

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Digital audiobook file format and player requirements

Exigences relatives au format de fichier de livre audio et aux lecteurs

[IEC 62571:2011](https://standards.iteh.ai/catalog/standards/sist/9cae7c74-e4a1-4719-9272-61e21e435c8b/iec-62571-2011)

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DIGITAL AUDIOBOOK FILE FORMAT AND PLAYER REQUIREMENTS

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This bilingual version (2011-07) replaces the English version.

The text of this standard is based on the following documents:

CDV	Report on voting
100/1543/CDV	100/1629/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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DIGITAL AUDIOBOOK FILE FORMAT AND PLAYER REQUIREMENTS

1 Scope

This International Standard defines requirements and provides recommendations to publishers, software developers, content providers, and hardware manufacturers for the data structure, usability requirements, playback systems and delivery systems for audiobooks in digital file format. It should be noted that throughout this International Standard, the term audiobook is defined as any audio file or collection of audio files of primarily spoken word content that are played in a linear or specified order. Therefore, spoken word audio with occasional music, a narration of newspaper articles, or other similar spoken word audio is assimilated to audiobooks in this standard.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 11578:1996, *Information technology – Open Systems Interconnection – Remote Procedure Call (RPC)*

ISO 639-1, *Codes for the representation of names of languages – Part 1: Alpha-2 code*

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions – Part 1: Country codes*

ISO 9660:1988, *Information processing – Volume and file structure of CD-ROM for information interchange*

3 General

This International Standard defines the audiobook file format structure for digital audiobook media. Goals in creating this International Standard include compatibility with music industry and multimedia standards as well as effectively presenting and navigating an audiobook. This International Standard is a compilation standard that straddles early binary architectures represented by earlier versions of CEA-2003¹, and newer XML architectures represented by the Optical Storage Technology Association's (OSTA) MusicPhotoVideo™² MPV). A conforming playback system and conforming audiobook content provides a wonderful and highly functional reading and listening experience. The goal of this International Standard is to create a broad, extensible standard for audiobook publishers, audiobook device manufacturers, and audiobook software developers in order to create the best listening experience for the audiobook consumer. An overview follows.

OSTA MultiAudio defines a binary file be placed in the root of the file format structure on a CD/MP3. The TOC.MAU serves as the table of contents for the associated MP3 files on a

¹ See Bibliography.

² MusicPhotoVideo is the trade name of a program supplied by the Optical Storage Technology Association. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the program named.

compliant CD/MP3. Conforming MultiAudio players read this file to obtain the information the player needs to present the content to the listener.

OSTA MPV defines an eXtensible Markup Language (XML) schema to be placed in the root of the file format structure. The INDEX.AUB serves as the table of contents for the associated audiobook files, regardless of media, codec, or delivery type. Conforming MPV players read this file to obtain the information the player needs to present the content to the listener. Audiobooks conforming to this standard MUST utilize the audiobook-specific file extension, .AUB. In addition, audiobooks conforming to this standard may utilize the same MPV file extension specified by the MPV Music Profile, .MUM, in order to create additional compatibility for MPV-compliant players that do not recognize the audiobook extension.

Similarly, while OSTA MPV was primarily designed for the music industry and CD-ROM media, it provides "extensions" for enhancing the format. This International Standard "extends" OSTA MPV to support audiobooks and does not require a specific media or content delivery system. The audiobook extensions are defined as the MultiAudio binary "TOC.MAU" for CD/MP3 audiobooks, and the MPV XML "INDEX.AUB" for all digital audiobooks.

Therefore, throughout this International Standard, "digital audiobook file format structure" is used to describe the entire audiobook content, regardless of media or method of delivery. "Delivery system" is used to represent any system used for playback of the content, whether it is actual physical media or another type of delivery system, such as downloaded or streaming content. This International Standard defines required MPV data and audiobook-specific Extra Data requirements. The conforming player, by reading the INDEX.AUB or TOC.MAU, is presented with the data needed to effectively navigate and play the content in the manner the publisher intended. Conforming players and conforming audio content shall meet the requirements contained in Clause 11. In addition, conforming players and conforming audio content are encouraged, but not required, to conform to the recommendations of Clause 11.

The player identifies and reads the INDEX.AUB or TOC.MAU file in the root of the digital audiobook file format structure. A conforming player recognizes the audiobook identifier in the OSTA MPV Extra Data field, and processes the audiobook data as defined in Clauses 4 through 7 accordingly. OSTA MPV provides specific identifiers to tell the player the type of encoded audio file that is in use. OSTA MPV also provides an "unknown" identifier, which signals the device to determine the type of encoding used. Once an audiobook and its encoding method have been detected, the playback system can reference navigational points and informational fields and present them to the listener. Excessive delays in playback or moving to the next portion of the audiobook should be minimized; excessive delays are not acceptable according to this standard.

One or more audiobooks may reside on the system, but if there is more than one audiobook, they shall each reside in separate directories within the digital audiobook file format structure. The MPV file contains one or more "playlists" for each audiobook. The playlist identifies the correct linear reading order of the files to be played for each book, and the location of the digital audiobook files. A simple digital audiobook file format structure residing on physical media may need only one playlist; a more complex digital audiobook file format structure that includes choices of delivery, such as local and streaming, may have multiple playlists to coincide with each method of delivery.

Navigational levels are defined by the content publisher within the INDEX.AUB or TOC.MAU file, and may be as simple or as complex as desired. Extra Data fields identify the levels and "time offsets" to navigational points within files or file locations. Pointers to the "parent" and "child" locations are also defined within Extra Data fields. In this manner, an unlimited amount of levels and navigation points may be identified. Within the binary TOC.MAU file, Level 0 navigation is the top level; for example, the audiobook itself, or a collection of several audiobooks contained in separate folders. Level 1 navigation is the first level of nested pointers defined, and is required for compliance. In a very simple example, a digital audiobook file format structure could contain one audiobook comprised of one digital file. Each of the chapter locations are defined as Level 1 navigation points within the TOC.MAU.

The conforming player is able to present the user with Level 1 navigation by moving to each of the defined offsets.

More complex digital audiobook file format structures can be achieved by nesting levels within the INDEX.AUB. A digital audiobook file format structure can contain several layers or levels, with offsets to the next navigation point, parent level, and child level. As a more complex example, a digital audiobook file format structure could contain two audiobooks, each in a separate folder and comprised of ten chapters each, with each chapter encoded as a separate digital file. Navigation would include pointers to each separate audiobook, and enable the player to choose between one or the other. Navigation markers would point to the beginning of each chapter, allowing navigation from chapter to chapter within the audiobook. Nested levels would point to pages within the chapters.

NOTE 1 Books, chapters and pages are used as level name examples; however, there is no naming requirement for levels in order to be compliant with this International Standard.

The only constraint on the audio publisher is to encode MP3 files with a "fixed bit rate" because variable bit rate encoding makes it impossible for low-powered players to calculate the data offset from the time offset.

NOTE 2 Audiobook content providers are strongly encouraged to name the audio files using an ASCII collated sequence. This means that the unaware player would still play the audio files in order and the navigation from file to file would be whatever design the audio publisher chose for structuring the files, that is one chapter per file would yield chapter navigation; one section per file would yield section navigation. The correct linear reading order would then most likely be preserved.

There is audiobook-specific content, such as title, author, and narrator, as well as time information that allows players to calculate elapsed time and time remaining. Extra Data fields associated with each file provide the player with this information so that it can be presented to the listener. Additional enhancements are encouraged, but not required with Level Class Identifiers and the separate Bookmark.AUB file for rewriteable media. The Level Class Identifiers will allow a playback device to handle distinct audiobook levels in customized ways, depending on the type of content, or sub-grouping, of those levels. The Bookmark.AUB file contains provisions for both an autoresume point, as well as user-defined bookmarking capabilities, and is encouraged for transfer from one device to another of such. Playback device designers may also consider incorporating multi-user enhancements with bookmarking capabilities.

For a player that reads binary files, Clauses 4 to 8 detail the MultiAudio audiobook extensions, headers, playlists and levels in the MultiAudio format. For a player that is capable of reading XML, Clause 10 discusses in detail the MPV schema for audiobooks in the MPV format. For players that read both binary files and XML schema, the XML should be used.

4 MultiAudio audiobook extensions

4.1 Table of contents

This clause defines audiobook extended data structures based on OSTA MultiAudio.

The data structure for the table of contents shall be as defined in Table 1.

Table 1 – Table of contents data structure

Clause / Subclause	Description
4.2	Description
Table 2	Audiobook MultiAudio Chunk
4.2.2	Tag.Identifier
4.2.3	Tag.OrdinalNumber
4.2.4	Tag.Reserved
4.2.5	Tag.Length
4.2.6	Tag.Data
5	Audiobook Extendable Structure (AB_ExtStruct)
5.2	Tag
5.3	Offset to Extra Data
5.4	Fixed Length Chunk (AB_FixedChunk)
5.4.2	Example
5.5	Variable Length Chunk (AB_VariableChunk)
5.5.2	Example
5.6	Extra Data
6	Audiobook Header (AB_Header)
6.2	Tag
6.3	AB_Header Fixed Chunk
6.3.2	Tag
6.3.3	Audiobook Spec Major Version
6.3.4	Audiobook Spec Minor Version
6.3.5	Number of Audiobooks
6.3.6	Offset to Playlist Indexes
6.4	AB_Header Variable Chunk
6.4.2	Tag
6.4.3	Playlist Indexes
6.5	Extra Data
7	Audiobook (AB_Book)
7.2	Tag
7.3	AB_Book Fixed Chunk
7.3.2	Tag
7.3.3	Text Format
7.3.4	Flags
7.3.5	TOC_Playlist Index
7.3.6	Offset to Book Title
7.3.7	Offset to Author
7.3.8	Offset to Narrator
7.3.9	Offset to Copyright Statement
7.3.10	Offset to Audiobook UUIDs
7.3.11	Offset to Book ISBN Identifier

Table 1 (Continued)

Clause Subclause	Description
7.3.12	Offset to Book ISSN Identifier
7.3.13	Offset to Book DOI Identifier
7.3.14	Offset to Book Index Number
7.3.15	Offset to Book Shelf Number
7.3.16	Offset to Book Part Number
7.3.17	Offset to Other Identifier
7.3.18	Offset to First Audiobook Level
7.3.19	Offset to Playlist Content Location Identifier
7.4	AB_Book Variable Chunk
7.4.2	Tag
7.4.3	Book Title
7.4.4	Author
7.4.5	Narrator
7.4.6	Copyright Statement
7.4.7	Book UUID
7.4.8	Book ISBN Identifier
7.4.9	Book ISSN Identifier
7.4.10	Book DOI Identifier
7.4.11	Book Index Number
7.4.12	Book Shelf Number
7.4.13	Book Part Number
7.4.14	Other Identifier
7.4.15	First Audiobook Level
7.4.16	Playlist Content Location Identifier
7.5	Extra Data
8	Audiobook Level (AB_Level)
8.2	Tag
8.3	AB_Level Fixed Chunk
8.3.2	Tag
8.3.3	Text Format
8.3.4	Flags
8.3.5	Number of Sub-Levels
8.3.6	Level Number
8.3.7	First TOC_TrackEntry Index
8.3.8	Offset to Sub-Level Chunk
8.3.9	Offset to Level Name
8.3.10	Offset to Level Description
8.3.11	Book Time Offset
8.3.12	Time Start Offset
8.3.13	Time Duration
8.3.14	Offset to Parent AB_Level
8.3.15	Offset to Previous AB_Level
8.3.16	Offset to Next AB_Level
8.4	AB_Level Variable Chunk
8.4.2	Tag
8.4.3	Level Name
8.4.4	Level Description
8.4.5	Sub-Level Chunk
8.5	Extra Data