Site Speed
Should it be a priority?

https://bizbudding.com/site-speed-matters
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Software geek – real-time coder
Network geek – understand TCP/IP
Prefer vi to a visual editor
Excel at business process optimization
Love trail running and beer

Lead our professional services and infrastructure-as-a-service divisions.
We deliver high-quality innovative work. We pay attention to detail.

We love WordPress.

Most importantly, we love what we do, and we treasure that we get to choose who we work with.
The Importance of Site Speed

Should it be your first priority?

“For 70% of the mobile landing pages we [Google] analyzed, it took more than five seconds for the visual content above the fold to display on the screen, and it took more than seven seconds to fully load all visual content above and below the fold.” -- February 2018, Google
Site Speed Affects Users

“Most users rate speed at the very top of their UX needs.” -- Google

The most important aspects of a website have become:

- 75% The speed it takes to load the page
- 66% How easy it is to find what I’m looking for
- 61% How well the site fits my screen
- 58% How simple the site is to use
- 24% How attractive the site looks

Site Speed Affects Conversions

“Today, it’s critical that marketers design fast web experiences across all industry sectors.” -- Google

As page load time goes from:

- 1s to 3s, the probability of bounce increases 32%
- 1s to 5s, the probability of bounce increases 90%
- 1s to 6s, the probability of bounce increases 106%
- 1s to 10s, the probability of bounce increases 123%

https://www.thinkwithgoogle.com/marketing-resources/data-measurement/mobile-page-speed-new-industry-benchmarks/
Site speed affects SEO

“Update July 9, 2018: The Speed Update is now rolling out for all users.” -- Google

What if a 1mo website performance refresh project delivered...

- 25% increase in sessions
- 31% increase in session duration
- 10% increase in pages / session
- 26% reduction in bounce rate

...during its first month?

Site Speed might be your #1 priority in 2018.
### Summary

- **Sessions**
  - Apr 1, 2018 - Aug 31, 2018: 30,000
  - Apr 1, 2017 - Aug 31, 2017: 25,000

### Graph

- May 2018 to August 2018,
- Sessions analysis.

### Table

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Acquisition</th>
<th>Behavior</th>
<th>Conversions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Users</td>
<td>New Users</td>
<td>Sessions</td>
</tr>
<tr>
<td></td>
<td>2.14%</td>
<td>1.97%</td>
<td>8.42%</td>
</tr>
</tbody>
</table>

### Notes
- Contact: david@bigbedding.com
Site Speed would be your #1 priority in 2018.

What if a 6mo website performance refresh project delivered...

4,038,455 new sessions from organic search

3,074,958 new users from organic search

...during its first three months?
Here’s how you start.

Measure the Total User Experience

Only focusing on and tracking common KPIs will not lead to the results you are seeking. You must focus on your Total User Experience.

Focus on these areas, in this order:

1) Real-Time Data and Analytics
2) Secure, Scalable, Reliable Infrastructure
3) Fast, Flexible Website Development
4) Synergistic Tools
Set Up Real-Time Data and Analytics Tracking

Focus on how you align internal metrics to the criticality of your business. Create your own EPMV equation to maximize revenue per visitor.

- Google Analytics
- Google Tag Manager
- Google Search Console
- Chrome Dev Tools
- Page Speed Insights
- Pingdom
- WebPageTest

Speed To Insight
Configure Infrastructure that is Secure, Scalable, and Reliable

Who is your I&OL?

*Infrastructure & Operations Leader*

Treat your hosting environment like the *mission-critical infrastructure* it is.

Create a Purpose-built System

- Anycast DNS/IPv4/IPv6
- SSL - HTTP/2
- Network Acceleration
- PHP 7, PHP OpCache
- Persistent Object Cache
- Web Application Firewall
- Server Firewall & Backups
- CDN Proximity Routing
- Network Monitoring
- Border Gateway Protocol
Once You Have a Purpose-built System

What to Measure - when does something start happening?

Secure, Scalable, Reliable Infrastructure

DNS Response Time
Server Response Time
Time to First Byte - TTFB
Render Start
First Paint
Develop Fast, Flexible Website Software

Hosting hardware is not enough, you must focus on the integration of hardware technology and software development.

- Fast Themes
- Solid Plugins
- Responsive Design
- Non-blocking Code
- Static File Caching
- Modern Development Tools
- Solid Plugins
- Fast Themes

Robust Code
Once You Have Robust Code

What to Measure - Is the page useful?
Has enough content rendered that you can engage with it?
Deploy Synergistic Tools

Digital businesses are designed to keep customers seamlessly connected. Ensure your tools, processes, and messaging work well together.

Dynamic Content
Display Ads
Personalized Content
Lead Generation
Customer Segmentation
Marketing Automation
Help Desk Support

Work Well Together
Once Your Tools Work Well Together

What to Measure:

Are the interactions smooth, free of jumpiness and lag when scrolling?
Actionable Steps

(It takes work.)

Five Ways to Make a Difference

Disclaimer: We are WordPress experts, and only work on WordPress sites.

Start by implementing these projects:

1) Reduce Server Response Time
2) Implement Google Tag Manager
3) Fix/optimize your images
4) Minify, concatenate, optimize delivery of CSS, JavaScript, and HTML
5) Correctly position render blocking CSS and JS
Google PageSpeed Insights

“You should reduce your server response time under 200ms”. -- Google

https://developers.google.com/speed/pagespeed/insights/
Google PageSpeed Insights

Page Speed
Unavailable

Optimization
Medium
65 / 100

PSI is currently showing a single-page report. Chrome User Experience Report does not have sufficient real-world speed data for this page, but PSI was still able to analyze this page to identify potential optimizations that may improve the speed of this page. Please investigate the recommendations below. Learn more.

Page Stats

Statistics show that the median page on the internet requires 4 render-blocking round trips and ~75 resources (1MB) to load. But this page appears to use fewer resources. PSI estimates this page requires 4 render-blocking round trips and 27 resources (0.9MB) to load. Fewer round trips and bytes results in faster pages.

Optimization Suggestions

Eliminate render-blocking JavaScript and CSS in above-the-fold content

Your page has 3 blocking script resources and 6 blocking CSS resources. This causes a delay in rendering your page.

None of the above-the-fold content on your page could be rendered without waiting for the following resources to load. Try to defer or asynchronously load blocking resources, or inline the critical portions of those resources directly in the HTML.

Remove render-blocking JavaScript:
https://maisites.com/...nrepair.com%2F&site=11&nonce=fc9caae753c
https://oldbarnrepair.com/...includes/js/jquery/jquery.js?ver=1.12.4
https://oldbarnrepair.com/...jquery/jquery-migrate.min.js?ver=1.4.1

https://developers.google.com/speed/pagespeed/insights/
CatchPoint Synthetic Monitoring Example

- **Step 1:** IFF < 200ms
- **Step 2:** GTM
- **Step 3:** Optimize Images
- **Step 4:** Optimize CSS, JS, HTML
- **Step 5:** All these blank windows means the theme's (or sites) CSS and JavaScript are blocking. Fix Render Start.

http://www.catchpoint.com/synthetic-monitoring/
CatchPoint Synthetic Monitoring

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Webpage Response (ms)</td>
<td>3,300</td>
</tr>
<tr>
<td>Render Start (ms)</td>
<td>297</td>
</tr>
<tr>
<td>DNS (ms)</td>
<td>13</td>
</tr>
<tr>
<td>Wait (ms)</td>
<td>76</td>
</tr>
<tr>
<td># Wire / Total Requests</td>
<td>38 / 38</td>
</tr>
<tr>
<td># Hosts</td>
<td>11</td>
</tr>
<tr>
<td># Failed Requests</td>
<td>0</td>
</tr>
<tr>
<td>Document Complete (ms)</td>
<td>1,229</td>
</tr>
<tr>
<td>Speed Index (ms)</td>
<td>468</td>
</tr>
<tr>
<td>Connect (ms)</td>
<td>1</td>
</tr>
<tr>
<td>Response (ms)</td>
<td>126</td>
</tr>
<tr>
<td># Connections</td>
<td>10</td>
</tr>
<tr>
<td>Downloaded Bytes</td>
<td>1,342,387</td>
</tr>
<tr>
<td># JS Failures</td>
<td>0</td>
</tr>
</tbody>
</table>

### Host, Content Type, Zone

<table>
<thead>
<tr>
<th>Search</th>
<th>Name</th>
<th>Bottlenecks</th>
<th># Hosts</th>
<th>File Size (Bytes)</th>
<th># Requests</th>
<th>Availability (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Script</td>
<td>468</td>
<td>1</td>
<td>611,228</td>
<td>9</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>CSS</td>
<td>240</td>
<td>1</td>
<td>44,156</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Image</td>
<td>228</td>
<td>1</td>
<td>553,328</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>HTML</td>
<td>128</td>
<td>2</td>
<td>13,059</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Font</td>
<td>NA</td>
<td>1</td>
<td>109,716</td>
<td>5</td>
<td>100</td>
</tr>
</tbody>
</table>

http://www.catchpoint.com/synthetic-monitoring/
WebPageTest

Web Page Performance Test for
https://touchstone.io

From: Dulles, VA - Chrome - Cable
9/6/2018, 10:57:30 PM

Test runs: 3
Re-run the test

Performance Results (Median Run)

<table>
<thead>
<tr>
<th>Load Time</th>
<th>First Byte</th>
<th>Start Render</th>
<th>Speed Index</th>
<th>First Interactive (msa)</th>
<th>Document Complete</th>
<th>Fully Loaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.287s</td>
<td>0.242s</td>
<td>0.500s</td>
<td>941</td>
<td>&gt; 5.036s</td>
<td>2.287s</td>
<td>5.595s</td>
</tr>
<tr>
<td>25</td>
<td>750 KB</td>
<td></td>
<td></td>
<td></td>
<td>45</td>
<td>1,417 KB</td>
</tr>
</tbody>
</table>

Cost: $$$-

https://www.webpagetest.org
## Pingdom Website Speed Test

<table>
<thead>
<tr>
<th><strong>Performance grade</strong></th>
<th><strong>Load time</strong></th>
<th><strong>Faster than</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A 92</strong></td>
<td><strong>312 ms</strong></td>
<td><strong>99%</strong> of tested sites</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Page size</strong></th>
<th><strong>Requests</strong></th>
<th><strong>Tested from</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>709.3 kB</strong></td>
<td><strong>19</strong></td>
<td><strong>New York City</strong> on Sep 7 at 20:46</td>
</tr>
</tbody>
</table>

[https://tools.pingdom.com](https://tools.pingdom.com)
Chrome Developer Tools

https://developers.google.com
Advanced Steps

(It takes know how.)

Continue by implementing these projects:

1) Static File Caching
2) Configure CDN
3) Get rid of sucky plugins/tools
4) Implement Persistent Object Caching
5) Implement a WAF at the Edge of your network
6) Prioritize Visible Content
7) Implement Border Gateway Protocol with DNS for network traffic routing
8) Implement Cloudflare Railgun

Bonus: Eight Additional Ways to Make THE Difference
Tools We Love

We use these everyday.

1) WP Rocket
2) Optimus
3) Imsanity
4) YoImages
5) Cloudflare
6) Heartbeat Monitor
7) WP Crontrol
Object Caching

Properly configuring a Persistent Object Cache will greatly improve the performance of your website, especially the WordPress admin screens.

67%

Reduction in page generation time
Page Generation Time (no object cache)
Page Generation Time (with object cache)