ETSI TS 136 445 V11.0.0 (2012-10)

Technical Specification

**LTE;
Evolved Universal Terrestrial Radio
Access Network (E-UTRAN);
M1 data transport
(3GPP TS 36.445 version 11.0.0 Release 11)**

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Foreword

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The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

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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.

1   Scope

The present document specifies the standards for user data transport protocols over the E-UTRAN M1 interface.

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 29.281: "General Packet Radio System (GPRS) Tunnelling Protocol User Plane (GTPv1-U)".

[3]   IETF RFC 768 (1980-08): "User Datagram Protocol".

[4]   IETF RFC 2474 (1998-12): "Definition of the Differentiated Services Field (DS Field) in the Ipv4 and Ipv6 Headers".

[5]   IETF RFC 2460 (1998-12): "Internet Protocol, Version 6 (IPv6) Specification".

[6]   IETF RFC 791 (1981-09): "Internet Protocol".

[7]   IETF RFC 3376 (2002-10): 'Internet Group Management Protocol, Version 3'.

[8]   IETF RFC3810 (2004-06): 'Multicast Listener Discovery Version 2 (MLDv2) for IPv6'.

3   Definitions, symbols 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].

M1: interface between an eNB and an EPC for MBMS data delivery, providing an interconnection point between the EUTRAN and the EPC. M1 is a user plane interface between E-UTRAN and EPC. It is also considered as a reference point.

3.2   Symbols

For the purposes of the present document, the following symbols apply:

Symbol format (EW)

<symbol>   <Explanation>

3.3 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].

DiffServ   Differentiated Service
eNB   E-UTRAN Node B
EPC   Evolved Packet Core
E-UTRA   Evolved UTRA
E-UTRAN   Evolved UTRAN
GTP   GPRS Tunnelling Protocol
IP   Internet Protocol
MBMS   Multimedia Broadcast Multicast Service
TCP   Transmission Control Protocol
TEID   Tunnel Endpoint Identifier
UDP   User Datagram Protocol

4 Data Link Layer

The support of any suitable data link Layer technique - like Ethernet, etc …- techniques shall not be prevented.

5 M1 interface user plane protocol

5.1 General

The transport layer for MBMS data streams over M1 is an IP based Transport. The following figure shows the transport protocol stacks over M1.
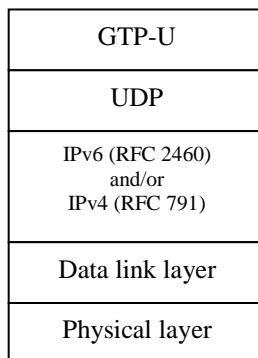
GTP-U
UDP
IPv6 (RFC 2460) and/or IPv4 (RFC 791)
Data link layer
Physical layer

Figure 5.1-1: Transport network layer for MBMS data streams over M1

The GTP-U (TS 29.281 [2]) protocol over UDP over IP shall be supported as the transport for MBMS data streams on the M1 interface. The data link layer is as specified in clause 4.

On IP multicast mode, the transport bearer is identified by the GTP-U TEID (TS 29.281 [2]) and the IP multicast address (source TEID, IP address of multicast source, IP multicast address).

5.2 GTP-U

The GTP-U (TS 29.281 [2]) protocol shall be used over the M1 interface toward the EPC.

5.3 UDP/IP

The path protocol used shall be UDP (IETF RFC 768 [3]).

The UDP port number for GTP-U shall be as defined in TS 29.281 [2].

eNB and EPC shall support fragmentation and assembly of GTP packets at the IP layer.

The eNB and EPC shall support IPv6 (IETF RFC 2460 [5]) and/or IPv4 (IETF RFC 791 [6]).

IP multicast (IETF RFC 3376 [7], IETF RFC3810 [8]) shall be supported for point-to-multipoint delivery of MBMS data streams for multi-cell transmission.

The packet processing function in the EPC shall send MBMS data of a given MBMS bearer to the TNL IP multicast address associated to that particular MBMS bearer.

5.4 Diffserv code point marking

IP Differentiated Services code point marking (IETF RFC 2474 [4]) shall be supported. The mapping between traffic categories and Diffserv code points shall be configurable by O&M based on QoS Class Identifier (QCI) Characteristics and other E-UTRAN traffic parameters. Traffic categories are implementation-specific and may be determined from the application parameters.

Annex A (informative): Change history

TSG #	TSG Doc.	CR	Rev	Subject/Comment	New
2009-10				First draft	0.0.0
2009-11				Capture the agreements in RAN3#66	1.0.0
2009-12				Presented for approval at RAN#46	2.0.0
46	RP-091255			Approved at RAN#46	9.0.0
47	RP-100226	0001	2	Clean up of unicast related text	9.1.0
48	RP-100597	0002		Correction and Completion of M1	9.2.0
2010-12				Created Rel-10 version based on v. 9.2.0	10.0.0
SP-49	SP-100629			Clarification on the use of References (TS 21.801 CR#0030)	10.0.1
52	RP-110685	0003	2	Correction of references	10.1.0
2012-09				Update to Rel-11 version (MCC)	11.0.0

History

Document history		
V11.0.0	October 2012	Publication