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Contents

Foreword 5

1 Scope 7

2 Normative references 7

3 Definitions 8

4 Symbols and abbreviations 8

5 Description 8

6 Procedures 9
6.1 Provision and withdrawal 9
6.2 Normal procedures 9
6.2.1 Originating the call (call establishment) 9
6.2.2 Indications during call establishment 9
6.2.3 Terminating the call 10
6.3 Exceptional procedures 10
6.3.1 Situations at the calling user side 10
6.3.2 Situations at the called user side 10
6.3.3 Situations due to network conditions 10
6.3.4 Retention of call information 10

7 Intercommunication considerations 10
7.1 Interworking with non-ISDNs 10
7.2 Interworking with private ISDNs 10

8 Interaction with other supplementary services 11

9 Static description of the service using attributes 11
9.1 Low layer attributes 11
9.1.1 Information transfer attributes 11
9.1.2 Access attributes 11
9.2 High layer attributes 12
9.3 General attributes 12

10 Dynamic description 12

Annex A (informative): Bibliography 13

History 14

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Network Aspects (NA) Technical Committee of the European Telecommunications Standards Institute (ETSI).

In accordance with CCITT Recommendation I.130 [1], the following three level structure is used to describe the supplementary telecommunications services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;

- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and

- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

This ETS details the stage 1 aspects (overall service description) for the telephony 3,1 kHz teleservice. The stage 2 and stage 3 aspects are detailed in a general form in CCITT Recommendation Q.71 (an ETSI version is under development) and ETS 300 102 (1990), respectively.

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1 Scope

This standard defines the stage one of the telephony 3,1 kHz teleservice for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. Stage one is an overall service description from the user's point of view (see CCITT Recommendation I.130 [1]), but does not deal with the details of the human interface itself.

This standard defines the interworking requirements of private ISDNs with the public ISDN.

In addition this standard specifies the base functionality where the service is provided to the user via a private ISDN.

This standard does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not an ISDN but does include interworking requirements of other networks with the public ISDN.

Charging principles are outside the scope of this standard.

The values of the general attributes are outside the scope of this standard.

The telephony 3,1 kHz teleservice provides users with the ability for real time two-way speech conversation via the public ISDN.

This standard is applicable to the stage two and stage three standards for the ISDN telephony 3,1 kHz teleservice. The terms "stage two" and "stage three" are also defined in CCITT Recommendation I.130 [1]. Where the text indicates the status of a requirement (i.e. as strict command or prohibition, as authorisation leaving freedom, or as a capability or possibility), this shall be reflected in the text of the relevant stage two and stage three standards.

Furthermore, conformance to this standard is met by conforming to the stage three standards with the field of application appropriate to the equipment being implemented. Therefore no method of testing is provided for this standard.

2 Normative references

This standard incorporates by dated or 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 standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] CCITT Recommendation I.130 (1988): "Method for the characterisation of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[2] CCITT Recommendation G.711 (1988): "Pulse code modulation (PCM) of voice frequencies".

[3] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".

[4] CCITT Recommendation I.210 (1988): "Principles of telecommunication services supported by an ISDN and the means to describe them".

[5] CCITT Recommendation I.220 (1988): "Common dynamic description of basic telecommunication services".

[6] CCITT Recommendation E.164 (1988): "Numbering plan for the ISDN era".

[7] CCITT Recommendation I.140 (1988): "Attribute technique for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[8] CCITT Recommendation I.221 (1988): "Common specific characteristics of services".

3 Definitions

For the purposes of this standard, the following definitions apply:

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [3], § 2.3, definition 308.

Service; telecommunications service: see CCITT Recommendation I.112 [3], § 2.2, definition 201.

Supplementary service: see CCITT Recommendation I.210 [4], § 2.4.

ISDN number: a number conforming to the numbering plan and structure specified in CCITT Recommendation E.164 [6].

Teleservice: see CCITT Recommendation I.112 [3], § 2.2.

Network determined user busy: see CCITT Recommendation I.221 [8], § 3.1.4.

User determined user busy: see CCITT Recommendation I.221 [8], § 3.1.4

Voice quality: the required acoustic performance is described in terms of loudness ratings, frequency response, quantisation distortion etc.; overall requirements are given in the P. Series of CCITT Recommendations.

Transmission delay: the maximum delay is that specified for the general telephone network.

Retention timer: this timer specifies the amount of time that the network retains all of the information supplied by the calling user when the call encounters busy or is terminated. Implementation of this timer is a network option. The value of this timer shall be greater than 15 seconds.

4 Symbols and abbreviations

ISDN Integrated Services Digital Network

PSTN Public Switched Telephone Network

5 Description

The telephony 3,1 kHz teleservice provides speech transmission at an audio bandwidth of 3,1 kHz. The communication is bidirectional, with both directions active during the speech phase.

User information shall be provided over a B channel, signalling is provided over the D channel.

NOTE: The network may use processing techniques appropriate for speech such as analogue transmission, echo cancellation and low rate encoding. Hence, bit integrity is not assured.

The network provides tones and/or announcements to support this teleservice. Tones and/or announcements can be used to indicate the progress (or lack of progress) of a call. The application and meaning of the tones and announcements is a national matter and outside the scope of this standard.

6 Procedures

6.1 Provision and withdrawal

Provision of this service shall be by prior arrangement with the network operator.

NOTE: As a network option this teleservice can be offered with several subscription options which apply separately to each ISDN number or groups of ISDN numbers on the interface. For each subscription option, only one value can be selected.

It should be noted that in this context an interface may consist of a group of physical interfaces.

Subscription options for the interface are summarised in table 1.

The user can be identified by an ISDN number or group of ISDN numbers on the interface.

More than one ISDN number can be associated with the interface only as part of a supplementary service such as the multiple subscriber number supplementary service. In the case of one ISDN number, the option given in table 1 for the number of calls can only exceed the number of information channels in association with a supplementary service (e.g. the call waiting supplementary service). As a network provider option, separate values may be specified for incoming and for outgoing calls for either or both of the limits.

Table 1: Subscription options for the interface

Subscription option	Values
Maximum number of information channels available	- m, where m is not greater than the number of information channels on the interface.
Maximum number of total calls present	- n, where n is not greater than the number of information channels on the interface.

6.2 Normal procedures

The network shall provide out of band indications to indicate call progress. Network generated tones and/or announcements shall be provided for this teleservice.

6.2.1 Originating the call (call establishment)

The service is originated by the originating user activating the terminal, performing service selection, if applicable for the originating terminal, and terminating selection. During this process the originating user is given the appropriate indications as to the state of the call.

A service selection is required on a multi-service terminal.

Terminating selection implies the selection of the required termination (user/network interface) and terminal selection.

6.2.2 Indications during call establishment

Indications during call establishment may include an indication that the network is ready to receive the network address information (proceed indication) and an indication that the call is progressing through the network. It shall be possible to have audible indications which may be accompanied by other indications.

Selection of the terminal shall be indicated to each user by appropriate indications, (call arrival indication and awaiting answer indication). The acceptance of the call by the terminating user, (answer), shall cause the indications to be removed and bidirectional communication paths to be provided.

6.2.3 Terminating the call

A request to terminate the service can be generated by either of the users. If one user terminates the call the other user shall be given an appropriate indication as to the state of the call.

6.3 Exceptional procedures

6.3.1 Situations at the calling user side

When the network receives an improper service request from a user, the network shall give that user the appropriate indication and the call establishment shall be ceased.

A user inputting an invalid ISDN number shall be given the appropriate indication by the network and the call establishment shall be ceased.

When the network receives an incorrect ISDN number from a user the network shall give that user the appropriate indication and the call establishment shall be ceased.

Users can input network address information subsequent to the service request (i.e. overlap sending). In this case, if the user fails to enter address information or subsequent parts of the address within network determined intervals, the network shall give that user the appropriate indication and the call establishment shall be ceased.

6.3.2 Situations at the called user side

A calling user attempting to establish a call to a user who is identified by the network to be busy (either network determined user busy, or user determined user busy) shall be given the appropriate indication by the network.

A user attempting to establish a call to a user whose terminal equipment fails to respond shall be given the appropriate indication by the network and the call establishment shall be ceased.

On a call to a user whose terminal equipment has responded that the called user is being informed of the call, but has failed to establish the connection within a defined period of time, the calling user attempting to establish the call shall be given the appropriate failure indication by the network and the call establishment shall be ceased.

6.3.3 Situations due to network conditions

A user attempting to establish a call but meeting problems due to network conditions (e.g. congestion) shall be given the appropriate indication by the network.

6.3.4 Retention of call information

When a user attempts to establish a call but meets problems due to network conditions (e.g. congestion) or called user state (e.g. network determined user busy or user determined user busy) then according to a network option the network shall retain all of the information supplied by the calling user for the duration of the retention timer.

7 Intercommunication considerations

7.1 Interworking with non-ISDNs

Interworking shall be required between the ISDN and PSTN for this teleservice.

Calls using this teleservice can be terminated in the PSTN and the calling user shall be given information that interworking has occurred.

7.2 Interworking with private ISDNs

The situation where the communicating users are attached to a private ISDN and a public ISDN is detailed in Clauses 5 and 6.

8 Interaction with other supplementary services

Each supplementary service description identifies the applicability to this teleservice.

If the in-band communication is interrupted by the network as a result of one user invoking a supplementary service (e.g. the call hold supplementary service, or the terminal portability supplementary service) then the network shall provide an appropriate indication (e.g. all ones or idle signal) in the B channel.

9 Static description of the service using attributes

The attributes are defined in CCITT Recommendation I.140 [7], Annex A, § A.1.1.

The values of the attributes are defined in CCITT Recommendation I.140 [7], Annex A, § A.2.

9.1 Low layer attributes

9.1.1 Information transfer attributes

The information transfer attributes of this teleservice are specified in table 2.

Table 2: Values of information transfer attributes

Attribute	Possible values
Information transfer mode	- circuit
Information transfer rate	- 64 kbit/s
Information transfer capability	- speech (NOTES 1, 2)
Structure	- 8 kHz integrity
Establishment of communication	- demand
Symmetry	- bidirectional symmetric
Communication configuration	- point-to-point
NOTE 1: Speech shall be encoded according to CCITT Recommendation G.711 [2], A-law.	
NOTE 2: When crossing an international boundary between administrations which employ different encoding laws, the network applying µ-law shall perform the necessary A-law to µ-law conversion (see CCITT Recommendation G.711 [2]).	

9.1.2 Access attributes

The access attributes of this teleservice are specified in table 3.

Table 3: Values of access attributes

Attribute	Possible values
Access channel and rate	User information - B (64 kbit/s) Signalling - D (16 kbit/s or 64 kbit/s)
Signalling access protocol, information access protocol	User information - CCITT Recommendation G.711 [2] Signalling - ETS 300 125 , ETS 300 102

9.2 High layer attributes

Type of user information: speech.

Layer 6 protocol functions: CCITT Recommendation G.711 [2].

Other attributes are not applicable.

9.3 General attributes

This standard does not provide values for general attributes.

10 Dynamic description

The dynamic description for this teleservice on a demand basis shall be as specified in CCITT Recommendation I.220 [5].

Annex A (informative): Bibliography

The following documents are used for information purposes from within this standard.

CCITT Recommendation Q.71 (1988): "ISDN 64 kbit/s circuit mode switched bearer services".

ETS 300 102 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control".

ETS 300 125 (1990): "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".

History

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