

ETSI TS 136 445 V9.1.0 (2010-04)

Technical Specification

**LTE;
Evolved Universal Terrestrial Radio
Access Network (E-UTRAN);
M1 Data Transport
(3GPP TS 36.445 version 9.1.0 Release 9)**



Reference

RTS/TSGR-0336445v910

Keywords

LTE

ETSI

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
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

http://portal.etsi.org/chaicor/ETSI_support.asp

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.

© European Telecommunications Standards Institute 2010.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™**, **TIPHON™**, the TIPHON logo and the ETSI logo are Trade Marks 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 currently being registered

for the benefit of its Members and of the 3GPP Organizational Partners.

GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

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

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.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

Contents

Intellectual Property Rights	2
Foreword.....	2
Foreword.....	4
1 Scope	5
2 References	5
3 Definitions, symbols and abbreviations	5
3.1 Definitions	5
3.2 Symbols.....	5
3.3 Abbreviations	6
4 Data Link Layer	6
5 M1 interface user plane protocol.....	6
5.1 General	6
5.2 GTP-U	6
5.3 UDP/IP	7
5.4 Diffserv code point marking.....	7
Annex A (informative): Change history	8
History	9

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] [FFS GTP-U is the reference; final TS reference requires further assessment.]
 - [3] IETF RFC 768 (August 1980): "User Datagram Protocol".
 - [4] IETF RFC 2474 (December 1998): "Definition of the Differentiated Services Field (DS Field) in the Ipv4 and Ipv6 Headers".
 - [5] IETF RFC 2460 (December 1998): "Internet Protocol, Version 6 (IPv6) Specification".
 - [6] IETF RFC 791 (September 1981): "Internet Protocol".
 - [7] IETF RFC3376, 'Internet Group Management Protocol, Version 3', October 2002.
 - [8] IETF RFC3810, 'Multicast Listener Discovery Version 2 (MLDv2) for IPv6', June 2004.
-

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.

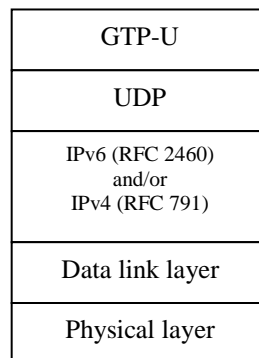


Figure 5.1-1: Transport network layer for MBMS data streams over M1

The GTP-U [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 [2] and the IP multicast address (source TEID, IP address of multicast source, IP multicast address).

5.2 GTP-U

Editor's Note: It is needed to confirm if GTP-U is agreed for M1.

Editor's Note: Description of GTP-U protocol (if necessary).

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

5.3 UDP/IP

Editor's Note: It is expected that security aspect of IP multicast will be captured in TS36.440 General Aspect (if necessary).

The path protocol used shall be UDP [3].

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

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

The eNB and EPC shall support IPv6 [5] and/or IPv4 [6].

IP multicast [7, 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

Editor's Note: Description for diffserv code point marking (if necessary).

IP Differentiated Services code point marking [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

History

Document history		
V9.0.0	February 2010	Publication
V9.1.0	April 2010	Publication