Matroska Media Container Chapter Codecs Specifications

Abstract

   This document defines common Matroska Chapter Codecs, the basic
   Matroska Script and the DVD inspired DVD menu.

Status of This Memo

   This Internet-Draft is submitted in full conformance with the
   provisions of BCP 78 and BCP 79.

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   material or to cite them other than as "work in progress."

   This Internet-Draft will expire on 2 November 2022.

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1. Introduction

TODO

2. Status of this document

This document is a work-in-progress specification defining the Matroska file format as part of the [IETF Cellar working group](#). It uses basic elements and concepts already defined in the Matroska specifications defined by this workgroup.

3. Security Considerations

Tag values can be either strings or binary blobs. This document inherits security considerations from the EBML and Matroska documents.

4. IANA Considerations

To be determined.

5. Notation and Conventions

The key words "**MUST**", "**MUST NOT**", "**REQUIRED**", "**SHALL**", "**SHALL NOT**", "**SHOULD**", "**SHOULD NOT**", "**RECOMMENDED**", "**NOT RECOMMENDED**", "**MAY**", and "**OPTIONAL**" in this document are to be interpreted as described in BCP 14 [[RFC2119](#)] [[RFC8174](#)] when, and only when, they appear in all capitals, as shown here.

6. Matroska Chapter Codecs

Chapter codecs are a way to add more complex playback features than the usual linear playback.

Some ChapProcess elements hold commands to execute when entering/ leaving a chapter.

When chapter codecs are used the EditionFlagOrdered of the edition they belong to **MUST** be set.

6.1. Segment Linking

Chapter Codecs can reference another Segment and jump to that Segment.

The Chapter Codecs **MAY** store the Segment information in their own format, possibly not using the SegmentUID format. The ChapterTranslate element and its child elements **SHOULD** be used to link the internal chapter codec representation, the chapter codec number and the actual Segment it represents.

For example if a chapter codec of type "1" in SegmentA needs to link to SegmentB, it can store that information as "SegB" in its internal data.

The translation ChapterTranslate in SegmentB would use the following elements: * ChapterTranslate\ChapterTranslateCodec = 1 * ChapterTranslate\ChapterTranslateID = "SegB"

The Matroska Player **MUST** use the SegmentFamily to find all Segments that need translation between the chapter codec values and the actual segment it targets.

7. Matroska Chapter Codecs and Nested Chapters

When Nested Chapters contain chapters codecs -- via the ChapProcess Element -- the enter/leave commands -- ChapProcessTime Element -- **MUST** be executed in a specific order, if the Matroska Player supports the chapter codecs included in the chapters.

When starting playback, the Matroska Player **MUST** start at the ChapterTimeStart of the first chapter of the ordered chapter. The enter commands of that chapter **MUST** be executed. If that chapter contains Nested Chapters, the enter commands of the Nested Chapter with the same ChapterTimeStart **MUST** be executed. If that chapter contains Nested Chapters, the enter commands of the Nested Chapter with the same ChapterTimeStart **MUST** be executed, and so on until there is no Nested Chapter with the same ChapterTimeStart.

When switching from a chapter to another:

   *the leave commands (ChapProcessTime=2) of the chapter **MUST** be executed, then the leave commands of its parent chapter, etc. until the common Parent Chapter or Edition element. The leave command of that Parent Chapter or Edition element **MUST NOT** be executed.

*the enter commands (ChapProcessTime=1) of the Nested Chapter of
the common Parent Chapter or Edition element, to reach the
chapter we switch to, **MUST** be executed, then the enter commands
of its Nested Chapter to reach the chapter we switch to **MUST** be
executed, until that chapter is the chapter we switch to. The
enter commands of that chapter **MUST** be executed as well.

When the last Chapter finished playing -- i.e. its ChapterTimeEnd
has been reached -- the Matroska Player **MUST** execute its leaved
commands, then the leave commands of it's Parent Chapter, until the
parent of the chapter is the Edition.

7.1. Matroska Script (0)

This is the case when ChapProcessCodecID = 0. This is a script
language build for Matroska purposes. The inspiration comes from
ActionScript, javascript and other similar scripting languages. The
commands are stored as text commands, in UTF-8. The syntax is C
like, with commands spanned on many lines, each terminating with a
";". You can also include comments at the end of lines with "//" or
comment many lines using "/* */". The scripts are stored in
ChapProcessData. For the moment ChapProcessPrivate is not used.

The one and only command existing for the moment is
GotoAndPlay(ChapterUID);. As the same suggests, it means that,
when this command is encountered, the Matroska Player **SHOULD** jump to
the Chapter specified by the UID and play it.

7.2. DVD menu (1)

This is the case when ChapProcessCodecID = 1. Each level of a
chapter corresponds to a logical level in the DVD system that is
stored in the first octet of the ChapProcessPrivate. This DVD
hierarchy is as follows:

ChapProcessPrivate	DVD Name	Hierarchy	Commands Possible	Comment
0x30	SS	DVD domain	-	First Play, Video Manager, Video Title
0x2A	LU	Language Unit	-	Contains only PGCs
0x28	TT	Title	-	Contains only PGCs
0x20	PGC	Program Group Chain (PGC)	*	
0x18	PG	Program 1 / Program 2 / Program 3	-	

ChapProcessPrivate	DVD Name	Hierarchy	Commands Possible	Comment
0x10	PTT	Part Of Title 1 / Part Of Title 2	-	Equivalent to the chapters on the sleeve.
0x08	CN	Cell 1 / Cell 2 / Cell 3 / Cell 4 / Cell 5 / Cell 6	-	

Table 1

You can also recover wether a Segment is a Video Manager (VMG),
Video Title Set (VTS) or Video Title Set Menu (VTSM) from the
ChapterTranslateID element found in the Segment Info. This field
uses 2 octets as follows:

1. Domain Type: 0 for VMG, the domain number for VTS and VTSM

2. Domain Value: 0 for VMG and VTSM, 1 for the VTS source.

For instance, the menu part from VTS_01_0.VOB would be coded [1,0] and
the content part from VTS_02_3.VOB would be [2,1]. The VMG is always
[0,0]

The following octets of ChapProcessPrivate are as follows:

Octet 1	DVD Name	Following Octets
0x30	SS	Domain name code (1: 0x00= First play, 0xC0= VMG, 0x40= VTSM, 0x80= VTS) + VTS(M) number (2)
0x2A	LU	Language code (2) + Language extension (1)
0x28	TT	global Title number (2) + corresponding TTN of the VTS (1)
0x20	PGC	PGC number (2) + Playback Type (1) + Disabled User Operations (4)
0x18	PG	Program number (2)
0x10	PTT	PTT-chapter number (1)
0x08	CN	Cell number [VOB ID(2)][Cell ID(1)][Angle Num(1)]

Table 2

If the level specified in ChapProcessPrivate is a PGC (0x20), there
is an octet called the Playback Type, specifying the kind of PGC
defined:

 *0x00: entry only/basic PGC

 *0x82: Title+Entry Menu (only found in the Video Manager domain)

 *0x83: Root Menu (only found in the VTSM domain)

*0x84: Subpicture Menu (only found in the VTSM domain)

        *0x85: Audio Menu (only found in the VTSM domain)

        *0x86: Angle Menu (only found in the VTSM domain)

        *0x87: Chapter Menu (only found in the VTSM domain)

    The next 4 following octets correspond to the User Operation flags
    in the standard PGC. When a bit is set, the command **SHOULD** be
    disabled.

    ChapProcessData contains the pre/post/cell commands in binary format
    as there are stored on a DVD. There is just an octet preceding these
    data to specify the number of commands in the element. As follows:
    [# of commands(1)][command 1 (8)][command 2 (8)][command 3 (8)].

    More information on the DVD commands and format on DVD from the
    [DVD-Info] project.

8. **Normative References**

    [**RFC2119**] Bradner, S., "Key words for use in RFCs to Indicate
               Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/
               RFC2119, March 1997, <https://www.rfc-editor.org/info/
               rfc2119>.

    [**RFC8174**] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC
               2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174,
               May 2017, <https://www.rfc-editor.org/info/rfc8174>.

9. **Informative References**

    [**DVD-Info**] "DVD-Video Information", , <http://dvd.sourceforge.net/
               dvdinfo/>.

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