# WEB PERFORMANCE OPTIMIERUNG (WPO) AM BEISPIEL EINES OXID-SHOPS

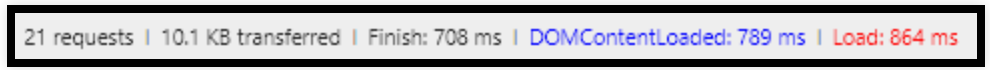
# AUSGANGSLAGE

- Ubuntu 16 mit 4.4.0 Kernel
- PHP 7.1(.19) als CGI/FPM
- 256M memory_limit
- MySQL 5.7.21
- HTTP2 (TLS + LetsEncrypt)
- Apache 2.4
- managed Hosting (All-Inkl Premium)
- OXID 6.1.0 (composer-project)
- kein CDN

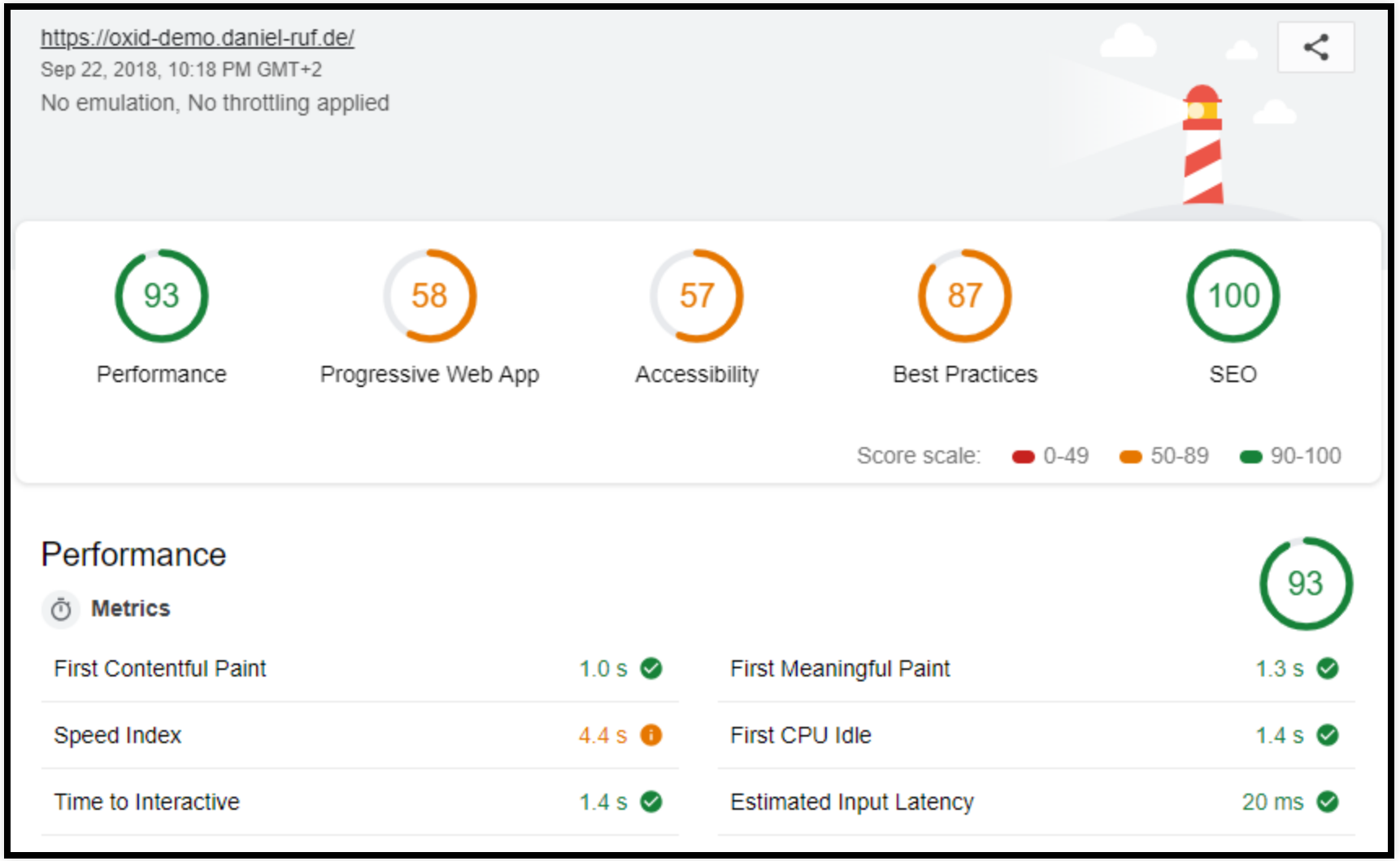
# ZIEL

- unter 1s
- unter 1MB
- sehr gute Scores

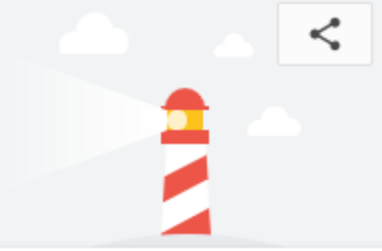
21 requests | 2.5 MB transferred | Finish: 5.19 s | DOMContentLoaded: 1.35 s | Load: 5.15 s


21 requests | 10.1 KB transferred | Finish: 708 ms | DOMContentLoaded: 789 ms | Load: 864 ms

7 / 21 requests | 2.2 MB / 2.5 MB transferred | Finish: 5.19 s | DOMContentLoaded: 1.35 s | Load: 5.15 s


https://oxid-demo.daniel-ruf.de/
Sep 22, 2018, 10:18 PM GMT+2
No emulation, No throttling applied
93
Performance
58
Progressive Web App
57
Accessibility
87
Best Practices
100
SEO
Score scale: 0-49 50-89 90-100
Performance
93
Metrics
First Contentful Paint 1.0 s
First Meaningful Paint 1.3 s
Speed Index 4.4 s
First CPU Idle 1.4 s
Time to Interactive 1.4 s
Estimated Input Latency 20 ms

https://oxid-demo.daniel-ruf.de/
Sep 22, 2018, 9:28 PM GMT+2
Emulated Nexus 5X, Simulated Fast 3G network



| 54 | 58 | 57 | 80 | 100 |
|---|---|---|---|---|
| Performance | Progressive Web App | Accessibility | Best Practices | SEO |

Score scale: 0-44 45-74 75-100

## Performance

54

**Metrics**

| | | | |
|---|---|---|---|
| First Contentful Paint | 2.3 s | First Meaningful Paint | 2.3 s |
| Speed Index | 7.3 s | First CPU Idle | 3.9 s |
| Time to Interactive | 9.4 s | Estimated Input Latency | 10 ms |

# Web Page Performance Test for

https://oxid-demo.daniel-ruf.de/

**From:** Frankfurt, Germany - EC2 - **Chrome - Cable**
22.9.2018, 22:23:22

Need help improving?

| A | A | A | F | F | X |
|---|---|---|---|---|---|
| First Byte Time | Keep-alive Enabled | Compress Transfer | Compress Images | Cache static content | Effective use of CDN |

**Summary** | **Details** | **Performance Review** | **Content Breakdown** | **Domains** | **Processing Breakdown** | **Screen Shot** | **Image Analysis** | **Request Map**

Tester: i-06ca5cddd891c5edc
**First View only**
Test runs: 3

Export HTTP Archive (.har)
Custom Metrics

| | | | | | | | | Document Complete | | | Fully Loaded | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Load Time | First Byte | Start Render | Visually Complete | Speed Index | First Interactive (beta) | Result (error code) | Time | Requests | Bytes In | Time | Requests | Bytes In |
| First View (Run 1) | 4.906s | 0.334s | 0.700s | 5.500s | 4023 | 0.840s | 0 | 4.906s | 20 | 2,582 KB | 5.526s | 31 | 2,652 KB |

| First Interactive (beta) | Colordepth | RUM First Paint | domInteractive | domContentLoaded | loadEvent |
|---|---|---|---|---|---|
| 0.840s | 24 | 0.731s | 0.820s | 0.820s - 0.840s (0.020s) | 4.906s - 4.939s (0.033s) |

# BILDER

- responsive Bilder (picture-Tags + picturefill)
- lazyloading
- Kompression (+ WebP)
- progressive

# Picture element - LS

Usage: Global — % of all users: 88.08%

A responsive images method to control which image resource a user agent presents to a user, based on resolution, media query and/or support for a particular image format

Current aligned | Usage relative | Date relative | Show all | ?

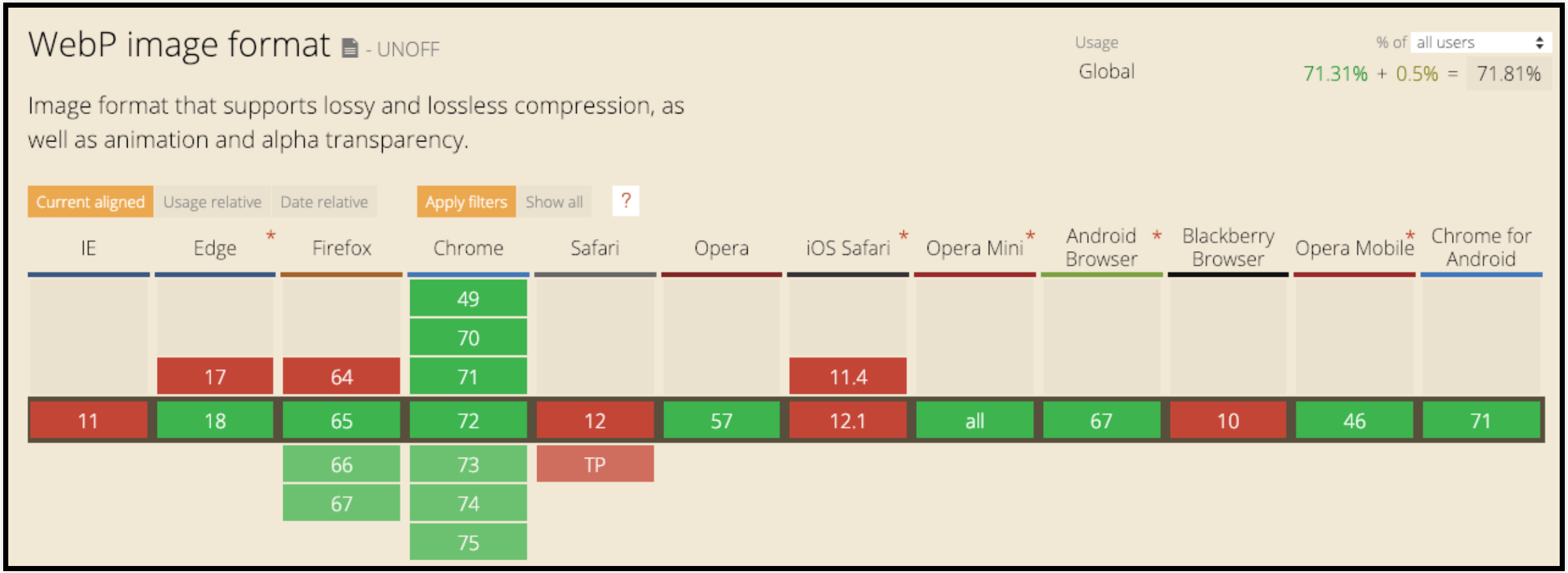
| IE | Edge * | Firefox | Chrome | Safari | Opera | iOS Safari * | Opera Mini * | Android Browser * | Blackberry Browser | Opera Mobile * | Chrome for Android |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 49 | | | | | | | | |
| | | | 63 | | | | | | | | |
| | | | 67 | | | 10.3 | | | | | |
| | | 61 | 68 | 11.1 | 54 | 11.2 | | 4.4 | | | |
| 11 | 17 | 62 | 69 | 12 | 55 | 11.4 | all | 67 | 10 | 46 | 69 |
| | 18 | 63 | 70 | TP | | 12 | | | | | |
| | | 64 | 71 | | | | | | | | |
| | | | 72 | | | | | | | | |

https://caniuse.com/#feat=picture

https://www.responsivebreakpoints.com/

# KOMPRESSION

- Photoshop
- imageoptim
- PNGGauntlet
- Caesium
- imagemin
- sharp
- …




https://caniuse.com/#feat=webp

https://developers.google.com/speed/webp/download
https://developers.google.com/speed/webp/docs/precompiled

```
cwebp -q 80 -o output_file.webp input_file
```

libjpeg
https://libjpeg-turbo.org/Documentation/OfficialBinaries

```
jpegtran -copy none -optimize -progressive -outfile $outfile $infile
```

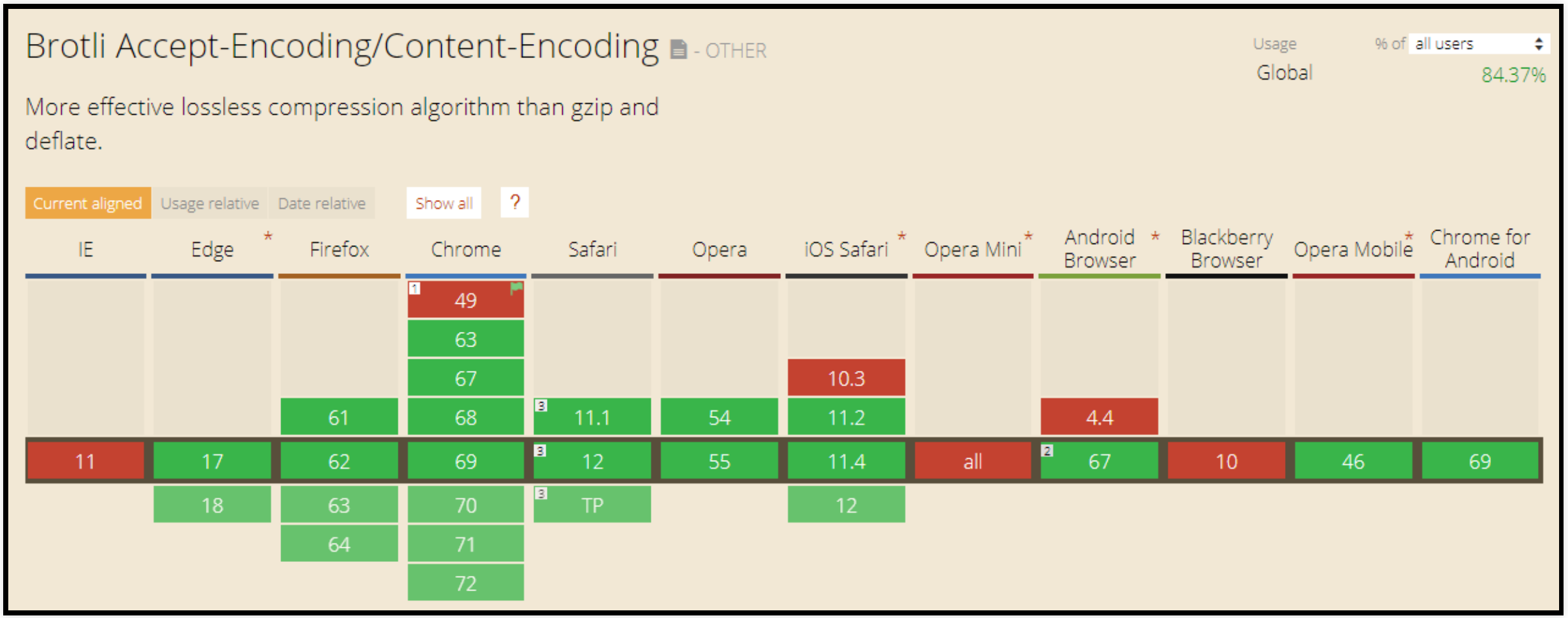
```
<picture>
        <source type="image/webp" sizes="(max-width: 1170px) 100vw, 1170px" srcset=
                https://oxid.daniel-ruf.de/out/pictures/promo/surfer_wave_1__promo_
                https://oxid.daniel-ruf.de/out/pictures/promo/surfer_wave_1__promo_
                https://oxid.daniel-ruf.de/out/pictures/promo/surfer_wave_1__promo_
                https://oxid.daniel-ruf.de/out/pictures/promo/surfer_wave_1__promo_
                https://oxid.daniel-ruf.de/out/pictures/promo/surfer_wave_1__promo_

        <source sizes="(max-width: 1170px) 100vw, 1170px" srcset="
                https://oxid.daniel-ruf.de/out/pictures/promo/surfer_wave_1__promo_
                https://oxid.daniel-ruf.de/out/pictures/promo/surfer_wave_1__promo_
                https://oxid.daniel-ruf.de/out/pictures/promo/surfer_wave_1__promo_
                https://oxid.daniel-ruf.de/out/pictures/promo/surfer_wave_1__promo_
                https://oxid.daniel-ruf.de/out/pictures/promo/surfer_wave_1__promo_
```

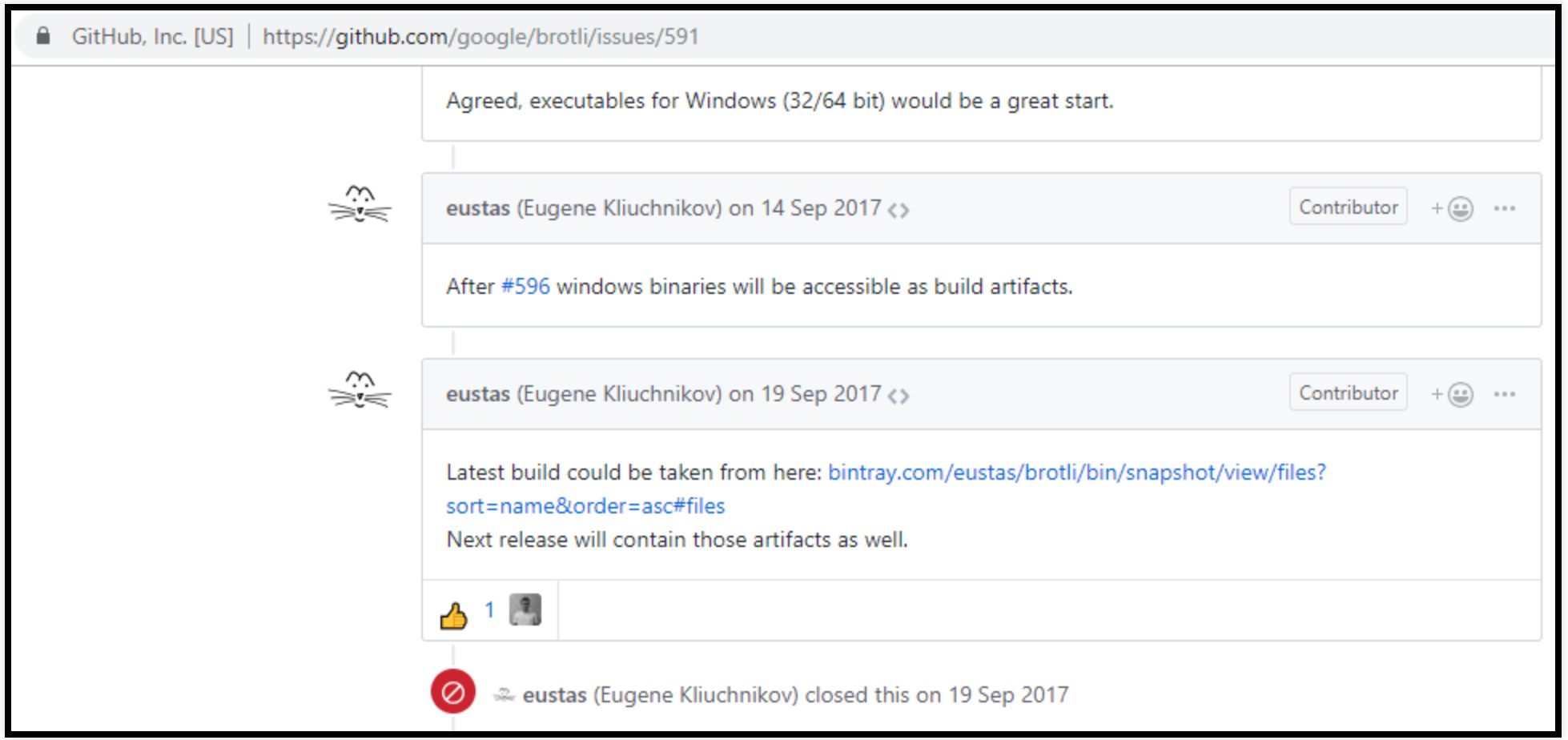
# IMAGE SERVICES

- WURFL (Wireless Universal Resource FiLe)
- Cloudinary
- imgix
- Sirv
- piio
- Thumbor
- flyimg

# Brotli für weitere Dateien (css, js, svg)




https://caniuse.com/#feat=brotli


GitHub, Inc. [US] | https://github.com/google/brotli/issues/591
Agreed, executables for Windows (32/64 bit) would be a great start.
eustas (Eugene Kliuchnikov) on 14 Sep 2017
Contributor
After #596 windows binaries will be accessible as build artifacts.
eustas (Eugene Kliuchnikov) on 19 Sep 2017
Contributor
Latest build could be taken from here: bintray.com/eustas/brotli/bin/snapshot/view/files?sort=name&order=asc#files
Next release will contain those artifacts as well.
1
eustas (Eugene Kliuchnikov) closed this on 19 Sep 2017

https://github.com/google/brotli
https://bintray.com/eustas/brotli/bin/snapshot/view/files?sort=name&order=asc#files/

```
brotli -5 index.html
brotli -5 -o index.html.br index.html
```

```
<IfModule mod_headers.c>

        RewriteCond %{HTTP:Accept-Encoding} br
        RewriteCond %{REQUEST_FILENAME}\.br -f
        RewriteRule \.(css|ics|js|json|html|svg)$ %{REQUEST_URI}.br [L]

        # Prevent mod_deflate double gzip
        RewriteRule \.br$ - [E=no-gzip:1]

        <FilesMatch "\.br$">

                <IfModule mod_mime.c>
                        # Serve correct content types
                        AddType text/css css.br
                        AddType text/calendar ics.br
```

https://github.com/powturbo/TurboBench
https://sites.google.com/site/powturbo/compression-benchmark

# CACHING

HTML5 Boilerplate .htaccess

# CACHING (AUSZUG)

```
<IfModule mod_expires.c>

        ExpiresActive on
        ExpiresDefault "access plus 1 month"

        # CSS

        ExpiresByType text/css "access plus 1 year"

        # HTML

        ExpiresByType text/html "access plus 0 seconds"

        # JavaScript
```

# SCHRIFTEN

self hosted!

https://google-webfonts-helper.herokuapp.com/fonts
https://github.com/majodev/google-webfonts-helper
https://www.npmjs.com/package/google-webfonts-downloader

## 3. Copy CSS: (default is `Best Support`)

Best Support | **Modern Browsers**

Choose `Modern Browsers` if supporting old browsers is not relevant. Formats in this snippet: `[woff,woff2]`

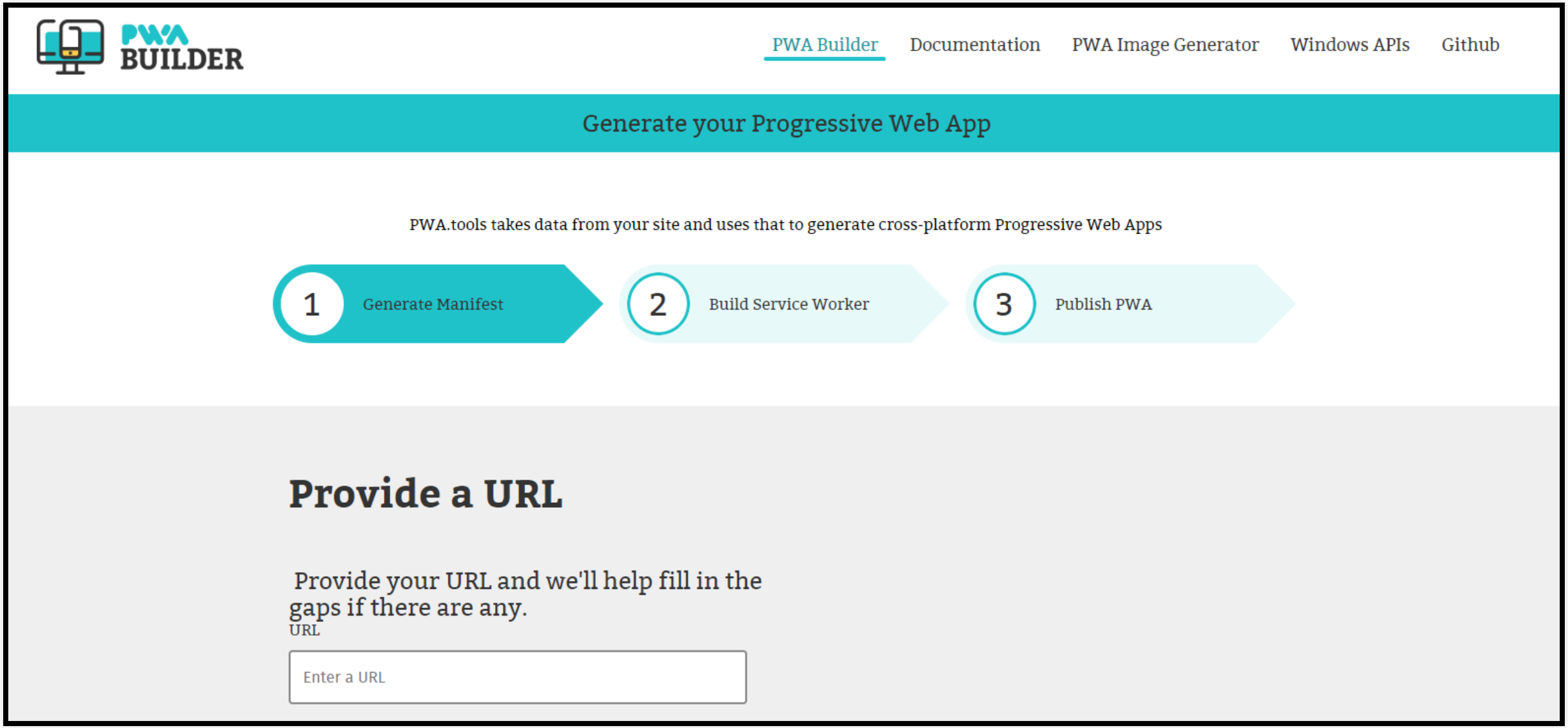
```
/* roboto-regular - latin */
@font-face {
  font-family: 'Roboto';
  font-style: normal;
  font-weight: 400;
  src: local('Roboto'), local('Roboto-Regular'),
       url('../fonts/roboto-v18-latin-regular.woff2') format('woff2'), /* Chrome 26+, Ope
       url('../fonts/roboto-v18-latin-regular.woff') format('woff'); /* Chrome 6+, Firefo
}
```

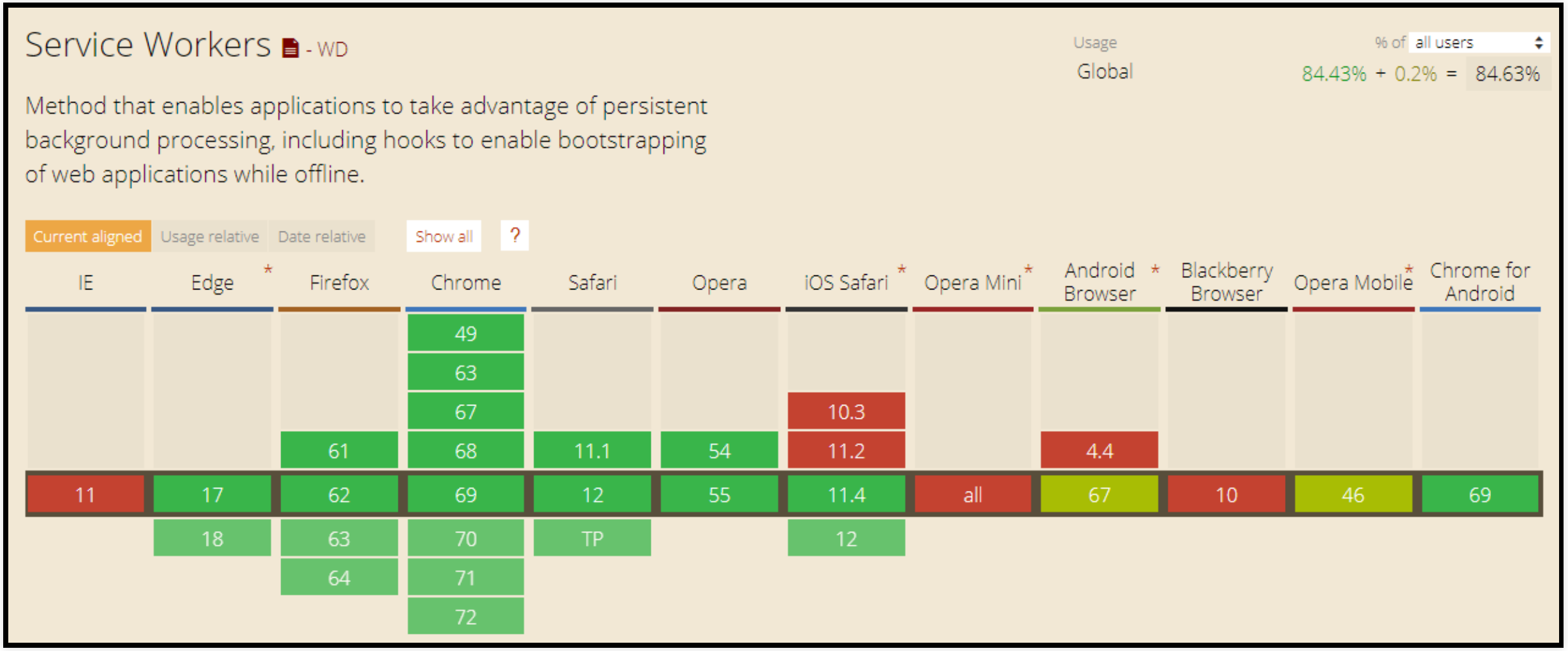
Customize folder prefix (optional): ../fonts/

Click on code to select all statements, then copy/paste it into your own CSS file.

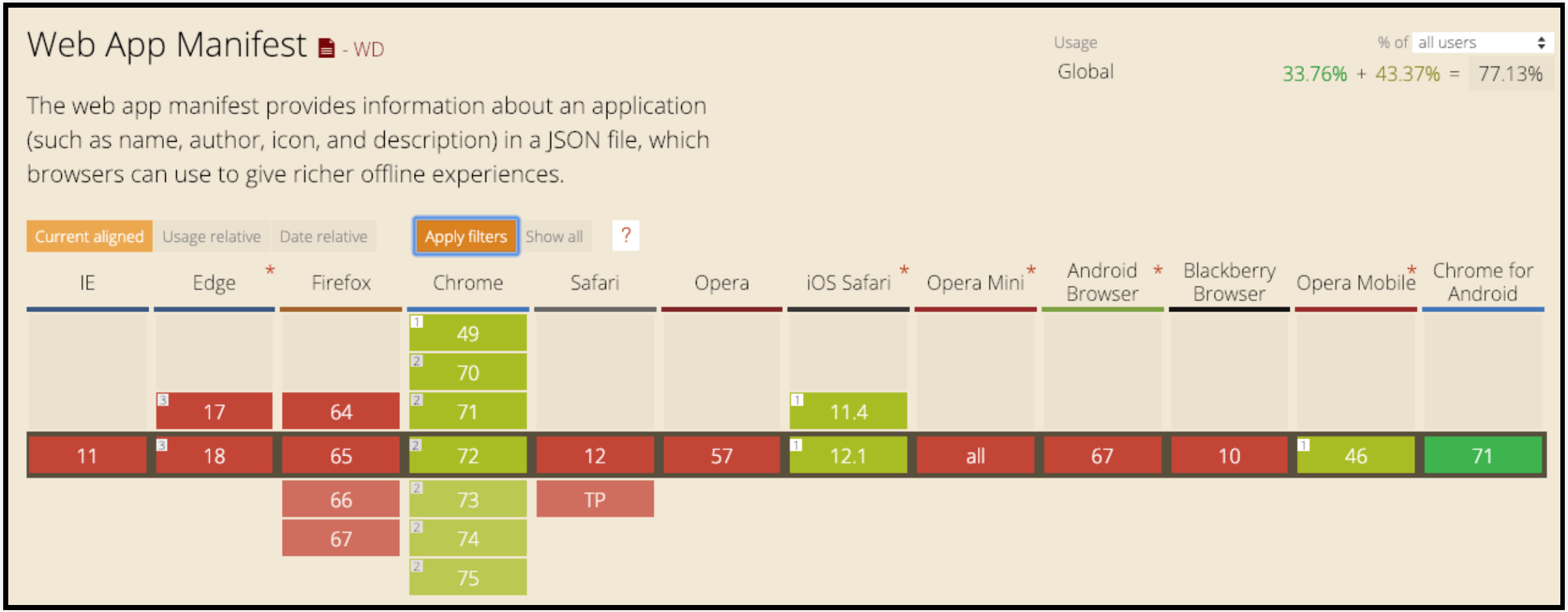
- modern browsers
- local raus
- nur benötigte Charsets

# offline first (PWA)


PWA BUILDER
PWA Builder
Documentation
PWA Image Generator
Windows APIs
Github
Generate your Progressive Web App
PWA.tools takes data from your site and uses that to generate cross-platform Progressive Web Apps
1
Generate Manifest
2
Build Service Worker
3
Publish PWA
Provide a URL
Provide your URL and we'll help fill in the gaps if there are any.
URL
Enter a URL




https://caniuse.com/#feat=serviceworkers




https://caniuse.com/#feat=web-app-manifest

# ERGEBNIS

- unter 1s (0,8s - 1,2s Desktop, 1,0s - 2,2s Mobile)
- unter 1MB (~800KB)
- sehr gute Scores
- offline first

# Web Page Performance Test for

https://oxid.daniel-ruf.de/

**From:** Frankfurt, Germany - EC2 - **Chrome - Cable**
22.9.2018, 22:20:58

Need help improving?

| First Byte Time | Keep-alive Enabled | Compress Transfer | Compress Images | Cache static content | Effective use of CDN |
|---|---|---|---|---|---|
| A | A | A | A | A | X |

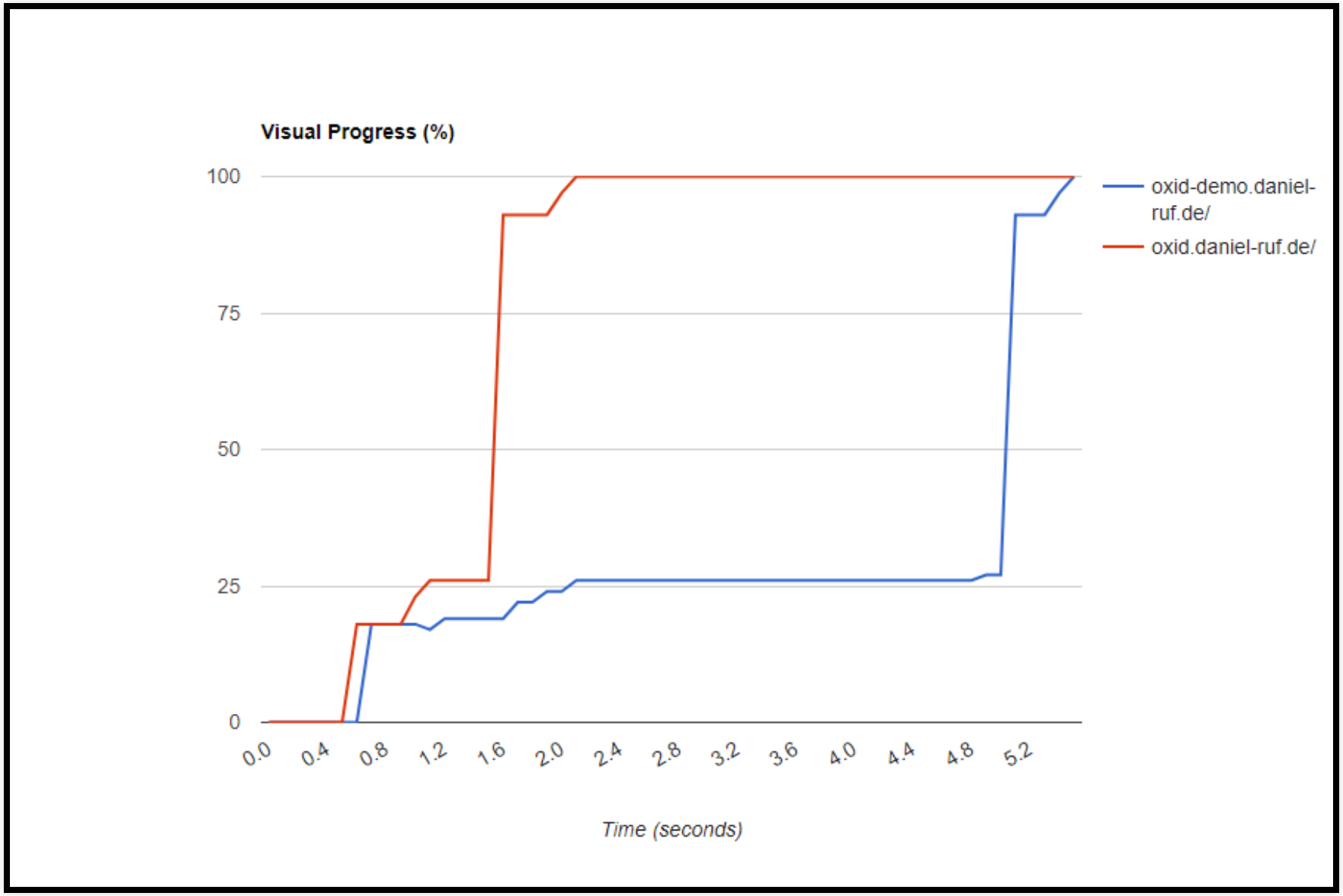
**Summary** | **Details** | **Performance Review** | **Content Breakdown** | **Domains** | **Processing Breakdown** | **Screen Shot** | **Image Analysis** | **Request Map**

Tester: i-0ce70bced9116eef7
**First View only**
Test runs: 3

Export HTTP Archive (.har)
Custom Metrics

| | | | | | | | | Document Complete | | | Fully Loaded | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Load Time | First Byte | Start Render | Visually Complete | Speed Index | First Interactive (beta) | Result (error code) | Time | Requests | Bytes In | Time | Requests | Bytes In |
| First View (Run 1) | 1.454s | 0.394s | 0.600s | 2.100s | 1406 | > 0.663s | 0 | 1.454s | 23 | 578 KB | 2.352s | 38 | 679 KB |

| First Interactive (beta) | Colordepth | RUM First Paint | domInteractive | domContentLoaded | loadEvent |
|---|---|---|---|---|---|
| > 0.663s | 24 | 0.664s | 0.827s | 0.827s - 0.849s (0.022s) | 1.455s - 1.481s (0.026s) |


Visual Progress (%)
100
75
50
25
0
0.0
0.4
0.8
1.2
1.6
2.0
2.4
2.8
3.2
3.6
4.0
4.4
4.8
5.2
Time (seconds)
oxid-demo.daniel-ruf.de/
oxid.daniel-ruf.de/

31 requests | 895 KB transferred | Finish: 6.96 s | DOMContentLoaded: 2.19 s | Load: 4.57 s

30 requests | 128 B transferred | Finish: 1.66 s | DOMContentLoaded: 607 ms | Load: 655 ms

https://oxid.daniel-ruf.de/
Sep 22, 2018, 10:15 PM GMT+2
No emulation, No throttling applied

| 100 | 100 | 57 | 87 | 100 |
|---|---|---|---|---|
| Performance | Progressive Web App | Accessibility | Best Practices | SEO |

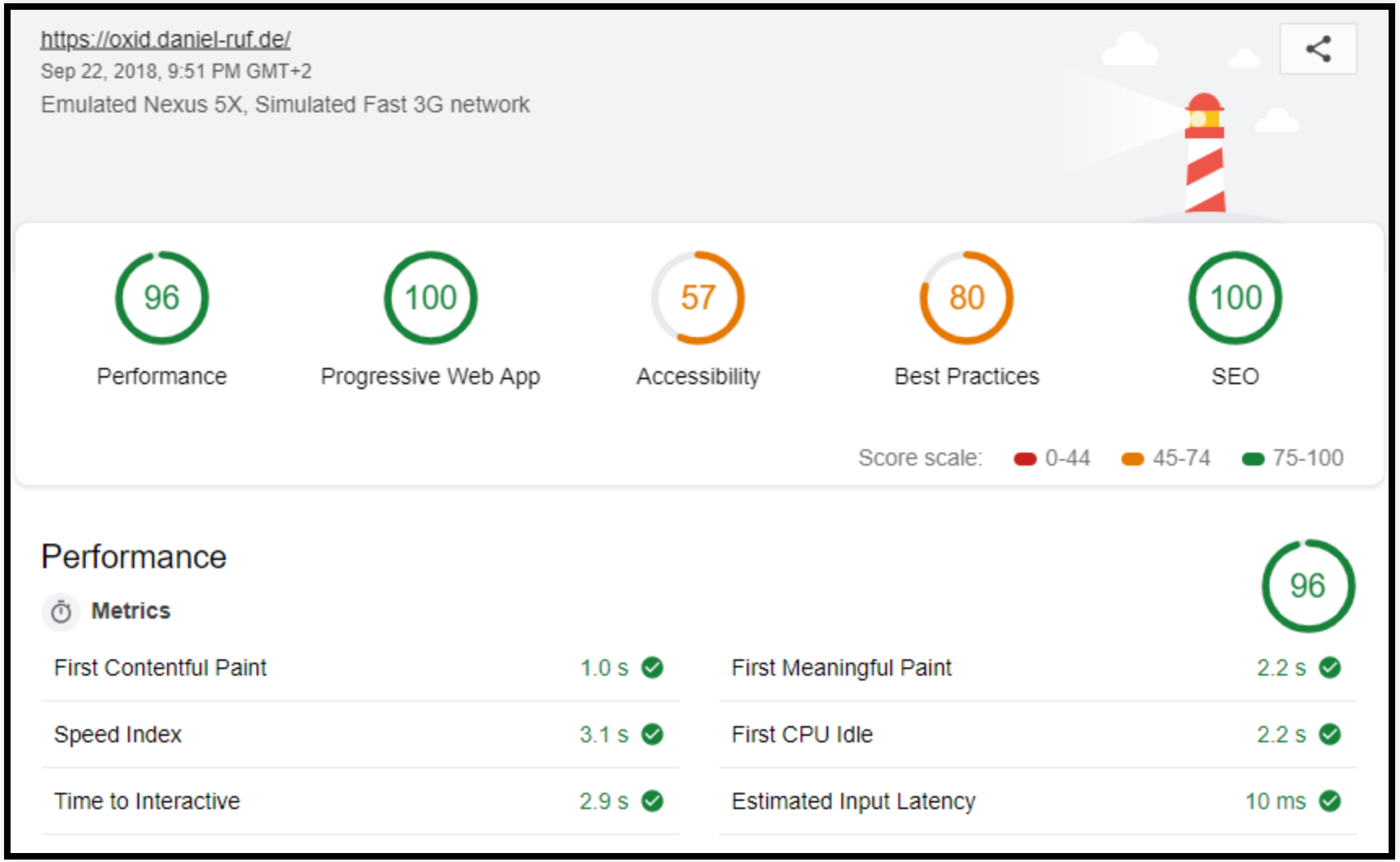
Score scale: 0-49 50-89 90-100

## Performance

100

**Metrics**

| | | | |
|---|---|---|---|
| First Contentful Paint | 0.8 s | First Meaningful Paint | 1.2 s |
| Speed Index | 1.5 s | First CPU Idle | 1.3 s |
| Time to Interactive | 1.3 s | Estimated Input Latency | 20 ms |


https://oxid.daniel-ruf.de/
Sep 22, 2018, 9:51 PM GMT+2
Emulated Nexus 5X, Simulated Fast 3G network
96
Performance
100
Progressive Web App
57
Accessibility
80
Best Practices
100
SEO
Score scale: 0-44 45-74 75-100
Performance
96
Metrics
First Contentful Paint 1.0 s
First Meaningful Paint 2.2 s
Speed Index 3.1 s
First CPU Idle 2.2 s
Time to Interactive 2.9 s
Estimated Input Latency 10 ms

# HEADLESS ECOMMERCE LÖSUNGEN

- Magento PWA Studio
- Deity
- Vue Storefront
- Shopware Experiments
- …

# VERBESSERUNGSVORSCHLÄGE

- alte Code raus (IE 8 / 9 / 10)
- picture-Tags generieren / unterstützen
- weniger Abhängigkeiten (Fontawesome, jQuery UI, jQuery)
- user-scalable=no raus (a11y verbessern)
- gute Defaults (Caching etc)
- schlankere Slider (Swiper)

# LINKS

https://github.com/DanielRuf/my-slides/
https://lighthouse-ci.appspot.com/try
https://images.guide/
https://developers.google.com/web/fundamentals/performance/w
performance-matters/
https://www.smashingmagazine.com/2016/10/next-generation-
server-compression-with-brotli/
https://github.com/thedaviddias/Front-End-Performance-
Checklist/blob/master/README.md

# U E B E R B : T

Vielen Dank für Ihre Aufmerksamkeit.

Daniel Ruf
daniel-ruf.de
@danielrufde