

CHANGE REQUEST

DASH-IF IOP CR **0119** rev - Current version: **4.0**

Status: Draft Internal Review Community Review Agreed

Title: Thumbnail tiles for visual scrubbars

Source: DASH-IF IOP

Supporting Companies:

Category: **C** **Date:** 2017-02-21

Use one of the following categories:

- C** (correction)
- A** (addition of feature)
- B** (editorial modification)

Reason for change:

There is a possibility to implement thumbnails for UI scrubbing by using trick mode adaptation sets. However, this relatively complex to implement in a player and requires double video decoders. Many players on the web, like the Youtube player, download and use tiles with multiple thumbnails to provide such thumbnails. It is relatively easy to invent such a system, but it would be beneficial for interoperability if we could agree on one format that also follows the DASH Manifest syntax as far as possible. The proposal here has been elaborated as part of <https://github.com/Dash-Industry-Forum/DASH-IF-IOP/issues/119>.

Summary of change:

- Add a new contentType "image" to the Manifest to signal a stream of thumbnails in form of tiles of still images (jpeg).
- The syntax is a natural extension to the current MPD syntax.

Consequences if not approved:

See issue above. There will likely be similar proprietary implementations.

Sections affected: 6.2.X (new)

Other comments:

Disclaimer:

This document is not yet final. It is provided for public review until the deadline mentioned below. If you have comments on the document, please submit comments by one of the following means:

- at the github repository <https://github.com/Dash-IndustryForum/IOP/issues> (public at <https://gitreports.com/issue/haudiobe/DASH-IF-IOP>), or
- dashif+iop@groupspaces.com

Please add a detailed description of the problem and the comment.

Based on the received comments a final document will be published latest by the expected publication date below, integrated in a new version of DASH-IF IOP if the following additional criteria are fulfilled:

- All comments from community review are addressed
- The relevant aspects for the Conformance Software are documented
- IOP test cases are provided

Commenting Deadline: May 10th, 2017

Expected Publication: June 30th, 2017

Add section

6.2.X Tiles of thumbnail images

For providing easily accessible thumbnails with timing, Adaptation Sets with the new `@contentType="image"` can be used in the MPD. A typical use case is for enhancing a scrub bar with visual cues. The actual asset referred to is a rectangular tile of temporally equidistant thumbnails combined into one jpeg or png image. A tile, therefore is very similar to a video segment from MPD timing point of view, but is typically much longer. As for video, different resolutions can be collected into one AdaptationSet. To limit the implementation effort, only `SegmentTemplate` with `$Number$` is used to described the thumbnail tiles and their timing.

A lot of parameters are the same as for video, but the ones which are new for thumbnail tiles, the rectangular grid dimensions are given as the value of the **EssentialProperty** with `@schemeIdUri` set to `"http://dashif.org/thumbnail_tile"`.

An example Adaptation Set can look like this:

```
<AdaptationSet id="3" mimeType="image/jpeg" contentType="image">
  <SegmentTemplate media="$RepresentationID$/tile$Number$.jpg" duration="125"
startNumber="1"/>
  <Representation bandwidth="10000" id="thumbnails" width="6400" height="180">
    <EssentialProperty schemeIdUri="dashif.org/thumbnail_tile" value="25x1"/>
  </Representation>
</AdaptationSet>
```

Here

- Duration tells duration of tile in seconds (of in timescale if provided)
- bandwidth is `average_tile_size_in_bits/duration`. In the example above, the `average_tile_size_in_bytes` would be a around 153kB $((153 * 1024B * 8) / 125s = 10027\text{bps})$
- width and height are resolution of the tile (max jpeg resolution is 64k x 64k)
- Value of `EssentialProperty` is the number of thumbnails (horizontal x vertical)
- Duration of each thumbnail is `tile_duration/nr_of_thumbnails`
- Size of thumbnail is derived from tile resolution

Last tile may have thumbnails outside time interval (add black thumbnails or possibly make smaller tile).