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Frame relay services; Part 4: Broadband Integrated Services Digital Network (B-ISDN); Frame relay bearer service; Service definition

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE
Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 4 92 94 42 00 - Fax: +33 4 93 65 47 16

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Foreword

This final draft European Telecommunication Standard (ETS) has been produced by the Network Aspects (NA) Technical Committee of the European Telecommunications Standards Institute (ETSI), and is now submitted for the Voting phase of the ETSI standards approval procedure.

The content of this ETS is adapted from CCITT Recommendation I.233.1.

This ETS consists of 4 parts as follows:

Part 1: "Part 1: General description".

Part 2: "Part 2: Integrated Services Digital Network (ISDN); Frame relay bearer service; Service definition".

Part 3: "Part 3: Integrated Services Digital Network (ISDN); Frame relay data transmission service; Service definition".

Part 4: "Part 4: Broadband Integrated Services Digital Network (B-ISDN); Frame relay bearer service; Service definition".

Proposed transposition dates	
Date of latest announcement of this ETS (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

Introduction

The purpose of this ETS is to describe the network specific aspects of the frame relay service when it is offered on a Broadband Integrated Services Digital Network (B-ISDN).

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1 Scope

This final draft European Telecommunication Standard (ETS) specifies the network specific aspects of the frame relay service when it is offered on a Broadband Integrated Services Digital Network (B-ISDN); the service is called "frame relay bearer service".

This ETS is applicable for all B-ISDNs offering a frame relay bearer service.

This ETS should be complemented with ETS 300 399-1 [1], for the common part of the frame relay service.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ETS 300 399-1: "Frame relay services; Part 1: General description".

[2] ETS 300 467: "Broadband Integrated Services Digital Network (B-ISDN); Support of Frame Relay Bearer Service (FRBS) in B-ISDN and frame relay interworking between B-ISDN and other networks".

[3] CCITT Recommendation E.164: "Numbering plan for the ISDN era".

[4] ETS 300 299: "Cell based user network access physical layer interfaces for B-ISDN applications".

[5] ETS 300 300: "SDH based user network access physical layer interfaces for B-ISDN applications".

[6] CCITT Recommendation Q.922: "ISDN data link layer specification for frame mode bearer services".

[7] ITU-T Recommendation Q.933: "Signalling specification for frame mode basic call control".

[8] ITU-T Recommendation Q.2100: "B-ISDN signalling ATM Adaptation Layer (SAAL) overview description".

[9] ITU-T Recommendation Q.2110: "B-ISDN ATM Adaptation Layer - Service Specific Connection Oriented Protocol (SSCOP)".

[10] ITU-T Recommendation Q.2130: "B-ISDN ATM Adaptation Layer - Service specific co-ordination function for support of signalling at the user-network interface (SSCF at UNI)".

[11] CCITT Recommendation X.121: "International numbering plan for public data networks".

[12] PrETS 300 428: "Broadband Integrated Services Digital Network (B-ISDN); Asynchronous Transfer Mode (ATM) Adaptation Layer (AAL) specification - Type 5".

[13] ETS 300 298-2: "Broadband Integrated Services Digital Network (B-ISDN); Asynchronous Transfer Mode (ATM); Basic characteristics and functional specifications of ATM; Part 2: B-ISDN ATM layer specifications".

[14] CCITT Recommendation Q.2931: "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No.2 (DSS2) User-Network Interface (UNI) layer 3 specification for basic call/connection control".

[15] CCITT Recommendation Q.2933: "Digital Subscriber Signalling System No.2 (DSS2) - Signalling Specification for France Relay service".

3 Definitions

For the purposes of this ETS, the definitions given in ETS 300 399-1 [1], clause 3 apply.

4 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

ATM	Asynchronous Transfer Mode
B-ISDN	Broadband Integrated Services Digital Network
DLCI	Data Link Connection Identifier
FR-SSCS	Frame Relay - Service Specific Convergence Sublayer
QoS	Quality of Service
SDU	Service Data Unit
AAL	ATM Adaptation Layer

5 General definition

This bearer service provides the bi-directional transfer of data units (Frame Relay - Service Specific Convergence Sublayer - Service Data Unit (FR-SSCS-SDU)) from one S_B or T_B reference point to another. The data units are routed through the network on the basis of an attached label. This label is a logical identifier with local significance (termed Data Link Connection Identifier (DLCI) in the protocol description). Per DLCI, the order of the data units is preserved from one S_B or T_B reference point to another.

The user-network interface structure at the S_B or T_B reference point allows for the establishment of multiple on-demand and/or permanent virtual channels to many destinations.

6 Description of the frame relay service

The description of the frame relay service given in clause 6 of ETS 300 399-1 [1] applies.

7 Service classes

The service class definition in clause 7 of ETS 300 399-1 [1] applies.

The service classes are defined per Asynchronous Transfer Mode (ATM) connection; not all service classes may be offered simultaneously on a single ATM connection. The service classes on ATM connections are provided with peak rate resource allocation. Other resource allocations and their possible impact on the service classes are for further study.

Table 1:Frame relay bearer service classes

Class			Characteristic	Service association						
P			Layer 2 permanent							
	1		Layer 1 permanent	◆						
		a	with Q.933, annex A connection monitoring		◆					
		b	with Q.933, annex B connection monitoring			◆				
	2		Layer 1 on-demand							
		a	with Q.933, annex A connection monitoring				◆			
		b	with Q.933, annex B connection monitoring					◆	◆	
A			On-demand case A							
	1		Layer 1 permanent		◆					
	2		Layer 1 on-demand					◆		
B			On-demand case B							
	1		Layer 1 permanent			◆				
	2		Layer 1 on-demand						◆	
Q.933 = ITU-T Recommendation Q.933 [7].										

The service classes supported are summarized in table 1. The service associations (columns in table 1) show the valid combinations of the individual frame relay bearer services which apply separately to each CCITT Recommendation E.164 [3] number or group of CCITT Recommendation E.164 [3] numbers on the interface. On a particular user-network interface, more than one CCITT Recommendation E.164 [3] number or groups of CCITT Recommendation E.164 [3] numbers may be assigned simultaneously.

NOTE: It is not implied that a network should offer all frame relay bearer services or all service associations.

8 Procedures

For the physical layer and the signalling, the procedures specified in the corresponding protocols listed in table 2 item 9 apply. The procedures defined in clause 8 of ETS 300 399-1 [1] apply.

9 Network capabilities for charging

The network capabilities for charging given in clause 9 of ETS 300 399-1 [1] apply.

10 Interworking

The interworking specification given in clause 10 of ETS 300 399-1 [1] applies.

11 Attributes and values of attributes

The attributes and values are given in table 2.

Table 2: Frame relay bearer service attributes

	Information transfer attributes	
1	Information transfer mode	Frame
2	Information transfer rate	Less than or equal to the maximum bit rate of the user information access channel and the throughput of the frame relay connection (DLCI)
3	Information transfer capability	Unrestricted
4	Structure	SDU integrity
5	Establishment of communication	On-demand Permanent
6	Symmetry	Bi-directional symmetric
7	Communication configuration	Point-to-point
	Access attributes	
8	Access channel	ATM connection
9	Access protocol	
9.1	Signalling access protocol layer 1(see note)	ETS 300 299 [4] or ETS 300 300 [5] and ETS 300 298-2 [13]
9.2	Signalling access protocol layer 2 (permanent) Signalling access protocol layer 2 (case A) Signalling access protocol layer 2 (case B) (see note)	none or AAL5 + FR-SSCS + Q.922 (data link control) ALL5 + Q.2100 + Q.2110 + Q.923 AAL5 + FR-SSCS + Q922 (data link control) AAL5 + Q.2100 + Q.2110 + Q.923
9.3	Signalling access protocol layer 3 (permanent) Signalling access protocol layer 3 (case A) Signalling access protocol layer 3 (case B) (see note)	Q.933 (annex A or B) Q.2931 and Q.933 Q.2933
9.4	Information access protocol layer 1	ETS 300 299 [4] or ETS 300 300 [5] and ETS 300 298-2 [13]
9.5	Information access protocol layer 2 (core functions)	AAL5 + FR-SSCS
9.6	Information access protocol layer 2 (data link control)	user specific; Q.922 data link control required for interworking with X.25
	General attributes	
10	Supplementary services provided for signalling access protocol layer 3, case A (see note)	for further study
11	Quality of Service (QoS).	not specified
12	Interworking possibilities	not specified
13	Operational and commercial	See clause 9 of ETS 300 399-1 [1]

SEQ
Q.933 = ITU-T Recommendation Q.933 [7]
Q.2110 = ITU-T Recommendation Q.2110 [9]
X.25 = ITU-T Recommendation X.25.

Q.922 = CCITT Recommendation Q.922 [6]
Q.2100 = ITU-T Recommendation Q.2100 [8]
Q.2130 = ITU-T Recommendation Q.2130 [10]
Q.2931 = ITU-T Recommendation Q.2931 [14]
Q.2933 = ITU-T Recommendation Q.2933 [15]
AAL5 = ETS 300 428 [12]

NOTE: Attribute values 9.1, 9.2, 9.3 and 10 of table 2 are only for on-demand frame relay bearer services.

12 Dynamic description

No dynamic description is provided for this ETS.

13 Numbering plan

Both the CCITT Recommendation E.164 [3] and the CCITT Recommendation X.121 [11] numbering plans are applicable depending on the service class (see clause 7). This dependence is shown in table 3.

Table 3: Numbering plan and service class dependency

Service class	Numbering plan
P1a P1b	not applicable not applicable
P2a P2b	CCITT Recommendation E.164 [3] CCITT Recommendation E.164 [3]
A1 A2	CCITT Recommendations E.164 [3] or X.121 [11] (note) stage 1 signalling: CCITT Recommendation E.164 [3] stage 2 signalling: CCITT Recommendations E.164 [3] or X.121 [11] (note)
B1 B2	CCITT Recommendation E.164 [3] CCITT Recommendation E.164 [3]
NOTE: The numbering plan used is service provider dependent.	

Annex A (informative): Bibliography

The following references are given for informative purposes:

1) ETS 300 102: "Integrated Services Digital Network (ISDN); User-network interface layer 3 Specifications for basic call control".
2) ETS 300 125: "Integrated Services Digital Network (ISDN); User-network interface data link layer specification Application of CCITT Recommendations Q.920/I.440 and Q.921/I.441".
3) prETS 300 425: "Private Telecommunication Network (PTN); Specification, functional model and information flows; Call intrusion supplementary service (CISD)".
4) ITU-T Recommendation I.361: "B-ISDN ATM layer specification".
5) ITU-T Recommendation I.362: "B-ISDN ATM adaptation layer (AAL) description".
6) ITU-T Recommendation I.363: "B-ISDN ATM adaptation layer (AAL) specification".
7) ITU-T Recommendation I.365.1: "Frame relaying service specific convergence sublayer (FR-SSCS)".
8) ITU-T Recommendation I.371: "Traffic control and congestion control in B-ISDN".
9) ITU-T Recommendation X.25: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".
10) CCITT Recommendation X.200: "Reference Model of Open Systems Interconnection for CCITT applications".
11) ITU-T Recommendation X.210: "Open Systems Interconnection layer service definition conventions".
12) CCITT Recommendation I.112: "Vocabulary of terms for ISDNs".
13) CCITT Recommendation I.233.1: "ISDN frame relaying bearer service".

History

Document history			
April 1995	Public Enquiry	PE 82:	1995-04-10 to 1995-09-01
November 1997	Vote	V 9803:	1997-11-18 to 1998-01-16