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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 – Additional traffic parameters: Support of ATM transfer capability in the broadband bearer capability information element

ITU-T Recommendation Q.2961.2

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION Q.2961.2

DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 2 – ADDITIONAL TRAFFIC PARAMETERS: SUPPORT OF ATM TRANSFER CAPABILITY IN THE BROADBAND BEARER CAPABILITY INFORMATION ELEMENT

Summary

This Recommendation is part of the DSS 2 family of Recommendations. It specifies the revision of the Broadband bearer capability information element coding from that which was specified in the first edition of Recommendation Q.2931 (1995) in order to enable the identification of the ATM transfer capability as defined in the second edition of Recommendation I.371 (1996). This Recommendation is designed, in addition, to be compatible with implementations conforming to the first edition of ITU-T Recommendation I.371 (1993) and Recommendation Q.2931 (1995).

Source

ITU-T Recommendation Q.2961.2 was prepared by ITU-T Study Group 11 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 5th June 1997.

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.

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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

Introduction

This Recommendation has been prepared to provide information on the use of the Broadband bearer capability that is consistent with the second edition of Recommendation I.371.

This Recommendation is issued in conjunction with an addendum to Recommendation Q.2931. This Recommendation is designed in addition to be compatible with implementations conforming to the first edition of Recommendation I.371 (1993) and Recommendation Q.2931 (1995).

Within this Recommendation, the changes from Recommendation Q.2931 (1995) are as follows:

– Octet 5a of the Broadband bearer capability information element was restructured to support the ATM Transfer Capabilities (ATC) specified in the second edition of Recommendation I.371. This restructuring is backward compatible with the first edition of Recommendation Q.2931 (i.e. values of Octet 5a defined in the first edition of Recommendation Q.2931 still have the same meaning). These values may be either those used on transmission and reception, those not generated by terminal equipment complying with this Recommendation, or those that are reserved.

– A new octet, Octet 7, of the Broadband bearer capability information element specified in Recommendation Q.2933, is shown.

Recommendation Q.2961.2

DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 2 – ADDITIONAL TRAFFIC PARAMETERS SUPPORT OF ATM TRANSFER CAPABILITY IN THE BROADBAND BEARER CAPABILITY INFORMATION ELEMENT

(Geneva, 1997)

2.1 Scope

Recommendation Q.2961 covers the support of additional traffic parameters for the Broadband Integrated Services Digital Network (B-ISDN) at the T_B reference point or coincident S_B and T_B reference point as defined in Recommendation I.413 [1] by means of the Digital Subscriber Signalling System No. 2 (DSS 2). This Recommendation defines DSS 2 protocol formats that support the indication of ATM traffic-related capabilities.

This Recommendation is part of the DSS 2 family of ITU-T Recommendations. It specifies the revised coding of the Q.2931 [2] Broadband bearer capability information element specifically to enable the identification of the ATM transfer capability (see Recommendation I.371 [4]).

2.2 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 I.413 (1993), *B-ISDN user-network interface*.

[2] ITU-T Recommendation Q.2931 (1995) (amended in 1997), *Digital Subscriber Signalling System No. 2 – User-Network Interface (UNI) layer 3 specification for basic call/connection control*.

[3] ITU-T Recommendation Q.2961.1 (1995), *Digital Subscriber Signalling System No. 2 – Additional traffic parameters: Additional signalling capabilities to support traffic parameters for the tagging option and the sustainable cell rate parameter set*.

[4] ITU-T Recommendation I.371 (1996), *Traffic control and congestion control in B-ISDN*.

[5] ITU-T Recommendation I.356 (1996), *B-ISDN ATM layer cell transfer performance*.

[6] ITU-T Recommendation Q.2933 (1996), *Digital Subscriber Signalling System No. 2 (DSS 2) – Signalling specification for frame relay service.*

2.3 Definitions

The definitions of Annex J/Q.2931 [2] apply. In addition, this Recommendation uses the following terms as defined in Recommendation I.371 [4]:

– Traffic parameter, ATM transfer capability, Deterministic Bit Rate (DBR), Statistical Bit Rate (SBR), SBR configuration 1, SBR configuration 2, SBR configuration 3.

2.4 Abbreviations

The abbreviations of Annex J/Q.2931 [2] apply. For the purpose of this Recommendation, the following abbreviations apply in addition:

ATC ATM Transfer Capability

BTC Broadband Transfer Capability

DBR Deterministic Bit Rate ATM transfer capability

FR Frame relay

SBR Statistical Bit Rate ATM transfer capability

SBR1 SBR configuration 1 ATM transfer capability

SBR2 SBR configuration 2 ATM transfer capability

SBR3 SBR configuration 3 ATM transfer capability

2.5 Description

This Recommendation specifies the revision of the broadband bearer capability information element coding as specified by Recommendation Q.2931 [2] in order to enable the identification of the ATM transfer capability (see Recommendation I.371 [4]).

2.6 Coding requirements

2.6.1 Broadband bearer capability

The purpose of the Broadband bearer capability information element is to indicate a requested broadband connection-oriented bearer service to be provided by the network. It contains only information that may be used by the network. The use of the Broadband bearer capability information element in relation to compatibility checking is described in Annex B/Q.2931 [2].

No default broadband bearer capability may be assumed by the absence of this information element.

The Broadband bearer capability information element will be examined by both the network and the customer equipment.

The Broadband bearer capability information element is coded as shown in Figure 1 and Table 1. The maximum length of this information element is 8 octets.

8	7	6	5	4	3	2	1	Octet
Broadband bearer capability								
0	1	0	1	1	1	1	0	1
Information element identifier								
1	Coding		IE Instruction Field					2
ext.	standard		Flag	Res.	IE Action Indicator			
Length of the Broadband bearer capability content								3 4
0/1	0	0	Bearer class					5
ext.	Spare							
1	Broadband Transfer Capability (BTC)							5a*
ext.								
1	Susceptibility		0	0	0	User plane		6
ext.	to clipping		Spare			connection configuration		
1	0	1	User information					7* (Note)
ext.	Layer id		layer 2 protocol					

NOTE – This octet shall be included when interworking with other networks providing frame relay data transfer service is required. Otherwise it is optional.

Figure 1/Q.2961.2 – Broadband bearer capability information element

Table 1/Q.2961.2 – Broadband bearer capability information element

– Bearer class (octet 5)

Bits

5 4 3 2 1

0 0 0 0 1 BCOB-A

0 0 0 1 1 BCOB-C

0 0 1 0 1 frame relaying bearer service

1 0 0 0 0 BCOB-X

All other values are reserved.

– Broadband transfer capability (octet 5a)

Values used on transmission and reception (Note 1)

– Broadband transfer capability (octet 5a)

Bits

7 6 5 4 3 2 1

0 0 0 0 1 0 1	BTC5,	constant bit rate with end-to-end timing required (Note 2)
0 0 0 0 1 1 1	DBR	(Note 3)
0 0 0 1 0 0 1	BTC9,	variable bit rate with end-to-end timing required (Note 4)
0 0 0 1 0 1 0	BTC10,	variable bit rate with end-to-end timing not required (Note 5)
0 0 0 1 0 1 1	SBR1	(Note 6) with end-to-end timing not required
0 0 1 0 0 1 1	SBR1	(Note 6) with end-to-end timing required

Additional values recognized on reception (Note 7)

– Broadband transfer capability (octet 5a)

Bits

7 6 5 4 3 2 1

0 0 0 0 0 0 0	BTC10,	variable bit rate with end-to-end timing not required
0 0 0 0 0 0 1	BTC9,	variable bit rate with end-to-end timing required
0 0 0 0 0 1 0	BTC10,	variable bit rate with end-to-end timing not required
0 0 0 0 1 0 0	BTC5,	constant bit rate with end-to-end timing required
0 0 0 0 1 1 0	BTC5,	constant bit rate with end-to-end timing required
0 0 0 1 0 0 0	BTC10,	variable bit rate with end-to-end timing not required

Additional reserved values (Note 8)

– Broadband transfer capability (octet 5a)

Bits

7 6 5 4 3 2 1

x x 0 0 0 0 0	reserved for backward compatibility
x x 0 0 0 0 1	reserved for backward compatibility
x x 0 0 0 1 0	reserved for backward compatibility
x x 0 0 1 0 0	reserved for backward compatibility
x x 0 0 1 0 1	reserved for backward compatibility
x x 0 0 1 1 0	reserved for backward compatibility
x x 0 1 0 0 0	reserved for backward compatibility
x x 0 1 0 0 1	reserved for backward compatibility
x x 0 1 0 1 0	reserved for backward compatibility

where:

x x = "0 1", "1 0", or "1 1"

All other values are reserved.

Table 1/Q.2961.2 – Broadband bearer capability information element *(concluded)*

Notes relative to Table 1:

NOTE 1 – The valid combinations of the BTC field values defined in this Recommendation and the values of the bearer class field are specified in Annex A.

NOTE 2 – This codepoint is defined to promote backward compatibility with the first edition of Recommendation Q.2931 (1995). When the bearer class is coded "BCOB-A", this octet shall only be present if the BTC field has a coding other than "constant bit rate with end-to-end timing required".

NOTE 3 – DBR is specified in Recommendation I.371 [3].

NOTE 4 – This codepoint is defined to promote backward compatibility with the first edition of Recommendation Q.2931 (1995).

NOTE 5 – This codepoint is defined to promote backward compatibility with the first edition of Recommendation Q.2931 (1995). When the bearer class is coded "BCOB-C", this octet shall only present if the BTC field has a coding other than "variable bit rate with end-to-end timing not required".

NOTE 6 – SBR1 is specified in Recommendation I.371 [4].

NOTE 7 – In order to be backward compatible with the first edition of Recommendation Q.2931 (1995) and with Recommendation Q.2933 [6], these codepoints shall be recognized in combination with a bearer class field coding of "BCOB-X" or "FR". At the S_B reference point or coincident S_B/T_B reference point, a user compliant to this Recommendation shall not include these values in a transmitted SETUP message. A network compliant to this Recommendation shall relay these values.

NOTE 8 – These values are reserved to promote backward compatibility with the first edition of Recommendation Q.2931 (1995) (i.e. the two bits marked xx are spare bits in the first edition of Recommendation Q.2931 and would accordingly be ignored by such equipment) and shall not be used.

– Susceptibility to clipping (octet 6)

  Bits
  7 6
  0 0 not susceptible to clipping
  0 1 susceptible to clipping
  All other values are reserved.

– User plane connection configuration (octet 6)

  Bits
  2 1
  0 0 point-to-point
  0 1 point-to-multipoint (Note 9)
  All other values are reserved.

NOTE 9 – Procedures for point-to-multipoint connections are optional. However, the support of this codepoint may allow a user to participate via a point-to-point connection segment in a point-to-multipoint connection (e.g. when a user, implementing Release 1 procedures, receives a SETUP message with the user plane connection configuration coding set to "point-to-multipoint", it shall treat it as if the coding were "point-to-point". This will allow the user to be a "leaf" of a point-to-multipoint connection).

– User information layer 2 protocol (octet 7)

  Bits
  5 4 3 2 1
  0 1 1 1 1 Core aspects of Annex A/Q.922

ANNEX A

Valid combinations of bearer class, broadband transfer capability and ATM traffic descriptor parameters

The parameters specified in the Broadband bearer capability information element, and the ATM traffic descriptor information element of the SETUP message shall be consistent. Table A.1 shows the valid combinations of the bearer class, BTC, and ATM traffic descriptor parameters.

NOTE 1 – The BTC values considered in Table A.1 are the ones specified in this Recommendation. This does not preclude other valid combinations to be defined in the future when new specified BTC values are specified (e.g. for Available bit rate [4], ATM block transfer [4]).

If a SETUP message is received with a Broadband bearer capability information element containing any other combination of values in Octet 5 and Octet 5a than those specified in Table A.1, a RELEASE COMPLETE message shall be returned with cause #65, "Bearer capability not supported".

If the combination of Traffic parameters, excluding the tagging field, in a SETUP message is not a valid combination specified in Table A.1 for the received values of Octet 5 and Octet 5a in the Broadband bearer capability information element, it shall be considered an unsupported combination of traffic parameters and a RELEASE COMPLETE message shall be returned with cause #73, "Unsupported combination of traffic parameters".

Table A.1 identifies the ATM transfer capability requested for the given direction of the connection. The implicitly requested QOS row in Table A.1 identifies the QOS requested for the given direction of the connection when the QOS Class is 0. In addition, Table A.1 identifies the Recommendation I.371 [4] ATM transfer capability that supports the requested ATM transfer capability and the Recommendation I.356 [5] QOS class that supports the implicitly requested QOS.

NOTE 2 – Recommendation I.371 [4] constrains the ATM transfer capability to be the same for both direction of a connection.

NOTE 3 – There is not a one-to-one correspondence between the codepoints of the BTC field and the ATM Transfer Capability (ATC) defined in Recommendation I.371 [4]. This is in part due to the need to be backward compatible with the first edition of Recommendation Q.2931 (1995) and also due to the implicit association of end-to-end timing requirements for some of the BTC codepoints.

Table A.1/Q.2961.2 (Part 1 of 3) – Valid combinations of traffic-related parameters in the SETUP message

Broadband bearer capability								
Bearer class	A	A	A	C	C	C	C	C
BTC (value) (Note 1)	absent	absent	7	absent	absent	absent	absent	11
Traffic descriptor for a given direction								
PCR (CLP = 0)		S			S			
PCR (CLP = 0 + 1)	S	S	S	S	S	S	S	S
{SCR, MBS} (CLP = 0)							S	
{SCR, MBS} (CLP = 0 + 1)						S		S
Tagging (Note 13)	N	Y/N	N	N	Y/N	N	Y/N	N
End-to-end timing required	Y	Y	Y	N	N	N	N	N
For the given direction:								
Requested ATC [4]	Note 2	Note 2	DBR	Note 2	SBR2/SBR3 Note 6	Note 7	SBR2/SBR3	SBR1
Implicitly requested QOS when the QOS class is 0	Note 3	Note 3	Class 1	Note 5	Class 3	Note 5	Class 3	Class 2
For the given direction:								
I.371 [4] ATC that supports the requested ATC	DBR	DBR Note 4	DBR	DBR	SBR2/SBR3 Note 6	SBR1	SBR2/SBR3	SBR1
I.356 [5] QOS class that supports the implicitly requested QOS	Class 1	Class 1	Class 1	Class 2	Class 3	Class 2	Class 3	Class 2
	Note 11	Note 11	Note 12	Note 11	Note 11	Note 11	Note 11	Note 12

Table A.1/Q.2961.2 (Part 2 of 3) – Valid combinations of traffic-related parameters in the SETUP message

Broadband bearer capability								
Bearer class	C	C	C	X or FR	X or FR	X or FR	X or FR	X or FR
BTC (value) (Note 1)	19	9	9	absent, 0, 2, 8 or 10	absent, 0, 2, 8 or 10	absent, 0, 2, 8 or 10	absent, 0, 2, 8 or 10	7
Traffic descriptor for a given direction								
PCR (CLP = 0)					S			
PCR (CLP = 0 + 1)	S	S	S	S	S	S	S	S
{SCR , MBS} (CLP = 0)		S					S	
{SCR , MBS} (CLP = 0 + 1)	S		S			S		
Tagging (Note 13)	N	Y/N	N	N	Y/N	N	Y/N	N
End-to-end timing required	Y	Y	Y	N	N	N	N	Y
For the given direction:								
Requested ATC [4]	SBR1	SBR2/SB R3	Note 7	Note 2	SBR2/SBR3 Note 6	Note 7	SBR2/SBR3	DBR
Implicitly requested QOS when the QOS class is 0	Note 10	Note 8	Note 8	Note 5	Class 3	Note 5	Class 3	Class 1
For the given direction:								
I.371 [4] ATC that supports the requested ATC	SBR1	Note 9	SBR1	DBR	SBR2/SBR3 Note 6	SBR1	SBR2/SBR3	DBR
I.356 [5] QOS class that supports the implicitly requested QOS	Class 1		Class 1	Class 2	Class 3	Class 2	Class 3	Class 1
	Note 12			Note 11	Note 11	Note 11	Note 11	Note 12

Table A.1/Q.2961.2 (Part 3 of 3) – Valid combinations of traffic-related parameters in the SETUP message

Broadband bearer capability								
Bearer class	X or FR	X or FR	X or FR	X or FR	X or FR	X or FR	X or FR	X or FR
BTC (value) (Note 1)	11	19	4, 5 or 6	4, 5 or 6	1 or 9	1 or 9	1 or 9	1 or 9
Traffic descriptor for a given direction								
PCR (CLP = 0)				S		S		
PCR (CLP = 0 + 1)	S	S	S	S	S	S	S	S
{SCR , MBS} (CLP = 0)								S
{SCR , MBS} (CLP = 0 + 1)	S	S					S	
Tagging (Note 13)	N	N	N	Y/N	N	Y/N	N	Y/N
End-to-end timing required	N	Y	Y	Y	Y	Y	Y	Y
For the given direction:								
Requested ATC [4]	SBR1	SBR1	Note 2	Note 2	Note 2	SBR2/SBR3 Note 6	Note 7	SBR2/SBR3
Implicitly requested QOS when the QOS class is 0	Class 2	Note 10	Note 3	Note 3	Note 8	Note 8	Note 8	Note 8
For the given direction:								
I.371 [4] ATC that supports the requested ATC	SBR1	SBR1	DBR	DBR Note 4	DBR	Note 9	SBR1	Note 9
I.356 [5] QOS class that supports the implicitly requested QOS	Class 2	Class 1	Class 1	Class 1	Class 1		Class 1	
	Note 12	Note 12	Note 11	Note 11	Note 11	Note 11	Note 11	Note 11

Table A.1/Q.2961.2 – Valid combinations of traffic-related parameters in the SETUP message *(concluded)*

Notes relative to Table A.1:

NOTE 1 – BTC values 0, 1, 2, 4, 6, 8 are not used on transmission but shall be understood on reception.

NOTE 2 – The requested capability in this case is not defined in Recommendation I.371 [4] and differs from the DBR ATM transfer capability (see Recommendation I.371 [4]) only in that selective discardability of CLP = 1 cells may apply.

NOTE 3 – The implicitly requested QOS class in this case is not defined in Recommendation I.356 [5] and differs from QOS class 1 (see Recommendation I.356 [5]) in that the CLR commitment is only for CLP = 0 cells.

NOTE 4 – PCR (CLP = 0) is ignored and tagging is not performed.

NOTE 5 – The implicitly requested QOS class corresponds to QOS class 3 (see Recommendation I.356 [5]).

NOTE 6 – This is equivalent to SBR2/SBR3 with SCR (CLP = 0) equal to specified PCR (CLP = 0) and with MBS (CLP = 0) equal to 1.

NOTE 7 – The requested capability in this case is not defined in Recommendation I.371 [4] and differs from the SBR1 ATM transfer capability (see Recommendation I.371 [4]) only in that selective discardability of CLP = 1 cells may apply.

NOTE 8 – The implicitly requested QOS class in this case is not defined in I.356 [5] and differs from QOS class 3 (see Recommendation I.356 [5]) in that end-to-end timing is required.

NOTE 9 – There is no combination recommended in Recommendation I.356 [5].

NOTE 10 – The implicitly requested QOS class in this case is not defined in Recommendation I.356 [5].

NOTE 11 – This combination is supported in order to promote backward compatibility with the first edition of Recommendation Q.2931 (1995), with Recommendations Q.2961.1 [3] and Q.2933 [6].

NOTE 12 – For this combination, the ATC and the QOS class is the same in both directions.

NOTE 13 – If tagging is not specified but requested by a user, or if tagging is specified for a combination but not supported by a network, the call shall proceed without tagging being applied.

A Blank in this table means that the traffic parameter is not applicable for this combination.

PCR = Peak Cell Rate, SCR = Sustainable Cell Rate, MBS = Maximum Burst Size, S = Specified

For the Tagging row: Y = Yes, N = No or No indication, Y/N = either "Yes" or "No or "No Indication"

SBR2/SBR3 = If tagging is allowed (as indicated in the CONNECT message) then the ATC is SBR3; otherwise, the ATC is SBR2.

APPENDIX I

Guidelines on meaning of bearer class field

I.1 Bearer class

The following provides a brief description of what is meant by the various codings of the bearer class field in the Broadband bearer capability information element.

I.1.1 BCOB-A

This class provides for a virtual channel-based capability where the service data unit integrity will depend on the presence of other parameters, e.g. when a Narrowband bearer capability information element is present and specifies a request for an emulated 64 kbit/s-based N-ISDN bearer service, the service data unit integrity is provided for the emulated 64 kbit/s channel (8 kHz * 8 bits). In this case, the network may act upon the contents of the AAL parameters information element to provide interworking with N-ISDN.

I.1.2 BCOB-C

This class provides for a virtual channel-based capability where AAL service data unit integrity is provided. Thus, the network may look at the AAL parameters information element in order to provide this service data unit integrity.

I.1.3 BCOB-X

This class provides for a virtual channel-based capability where ATM service data unit integrity is provided.

I.1.4 FR

This class provides for a virtual channel-based capability where layer 2 frame service data unit integrity is provided. In this, the network may not process any higher layer user plane protocols. Thus, the network may look at the AAL parameters, link layer core parameters, and the link layer protocol parameters information elements in order to provide this service data unit integrity.

APPENDIX II

Guidelines on use of BTC field

Although great effort was put into making the restructuring of Octet 5a (BTC field) of the Broadband bearer capability information element backward-compatible, some of the allowed combinations in Table A.1 will not be supported by equipment that do not implement this Recommendation. This appendix will identify where backward compatibility is not preserved and provide guidance on when these non-backward-compatible codings should be used.

The following identifies the non-backward-compatible codings:

- Octet 5a present with bearer classes BCOB-A or BCOB-C;
- BTC field values of 7, 11 and 19.

A call placed with either of the above will not complete if the call must transit a network that does not support the BTC field or if the called party does not support the BTC field.

II.1 Guidelines on the use of BTC value of 7

The BTC value of 7 may be used with BCOB-A and with BCOB-X to request the I.371-defined DBR ATC. A similar capability may be requested by using the BTC value of 5 for BCOB-X or by the absence of octet 5a of the Broadband bearer capability information element for BCOB-A. This capability differs from DBR only in that cells with the CLP bit set to 1 may be subject to preferential discard. If the user sends only CLP = 0 cells, the service provided is the same. Thus, when backward compatibility is a concern and the user is willing to accept that cells with CLP = 1 are subject to discard, the user should request:

- BCOB-A with octet 5a absent instead of BCOB-A with a BTC value of 7;
- BCOB-X with BTC value of 5 instead of BCOB-A with a BTC value of 7.

If discardability of CLP = 1 cells is not acceptable to the user, then the BTC value of 7 should be used. This way, if the connection is established, it will have the desired ATC.

II.2 Guidelines on the use of BTC value of 11

The BTC value of 11 may be used with BCOB-C and with BCOB-X to request the I.371-defined SBR1 ATC. A similar capability may be requested by using the BTC value of 10 for BCOB-X or by the absence of octet 5a of the Broadband bearer capability information element for BCOB-C. This capability differs from SBR1 only in that cells with the CLP bit set to 1 may be subject to preferential discard. If the user sends only CLP = 0 cells, the service provided is the same. Thus when backward compatibility is a concern and the user is willing to accept that cells with CLP = 1 are subject to discard, the user should request:

- BCOB-C with octet 5a absent instead of BCOB-C with a BTC value of 11;
- BCOB-X with either octet 5a absent or BTC value of 10 instead of BCOB-X with a BTC value of 11;
- FR with either octet 5a absent or BTC value of 10 instead of FR with a BTC value of 11.

If discardability of CLP = 1 cells is not acceptable to the user, then the BTC value of 11 should be used. This way, if the connection is established, it will have the desired ATC.

II.3 Guidelines on the use of BTC value of 19

The BTC value of 19 may be used with BCOB-A and with BCOB-X to request the I.371-defined SBR1 ATC. A similar capability may be requested by using the BTC value of 9 for BCOB-X or by the absence of octet 5a of the Broadband bearer capability information element for BCOB-C. This capability differs from SBR1 only in that cells with the CLP bit set to 1 may be subject to preferential discard. If the user sends only CLP = 0 cells, the service provided is the same. Thus when backward compatibility is a concern and the user is willing to accept that cells with CLP = 1 are subject to discard, the user should request:

- BCOB-C with BTC value of 9 instead of BCOB-C with a BTC value of 19;
- BCOB-X with BTC value of 9 instead of BCOB-X with a BTC value of 19;
- FR with BTC value of 9 instead of FR with a BTC value of 19.

If discardability of CLP = 1 cells is not acceptable to the user, then the BTC value of 19 should be used. This way, if the connection is established, it will have the desired ATC.

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