



AUSTRALIAN COMMUNICATIONS INDUSTRY FORUM
INDUSTRY SPECIFICATION

**PART E.7 STAGE 1 SUPPLEMENTARY
DESCRIPTION SPEECH BEARER SERVICE
CATEGORY**

ACIF G500:2000 PART E.7

Industry Specification

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Recommendation I.231 Part E.7**STAGE 1 SUPPLEMENTARY DESCRIPTION SPEECH CIRCUIT-MODE BEARER
SERVICE CATEGORIES***(Melbourne, 1988)***General**

This document forms part of the Australian Communications Industry Forum (ACIF) G.500 signalling protocol specification for interconnection services to be used in the Australian domestic network.

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Introduction

This document specifies the requirements for the implementation of the ACIF G.500 specification based on ITU-T recommendation I.231.

References

ITU-T Recommendation I.231 Circuit-Mode Bearer Service Categories (1988).

ITU-T Recommendation I.210 describes the principles for defining telecommunication services supported by an ISDN including the concept of bearer services, teleservices and supplementary services. It also provides the means for the definition and description of such services. A recommended set of circuit-mode bearer services categories is defined in ITU-T Recommendation I.230.

The purpose of this Recommendation is to describe circuit-mode bearer service categories, to describe individual circuit-mode bearer services, and to recommend their provision in ISDN. The definitions and descriptions form the basis to define the network capabilities required for the support of the services in ISDN.

Bearer service categories are described by prose definitions and descriptions, by attributes and their values and by dynamic descriptions following the description method given in ITU-T Recommendation I.130. The application of the attribute technique and the definitions of these attributes and attribute values is given in ITU-T Recommendation I.140.

The following set of bearer service categories is currently identified and more may be identified in the future.

~~I.231.1 Part E-2~~ Circuit-mode 64 kbit/s unrestricted, 8 kHz structured bearer service category

~~I.231.2 Part E-7~~ Circuit-mode 64 kbit/s, 8 kHz structured bearer service category usable for speech information transfer

~~I.231.3 Part E-1~~ Circuit-mode 64 kbit/s, 8 kHz structured bearer service category usable for 3.1 kHz audio information transfer

~~I.231.4~~ Circuit-mode, alternate speech / 64 kbit/s unrestricted, 8 kHz structured bearer service category

~~I.231.5~~ Circuit-mode 2×64 kbit/s unrestricted, 8 kHz structured bearer service category

~~I.231.6~~ Circuit-mode 384 kbit/s unrestricted, 8 kHz structured bearer service category

~~I.231.7~~ Circuit-mode 1536 kbit/s unrestricted, 8 kHz structured bearer service category

~~I.231.8~~ Circuit-mode 1920 kbit/s unrestricted, 8 kHz structured bearer service category

2 I.231.2 - Circuit-mode 64 kbit/s, 8 kHz structured bearer service category usable for speech information transfer

2.1 Definition

This bearer service category is intended to support speech.

The digital signal at the S/T reference point shall conform to ITU-T Recommendation G.711 (A-law or ~~μ -law~~). The network may use processing techniques appropriate for speech such as analogue transmission, echo cancellation and low bit-rate voice encoding. Hence, bit integrity is not assured. This bearer service is not intended to support modem derived voice-band data.

All Recommendations for the transfer of speech information in the network apply to this bearer service category.

2.2 Description

2.2.1 General description

This circuit-mode bearer service category allows:

- two users (e.g. terminals, PABXs) in a point-to-point configuration to communicate via the ISDN using speech encoding into 64 kbit/s digital signals over the B-channel, in both directions continuously and simultaneously for the duration of a call;
- ~~three or more users in a multipoint configuration (refer to Recommendation I.254 for the supplementary service description for Three-Party Service and Conference Calling).~~

Tones and/or announcements to indicate the progress or otherwise of a call, are provided by the network.

2.2.2 Specific terminology

Retention timer: this timer specifies the amount of time that the network retains the call information of the original call upon encountering busy or being released. It is a network provider option. The value for this timer is greater than 15 seconds.

2.3 Procedures

2.3.1 ~~Provision/withdrawal~~

2.3.1.1 ~~Provision of this service will be by pre-arrangement with the Administration.~~

2.3.1.2 ~~This bearer service is offered with several subscription options which apply separately to each ISDN number or group of ISDN numbers on the interface. For each subscription option, only one value can be selected. Subscription options for the interface are summarized below:~~

<i>Subscription option</i>	<i>Value</i>
Maximum number of information channels available at user B	— <i>m</i> , where <i>m</i> is not greater than the number of information channels on the interface
Maximum number of total calls present at user B	— <i>n</i> , where <i>n</i> is not greater than the number of information channels on the interface

User B can be an ISDN number or group of ISDN numbers on the interface.

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

2.3.2 — *Normal procedures*

Out-of-band messages shall always be provided to indicate call progress, etc. However, network-generated in-band tones and announcements shall always be provided for this bearer service category.

a) — *Originating the service (call set-up)*

The call is originated by the user requesting the required bearer service; the request includes a number identifying the called user. Other information, as required, for the bearer service and for use by the network in supplementary services provided to the called user (e.g. calling line identity) may also be included. This request may be given to the network either *en bloc*, containing all the required information, or not *en bloc*.

b) — *Indications during call set-up*

All indications entail signalling messages and shall include, where appropriate, in-band tones or announcements.

After initiating a call the calling user will receive an acknowledgement that the network is able to process the call. The called user will receive an indication of the arrival of an incoming call of this bearer service.

The calling user shall also be given an indication that the incoming call is being offered to the called user, when an indication is received by the network that the called user is being informed of this call. When the call reaches the called user and the connection is established, an indication of this is sent to the calling user.

The called user may also provide other information for use by the network in supplementary services provided to other users (e.g. connected line identity). The relationship of a connected user with a called user requires further study.

Once established, the B-channel is then available for the transmission of speech signals in both directions continuously and simultaneously

e) — *Terminating the call*

The call may be terminated by either or both of the users by indicating this to the network. If one user terminates the call, an appropriate indication is sent to the other user.

2.3.3 — *Exceptional procedures*

a) — *Failure situations due to user error*

i) — A user inputting a network-identifiable, improper service request will be given an appropriate failure indication by the network and the call set-up will be ceased.

ii) — A user inputting a non-valid network number will be given an appropriate failure indication by the network and the call set-up will be ceased.

b) — *Failure situations due to called user state*

i) — 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) will be given an appropriate failure indication by the network.

ii) — A user attempting to establish a call to a user whose terminal equipment fails to respond will be given an appropriate failure indication by the network and the call set-up will be ceased.

iii) — 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 answer within a defined period of time, the calling user attempting to

establish the call will be given an appropriate failure indication by the network and the call set up will be ceased.

e) ~~Failure situations due to network conditions~~

~~A user attempting to establish a call but meeting call failure situations due to network conditions (e.g., congestion) will be given an appropriate failure indication by the network.~~

d) ~~Failure situations due to called user state and/or network conditions~~

~~A user attempting to establish a call but meeting call failure situations due to network conditions (e.g., congestion) or called user state (e.g., busy) can have service data retained for a specified period of time, i.e., retention timer.~~

2.3.4 ~~Alternative procedures~~

2.3.4.1 ~~Reserved service procedures~~

~~For further study.~~

2.3.4.2 ~~Permanent service procedures~~

~~For further study.~~

2.4 ~~Network capabilities for charging~~

~~This Recommendation does not cover charging principles. Future Recommendations in the D-Series are expected to contain that information~~

2.4.1 ~~Demand service charging~~

~~It shall be possible to charge the subscriber accurately for the demand service.~~

2.4.2 ~~Reserved service charging~~

~~It shall be possible to charge the subscriber accurately for the reserved service.~~

2.4.3 ~~Permanent service charging~~

~~It shall be possible to charge the subscriber accurately for the permanent service.~~

2.5 ~~Interworking requirements~~

~~Interworking is required between the ISDN and the PSTN for this bearer service category.~~

2.6 ~~Interaction with supplementary services~~

~~Not applicable. Each supplementary service description identifies the applicability with this bearer service category.~~

2.7 ~~Attributes and values of attributes of the circuit-mode 64 kbit/s 8 kHz structured bearer service category usable for speech information transfer~~

~~Information transfer attributes~~

- ~~1. Information transfer mode: circuit~~
- ~~2. Information transfer rate: 64 kbit/s~~
- ~~3. Information transfer capability: speech (encoded according to Recommendation G.711 A-law, μ -law) (Note 1)~~
- ~~4. Structure: 8 kHz integrity~~

5. Establishment of communication: demand/reserved/permanent
6. Symmetry: bidirectional/symmetric/unidirectional
7. Communication configuration: point-to-point/multipoint

Access attributes

8. Access channel: B for user information,
D for signalling (Note 2)
9. Access protocol: I-Series for D-channel, Rec. G.711 for B-channel

General attributes

10. Supplementary services provided Refer to ITU-T Recommendation I.250
11. Quality of Service }
12. Interworking possibilities } for further study (may be
13. Operation and commercial aspects } different from I.231.1)

Note 1 – When crossing an international boundary between Administrations which employ different encoding laws, the network shall perform the necessary A-μ-law conversion (see Recommendation G.711).

Note 2 – For reserved/permanent service the operational administrative and maintenance (OAM) messages related to these services may be conveyed over the D-channel.

2.8 Provision of individual circuit-mode 64 kbit/s, 8 kHz structured bearer services usable for speech information transfer

- a) Overall provision²⁾: E

Note – Some networks will offer this service in a manner identical to the 3.1 kHz audio service.

- b) Variations of secondary attributes:

<i>Establishment</i>		<i>Symmetry</i>	<i>Communication</i>	<i>Provision²⁾</i>
<i>of communication</i>			<i>of configuration</i>	
I.231.2/1	demand	} bidirectional	pt-pt	E
I.231.2/2	reserved		pt-pt	A
I.231.2/3	permanent		pt-pt	E
I.231.2/4	demand	} unidirectional	pt-pt	A
I.231.2/5	reserved		pt-pt	A
I.231.2/6	permanent		pt-pt	A
I.231.2/7	demand	} bidirectional	multipt	A
I.231.2/8	reserved		multipt	A
I.231.2/9	permanent		multipt	A
I.231.2/10	demand	} unidirectional	multipt	A
I.231.2/11	reserved		multipt	A
I.231.2/12	permanent		multipt	A

²⁾ The definition of E (essential) and A (additional) can be found in Recommendation I.230

e) — Access

Signalling and OAM (Note 1)		User information		Provision
Channel and rate	Protocols	Channel and rate	Protocols	
D(16)	I.451 (Note 2)	B(64)	G.711	E
D(64)	I.451 (Note 2)	B(64)	G.711	E

Note 1 — Definition of protocols for OAM is for further study.

Note 2 — Demand services only. Further study for reserved and permanent services.

2.9 — *Dynamic description*

The dynamic description for this service on a demand basis is identical for a number of circuit mode services and is therefore collectively given in ITU-T Recommendation I.220.

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