**3GPP TSG-CT WG1 Meeting #145C1-239509**

**Chicago, US , 13– 17 November 2023 (was C1-239075)**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **24.380** | **CR** | **0356** | **rev** | **4** | **Current version:** | **18.3.0** |  |
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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 | **X** |

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|  |
| ***Title:*** | MCPTT support of multiplexing - SSRCs used for RTP audio and RTCP floor control |
|  |  |
| ***Source to WG:*** | Airbus, Samsung, Ericsson, FirstNet, Sepura |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | enh4MCPTT |  | ***Date:*** | 2023-09-25 |
|  |  |  |  |  |
| ***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 canbe 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | RTP packets and RTCP messages are associated with an established session based on their transport information (IP address and Port number).RTP audio streams and/or RTCP floor control messages between two MCPTT entities (i.e. client, participating function, non-controlling function and controlling function) can also be multiplexed over the same IP address and Port number. In that case, the receiving entities cannot determine from the transport information to which SIP session (and then to which communication) the RTP stream or the RTCP floor control message is related to.To enable such multiplexing that can be required to e.g. limit the number of radio bearers and limit the number of IP ports used, the SSRC included in the header of the RTP or RTCP packets is intended to be used, but the current specification is unclear on how those SSRCs are determined and exchanged. |
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| ***Summary of change:*** | This CR clarifies that :* In the RTP header of an MCPTT audio stream, the so-called "audio SSRC", is allocated by the floor arbitrator, at the time it grants the floor. It is transmitted to the granted MCPTT client in the floor granted message, and to all other participants in the floor taken message, within the "Audio SSRC of Granted Participant" field. That audio SSRC shall be transmitted end to end, as it is also used as an input information for encryption, and therefore shall be globally unique.
* In the RTCP header of an MCPTT floor control message, the so-called "RTCP SSRC" used in floor control messages sent by one entity within a given SIP session (i.e. within one communication) is allocated at the time of session establishment and exchanged within the SDP, in addition to the IP address and Port number used by the media plane control channel. That RTCP SSRC shall be unique in the allocating entity but not globally.

The media plane control channel definition is updated.The floor granted and floor taken messages are updated.The procedures using floor granted or floor taken messages are updated.The procedure at the participating function is clarified.The new fmtp attribute mc\_floor\_ssrc is created.Add statement in 14.4 to prevent the mc\_ssrc fmtp attribute from being ignored |
|  |  |
| ***Consequences if not approved:*** | Multiplexing of MCPTT audio stream over one bearer, and/or multiplexing of MCPTT media plane control channels over one bearer is not possible, over the air and between servers. System elements (e.g. eNB, MCPTT server) may run out of radio bearers or out of port numbers when they need to support a high number of users and communications.Specification is incorrect and inconsistent, making different implementation most likely not interoperable. |
|  | ( |
| ***Clauses affected:*** | 4.3.3.1, 6.2.4.3.3, 6.2.4.4.2, 6.2.4.6.5, 6.2.4.9.3, 6.2.4.9.4, 6.3.4.3.2, 6.3.4.4.2, 6.3.4.4.7a ,6.3.5.2.2, 6.3.5.4.5, 6.3.5.6.5, 6.3.5.7.4, 6.3.6.3.2, 6.3.6.3.3, 6.3.6.3.4, 6.3.6.3.6, 6.4.2, 8.1.2, 8.2.3.1, 8.2.3.16, 8.2.5, 8.2.9, 12.1.2.2, 12.1.2.3, 14.2.X (new), 14.3.Y (new), 14.4 |
|  |  |
|  | **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:*** | Rev 3: changes in 14.4 copied from MCVideo C-238263 |

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

#### 4.3.3.1 General

The MCPTT client and the MCPTT server use the SDP offer/answer mechanism in order to negotiate the establishment of the media plane control channel. The SDP offer/answer procedures for negotiating media plane control channel capabilities are specified in clause 14. The ABNF is defined in clause 12.

The media description ("m=" line) associated with the media plane control channel shall have the values as described in table 4.3.3.1-1.

Table 4.3.3.1-1: Media plane control channel media description

|  |  |
| --- | --- |
| Media description element | Value |
| <media> | "application" |
| <port> | RTCP port |
| <proto> | "udp" |
| <fmt> | "MCPTT" |

The port used for RTCP messages associated with the media plane control channel shall be different than ports used for RTCP messages associated with other "m=" lines (e.g. RTP) in the SDP.

The SSRC of the RTCP header is used to enable multiplexing of media plane control channels for different communications over the same IP address and port. The SSRCs to be used in the RTCP messages over the media plane control channel for one communication are allocated at session establishment by each receiving entity.

The allocated RTCP SSRC is exchanged at session establishment, within an mc\_floor\_ssrc 'fmtp' attribute included in the "m=" line defining the media plane control channel in the SDP offer or answer, in addition to the IP address and port that will be used by the receiving entity. This RTCP SSRC in the mc\_floor\_ssrc 'fmtp' attribute is the SSRC value that the receiving entity expects in the RTCP header of the floor control messages it will receive for this session, and therefore that the distant entity shall use in the RTCP header of the floor control messages it sends in this session.

The SSRC allocated by a receiving entity shall be unique for that receiving entity. This ensures that there cannot be collision and the SSRC will allow to identify the session it is related to in the receiving entity without any ambiguity.

NOTE 1: As RTCP is used to transport messages on the media plane control channel, the "m=" line port value indicates an RTCP port. This is different from cases where an "m=" line is associated with an RTP-based stream, and the "m=" line port value indicates an RTP port.

NOTE 2: In case the media plane control channel uses a different IP address than other media described in the SDP, a media plane control channel specific "c=" line also needs to be associated with the "m=" line associated with the media plane control channel.

The format of the optional SDP fmtp attribute, when associated with the media plane control channel, is described in clause 14.

The example below shows an SDP media description for a media plane control channel.

m=application 20032 udp MCPTT

a=fmtp:MCPTT mc\_queueing;mc\_priority=5;mc\_granted;mc\_floor\_ssrc=12345678

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##### 6.2.4.3.3 Receive Floor Taken message (R: Floor Taken)

Upon receiving the Floor Taken message, the floor participant:

1. if the first bit in the subtype of the Floor Taken message is set to '1' (Acknowledgment is required) as described in clause 8.2.2, shall send a Floor Ack message. The Floor Ack message:

a. shall include the Message Type field set to '2' (Floor Taken); and

b. shall include the Source field set to '0' (the floor participant is the source);

2. may provide a floor taken notification to the user;

3. if the Floor Indicator field is included and the type of call bit is set, may provide a notification to the user indicating the type of call;

4. if the Floor Indicator field is included and the I-bit is set to '1' (multi-talker), shall provide a notification to the user indicating the type of call and may provide a list of current talkers;

5. may store the Granted Party's Identity and may display the identity of the talking party to the user;

6. shall store the Audio SSRC of the Granted Participant, to be able to associate received RTP media packets with this communication in case of multiplexing;

7. should start the optional timer T103 (End of RTP media) for the participant for which Floor Taken message was received; and

8. shall remain in the 'U: has no permission' state.

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##### 6.2.4.4.2 Receive Floor Granted message (R: Floor Granted)

Upon receiving a Floor Granted message from the floor control server or a floor granted indication in an SIP 200 (OK) response in the application and signalling layer, the floor participant:

1. if the first bit in the subtype of the Floor Granted message is set to '1' (Acknowledgment is required) as described in clause 8.2.2, shall send a Floor Ack message. The Floor Ack message:

a. shall include the Message Type field set to '1' (Floor Granted);

b. shall include the Source field set to '0' (the floor participant is the source); and

c. if the call is a remotely initiated ambient listening call and if the user's MCPTT profile allows sending the user's location, shall include the location as specified in clause 6.2.4.3.5. If sending the user's location is not allowed, the location field may be included with the location type field set to '0' (Not provided);

2. if the call is not an ambient listening call, shall provide floor granted notification to the user, if not already done;

NOTE: Providing the floor granted notification to the user prior to receiving the Floor Granted message is an implementation option.

3. if the Floor Indicator field is included and the type of call bit is set, may provide a notification to the user indicating the type of call;

4. if the G-bit in the Floor Indicator is set to '1' (Dual floor) shall store an indication that the participant is overriding without revoke;

5. shall stop the optional timer T103 (End of RTP media), if running;

6. shall stop timer T101 (Floor Request);

7. shall store the Audio SSRC of the Granted Participant and use it in the RTP media packets until the floor is released; and

8. shall enter the 'U: has permission' state.

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##### 6.2.4.6.5 Receive Floor Taken message (R: Floor Taken)

Upon receiving a Floor Taken message, the floor participant:

1. if the first bit in the subtype of the Floor Taken message is set to '1' (Acknowledgment is required) as described in clause 8.2.2, shall send a Floor Ack message. The Floor Ack message:

a. shall include the Message Type field set to '2' (Floor Taken); and

b. shall include the Source field set to '0' (the floor participant is the source);

2. may provide floor taken notification to the user;

3. if the Floor Indicator field is included and the type of call bit is set, may provide a notification to the user indicating the type of call;

4. if the Floor Indicator field is included and the I-bit is set to '1' (multi-talker), shall provide a notification to the user indicating the type of call and may provide a list of current talkers;

5. may store the Granted Party's Identity and may display the identity of the talking party to the user;

6. shall store the Audio SSRC of the Granted Participant, to be able to associate received RTP media packets with this communication in case of multiplexing;

7. should start the optional timer T103 (End of RTP media) for each new talker as received in Floor Taken message;

8. if the identity of the floor participant is not included in the List of Granted Users, shall stop timer T100 (Floor Release); and

9. shall enter the 'U: has no permission' state.

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##### 6.2.4.9.3 Receive Floor Taken message (R: Floor Taken)

Upon receiving a Floor Taken message, the floor participant:

1. may provide a floor taken notification to the MCPTT user;

2. if the first bit in the subtype of the Floor Taken message is set to '1' (Acknowledgment is required) as described in clause 8.2.2, shall send a Floor Ack message. The Floor Ack message:

a. shall include the Message Type field set to '2' (Floor Taken); and

b. shall include the Source field set to '0' (the floor participant is the source);

3. if the Floor Indicator field is included and the I-bit is set to '1' (multi-talker), shall provide a notification to the user indicating the type of call and may provide a list of current talkers;

4. may store the Granted Party's Identity and may display the identity of the talking party to the user;

5. shall store the Audio SSRC of the Granted Participant, to be able to associate received RTP media packets with this communication in case of multiplexing;

6. should start the optional timer T103 (End of RTP media); and

7. shall remain in the 'U: queued' state.

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##### 6.2.4.9.4 Receive Floor Granted message (R: Floor Granted)

Upon receiving a Floor Granted message, the floor participant:

1. if the first bit in the subtype of the Floor Granted message is set to '1' (Acknowledgment is required) as described in clause 8.2.2, shall send a Floor Ack message. The Floor Ack message:

a. shall include the Message Type field set to '1' (Floor Granted); and

b. shall include the Source field set to '0' (the floor participant is the source);

2. shall provide a floor granted notification to the MCPTT user;

3. if the Floor Indicator field is included and the type of call bit is set, may provide a notification to the user indicating the type of call;

4. shall stop timer T104 (Floor Queue Position Request), if running;

5. shall start timer T132 (Queued granted user action);

6. shall stop the optional timer T103 (End of RTP media), if running, and if associated to a participant for which the previously received Floor Taken did not include a Floor Indicator field with the G-bit set to '1' (Dual floor);

7. shall indicate the user that the floor is granted;

8. shall store the Audio SSRC of the Granted Participant and use it in the RTP media packets until the floor is released; and

9. shall remain in the 'U: queued' state.

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##### 6.3.4.3.2 Enter the 'G: Floor Idle' state

When entering this state from any state except the 'Start-stop' state and if no MCPTT client negotiated support of queueing floor requests as described in clause 14, and the state machine specified in clause 6.3.6 does not exist, the floor control arbitration logic in the floor control server:

1. if there is a Track Info field associated with the floor control server state transition diagram for 'general floor control operation' stored, shall remove the Track Info field from the storage;

2. if the active floor request queue is empty the floor control server:

a. shall send Floor Idle message to all floor participants. The Floor Idle message:

i. shall include a Message Sequence Number field with a Message Sequence Number value increased with 1; and

ii. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

b. shall start timer T7 (Floor Idle) and initialise counter C7 (Floor Idle) to 1;

c. shall start timer T4 (Inactivity); and

d. shall set the general state to the 'G: Floor Idle' state; and

3. if the active floor request queue is not empty the floor control server:

a. shall select a queued floor request from the top of the active floor request queue;

b. shall remove that queued floor request from the active floor request queue;

c. if the queued floor request includes a Track Info field, shall store the Track Info field and associate it with the floor control server state transition diagram for 'general floor control operation'; and

d. shall enter the 'G: Floor Taken' state as specified in the clause 6.3.4.4.2 with respect to that floor participant.

When entering this state from any state except the 'Start-stop' state and the state machine specified in clause 6.3.6 exists, the floor control arbitration logic in the floor control server:

1. if there is a Track Info field associated with the floor control server state transition diagram for 'general floor control operation' stored, shall remove the Track Info field from the storage;

2. shall send Floor Idle message to all floor participants which are configured to listen to the overridden participant. The Floor Idle message:

a. shall include a Message Sequence Number field with a Message Sequence Number value increased with 1; and

b. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

3. shall send Floor Taken message to floor participants which are configured to listen only to the overridden participant. The Floor Taken message:

a. if privacy is not requested, shall include the granted MCPTT user’s (overriding participant) MCPTT ID in the Granted Party's Identity field;

b. shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1;

c. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

d. shall include the Audio SSRC that was generated for the overridden participant into the Audio SSRC of Granted Participant field; and

e. shall include the location of the user as specified in clause 6.2.4.3.5;

4. shall set the general state to the 'G: Floor Taken' state; and

5. shall send the termination instruction to the state machine for dual floor control operation.

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##### 6.3.4.4.2 Enter the 'G: Floor Taken' state

When entering this state the floor control arbitration logic in the floor control server:

1. shall send a Floor Granted message to the floor participant to which the floor is granted. The Floor Granted message:

a. shall include the value of timer T2 (Stop talking)in the Duration field;

b. shall include the granted priority in the Floor priority field;

c. if a Track Info field associated with the floor control server state transition diagram for 'general floor control operation' is stored, shall include the stored Track Info field;

d. if a group call is a broadcast group call, system call, emergency call, an imminent peril call or a temporary group session, shall include the Floor Indicator field with appropriate indications;

e. if the call is a remotely initiated ambient listening call, shall set the first bit in the subtype of the Floor Granted message to '1' (Acknowledgment is required) as described in clause 8.2.2; and

f. shall include in the Audio SSRC of Granted Participant field a globally unique audio SSRC, generated and stored by the floor control server, to be used by the granted MCPTT participant in the RTP media packets it will send;

NOTE: If the call is an ambient listening call and the ambient listening call type is remote-initiated, then the floor participant to which the floor is granted is the terminating floor participant of the call. Otherwise the floor is granted to the participant which requested the floor.

2. shall start timer T20 (Floor Granted) if the floor request was queued for the participant to which the floor is granted and initialise the counter C20 (Floor Granted) to 1;

3. shall send Floor Taken message to all other floor participants. The Floor Taken message:

a. if the floor is currently granted only to one particpant:

i shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field, if privacy is not requested;

ii. may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested; and

iii. shall include the location of the user as specified in clause 6.2.4.3.5;

b. if multi-talker is supported and the floor is currently granted to multiple participants:

i. shall include the Floor Indicator field with the I-bit set to '1' (Multi-talker);

ii. shall include the list of granted users in the multi-talker group in List of Granted Users field, including a new granted talker;

iii. shall include the list of Audio SSRCs of Granted Participants;

iv. may include the list of functional aliases of the granted floor participants in the List of Functional Aliases field; and

v. shall include the List of Locations of granted floor participants;

c. shall include a Message Sequence Number field with a Message Sequence Number value increased with 1;

d. if the session is a broadcast group call or an ambient listening call, shall include the Permission to Request the Floor field set to '0';

e. if the session is not a broadcast group call, may include the Permission to Request the Floor field set to '1';

f. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

g. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field;

4. shall start timer T1 (End of RTP media) for the participant to which the floor is granted;

5. shall enter the 'G: Floor Taken' state; and

6. if configured to support multi-talker floor control the group is configured to shall add the MCPTT identity of the participant to which the floor is granted to the list of currently granted talkers.

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##### 6.3.4.4.7a Receive Floor Request message multi-talker (R: multi-talker Floor Request)

On receipt of a floor request message and if the group is configured as multi-talker group the floor control arbitration logic in the floor control server:

1. shall select one of the following options:

a. if the maximum number of simultaneous talkers applicable for multi-talker control is reached and if the floor request message has effective priority indicating pre-emptive priority, determine from all participants having permission to send media, the one with the lowest priority and revoke the floor from the participant with the lowest priority; or

b. if the maximum number of simultaneous talkers applicable for multi-talker control is not reached, allow media from both the current speaker(s) and from the participant now requesting floor;

2. if revoking is selected:

a. shall stop timer T1 (End of RTP media) for the participant from which the floor is revoked, if running;

b. shall stop timer T20 (Floor Granted) for the participant from which the floor is revoked, if running;

c. shall include a Reject Cause field with the <Reject Cause> value set to #4 (Media Burst pre-empted) in the Floor Revoke message sent in clause 6.3.4.5.2;

d. shall enter the 'G: pending Floor Revoke' state as specified in the clause 6.3.4.5.2;

e. shall insert the floor participant into the active floor request queue to the position in front of all queued requests, if not inserted yet or update the position of the floor participant in the active floor request queue to the position in front of all other queued requests, if already inserted;

f. shall send a Floor Queue Position Info message to the requesting floor participant, if negotiated support of queueing of floor requests as specified in clause 14. The Floor Queue Position Info message:

i. shall include the queue position and floor priority in the Queue Info field; and

ii. if the Floor Request message included a Track Info field, shall include the received Track Info field; and

3. if allow media from both the current speaker(s) and from the participant now requesting floor is selected:

a. shall send a Floor Granted message to the requesting floor participant. The Floor Granted message:

i. shall include the value of the T2 (Stop talking) timer in the Duration field;

ii. shall include the granted priority in the Floor priority field;

iii. if a Track Info field associated with the floor control server state transition diagram for 'multi-talker floor control operation' is stored, shall include the stored Track Info field;

iv. shall include the Floor Indicator field with the I-bit set to '1' (Multi-talker); and

v. shall include in the Audio SSRC of Granted Participant field a globally unique audio SSRC, generated and stored by the floor control server, to be used by the granted MCPTT participant in the RTP media packets it will send;

b. shall add the MCPTT ID of the user to which the floor is granted to the list of currently granted talkers;

c. shall send a Floor Taken message to any non-controlling MCPTT functions involved and to floor participants controlled by the controlling MCPTT function that will listen to the RTP media from the multi-talker MCPTT client according to local policy. The Floor Taken message:

i. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field and may include the associated functional alias in the Functional Alias field, if privacy is not requested;

ii. shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1;

iii. shall include the Floor Indicator field with the I-bit set to '1' (Multi-talker);

iv. shall include the list of granted users in the multi-talker group in List of Granted Users field;

v. shall include the list of Audio SSRCs of Granted Particpants; and

vi. may include the list of functional aliases of the granted floor participants in the List of Functional Aliases field.

d. shall start the T1 (End of RTP) timer for the participant to which the floor is granted;

e. shall start timer T20 (Floor Granted) for the participant to which the floor is granted, if the floor request was queued and initialise the counter C20 (Floor Granted) to 1; and

f. shall stay in the state to 'G: Floor Taken' state.

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##### 6.3.5.2.2 SIP Session initiated

When a SIP Session is established and if:

1. the session is not a temporary group call session;

2. the session is a temporary group call session and the associated floor participant is an invited MCPTT client (i.e. not a constituent MCPTT group); or

3. the session is not an ambient listening call;

then:

NOTE 1: A MCPTT group call is a temporary group session when the <on-network-temporary> element is present in the <list-service> element as specified in 3GPP TS 24.381 [12].

1. if an MCPTT client initiates an MCPTT call with an implicit floor request, and the MCPTT call does not exist yet, the floor control interface towards the MCPTT client in the floor control server:

a. shall initialize a general state machine as specified in clause 6.3.4.2.2; and

NOTE 2: In the clause 6.3.4.2.2 the 'general floor control operation' state machine will continue with the initialization of the 'general floor control operation' state machine.

b. shall enter the state 'U: permitted' as specified in the clause 6.3.5.5.2;

2. if the associated MCPTT client rejoins an ongoing MCPTT call without an implicit floor request or initiates or joins a chat group call without an implicit floor request or attempts to initiate an already existing MCPTT call without an implicit floor request, and

a. if an MCPTT call already exists but no MCPTT client has the permission to send a media, the floor control interface towards the MCPTT client in the floor control server:

i. should send a Floor Idle message to the MCPTT client. The Floor Idle message:

A. shall include a Message Sequence Number field with a Message Sequence Number value increased with 1; and

B. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

ii. shall enter the state 'U: not permitted and Floor Idle' as specified in the clause 6.3.5.5.2;

b. if an MCPTT call is initiated, the floor control interface towards the MCPTT client in the floor control server:

i. shall enter the state 'U: not permitted and Floor Idle' as specified in the clause 6.3.5.5.2; and

ii. shall initialize a general state machine as specified in clause 6.3.4.2.2; and

NOTE 3: In the clause 6.3.4.2.2 the general state machine will continue with the initialization of the general state machine.

c. if another MCPTT client has the permission to send a media, the floor control interface towards the MCPTT client in the floor control server:

i. should send a Floor Taken message to the MCPTT client. The Floor Taken message:

A. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field and may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested;

B. shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1;

C. if the session is a broadcast group call, shall include the Permission to Request the floor field set to '0';

D. if the session is not a broadcast group call, may include the Permission to Request the floor field set to '1';

E. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

F. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field; and

ii. shall enter the 'U: not permitted and Floor Taken' state as specified in the clause 6.3.5.4.2;

3. if the associated floor participant attempts to initiate an already existing MCPTT call with an implicit floor request, and

a. if no MCPTT client has the permission to send media, the floor control interface towards the MCPTT client in the floor control server:

i. shall process the implicit floor request as if a Floor Request message was receive as specified in clause 6.3.4.3.3; and

ii. shall enter the state 'U: permitted' as specified in the clause 6.3.5.5.2;

b. if the MCPTT client negotiated support of queueing floor requests as specified in clause 14 and if another MCPTT client has the permission to send media, the floor control interface towards the MCPTT client in the floor control server:

i. shall set the priority level to the negotiated maximum priority level that the MCPTT client is permitted to request, except for pre-emptive priority, when high priority is used;

NOTE 4: The maximum floor priority the floor participant is permitted to request is negotiated in the "mc\_priority" fmtp attribute as specified in clause 14.

NOTE 5: The initial implicit floor request will not result in pre-emption when an MCPTT client is joining an ongoing MCPTT call. If the MCPTT client wants to pre-empt the current MCPTT client that is sending media, an explicit floor request with pre-emptive floor priority is required.

ii. shall insert the MCPTT client into the active floor request queue to the position immediately following all queued floor requests with the same floor priority;

iii. shall send a Floor Queue Position Info message to the MCPTT client. The Floor Queue Position Info message:

A shall include the queue position and floor priority in the Queue Info field; and

B. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

iv. should send a Floor Queue Position Info message with the updated status to the MCPTT clients in the active floor request queue which negotiated queueing of floor requests as specified in clause 14, which have requested the queue status, whose queue position has been changed since the previous Floor Queue Position Info message and which is not the joining MCPTT client. The Floor Queue Position Info message:

A shall include the queue position and floor priority in the Queue Info field; and

B. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

v. shall enter the 'U: not permitted and Floor Taken' state as specified in the clause 6.3.5.4.2; and

c. if the MCPTT client did not negotiate queueing of floor requests and if another MCPTT client has the permission to send a media, the floor control interface towards the MCPTT client in the floor control server:

i. shall send a Floor Taken message to the MCPTT client. The Floor Taken message:

A. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field and may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested;

B. shall include a Message Sequence Number field with a Message Sequence Number value increased with 1;

C. if the session is a broadcast group call, shall include the Permission to Request the floor field set to '0';

D. if the session is not a broadcast group call, may include the Permission to Request the floor field set to '1';

E. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

F. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field; and

ii. shall enter the 'U: not permitted and Floor Taken' state as specified in the clause 6.3.5.4.2; and

4. if the MCPTT client is invited to the MCPTT call and

a. if another MCPTT client has permission to send a media, the floor control interface towards the MCPTT client in the floor control server:

i. should send a Floor Taken message to the MCPTT client. The Floor Taken message:

A. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field and may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested;

B. shall include a Message Sequence Number field with a Message Sequence Number value increased with 1;

C. if the session is a broadcast group call, shall include the Permission to Request the floor field set to '0';

D. if the session is not a broadcast group call, may include the Permission to Request the floor field set to ‘1’;

E. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

F. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field; and

ii. shall enter the 'U: not permitted and Floor Taken' state as specified in the clause 6.3.5.4.2; and

b. if no other MCPTT client has the permission to send a media; the floor control interface towards the MCPTT client in the floor control server:

i. should send a Floor Idle message to the MCPTT client. The Floor Idle message:

A. shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1; and

B. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

ii. shall enter the 'U: not permitted and Floor Idle' state as specified in the clause 6.3.5.3.2.

When a SIP Session is established and if the session is a temporary group call session and,

1. if the associated floor participant is a constituent MCPTT group; or

2. if the associated floor participant is the initiator of the temporary group session;

then the floor control interface towards the MCPTT client:

1. shall initialize a general state machine as specified in clause 6.3.4.2.2, if not already initiated; and

2. shall enter the 'U: not permitted and initiating' state as specified in clause 6.3.5.10.2.

When a SIP Session is established and if the session is an ambient listening call session then the floor control interface towards the MCPTT client:

1. if the floor is granted to the associated floor participant

a. shall forward the "Floor Granted" message to the associated floor participant; and

b. shall enter the state 'U: permitted' as specified in the clause 6.3.5.5.2; and

2. if the floor is not granted to the associated floor participant

a. shall forward the "Floor Taken" message to the associated floor participant; and

b. shall enter the state 'U: not permitted Floor Taken' as specified in the clause 6.3.5.4.2.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

##### 6.3.5.4.5 Receive Floor Release message (R: Floor Release)

Upon receiving a Floor Release message from the associated floor participant and if the MCPTT client did not negotiate support of queueing of floor requests or included a floor priority in the "mc\_priority" fmtp attribute as specified in clause 14, the floor control interface towards the MCPTT client in the floor control server:

1. if the first bit in the subtype of the Floor Release message is set to '1' (Acknowledgment is required) as described in clause 8.2.2, shall send a Floor Ack message. The Floor Ack message:

a. shall include the Message Type field set to '4' (Floor Release);

b. shall include the Source field set to '2' (the controlling MCPTT function is the source); and

c. if the Floor Release message included a Track Info field, shall include the received Track Info field;

2. shall send a Floor Taken message to the associated floor participant. The Floor Taken message:

a. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field and may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested;

b. shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1;

c. shall include the Permission to Request the floor field set to '0', if the floor participants are not allowed to request the floor;

d. if the Floor Release message included a Track Info field, shall include the received Track Info field;

e. may set the first bit in the subtype of the Floor Taken message to '1' (Acknowledgment is required) as described in clause 8.2.2;

NOTE 1: It is an implementation option to handle the receipt of the Floor Ack message and what action to take if the Floor Ack message is not received.

f. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

g. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field; and

3. shall remain in the 'U: not permitted and Floor Taken' state.

Upon receiving a Floor Release message from the associated floor participant and if the MCPTT client negotiated support of queueing of floor requests as specified in clause 14, the floor control interface towards the MCPTT client in the floor control server:

1. if the first bit in the subtype of the Floor Release message is set to '1' (Acknowledgment is required) as described in clause 8.2.2, shall send a Floor Ack message. The Floor Ack message:

a. shall include the Message Type field set to '4' (Floor Release);

b. shall include the Source field set to '2' (the controlling MCPTT function is the source); and

c. if the Floor Release message included a Track Info field, shall include the received Track Info field;

2. if

a. a Track Info field is included in the Floor Release message, shall use the topmost <Participant Reference> value and the SSRC in the received Floor Release message to check if the floor participant has a queued floor request; or

b. if a Track Info field is not included in the Floor Release message, shall use the SSRC in the received Floor Release message to check if the floor participant has a queued floor request;

3. shall remove the MCPTT client from the active floor request queue, if the MCPTT client was in the active floor request queue;

4. shall send a Floor Taken message to the associated floor participant. The Floor Taken message:

a. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field and may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested;

b. if the session is a broadcast group call, shall include the Permission to Request the floor field set to '0';

c. if the session is not a broadcast group call, may include the Permission to Request the floor field set to '1';

d. if a Track Info field is included in the Floor Release message, shall include the received Track Info field;

e. shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1;

f. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

g. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field;

5. may set the first bit in the subtype of the Floor Taken message is set to '1' (Acknowledgment is required) as described in clause 8.2.2; and

NOTE 2: It is an implementation option to handle the receipt of the Floor Ack message and what action to take if the Floor Ack message is not received.

6. shall remain in the 'U: not permitted and Floor Taken' state.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

##### 6.3.5.6.5 Receive Floor Release message (R: Floor Release)

Upon receiving a Floor Release message from the associated floor participant, the floor control interface towards the MCPTT client in the floor control server:

1. if the first bit in the subtype of the Floor Release message is set to '1' (Acknowledgment is required) as described in clause 8.2.2, shall send a Floor Ack message. The Floor Ack message:

a. shall include the Message Type field set to '4' (Floor Release); and

b. shall include the Source field set to '2' (the controlling MCPTT function is the source);

c. if the Floor Release message included a Track Info field, shall include the received Track Info field;

2. if the G-bit in the Floor Indicator is set to '1' (Dual floor):

a. if the state in the 'general floor control operation' state machine is 'G: Taken':

i. shall send a Floor Taken message to the associated floor participant. The Floor Taken message:

A. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field of the permitted MCPTT client and may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested;

B. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

C. if the Floor Release message included a Track Info field, shall include the received Track Info field; and

D. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field; and

ii. shall enter the 'U: not permitted and Floor Taken' state as specified in the clause 6.3.5.4.2; and

b. if the state in the 'general floor control operation' state machine is 'G: Idle':

i. shall send a Floor Idle message to the associated floor participant;

ii. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

iii. if the Floor Release message included a Track Info field, shall include the received Track Info field; and

iv. shall enter the 'U: not permitted and Floor Idle' state as specified in the clause 6.3.5.3.2; and

3. if the G-bit in the Floor Indicator is set to '0':

a. shall forward the Floor Release message to the floor control server arbitration logic; and

b. shall remain in the state 'U: pending Floor Revoke'.

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##### 6.3.5.7.4 Receive Floor Release message (R: Floor Release)

Upon receiving a Floor Release message, the floor control interface towards the MCPTT client in the floor control server:

1. if the first bit in the subtype of the Floor Release message is set to '1' (Acknowledgment is required) as described in clause 8.2.2, shall send a Floor Ack message. The Floor Ack message:

a. shall include the Message Type field set to '4' (Floor Release); and

b. shall include the Source field set to '2' (the controlling MCPTT function is the source);

c. if the Floor Release message included a Track Info field, shall include the received Track Info field;

2. if the general state is 'G: Floor Idle', the floor control interface towards the MCPTT client in the floor control server:

a. shall send the Floor Idle message. The Floor Idle message:

i. shall include a Message Sequence Number field with a Message Sequence Number value increased with 1; and

ii. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

iii. if the Floor Release message included a Track Info field, shall include the received Track Info field; and

b. shall enter the 'U: not permitted and Floor Idle' state as specified in the clause 6.3.5.3.2; and

3. if the general state is 'G: Floor Taken', the floor control interface towards the MCPTT client in the floor control server:

a. shall send a Floor Taken message. The Floor Taken message:

i. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field and may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested;

ii. if the session is a broadcast group call, shall include the Permission to Request the floor field set to '0';

iii. if the session is not a broadcast group call, may include the Permission to Request the floor field set to '1';

iv. may include the first bit in the subtype of the Floor Taken message set to '1' (Acknowledgment is required) as described in clause 8.2.2;

NOTE: It is an implementation option to handle the receipt of the Floor Ack message and what action to take if the Floor Ack message is not received.

v. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

vi. if the Floor Release message included a Track Info field, shall include the received Track Info field; and

vii. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field; and

b. shall enter the 'U: not permitted and Floor Taken' state as specified in the clause 6.3.5.4.2.

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##### 6.3.6.3.2 Enter state 'D: Floor Taken'

When entering this state the floor control arbitration logic in the floor control server:

1. shall send a Floor Granted message to the requesting floor participant. The Floor Granted message:

a. shall include the value of the T12 (Stop talking dual) timer in the Duration field;

b. shall include the granted priority in the Floor priority field;

c. if a Track Info field associated with the floor control server state transition diagram for 'dual floor control operation' is stored, shall include the stored Track Info field;

d. shall include the Floor Indicator field with the G-bit set to '1' (Dual floor);

e. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

f. shall include in the Audio SSRC of Granted Participant field a globally unique audio SSRC, generated and stored by the floor control server, to be used by the granted MCPTT participant in the RTP media packets it will send;

2. shall send a Floor Idle message to any non-controlling MCPTT functions involved in the session and to those floor participants controlled by the controlling MCPTT function that will only listen to RTP media from the overriding MCPTT client according to local policy. The Floor Idle message:

NOTE 1: The non-controlling MCPTT function will send the Floor Idle message to those floor participants controlled by the non-controlling MCPTT function that will only listen to RTP media from the overriding MCPTT client according to local policy when the non-controlling MCPTT function receives the Floor Taken with the G-bit set to '1' (Dual floor) in the Floor Indicator field.

i. shall include a Message Sequence Number field with a Message Sequence Number value increased with 1; and

ii. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

3. shall send a Floor Taken message to any non-controlling MCPTT functions involved and to floor participants controlled by the controlling MCPTT function that will listen to the RTP media from the overriding MCPTT client according to local policy. The Floor Taken message:

NOTE 2: The MCPTT client overridden by the overriding MCPTT client is still sending voice (overridden). The list of floor participants that receive the overriding, overridden, or both transmissions is based on configuration.

a. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field and may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested;

b. shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1;

c. shall include the Floor Indicator field with the G-bit set to '1' (Dual floor);

d. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

e. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field;

4. shall start the T11 (End of RTP dual) timer ; and

5. shall enter the state to 'D: Floor Taken' state.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

##### 6.3.6.3.3 Timer T11 (End of RTP dual) expired

On expiry of timer T11 (End of RTP dual), the floor control arbitration logic in the floor control server:

1. shall stop the T12 (Stop talking dual) timer; if running;

2. shall request the media distributor in the MCPTT server to stop distributing RTP media packets received from the overriding MCPTT client to other MCPTT clients;

NOTE: If dual floor control is ongoing as described in clause 6.3.6, the list of floor participants that receive the overriding, overridden, or both transmissions is based on configuration.

3. shall release all resources reserved in the media plane including the instances used for the 'dual floor control operation' state machine and any running timers associated with the state machine;

4. shall send a Floor Idle message to any non-controlling MCPTT functions and to those floor participants controlled by the controlling MCPTT functions receiving RTP media from the overriding MCPTT client. The Floor Idle message:

a. shall include a Floor Indicator field with the G-bit set to '1' (Dual floor);

b. shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1; and

c. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

5. if the state in the 'general floor control operation' state machine is 'G: Taken';

a shall send a Floor Taken message to any non-controlling MCPTT functions and to those floor participants controlled by the controlling MCPTT function that only received RTP media from the overriding MCPTT client. The Floor Taken message:

i. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field of the permitted MCPTT client and may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested;

ii. shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1;

iii. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

iv. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field;

6. if the state in the 'general floor control operation' state machine is 'G: Idle', shall send a Floor Idle message to all floor participants. The Floor Idle message:

a. shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1; and

b. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

7. shall enter the 'Start-stop' state.

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##### 6.3.6.3.4 Timer T12 (Stop talking dual) expired

On expiry of the T12 (Stop talking dual) timer the floor control arbitration logic in the floor control server:

1. shall stop the T11 (End of RTP dual) timer;

2. shall request the media distributor in the MCPTT server to stop distributing RTP media packets to other MCPTT client;

3. shall send the Floor Revoke message to the permitted participant. The Floor Revoke message:

a. shall include the Reject Cause field with the <Reject Cause> value set to #2 (Media burst too long) in the Floor Revoke message sent in clause 6.3.4.5.2;

b. shall include the Floor Indicator with the G-bit set to '1' (Dual floor);

c. if a Track Info field associated with the dual floor is stored, shall include the stored Track Info field; and

d. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

4. shall remove the stored Track info field associated with the dual floor;

5. if the state in the 'general floor control operation' state machine is 'G: Taken';

a. shall send a Floor Taken message to all non-controlling functions (if the session is a temporary group session involving non-controlling MCPTT functions) and to those floor participants that only received RTP media from the overriding MCPTT client. The Floor Taken message:

i. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field of the permitted MCPTT client and may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested;

ii shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1; and

iii. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field;

6. if the state in the 'general floor control operation' state machine is 'G: Idle', shall send a Floor Idle message to all floor participants. The Floor Idle message:

a. shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1; and

b. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

7. shall release all resources reserved in the media plane including the instances used for the 'Floor control server state transition diagram for dual floor control operation'; and

8. shall enter the 'Start-stop' state.

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##### 6.3.6.3.6 Receive Floor Release message (R: Floor Release)

Upon receiving a Floor Release message the floor control arbitration logic in the floor control server:

1. shall request the media distributor in the MCPTT server to stop distributing RTP media packets received from the overriding MCPTT client to other MCPTT client;

2. shall stop the T12 (Stop talking dual) timer, if running;

3. shall stop the T11 (End of RTP dual) timer;

4. shall release all resources reserved in the media plane including the instances used for the 'Floor control server state transition diagram for dual floor control operation' and any running timers associated with the state machine;

5. if the first bit in the subtype of the Floor Release message is set to '1' (acknowledgement is required) as specified in clause 8.2.2:

a. shall send a Floor Ack message. The Floor Ack message:

i. shall set the Source field to the value '2' (the controlling MCPTT function is the source); and

ii. shall set the Message Type field to the value '4'( Floor Release);

6. shall send a Floor Idle message to any non-controlling MCPTT functions, to the overridden floor participant and to those floor participants controlled by the controlling MCPTT functions receiving RTP media from the overriding MCPTT client. The Floor Idle message:

a. shall include an Floor Indicator field with the G-bit set to '1' (Dual floor);

b shall include a Message Sequence Number field with a <Message Sequence Number> value increased with 1; and

c. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications;

7. if the state in the 'general floor control operation' state machine is 'G: Taken',

a. shall send a Floor Taken message to any non-controlling MCPTT functions and to those floor participants that only received RTP media from the overriding MCPTT client. The Floor Taken message:

i. shall include the granted MCPTT user's MCPTT ID in the Granted Party's Identity field of the permitted MCPTT client and may include the functional alias of the granted MCPTT user in the Functional Alias field, if privacy is not requested;

ii. shall include a Message Sequence Number field with a Message Sequence Number value increased with 1;

iii. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

iv. shall include the generated audio SSRC to be used by the granted MCPTT participant into the Audio SSRC of Granted Participant field;

8. if the state in the 'general floor control operation' state machine is 'G: Idle', shall send a Floor Idle message to all floor participants;. The Floor Idle message:

a. shall include a Message Sequence Number field with a Message Sequence Number value increased with 1; and

b. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Floor Indicator field with appropriate indications; and

9. shall enter the 'Start-stop' state.

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### 6.4.2 Receive floor control messages

Upon receiving a floor control message the participating MCPTT function:

1. shall immediately forward the floor control message to the floor control server if the message is received from the floor participant;

a. when forwarding the floor control message, the participating MCPTT function shall update the RTCP header of the floor control message with the RTCP SSRC it has received from the floor control server at session establishment.

2. if an MBMS subchannel is not used for a conversation in the session the floor control message is associated with, shall immediately forward the floor control message to the floor participant if the message is received from the floor control server; and

a. when forwarding the floor control message, the participating MCPTT function shall update the RTCP header of the floor control message with the RTCP SSRC it has received from the floor participant at session establishment.

3. if an MBMS subchannel is used for a conversation in the session the floor control message is associated with:

a. if

i. the floor control message is not a Floor Idle message or a Floor Taken message or a Floor Release Multi Talker message;

ii. the MCPTT client has not reported "listening" status as specified in 3GPP TS 24.379 [2] clause 14.2.3;

iii. the MCPTT client has reported "not-listening" status as specified in 3GPP TS 24.379 [2] clause 14.2.3 in the latest received MBMS bearer listening status report; or

iv. the floor control message is a Floor Idle message or a Floor Taken message or a Floor Release Multi Talker message, protection of floor control messages sent over the MBMS subchannel from the participating MCPTT function to the served MCPTT clients is required, and the participating MCPTT function determined that the MCPTT client does not support MuSiK as specified in 3GPP TS 24.379 [2];

 shall immediately forward the floor control message to the floor participant; and

b. if

i. the MCPTT client has reported "listening" status as specified in 3GPP TS 24.379 [2] clause 14.2.3 in the latest received MBMS bearer listening status report; and

ii if the floor control message is the Floor Idle message or the Floor Taken message or the Floor Release Multi Talker message, and:

- protection of floor control messages sent over the MBMS subchannel from the participating MCPTT function to the served MCPTT clients is not required; or

- the participating MCPTT function determined that the MCPTT client supports MuSiK as specified in 3GPP TS 24.379 [2];

 shall perform actions as specified in clause 10.2.

NOTE: When the Floor Idle, Floor Taken, or Floor Release Multi Talker messages are discarded the messages are sent to the MCPTT clients over the MBMS subchannel allocated for the conversation as specified in clause 10.2.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

### 8.1.2 RTCP: APP message format

The definition of the fields in the RTCP APP packet is found in IETF RFC 3550 [3].

Table 8.1.2-1 shows the RTCP APP packet format.

Table 8.1.2-1: RTCP: APP message format

0 1 2 3

0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

|V=2|P| Subtype | PT=APP=204 | length |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| SSRC |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| name (ASCII) |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| application-dependent data |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Secure RTCP message part |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

**P**

The padding bit P is set to '0'.

**Subtype:**

Dependent upon the relevant set of media plane control messages, as identified by the Name field, the possible Subtype values are defined in the following tables:

- Name field = "MCPT" (i.e. Floor control): Table 8.2.2.1-1

- Name field = "MCPC" (i.e. Pre-established session call control): Table 8.3.2-1

- Name field= "MCMC" (i.e. MBMS subchannel control): Table 8.4.2-1

- Name field= "MCNC" (i.e. Notification control): Table 8.5.2-1

- Name field= "MCSC" (i.e. MBS subchannel control): Table 8.6.2-1

**Length**

The length field in the RTCP header is the length of the packet in 32-bit words, not counting the first 32-bit word in which the length field resides.

NOTE: The length field can indicate message size longer than specified in this version of the protocol. This can be the case e.g. if message is of later version of this protocol.

**SSRC**

The SSRC field shall carries the RTCP SSRC of the sending floor control entity.

In on-network, the RTCP SSRCs are exchanged at session establishment within the SDP offer and answer as specified in clause 4.3.

NOTE: In the case the RTCP APP message is forwarded (e.g. by participating or non-controlling MCPTT function), the forwarding floor control entity updates the RTCP header with the RTCP SSRC it has received from the destination floor control entity at session establishment.

**Name**

The 4-byte ASCII string in the RTCP header is used to define the set of media plane control messages to be unique with respect to other APP packets that the media plane might receive.

The present document specified the use of the following names:

1. For the floor control protocol specified in the present document the ASCII name string is: MCPT (Mission Critical Push-to-Talk).

2. For the pre-established session call control protocol specified in the present document the ASCII name string is: MCPC (Mission Critical Pre-established Session Control).

3. For the MBMS subchannel control protocol specified in the present document the ASCII name string is: MCMC (Mission Critical MBMS subchannel Control).

4. For the MBMS subchannel control protocol specified in the present document the ASCII name string is: MCNC (Notification control).

5. For the MBS subchannel control protocol specified in the present document the ASCII name string is: MCSC (Mission Critical MBS subchannel Control).

**Application-dependent data**

The application-dependent data contains zero or more application specific data fields is specified in clause 8.1.3.

This part is encrypted if SRTCP is used.

**Secure RTCP message part**

The content of the secure RTCP message part is in specified in clause 13 and in IETF RFC 3711 [16].

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

#### 8.2.3.1 Introduction

This clause describes the floor control specific data fields.

The floor control messages can include floor control specific data fields contained in the application-dependent data of the floor control message. The floor control specific data fields follow the syntax specified in clause 8.1.3.

Table 8.2.3.1-1: Void

Table 8.2.3.1-2 lists the available floor control specific data fields including the assigned field ID.

Table 8.2.3.1-2: Floor control specific data fields

|  |  |  |
| --- | --- | --- |
| Field name | Field ID | Reference |
| Decimal | Binary |
| Floor Priority | 000 | 00000000 | Clause 8.2.3.2 |
| Duration | 001 | 00000001 | Clause 8.2.3.3 |
| Reject Cause | 002 | 00000010 | Clause 8.2.3.4 |
| Queue Info | 003 | 00000011 | Clause 8.2.3.5 |
| Granted Party's Identity | 004 | 00000100 | Clause 8.2.3.6 |
| Permission to Request the Floor | 005 | 00000101 | Clause 8.2.3.7 |
| User ID | 006 | 00000110 | Clause 8.2.3.8 |
| Queue Size | 007 | 00000111 | Clause 8.2.3.9 |
| Message Sequence-Number  | 008 | 00001000 | Clause 8.2.3.10 |
| Queued User ID | 009 | 00001001 | Clause 8.2.3.11 |
| Source | 010 | 00001010 | Clause 8.2.3.12 |
| Track Info | 011 | 00001011 | Clause 8.2.3.13 |
| Message Type | 012 | 00001100 | Clause 8.2.3.14 |
| Floor Indicator | 013 | 00001101 | Clause 8.2.3.15 |
| Audio SSRC of Granted Participant | 014 | 00001110 | Clause 8.2.3.16 |
| List of Granted Users | 015 | 00001111 | Clause 8.2.3.17 |
| List of SSRCs  | 016 | 00010000 | Clause 8.2.3.18 |
| Functional Alias | 017 | 00010001 | Clause 8.2.3.19 |
| List of Functional Aliases | 018 | 00010010 | Clause 8.2.3.20 |
| Location | 019 | 00010011 | Clause 8.2.3.21 |
| List of Locations | 020 | 00010100 | Clause 8.2.3.22 |
| Queued Floor Requests Purpose | 021 | 00010101 | Clause 8.2.3.23 |
| List of Queued Users | 022 | 00010110 | Clause 8.2.3.24 |
| Response State | 023 | 00010111 | Clause 8.2.3.25 |
| Media Flow Control Indicator | 024 | 00011000 | Clause 8.2.3.26 |

The following clauses describe the coding of each field.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

#### 8.2.3.16 Audio SSRC of Granted Participant field

The content of the Audio SSRC of Granted Participant field is coded as specified in IETF RFC 3550 [3]. An Audio SSRC of Granted Participant field can also have a Field ID and a length value. This clause specifies an Audio SSRC of Granted Participant field including a Field ID and a length value.

Table 8.2.3.16-1: SSRC field coding

0 1 2 3

0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

|Audio SSRC |Audio SSRC |Audio SSRC of Granted |

|of Granted |of Granted |Participant value |

|Participant |Participant | |

|field ID value |length value | |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Audio SSRC of Granted |Spare |

| Participant value | |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

The < Audio SSRC of Granted Participant field ID> value is a binary value and is set according to table 8.2.3.1-2.

The < Audio SSRC of Granted Participant length> value is a binary value and has the value '6' indicating the total length in octets of the < Audio SSRC of Granted Participant length> value item and the spare bits.

The < Audio SSRC of Granted Participant > value is coded as the SSRC specified in IETF RFC 3550 [3].

The spare bits are set to zero.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

### 8.2.5 Floor Granted message

The Floor Granted message is sent by the floor control server to inform the requesting floor participant that it has been granted the permission to send media.

The Floor Granted message is used in the off-network mode and in the on-network mode. In the on-network mode the Floor Granted message is only used over the unicast bearer.

Table 8.2.5-1 shows the content of the Floor Granted message.

Table 8.2.5-1: Floor Granted message

0 1 2 3

0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

|V=2|P| Subtype | PT=APP=204 | length |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| RTCP SSRC of sending floor control entity |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| name=MCPT |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Duration field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Audio SSRC of Granted Participant field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Floor Priority field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| User ID field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Queue Size field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| SSRC of queued floor participant field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Queued User ID field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Queue Info field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Track Info field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Floor Indicator field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

With the exception of the three first 32-bit words the order of the fields are irrelevant. However, any set of Queue size field, SSRC of queued floor participant field, Queued User ID field and the Queue Info field shall be kept together.

**Subtype:**

The subtype is coded according to table 8.2.2-1.

**Length:**

The length is coded as specified in to clause 8.1.2.

**SSRC:**

The SSRC field shall carries the RTCP SSRC of the sending floor control entity for on-network and floor arbitrator for off-network.

In on-network, those RTCP SSRCs are defined by the receiving entity at session establishment within the SDPs as specified in clause 4.3.

The content of the SSRC field is coded as specified in IETF RFC 3550 [3].

**Duration:**

The Duration field is coded as specified in clause 8.2.3.3.

**Audio SSRC of Granted Participant:**

The Audio SSRC of Granted Participant field carries the SSRC value for Audio RTP stream of the user transmitting the media.

The Audio SSRC of Granted Participant is coded as specified in clause 8.2.3.X.

**Floor Priority:**

The Floor Priority field contains the granted floor priority and is coded as specified in clause 8.2.3.2.

**User ID:**

The User ID field is used in off-network only. The User ID field shall carries the MCPTT ID of the floor participant granted the floor. The User ID field is coded as described in clause 8.2.3.8.

**Queue Size:**

The Queue Size field is only applicable in off-network and contains the numbers of queued MCPTT clients in the MCPTT call.

The Queue Size field is coded as specified in clause 8.2.3.9.

For each waiting floor participant the following set of fields are included:

1. the SSRC of queued floor participant;

2. the Queued User ID field; and

3. the Queue info field.

The set occurs as many times as the <Queue size> value in the Queue size field.

**SSRC of queued floor participant:**

The SSRC of queued floor participant is only applicable in off-network and carries the SSRC of the floor participant in the queue.

The content of the SSRC of queued floor participant is coded as the SSRC specified in IETF RFC 3550 [3].

**Queued User ID:**

The Queued User ID field is only applicable in off-network and contains the MCPTT ID of the floor participant in the queue.

The Queued User ID field is coded as specified in clause 8.2.3.11.

**Queue Info:**

The Queue Info field is only applicable in off-network and defines the queue position and granted floor priority in the queue.

The Queue Info field is coded as specified in clause 8.2.3.5.

**Track Info:**

The Track Info field is included when an MCPTT call involves a non-controlling function. The coding of the Track Info field is described in clause 8.2.3.13.

**Floor Indicator:**

The Floor Indicator field is coded as described in clause 8.2.3.15.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

### 8.2.9 Floor Taken message

The Floor Taken message is sent as an action from the floor control server to inform non-requesting floor participant(s) that someone has been granted permission to send media.

The Floor Taken message is used in the off-network mode and in the on-network mode. In the on-network mode the Floor Taken message is used over both the unicast and MBMS bearer.

Table 8.2.9-1 shows the content of the Floor Taken message.

Table 8.2.9-1: Floor Taken message

0 1 2 3

0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

|V=2|P| Subtype | PT=APP=204 | length |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| RTCP SSRC of sending floor control entity |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| name=MCPT |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Granted Party's Identity field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Permission to Request the Floor field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| User ID field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Message Sequence Number field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Track Info field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Floor Indicator field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Audio SSRC of Granted Participant field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Functional Alias field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| List of Granted Users field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| List of Audio SSRCs of Granted Participants field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| List of Functional Aliases field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| Location field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

| List of Locations of granted floor participants field |

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

With the exception of the three first 32-bit words the order of the fields are irrelevant.

**Subtype:**

The subtype is coded according to table 8.2.2-1.

**Length:**

The length is coded as specified in to clause 8.1.2.

**SSRC:**

The SSRC field carries the RTCP SSRC of the sending floor control entity for on-network and floor arbitrator for off-network.

In on-network, those RTCP SSRCs are defined by the receiving entity at session establishment within the SDPs as specified in clause 4.3.

The content of the SSRC field is coded as specified in IETF RFC 3550 [3].

**Granted Party’s Identity:**

The Granted Party’s Identity field is coded as specified in clause 8.2.3.6.

**Permission to request the floor:**

The Permission to Request the Floor field is coded as specified in clause 8.2.3.7.

**User ID:**

The User ID field is used in off-network only. The User ID field carries the MCPTT user ID of the floor participant sending the Floor Taken message.

The User ID field is coded as specified in clause 8.2.3.8.

**Message Sequence Number:**

The Message Sequence Number field is coded as specified in to clause 8.2.3.10.

**Track Info:**

The Track Info field is included when an MCPTT call involves a non-controlling MCPTT function. The coding of the Track Info field is described in clause 8.2.3.13.

**Floor Indicator:**

The Floor Indicator field is coded as described in clause 8.2.3.15.

**Audio SSRC of Granted Participant:**

The Audio SSRC of Granted Participant field carries the SSRC value for Audio RTP stream of the user transmitting the media.

The Audio SSRC of Granted Participant is coded as specified in clause 8.2.3.X. . The field is not used in multi-talker control scenario.

**Functional Alias:**

The Functional Alias field contains the functional alias of the granted party and is coded as specified in clause 8.2.3.19.

**List of Granted Users:**

The List of Granted Users field is used in a multi-talker scenario. The List of Granted Users field is coded as specified in clause 8.2.3.17 and indicates the list of users that have permission to send media.

**List of Audio SSRCs of Granted Participants:**

The List of Audio SSRCs of Granted Participants field is used in a multi-talker scenario.

The List of Audio SSRCs of Granted Participants field carries the SSRC values for Audio RTP streams of the users transmitting the media.

The List of Audio SSRCs of Granted Participants is coded as specified in clause 8.2.3.18. The list contains the Audio SSRCs of the granted participants in the same order as the corresponding user IDs in the List of Granted Users field.

**List of Functional Aliases:**

The List of Functional Aliases field is used in multi-talker scenario. The List of Functional Aliases field is coded as specified in clause 8.2.3.20 and indicates the list of Functional Aliases that have permission to send media. The list contains the Functional Aliases in the same order as the corresponding user IDs in the List of Granted Users field.

**Location:**

The Location field is coded as specified in clause 8.2.3.21 and contains the location of the granted party.

**List of Locations of granted floor participants:**

The List of Locations field is used in a multi-talker scenario. The List of Locations of granted floor participants is coded as specified in clause 8.2.3.22. The list contains the Locations of granted floor participants in the same order as the corresponding user IDs in the List of Granted Users field.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

#### 12.1.2.2 Semantics

In an SDP offer and answer, the "mc\_queueing" fmtp attribute is used to indicate support of the Floor Request message queueing mechanism, as defined in the present specification.

In an SDP offer, the "mc\_priority" fmtp attribute indicates (using an integer value between '1' and '255') the maximum floor priority that the offerer requests to be used with Floor Request messages sent by the offerer. In an SDP answer, the attribute parameter indicates the maximum priority level that the answerer has granted to the offerer. The value must be equal or less than the value provided in the associated SDP offer.

NOTE 1: If the "mc\_priority" fmtp attribute is not used within an SDP offer or answer, a default priority value is assumed.

In an SDP offer, the "mc\_granted" fmtp attribute parameter indicates that the offerer supports the procedure where the answerer indicates, using the fmtp attribute in the associated SDP answer, that the floor has been granted to the offerer.

NOTE 2: When the "mc\_granted" fmtp attribute is used in an SDP offer, it does not indicate an actual request for the floor. The SDP "mc\_implicit\_request" fmtp attribute can be used to request the floor. In an SDP answer, the attribute indicates that the floor has been granted to the offerer.

NOTE 3: Once the offerer has been granted the floor, the offerer has the floor until it receives a Floor Revoke message, or until the offerer itself releases the floor by sending a Floor Release message, as described in the present specification.

In an SDP offer, the "mc\_implicit\_request" fmtp attribute indicates that the offerer implicitly requests the floor (without the need to send a Floor Request message). In an SDP answer, the attribute parameter indicates that the answerer has accepted the implicit floor request. Once the answerer grants the floor to the offerer, the answerer will send a Floor Granted message.

NOTE 4: The usage of the "mc\_implicit\_request" fmtp attribute in an SDP answer does not mean that the answerer has granted the floor to the offerer, only that the answerer has accepted the implicit floor request.

In an SDP answer, the "mc\_ssrc" fmtp attribute indicates the value of the Audio SSRC to be used by the offerer. The value may be equal to the value provided in the associated SDP offer or different, e.g. if a collision is detected. If the associated SDP offer does not indicate the ssrc value then the server determines an appropriate value. This value is returned in an SDP answer only if the answerer accepts the implicit floor request offered in SDP.

In an SDP offer, the "mc\_no\_floor\_ctrl" fmtp attribute indicates that the offerer wants to use pre-established session call control during the session without floor control over the offered media plane control channel. In an SDP answer, the attribute parameter indicates that the answerer has accepted the request to use the offered media plane control channel for pre-established session call control during the session without floor control.

In an SDP offer (resp. SDP answer), the "mc\_floor\_ssrc" fmtp attribute indicates the SSRC that the answerer (resp. offerer) shall use in the RTCP header of Floor Control messages sent to the offerer (resp. answerer) in this session.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

#### 12.1.2.3 Syntax

Table 12.1.2.3-1: SDP "fmtp" attribute for the MCPTT media plane control channel

fmtp-attr-mpcp = "a=fmtp:" "MCPTT" SP attr-param-list

attr-param-list = attr-param \*(COLON attr-param)

attr-param = mc\_queueing / mc\_priority / mc\_granted / mc\_implicit\_request / mc\_ssrc / mc\_no\_floor\_ctrl / mc\_floor\_ssrc

mc\_queueing = "mc\_queueing"

mc\_priority = "mc\_priority=" 1\*2(DIGIT)

mc\_granted = "mc\_granted"

mc\_implicit\_request = "mc\_implicit\_request"

mc\_ssrc = "mc\_ssrc=" 1\*(DIGIT)

mc\_no\_floor\_ctrl = "mc\_no\_floor\_ctrl"

mc\_floor\_ssrc = "mc\_floor\_ssrc=" 1\*(DIGIT)

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

### 14.2.X "mc\_floor\_ssrc" fmtp attribute

The MCPTT client, the participating MCPTT function, the controlling MCPTT function and the non-controlling MCPTT function shall include the "mc\_floor\_ssrc" fmtp attribute in SDP offers if multiplexing is supported.

The offerer shall assign a unique SSRC value to be used by the answerer in the media floor control messages sent to the offerer in this session, for the offerer to be able to associate the received media floor control message to the correct session in case of multiplexing. The assigned SSRC value shall be unique for the offerer to ensure that there is no SSRC collision.

The offerer shall include that assigned SSRC value in an "mc\_floor\_ssrc" fmtp attribute in the SDP offer.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

### 14.3.Y "mc\_floor\_ssrc" fmtp attribute

The MCPTT client, the participating MCPTT function, the controlling MCPTT function and the non-controlling MCPTT function shall include the "mc\_floor\_ssrc" fmtp attribute in SDP answers if multiplexing is supported and that the "mc\_floor\_ssrc" fmtp attribute was received in the SDP offers.

The answerer shall assign a unique SSRC value to be used by the offerer in the media floor control messages sent to the answerer in this session, for the answerer to be able to associate the received media floor control message to the correct session in case of multiplexing. The assigned SSRC value shall be unique for the answerer to ensure that there is no SSRC collision.

The answerer shall include that assigned SSRC value in an "mc\_floor\_ssrc" fmtp attribute in the SDP answer.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

## 14.4 Offerer processing of the SDP answer

If the offerer receives an SDP answer that includes the "mc\_ssrc" fmtp attribute, the offerer shall use the returned value from the "mc\_ssrc" fmtp attribute of SDP answer even if the "mc\_ssrc" attribute was not present in the associated offer.

If the offerer receives an SDP answer that includes the "mc\_floor\_ssrc" fmtp attribute the offerer shall treat the SDP answerer as an entity that supports multiplexing and may based on that information determine that support for multiplexing.

When the offerer receives an SDP answer, if an SDP fmtp attribute is associated with the media description associated with the media plane control channel, and if the attribute contains attribute parameters that were not present in the associated offer, the offerer shall discard those attribute parameters.

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