



# Managing Application Sprawl in the Cloud Era

*Regaining visibility and control with next-generation application performance management*

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This paper addresses how diverse teams within the organization — including architects, developers, and operations managers — can use next-generation application management tools to collaboratively monitor application performance and meet stringent goals for application health and availability without sacrificing the speed and advantages of agile development.

## Background

The way that web applications are built, deployed, managed, and used is rapidly changing. For today's large organizations, the explosion of mobile devices is bringing the business closer than ever to consumers and end users – creating opportunities for business units to strategically differentiate their services, while intensifying the pressure on web app performance. Meanwhile, advances in cloud computing and 'do-it-yourself' application development tools have lowered the barrier to entry for app development. The resulting proliferation of web apps in all parts of the enterprise has created new opportunities – and risks – for IT Operations and Developer teams. A new way forward in web application management is needed if organizations are to keep pace with development and maintain their competitive advantage.

## The Rise of the 'Do-It-Yourself' Developer

Web applications can be easily created and customized for a variety of business needs. They often require minimal financial and infrastructure investment, and may be hosted on data center, cloud, or hybrid environments. In short, it is now possible for a small team to build, manage, and deploy a large-scale web application with little or no support from their corporate IT department. While this trend is sometimes referred to as 'shadow IT,' these applications often deliver real business value by providing faster customer support, promoting better collaboration, and/or improving employee productivity and morale.

A recent Intuit QuickBase study<sup>1</sup> illustrates this 'shadow' application development trend further. Intuit interviewed 900 information technology workers about their interactions with their corporate IT departments and their use of 'do-it-yourself' development tools. Over 50 percent of respondents said they bypassed corporate IT in favor of web apps, instant messaging platforms, and social networks. One in five had built or customized an app in the last year. Another 17 percent used development tools and software without the knowledge of their IT department.

Such applications are usually developed with a specific business need in mind and can be quickly put into production. Because of this, they often provide an immediate return on investment (ROI). One side effect of this trend is that QA and testing processes are often shortened or non-existent and thus application performance and reliability can diminish over time, causing degradation in quality of service.

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<sup>1</sup> Source: [Intuit QuickBase](#), Workplace Innovation, "DIY Enterprise Apps Hit the Tipping Point," December 13, 2011

To address these issues, corporate IT Operations should work with business unit developers to resolve Quality of Service (QoS), reliability, and security concerns. According to the study, organizations that support this 'do-it-yourself' philosophy often find long-lasting, significant improvements in employee productivity and morale. Next-generation, SaaS application performance management (APM) tools can de-risk this practice by enabling multiple team members to manage app performance effectively.

Below are five suggested application performance best practices for organizations that want to harness the advantages and successfully manage the risks of rapid application development and deployment.

## Find and Eliminate Performance Issues Before They Affect End Users

Poor web application performance can have a significant impact on customer satisfaction and corporate revenues. Organizations that want to leverage web apps to generate revenue must focus on providing high QoS by minimizing application downtime and meeting end-user expectations for site performance. Therefore, having deep visibility into end users' perspectives in a real time production environment is a critical requirement.

Traditional APM tools often use 'outside-in' methods to monitor user experiences. Some use 'bots' to replicate application and transaction times on their internal infrastructures. Others create a network of monitoring points outside their firewall to collect data about application response times, abandonment rates, and application usage patterns.

Neither method provides an accurate picture of the health of a web application. To track performance problems before they affect end users, enterprises need to have deep visibility into their application's performance from the end user experience. Average response time, a metric heavily reported by traditional APM tools, is easily skewed by a few outlier transactions and therefore often misrepresents the true end user experience. By monitoring and understanding how real users experience a web application's performance in real time, enterprises can quickly address issues impacting app response times. The more accurate method for measuring response time is through Apdex<sup>2</sup> scoring, an industry standard method for measuring the

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<sup>2</sup> Source: Apdex Alliance, Peter Sevcik, "Using Apdex to Improve Online Customer Satisfaction", September 8, 2009

satisfaction of each individual user. Further, transaction and browser tracing provide detailed information about slow web and end user transactions. Effective APM tools use this information to show development teams exactly where their bottlenecks are located – whether in the front end, the app, or on connected systems.

## Become Language and Platform Agnostic

The reality today is that when building web applications, developers are utilizing a number of different software platforms, languages, frameworks, and development environments, some of which are newly emerging. Each language has its own set of benefits and use cases. Common development languages used to create enterprise-class web applications include Ruby, PHP, and Python in addition to Java and .NET. Developers may choose one language over another due to performance requirements, developer productivity or integrations with other existing applications or services. In addition, many companies are no longer choosing between languages, but rather are building apps with several languages to take advantage of their unique characteristics.

Applications written with dynamic languages and frameworks require performance management tools that support their distinctive features. An application performance management tool that provides support for each of the most commonly used languages will provide tremendous developer productivity advantages because it can deliver the same set of monitoring, triaging and diagnostics capabilities in one tool, versus the alternative of seeking, acquiring, and learning different tools for each development language.

## Gain Visibility into Both the Cloud and Data Center

As enterprises migrate more web applications to cloud environments, they need to carefully manage the performance of their applications to ensure they are gaining the efficiencies and ROI they expect. While many individual business users were early adopters of cloud platforms, corporate IT departments often took a wait-and-see approach. Their understandable caution was based on the desire to maintain control of their infrastructure, and to provide fast and reliable application availability.

As the need to stay competitive in the global marketplace intensifies, large organizations are looking for ways to reduce costs by outsourcing IT projects. At the same time, advances in cloud technologies have made it easier for enterprises to scale their virtual environments and honor Service Level Agreements (SLAs).

The advent of SaaS-based application management tools has helped alleviate the lack of visibility into composite applications introduced in virtual environments. Next-generation application performance management tools were designed with the cloud in mind to independently monitor app performance across physical data centers, cloud and hybrid environments.

By utilizing a single tool for application performance management, enterprises gain automatic visibility across physical and virtual environments. This allows organizations to standardize their development operations facilitating the migration of business-critical applications to the cloud.

## Change the Way Applications Are Tested

Rapid application deployment instills an element of risk into the development process. Applications that appear performant during testing may fail short of QoS goals in a production environment. Therefore, enterprises can no longer rely on testing environments to imitate real world user experiences.

Production monitoring enables enterprises to track the performance of their application in a post-deployment environment. By including deployment tracking and reporting features, next generation APM tools allow developers to predict how an app will perform as its audience grows. Organizations can then make immediate adjustments based on real world data to ensure an app performs according to customer and internal expectations.

## Measure Efficiencies and Calculate the Cost of Ownership

As enterprises implement continuous app integration practices, they should carefully measure and monitor how it impacts their operations. Such changes often result in an immediate return on investment, and gains in productivity and efficiency.

By determining where in the stack performance issues lie, companies can optimize their application and potentially reduce their infrastructure costs. For example, a large social crowdsourcing organization was able to determine that their performance problems were contained within their application's code. They were able to reduce their server usage by almost 30 percent, resulting in a significant cost savings for the organization.

Compared to on-premise APM solutions, next-generation, SaaS-based performance tools do not require additional investment into the supporting infrastructure nor do they require an army of administrators to manage and support the APM installation. Further, SaaS-based performance tools are easy and fast to implement and don't require months of professional services engagements, which drastically reduces TCO and improves time to value. Additionally, support, upgrades and other maintenance costs are included in the base cost of the product, bringing costs down further. SaaS tools can be used independently or in conjunction with traditional on-premise app management tools to provide better insight into application performance.

## Conclusion

Enterprise IT Operations and Development teams need next-generation APM tools to gain insight into overall performance and end user experience of applications that are being newly created throughout the organization, whether they originate within IT or the business unit. These innovative applications provide significant business value and should offer the same QoS as other enterprise applications. The proliferation of these web apps is being driven by a number of trends, including enterprise adoption of cloud-based architectures, platform diversification, and the use of agile software development techniques across IT and business units. Only next-generation, SaaS-based APM tools can provide the in-depth visibility into application health that enterprises require. These tools will continue to gain market share as enterprises migrate more of their applications to cloud environments.

## About New Relic

New Relic is the all-in-one web application management provider for the cloud and the datacenter. More than 14,000 organizations use New Relic to optimize over 30 billion metrics in production each day. Fully implemented in just minutes, New Relic provides 24x7 real user monitoring and code-level diagnostics for web apps deployed on dedicated infrastructures, the cloud, or hybrid environments. New Relic provides support for Ruby, Python, PHP, Java, and .NET platforms and related frameworks. New Relic also partners with leading cloud management, platform, and hosting vendors to provide their customers with instant visibility into the performance of deployed applications.

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