# Optimizing for **return visits**

# Caching Headers...

# The old way.

```
Expires: Wed, 21 Oct 2015 07:28:00 GMT
```

# The Modern Way: Cache-Control

```
# Apache:
<FilesMatch "\.(css|js|)$">
Header set Cache-Control "max-age=604800, public"
</FilesMatch>
```

```
# PHP:
<?php
 header("Cache-Control: max-age=604800, public");
?>
```

## Cache request directives

Standard `Cache-Control` directives that can be used by the client in an HTTP request.

```
Cache-Control: max-age=<seconds>
Cache-Control: max-stale[=<seconds>]
Cache-Control: min-fresh=<seconds>
Cache-Control: no-cache
Cache-Control: no-store
Cache-Control: no-transform
Cache-Control: only-if-cached
```

## Cache response directives

Standard `Cache-Control` directives that can be used by the server in an HTTP response.

```
Cache-Control: must-revalidate
Cache-Control: no-cache
Cache-Control: no-store
Cache-Control: no-transform
Cache-Control: public
Cache-Control: private
Cache-Control: proxy-revalidate
Cache-Control: max-age=<seconds>
Cache-Control: s-maxage=<seconds>
```

# Asset changes often? No-cache

```
Cache-Control: no-cache
```

# Asset won't change soon/ever?

**Set a long cache-control**

```
Cache-Control: public, max-age=2628000
```

# Asset won't change soon/ever?

**Set a long cache-control**

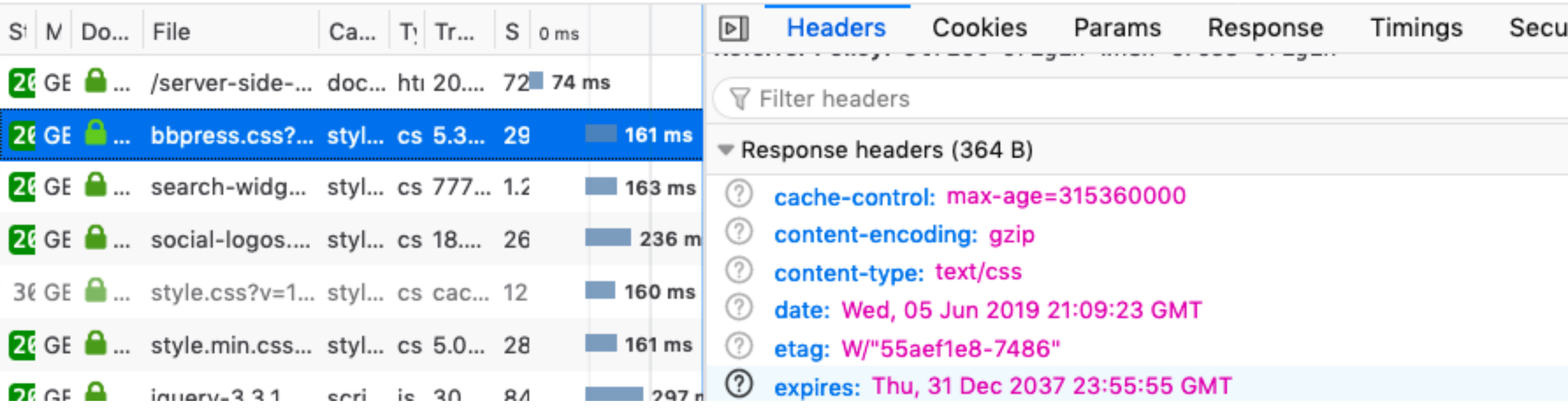
```
Cache-Control: public, max-age=604800, immutable
```

# Break immutable w/ a filename

**Last resort, version your filename when it changes**

```
path/to/site.123456.js
```

# In Devtools...


St M Do... File Ca... Ty Tr... S 0 ms
Headers Cookies Params Response Timings Secu
GE ... /server-side-... doc... htı 20.... 72 74 ms
GE ... bbpress.css?... styl... cs 5.3... 29 161 ms
GE ... search-widg... styl... cs 777... 1.2 163 ms
GE ... social-logos.... styl... cs 18.... 26 236 m
GE ... style.css?v=1... styl... cs cac... 12 160 ms
GE ... style.min.css... styl... cs 5.0... 28 161 ms
Filter headers
Response headers (364 B)
cache-control: max-age=315360000
content-encoding: gzip
content-type: text/css
date: Wed, 05 Jun 2019 21:09:23 GMT
etag: W/"55aef1e8-7486"
expires: Thu, 31 Dec 2037 23:55:55 GMT

4 March, 2019

# Cache-Control for Civilians

**Table of Contents**

The best request is the one that never happens: in the fight for fast websites, avoiding the network is far better than hitting the network at all. To this end, having a solid caching strategy can make all the difference for your visitors.

> *"📊 How is your knowledge of caching and Cache-Control headers?"*
> *— Harry Roberts (@csswizardry) **3 March, 2019***

That being said, more and more often in my work I see lots of opportunities being left on the table through unconsidered or even completely overlooked caching practices. Perhaps it's down to the heavy focus on first-time visits, or perhaps it's a simple lack of awareness and knowledge? Whatever it is, let's have a bit of a refresher.

## Cache-Control

Hi there, I'm Harry. I am an **award-winning** **Consultant Web Performance Engineer**, **designer**, **developer**, **writer**, and **speaker** from the UK. I **write**, **Tweet**, **speak**, and **share code** about measuring and improving site-speed. You **should hire me**.

**Follow @csswizardry**



https://csswizardry.com/2019/03/cache-control-for-civilians/

# A couple more pre's

# Prefetch

```
<link rel="prefetch" href="/style.css" as="style" />
```

**asks the browser to download and cache a resource (like, a script or a stylesheet) in the background.**

# Prerender

```
<link rel="prerender" href="https://example.com/
about.html" />
```

asks the browser to load a URL and recursively fetch its resources

# Service **workers**

# What is a service worker?

- A script that downloads and listens in the background
- A tool for managing requests and responses
- A tool with great ability to work with local caches
- The best way to stabilize low (and no) connectivity

# Worker registration

```
if ('serviceWorker' in navigator) {
  window.addEventListener('load', function() {
    navigator.serviceWorker.register('/sw.js')
  });
}
```

What we do | Who we are | Our work | Articles | Code

filament group

We help companies design and build super-fast responsive sites and web apps that are simple to use and accessible to everyone.

**Looking for help on a project?** **Work with us!**

Recent & Upcoming

**JUN 25 | TORONTO** Smashing Conf

**Move Fast & Don't Break Things**

**Filament Group wins Agency of the Year!**

We're honored to have been voted **Agency of the Year** at the 2015 Net Awards, the web industry's largest peer-voted awards show.

Elements | Console | Sources | Network | Performance | Memory | Application | Security | Audits

2 2

Application
- Manifest
- Service Workers
- Clear storage

Storage
- Local Storage
- Session Storage
- IndexedDB
- Web SQL
- Cookies

Cache

## Service Workers

Offline | Update on reload | Bypass for network

**www.filamentgroup.com** Update Unregister

Source sw.js

Received 6/7/2019, 10:30:10 AM

Status #6186 activated and is running stop

Clients https://www.filamentgroup.com/webappmanifest.json focus

https://www.filamentgroup.com/ focus

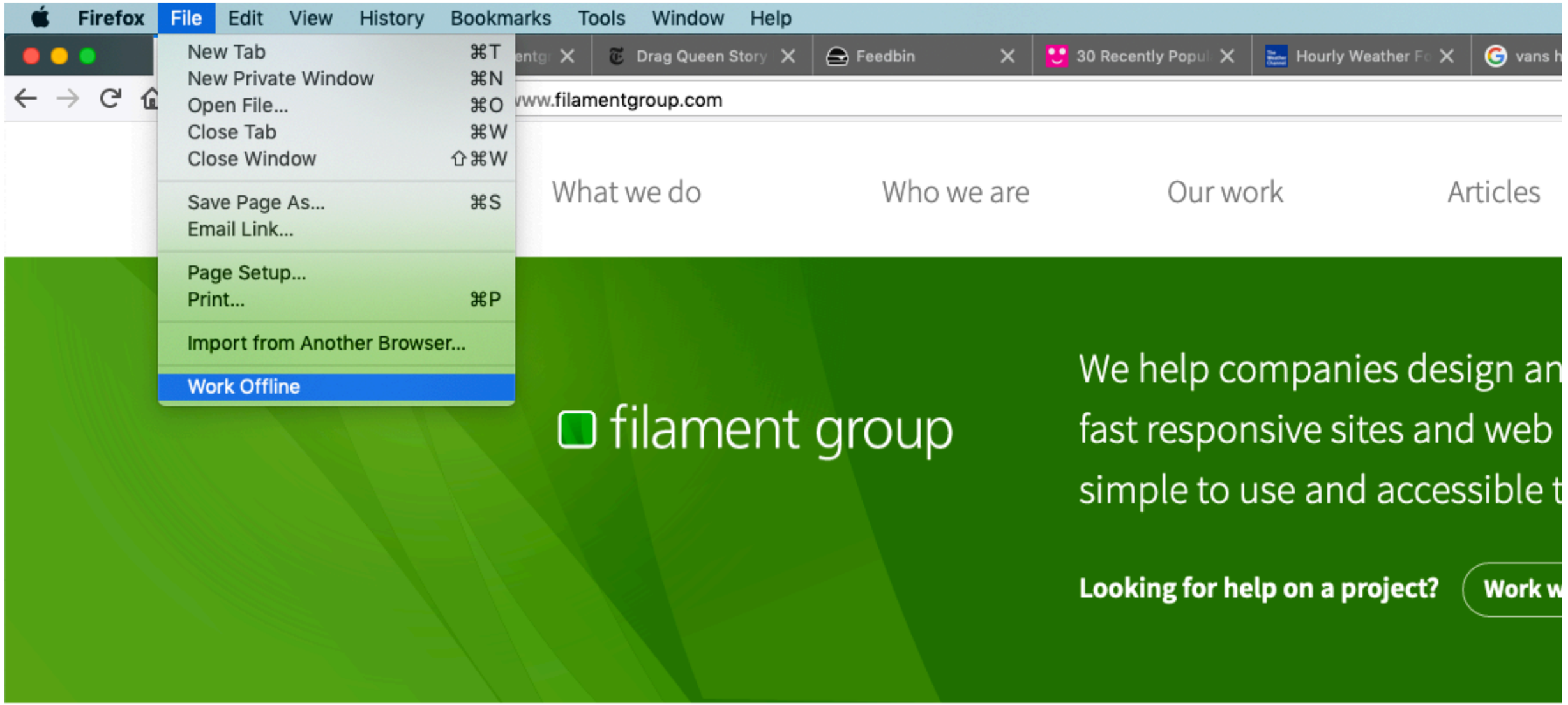
# In the worker...

```
var CACHE_NAME = 'my-site-cache-v1';
var urlsToCache = [
  '/styles/main.css',
  '/script/main.js'
];

self.addEventListener('install', function(event) {
  // Perform install steps
  event.waitUntil(
    caches.open(CACHE_NAME)
      .then(function(cache) {
        console.log('Opened cache');
        return cache.addAll(urlsToCache);
      })
  );
});
```

# Offline-first, then network

```
self.addEventListener('fetch', function(event) {
  event.respondWith(
    caches.match(event.request)
      .then(function(response) {
        // Cache hit - return response
        if (response) {
          return response;
        }
        return fetch(event.request);
      }
    )
  );
});
```




## Recent & Upcoming

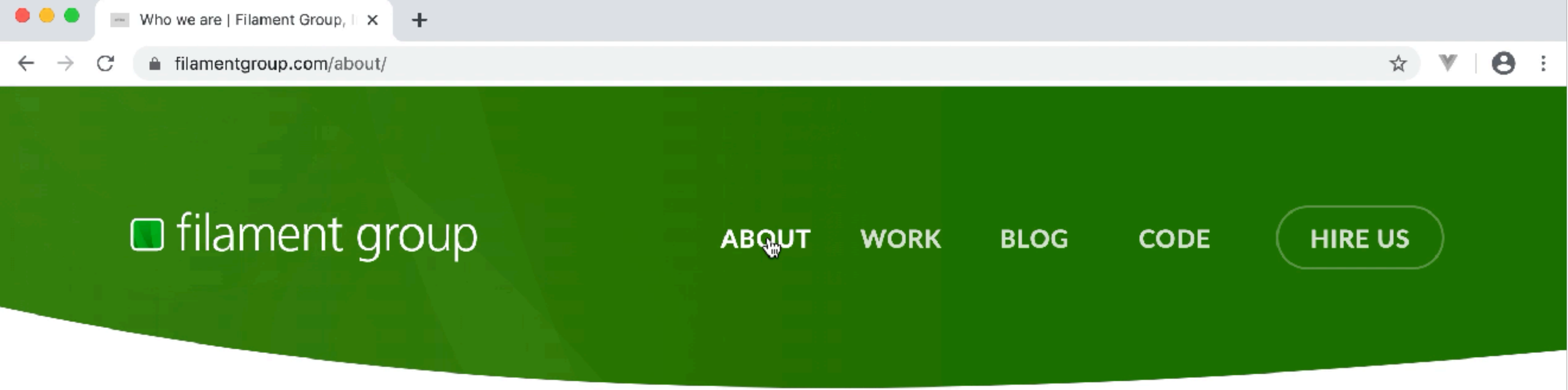
**JUN 25 | TORONTO** Smashing Conf

**Move Fast & Don't Break Things**
Scott Jehl

net awards 2015

**Filament Group wins Ager**

We're honored to have been vote
the 2015 Net Awards, the web ind
awards show.




# who we are

Filament Group is a design and front-end development studio. Since 2001 we've been designing and developing a wide range of sites and apps for big companies, innovative startups, and open-source projects.

# Completing the PWA

https://www.filamentgroup.com/webappmanifest.json


```
{
  "lang": "en",
  "dir": "ltr",
  "name": "Filament Group",
  "description": "We help companies design and build super-fast responsive sites and web apps that are simple to use and accessible to everyone.",
  "short_name": "Filament",
  "icons": [{
    "src": "/images/icons/icon-192.png",
    "sizes": "192x192",
    "type": "image/png"
  },
  {
    "src": "/images/icons/icon-256.png",
    "sizes": "256x256",
    "type": "image/png"
  },
  {
    "src": "/images/icons/icon-384.png",
    "sizes": "384x384",
    "type": "image/png"
  },
  {
    "src": "/images/icons/icon-512.png",
    "sizes": "512x512",
    "type": "image/png"
  }],
  "start_url": "/",
  "display": "standalone",
  "orientation": "natural",
  "theme_color": "#247200",
  "background_color": "#247200"
}
```

# Linking that up!

```
<link rel="manifest" href="/webappmanifest.json">
```

# Custom **Request Headers**

# Look, no cookies!

```
const version = "65";
self.addEventListener('fetch', event => {
if (event.request.headers.get('Accept').indexOf('text/html') !== -1) {
      var newReq;
  var reqHeaders = new Headers();
  for( var i in event.request.headers ){
    reqHeaders.set( i, event.request.headers[i] );
  }
  reqHeaders.set( 'X-CACHED', version );
  newReq = new Request( event.request.url, {
    method: "GET",
    headers: reqHeaders
  } );
```

# New visitor? Let's push some stuff.

```
<If "%{HTTP:x-cached} !~ /65/ && "%{DOCUMENT_URI} =~ /\.html/">
    H2PushResource add site.css critical

</If>
```

# Not just **no** cookies; **better** than

```
function updateStaticCache() {
    // code in this function will cache all the static assets
    …
}
```

```
self.addEventListener('install', event => {
    event.waitUntil(updateStaticCache()
        .then( () => self.skipWaiting() )
    );
});
```

filament group

ABOUT WORK BLOG CODE HIRE US

# Tuning Performance for New and "Old" Friends

POSTED BY
SCOTT JEHL
02/19/2019

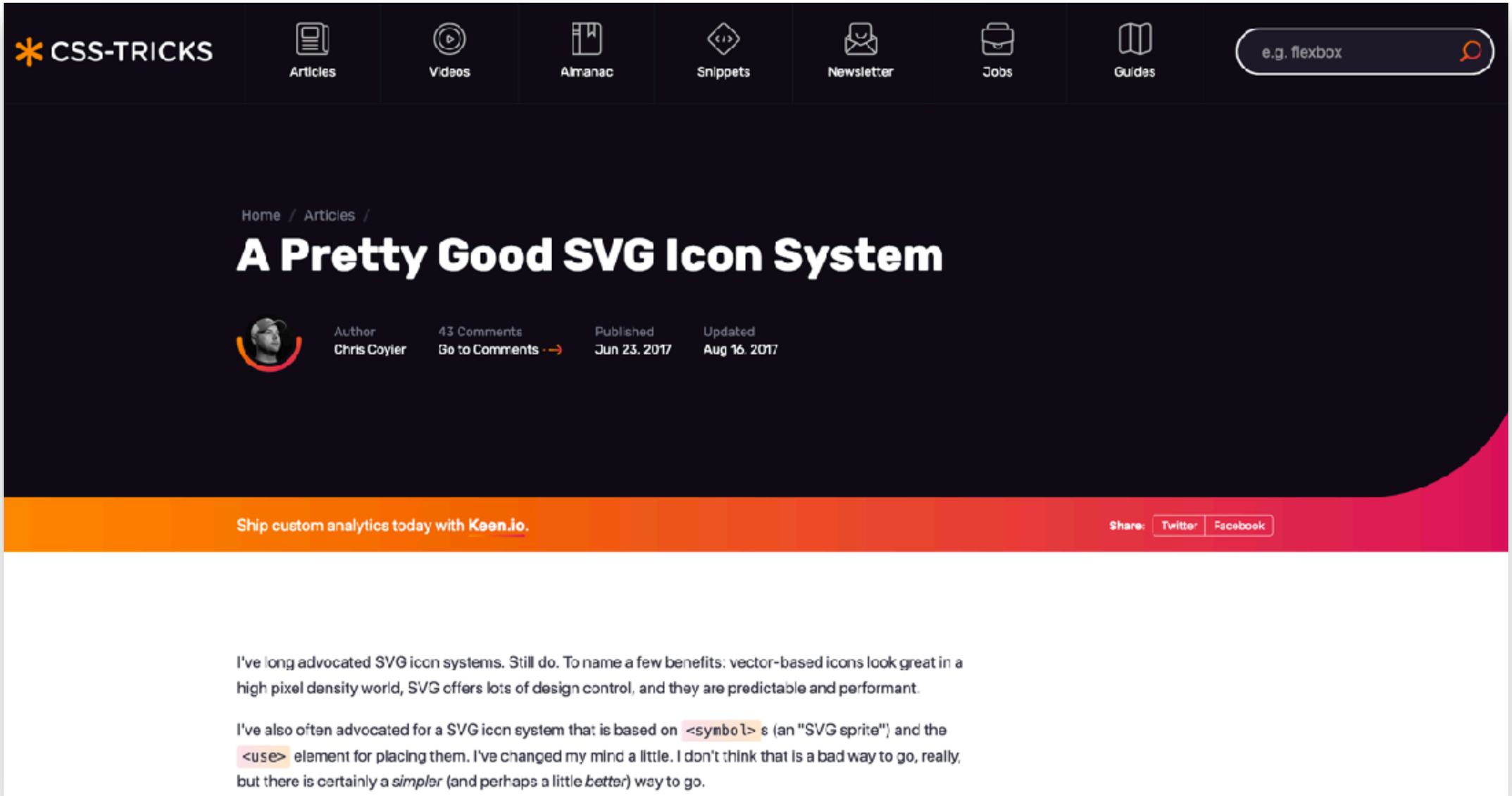
For performance reasons, we often configure our sites to deliver their code in slightly different ways for new and returning visitors. For example, for new visitors, we might choose to inline or http2-push important resources along with a page's HTML so that it will be ready to render immediately on arrival. Additionally, for a new visit we might set

https://filamentgroup.com/lab/cache-state/

# Caching **Inlined Content**

# Cache API: Inlining without the waste.

```
<style id="css">
   body { background: green; }
</style>
<script>
   var css = document.getElementById("css").innerHTML;
   caches.open('static').then(function(cache) {
      cache.put("site.css", new Response( css,
        {headers: {'Content-Type': 'text/css'}}
      ));
   });
</script>
```




https://css-tricks.com/pretty-good-svg-icon-system/

# Inline-Cache for SVG?

```
<div id="icons">
   <svg> … </svg>
</div>
<script>
   var svg =
document.getElementById("icons").innerHTML;
   caches.open('static').then(function(cache) {
      cache.put("icons.svg", new Response( svg,
        {headers: {'Content-Type': 'image/svg+xml'}}
      ));
   });
</script>
```

# Inlining or Caching? Both Please!

POSTED BY
SCOTT JEHL
11/12/2018

Last week, I was finishing a section of my slides for a presentation at the Performance.Now() conference. In it, I was exploring patterns that enable the browser to render a page as fast as possible by including code alongside the initial HTML so that the browser has everything it needs to start rendering the page, without making additional requests.

Our two go-to options to achieve this goal are inlining and server push (more on how we use those), but each has drawbacks: inlining prevents a file from being cached for reuse, and server push is still a bit experimental, with some browser bugs still being worked out. As I was preparing to describe these

https://filamentgroup.com/lab/inlining-cache.html

It's easier to

**make a fast website**

than it is to

**keep a website fast...**