

ETSI TS 136 423 V14.8.0 (2019-10)



LTE;
Evolved Universal Terrestrial
Radio Access Network (E-UTRAN);
X2 Application Protocol (X2AP)
(3GPP TS 36.423 version 14.8.0 Release 14)

<https://standards.iteh.ai/catalog/standards/si/66d67925-67ea-4f57-9d5a-ac27c9d6b2b1/etsi-ts-136-423-v14-8-0-2019-10>



ReferenceRTS/TSGR-0336423ve80

KeywordsLTE

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

The present document can be downloaded from:
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

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 <https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:
<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2019.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

oneM2M™ logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners.

GSM® and the GSM logo are trademarks registered and owned by the GSM Association.

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables 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 (<https://ipr.etsi.org/>).

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.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

Legal Notice

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. These shall be interpreted as being references to the corresponding ETSI deliverables.

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

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Intellectual Property Rights	2
Legal Notice	2
Modal verbs terminology.....	2
Foreword.....	9
1 Scope	10
2 References	10
3 Definitions, symbols and abbreviations	11
3.1 Definitions	11
3.2 Symbols.....	12
3.3 Abbreviations	12
4 General	13
4.1 Procedure specification principles.....	13
4.2 Forwards and backwards compatibility.....	13
4.3 Specification notations	13
5 X2AP services	13
5.1 X2AP procedure modules	14
5.2 Parallel transactions.....	14
6 Services expected from signalling transport.....	14
7 Functions of X2AP.....	14
8 X2AP procedures	15
8.1 Elementary procedures	15
8.2 Basic mobility procedures	17
8.2.1 Handover Preparation	17
8.2.1.1 General	17
8.2.1.2 Successful Operation.....	17
8.2.1.3 Unsuccessful Operation	19
8.2.1.4 Abnormal Conditions	20
8.2.2 SN Status Transfer	20
8.2.2.1 General	20
8.2.2.2 Successful Operation.....	21
8.2.2.3 Unsuccessful Operation	21
8.2.2.4 Abnormal Conditions	21
8.2.3 UE Context Release	21
8.2.3.1 General	21
8.2.3.2 Successful Operation.....	22
8.2.3.3 Unsuccessful Operation	23
8.2.3.4 Abnormal Conditions	23
8.2.4 Handover Cancel	23
8.2.4.1 General	23
8.2.4.2 Successful Operation.....	23
8.2.4.3 Unsuccessful Operation	23
8.2.4.4 Abnormal Conditions	23
8.3 Global Procedures	24
8.3.1 Load Indication	24
8.3.1.1 General	24
8.3.1.2 Successful Operation.....	24
8.3.1.3 Unsuccessful Operation	25
8.3.1.4 Abnormal Conditions	25
8.3.2 Error Indication.....	25
8.3.2.1 General	25
8.3.2.2 Successful Operation.....	26
8.3.2.3 Unsuccessful Operation	26

8.3.2.4	Abnormal Conditions	26
8.3.3	X2 Setup	26
8.3.3.1	General	26
8.3.3.2	Successful Operation.....	26
8.3.3.3	Unsuccessful Operation	28
8.3.3.4	Abnormal Conditions	28
8.3.4	Reset	28
8.3.4.1	General	28
8.3.4.2	Successful Operation.....	29
8.3.4.3	Unsuccessful Operation	29
8.3.4.4	Abnormal Conditions	29
8.3.5	eNB Configuration Update	29
8.3.5.1	General	29
8.3.5.2	Successful Operation.....	29
8.3.5.3	Unsuccessful Operation	31
8.3.5.4	Abnormal Conditions	32
8.3.6	Resource Status Reporting Initiation	32
8.3.6.1	General	32
8.3.6.2	Successful Operation.....	32
8.3.6.3	Unsuccessful Operation	33
8.3.6.4	Abnormal Conditions	34
8.3.7	Resource Status Reporting.....	34
8.3.7.1	General	34
8.3.7.2	Successful Operation.....	35
8.3.7.3	Unsuccessful Operation	35
8.3.7.4	Abnormal Conditions	35
8.3.8	Mobility Settings Change	35
8.3.8.1	General	35
8.3.8.2	Successful Operation.....	36
8.3.8.3	Unsuccessful Operation	36
8.3.8.4	Abnormal Conditions	36
8.3.9	Radio Link Failure Indication	36
8.3.9.1	General	36
8.3.9.2	Successful Operation.....	37
8.3.9.3	Unsuccessful Operation	37
8.3.9.4	Abnormal Conditions	37
8.3.10	Handover Report.....	37
8.3.10.1	General	37
8.3.10.2	Successful Operation.....	38
8.3.10.3	Unsuccessful Operation	38
8.3.10.4	Abnormal Conditions	38
8.3.11	Cell Activation.....	38
8.3.11.1	General	38
8.3.11.2	Successful Operation.....	39
8.3.11.3	Unsuccessful Operation	39
8.3.11.4	Abnormal Conditions	39
8.3.12	X2 Removal	39
8.3.12.1	General	39
8.3.12.2	Successful Operation.....	40
8.3.12.3	Unsuccessful Operation	40
8.3.12.4	Abnormal Conditions	40
8.3.13	Retrieve UE Context.....	40
8.3.13.1	General	40
8.3.13.2	Successful Operation.....	41
8.3.13.3	Unsuccessful Operation	42
8.3.13.4	Abnormal Conditions	42
8.4	X2 Release.....	42
8.4.1	General.....	42
8.4.2	Successful Operation	42
8.4.3	Unsuccessful Operation	42
8.4.4	Abnormal Condition	42
8.5	X2AP Message Transfer	43

8.5.1	General.....	43
8.5.2	Successful Operation.....	43
8.5.3	Unsuccessful Operation.....	43
8.5.4	Abnormal Condition.....	43
8.6	Procedures for Dual Connectivity.....	43
8.6.1	SeNB Addition Preparation.....	43
8.6.1.1	General.....	43
8.6.1.2	Successful Operation.....	44
8.6.1.3	Unsuccessful Operation.....	45
8.6.1.4	Abnormal Conditions.....	45
8.6.2	SeNB Reconfiguration Completion.....	46
8.6.2.1	General.....	46
8.6.2.2	Successful Operation.....	46
8.6.2.3	Abnormal Conditions.....	46
8.6.3	MeNB initiated SeNB Modification Preparation.....	47
8.6.3.1	General.....	47
8.6.3.2	Successful Operation.....	47
8.6.3.3	Unsuccessful Operation.....	49
8.6.3.4	Abnormal Conditions.....	49
8.6.4	SeNB initiated SeNB Modification.....	50
8.6.4.1	General.....	50
8.6.4.2	Successful Operation.....	50
8.6.4.3	Unsuccessful Operation.....	51
8.6.4.4	Abnormal Conditions.....	51
8.6.5	MeNB initiated SeNB Release.....	52
8.6.5.1	General.....	52
8.6.5.2	Successful Operation.....	52
8.6.5.3	Unsuccessful Operation.....	52
8.6.5.4	Abnormal Conditions.....	52
8.6.6	SeNB initiated SeNB Release.....	53
8.6.6.1	General.....	53
8.6.6.2	Successful Operation.....	53
8.6.6.3	Unsuccessful Operation.....	53
8.6.6.4	Abnormal Conditions.....	53
8.6.7	SeNB Counter Check.....	53
8.6.7.1	General.....	53
8.6.7.2	Successful Operation.....	54
8.6.7.3	Unsuccessful Operation.....	54
8.6.7.4	Abnormal Conditions.....	54
9	Elements for X2AP Communication.....	54
9.0	General.....	54
9.1	Message Functional Definition and Content.....	54
9.1.1	Messages for Basic Mobility Procedures.....	54
9.1.1.1	HANDOVER REQUEST.....	54
9.1.1.2	HANDOVER REQUEST ACKNOWLEDGE.....	56
9.1.1.3	HANDOVER PREPARATION FAILURE.....	58
9.1.1.4	SN STATUS TRANSFER.....	58
9.1.1.5	UE CONTEXT RELEASE.....	60
9.1.1.6	HANDOVER CANCEL.....	61
9.1.2	Messages for global procedures.....	61
9.1.2.1	LOAD INFORMATION.....	61
9.1.2.2	ERROR INDICATION.....	62
9.1.2.3	X2 SETUP REQUEST.....	63
9.1.2.4	X2 SETUP RESPONSE.....	64
9.1.2.5	X2 SETUP FAILURE.....	65
9.1.2.6	RESET REQUEST.....	66
9.1.2.7	RESET RESPONSE.....	66
9.1.2.8	ENB CONFIGURATION UPDATE.....	66
9.1.2.9	ENB CONFIGURATION UPDATE ACKNOWLEDGE.....	69
9.1.2.10	ENB CONFIGURATION UPDATE FAILURE.....	69
9.1.2.11	RESOURCE STATUS REQUEST.....	69

9.1.2.12	RESOURCE STATUS RESPONSE	71
9.1.2.13	RESOURCE STATUS FAILURE	73
9.1.2.14	RESOURCE STATUS UPDATE	74
9.1.2.15	MOBILITY CHANGE REQUEST	74
9.1.2.16	MOBILITY CHANGE ACKNOWLEDGE	75
9.1.2.17	MOBILITY CHANGE FAILURE	75
9.1.2.18	RLF INDICATION	75
9.1.2.19	HANDOVER REPORT	76
9.1.2.20	CELL ACTIVATION REQUEST	77
9.1.2.21	CELL ACTIVATION RESPONSE	78
9.1.2.22	CELL ACTIVATION FAILURE	78
9.1.2.23	X2 RELEASE	78
9.1.2.24	X2AP MESSAGE TRANSFER	78
9.1.2.25	X2 REMOVAL REQUEST	79
9.1.2.26	X2 REMOVAL RESPONSE	79
9.1.2.27	X2 REMOVAL FAILURE	79
9.1.2.28	RETRIEVE UE CONTEXT REQUEST	79
9.1.2.29	RETRIEVE UE CONTEXT RESPONSE	80
9.1.2.30	RETRIEVE UE CONTEXT FAILURE	82
9.1.3	Messages for Dual Connectivity Procedures	82
9.1.3.1	SENB ADDITION REQUEST	82
9.1.3.2	SENB ADDITION REQUEST ACKNOWLEDGE	84
9.1.3.3	SENB ADDITION REQUEST REJECT	86
9.1.3.4	SENB RECONFIGURATION COMPLETE	86
9.1.3.5	SENB MODIFICATION REQUEST	87
9.1.3.6	SENB MODIFICATION REQUEST ACKNOWLEDGE	89
9.1.3.7	SENB MODIFICATION REQUEST REJECT	91
9.1.3.8	SENB MODIFICATION REQUIRED	92
9.1.3.9	SENB MODIFICATION CONFIRM	92
9.1.3.10	SENB MODIFICATION REFUSE	93
9.1.3.11	SENB RELEASE REQUEST	94
9.1.3.12	SENB RELEASE REQUIRED	94
9.1.3.13	SENB RELEASE CONFIRM	95
9.1.3.14	SENB COUNTER CHECK REQUEST	96
9.2	Information Element definitions	97
9.2.0	General	97
9.2.1	GTP Tunnel Endpoint	97
9.2.2	Trace Activation	98
9.2.3	Handover Restriction List	98
9.2.4	PLMN Identity	99
9.2.5	DL Forwarding	100
9.2.6	Cause	100
9.2.7	Criticality Diagnostics	105
9.2.8	Served Cell Information	106
9.2.9	E-RAB Level QoS Parameters	109
9.2.10	GBR QoS Information	110
9.2.11	Bit Rate	110
9.2.12	UE Aggregate Maximum Bit Rate	111
9.2.13	Message Type	111
9.2.14	E-CGI	111
9.2.15	COUNT Value	111
9.2.16	GUMMEI	112
9.2.17	UL Interference Overload Indication	112
9.2.18	UL High Interference Indication	112
9.2.19	Relative Narrowband Tx Power (RNTP)	112
9.2.20	GU Group Id	115
9.2.21	Location Reporting Information	115
9.2.22	Global eNB ID	115
9.2.23	E-RAB ID	115
9.2.24	eNB UE X2AP ID	116
9.2.25	Subscriber Profile ID for RAT/Frequency priority	116
9.2.26	EARFCN	116

9.2.27	Transmission Bandwidth	116
9.2.28	E-RAB List	116
9.2.29	UE Security Capabilities	117
9.2.30	AS Security Information	117
9.2.31	Allocation and Retention Priority	118
9.2.32	Time To Wait	118
9.2.33	SRVCC Operation Possible	119
9.2.34	Hardware Load Indicator	119
9.2.35	S1 TNL Load Indicator	119
9.2.36	Load Indicator	119
9.2.37	Radio Resource Status	119
9.2.38	UE History Information	119
9.2.39	Last Visited Cell Information	120
9.2.40	Last Visited E-UTRAN Cell Information	120
9.2.41	Last Visited GERAN Cell Information	121
9.2.42	Cell Type	121
9.2.43	Number of Antenna Ports	121
9.2.44	Composite Available Capacity Group	121
9.2.45	Composite Available Capacity	121
9.2.46	Cell Capacity Class Value	122
9.2.47	Capacity Value	122
9.2.48	Mobility Parameters Information	122
9.2.49	Mobility Parameters Modification Range	122
9.2.50	PRACH Configuration	123
9.2.51	Subframe Allocation	123
9.2.52	CSG Membership Status	123
9.2.53	CSG ID	123
9.2.54	ABS Information	124
9.2.55	Invoke Indication	126
9.2.56	MDT Configuration	126
9.2.57	Void	129
9.2.58	ABS Status	129
9.2.59	Management Based MDT Allowed	130
9.2.60	MultibandInfoList	130
9.2.61	M3 Configuration	130
9.2.62	M4 Configuration	130
9.2.63	M5 Configuration	130
9.2.64	MDT PLMN List	131
9.2.65	EARFCN Extension	131
9.2.66	COUNT Value Extended	131
9.2.67	Extended UL Interference Overload Info	131
9.2.68	RNL Header	132
9.2.69	Masked IMEISV	132
9.2.70	Expected UE Behaviour	133
9.2.71	Expected UE Activity Behaviour	133
9.2.72	SeNB Security Key	133
9.2.73	SCG Change Indication	134
9.2.74	CoMP Information	134
9.2.75	CoMP Hypothesis Set	134
9.2.76	RSRP Measurement Report List	135
9.2.77	Dynamic DL transmission information	136
9.2.78	ProSe Authorized	136
9.2.79	CSI Report	136
9.2.80	Wideband CQI	137
9.2.81	Subband CQI	137
9.2.82	COUNT Value for PDCP SN Length 18	138
9.2.83	LHN ID	138
9.2.84	Correlation ID	138
9.2.85	UE Context Kept Indicator	138
9.2.86	eNB UE X2AP ID Extension	139
9.2.87	M6 Configuration	139
9.2.88	M7 Configuration	139

9.2.89	Tunnel Information	139
9.2.90	X2 Benefit Value	140
9.2.91	Resume ID	140
9.2.92	Bearer Type	140
9.2.93	V2X Services Authorized	141
9.2.94	Offset of NB-IoT Channel Number to EARFCN	141
9.2.95	WT ID	141
9.2.96	WT UE XwAP ID	141
9.2.97	UE Sidelink Aggregate Maximum Bit Rate	141
9.3	Message and Information Element Abstract Syntax (with ASN.1)	142
9.3.1	General	142
9.3.2	Usage of Private Message Mechanism for Non-standard Use	142
9.3.3	Elementary Procedure Definitions	142
9.3.4	PDU Definitions	150
9.3.5	Information Element definitions	190
9.3.6	Common definitions	227
9.3.7	Constant definitions	228
9.3.8	Container definitions	233
9.4	Message transfer syntax	238
9.5	Timers	238
10	Handling of unknown, unforeseen and erroneous protocol data	238
Annex A (informative):	Change history	239
History		244

PREVIEW
STANDARD
ETSI
 (standards.iteh.ai)
 Full standard:
<https://standards.iteh.ai/catalog/standards/sist/6fd67925-67e5-4f57-9d5a-ae27c9d6b2b1/etsi-ts-136-423-v14.8.0-2019-10>

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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/6fd67925-67ea-4f57-9d5a-ae27c9d6b2b1/etsi-ts-136-423-v14.8.0-2019-10>

1 Scope

The present document specifies the radio network layer signalling procedures of the control plane between eNBs in E-UTRAN. X2AP supports the functions of X2 interface by signalling procedures defined in this document. X2AP is developed in accordance to the general principles stated in TS 36.401 [2] and TS 36.420 [3].

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 36.401: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Architecture Description".
- [3] 3GPP TS 36.420: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 General Aspects and Principles".
- [4] 3GPP TS 36.413: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)".
- [5] ITU-T Recommendation X.691 (2002-07): "Information technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER) ".
- [6] 3GPP TS 32.422: "Telecommunication Management; Subscriber and Equipment Trace; Trace Control and Configuration Management".
- [7] 3GPP TS 32.421: "Telecommunication Management; Subscriber and Equipment Trace; Trace concepts and requirements".
- [8] 3GPP TS 36.424: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 data transport".
- [9] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRAN); Radio Resource Control (RRC) Protocol Specification".
- [10] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation".
- [11] 3GPP TS 36.213: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures ".
- [12] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".
- [13] 3GPP TS 23.203: "Policy and charging control architecture".
- [14] 3GPP TS 24.301: "Non-Access-Stratum (NAS) protocol for Evolved Packet System; Stage 3".
- [15] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA), Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; stage 2".
- [16] 3GPP TS 36.104: "Base Station (BS) radio transmission and reception ".

- [17] Void.
- [18] 3GPP TS 33.401: "Security architecture".
- [19] 3GPP TS 36.414: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 data transport".
- [20] 3GPP TS 23.216: "Single Radio Voice Call Continuity (SRVCC)".
- [21] 3GPP TS 36.422: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 signaling transport".
- [22] 3GPP TS 36.314: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Layer 2 - Measurements".
- [23] Void.
- [24] 3GPP TS 25.413: "UTRAN Iu interface RANAP signalling"
- [25] 3GPP TS 37.320: "Universal Terrestrial Radio Access (UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRA); Radio measurement collection for Minimization of Drive Tests (MDT); Overall description; Stage 2".
- [26] 3GPP TS 29.281: "General Packet Radio Service (GPRS); Tunnelling Protocol User Plane (GTPv1-U)".
- [27] ITU-T Recommendation X.680 (2002-07): "Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation".
- [28] ITU-T Recommendation X.681 (2002-07): "Information technology – Abstract Syntax Notation One (ASN.1): Information object specification".
- [29] 3GPP TS 23.003: "Technical Specification Group Core Network and Terminals; Numbering, addressing and identification".
- [30] 3GPP TR 25.921, (version.7.0.0): "Guidelines and principles for protocol description and error handling".

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].

Elementary Procedure: X2AP protocol consists of Elementary Procedures (EPs). An X2AP Elementary Procedure is a unit of interaction between two eNBs. An EP consists of an initiating message and possibly a response message. Two kinds of EPs are used:

- **Class 1:** Elementary Procedures with response (success or failure),
- **Class 2:** Elementary Procedures without response.

E-RAB: Defined in TS 36.401 [2].

CSG Cell: as defined in TS 36.300 [15].

Dual Connectivity: as defined in TS 36.300 [15].

Hybrid cell: as defined in TS 36.300 [15].

Master eNB: as defined in TS 36.300 [15].

Secondary Cell Group: as defined in TS 36.300 [15].

Secondary eNB: as defined in TS 36.300 [15].

3.2 Symbols

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

<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].

ABS	Almost Blank Subframe
BBF	Broadband Forum
BL	Bandwidth reduced Low complexity
CCO	Cell Change Order
CE	Coverage Enhancement
CoMP	Coordinated Multi Point
DC	Dual Connectivity
DL	Downlink
EARFCN	E-UTRA Absolute Radio Frequency Channel Number
E-CID	Enhanced Cell-ID (positioning method)
eNB	E-UTRAN NodeB
EP	Elementary Procedure
EPC	Evolved Packet Core
E-RAB	E-UTRAN Radio Access Bearer
E-UTRAN	Evolved UTRAN
GNSS	Global Navigation Satellite System
GUMMEI	Globally Unique MME Identifier
HFN	Hyper Frame Number
IE	Information Element
L-GW	Local GateWay
LWA	LTE-WLAN Aggregation
MCG	Master Cell Group
MDT	Minimization of Drive Tests
MeNB	Master eNB
MME	Mobility Management Entity
NAICS	Network-Assisted Interference Cancellation and Suppression
PDCP	Packet Data Convergence Protocol
PLMN	Public Land Mobile Network
ProSe	Proximity Service
SCG	Secondary Cell Group
S-GW	Serving Gateway
SeNB	Secondary eNB
SIPTO	Selected IP Traffic Offload
SIPTO@LN	Selected IP Traffic Offload at the Local Network
SN	Sequence Number
TAC	Tracking Area Code
UE	User Equipment
UL	Uplink
V2X	Vehicle-to-Everything
WLAN	Wireless Local Area Network
WT	WLAN Termination