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Technical Specification

**LTE;
Evolved Universal Terrestrial Radio
Access Network (E-UTRAN);
S1 data transport
(3GPP TS 36.414 version 8.2.0 Release 8)**



Reference

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Keywords

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

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Foreword

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

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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 and related signalling protocols to establish user plane transport bearers over the S1 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] GTP-U is the reference; final TS reference required 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".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions below apply. Terms and definitions not defined below can be found in [1].

S1: interface between an eNB and an EPC, providing an interconnection point between the EUTRAN and the EPC. It is also considered as a reference point.

SAE bearer: one or more Service Data Flows between a UE and EPC [*according to definition for EPS bearer 23.401*].

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].

eNB	E-UTRAN Node B
EPC	Evolved Packet Core
E-UTRA	Evolved UTRA
E-UTRAN	Evolved UTRAN

GTP	GPRS Tunnelling Protocol
IP	Internet Protocol
MME	Mobility Management Entity
TEID	Tunnel Endpoint Identifier
UDP	User Datagram Protocol
UPE	User Plane Entity

4 Data Link Layer

Any data link protocol that fulfils the requirements toward the upper layer may be used.

5 S1 Interface user plane protocol

5.1 General

The transport layer for data streams over S1 is an IP based Transport. The following figure shows the transport protocol stacks over S1.

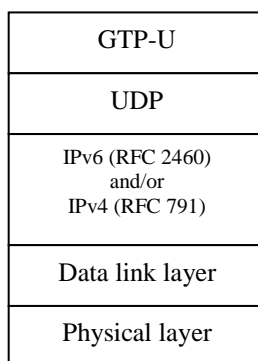


Figure 6.1: Transport network layer for data streams over S1

The GTP-U [2] protocol over UDP over IP shall be supported as the transport for data streams on the S1 interface. The data link layer is as specified in clause 4.

The transport bearer is identified by the GTP-U TEID [2] and the IP address (source TEID, destination TEID, source IP address, destination IP address).

5.2 GTP-U

The GTP-U [2] protocol shall be used over the S1 interface toward the EPC.

5.3 UDP/IP

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].

There may be one or several IP addresses in the eNB and in the EPC. The packet processing function in the EPC shall send downstream packets of a given SAE bearer to the eNB IP address (received in S1-AP) associated to that particular SAE bearer. The packet processing function in the eNB shall send upstream packets of a given SAE bearer to the EPC IP address (received in S1-AP) associated to that particular SAE bearer.

Transport Layer Address signalled in S1-AP messages is a bit string of

- a) 32 bits in case of IPv4 address according to [6]; and
- b) 128 bits in case of IPv6 address according to [5].

5.4 Diffserv code point marking

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)/ Label Characteristics and others E-UTRAN traffic parameters. Traffic categories are implementation-specific and may be determined from the application parameters.

Annex A (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
11.2007	38	RP-070852			specification presented to TSG-RAN for information and approval		1.0.0
12.2007	38				specification approved at TSG-RAN and placed under change control	1.0.0	8.0.0
03-2008	39	RP-080078	001	1	Data link layer proposal	8.0.0	8.1.0
03-2008	39	RP-080078	002		Editorial correction on 36.414	8.0.0	8.1.0
06-2008	40	RP-080302	003	1	eGTP draft reference for S1 Data Transport	8.1.0	8.2.0
06-2008	40	RP-080302	005		Define format for TLA signalled in S1AP messages	8.1.0	8.2.0

History

Document history		
V8.2.0	November 2008	Publication