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Contents

Foreword

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

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1 Scope

The present document specifies the configuration management documents and protocols needed to support Mission Critical Service online configuration over the CSC-4 and CSC-5 reference points and the procedures to support Mission Critical Service offline configuration over the CSC-11and CSC-12 reference points. Configuration management documents defined in the present document includes:

MCPTT UE initial configuration document;

MCPTT UE configuration document;

MCPTT user profile configuration document; and

MCPTT service configuration document.

Mission critical services are services that require preferential handling compared to normal telecommunication services, e.g. in support of police or fire brigade.

The Mission critical services can be used for public safety applications and also for general commercial applications (e.g., utility companies and railways).

The present document is applicable to an Mission Critical Push To Talk (MCPTT) UE supporting the configuration management client functionality, to application server supporting the configuration management server functionality, and to application server supporting the Mission Critical Push To Talk (MCPTT) server functionality.

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] OMA OMA-TS-XDM_Core-V2_1-20120403-A: "XML Document Management (XDM) Specification".

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

[4] 3GPP TS 24.383: "Mission Critical Push to Talk (MCPTT) Management Object (MO)".

[5] 3GPP TS 24.381: "Mission Critical Push to Talk (MCPTT) group management Protocol specification".

[6] 3GPP TS 24.382: "Mission Critical Push to Talk (MCPTT) identity management Protocol specification".

[7] 3GPP TS 29.283: "Diameter Data Management Applications".

[8] 3GPP TS 23.179: "Functional architecture and information flows to support mission critical communication services; Stage 2".

[9] 3GPP TS 24.379: "Mission Critical Push to Talk (MCPTT) call control Protocol specification".

[10] 3GPP TS 24.380: "Mission Critical Push to Talk (MCPTT) media plane control Protocol specification".

[11] IETF RFC 5875: "An Extensible Markup Language (XML) Configuration Access Protocol (XCAP) Diff Event Package".

[12] 3GPP TS 24.333: "Proximity-services (ProSe) Management Objects (MO)".

[13] IETF RFC 4745: "Common Policy: A Document Format for Expressing Privacy Preferences".

[14] IETF RFC 4825: "The Extensible Markup Language (XML) Configuration Access Protocol (XCAP)".

[15] Void.

[16] 3GPP TS 23.003: "Numbering, addressing and identification".[17] OMA OMA-TS-XDM_Group-V1_1-20120403-A: "Group XDM Specification".

[18] 3GPP TS 23.303: "Proximity-based Services (ProSe); Stage 2".

[19] 3GPP TS 24.334: "Proximity-services (ProSe) User Equipment (UE) to ProSe function protocol aspects; Stage 3".

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

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

[22] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".

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

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions 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].

MCPTT network: A network infrastructure that supports the MCPTT service.
Offline Configuration: Configuration of the MCPTT UE without connectivity with any MCPTT network. Configuration of the MCPTT UE is achieved using some external device (e.g. a laptop) with some kind of IP connectivity with the MCPTT UE (e.g. over USB, WLAN, Bluetooth, etc).
Off-network operation: An MCPTT UE operating without connectivity to an MCPTT network (not even via a relay).
Online Configuration: Configuration of the MCPTT UE using the MCPTT network. Configuration of the MCPTT UE is achieved using the network connectivity with the MCPTT UE (e.g. over LTE).
On-network operation: An MCPTT UE operating with connectivity to an MCPTT network including when network connectivity is achieved via a relay.

For the purposes of the present document, the following terms and definitions given in OMA OMA-TS-XDM_Core-V2_1 [2] apply:

XDMC
XDMS

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.179 [3] apply:

MCPTT administrator
MCPTT UE
MCPTT User Profile

MCPTT service
Mission Critical Push To Talk

For the purpose of the present document, the following terms and definitions given in 3GPP TS 23.179 [8] apply:

Pre-selected MCPTT user profile

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].

AUID	Application Unique IDentity
CMC	Configuration Management Client
CMS	Configuration Management Server
DM	Device Management
E-UTRAN	Evolved Universal Terrestrial Radio Access Network
FQDN	Fully Qualified Domain Name
GC	General Client
HTTP	HyperText Transfer Protocol
HTTPS	HyperText Transfer Protocol Secure
IANA	Internet Assigned Numbers Authority
IETF	Internet Engineering Task Force
IMEI	International Mobile Equipment Identity
IP	Internet Protocol
MCPTT	Mission Critical Push To Talk
MIME	Multi-Purpose Internet Mail Extensions
MO	Management Object
OMA	Open Mobile Alliance
ProSe	Proximity Services
RFC	Request For Comments
SIP	Session Initiation Protocol
SNR	Serial Number
TAC	Type Allocation Code
UE	User Equipment
URI	Uniform Resource Identifier
URN	Uniform Resource Name
USB	Universal Serial Bus
WLAN	Wireless Local Area Network
XCAP	XML Configuration Access Protocol
XDM	XML Document Management
XDMC	XML Document Management Client
XDMS	XML Document Management Server
XML	eXtensible Markup Language
XUI	XCAP Unique Identifier

4 General

4.1 MCPTT service administrator configuration

An MCPTT service administrator can, using an MCPTT UE configure the:

- MCPTT UE initial configuration document;
- MCPTT UE configuration document;
- MCPTT user profile configuration document;
- MCPTT service configuration document; and

- MCPTT group document.

The format of the MCPTT UE initial configuration document for configuration by an MCPTT service administrator is defined in subclause 7.2.

The format of the MCPTT UE configuration document is defined in subclause 7.3.

The format of the MCPTT user profile configuration document is defined in subclause 7.4.

The format of the MCPTT service configuration document is defined in subclause 7.5.

The format of the MCPTT group document is defined in 3GPP TS 24.381 [5].

To create a new configuration document on the configuration management server, the MCPTT UE uses the procedures in subclause 6.3.2.2.

NOTE: If the MCPTT service administrator includes a <Default-user-profile> element in the MCPTT UE initial configuration document as defined in subclause 7.2.2.1, a MCPTT user profile configuration document needs to first be created on the configuration management server, containing the "XUI-URI" attribute and "user-profile-index" attribute (as defined in subclause 7.4.2.1) that are included in the <Default-user-profile> element.

To update an existing configuration document on the configuration management server, the MCPTT UE uses the procedures in subclause 6.3.4.2.

To delete an existing configuration document on the configuration management server, the MCPTT UE uses the procedures in subclause 6.3.5.2.

To create a new MCPTT group document on the configuration management server, the MCPTT UE uses the procedures in 3GPP TS 24.381 [5].

To update an existing MCPTT group document on the configuration management server, the MCPTT UE uses the procedures in 3GPP TS 24.381 [5].

To delete an existing MCPTT group document on the configuration management server, the MCPTT UE uses the procedures in 3GPP TS 24.381 [5].

4.2 MCPTT UE configuration

4.2.1 General

Upon start up the MCPTT UE bootstraps the required information (e.g. FQDN or IP address) to locate the configuration management server for configuration of the MCPTT UE initial configuration management object (MO) and the default MCPTT user profile configuration management object (MO).

In order to obtain access to the MCPTT service the MCPTT UE needs to obtain configuration data either online via the network or offline using some external device (e.g. a laptop). As part of the bootstrap process the MCPTT UE needs to discover either:

1. the online configuration management server in the network that configures the MPCTT UE initial configuration MO and the default MCPTT user profile configuration MO, then the MCPTT UE:

   a) using the URI of the configuration management server obtained from the MPCTT UE initial configuration MO, obtains:

      - the MCPTT UE configuration document;

      - the MCPTT user profile configuration document; and

      - the MCPTT service configuration document; and

   b) using the URI of the group management server obtained from the MPCTT UE initial configuration MO obtain the MCPTT group document; or

2. the:

   a) offline configuration management server on the external device that configures the MCPTT UE with the:

      - MPCTT UE initial configuration MO;
      - MPCTT UE configuration MO;
      - MPCTT user profile MO; and
      - MPCTT service configuration MO; and

   b) offline group management server on the external device that configures the MCPTT UE with the MPCTT group MO.

The mechanism to discover the online or offline configuration management server is dependent on the protocol used to manage and configure the MO and is out of scope of the present document.

4.2.2 Online configuration

The format of the MPCTT UE initial configuration MO downloaded to the MCPTT UE during online configuration is defined in 3GPP TS 24.383 [4].

The format of the MPCTT UE configuration document downloaded to the MCPTT UE during online configuration is defined in subclause 7.3.

The format of the MPCTT user profile configuration document downloaded to the MCPTT UE during online configuration is defined in subclause 7.4.

The format of the MPCTT group document downloaded to the MCPTT UE during online configuration is defined in 3GPP TS 24.381 [5].

Figure 4.2.2-1 shows the MCPTT UE online configuration time sequence.

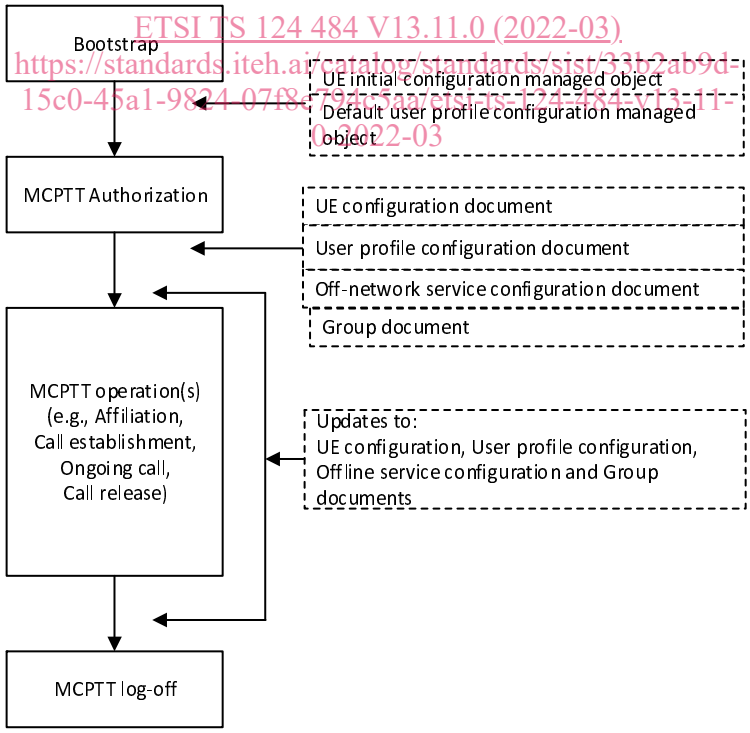

Figure 4.2.2-1 MCPTT UE online configuration time sequence

If the MCPTT UE initial configuration MO has changed from the version stored in the MCPTT UE, the updated MCPTT UE initial configuration MO is downloaded to the MCPTT UE.

If the MCPTT UE initial configuration MO contains a <default-user-profile> element and the identified default MCPTT user profile configuration MO has changed from the version stored in the MCPTT UE, the updated default MCPTT user profile configuration MO is downloaded to the MCPTT UE.

NOTE 1: The default MCPTT user profile configuration MO defines the default MCPTT ID and the profile of services available to the user (e.g. emergency MCPTT services) prior to user authentication.

The MCPTT UE contacts the identity management server using the HTTPS URI stored in the MCPTT UE initial configuration MO and performs MCPTT User authentication as specified in 3GPP TS 24.382 [6].

The MCPTT UE, using the MCPTT ID obtained during MCPTT user authentication, subscribes to the MCPTT UE configuration document, the MCPTT user profile configuration document and the MCPTT service configuration document using the procedure for subscribing to multiple documents simultaneously using the subscription proxy function specified in subclause 6.3.13.2.2(i.e., the CMS acts as a Subscription Proxy) and subscribes to the MCPTT group document using the procedure specified in 3GPP TS 24.381 [5]. If these documents have been updated since the current version stored in the MCPTT UE, then the MCPTT UE will receive a SIP NOTIFY request with an XCAP Diff document (see IETF RFC 5875 [11]), in which case the CMC updates its local document copies . Retrieval by the MCPTT UE using the notified HTTPS URI of the MCPTT group document is performed as specified in 3GPP TS 24.381 [5].

NOTE 2: The MCPTT UE can be notified of changes to the configuration documents at any time while using the MCPTT service.

4.2.3 Offline configuration

When configuring an MCPTT UE offline the offline configuration management server will need to support the MCPTT administrator providing the MCPTT ID of the MCPTT user for whom the MCPTT UE is being configured so that the correct configuration data for that MCPTT user can be configured in the MOs.

The format of the MPCTT UE initial configuration MO downloaded to the MCPTT UE during offline configuration is defined in 3GPP TS 24.383 [4].

The format of the MPCTT UE configuration MO downloaded to the MCPTT UE during offline configuration is defined in 3GPP TS 24.383 [4].

The format of the MPCTT user profile configuration MO downloaded to the MCPTT UE during offline configuration is defined in 3GPP TS 24.383 [4].

The format of the MPCTT service configuration MO downloaded to the MCPTT UE during offline configuration is defined in 3GPP TS 24.383 [4].

The format of the MPCTT group document MO to the MCPTT UE during offline configuration is defined in 3GPP TS 24.383 [4].

NOTE: If the MCPTT service administrator includes a "DefaultUserProfile" element in the MPCTT UE initial configuration MO as defined in 3GPP TS 24.383 [4], a MCPTT user profile configuration MO needs to first be created on the offline configuration management server, containing the "MCPTTUserID" element and "UserProfileIndex" element (as defined in 3GPP TS 24.383 [4]) that are included in the "DefaultUserProfile" element.

4.3 MCPTT server

The MCPTT server obtains the MCPTT service configuration document that contains the mission critical organisation configured parameters that defined the behaviour of the MCPTT service from the configuration management server.

The format of the MCPTT service configuration document downloaded to the MCPTT server is defined in subclause 7.5.

The MCPTT server obtains the MCPTT service configuration document that contains the mission critical organisation configured parameters that defined the behaviour of the MCPTT service from the configuration management server.

The MCPTT server subscribes to the MCPTT service configuration document for each mission critical organisation that is provisioned that is supported by the MCPTT server using the procedure specified in subclause 6.3.13.2.3. How the

MCPTT server is provisioned with the identities of the mission critical organisations is out of scope of the present document.

If the MCPTT service configuration document has been updated since the current version stored at the MCPTT server, then the MCPTT server will receive a SIP NOTIFY request containing an HTTPS URI of the MCPTT service configuration document. Retrieval by the MCPTT server, using the notified HTTPS URI, of the MCPTT service configuration document is performed as specified in subclause 6.3.3.2.3.

NOTE: The MCPTT server can be notified of changes to the MCPTT service management configuration document at any time while operating the MCPTT service.

The format of the MCPTT service configuration document downloaded to the MCPTT server is defined in subclause 7.5.

4.4 Configuration management server

The following applies to the configuration management server used for online configuration.

The configuration management server needs to convert the MCPTT UE initial configuration document received from a MCPTT administrator into an appropriate format for configuration of the MCPTT UE initial configuration MO.

If the MCPTT UE initial configuration MO contains a <default-user-profile> element that identifies a MCPTT user profile configuration document, the configuration management server needs to convert the identified MCPTT user profile configuration document received from a MCPTT administrator into an appropriate format for configuration of the MCPTT user profile configuration MO.

Once an MCPTT User Profile configuration document has been created or updated by the MCPTT UE, the configuration management server uses the procedures specified in 3GPP TS 29.283 [7] to store MCPTT user profile configuration document as the user profile in the MCPTT user database.

In order to download MCPTT the user profile configuration document to an MCPTT UE or to support an MCPTT UE updating the MCPTT user profile configuration document, the configuration management server uses the procedures specified in 3GPP TS 29.283 [7] to obtain the MCPTT user profile from the MCPTT user database.

In order to be notified of changes to an MCPTT user profile configuration document that have been subscribed to by an MCPTT UE, the configuration management server uses the procedures specified in 3GPP TS 29.283 [7] to be notified of changes to the MCPTT user profile stored in the MCPTT user database.

In order to delete the MCPTT user profile when requested by an MCPTT UE, the configuration management server uses the procedures specified in 3GPP TS 29.283 [7] to delete the MCPTT user profile from the MCPTT user database.

NOTE: The configuration management server and group management server functionality for offline configuration is out of scope of the present document.

5 Functional entities

5.1 Configuration management client (CMC)

To be compliant with the procedures in the present document the CMC shall:

- shall support the role of XCAP client as specified in IETF RFC 4825 [14];
- support the role of XDMC as specified in OMA OMA-TS-XDM_Core-V2_1 [2];
- support the procedures in subclause 6.3.1.1;
- support the procedures in subclause 6.3.2.2;
- support the procedures in subclause 6.3.3.2.2;
- support the procedures in subclause 6.3.8.2.2;