Cache Digests for HTTP/2

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Changes from draft-02

- switch to Cuckoo Hash
- open issues:
  - negotiating the use #410
  - remove etag / stale support #516
Negotiating the Use #410
Current approach: use SETTINGS

- **SENDING_CACHE_DIGEST:**
  - indicates client-support
- **ACCEPT_CACHE_DIGEST:**
  - indicates server-support
  - sent in 0.5 RTT in TLS 1.3 full handshake
  - client can remember
Current approach: issues

• server’s indication is per-connection
  – need to be per-origin?
    • use ORIGIN frame?

• require clients to cache the info?
  – currently it’s a MAY
remove etag / stale support #516
Current approach: four types of digests

<table>
<thead>
<tr>
<th>digest key / cache state</th>
<th>server’s strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>match found</td>
</tr>
<tr>
<td>SHA(URL) / fresh</td>
<td>do not push</td>
</tr>
<tr>
<td>SHA(URL) / stale</td>
<td>push Etag only(^{1,3})</td>
</tr>
<tr>
<td>SHA(URL + Etag)(^2) / fresh</td>
<td>do not push</td>
</tr>
<tr>
<td>SHA(URL + Etag)(^2) / stale</td>
<td>push Etag only(^4)</td>
</tr>
</tbody>
</table>

*1: either potentially wastes bandwidth or one RT, since server cannot tell if it should push response body or just Etag
*2: hard to use unless h2 endpoint and cache (that store’s the Etag value) exist on a single machine (impl. issue)
*3: clients do not adopt pushed response if it has a fresh cache (H2 issue)
*4: up-to-date value of the Etag needs to be transferred, but how? (H2 issue)
Proposal: remove etag / stale support

- i.e. concentrate on SHA(URL) / fresh case
  - since majority of the resources that block rendering are long-term cacheable