

three?

~~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

- Akamai - <https://techdocs.akamai.com/purge-cache/reference/api>
- Fastly - <https://developer.fastly.com/reference/api/purging/>
- Cloudflare - <https://developers.cloudflare.com/cache/how-to/purge-cache/>
- Cloudfront - <https://docs.aws.amazon.com/AmazonCloudFront/latest/DeveloperGuide/Invalidation.html#invalidating-objects-api>
- ATS - https://docs.trafficserver.apache.org/en/latest/admin-guide/plugins/remap_purge.en.html
- 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?