WHITEPAPER

Optimizing Digital Experiences with an Edge Cloud Platform

Improving site speed only scratches the surface: How the edge is redefining the way organizations create extraordinary digital experiences.

fastly

Introduction

Delivering fast, responsive web experiences that satisfy customer expectations is a bare minimum requirement for survival in the ecommerce space; organizations must remain performant to stay competitive, especially at times of high traffic demand, in order to attract and retain customers. But it's not just about site speed - organizations that want to maintain their edge must consider a more comprehensive strategy. Leveraging an edge cloud platform can help organizations thrive in the competitive ecommerce landscape.

The importance of site speed

Site speed, synonymous with website performance, refers to how quickly a browser can render a fully functional webpage for a user. Site speed is a crucial consideration for any organization doing business online; it directly correlates to user experience, conversion rates, search engine rankings and revenue.

Studies consistently show that slow-loading pages frustrate customers and ultimately drive them away. One study found that nearly 70% of consumers report that page speed influences their willingness to purchase online, meaning slow web experiences directly result in revenue losses.

Making your site faster improves user experience, keeping visitors on your page for longer. Quick-loading pages also lead to higher engagement, better search engine rankings, and increased conversions. And site speed doesn't need to be egregiously slow in order to negatively impact user experience and resulting effects. Even fairly decent load times can be insufficient to the average consumer, who expects near-instant browsing experiences. Therefore, even minor optimizations to site speed are worthy of consideration.

Which website performance metrics are important?

Site speed can be analyzed through various site 'health' metrics that provide a picture of how well a website is performing:

- **Largest Contentful Paint (LCP):** Measures how long it takes for the largest visible element, such as a high-quality image or a substantial block of text, to load.
- **Time to First Byte (TTFB)**: TTFB measures the time it takes for the first data byte to arrive from the server.
- **Cumulative Layout Shift (CLS):** This measures how stable your page layout appears between loads.
- **Server Response Time:** This metric represents how quickly your server responds to a browser's request.
- **Page Load Time:** This refers to the total time it takes for a web page to fully load, including all images, scripts, and content.

Prioritize LCP

Perhaps the most important, or simplest way to gauge a website's performance is through Google's Core Web Vitals (CWVs). Google created CWVs, a set of metrics aimed at measuring various performance indicators across a website, in an effort to gauge its overall performance. Based on scores on three key criteria (you can check them out here), Google determines where a

site should appear in search engine rankings - a critical factor in driving traffic to your website.

Of the three metrics, Largest Contentful Paint (LCP) - how quickly the largest part of a webpage loads and becomes visible to customers - is a key indicator of website performance. A recent industry report revealed that 60% of examined ecommerce sites fell outside the “Good” category for LCP scores (2.5 seconds or less load time), indicating significant room for improvement across the sector. Organizations should take every effort to optimize for good scores across CWVs.

Is good enough, good enough?

But is ‘good’ good enough? Even the slightest delay in LCP or shortcomings in other core vitals can result in negative impacts to performance - and ensuing hit to KPIs that affect revenue, like conversion rates. Organizations, particularly those highly dependent upon online activity, should make efforts to perform even minor site performance optimizations.

According to a study by Google and SOASTA, more than half of mobile users actually leave a website if it takes longer than 3 seconds to load. An improvement of a single second could mean the difference between a sale or a lost customer. So... even if you think your site is performing “good enough”... evaluating ways to improve, especially easy wins, should always be on the agenda.

Considerations beyond site speed

While site speed is a critical component of overall website performance and a successful ecommerce business strategy, organizations should also weigh other important improvement opportunities. Orgs need the ability to personalize offers for their customers, to handle traffic surges (spikes) in times of high demand, and to ensure that all internet-facing assets are secured.

Ecommerce companies must also consider solutions that address the following:

- **Dynamic content:** Frequently and unpredictably changing inventory, pricing, and personalized recommendations require real-time updates.
- **Complex infrastructure:** Legacy systems and centralized data processing can slow down site interactions + make it difficult to find optimization trajectories.
- **Security measures:** While essential for protecting customer data, security can introduce latency if not

implemented correctly. Security can also introduce the risk of lost revenue by virtue of false positives from inaccurate WAF solutions.

- **Attack surface:** How many 3rd, 4th, and 5th party calls is your website making to entities beyond your control and which you may not be familiar with?
- **Mobile optimization:** With increasing mobile shopping, sites must perform well across various devices and network conditions.
- **Third-party integrations:** Plugins and tools for enhanced functionality can impact overall site speed.

The Solution: An Edge Cloud Platform

Use of an edge cloud platform can help easily improve site speed while **also** yielding a variety of other benefits that give an organization a competitive edge.

Improved site speed + performance

Edge computing and CDNs are critical for improving site performance, especially for global customers. With a modern CDN, you can store copies of a website's content on servers distributed across various geographic locations, allowing users to access data from a server closer to their location. This reduces latency and improves load times, offering a faster and more responsive browsing experience. Edge computing further enhances this by processing data closer to the end user, offloading tasks from the central server and improving real-time interactions. Not only does this ensure the best possible performance, but it reduces origin costs and boost overall resiliency. Together, CDNs and edge computing ensure that websites can deliver consistent performance to users worldwide, regardless of where they are located.

Personalized online experiences

Personalized customer interactions help to build trust, drive engagement and conversions, and keep an ecommerce org competitive. Using customer data and behavioral insights, online stores can customize product recommendations, marketing messages, and appearance in accordance with individual preferences and browsing history. An edge cloud platform provides compute, which helps solve these challenges by offering development teams the tools they need to personalize real-time experiences closer to end users without having to make tradeoffs around cost, control, or performance. Edge compute personalizes shopping experiences directly at the network's edge, meaning the added benefits of reduced latency and improved responsiveness.

Litium reported faster, auto-scaling solutions for its customers after adopting edge cloud technology, resulting in noticeable improvements in their operations.

The Guardian experienced a 20% improvement in time to first byte globally after implementing edge caching and real-time purging capabilities.

Spread Group, handling over 6 billion monthly requests, improved security and performance by implementing edge-based WAF and CDN solutions.

Handing of traffic surges

An edge cloud platform provides scalable computing resources, allowing businesses to add or reduce server capacity based on real-time traffic fluctuations. Auto-scaling features can automatically allocate additional resources when traffic spikes occur, and scale back during slower periods to optimize costs. This dynamic scalability ensures that ecommerce websites can handle surges in traffic without experiencing performance degradation, while also avoiding the financial burden of maintaining excessive infrastructure year-round.

Baked-in security

Real-time traffic monitoring and predictive analytics are also essential components of a high-traffic ecommerce network infrastructure. Monitoring tools provide live visibility into traffic patterns, helping businesses identify and address potential issues before they impact users. Predictive analytics can forecast traffic spikes based on historical data, allowing companies to prepare for high-demand periods by scaling resources or adjusting traffic management strategies in advance. By proactively managing traffic and infrastructure needs, ecommerce companies can prevent downtime, reduce response times, and ensure a smoother shopping experience for their customers.

How Fastly can help

Implementing an edge cloud platform strategy not only alleviates website performance concerns, but delivers key benefits and capabilities to enhance digital experiences across your portfolio. From increased visibility and lower latency to more agile security solutions, Fastly's edge cloud platform yields better margins, higher developer productivity, faster innovation cycles, and new levels of reliability.

Fastly's edge cloud platform delivers performance, security, and compute - all on one platform:

- **Content caching:** Fastly's unique and modern approach to network and server architecture ensures the highest possible Cache Hit Ratios (CHRs) for static and dynamic content including API responses for inventory, pricing, and personalized recommendations.
- **Image optimization:** With Fastly, you can implement on-the-fly image resizing, compression, and format conversion at the edge to reduce load times + ensure the best possible user experience.
- **Code optimization + personalization:** Fastly's edge computing allows you to execute performance-critical functions closer to customers, reducing latency and cost. Personalization is simple with shopping experiences delivered directly at the network's edge.
- **Security at the edge:** With our edge cloud platform, security is built in: you can implement web application firewalls (WAFs) and DDoS protection at the edge to maintain security without compromising speed or transaction volume.
- **Real-time monitoring:** Use highly granular edge-generated analytics to gain insights into performance issues and quickly identify bottlenecks.

Edge cloud technology offers a powerful solution to address the unique challenges of ecommerce performance, enabling businesses to deliver fast, secure, and scalable online shopping experiences.

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