Everyone wants more traffic to their web site, right? More web traffic surely means more revenue, more conversions and reduced costs. But what happens if your web site can't handle the load? What happens if the investments you make to drive traffic to your site result in reduced revenue?

We've all experienced business challenges like:

- the new web application that slows to a crawl when it is launched and exposed to real-world usage
- the marketing campaign that is so successful in attracting customers that your site crashes
- holiday shoppers abandoning shopping carts due to performance problems caused by a spike in visitors
- the new feature included to provide a richer experience that slows the entire site down.

You put a lot of effort into achieving your online business goals. This whitepaper will help you by highlighting the business impact of poor web performance, describing best practices for ensuring the success of critical web initiatives and showing you how to reduce risks when:

- launching new web applications
- running marketing campaigns
- preparing for seasonal peak traffic
- deploying new infrastructure and application delivery partners, like content delivery networks (CDNs).

"We know that when consumers see enhanced marketing from brands — such as videos, tours, 360-views, complete feature descriptions, user manuals and more — sales increase for both the brand and the retailer, on average by six to 25 percent. But the sales opportunity hinges on the customers online experience — if a page loads too slowly or the content doesn’t appear, the customer is likely to click over to a competitor’s site."

— Vice President of Marketing, retail company

**BUSINESS IMPACT OF POOR WEB PERFORMANCE**

You may think that if your web site is a bit slow, or people have a little trouble accessing it during a peak traffic period such as during a new marketing promotion, implementing a new application or during a holiday sale, that it doesn’t really have an overall impact on your business. After all, people must expect that when it’s crowded or you are changing things around that they have to wait. They’ll try again later, won’t they?

Unfortunately, you’d be wrong.

A 1-second delay in page load time equals 11 percent fewer page views, a 16 percent decrease in customer satisfaction and 7 percent loss in conversions. In dollar terms, this means that if your site typically earns $100,000 a day, this year you could lose $2.5 million in sales.

Poor web site performance impacts your business regardless of the type of transaction or conversion that you are tracking. A retail site measuring shopping cart purchases will see a loss of revenue due to fewer purchases, a hotel reservation system will see a drop-off in the number of reservations and a bank may see fewer bill payments made.

Customers’ web site expectations are very high and getting higher. In 2006, the average online shopper expected a web page to load in 4 seconds. Today, that same shopper expects your page to load in 2 seconds or less. The expectations for mobile devices are the same. In fact, 58 percent of mobile users expect the performance on their mobile device to be the same or better than their home computer or laptop. If your new iPhone application slows under load, your customers will download a different app — there are thousands of them after all.

1 Source: Aberdeen Group
2 Source: Forrester Consulting
So why should you as a business manager care about load testing? Because the success of your business initiatives depend on it. As the web becomes an increasingly important business channel and user experiences are greatly impacted by content and services outside of the data center, business managers have new risks that need to be managed. Let’s take a look at some of these risks.

Web and mobile applications are delivered to your users via a complex web application delivery chain. Web browsers have evolved from lightweight displays of information to platforms that are actually assembling applications on the fly from a variety of sources. The average number of sources contributing to any given web transaction is 8.87. With so many moving parts, the only way to ensure excellent experiences is to test from the end users’ perspective. As you can see in the diagram below, the web application delivery chain is a complex path to your end users.

There are two factors that create new urgency for testing your web applications. First, your customers are at the end of this web application delivery chain, outside the firewall, not in your data centers where traditional testing occurs. Second, web applications only come together in the increasingly diverse set of browsers and devices that interact with your web site. Since the end-user experience measured from the browser is what matters most, you must test the entire web application delivery chain from the end where your customers are. This is the best method for finding problems before your customers do.

Problems can occur along the entire web application delivery chain, causing these issues for your users:

- Slow page loads and response times
- Failed transactions and time-outs
- Dramatically different response times in different locations
- Pages that don’t work or display properly in some browsers or devices

The result: Lost revenue, brand damage, low customer satisfaction, increased cost

GETTING TO CUSTOMERS: THE WEB APPLICATION DELIVERY CHAIN

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POOR EXPERIENCES DURING PEAK TRAFFIC DIRECTLY IMPACT BUSINESS RESULTS

After a poor online experience...

- 88 percent are less likely to return to a web site
- 78 percent went to a competitor’s site
- 47 percent left with a negative perception of the company
- 42 percent discussed it either with friends or online.
WHERE THINGS CAN GO WRONG

Problems can occur anywhere along the web application delivery chain. The table below illustrates common problems that you want to find and fix before they become issues for your customers and impact your revenue and brand.

<table>
<thead>
<tr>
<th>PROBLEM TYPE</th>
<th>EXAMPLES</th>
<th>BUSINESS IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application code</td>
<td>• Database issue</td>
<td>• Critical transactions fail</td>
</tr>
<tr>
<td></td>
<td>• Authentication</td>
<td>• Error messages</td>
</tr>
<tr>
<td></td>
<td>• Java and .NET</td>
<td>• Inconsistent performance across browsers</td>
</tr>
<tr>
<td>Not enough infrastructure capacity</td>
<td>• Insufficient bandwidth from ISP</td>
<td>• Performance slows to a crawl</td>
</tr>
<tr>
<td></td>
<td>• Load balancing issues</td>
<td>• Application down</td>
</tr>
<tr>
<td></td>
<td>• Server capacity</td>
<td>• Only a fraction of customers can gain access</td>
</tr>
<tr>
<td>Geographical performance problems</td>
<td>• Content is served too far from target market causing latency problems</td>
<td>• Unacceptable response times in specific locations</td>
</tr>
<tr>
<td></td>
<td>• Performance differences under load between Internet Explorer and Firefox</td>
<td>• Timeouts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Application unavailable in specific locations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Content renders inconsistently across target markets</td>
</tr>
<tr>
<td>Third-party problems</td>
<td>• Ad servers with insufficient capacity</td>
<td>• Slow response time</td>
</tr>
<tr>
<td></td>
<td>• CDNs configured incorrectly</td>
<td>• Missing ads</td>
</tr>
<tr>
<td></td>
<td>• Data slow to load</td>
<td>• Site down</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Site appearance changed/ branding damaged</td>
</tr>
</tbody>
</table>

LOAD TESTING — WHY BUSINESS MANAGERS SHOULD CARE

Your company’s web site and web applications are critical to the success of your business initiatives. Web load testing from the customer’s perspective is one of the best ways to reduce risks and ensure success.

Why should you care? Because your success depends on it. What happens if:

• your new application launch is delayed due to performance problems
• your site breaks under the load of your successful marketing promotion
• high traffic volume causes such poor web performance on your busiest online shopping day that abandonment skyrockets and conversions plummet
• your new infrastructure is configured improperly grinding the website to a crawl?

As a manager, a key part of your job is to protect revenue, reduce risk and ensure your customers have great experiences that strengthen your brand and reputation.

DRIVING A SUCCESSFUL WEB LOAD TESTING PROGRAM IS A KEY PART OF REDUCING RISK

A study by the Aberdeen Group found that poor application performance can affect overall business revenues by up to 9 percent.³

To avoid these problems, your team should ask questions like:

a.) Will my site break under load? Can we handle surges in traffic?
b.) Will our most important transactions and pages performing properly?
c.) Are my web pages optimized for fast performance?
d.) Are our customers having a positive experience across different geographies?
e.) Are our site’s third-party providers such as ratings and reviews, ads, news feeds, e-commerce engines and CDNs hurting our performance?

³ Source: PhoCusWright
BEST PRACTICES — A BUSINESS MANAGERS GUIDE TO SUCCESS

Here are some practical best practices that will enable you to mitigate risk and ensure success of your key business initiatives.

TEST BEFORE MAJOR INCREASES IN TRAFFIC

Most changes in traffic patterns can be anticipated. They may be caused by external events such as seasonality, financial market volatility or political activity, or they may be due to some action you are taking internally, such as rolling out a new marketing campaign, product release or opening in a new geography. When you are planning for an internal or external event, plan for load testing at the same time.

TEST WHAT USERS DO MOST FREQUENTLY ON YOUR SITE

Tracking numbers of users and hits is no longer enough. It's increasingly important to understand what business processes are most often used on your site (e.g., shopping cart, search results, login page, etc.). Once your top business processes (e.g., browse-to-book paths, reservations searches, customer service communications, package tracking, etc.) are understood, load test them to determine performance under load. Keep in mind that user paths are not just dictated by HTML links, as commonly measured by web analytics tools, but programmatically by JavaScript and other Web 2.0 coding techniques. Use tools that can test these also.

TEST FROM WHERE YOUR CUSTOMERS ARE — MIRROR ACTUAL GEOGRAPHIC LOCATIONS THAT ARE IMPORTANT

Understand from a business perspective what geographical regions are most important to your site and make sure that external load tests focus there first. Third-party content providers do not always provide consistent performance across all regions. Know your top geographical markets and create regional load tests to evaluate performance of key processes and third-party content providers in those regions. Factor in the different mix of ISPs, connection speeds, browsers and prevalent PC and operating system types when creating and running load tests found in different countries and regions.

TEST EARLY AND OFTEN — BUILD EXTERNAL LOADING TESTING DIRECTLY INTO YOUR BUSINESS PROCESSES

Better load testing means better business results. Don't be afraid to conduct more regular load tests and catch potential problems before they begin to escalate. Load test whenever significant site changes are made to the application or infrastructure. Remember to do load testing after any hardware or configuration change, such as the introduction of a new router, load balancer or server. Frequent load testing is a good way for both technical and business managers to feel confident their site is performing at peak levels for users.

TEST THE ENTIRE WEB APPLICATION DELIVERY CHAIN — FROM THE END USER’S PERSPECTIVE

Find and resolve problems across the entire web application delivery chain, prior to launch and before your customers can find them. The only method to truly ensure you meet your goal of a great customer experience is to test from their perspective. This means testing outside the firewall, using a combination of high-volume load from the cloud, and low-volume load from the locations important to your business. You should also be looking to test from a variety of browsers and devices, as there are many combinations your customers will access your site from.

By finding problems before your customers do, ensuring that they have great experiences no matter the level of traffic, you control your own success. Your risks from third-party failures or disconnects between departments is greatly reduced, and you will know that your customers from New York to Los Angeles, Europe to Asia Pacific, will all have the responsiveness that is required for you to build your business.

FROM ANOTHER STUDY OF ONLINE BEHAVIOR COME THESE SIMILAR FINDINGS:

- 57 percent of online consumers will abandon a site after waiting 3 seconds for a page to load.
- Eight out of 10 people will not return to a site after a disappointing experience.
- Of these, three will go on to tell others about their experience.
SUMMARY

The bottom line is that performance matters. Remember: A 1-second delay in page load time results in a 7 percent loss of conversions. Your web site is critical to your business success and must support your business initiatives. It’s also become much more complex and involves many moving parts. Load testing helps you extend control, mitigate risk and ensure great customer experiences. Load testing your website across the entire web application delivery chain will enable you to find and fix problems before they impact customers and will help make your most critical e-business initiatives successful. Today’s on-demand, cloud-based load testing makes it affordable and easier than ever.

ABOUT GOMEZ

The Gomez platform is the industry’s leading solution for optimizing the performance, availability, and quality of web, non-web, mobile, streaming and cloud applications. The Gomez approach to application performance management starts by measuring your end user’s experiences and all the components that contribute to it to proactively detect performance issues, quantify their business impact and accelerate resolution. The Gomez solution works for any type of application, including enterprise applications accessed by employees, e-commerce web sites visited by customers or applications running on mobile devices. Only the Gomez “First Mile to Last Mile” solution eliminates blind spots across the entire application delivery chain, from the browser on a user’s computer or mobile device, across the Internet or a corporate WAN, across third-party and cloud providers, to the complex infrastructure inside data centers. Business managers, IT operations personnel and application development/QA engineers benefit from the insight provided by the Gomez solution. More than 4,000 customers worldwide, ranging from small companies to large enterprises and managed service providers, use Gomez to increase revenue, build brand loyalty and decrease costs.

To learn more about Gomez, visit: www.compuware.com/gomez