX Participant and may notify one or more authorized users when a communication is queued, when a communication is rejected, when communications has started after being de-queued.  [R-6.19.1.1-005] The MCX Service shall provide a mechanism for an authorised user to remove another user’s MCX request to transmit from the MCX request queue. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | In subclauses 10.9.1.3.1, 10.9.1.3.4.1 and 10.9.1.3.4.2, authorized user is notified about other users queued status | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The existing procedure for floor request cancellation from the floor request queue by authorized user can’t be fulfilled or implemented. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 10.9.1.2.5,10.9.1.3.1, 10.9.1.3.4.1, 10.9.1.3.4.2, 10.9.1.4.1 and 10.9.1.4.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \* \* \* \* \* \* \*

##### 10.9.1.2.5 Floor request cancel

Table 10.9.1.2.5-1 describes the information flow floor request cancel, from the floor participant to the floor control server, which is used to request cancelling the floor request from the floor request queue. This information flow is sent in unicast to the floor control server.

Editor's note: It is FFS whether to support clearing of all the entries in the floor request queue by authorized user in single floor request cancel message.

Table 10.9.1.2.5-1: Floor request cancel

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| MCPTT ID | M | Identity for the requester |
| Functional alias | O | Functional alias for the requester |
| List of MCPTT IDs | M | Target identity (Identities) whose floor request is to be cancelled |
| Source identifier | O | Identifies the communication, e.g. by identifying the media flow within a media multiplex, present only if media multiplexing |

\* \* \* \* \* \* \* SECOND CHANGE \* \* \* \* \* \* \*

##### 10.9.1.3.1 Floor request, floor granted and floor taken during an MCPTT session

Figure 10.9.1.3.1-1 shows the high level procedure that the floor control is conducted for the MCPTT session already established between the floor participant and the floor control server. Only three UEs involved in the session are shown for the simplicity.

Pre-condition:

1. MCPTT session is established between MCPTT clients (client A, client B and client C) and MCPTT server.

2. The user at MCPTT client C is an authorized user (e.g., dispatcher) allowed to remove a floor request of other MCPTT users from the floor queue and can receive notifications about another user when their floor request is queued, when their queued floor request is rejected and when their queued floor request is removed from the queue.



Figure 10.9.1.3.1-1: Floor request, floor granted, floor taken during an MCPTT session

1. The floor control is established between the floor participants and floor control server. It is assumed that the floor is now in idle status.

2. Floor participant A wants to send voice media over the session.

3. Floor participant A sends a floor request message to floor control server which includes floor priority and other information as necessary.

4. Floor control server makes the determination on what action (grant, deny, or queue) to take on the request based on criteria (e.g., floor priority, participant type) and determines to accept the floor request from floor participant A. The floor control server may limit the time a user talks (hold the floor) as allowed by the configuration.

5a. Floor control server responds with a floor granted message to floor participant A including the maximum floor granted duration e.g., if no other floor participant has the permission for transmission.

5b. Floor control server sends a floor taken message to the other floor participant (floor participant B) including information about who is granted the floor.

5c. Floor participant A sends a floor acknowledgement if indicated to do so by the floor granted message.

5d. Floor participant B sends a floor acknowledgement if indicated to do so by the floor taken message.

5e. Floor control server sends a floor taken message to the other floor participant (floor participant C) including information about who is granted the floor.

5f. Floor participant C sends a floor acknowledgement if indicated to do so by the floor taken message.

6a. The floor granted shall cause the user of UE A where the floor participant A is located to be notified.

6b. The receipt of the floor taken may be used to inform the user of UE B where the floor participant B is located.

6c. The receipt of the floor taken may be used to inform the user of UE C where the floor participant C is located.

7. Floor participant A starts sending voice media over the session established beforehand.

NOTE 1: Voice media can continue to be sent while steps 8 through 11 occur.

8. Suppose there are one or more users requesting to talk at this time, the floor request(s) are queued as decided by floor control server e.g., based on floor priority.

9. Floor participant B sends a floor request message.

10. Floor control server queues the request of floor participant B.

11a. Floor control server sends queue position info to floor participant B.

11b. Floor participant B sends a floor acknowledgement if indicated to do so by the queue position info message.

12. Floor control server may send the queue position info to floor participant C who is an authorized user to indicate floor participant user B’s floor request is queued.

13. Floor participant C sends a floor acknowledgement if indicated to do so by the queue position info message.

NOTE 2: If the floor participant user B’s queued floor request is rejected after de-queue from the floor control queue then the floor control server may send the queue position info to floor participant C who is an authorized user. The floor queue position info message should indicate that floor participant user B’s queued floor request is no longer queued.

\* \* \* \* \* \* \* THIRD CHANGE \* \* \* \* \* \* \*

###### 10.9.1.3.4.1 Floor request cancellation from the queue – MCPTT user initiated

Figure 10.9.1.3.4.1-1 illustrates the procedure for floor request cancellation from the floor queue initiated by the MCPTT user. The MCPTT user may be an authorized user who has rights to cancel the floor requests of other MCPTT users, whose floor requests are in floor control queue.

Pre-conditions:

- It is assumed that floor participant B has been granted the floor and is transmitting voice media. There are several other floor participants (including floor participant A and floor participant C) requesting the floor which have been queued at the floor control server.



Figure 10.9.1.3.4.1-1: Floor request cancellation from queue initiated by MCPTT user

1. The floor participant A wants to remove the floor request from the floor request queue. If floor participant A is an authorized MCPTT user with the rights to cancel another MCPTT user's floor request, the authorized MCPTT user may request floor request cancellation for one or more floor participants, whose floor request needs to be removed from the floor queue.

2. The floor participant A sends a floor request cancel (initiating MCPTT ID) message to the floor control server. If the floor participant A wants to remove the floor request(s) of other participant(s), the target participant(s)' MCPTT ID should be included in this message.

3. The floor control server shall check whether the requesting floor participant has authorization to cancel the floor request(s). If authorized, the floor request(s) will be removed from the floor request queue. When current transmission is completed, floor control server will process the floor request from the updated floor request queue.

4. If the floor request cancel in step 2 is sent by an authorized user (e.g., dispatcher) to cancel the floor request(s) of other participant(s) from the floor request queue, the floor request cancel notify message is sent to the floor participant whose floor request was cancelled from the floor queue. The floor request cancel notify message is also sent to the authorized user (not shown in figure) if the floor request cancel in step 2 is sent by the floor participant A is an initiating MCPTT user.

5. The floor control server provides a floor request cancel response to the floor participant A when the floor cancellation is completed. Optionally, the new queue position information may be notified to the floor participants whose floor requests are in the floor request queue (not shown in the figure).

\* \* \* \* \* \* \* FOURTH CHANGE \* \* \* \* \* \* \*

###### 10.9.1.3.4.2 Floor request cancellation from the queue - floor control server initiated

Figure 10.9.1.3.4.2-1 illustrates the procedure for floor request cancellation from the queue initiated by the floor control server. Only three UEs involved in the session are shown for the simplicity.

Pre-conditions:

- MCPTT session is established between MCPTT clients (client A, client B, client C and client D) and MCPTT server.- It is assumed that floor participant B (not shown in figure) has been granted the floor and is transmitting voice media. There are several other floor participants (including floor participant A and participant C) requesting the floor which have been queued at the floor control server.

- The user at MCPTT client D is an authorized user (e.g., dispatcher) allowed to remove a floor request of other MCPTT users from the floor queue and can receive notifications about another user when their floor request is queued, when their queued floor request is rejected and when their queued floor request is removed from the queue.



Figure 10.9.1.3.4.2-1: Floor request cancellation from queue initiated by floor control server

1. The floor control server removes the floor request from the floor request queue based on policy. e.g., expiration of a timer. In the case when floor control server receives repeated floor requests from a floor participant while the floor is occupied, the new floor request is accepted and added into the floor queue and the existing/former floor request is removed from the floor queue or the new floor request is rejected and the existing/former floor request of this floor participant is retained in the floor request queue.

2. The floor control server sends a floor request cancel notify to the floor participant(s) whose floor request is removed from the floor request queue.

3. Optionally, the newly queue position information is notified to the other floor participants whose floor requests are queued.

4. If the floor request cancel in step 2 is sent by floor control server for the user whose floor request is in the floor request queue, the floor control server may send the floor cancel notify to the floor participant D who is an authorized user.

\* \* \* \* \* \* \* FIFTH CHANGE \* \* \* \* \* \* \*

##### 10.9.1.4.1 Partner MCPTT system routes all floor control messages to primary MCPTT system's floor control server

The MCPTT users belonging to different groups in multiple MCPTT systems will participate in MCPTT media services (group communication, private calls, etc.) in scenarios like group hierarchies and temporary groups formed by group regroup. In this service delivery model involving multiple groups from different MCPTT systems, the floor control arbitration resides with the primary MCPTT system. This is determined in the group call setup stage. The MCPTT users of groups involved in the call session will transmit their floor control messages through the partner MCPTT systems to which they belong. In this scenario, the partner MCPTT systems request the floor control for its MCPTT user(s) from the floor control server of the primary MCPTT system. The protocol used for media plane signalling is non-SIP like RTCP.

Figure 10.9.1.4.1-1 describes the procedure for floor control involving groups from multiple MCPTT systems.

Pre-conditions:

1. The security aspects of sharing the user information between primary and partner MCPTT systems shall be governed as per the service provider agreement between them. In this case, we consider the partner MCPTT system does not share all information of their users' to the primary MCPTT system (public information would still need to be shared).

2. The group 1 is hosted by primary MCPTT system and group 2 and 3 are hosted by the partner MCPTT system.

3. The floor participant 1 corresponds to the MCPTT user of group 1. The floor participant 2 corresponds to the MCPTT user of group 2. The floor participant 3 corresponds to the MCPTT user of group 3. The floor control server 1 belongs to primary MCPTT system. The floor control server 2 belongs to partner MCPTT system.

4. The floor control server 1 is the floor arbitrator of the MCPTT group call. The floor control server 2 routes all floor control messages to and from the floor participants 2 and 3 and then floor control server 1.



Figure 10.9.1.4.1-1: Floor control (partner MCPTT system forwarding) involving groups from multiple MCPTT systems

1. An MCPTT group call involving group1, group 2 and group 3 is setup and active.

2. The MCPTT users want to talk.

3. The floor participants initiate a floor request to the floor control server of their corresponding MCPTT systems. (The requests may or may not occur at the same time).

4. If only one floor request is received, or floor control server 2 handles the floor request sequentially, there is no arbitration performed and the corresponding floor request is forwarded to the floor control server 1. If the floor control server 2 receives multiple floor requests at the same time or during an interval, then it forwards the floor requests to the floor control server 1 (floor arbitrator for the MCPTT group call). As the floor participant information shall not be exposed, the floor priority related information or/and group information to be used by floor control server 1 should be included in the forwarded request.

5. The floor control server 1 performs floor arbitration for the MCPTT group call and determines the floor request to be accepted.

6. If the floor request from floor participant 2 of the partner MCPTT system is accepted, a floor granted is sent with permission to talk. The floor control messages from floor control server 1 are routed to floor participant 2 via the floor control server 2.

7. When the floor control server 2 (partner) receives the floor granted, the floor control server 2 sends a floor granted message on to floor participant 2.

8. The floor granted shall cause the user of the UE where the floor participant 2 is located to be notified.

9. The primary floor control server 1 may (9a.1) send a floor rejected message, or (9b.1) send a queue position info message for each non-granted received floor requests forwarded from the floor control server 2 (partner). When the floor control server 2 (partner) receives the floor rejected message, then the floor control server 2 (partner) (9a.2) sends a floor rejected message to the appropriate floor participant. When the floor control server 2 (partner) receives the queue position info, then the floor control server 2 (partner) (9b.2) sends a queue position info message to the appropriate floor participant.

10a.1 If floor control server 1 rejects the floor request from floor participant 1, then a floor reject message is sent.

10a.2 Upon this being received the user of the UE where floor participant 1 is located may be notified.

10b.1 If floor control server 1 supports floor queue, queue position info message is sent to the floor participant 1.

10b.2 Upon this being received the user of the UE where floor participant 1 is located may be notified.

NOTE 1: Steps 10a.1 through 10.b2 are optional as indicated by the dashed box enclosing them. However, if this box is implemented then either information flow 10a or 10b would occur.

NOTE 2: Optionally, the authorized user (e.g., dispatcher) receiving notifications about another user when their floor request is queued, when their queued floor request is rejected and when their queued floor request is removed from the queue is not shown here for the sake of brevity.

11. Since the floor is granted to floor participant 2 of the partner MCPTT system, then a floor taken is sent to all other floor participants ((11a) floor participant 1 and (11b.1) to floor control server 2 (partner) for forwarding to (11b.2) floor participant 3.

12. The receipt of the floor taken may be used to inform the users of the UEs where the floor participant entity 1 and floor participant 3 are located to be notified.

13. Upon successful floor granted, the group call media transmission occurs.

NOTE 3: The media flow between the media gateways of primary and partner MCPTT systems have not been depicted in the figure for clarity.

\* \* \* \* \* \* \* SIXTH CHANGE \* \* \* \* \* \* \*

##### 10.9.1.4.2 Partner MCPTT system performs filtering of floor control messages entering and leaving the partner MCPTT system

The MCPTT users belonging to different groups in multiple MCPTT systems will participate in MCPTT media services (group communication, private calls, etc.) in scenarios like group hierarchies and temporary groups formed by group regroup. In this service delivery model involving multiple groups from different MCPTT systems, the floor control arbitration resides with the primary MCPTT system. This is determined in the group call setup stage. The MCPTT users of groups involved in the call session will transmit their floor control messages through the partner MCPTT systems to which they belong. In this scenario, the partner MCPTT system filters its MCPTT users' floor requests before communicating with the floor control server of the primary MCPTT system. The protocol used for media plane signalling is non-SIP like RTCP.

Figure 10.9.1.4.2-1 describes the procedure for floor control involving groups from multiple MCPTT systems.

Pre-conditions:

1. The security aspects of sharing the user information between primary and partner MCPTT systems shall be governed as per the service provider agreement between them. In this case, we consider the partner MCPTT system does not share all information of their users to the primary MCPTT system (public information would still need to be shared).

2. The group 1 is hosted by primary MCPTT system and group 2 and 3 are hosted by the partner MCPTT system.

3. The floor participant 1 corresponds to the MCPTT user of group 1. The floor participant 2 corresponds to the MCPTT user of group 2. The floor participant 3 corresponds to the MCPTT user of group 3. The floor control server 1 belongs to primary MCPTT system. The floor control server 2 belongs to partner MCPTT system.

4. The floor control server 1 is the floor arbitrator of the MCPTT group call. The floor control server 2 does floor control filtering with its floor participants 2 and 3 before communicating with the floor control server 1.



Figure 10.9.1.4.2-1: Floor control (filtering by partner MCPTT system) involving groups from multiple MCPTT systems

1. An MCPTT group call involving group 1, group 2 and group 3 is setup and active.

2. The MCPTT users want to talk

3. The floor participants initiate a floor request to the floor control server of their corresponding MCPTT systems. (The requests may or may not occur at the same time).

4. Floor control server 2 receives a floor request from floor participant 2 and from participant 3 at the same time or during an interval, then the floor control server 2 (partner) performs filtering of the floor requests received according to its local policy such as priority or order based on its own users, and forwards the selected floor request (floor participant 2) to the floor control server 1 (floor arbitrator for the MCPTT group call). As the floor participant information shall not be exposed, the priority related information or/and group information to be used by floor control server 1 should be included in the forwarded request.

5. The floor control server 2 (partner) may send a floor rejected towards the floor participant 3, since its floor request was not chosen to be forwarded on to the floor control server 1.

6. The user on the UE where the floor participant 3 is located may be notified of the rejection.

NOTE 1: Steps 5 and 6 can occur any time between step 4 and step 16.

7. The floor control server 2 (partner) forwards the floor request of floor participant 2 to the floor server 1.

8. The floor control server 1 performs floor arbitration for the MCPTT group call and determines the floor request to be accepted. The floor request message from floor participant 2 of the partner system is accepted by the floor control server 1 (arbitrator) and is determined that a floor granted is sent with permission to talk.

9. The floor granted message from floor control server 1 is routed to floor participant 2 via the floor control server 2 (partner).

10. Since floor participant 1 sent a floor request but was not granted,

10a.1 the primary floor control server may send a floor rejected message to floor participant 1.

10a.2 The user of the UE where the floor participant 1 is located may be notified of the rejection.

10b.1 if floor control server supports floor queuing, send a queue position info message to floor participant 1.

10b.2 The user of the UE where the floor participant 1 is located may be notified of the queue position.

NOTE 2: Steps 10a.1 through 10.b2 are optional as indicated by the dashed box enclosing them. However, if this box is implemented then either information flow 10a or 10b would occur.

NOTE 3: Optionally, the authorized user (e.g., dispatcher) receiving notifications about another user when their floor request is queued, when their queued floor request is rejected and when their queued floor request is removed from the queue is not shown here for the sake of brevity.

11. A floor taken message is sent to floor participant 1.

12. The user of the UE where the floor participant 1 is located may be notified.

NOTE 4: Step 10 through Step 12 can occur any time between step 8 and step 18.

13. Since the floor control server 2 (partner) filters floor requests, when the floor control server 2 (partner) receives the floor granted for floor participant 2 from floor control server 1, the floor control server 2 (partner) needs to use the information received to generate the floor taken which will be sent to all other floor participants (floor control participant 3).

14. The floor control server 2 (partner) sends a floor granted message to floor participant 2.

15. The user of the UE where the floor participant 2 is located is notified.

16. The floor control server 2 (partner) sends a floor taken message to all other floor participants (floor participant 3).

17. The user of the UE where the floor participant 1 is located may be notified.

18. Upon successful floor grant, the group call media transmission occurs.

NOTE 5: The media flow between the media gateways of primary and partner MCPTT systems have not been depicted in the figure for clarity.