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Title **Proposed corrections on DASH**
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1. Introduction

This contribution lists several possible errata in the DASH specification.

2. Misc Editing

1. Duplicated sentence

In Table 17, row "S" delete the sentence "The textual order of the S elements must match the indexed (and thus time) order of the corresponding Media Segments." which is already present in Section 5.3.9.6.1 (6th paragraph).

2. "series"

The word "series" is used 4 times without being defined:

- "The value of the @t attribute minus the value of the @presentationTimeOffset specifies the MPD start time of the first Segment in the **series**."
- "The @r attribute has a default value of zero (i.e., a single Segment in the **series**) when not present."
- "@t specifies the MPD start time, in @timescale units, the first Segment in the **series** starts relative to the beginning of the Period."
- "@r is zero-based (e.g. a value of three means four Segments in the contiguous **series**)."

Define the series in the "S" row of Table 17, by replacing:

"specifies Segment start time and duration for a contiguous sequence of segments of identical durations."

with

"specifies Segment start time and duration for a contiguous sequence of segments of identical durations, called a series."

3. Clarifications on segment timeline

Section 5.3.9.6.1 (3rd paragraph, last sentence) says:

"The value of the @t attribute minus the value of the @presentationTimeOffset specifies the MPD start time of the first Segment in the series."

Table 17, row "@t" says:

"specifies the MPD start time, in @timescale units, the first Segment in the series starts relative to the beginning of the Period."

We recommend fixing the first sentence (including the missing 'of').

A table clarifying the relationship between PTO, MPD start time and gaps/overlaps at period boundaries would be useful in the specification. We suggest adding the following:

| | SegmentTemplate w/ @duration | SegmentTemplate w/ SegmentTimeline | |
|---|---|------------------------------------|---|
| w/o @presentationTimeOffset (= 0) | <ul style="list-style-type: none"> • MPD start time of the first media segment is 0 • EPT of the first media segment shall be greater than or equal to 0. | @t = 0 for first s entry | <ul style="list-style-type: none"> • MPD start time of the first media segment is 0 • EPT of the first media segment shall be greater than or equal to 0 |
| | | @t = X != 0 for first s entry | <ul style="list-style-type: none"> • MPD start time of the first media segment is X • There is a gap (nothing to present) between 0 and X in static mode. |
| w/ @presentationTimeOffset (= Y) | <ul style="list-style-type: none"> • MPD start time of the first media segment is 0 • The first media segment shall contain at least one AU whose PTS is greater than Y, and the EPT of the segment is so that: <ul style="list-style-type: none"> ○ if EPT > Y : gap in presentation ○ if EPT < Y: some AU are discarded or not presented | @t = 0 for first s entry | <ul style="list-style-type: none"> • MPD start time of the first media segment is 0 • The first media segment shall contain at least one AU whose PTS is greater than Y, and the EPT of the segment is so that: <ul style="list-style-type: none"> ○ if EPT > Y : gap in presentation ○ if EPT < Y: some AU are discarded or not presented |
| | | @t = X != 0 for first s entry | <ul style="list-style-type: none"> • MPD start time of the first media segment is X • There is a gap (nothing to present) between 0 and X in static mode • The first media segment shall contain at least one AU whose PTS is greater than X+Y, and the EPT of the segment is so that: <ul style="list-style-type: none"> ○ if EPT > Y+X : gap in |

| | | | |
|--|--|--|--|
| | | | <p>presentation</p> <ul style="list-style-type: none"> ○ if $EPT < Y+X$: some AU are discarded or not presented |
|--|--|--|--|

4. On Descriptors

| Descriptor Element | Element allowed in |
|----------------------------------|--|
| AssetIdentifier | Period |
| Accessibility | AdaptationSet, ContentComponent |
| Role | AdaptationSet, ContentComponent |
| Rating | AdaptationSet, ContentComponent |
| Viewpoint | AdaptationSet, ContentComponent |
| FramePacking | AdaptationSet, Representation, SubRepresentation |
| AudioChannelConfiguration | AdaptationSet, Representation, SubRepresentation |
| ContentProtection | AdaptationSet, Representation, SubRepresentation |
| EssentialProperty | AdaptationSet, Representation, SubRepresentation |
| SupplementalProperty | AdaptationSet, Representation, SubRepresentation |
| InbandEventStream | AdaptationSet, Representation, SubRepresentation |
| Reporting | Metrics |

We note that some descriptors are allowed at SubRepresentation level while some others are not but allowed at the ContentComponent level. Since the @contentComponent attribute on SubRepresentation allows linking SubRepresentation and ContentComponent elements, the exact location of the descriptor does not matter. The difference is when @level is used on a SubRepresentation, as it requires the use of 'ssix' and 'leva' boxes; but on the other hand multiple SubRepresentation elements may be linked to the same ContentComponent. It is unclear why Descriptors are not uniformly treated.

Then, it seems that nothing prevents some of these descriptors to be present in multiple locations (e.g. AdaptationSet and Representation) with same ID but different values. What is the normative behavior for such cases?

Furthermore, there is no restriction on using the same descriptor with different values on different Representations of an AdaptationSet. For example, the AudioChannelConfiguration could be different on each representation, switching from stereo to 22.2: is this a really seamless switch?

5. Accuracy of MPD time

In 7.2.1, it is said

” The MPD start times as defined in 5.3.9.5.3 shall provide an approximation of the Media Presentation time T_M within the Period. Specifically, the MPD start time shall be drift-free relative to the presentation time T_P signaled in the media stream, i.e. the accuracy of the offset of the MPD start time relative to the presentation time does not depend on the position of the Segment in the Representation”

According to 5.3.9.5.3, the MPD start time of a segment in case of segmentTemplate and @duration is a function of the number of segments. This implies that to match the drift-free criteria, all segments shall have the same duration when no SegmentTimeline is used.

This is not consistent throughout the spec (for example « Typically all Segments in a Representation have the same or roughly similar duration ») and seems in conflict with industrial practice.

We suggest removing the drift-free constraint and replacing it with a maximum allowed drift.

6. Conclusion

We propose to include all the defects reported into a new COR to MPEG-DASH.