AUSTRALIAN COMMUNICATIONS INDUSTRY FORUM

INDUSTRY SPECIFICATION

PART E.1 STAGE 1 SUPPLEMENTARY DESCRIPTION - 3.1 KHz AUDIO BEARER SERVICE CATEGORY

Industry Specification

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~~Recommendation I.231~~ **Part E.1**

STAGE 1 SUPPLEMENTARY DESCRIPTION - 3.1 KHz AUDIO ~~CIRCUIT MODE~~ BEARER SERVICE CATEGORI~~ES~~Y

~~*(Melbourne, 1988)*~~

General

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ITU Sales and Marketing Service
Place Des Nations - CH-1211 GENEVA 20 Switzerland
E-mail: sales@itu.int

This document is based on ITU-T recommendation I.231 (1988). This document is a modification of ITU-T recommendation I.231 which has been customised to suit Australian network requirements.

Participants

The ACIF group (Network Reference Panel: Working Committee #7 "Signalling and Interconnect Dial Plan") that developed this document consisted of the following companies and representatives:

Representative	Company / Organisation	
Gary McLaren	Siemens	Chairperson
Alan Arthurell	Alcatel	Secretary
Sam Fois	Telstra	Interconnection Implementation Plan Editor
Roger Nicoll	Primus	Interconnection Implementation Plan Editor
Catherine Tritt	Telstra	Signalling Specification Editor
Adrian Jang	Telstra	Signalling Specification Editor
Sarath Weerasinghe	Nortel	Signalling Specification Editor
Wayne Thomas	AAPT	
Peter Ramsey	ACA	
Mankin Leung	Alcatel	
Ian Bentley	C&W Optus	
Kamal Wanigatunga	C&W Optus	
Terry Gillespie	C&W Optus	
James Dam	C&W Optus	
Mark Hollis	Ericsson	
Nebojsa Dikic	Ericsson	
Craig Hennessy	Global One	
Elizar Franco	Global One	
Mark Ristich	Lucent	
Michelle Fong	Lucent	
Paul Coleman	MCI/Worldcom	
Thomas Kam	Nortel	
Peter Hull	Nortel	
Trinh Lam	Primus	
Adrian Pizzica	Telstra	
Phil Walls	Telstra	
Dusica Vukadinovic	Vodafone Network	

Matthew Ahyong Vodafone Network
Davorka Karacic Vodafone Network

Introduction

This document specifies the requirements for the implementation of the ACIF G.500 specification based on the 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~~

3 I.231.3 - **Circuit-mode 64 kbit/s, 8 kHz structured bearer service category usable for 3.1 kHz audio information transfer**

3.1 *Definition*

This bearer service category corresponds to the service which is currently offered in the PSTN and Mobile networks. It provides for the transfer of speech and of 3.1 kHz bandwidth audio information such as voice-band data via modems and facsimile group 1, 2 and 3 information ~~(Note).~~ The digital signal at the S/T reference point shall conform to Recommendation G.711 (A-law ~~or μ-law~~).

All domestic Australian networks must use A-law encoding for this service.

Connections provided for these services should offer the transfer capability for the information indicated above. (This means that the network may include speech processing techniques provided they are appropriately modified or functionally removed prior to non-speech information transfer.) The control of echo control devices, speech processing devices, etc., is only made by use of disabling tones (see Recommendation V.25). Bit integrity is not assured. The network may use analogue transmission.

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

~~*Note* - The maximum modem bit rate that can be used by users in applications of this bearer service category depends on the modulation standard employed by the user and on the transmission performance within an Administration or between different Administrations. The extent of support is a matter concerning the network or agreed to bilaterally.~~

3.2 *Description*

3.2.1 *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 3.1 kHz audio information 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 ITU-T Recommendation I.254 for the supplementary service descriptions on Three-party Service and Conference Calling).~~

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

This service must be implicitly supported in all domestic Australian networks supporting a telephony service.

The selection of this bearer service category may be explicitly supported by an Integrated Services Digital Network (ISDN) or a GSM mobile networks. In these cases the relevant ITU-T ISDN DSS1 or GSM standard for selecting this bearer service category must be applied.

~~3.2.2 *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.~~

3.3 *Procedures*

3.3.1 *Provision/withdrawal*

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

3.3.1.2 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:

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

3.3.2 *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.

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 may also include 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 the requested (i.e. speech or 3.1 kHz audio information) signals in both directions continuously and simultaneously.

c) *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.

3.3.3 *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.

c) *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.

3.3.4 *Alternative procedures*

3.3.4.1 *Reserved service procedures*

For further study.

3.3.4.2 *Permanent service procedures*

For further study.

3.4 *Network capabilities for charging*

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

3.4.1 *Demand service charging*

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

3.4.2 *Reserved service charging*

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

3.4.3 *Permanent service charging*

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

3.5 *Interworking requirements*

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

3.6 *Interaction with supplementary services*

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

3.7 *Attributes and values of attributes of the circuit-mode 64 kbit/s, 8 kHz structured bearer service category usable for 3.1 kHz audio information transfer*

Information transfer attributes

1. Information transfer mode: circuit
2. Information transfer rate: 64 kbit/s
3. Information transfer capability: 3.1 kHz audio (Note)
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 and/or operational, administrative and maintenance (OAM) messages
9. Access protocol: ITU-T Recommendation G.711 for B-channel, I-Series for D-channel

General attributes

10. Supplementary services provided - Refer to ITU-T Recommendation I.250
11. Quality of Service
12. Interworking possibilities
13. Operation and commercial aspects

} for further study

Note - 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).

3.8 *Provision of individual circuit-mode 64 kbit/s, 8 kHz structured bearer services usable for 3.1 kHz audio information transfer*

a) Overall provision[3)] : E

b) Variations of secondary attributes:

Establishment of communication		*Symmetry*	*Communication of configuration*	*Provision*[3)]
I.231.3/1	demand	bidirectional	pt-pt	E
I.231.3/2	reserved	bidirectional	pt-pt	A
I.231.3/3	permanent	bidirectional	pt-pt	E
I.231.3/4	demand	unidirectional	pt-pt	A
I.231.3/5	reserved	unidirectional	pt-pt	A
I.231.3/6	permanent	unidirectional	pt-pt	A
I.231.3/7	demand	bidirectional	multipt	A
I.231.3/8	reserved	bidirectional	multipt	A
I.231.3/9	permanent	bidirectional	multipt	A
I.231.3/10	demand	unidirectional	multipt	A
I.231.3/11	reserved	unidirectional	multipt	A
I.231.3/12	permanent	unidirectional	multipt	A

c) Access

Signalling and OAM (Note 1)		User information		Provision
Channel 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.

3.9 *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.

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

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THE AUSTRALIAN COMMUNICATIONS INDUSTRY FORUM LTD

Level 9, 32 Walker Street
North Sydney NSW 2060

Correspondence: PO Box 444
Milsons Point NSW 1565

Telephone: (02) 9959 9111
Facsimile: (02) 9954 6136

E-mail: acif@acif.org.au

Web Site: http://www.acif.org.au/

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