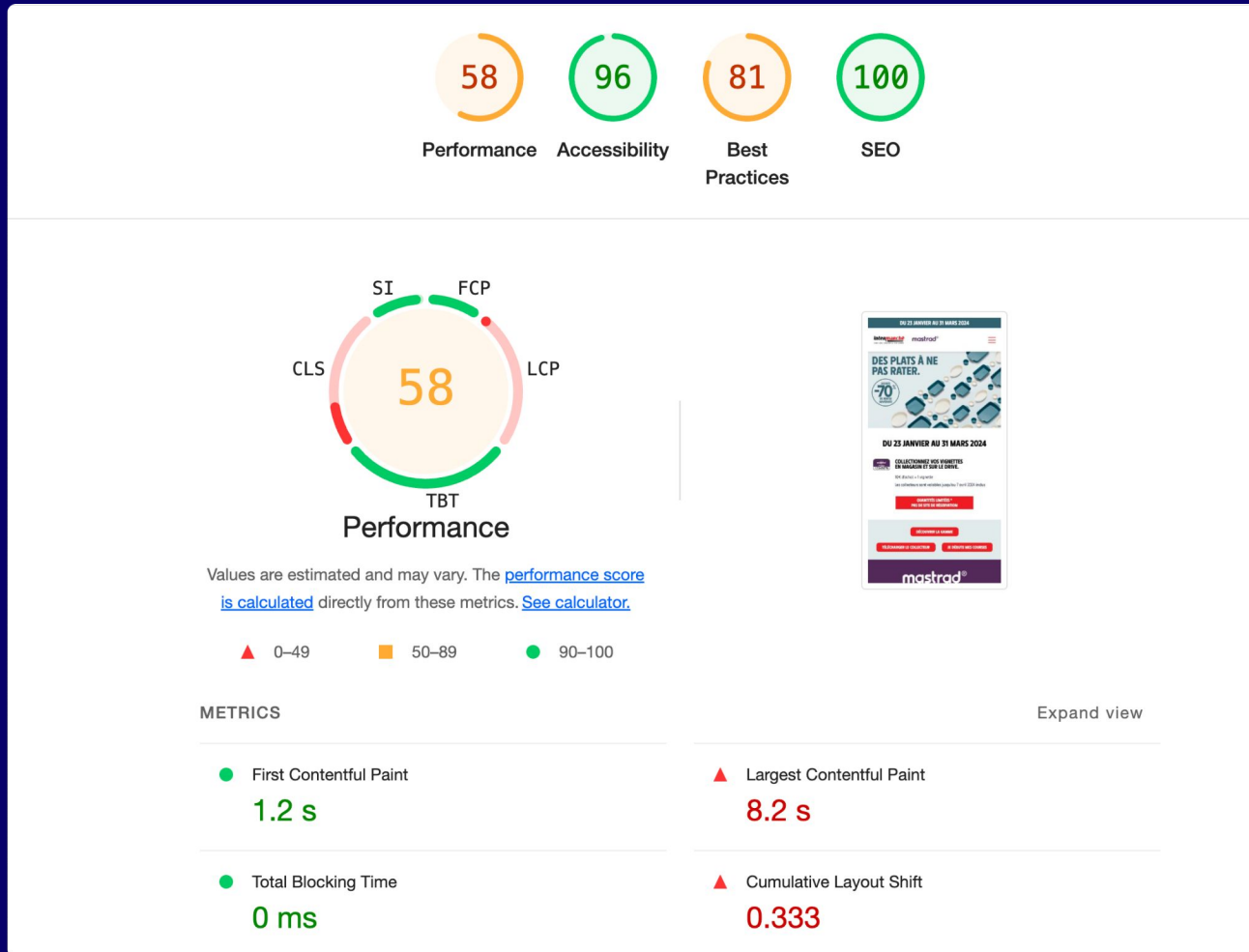




How to achieve 100% performance Google Lighthouse score with Drupal

Let's go from this score to a 100



About me

Alexander Dunchev

Front-end developer / Drupal Themer at 



Contents



- Performance first approach
- Local environment configuration
- Image optimization - LCP
- Reduce unused HTML, CSS and JS
- Fonts optimizations
- Improve INP and CLS

“PHP you were right all along” - Guillermo Rauch, CEO - Vercel

Lighthouse diagnostics errors



09:44:20 - lando-mastrad.lndo.site

58 96 81 100

DIAGNOSTICS

- ▲ Avoid large layout shifts — 4 layout shifts found
- ▲ Largest Contentful Paint element — 8,190 ms
- ▲ Use HTTP/2 — 63 requests not served via HTTP/2
- ▲ Largest Contentful Paint image was lazily loaded
- ▲ Serve images in next-gen formats — Potential savings of 172 KiB
- ▲ Efficiently encode images — Potential savings of 121 KiB
- ▲ Eliminate render-blocking resources — Potential savings of 200 ms
- ▲ Reduce unused JavaScript — Potential savings of 20 KiB
- Image elements do not have explicit `width` and `height`
- Minify JavaScript — Potential savings of 5 KiB
- Properly size images — Potential savings of 20 KiB
- Initial server response time was short — Root document took 20 ms
- Avoids enormous network payloads — Total size was 721 KiB



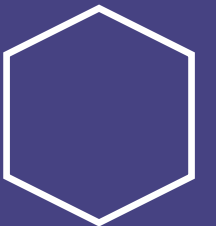
Performance first approach

Embrace the Performance first development approach!

It is very hard to improve performance at the end of the project!



Drupal and local configuration



Enable caching and aggregation



← Back to site | Administration / Configuration / Development

Performance ☆

Performance Critical CSS

^ Clear cache

Clear all caches

^ Caching

Browser and proxy cache maximum age

1 day ▾

This is used as the value for max-age in Cache-Control headers.

^ Bandwidth optimization

External resources can be optimized automatically, which can reduce both the size and number of requests made to your website.

Aggregate CSS files

Aggregate JavaScript files

Lando setup



```
● ● ●  
  
# .lando.yml or .lando.local.yml  
  
services:  
# other configs...  
  appserver:  
    build_as_root:  
      - a2enmod headers  
      - a2enmod expires  
      - service apache2 reload  
    ssl: true  
    run_as_root: a2enmod http2
```



Cache static files in .htaccess file

```

# Requires mod_expires to be enabled.
<IfModule mod_expires.c>
  # Enable expirations.
  ExpiresActive On
  # Cache all files for 2 weeks after access (A).
  ExpiresDefault A1209600

  # Allow images/fonts/css/js to be cached for 1 year.
  ExpiresByType image/webp A31536000
  ExpiresByType image/svg+xml A31536000
  ExpiresByType text/css A31536000
  ExpiresByType text/javascript A31536000
  ... other formats

  # Web fonts
  ExpiresByType application/font-woff A31536000
  ...

  <FilesMatch \.php$>
    ExpiresActive Off
  </FilesMatch>
</IfModule>
```

Result after local environment setup

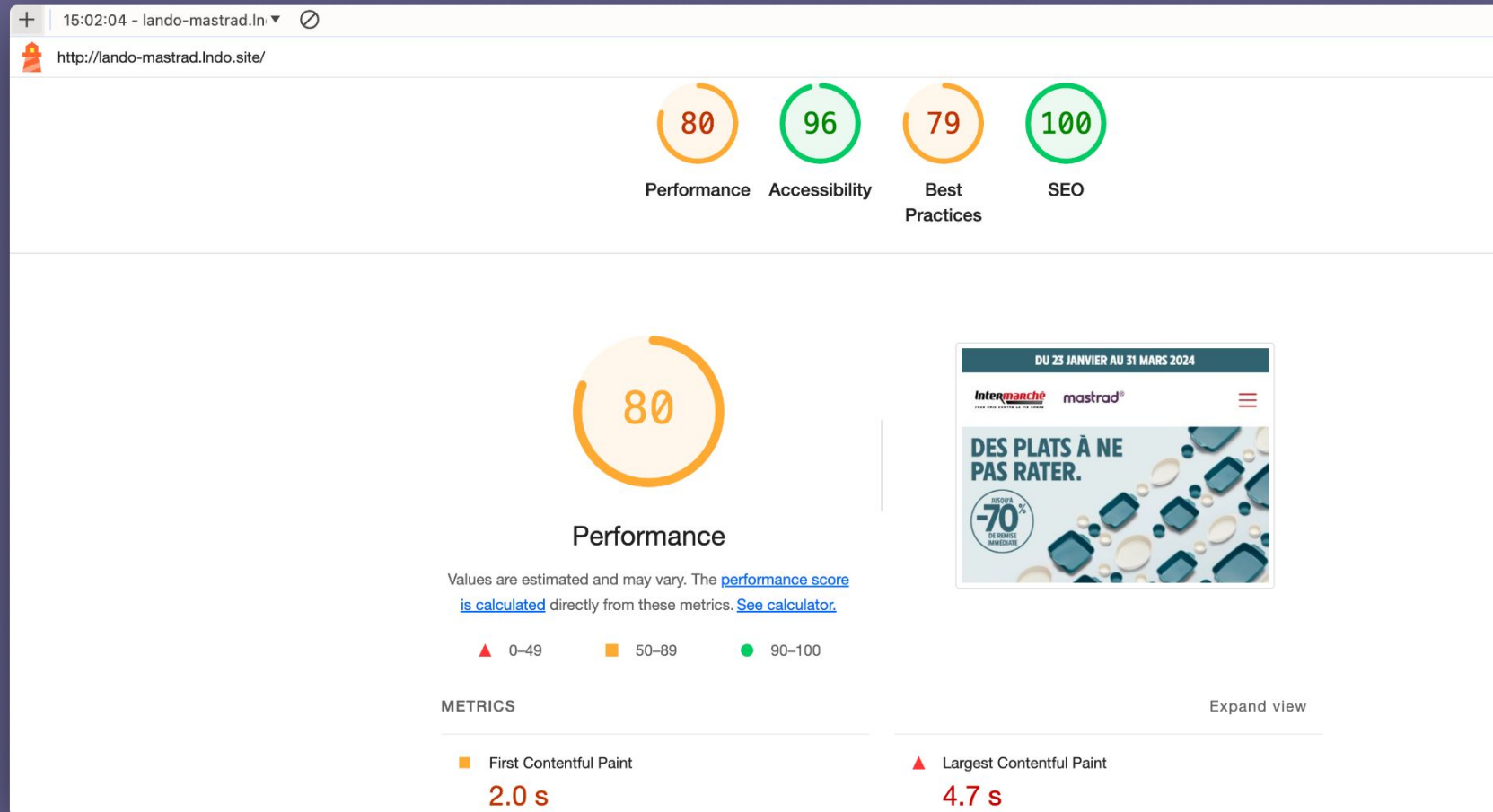




Image optimizations

- Use Drupal responsive image module





Image art direction



```
<picture>
  <source srcset="100_percent_xxl/img-0.png.webp 1x" media="screen and (min-width: 1360px)"
type="image/webp" width="1920" height="600">
  <source srcset="100_percent_xl/img-0.png.webp 1x" media="screen and (min-width: 1024px)"
type="image/webp" width="1360" height="777">
  <source srcset="100_percent_lg/img-0.png.webp 1x" media="screen and (min-width: 768px)"
type="image/webp" width="1023" height="585">
  <source srcset="100_percent_md/img-0.png.webp 1x" media="screen and (min-width: 568px)"
type="image/webp" width="768" height="439">
  <source srcset="100_percent_sm/img-0.png.webp 1x" type="image/webp" width="568" height="325">
  
</picture>
```

Resolution switching



```

```

CSS Background images



```
element {  
  background-image: image-set(  
    small-image.png 1x,  
    medium-image.png 2x,  
    large-image.png 3x  
  );  
}
```

LCP Breakdown




LCP Sub-part	Target (%)	Target (ms)
Time to first byte	40%	< 1000 ms
Resource load delay	10%	< 250 ms
Resource load time	40%	< 1000 ms
Element render delay	10%	< 250 ms
TOTAL	100%	< 2500 ms

▲ Largest Contentful Paint element — 5,930 ms

This is the largest contentful element painted within the viewport. [Learn more about the Largest Contentful Paint element](#)

LCP

Element



Phase	% of LCP	Timing
TTFB	8%	450 ms
Load Delay	77%	4,550 ms
Load Time	2%	110 ms
Render Delay	14%	810 ms

Improve loading and CLS



Do not lazy load image above the fold

Manage display ☆

Edit Manage fields Manage form display **Manage display** Manage permissions

Default Banner **Hero** Media library Product Card

Field	Label	Format
Image	- Hidden -	<p>Format settings: Responsive image</p> <p>Responsive image style* Hero</p> <p>Link image to Nothing</p> <p>Image loading</p> <p>Lazy render images with native image loading attribute (<i>loading="lazy"</i>). This improves page load times by allowing browsers to lazily load images. See Lazy loading.</p> <p>Lazy loading attribute Eager</p> <p>Select the lazy loading attribute for images. Learn more.</p>

Convert to WEBP

Not Secure https://lando-mastrad.lndo.site/admin/config/media/image-styles/manage/full_width

Back to site Administration / Configuration / Media / Image styles

Edit style *Full Width (1920x620)* ☆

Preview

original (view actual size) 600px
Full Width (1920x620) (view actual size) 620px
1920px

Image style name*
Full Width (1920x620) Machine name: full_width [Edit]

Effect

Scale and crop 1920x620 [Edit]

Convert WEBP [Edit]

Select a new effect [Add]



Always add width and height to images



```

```



Fetch Priority

```
/**
 * Implements template_preprocess_responsive_image().
 */
function sirius_preprocess_responsive_image(&$variables) {
  ...

  if (isset($img_element) && $loading === 'eager') {
    $variables['img_element']['#attributes']['fetchpriority'] = 'high';
  }
}
```

Results after image improvements



13:23:06 - lando-mastrad.ln

https://lando-mastrad.lndo.site/

83 96 100 100

DES PLATS À NE PAS RATER. DES PLATS À NE PAS RATER. DES PLATS À NE PAS RATER. DES PLATS À NE PAS RATER. DES PLATS À NE PAS RATER. DES PLATS À NE PAS RATER. DES PLATS À NE PAS RATER. DES PLATS À NE PAS RATER.

Show audits relevant to: **All** FCP LCP TBT CLS

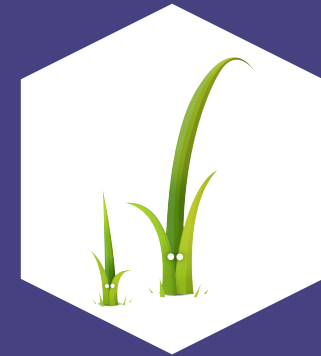
DIAGNOSTICS

- ▲ Avoid large layout shifts — 3 layout shifts found
- ▲ Eliminate render-blocking resources — Potential savings of 300 ms
- ▲ Reduce unused JavaScript — Potential savings of 22 KiB
- Serve static assets with an efficient cache policy — 1 resource found



HTML, CSS, JS improvements

Page size, look and feel matters for
performance.



Using SDC module



```
|- components
  |- header
    |- header.twig
    |- header.component.yml
    |- header.js
    |- header.css
```

No markup module



```

• • •
<div data-component-id="sirius:hero" class="hero relative md:grid">
  <div class="col-start-1 col-end-2 row-start-1 row-end-2">
    <div>
      <picture>...</picture>
    </div>
  </div>
  <div class="relative z-10 grid ...">
    <div class="hero__content__inner">
      <h1>Optimized for performance</h1>
      <p>Start immediately and do something great a long the way.</p>
      <a data-component-id="sirius:button" class="button ..." href="...">
        Read more
      </a>
    </div>
  </div>
</div>

```

CSS approach



- Tailwind CSS
- Do not use arbitrary values in Tailwind, like: `m-[55px]`
- Separate CSS where Tailwind cannot do the job
- BEM
- CSS Nano
- Keep it small and avoid unused CSS



CSS is render blocking

- Keep it small and avoid unused CSS
- In certain situations use critical CSS technique(styles above the fold)

```
<html>
  <head>
    <style id="critical-css">@font-face{font-display:swap;font-
family:Intermarc;font-style:normal;font-
weight:300;src:url('/themes/custom/sirius/src/fonts/intermarc/INTERMARCH
E-Light.woff2') format("woff2")}@font-face{font-display:swap;font-
family:Intermarc;font-style:normal;font-weight:400; ...
    </style>
  </head>
</html>
```

Remove unused CSS



```
libraries-override:  
  system/base:  
    css:  
      component:  
        css/components/ajax-progress.module.css: false  
        css/components/autocomplete-loading.module.css: false  
        ...  
  
paragraphs/drupal.paragraphs.unpublished: false
```

JS approach



- Put JS before the closing body tag
- Do not use jQuery, if possible
- Use defer or async attribute when needed

```
duet-datepicker:  
  js:  
    /libraries/duetds--date-picker/dist/duet/duet.esm.js:  
    {  
      preprocess: false,  
      minified: true,  
      attributes: { defer: true, type: module },  
    }
```

Minify JS



Use Uglify JS or similar tools

```

// Minify each file to it's own directory or dist folder.
jsFiles.forEach((file) => {
  const fileContents = fs.readFileSync(file);
  const fileName = ....

  const result =
    environment === 'production'
      ? UglifyJS.minify(fileContents.toString())
      : fileContents.toString();
  const code = environment === 'production' ? result.code : result;

  try {
    fs.writeFileSync(`${dirName}/${parsedFileName}.js`, code);
  }
  console.log(`Minified file: ${fileName}.js`);
} catch (error) {...}
});
```

Fonts preloading



```
{# <head> html.html.twig #}
```

```
<link rel="preload"  
      href="/themes/custom/sirius/src/fonts/...Bold.woff2"  
      as="font" type="font/woff2" crossorigin>  
<link rel="preload"  
      href="/themes/custom/sirius/src/fonts/...Demi.woff2"  
      as="font" type="font/woff2" crossorigin>  
<link rel="preload"  
      href="/themes/custom/sirius/src/fonts/...Light.woff2"  
      as="font" type="font/woff2" crossorigin>  
<link rel="preload"  
      href="/themes/custom/sirius/src/fonts/...Regular.woff2"  
      as="font" type="font/woff2" crossorigin>
```

Results after CSS and JS improvements



14:13:14 - lando-mastrad.lnc

https://lando-mastrad.lndo.site/

84 96 100 100

DU 25 JANVIER AU 31 MARS 20	DU 25 JANVIER AU 31 MARS 20	DU 25 JANVIER AU 31 MARS 20	DU 25 JANVIER AU 31 MARS 20	DU 25 JANVIER AU 31 MARS 20	DU 25 JANVIER AU 31 MARS 20	DU 25 JANVIER AU 31 MARS 20	DU 25 JANVIER AU 31 MARS 20
DES PLATS À NE PAS RATER.	DES PLATS À NE PAS RATER.	DES PLATS À NE PAS RATER.	DES PLATS À NE PAS RATER.	DES PLATS À NE PAS RATER.	DES PLATS À NE PAS RATER.	DES PLATS À NE PAS RATER.	DES PLATS À NE PAS RATER.

Show audits relevant to: All FCP LCP TBT CLS

DIAGNOSTICS

- ▲ Avoid large layout shifts — 3 layout shifts found
- Serve static assets with an efficient cache policy — 1 resource found
- Initial server response time was short — Root document took 20 ms
- Avoids enormous network payloads — Total size was 452 KiB

Fix INP issues



The screenshot shows a web browser window with the URL `https://lando-mastrad.lndo.site`. The page content includes a promotional banner for 'mastrad' with a '-70% DE REMISE IMMEDIATE' offer, valid from January 23 to March 31, 2024. Below the banner, there is a section for collecting stickers ('COLLECTIONNEZ VOS VIGNETTES EN MAGASIN ET SUR LE DRIVE') with a '10€ d'achat = 1 vignette' promotion. The browser's developer tools are open to the Performance tab, showing a timeline of events. A tooltip highlights a 'Task Long_task took 82.14 ms' event. The summary section at the bottom indicates a Range of 1.06 s - 1.29 s and a Total INP of 230 ms, broken down by category: Scripting (79 ms), Rendering (5 ms), Painting (3 ms), System (2 ms), Idle (142 ms), and Total (230 ms).

Dimensions: Mot... 412 x 823 100%

Not Secure `https://lando-mastrad.lndo.site` Incognito

Elements Console Sources Network Performance Memory Application Security Lighthouse

lando-mastrad.lndo.site... Screenshots Memory

498 ms 998 ms 1498 ms 1998 ms 2498 ms 2998 ms

1078 ms 1098 ms 1118 ms 1138 ms 1158 ms 1178 ms 1198 ms 1218 ms 1238 ms 1258 ms 1278 ms

Network

Frames 453.2 ms 9.3 ms 16.0 ms 9.2 ms 9.3 ms

Animations

Timings

Interactions

Pointer

Main — `https://lando-mastrad.lndo.site/`

Task

Event: click 82.14 ms (self 0.35 ms) Task Long_task took 82.14 ms.

Function Call (anonymous)

Summary Bottom-Up Call Tree Event Log

Range: 1.06 s - 1.29 s

230 ms

79 ms Scripting

5 ms Rendering

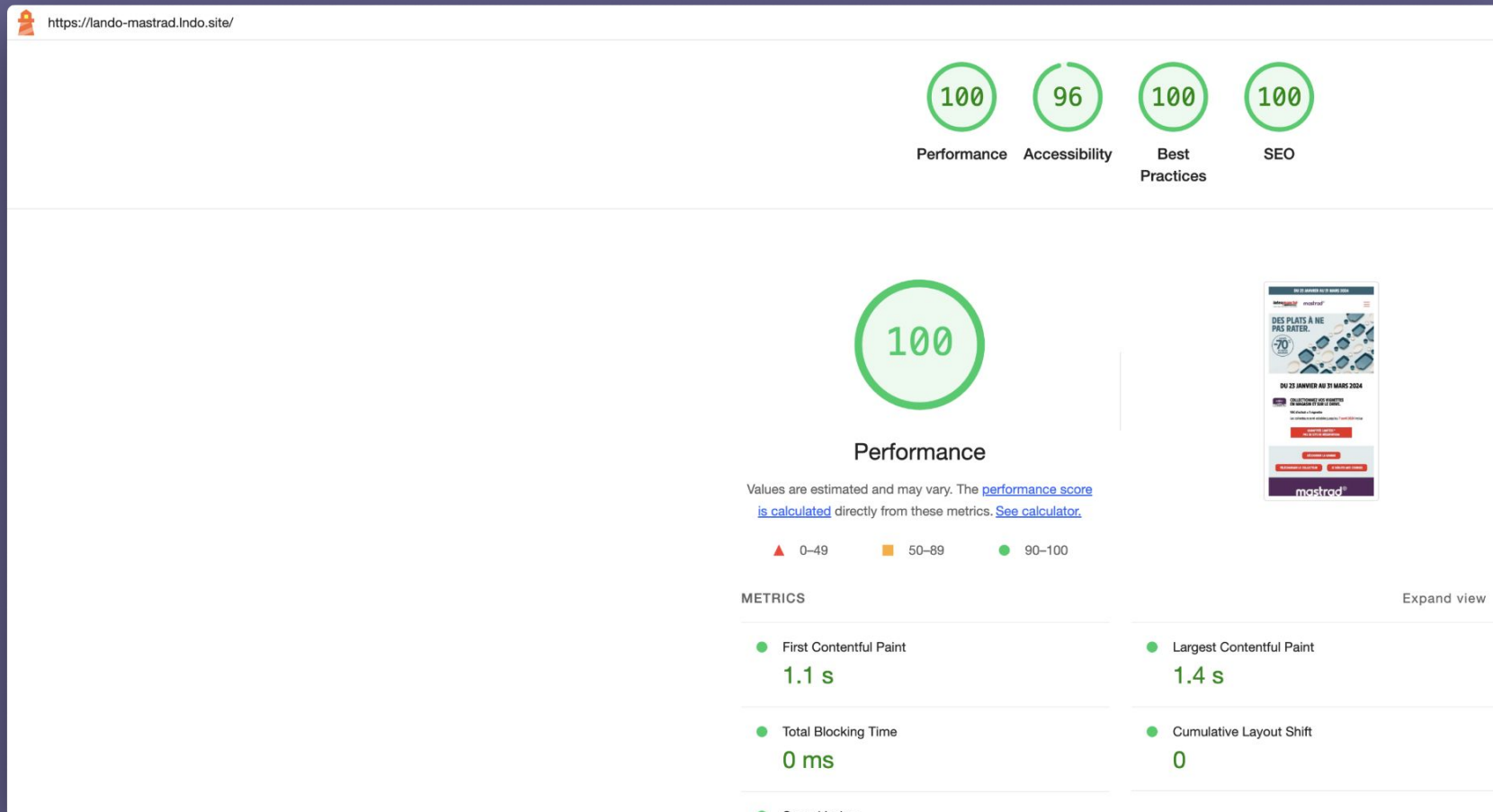
3 ms Painting

2 ms System

142 ms Idle

230 ms Total

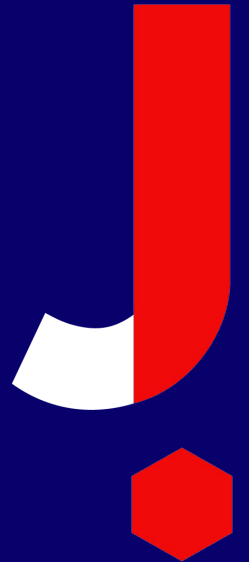
Final result



Thank you!

Useful links:

- [PHP you got it right all along - video Next JS conf 2023](#)
- [Optimize Largest Contentful Paint](#)





Thank you for joining us!

Stay connected with **Drupal Bulgaria Association** for more exciting events, news, and updates!

Also visit our website: <https://ddd24.drupalcamp.bg>



And don't forget to visit our [sponsors' stands](#).

Their support helps make events like this possible!



INTERNET

JAKALA

dropsolid
DIGITAL EXPERIENCE
COMPANY

