



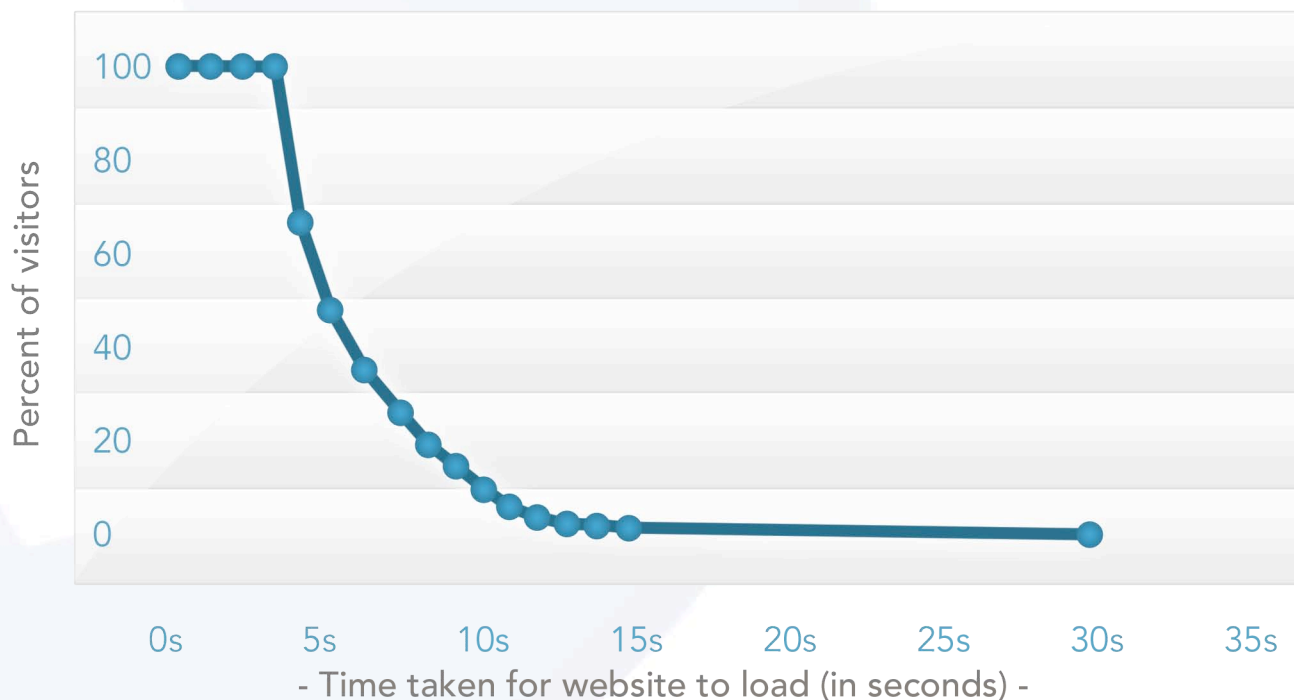
Gain and Maintain Customers by
Optimizing Web Site Performance

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What to do if you are losing customers because your web site is slow.

Don't you hate slow web sites? So do customers.

You may not make the connection at first. You know you have good products and marketing, but your sales have flattened or declined – and you cannot figure out why. You begin to suspect that your web site may be the problem, so you look at the metrics – and there it is – the ugly truth – a steady decline in page views, click-through rates and visitors spending less time on your site than they used to. These are the telltale signs that your web site response is too slow. This all-too-common problem is hurting your business as frustrated visitors abandon your site and run to the competition. Finally, there IS a solution. It has been called “web performance engineering” or “internet performance engineering”. The terminology is not important – what IS important is that it can be the answer to your poor web site performance problem. A faster site means happier users and longer visits to your site.



*Chart information and graph based on data from www.peer1.com

It happens to all of us at one time or another.

You are cruising the net looking for information or to make a purchase and you visit a web site that just seems to take FOREVER to load. You may try a few times, but eventually you move on – most people have no patience for poorly designed sites with slow loading pages – and the problem is getting worse.

Ten years ago, Zona research established that one third of visitors are lost if a site takes more than eight seconds to download – today, the limit of our patience is closer to two seconds. Based on its research, JupiterResearch recommends that retailers make every effort to keep page rendering to four seconds at most.

The company with a slow load time lost a golden opportunity – and they probably were not even aware of it! The company accomplished the hard part – getting us to their site instead of the thousands of alternatives – but their own poor-performing web site has done them in.

Just how big is this iceberg?

As it turns out, this situation is an enormous problem for businesses. The JupiterResearch study also revealed that consequences for an online retailer whose site underperforms include diminished goodwill, negative brand perception, and, most important, a significant loss in overall sales.

Other studies conducted over the years indicate that long download times have always been a major problem for web users. Participants in one study listed “it took too long to download web pages” as the **most widely cited problem with using the web** (cited by 69% of respondents). In fact, the situation is even worse for those accessing a site from mobile devices or remote areas.

Web loading times are even more crucial for e-commerce sites. Studies indicate that a delay of only microseconds can cause a significant loss of revenue. For example, tests at Amazon revealed that every 100 ms increase in load time for Amazon.com decreased sales by 1% (Kohavi and Longbotham 2007). Google discovered that a change in a 10-result page loading in 0.4 seconds to a 30-result page loading in 0.9 seconds decreased traffic and ad revenues by 20% (Linden 2006). In their study on the subject, JupiterResearch discovered that online shopper loyalty is contingent upon quick page loading, especially for high-spending shoppers – 55% of online shoppers who spend more than \$1,500 online per year insist on pages loading quickly.

Finally, your placement in search engines is also affected by your site’s performance – web sites with slow loading pages receive a lower ranking from major search engines like Google.

Employees are people, too.

It is not just your potential customers that are affected. Increasingly, companies are using their intranet to support sales organizations. Slow response means salespeople are prevented from quickly accessing the information and resources they need to properly perform their job. This may be a problem for your company, which results in the loss of sales.

Where’s the bottleneck?

Although simple in appearance, a web session can be a complicated endeavor. When a web server receives a request and formulates the HTML, the content can be dynamically generated or statically generated. The HTML code starts to be processed and sent back to your browser. Your browser starts to interpret (parse) the HTML and it may hit an image tag that causes it to fire off a parallel thread for that object. Embedded within the HTML code are requests for images, java script files, cascading file sheets, etc. – and not just for the original request. As you conduct a normal web interaction, you might actually see 50-70 requests if you were to analyze and inspect traffic from the browser to the server.

Clearly, there are lots of places where the process can be diverted or become bogged down. Sometimes the problem is caused by DB queries, long render time, or server load. In other cases, a large number of simultaneous visitors can be the culprit. Often, pages load slowly because of file size or latency. Unless the site was specifically designed for optimization, there is a good chance that numerous inefficient or unnecessary operations are being performed, each contributing to the problem. Consequently, the first step of internet performance engineering is to identify all potential causes of the bottleneck.

Gimme three steps (or maybe four).

Investigation - the first step of internet performance engineering is to thoroughly investigate the problem by performing a detailed analysis of the current web application design. Typically, this includes investigating several areas, i.e., the "front end" application UI page design and the middle tier and back end integration points (such as DB, Queuing, etc).

Also, part of the investigation is an in-depth analysis of internet-based delivery of static and dynamic content. This includes customer base, geographic locations, and delivery platforms.

The final part of this step is the generation of a report. The generation of report includes critical findings and information collected about each area where investigations were performed, such as network and internet delivery, front end application UI design, and back end application design. The report should also include any tests that were conducted.

Armed with this information, it is now possible to develop solutions targeted at the specific problem areas that have been identified.

Optimize Your Applications – the second step of the process is to optimize the performance of your applications, including application UI, and backend design. Recommendations are developed that address the effort, risk, and benefit associated with each. Recommendations must be based upon proven techniques guaranteed to reduce the number of browser-to-server round-trips, reduce the amount of data being transmitted, and reduce the time required to complete a round-trip. Finally, the recommendations must include strategic and tactical implementation plans, complete with specific milestones, deliverables, responsibilities, and deadlines.

Improve Web Performance – the third step of internet performance engineering is developing specific recommendations regarding design changes to accelerate web performance. The objectives of these recommendations should be to improve the delivery of dynamic and static content over the open internet to the end user, deliver content faster to bandwidth-challenged users (especially those located in remote geographic areas), and optimize content delivery for challenging platforms such as mobile web.

Establish Performance Measurements – the fourth step is to establish the means whereby you can measure the web site's performance improvement. This involves analyzing existing tools and techniques used to monitor and measure end-to-end performance. Then, recommend steps that the webmaster can take to ensure that they can quickly identify performance issues in the most common problem areas (e.g., Application UI (Ajax/Javascript), Application UI anatomy, End-to-End response time, web application and middle tier, Database, and Back end integration points).

When you come to a fork in the road, take it.

You know you have a problem – you have seen the symptoms and heard the complaints. Clearly, something needs to be done – letting it continue is just bad business and not an option. The only choice is to do it yourself or hire an expert.

At first, you are tempted to go the DIY route – in fact, you may have already tried that – perhaps that is why you are reading this article. Unfortunately, there are downsides to the DIY approach. Do you really want to take time away from your primary responsibilities to take on another task in part-time mode? Can you possibly do it as well as people who have spent years focusing on just this problem and built a business around helping people like you? Can you match the techniques and tools they have developed and applied in dozens of situations just like yours? If you were on trial for a serious offense, would you defend yourself? If you answered “yes” to any of these questions, go back and read them again.

Help me Rhonda.

Okay, so the right answer is “No” – there is just too much at stake to leave it to amateurs like you. But where to turn? Here are the characteristics of the consultant you are looking for:

- Longevity – look for a consultant who has been practicing in this industry for years (time will weed out the poor performers). Even though the internet is a relatively new technology, there are actually consultants that have been specializing in optimizing web sites for 15 years.
- Relevance – there are thousands of web designers out there, but how many specialize in optimizing web performance? Only consider the ones who do and ignore the rest.
- References – check out their client list. Did they have the same problem as you? Were they satisfied with the results?
- A well-honed approach – someone with years of significant relevant experience has developed a well-defined process that they have honed to perfection for exactly this situation. They may have as many as 15 different tricks of the trade as part of their arsenal. Put that experience to work for you.
- The right metric – the only metric that matters is “user response time”. Make sure that they primarily focus on this metric. Beware of consultants who mistakenly focus on areas other than user response time.
- Committed results – ask about how much improvement you can expect. By the way, it is not unheard of to get an upfront commitment of a 25% performance improvement in end user response time.

The big payoff.

Can this work for you? If you choose wisely, yes it can.

If you want to learn more about how Internet Performance Engineering can accelerate your website’s performance for substantially improved customer experiences and increased conversion rates, visit <http://www.techout.com> or call 732-530-3320.

Sidebar

Sidebar 1

Internet performance engineering (also referred to as web performance engineering) – a results-based research and analysis process intended to optimize web site performance. The adherence to this process and implementation of the specific recommendations it provides can significantly improve a company's web site performance.