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ITU-T Q.2726.2

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TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

SERIES Q: SWITCHING AND SIGNALLING

Broadband ISDN – B-ISDN application protocols for the network signalling

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B-ISDN user part – Call priority

ITU-T Recommendation Q.2726.2

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION Q.2726.2

B-ISDN USER PART – CALL PRIORITY

Summary

This Recommendation specifies the extensions to the Broadband ISDN User Part for the support of the Broadband call priority service.

Source

ITU-T Recommendation Q.2726.2 was prepared by ITU-T Study Group 11 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 9th of July 1996.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 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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As of the date of approval of this Recommendation, the ITU had/had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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Recommendation Q.2726.2

B-ISDN USER PART – CALL PRIORITY

(Geneva, 1996)

2 Call priority

2.1 Overview

2.1.1 Scope

This Recommendation specifies optional extensions to the Broadband ISDN User Part to support call priority handling. These specifications allow for preferential treatments for high priority calls during network congestion based on the priority level of the call.

It defines:

– new message and parameter coding needed;

– additional primitives and primitive parameters needed to model the new capabilities according to the specification model for the B-ISDN User Part defined in Recommendation Q.2764;

– enhancements to the Application Process procedures; and

– enhancements to the description of the Application Service Element.

This Recommendation is applicable to simultaneous establishments of a single call/connection in a point-to-point configuration.

2.1.2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

[1] ITU-T Recommendation Q.2764 (1995), *Signalling System No. 7 B-ISDN User Part (B-ISUP) – Basic call procedures.*

[2] ITU-T Recommendation Q.2650 (1995), *Interworking between Signalling System No. 7 Broadband ISDN User Part (B-ISUP) and Digital Subscriber Signalling System No. 2 (DSS 2).*

[3] CCITT Recommendation I.255.4 (1990), *Community of interest supplementary services: Priority service.*

[4] CCITT Recommendation I.255.3 (1990), *ISDN general structure and service capabilities: Multi-Level Precedence and Preemption.*

[5] ITU Recommendation Q.735.3 (1993), *Stage 3 description for community of interest supplementary service using SS No. 7: Multi-Level Precedence and Preemption.*

[6] CCITT Recommendation Q.955.1 (1992), *Stage 3 description for community of interest supplementary service using DSS 1: Closed User Group.*

[7] ITU Recommendation Q.955.3 (1993), *Stage 3 description for community of interest supplementary service using DSS 1: Multi-Level Precedence and Preemption.*

2.1.3 Abbreviations

This Recommendation uses the following abbreviations.

BCC Bearer Connection Control

B-ISDN Broadband Integrated Services Digital Network

B-ISUP Broadband ISDN User Part

CC Call Control

CS-1 Capability Set 1

CUG Close User Group

DSS 2 Digital Subscriber Signalling System No. 2

IAM Initial Address Message

IE Information Element

ISDN Integrated Services Digital Network

ISUP ISDN User Part

MLPP Multi-Level Precedence and Preemption

SACF Single Association Control Function

TCC Telephony Country Code

2.2 B-ISDN user part messages and parameters

2.2.1 Parameters and parameter subfields

The following new parameter and parameter subfields are required in B-ISDN.

2.2.1.1 Priority

The format of the Priority parameter field as used by the procedures of this Recommendation is shown in Figure 2-1.

The parameter name code allocated to the Priority parameter is 0110 0111.

8	7	6	5	4	3	2	1	Octet
1 ext.	Spare			Priority				1
1st II digit				2nd II digit				2
3rd II digit				4th II digit				3
Most significant bit								4
National Domain								5
							Least significant bit	6

Figure 2-1/Q.2726.2 – Priority parameter

– *Priority (octet 1)*

Four binary coded bits indicating priority coded as follows:

0 0 0 0 level 1 (highest)

0 0 0 1 level 2

0 0 1 0 level 3

0 0 1 1 level 4

0 1 0 0 level 5 (lowest)

other values are reserved.

– *Domain (octets 2-6)*

The domain consists of four International identification digits, followed by a pure binary coded national domain.

International Identification (II) (octets 2-3)

Each II digit is coded in a binary coded decimal representation from 0 to 9. The first digit is coded 0. The Telephony Country Code (TCC) follows in the 2nd to the 4th II digits (the most significant TCC digit is in the 2nd II digit). If octet 3 is not required, it is coded all zeros.

National domain (octets 4-6)[1]

National domain contains a code expressing in pure binary the number allocated to a national-specific domain to uniquely identify a customer domain across multiple ISDN networks. Bit 8 of octet 4 is the most significant bit and bit 1 of octet 6 is the least significant bit.

2.2.2 Messages

The following tables show the impact of the new parameters on message coding.

2.2.2.1 IAM

The following new parameters can be carried in the IAM:

See Table 2-1.

Table 2-1/Q.2726.2 – Additional parameter to be included in the IAM

IAM
Priority parameter

2.3 Application process procedures

2.3.1 Priority handling procedures

Under the normal condition, when the network is not congested and the exchange has the necessary resources to complete it, the call is processed without special treatments.

[1] The code for National Domain is to be assigned and administered by different national Administrations.

In times of network congestion, when the exchange does not have sufficient resources to complete all of the incoming connection setup requests, as one option, the exchange may give preferential treatments based on the priority level. The preferential treatment should include access to reserved network resources, e.g.:

1) the highest priority calls are given access to available network resources including the resources reserved for highest priority calls;

2) the second highest priority calls are given access to available network resources including the resources reserved for the second highest priority calls, except for the resources reserved for the highest priority calls, and so on;

..

n) calls of the lowest priority level have no access to reserved network resources.

Allocation of reserved network resources to specific priority levels is implementation specific, and is not a subject for standardization.

If the exchange cannot complete a high priority call even after application of the preferential treatment, it clears the call. No existing calls shall be preempted in support of the high priority call.

2.3.1.1 Originating exchange

The originating exchange receives a SETUP message with Priority IE. It validates the indicated priority level to ensure that it does not exceed the highest priority level assigned to the user.

If Priority IE does not exist, the exchange processes it as a normal call.

The exchange includes the priority information in the outgoing IAM message as Priority parameter and passes on to the intermediate exchange.

2.3.1.2 Intermediate exchange

When an intermediate exchange receives an IAM with the Priority parameter, the Priority parameter shall be passed on unchanged.

2.3.1.3 Destination exchange

The destination exchange maps the priority level in the received Priority parameter to the Priority Information Element in the SETUP message.

2.3.1.4 Networks that do not support Call Priority Handling

A network that does not support the Call Priority Handling is required, if bilaterally agreed, to convey the Priority parameter intact. If the parameter is received from another network, the network should pass them on with no action taken, if bilaterally agreed, with no effect on the network that does not support the Call Priority Handling.

2.4 Application service elements and primitives

The following subclause identifies impacts on the B-ISUP Application Service Elements and the primitives exchanged between ASEs as shown in Recommendation Q.2764.

2.4.1 Primitives between SACF and application process

2.4.1.1 Setup Request/Indication primitive

Table 2-2 shows new parameter that must be added to the Setup Request/Indication primitive.

Table 2-2/Q.2726.2 – Parameter for Setup Request/Indication primitive

Setup Request/Indication	B-ISDN
Priority	O

2.4.2 Primitives between BCC ASE and SACF

2.4.2.1 Link Setup Request/Indication primitive

Table 2-3 shows a new parameter that must be added to the Link Setup Request/Indication primitive.

Table 2-3/Q.2726.2 – Parameter for Link Setup Request/Indication primitive

Link Setup Request/Indication
Priority

2.4.3 ASE descriptions

No changes are required to the ASE descriptions for BCC or CC ASEs.

2.5 Interworking

2.5.1 Interworking with CS-1 nodes

CS-1 nodes do not support the Priority parameter defined in this Recommendation and accordingly will treat this as unrecognized signalling information. The Instruction Indicators for the Priority parameter shall be set to transfer the parameter transparently so as to cause the call to be processed by a CS-1 node using only the parameters defined in CS-1. The Priority parameter will be passed transparently at a transit exchange.

The coding of the instruction indicators for the Priority parameter shall be set as shown in Appendix I in order to support the correct behaviour.

2.5.2 Interworking with ISUP

The Priority Parameter will be discarded at the B-ISUP/ISUP interworking point.

The coding of the instruction indicators for the Priority parameter shall be set as shown in Appendix I in order to support the correct behaviour.

2.5.3 Interworking with DSS 2

The following mapping of DSS 2 Information Elements to B-ISUP parameters is followed, in addition to those mappings already shown in Recommendation Q.2650.

SETUP	IAM	SETUP
Priority IE	Priority	Priority IE

APPENDIX I

Coding of instruction indicators

The instruction indicators for the Priority Parameter will be coded as follows:

Transit at intermediate Exchange	Transit interpretation
Release call indicator	Do not release call
Send notification indicator	Do not send notification
Discard message indicator	Do not discard message
Discard parameter indicator	Do not discard parameter
Pass on not possible indicator	Discard parameter
Broadband/narrow-band interworking indicator	Discard parameter

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