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 \(\approx\) single file/stream
- With HAS:
  - Content \(\neq\) 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