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SERIES Q: SWITCHING AND SIGNALLING

Broadband ISDN – B-ISDN application protocols for access signalling

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Digital subscriber signalling system No. 2 – Call priority

ITU-T Recommendation Q.2959

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION Q.2959

DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 2 – CALL PRIORITY

Summary

This Recommendation defines the operation of the Digital Subscriber Signalling System No. 2 (DSS 2) for the handling of Call priority that may be provided, as a service provider option, for Basic call and connection control at the T_B or at the coincident S_B and T_B reference point of the User-Network Interface of the Broadband-Integrated Services Digital Network (B-ISDN). The call priority capability defined in this Recommendation allows for preferential treatment of high priority calls during network congestions, based on the priority level allocated to the call.

Source

ITU-T Recommendation Q.2959 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

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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.

INTELLECTUAL PROPERTY RIGHTS

The ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. The ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

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.

CONTENTS

Recommendation Q.2959

DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 2 – CALL PRIORITY

(Geneva, 1996)

1 Scope

This Recommendation specifies the messages, information elements and procedures needed to support priority treatment of calls on the User-Network Interface (UNI).

Specifically, the following **optional** capabilities are provided:

– The originating user may provide priority information for each call setup request. If not provided, the network shall include the priority information for the lowest priority.

– The originating side of the network shall provide for screening of the priority to ensure that the user does not exceed the highest assigned priority level.

– The network shall transport the priority information on the NNI.

– The destination UNI shall deliver the priority information to the destination user.

The support of the Priority IE and associated procedures described in this Recommendation is optional for both the network and the user.

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.

– CCITT Recommendation I.255.3 (1990), *Community of interest supplementary services: Multi-level Precedence and Preemption service (MLPP).*

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

– ITU-T Recommendation I.413 (1993), *B-ISDN user-network interface.*

– ITU-T Recommendation Q.735.3 (1993), *Stage 3 description for community of interest supplementary services using SS No. 7: Multi-level precedence and preemption.*

– CCITT Recommendation Q.955.1 (1992), *Stage 3 description for community of interest supplementary services using DSS 1: Closed user group.*

– ITU-T Recommendation Q.955.3 (1993), *Stage 3 description for community of interest supplementary services using DSS 1: Multi-level Precedence and Preemption (MLPP).*

– ITU-T Recommendation Q.2130 (1994), *B-ISDN signalling ATM adaptation layer – Service Specific Coordination Function for the Support of Signalling at the User-Network Interface (SSCF at UNI).*

– ITU-T Recommendation Q.2610 (1995), *Usage of cause and location in B-ISDN user part and DSS 2*.

– ITU-T Recommendation Q.2931 (1995), *Digital Subscriber Signalling System No. 2 – User-Network Interface (UNI) layer 3 specification for basic call/connection control.*

3 Definitions

See Annex J/Q.2931.

4 Abbreviations

This Recommendation uses the following abbreviations:

ATM	Asynchronous Transfer Mode
B-ISDN	Broadband Integrated Services Digital Network
CUG	Closed User Group
DSS 2	Digital Subscriber Signalling System No. 2
ISDN	Integrated Services Digital Network
MLPP	Multi-level Precedence and Preemption
NNI	Network Node Interface
ROA	Recognized Operating Agency
SDL	Specification and Description Language
TCC	Telephony Country Code
UNI	User-Network Interface

5 Description

5.1 Application to interface structure

The layer 3 procedures apply to the interface structures defined in Recommendation I.413. They use the functions and services provided by layer 2. The layer 3 procedures request the services of layer 2 and receive information from layer 2 using the primitives defined in Recommendation Q.2130. These primitives are used to illustrate the communication between the protocol layers and are not intended to specify or constrain implementations.

5.2 Capabilities supported by this Recommendation

This Recommendation builds upon the capabilities in Recommendation Q.2931 for DSS 2 (see 1.5/Q.2931). The additional capability supported by the signalling protocol specified in this Recommendation is the support of preferential treatment of high priority calls.

5.3 General overview

This Recommendation specifies the information elements and procedures needed to support call priority handling on the User-Network Interface.

The priority information is used to identify the priority of a call. It may be used by the network during call establishment. It may also be used by the called user to efficiently manage the incoming calls. The called user may also use this information for actions such as clearing an existing lower priority call and answering a higher priority call.

6 Operational requirements

6.1 Provision and withdrawal

The provision of this capability requires arrangements between the user and the network provider.

6.2 Requirements on the originating network side

See 6.1 above.

6.3 Requirements on the destination network side

See 6.1 above.

7 Primitive definitions and state definitions

7.1 Primitive definitions

Clause 8/Q.2931 shall apply.

7.2 State definitions

See clause 2/Q.2931.

8 Coding requirements

8.1 Messages

8.1.1 Modification of messages in Recommendation Q.2931

Table 8-1 lists the existing Q.2931 message that has had its contents modified to support the Call Priority.

Table 8-1/Q.2959 – Modified Q.2931 message

Message	Reference
SETUP	8.1.1.1

8.1.1.1 SETUP

This message is sent by the calling user to the network and by the network to the called user to initiate B-ISDN call establishment. See Table 8-2 for additions to the structure of this message shown in Table 3-8/Q.2931.

Table 8-2/Q.2959 – SETUP message additional content

Message type: SETUP Significance: Global Direction: Both				
Information element	**Reference**	**Direction**	**Type**	**Length**
Priority	8.2.1	Both	O	10

8.2 Information elements

See clause 4/Q.2931. The additional Priority IE is specified below.

8.2.1 Priority information element

The Priority information element is used to identify the priority of a call. It is optionally present in the SETUP message on the originating UNI and on the destination UNI.

The Priority information element is coded as shown in Figure 8-1. The length of this information element is 10 octets.

8	7	6	5	4	3	2	1	Octet
Priority information element identifier								1
1	0	0	0	1	0	0	0	
1 ext.	Coding standard		IE instruction field Flag	Res	IE action indicator			2
Length of priority contents								3 4
1 ext.	Spare			Priority				5
1st II digit				2nd II digit				6
3rd II digit				4th II digit				7
Most significant bit Domain Least significant bit								8 9 10

Figure 8-1/Q.2959 – Priority information element

– Priority (octet 5)

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 6-10)

The domain consists of four international identification digits, called Network Identity (NI), followed by a pure binary coded national domain.

– International Identification (II) (octets 6-7)

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 7 is not required, it is coded all zeros.

– National domain (octets 8-10) (See Note.)

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 8 is the most significant bit and bit 1 of octet 10 is the least significant bit.

NOTE – The code for national domain is to be assigned and administered by different national administrations.

9 Signalling procedures at the coincident S_B and T_B reference points

9.1 Procedure at originating UNI

When subscribed to, the user will include the Priority IE in the SETUP message to convey the priority and domain of a call to the network. If not included, the network shall insert the Priority IE containing the lowest priority. If the network does not support this information element, it shall treat it as an unrecognized information element in accordance with the procedures defined in 5.6/Q.2931 or 5.7/Q.2931, depending on whether the "Flag" bit in the Instruction field is set to "0" or "1". If the network supports this information element, it shall validate the priority to ensure that the user does not exceed the highest priority assigned to the user. If the user exceeds the highest assigned priority, the network shall reject the call with a RELEASE COMPLETE message with Cause No. 50, "requested facility not subscribed".

9.2 Procedure at destination UNI

At the destination UNI, the network will map the priority and domain information transported through the network into this information element (i.e. the Priority IE) and deliver it in the SETUP message to the called user, in accordance with the Q.2931 call control procedures. If the called user does not have adequate resources to accept the call, then upon being offered the call, the called user may:

1) clear the existing lower priority call in the same domain with Cause No. 8, "pre-emption" to answer the incoming higher priority call; or

2) reject the offered call, based on the priority and domain information.

10 Procedures at the T_B reference point for interworking with private B-ISDNs

The procedures specified in clause 9 applies to the T_B reference point except for the following: validation of the indicated priority level and the associated procedure will be performed by the private B-ISDN. The network shall ensure that the private B-ISDN does not exceed the highest priority assigned to the private network.

11 Interworking with other networks

11.1 Interworking with CS-1 networks

CS-1 nodes do not support the Priority IE defined in this Recommendation and accordingly will treat this as unrecognized signalling information. The Instruction Indicators for the Priority IE shall be set to "discard IE and proceed" so that the call to be processed by a CS-1 node uses only the IEs defined in CS-1.

11.2 Interworking with DSS 1

The Priority information element will be discarded at the DSS 1/DSS 2 interworking point.

11.3 Interworking with 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.

12 Interaction with supplementary services

No interactions have been identified.

13 Parameter values

No new timers are needed for this capability.

14 Dynamic description (SDLs)

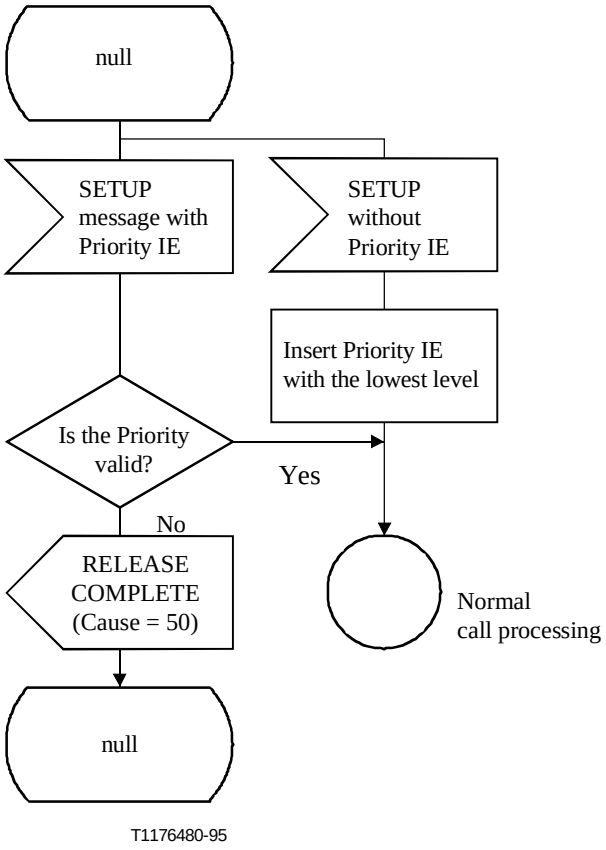

Figure 14-1/Q.2959 – Originating network side dynamic description

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