



/ BROCHURE /

BEST PRACTICE FOR BENCHMARKING WEB & MOBILE SITE PERFORMANCE

By Melbourne IT Enterprise Services

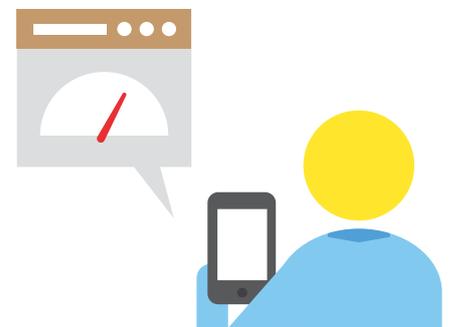
WEB & MOBILE SITE PERFORMANCE

The web continues to change and evolve, as do the demands of website visitors. Web 2.0 has seen a massive increase in user preference for bandwidth-hungry video and rich applications, coupled with a rise in the popularity of mobile web browsing.

However the rise of lower-powered, lower bandwidth mobile devices has not been tempered with a corresponding lowering of expectations. Consumers still expect web pages and content to load in two seconds or less, creating a potential paradox for site owners.

The modern website operator needs to benchmark their performance, and to use those insights to institute a continuous improvement program. Metrics provide the hard data needed to help engineers and developers properly architect and specify solutions that unify design and technology to create a website that works on every level to deliver a powerful user experience.

By doing so, businesses can deliver the performance and experience their clients demand, and greatly increase the potential for improving website conversions and profitability.



BENCHMARKING FOR WEBSITE SUCCESS

Without collecting accurate statistics and defining benchmarks, it is impossible to accurately assess the performance of a website. Not only is it impossible to calculate an accurate value for ROI, but there is no way to evaluate just how effective a newly-implemented improvement has been. Even more importantly, how is the site performing against the competition?



CONVERSION RATE

The most obvious metric that businesses are almost certainly already monitoring is the conversion rate – what percentage of website visitors are completing a purchase, or raising a genuine sales query? Calculating the conversion rate is simply a matter of dividing the number of website-related sales by the total number of website visitors.

For non-retail sites, the conversion rate can be calculated in terms of how many sales queries were raised after visiting the website, creating qualified leads for the sales team to follow up.



BOUNCE RATE

One of the quickest indications that a website is failing to deliver for customers is the bounce rate. Defined as the number of visitors who look at a single page and leave within a set period of time, a high bounce rate indicates that there is a problem with the site.

Among the reasons visitors may abandon the site include:

- > Unappealing design
- > Difficulty finding important information
- > Slow page load times (see below)
- > Irrelevant search results
- > Unconvincing copy that fails to prompt visitors into action



PAGE LOAD TIME

As indicated above, page load speeds are vitally important to creating a positive experience for visitors. The quicker a page loads, the better the chance of capturing and holding the visitor's attention. Google reports that a 400 millisecond delay results in people conducting less searches, whilst other research suggests that a 250 millisecond difference in load times is enough to convince shoppers to click off to visit the site of a close competitor¹.

Historically, the ideal page load time has been two seconds or less – on both desktop and mobile devices – and thus serves as a good initial goal to work towards.

Other metrics that may prove of use include:

- > Average time on site – how long individual visitors spend browsing
- > Average number of pages browsed – low numbers indicate how useful visitors find content, whilst high numbers could reveal problems locating key information

“Visual appeal can be assessed within 50 ms, suggesting that web designers have about 50 ms to make a good first impression.”

-Lindgaard et alⁱⁱ.



ON-SITE TESTING

With KPIs defined and systems in place to capture these metrics, focus then shifts to performing the tests required to generate results. In order to gain a holistic view of website performance, businesses need to use both automated and observational testing.



SYNTHETIC TESTING

With so many different browser and device combinations available, manual testing would be a full time job in itself. Using tools like Keynote and Gomez it becomes possible to define and test virtually any combination of browser, connection speed and device automatically to simulate the experiences of users on a site.

The use of synthetic tools can help speed up the testing process, helping to establish a basic median load time for every specified permutation. Automated testing is a proactive method to assess site health, helping to identify availability issues, intermittent server faults and network bottlenecks within the ISP's data centre.



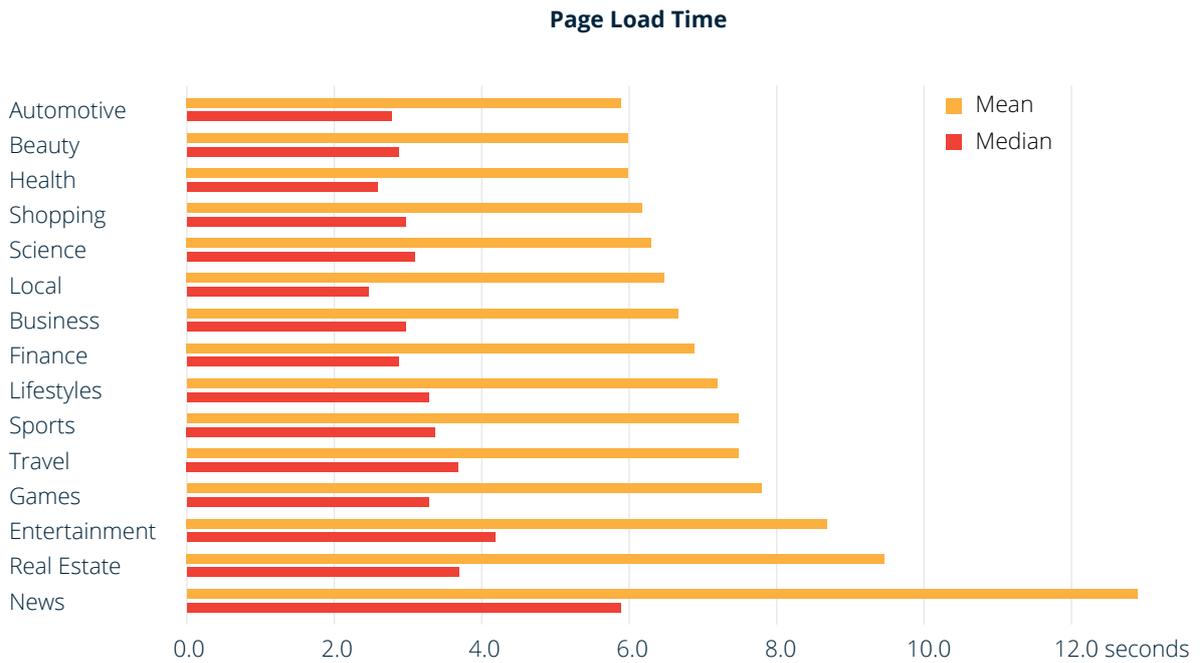
REAL USER METRICS

As useful as automated testing is, metrics gained from monitoring actual user sessions can often reveal instances where the averages mask poor performance or negative experiences. Real User Metrics (RUM) frequently disagree with their synthetic counterparts, helping to identify other issues that need to be addressed to improve site performance.

Web acceleration expert Akamai reports that the combination of synthetic and RUM testing reveals disparities of up to 20% between automated and actual experiences, highlighting the importance of using both techniques to gain a true understanding of website performanceⁱⁱ.

CHECK THE COMPETITION

With metrics defined and goals set, how do competitors measure up to the two-second page loading rule? When a 250 millisecond website loading lead equates to a definite bottom-line advantage, businesses must also keep track of their competitors' website metrics to ensure that their improvements remain on target.



The last time Google released page-loading statistics broken down by industry vertical, the fastest sites were achieving median times of between 2.5 and 3.0 seconds^{iv}.

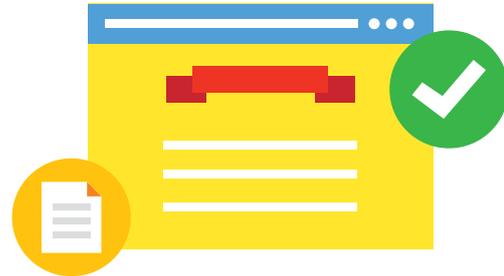


Obviously these figures should have improved since 2012, but they do show a distinct disparity between industries, and indicate that there are likely to be significant variations between sites.

It is also critically important to subdivide results into traditional and mobile web traffic. For the first time ever, mobile web traffic overtook the desktop PC in January 2014, a trend that has continued ever since^v. In order to optimise for mobile, businesses must first understand how well they perform in that arena.

DESIGN

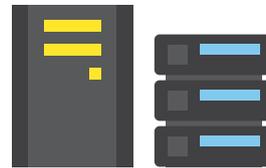
The visual appearance of a website plays a major role in the user experience, first by delivering the information visitors need efficiently, and secondly by instilling confidence that the site is legitimate, and that your brand is trustworthy.



In order to minimise page load times, design needs to combine thin and efficient code with optimised on-page elements that:



Minimise file sizes to reduce the amount of data that needs to be sent to the user's browser



Reduce the amount of call backs to the server, including database queries

And although page loading time is an important metric, site conversions and sales are the ultimate goal. The design of the site needs to reduce friction, making it as simple as possible for shoppers to find the products they want, and to complete the checkout process with minimum effort.

Successful design is an ongoing process of testing and deploying iterative updates, instituting a process of continuous improvement that boost conversion rates without increasing the page loading times.

"The literature provides sound empirical support for our general hypothesis that web design cues effectively enhance consumers' initial trust towards unfamiliar online vendors."

- The Effect of Website Design Dimensions on Initial Trust: A Synthesis of the Empirical Literature, Karimov et al^{vi}.

TECHNOLOGY

The choice of technology also plays an important part in successful design that delivers against business goals. In order to ensure speedy page delivery, the technology platform needs to be scalable, resilient and efficient.



Factors to consider include:



The use of cloud technologies to improve resource availability and to cope with periods of high demand

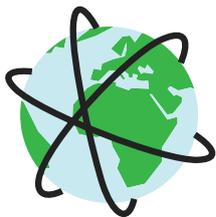


Caching and pre-fetching solutions to improve delivery of commonly accessed assets

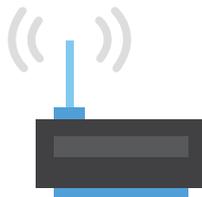


Advanced Content Delivery Network (CDN) provisions that can help balance resource demand and shorten the physical distance of each browser request

Because users now demand a “rich” browsing experience that includes video, animations and high quality graphics, simply maintaining a network of cached content, as would be the case with a traditional CDN, is no longer going to be sufficient. For improved delivery of rich content, the technology platform serving a successful site will use:



Dynamic media routing to deliver content to users quickly by accounting for prevailing Internet traffic conditions and automatically serving from the quickest endpoint.



Connection optimisation to multiplex HTTP requests over a limited range of connections, maximising throughput and reducing the time required to serve pages and content.



Automatic prefetching of rich media content, creating a proxy-like gateway that can deliver large media items to the user without having to complete the full round trip to the origin server.

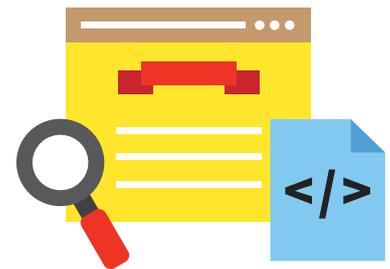
A busy, congested Internet coupled with inconsistent broadband speeds demands that businesses use advanced CDN technologies to ensure super-fast delivery of content to their visitors.

KEY TAKEAWAYS

A high performing site relies on a combination of factors, but before beginning any kind of remedial work, CIOs and CMOs need to know how their existing online presence is performing. Metrics are a key aspect of analysing business process performance, so extending those assessment techniques to corporate websites makes logical sense – after all, without data it is impossible to properly discern whether a website is successful or not.

Website metrics play an important ongoing role however. Only by consistent testing does it become possible to identify platform issues, or to discover pages and features that could be tweaked to perform better. When trying to improve the customer's experience, designers and developers need to be able to see where existing problems lurk.

A great website experience carefully balances visual appeal, relevant information and optimised technology to give visitors what they want, when they want on the device of their choice. Using the insights gathered from website metrics, it then becomes possible to implement a cycle of continuous improvement intended to meet those customer demands.



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