INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.765.5

Amendment 1

(07/2001)

SERIES Q: SWITCHING AND SIGNALLING

Specifications of Signalling System No. 7 – ISDN user part

Signalling system No. 7 – Application transport mechanism: Bearer Independent Call Control (BICC)

Amendment 1: Bearer Independent Call Control Capability Set 2

ITU-T Recommendation Q.765.5 – Amendment 1

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ITU-T Recommendation Q.765.5

Signalling system No. 7 – Application transport mechanism: Bearer Independent Call Control (BICC)

AMENDMENT 1

Bearer Independent Call Control Capability Set 2

Summary

This amendment enhances ITU-T Q.765.5 (*Application Transport Mechanism: Bearer Independent Call Control* (2000)) for Bearer Independent Call Control Capability Set 2 (BICC CS-2).

The modifications are underlined and marked with revision bars.

Source

Amendment 1 to ITU-T Recommendation Q.765.5 was prepared by ITU-T Study Group 11 (2001-2004) and approved under the WTSA Resolution 1 procedure on 2 July 2001.

FOREWORD

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The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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ITU-T Recommendation Q.765.5

Signalling system No. 7 – Application transport mechanism: Bearer Independent Call Control (BICC)

AMENDMENT 1

Bearer Independent Call Control Capability Set 2

This amendment enhances Recommendation Q.765.5 (*Application Transport Mechanism: Bearer Independent Call Control* (2000)) for Bearer Independent Call Control Capability Set 2 (BICC CS-2).

The modifications are underlined and marked with revision bars.

1) Clause 2, References

[1] ITU-T Q.1902.5 (2001), *Exceptions to the Application Transport Mechanism in the Context of Bearer Independent Call Control*.

[2] ITU-T Q.1400 (1993), *Architecture framework for the development of signalling and OA&M protocols using OSI concepts*.

[3] ITU-T Q.1902.1 (2001), *Bearer independent call control protocol (CS-2) functional description*.

[4] ITU-T X.213 (1995) | ISO/IEC 8348:1996, *Information technology – Open Systems Interconnection – Network service definition,* plus Amendment 1 (1997), *Addition of the Internet protocol address format identifier*.

[5] ITU-T Q.1990 (2001), *BICC bearer control tunnelling protocol*.

[6] ITU-T E.182 (1998), *Application of tones and recorded announcements in telephone services.*

2) Clause 4, Abbreviations

AAL	Asynchronous Transfer Mode Adaptation Layer
AE	Application Entity
AEI	Application Entity Invocation
AP	Application Process
APM	Application Transport Mechanism
APM-user	Application Transport Mechanism User Application
APP	Application Transport Parameter
ASE	Application Service Element
ATII	Application Transport Instruction Indicator
BAT	Bearer Association Transport
BICC	Bearer Independent Call Control
CMN	Call Mediation Node

DTMF	Dual Tone Multi-Frequency
EH	Errors Handling
GSN	Gateway Serving Node
IAM	Initial Address Message
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISN	Interface Serving Node
ISUP	ISDN User Part
LE	Local Exchange
LSB	Least Significant Bit
M/O	Mandatory/Optional
MACF	Multiple Association Control Function
MSB	Most Significant Bit
NI	Network Interface
NNI	Network Node Interface
PAN	Public Addressed Node
PIN	Public Initiating Node
RTP	Real Time Transport Protocol
SACF	Single Association Control Function
SAO	Single Association Object
SCN	Switched Circuit Network
SN	Serving Node
TE	Transit Exchange
TSN	Transit Serving Node

3) Clause 8.3, Primitive contents

Table 2/Q.765.5 – Contents of the BICC_Data Ind/Req primitive

Parameter	Mandatory/Optional	Reference
ATII	M	See [3]
Action Indicator	O	See 11.1
Backbone Network Connection Identifier	O	See 11.1
Interworking Function Address	O	See 11.1
Codec List	O	See 11.1
Single Codec	O	See 11.1
BAT Compatibility Report	O	See 11.1
Bearer Network Connection Characteristics	O	See 11.1
Bearer Control Information	O	See 11.1

Table 2/Q.765.5 – Contents of the BICC_Data Ind/Req primitive

Parameter	Mandatory/Optional	Reference
Bearer Control Tunnelling	O	See 11.1
Bearer Control Unit Identifier	O	See 11.1
Signal	O	See 11.1
Bearer Redirection Capability	O	See 11.1
Bearer Redirection Indicators	O	See 11.1
Signal Type	O	See 11.1
Duration	O	See 11.1

4) Clause 11.1.2, List of Identifiers

Table 12/Q.765.5 – List of Identifiers

Value	Information Element Name	Type	Reference
0000 0000	Spare	–	–
0000 0001	Action Indicator	simple	11.1.3
0000 0010	Backbone Network Connection Identifier	simple	11.1.4
0000 0011	Interworking Function Address	simple	11.1.5
0000 0100	Codec List	constructor	11.1.6
0000 0101	Single Codec	simple	11.1.7
0000 0110	BAT Compatibility Report	simple	11.1.8
0000 0111	Bearer Network Connection Characteristics	simple	11.1.9
0000 1000	Bearer Control Information	simple	11.1.10
0000 1001	Bearer Control Tunnelling	simple	11.1.11
0000 1010	Bearer Control Unit Identifier	simple	11.1.12
0000 1011	Signal	constructor	11.1.13
0000 1100	Bearer Redirection Capability	simple	11.1.14
0000 1101	Bearer Redirection Indicators	simple	11.1.15
0000 1110	Signal Type	simple	11.1.16
0000 1111	Duration	simple	11.1.17
0001 0000 to 1101 1111	spare	–	–
1110 0000 to 1111 1111	reserved for national use	–	–

5) Clause 11.1.3, Action Indicator

0000 0000	no indication
0000 0001	connect backward
0000 0010	connect forward
0000 0011	connect forward, no notification
0000 0100	connect forward, plus notification
0000 0101	connect forward, no notification + selected codec
0000 0110	connect forward, plus notification + selected codec
0000 0111	use idle
0000 1000	Connected
0000 1001	Switched
0000 1010	selected codec
0000 1011	modify codec
0000 1100	successful codec modification
0000 1101	codec modification failure
0000 1110	mid-call codec negotiation
0000 1111	modify to selected codec information
0001 0000	mid-call codec negotiation failure
0001 0001	start signal, notify
0001 0010	start signal, no notify
0001 0011	stop signal, notify
0001 0100	stop signal, no notify
0001 0101	start signal acknowledge
0001 0110	start signal reject
0001 0111	stop signal acknowledge
0001 1000	bearer redirect
0001 1001 to 1101 1111	spare
1110 0000 to 1111 1111	reserved for national use

6) Clause 11.1.7.1, Organization Identifier subfield

0000 0000	no indication
0000 0001	ITU-T
0000 0010	ETSI (refer to TS 26.103)
0000 0011 to 0010 0001	reserved for use by IMT-2000 family members
0010 0010 to 1101 1111	spare
1110 0000 to 1111 1111	reserved for national use

7) Clause 11.1.9, Bearer Network Connection Characteristics

0000 0000	no indication
0000 0001	AAL type 1
0000 0010	AAL type 2
0000 0011	Structured AAL type 1
0000 0100	IP/RTP
0000 0101 to 1101 1111	spare
1110 0000 to 1111 1111	reserved for national use

8) New clause 11.1.10, Bearer Control Information

11.1.10 Bearer Control Information

The format of the Bearer Control Information is shown in Figure 20.

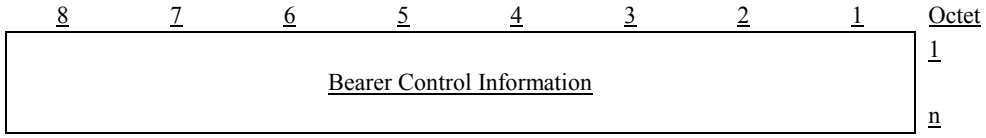

Figure 20/Q.765.5 – Bearer Control Information

The Bearer Control Information information element contains the bearer control tunnelling protocol data unit; see [5].

9) New clause 11.1.11, Bearer Control Tunnelling

11.1.11 Bearer Control Tunnelling

The format of the Bearer Control Tunnelling is shown in Figure 21.

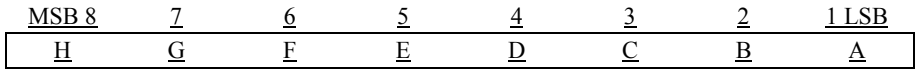

Figure 21/Q.765.5 – Bearer Control Tunnelling

Bits

A *Bearer Control Tunnelling indicator*

0 no indication

1 tunnelling to be used

H-B *spare*

The Bearer Control Tunnelling indicator (bit A) signals that bearer control tunnelling is to be used.

10) New clause 11.1.12, Bearer Control Unit Identifier

11.1.12 Bearer Control Unit Identifier

The Bearer Control Unit Identifier information element contains information sent in the forward and backward directions to aid Bearer Interworking Function selection by the Call Service Function. A Bearer Interworking Function may consist of one or more Bearer Control Units (BCUs) where a BCU represents a physical grouping.

The definition of the Network ID subfield is the same as for the Network ID of the Global Call Reference parameter (see [3]).

The Local BCU-ID subfield is an identifier that uniquely identifies a BCU entity within a network domain.

The format of the Bearer Control Unit Identifier is shown in Figure 22.

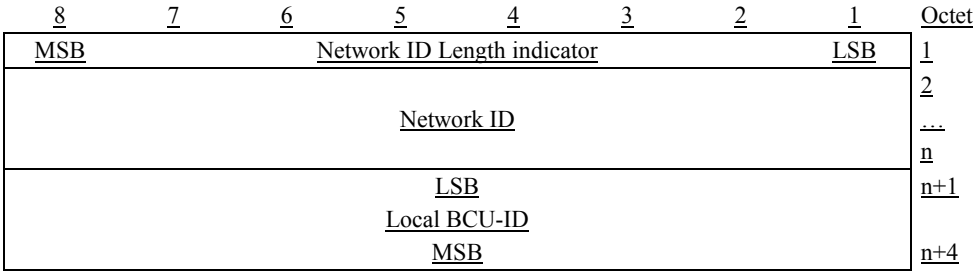

Figure 22/Q.765.5 – Bearer Control Unit Identifier

The following codes are used in the Bearer Control Unit Identifier:

1) Network ID Length indicator

The Network ID Length indicator specifies the length (i.e. integral number of octets in pure binary representation) of the Network ID subfield. The length does not include the Network ID Length indicator.

2) Network ID

The coding of the Network ID field is identical to the coding of the Network ID field in the Global Call Reference parameter as specified in clause 6/Q.1902.3 (see [3]).

NOTE – When used inside a network domain, the Network ID may be omitted by setting the Network ID Length indicator to the value "0".

3) Local BCU-ID

A binary number that uniquely identifies the BCU within a network domain.

11) New clause 11.1.13, Signal

11.1.13 Signal

The format of the Signal is shown in Figure 23.

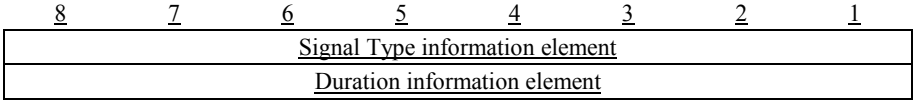

Figure 23/Q.765.5 – Signal

The Signal Type information element is specified in 11.1.16, and the Duration information element is specified in 11.1.17.

The Signal information element containing the Signal Type information element is mandatory if and only if the Action indicator is set to the value "start signal, notify" or "start signal, no notify". The purpose of the Signal Type information element is to convey a value for a single signal. Optionally the duration of the signal may be specified in the Duration information element, i.e. the Signal information element may contain the Signal Type information element only.

The duration of the signal can be controlled:

- either implicitly by a sequence of messages with the Action indicator set to "start signal, notify"/"start signal, no notify" and "stop signal, notify"/"stop signal, no notify",
- or implicitly by the signal itself,
- or explicitly by a message with the Action indicator set to "start signal, notify"/"start signal, no notify" accompanied by a Signal information element containing the Signal Type information element and the Duration information element indicating the duration. In this case, no Action indicator with "stop signal, notify"/"stop signal, no notify" is sent by the originator. If a notification has been requested in the Action indicator, an Action indicator set to "start signal acknowledge" or "start signal reject" is sent back, i.e. there is no additional notification for the end of the signal.

12) New clause 11.1.14, Bearer Redirection Capability

11.1.14 Bearer Redirection Capability

The Bearer Redirection Capability information element contains information sent in the forward direction at call setup to indicate that the sending node supports Bearer Redirection, and to indicate support of options within the capability.

The format of the Bearer Redirection Capability is shown in Figure 24.

MSB 8	7	6	5	4	3	2	1 LSB
ext.	G	F	E	D	C	B	A

Figure 24/Q.765.5 – Bearer Redirection Capability

Bits

A *Late Cut-through capability indicator*

0 Late Cut-through not supported

1 Late Cut-through supported

G-B *Spare*

H *Extension indicator*

0 Information continues through the next octet

1 Last octet

13) New clause 11.1.15, Bearer Redirection Indicators

11.1.15 Bearer Redirection Indicators

The Bearer Redirection Indicators information element contains information sent in the forward or backward direction relating to the bearer redirection procedure.

The format of the Bearer Redirection Indicators is shown in Figure 25.

The format of the Bearer Redirection Indicators information element is not of type "constructor" but consists of a sequence of octets, each with the same format, allowing several indicator values to be included in a single information element, as follows:

8	7	6	5	4	3	2	1	Octet
Bearer Redirection Indicator								1
Bearer Redirection Indicator								2
								…
Bearer Redirection Indicator								N

Figure 25/Q.765.5 – Bearer Redirection Indicators

The number of the Bearer Redirection Indicator octets is derived from the length indication of the Bearer Redirection Indicators information element.

The following codes are used in the Bearer Redirection Indicator:

0000 0000	no indication
0000 0001	late cut-through request
0000 0010	redirect temporary reject
0000 0011	redirect backwards request
0000 0100	redirect forwards request
0000 0101	redirect bearer release request
0000 0110	redirect bearer release proceed
0000 0111	redirect bearer release complete
0000 1000	redirect cut-through request
0000 1001	redirect bearer connected indication
0000 1010	redirect failure
0000 1011	new connection identifier
0000 1100 to 0111 1111	spare
1000 0000 to 1111 1111	reserved for national use

14) New clause 11.1.16, Signal Type

11.1.16 Signal Type

The format of the Signal Type is shown in Figure 26.

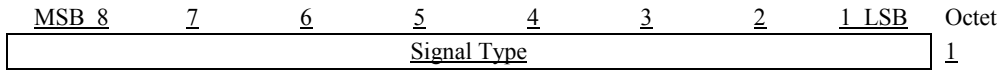

Figure 26/Q.765.5 – Signal Type

The following codes are used in the Signal Type:

0000 0000	DTMF 0
0000 0001	DTMF 1
0000 0010	DTMF 2
0000 0011	DTMF 3
0000 0100	DTMF 4
0000 0101	DTMF 5
0000 0110	DTMF 6
0000 0111	DTMF 7
0000 1000	DTMF 8
0000 1001	DTMF 9
0000 1010	DTMF *
0000 1011	DTMF #
0000 1100	DTMF A
0000 1101	DTMF B
0000 1110	DTMF C
0000 1111	DTMF D
0001 0000 to 0011 1111	spare
0100 0000	dial tone
0100 0001	PABX internal dial tone
0100 0010	special dial tone
0100 0011	second dial tone
0100 0100	ringing tone
0100 0101	special ringing tone
0100 0110	busy tone
0100 0111	congestion tone
0100 1000	special information tone
0100 1001	warning tone
0100 1010	intrusion tone
0100 1011	call waiting tone
0100 1100	pay tone
0100 1101	payphone recognition tone
0100 1110	comfort tone
0100 1111	tone on hold
0101 0000	record tone
0101 0001	Caller waiting tone
0101 0010	positive indication tone
0101 0011	negative indication tone

0101 0100 to 1101 1111 } spare

1110 0000 to 1111 1111 } reserved for national use

NOTE 1 – The signals 0100 0000 to 0101 0011 are defined in ITU-T E.182 [6].

NOTE 2 –The use of out-of-band transport of the value 0100 0100 "ringing tone" may cause speech clipping due to a race condition between out-of-band stop "ringing tone" and in-band speech.

15) New clause 11.1.17, Duration

11.1.17 Duration

The format of the Duration is shown in Figure 27.

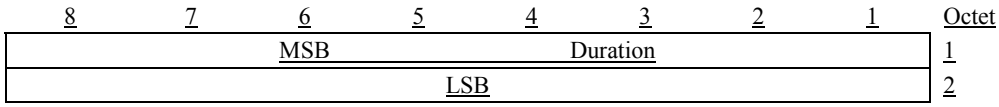

Figure 27/Q.765.5 – Duration

The Duration contains the duration of the signal (see 11.1.16) in milliseconds.

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Printed in Switzerland
Geneva, 2002