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Technical Specification

**Universal Mobile Telecommunications System (UMTS);
Application of Q.1900 series to bearer-independent
Circuit Switched (CS) core network architecture;
Stage 3
(3GPP TS 29.205 version 8.1.0 Release 8)**



Reference

RTS/TSGC-0429205v810

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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
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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 describes the protocols to be used when ITU-T Q.1902 "Bearer Independent Call Control" is used as call control protocol in a 3GPP Bearer Independent CS core network 3GPP TS 23.205 [1]. The Q.1902 operates between (G)MSC servers. The BICC architecture as described in ITU-T Q.1902 [6]-[10] consists of a number of protocols. The following types of protocols are described: call control protocol, bearer control protocols and a resource control protocol for this architecture. The architecture complies with the requirements imposed by 3GPP TS 23.205 [1] and TS 23.153 [2].

The present document is valid for a 3rd generation PLMN (UMTS) complying with Release 4 and later.

Note: Q.1902 can be used in other network architectures than the one defined in 3GPP TS 23.205 [1].

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 23.205: "Bearer Independent CS Core Network – Stage 2"
- [2] 3GPP TS 23153 "Out of Band Transcoder Control - Stage 2"
- [3] 3GPP TS 29.232 "Media Gateway Controller (MGC) – Media Gateway (MGW) Interface; Stage 3"
- [4] 3GPP TS 29.414 "Core Network Nb Data Transport and Signalling Transport"
- [5] ITU-T Q.765.5: "Application Transport Mechanism"
- [6] ITU-T Q.1902.1: "Bearer Independent Call Control CS2 Functional Description"
- [7] ITU-T Q.1902.2: "Bearer Independent Call Control CS2 General Functions of Messages and Signals"
- [8] ITU-T Q.1902.3: "Bearer Independent Call Control CS2 Formats and Codes"

Editor's note: The reference above will include the amendment for "multimedia Customized Alerting Tone (CAT) service in ITU ISUP/BICC" (see http://www.3gpp.org/ftp/tsg_ct/WG4_protocollars_ex-CN4/TSGCT4_42_San_Antonio_2009_02/Docs/C4-090471.zip), but this amendment cannot be formally referenced until it is published as a standard ITU-T Q series Recommendation.

- [9] ITU-T Q.1902.4: "Bearer Independent Call Control CS2 Basic Call Procedures"
- [10] ITU-T Q.1902.5: "Exceptions to the Application Transport Mechanism in the Context of Bearer Independent Call Control"
- [11] ITU-T Q.1902. 6: 'Generic Signalling Procedures and Support of the ISDN User Part Supplementary Services with the Bearer Independent Call Control Protocol".
- [12] ITU-T Q.1950 "Call Bearer Control Protocol".

- [13] ITU-T Q.2630.1-2: "AAL type 2 signalling protocol".
- [14] ITU-T Q.1990 "BICC tunnelling control protocol".
- [15] ITU-T Q.1970 "IP Bearer Control protocol".
- [16] ITU-T Q.1912.1 "ISUP-BICC Interworking".
- [17] ITU-T Q.1912.2 "Interworking between selected Signalling System (PSTN Access DSS1, C5, R1, R2, TUP) AND THE Bearer Independent Call Control Protocol".
- [18] ITU-T Q.2150.0 "Generic Signalling Transport Service".
- [19] ITU-T Q.2150.1 "Signalling Transport Converter MTP and MTP3 B".
- [20] ITU-T Recommendation Q.2150.3 "Signalling Transport Converter on SCTP".
- [21] ITU-T H.248.4 : " Gateway Control Protocol: Transport over SCTP".
- [22] 3GPP TS 29.202: "SS7 signalling transport in core network".
- [23] ITU-T H.248.5 : " Gateway control protocol: Transport over ATM".

3 Definitions, symbols and abbreviations

3.1 Definitions

3.2 Symbols

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

Nc	Interface between the(G)MSC servers.
Mc	Interface between the server and the media gateway.
Nb	Interface between media gateways (MGW).

3.3 Abbreviations

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

BICC	Bearer Independent Call Control
MGC	Media Gateway Controller
AAL	ATM Adaptation layer
STC	Signalling Transport Converter
SCTP	Stream Control Transmission Protocol
MTP	Message Transfer Part
DSS 1	Digital Signalling System number 1
R1	Regional Signalling System 1
R2	Regional Signalling System 2
TUP	Telephony User Part
C5	CCITT signalling system number 5
M3UA	MTP3 – User Adaptation Layer

4 Protocols

Implementations providing any of the interfaces or protocols identified in the subclauses below shall implement the requirements of the specifications identified in those subclauses.

4.1 Call control protocol (Nc interface)

Q.1902.1	BICC PROTOCOL (CS2) FUNCTIONAL DESCRIPTION [6]
Q.1902.2	BICC PROTOCOL (CS2) AND SIGNALLING SYSTEM NO 7 ISUP GENERAL FUNCTIONS OF MESSAGES AND PARAMETERS [7]
Q.1902.3	BICC PROTOCOL (CS2) AND SIGNALLING SYSTEM NO 7 ISUP FORMATS AND CODES [8]
Q.1902.4	BICC BASIC CALL PROCEDURES [9]
Q.1902.5	EXCEPTIONS TO THE APM IN THE CONTEXT OF BICC AMENDMENT TO Q.765.5 FOR BICC CS2 [10]
Q.1902.6	GENERIC SIGNALLING PROCEDURES AND SUPPORT OF THE ISDN USER PART SUPPLEMENTARY SERVICES WITH THE BEARER INDEPENDENT CALL CONTROL PROTOCOL [11]

4.2 Interworking with other protocols

Q.1912.1	ISUP-BICC INTERWORKING[16]
Q.19.12.2	INTERWORKING BETWEEN SELECTED SIGNALLING SYSTEMS (PSTN ACCESS DSS1 C5 R1 R2 TUP) AND THE BEARER INDEPENDENT CALL CONTROL PROTOCOL[17]

4.3 Resource control protocol (G)MSC and MGW (Mc Interface)

3GPP TS.29232.	Media Gateway Controller (MGC) – Media Gateway (MGW) Interface;Stage 3 [3]
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4.4 Bearer control protocol between MGWs (Nb interface)

3GPP TS.29.414	IP bearer control protocol [15] , BICC tunneling protocol [14] , "AAL type 2 signalling protocol (Q.2630.1-2) [13].
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4.5 Signalling Transport

4.5.1 Call Control protocols

Q.2150.0	Generic Signalling Transport Service [18]
Q.2150.1	Signalling Transport Converter on MTP3 and MTP3b [19]
Q.2150.3	Signalling Transport Converter on SCTP. [20]
3GPP TS 29.202	SS7 signalling transport in core network . [22] Annex A: SS7 MTP3-User Adaption Layer (M3UA).

4.5.2 Resource control protocol (G)MSC and MGW (Mc Interface)

3GPP TS.29232.	Media Gateway Controller (MGC) – Media Gateway (MGW) Interface;Stage 3 [3] including H.248.4 [21] 'Transport over SCTP', H.248.5 [yy] 'Transport over ATM' , and 3GPP TS 29.202 "SS7 signalling transport in core network" [22]. Annex A: The use of M3UA in 3GPP networks.
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4.5.3 Bearer control protocol between MGWs (Nb interface)

3GPP TS.29.414	Core Network Nb Data Transport and signalling transport. [4] including ITU-T Q.2630.1-2: AAL type 2 signalling protocol [13] and the tunnel-up and tunnel-down procedure in 29.232 [31]
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Annex A (informative): Support of Customized Alerting Tone (CAT) service in ITU ISUP/BICC

The following ITU ISUP/BICC protocol evolutions are specified here as required by 3GPP BICC and SIP-I based Nc but are intended to be published as a standard ITU-T Q series Recommendation, pending acceptance and approval via ITU-T SG11.

Parameter and information descriptions would appear in [Q.1902.2](#) as follows:

6.xx forward customized alerting tone indicators: information sent in the forward direction to indicate capability of the calling terminal to participate in multimedia customized alerting tone service and whether priority should be given to the calling party or to the called party's customized alerting tone.

6.xx backward customized alerting tone indicators: information sent in the backward direction to indicate that inband customized alerting tone information is being provided.

7.xx multimedia customized alerting tone (MCAT) capability indicator: information sent in the forward direction to indicate the capability of the calling terminal to participate in multimedia customized alerting tone service.

7.xx customized alerting tone (CAT) priority indicator: information sent in the forward direction to indicate whether priority should be given to the calling party or called party's customized alerting tone.

7.yy customized alerting tone (CAT) content indicator: information sent in the backward direction to indicate that inband customized alerting tone information is being provided.

New parameters and their indicators would appear in [Q.1902.3](#) as follows:

Parameter codepoint: would appear in Table 2/Q.1902.3 as follows:

Parameter name	Reference (clause)	Code	Note
Forward CAT indicators	6.xxx	1 0 0 0 1 1 1 0	
Backward CAT indicators	6.xxx	1 0 0 0 1 1 1 1	

The Forward CAT indicators parameter would be added to the message table for IAM as an optional 3-octet parameter.

The Backward CAT indicators parameter would be added to the message tables for ACM and CPG as an optional 3-octet parameter.

The parameter description clause would appear as follows:

6.xxx Forward Customized Alerting Tone Indicators

The format of the forward customized alerting tone indicators parameter field is shown in Figure yyy.

8	7	6	5	4	3	2	1
spare	spare	spare	spare	spare	C	B	A

Figure yyy/Q.1902.3 – Forward customized alerting tone parameter field

The following codes are used in the Forward CAT indicators parameter field:

Bit	A	<i>Multimedia CAT capability indicator</i>
	0	No indication
	1	CAT supported

Bits	C B	<i>CAT Priority indicator</i>
	0 0	no indication
	0 1	Priority given to Calling party (CAT-A)
	1 0	Priority given to Called party (CAT-B)
	1 1	Spare

See ETSI TS 123.205 for a description of the related service and procedures.

6.xxx Backward Customized Alerting Tone Indicators

The format of the backward customized alerting tone indicators parameter field is shown in Figure yyy.

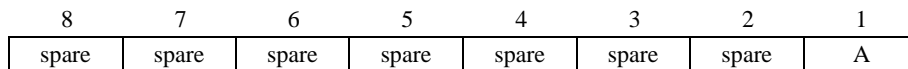


Figure yyy/Q.1902.3 – Backward customized alerting tone parameter field

The following codes are used in the Backward CAT indicators parameter field:

Bit	A	<i>CAT content Indicator</i>
	0	No indication
	1	Inband media content available

See ETSI TS 123.205 for a description of the related service and procedures.

Corresponding amendments would be added to Q.761 and Q.762.

Annex B (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
17/1/01	CN3/CN4 #66 Beijing			0.1.	New Document approved	-	0.1.0
15/2/01	Ad hoc CN 4#6 in Madrid			0.2	Revised Document approved	0.1.0	0.2.0
01/3/01	CN 4 #7 Sophia—Antopolis			0.3	Forwarded to TSG CN Plenary meeting #11 for approval	0.2.0	2.0.0
03/2001	CN#11	NP-010083			Modifications made during CN#11	2.0.0	2.1.0
03/2001	CN#11	NP-010214			Approved in CN#11	2.1.0	4.0.0
06/2001	CN#12	NP-010285	0001	1	Changes to provide interworking between signalling transport	4.0.0	4.1.0
09/2001	CN#13				Editorial clean up	4.1.0	4.2.0
09/2001	CN#13	NP-010452	0002		Mc signalling transport in IP environment	4.1.0	4.2.0
09/2001	CN#13	NP-010452	0003	1	BICC signalling transport in IP enviroment	4.1.0	4.2.0
09/2001	CN#13	NP-010452	0004		Status of ITU recommendation Q.2150.3	4.1.0	4.2.0
06/2002	CN#16				Rel-5 created after CN#16	4.2.0	5.0.0
06/2003	CN#20	NP-030220	0006	2	Alignment of references after renumbering of H248 by ITU-T	5.0.0	5.1.0
12/2004	CN#26				Rel-6 created after CN#26	5.1.0	6.0.0
06/2006	CT#32	CP-060298	0009	1		6.0.0	6.1.0
06/2007	CT#36				Upgraded unchanged from Rel-6	6.1.0	7.0.0
12/2008	CT#42				Upgraded unchanged from Rel-7	7.0.0	8.0.0
06/2009	CT#44	CP-090312	0011	2	Amendment for "multimedia Customized Alerting Tone (CAT) service in ITU ISUP/BICC	8.0.0	8.1.0

History

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