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**SERIES J: TRANSMISSION OF TELEVISION, SOUND
PROGRAMME AND OTHER MULTIMEDIA SIGNALS**

Interactive systems for digital television distribution

**Distribution of sound and television programs
over the IP network**

ITU-T Recommendation J.120

(Formerly CCITT Recommendation)

FOREWORD

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NOTE

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CONTENTS

	Page
1 Scope.....	1
2 References.....	1
2.1 Normative references	1
2.2 Informative references	1
3 Terms and definitions	2
4 Abbreviations.....	2
5 System definition	3
5.1 Procedures for the receiver	4
5.1.1 Acquisition of a presentation description	4
5.1.2 Downloading audio/video decoders	4
5.1.3 Setting-up a server	4
5.1.4 Receiving streams.....	4
5.2 Video decoding	4
5.3 Audio decoding.....	4
5.4 Application Programming Interface (API) of the decoder.....	5
5.5 Network interface.....	5
6 Session control.....	6
6.1 Overall operation of the session control	6
6.2 Presentation description.....	7
6.2.1 "v=" field	7
6.2.2 "o=" field	7
6.2.3 "s=" field.....	7
6.2.4 "i=" field	7
6.2.5 "m=" field	8
6.2.6 "a=" field.....	8
6.3 RTSP control methods.....	8
6.3.1 SETUP	8
6.3.2 PLAY.....	8
6.3.3 PAUSE.....	9
6.3.4 TEARDOWN	9
6.4 RTSP header fields	9
6.4.1 CSeq.....	9
6.4.2 Range	9
6.4.3 Session	10
6.4.4 Transport.....	10

	Page
7 RTP header formats	10
Appendix I – Simple example of RTSP presentation description and session control.	12
Appendix II – A typical RTP payload format for ITU-T H.263	13
Appendix III – An example of RTP payload format for audio data.....	15
Appendix IV – Preferred embodiments of downloading decoders	16
Appendix V – Sample Software.....	17
Electronic attachment: source code and conformance test tools	

ITU-T Recommendation J.120

Distribution of sound and television programs over the IP network¹

1 Scope

This Recommendation defines the transmission protocol and system configuration for distributing sound and television programs over the Internet "Webcasting". This concerns the end-to-end signal flow from the program server to user receiver. This transmission chain contains the signal encoding/decoding, packet mapping, session control and network transmission.

The following items are specified:

- Presentation description which provides the overall program and the properties of the media.
- Server control protocol which provides signalling for proper operation between the server and receiver.
- Stream packet mapping which formats coded video and audio streams into messages for output to the network interface and retrieves received video and audio data.
- Required receiver capability.
- Downloadable software decoders.

This Recommendation is restricted to the Internet Protocol (IP) as a network layer. Usage of transport layer protocol is outside its scope.

2 References

The following ITU-T Recommendations, and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

2.1 Normative references

- ITU-T H.225.0 (2000), *Call signalling protocols and media stream packetization for packet-based multimedia communication systems*.

2.2 Informative references

- ITU-T G.723.1 (1996), *Dual rate speech coder for multimedia communications transmitting at 5.3 and 6.3 kbit/s*.
- ITU-T H.222.0 (2000) | ISO/IEC 13818-1:1996, *Information technology – Generic coding of moving pictures and associated audio information: Systems*.
- ITU-T H.262 (2000) | ISO/IEC 13818-2:1996, *Information technology – Generic coding of moving pictures and associated audio information: Video*.
- ITU-T H.263 (1998), *Video coding for low bit rate communication*.

¹ This Recommendation includes an electronic attachment containing sample source code and some tools for conformance tests.

5.1 Procedures for the receiver

5.1.1 Acquisition of a presentation description

The presentation description defines the overall program and the properties of the media in the form of the description defined in 6.2. The acquisition method of the presentation description may be HTTP, FTP or others such as e-mail, but a definition is outside the scope of this Recommendation.

The receiver may obtain information relating to program contents, details of streams constituting the program, decoder downloading information and other parameters.

5.1.2 Downloading audio/video decoders

After acquisition of the presentation description, if necessary the receiver may obtain the audio/video decoder by downloading it from the server defined in the presentation description or from storage media such as a CD-ROM.

Downloading information is specified in the <a> field of the presentation description, it may directly indicate the decoder software by HTTP or FTP or it may be linked to the HTML script of the downloading page. The receiver which is capable of downloading decoders shall be capable of accessing the HTML 4.0 script and of downloading decoder software by HTTP and FTP.

5.1.3 Setting-up a server

After decoding the presentation description as well as after downloading the decoder(s) if necessary, the receiver may send audio/video stream controls in the form of RTSP to the stream servers specified in the presentation description. The receiver shall be equipped with the minimal RTSP implementation.

In the setting-up process, RTSP may not deliver the audio/video streams itself, but instead act as a "network remote control" for stream servers.

The SETUP control method of RTSP may start an RTSP session and may cause the server to prepare to send the stream. The PLAY method may start data transmission on a stream specified via SETUP. The TEARDOWN method frees resources associated with the stream.

5.1.4 Receiving streams

Actual audio/video streams shall be sent via separate protocol RTP, independent of the session control channel. Properties of transport protocol such as the port number may be obtained from the RTSP session control prior to receiving streams. The receiver shall be equipped with RTP/RTCP capability. Received packets from each stream are transferred to the decoders. The application programming interface (API) for the audio/video decoders is specified in clause 5.4.

5.2 Video decoding

The video coding method and its downloadable sites are identified in the presentation description. More than one video channel may be transmitted, as negotiated via the RTSP session set-up. The video stream packet is formatted as described in clause 7.

The video stream packet is transferred to the video decoder via the application programming interface described in clause 5.4. All video decoders shall have the application programming interface.

5.3 Audio decoding

The audio coding algorithm and its downloadable sites shall be specified in the presentation description. The receivers may optionally receive more than one audio channel at the same time, for example, to allow two languages or stereo sound to be conveyed.