INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.2939.1
(09/97)

SERIES Q: SWITCHING AND SIGNALLING

Broadband ISDN – B-ISDN application protocols for access signalling

Digital Subscriber Signalling System No. 2 – Application of DSS 2 service-related information elements by equipment supporting B-ISDN services

ITU-T Recommendation Q.2939.1

(Previously CCITT Recommendation)

ITU-T Q-SERIES RECOMMENDATIONS

SWITCHING AND SIGNALLING

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ITU-T RECOMMENDATION Q.2939.1

DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 2 – APPLICATION OF DSS 2 SERVICE-RELATED INFORMATION ELEMENTS BY EQUIPEMENT SUPPORTING B-ISDN SERVICES

Summary

This Recommendation provides supplementary information on the usage of the service-related information elements (B-BC, AAL parameters, B-HLI, B-LLI, N-BC, N-HLC, N-LLC) for individual B-ISDN services. It considers the services as they are specified for public B-ISDN. It does not specify additional codings required to support services by private networks. This Recommendation is Part 1 of Recommendation Q.2939. The coding for the parameters which are defined in Recommendation Q.2931 (1996) are specified in this part, while the coding for the additional traffic parameters which are defined in Recommendation Q.2961 (1996) are expected to be specified in the subsequent publication of additional parts of Recommendation Q.2939.

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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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 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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DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 2 – APPLICATION OF DSS 2 SERVICE-RELATED INFORMATION ELEMENTS BY EQUIPEMENT SUPPORTING B-ISDN SERVICES

(Geneva, 1997)

1   Introduction

This Recommendation specifies the service-related coding of the information elements to be used by terminals supporting the B-ISDN telecommunication services identified in the Recommendations in Study Group 1 and operating in the demand mode. It is based on Recommendation Q.2931 [1] including its relevant Annexes B and E.

For each service it is specified which field values the calling user is requested to send and which field values the called user could expect to receive in a pure B-ISDN environment (clause 7). Clause 8 specifies the codings to be used in the case that an emulated N-ISDN service is requested.

The exact information elements and their bit patterns correlated with the named field values can be found in the following subclauses of Recommendation Q.2931 [1]:

–   in 4.5.7 as for the broadband bearer capability information element;

–   in 4.5.8 as for the broadband high layer information element;

–   in 4.5.9 as for the broadband low layer information element;

–   in 4.5.5 as for the ATM adaptation layer parameter information element;

–   in 4.5.6 as for the ATM traffic descriptor information element;

–   in 4.5.18 as for the quality of service parameter information element; and

–   in 4.5.24 as for the OAM traffic descriptor information element.

Generally, the above-mentioned information elements serve the following purposes.

At the calling side, the network shall check that the bearer service requested by the calling user in the broadband bearer capability information element matches with the broadband bearer service provided to that user by the network (see Annex B/Q.2931 [1]).

At the called side, the called user performs network-to-user compatibility checking based on the content of the B-BC, QOS parameter, ATM traffic descriptor and OAM traffic descriptor information elements. In addition, the user performs user-to-user compatibility checking based on the content of the AAL parameter, B-HLI and B-LLI information elements (see Annex B/Q.2931 [1]).

2   Scope and objective

This Recommendation provides supplementary information on the usage of the compatibility information elements for individual B-ISDN services. It considers the services as they are specified for public B-ISDN. It does not specify additional codings required to support services by private networks.

This Recommendation is Part 1 of Recommendation Q.2939. The codings for the parameters which are defined in Recommendation Q.2931 [1] (SCS1) are specified in this part and the codings for the additional traffic parameters which are defined in Recommendation Q.2961 will be specified in the following parts of this Recommendation.

The services currently covered in this Recommendation may require to be enhanced when new services are defined and/or when the functionality of the networks and terminal equipment has progressed.

The specific objective of this Recommendation is to provide guidance on the correct usage of DSS 2 codepoints to the different ITU-T Study Groups dealing with services, B-ISDN terminals and terminal adapters. This Recommendation shall help to assure interoperability of terminals supporting the same telecommunication service and shall enable terminals to operate on different public B-ISDNs.

The typical codings specified in clause 7 shall be supported by all users and networks supporting the corresponding service. Other variants of these codings may be supported in addition, however, these variants might not provide for worldwide interoperability and might not guarantee terminal interchangeability.

Finally, clause 8 presents codings when emulated N-ISDN services are requested.

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

[2]   CCITT Recommendation F.811 (1992), *Broadband connection-oriented bearer service*.

[3]   ITU-T Recommendation Q.939 (1993), *Typical DSS 1 service indicator codings for ISDN telecommunications services*.

4 Abbreviations

The abbreviations of Annex J/Q.2931 [1] apply.

5 General principles applicable to all services

For all services the following principles apply:

1)   The AAL information element for BCOB-X is transferred transparently through a B-ISDN between the calling entity and the addressed entity. However, dependent on the charging principles applied (e.g. for narrow-band ISDN interworking), some networks may perform checks on the length of the AAL information elements. For BCOB-A and BCOB-B, networks can act upon the AAL information element.

2)   The broadband high layer information element is transferred transparently through a B-ISDN between the calling entity and the addressed entity. However, some networks may check its content, e.g. to associate a supplementary service to a teleservice.

3)   When bearer services are specified, the B-HLI information element will normally not be present unless it is used to support high layer applications.

4)   The broadband low layer information element is transferred transparently through a B-ISDN between the calling entity and the addressed entity. However, dependent on the charging principles applied, some networks may perform checks on the length of the B-LLI information element.

5)   The narrow-band low layer compatibility information element is transferred transparently through a B-ISDN between the calling entity and the addressed entity. However, dependent on the charging principles applied, some networks may perform checks on the length of the N-LLC information.

6)   The narrow-band high layer compatibility information element is transferred transparently through a B-ISDN between the calling entity and the addressed entity. However, some networks may check its content, e.g. to associate a supplementary service to a teleservice.

7)   The coding examples consider the general case.

Conventions applied for the presentation of the coding examples:

1) Octets 1-4 of the compatibility information elements, indicating the information element identifier, coding standard, information element instruction field and length respectively, are omitted from the considerations and therefore not shown in the examples.

2) A dashed line (------) instead of a field value indicates:

    a)   at the calling side: this field is not included in the information element;

    b)   at the called side: this field is not present.

3) Field values in brackets ( ) may or may not be included at the calling side and therefore may or may not be present at the called side.

6 Impact of interworking situations

6.1 Incoming calls originated in non-ISDNs

In the case of an incoming call originated in a non-ISDN, N-HLC and N-LLC information elements will be absent, and interworking with a non-ISDN is shown by the presence of the progress indicator information element. When this occurs, the terminal shall accept the incoming call according to Annex B/Q.2931 [1], i.e. it shall regard the compatibility as successful if it is compatible with the included information, which as a minimum will be in addition to the information elements listed in B.3.2/Q.2931 [1] and B.3.3/Q.2931 [1] the narrow-band bearer capability information element.

6.2 N-BC and N-LLC application guidelines for emulated N-ISDN services

The N-BC and N-LLC information elements shall be used in accordance with the BC and LLC application guidelines described in 6.2/Q.939 [3].

7 Request and recognition of a basic B-ISDN service

7.1 Request and recognition of a broadband bearer service

7.1.1 Request and recognition of a general broadband connection-oriented bearer service (Recommendation F.811 [2])

7.1.1.1 Request by a calling terminal equipment

a) B-BC information element coding:

Octet	Information element field	Field value
5	Bearer class	BCOB-A or BCOB-C or BCOB-X
5a (Note)	Traffic type	No indication or constant bit rate or variable bit rate
	Timing requirements	No indication or end-to-end timing required or end-to-end timing not required
6	Susceptibility to clipping	Not susceptible or susceptible
	User plane connection configuration	Point-to-point or point-to-multipoint
NOTE – This octet may only be present if bearer class "X" is indicated in octet 5.		

b) The ATM traffic descriptor information element and quality of service information element are set according to the user requirements.

c) The AAL parameters information element, B-HLI information element and B-LLI information element are optional.

7.1.1.2 Compatibility at the called terminal equipment

a) B-BC information element coding:

Octet	Information element field	Field value
5	Bearer class	BCOB-A or BCOB-C or BCOB-X
5a (Note)	Traffic type	No indication or constant bit rate or variable bit rate
	Timing requirements	No indication or end-to-end timing required or end-to-end timing not required
6	Susceptibility to clipping	Not susceptible or susceptible
	User plane connection configuration	Point-to-point or point-to-multipoint
NOTE – This octet may only be present if bearer class "X" is indicated in octet 5.		

b) The ATM traffic descriptor information element and quality of service information elements are checked by the calling user for terminal compatibility according to Annex B/Q.2931 [1].

c) The AAL parameters information element, B-HLI information element and B-LLI information element are present if provided by the calling user. If present, these should be checked for terminal compatibility according to Annex B/Q.2931 [1].

7.1.2 Request and recognition of BCOB-A

7.1.2.1 Request by a calling terminal equipment

a) B-BC information element coding:

Octet	Information element field	Field value
5	Bearer class	BCOB-A
6	Susceptibility to clipping	(Specific service dependent)
	User plane connection configuration	(Specific service dependent)

b) The ATM traffic descriptor information element and quality of service information element are set according to the user requirements.

c) AAL parameters information element coding:

Octet	Information element field	Field value
5	AAL type	Type 1

Other fields depend on service specification.

d) The B-HLI information element and B-LLI information element are optional.

7.1.2.2 Compatibility at the called terminal equipment

a) B-BC information element coding:

Octet	Information element field	Field value
5	Bearer class	BCOB-A
6	Susceptibility to clipping	(Specific service dependent)
	User plane connection configuration	(Specific service dependent)

b)   The ATM traffic descriptor information element and quality of service information elements are checked by the calling user for terminal compatibility according to Annex B/Q.2931 [1].

c)   AAL parameters information element coding:

Octet	Information element field	Field value
5	AAL type	Type 1

Other fields depend on service specification.

d)   The B-HLI information element and B-LLI information elements are present if provided by the calling user. If present, these should be checked for terminal compatibility according to Annex B/Q.2931 [1].

7.1.3   Request and recognition of BCOB-C

7.1.3.1   Request by a calling terminal equipment

a)   B-BC information element coding:

Octet	Information element field	Field value
5	Bearer class	BCOB-C
6	Susceptibility to clipping	(Specific service dependent)
	User plane connection configuration	(Specific service dependent)

b)   The ATM traffic descriptor information element and quality of service information element are set according to the user requirements.

c)   AAL parameters information element coding:

Octet	Information element field	Field value
5	AAL type	Type 3, 4 or 5

Other fields depend on service specification.

d)   The B-HLI information element and B-LLI information element are optional.

7.1.3.2   Compatibility at the called terminal equipment

a)   B-BC information element coding:

Octet	Information element field	Field value
5	Bearer class	BCOB-C
6	Susceptibility to clipping	(Specific service dependent)
	User plane connection configuration	(Specific service dependent)

b)   The ATM traffic descriptor information element and quality of service information elements should be checked by the calling user for terminal compatibility according to Annex B/Q.2931 [1].

c)   AAL parameters information element coding:

Octet	Information element field	Field value
5	AAL type	Type 3, 4 or 5

Other fields depend on service specification.

d)   The B-HLI information element and B-LLI information elements are present if provided by the calling user. If present, these should be checked for terminal compatibility according to Annex B/Q.2931 [1].

8   Application of the B-BC, N-BC, N-HLC, N-LLC, ATM traffic descriptor, QOS parameter and AAL parameter information elements for emulated N-ISDN services

The allowed codepoint values for the B-BC, ATM traffic descriptor, QOS parameter and AAL parameter information elements for emulated N-ISDN services are given in E.4/Q.2931 [1].

The N-BC, N-HLC and N-LLC information elements shall be used in accordance with the guidelines on the usage of the BC, HLC and LLC information elements described in Recommendation Q.939 [3].

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