HTTP Adaptive Streaming (HAS) and CDNI

draft-brandenburg-cdni-has-00

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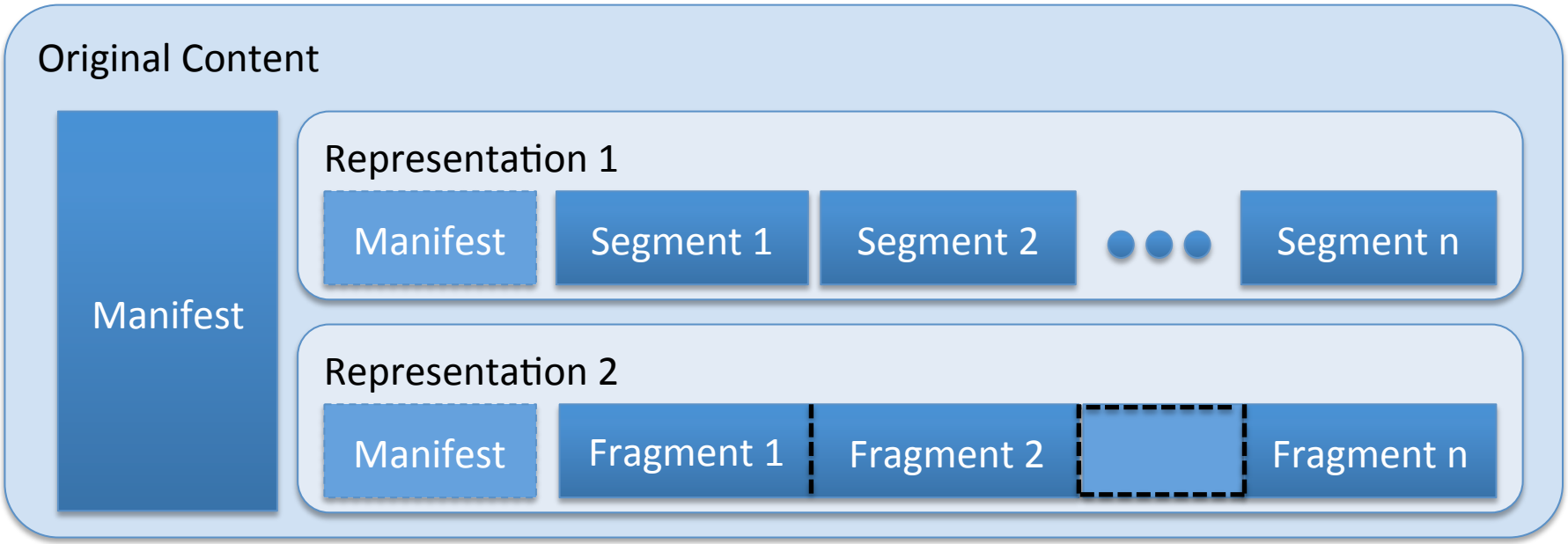
Background - 1

- HAS as an umbrella term for:
  - Apple HLS, MPEG DASH, Microsoft Smooth Streaming, Adobe HDS, etc…
- Characteristics:
  - Session less, pull-based, adaptive-bitrate, chunked

Background - 2

- With traditional (non-HAS) media delivery methods:
  - Content ≈ single file/stream
- With HAS:
  - Content ≠ single file/stream



Why this draft?

- Although CDNI should be content-agnostic, HAS content poses some unique challenges
  - Very large number of (possibly distributed) files
  - Session-less nature makes logging difficult
  - Manifest file poses problems for Request Routing
  - Etc…

- This draft…
  - Is meant to spur discussion on HAS and CDNI
  - Introduces terminology
  - Discusses some of the problems related to HAS and CDNI
  - Explicitly does not present solutions
  - Can serve as a basis for eliciting HAS-specific CDNI requirements
  - Can serve as a basis for input to CDNI Framework document

Problem 1: What is a Content Item?

- Lets assume…
  - A Content Item is the element that is being Request Routed
  - A Content Item is the element to which metadata is associated
  - Etc.

- From I-D-ietf-cdni-problem-statement:

  Content: Any form of digital data. One important form of content with additional constraints on distribution and delivery is continuous media (i.e. where there is a timing relationship between source and sink)

- What does this mean for HAS content?:
  - Is it the manifest file? Can it also be a manifest file describing a single representation? Could it be an individual chunk?
  - Relationship with 'Aggregation Construct' from Framework

- Do we want to allow the uCDN and dCDN to have a different notion of what constitutes a Content Item?

Problem 2: Dealing with manifest files

- Currently, three different methods of identifying chunks in a manifest file are in use:
  - Full Locator
    http://deliverynode.server.cdn.com/content_1/segments/segment1_1.ts
  - Relative Locator
    segments/segment1_1.ts (relative to location of manifest file)
  - Chunk Request Routing
    http://req-routing.cdn.com/content_req?content=content_1&segment=seg1_1.ts
- What happens with these locators in an Inter-CDN situation?
  - Should the uCDN/dCDN be able to rewrite the manifest file?
  - Should the dCDN be able to distribute chunks/representations between delivery nodes?
  - Should it be possible for HAS content to be distributed across CDNs?

Problem 3 – n:

- These are just two of the problems, many more exist
  - Dealing with logging of segmented content
  - Metadata for HAS content
  - CDNs in Reverse Proxy mode

- Some of these are discussed in our draft

Summary

- Before discussing impact of HAS on specific interfaces (e.g. Logging), let's agree on high-level requirements

- Examples:
  - Common definition of what constitutes a Content Item
  - Should CDNs be HAS-aware?

Proposal

- Create WG HAS/ABR ‘ramifications’ document containing detailed analysis of problems and solutions
  - draft-brandenburg-cdni-has could form as a basis for this

- Once finished, update the Framework and Requirement document with conclusions