

# ETSI TS 129 238 V13.1.0 (2016-04)



**Digital cellular telecommunications system (Phase 2+) (GSM);  
Universal Mobile Telecommunications System (UMTS);  
LTE;  
Interconnection Border Control Functions (IBCF)  
- Transition Gateway (TrGW) interface, Ix interface;  
Stage 3  
(3GPP TS 29.238 version 13.1.0 Release 13)**



---

Reference

RTS/TSGC-0429238vd10

---

Keywords

GSM,LTE,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

---

**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 2016.  
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.

# Contents

Intellectual Property Rights .....	2
Foreword.....	2
Modal verbs terminology.....	2
Foreword.....	6
1 Scope .....	7
2 References .....	8
3 Definitions, symbols and abbreviations .....	10
3.1 Definitions .....	10
3.2 Symbols.....	11
3.3 Abbreviations .....	11
4 Applicability.....	12
4.1 Architecture.....	12
5 Profile Description .....	12
5.1 Profile Identification.....	12
5.2 Summary .....	12
5.3 Gateway Control Protocol Version .....	13
5.4 Connection model.....	13
5.5 Context attributes .....	13
5.6 Terminations.....	14
5.6.1 Termination names .....	14
5.6.1.1 IP Termination .....	14
5.6.1.1.1 ABNF Coding Overview and prose specification .....	14
5.6.1.1.2 ASN.1 Coding Overview and prose specification .....	15
5.6.2 Multiplexed terminations .....	15
5.7 Descriptors .....	15
5.7.1 TerminationState Descriptor .....	15
5.7.2 Stream Descriptor .....	16
5.7.2.0 General .....	16
5.7.2.1 LocalControl Descriptor.....	16
5.7.3 Events descriptor .....	17
5.7.4 EventBuffer descriptor.....	18
5.7.5 Signals descriptor.....	18
5.7.6 DigitMap descriptor .....	19
5.7.7 Statistics descriptor .....	19
5.7.8 ObservedEvents descriptor .....	19
5.7.9 Topology descriptor .....	20
5.7.10 Error descriptor .....	20
5.8 Command API.....	23
5.8.1 Add .....	23
5.8.2 Modify .....	23
5.8.3 Subtract.....	23
5.8.4 Move.....	24
5.8.5 AuditValue.....	24
5.8.6 AuditCapabilities .....	24
5.8.7 Notify.....	25
5.8.8 ServiceChange .....	25
5.8.9 Manipulating and auditing context attributes.....	27
5.9 Generic command syntax and encoding .....	27
5.10 Transactions .....	27
5.11 Messages .....	28
5.12 Transport .....	28
5.13 Security .....	29

5.14	Packages .....	29
5.14.1	Mandatory Packages .....	29
5.14.2	Optional Packages .....	30
5.14.3	Package usage information .....	31
5.14.3.1	Generic (g) .....	31
5.14.3.2	Base root (root) .....	32
5.14.3.3	Differentiated Services (ds).....	33
5.14.3.4	Gate Management (gm).....	34
5.14.3.5	Traffic management (tman).....	35
5.14.3.6	Inactivity Timer (it).....	36
5.14.3.7	IP Domain Connection (ipdc) .....	36
5.14.3.8	Media Gateway Overload Control Package (ocp).....	37
5.14.3.9	Hanging Termination Detection (hangterm) .....	37
5.14.3.10	Media Gateway Resource Congestion handling Package (chp).....	38
5.14.3.11	IP Realm Availability (ipra).....	38
5.14.3.12	3G Interface Type package (threegint).....	39
5.14.3.13	RTCP Handling Package (rtcph).....	39
5.14.3.14	Application Data Inactivity Detection (adid) .....	40
5.14.3.15	Explicit Congestion Notification for RTP-over-UDP Support (ecnrous).....	41
5.14.3.16	MG Act-as STUN Server (mgastuns) .....	43
5.14.3.17	Originate STUN Continuity Check (ostuncc) .....	44
5.14.3.18	MG located Bearer Level ALG (mgbalg) .....	45
5.15	Mandatory support of SDP and Annex C information elements .....	46
5.16	Optional support of SDP and Annex C information elements.....	50
5.17	Procedures .....	53
5.17.1	Formats and Codes .....	53
5.17.2	Call Related Procedures.....	58
5.17.2.1	General .....	58
5.17.2.2	Reserve TrGW Connection Point.....	58
5.17.2.3	Configure TrGW Connection Point .....	63
5.17.2.4	Reserve and Configure TrGW Connection Point.....	70
5.17.2.5	Release TrGW Termination .....	79
5.17.2.6	Termination Heartbeat Indication .....	79
5.17.2.7	IP Bearer Released .....	79
5.17.2.8	Media Inactivity Notification .....	80
5.17.2.9	Change Through Connection .....	80
5.17.2.10	ECN FailureIndication .....	81
5.17.2.11	Change Flow Direction .....	81
5.17.2.12	ICE Connectivity Check Result Notification .....	82
5.17.2.13	ICE New Peer Reflexive Candidate Notification.....	82
5.17.3	Non-Call Related Procedures.....	82
5.17.3.1	General .....	82
5.17.3.2	TrGW Out Of Service .....	83
5.17.3.3	TrGW Communication Up.....	84
5.17.3.4	TrGW Restoration.....	84
5.17.3.5	TrGW Register .....	84
5.17.3.6	TrGW Re-Register .....	85
5.17.3.7	IBCF Ordered Re-register .....	86
5.17.3.8	IBCF Restoration .....	86
5.17.3.9	IBCF Out of Service.....	87
5.17.3.10	Audit Value .....	87
5.17.3.11	Command Rejected .....	89
5.17.3.12	TrGW Capability Change .....	89
5.17.3.13	TrGW Resource Congestion Handling – Activate .....	89
5.17.3.14	TrGW Resource Congestion Handling – Indication .....	90
5.17.3.15	Inactivity Timeout – Activation .....	90
5.17.3.16	Inactivity Timeout – Indication.....	91
5.17.3.17	Realm Availability Change – Activation .....	91
5.17.3.18	Realm Availability Change – Indication .....	91
5.17.3.19	Termination Out Of Service.....	92
<b>Annex A (informative):</b>	<b>Illustration of Gate/Pinhole Concept .....</b>	<b>93</b>

A.1 General .....93

A.2 Relationships between gates and H.248 Streams .....93

**Annex B (informative): Void .....94**

**Annex C (informative): Change history .....95**

History .....97

---

# Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> 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 describes the protocol to be used on the Interconnection Border Control Function (IBCF) – Transition Gateway (TrGW) interface and the CS-IBCF – CS-TrGW interface. The basis for this protocol is the H.248 protocol as specified in ITU-T. The Profile provides MG control function for IMS and CS Border Control. The IMS architecture is described in 3GPP TS 23.228 [2]. The underlying reference model and stage 2 information is described in Annex I of 3GPP TS 23.228 [2] and in 3GPP TS 29.162 [18]. The CS architecture is described in Annex A of 3GPP TS 29.235 [17].

This specification describes the application of H.248 Ix profile for both Ix and CS-Ix interfaces (see Figure 1.1 and Figure 1.2). Required extensions use the H.248 standard extension mechanism. In addition certain aspects of the base protocol H.248 are not needed for this interface and thus excluded by this profile.

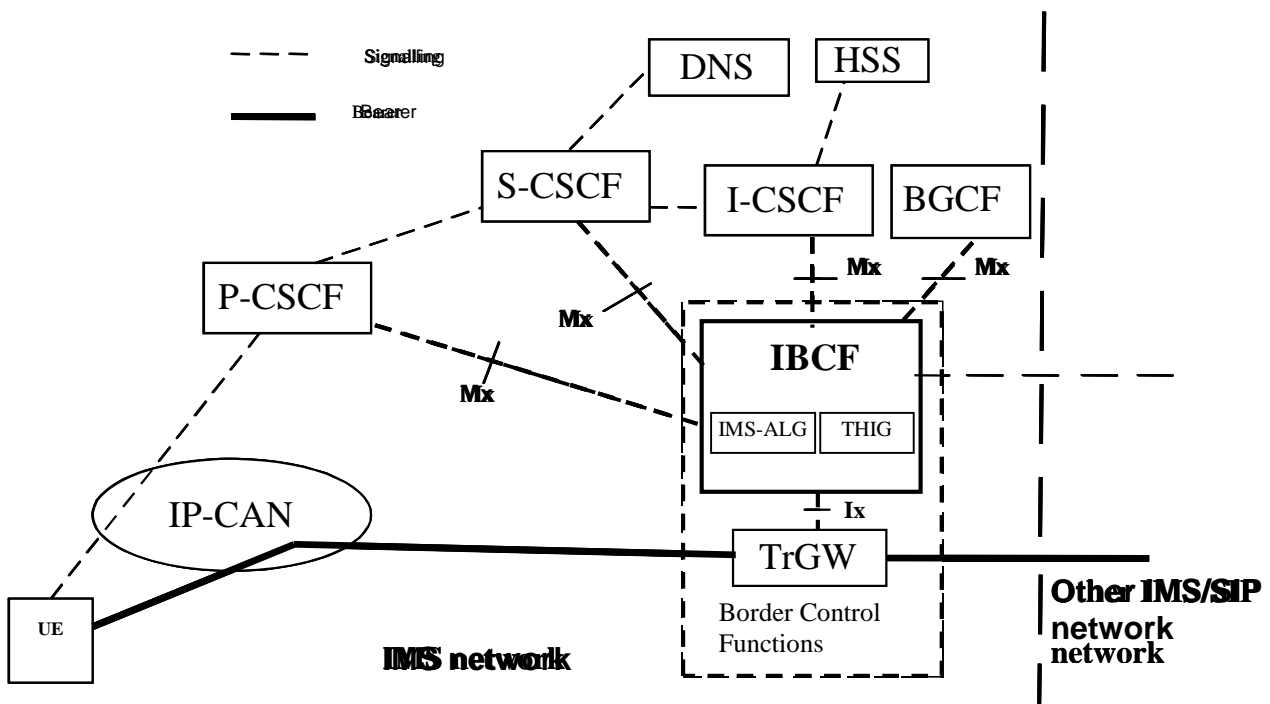


Figure 1.1: Reference model for IMS Border Control Functions

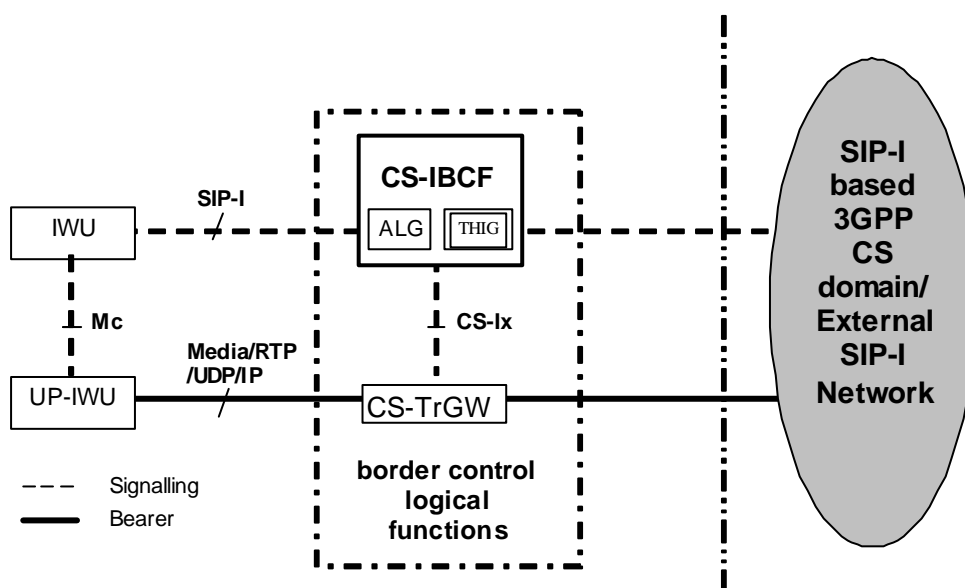


Figure 1.2: Reference model for CS Border Control Functions