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Improve Your Core Web Vitals

No matter what device they browse on, today's users expect quick-loading, seamless, intuitive online experiences. To help developers and marketers meet these expectations, Google introduced Core Web Vitals in 2020, a set of metrics designed to assess three key aspects of website performance.

These metrics, Largest Contentful Paint (LCP), Interaction to Next Paint (INP), and Cumulative Layout Shift (CLS), provide a clear framework for measuring how users experience a webpage. By optimizing each of them, site owners can boost engagement, reduce bounce rates, and even improve search engine rankings.

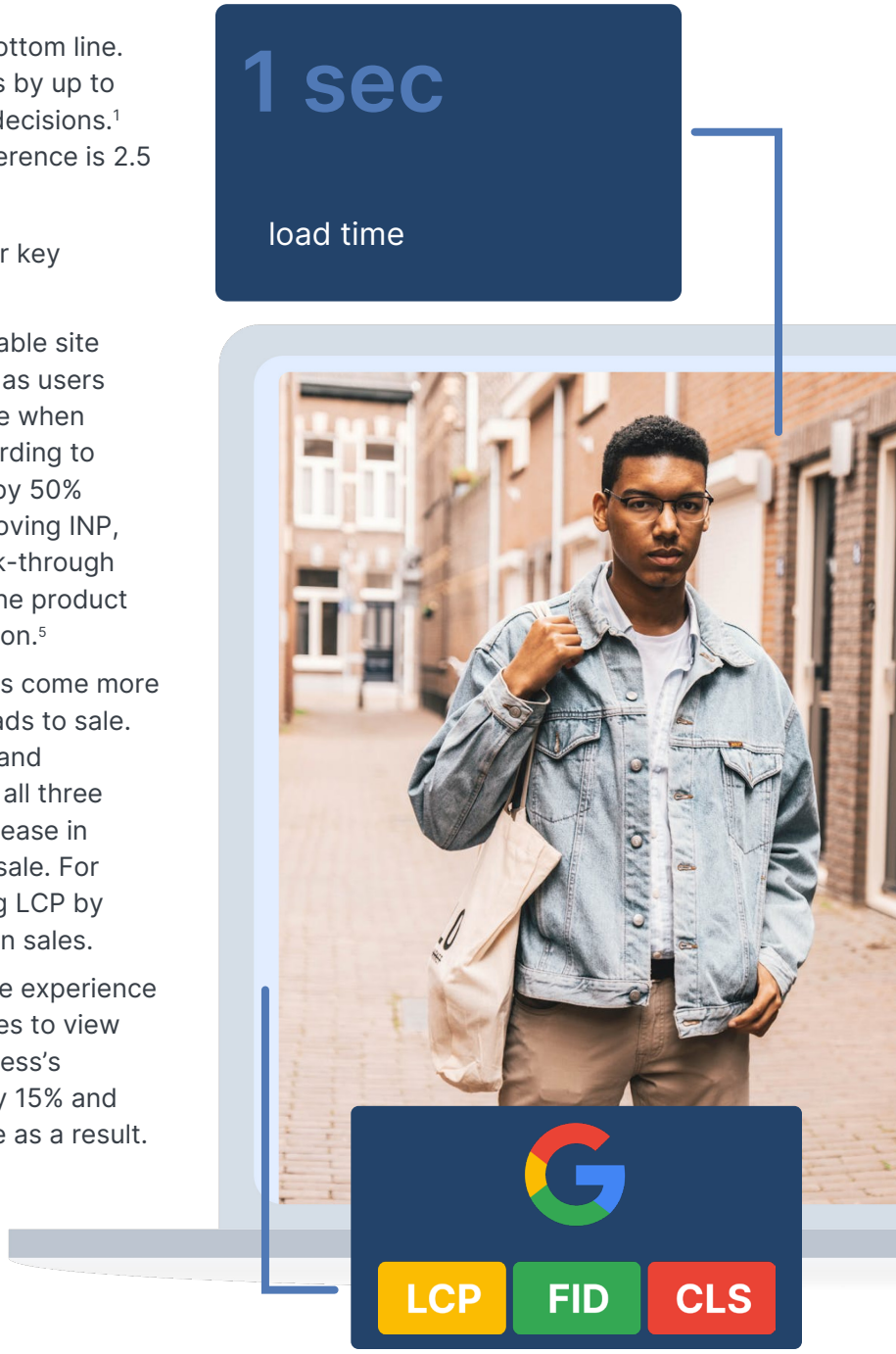
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The Importance of Core Web Vitals

Speed, stability, and interactivity don't just improve user experience. They add to the bottom line. Research shows that improving load times by just one second can increase conversions by up to 7%, with the greatest impact seen on e-commerce where users are making immediate decisions.[1] For B2B sites, that difference is three times higher; for B2C e-commerce sites, that difference is 2.5 times higher.

In addition to conversions, optimizing Core Web Vitals has been shown to improve other key business objectives.[2]

- **Search engine rankings.** Core Web Vitals are a Google Ranking Factor. As such, pages that provide a better user experience may rank higher in search results. Cosmetic brand Nykaa found that a 40% improvement in LCP led to a 28% lift in organic traffic.
  - **Generative citations.** As AI-powered answer engines transform how people access information, brands that combine Core Web Vital optimization with Generative Engine Optimization (GEO) will dominate organic visibility. Sites with a CLS of ≤ 0.1 are included 29.8% more often in AI summaries than sites with poor CLS, and an LCP of ≤ 2.5s are almost 50% more likely to appear in AI results.[3]
- **Session duration.** Websites that prioritize Core Web Vitals may see an increase in the amount of time visitors spend on their website. In a 2025 case study, Ray-Ban improved LCP by 43% and saw 65% better average pages viewed per session.[4]
- **Bounce rates.** A faster, more stable site can lead to lower bounce rates, as users are less likely to abandon a page when it delivers content quickly. According to Google, NDTV cut bounce rate by 50% after optimizing LCP. After improving INP, Trendyol saw a 1% uplift on click-through rates from the listings page to the product detail page (PDP) per user session.[5]
- **Revenue.** With more conversions come more opportunities to nurture your leads to sale. A case study of e-commerce brand Cdiscount found that improving all three metrics contributed to a 6% increase in revenue during its Black Friday sale. For Vodafone Italy, simply improving LCP by 31% resulted in an 8% increase in sales.
- **Ad revenue.** A smoother website experience translates into more opportunities to view and interact with ads on a business's website. iCook improved CLS by 15% and generated 10% more ad revenue as a result.



1. https://www.portent.com/blog/analytics/research-site-speed-hurting-everyones-revenue.htm
2. https://web.dev/case-studies/vitals-business-impact
3. https://www.rebelmouse.com/core-web-vitals-ai-visibility
4. https://web.dev/case-studies/rayban-speculation-rules
5. https://web.dev/case-studies/trendyol-inp?hl=en

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Largest Contentful Paint (LCP)

A measure of page load performance, largest contentful paint tracks the time it takes for the largest visible content element (like an image, video, or a block of text) to become visible on the screen. A low score indicates that the page is more effective at displaying content to the user quickly.

LCP timing begins when the page starts loading. Then, the browser identifies the largest element. Once the largest element is identified, the timestamp is recorded when that element is fully rendered and visible to the user. Scoring is as follows:

- **Good:** 2.5 seconds or faster.
- **Needs improvement:** Between 2.5 and four seconds.
- **Poor:** More than four seconds.



Common Issues Affecting LCP

Slow LCP is often related to excessive or large resources on a webpage as well as the servers delivering content to the user.

- **Server response times.** Slow server response can delay the loading of content.
- **Render-blocking resources.** JavaScript and CSS that block rendering can delay the display of large elements.
- **Image bloat.** Large or unoptimized images can increase load times.
- **Client-side rendering.** Heavy reliance on JavaScript frameworks can affect how quickly content appears.

Improving LCP

There are many ways to improve LCP, ranging from leveraging lazy loading to using an automated media optimization tool.

- **Convert photos to more efficient, modern formats.** These could include AVIF, JPEG 2000, JPEG XL, or WebP.
- **Compress images to reduce their bandwidth.** But don't compress them so much that they experience a significant loss in quality.
- **Leverage lazy loading.** With lazy loading, the browser doesn't attempt to render elements until they're in the user's viewport.
- **Use a content delivery network.** Serve your content from a location closer to the user to reduce latency.
- **Enable page caching.** This allows page content to be stored on the server after the first time it's visited, enabling a streamlined load experience upon next visit.
- **Use an automated media optimization tool.** According to the Chrome team, one of the best ways to improve your LCP is by using an image content delivery network.[3] Cloudinary's AI-powered optimizations effectively do this through the use of multi-CDN edge nodes so that every visual displays in the ideal format, crop, and size. This improves delivery, it also minimizes resources needed to accomplish it.
- **Use video as an alternative to GIFs.** GIFs are prevalent in social media and on the web, but can drag significantly on page load time.
- **Minimize third-party scripts.** Limit the number of third-party scripts that can block the main thread, impacting responsiveness.

6. https://developer.chrome.com/docs/lighthouse/performance/lighthouse-largest-contentful-paint

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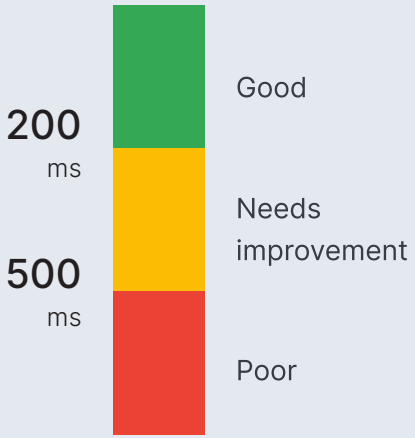
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Interaction to Next Paint (INP)

Interaction to Next Paint measures how quickly a webpage responds to a visitor. It tracks the time from when a user interacts with a page – like clicking a link or filling out a form – to the time when the browser begins to process that event. A low score indicates that the page is able to swiftly fulfill a user request.

INP measurement begins when a user first interacts with the page. The browser records this event, but it's not registered as complete until the browser responds to it. INP records the delay – the time elapsed between the user's first input and the moment the browser starts executing that interaction. Scoring is as follows:

- **Good:** 0-200ms
- **Needs improvement:** 200-500ms
- **Poor:** >500ms



Common Issues Affecting INP

A lagging INP is often the result of complex scripts running in the background as the site attempts to respond to the user.

- **JavaScript execution time.** If a page is running excessive JavaScript when a user interacts with it, the response may be delayed.
- **Complex scripts.** If the browser needs to execute tasks before responding to the user, like complex scripts or large resource loading, it can significantly slow INP.
- **Inefficient event handling.** Excessive or redundant event listeners can require the browser to take more steps than needed to respond to the user.

Improving INP

INP improvements focus mostly on minimizing scripts that trigger before your page attempts to register an interaction.

1. **Minimize JavaScript execution time.** Reduce the amount of JavaScript and optimize code to ensure quicker execution.
2. **Defer non-critical JavaScript.** Load non-essential scripts after responding to the user, using techniques like lazy loading.
3. **Use a content delivery network (CDN).** Serving resources from a CDN can reduce latency and speed up loading times.

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Cumulative Layout Shift (CLS)

Cumulative Layout Shift is a metric used to evaluate the visual stability of a webpage. It measures how much the layout of a page shifts unexpectedly as it loads, which can make it difficult for users to view and interact with the page. A low CLS score indicates that content remains stationary as the page loads, and businesses should aim for a score below 0.1.

Measuring CLS is slightly more complex than measuring the other metrics. It involves calculating two aspects of shift:

- **Impact fraction.** The portion of the viewport that the shifted element occupies.
- **Distance fraction.** How far the element has moved relative to the viewport.

A cumulative score is calculated for each individual shift, then scores are added together to produce the total CLS score for the page. CLS tracks all unexpected layout shifts that occur during the lifespan of a page. This includes changes due to loading images, ads, or any dynamic content. Scoring is as follows:

- **Good:** > 0.1
- **Needs improvement:** Between 0.1 and 0.25
- **Poor:** > 0.25



Common Issues Affecting CLS

Content commonly shifts when images don't have set dimensions, certain CSS properties are used, and dynamic content is added to a webpage.

- **Images without dimensions.** If images or videos don't have specified width and height attributes, the browser doesn't know how much space to allocate to your images until they load fully. When they do finally appear, they can unexpectedly shift content.
- **Poorly implemented animations.** Some CSS properties, like "box-shadow" and "box-sizing," as well as "top," and "left," can cause the layout to shift when content loads.
- **Ads and embeds.** Ads or embedded content that load after the main content can also push other elements around the page.
- **Dynamic content.** Adding new content dynamically, like notifications, banners, or ads, can lead to layout shifts if not managed properly.
- **Fonts loading.** When custom fonts load, flash of unstyled text (FOUT) and flash of invisible text (FOIT) can occur, causing text to shift when the default font finally transforms into the custom web font.

Improving CLS

The easiest way to improve CLS is to always specify dimensions and never insert content above existing content without using placeholders.

- **Specify dimensions.** Always define width and height for images and videos to reserve space in the page layout.
- **Preload fonts.** Use the CSS "font-display" to control how and when fonts load on your webpage.
- **Don't insert content above existing content.** If you need to add content, do so in a way that doesn't push existing elements down (e.g., use placeholders).
- **Manage ads.** Ensure that ads have a fixed size, or reserve space for them to prevent shifts when they load.

Manage animations with the "transform" property if your website builder doesn't already do this for you. This will allow you to scale and move elements around so that they don't cause unexpected shifts upon loading.

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Monitoring Performance

Understanding Core Web Vitals is only half the process of improving user experience. You also need to be able to measure and test them.

- **Use tools.** Utilize common tools like Google PageSpeed Insights, Lighthouse, Google Console, Web Vitals Extension, or Chrome DevTools to regularly monitor and analyze your website's performance.
- **Set performance budgets.** Establish performance goals for each page and regularly test to ensure you're meeting them.
- **Keep frameworks updated.** Regularly update libraries and frameworks to benefit from performance improvements.
- **Conduct A/B testing.** Experiment with changes to see how they impact Core Web Vitals and user experience.

AMC Makes Movie History With Image-Rich Mobile-First Website

READ CASE STUDY →



Leveraged auto-responsive features for faster page loading on different screen sizes and devices

"It's a huge boon that Cloudinary allows our app experience to be both media-intensive and high-performing."

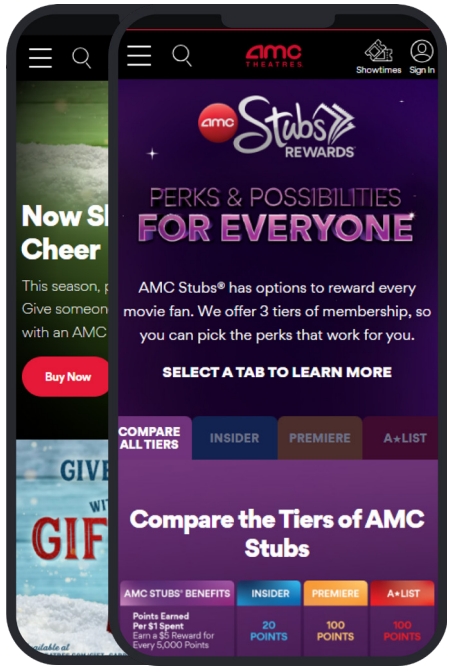
—**Travis Maddox**, Senior Director, Application Development – Consumer, AMC Theatres

Optimized 7M+

movie-related imagery

Reduced image load times

by compressing images without sacrificing quality



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PUMA Moves Faster With Cloudinary

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Delivered 70% faster-ladoing

product pages worldwide

"With our new infrastructure, online shoppers only ever see the right images and videos for a PUMA product, as all our websites and apps now rely on Cloudinary for image delivery and anomaly tracking. It's also supporting all our global CRM efforts."

—**Bettina Dönmez**, Senior Manager Cloud Native Platform Development, PUMA

Uptime rate of 99.95%

on 20TB resources

Processes 10M images

that update every 5 minutes



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Improve Web Core Vitals With Cloudinary

The challenge with improving Core Web Vitals is it costs businesses valuable resources that are often dedicated to product-focused objectives. But the benefits of optimizing them are impossible to ignore. Fortunately, Cloudinary's AI-powered visual solution can help businesses do it without the hassle.

Cloudinary enables businesses to automatically deliver images and video in smaller file sizes with high visual fidelity without the need to manually create size, format, and quality variants, or write URL parameters. That means improved Core Web Vitals, better site performance, and optimal user experience with no coding required. Find out how Cloudinary can reduce resource spend and optimize Web Core Vitals for your business.

Cloudinary's Website Image Analysis tool can give you detailed insights into how to boost page performance. Try our free Website Image Analysis Tool here.

To learn more about how Cloudinary can reduce resource spend and optimize Core Web Vitals for your business, contact us for a free demo.

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Cloudinary is the image and video platform that enables the world's most engaging brands to deliver transformative visual experiences at a global scale. More than three million users and 11,000 customers, including Adidas, Etsy, Fiverr, Grubhub, Minted and Paul Smith rely on Cloudinary to bring their campaigns, apps and sites to life. Backed by an ecosystem of more than 300 partners, integrations and plug-ins, Cloudinary's AI-powered image and video solutions offer a single source of truth for brands to manage, transform, optimize, and deliver engaging visual content to anyone, anywhere. As a result, brands across all industries are seeing up to a 203% ROI with benefits including faster time to market, higher user satisfaction and increased engagement and conversions.

For more information, visit www.cloudinary.com.

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