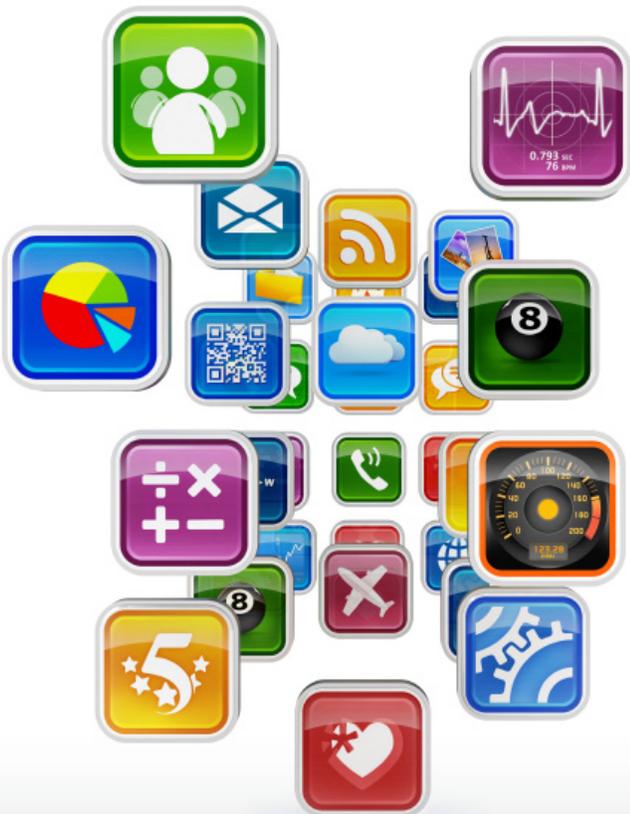


Mobile Computing: Maximizing the mobile Web user experience: Tips of the trade

As the Web was to the end of the 20th century, mobility is to the beginning of the 21st century. The CTIA reported in its *Semi-Annual Wireless Industry Survey* at the end of 2012 that there are 326 million mobile devices in the United States, 12 million more than there are people. But what's intriguing is that what started out as communication devices are increasingly being used as transaction devices.

- Cyber Monday sales jumped 30.3% from 2011 to 2012, according to the IBM *Cyber Monday Report 2012*.
- Gartner estimates the value of mobile payment transactions will top \$721 billion in 2017 and show a CAGR of 35% for the period 2012 to 2017.*
- Gartner also states that merchandise purchases will account for more than 30% of transactions by volume in North America and Western Europe through 2017.*

That's good news for companies offering mobile access to their websites, but on the flip side, it means that those websites have to be responsive to those devices. In fact, one statistic from multiple studies stands out: The longest a majority of users will wait for a website to load is three seconds. After that, they move on. No matter where they go, companies lose money. If they pick up the phone and call a live customer service agent, that's more expensive. And if they take their business elsewhere, that's even more costly.



There is a significant link between customer expectations, a corporate brand, and website performance. Customers don't care why websites don't work. They've become accustomed to faster networks and quick-response time. They think they can click to a new website as quickly as they click to a new television channel. People expect the same performance outcome no matter what day of the year, time of the day, day of the week—and no matter the device. "Customers are far less tolerable of delays than they used to be," says Joe Loveless, Web performance market manager for Neustar. "Customers may not abandon the transaction, but they will be open to using a competitive site. This is an issue of performance theft: What robs a website of performance, steals from the bottom line."

The inescapable conclusion: The customer's mobile website user experience equates strongly to customer engagement and customer intimacy. Companies need to monitor their mobile website both in test and real-world conditions to ensure performance and response time.

Without knowing what kind of response time their website provides, companies are woefully unaware of the user experience their customers—and more important, their prospects—receive. That's why it's so important for companies in specific industries to monitor website performance, and to understand five best practices for improving performance. Without this monitoring and remediation, there is a cascading effect of negative events. First, customer experience suffers. Then customer engagement decreases. Then brand reputation diminishes. Finally, revenue drops. Fortunately, it's easy to keep this vicious cycle from even starting.

Key Industries for Mobile Website Monitoring

Maintaining website performance is critical to any organization in today's digital world, but even more crucial to three trendsetting industries in the mobile movement. Customers with mobile devices rely on these industries for accurate information, updates, and performance. By understanding the key scenarios and challenges these industries face, CIOs in other industries can extrapolate for their own benefit.

Retail Scenario #1. Mobile devices are being used more frequently, whether at home or "on the go" to access retailing websites. So it's important that customers and prospects accessing retailer websites enjoy a user experience that's fast and efficient. Otherwise, companies can lose potential customers they never knew they had a chance at.

Retail Scenario #2. Ensuring Web performance is not limited to applications on customers' mobile devices. Customers may rely on salespeople to access inventory or pricing information; that means that applications accessed by employees must also be tested for per-

formance. Otherwise, an impatient customer may just walk away. Stores that have kiosks must test those applications as well.

E-Commerce Scenario #1. Another on-the-go scenario applies to the travel and hospitality industry. Airlines and hotels need to deliver flight or reservation changes quickly and accurately, and then maintain robust website performance when the customers access reservations to switch flights or rooms. Because travelers with mobile apps are more likely to be business travelers or members of a customer-loyalty program, it's doubly important to serve them quickly.

E-Commerce Scenario #2. The more traditional e-commerce scenario—customers making online purchases—must also take place without errors or concerns. A robust website responding smoothly and sending out email confirmations quickly helps make customers more secure.

Financial Services Scenario #1. If there's one thing customers are finicky about, it's accessing their bank account information. Whether they're checking their balance to see if they can write a check safely or determining whether a check has already cleared, they want accurate information quickly—regardless of their location.

Financial Services Scenario #2. Everything previously noted about online purchases is doubly important with stock trades, which are frequently time-sensitive and involve large sums of money. Companies must be able to provide reliable access regardless of day, hour, or month to guard against unpredictable events.

Five Best Practices for Better Mobile Web Performance

So what can companies do to ensure that they avoid these issues and improve customer satisfaction? How can they guarantee that their customers' user experiences are satisfying rather than frustrating? There are five key practices enterprises can adopt to develop a sense of what their customers will experience—before it's too late.

1. Monitor synthetic conditions. This involves monitoring under tightly controlled conditions in order to determine whether mobile applications perform optimally over a network. These procedures can be highly granular charting metrics such as time to first byte, time to first full load, average load time, and total load time. They should track any issues relating to document objects, Flash-based graphics, or Java scripts.

2. Monitor real-world conditions. Once companies have observed simulated conditions, it's time to monitor the website using the In-



ternet, under conditions more commensurate with actual usage. Organizations must conduct real user measurement a maximum interval of every five minutes, every hour, to ensure consistency, as well as to test response time at certain points of the day and days of the week.

3. Accommodate multiple devices. One of the reasons mobility has taken off is the dazzling array of powerful devices that are available today. But a world filled with multiple platforms, multiple operating systems, and multiple user scenarios complicates things. Companies must monitor and test their website with a wide variety of contingencies that cover different devices, and a wide variety of operating system versions. That's the only way to assure the user experience by delivering consistent performance across any tablet or smartphone.

4. Establish procedures for incorporating monitoring results. Businesses should set up alarms so that IT is aware when performance falls below certain thresholds. Companies should establish a way to incorporate not only updates to the applications themselves, but also improvements to their internal networks to ensure smooth transmission of data between back-end systems and Web servers.

5. Establish procedures for customer feedback. Enterprises must commit to creating a baseline of current conditions and then monitoring for continuous improvement. They should also build a process for customer feedback cycles. Customer-facing performance issues must be identified, investigated, and resolved quickly before they can adversely affect business operations. Companies that demonstrate the ability to incorporate feedback can improve engagement and customer intimacy.

The Payoff for Mobile Web Monitoring

Website performance can create either a virtuous or vicious circle. In the latter situation, increasingly worse performance leads to dropped purchasing or access sessions, customer dissatisfaction, and ultimately, a loss of customers and the revenue they represent. Applying these best practices, however, can create a virtuous circle—one in which customers find website performance crisp and responsive, and then begin to not only visit the site more frequently, but recommend the site and the company to others.

Through the simple mechanism of website monitoring, companies can capitalize on the boom in mobile usage, increase consumer engagement, and ultimately, develop the best result of all: a positive experience that creates unshakable customer intimacy and loyalty.



Find and Fix: How Neustar Website Monitoring and Load Testing Help Companies Improve Performance

Neustar's [website monitoring](#) helps find and fix problems that can impact performance by providing:

- **Intelligent Alerts:** Script alerts identify website problems with connectivity, time-outs, SLA violations, and more.
- **Real User Measurements:** Real-world testing from all locations where a site's users come from identifies problems synthetic testing doesn't catch.
- **Browser and Device Differences:** Testing of commonly used browsers and devices reveals how performance can vary on different systems.
- **Internal and External Monitoring:** Availability and performance data from anywhere in a company's infrastructure, both external and internal, help companies gain a holistic perspective on site performance.

Neustar's [load testing](#) helps find performance problems before they affect the business by providing:

- **Powerful Platform:** Cloud-based testing allows scripts to be used for both monitoring and testing.
- **Testing Flexibility:** Self-service or full-service options accommodate schedules, needs, and budgets.
- **Extensive Test Analysis:** Test analyses identify problems for remediation whether by staff or automated contingency plans to protect the user experience.

*Gartner Inc., Forecast: Mobile Payment, Worldwide, 2013 Update, Sandy Shen, May 15, 2013.