
**Information technology — Multimedia
application format (MPEG-A) —**

**Part 9:
Digital Multimedia Broadcasting
application format**

**AMENDMENT 2: Harmonization on
MPEG-2 TS storage**

*Technologies de l'information — Format pour application multimédia
(MPEG-A) —*

*Partie 9: Format pour application de diffusion générale multimédia
numérique*

AMENDEMENT 2: Harmonisation sur stockage MPEG-2 TS

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2010

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 2 to ISO/IEC 23000-9:2008 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

STANDARDSISO.COM : Click to view the full PDF of ISO/IEC 23000-9:2008/AMD2:2010

Information technology — Multimedia application format (MPEG-A) —

Part 9: Digital Multimedia Broadcasting application format

AMENDMENT 2: Harmonization on MPEG-2 TS storage

Replace 6.5 with the following:

6.5 Storage and playback of transport stream

6.5.1 Introduction

A simple storage and playback method of MPEG-2 TS is defined by utilizing a subset of MPEG-2 TS Reception Hint Track functionalities defined in the ISO-FF (more specifically, ISO/IEC 14496-12:2008/Amd.1:2009, *Information technology — Coding of audio-visual objects — Part 12: ISO base media file format — AMENDMENT 1: General improvements including hint tracks, metadata support, and sample groups*). Thus, if otherwise mentioned in this standard, the restrictions in the ISO-FF shall apply.

6.5.2 File structure and track type definition

An MPEG-2 TS is stored sequentially (i.e., untouched) as a sample data. A sample can be the whole TS to be stored or a segment of it. All the sample boundaries shall be aligned with the TS packet boundaries.

A handler type of 'hint' (hint track) is used for the stored MPEG-2 TS and the matching media information header shall be 'hmhd' (hint media header). The `maxPDUsSize` and `avgPDUsSize` fields in the 'hmhd' of the TS hint track shall take the value of 188 (the TS packet size).

MPEG-2 TS hint tracks can be used in two contexts; one is to guide streaming servers to easily generate a transport stream from the stored MPEG-2 TS and the other is to guide players for local playback or preview of stored (or recorded) MPEG-2 TS. Note that this standard defines the latter one only.

In this standard, an MPEG-2 TS is always stored as 'already-prepared' samples regardless of whether it is from direct reception or from content providers. Thus the MPEG-2 TS hint track defined in this standard does not refer to other media tracks for dynamic composition of MPEG-2 TS from the media data. The track header flags in the `tkhd` (track header box) would normally be set as follows:

- `track_enabled` = 1
- `track_in_movie` = 1
- `track_in_preview` = 1.

6.5.3 Sample format

In this standard, the MPEG-2 TS sample format defined in the ISO-FF standard is restricted to be some group of complete MPEG-2 TS packets.

In case `stss` (sync sample box) is absent, a sample is defined as a group of TS packets containing independently decodable group of video or audio access units. More specifically, following rules apply;

- If video exist in the TS to be stored, then TS packets corresponding to a GOP (Group of Pictures) are defined as one sample. The `random_access_indicator` inside the `adaptation_field()` of TS packet can be used to identify the starting TS packet corresponding to a GOP; In this case, a sample starts from a TS packet having `random_access_indicator=1` and ends just before the firstly encountered another TS packet having `random_access_indicator=1`.
- If video does not exist in the TS to be stored, then TS packets corresponding to an audio frame are defined as one sample.

In case `stss` box exists, then the `entry_count` in the `stss` box shall take the value of 0, which means that the sync sample positions are unknown and a sample is defined as the whole TS packets.

Note that the Player should check the existence of `stss` box to determine which sample definition should be applied.

6.5.4 Sample description format

The MPEG-2 TS sample description format defined in ISO-FF shall apply except the following restrictions.

- `MPEG2TSServerSampleEntry` is not used and only `MPEG2TSReceptionSampleEntry` with code point of 'rm2t' is used for this standard.
- When using `MPEG2TSReceptionSampleEntry`, the following restrictions apply;
 - `precedingbyteslen = 0`
 - `trailingbyteslen = 0`
 - `precomputed_only_flag = 1`
 - Exactly one `PMTBox` and one `TSTimingBox` shall be included in `additionaldata[]`. At most one `ODBox`, `BIFSBox`, and `InitialSampleTimeBox` may be present in `additionaldata[]`. If other box appears in `additionaldata[]`, it may be ignored and discarded.
- The syntax of the `BIFSBox` is defined in this standard as follows:


```
aligned(8) class BIFSBox () extends Box ('tBFS') {
    uint(3) reserved;
    uint(13) PID;
    uint(8) sectiondata[];
```
- For the `ODBox` and `BIFSBox`, the following restrictions shall apply;
 - `PID` is the `PID` of the MPEG-2 TS packets correspond only to the non-dependent OD (BIFS) stream; The non-dependent OD (BIFS) stream is defined as the OD (BIFS) stream whose `streamDependenceFlag` value in the corresponding `ES_Descriptor/IOD/PMT` is set to 0.