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TECHNICAL SPECIFICATION

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5G;
Mission Critical Push To Talk (MCPTT) call control interworking with Land Mobile Radio (LMR) systems; Stage-3
(3GPP TS 29.379 version 19.1.0 Release 19)

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Modal verbs terminology

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

In the present document, certain modal verbs have the following meanings:

shall indicates a mandatory requirement to do something

shall not indicates an interdiction (prohibition) to do something

NOTE 1: The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

NOTE 2: The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

should indicates a recommendation to do something

should not indicates a recommendation not to do something

may indicates permission to do something

need not indicates permission not to do something

NOTE 3: The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

can indicates that something is possible

cannot indicates that something is impossible

NOTE 4: The constructions "can" and "cannot" shall not to be used as substitutes for "may" and "need not".

will indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

will not indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

might indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

NOTE 5: The constructions "is" and "is not" do not indicate requirements.

1 Scope

The present document specifies the call control protocols needed to support a Mission Critical Push To Talk (MCPTT) system interworking with a Land Mobile Radio (LMR) system.

The IWF supports the basic group and other features as specified in 3GPP TS 23.283 [28]. The present document describes functionality modelled on 3GPP TS 24.379 [29].

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 23.379: "Functional architecture and information flows to support mission critical communication services; Stage 2".

[3] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".

[4] 3GPP TS 24.380: "Mission Critical Push To Talk (MCPTT) floor control Protocol specification".

[5] IETF RFC 3841 (August 2004): "Caller Preferences for the Session Initiation Protocol (SIP)".

[6] IETF RFC 4028 (April 2005): "Session Timers in the Session Initiation Protocol (SIP)".

[7] IETF RFC 6050 (November 2010): "A Session Initiation Protocol (SIP) Extension for the Identification of Services".

[8] IETF RFC 4566 (July 2006): "Session Description Protocol".

[9] IETF RFC 3840 (August 2004): "Indicating User Agent Capabilities in the Session Initiation Protocol (SIP)".

[10] IETF RFC 5373 (November 2008): "Requesting Answering Modes for the Session Initiation Protocol (SIP)".

[11] IETF RFC 5366 (October 2008): "Conference Establishment Using Request-Contained Lists in the Session Initiation Protocol (SIP)".

[12] IETF RFC 4488 (May 2006): "Suppression of Session Initiation Protocol (SIP) REFER Method Implicit Subscription".

[13] IETF RFC 4538 (June 2006): "Request Authorization through Dialog Identification in the Session Initiation Protocol (SIP)".

[14] IETF RFC 3261 (June 2002): "SIP: Session Initiation Protocol".

[15] IETF RFC 4575 (August 2006): "A Session Initiation Protocol (SIP) Event Package for Conference State".

[16] 3GPP TS 24.481: "Mission Critical Services (MCS) group management Protocol specification".

[17] IETF RFC 4483 (May 2006): "A Mechanism for Content Indirection in Session Initiation Protocol (SIP) Messages".

[18] IETF RFC 3428 (December 2002): "Session Initiation Protocol (SIP) Extension for Instant Messaging".

[19] IETF RFC 4964 (October 2007): "The P-Answer-State Header Extension to the Session Initiation Protocol for the Open Mobile Alliance Push-to-talk over Cellular".

[20] IETF RFC 5318 (December 2008): "The Session Initiation Protocol (SIP) P-Refused-URI-List Private-Header (P-Header)".

[21] IETF RFC 3903 (October 2004): "Session Initiation Protocol (SIP) Extension for Event State Publication".

[22] IETF RFC 4567 (July 2006): "Key Management Extensions for Session Description Protocol (SDP) and Real Time Streaming Protocol (RTSP)".

[23] IETF RFC 8101 "IANA Registration of New Session Initiation Protocol (SIP) Resource-Priority Namespace for Mission Critical Push To Talk service".

[24] IETF RFC 3856 (August 2004): "A Presence Event Package for the Session Initiation Protocol (SIP)".

[25] IETF RFC 6665 (July 2012): "SIP-Specific Event Notification".

[26] IETF RFC 6086 (January 2011): "Session Initiation Protocol (SIP) INFO Method and Package Framework".

[27] 3GPP TS 33.180: "Security of the mission critical service".

[28] 3GPP TS 23.283: "Mission Critical Communication Interworking with Land Mobile Radio Systems; Stage 2".

[29] 3GPP TS 24.379: "Mission Critical Push To Talk (MCPTT) call control; Protocol specification".

[30] 3GPP TS 24.282: "Mission Critical Data (MCData) signalling control; Protocol specification".

[31] 3GPP TS 29.380: "Mission Critical Push To Talk (MCPTT) media plane control interworking with LMR systems".

[32] IETF RFC 3986: "Uniform Resource Identifier (URI): Generic Syntax".

[33] 3GPP TS 29.582: "Mission Critical Data (MCData) interworking with LMR systems".

[34] 3GPP TS 24.484: "Mission Critical Services (MCS) configuration management Protocol specification".

3 Definitions of terms, symbols and abbreviations

3.1 Terms

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

IWF performing the controlling role: an IWF role in which the IWF interacts with MCPTT participating functions and MCPTT non-controlling functions across the IWF-1 interface.

IWF performing the non-controlling role: an IWF role in which the IWF interacts with MCPTT participating functions and MCPTT controlling functions across the IWF-1 interface

IWF performing the participating role: an IWF role in which the IWF interacts with MCPTT controlling functions and MCPTT non-controlling functions across the IWF-1 interface.

Participant homed in the IWF: same as "User homed in the IWF".

User homed in the IWF: A user represented by an MCPTT ID in the IWF with the same domain as the IWF.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.283 [28] apply:

Interworking Function (IWF)

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].

IWF	InterWorking Function
KMS	Key Management Service
LMR	Land Mobile Radio
MC	Mission Critical
MCPTT	Mission Critical Push To Talk
URI	Uniform Resource Identifier

4 General

4.1 IWF overview

The IWF interacts with the controlling, participating and non-controlling MCPTT functions of an MCPTT system as a peer system via the IWF-1 interface and with MCData systems via the IWF-2 interface. The IWF supports a subset of the client-server group management interfaces defined in 3GPP TS 24.481 [16] required to support IWF-3, with the exceptions and additions defined in the present document.

4.2 Warning Header Field

4.2.1 General

An IWF can include a free text string in a SIP response to a SIP request. When the IWF includes a text string in a response to a SIP INVITE request the text string is included in a Warning header field as specified in IETF RFC 3261 [14]. The IWF includes the Warning code set to 399 (miscellaneous warning) and includes the host name set to the host name of the IWF.

4.2.2 Warning texts

Warning texts specified in table 4.2.2-1 for interworking are used, in conjunction with existing warning texts as specified in 3GPP TS 24.379 [29].

Table 4.2.2-1: Warning texts for interworking defined for the Warning header field

Code	Explanatory text	Description
300	LMR end-to-end encryption not permitted	The call is not allowed to use LMR end-to-end encryption.
301	LMR end-to-end encryption required	The call is required to use LMR end-to-end encryption.
302	LMR codec required	The call requires an LMR defined codec to be used.

4.3 MCPTT priority calls and alerts

Clauses 4.6.1, 4.6.2, 4.6.3 and 4.6.4 in 3GPP TS 24.379 [29] describe the aspects and states that are key in managing priority calls and alerts.

The IWF manages the states on behalf of its homed users. For states that are managed by clients, the IWF manages an instance of the state for each client homed in the IWF.

4.4 Media security at the IWF

With respect to LMR interworking, the IWF provides the interfaces as specified in 3GPP TS 23.283 [28] and 3GPP TS 33.180 [27] to key management and group management capabilities of the LMR system.

4.5 Broadcast group calls

See 3GPP TS 24.379 [29] for a description of broadcast group calls.

5 Functional entities

5.1 General

An IWF can perform the controlling role for group calls and private calls. The controlling role serves as the group home, managing the floor and tracking group affiliations.

An IWF can perform the participating role for group calls and private calls. The participating role serves as the user home, checking user authorizations and forwarding signalling and media between the controlling role and clients.

An IWF can perform a non-controlling role for temporary group calls involving groups from multiple MCPTT systems. The non-controlling role serves as the controlling role for a constituent group of a regroup and coordinates with the controlling server of the temporary group.

An IWF performing the participating role can serve an originating LMR user. How the IWF serves LMR users is out of scope of 3GPP.

An IWF performing the participating role can serve a terminating LMR user. How the IWF serves LMR users is out of scope of 3GPP.

The same IWF can perform the participating role and controlling role for the same group session.

The same IWF can perform the participating role and non-controlling role for the same group session.

When referring to the procedures in the present document for the IWF acting in a participating role, the term, "IWF performing the participating role" is used.

When referring to the procedures in the present document for the IWF acting in a controlling role, the term "IWF performing the controlling role" is used.

When referring to the procedures in the present document for the IWF acting in a non-controlling role for a group call, the term " IWF performing the non-controlling role " is used.

To be compliant with the procedures in the present document, an IWF shall:

- support the IWF procedures defined in 3GPP TS 23.283 [28];
- generate SDP offer and SDP answer in accordance with 3GPP TS 24.229 [3] and clause 6.3 of 3GPP TS 24.379 [29];
- implement the role of a centralised floor control server and implement the on-network procedures for floor control as specified in 3GPP TS 29.380 [31];