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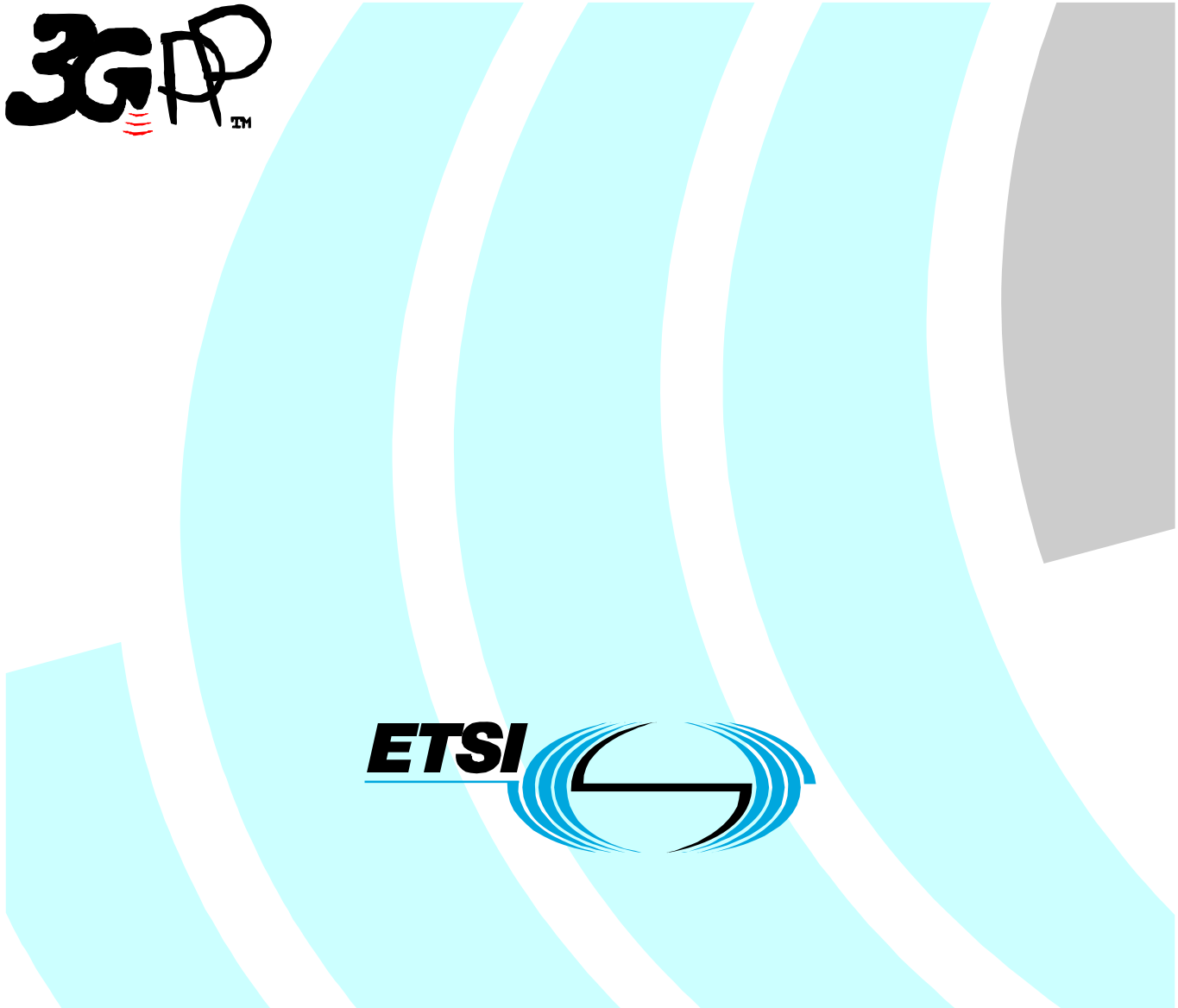
Technical Specification

**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 10.1.0 Release 10)**



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Foreword

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Contents

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

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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 Recommendation Q.765.5 (06/2000): "Application Transport Mechanism".

[6] ITU-T Recommendation Q.1902.1 (07/2001): "Bearer Independent Call Control CS2 Functional Description". Inclusive Amendment 3: "Support for the Customized Alerting Tone (CAT) service".

[7] ITU-T Recommendation Q.1902.2 (07/2001): "Bearer Independent Call Control CS2 General functions of messages and parameters". Inclusive Amendment 5: "Support for the Customized Alerting Tone (CAT) service".

[8] ITU-T Q.1902.3 (07/2001): "Bearer Independent Call Control CS2 Formats and Codes". Inclusive Amendment 5: "Support for the Customized Alerting Tone (CAT) service".

[9] ITU-T Recommendation Q.1902.4 (07/2001): "Bearer Independent Call Control CS2 Basic Call Procedures".

[10] ITU-T Recommendation Q.1902.5 (07/2001): "Exceptions to the Application Transport Mechanism in the Context of Bearer Independent Call Control".

[11] ITU-T Recommendation Q.1902. 6 (07/2001): "Generic Signalling Procedures for the support of the ISDN User Part Supplementary Services and for bearer redirection".

[12] ITU-T Recommendation Q.1950 (07/2001): "Call Bearer Control Protocol".

[13] ITU-T Recommendations Q.2630.1 (12/1999), Q.2630.2 (12/2000): "AAL type 2 signalling protocol".

[14] ITU-T Recommendation Q.1990 (07/2001): "BICC Bearer Control tunnelling protocol".

[15] ITU-T Recommendation Q.1970 (07/2001): "BICC IP Bearer Control protocol".

[16] ITU-T Recommendation Q.1912.1 (07/2001): "Interworking between Signalling System No. 7 ISDN user part and the Bearer Independent Call Control protocol".

[17] ITU-T Recommendation Q.1912.2 (07/2001): "Interworking between selected Signalling System (PSTN Access DSS1, C5, R1, R2, TUP) and the Bearer Independent Call Control Protocol".

[18] ITU-T Recommendation Q.2150.0 (05/2001): "Generic Signalling Transport Service".

[19] ITU-T Recommendation Q.2150.1 (05/2001): "Signalling Transport Converter on MTP3 and MTP3b".

[20] ITU-T Recommendation Q.2150.3 (12/2002): "Signalling Transport Converter on SCTP".

[21] ITU-T Recommendation H.248.4 (11/2000): "Gateway Control Protocol: Transport over SCTP".

[22] 3GPP TS 29.202: "SS7 signalling transport in core network".

[23] ITU-T Recommendation H.248.5 (11/2000): "Gateway control protocol: Transport over ATM".

[24] ITU-T Q.765 (06/2000): "Signalling system No. 7 – Application transport mechanism".

[25] 3GPP TS 23.003: "Numbering, addressing and identification".

[26] 3GPP TS 23.216: "Single Radio Voice Call Continuity (SRVCC); Stage 2".

[27] 3GPP TS 23.237: "IP Multimedia subsystem (IMS) Service Continuity; Stage 2".

[28] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[29] 3GPP TS 23.284: "Local Call Local Switch; Stage 2".

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 abbreviations as defined in 3GPP TR 21.905 [28] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in3GPP TR 21.905 [28].

APM Application Transport Mechanism
Application Transport Message
APP Application Transport Parameter
BAT Bearer Association Transport
BICC Bearer Independent Call Control
C5 CCITT signalling system number 5
GCR Global Call Reference

LCLS	Local Call Local Switch
M3UA	MTP3 – User Adaptation Layer
MGC	Media Gateway Controller
MST	Mobile Service Transport
R1	Regional Signalling System 1
R2	Regional Signalling System 2
SCTP	Stream Control Transmission Protocol
SN	Serving Node
TUP	Telephony User Part

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 SUSTEM 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] (NOTE)
Q.1902.4	BICC (CS2) BASIC CALL PROCEDURES [9]
Q.1902.5	EXCEPTIONS TO THE APM IN THE CONTEXT OF BICC [10] AMENDMENT TO ITU-T RECOMMENDATION Q.765.5 FOR BICC CS2 [5]
Q.1902.6	GENERIC SIGNALLING PROCEDURES AND SUPPORT OF THE ISDN USER PART SUPPLEMENTARY SERVICES WITH THE BEARER INDEPENDENT CALL CONTROL PROTOCOL [11]
NOTE:	The "Backward CAT indicators" parameter shall be encoded as an optional 3-octet parameter in the ACM, CPG and SEG messages rather than as a 1-octet parameter as incorrectly defined in Amendment 5 of ITU-T Recommendation Q.1902.3 [8].

4.2 Interworking with other protocols

Q.1912.1	ISUP-BICC INTERWORKING [16]
Q.1912.2	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 29.232	"Media Gateway Controller (MGC) – Media Gateway (MGW) Interface;Stage 3" [3]

4.4 Bearer control protocol between MGWs (Nb interface)

3GPP TS 29.414	"Core Network Nb Data Transport and Signalling Transport" [4] including ITU-T Recommendation Q.1970 "IP bearer control protocol" [15] , ITU-T Recommendation Q.1990 "BICC tunneling control protocol" [14] , ITU-T Recommendation Q.2630.1-2 "AAL type 2 signalling protocol" [13].

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: The use of M3UA in 3GPP networks.

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

3GPP TS 29.232	"Media Gateway Controller (MGC) – Media Gateway (MGW) Interface; Stage 3" [3] including ITU-T Recommendation H.248.4 "Transport over SCTP" [21], ITU-T Recommendation H.248.5 "Transport over ATM" [23], and 3GPP TS 29.202 "SS7 signalling transport in core network" [22] Annex A: The use of M3UA in 3GPP networks.

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 Recommendation Q.2630.1-2: "AAL type 2 signalling protocol" [13] and the tunnel-up and tunnel-down procedure in 3GPP TS 29.232 [31]

Annex A: Void

Annex B (normative): Transparent Support of Mobile Services

B.1 Introduction

This Annex specifies a new mobile APM usage "Transparent support of mobile services".

In ITU-T Recommendation Q.1902.3 [8], for the Application Transport Parameter (APP), the following codepoint is defined to refer to this application context identifier (ACI):

0 0 0 0 1 1 1 MST <as defined in ETSI TS 129.205>

The text in ITU-T Recommendation Q.1902.5 [10] shall be followed when implementing this application with the following clarification:

- where the text refers to BAT ASE this shall be interpreted to mean Mobile Service Transport (MST) service.

The MST service shall use implicit addressing; see ITU-T Recommendation Q.765 [24].

B.2 Mobile Service Transport (MST) – Format and Codes

B.2.1 Encapsulated Application Information

B.2.1.1 General Layout

The general layout of the Encapsulated Application Information field of the Application Transport parameter as defined in ITU-T Recommendation Q.1902.3 [8] is shown in Table B.2.1.1.1.

Table B.2.1.1.1: Encapsulated application information field

MSB 8	7	6	5	4	3	2	LSB 1	Octet
Identifier 1								1
Length indicator 1								2
Compatibility information 1								3
Contents 1								4
Identifier n								m
Length indicator n								
Compatibility information n								
Contents n								p

Each information element within the Encapsulated Application Information field has the same structure. An information element consists of four fields which always appear in the following order: Identifier (one octet), Length indicator, Compatibility information, Contents.

The Identifier distinguishes one type from another one and governs the interpretation of the contents. There are two types of Identifiers: type "constructor" and type "simple", for which the contents are defined as follows:

- For a "constructor" type, the Contents field shall again consist of one or more information elements, each of which is structured as described above, i.e., Identifier, Length indicator, Compatibility information, Contents.
- For a "simple" type, the Contents field contains one value only.

When passing on an information element of type "constructor", the order of the information elements within this "constructor" shall be maintained.

The Length indicator specifies the length (i.e., integral number of octets in pure binary representation) of the Compatibility information and Contents. The length does not include the Identifier nor the Length indicator.

The format of the Length indicator is shown in Table B.2.1.1.2. Bit 8 is defined as Extension indicator and indicates whether or not the information on the length continues through the next octet. Value "*0*" of the Extension indicator means "*information continues through the next octet*", while value "*1*" means "*last octet*". The Length indicator itself has a maximum length of 2 octets, i.e., if octet 1a is needed, the Extension indicator of octet 1a is always set to value "*1*".

Table B.2.1.1.2: Length indicator

8	7	6	5	4	3	2	1	Octet
ext.							LSB	1
ext. 1	0	0	0	MSB				1a

The Compatibility information contains corresponding instructions for the case that the received information element is unrecognised. The format of this field is shown in Table B.2.1.1.3.

Table B.2.1.1.3: Compatibility information

8	7	6	5	4	3	2	1	Octet
ext.	pass-on not possible			reserved	general action			1
	send notification indicator	instruction indicator			send notificaton indicator	instruction indicator		

The following codes are used in the subfields of the Compatibility information field.

Bits 2 1 *Instruction indicator for general action*

0 0 Pass on information element

0 1 Discard information element

1 0 Discard MST data

1 1 Release call

Bit 3 *Send notification indicator for general action*

0 Do not send notification

1 Send notification

Bit 4 reserved

Bits 6 5 *Instruction indicator for pass-on not possible*

0 0 Release call

0 1 Discard information element

1 0 Discard MST data

1 1 reserved (interpreted as 00)

Bit 7 *Send notification indicator for pass-on not possible*

0 Do not send notification

1 Send notification

Bit 8 *Extension indicator*

0 Information continues through the next octet

1 Last octet

The Contents field is the substance of the element and contains the information the element is intended to convey.

B.2.1.2 List of Identifiers

Table B.2.1.2.1 contains the list of Identifiers.

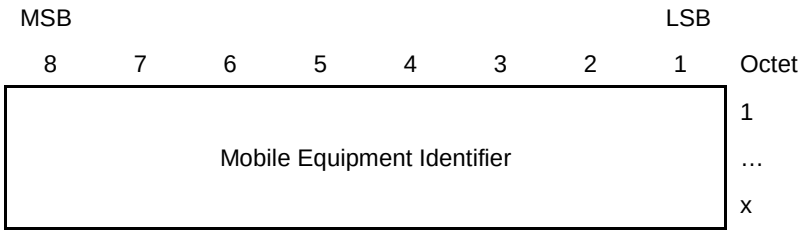
Table B.2.1.2.1: List of identifiers

Value	Information element name	Type	Reference
0000 0000	spare	-	
0000 0001	Mobile Equipment Identifier	simple	B.2.1.3
0000 0010	LCLS Negotiation Identifier	simple	B.2.1.4
0000 0011	LCLS Negotiation Result Identifier	simple	B.2.1.5
0000 0100	LCLS Status Identifier	simple	B.2.1.6
0000 0101	LCLS Status Change Identifier	simple	B.2.1.7
0000 0110	LCLS Status Result Identifier	simple	B.2.1.8
0000 0111	LCLS Global Call Reference Identifier	simple	B.2.1.9
0000 1000 to 1101 1111	reserved for 3GPP use	-	
1110 0000 to 1111 1111	reserved for national use	-	

B.2.1.3 Mobile Equipment Identifier

The format of the Mobile Equipment Identifier is shown in Table B.2.1.3.1.

Table B.2.1.3.1: Mobile Equipment Identifier



The MEI contains either the International Mobile station Equipment Identity (IMEI) or the International Mobile station Equipment Identity and Software Version Number (IMEISV) as defined in subclause 6.2 of 3GPP TS 23.003 [25].

Both IMEI and IMEISV are TBCD encoded where IMEI is 15 digits and IMEISV is 16 digits. Bits 5 to 8 of octet n+1 (where n represents the octet of the IMEI(SV) being encoded) encodes digit 2n, bits 1 to 4 of octet n+1 encodes digit 2n-1 (i.e. the order of digits is swapped in each octet compared to the digit order defined in 3GPP TS 23.003 [25]). For IMEI, bits 5 to 8 of the last octet shall be filled with an end mark coded as '1111'.

For the use of the Mobile Equipment Identifier (MEI) see 3GPP TS 23.216 [26] and 3GPP TS 23.237 [27].

B.2.1.4 LCLS Negotiation Identifier

The format of the LCLS Negotiation Identifier is shown in Table B.2.1.4.1.

Table B.2.1.4.1: LCLS Negotiation Identifier

MSB LSB

8	7	6	5	4	3	2	1	Octet
Extension Indicator	Spare		Backward Data Reception Indicator	Forward Data Reception Indicator	Backward Data Sending Indicator	Forward Data Sending Indicator	Permission Indicator	1

The LCLS Negotiation Identifier contains information sent in forward and backward directions to indicate negotiated LCLS configuration preference.

Bit 1 **Permission Indicator**
0 LCLS is allowed
1 LCLS is not allowed

Bit 2 **Forward Data Sending Indicator**
0 not required
1 required

Bit 3 **Backward Data Sending Indicator**
0 not required
1 required

Bit 4 **Forward Data Reception Indicator**
0 not required
1 required

Bit 5 **Backward Data Reception Indicator**
0 not required
1 required

Bits 6 - 7 Spare

Bit 8	Extension Indicator
0	information continues in next octet
1	last octet

NOTE: When LCLS is allowed bits 2 – 5 indicate additional granularity of the LCLS configuration preference.

For the use of the LCLS negotiation IE see Annex C.2.1, C.2.2, C.2.4 and 3GPP TS 23.284 [29].

B.2.1.5 LCLS Negotiation Result Identifier

The format of the LCLS Negotiation Result Identifier is shown in Table B.2.1.5.1.

Table B.2.1.5.1: LCLS Negotiation Result Identifier

MSB							LSB	
8	7	6	5	4	3	2	1	Octet
Spare			Rejection Indicator				Acceptance Indicator	1

The LCLS Negotiation Result Identifier contains information sent in forward and backward directions to indicate result of the LCLS Negotiation Change Request. The LCLS Negotiation Result Identifier is coded as follows:

Bit 1	Acceptance Indicator
0	LCLS Negotiation Change request accepted
1	LCLS Negotiation Change request rejected

Bits 2 3 4 5	Rejection Indicator
0000	No indication
0001	Requested LCLS configuration not supported
0010	Ongoing supplementary service
0011 – 1111	Reserved for future use

Bits 6 - 8 Spare

For the use of the LCLS Negotiation Result IE see Annex C.2.4 and 3GPP TS 23.284 [29].

B.2.1.6 LCLS Status Identifier

The format of the LCLS Status Identifier is shown in Table B.2.1.6.1.

Table B.2.1.6.1: LCLS Status Identifier

MSB							LSB	
8	7	6	5	4	3	2	1	Octet
LCLS Status Identifier								1

The LCLS Status Identifier contains information sent in forward and backward directions to indicate LCLS connection status. The LCLS Status Identifier is coded as follows:

Value	Meaning
0000 0000	no indication
0000 0001	LCLS is feasible but not yet connected
0000 0010	LCLS not connected
0000 0011	LCLS connected

All other values are reserved.

For the use of the LCLS Status IE see Annex C.2.3, C.2.5 and 3GPP TS 23.284 [29].

B.2.1.7 LCLS Status Change Identifier

The format of the LCLS Status Change Identifier is shown in Table B.2.1.7.1.

Table B.2.1.7.1: LCLS Status Change Identifier

MSB							LSB	
8	7	6	5	4	3	2	1	Octet
LCLS Status Change Identifier								1

The LCLS Status Change Identifier contains information sent in forward and backward directions to indicate requested change of LCLS connection status. The LCLS Status Change Identifier is coded as follows:

Value	**Meaning**
0000 0000	LCLS connection preparation
0000 0001	LCLS disconnection preparation
0000 0010	LCLS disconnection preparation for Handover

All other values are reserved.

For the use of the LCLS Status Change IE see Annex C.2.6 and 3GPP TS 23.284 [29].

B.2.1.8 LCLS Status Result Identifier

The format of the LCLS Status Result Identifier is shown in Table B.2.1.8.1.

Table B.2.1.8.1: LCLS Status Result Identifier

MSB							LSB	
8	7	6	5	4	3	2	1	Octet
Spare			Rejection Indicator				Acceptance Indicator	1

The LCLS Status Result Identifier contains information sent in forward and backward directions to indicate result of the LCLS Status Change Request. The LCLS Status Result Identifier is coded as follows:

Bit 1	**Acceptance Indicator**
0	LCLS Status Change request accepted
1	LCLS Status Change request rejected

Bits 2 3 4 5	**Rejection Indicator**
0000	No indication
0001	Ongoing supplementary service
0010 – 1111	Reserved for future use

Bits 6 - 8 Spare

For the use of the LCLS Status Result IE see Annex C.2.6 and 3GPP TS 23.284 [29].

B.2.1.9 LCLS Global Call Reference Identifier

The format of the LCLS Global Call Reference (GCR) Identifier is shown in Table B.2.1.9.1.

Table B.2.1.9.1: LCLS Global Call Reference Identifier

MSB							LSB	
8	7	6	5	4	3	2	1	Octet
Network ID length indicator								1
Network ID (variable length 3 – 5 octets)								2 4+m (m=0,1,2)
Node ID length indicator								5+m
Node ID (fixed length: 2 octets)								6+m 7+m
Call Reference ID length indicator								8+m
Call Reference ID (fixed length: 5 octets)								9+m 13+m

The LCLS GCR Identifier is information sent in forward direction to uniquely identify a call and correlate activities associated with that call. The LCLS GCR Identifier is coded as follows:

- Network ID length indicator
  Binary coded information indicating the number of octets in the Network ID field.

- Network ID
  Information identifying a network. The Network ID field is specified in ITU-T Recommendation Q.1902.3 [8].

- Node ID length Indicator
  Binary coded information indicating the number of octets in the Node ID field.

- Node ID
  A binary number that uniquely identifies within the network the node which generates the call reference.

- Call Reference ID length indicator
  Binary coded information indicating the number of octets in the Call Reference ID field.

- Call Reference ID
  A binary number used for the call reference of the call. It is generated by the originating serving node for each call.

NOTE: If the originating serving radio access is GERAN the format of the Call Reference ID subfield is shown in Table B.2.1.9.2. The originating BSS ID is an integer that uniquely identifies the Base Station Subsystem (BSS) Node within an operator's network.

Table B.2.1.9.2: Call Reference ID

MSB							LSB	
8	7	6	5	4	3	2	1	Octet
Call Identifier (fixed length: 3 octets)								1 2 3
Originating BSS ID (fixed length: 2 octets)								4 5

For the use of the LCLS GCR IE see Annex C.2.1 and 3GPP TS 23.284 [29].

B.2.2 Application Transport Instruction Indicators

For the MST service the Application Transport Instruction Indicators (ATII) shall be set as follows:

Bits 1 *Release call indicator (RCI)*

0 do not release call

Bit 2 *Send notification indicator (SNI)*

0 do not send notification

Annex C (normative): LCLS Service Application

LCLS Service is defined in 3GPP TS 23.284 [29] and is dependent on the following identifiers being included in BICC/ISUP messaging. The following sections describe the detailed protocol behaviour when these identifiers are included.

C.1 Use of MST ASE

LCLS service makes use of the services of the MST ASE described in Annex B. The services of the MST ASE are accessed by means of primitives (such as "MST_data") which are the same as BAT ASE primitives defined in ITU-T Recommendation Q.765.5 [5].

C.2 Procedures

C.2.1 Indication of LCLS Capability

C.2.1.1 LCLS Service Capability Indication

LCLS service shall be used for a call if MST_data primitive associated with an IAM includes a LCLS GCR and a LCLS Negotiation information element. The absence of the LCLS Negotiation and LCLS GCR information elements in the IAM specifies that the LCLS service shall not be used.

The compatibility information of LCLS Negotiation and LCLS GCR identifiers shall be set so as to cause the information element to be discarded by nodes that do not support LCLS service.

The procedures for call establishment using the LCLS service are described in 3GPP TS 23.284 [29].

C.2.1.2 Actions at Originating Serving Node

An originating Serving Node (SN) that supports the LCLS service shall indicate this within the IAM message of the mobile originating call by including the LCLS Negotiation and LCLS GCR Information elements within the MST Application Transport Parameter (APP) within IAM message.

When the LCLS service is allowed to be used the IAM is sent to the preceding node with the Permission Indicator of the LCLS Negotiation Information element set to "LCLS is allowed".

Depending on network requirements the originating SN may additionally indicate required configurations for user plane connectivity towards originating or terminating UE. If the originating MSC server needs to:

- send data towards the terminating UE it shall set Forward Data Sending Indicator to "required";
- send data towards the originating UE it shall set Backward Data Sending Indicator to "required";
- receive data from the originating UE it shall set Forward Data Reception Indicator to "required";
- receive data from the terminating UE it shall set Backward Data Reception Indicator to "required".

If the originating SN requires reception of data from the terminating UE and sending of data to the originating UE it may indicate the LCLS service is not allowed by setting the value of Permission Indicator of the LCLS Negotiation Information element to "LCLS is not allowed" or it may apply setting of LCLS Negotiation according to rules specified in sub-clause 4.2 of 3GPP TS 23.284 [29].

C.2.1.3 Actions at Intermediate Node

In the case of intermediate node, LCLS service indication shall be included only if received from the preceding node and if the node itself supports the LCLS service.

The intermediate node shall not change the LCLS GCR Information element. If a node receives Permission Indicator of the LCLS Negotiation Information element set to "LCLS is not allowed" it shall not change it.

Depending on network requirements the intermediate node may additionally indicate required configurations for user plane connectivity towards originating or terminating UE. If a node needs to:

- send data towards the terminating UE it shall set Forward Data Sending Indicator to "required";
- send data towards the originating UE it shall set Backward Data Sending Indicator to "required";
- receive data from the originating UE it shall set Forward Data Reception Indicator to "required";
- receive data from the terminating UE it shall set Backward Data Reception Indicator to "required".

If a node receives any of these indicators set to "required" it shall not change them.

C.2.1.4 Actions at Destination Serving Node

In the case of destination Serving Node (SN), LCLS service shall be supported only if the IAM message with the LCLS Negotiation and LCLS GCR Information elements within the MST Application Transport Parameter (APP) is received from the preceding node and if the node itself supports the LCLS service.

Depending on network requirements the destination SN may additionally modify received configurations for user plane connectivity towards originating or terminating UE. If the destination SN needs to:

- send data towards the terminating UE it shall set Forward Data Sending Indicator to "required";
- send data towards the originating UE it shall set Backward Data Sending Indicator to "required";
- receive data from the originating UE it shall set Forward Data Reception Indicator to "required";
- receive data from the terminating UE it shall set Backward Data Reception Indicator to "required".

If destination SN receives any of these indicators set to "required" it shall not change them.

If the LCLS Negotiation Information element after possible modification indicates reception of data from the originating UE and sending of data to the terminating UE the destination SN may change the value of Permission Indicator of the LCLS Negotiation Information element to "LCLS is not allowed" or it may apply modification of LCLS Negotiation according to rules specified in sub-clause 4.2 of 3GPP TS 23.284 [29].

C.2.2 Backward LCLS Negotiation during Call Setup

C.2.2.1 Introduction

LCLS service shall be used for a call if MST_data primitive associated with first backward (APM or ACM) message includes a LCLS Negotiation information element. The absence of the LCLS Negotiation information element in the first backward message specifies that the LCLS service shall not be used.

The compatibility information of a LCLS Negotiation identifier shall be set so as to cause the information element to be discarded by nodes that do not support LCLS service.

C.2.2.2 Actions at Destination Serving Node

If LCLS service is supported according to conditions specified in sub-clause C.2.1.4 a destination SN shall include in the first backward message (APM or ACM) the LCLS Negotiation Information element in the MST_Data request primitive.

C.2.2.3 Actions at Intermediate Node

C.2.2.4 Actions at Originating Serving Node

C.2.3 Answer message

C.2.3.1 Introduction

The compatibility information of LCLS Status identifier shall be set so as to cause the information element to be discarded by nodes that do not support LCLS service.

C.2.4 LCLS Negotiation Change Request

C.2.4.1 Introduction

The compatibility information of LCLS Negotiation identifier and LCLS Negotiation Result identifier shall be set so as to cause the information element to be discarded and send notification by nodes that do not support LCLS service.

Bits 2 1	**Instruction indicator for general action**
0 1	Discard information element
Bit 3	**Send notification indicator for general action**
1	Send notification
Bits 6 5	**Instruction indicator for pass-on not possible**
0 1	Discard information element
Bit 7	**Send notification indicator for pass-on not possible**
1	Send notification
Bit 8	**Extension indicator**
1	Last octet

C.2.5 LCLS Status Update

C.2.5.1 Introduction

The compatibility information of LCLS Status identifier shall be set so as to cause the information element to be discarded and send notification by nodes that do not support LCLS service.

Bits 2 1	**Instruction indicator for general action**
0 1	Discard information element
Bit 3	**Send notification indicator for general action**
1	Send notification
Bits 6 5	**Instruction indicator for pass-on not possible**
0 1	Discard information element
Bit 7	**Send notification indicator for pass-on not possible**
1	Send notification
Bit 8	**Extension indicator**
1	Last octet

C.2.6 LCLS Status Change Request

C.2.6.1 Introduction

The compatibility information of LCLS Status Change identifier and LCLS Status Result identifier shall be set so as to cause the information element to be discarded and send notification by nodes that do not support LCLS service.

Bits 2 1 **Instruction indicator for general action**
0 1 Discard information element

Bit 3 **Send notification indicator for general action**
1 Send notification

Bits 6 5 **Instruction indicator for pass-on not possible**
0 1 Discard information element

Bit 7 **Send notification indicator for pass-on not possible**
1 Send notification

Bit 8 **Extension indicator**
1 Last octet

Annex D (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 tansport	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
06/2009	CT#44	CP-090499	0013	1	Mobile Service Application Transport	8.1.0	9.0.0
12/2009	CT#46	CP-090801	0017	2	Introduction of IMEI IE to Mobile APM for SRVCC Emergency Call	9.0.0	9.1.0
06/2010	CT#48	CP-100267	0020	1	ITU amendments for Customized Alerting Tone (CAT)	9.1.0	9.2.0
06/2010	CT#48	CP-100278	0018		IPBCP version	9.1.0	9.2.0
03/2011	CT#51	CP-110041	0027	1	Correcting non-specific external references	9.2.0	9.3.0
03/2011	CT#51	CP-110081	0021	1	Introduction of LCLS Application to Mobile Service Application Transport	9.3.0	10.0.0
06/2011	CT#52	CP-110376	0028		Miscellaneous corrections	10.0.0	10.1.0

History

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