

3GPP TS 23.XXX V0.1 draft (2015-05)

Technical Specification

**3rd Generation Partnership Project;
Technical Specification Group and System Aspects;
Application Architecture to support Mission Critical Push to
Talk over LTE (MCPTT) services;
Stage 2
(Release 13)**



Keywords

<keyword[, keyword, ...]>

3GPP

Postal address

3GPP support office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet

<http://www.3gpp.org>

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© 2015, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TTA, TTC).
All rights reserved.

UMTS™ is a Trade Mark of ETSI registered for the benefit of its members
3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners
LTE™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners
GSM® and the GSM logo are registered and owned by the GSM Association

Contents

Foreword.....	5
1 Scope.....	6
2 References.....	6
3 Definitions and abbreviations.....	7
3.1 Definitions.....	7
3.2 Abbreviations.....	7
4 Introduction.....	8
5 Description of Functional Entities.....	9
5.1 Functional Model.....	9
5.2 Description of the Planes.....	9
5.3 Functional Diagram.....	9
5.3.1 On-network Architecture Model.....	9
5.3.1.1 On-network Architectural Model Diagram.....	9
5.3.1.2 Application Services Layer.....	9
5.3.1.3 SIP Core.....	9
5.3.1.4 EPS.....	9
5.3.1.5 UE 1.....	9
5.3.1.6 UE 2.....	9
5.3.1.7 On-Network functional model.....	9
5.3.2 Off-network Architecture Model.....	9
5.3.2.1 Off-network Architectural Model Diagram.....	9
5.3.2.2 UE 3.....	9
5.3.2.3 UE 4.....	9
5.3.2.4 UE 5.....	9
5.3.2.5 UE 6.....	9
5.3.2.6 UE 7.....	9
5.3.2.7 Off-network functional model.....	9
5.3.3 Architectural Model for Roaming Scenarios.....	10
5.4 Identities.....	10
5.4.1 Application plane.....	10
5.4.2 Signalling control plane.....	10
5.4.3 Relationship between identities in different planes.....	10
5.5 List of Functional Entities.....	10
5.5.1 Introduction.....	10
5.5.2 Application plane.....	10
5.5.2.1 Common services core.....	10
5.5.2.2 MCPTT application service.....	10
5.5.3 Signalling control plane.....	10
5.5.3.1 Signalling user agent.....	10
5.5.3.2 Local inbound / outbound proxy.....	10
5.5.3.3 Registrar Finder.....	10
5.5.3.4 Registrar / application service selection.....	11
5.5.3.5 Hypertext client.....	11
5.5.3.6 Hypertext proxy.....	11
5.5.3.7 Hypertext server.....	11
5.5.4 Media plane.....	11
5.5.4.1 Floor participant.....	11
5.5.4.2 Floor control server.....	11
5.5.4.3 Media resource function controller.....	11
5.5.4.4 Media resource function gateway.....	11

5.5.5	Bearer plane	11
5.5.6	Non-Plane Specific Entities	11
5.5.6.1	Public network operator Subscriber database	11
5.5.6.2	MCPTT user database	11
5.6	Reference points	11
5.6.1	General Reference point principle.....	11
5.6.2	Reference points for the signaling plane	11
5.6.3	Reference point SIP-1(between MCPTT UE SIP User Agent Client and the SIP core)	11
5.6.4	Reference point SIP-2 (between the SIP Core and the MCPTT AS)	11
5.6.5	Reference point MCPTT-1(between the MCPTT Client and the MCPTT AS)	11
5.6.6	Reference point X-1(Data Management between the MCPTT Client and the Network)	11
6	Information Flow Concepts	12
6.1	Registration and User Authentication Information Flow for MCPTT Service	12
7	System Concepts	12
8	High Level Procedures	12
9	Change History	12

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.

1 Scope

This clause shall start on a new page.

The present document ...

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 22.179: "Mission Critical Push to Talk MCPTT".
- [3] 3GPP TS 23.468: "Group Communication System Enablers for LTE (GCSE_LTE)".
- [4] 3GPP TS 23.303: "Proximity-based Services (ProSe)".
- [5] 3GPP TS 23.218: "Internet Multimedia (IM) Session Handling; IM Call Model".
- [6] 3GPP TR 23.713: "Study on Extended Architecture Support for Proximity-based Services".
- [7] 3GPP TS 33.203: "Access Security for IP-based Services".
- [8] IETF RFC 3261: "SIP: Session Initiation Protocol".
- [9] IETF RFC 4582: "The Binary Floor Control Protocol (BFCP)".
- [10] 3GPP TS 24.525: "Business trunking; Architecture and functional description".
- [11] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".
- [12] 3GPP TS 23.002: "Network Architecture".
- [13] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS)".
- [14] Open Mobile Alliance™, OMA-AD-PCPS-V1_0: "Push to Communicate for Public Safety Architecture".

Editor's note: Use of text from OMA PCPS is subject to execution of OMA-3GPP copyright agreement.

- [15] 3GPP TS 24.173: "IMS Multimedia telephony communication service and supplementary services; Stage 3".
- [16] 3GPP TS 22.278: "Service requirements for the Evolved Packet System (EPS)".
- [17] 3GPP TS 23.237: "IP Multimedia Subsystem (IMS) Service Continuity; Stage 2".

[18] 3GPP TS 23.003: "Numbering, addressing and identification".

[19] 3GPP TS 23.008: "Organization of subscriber data".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 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 TR 21.905 [1].

Floor control: An arbitration system in an MCPTT Service that determines who has the authority to transmit (talk) at a point in time during an MCPTT call.

Group Affiliation: A mechanism by which an MCPTT user's interest in one or many MCPTT groups is determined. The affiliation procedure is performed by the MCPTT user (explicitly), MCPTT UE (implicitly) or MCPTT service (implicitly. e.g. emergency, re-grouping, etc.).

Group Call: A mechanism by which an MCPTT user can make a one-to-many MCPTT transmission to other users that are members of MCPTT Group(s).

MCPTT Service: A Push To Talk communication service supporting applications for Mission Critical Organizations and mission critical applications for other businesses and organizations (e.g., utilities, railways) with fast setup times, high availability, reliability and priority handling.

MCPTT system: The collection of applications, services, and enabling capabilities required to provide Mission Critical Push To Talk for a Mission Critical Organization.

Mission Critical Push To Talk: A group communication service with fast setup times, ability to handle large groups, strong security and priority handling.

Off-Network MCPTT Service: The collection of functions and capabilities required to provide MCPTT using ProSe Discovery and the ProSe Communication path for MCPTT Users using Public Safety ProSe-enabled UEs as a direct communication between UEs using E-UTRA or possibly via a ProSe UE-to-UE Relay.

On-Network MCPTT Service: The collection of functions and capabilities required to provide MCPTT via EPS bearers using E-UTRAN to provide the last hop radio bearers.

Private Call: A call between a pair of MCPTT Users using the MCPTT Service with or without MCPTT Floor control.

UE-to-Network Relay MCPTT Service: The collection of functions and capabilities required to provide MCPTT via a ProSe UE-to-Network Relay using ProSe direct communication paths to provide the last hop radio bearer(s).

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 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 TR 21.905 [1].

GMF	Group Management Function
MCPTT	Mission Critical Push To Talk over LTE
MCPTT AS	MCPTT Application Server
NGCN	Next Generation Corporate Network
OMA	Open Mobile Alliance
P25	Project 25
PCPS	Push to Communicate for Public Safety

POC	Push To Talk Over Cellular
PS-UDF	Public Safety User Data Function
PTT	Push To Talk
TCCE	TETRA and Critical Communications Evolution
TETRA	Terrestrial Trunked RAdio
XDMS	XML Documentation Management Server

4 Introduction

The present document ...

5 Description of Functional Entities

5.1 Functional Model

5.2 Description of the Planes

5.3 Functional Diagram

5.3.1 On-network Architecture Model

5.3.1.1 On-network Architectural Model Diagram

5.3.1.2 Application Services Layer

5.3.1.2.1 Common services core

5.3.1.2.2 MCPTT application service

5.3.1.3 SIP Core

5.3.1.4 EPS

5.3.1.5 UE 1

5.3.1.6 UE 2

5.3.1.7 On-Network functional model

5.3.2 Off-network Architecture Model

5.3.2.1 Off-network Architectural Model Diagram

5.3.2.2 UE 3

5.3.2.3 UE 4

5.3.2.4 UE 5

5.3.2.5 UE 6

5.3.2.6 UE 7

5.3.2.7 Off-network functional model

- 5.3.3 Architectural Model for Roaming Scenarios
- 5.4 Identities
 - 5.4.1 Application plane
 - 5.4.2 Signalling control plane
 - 5.4.3 Relationship between identities in different planes
- 5.5 List of Functional Entities
 - 5.5.1 Introduction
 - 5.5.2 Application plane
 - 5.5.2.1 Common services core
 - 5.5.2.1.1 Configuration management client
 - 5.5.2.1.2 Configuration management server
 - 5.5.2.1.3 Group management client
 - 5.5.2.1.4 Group management server
 - 5.5.2.1.5 Identity management server
 - 5.5.2.1.6 Identity management client
 - 5.5.2.2 MCPTT application service
 - 5.5.2.2.1 MCPTT client
 - 5.5.2.2.2 MCPTT server
 - 5.5.3 Signalling control plane
 - 5.5.3.1 Signalling user agent
 - 5.5.3.2 Local inbound / outbound proxy
 - 5.5.3.3 Registrar Finder

5.5.3.4 Registrar / application service selection

5.5.3.5 Hypertext client

5.5.3.6 Hypertext proxy

5.5.3.7 Hypertext server

5.5.4 Media plane

5.5.4.1 Floor participant

5.5.4.2 Floor control server

5.5.4.3 Media resource function controller

5.5.4.4 Media resource function gateway

5.5.5 Bearer plane

5.5.6 Non-Plane Specific Entities

5.5.6.1 Public network operator Subscriber database

5.5.6.2 MCPTT user database

5.6 Reference points

5.6.1 General Reference point principle

5.6.2 Reference points for the signaling plane

5.6.3 Reference point SIP-1(between MCPTT UE SIP User Agent Client and the SIP core)

5.6.4 Reference point SIP-2 (between the SIP Core and the MCPTT AS)

5.6.5 Reference point MCPTT-1(between the MCPTT Client and the MCPTT AS)

5.6.6 Reference point X-1(Data Management between the MCPTT Client and the Network)

6 Information Flow Concepts

6.1 Registration and User Authentication Information Flow for MCPTT Service

7 System Concepts

8 High Level Procedures

9 Change History

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
<i>2015-04</i>					<i>Initial Outline Created</i>		<i>0.1</i>