Measuring and Improving Site Performance

The importance of performance when creating impactful page experiences

Co-authored with 10up and Google

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Why Performance Matters, More Than Ever

Performance isn't just about speed. More than ever before, building a website that performs well requires a deeper focus on the overall end-user or page experience. While speed certainly plays a role, performance should encompass a number of factors aimed at creating fast, responsive, and stable websites that deliver a great page experience to each user.

Not only are these best practices for building better websites and creating a more delightful web, building sites with a focus on performance as it relates to page experience affects that crucially important moment in which a user decides to further engage with you, either by consuming additional content or making a purchase. This decision is often made almost-subconsciously, it's usually based on a first impression, and it's intrinsic to the success of your business.

Performance must be at the center of digital publishing platforms in order to create new and innovative experiences that engage and delight users while increasing business-driven metrics.

The Importance of Page Experience

There are three main reasons page experience is critical for publishers and their digital platforms. Below, we have outlined these areas, exploring why engagement, content sharing, and findability are all metrics that are directly impacted by page experience.

Page experience influences the depth of engagement. Sites which are slow to load and respond negatively impact a user's experience both as an initial impression and on an ongoing basis. This impact manifests itself in a poor navigation experience, lowering the likelihood that a user will interact with your site in other ways that generate revenue.

Users must be able to quickly engage with your website in a meaningful way, enabling them to find what they're looking for in an intuitive manner.

Performance has a clear and measurable impact. An improvement of speed by just 0.1 seconds can create meaningful, positive outcomes. In the case of Pfizer, a 38% improvement in speed resulted in a 20% decrease in bounce rate. Ebay measured that just a 0.1 second speed improvement led to a .5% increase in additions to user shopping carts.

Read the full report.

Page experience impacts the likelihood of your content being shared. Visitors are much more likely to turn into your advocates and share your links across social media and messenger apps if they not only like your products and services, but also have a great time interacting with the experience your site provides.

Page experience is significant when considering findability, with a direct impact on results within Google Search. Search engines and aggregators seek to provide recommendations and answers that include the best possible experience for their users. If your site has great page experience, it's far more likely to stand out from the crowd.

Measuring Page Experience

Optimizing for quality of page experience is key to the long-term success of any site. Getting it right requires appropriate focus on the right areas as well as ongoing attention and investment.

Annie Sullivan, who leads performance testing at Chrome, discussed the wide range of tools and metrics you may consider implementing within your organization. What she concludes is that there are very few that work well for top-level insights.

Ultimately, this means your organization will need to focus on a core set of metrics rather than a single point of measurement. To do this effectively, you will need to ensure that your chosen metrics are helping you make informed decisions, which are aligned to your core business goals and objectives; in short, they need to be: **representative, accurate, consumable, stable, and real-time reflective.**

Core Web Vitals have been introduced with this in mind, and represent a larger effort to provide unified guidance for quality signals that are essential to delivering a great page experience.


Core Web Vitals

Core Web Vitals are a subset of the quality signals included in Google's larger Web Vitals initiative, which launched in 2020. With a focus on creating fast, responsive, and stable websites, Core Web Vitals are meant to quantify distinct aspects of the end-user experience in an automated and repeatable way.

While the list is set to evolve over time, Core Web Vitals specifically help answer three core questions (through key metrics) that heavily impact page experience:

> **1. How fast does the page load:** is something going to happen (engagement vs. abandonment) based on a user's interaction?
> **2. How quickly does the page become interactive to the end-user:** does the page respond to a user's next interaction?
> **3. How does the page layout change as it loads:** does the page seem visually stable or does it shift as a user attempts to interact?

Core Web Vitals (cont.)

To measure these three areas, Core Web Vitals are based on the following key metrics:
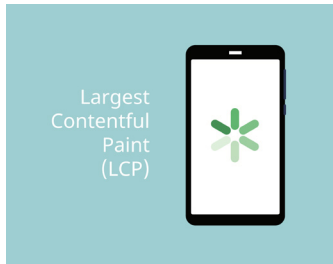
Largest Contentful Paint (LCP)

LCP measures loading performance of above-the-fold content. To provide a good page experience, LCP should occur within 2.5 seconds of when a page first begins loading.

Numerous factors contribute to a high LCP, including server responsiveness, render blocking scripts and styles, complexity of CSS, fonts, and images.
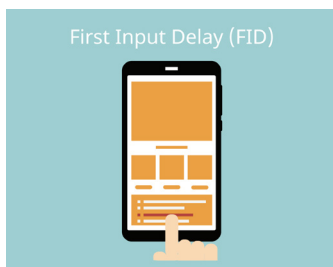
First Input Delay (FID)

FID measures interactivity. To provide a good page experience, pages should have an FID of less than 100 milliseconds.

If the browser is parsing or executing a lot of JavaScript during page load, this will tie up the CPU or block the "Main Thread," causing devices to become less responsive to input. A high FID is usually an indicator of complex JavaScript. This could be a single script, a function, or numerous scripts.
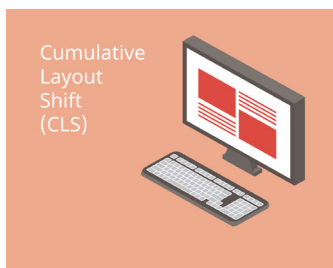

Cumulative Layout Shift (CLS)

CLS measures visual stability of above-the-fold content. To provide a good page experience, pages should maintain a CLS of less than 0.1.

Recognizing the potential of Core Web Vitals to help evaluate page experience, Google first announced that page experience signals would begin to be included in Google Search rankings in May 2020.

As noted above, these signals measure how users perceive the experience of interacting with a web page and contribute to ensuring that users get the most helpful and enjoyable experiences from the web.

In November 2020, Google announced that page experience signals would begin playing a greater role in search results as part of a larger page experience update beginning in 2021.
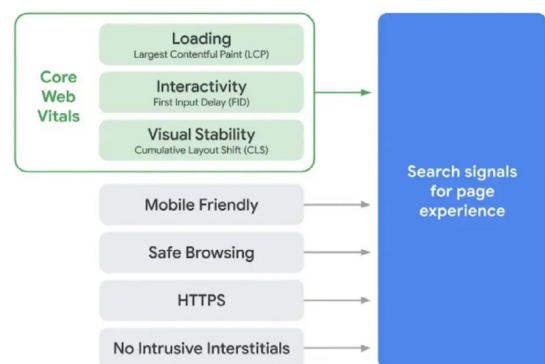
This update has combined Core Web Vitals with Google's existing search signals (mobile-friendliness, safe-browsing, HTTPS-security, and intrusive interstitial guidelines) to officially incorporate the user-centric metrics into its ranking algorithm.

How Do Core Web Vitals Affect My Site Rankings?

As of June 2021, Core Web Vitals are factored into search results for mobile and desktop, with page experience signals playing a growing role over time. In addition to regular search, the changes to Google's algorithm also impact the position of content appearing within Google's Top Stories.

As the page experience transition becomes standard practice, it's imperative that the correct tooling is considered when beginning to evaluate the performance of your platform against these new metrics.

Sites hosted with a managed WordPress provider like WP Engine are already well-positioned for Core Web Vitals and the page experience update. WP Engine is the only managed WordPress host that provides solutions for all three Core Web Vitals, as well as the fastest, most reliable managed WordPress platform.

Tooling For Measuring Performance

Good page experience should not be measured at a single point in time. It should be composed through a series of key milestones in your users' journey. Understanding the different metrics and how to track them is key to effectively monitoring and evaluating page experience and impact.

There is no one-size-fits-all when considering the tools that you should be using. Performance optimization is an iterative process and there are a number of factors to be considered when looking at the performance of a site.

It is important to understand how performance metrics are most commonly measured, usually in one of two ways:

1. **Lab Data**
2. **Field Data**

Neither of these measures are considered to be better or worse than the other—instead, you should use both in tandem.

Understanding Lab vs Field Data

Lab data is performance data collected within a controlled environment using predefined device and network settings. This offers reproducible results and debugging capabilities which can help identify, isolate, and fix performance issues.

- **Strengths**
  Helpful for debugging performance issues. End-to-end and deep visibility into page experience.
  Reproducible testing and debugging environment.

- **Weaknesses**
  Does not always capture real-world bottlenecks. Does not always correlate with real-world page KPIs.

Field data is performance data collected from real page loads your users are experiencing in real-time.

- **Strengths**
  Helpful for debugging performance issues. End-to-end and deep visibility into page experience.
  Reproducible testing and debugging environment.

- **Weaknesses**
  Does not always capture real-world bottlenecks. Does not always correlate with real-world page KPIs.

As a publisher looking to improve the page experience of your site, the easiest starting point for your analysis of both field and lab data is PageSpeed Insights.

PageSpeed Insights: PageSpeed Insights (PSI) reports on the performance of a page on both mobile and desktop devices, and provides suggestions on how that page may be improved. PSI is a web interface that considers both lab data from Lighthouse (by URL) and field data from the Chrome Page Experience report.

Lighthouse: PSI uses Lighthouse (LH) to analyze the given URL, generating a performance score on the fly that estimates the page's performance on different metrics, including: First Contentful Paint, Largest Contentful Paint, Speed Index, Cumulative Layout Shift, Time to Interactive, and Total Blocking Time.

Chrome Page Experience Report: When PSI is given a URL, it will look it up in the Chrome Page Experience Report (CrUX) dataset. If available, PSI reports the First Contentful Paint (FCP), First Input Delay (FID), Largest Contentful Paint (LCP), and Cumulative Layout Shift (CLS) metric data for the origin and potentially the specific page URL.

Additional Tooling

WebPageTest: Allows you to compare the performance of one or more pages in a controlled lab environment, and deep dive into performance stats and test performance on a real device. You can also run Lighthouse on WebPageTest.

Search Console: Monitor, maintain, and troubleshoot your site's presence in Google Search results including CWV data for every page.

Site Kit: Free official Plugin for WordPress with Search Console and PSI APIs integrated into your WordPress dashboard.

Chrome Dev Tools: Allows you to profile the runtime of a page, as well as identify and debug performance bottlenecks.

Improving Page Experience

Page experience should be considered a journey not a destination, optimizing the experience for your users takes time and should be integral to your digital strategy. Creating ownership and awareness amongst core business teams is essential.

Useful Starting Points

Evaluate your current web page experience. Use CrUX via PSI, or if you're on WordPress, use Site Kit (enterprise users may prefer Search Console). Focus on your high value pages and key conversion areas

Prioritize the highest value improvement opportunities. Recommendations in PSI will help you identify them. Common areas to focus on include:

Removal of third-party scripts: Third-party scripts include any script that can be directly embedded into your website from a third-party vendor. There are numerous WordPress plugins you can use to remove third-party scripts, and to limit the load on your site, you can test out various options with the same functionality and (based on lab data) choose the plugin with the least detrimental impact.

Lazy loading: Lazy loading images helps reduce the number of calls a visitor's browser has to make to your website's server, which can prevent your site from getting bogged down. With WordPress 5.5+, lazy loading occurs by default.

Removal or optimization of large page elements: Large page elements can include media files, plugins, or other customizations that require a lot of resources to run. While some of these may be necessary for your site design or overall functionality, anything that's not mission-critical should either be removed or optimized to ensure minimal impact on all Core Web Vitals.

Make changes and test their impact before shipping to production. If applicable, integrate Lighthouse (LH) into your testing using Node CLI.

Introduce performance budgets to avoid regressions. Make performance a KPI for all business units: from SEO to Frontend Dev and review them as part of your development lifecycle.

Core Web Vitals:
The Managed WordPress Difference

To ensure your website is delivering an optimal Core Web Vitals experience, these three areas are key for you to focus on:

Fast hardware and up-to-date software: Provides better overall speed and uptime as well as the resources needed for uncached hits.

Fast network: Delivers page content quickly, with optimal load times.

Clean front-end code: Reduces unwanted layout shifts, ensures a smooth user experience.

WP Engine is the only managed WordPress host that provides solutions at all three of these layers, including:

Fast hardware: all WP Engine customers benefit from the latest version of PHP (7.4), WordPress-specific server configurations, as well as leading cloud solutions including Google Cloud Platform. WP Engine also offers access to Google's next-gen C2 hardware, which provides a more than 40% drop in server execution time and a powerful boost for both LCP and FID.

Fast network: including an integrated global CDN powered by Cloudflare, standard with every WP Engine plan, ensures WP Engine customers have a fast network that reduces LCP by reducing protocol overhead and bringing content closer to visitors. Our advanced security offering, Global Edge Security, further improves LCP with Argo smart traffic routing, and DDOS protection insulating your site from unwanted load.

Clean front-end code: from WP Engine's suite of StudioPress themes (also standard with every plan), to headless front-ends powered by Atlas, WP Engine offers solutions for both small and large sites, all built with Web Vitals and other user-centric metrics at the forefront.

The WP Engine and 10up Partnership

10up is one of WP Engine's longtime Strategic Agency Partners, focused on making a better web with finely crafted websites, apps, and tools for content creators, leveraging open source technologies like WordPress and React.

Whether delivering complex WordPress instances at scale, managing substantial platform migrations, or reimagining user experiences for global brands and creating innovative tools, 10up partners with WP Engine to bring incredible client projects to life. As a Strategic Partner, 10up also enjoys preferred listings in WP Engine's partner directory, dedicated sales support, lead referrals, custom quarterly reviews, and custom on-site training.

10up has also partnered with WP Engine on strategic company projects including WP Engine's eCommerce Solution and ElasticPress integration as well as Atlas for Headless WordPress.

The Google and 10up Partnership

Google and 10up have an established partnership, focusing on delivering tools for publishers and products that make experiencing content on the web better for all.

Site Kit
Site Kit, which was developed in partnership with 10up, is the free official WordPress plugin from Google. With more than one million active installs, Site Kit provides authoritative, up-to-date insights from multiple Google products directly in your WordPress dashboard, enabling you to deploy, manage, and get insights from critical Google tools to make your site more successful.

Performance Budgets

A performance budget is a set of limits imposed on metrics that affect site performance (CWV).
Performance should be your front-line defense in creating an end-to-end experience for a user. The first step to that is creating the proper performance budget.

This could be the total size of a page, the time it takes to load on a mobile network, or even the number of HTTP requests that are sent. Defining a budget helps get the web performance conversation started. It serves as a point of reference for making decisions about design, technology, and adding features.

Having a budget enables designers to think about the effects of high resolution images and the number of web fonts they pick. It also helps developers compare different approaches to a problem and evaluate frameworks and libraries based on their size and parsing cost.

About 10up

[10up](#) builds finely crafted websites and tools for content creators, creating a better web for clients like Microsoft, Time, ESPN, and Adobe.

From New York City to the wilds of Idaho to a dozen countries across Europe, 10up's model empowers them to bring in the best strategists, designers, and engineers, wherever they may live. Veterans of commercial agencies, universities, start ups, nonprofits, and international technology brands, the agency's team of 200 is built to solve problems; made to create; wired to delight. From beautiful pixels to beautiful code, the 10up team applies its passions to its clients' projects and goals.

 Are you seeking a partner to help conceptualize, refine, execute, and/or support your digital strategy? 10up is always looking for new opportunities to apply its service, craftsmanship, and creativity. Let's build something great!

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About WP Engine.

WP Engine, the world's most trusted WordPress technology company, powers the freedom to create on WordPress. We provide the most relied upon and trusted brands and developer-centric WordPress products for companies and agencies of all sizes, including [Atlas](#), Flywheel, Genesis, and Local. Headquartered in Austin, Texas, WP Engine has offices in Brisbane, Australia; Kraków, Poland; Limerick, Ireland; London, England; Omaha, Nebraska and San Antonio, Texas.

Read more at [www.wpengine.com.](http://www.wpengine.com)