Two New Caching Specs
Why?
CDN / Reverse Proxies should be a targetable platform...

... so an origin / origin software (e.g., CMS) can rely on its behaviour and interfaces.
1. Cache Groups
It’s often useful to group stored responses together.
Use Case: Invalidation

• If more than one resource incorporates common information, it’s useful to invalidate them together.
  
  • E.g., When a famous person dies, invalidate all pages referring to them.

• Invalidating all resources that have a certain property can be accommodated by using a URI prefix (e.g., “all images in / images”), but that is constraining, and not practical in many cases.
Many CDNs Already Invalidate By Group

• Cloudflare
  Cache-Tag: tag1, tag2, tag3

• Fastly
  Surrogate-Key: product-62952 product-1043 product-14534

• Akamai
  Edge-Cache-Tag: casual, knits, fall-sale
New Thing: Revalidation by Group

• Some resources are so tightly bound that successfully revalidating one can imply that the others are fresh too.
  
  • E.g., JavaScript libraries are deployed as many files that are versioned together.

• Saves revalidation requests and latency waiting for responses.

• Question: Does this require too much operational discipline? Need to make sure that if one file changes, all do.
2. Invalidation API
Most CDNs and reverse proxies have invalidation APIs

- Cloudflare - https://developers.cloudflare.com/cache/how-to/purge-cache/
- Varnish - https://docs.varnish-software.com/tutorials/cache-invalidation/
- Etc…
{
    "type": "uri",
    "selectors": [
        "https://example.com/foo/bar",
        "https://example.com/foo/bar/baz"
    ]
}

Selector types:
- URI
- URI prefix
- Origin
- Group
3. Gateway Description
Origin Servers Need to Know Things

• E.g.,
  • Where is the invalidation API?
  • What are my credentials for it?
  • What invalidation selectors are supported?
  • What Targeted Cache-Control [RFC9213] are supported?
  • And probably a lot more.
{
  "description": "The Example CDN",
  "generated": "Sun, 06 Nov 2024 08:49:37 GMT",
  "invalidation": {
    "uri": "https://api.cdn.example.com/invalidate",
    "selectors": ["uri", "uri-prefix", "group"],
    "purge": true,
    "p95-latency": 2000
  },
  "targeted-cc": [
    "ExampleCDN-Cache-Control",
    "CDN-Cache-Control"
  ],
  "api-authentication": {
    "bearer": "mF_9.B5f-4.1JqM"
  }
}
Adopt?