

# YOTTAA

## Yottaa for eCommerce Single Page Applications (SPAs)



Single-Page Applications (“SPAs”) are web-based applications that load a single HTML page in a shopper’s browser and dynamically update that page based on shopper interactions without having to reload the page. These applications rely heavily on JavaScript (“JS”) to call and retrieve content that is rendered on the client side (phone, tablet, desktop, etc.). As a result, there are fewer interruptions in the shopping experience from loading new pages compared to multi-page applications, and it is considered by some to be a more intuitive and simple shopping experience.

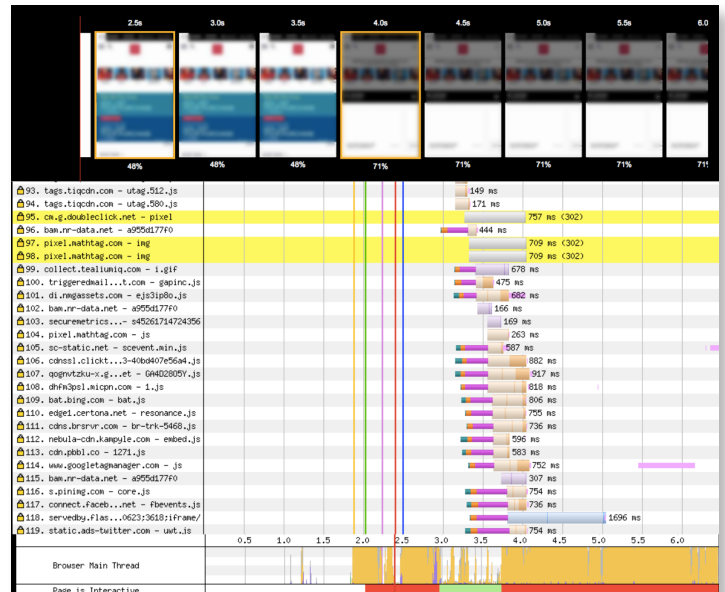
### What are the limitations of SPAs?

#### ! PERFORMANCE

SPAs suffer many of the same performance challenges that JS-heavy sites suffer (JS blocking errors, latency from 3rd party technologies, etc.). These issues are typically changed by a developer manually, but they can resurface anytime a change is made to the code or a 3rd party JS is added.

#### ! MISLEADING ANALYTICS

Performance reporting on traditional tools (Google Lighthouse, Webpagetest.org, etc.) that focus on “document complete” times tend to make SPAs look very fast. However, since SPAs often push the execution of JS until after the onload event (“document complete”), the content is still being loaded all at one time (just later). This can max out the device CPU and causes delays for shoppers when they attempt to interact with the site. Retailers need to start looking at different measures when evaluating SPAs, such as the “time to interact” (time passed before a shopper can interact with page features) and “first input delay” (e.g. time passed between clicking and the page changing in response).



#### ! SHOPPING EXPERIENCE

SPAs typically offer a very simplistic and scaled back experience in an effort to improve the speed and performance of moving between pages. However, this minimalistic experience can have the opposite effect of decreasing conversion rates when customers expect more content and features.

## How does Yottaa improve SPAs?



### DISCOVER PERFORMANCE ISSUES

Yottaa inventories all the 3rd party technologies utilized on your SPAs, to identify potential sources of delays. The platform also includes RUM performance monitoring and custom analytics that focus on how shoppers experience the performance of your SPA by device, browser, geography, etc. In the process, we identify JS errors and page elements that are likely causing delays.



### DETERMINE IMPACT ON PERFORMANCE

Once we identify potential risks to your SPA performance, Yottaa compares it to similar retailers in our network of over 1,000 eCommerce sites. In the process, we identify 3rd party technologies, JS errors, and other page elements that are causing unusual delays so they can be targeted for optimization.



### OPTIMIZE PERFORMANCE

Using the Yottaa Optimization API designed for JS-driven applications, retailers can apply many of the same optimization capabilities for SPAs that we use on multi-page HTML websites. For example, retailers can optimize and cache content on the Yottaa network until they are requested, and then deliver them in a more compact and streamlined fashion. In addition, Yottaa applies our Application Sequencing capabilities to intelligently schedule the loading of 3rd party technologies based on best practices derived from thousands of retail websites.



### IDENTIFY ANOMALIES & RESOLVE

AI-driven Anomaly Detection monitors your SPA to identify delays and errors that are outside the expected variation of your application's performance. For example, Yottaa detects unusual image placement and sizing, traffic errors, security threats, and unusual delays or outages from 3rd party technologies. Yottaa's AI then makes optimization recommendations to fix these errors, and continues to learn and adjust anomaly thresholds as it learns more about your SPA.

Here are just a few of the retail brands that rely on Yottaa to speed up their sites:

