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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
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1 Scope

The common functional architecture for support of Mission Critical (MC) services is specified in 3GPP TS 23.280 [21].

The functional architecture for support of Mission Critical Push To Talk (MCPTT) services is specified in 3GPP TS 23.379 [18].

The functional architecture for support of Mission Critical Video (MCVideo) services is specified in 3GPP TS 23.281 [19].

The functional architecture for support of Mission Critical Data (MCData) services is specified in 3GPP TS 23.282 [20].

This 3GPP Technical Specification (TS) specifies:

1. The interactions between the MC Service User Database and the MC Service Server:

- This interface between the MCPTT User Database and the MCPTT Server is referred to as the MCPTT-2 reference point, as specified in 3GPP TS 23.379 [18].

    - This interface between the MCVideo User Database and the MCVideo Server is referred to as the MCVideo-2 reference point, as specified in 3GPP TS 23.281 [19].

- This interface between the MCData User Database and the MCData Server is referred to as the MCData-2 reference point, as specified in 3GPP TS 23.282 [20].

    - This interface between the MCData User Database and the MCData Server is referred to as the MCVideo-2 reference point, as specified in 3GPP TS 23.282 [20].

2. The interactions between the MC Service User Database and the Configuration Management Server. This interface is referred to as the CSC-13 reference point.

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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] Void.

[3] Void.

[4] 3GPP TS 33.210: "3G security; Network Domain Security (NDS); IP network layer security".

[5] IETF RFC 4960: "Stream Control Transmission Protocol".

[6] 3GPP TS 29.229: "Cx and Dx interfaces based on the Diameter protocol; Protocol details".

[7] IETF RFC 5234:"Augmented BNF for Syntax Specifications: ABNF".

[8] IETF RFC 7944: "Diameter Routing Message Priority".

[9] 3GPP TS 29.329: "Sh interface based on the Diameter protocol; Protocol details".

[10] 3GPP TS 29.336: "Home Subscriber Server (HSS) diameter interfaces for interworking with packet data networks and applications".

[11] IETF RFC 7683: "Diameter Overload Indication Conveyance".

[12] 3GPP TS 23.003: "Numbering, addressing and identification".

[13] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".

[14] 3GPP TS 29.228: "IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and message contents".

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

[16] Void.

[17] IETF RFC 8583: "Diameter Load Information Conveyance".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[18] 3GPP TS 23.379: "Functional architecture and information flows to support Mission Critical Push To Talk (MCPTT); Stage 2".

[19] 3GPP TS 23.281: "Functional architecture and information flows to support Mission Critical Video (MCVideo); Stage 2".

[20] 3GPP TS 23.282: "Functional architecture and information flows to support Mission Critical Data (MCData); Stage 2".

[21] 3GPP TS 23.280: "Common functional architecture to support mission critical services; Stage 2".

[22] 3GPP TS 24.484: "Mission Critical Services (MCS) configuration management; Protocol specification".

[23] IETF RFC 6733: "Diameter Base Protocol".

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3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1], in 3GPP TS 23.281 [19], in 3GPP TS 23.282 [20], in 3GPP TS 23.280 [21], in 3GPP TS 23.379 [18] and the following apply, if any.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1], in 3GPP TS 23.281 [19], in 3GPP TS 23.282 [20], in 3GPP TS 23.280 [21], in 3GPP TS 23.379 [18] and the following apply, if any. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

4 Main Concept

4.1 Introduction

The MCPTT-2 reference point (between the MCPTT Server and the MCPTT User Database) is defined in the 3GPP TS 23.379 [18].

The MCVideo-2 reference point (between the MCVideo Server and the MCVideo User Database) is defined in the 3GPP TS 23.281 [19].

The MCData-2 reference point (between the MCData Server and the MCData User Database) is defined in the 3GPP TS 23.282 [20].

The CSC-13 reference point (between the Configuration Management and the MC Service User Database) is defined in the 3GPP TS 23.280 [21].

This document describes the Diameter-based related procedures, message parameters and protocol specification for MCPTT-2, MDVideo-2, MCData-2 and CSC-13 reference points.

This document specifies the Diameter Management Application used as protocol over the MCPTT-2, MDVideo-2, MCData-2 and CSC-13 reference points.

5 MC Service General Architecture

5.1 Introduction

This clause further specifies the architectural assumptions associated with the MCPTT-2, MDVideo-2, MCData-2 and CSC-13 reference points, building on respectively 3GPP TS 23.379 [18], 3GPP TS 23.281 [19], 3GPP TS 23.282 [20] and 3GPP TS 23.280 [21].

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5.2 Functional requirements of network entities

5.2.1 Functional Requirements of the MC Service Server

Depending on the MC Service, the MC Server is:

- the MCPTT Server for MCPTT services, as defined in 3GPP TS 23.379 [18],
- the MCVideo Server for MCVideo services, as defined in 3GPP TS 23.281 [19],
- and the MCData Server for MCData services, as defined in 3GPP TS 23.282 [20].

The MC Service Server may communicate with the MC Service User Database over:

- the MCPTT-2 interface between the MCPTT Server and the MCPTT User Database;
- the MCVideo-2 interface between the MCVideo Server and the MCVideo User Database;
- the MCData-2 interface between the MCData Server and the MCPTT User Database.

For more details on the functionality of the MC Service Server, refer to 3GPP TS 23.379 [18], 3GPP TS 23.281 [19] and 3GPP TS 23.282 [20], depending on the MC Service.

5.2.2 Functional Requirements of the Configuration Management Server

The Configuration Management Server may communicate with the MC Service User Database over the CSC-13 interface.

For more details on the functionality of the Configuration Management Server, refer to 3GPP TS 23.280 [21].

5.2.3 Functional requirements of MCPTT User Database

Depending on the MC Service, the MC Service User Database is:

- the MCPTT user database for MCPTT services, as defined in 3GPP TS 23.379 [18],

- the MCVideo user database for MCVideo services, as defined in 3GPP TS 23.281 [19],
- and the MCData user database for MCData services, as defined in 3GPP TS 23.282 [20].

These MC service user databases can be co-located.

The MCPTT User Database may communicate with the MCPTT Server over the MCPTT-2 interface.

The MCVideo User Database may communicate with the MCVideo Server over the MCVideo-2 interface.

The MCData User Database may communicate with the MCData Server over the MCData-2 interface.

Any MC Service User Database may communicate with the Configuration Management Server over the CSC-13 interface.

For more details on the functionality of the MC Service User Database, refer to 3GPP TS 23.280 [21], 3GPP TS 23.379 [18], 3GPP TS 23.281 [19] and 3GPP TS 23.282 [20] depending on the MC Service.

5.3 Functional classification of MC Service Server to MC Service User Database related interface procedures

MC Service Server to MC Service User Database interfaces are:

- The MCPTT-2 interface between the MCPTT User Database and the MCPTT Server;
- The MCVideo-2 interface between the MCVideo User Database and the MCVideo Server;
- The MCData-2 interface between the MCData User Database and the MCData Server.

Operations on the MC Service Server to MC Service User Database interfaces are classified in functional groups:

1. Data handling procedures
   - The download of data from the MC Service User Database to an MC Service Server.
   - The subscription to notifications from the MC Service User Database when particular information about a specific MC Service User is updated.
   - The MC Service User Database can notify an MC Service Server of changes in data for which the MC Service Server previously had subscribed.

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5.4 Functional classification of CSC-13 interface procedures

Operations on the CSC-13 interface are classified in functional groups:

1. Data handling procedures
   - The download of data from the MC Service User Database to a Configuration Management Server.
   - The update of data in the MC Service User Database.
   - The subscription to notifications from the MC Service User Database when particular information about a specific MC Service User is updated.
   - The MC Service User Database can notify a Configuration Management Server of changes in data for which the Configuration Management Server previously had subscribed.

6 Procedure Descriptions for MC Services

6.1 Introduction

This clause describes the procedures invoked between MC Service Server(s) and the MC Service User Database(s), i.e.:

- between the MCPTT Server and the MCPTT User Database over the MCPTT-2 reference point;
- between the MCVideo Server and the MCVideo User Database over the MCVideo-2 reference point;
- between the MCData Server and the MCData User Database over the MCData-2 reference point.

This clause describes the procedures invoked between the Configuration Management Server and the MC Service User Database over the CSC-13 reference point.

In the tables that describe the Information Elements transported by each command, each Information Element is marked as (M) Mandatory, (C) Conditional or (O) Optional in the "Cat." column. For the correct handling of the Information Element according to the category type, see the description detailed in clause 6 of the 3GPP TS 29.228 [14].

6.2 MC Service User data handling procedures

6.2.1 Data Pull

6.2.1.1 General

This procedure is used between the MC Service Server or the Configuration Management Server and the MC Service User Database.

The procedure is invoked by the MC Service Server or the Configuration Management Server and is used:

- To obtain information for a specific MC Service ID from the MC Service User Database;
- To subscribe to notifications from the MC Service User Database for when particular information associated with a specific MC Service ID is updated.

This procedure is mapped to the commands Data-Pull-Request/Answer in the Diameter application specified in clause 7.2.3/7.2.4. The tables 6.2.1-1 and 6.2.1-2 detail the involved information elements.

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Table 6.2.1-1: Data Pull Request

Information element name	Mapping to Diameter AVP	Cat.	Description
MC Service ID	User-Identifier (See 7.3.8)	M	This information element contains the MC Service ID of the MC Service user for whom the data is required. See 3GPP TS 23.280 [21]. See clause 7.3.8 for the content of this AVP.
Requested Data	Data-Identification (See 7.3.3)	M	This information element indicates the requested information. The set of valid values are defined in clause 7.3.3.
DPR Flags	DPR-Flags (See 7.3.13)	O	This information element contains one or several flags that define different command behaviours. The set of valid values are defined in clause 7.3.13.