DEBUGGING FRONT-END PERFORMANCE

Tim Kadlec (@tkadlec) & Pat Meenan (@patmeenan)

June 20-21, 2016 at Velocity Conference (#velocityconf)
MEASURE & OPTIMIZE
Performance budget

A clearly defined performance goal used to guide design & development
Four types of metrics

1. Quantity Based
2. Rule Based
3. Milestone Timings
4. Speed Index
QUANTITY BASED

Metrics related to the quantity of requests, bytes, etc of a page
QUANTITY BASED

Easy to understand

Clear tie to design/ development decisions

Almost no connection to user experience
RULE BASED

Metrics based on adherence to a set of rules or guidelines
RULE BASED

Great checklist of basic optimizations

Easy to understand

Almost no connection to user experience
MILESTONE TIMINGS

Timing of a very specific milestone in the course of loading a page
MILESTONE TIMINGS

Easy to track

Limited view of the user experience

Easy to communicate

User timing allows for very specific metrics
SPEED INDEX

A representation of the perceived load of a page
SPEED INDEX

Very closely tied to user experience

Difficult to communicate

Limited tracking
Quantity Based
Rule Based
Milestone Timings
Speed Index
HOW FAST IS FAST ENOUGH?
AS FAST AS POSSIBLE
100ms: instantaneous
1000ms: state of flow
20% RULE
YOUR SITE &
10-12 COMPETITORS
WEBPAGETEST

Request API Key

Akamai is providing resources for automated testing through the public WebPageTest instance.

This form allows you to request an API key to use for limited automation of WebPageTest testing. The API key is provisioned for up to 200 "page loads" per day. Each run, first or repeat view counts as a page load (10 runs, first and repeat view would be 20 page loads). That should be sufficient for most low-volume use cases and for building a proof-of-concept for larger testing. If you need to do more testing than that allows then you should consider a private instance. There are pre-packaged AMIs available on EC2 for running a full WebPageTest instance.

The API keys are limited to testing from a subset of locations (EC2 regions and the Dulles Chrome, Firefox, IE 9 and Mobile agents). The EC2 locations will offer consistent performance from location to location and can be scaled as necessary to meet demand. If you need to automate testing from other locations then email me directly (pmeenan@webpagetest.org).

The results for tests run with the API keys will be available for 30 days from when the test was run.

Once you fill out the details below, you will receive an email with information on how to retrieve your API key.

Email Address (Required):

Name:

Company:

Sponsored by: Akamai

FASTER FORWARD

WEBPAGETEST.ORG/GETKEY-PHP
Maps JSON result data from marcelduran/webpagetest-api into human-readable document formats.

Bump version.

- **examples**
  - Change examples.
  - 6 days ago

- **src**
  - Fix stupid require path error.
  - a day ago

- **test**
  - Fix failing test.
  - 6 days ago

- **.gitignore**
  - Ignore file.
  - 4 months ago

- **.jshintrc**
  - Linter config.
  - 4 months ago

- **.travis.yml**
  - Add io.js to the CI config.
  - a month ago

HTTPS clone URL

https://github.com/
[{
  "name": "My homepage",
  "url": "http://timkadlec.com/",
  "type": "home"
},
{
  "name": "Steve Souders",
  "url": "https://www.stevesouders.com/",
  "type": "away"
},
{
  "name": "Filament Group",
  "url": "http://www.filamentgroup.com/",
  "type": "away"
}]
wptmap --mapper odf-spreadsheet --key MY_KEY --count 3
<table>
<thead>
<tr>
<th></th>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>First view</td>
<td>First byte</td>
<td>Start render</td>
<td>Load</td>
<td>Speed index</td>
<td>First byte</td>
<td>Start render</td>
</tr>
<tr>
<td>2</td>
<td>Run</td>
<td>150107_1Y_JH9/1</td>
<td>187</td>
<td>1691</td>
<td>2369</td>
<td>1700</td>
<td>1460</td>
<td>1992</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>150107_1Y_JH9/2</td>
<td>1400</td>
<td>291</td>
<td>1191</td>
<td>2305</td>
<td>1221</td>
<td>230</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>150107_1Y_JH9/3</td>
<td>2594</td>
<td>827</td>
<td>237</td>
<td>1194</td>
<td>2232</td>
<td>1200</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>150107_1Y_JH9/4</td>
<td>495</td>
<td>1488</td>
<td>530</td>
<td>203</td>
<td>895</td>
<td>1699</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>150107_1Y_JH9/5</td>
<td>201</td>
<td>395</td>
<td>1765</td>
<td>528</td>
<td>216</td>
<td>1195</td>
</tr>
<tr>
<td>11</td>
<td>12</td>
<td>150107_1Y_JH9/6</td>
<td>1000</td>
<td>111</td>
<td>393</td>
<td>1460</td>
<td>430</td>
<td>237</td>
</tr>
<tr>
<td>13</td>
<td>14</td>
<td>150107_1Y_JH9/7</td>
<td>2025</td>
<td>1107</td>
<td>208</td>
<td>695</td>
<td>1693</td>
<td>727</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
<td>150107_1Y_JH9/8</td>
<td>1194</td>
<td>1956</td>
<td>1200</td>
<td>170</td>
<td>695</td>
<td>1851</td>
</tr>
<tr>
<td>17</td>
<td>18</td>
<td>150107_1Y_JH9/9</td>
<td>180</td>
<td>1091</td>
<td>2092</td>
<td>1121</td>
<td>129</td>
<td>692</td>
</tr>
<tr>
<td>19</td>
<td></td>
<td>UPPER</td>
<td>2594</td>
<td>1956</td>
<td>2369</td>
<td>2305</td>
<td>2232</td>
<td>1992</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>LOWER</td>
<td>180</td>
<td>111</td>
<td>208</td>
<td>170</td>
<td>129</td>
<td>230</td>
</tr>
<tr>
<td>21</td>
<td></td>
<td>90th PCT</td>
<td>2138.8</td>
<td>1744</td>
<td>2147.4</td>
<td>1821</td>
<td>1800.8</td>
<td>1879.2</td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>10th PCT</td>
<td>185</td>
<td>255</td>
<td>231.2</td>
<td>196.4</td>
<td>198.6</td>
<td>235.6</td>
</tr>
</tbody>
</table>
Summary

<table>
<thead>
<tr>
<th>Page</th>
<th>Speed index</th>
<th>First byte</th>
<th>Start render</th>
<th>Load</th>
<th>Bytes</th>
<th>Requests</th>
<th>Connections</th>
<th>Speed index</th>
<th>Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>My homepage</td>
<td>627</td>
<td>276</td>
<td>596</td>
<td>719</td>
<td>55,528</td>
<td>6</td>
<td>3</td>
<td>300</td>
<td>296</td>
</tr>
<tr>
<td>Steve Souders</td>
<td>2,035</td>
<td>1,112</td>
<td>1,989</td>
<td>3,330</td>
<td>675,327</td>
<td>52</td>
<td>17</td>
<td>2,003</td>
<td>2,198</td>
</tr>
<tr>
<td>Filament Group</td>
<td>672</td>
<td>110</td>
<td>592</td>
<td>706</td>
<td>159,946</td>
<td>12</td>
<td>5</td>
<td>300</td>
<td>347</td>
</tr>
</tbody>
</table>

Times are in milliseconds and are the median values from 9 runs in WebPageTest. The test location was Dulles, the connection was Native Connection, and the browser was Chrome. All measurements were taken between 3:42:57 PM and 3:45:00 PM on 4/21/2015.

Care should be taken when making comparisons between the figures for different pages, since each page contains a different amount of data and requires a different amount of work. Nonetheless, some comparisons can be made.

Charts

Speed index, first view

<table>
<thead>
<tr>
<th>Page</th>
<th>Speed index</th>
</tr>
</thead>
<tbody>
<tr>
<td>My homepage</td>
<td>627</td>
</tr>
<tr>
<td>Filament Group</td>
<td>672</td>
</tr>
<tr>
<td>Steve Souders</td>
<td>2,035</td>
</tr>
</tbody>
</table>

First-view speed index (lower is better)

Speed index, repeat view

<table>
<thead>
<tr>
<th>Page</th>
<th>Speed index</th>
</tr>
</thead>
<tbody>
<tr>
<td>My homepage</td>
<td>300</td>
</tr>
<tr>
<td>Filament Group</td>
<td>300</td>
</tr>
</tbody>
</table>
Google App Script for spreadsheet that uses the WPT API to bulk test URLs

- 9 commits
- 1 branch
- 0 releases
- 1 contributor

**Added link to Perf Advent post**

**andydavies** authored on Dec 10, 2014

**LICENSE**
Initial commit
a year ago

**README.md**
Added link to Perf Advent post
4 months ago

**webpagetest.gs**
Updated to add polling interval and changes for public release
5 months ago

**WebPageTest Bulk Tester**

HTTP://BIT.LY/1FEKY96
WebPageTest Bulk Tester v0.2

Test multiple URLs with webpagetest.org (or another publicly accessible instance of webpagetest)

Each test uses one of a defined set of parameters (scenario) so tests can either share the same parameters, or use different sets depending on need.

If a test completes successfully, selected values from the results are extracted and added to the Tests tab.

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Licensed under MIT license - see About tab for details

Comments, suggestions, improvements etc. welcome:
https://github.com/andydavies/WPT-Bulk-Tester/issues

How to Use

1. Make a copy of Spreadsheet

   This spreadsheet is shared read-only so you’ll first need to make a copy

2. Configuring Spreadsheet - Settings Tab

   Add your own API key

   Customize the parameters and results maps to include the parameters you want to specify and the results values to be extracted

3. Defining Tests - Scenarios Tab

   Create one or more test scenarios (a scenario is a named set of test parameters)

   First column must always be the name of the scenario, other columns are defined by the Parameters map in the Settings tab

4. Specifying URLs to be Tested - Tests Tab

   Add URLs to be tested in the first column, and scenario in the second (a drop down can be created via the Data > Validation menu, or just copy cell from previous row)

5. Running Tests

   Once the URLs to be tested and the corresponding scenario have been defined, choose 'Run Tests' from WebPageTest menu (on first run the app will need to be authorised and the test re-submitted)

   Once the tests have been submitted the results will be polled once a minute until they have all completed

   To re-run a test delete the WPT URL and then choose 'Run Tests' from WebPageTest menu

   To re-fetch results delete the status (and corresponding results) and choose 'Get Results' from the

Andy Davies
@andydavies
<table>
<thead>
<tr>
<th>URL</th>
<th>Scenario</th>
<th>WPT ID</th>
<th>Status</th>
<th>TTFB (ms)</th>
<th>Render Start (ms)</th>
<th>Visually Complete (ms)</th>
<th>Load Time (ms)</th>
<th>Speed Index</th>
<th>Requests</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://riafet.org">http://riafet.org</a></td>
<td>Dukes/Chrome</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><a href="http://www.rfa.org/content/usa-profiles-ukraine-spring-protectors/20672815.html">http://www.rfa.org/content/usa-profiles-ukraine-spring-protectors/20672815.html</a></td>
<td>Dukes/Chrome</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>URL</td>
<td>Speed Index</td>
<td>Start Render</td>
<td>Visually Complete</td>
<td>Fully Loaded</td>
<td>Results Link</td>
<td>Target (Based on 20%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-------------</td>
<td>--------------</td>
<td>-------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>---------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: The test results are based on a 20% confidence interval.
Live Blog: Ban Ki-Moon In Crimea Appeal
Ban Ki-moon urges respect for Ukraine’s "sovereignty, unity, and territorial integrity" after Russia formally annexes Crimea and EU and Ukrainian officials sign an association agreement. Plus, the EU names its latest sanctions targets.

Infographic: Neighbors' Ties To Russia

UKRAINE
Ukrainian Oligarch Firtash Released On $172 Million Bail
March 21, 2014

Ukrainian businessman Dmytro Firtash has been under investigation in the United States since 2006 for bribery and forming a criminal organization.
visually complete \(\leq 4000\text{ms}\)
<table>
<thead>
<tr>
<th>MEASURE</th>
<th>MAXIMUM</th>
<th>TOOL</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total page load</td>
<td>2 seconds</td>
<td>WebPagetest, median from five runs on</td>
<td>All pages</td>
</tr>
<tr>
<td>time</td>
<td></td>
<td>3G</td>
<td></td>
</tr>
<tr>
<td>Total page load</td>
<td>2 seconds</td>
<td>Real user monitoring tool, median across</td>
<td>All pages</td>
</tr>
<tr>
<td>time</td>
<td></td>
<td>geographies</td>
<td></td>
</tr>
<tr>
<td>weight</td>
<td>800 Kb</td>
<td>WebPagetest</td>
<td>All pages</td>
</tr>
<tr>
<td>Speed Index</td>
<td>1,000</td>
<td>WebPagetest using Dulles location in</td>
<td>All pages except home page</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chrome on 3G</td>
<td></td>
</tr>
<tr>
<td>Speed Index</td>
<td>600</td>
<td>WebPagetest using Dulles location in</td>
<td>Home page</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chrome on 3G</td>
<td></td>
</tr>
</tbody>
</table>
Performance budget

A clearly defined performance goal used to guide design & development
Two weeks ago, some interesting discussions flared up around performance budgets. I can’t help but feel somewhat responsible.
<table>
<thead>
<tr>
<th>Event</th>
<th>Current Time</th>
<th>Target Time (20% Faster)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Render</td>
<td>1.492s</td>
<td>1.194s</td>
</tr>
<tr>
<td>Document Complete</td>
<td>3.150s</td>
<td>2.52s</td>
</tr>
<tr>
<td>Fully Loaded</td>
<td>3.527s</td>
<td>2.822s</td>
</tr>
</tbody>
</table>
96 KB/S
<table>
<thead>
<tr>
<th></th>
<th>TARGET TIME</th>
<th>KILOBYTE WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Render</td>
<td>1.194s</td>
<td>114kb</td>
</tr>
<tr>
<td>Document Complete</td>
<td>2.52s</td>
<td>242kb</td>
</tr>
<tr>
<td>Fully Loaded</td>
<td>2.822s</td>
<td>271kb</td>
</tr>
</tbody>
</table>
Let's Make A Performance Budget!

**Home Page**

<table>
<thead>
<tr>
<th></th>
<th>HTML</th>
<th>CSS</th>
<th>JS</th>
<th>Images</th>
<th>Fonts</th>
<th>Ads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>100</td>
<td>50</td>
</tr>
</tbody>
</table>

**Product Page**

<table>
<thead>
<tr>
<th></th>
<th>HTML</th>
<th>CSS</th>
<th>JS</th>
<th>Images</th>
<th>Fonts</th>
<th>Ads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>100</td>
<td>50</td>
</tr>
</tbody>
</table>

**Category Page**

<table>
<thead>
<tr>
<th></th>
<th>HTML</th>
<th>CSS</th>
<th>JS</th>
<th>Images</th>
<th>Fonts</th>
<th>Ads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50</td>
<td>100</td>
<td>200</td>
<td>500</td>
<td>100</td>
<td>50</td>
</tr>
</tbody>
</table>

Budget: 800KB
Actual: 800KB

HTTP://BIT.LY/231338P
Howdy!  Howdy!

Chaparral Pro   Tisa Pro

188k           140k
El dijo el lunes que la decisión de recibir a presos de Guantánamo en Uruguay ya está tomada y negó que dependa del pedido que hizo a Washington de liberar a tres presos cubanos condenados. Cifran doles e que hace cuatro meses recibió el pedido de Estados Unidos.
Hague Court Rules Against Russia In Yukos Case

A court based in The Hague has ordered Russia to pay about $50 billion to a group of former shareholders of the Yukos oil company.
Hague Court Rules Against Russia In Yukos Case
A court based in The Hague has ordered Russia to pay about $50 billion to a group of former shareholders of the Yukos oil company.
Hong Kong Phooey, number one super g
window.performance = window.performance || window.mozPerformance || window.msPerformance || window.webkitPerformance || {};

var timing = window.performance.timing,
now = new Date().getTime(),
output, loadTime;

budget = budget ? budget : 1000;
var start = timing.navigationStart;

//create element named results and put on page

//
if (loadTime > budget) {
    results.className += ' overBudget';
} else {
    results.className += ' underBudget';
}
document.body.appendChild(results);
Super simple example of adding perf timing to the page display during dev work

```javascript
(function () {
    var perfBar = function (budget) {

        window.onload = function () {

            window.performance = window.performance || window.mozPerformance || window.msPerformance

            var timing = window.performance.timing,
            now = new Date().getTime(),
            output, loadtime;

            if (!timing) {
                // fail silently
                return;
            }

            budget = budget ? budget : 1000;
            var start = timing.navigationStart;

            var results = document.createElement('div');
            results.setAttribute('id', 'results');
            loadtime = now - start;
            results.innerHTML = '[loadTime: ' + loadtime + ']';

            // print results
            // perfBar(1000);

        }
    }

    perfBar(1000);

})()
```
PerfBar

Simple way to collect and look at your website performance metrics quickly, that supports budgeting and adding custom metrics.

Learn More  Install  Star on Github

18  725 ms  71 ms  266 ms  9
Test new metric  Load Time  Latency  First Paint  Number of requests

HTTP://BIT.LY/1UNLUVV9
PerfBar

Simple way to collect and look at your website performance metrics quickly, that supports budgeting and adding custom metrics.

Learn More    Install    Star on Github

18
Test new metric

725 ms
Load Time

71 ms
Latency

266 ms
First Paint

18
Number of requests

464 ms
Front End

261 ms
Back End

7 ms
Response Duration

69 ms
Request Duration

0
Redirects
HTTP://BIT.LY/1SICBL8
What Does My Site Cost?
Find out how much it costs for someone to use your site on mobile networks around the world.

https://instantarticles.fb.com/ weighs 19.85MB. Here's what that costs around the globe.

Want to make things better? Check out the full results and recommendations at WebPageTest.org.

Cost in USD | Cost in USD, PPP | Cost as % of GNI, PPP
---|---|---

Cost in USD, PPP (POSTPAID DATA)
This is the cost of the site based on data from the ITU and World Bank. The cost of data is standardized based on the PPP factor. Prices were collected from the operator with the largest market share in the country, using the least expensive plan with a (minimum) data allowance of 500 MB over (a minimum of) 30 days. Prices include taxes. Because these numbers are based on the least expensive plan, they are best case scenarios.
https://instantarticles.fb.com/ weighs 19.85MB. Here's what that costs around the globe.

Want to make things better? Check out the full results and recommendations at WebPageTest.org.

<table>
<thead>
<tr>
<th>Cost in USD, PPP</th>
<th>Cost as % of GNI, PPP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Cost in USD, PPP (POSTPAID DATA)**

This is the cost of the site based on data from the ITU and World Bank. The cost of data is standardized based on the PPP factor. Prices were collected from the operator with the largest marketshare in the country, using the least expensive plan with a (minimum) data allowance of 500 MB over (a minimum of) 30 days. Prices include taxes. Because these numbers are based on the least expensive plan, they are best case scenarios.

<table>
<thead>
<tr>
<th>Country</th>
<th>Cost (in USD, PPP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>$2.92</td>
</tr>
<tr>
<td>Switzerland</td>
<td>$1.94</td>
</tr>
<tr>
<td>Japan</td>
<td>$1.87</td>
</tr>
<tr>
<td>Germany</td>
<td>$1.58</td>
</tr>
</tbody>
</table>

- This exceeds the $1.25 per day poverty level. Approximately 281,280 people in Canada live below this level.
- This exceeds the $1.25 per day poverty level.
- This exceeds the $1.25 per day poverty level. Approximately 509,200 people in Japan live below this level.
- This exceeds the $1.25 per day poverty level. Approximately 241,660 people in Germany live below this level.
ENFORCE
perfbudget: {
  home: {
    options: {
      url: 'http://stage.mysite.com',
      key: 'MY_API_KEY',
      runs: '3',
      connectivity: '3G',
      mobile: '1',
      budget: {
        'visualComplete': '4000'
      }
    }
  }
}
}
perfbudget: {
    home: {
        options: {
            url: 'http://stage.mysite.com',
            key: 'MY_API_KEY',
            output: 'wpt-results.json',
            budget: {
                'visualComplete': '4000'
            }
        }
    }
}
perfbudget: {
  home: {
    options: {
      url: 'http://stage.mysite.com',
      key: 'MY_API_KEY',
      budget: {
        'userTime.CUSTOM_MARK': '1500'
      }
    }
  }
}

perfbudget: {
    home: {
        options: {
            url: 'http://stage.mysite.com',
            key: 'MY_API_KEY',
            budget: {
                'bytesIn': '250',
                'SpeedIndex': '1000',
                'visualComplete': '1500'
            }
        }
    }
}
Running "perfbudget:home" (perfbudget) task

Test for http://rferl.dev.superfriend.ly/patterns/04-pages-00-homepage/04-pages-00-homepage.html FAILED

visualComplete: 4100 [FAIL]. Budget is 4000
Summary: http://www.webpagetest.org/result/140902_CC_2e88b94bde864589367a1c64cb287860/
Warning: Task "perfbudget:home" failed. Use --force to continue.

Aborted due to warnings.
Analyze your website speed and performance

Sitespeed.io is an open source tool (Apache License Version 2.0) that helps you analyze your website speed and performance based on performance best practices and timing metrics. It collects data from multiple pages on your website, analyze them using the rules and output the result as HTML or send the metrics to Graphite.

You can analyze one site, analyze and compare multiple sites or let your continuous integration server break your build when your performance budget is exceeded.

Install using npm (need help?):

```
$ npm install -g sitespeed.io
$ sitespeed.io -h
```

You can clone or fork the project at and if you like sitespeed.io, please give us a ⭐️!

Performance dashboard  Performance budget
Metrics for one page

You can choose to Graph data for multiple URLs or for a specific page. Create dashboards and keep track of your most important pages.

You can keep track of timings and how your page is built.
HTTP://BIT.LY/1QNESMA
$ psi http://technical.higedweb.org/

URL: technical.higedweb.org
Strategy: mobile
Score: 66

CSS size 108.06 kB
HTML size 14.76 kB
Image size 101.36 kB
JavaScript size 165.25 kB
CSS resources 6
Hosts 8
JS resources 12
Resources 43
Static resources 17
Other size 142.8 kB
Total size 4.15 kB

Main resource server response time 3.87
Minify CSS 0.21
Minimize render blocking resources 32
Optimize images 7.07
Prioritize visible content 8
Size tap targets appropriately 0.84

Threshold of 70 not met with score of 66
$ bigrig --file ~/Desktop/animation.json --pretty-print

sideNavAnimation [Animation]:

start: 933.32ms
end: 1179.98ms
duration: 246.66ms
parseHTML: 0.00ms (0.00ms per frame)
javaScript: 0.12ms (0.01ms per frame)
styles: 8.91ms (0.59ms per frame)
updateLayerTree: 30.01ms (2.00ms per frame)
layout: 7.92ms (0.53ms per frame)
paint: 4.18ms (0.28ms per frame)
raster: 11.56ms (0.77ms per frame)
composite: 1.84ms (0.12ms per frame)
extendedInfo:
domContentLoaded: 0.00ms
loadTime: 0.00ms
firstPaint: 0.00ms
javaScript:
  localhost:11080: 0.12ms (0.01ms per frame)
fps: 60
frameCount: 15
Failed — Deployment #1604 failed · Details

Merge with caution!
You can also merge branches on the command line.
Performance + Design

Measure what matters most - the user experience

Use the Responsive Design dashboard to see your site in different viewports & orientations
### Median Page Times

<table>
<thead>
<tr>
<th>Backend</th>
<th>Start Render</th>
<th>DOM Complete</th>
<th>Fully Loaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1s</td>
<td>0.5s</td>
<td>0.6s</td>
<td>0.7s</td>
</tr>
</tbody>
</table>

**Graph:**

- X-axis: Date
- Y-axis: Time in seconds
- Various time points marked for comparison.
Page Load Time budget for M.Search over by 61%

The page load time for M.Search on Zillow.com in Google Chrome in Us East crossed over the threshold of 11000ms by 61% and is currently 17782ms.
Image Requests budget for M.Search over by 373%

The image requests for M.Search on Zillow.com in Google Chrome in Us East crossed over the threshold of 30 by 373% and is currently 142.
Total Size budget for M.Search over by 417%

The total size for M.Search on Zillow.com in Google Chrome in US East crossed over the threshold of 5% by 417% and is currently 13,290.06KB.
Image Size budget for M.Search over by 708%

The image size for M.Search on Zillow.com in Google Chrome in Us East crossed over the threshold of 5% by 708% and is currently 12,235.05KB.
OPTIMIZE
compress images

grunt-contrib-imagemin
progressive JPEGs

grunt-contrib-imagemin
imagemin: {
    png: {
        options: {
            optimizationLevel: 7
        },
        files: [
            {
                expand: true,
                cwd: 'source/images/',
                src: ['**/*.png'],
                dest: 'source/images/',
                ext: '.png'
            }
        ]
    },
    jpg: {
        options: {
            progressive: true
        },
        files: [
            {
                expand: true,
                cwd: 'source/images/',
                src: ['**/*.jpg'],
                dest: 'source/images/',
                ext: '.jpg'
            }
        ]
    }
}
imagemin

png

),

{

}

],

}

},

jpg

options: {
  progressive: true
},

{

}

],

}

}
concatenate & minimize JS

grunt-contrib-concat
grunt-contrib-uglify
concat: {
    options: {
        separator: '
    },
    main: {
        src: ['source/js/vendor/*.js',
              'source/js/modules/*.js', 'source/js/components/*.js'],
        dest: 'public/js/main.js'
    }
},
uglify: {
    prod: {
        files: {
            'public/js/main.js': ['<%= concat.main.dest %>']
        }
    }
},
eliminate unused CSS

grunt-uncss
uncss : {
    dist : {
        files: {
            'public/css/style.css': [
                'public/styleguide/html/styleguide.html',
                'public/patterns/04-pages-00-homepage/04-pages-00-homepage.html',
                'public/patterns/04-pages-00-homepage-emergency/04-pages-00-homepage-emergency.html',
                'public/patterns/04-pages-01-blog/04-pages-01-blog.html',
                'public/patterns/04-pages-02-article/04-pages-02-article.html'.
            ]
        },
        options: {
            report: 'min',
            compress: true,
            stylesheets: ['../..//css/style.css']
        }
    },
inline critical CSS

grunt-penthouse
penthouse: {
  home: {
    outfile: 'public/css/critical-home.css',
    css: 'public/css/style.css',
    url: 'http://rfe.dev/public/patterns/04-pages-00-homepage/
         04-pages-00-homepage.html?pl=false',
    width: 1300,
    height: 900
  },
  article: {
    outfile: 'public/css/critical-article.css',
    css: 'public/css/style.css',
    url: 'http://rfe.dev/public/patterns/04-pages-02-article/04-
         pages-02-article.html?pl=false',
    width: 1300,
    height: 900
  }
}
SVG workflow

grunt-svgmin
Horse covers up my last star on my reviews.

Tara from ShabbyWorks  12:21 am May 20, 2014 EDT

Why is there a horse emoji (spelling?) covering up the 5th star of my reviews?? Been like this all day!
<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original SVG</td>
<td>10,379 bytes</td>
</tr>
<tr>
<td>1 Decimal Place</td>
<td>7,990 bytes</td>
</tr>
<tr>
<td>Merged Paths</td>
<td>5,813 bytes</td>
</tr>
<tr>
<td>SVGO</td>
<td>4,705 bytes</td>
</tr>
<tr>
<td>GZip</td>
<td>1,317 bytes</td>
</tr>
<tr>
<td><strong>Total savings</strong></td>
<td><strong>9,062 bytes</strong> (87%)</td>
</tr>
</tbody>
</table>
svgmin: {
  options: {
    plugins: [
      {
        cleanupNumericValues: {
          floatPrecision: 1
        }
      }
    ]
  },
  dist: {
    files: [
      {
        expand: true,
        cwd: 'source/images/',
        src: ['**/*.svg'],
        dest: 'source/images/'
      }
    ]
  }
}

svgmin
  options
    plugins: [
      {
        cleanupNumericValues: {
          floatPrecision: 1
        }
      }
    ]
  },
  dist
  {
  }
}
SVG workflow

grunt-svgmin

grunt-svgstore
<svg class="svgmap">
  <symbol viewBox="0 0 16 17" id="shape-add-to-list">
    <title>add-to-list</title>
    <path class="add-to-list"
      d="M0 0h12v3H0zm12 7V5H0v3h10V7zm-5 6v-2h3v-1H0v3zm6-1V9h-2V3H8v2h3v3h2v-3h3v-2z"/>
  </symbol>
  ....
</svg>
<svg class="icon icon-add-to-list" aria-hidden="true">
  <use xlink:href="#shape-add-to-list"></use>
</svg>
20 icons = 2.5kb
125 bytes
svgstore: {
  options: {
    prefix: 'shape-', // this prefixes each symbol ID
    svg: {
      'class': 'svgmap'
    }
  },
  default: {
    files: {
      'public/svg-icons.svg': ['source/images/svg-icons/*.svg'],
    }
  }
},
easy
THANK YOU!

Tim Kadlec (@tkadlec) & Pat Meenan (@patmeenan)
June 20-21, 2016 at Velocity Conference (#velocityconf)

Icons courtesy of The Noun Project