

Real User Monitoring

Real User Monitoring (RUM) is an essential capability for tracking and analyzing user interactions and experiences on websites and web applications. Visibility and diagnostics of the user experience and third-party application impact on performance and functionality of a website allows faster site optimization leading to better business results.

Yottaa unobtrusively accumulates RUM data and makes it available in real time. Encompassing site performance, traffic, errors, anomalies, and benchmarking, it provides insight to real user experience across various dimensions, like device, browser, page categories, and network.

Understanding the availability, functionality and responsiveness of a website leads to gaining an understanding of the user experience when visiting and navigating the website. The Yottaa RUM capability gathers data and monitors four types of use case:

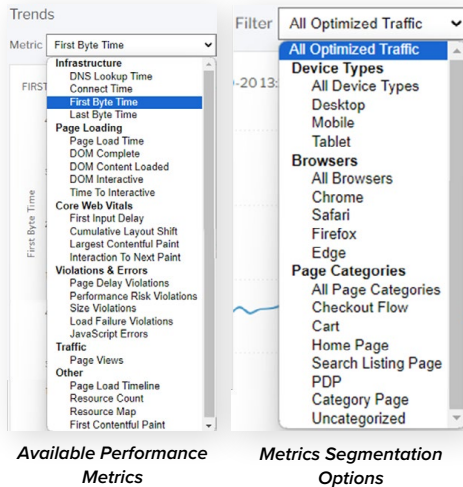
- Performance of web pages, screen stability, devices, network.
- Errors and Anomalies that may impact the website or indicate unusual behavior.
- Analytics and insight information enables segmenting users by device, browser, geo, OS, and can enable actions based on the segmentation.
- Diagnostic details enable troubleshooting of poor performance or errors such as JavaScript across pages and third-party applications.

Key Features

User Monitoring: RUM measures and reports on the actual experiences of real users as they interact with your website or application. This includes page load times, response times, and overall performance metrics, as well as errors and response codes. Yottaa RUM captures and presents many metrics to be able to understand visitor experience and site functionality. The errors and anomalies identify any issues which can be impacting the experience. Diagnostics provide the details necessary to be able to quickly troubleshoot and resolve issues with errors or performance.

• Context Intelligence:

Provides the ability to segment user data based on several attributes such as location, browser, device, and network. The tables and charts provided for the different metrics can be filtered to show how different user segments experience your website.



• Page Load Performance

Metrics: Page Load time is a key metric for indicating website performance. Dashboards and charts show how it affects conversion and bounce rates and can be broken down to specific browsers, devices and platforms. Several other performance metrics are selectable in multiple tables and charts for a complete understanding of site performance.

Synthetic Monitoring contrasts with RUM in that it is an active test of a website in a controlled environment, checking the website availability, performance, and any errors. It can miss issues that real users experience with the UX and UI and does not account for the different environments the users operate under. RUM passively gathers web metrics that show how the site's functionality impacts real user's experience on the site.

- **Google Core Web Vitals metrics (CWV)*:** CWV indicators are Google's primary metrics for indicating web performance and improving search results and include Largest Contentful Paint (LCP), Cumulative Layout Shift (CLS), Interaction to Next Paint (INP), and others.
- **Conversion Insights:** Yottaa measures the load time, bounce rate, and conversion rate and provides data and trend charts showing the correlation between these key indicators. The Conversion Insights charts demonstrate how faster load time affects real user behavior. With a faster load time there are fewer bounces and an increase in the number of conversions.
- **Anomaly AI*:** Yottaa detects JavaScript errors, response codes and unusual behavior (anomalies). Automatic alerting for errors and anomalies when thresholds are exceeded allows issues to be identified and addressed promptly. Using machine learning the site is tracked over a two-week period to establish a baseline. If any spikes or plunges versus the baseline data are identified alerts can be sent via email or over a Slack channel. Online dashboards allow more detailed analysis of the anomalies. Detailed data capture allows for a deep dive to understand the source of any events, enabling quicker issue resolution.
 - Identify the specific pages that regularly generate violations for load time.
 - Be notified when delays or timing violations are exceeded due to increased visitor activity.
 - Anomalies can be detected based on a time frame, threshold, or baseline change.
 - Over 30 different metrics can be monitored for anomalies.
 - View and track response codes to identify any pattern or consistency to focus optimization efforts.

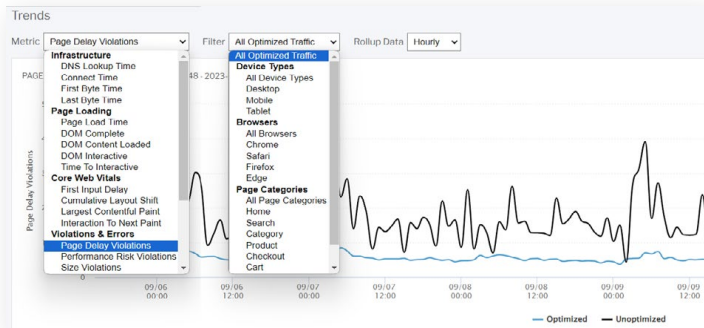
- **Community Benchmarking:** Being able to understand how other websites are performing compared to your own helps understand what your site visitor experience and satisfaction may be versus visiting competitor sites. Community Benchmarking from Yottaa allows comparisons of key metrics to be made against an aggregate of other companies in select eCommerce sectors, or companies using some of the most popular platforms. Selections include:

- **eCommerce:** Apparel, Electronics, Food & Beverage, Home Products, Jewelry, others
- **Platforms:** Salesforce Commerce Cloud, SAP Hybris Commerce, Shopify

Metrics cover key eCommerce comparisons including conversion rate, bounce rate and session depth. A large range of performance metrics can be viewed and compared with other communities, including infrastructure, page loading, and Core Web Vitals, as shown in the image for 'Available Performance Metrics', under Trends. The benchmark insights dashboard demonstrates how these metrics correlate to site speed across the same communities and are explored further in the Community Benchmark Datasheet*.

Further Analysis

- **Browser and Device Analysis:** Metrics are available which show breakdown by device, browser, and page category. By segmenting the aggregated visitor data an understanding of how users are accessing the website can be achieved and help to optimize the website or application and improve the visit experience for different user groups.
 - **Browser:** Chrome, Safari, Firefox, Edge, other
 - **Device:** Desktop/laptop, tablet, mobile, other
 - **Page Category:** Home, Product, Category, Search, Cart, Checkout, etc.
 - **Network:** 2G, 3G, 4G, 2G-Slow, Wi-Fi, other
- **Geographic Insights:** Aggregated traffic analysis provides countries, regions, Top IPs, and Top User Agents, offering geographic information about where your users are located. This can be valuable for tailoring content and optimizing performance for different regions.
- **Real-time Monitoring:** Allows issues to be spotted as they occur and allows immediate action to be taken. Yottaa captures the aggregated performance and violations metrics every minute over a rolling 24 hours. The data for each metric can be viewed for one-hour periods over the past 24 hours and continues to be updated every minute.



Metrics and traffic types available to understand performance and areas for optimization.

Most metrics are for browser performance. Edge metrics provide another level of analytics and include:

- **Response codes (2xx, 3xx, 4xx, 5xx)**
- **Geolocation (country, region)**
- **User agents, IPs**
- **Origin server**

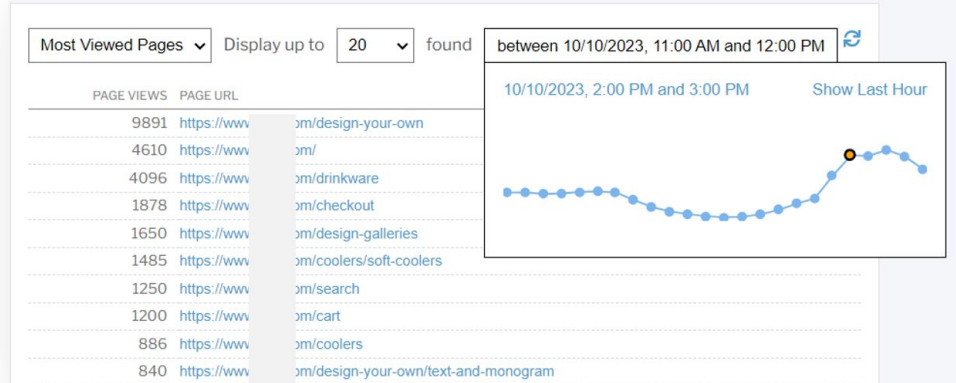
- **Continuous Impact:** Yottaa can show optimized versus unoptimized traffic for some key indicators by allowing optimization to be switched off for a small set of random visitors. This Continuous Impact data provides an ongoing view of how much site performance is improved with optimization applied versus an unoptimized site. Any changes in optimization or code will be reflected in the charts and graphs.
- **Trend and Historical Data:** All aggregated performance, violations, and anomaly data is retained for up to one year. The data is aggregated over one-hour intervals and can be viewed in periods from 'Today' to 'This year', or over a custom time range. Viewing the aggregated data will help identify trends or specific timeframes where different activity can be observed.
- **Integration with Data APIs:** A data API is available to help integrate with other performance monitoring and analytics tools, enabling a more holistic view of the website's performance and user behavior.
- **Resource Utilization Analysis:** Website operation relies on multiple third-party applications to enhance the visitor experience, enable marketing programs, and gather site usage data and analytics. Yottaa provides detailed information on the third-party applications running on any website along with performance information, violations, and guidance on where improvements could be made. The third-party Knowledge base listing all third-party applications deployed by all Yottaa customers is embedded in the tool.
- **Security and Privacy:** The RUM data gathered by Yottaa does not include any Personally Identifiable Information (PII). The security and privacy standards followed ensure compliance with regulations and Yottaa undergoes a regular audit which includes examination of these processes.

- **Scalability:** Yottaa is deployed on hundreds of the largest eCommerce retailer sites, most receiving over a million page views and several receiving over 12 million page views in a typical week. It comfortably manages increased traffic during key events such as Cyber 5. Trend information can be used to view changes in traffic before, during, and after these events, allowing analysis of aggregated performance for millions of site visitors, and helps highlight areas that do not perform as well under increased volume.

Diagnostics

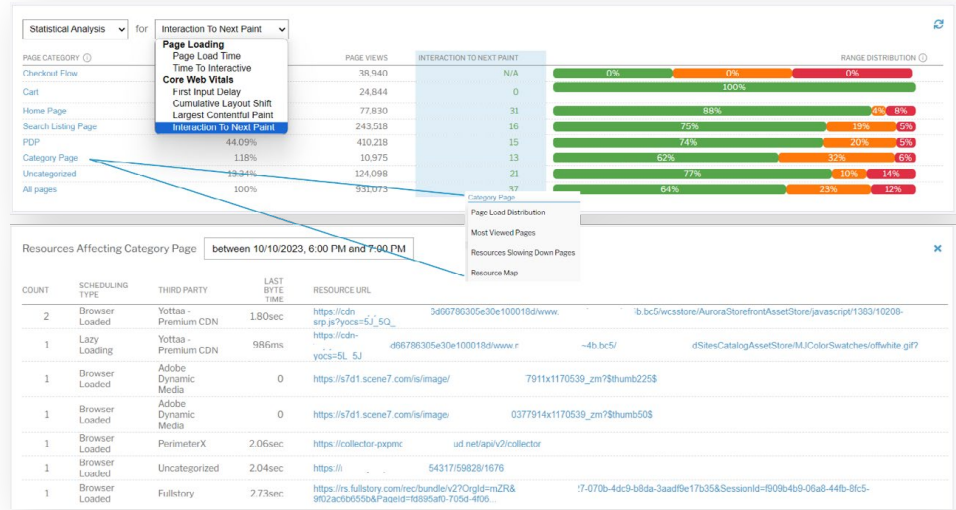
In addition to displaying RUM metrics, providing an indication of real user experience and website functionality, Yottaa provides diagnostic information to help with the identification and resolution of issues. The diagnostic information gives more insight into visitor behavior which can help direct efforts for further site improvements.

Most Viewed Pages provides an hourly breakdown of the top pages visited over the past 24 hours. Correlating this with the performance metrics give an understanding of the visitor hot spots and visitors site speed performance experience.



Performance Diagnostics

Resources and the specific resource URLs can be identified for several performance metrics. Different page categories can be examined with a statistical analysis view giving a visual indicator of performance distribution. Each page category can be examined further to identify third-party applications, Last Byte Time, and provide the specific URL for the resource.



Page Delay Violations

Page Delay Violations

Performance Risk Violations

Size Violations

Load Failure Violations

JavaScript Errors

Violation Type

Select one...

Select one...

Most Viewed Pages

Top Resources

Most Recent Violations

Table options

Errors and Violations Diagnostics

Errors and violations will provide a poor visitor experience, but it is often difficult to identify what is causing issues, where they are occurring, or even being aware of them at all. The violations and errors dashboard diagnostic information provides multiple options for what can be examined and provides several ways to filter the data.

The diagnostic information available can help identify the areas that are causing the largest negative impact to the site speed performance and what type of resource is causing the impact. This allows further actions to be taken as appropriate. This could include optimizing (resequencing) some third-party applications, changing images or examining scripts, css, or HTML, etc.

Diagnostics

Violation Type: Performance Risk Violations | Table: Most Recent Violations | Display up to: 20 | found: between 10/10/2023, 12:00 PM and 1:00 PM

Year	Device Type	Start Time	Last Byte Time	Resource	Resource URL	Page URL
10/10/2023	Mobile	12:31:07 PM	0	Edge	www.static-Clou...	Kirk&lang-en_US
10/10/2023	Mobile	12:30:44 PM	0	Edge	https://www.sta...	batte2/1615000/4.html
10/10/2023	Mobile	12:30:07 PM	0	Edge	https://www.sta...	Junior&lang-en_US
10/10/2023	Mobile	12:30:02 PM	792ms	Edge	https://cdn-cu...	Water-bottle&lang-en_US
10/10/2023	Mobile	12:30:01 PM	0	Edge	https://www.sta...	Water-bottle&lang-en_US
10/10/2023	Mobile	12:30:01 PM	609ms	Edge	https://www.sta...	Water-bottle&lang-en_US
10/10/2023	Mobile	12:30:10 PM	0	Edge	https://www.sta...	Water-bottle&lang-en_US
10/10/2023	Mobile	12:30:10 PM	0	Edge	https://www.sta...	Water-bottle&lang-en_US
10/10/2023	Mobile	12:29:54 PM	859ms	Edge	https://www.sta...	Water-bottle&lang-en_US
10/10/2023	Mobile	12:29:54 PM	888ms	Edge	https://www.sta...	Water-bottle&lang-en_US
10/10/2023	Mobile	12:29:54 PM	290ms	Edge	https://www.sta...	Water-bottle&lang-en_US
10/10/2023	Mobile	12:29:53 PM	860ms	Edge	https://www.sta...	Water-bottle&lang-en_US
10/10/2023	Mobile	12:29:53 PM	863ms	Edge	https://www.sta...	Water-bottle&lang-en_US

Most recent Performance Risk Violations for Edge browser on mobile devices

Single Page Applications (SPA)

SPAs operate differently to multi-page application (MPA) websites and the metrics have some differences to reflect their operation. The initial user visit to a SPA loads the full application and the conventional performance metrics are valid. Yottaa views this as a 'CLEAN' page. Once loaded and the user interacts with the page the user 'transitions' from page to page by only having the new and changed (dynamic) content loaded into the page. As the full page does not need to be reloaded there is a faster experience for the user, and these are identified as 'TRANSITION' pages. On SPA sites, Yottaa provides additional metrics called View Type and SPA Rendered, displaying these metrics in the dashboards.

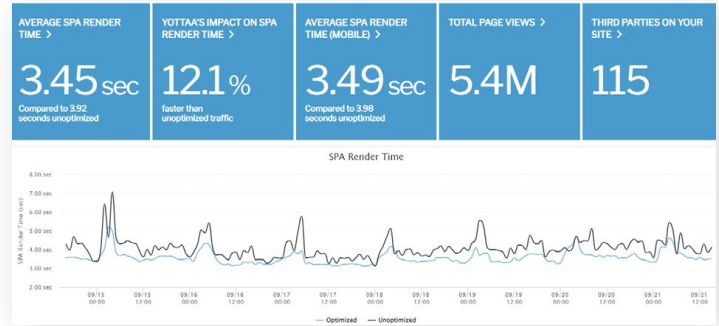


SPA Clean and Transition page Onload performance over 7 day and last hour



Most recent Performance Risk Violations for Edge browser on mobile devices

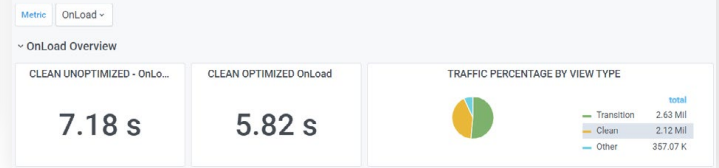
The charts show that optimized SPA sites have better performance, and more consistent behavior, with reduced peaks and troughs, than unoptimized. Due to the way that SPAs function, the biggest improvement will always be seen on Clean pages with small improvements possible on Transition pages. The high level site performance metrics for SPA Render are the average render time for all pages fully rendering.



Performance overview for Single Page Application site

SPA Performance Dashboard

Shows performance information for CLEAN and TRANSITION pages.



Overall performance impact to OnLoad time (unoptimized v. optimized) for SPA

PAGE CATEGORY	% OF TRAFFIC	PAGE VIEWS
Order Confirmation Page	< 1%	565795
PDP - CLEAN	16.13%	17337536
Collections - CLEAN	10.34%	11117113
Search Pages	2.53%	2718975
Page - CLEAN	6.91%	7429936
Blog Page	< 1%	271
Home Page - CLEAN	12.85%	13815300
Account	1.06%	1134537
Checkout	2.66%	2862791
Cart	< 1%	23805
Collections - TRANSITION	23.95%	25739106
Home Page - TRANSITION	< 1%	861062

Clean pages versus the equivalent Transition page category indicate visitor behavior.

References

Anomaly AI Datasheet: Anomalies are unusual events in your website data which Yottaa tracks and generates alerts for spikes and plunges. Identify anomalies in the digital experience before they affect customers and online sales.

Community Benchmarking Datasheet: Understand how your website is performing compared to others in the same segment or using the same platform.

Core Web Vitals Diagnostics Datasheet: Googles common set of metrics to measure web performance and determine search engine optimization.

Third-party Service-level Violations Datasheet: Yottaa tracks the third-party services running on your site and identifies any errors or when the service is operating outside defined ranges. Providing real-time detail on the third party, the error and which pages are affected enables faster diagnostics and remediation. Read the datasheet for more detail.

Yottaa's RUM capability gives a detailed understanding of web performance and provides the diagnostic detail necessary to see where there may be issues. It shows real time and historic data to allow immediate action to be taken, or to understand trends in use and performance. These capabilities help organizations monitor, optimize, and enhance the user experience ultimately leading to higher user satisfaction and better business outcomes.

The Next Step

Do you have the understanding of how your eCommerce site is performing and what your visitor experience really is? Find out how to get this insight by contacting your Yottaa representative or [go to the Yottaa website for more information.](#) You can't afford not to.