**3GPP TSG-SA WG6 Meeting #62 S6-243377**

**Maastricht, The Netherlands, 19-23 August was S6-243043**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.283** | **CR** | **0078** | **rev** | **1** | **Current version:** | **18.1.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network | **x** |

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| ***Title:*** |  | | | | | | | | | |
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| ***Source to WG:*** | , Nokia | | | | | | | | | |
| ***Source to TSG:*** | S6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | | 2024-08-08 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The current specification does not cover interworking of ad hoc group call based on criteria. This CR is adding the missing information flows and procedure to support it | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add the necessary procedures and information flows to support ad hoc group call interworking based on criteria | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Interworking for ad hoc group call remains not supported | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 3.2, 10.17 (new), 10.17.1 (new), 10.17.2 (new), 10.17.2.1 (new), 10.17.2.2 (new), 10.17.2.3 (new), 10.17.2.4 (new), 10.17.2.5 (new), 10.17.3 (new), 10.17.3.1 (new), 10.17.3.2 (new), 10.17.3.3 (new), 10.17.3.4 (new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

# 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".

[102 610] 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 \* \* \* \*

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

E2EE End-to-End Encryption

IWF InterWorking Function

KEK Key Encryption Key (TETRA)

KMS Key Management Service

MC Mission Critical

MCPTT Mission Critical Push To Talk

LMR Land Mobile Radio

LMC Location Management Client

LMS Location Management Server

OTAK Over-The-Air-Key Management (TETRA)

OTAR Over-The-Air Rekeying (P25)

P25 Project 25

SDS Short Data Service

TETRA TErrestrial Trunked Radio

UE User Equipment

UKEK Unique Key Encryption Key (P25)

URI Uniform Resource Identifier

UUI User-to-User Information

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

## 10.17 Ad hoc group call

### 10.17.1 General

The following clauses define information flows and signalling procedures for ad hoc group calls, where the ad hoc group call is established based on criteria or based on a list of participants provided by the call initiator. The MCPTT server determines the list of users. The list consists of MCPTT users and one LMR user that is representing a group in LMR system (GSM-R) Then the MCPTT server acts as the call control server and individually calls each MCPTT user that the specific LMR user via the IWF.

### 10.17.2 Information flows for ad hoc group call

#### 10.17.2.1 General

The following clauses define information flows for ad hoc group calls on the IWF-1 interface. Ad hoc group call related information flows on reference points other than IWF-1 are defined in 3GPP TS 23.379 [7].

#### 10.17.2.2 IWF ad hoc group call request (MCPTT server – IWF and IWF - MCPTT server)

Table 10.17.2.2-1 describes the information flow IWF ad hoc group call request from the MCPTT server to the IWF and from the IWF to the MCPTT server.

**Table 10.17.2.2-1 IWF Ad hoc group call request information elements**

|  |  |  |
| --- | --- | --- |
| Information Element | Status | Description |
| MCPTT ID | M | The MCPTT ID of the calling party |
| Functional alias | O | The functional alias of the calling party |
| MCPTT ad hoc group ID | M | The MCPTT group ID to be associated with the ad hoc group communication |
| Preconfigured MCPTT group ID | O | Indicates pre-configured group configuration to be used for the ad hoc group call |
| MCPTT ID | O | MCPTT ID of the participant being invited for the ad hoc group call |
| SDP offer | M | Offered Media parameters |
| Implicit floor request (see NOTE 1) | O | When originating client requests the floor, this element shall be included |
| Broadcast indicator  (see NOTE 2) | O | Indicates that the ad hoc group call request is for a broadcast ad hoc group call |
| Imminent peril indicator (see NOTE 2) | O | Indicates that the ad hoc group call request is an MCPTT imminent peril ad hoc group call |
| Emergency Indicator (see NOTE 2) | O | Indicates that the ad hoc group call request is an MCPTT emergency ad hoc group call |
| Location information | O | Location of the calling party. |
| Criteria for determining the participants (see NOTE 3) | O | Carries the details of criteria or meaningful label identifying the criteria or the combination of both which will be used by the MCPTT server for determining the participants e.g., it can be a location based criteria to invite participants in a particular area |
| Additional application specific data (see NOTE 4) | O | Some LMR systems use additional information at the application layer. |
| Requested priority | O | Application priority level requested for this group call |
| NOTE 1: This element is included only when the originating client requests the floor.  NOTE 2: If used, only one of these information elements is present.  NOTE 3: This element can be used by the IWF together with the LMR system to determine the users to be invited in the LMR system.  NOTE 4: 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]. | | |

#### 10.17.2.3 IWF ad hoc group call response (IWF - MCPTT server and MCPTT server - IWF)

Table 10.17.2.3-1 describes the information flow IWF ad hoc group call request from the IWF to the MCPTT server and from the MCPTT server to the IWF.

Table 10.17.2.3-1 IWF Ad hoc group call response information elements

|  |  |  |
| --- | --- | --- |
| Information Element | Status | Description |
| MCPTT ID | M | The MCPTT ID of the calling party |
| Functional alias | O | The functional alias of the calling party |
| MCPTT ad hoc group ID | M | The MCPTT group ID associated with the ad hoc group call |
| SDP answer | O | Media parameters selected and present if the Result is success. |
| Result | M | Result of the group call request (success or failure) |
| Additional application specific data (see NOTE) | O | Some LMR systems use additional 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]. | | |

#### 10.17.2.4 IWF ad hoc group call release request (MCPTT server – IWF and IWF - MCPTT server)

Table 10.17.2.4-1 describes the information flow IWF ad hoc group call release request from the MCPTT server to the IWF from the IWF to the MCPTT server.

Table 10.17.2.4-1 IWF ad hoc group call release request information elements

|  |  |  |
| --- | --- | --- |
| Information Element | Status | Description |
| MCPTT ID | M | The MCPTT ID of the user authorized to release the ad hoc group call |
| Functional alias | O | The functional alias of the authorized user requesting to release the ad hoc group call |
| MCPTT ad hoc group ID | M | The MCPTT group ID of the ad hoc group call on which call is released |
| Additional application specific data (see NOTE) | O | Some LMR systems use additional 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]. | | |

#### 10.17.2.5 IWF ad hoc group call release response (IWF - MCPTT server)

Table 10.17.2.5-1 describes the information flow IWF ad hoc group call release response from the IWF to the MCPTT server.

Table 10.17.2.5-1 IWF ad hoc group call release response information elements

|  |  |  |
| --- | --- | --- |
| Information Element | Status | Description |
| MCPTT ID | M | The MCPTT ID of the ad hoc group call participant |
| Functional alias | O | The functional alias of the ad hoc group call participant |
| MCPTT ad hoc group ID | M | The MCPTT group ID of the ad hoc group call that is released |
| Additional application specific data (see NOTE) | O | Some LMR systems use additional 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 \* \* \* \*

### 10.17.3 Procedures

#### 10.17.3.1 Ad hoc group call initiated by an MCPTT user with MCPTT server determining the participant list

In this procedure, an MCPTT user is initiating an ad hoc group call based on criteria involving both MCPTT users and LMR users.

NOTE 1: How the LMR users are determined and invited to the MCPTT ad hoc group call is outside the scope of the present document.

Pre-conditions:

1. The MCPTT user at MCPTT client 1 is authorized to initiate ad hoc group call.

2. The MCPTT user at MCPTT client 1 wants to invite MCPTT and LMR users who are satisfying certain criteria for the ad hoc group call.

3. The mapping relationship of group and user identities between the MCPTT system and the LMR system has been configured at the IWF.

NOTE 2: For all the signalling messages passing through the IWF between the MCPTT system and the LMR system, the IWF performs the identity conversion and protocol translation.



Figure 10.17.3.1-1: Ad hoc group call setup initiated by an MCPTT user in the MCPTT system

The procedure and information flows as defined in 3GPP TS 23.379 [7] clause 10.19.3.1.1 is applied with the following differences:

1-7. Same as clause 10.19.3.1.3 in 3GPP TS 23.379 [7].

8. The MCPTT server sends the IWF ad hoc group call request to the IWF.

NOTE 3: The MCPTT server can send this message any time after step 4, in particular it does not have to wait for the Ad hoc group call responses in steps 7a and 7b.

9. The IWF returns with an IWF ad hoc group call response to the MCPTT server.

NOTE 4: IWF can handle the IWF ad hoc group call as a normal group call towards the LMR user in the LMR system.

10. Same as step 10 in clause 10.19.3.1.3 in 3GPP TS 23.379 [7].

11. The MCPTT server may notify the initiating MCPTT user of all MCPTT users who acknowledged the ad hoc group call request and joined the ad hoc group call. This notification may be sent to the initiating MCPTT user by the MCPTT server more than once during the call when MCPTT users join or leave the MCPTT ad hoc group call. The authorized users (not shown in figure), who are configured to receive the participants information of ad hoc group call, are notified to receive the MCPTT IDs of the MCPTT users who acknowledged the ad hoc group call request and joined the ad hoc group call, when the MCPTT users joins late or leave the MCPTT ad hoc group call.

NOTE 5: For LMR users, notification of acknowledging the ad hoc group call is not applicable.

12. MCPTT client 1, MCPTT client 2, and the LMR users establish media plane and floor control resources.

#### 10.17.3.2 Ad hoc group call initiated by an LMR user with MCPTT server determining the participant list

In this procedure, an LMR user is initiating an ad hoc group call based on criteria involving both MCPTT users and LMR users.

NOTE 1: How the LMR users are determined and invited to the MCPTT ad hoc group call is outside the scope of the present document.

Pre-conditions:

1. The LMR user is authorized to initiate ad hoc group call.

2. An LMR user want to invite MCPTT users who are satisfying certain criteria for the ad hoc group call.

3. The mapping relationship of group and user identities between the MCPTT system and the LMR system has been configured at the IWF.

NOTE 2: For all the signalling messages passing through the IWF between the MCPTT system and the LMR system, the IWF performs the identity conversion and protocol translation.



Figure 10.17.3.2-1: Ad hoc group call setup initiated by an LMR user in the MCPTT system

The procedure and information flows as defined in 3GPP TS 23.379 [7] clause 10.19.3.1.1 is applied with the IWF acting as a MCPTT client.

#### 10.17.3.3 IWF ad hoc group call released by the MC system

In this procedure, the ad hoc group call is released by the MC system due to the release conditions or the ad hoc group call is released by an authorized user.

Pre-conditions:

1. The mapping relationship of group and user identities between the MCPTT system and the LMR system has been configured at the IWF.

2. The mapping relationship of group and user identities between the MCPTT system and the LMR system has been configured at the IWF.

NOTE: For all the signalling messages passing through the IWF between the MCPTT system and the LMR system, the IWF performs the identity conversion and protocol translation.



Figure 10.17.3.3-1: Release IWF ad hoc group call by the MC system

The procedure and information flows as defined in 3GPP TS 23.379 [7] clause 10.19.3.1.2 and 10.19.3.1.2a are applied to the interactions between the MCPTT client and the MCPTT server. In addition, new step 2a and 2b are introduced.

1. The IWF ad hoc group call is releasing at the MCPTT system either initiated by the server due to the release conditions are met as described in clause 10.19.3.1.2 in 3GPP TS 23.379 [7] or by an authorized user as described in clause 10.19.3.1.2a in 3GPP TS 23.379 [7].

2a-2b. The MCPTT server sends the IWF ad hoc group call release request to the IWF (2a), and the IWF returns the IWF ad hoc group call release response (2b).

3. MCPTT client 1, client 2 and LMR users have successfully released the floor control and media plane resources associated with the ad hoc group call that is terminated and the ad hoc group ceases to exist (i.e., further call is not possible over the same ad hoc group).

#### 10.17.3.4 IWF ad hoc group call released by the LMR system

In this procedure, the ad hoc group call is released by the LMR system due to a release condition on the LMR system.

NOTE 1: Release conditions on the LMR system are outside the scope of the present document.

Pre-conditions:

1. The LMR user that is sending the ad hoc group call release request to the MCPTT server is an authorized user as described in clause 10.19.3.1.2a in 3GPP TS 23.379 [7].

2. The mapping relationship of group and user identities between the MCPTT system and the LMR system has been configured at the IWF.



Figure 10.17.3.4-1: Release IWF ad hoc group call by the LMR system

The procedure and information flows as defined in 3GPP TS 23.379 [7] clause 10.19.3.1.2a are applied to the interactions between the LMR user and the MCPTT server.

\* \* \* End of Changes \* \* \* \*