**3GPP TSG- Meeting #2 *3376***

**Maastricht, The Netherlands, 19-23 August was S6-243041**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | **0077** | **rev** | **1** | **Current version:** |  |  |
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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:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Kontron Transportation France, Nokia, UIC | | | | | | | | | |
| ***Source to TSG:*** | S6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FRMCS\_Ph5 | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | |  |
|  | *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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | This CR adds the missing elements. Interworking of private calls with GSM-R is not fully specified. This CR adds the missing items. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 10.4.1.2: Adding:  - functional alias of the called party  - Requested priority  - Transfer indicator  - Forwarding indicator  - Remotely initiated call request indicator  - Additional application specific data (as used by GSM-R)  10.4.1.3:  - Adding Additional application specific data (as used by GSM-R)  10.4.1.5:  - Additional application specific data (as used by GSM-R)  10.4.2.1:  Adding handling of case to a functional alias  10.4.2.2:  Adding handling of case to a functional alias  10.4.3.1:  Adding handling of case to a functional alias  10.4.3.2:  Adding handling of case to a functional alias  10.4.4.1:  Adding handling of additional application specific data  10.4.4.3:  Adding handling of additional application specific data | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Interworking of private call with GSM-R remains incomplete | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 10.4.1.2, 10.4.1.3, 10.4.1.5, 10.4.2.1, 10.4.2.2, 10.4.3.1, 10.4.3.2, 10.4.4.1, 10.4.4.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* First Change \* \* \* \*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.280: "Mission Critical Services Common Requirements (MCCoRe); Stage 1".

[3] 3GPP TS 22.179: "Mission Critical Push to Talk (MCPTT); Stage 1".

[4] 3GPP TS 22.282: "Mission Critical Data services".

[5] 3GPP TS 23.280: "Common functional architecture to support mission critical services; Stage 2".

[6] 3GPP TS 23.282: "Functional architecture and information flows to support Mission Critical Data (MCData); Stage 2".

[7] 3GPP TS 23.379: "Functional architecture and information flows to support Mission Critical Push To Talk (MCPTT); Stage 2".

[8] 3GPP TS 33.180: "Security of the mission critical service"

[9] TIA-603-D: "Land Mobile FM or PM Communications Equipment Measurement and Performance Standards".

[103 389] ETSI TS 103 389: "Rail Telecommunications (RT); Global System for Mobile communications (GSM); Usage of Session Initiation Protocol (SIP) on the Network Switching Subsystem (NSS) to Fixed Terminal Subsystem (FTS) interface for GSM Operation on Railways".

[102 601] ETSI TS 102 610: "Railways Telecommunications (RT); Global System for Mobile communications (GSM); Usage of the User-to-User Information Element for GSM Operation on Railways".

\* \* \* Next Change \* \* \* \*

#### 10.4.1.2 IWF private call request

Table 10.4.1.2-1 describes the information flow IWF private call request from the MCPTT server to the IWF and from the IWF to the MCPTT server.

Table 10.4.1.2-1: IWF private call request information elements

|  |  |  |
| --- | --- | --- |
| Information Element | Status | Description |
| MCPTT ID | M | The MCPTT ID of the calling party |
| Functional alias | O | The functional alias associated with the MCPTT ID of the calling party. |
| MCPTT ID (see NOTE 1) | O | The MCPTT ID of the called party |
| Functional alias (see NOTE 1) | O | The functional alias of the called party |
| Use floor control indication | M | This element indicates whether floor control will be used for the private call. |
| SDP offer | M | Media parameters of MCPTT client. |
| Encryption Algorithm | O | Encryption algorithm to use for the call. The field can also indicate whether the encryption algorithm choice is determined from information in the media stream. |
| Encryption mode | M | Whether E2EE will be used. |
| Requested commencement mode | O | An indication of the commencement mode to be used. |
| Implicit floor request  (see NOTE 2) | O | An indication that the user is also requesting the floor. |
| Location | O | Location of the calling party |
| Requested priority | O | Application priority level requested for this call. |
| Transfer indicator | O | Indicates that the MCPTT private call request is a result of a call transfer (true/false). |
| Forwarding indicator | O | Indicates that the MCPTT private call request is a result of a call forwarding (true/false) |
| Remotely initiated call request indicator | O | Indicates that the MCPTT private call request is a result of receiving of a remotely initiated call request and may be included only for remotely initiated call. |
| Additional application specific data (see NOTE 3) | O | Some LMR systems use addional information at the application layer. |
| NOTE 1: At least one identity shall be present. If both elements are present, the MCPTT ID is used to route the call.  NOTE 2: This element shall be included only when the originating client requests the floor.  NOTE 3: This element can be present if the LMR system uses it (like GSM-R). GSM-R uses for example UUI as defined in ETSI TS 103 389 [103 389] and ETSI TS 102 610 [102 610]. | | |

\* \* \* Next Change \* \* \* \*

#### 10.4.1.3 IWF private call response

Table 10.4.1.3-1 describes the information flow IWF private call response from the MCPTT server to the IWF and from the IWF to the MCPTT server.

Table 10.4.1.3-1: IWF private call response information elements

|  |  |  |
| --- | --- | --- |
| Information Element | Status | Description |
| MCPTT ID | M | The MCPTT ID of the calling party |
| MCPTT ID | O | The MCPTT ID of the called party |
| Acceptance confirmation | O | An indication whether the user has positively accepted the call. |
| SDP answer | M | Media parameters selected |
| Result | M | Result of the IWF private call request: success or failure |
| Encryption Algorithm(s) response | O | A list of one or more alternative encryption algorithm(s) to use for the call. |
| Use floor control indication response | O | This element indicates whether the floor control indication in the request is acceptable. |
| Implicit floor request response | O | This element indicates whether the indication that the user is also requesting the floor in the request is acceptable. |
| Additional application specific data (see NOTE) | O | Some LMR systems use addional information at the application layer. |
| NOTE: This element can be present if the LMR system uses it (like GSM-R). GSM-R uses for example UUI as defined in ETSI TS 103 389 [103 389] and ETSI TS 102 610 [102 610]. | | |

\* \* \* Next Change \* \* \* \*

#### 10.4.1.5 IWF call end request

Table 10.4.1.5-1 describes the information flow IWF call end request from the MCPTT server to the IWF and from the IWF to the MCPTT server.

Table 10.4.1.5-1: IWF call end request information elements

|  |  |  |
| --- | --- | --- |
| Information Element | Status | Description |
| MCPTT ID | M | The MCPTT ID of the calling party |
| MCPTT ID | M | The MCPTT ID of the called party |
| Additional application specific data (see NOTE) | O | Some LMR systems use addional information at the application layer. |
| NOTE: This element can be present if the LMR system uses it (like GSM-R). GSM-R uses for example UUI as defined in ETSI TS 103 389 [103 389] and ETSI TS 102 610 [102 610]. | | |

\* \* \* Next Change \* \* \* \*

#### 10.4.2.1 MCPTT user initiating an MCPTT private call

In this procedure, an MCPTT user is initiating an MCPTT private call (automatic commencement mode) for communicating with a user in an LMR system, with or without floor control enabled.

This subclause is based on the procedure for private call setup in automatic commencement mode – MCPTT users in multiple MCPTT systems described in 3GPP TS 23.379 [7], subclause 10.7.2.3.1.

In figure 10.4.2.1-1, an MCPTT client initiates establishment of an MCPTT private call with an LMR user.

Pre-conditions:

1. The calling MCPTT user has selected automatic commencement mode for the call;

2. The MCPTT client is registered to the MCPTT service, as per procedure in subclause 10.2 in 3GPP TS 23.379 [7].

3. Optionally, MCPTT client may use an activated functional alias for the call.

4. The MCPTT server has subscribed to the MCPTT functional alias controlling server within the MC system for functional alias activation/de-activation updates.



Figure 10.4.2.1-1: Private call setup in automatic commencement mode, initiated by an MCPTT user

1. The MCPTT user at the MCPTT client initiates an MCPTT private call. The MCPTT client sends an MCPTT private call request towards the MCPTT server. The MCPTT private call request contains the MCPTT IDs corresponding to the calling MCPTT party and called LMR party and an SDP offer containing one or more media types. If available, the MCPTT user at the MCPTT client may also include a functional alias. The following parameters are also included that describe the MCPTT client's choices:

- the encryption algorithm;

- the encryption mode (encrypted or not);

- an indication of whether the MCPTT client is requesting the floor, and if the MCPTT client is requesting the floor, location information of the calling MCPTT client may be provided;

- requested commencement mode (automatic in this case); and

- an indication of whether the call is to be full or half duplex (whether to establish floor control).

2. The MCPTT server checks whether the MCPTT user at the MCPTT client is authorized to initiate the private call and whether the provided functional alias, if present, can be used and has been activated for the user. Because the IWF private call request is requesting automatic commencement mode, the MCPTT server also checks whether the MCPTT user at the MCPTT client is authorized to initiate a call in automatic commencement mode. If the MCPTT private call request contains a functional alias instead of an MCPTT ID as called party, the MCPTT server shall resolve the functional alias to the corresponding MCPTT ID(s) for which the functional alias is active. The MCPTT server shall also check whether MCPTT client 1 is allowed to use the functional alias of MCPTT client 2 to setup a private call and whether MCPTT client 2 is allowed to receive a private call from MCPTT client 1 using the functional alias. If authorized the MCPTT server proceeds with step 3. If location information was included in the MCPTT private call request, the MCPTT server also checks the privacy policy (authorisation to provide location information to other MCPTT users on a call when talking, as defined in 3GPP TS 23.379 [7] Annex A.3) of the requesting MCPTT user to decide if the user's location information may be provided to other MCPTT users on the call and the IWF.

NOTE 1: For private calls to a functional alias homed in the LMR system (i.e. GSM-R). the final resolution of the functional alias is performed in the GSM-R system.

3a. The MCPTT server responds with a functional alias resolution response message that contains the resolved MCPTT ID back to MCPTT client.

3b. If the MCPTT server replies with a MCPTT functional alias resolution response message, the MCPTT client 1 abandons the first MCPTT private call request in step 1 and sends a new MCPTT private call request towards the resolved MCPTT ID.

4. If authorized, the MCPTT server sends the IWF private call request that may or may not include location of the requestor, depending on the outcome of the privacy check towards the IWF, including the original parameters and offering the same media types or a subset of the media types contained in the initial received request as per 3GPP TS 23.379 [7].

NOTE 2: How the IWF private call request is forwarded to the LMR system is out of scope of the present document.

5. The IWF sends an IWF private call response to the MCPTT server, indicating that the IWF does support one of the requested media types. The response indicates success or failure. If the indication is failure, the response may include one or more alternatives to the parameter values contained in step 3.

6. The MCPTT server forwards the MCPTT private call response to the MCPTT client. If the result parameter indicates success, then the MCPTT client proceeds to step 6. Otherwise, if the parameters returned in the MCPTT private call response are acceptable to the MCPTT client, then the MCPTT client can send a new MCPTT private call request with the new parameters and behaves according to those parameters. The calling MCPTT user may be notified of the change in parameters, for example, that the call is to be without floor control. The MCPTT user can choose to end the call rather than continue with the new parameters. If the parameters returned are not acceptable to the MCPTT client, then the call fails.

7. The MCPTT client has successfully established media plane for communication to the IWF and either end can transmit media. The MCPTT system initiating the call is responsible of granting the floor, solving competing floor requests and issuing floor revoked indications.

\* \* \* Next Change \* \* \* \*

#### 10.4.2.2 LMR user initiating a private call with MCPTT user

In this procedure, an LMR user is initiating a private call (in automatic commencement mode) for communicating with a user in MCPTT system, with or without floor control enabled.

This subclause is based on the procedure for private call setup in automatic commencement mode – MCPTT users in multiple MCPTT systems described in 3GPP TS 23.379 [7], subclause 10.7.2.3.1.

In figure 10.4.2.2-1, an LMR user initiates establishment of a private call with an MCPTT user.

Pre-conditions:

1. The calling LMR user has selected automatic commencement mode for the call;

2. The MCPTT client is registered to the MCPTT service, as per procedure in subclause 10.2 in 3GPP TS 23.379 [7].

3. The LMR user at the LMR system has initiated a private call towards an MCPTT user.

4. Optionally, LMR user may use an activated functional alias (homed in the MCPTT system) for the call.

5. The MCPTT server has subscribed to the MCPTT functional alias controlling server within the MC system for functional alias activation/de-activation updates.

NOTE 1: Private call operation between the LMR user and the IWF are out of scope of the present document.

NOTE 2: The mapping between alternative addressing schemes of the LMR user and the corresponding functional alias is out of scope of the present document.



Figure 10.4.2.2-1: Private call setup in automatic commencement mode, initiated by an LMR user

1. The IWF sends an IWF private call request towards the MCPTT server. The IWF private call request contains the MCPTT IDs corresponding to the calling LMR party and the called MCPTT party and an SDP offer containing one or more media types. If available, the LMR party homed in the IWF may also include a functional alias. The following parameters are also included that describe the MCPTT client's choices:

- the encryption algorithm;

- the encryption mode (encrypted or not);

- an indication of whether the LMR user is requesting the floor, and if the MCPTT client is requesting the floor, location information of the calling MCPTT client may be provided;

- requested commencement mode (automatic in this case); and

- an indication of whether the call is to be full or half duplex (whether to establish floor control).

2. The MCPTT server checks whether the MCPTT user at the MCPTT client is authorized and able to receive the private call. Because the IWF private call request is requesting automatic commencement mode, the MCPTT server also checks whether the MCPTT user at the MCPTT client is authorized to receive a call in automatic commencement mode. If the MCPTT private call request contains a functional alias instead of an MCPTT ID as called party, the MCPTT server shall resolve the functional alias to the corresponding MCPTT ID for which the functional alias is active. The MCPTT server shall also check whether MCPTT client 1 is allowed to use the target functional alias to setup a private call and whether the MCPTT client is allowed to receive a private call from the IWF using the functional alias. If authorized the MCPTT server proceeds with step 3.

3a. The MCPTT server responds with a functional alias resolution response message that contains the resolved MCPTT ID back to the IWF.

3b. If the MCPTT server replies with a MCPTT functional alias resolution response message, the IWF abandons the first MCPTT private call request in step 1 and sends a new MCPTT private call request towards the resolved MCPTT ID.

4. If authorized, the MCPTT server sends the MCPTT private call request towards the MCPTT client, including the original parameters with or without the location of the calling party and offering the same media types or a subset of the media types contained in the initial received request as per 3GPP TS 23.379 [7].

5. The MCPTT client sends an MCPTT private call response to the MCPTT server indicating that the MCPTT client does support one of the requested media types. The response indicates success or failure. If the indication is failure, the response may also include one or more alternatives to the parameter values contained in step 3.

6. The MCPTT server sends the IWF private call response to the IWF offering the same media type as that sent in step 4. If the parameters returned are not acceptable to the IWF, then the call fails. If the parameters returned in the IWF private call response are different but acceptable to the IWF, then the IWF can send a new IWF private call request with the new parameters starting with step 1, which is to essentially restart the call. If there is no change of parameter, then the call proceeds to step 6.

NOTE 3: The calling LMR user may be notified of the change in parameters, for example, that the call is to be without floor control.

7. The MCPTT client has successfully established media plane for communication to the IWF and either end can transmit media. The LMR system initiating the call is responsible of granting the floor, solving competing floor requests and issuing floor revoked indications.

\* \* \* Next Change \* \* \* \*

#### 10.4.3.1 MCPTT user is initiating an MCPTT private call

In this procedure, an MCPTT user is initiating an MCPTT private call (manual commencement mode) for communicating with an LMR user via an IWF, with or without floor control enabled.

This subclause is based on the procedure for private call setup in manual commencement mode – MCPTT users in multiple MCPTT systems described in 3GPP TS 23.379 [7], subclause 10.7.2.3.2.

In figure 10.4.3.1-1, an MCPTT client initiates establishment of an MCPTT private call with an LMR user.

Pre-conditions:

1. The calling MCPTT user has selected manual commencement mode for the call.

2. The MCPTT client is registered to the MCPTT service, as per procedure in subclause 10.2 in 3GPP TS 23.379 [7].

3. Optionally, MCPTT client may use an activated functional alias (homed in the MCPTT system) for the call.

4. The MCPTT server has subscribed to the MCPTT functional alias controlling server within the MC system for functional alias activation/de-activation updates.



Figure 10.4.3.1-1: Private call setup in manual commencement mode – initiated by an MCPTT user

1. The MCPTT user at the MCPTT client would like to initiate an MCPTT private call. The MCPTT client sends an MCPTT private call request towards the MCPTT server. The MCPTT private call request contains the MCPTT IDs corresponding to the calling MCPTT party and called LMR party and an SDP offer containing one or more media types. If available, the MCPTT user at the MCPTT client may also include a functional alias. The following parameters are also included that describe the MCPTT client's choices:

- the encryption algorithm;

- the encryption mode (encrypted or not)

- an indication of whether the MCPTT client is requesting the floor;

- requested commencement mode (manual in this case), and if the MCPTT client is requesting the floor, location information of the calling MCPTT client may be provided; and

- an indication of whether the call is to be full or half duplex (whether to establish floor control).

2. The MCPTT server checks whether the MCPTT user at the MCPTT client is authorized to initiate the private call and whether the provided functional alias, if present, can be used and has been activated for the user. Because the IWF private call request is requesting manual commencement mode, the MCPTT server also checks whether the MCPTT user at the MCPTT client is authorized to initiate a call in manual commencement mode. If the MCPTT private call request contains a functional alias instead of an MCPTT ID as called party, the MCPTT server shall resolve the functional alias to the corresponding MCPTT ID for which the functional alias is active. The MCPTT server shall also check whether MCPTT client 1 is allowed to use the functional alias of MCPTT client 2 to setup a private call and whether MCPTT client 2 is allowed to receive a private call from MCPTT client 1 using the functional alias. If authorized the MCPTT server proceeds with step 3. If location information was included in the MCPTT private call request, the MCPTT server also checks the privacy policy (authorisation to provide location information to other MCPTT users on a call when talking, as defined in 3GPP TS 23.379 [7] Annex A.3) of the requesting MCPTT user to decide if the user's location information may be provided to other MCPTT users on the call and the IWF.

NOTE 1: For private calls to a functional alias homed in the LMR system (i.e. GSM-R). the final resolution of the functional alias is performed in the GSM-R system.

3a. The MCPTT server responds with a functional alias resolution response message that contains the resolved MCPTT ID back to MCPTT client 1.

3b. If the MCPTT server replies with a MCPTT functional alias resolution response message, the MCPTT client 1 abandons the first MCPTT private call request in step 1 and sends a new MCPTT private call request towards the resolved MCPTT ID.

4. If authorized, the MCPTT server sends the IWF private call request towards the IWF, including the original parameters that may or may not include location of the requestor, depending on the outcome of the privacy check, and offering the same media types or a subset of the media types contained in the initial received request as per 3GPP TS 23.379 [7].

NOTE 2: How the IWF private call request is forwarded to the LMR system is out of scope of the present document.

5. The IWF may report failure with an IWF private call response to the MCPTT server. The response may include one or more alternatives to the parameter values contained in step 3. If the IWF does not report failure, the process proceeds with step 6.

6. The MCPTT server forwards the MCPTT private call response to the MCPTT client. If the result parameter indicates failure, the MCPTT client may abandon the call. If the parameters in the MCPTT private call response are acceptable to the MCPTT client, then the MCPTT client can send a new MCPTT private call request with the new parameters to the MCPTT server and behaves according to those parameters. The calling user may be notified of the change in parameters, for example, that the call is to be without floor control. The calling user may choose to end the call rather than continue with the new parameters.

7. The receiving IWF sends an IWF ringing to the MCPTT server while waiting for the call to be accepted.

8. The MCPTT server forwards the MCPTT ringing to the MCPTT client. The MCPTT client may indicate to the MCPTT user that the LMR user has been notified, e.g. by producing ringback audio.

9. Once the call has been accepted by the called user, the IWF sends an IWF private call response to the MCPTT server. The IWF private call response indicates that the IWF does support one of the requested media types.

10. The MCPTT server forwards the MCPTT private call response to the MCPTT client. The MCPTT client may indicate to the MCPTT user that the call is connected, e.g. by stopping the ringback audio.

11. The MCPTT client has successfully established media plane for communication to the IWF. The MCPTT system initiating the call is responsible of granting the floor and solving the competing floor requests, and floor revoked indications.

\* \* \* Next Change \* \* \* \*

#### 10.4.3.2 LMR user initiating a private call with MCPTT user

In this procedure, an LMR user is initiating a private call (in manual commencement mode) for communicating with an MCPTT user via an IWF, with or without floor control enabled.

This subclause is based on the procedure for private call setup in manual commencement mode – MCPTT users in multiple MCPTT systems described in 3GPP TS 23.379 [7], subclause 10.7.2.3.2.

In figure 10.4.3.2-1, an LMR user initiates establishment of a private call with an MCPTT user.

Pre-conditions:

1. The calling LMR user has selected manual commencement mode for the call.

2. The MCPTT client is registered to the MCPTT service, as per procedure in subclause 10.2 in 3GPP TS 23.379 [7].

3. The LMR user at the LMR system has initiated a private call towards an MCPTT user.

4. Optionally, LMR user may use an activated functional alias (homed in the MCPTT system) for the call.

5. The MCPTT server has subscribed to the MCPTT functional alias controlling server within the MC system for functional alias activation/de-activation updates.

NOTE 1: Private call operation between the LMR user and the IWF are out of scope of the present document.

NOTE 2: The mapping between alternative addressing schemes of the LMR user and the corresponding functional alias is out of scope of the present document



Figure 10.4.3.2-1: Private call setup in manual commencement mode, initiated by an LMR user

1. The IWF sends an IWF private call request towards the MCPTT server. The IWF private call request contains the MCPTT IDs corresponding to the calling LMR party and called MCPTT party and an SDP offer containing one or more media types. If available, the LMR party homed in the IWF may also include a functional alias. The following parameters are also included that describe the IWF's choices:

- the encryption algorithm;

- the encryption mode (encrypted or not)

- an indication of whether the LMR user is requesting the floor, and if the MCPTT client is requesting the floor, location information of the calling MCPTT client may be provided;

- requested commencement mode (manual in this case); and

- an indication of whether the call is to be full or half duplex (whether to establish floor control).

2. The MCPTT server checks whether the MCPTT user at the MCPTT client is authorized and able to receive the private call. Because the IWF private call request is requesting manual commencement mode, the MCPTT server also checks whether the MCPTT user at the MCPTT client is authorized to receive a call in manual commencement mode. If the MCPTT private call request contains a functional alias instead of an MCPTT ID as called party, the MCPTT server shall resolve the functional alias to the corresponding MCPTT ID(s) for which the functional alias is active. The MCPTT server shall also check whether MCPTT client 1 is allowed to use the functional alias of MCPTT client 2 to setup a private call and whether MCPTT client 2 is allowed to receive a private call from MCPTT client 1 using the functional alias. If authorized, the MCPTT server proceeds with step 3.

3a. The MCPTT server responds with a functional alias resolution response message that contains the resolved MCPTT ID back to the IWF.

3b. If the MCPTT server replies with a MCPTT functional alias resolution response message, the IWF abandons the first MCPTT private call request in step 1 and sends a new MCPTT private call request towards the resolved MCPTT ID.

4. If authorized, the MCPTT server sends the MCPTT private call request towards the MCPTT client, including the original parameters with or without the location of the calling party and offering the same media types or a subset of the media types contained in the initial received request as per 3GPP TS 23.379 [7].

NOTE 3: How the IWF private call request is forwarded to the LMR system is out of scope of the present document.

5. The MCPTT client may report failure with an MCPTT private call response to the MCPTT server. The response may include one or more alternatives to the parameter values contained in step 3. If the MCPTT client does not report failure, the process proceeds with step 6.

6. The MCPTT server forwards the MCPTT private call response to the IWF. If the result parameter indicates failure, the IWF may abandon the call. If the parameters in the IWF private call response are acceptable to the IWF, then the IWF can send a new IWF private call request with the new parameters to the MCPTT server and behaves according to those parameters. The IWF may choose to end the call rather than continue with the new parameters.

7. The MCPTT client sends an MCPTT ringing to the MCPTT server while waiting for the call to be accepted by the MCPTT user.

8. The MCPTT server sends an IWF ringing to IWF the while waiting for the call to be accepted.

9. Once the call has been accepted by the called user, the MCPTT client sends an MCPTT private call response to the MCPTT server. The IWF private call response indicates that the IWF does support one of the requested media types.

10. The MCPTT sends the IWF private call response to the IWF.

11. The MCPTT client has successfully established media plane for communication to the IWF. The LMR system initiating the call is responsible of granting the floor, solving competing floor requests and issuing floor revoked indications.

\* \* \* Next Change \* \* \* \*

#### 10.4.4.1 MCPTT client initiated

The procedure describes the case where an MCPTT client requests release of an ongoing MCPTT private call (with or without floor control) that was established in either of the two commencement modes (manual or automatic). This subclause is based upon the subclauses for MCPTT private call release in 3GPP TS 23.379 [7], subclauses 10.7.2.2.3.1 and 10.7.2.3.3.

Procedures in figure 10.4.4.1-1 are the basic signalling control plane procedures for the MCPTT client initiating the release of an ongoing interworked private call.

Pre-conditions:

1. The MCPTT user on the MCPTT client is already registered for receiving MCPTT service and is involved in a private call with an LMR user via the IWF with or without floor control and established either in manual or automatic commencement mode, as described in subclause 10.4.2 and subclause 10.4.3.



Figure 10.4.4.1-1: Private call release – client initiated

1. The user at the MCPTT client would like to release an ongoing interworked private call with the LMR user.

2. The MCPTT client sends an MCPTT private call end request towards the MCPTT server (via SIP core) for tearing down the private call with the other client. Depending on the reason of the release, the MCPTT client may include additional application specific data in the MCPTT private call end request.

3. The MCPTT server sends the corresponding IWF call end request towards the IWF, addressed to the MCPTT client ID specified in the original MCPTT private call end request.

NOTE: The LMR user is also notified about the release of the private call. How the LMR user is notified is outside the scope of the present document.

4. The IWF acknowledges the IWF call end request with an IWF call end response sent towards the MCPTT server.

5. After receiving the MCPTT private call end request acknowledgement from the IWF, the MCPTT server generates an acknowledgement for the MCPTT client's MCPTT private call end request.

6. The MCPTT client and the IWF release all the media plane resources used for the private call. Further, if the private call was established with floor control, floor control resources are released and the MCPTT client cannot make further requests for floor control or send media.

\* \* \* Next Change \* \* \* \*

#### 10.4.4.3 LMR user initiated

The procedure describes the case where either an LMR user or the LMR system is requesting to release an ongoing interworked private call (with or without floor control) and the call established in either of the two commencement modes (manual or automatic). This subclause is based upon the subclauses for MCPTT private call release in 3GPP TS 23.379 [7], subclauses 10.7.2.2.3.1 and 10.7.2.3.3.

Procedures in figure 10.4.4.3-1 are the basic signalling control plane procedures for the LMR user, via the IWF, initiating the release of an ongoing interworked private call.

Pre-conditions:

1. The MCPTT user on the MCPTT client is already registered for receiving MCPTT service and is involved in a private call with an LMR user via the IWF with or without floor control and established either in manual or automatic commencement mode, as described in subclause 10.4.2 and subclause 10.4.3.



Figure 10.4.4.3-1: Private call release – IWF initiated

1. The LMR system would like to release an ongoing interworked private call with the MCPTT user.

2. The IWF sends an IWF call end request towards the MCPTT server for tearing down the private call with the MCPTT client. Depending on the reason of the release, the IWF may include additional application specific data in the IWF private call end request.

3. The MCPTT server sends the corresponding MCPTT private call end request towards the MCPTT client specified in the original IWF call end request.

4. The MCPTT user is notified about the release of the private call. If additional application specific data is present in the MCPTT private call end request the MCPTT client may react depending on the content of the additional application specific data.

NOTE: The reaction of the MCPTT client on receiving additional application specific data is out of scope of the present document. It could be for example just displaying the content of the additional application specific data or notifying the user at the terminating client of a certain event.

5. The MCPTT client acknowledges the MCPTT private call end request.

6. After receiving the MCPTT private call end request acknowledgement from the MCPTT client, the MCPTT server generates an acknowledgement for the IWF's IWF call end request.

7. The MCPTT client and the IWF release all the media plane resources used for the private call. Further, if the private call was established with floor control, floor control resources are released and the MCPTT client cannot make further requests for floor control or send media.