

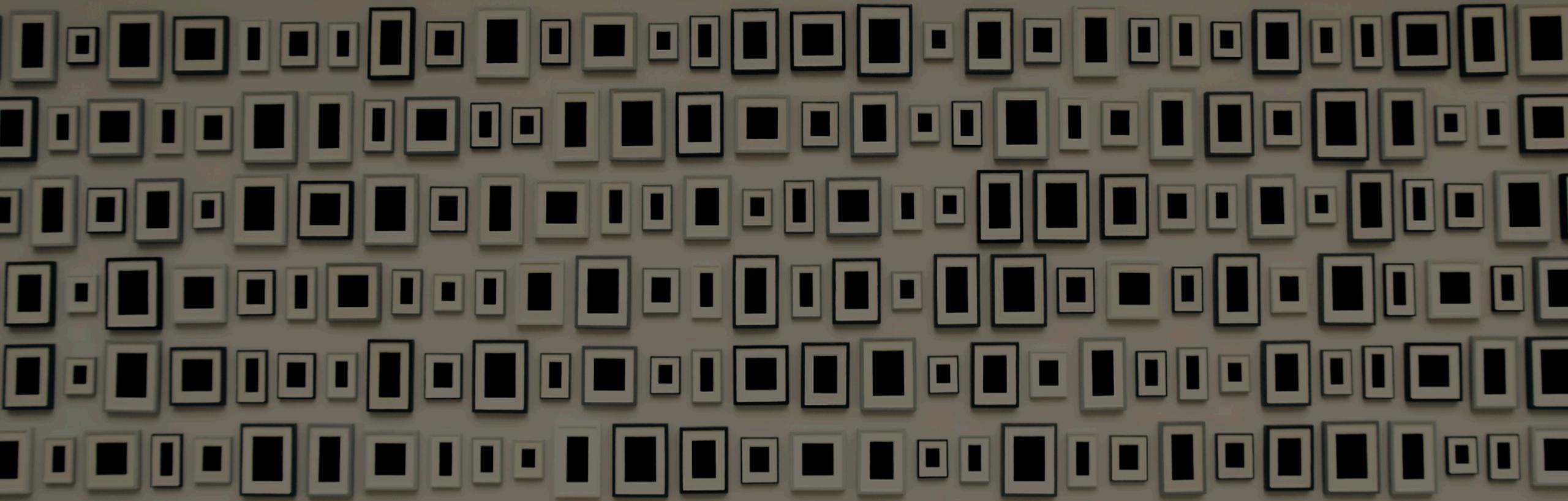
adaptTo()

EUROPE'S LEADING AEM DEVELOPER CONFERENCE
27th – 29th SEPTEMBER 2021

Image optimization at the edge

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Images are everywhere...



Standard image manipulation strategies

- Rendition workflows
- Custom workflows (i.e. metadata removal, imagemagick, etc)
- Offloading (to separate AEM instance)
- Dynamic Media (formerly known as Scene7)

<picture> tag



```
<picture>
  <source srcset="/content/dam/k.jpg.rendition.451.1353.jpg" media="(max-width: 480px)" />
  <source srcset="/content/dam/k.jpg.rendition.902.2706.jpg" media="(min-width: 481px) and (max-width: 640px)" />
  <source srcset="/content/dam/k.jpg.rendition.902.2706.jpg" media="(min-width: 641px) and (max-width: 767px)" />
  <source srcset="/content/dam/k.jpg.rendition.1570.4710.jpg" media="(min-width: 768px) and (max-width: 991px)" />
  <source srcset="/content/dam/k.jpg.rendition.1570.4710.jpg" media="(min-width: 992px) and (max-width: 1199px)" />
  <source srcset="/content/dam/k.jpg.rendition.1570.4710.jpg" media="(min-width: 1200px) and (max-width: 1399px)" />
  <source srcset="/content/dam/k.jpg.rendition.1570.4710.jpg" media="(min-width: 1400px)" />
  
</picture>
```

Reality check

- New image formats (WebP, HEIC, AVIF)
- EXIF metadata removal
- “It takes ages to generate renditions out of 300 MB TIF file!”
- “Can you reduce image quality from 85% to 78% for all our assets?”
- “Is it possible to blur out-of-stock products?”
- “Can you render a small ‘20% off’ overlay for all on sale dresses?”
- “Would it be possible to dynamically reduce image quality for low-speed clients?”
- ...

The use case

- E-commerce site
- 2 image sources
 - AEM (marketing assets)
 - External system (products)
- Image-heavy website (product listings)

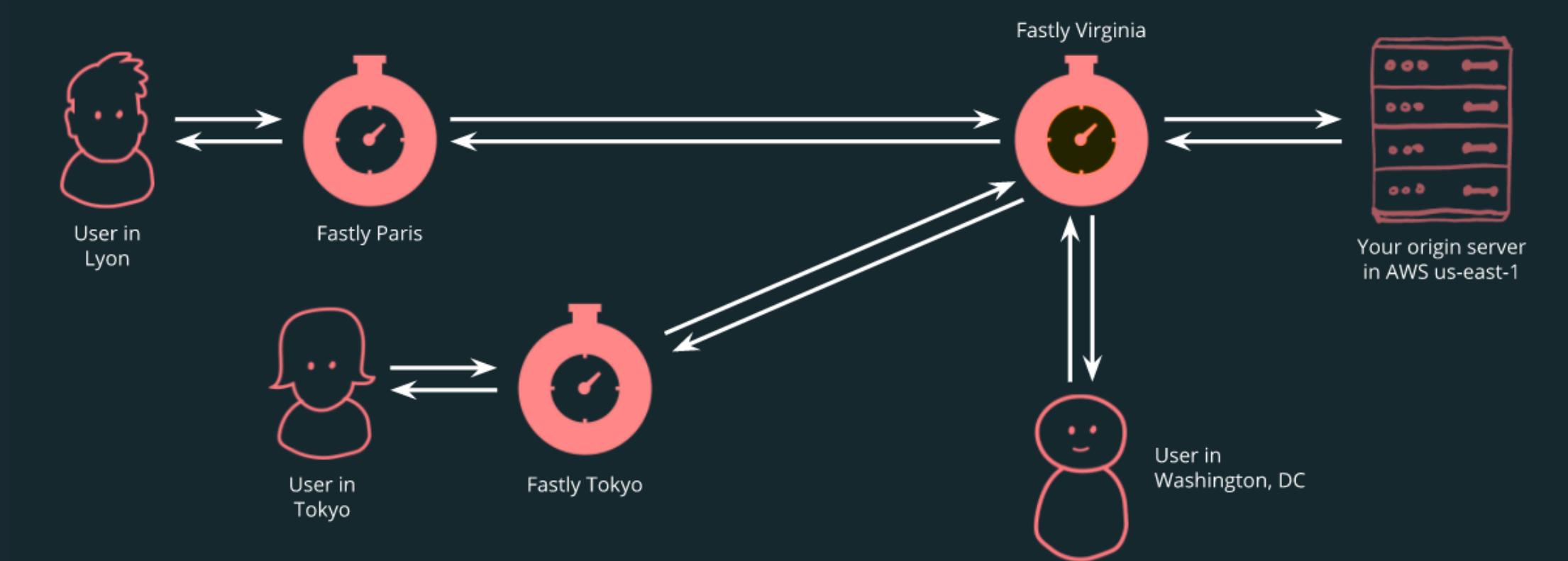
Image Optimizer by Fastly

- Image transformations (trim, crop, width, overlay, blur, etc)
- On-the-fly format changes (i.e. auto WebP)
- Quality level adjustments
- EXIF/XMP/ICC metadata removal

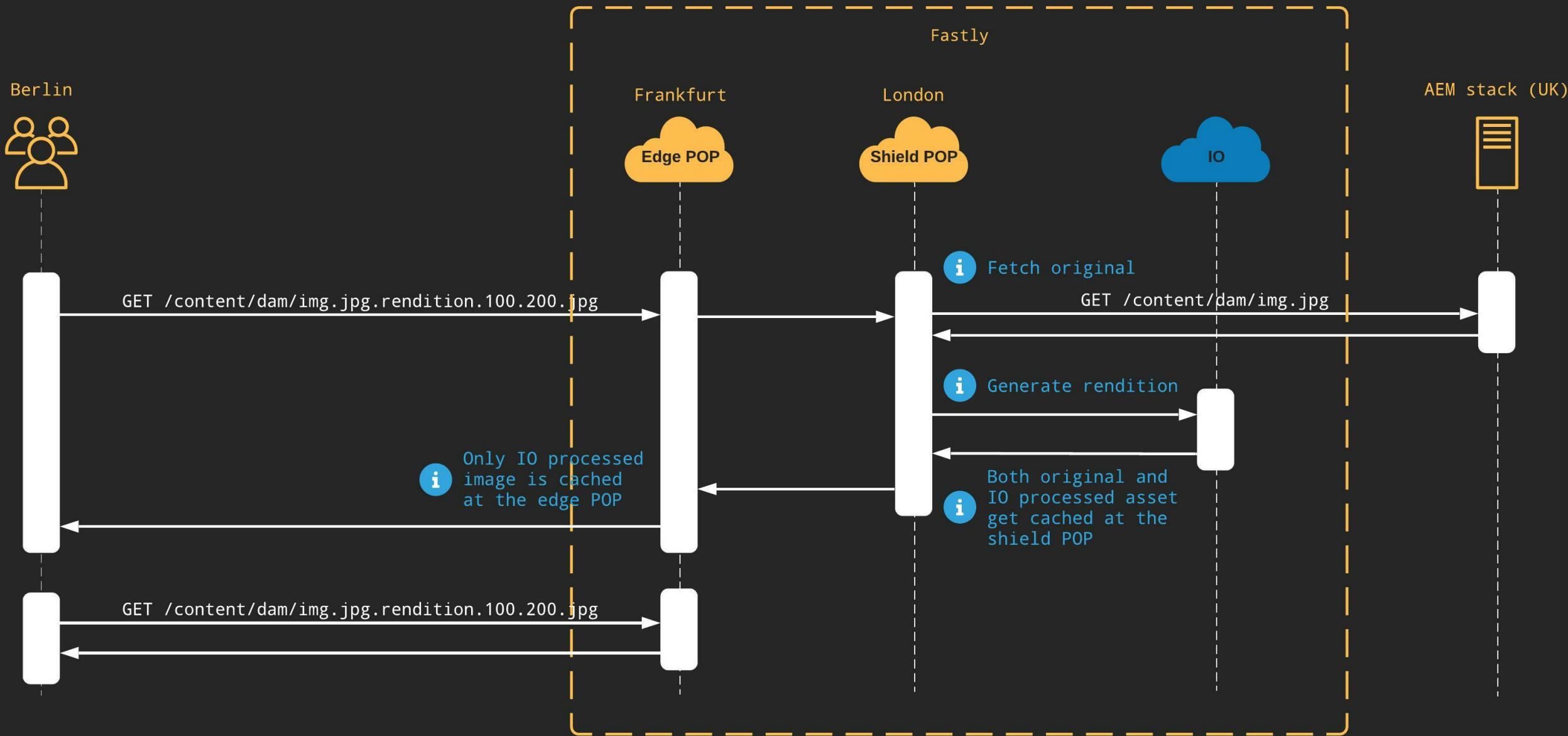
Prerequisites

- IO (Fastly service add-on)
- Shielding is mandatory
- VCL changes

Shielding



How it works?



VCL snippet

● ● ●

```
sub vcl_recv {
    # ...

    # Remove all QS from image requests to prevent IO service abusing
    if (req.url.ext ~ "(?i)^(:gif|png|jpe?g)$") {
        set req.url = querystring.remove(req.url);
    }

    # AEM DAM assets
    if (req.http.X-Varnish-Backend == "dispatcher" && req.url ~ "^/content/dam/.+?\.(gif|png|jpe?g)\.rendition\.[0-9]+\.[0-9]+\.(gif|png|jpe?g)(\?[^\\?]*?)$") {
        set req.http.X-Fastly-Imageopto-Api = "fastly";
        set req.url = querystring.set(req.url, "auto", "webp");
        set req.url = querystring.set(req.url, "quality", "82");

        # Extract width from image URL
        declare local var.width STRING;
        set var.width = regsub(req.url, "^.+\.(rendition\.[0-9]+)\..+", "\1");

        # Only configured renditions should be processed by IO
        if (var.width ~ "^(3|290|451|902|1570|3140)$") {
            # Height from the URL doesn't reflect actual image height
            set req.url = querystring.set(req.url, "width", var.width);
        } else {
            unset req.http.X-Fastly-Imageopto-Api;
            set req.url = querystring.remove(req.url);
        }
    } elseif {
        # other image origins
    }

    # ...
}
```

VCL snippet (cont'd)



```
sub rewrite_dam_asset_url {
    if (req.http.X-Varnish-Backend == "dispatcher" && req.http.X-Fastly-Imageopto-Api == "fastly") {
        set bereq.url = regsub(bereq.url, "\.rendition\.[0-9]+\.[0-9]+\.(gif|png|jpe?g)", "");
    }
}

sub vcl_miss {
    # ...
    if (req.backend.is_origin) {
        call rewrite_dam_asset_url;
    }
    # ...
}

sub vcl_pass {
    # ...
    if (req.backend.is_origin) {
        call rewrite_dam_asset_url;
    }
    # ...
}
```

What we use IO for?

- Rendition generation
- Auto WebP
- Metadata removal
- Quality adjustments

Demo time!



Standard image request



```
$ curl -SsD - -o /dev/null 'https://example.com/content/dam/path/to/an/image.jpg.rendition.1570.4710.jpg'  
HTTP/2 200
```

```
cache-control: public, max-age=2592000  
content-type: image/jpeg  
etag: "CVnRHI+4Vr1/WUT+clygQT7e8VuTBUqAQjeXw6Cxj+E"  
fastly-io-info: ifsz=228878 idim=2000x768 ifmt=jpeg ofsz=90848 odim=1570x603 ofmt=jpeg  
fastly-stats: io=1  
x-served-by: cache-lcy19238-LCY, cache-fra19152-FRA  
x-cache: HIT, HIT  
x-cache-hits: 1, 1  
vary: Accept  
content-length: 90848  
...
```

WebP request



```
$ curl -SsD - -o /dev/null 'https://example.com/content/dam/path/to/an/image.jpg.rendition.1570.4710.jpg' -H 'Accept: image/webp'  
HTTP/2 200  
  
cache-control: public, max-age=2592000  
content-type: image/webp  
etag: "VhkfSZ3m0eiPwQsNRYqwviNpmTw0a4xRS1lEjo0IJJsM"  
fastly-io-info: ifsz=228878 idim=2000x768 ifmt=jpeg ofsz=65030 odim=1570x603 ofmt=webp  
fastly-stats: io=1  
x-served-by: cache-lcy19253-LCY, cache-fra19167-FRA  
x-cache: HIT, HIT  
x-cache-hits: 1, 1  
vary: Accept  
content-length: 65030  
...
```

It's a trap!



AEM assets go-live

SIZES		SIZES	
BEFORE IO ROLLOUT		AFTER IO ROLLOUT	
TOTAL SIZE	3,947KB	119% LARGER	8,654KB
THIRD PARTY SIZE	925KB	0% NO CHANGE	927KB
HTML SIZE	85KB	1% LARGER	86KB
CSS SIZE	100KB	0% NO CHANGE	100KB
JS SIZE	1,103KB	0% NO CHANGE	1,105KB
IMAGE SIZE	2,466KB	191% LARGER	7,171KB
FONTS SIZE	190KB	0% NO CHANGE	190KB
FLASH SIZE	OKB	0% NO CHANGE	OKB
VIDEO SIZE	OKB	0% NO CHANGE	OKB
OTHER SIZE	2KB	0% NO CHANGE	2KB

What went wrong?

- 2-stage deployment
 - VCL changes (headers/QS/URL rewrites)
 - IO add-on deployment
- Order matters :)

AEM assets go-live (cont'd)

SIZES

TOTAL SIZE
3,947KB

THIRD PARTY SIZE
925KB

HTML SIZE
85KB

CSS SIZE
100KB

JS SIZE
1,103KB

IMAGE SIZE
2,466KB

FONTS SIZE
190KB

FLASH SIZE
0KB

VIDEO SIZE
0KB

OTHER SIZE
2KB

16% SMALLER

0% NO CHANGE

1% SMALLER

0% NO CHANGE

0% NO CHANGE

26% SMALLER

0% NO CHANGE

0% NO CHANGE

0% NO CHANGE

0% NO CHANGE

SIZES

TOTAL SIZE
3,308KB

THIRD PARTY SIZE
927KB

HTML SIZE
84KB

CSS SIZE
100KB

JS SIZE
1,105KB

IMAGE SIZE
1,827KB

FONTS SIZE
190KB

FLASH SIZE
0KB

VIDEO SIZE
0KB

OTHER SIZE
2KB

Non-AEM assets go-live

SIZES

TOTAL SIZE
2,661KB

THIRD PARTY SIZE
548KB

HTML SIZE
76KB

CSS SIZE
44KB

JS SIZE
889KB

IMAGE SIZE
1,562KB

FONTS SIZE
89KB

FLASH SIZE
0KB

VIDEO SIZE
0KB

OTHER SIZE
0KB

41% SMALLER

96% SMALLER

22% SMALLER

7% LARGER

69% SMALLER

30% SMALLER

0% NO CHANGE

0% NO CHANGE

0% NO CHANGE

0% NO CHANGE

SIZES

TOTAL SIZE
1,558KB

THIRD PARTY SIZE
24KB

HTML SIZE
59KB

CSS SIZE
47KB

JS SIZE
274KB

IMAGE SIZE
1,089KB

FONTS SIZE
89KB

FLASH SIZE
0KB

VIDEO SIZE
0KB

OTHER SIZE
0KB

Why not Dynamic Media?

- Implementation cost
 - Fastly was already part of the application stack
 - Fully functional PoC took 1 day
 - Zero changes in AEM codebase
- Unified approach for all the origins
- On-going cost

Thank you!