Overview

The software checks conformance according to various specs documented below. The checks based on ISO/IEC 14496-12 version 4 are not documented here.

1 Rules from ISO/IEC 23009-2

#	**Rule**
1.	Media Segment formats shall comply with the respective container formats (ISO BMFF and MPEG-2 TS).
2.	The Initialization Segment shall not contain any media data with an assigned presentation time.
3.	If it is the first Media Segment in the Representation, it shall contain only media streams that start with a SAP of type 1 or 2
4.	A Media Segment shall specify all Media Presentation times relative to the start of the Period and compensated with the value of the @presentationTimeOffset. The presentation time in Media Segments shall be accurate to ensure accurate alignment of all Representations in one Period.
5.	earliest*_presentation_time shall be equal to the sum of all temporally preceding subsegments in the representation.*
6.	*The* duration *of a subsegment indexed by an 'sidx' shall be equal to the sum of the durations of all the subsegments it indices.*
	Each Subsegment shall contain a number of complete access units. If a Segment Index is present for at least one media stream, then for any media stream for which no Segment Index is present, referred to as non-indexed stream, the following applies:
7.	every access unit of the non-indexed streams shall be a SAP of type 1
8.	for each Subsegment, every non-indexed stream must contain exactly one access unit within the Subsegment with presentation time less than or equal to the earliest presentation time of the Subsegment.
9.	If two Segment Index boxes document the same byte range, then the value of their first_offset field and their reference_size field shall be identical.
10.	A media data box containing data referenced by a movie fragment ('moof') box shall follow that movie fragment box and precede the next movie fragment box, if any, containing information about the same track.
11.	For a Media Subsegment, the value of the reference_type field in the describing Segment Index ('sidx') box shall be set to 0.
12.	If the Segment Index is provided the Segment Index ('sidx') box in ISO/IEC 14496-12 shall be used.
13.	If the Subsegment Index is provided the Subsegment Index ('ssix') box in ISO/IEC 14496-12 shall be used.

14.	The Initialization Segment shall contain an “ftyp” box, and a “moov” box.
15.	It shall not contain any “moof” boxes.
16.	The tracks in the “moov” box shall contain no samples (i.e. the entry_count in the “stts”, “stsc”, and “stco” boxes shall be set to 0).
17.	The “mvex” box shall be contained in the “moov” box. The “mvex” box also sets default values for the tracks and samples of the following movie fragments.
18.	‘styp’ box, if present, shall carry ‘msdh’ as a compatible brand.
19.	Each Media Segment shall contain one or more whole self-contained movie fragments. A whole, self-contained movie fragment is a movie fragment (‘moof’) box and a media data (‘mdat’) box that contains all the media samples that do not use external data references referenced by the track runs in the movie fragment box.
20.	Each ‘moof’ box shall contain at least one track fragment.
21.	The ‘moof’ boxes shall use movie-fragment relative addressing for media data that does not use external data references and the flag ‘default-base-is-moof’ shall also be set; absolute byte-offsets shall not be used for this media data.
22.	Each ‘traf’ box shall contain a ‘tfdt’ box.
23.	Each Media Segment may contain one or more ‘sidx’ boxes. If ‘sidx’ is present in a Media Segment, the first ‘sidx’ box shall be placed before any ‘moof’ box and the first Segment Index box shall document the entire Segment.
24.	In each self-contained movie fragment, the movie fragment (‘moof’) box is immediately followed by its corresponding media data (‘mdat’).
25.	Each Media Segment shall contain one or more ‘sidx’ boxes.
26.	The first ‘sidx’ box shall be placed before any ‘moof’ box and shall document Subsegments that span the composition time of the entire Segment.
27.	Each Media Segment shall carry ‘msix’ as a compatible brand.
28.	The Subsegment Index box (‘ssix’) shall be present and shall follow immediately after the ‘sidx’ box that documents the same Subsegment. This immediately preceding ‘sidx’ shall only index Media Subsegments.
29.	It shall carry ‘sims’ in the Segment Type box (‘styp’) as a compatible brand.
30.	The Indexed Self-Initializing Media Segment shall carry ‘dash’ as a compatible brand.
	If a Segment Index is present in a Media Segment of one Representation within an Adaptation Set, then the following shall hold:
31.	the order of Segment Index boxes for multiple media streams induces an ordering on the media content components equal to the order in which a Segment Index box for a media stream for each component first appears. This ordering shall be the same for all Segments of all Representations of an Adaptation Set. As a consequence, if there is a Segment Index for a media content component in one Segment there shall be a Segment Index for that media component in all Segments in this Adaptation Set.

32.	non-indexed media streams in all Representations of an Adaptation Set shall have the same access unit duration.
33.	In all cases for which a Representation contains more than one Media Segment, and if the Media Segment is not the last Media Segment in the Representation, the 'lmsg' compatibility brand shall not be present.
	As a consequence of @bitstreamSwitching being set to ‘true’, the following conditions are satisfied:
34.	The track IDs for the same media content component are identical for each Representation in each Adaptation Set.
35.	The conditions required for setting the @segmentAlignment attribute to a value other than 'false' for the Adaptation Set are fulfilled.
36.	The conditions required for setting (i) the @startWithSAP attribute to 2 for the Adaptation Set, or (ii) the conditions required for all Representations within the Adaptation Set to share the same value of @mediaStreamStructureId and setting the @startWithSAP attribute to 3 for the Adaptation Set, are fulfilled.
37.	If a SubRepresentation element is present in a Representation in the MPD and the attribute SubRepresentation@level is present, then the Media Segments in this Representation shall conform to a Sub-Indexed Media Segment as defined in 6.3.4.4 of ISO/IEC 23009-1. The Initialization Segment shall contain the Level Assignment (‘leva’) box.
38.	All Segment Index ('sidx') and Subsegment Index ('ssix') boxes shall be placed before any Movie Fragment ('moof') boxes.
39.	Media Segments containing multiple Media Components shall comply with the formats defined in 6.3.4.3, i.e. the brand 'msix'.
40.	In Media Segments, all Segment Index ('sidx') and Subsegment Index ('ssix') boxes shall be placed before any Movie Fragment ('moof') boxes.
41.	At least one SAP of type 1 to 3, inclusive, shall be present for each track in each Subsegment.
42.	In Media Segments, all Segment Index ('sidx') and Subsegment Index ('ssix') boxes shall be placed before any Movie Fragment ('moof') boxes.
43.	Each Media Segment of the Representations not having @startWithSAP present or having @startWithSAP value 0 or greater than 3 shall comply with the formats defined in 6.3.4.3 of ISO/IEC 23009-1, i.e. the brand 'msix'.
44.	`@segmentAlignment` when not set to ‘false’, this specifies that for any two Representations, X and Y, within the same Adaptation Set, the m-th Segment of X and the n-th Segment of Y are non-overlapping (as defined in 4.5.2) whenever m is not equal to n. For Adaptation Sets containing Representations with multiple media content components, this attribute value shall be either 'true' or 'false'. For Adaptation Sets containing Representations with a single media content component, when two AdaptationSet elements within a Period share the same integer value for this attribute, then for any two Representations, X and Y, within the union of the two Adaptation Sets, the m-th Segment of X and the n-th Segment of Y are non-overlapping (as defined in 4.5.2) whenever m is not equal to n.
45.	If the @subsegmentAlignment for an Adaptation Set is set to other than ‘false’, all following conditions shall be satisfied:

	□ Each Media Segment shall be indexed (i.e. either it contains a Segment index or there is an Index Segment providing an index for the Media Segment) □ For any two Representations, X and Y, within the same Adaptation Set, the m-th Subsegment of X and the n-th Subsegment of Y are non-overlapping (as defined in 4.5.2) whenever m is not equal to n. □ For Adaptation Sets containing Representations with a single media content component, when two AdaptationSet elements within a Period share the same integer value for this attribute, then for any two Representations, X and Y, within the union of the two Adaptation Sets, the m-th Subsegment of X and the n-th Subsegment of Y are non-overlapping (as defined in 4.5.2) whenever m is not equal to n.

2 DASH264 Interoperability Points

#	**Rule**
1	Representations shall comply with the formats defined in ISO/IEC 23009-1, section 7.3.
2	In Media Segments, all Segment Index ('sidx') and Subsegment Index ('ssix') boxes, if present, shall be placed before any Movie Fragment ('moof') boxes.
3	If the MPD@type is equal to "static" and the MPD@profile attribute includes "urn:mpeg:dash:profile:isoff-on-demand:2011", then
	Each Representation shall have one Segment that complies with the Self-Initializing Media Segment as defined in section 6.3.5.2 in ISO/IEC 23009-1.
4	If the MPD@type is equal to "dynamic" or if it includes MPD@profile attribute in-cludes "urn:mpeg:dash:profile:isoff-live:2011", then
	if the Media Segment is the last Media Segment in the Representation, this Me-dia Segment shall carry the 'lmsg' compatibility brand.