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Australian Standard®

Information processing—Digital channel aggregation (N × 64)

STANDARDS AUSTRALIA

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PREFACE

This Standard was prepared by the Standards Australia Committee on Digital Channel Aggregation. It is the continuation of work started in AUSTEL Working Group 11/1, Digital Bandwidth Aggregation.

Although the content of this Standard may be compared with the provisions of CCITT Recommendation H.221: 1988, *Frame structure for a 64 to 1920 kbit/s channel in audiovisual teleservices*, this Standard has a different area of application and is capable of providing wider bandwidth over a switched network.

CCITT Recommendations are applied throughout this Standard where appropriate.

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FOREWORD

Channel aggregation is achieved by splitting high-bandwidth user data into a number of lower-bandwidth channels, transmitting these channels across a network, and extracting and reassembling the data at the remote end of the network.

In general each individual lower-bandwidth channel may be routed through a network differently to the others that comprise the aggregation, resulting in different time delays between the channels. Accordingly, it is necessary to have some in-band method of not only distinguishing the channels belonging to the aggregation, and their order in it, but also to provide timing information to enable compensation for the differential delays.

The Standard typically applies to user equipment connected to an ISDN service which supports channels of 64 kbit/s. It covers both the protocol used to transmit the high-bandwidth user data and the call establishment procedures to be used to establish the call. The call establishment procedures also cover the interworking of 64 kbit/s networks with 56 kbit/s equipment or networks.

Examples of applications that could utilize this service include:

(a) Audiovisual applications.

(b) Broad-band data exchange.

(c) Graphical information exchange.

The Standard may be employed in any situation where it is desired to use a number of lower-bandwidth channels to transport a high-bandwidth user data stream. If used in a non-ISDN application then much of the call setup procedure may not apply.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard defines a means of creating a high-bandwidth digital bidirectional channel using multiple lower-bandwidth digital channels. This procedure is called channel aggregation. The lower-bandwidth channels may be switched or non-switched.

1.2 APPLICATION This Standard is divided into four Sections. It defines the aggregated bearer service from an ISDN user's perspective (Section 2), specifies the ISDN call establishment procedures (Section 3), and describes the channel aggregation protocol (Section 4). Section 4 is applicable to both ISDN and non-ISDN networks.

1.3 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
2571 Information processing systems—Data communications—High-level data link control elements of procedures

AUSTEL
TS 013 General requirements for customer equipment connected to ISDN basic rate access

TS 014 General requirements for customer equipment connected to ISDN primary rate access

CCITT
Rec I.210 Principles of telecommunication services supported by an ISDN and the means to describe them

Rec I.231 Circuit-mode bearer service categories

Rec I.411 ISDN user-network interfaces—Reference configurations

Rec I.412 ISDN user-network interfaces—Interface structures and access capabilities

Rec G.704 Synchronous frame structures used at primary and secondary hierarchical levels

Rec Q.71 ISDN 64 kbit/s circuit mode switched bearer services

Rec V.110 Support of data terminal equipment (DTEs) with V-series type interfaces by an integrated services digital network (ISDN)

1.4 DEFINITIONS For the purposes of this Standard, the definitions below apply.

1.4.1 Aggregated call—a call that associates together a number of communications channels effectively providing a higher-bandwidth channel whose capacity approaches that of the sum of the lower-bandwidth channels used.

1.4.2 B-channel—a 64 kbit/s bidirectional communications channel used to carry user information such as voice, circuit-switched or packet-switched data (see CCITT Rec. I.412).

1.4.3 Bearer channel—an individual connection between two end points, a number of which provide the aggregated data stream.

1.4.4 Bearer channel number—the number given by the channel identifier associated with a particular bearer channel within an aggregated data stream. This is unrelated to the position of the time slots carrying these channels across a physical interface.

1.4.5 Channel aggregation—a means of using a number of digital bearer channels to transport a data stream (aggregated data stream) of bandwidth greater than the individual bearer channels.

1.4.6 Channel identifier—an integer in the range 1 to 1022 used to identify individual bearer channels within an aggregation, or the total number of bearer channels within an aggregation (see Clause 4.2.2.7).

1.4.7 Channel identifier flag (CF)—a single bit used to identify the first bearer channel within an aggregation. When this bit is set, it identifies the channel as bearer channel 1, and indicates that the associated channel identifier represents the value of the user data rate multiplier, P, rather than the bearer channel number (see Clause 4.2.2.8).

1.4.8 D-channel—a 16 kbit/s or 64 kbit/s channel carrying ISDN signalling and user-to-user information (see CCITT Rec. I.412).

1.4.9 F-bit—the framing bit used in bearer channel aggregation.