The Performance of Web Applications

Customers Are Won or Lost in One Second

November 2008

Aberdeen *Group*
A Harte-Hanks Company

Executive Summary

Aberdeen surveyed over 160 organizations in November of 2008 to examine the best practices for optimizing the performance of web applications in the enterprise. These findings serve as guidelines to organizations that are looking to improve customer satisfaction and brand reputation, mitigate lost revenue opportunities, and optimize the cost of enterprise infrastructure by managing the performance of web applications.

Best-in-Class Performance

Aberdeen used three key performance criteria to distinguish Best-in-Class companies: 1) the average availability of business-critical web applications; 2) the average success rate in preventing issues with application performance before end-users are impacted; 3) the average improvements in application response times. Best-in-Class organizations reported:

- 99.8% average availability of business-critical web applications

- 83% average success rate in preventing issues with application performance before end-users are impacted

- 273% average improvements in application response times

Competitive Maturity Assessment

Survey results show that the firms enjoying Best-in-Class performance shared several common characteristics, they are:

- Nearly three-times more likely to have the ability to monitor performance across multiple browsers and end-user platforms

- Nearly four-times more likely to have tools for balancing content demand across devices dynamically

- Three-times more likely to have the ability to measure end-user experience via passive monitoring

Required Actions

In addition to the specific recommendations in Chapter Three of this report, to achieve Best-in-Class performance, companies must:

- Develop capabilities for a job-role specific view into application performance

- Deploy capabilities for monitoring the geographical distribution of content demands

- Deploy tools for load testing of web applications

Research Benchmark

Aberdeen's Research Benchmarks provide an in-depth and comprehensive look into process, procedure, methodologies, and technologies with best practice identification and actionable recommendations

"Our IT team would rather spend time writing code than dealing with performance issues. However, for us, performance is very important, and we were able to improve response times of our dynamic web applications without adding any additional resources by deploying solutions for intelligent caching and load testing."

~ Orion Jensen

Technical Operations Manager

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Chapter One:
# Benchmarking the Best-in-Class

Business Context

Aberdeen's June Benchmark report, Application Performance Management: The Lifecycle Approach Brings IT and Business Together revealed that issues with application performance could impact overall corporate revenues by up to 9%. Average annual revenues for organizations that participated in Aberdeen's survey are $1.3 billion; this shows that application performance issues could impact revenues by an average of $117 million annually. As issues with application performance are impacting some of the top business goals, organizations are increasingly realizing the importance of optimizing performance of Web applications that are being used by their customers, prospects, partners and employees.

Aberdeen's research shows that for organizations that participated in the survey, business performance (as measured by customer satisfaction, conversions, etc.) begins to suffer at 5.1 seconds of delay in response times of web applications (3.9 seconds from Best-in-Class organizations). Figure 1 shows that only one second of additional delay in the response times of web applications could significantly impact some of the top business goals. That also shows that end-user's expectations are increasing and organizations need to take actions to optimize not only the performance of their enterprise infrastructure, but more importantly, the performance of their business-critical applications as measured from the end-user perspective. Organizations that are not able to optimize the performance of these applications are at risk of seeing a significant decline in some of the key business metrics such as customer satisfaction and revenue growth.

Fast Facts

√ One second delay in response times of Web applications can impact customer satisfaction by up to 16%

√ Inability to prevent performance issues before end-users are impacted and inability to measure quality of end-user experience are the top challenges of managing performance of web applications

Figure 1: The Average Impact of a One Second Delay in Response Times on Key Business Metrics
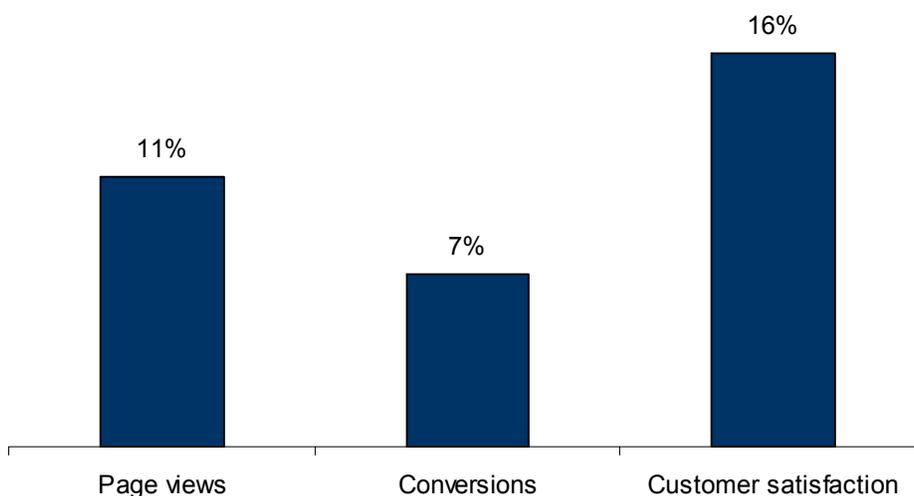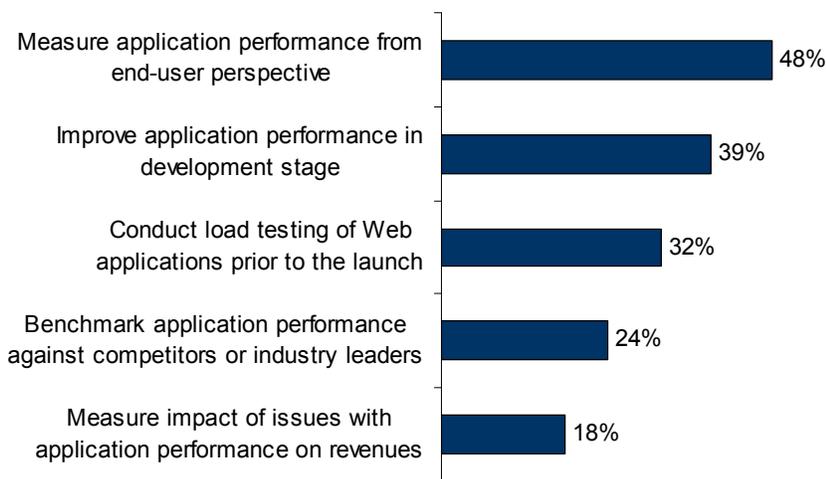

Source: Aberdeen Group, November 2008

Hence, it doesn't come as a surprise that organizations that participated in Aberdeen's survey reported that the top pressures for adopting technology solutions for optimizing the performance of web applications are:

- The need to improve customer satisfaction (63% of organizations that participated in the survey)
- The need to improve employee productivity (32%)
- The need to optimize the cost of the enterprise infrastructure (30%)
- The need to mitigate disruption of key business processes (27%)

In order to address these pressures, organizations are taking strategic actions as shown in Figure 2.

Figure 2: Top Strategic Actions That Organizations are Taking or Planning to Take

Measure application performance from end-user perspective	48%
Improve application performance in development stage	39%
Conduct load testing of Web applications prior to the launch	32%
Benchmark application performance against competitors or industry leaders	24%
Measure impact of issues with application performance on revenues	18%

Source: Aberdeen Group, November 2008

The research shows that in order to prevent a decline in customer satisfaction and avoid lost revenue opportunities, organizations are focusing their resources on two major areas: measuring application performance from the end-user perspective and eliminating performance bottlenecks before applications are deployed into production. Figure 2 shows that not only are organizations looking to measure and analyze application performance in production, but they are also looking to improve application performance in the development stage and conduct load tests before web applications are deployed.

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The Maturity Class Framework

Aberdeen used three key performance criteria to distinguish the Best-in-Class from Industry Average and Laggard organizations. These Key Performance Indicators (KPIs) are:

- Application availability
- Success rate in preventing issues with the performance of web applications before end-users are impacted
- Average improvements in response times of web applications

Table 1: Top Performers Earn Best-in-Class Status

Definition of Maturity Class	Mean Class Performance
Best-in-Class: **Top 20%** of aggregate performance scorers	▪ 99.8% average availability of business-critical web applications ▪ 83% average success rate in preventing issues with application performance before end-users are impacted ▪ 273% average improvements in application response times
Industry Average: **Middle 50%** of aggregate performance scorers	▪ 97.8% average availability of business-critical web applications ▪ 37% average success rate in preventing issues with application performance before end-users are impacted ▪ 73% average improvements in application response times
Laggard: **Bottom 30%** of aggregate performance scorers	▪ 86.3% average availability of business-critical web applications ▪ 17% average success rate in preventing issues with application performance before end-users are impacted ▪ 7% average improvements in application response times

Source: Aberdeen Group, November 2008

The Best-in-Class PACE Model

Leveraging solutions for managing the performance of web applications to achieve corporate goals requires a combination of strategic actions, organizational capabilities, and enabling technologies that can be summarized as shown in Table 2.

Table 2: The Best-in-Class PACE Framework

Pressures	Actions	Capabilities	Enablers
▪ The need to improve customer satisfaction	▪ Measure application performance from end-user perspective ▪ Improve application performance in development stage	▪ Ability to measure quality of end-user experience ▪ Ability to monitor the performance of web applications across multiple browsers ▪ Ability to monitor geographical distribution of content demands ▪ Real-time view into performance of revenue generating transactions ▪ Job-role specific view into application performance ▪ Centralized management of end-user experience	▪ Tools for monitoring page load ▪ Tools for load testing of web-based applications ▪ Tools for traffic compression ▪ Automated, real-time alerts for issues with performance of web applications ▪ Tools for replicating files between different devices ▪ Tools for balancing demand across devices dynamically ▪ Multiple application delivery functionalities (caching, compression, SSL acceleration, etc.) on a single device ▪ Intelligent agents for adjusting caching decisions with traffic load

Source: Aberdeen Group, November 2008

Best-in-Class Strategies

Aberdeen's research shows that the top challenges for ensuring an optimal level of performance for web applications include the inability to prevent performance issues before end-users are impacted and the inability to measure application performance from an end-user perspective (Figure 3). Additionally, organizations are increasingly realizing that the communication between application development and the systems and network is important for two reasons: faster troubleshooting of performance issues and eliminating performance issues before applications are rolled out into production.

Figure 3: Top Challenges for Managing the Performance of Web Applications
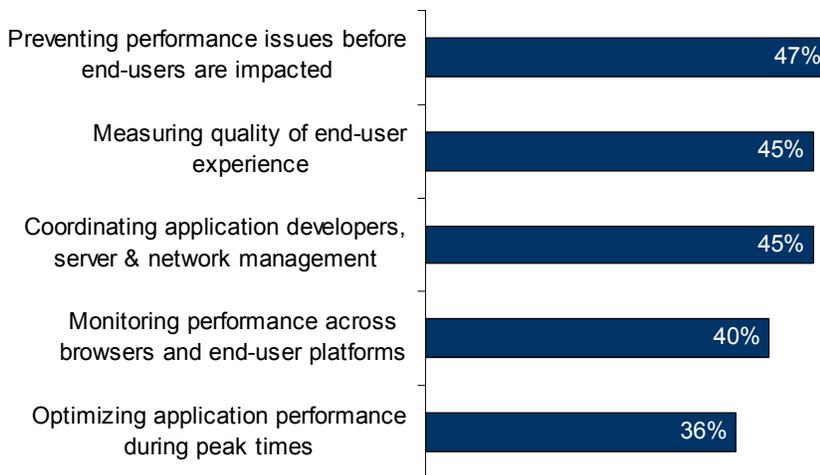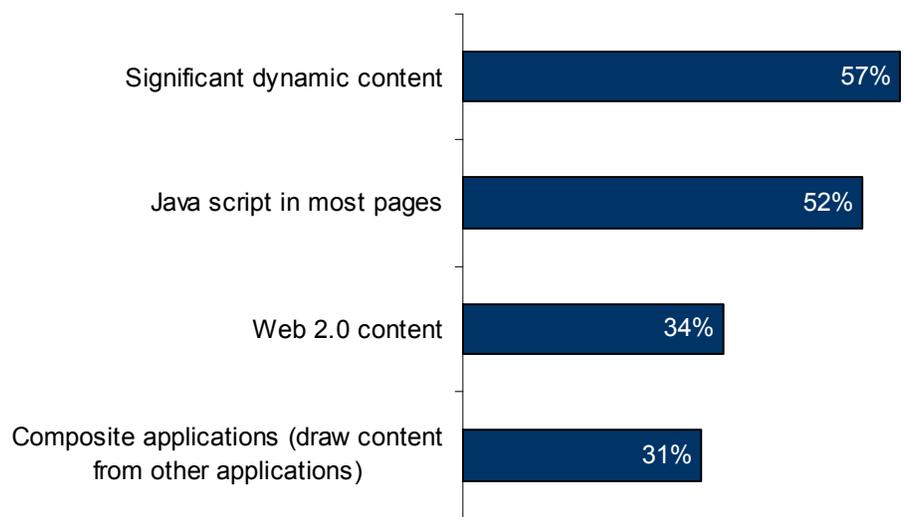

Source: Aberdeen Group, November 2008

Additionally, the research also shows that end-user organizations find it challenging to monitor application performance across different browsers. This becomes more of a challenge as organizations are increasingly adopting Web 2.0 applications and dynamic web applications as shown in Figure 4.

While even one second of delay in application response times can significantly impact some of the top business goals, it is apparent that managing the performance of web applications is becoming increasingly complex and important. At the same time, organizations are looking to find a balance between improving the quality of the end-user experience and customer satisfaction and optimizing the cost of enterprise infrastructure.

Figure 4: Top Characteristics of Web Applications Deployed

Source: Aberdeen Group, November 2008

It should also be noted that Aberdeen's recent studies on Workforce Collaboration and Web 2.0: Improving Productivity by Facilitating Knowledge Transfer and Web 2.0, Talent Management, and Employee Engagement revealed that organizations are increasingly looking into Web 2.0 applications as a solution for some of the key challenges around workforce collaboration and customer relationship management. The deployment of Web 2.0 applications in the enterprise is associated with a set of challenges from a performance standpoint as usage patterns for these applications and the underlying technology are taking some of the control over the quality of end-user experience out of reach of IT departments. Due to the characteristics of Web 2.0 environments and high expectations from end-users, it is becoming even more important for end-user organizations to have visibility into the end-user experience, understand usage patterns and to achieve optimal availability and performance of these applications.

"The ability to manage SLAs was one of the key drivers for deploying a solution for visibility into the quality of the end-user experience. The solution helped us to significantly improve visibility into our carrier's network and have a better understanding of performance levels that our customers are experiencing."

~ IT Director

Retail

Aberdeen Insights — Strategy

An increase in dynamic web content and an emergence of Web 2.0 applications are impacting the market for web application performance management in a few different ways. End-user organizations are losing some of the control that they previously had over the performance of these applications due to new underlying technologies and usage patterns that are becoming more difficult to predict. More importantly, end-users' expectations for the performance of these applications are getting higher and what seemed to be minor performance issues one or two years ago are now becoming serious business problems that can significantly impact revenue, customer satisfaction, and brand reputation.

These trends are driving a number of organizations to change their strategies around managing the performance of web applications and shift their focus from evaluating the performance of these applications from their IT departments perspective, to trying to understand the quality of experience that their end-users are experiencing. More importantly, their efforts to take full control of the performance of their web applications are increasingly being driven by the end-user usage patterns.

More than half of the organizations that participated in Aberdeen's June Benchmark study on Application Performance Management reported that they are using web applications to generate revenue, communicate with customers or partners and support their employees. As the importance of managing the performance of web applications is increasing, some of the power that traditionally was reserved for technology vendors is shifting to the end-user side. Going forward, market leaders in this space will be defined not by features and functionalities of technology solutions, but by the willingness to understand end-users' expectations, usage patterns and needs for new types of web content.

In the next chapter, we will see what the top performers are doing to achieve these gains.

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Chapter Two:
Benchmarking Requirements for Success

The selection of technology solutions for optimizing the performance of web applications and integration with business intelligence and business process management systems plays a crucial role in the ability to turn these strategies into profit.

Case Study — Disaboom.com

Disaboom.com is a web community of people with disabilities. Over the last four months, the website has been experiencing a growth in the number of visitors of more than 50% per month resulting in more than 500,000 visitors in November. Even though performance of the website has always been reasonable, Disaboom decided to be proactive and to invest in a technology solution for optimizing the website performance.

Harry Brumleve, VP of Engineering at Disaboom said, "Disaboom has been focusing on site functionality and end-user experience as a part of our strategy to add new members to our community. As we were growing our community, we realized that improving site speed would greatly benefit site functionality."

In order to achieve that goal, we made the speed of our website a corporate mandate and made it a priority for our development team," continued Brumleve. "Even more important, we deployed a technology solution that is based on intelligent, dynamic caching for reducing page load."

This solution allowed the company to reduce page load by 50% and server load by 15% to 25%. He continued, "This enabled us to support more visitors and to improve speed without investing in new servers. This type of approach allowed us not only to avoid costly investments in the infrastructure, but also to improve speed and the quality of end-user experience."

Fast Facts

√ Best-in-Class organizations are nearly four times more likely to be using tools for load testing of Web-based applications as compared to Laggards

√ Best-in-Class organizations are nearly three times more likely to have ability to monitor performance of Web applications across multiple browsers as compared to Laggards

Competitive Assessment

Aberdeen Group analyzed the aggregated metrics of surveyed companies to determine whether their performance ranked as Best-in-Class, Industry Average, or Laggard. In addition to having common performance levels, each class also shared characteristics in five key categories: (1) **process** (ability to monitor performance of web applications across multiple browsers; real-time view into performance of revenue generating transactions); (2) **organization** (job-role specific view into application performance); (3) **knowledge management** (ability to monitor geographical distribution of content demands); (4) **technology** (the selection of appropriate tools and effective deployment of those tools); and (5) **performance management** (ability to measure quality of end-user experience). These characteristics

(identified in Table 3) serve as a guideline for best practices, and correlate directly with Best-in-Class performance across the key metrics.

Table 3: The Competitive Framework

	Best-in-Class	Average	Laggards
Process	Ability to monitor performance of web applications across multiple browsers		
	52%	41%	19%
	Real-time view into performance of revenue generating transactions		
	49%	19%	15%
Organization	Job-role specific view into application performance		
	47%	28%	15%
Knowledge	Ability to monitor geographical distribution of content demands		
	50%	26%	15%
	Centralized management of end-user experience		
	47%	39%	26%
Technology	Technology for managing performance of web applications currently in use:		
	▪ 59% tools for monitoring page load	▪ 41% tools for monitoring page load	▪ 18% tools for monitoring page load
	▪ 52% tools for load testing of Web-based applications	▪ 50% tools for load testing of Web-based applications	▪ 14% tools for load testing of Web-based applications
	▪ 53% tools for traffic compression	▪ 36% tools for traffic compression	▪ 31% tools for traffic compression
	▪ 50% automated, real-time alerts for issues with performance of Web applications	▪ 45% automated, real-time alerts for issues with performance of Web applications	▪ 23% automated, real-time alerts for issues with performance of Web applications
	▪ 50% tools for replicating files between different devices	▪ 42% tools for replicating files between different devices	▪ 27% tools for replicating files between different devices
	▪ 47% tools for balancing demand across devices dynamically	▪ 33% tools for balancing demand across devices dynamically	▪ 12% tools for balancing demand across devices dynamically

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	Best-in-Class	Average	Laggards
Technology (cont.)	▪ 35% multiple application delivery functionalities (caching, compression, SSL acceleration, etc.) on a single device ▪ 33% intelligent agents for adjusting caching decisions with traffic load	▪ 24% multiple application delivery functionalities (caching, compression, SSL acceleration, etc.) on a single device ▪ 12% intelligent agents for adjusting caching decisions with traffic load	▪ 9% multiple application delivery functionalities (caching, compression, SSL acceleration, etc.) on a single device ▪ 11% intelligent agents for adjusting caching decisions with traffic load
Performance	Ability to measure the quality of end-user experience		
	66%	51%	14%

Source: Aberdeen Group, November 2008

Capabilities and Enablers

Based on the findings of the Competitive Framework and interviews with end users, Aberdeen's analysis of the Best-in-Class reveals 12 capabilities that these organizations are more likely to have in place as compared to their peers.

Process

Figure 4 shows that the inability to monitor performance across multiple browsers and end-user platforms is one of the top challenges for managing the performance of web applications. However, Table 3 shows that Best-in-Class organizations are nearly three-times more likely to have capabilities in place to address this challenge. Additionally, the research reveals that Best-in-Class organizations are three-times more likely to have a real-time view into performance of revenue generating applications. As a result of having these capabilities in place, Best-in-Class organizations are three-times more likely to improve the performance of the end-user platform as compared to Laggards. These organizations are also nearly twice as likely to avoid damage to brand reputation.

Organization

The research also shows that Best-in-Class organizations are three-times more likely to have a job-role specific view into application performance as compared to Laggards. Having this capability in place allows organizations to improve usability of data collected on application performance and ensure that different job-roles have access to information that is relevant to their responsibilities. This also enables better communication between IT and

Measuring Application Performance

With expected release of Internet Explorer 8 and Google Chrome, and a significant growth in adoption rates for Firefox, organizations are facing a new challenge: how to measure application performance across different browsers. It should be noted that the number of parallel host connections is one of the key differences between older and newer browsers and organizations need to take that into consideration when optimizing the performance of web applications. In order to ensure optimal quality of end-users experience, organizations need to be aware of the differences between browsers and it is becoming increasingly important for them to be able to monitor and test application performance across different browsers.

business organizations as business executives can access information about the impact of application performance on business goals such as page views, conversions, user session abandonment rate, and estimated missed revenue opportunities while IT management can focus more on metrics such as response times, availability, and quality of end-user experience. As a result of having this capability in place, Best-in-Class organizations are nine-times more likely to report decreases in mean time to repair application performance issues as compared to Laggards. Additionally, Best-in-Class organizations are four-times more likely to reduce labor cost to manage application performance (as a percent of total IT spend).

Knowledge Management

Table 3 shows that Best-in-Class organizations are three-times more likely to have the ability to monitor the geographical distribution of content demands as compared to Laggards. Having this capability in place allows organizations to improve visibility into the quality of the end-user experience regardless of the geographic location of the end-user. Having this capability in place contributed to Best-in-Class organizations being nearly eight-times more likely to improve the visibility into the end-user experience as compared to Laggards.

Figure 5: Budget Allocation for Managing the Performance of Web Applications

- Content Delivery Networks (CDN) — 14%
- Performance monitoring/management — 20%
- Application development — 29%
- Server purchases — 21%
- Bandwidth upgrades — 16%
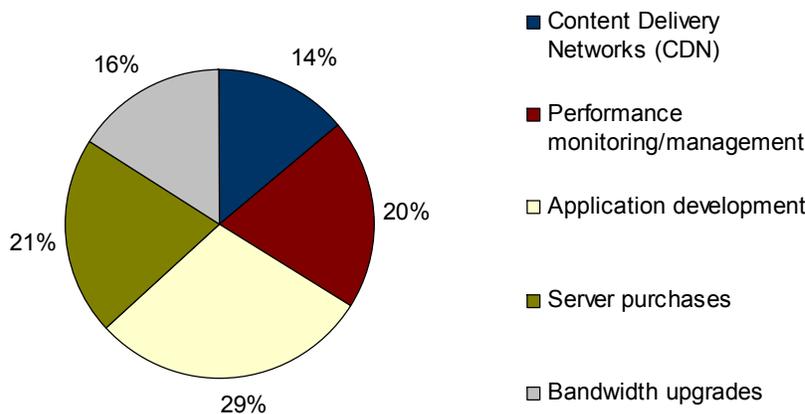
Source: Aberdeen Group, November 2008

"Since implementing an application performance management solution, our overall site traffic has increased by 400%, yet traffic to our back-end nodes has only increased by 75%, while simultaneously reducing the burden on the applications by 80%. We can now do things with our applications that we wouldn't have otherwise been able to do."

~ System Administrator

Public Sector

Technology

Sixty-three percent (63%) of organizations in Aberdeen's survey reported that the number of servers needed for the optimal performance of web applications has increased over the last two years. Additionally, the research shows that on average, servers are reaching at least 95% of the capacity 16% of the time, while Figure 5 shows that the cost of new server purchases contributes 21% of the total cost of deploying web applications. However, the research also shows that Best-in-Class organizations are 71% more likely to increase available server capacity as compared to Laggards while

being less likely to invest in purchasing new servers. The research shows that the cost of new server purchases contribute 11% of a Best-in-Class organizations' total spend on deploying web applications as compared to 24% for all others.
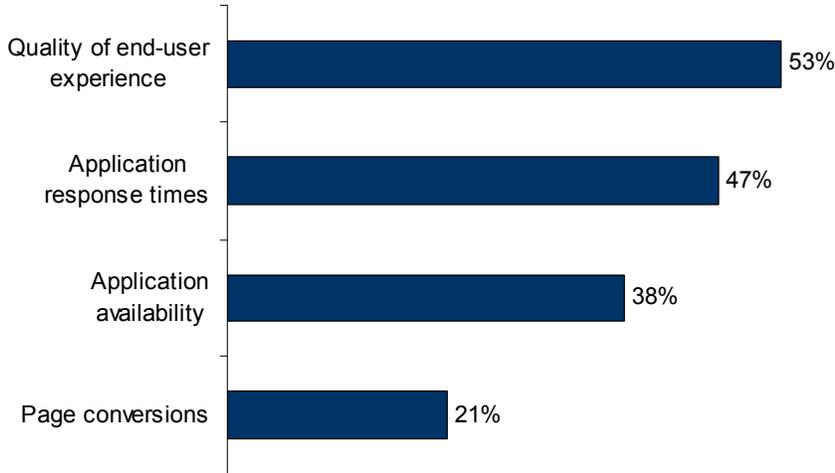
Best-in-Class organizations are able to improve server utilization and avoid additional investments in new servers by deploying a mix of technology enablers as shown in Table 3. With that said, the research shows that Best-in-Class organizations are more likely to be deploying tools for traffic compression, replicating files between different devices, and balancing demand across devices dynamically as compared to all others. Additionally, these organizations are more likely to be using devices that have multiple application delivery functionalities and intelligent agents for adjusting caching decisions with traffic load. A combination of these capabilities allows Best-in-Class organizations to better manage unpredictable usage patterns and provide optimal level of end-user experience even at the peak times while avoiding additional investments in the enterprise infrastructure. The research shows that Best-in-Class organizations are twice as likely to improve application performance during peak times and nearly three times more likely to improve their ability to support more site visitors as compared to Laggards. Additionally, these organizations are also twice likely to avoid increasing a total footprint of the enterprise infrastructure.

Table 3 also shows that Best-in-Class organizations are nearly four times more likely to be using tools for load testing of web-based applications as compared to Laggards. Having this capability allows organizations to effectively address the top challenge for managing the performance of web applications as shown on Figure 3. Having this capability in place enabled Best-in-Class organizations to have the average 83% success rate in preventing issues before end-users are impacted as compared to a 17% success rate for Laggard organizations.

Performance Management

Figure 6 shows that the quality of the end-user experience is the top performance indicator that organizations are using to evaluate their success in managing the performance of web applications. However, Table 3 shows that Best-in-Class organizations are four-times more likely to have capabilities in place to measure application performance from an end-user perspective as compared to Laggards.
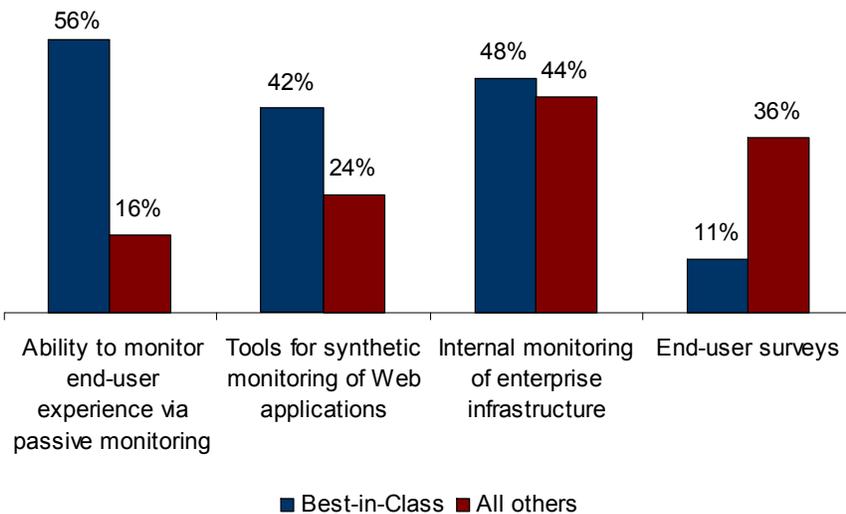
Figure 6: Top Performance Indicators Used to Evaluate the Performance of Web Applications

Quality of end-user experience: 53%

Application response times: 47%

Application availability: 38%

Page conversions: 21%

Source: Aberdeen Group, November 2008

Aberdeen's research also shows that organizations are taking different approaches when measuring the quality of end-user experience. Figure 7 shows that Best-in-Class organizations are more likely to measure end-user experience via passive monitoring while Industry Average and Laggard organizations are predominately relying on internal monitoring of enterprise infrastructure and end-user surveys.

Figure 7: Different Approaches for Measuring the Quality of End-User Experience

Ability to monitor end-user experience via passive monitoring: Best-in-Class 56%, All others 16%

Tools for synthetic monitoring of Web applications: Best-in-Class 42%, All others 24%

Internal monitoring of enterprise infrastructure: Best-in-Class 48%, All others 44%

End-user surveys: Best-in-Class 11%, All others 36%

■ Best-in-Class ■ All others

Source: Aberdeen Group, November 2008

As a result of taking this type of approach to measuring the quality of end-user experience, Best-in-Class organizations are more likely to have good visibility into the performance of web applications from an end-user perspective which allows them to make educated decisions about actions that need to be taken to improve application performance. That contributed to Best-in-Class organizations being 88% more likely to improve customer satisfaction as compared to Laggards.

Aberdeen Insights — Technology

Aberdeen's research shows that Best-in-Class organizations are experiencing 99.8% availability of web applications, 273% improvement in application response times, and they are able to prevent performance issues before end-users are impacted 83% of the time. Traditional technologies for application acceleration, load balancing, server offload, and traffic compression have been successful in helping organizations to improve the speed and availability of web applications for several years. Changes in end-user expectations and usage patterns and an emergence of Web 2.0 applications are calling for more than just a simple acceleration of web applications.

Best-in-Class organizations are able to outperform their peers not only because they are able to accelerate business-critical applications, but also because they are developing capabilities for load testing, eliminating performance bottlenecks in the development stage, and truly measuring end-user experience so they can ensure that their customers, prospects, employees, and partners can be satisfied with the performance levels they are experiencing across the value chain.

In the era of new generation web applications, this type of approach does not have an alternative. Organizations increasingly understand that a lack of capabilities for managing every aspect of web application performance can impact anything from their ability to manage relationships with customers and prospects to their ability to attract top talent or improve employee productivity.

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Chapter Three:
Required Actions

Whether a company is trying to move its performance in optimizing web applications from Laggard to Industry Average, or Industry Average to Best-in-Class, the following actions will help spur the necessary performance improvements:

Laggard Steps to Success

- **Develop capabilities for a job-role specific view into application performance.** Eighty-five percent (85%) of Laggard organizations do not have a job-role specific view into the performance of web applications. Having this capability in place allows IT operations, application developers, line of business owners and application QA teams to access only data that is relevant for their job role and therefore enable them to make better decisions in a timely manner. Best-in-Class organizations are three-times more likely to have this capability as compared to Laggards and, therefore, are twice as likely to improve employee productivity as compared to their peers.

- **Develop capabilities for monitoring and managing the performance of web applications across multiple browsers.** Even though Laggard organizations reported that monitoring and managing application performance across different browsers and end-user platforms is one of the top challenges for managing the performance of web applications, 81% of these organizations still do not have the capability in place to address this issue. As a result, Laggard organizations are nearly two-times less likely to improve brand reputation as compared to Best-in-Class organizations.

- **Deploy tools for load testing of web applications.** Fifty-seven percent (57%) of Laggard organizations reported that inability to prevent issues with application performance before end-users are impacted is the top challenge for managing web applications. However, 86% of these organizations do not have tools for load testing in place. A development of this capability enables organizations to identify and eliminate performance bottlenecks before applications are rolled out in production and, therefore, be more proactive when managing application performance.

Industry Average Steps to Success

- **Deploy capabilities for monitoring geographical performance and distribution of content demands.** Even though 31% of Industry Average organizations have more than $1 billion in annual revenues and a global customer base, 74% of these organizations do not have capabilities for monitoring content demands from different geographical locations. This capability allows

Fast Facts

√ Develop capabilities for a job-role specific view into application performance

√ Deploy tools for load testing of web applications

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organizations to manage the performance of web applications that are being accessed from different geographies and to identify performance issues that are specific for each location. That includes capabilities for "last mile" acceleration, but it also includes visibility into application performance from different as measured from geographies where end-users are located. That enables end-user organizations to optimize the performance of applications from the end-user perspective regardless of the geographical location of site visitors.

- **Deploy tools for balancing content demand across devices dynamically.** The research shows that 67% of Industry Average organizations do not have tools in place for balancing content demand across devices. Having this capability in place allows organizations to be able to support more site visitors with less in investments in enterprise infrastructure and achieve higher ROI from deploying solutions for managing the performance of web applications. Additionally, this capability allows organizations to optimize the performance of web applications in real-time, or near real-time.

"On average, we have 8,000 visitors per day with occasional spikes that depend on our marketing promotions. We have a heavy focus on performance and effectiveness of our IT team. Since deploying caching solution, we have seen acceleration at 1.3-times and performance issues became less frequent."

~ Orion Jensen

Technical Operations Manager

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Best-in-Class Steps to Success

- **Develop capabilities for synthetic monitoring of web applications.** Even though Best-in-Class organizations are 67% more likely to have this capability in place as compared to all others, 58% of these organizations are still not using this functionality. Having this capability in place enables continuous monitoring of web applications which allows end-user organizations to be more proactive and address the top challenge of application performance management: prevent issues with application performance before end-users are impacted.

- **Deploy intelligent agents for adjusting caching decisions with traffic load.** Figure 4 shows that increasing the amount of dynamic content and Java scripts are the top two characteristics of web applications that are currently being deployed. In order to adjust their performance management initiatives with these types of web applications, organizations are looking to not only deploy tools for caching web traffic, but also deploy intelligent agents that are able to adjust caching decisions based on traffic load. Even though, Best-in-Class organizations are nearly three-times more likely to have this type of capability as compared to Laggards, 67% of these organizations are still not deploying this technology enabler.

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Aberdeen Insights — Summary

Aberdeen's recent report revealed that the delivery of video and digital content in one of the top concerns that organizations have around application performance management. Organizations are increasingly looking to leverage business video and streaming media to communicate their value proposition to their customers, prospects, employees and partners. Additionally, a current economic crisis is driving organizations to reduce the cost of travel and make collaboration with partners and suppliers more effective.

While the majority of organizations are still struggling to meet expectations of end-users, a growth of deployment of business video will pose new challenges from a performance management perspective. Even Best-in-Class organizations will need to adjust their strategies for managing the performance of applications that are becoming more dependent on digital content. At the same time, their peers that are currently struggling to ensure optimal levels of end-user experience for web applications will be facing a new challenge: how to translate application response times and availability into buffering times and the overall performance of delivering digital content.

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Appendix A:
Research Methodology

In November of 2008, Aberdeen examined the use, the experiences, and the intentions of more than 160 enterprises using solutions for managing performance of Web applications in a diverse set of enterprises.

Aberdeen supplemented this online survey effort with interviews with select survey respondents, gathering additional information on web application performance management strategies, experiences, and results.

Responding enterprises included the following:

- *Job title / function:* The research sample included respondents with the following job titles: IT developer/systems architect (23%); senior management (19%); IT manager (19%); director (15%); consultant (9%).

- *Industry:* The research sample included respondents from 14 industries. Some of the largest industry segments were: finance (12%); retail (10); media/entertainment (8%); telecommunications (8%).

- *Geography:* The majority of respondents (55%) were from North America. Remaining respondents were from Europe (26%), the Asia-Pacific region (13%) and the rest of the world (6%).

- *Company size:* Thirty-five percent (35%) of respondents were from large enterprises (annual revenues above US $1 billion); 28% were from midsize enterprises (annual revenues between $50 million and $1 billion); and 37% of respondents were from small businesses (annual revenues of $50 million or less).

- *Headcount:* Twenty-three percent (23%) of respondents were from large enterprises (headcount greater than 1,000 employees); 37% were from midsize enterprises (headcount between 100 and 999 employees); and 40% of respondents were from small businesses (headcount between 1 and 99 employees).

Solution providers recognized as sponsors were solicited after the fact and had no substantive influence on the direction of this report. Their sponsorship has made it possible for Aberdeen Group to make these findings available to readers at no charge.

Study Focus

Responding executives completed an online survey that included questions designed to determine the following:

√ The degree to which solutions for managing performance of web applications are deployed in their operations and the financial implications of the technology

√ The structure and effectiveness of existing web application performance management implementations

√ Current and planned use of solutions for managing performance of web applications to aid operational and promotional activities

√ The benefits, if any, that have been derived from web application performance management initiatives

The study aimed to identify emerging best practices for managing performance of web applications, and to provide a framework by which readers could assess their own management capabilities.

Table 4: The PACE Framework Key

Overview
Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows: **Pressures —** external forces that impact an organization's market position, competitiveness, or business operations (e.g., economic, political and regulatory, technology, changing customer preferences, competitive)   **Actions —** the strategic approaches that an organization takes in response to industry pressures (e.g., align the corporate business model to leverage industry opportunities, such as product / service strategy, target markets, financial strategy, go-to-market, and sales strategy)   **Capabilities —** the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products / services, ecosystem partners, financing)   **Enablers —** the key functionality of technology solutions required to support the organization's enabling business practices (e.g., development platform, applications, network connectivity, user interface, training and support, partner interfaces, data cleansing, and management)

Source: Aberdeen Group, November 2008

Table 5: The Competitive Framework Key

Overview
The Aberdeen Competitive Framework defines enterprises as falling into one of the following three levels of practices and performance: **Best-in-Class (20%) —** Practices that are the best currently being employed and are significantly superior to the Industry Average, and result in the top industry performance.   **Industry Average (50%) —** Practices that represent the average or norm, and result in average industry performance.   **Laggards (30%) —** Practices that are significantly behind the average of the industry, and result in below average performance.   In the following categories: **Process —** What is the scope of process standardization? What is the efficiency and effectiveness of this process?   **Organization —** How is your company currently organized to manage and optimize this particular process?   **Knowledge —** What visibility do you have into key data and intelligence required to manage this process?   **Technology —** What level of automation have you used to support this process? How is this automation integrated and aligned?   **Performance —** What do you measure? How frequently? What's your actual performance?

Source: Aberdeen Group, November 2008

Table 6: The Relationship Between PACE and the Competitive Framework

PACE and the Competitive Framework – How They Interact
Aberdeen research indicates that companies that identify the most influential pressures and take the most transformational and effective actions are most likely to achieve superior performance. The level of competitive performance that a company achieves is strongly determined by the PACE choices that they make and how well they execute those decisions.

Source: Aberdeen Group, November 2008

Appendix B:
Related Aberdeen Research

For related Aberdeen research visit www.Aberdeen.com

Since 1988, Aberdeen's research has been helping corporations worldwide become Best-in-Class. Having benchmarked the performance of more than 644,000 companies, Aberdeen is uniquely positioned to provide organizations with the facts that matter — the facts that enable companies to get ahead and drive results. That's why our research is relied on by more than 2.2 million readers in over 40 countries, 90% of the Fortune 1,000, and 93% of the Technology 500.

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