INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

F.731
(07/97)

SERIES F: NON-TELEPHONE TELECOMMUNICATION SERVICES

Audiovisual services

Multimedia conference services in the ISDN

ITU-T Recommendation F.731

(Previously CCITT Recommendation)

ITU-T F-SERIES RECOMMENDATIONS

NON-TELEPHONE TELECOMMUNICATION SERVICES

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ITU-T RECOMMENDATION F.731

MULTIMEDIA CONFERENCE SERVICES IN THE ISDN

Source

ITU-T Recommendation F.731 was prepared by ITU-T Study Group 16 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 10th of July 1997.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, the ITU had/had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

CONTENTS

Recommendation F.731

MULTIMEDIA CONFERENCE SERVICES IN THE ISDN

(Geneva, 1997)

1   Introduction

This Recommendation describes the Multimedia Conference Services supported by an ISDN. It relies on Recommendation F.702 for the main body of the description, and only gives the specific complements relevant to the ISDN, which derive from its capabilities and its limitations. Thus when reading this Recommendation, it is necessary to refer back to Recommendation F.702. The numbers of the clauses are those of Recommendation F.702, and thus they do not form a continuous sequence because only a few clauses need a specific complement for the ISDN. In addition there is a new clause 9 on the attributes for the various profiles.

4.3   Configuration

In the ISDN, all connections are bidirectional symmetric. When several B-channels are used, they are synchronized through the frame alignment process of Recommendation H.221, so that a single composite channel is formed, where audio, video, data and control signals are multiplexed and are allocated specific subchannels. Data and enhanced control signals may be multiplexed in a common packet subchannel supporting the T.120-Series protocol (whereas basic control signals are in the BAS channel of Recommendation H.221).

The various possible configurations supported by these connections are as follows:

a)   point-to-point between two terminals;

b)   multichannel multipoint for the continuous presence mode;

c)   shared channel around one or more MCUs: the audio channels are mixed, the data signals are multiplexed (if present) in a common T.120 subchannel; this is the usual mode in the case of an audiographic conference or of CDH without video (see 7.1/F.702); when video is present, the pictures from the different sources are combined into a single picture with several windows;

d)   switched multipoint operation: the audio signals or the video signals or both are switched in the MCU(s); this is the usual mode for the videoconference service, with mixed audio and a single switched video picture; multiple switched video subpictures are for further study.

4.4   Roles of the participants

The basic control signals in the BAS channel allocate the roles of Chairman and controller jointly; they can only be separated inside the terminal equipment. The T.120-Series protocol allows separate allocation of call control, chair control and facility control.

4.5   Terminal aspects

The normal audio mode for conferencing services is wideband audio conforming to Recommendation G.722. A G.711 codec should also be present for interworking purposes. G.728 coding may also be used in interworking or fallback situations, or temporarily to leave a larger bandwidth to the video or to the data subchannels, e.g. while showing an object or transmitting a document.

Video codecs should conform to Recommendation H.261. The possible use of higher quality codecs is for further study.

6.2.7 Conference management procedures

All terminals should conform to the procedures in Recommendation H.242. Multipoint procedures are those of Recommendation H.243.

Media components other than audio and video should be transmitted on a common data subchannel supporting the T.120-Series protocol.

7.2 List of service profiles

The following service profiles may be offered over an ISDN.

1) *Videoconference services*

– Profiles 1a: Basic videoconference service on two B-channels; terminals should conform to Recommendation H.320;

– Profiles 1b: Standard videoconference service on six B-channels (or one H0-channel); terminals should conform to Recommendation H.320;

– Profile 1c: Enhanced videoconference service; for further study;

– Profile 1d: High quality videoconference service; for further study.

2) *Audiographic conference services*

– Profiles 2: All audiographic conference services use wideband audio conforming to Recommendation G.722 and a data subchannel supporting the T.120-Series protocol.

3) *Cooperative document handling services*

– Profiles 3: All cooperative document handling services have audio to one or more of the Recommendations G.711, G.722, G.728; they have a data subchannel supporting the T.120-Series protocol, and in particular T.127 for file transfer; other data functions are for further study; H.261 video is optional.

4) *Videophone conference supplementary services*

– Profile 4b: Basic videophone conference supplementary service; this supplementary service applies to basic videophone terminals on one or two B-channels, and does not require any specific enhancements to the terminals; these terminals conform to Recommendation H.320, have G.728 and/or G.722 audio codecs (and G.711 for interworking purposes) and H.261 video codecs; on two B-channels, the profile is the same as Profile 1a except that G.722 coding is only optional instead of mandatory.

8 Interworking/intercommunication

All terminals have the media component audio. The basic common audio mode is G.722. However, some videophone terminals (and possibly some CDH terminals) may not have that capability; in that case G.711 is used, or alternatively G.728 if all terminals in the conference have that capability.

For the media component video, all terminals which support it use H.261 coding. They will always be able to communicate with this coding algorithm, by aligning the bit rate of the video subchannel on the lowest bit rate. If the resulting quality is not sufficient, then a higher bit rate may be chosen, with some terminals relegated to secondary status and participating with sound (and possibly data) only.

For the other media components, all terminals using them have a common data subchannel with the T.120 protocol. The bit rate of the subchannel will be aligned on the terminal with the lowest bit rate capability. However, this does not imply that all terminals will have a common media component. For instance a group of participants may be able to exchange facsimile while another group (overlapping or not) may exchange still pictures.

9 Attributes values

9.1 General

In the ISDN, only point-to-point independent channels can be established. When several B-channels are used in a connection, they are based on separate independent calls and synchronized in-band. Similarly, in a multipoint configuration, each connection between a terminal and an MCU or between two MCUs is an independent point-to-point connection. The same also applies for H0-channels.

When two or more B- (or H0-) channels are needed to support a connection, one of them supports the audio and BAS control subchannels; the call for establishing this channel is referred to as Call 1. Except when otherwise stated, the values of the attributes are the same for Call 1 and for the other calls involved in the connection.

9.2 Service independent attributes

The following attribute values are applicable to all multimedia conference service profiles.

1) *Low layer attributes*

	Attributes	Values
1	Transfer mode	Circuit
2	Transfer rate	64 kbit/s
3	Transfer capability	Call 1: unrestricted digital information with tones/announcements Other calls: unrestricted digital information
4	Structure	7 kHz integrity
5	Establishment of communication	Demand or reservation
6	Symmetry	Bidirectional symmetric
7	Configuration of call	Point-to-point

2)   *Access attributes*

	Attributes	**Values**
8	Access channel and rate	D(16) or D(64) for signalling, B(64) for user information
9.1	Signalling access protocol, Layer 1	Rec. I.430/I.431
9.2	Signalling access protocol, Layer 2	Rec. Q.921
9.3	Signalling access protocol, Layer 3	Rec. Q.931
9.4	Information access protocol, Layer 1	Rec. H.221
9.5	Information access protocol, Layer 2	Rec. H.230
9.6	Information access protocol, Layer 3	Rec. H.242, Rec. H.243

9.3   Service specific attributes

The following attribute values are applicable to the communication as a whole, even when two or more separate calls are established in the network to support the required connection. They are generally dependent upon the multimedia conference service profiles.

3)   *High layer attributes*

	Attributes	**Values**
10	Type of user information	Audio (in Call 1 only) + video and/or data
11	Layer 4 protocol functions	
12	Layer 5 protocol functions	
13	Layer 6 protocol functions	Rec. G.711, Rec. G.722 or Rec. G.728 for audio Rec. H.261 for video (profiles 1, 4, optional for profile 3) T.120-Series for data (profiles 2, 3, optional for profiles 1, 4)
14	Layer 7 protocol functions	

4)   *General attributes*

	Attributes	Values
15	Supplementary services provided	For further study
16	Quality of service	Audio: 7 kHz telephony for profiles 1, 2 telephone quality for profiles 3, 4 Video: see 5.3.2.2/F.702 Synchronization of audio and video: no subjectively discernible delay between sound and image Data: for further study
17	Intercommunication/interworking possibilities	With other multimedia conference services with videophone service with telephony with other services: for further study
18	Operation and commercial aspects	For further study

ANNEX A

Multipoint Conference Units (MCUs)

MCUs shall conform to Recommendation H.231 and use the procedures of Recommendation H.243.

In a conference, all connections have the same overall bit rate and the same allocation of bit rates to the audio, video and data subchannels, whether between a terminal and an MCU or between MCUs. The exception to this is the connection to a terminal with secondary status, which cannot use all the subchannels and may thus be connected at a smaller bit rate. The possibility of additional or broader subchannels on inter-MCU connections is for further study.

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