ETSI TS 125 420 V14.0.0 (2017-04)

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/3db18539-d05b-4310-82a2-649fbcf6da57/etsi-ts-125-420-v14.0.0-2017-04

Universal Mobile Telecommunications System (UMTS);
UTRAN Iur interface general aspects and principles
(3GPP TS 25.420 version 14.0.0 Release 14)

3GPP
A GLOBAL INITIATIVE

Reference
RTS/TSGR-0325420ve00

Keywords
UMTS

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/3dc18539-d65b-4310-82a2-609fbcf6da57/etsi-ts-125-420-v14.0.0-2017-04

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 only prevailing document is the print of the Portable Document Format (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
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.

© European Telecommunications Standards Institute 2017.
All rights reserved.

DECT™, **PLUGTESTS**™, **UMTS**™ and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.
3GPP™ and **LTE**™ are Trade Marks of ETSI 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 (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.

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.

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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/3db18539-d05b-4310-82a2-649fc5f6da57/ts-125-420-v14.0.0-2017-04

Contents

Intellectual Property Rights 2

Foreword 2

Modal verbs terminology 2

Foreword 5

1 Scope 6

2 References 6

3 Definitions and abbreviations 7
3.1 Definitions 7
3.2 Abbreviations 7
3.2 Specification Notations 8

4 General Aspects 9
4.1 Introduction 9
4.2 Iur Interface General Principles 9
4.3 Iur Interface Specification Objectives 9
4.3.1 General 9
4.3.2 Addressing of RNSs over the Iur Interface 9
4.4 Iur Interface Capabilities 10
4.4.1 Radio application related signalling 10
4.4.2 Iub/Iur DCH data streams 10
4.4.3 Iur RACH data streams 10
4.4.4 Iur DSCH data streams [TDD] 10
4.4.5 Iur USCH data streams [TDD] 10
4.4.6 Iur FACH data streams 10
4.4.7 Iur HS-DSCH data streams 10
4.4.8 Iub/Iur E-DCH data streams 10
4.4.9 Iur IuUP data streams for CS data forwarding 11
4.5 Iur Interface Characteristics 11
4.5.1 Uses of SCCP 11
4.5.1.1 General 11
4.5.1.2 SCCP connection establishment 11
4.5.1.3 Establishment procedure initiated from the SRNC 11
4.5.1.3A Establishment procedure initiated from an RNC requesting common measurements or information 12
4.5.1.4 SCCP connection release 13
4.5.1.5 General SCCP Abnormal Conditions 13
4.5.1.5.1 SCCP bearer failure 13
4.5.1.5.2 SCCP connection failure 13
4.5.2 SCCP Addressing Scheme 14
4.5.2.1 General 14

5 Functions of the I_{ur} Interface Protocols 14
5.1 Functional List 14
5.2 Functional Split over Iur 15
5.2.1 Combining/Splitting 15
5.2.2 Control of Combining/Splitting Topology 15
5.2.3 Handling of DRNS Hardware Resources 15
5.2.4 Allocation of Physical Channels 15
5.2.5 UpLink Power Control 15
5.2.6 Down-Link Power Control 15
5.2.7 Admission Control 16
5.2.8 Radio Protocol Functional Split 16
5.2.9 MBMS Bearer Type Control 16
5.2.10 MBSFN MCCH Information Control 16

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/3db18539-d05b-4310-82a2-e49fbcf6da57/etsi-ts-125-420-v14.0.0-2017-04

6 I_{ur} Interface Protocols 16
6.1 General 16
6.2 Radio Signalling Protocols 17
6.2.1 RNSAP Protocol 17
6.3 User Plane Frame Protocols 17
6.3.1 Iub/Iur DCH Frame Protocol 17
6.3.2 Iur DSCH Frame Protocol [TDD] 18
6.3.3 Iur USCH Frame Protocol [TDD] 18
6.3.4 Iur RACH Frame Protocol 18
6.3.5 Iur FACH Frame Protocol 18
6.3.6 Iur HS-DSCH Frame Protocol 18
6.3.7 Iur E-DCH Frame Protocol 19
6.4 Mapping of Frame Protocols onto transport bearers 19

7 DRNS logical Model over I_{ur} 19
7.1 Overview 19
7.2 Logical Model Elements 20
7.2.1 Radio Link 20
7.2.2 Cell 20
7.2.3 Iur DCH Data Port 20
7.2.4 Iur DSCH Data Port [TDD] 21
7.2.5 Iur USCH Data Port [TDD] 21
7.2.6 Iur RACH/FACH Data Port 21
7.2.7 Iur Control Port 21
7.2.8 Iur HS-DSCH Data Port 21
7.2.9 Iur E-DCH Data Port 21

8 I_{ur} Interface Protocol Structure 21

9 Other I_{ur} Interface Specifications 22
9.1 UTRAN Iur Interface: Layer 1 (TS 25.421) 22
9.2 UTRAN Iur Interface: Signalling Transport (TS 25.422) 22
9.3 UTRAN Iur Interface: RNSAP Specification (TS 25.423) 22
9.4 UTRAN Iur Interface: Data Transport and Transport Signalling for Common Transport Channel Data Streams (TS 25.424) 22
9.5 UTRAN Iur Interface: User Plane Protocols for Common Transport Channel Data Streams (TS 25.425) 23
9.6 UTRAN Iur & Iub Interface: Data Transport and Transport Signalling for DCH Data Streams (TS 25.426) 23
9.7 UTRAN Iur & Iub Interface: User Plane Protocols for DCH Data Streams (TS 25.427) 23
9.8 Summary of UTRAN Iur Interface Technical Specifications 23

Annex A (informative): Change History 24

History 25

iTeh STANDARD PREVIEW
(standards.iteh.ai)
https://standards.iteh.ai/catalog/standards/sist/3db18539-0d5f-4310-82c3-649cc4d5e7f7/etsi-ts-125-420-v14.0.0-2017-04

Foreword

This Technical Specification (TS) 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/3db16f39-d05b-4310-82a2-649fbcf6da57/etsi-ts-125-420-v14.0.0-2017-04

1 Scope

The present document is an introduction to the TSG RAN TS 25.42x series of UMTS Technical Specifications that define the Iur Interface. It is a logical interface for the interconnection of two Radio Network Controller (RNC) components of the UMTS Terrestrial Radio Access Network (UTRAN) for the UMTS system.

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 TS 25.427: "UTRAN Iub/Iur Interface User Plane Protocol for DCH Data Streams".

[2] 3GPP TS 25.425: "UTRAN Iur Interface: User Plane Protocols for Common Transport Channel Data Streams".

[3] 3GPP TS 25.421: "UTRAN Iur Interface: Layer 1".

[4] 3GPP TS 25.422: "UTRAN Iur Interface: Signalling Transport".

[5] 3GPP TS 25.423: "UTRAN Iur Interface: Radio Network Subsystem Application Part (RNSAP) signalling".

[6] 3GPP TS 25.424: "UTRAN Iur Interface: Data Transport & Transport Signalling ".

[7] Void

[8] 3GPP TS 25.426: "UTRAN Iur & Iub Interface: Data Transport & Transport Signalling for DCH Data Streams".

[9] ITU-T Recommendation Q.711 (1996-07): "Functional description of the signalling connection control part".

[10] ITU-T Recommendation Q.712 (1996-07): "Definition and function of signalling connection control part messages".

[11] ITU-T Recommendation Q.713 (1996-07): "Signalling connection control part formats and codes".

[12] ITU-T Recommendation Q.714 (1996-07): "Signalling connection control part procedures".

[13] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[14] Void

[15] Void

[16] Void

[17] 3GPP TR 43.930: "Iur-g interface; Stage 2".

[18] 3GPP TS 25.346: "Introduction of the Multimedia Broadcast/Multicast Service (MBMS) in the Radio Access Network (RAN); Stage 2".

[19] 3GPP TS 25.319: "Enhanced Uplink; Overall description; Stage 2".

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/3db18739-d05b-4310-82a2-6e9fbcf6da57/etsi-ts-125-420-v14-0.0-2017-04

[20] 3GPP TS 25.415: "UTRAN Iu interface user plane protocols"

3 Definitions and abbreviations

3.1 Definitions

None.

3.2 Abbreviations

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

AAL2	ATM Adaptation Layer type 2
AAL5	ATM Adaptation Layer type 5
ALCAP	Access Link Control Application Part
ATM	Asynchronous Transfer Mode
BSS	Base Station Subsystem
CRNC	Controlling RNC
CTP	Common Transport Protocol
DCH	Dedicated Transport Channel
DL	Downlink
DPCH	Dedicated Physical Channel
DRNC	Drift Radio Network Controller
DRNS	Drift Radio Network Subsystem
DSCH	Downlink Shared Channel
E-DCH	Enhanced Dedicated Channel
EDGE	Enhanced Data rates for GSM Evolution
FACH	Forward Access Channel
F-DPCH	Fractional DPCH
FFS	For Further Study
GERAN	GSM/EDGE Radio Access Network
GSM	Global System for Mobile communications
GT	Global Title
HARQ	Hybrid Automatic Repeat Request
HS-DSCH	High Speed Downlink Shared Channel
IP	Internet Protocol
MAC	Medium Access Control
MBMS	Multimedia Broadcast Multicast Service
MRNC	MBMS Master RNC
MTP3-B	Message Transfer Part level 3 (for Q.2140)
PLMN	Public Land Mobile Network
PTM	Point To Multipoint
PTP	Point To Point
QoS	Quality of Service
RACH	Random Access Channel
RF	Radio Frequency
RNC	Radio Network Controller
RNS	Radio Network Subsystem
RNSAP	Radio Network Subsystem Application Part
RRC	Radio Resource Control
SCCP	Signalling Connection Control Part
SPC	Signalling Point Code
SRNC	Serving Radio Network Controller
SRNS	Serving Radio Network Subsystem
SS7	Signalling System Nº 7
SSCF-NNI	Service Specific Co-ordination Function – Network Node Interface
SSCOP	Service Specific Connection Oriented Protocol
SSN	Sub-System Number

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/3db18539-d8f8-4310-a2a4-649fbcf6da57/etsi-ts-125-420-v14.0.0-2017-04

STC	Signalling Transport Converter
UDP	User Datagram Protocol
UE	User Equipment
UL	Up-link
UMTS	Universal Mobile Telecommunication System
URA	UTRAN Registration Area
USCH	Uplink Shared Channel
UTRAN	UMTS Terrestrial Radio Access Network

3.2 Specification Notations

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

[FDD] This tagging of a word indicates that the word preceding the tag "[FDD]" applies only to FDD. This tagging of a heading indicates that the heading preceding the tag "[FDD]" and the section following the heading applies only to FDD.

[TDD] This tagging of a word indicates that the word preceding the tag "[TDD]" applies only to TDD, including 7.68 Mcps TDD, 3.84Mcps TDD and 1.28Mcps TDD. This tagging of a heading indicates that the heading preceding the tag "[TDD]" and the section following the heading applies only to TDD, including 7.68 Mcps TDD, 3.84Mcps TDD and 1.28Mcps TDD.

[3.84Mcps TDD] This tagging of a word indicates that the word preceding the tag "[3.84Mcps TDD]" applies only to 3.84Mcps TDD. This tagging of a heading indicates that the heading preceding the tag "[3.84Mcps TDD]" and the section following the heading applies only to 3.84Mcps TDD.

[1.28Mcps TDD] This tagging of a word indicates that the word preceding the tag "[1.28Mcps TDD]" applies only to 1.28Mcps TDD. This tagging of a heading indicates that the heading preceding the tag "[1.28Mcps TDD]" and the section following the heading applies only to 1.28Mcps TDD.

[7.68Mcps TDD] This tagging of a word indicates that the word preceding the tag "[7.68Mcps TDD]" applies only to 7.68Mcps TDD. This tagging of a heading indicates that the heading preceding the tag "[7.68Mcps TDD]" and the section following the heading applies only to 7.68Mcps TDD.

[FDD - …] This tagging indicates that the enclosed text following the "[FDD - " applies only to FDD. Multiple sequential paragraphs applying only to FDD are enclosed separately to enable insertion of TDD specific (or common) paragraphs between the FDD specific paragraphs.

[TDD - …] This tagging indicates that the enclosed text following the "[TDD - " applies only to TDD including 7.68 Mcps TDD, 3.84Mcps TDD and 1.28Mcps TDD. Multiple sequential paragraphs applying only to TDD are enclosed separately to enable insertion of FDD specific (or common) paragraphs between the TDD specific paragraphs.

[3.84Mcps TDD - …] This tagging indicates that the enclosed text following the "[3.84Mcps TDD - " applies only to 3.84Mcps TDD. Multiple sequential paragraphs applying only to 3.84Mcps TDD are enclosed separately to enable insertion of FDD and TDD specific (or common) paragraphs between the 3.84Mcps TDD specific paragraphs.

[1.28Mcps TDD - …] This tagging indicates that the enclosed text following the "[1.28Mcps TDD – " applies only to 1.28Mcps TDD. Multiple sequential paragraphs applying only to 1.28Mcps TDD are enclosed separately to enable insertion of FDD and TDD specific (or common) paragraphs between the 1.28Mcps TDD specific paragraphs.

[7.68Mcps TDD - …] This tagging indicates that the enclosed text following the "[7.68Mcps TDD - " applies only to 7.68Mcps TDD. Multiple sequential paragraphs applying only to 7.68Mcps TDD are enclosed separately to enable insertion of FDD and TDD specific (or common) paragraphs between the 7.68Mcps TDD specific paragraphs.

iTeh STANDARD PREVIEW (standards.iteh.ai) Full standard: https://standards.iteh.ai/catalog/standards/sist/38b18539-d05b-4310-82a3-d49fbcf6da57/etsi-ts-125-420-v14.0.0-2017-04

Procedure	When referring to a procedure in the specification, the Procedure Name is written with the first letters in each word in upper case characters followed by the word "procedure", e.g. RNSAP Basic Mobility Procedures.
Message	When referring to a message in the specification, the MESSAGE NAME is written with all letters in upper case characters followed by the word "message", e.g. RADIO LINK SETUP REQUEST message.
Frame	When referring to a control or data frame in the specification, the CONTROL/DATA FRAME NAME is written with all letters in upper case characters followed by the words "control/data frame", e.g. DCH data frame.

4 General Aspects

4.1 Introduction

The logical connection that exists between any two RNCs within the UTRAN is referred to as the Iur interface.

4.2 Iur Interface General Principles

The general principles for the specification of the Iur interface are as follows:

- The Iur interface should be open;
- The Iur interface shall support the exchange of signalling information between two RNCs, in addition the interface may need to support one or more Iur data streams;
- From a logical standpoint, the Iur is a point-to-point interface between two RNCs within the UTRAN. A point-to-point logical interface should be feasible even in the absence of a physical direct connection between the two RNCs.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/3db18539-d05b-4310-8a2-649fbcfdda57/etsi-ts-125-420-v14.0.0-2017-04

4.3 Iur Interface Specification Objectives

4.3.1 General

The I_{ur} interface specifications shall facilitate the following:

- inter-connection of RNCs supplied by different manufacturers;
- support of continuation between RNSs of the UTRAN services offered via the Iu interface;
- separation of I_{ur} interface Radio Network functionality and Transport Network functionality to facilitate introduction of future technology.

4.3.2 Addressing of RNSs over the Iur Interface

- For an RRC connection using a dedicated channel or for a UE using F-DPCH in the downlink, the Iur standard shall allow the addition / deletion of radio links supported by cells belonging to any RNS within the PLMN.
- The specification of the Iur interface shall allow an RNC to address any other RNC within the PLMN for establishing a signalling bearer over Iur.
- The specification of the Iur interface shall allow an RNC to address any other RNC within the PLMN for establishing user data bearers for Iur data streams.

RNSAP shall allow different kinds of addressing schemes to be used for the signalling bearer.