

FEATURE BRIEF
.....

Webscale RUM (Real User Monitoring)

Monitoring and reporting page load metrics, simplified

In June 2021, Google announced an update to the user experience signal fed into its search ranking algorithm, adding **Core Web Vitals**, or more generically Real User Monitoring (RUM), to its metrics for measuring a user's loading experience when visiting a website.

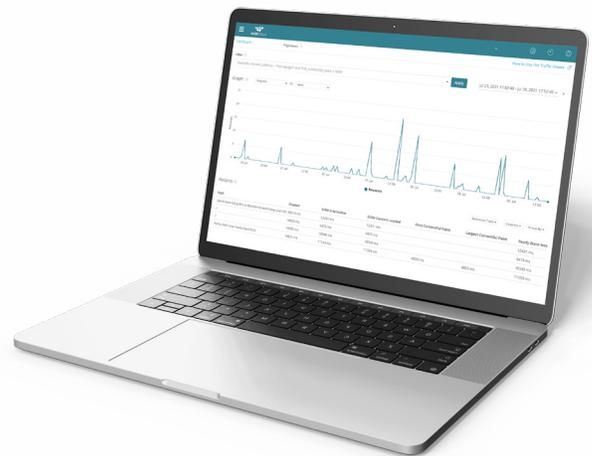
These metrics go beyond how fast the page loads and attempt to quantify how the page load feels to the user. Many factors, including when the origin server responds, which is when the most important content is made available to the user, can impact a user's interaction. This is the focus of RUM.

Traditionally, page speed has been the tool of choice to collect a page load time metric for each pageview of a web application. However, if page speed is disabled for the application, these metrics are not recorded. So, to gather deeper insights into the user experience for Webscale-managed applications, we have expanded the RUM metrics that are currently collected for each pageview.

The RUM feature of Webscale uses a beacon to collect page load time metric by page speed, for a Webscale-managed application that has opted in, regardless of page speed being enabled or not. The RUM beacon (Javascript) is injected into every HTML page of a Webscale-managed application via the Webscale Portal and it reports back a collection of page load metrics to the proxy for recording.

To help merchants optimize the performance of their ecommerce storefronts, Webscale provides deep visibility and insights into what internet users experience while accessing their Webscale-managed applications. RUM serves as a critical tool that provides the data and analytics needed to understand user experience.

Enabling RUM will clear/invalidate cache. Hence, for production sites, RUM is enabled at a time when traffic is the lowest and with the customer's prior approval.





RUM Metrics

Time To First Byte (TTFB)

- Time it takes for the browser to receive the first byte from the server's response.

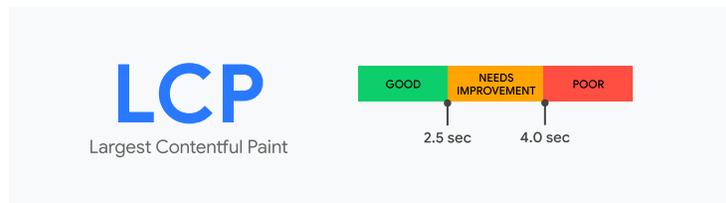
First Contentful Paint (FCP)

- Heuristic for perceived load speed of the web page and assures the user something is happening.
- Measures how long it takes the browser to render the first piece of DOM content.
 - `<iframe>` content is not considered DOM content.



Largest Contentful Paint (LCP)

- Heuristic for perceived load speed of the web page.
- Measures how long it takes for the largest image or text block to render in the viewport.



DomContentLoaded event

- Event that fires when the initial HTML document has been completely loaded and parsed.

DOMInteractive (DI)

- A timestamp representing the time value immediately before the user agent sets the document's readiness to 'interactive'.

Ready State Interactive (RSI)

- A timestamp representing the time value immediately after the user agent sets the document's readiness to 'interactive'. There is a document `readystatechange` event that fires when the document.readyState is changed to 'interactive'.

Load event

- Event that fires when the whole page has loaded, including all dependent resources such as style sheets and images. Expensive fetches for dependent resources prevent this event from emitting.



Network and Server Latency

After a user decides to visit a page, they'll wait – for the DNS lookup to occur; for any connection handshaking to occur; and for the origin server to process the request and return the page. This latency is nicely captured in the time to first byte (TTFB) metric. The measurement starts when the user points their browser at a page and finishes when the browser gets the first byte of the response.



Interactive Content

To measure when a page becomes interactive, three similar but subtly different metrics are collected: DOM interactive, DOM content loaded and ready state interactive. The page's DOM must be created and loaded before a user can interact with the page, which makes these metrics a good heuristic for interactivity.

Synchronous Javascript will prevent DOM construction as the browser's parser must stop, load the script and wait for it to execute before parsing the rest of the page's content. As a result, pages with synchronous Javascript will have larger DOM interactive timings, as this event will only fire after the DOM is created. Afterwards, deferred Javascript is executed and the DOM content loaded event is fired. At this point, the browser can begin to paint to the user's screen.



Useful Content

A user will begin seeing the content as the browser starts painting. This "first contentful paint" is how long it took from the user's initial request to when they start seeing a page in their browser. This paint will fill an otherwise empty screen and recapture the user's attention. The largest content paint metric captures when the largest piece of text or image content is fully painted. This can be used as a heuristic for when a page becomes "useful" to a user.

In general, minimizing each of these metrics will lead to snappier pages, smoother user experiences and happier customers. Being aware of the current users' experience is important for converting sales and has taken on added significance with Google's new update. So capture, monitor and analyze user experience with the help of RUM metrics.