International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

H.222.0

Amendment 2

(08/2007)

SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

Infrastructure of audiovisual services – Transmission multiplexing and synchronization

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Information technology – Generic coding of moving pictures and associated audio information: Systems

Amendment 2: Carriage of auxiliary video data

ITU-T Recommendation H.222.0 (2006) – Amendment 2

International Telecommunication Union

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INTERNATIONAL STANDARD ISO/IEC 13818-1
ITU-T RECOMMENDATION H.222.0

Information technology – Generic coding of moving pictures and associated audio information: Systems

Amendment 2

Carriage of auxiliary video data

Summary

With this Amendment, ISO/IEC 23002-3 auxiliary video streams can be carried over ITU-T Rec. H.222.0 | ISO/IEC 13818-1 streams. The corresponding descriptor indicates which video compression format is used, and contains supplemental information (SI) about the auxiliary video stream, as also defined in ISO/IEC 23002-3.

Depth maps and parallax maps, relating to stereoscopic-view video content, are the first specified types of auxiliary video streams. This amendment supports future extensions of ISO/IEC 23002-3.

Source

Amendment 2 to ITU-T Recommendation H.222.0 (2006) was approved on 29 August 2007 by ITU-T Study Group 16 (2005-2008) under the ITU-T Recommendation A.8 procedure. An identical text is also published as ISO/IEC 13818-1, Amendment 2.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 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.

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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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INTERNATIONAL STANDARD
ITU-T RECOMMENDATION

Information technology – Generic coding of moving pictures and associated audio information: Systems

Amendment 2

Carriage of auxiliary video data

1) Clause 2.4.3.7

Replace Table 2-27 with the following one:

Table 2-27 – Stream_id_extension assignments

stream_id_extension	Note	stream coding
000 0000	1	IPMP Control Information stream
000 0001	2	IPMP stream
000 0010 … 000 1111		ISO/IEC 14496-17 text stream
001 0000 … 001 1111		ISO/IEC 23002-3 auxiliary video stream
~~001~~ 010 0010 … 011 1111		reserved_data_stream
100 0000 … 111 1111		private_stream
NOTE 1 – PES packets of stream_id_extension 0b000 0000 (IPMP Control Information Stream) have a unique syntax specified in ISO/IEC 13818-11 (MPEG-2 IPMP). NOTE 2 – PES packets of stream_id_extension 0b000 0001 (IPMP Stream) have a unique syntax specified in ISO/IEC 13818-11 (MPEG-2 IPMP).		

2) Clause 2.4.4.9

Replace Table 2-34 with the following one:

Table 2-34 – Stream type assignments

Value	Description
0x00	ITU-T | ISO/IEC Reserved
0x01	ISO/IEC 11172-2 Video
0x02	ITU-T Rec. H.262 | ISO/IEC 13818-2 Video or ISO/IEC 11172-2 constrained parameter video stream
0x03	ISO/IEC 11172-3 Audio
0x04	ISO/IEC 13818-3 Audio
0x05	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 private_sections
0x06	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 PES packets containing private data
0x07	ISO/IEC 13522 MHEG
0x08	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 Annex A DSM-CC
0x09	ITU-T Rec. H.222.1
0x0A	ISO/IEC 13818-6 type A
0x0B	ISO/IEC 13818-6 type B
0x0C	ISO/IEC 13818-6 type C
0x0D	ISO/IEC 13818-6 type D
0x0E	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 auxiliary

Table 2-34 – Stream type assignments

Value	Description
0x0F	ISO/IEC 13818-7 Audio with ADTS transport syntax
0x10	ISO/IEC 14496-2 Visual
0x11	ISO/IEC 14496-3 Audio with the LATM transport syntax as defined in ISO/IEC 14496-3/Amd.1
0x12	ISO/IEC 14496-1 SL-packetized stream or FlexMux stream carried in PES packets
0x13	ISO/IEC 14496-1 SL-packetized stream or FlexMux stream carried in ISO/IEC 14496_sections
0x14	ISO/IEC 13818-6 Synchronized Download Protocol
0x15	Metadata carried in PES packets
0x16	Metadata carried in metadata_sections
0x17	Metadata carried in ISO/IEC 13818-6 Data Carousel
0x18	Metadata carried in ISO/IEC 13818-6 Object Carousel
0x19	Metadata carried in ISO/IEC 13818-6 Synchronized Download Protocol
0x1A	IPMP stream (defined in ISO/IEC 13818-11, MPEG-2 IPMP)
0x1B	AVC video stream as defined in ITU-T Rec. H.264 | ISO/IEC 14496-10 Video
0x1C	ISO/IEC 14496-3 Audio, without using any additional transport syntax, such as DST, ALS and SLS
0x1D	ISO/IEC 14496-17 Text
0x1E	Auxiliary video stream as defined in ISO/IEC 23002-3
0x1F-0x7E	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 Reserved
0x7F	IPMP stream
0x80-0xFF	User Private

3) Clause 2.6.1

Replace Table 2-45 with the following one:

Table 2-45 – Program and program element descriptors

descriptor_tag	TS	PS	Identification
0	n/a	n/a	Reserved
1	n/a	X	Forbidden
2	X	X	video_stream_descriptor
3	X	X	audio_stream_descriptor
4	X	X	hierarchy_descriptor
5	X	X	registration_descriptor
6	X	X	data_stream_alignment_descriptor
7	X	X	target_background_grid_descriptor
8	X	X	video_window_descriptor
9	X	X	CA_descriptor
10	X	X	ISO_639_language_descriptor
11	X	X	system_clock_descriptor
12	X	X	multiplex_buffer_utilization_descriptor
13	X	X	copyright_descriptor
14	X		maximum_bitrate_descriptor
15	X	X	private_data_indicator_descriptor

Table 2-45 – Program and program element descriptors

descriptor_tag	TS	PS	Identification
16	X	X	smoothing_buffer_descriptor
17	X		STD_descriptor
18	X	X	IBP_descriptor
19-26	X		Defined in ISO/IEC 13818-6
27	X	X	MPEG-4_video_descriptor
28	X	X	MPEG-4_audio_descriptor
29	X	X	IOD_descriptor
30	X		SL_descriptor
31	X	X	FMC_descriptor
32	X	X	external_ES_ID_descriptor
33	X	X	MuxCode_descriptor
34	X	X	FmxBufferSize_descriptor
35	X		multiplexBuffer_descriptor
36	X	X	content_labeling_descriptor
37	X	X	metadata_pointer_descriptor
38	X	X	metadata_descriptor
39	X	X	metadata_STD_descriptor
40	X	X	AVC video descriptor
41	X	X	IPMP_descriptor (defined in ISO/IEC 13818-11, MPEG-2 IPMP)
42	X	X	AVC timing and HRD descriptor
43	X	X	MPEG-2 AAC audio descriptor
44	X	X	FlexMux_Timing_descriptor
45	X	X	MPEG-4_text_descriptor
46	X	X	MPEG-4_audio_extension_descriptor
47	X	X	auxiliary_video_stream_descriptor
48-63	n/a	n/a	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 Reserved
64-255	n/a	n/a	User Private

4) New clauses 2.6.74 to 2.6.75

Add the following clauses:

2.6.74 Auxiliary video stream descriptor

The auxiliary video stream descriptor specifies parameters for the decoding and interpretation of the auxiliary video stream to which the descriptor is associated. For each auxiliary video stream carried in an ITU-T Rec. H.222.0 | ISO/IEC 13818-1 stream, the auxiliary video stream descriptor shall be included in the PMT or in the PSM, if PSM is present in the program stream.

Table 2-92.3 – Auxiliary video stream descriptor

Syntax	No. of bits	Mnemonic
Auxiliary_video_stream_descriptor() {		
descriptor_tag	**8**	**uimsbf**
descriptor_length	**8**	**uimsbf**
aux_video_codedstreamtype	**8**	**uimsbf**
si_rbsp(descriptor_length-1)		
}		

2.6.75 Semantic definition of fields in auxiliary video stream descriptor

aux_video_codedstreamtype – An 8-bit unsigned integer that indicates the compression coding type of the auxiliary video stream. The value of aux_video_codedstreamtype shall match one of the stream types defined in Table 2-34 for video (for instance 0x02, 0x10 or 0x1B). In order to convey additional information such as profile/level, a descriptor that corresponds to the aux_video_codedstreamtype may also be included in the PMT or in the PSM, if PSM is present in the program stream, for the auxillary video data stream.

NOTE – For example, if the auxiliary video is encoded using ITU-T Rec. H.264 | ISO/IEC 14496-10 Video, then the value of aux_video_codedstreamtype is 0x1B and an AVC video descriptor (descriptor_tag = 40) can be optionally included.

si_rbsp() – Supplemental Information RBSP as defined in ISO/IEC 23002-3. It shall contain at least one Auxiliary Video Supplemental Information (AVSI) message (also defined in ISO/IEC 23002-3). The type of auxiliary video is inferred from si_rbsp(). The total size of si_rbsp() shall not exceed 254 bytes.

5) New clause 2.16

Add the following new clause:

2.16 Carriage of auxiliary video streams

ISO/IEC 23002-3 specifies auxiliary video streams. ISO/IEC 23002-3 auxiliary video streams can be carried over ITU-T Rec. H.222.0 | ISO/IEC 13818-1 streams as follows:

- in Table 2-27, 16 stream-id_extension values are assigned to signal auxiliary video streams;
- in Table 2-34, one stream-type value is assigned to signal an auxiliary video stream;
- in Table 2-45, one descriptor tag is assigned to indicate an auxiliary video stream descriptor;
- in subclause 2.6.57 the auxiliary video stream descriptor is specified;
- the auxiliary video stream descriptor is associated to each auxiliary video stream.

Auxiliary video streams provide additional information about a conventional primary video sequence, as specified in ISO/IEC 23002-3. The auxiliary video stream shall be synchronized with its primary video counterpart through the use of timestamps in the associated PES header based on the same PCR clock.

In case a program contains multiple video streams, it will be up to the application to specify the association between the video component and auxiliary video streams.

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