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Global Trends: Unified SOA Performance Management Matters

A comprehensive solution is needed for managing all of the different complexities involved with SOA environments

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Global Trends: Unified SOA Performance Management Matters

According to a new survey from *InformationWeek* Business Technology Network — *The State of Real-Word SOA* — SOA deployments are coming on strong, and they're not just pilot tests anymore. As leading organizations take SOA enterprisewide, they're learning that the best way to ensure SOA app performance is with a suite of tools able to unify performance management.

by Carol Weiszmann

About the Author
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Applications built on a service-oriented architecture (SOA) model are replacing tightly-integrated, siloed legacy apps with plug-and-play software environments comprised of loosely-coupled services/components that simplify integration of existing applications and accelerate development cycles via reuse of services and components.

SOA's loose coupling promises to simplify the struggle to integrate notoriously segregated information systems and databases that have for so long dampened productivity and hindered development of effective business processes.

Despite their own complexities, SOA applications generally are built from standard components and services, so they're able to simplify communication between disparate systems. And the complexities that SOA does introduce can be addressed with SOA-oriented application performance management solutions that give IT operations staff necessary end-to-end visibility into SOA transaction paths, integration points, services/components, and connected back-end systems.

SOA also enables more agile and better-optimized business processes that ultimately can be developed independently by business analysts without altering core integration technology. As more SOA services/components (in effect, automated business functions) are developed and shared, the result can be an environment able to respond to the continuous change that all organizations experience to some degree in today's fast-paced global economy.

The potential payoffs from SOA properly deployed and effectively managed include more flexible business automation, lower innovation costs, and faster time-to-market with new products and services.

Clear Signs of Commitment to SOA

InformationWeek's recent *The State of Real-World SOA* survey sought to find out how far organizations have gone in committing to SOA. All of the survey's 615 respondents (from the United States, the United Kingdom, France, Germany, and Australia) hail from organizations that are either deploying SOA applications or planning to.

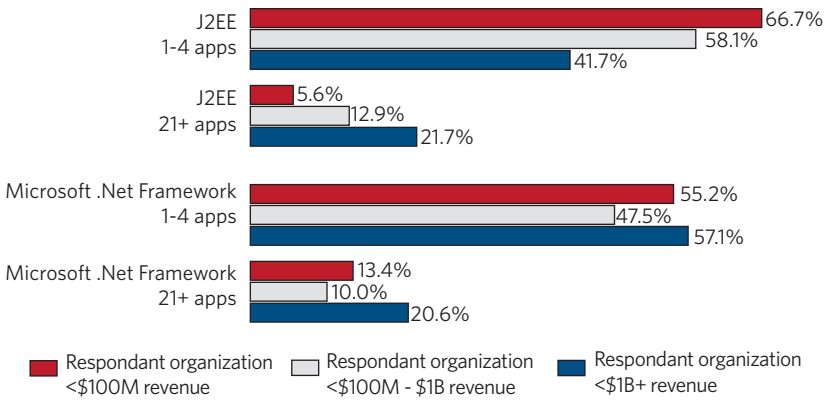
Findings indicate deployment of SOA applications is still in its early stages, with organizations implementing SOA apps on multiple platforms (.NET as well as J2EE) for multiple purposes.

To be sure, there are clear signs of commitment to enterprisewide SOA: Twenty-nine percent of survey respondents report that their organizations are deploying SOA applications as part of an enterprisewide strategic initiative. And the larger the organization, the more SOA apps it tends to deploy (see Figure 1: *SOA App Deployment by Organization Size*) on a given platform.

Yet only a minority of respondent organizations is deploying SOA apps on either platform in large numbers (see Figure 2: Stages of SOA App Deployment by Platform). Most are still fielding just one

FIGURE 1: SOA APP DEPLOYMENT BY ORGANIZATION SIZE

Platform on which SOA apps are currently deployed



to four SOA apps in any given deployment stage.

Even so, 26 percent of respondents to *The State of Real-World SOA* survey are deploying more than 21 SOA apps on J2EE and .NET as part of an enterprisewide strategic initiative. Still the low number of enterprise-level strategic initiatives shown in *The State of Real-World SOA* survey suggests there's a long way to go even for the more SOA-advanced organizations.

What SOA Changes

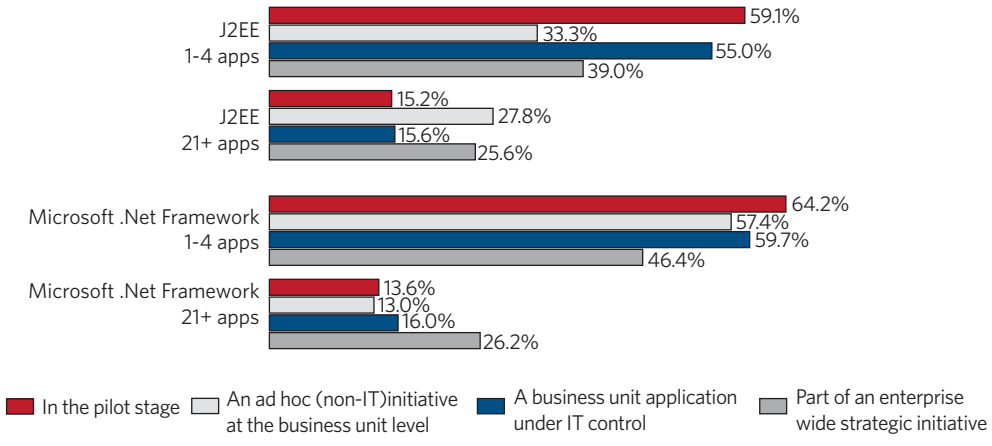
Traditionally, IT applications have been static: Features and functionality, software code, and infrastructure are all predetermined at the design stage and difficult to alter.

SOA changes all that. Driven by business rules that can and do adjust to shifts in business conditions and demands, SOA applications are composed of mutable services/components from various sources that follow transaction paths which are decided on-the-fly at runtime.

Hence SOA application services/components can change from run to run. Transaction paths can change from run to run. And these changes can in turn produce new, unanticipated behaviors in applications, in response times, etc. Customer behavior is volatile, too: SOA app developers may expect 100 calls a day, but the fielded application can end up with 100 calls a minute.

FIGURE 2: STAGES OF SOA APP DEPLOYMENT BY PLATFORM

Platform on which SOA apps are currently deployed



Service end points may be added or changed, too. New services might be offered, or existing service-level agreements redefined. SLAs may even exist between entities outside the immediate organization. This is in addition to the normal complexities required to define SLAs based on numerous metrics.

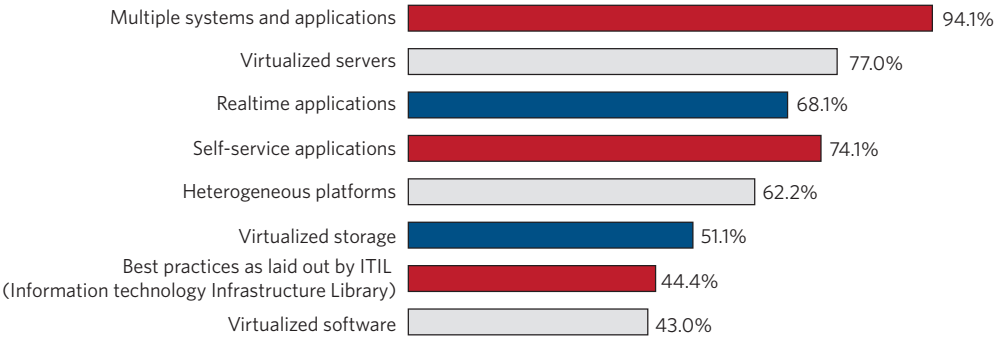
Thus, almost by definition, SOA applications and environments are heterogeneous. So the already powerful need for IT staff to deal more effectively and efficiently with heterogeneity becomes downright intense when the organization begins to implement SOA applications, especially if they're developing and deploying on both J2EE and the .NET framework.

Respondents to *The State of Real-World SOA* survey — particularly those deploying SOA applications enterprise-wide — reflect the longstanding shift toward heterogeneity (see Figure 3: Technology Use Among Those Deploying SOA Apps Enterprisewide).

As might be expected, nearly all of them use multiple systems and applications. This likely reflects the 'façade' approach used by many organizations to introduce SOA incrementally with less risk, in which an SOA interface is put in front of an existing application or service. Some 62 percent of respondents to *The State of Real-World SOA* survey use heterogeneous platforms, significantly

FIGURE 3: TECHNOLOGY USE AMONG THOSE DEPLOYING SOA APPS ENTERPRISEWIDE

Platforms on which SOA apps are currently deployed



higher than the overall survey respondent base, 47 percent of which uses heterogeneous platforms.

These organizations are already facing the challenges of integrating disparate systems, platforms, and applications — something that SOA can simplify, if SOA applications are properly managed once they've been deployed.

SOA: Going Mission-Critical

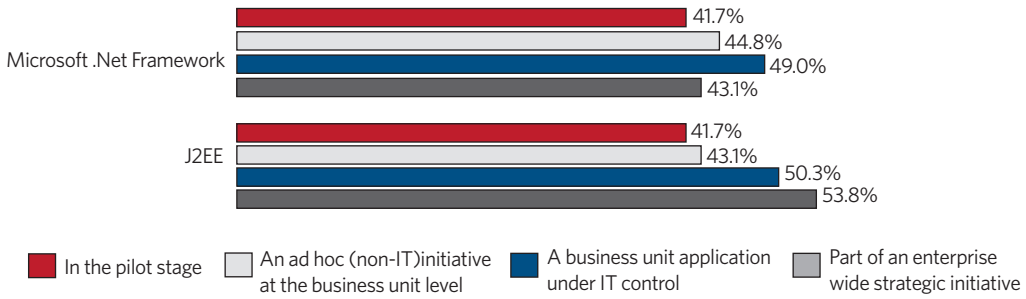
If information technology exists to support the strategic and tactical goals of the organization that feeds it, then the experience of customers (internal and external) decides whether or not any application or IT environment is living up to expectations.

With SOA applications, that mandate is more explicit than ever. Since assuring the customer experience is impossible without extensive knowledge of application performance, monitoring and measuring performance is essential to running mission-critical SOA applications in production environments.

And mission-critical SOA applications in production environments are precisely what are coming down the pike.

FIGURE 4: COMING NEXT — MISSION-CRITICAL SOA IN A PRODUCTION ENVIRONMENT

Planned platform for mission-critical SOA apps in a production environment



Fully 78 percent of respondents to *The State of Real-World SOA* survey report plans to run mission-critical SOA applications in a production environment. What's more, they're doing it quite evenly across the two key SOA platforms (see Figure 4: Coming Next — Mission-Critical SOA in a Production Environment).

Lurking: Performance Troubles

So far, in these early stages of SOA app development, respondents to *The State of Real-World SOA* survey report that their SOA deployments are pretty much meeting expectations.

Indeed, expectations have been adequately met by at least two-thirds of respondent organizations in four make-or-break categories: Development and deployment, conversion of legacy applications, performance, and achieving business unit objectives (see Chart 5: The SOA Report Card).

Of course, SOA in the real world is new and these are preliminary results. In them are hints of where trouble lurks (see Figure 5A: When SOA Fails).

And it lurks in the conversion of legacy applications and in performance. This is significant because so many early-stage SOA application initiatives involve putting an SOA 'face' on legacy applications.

FIGURE 5: THE SOA REPORT CARD

How SOA apps that are part of an enterprisewide strategic initiative are meeting expectations

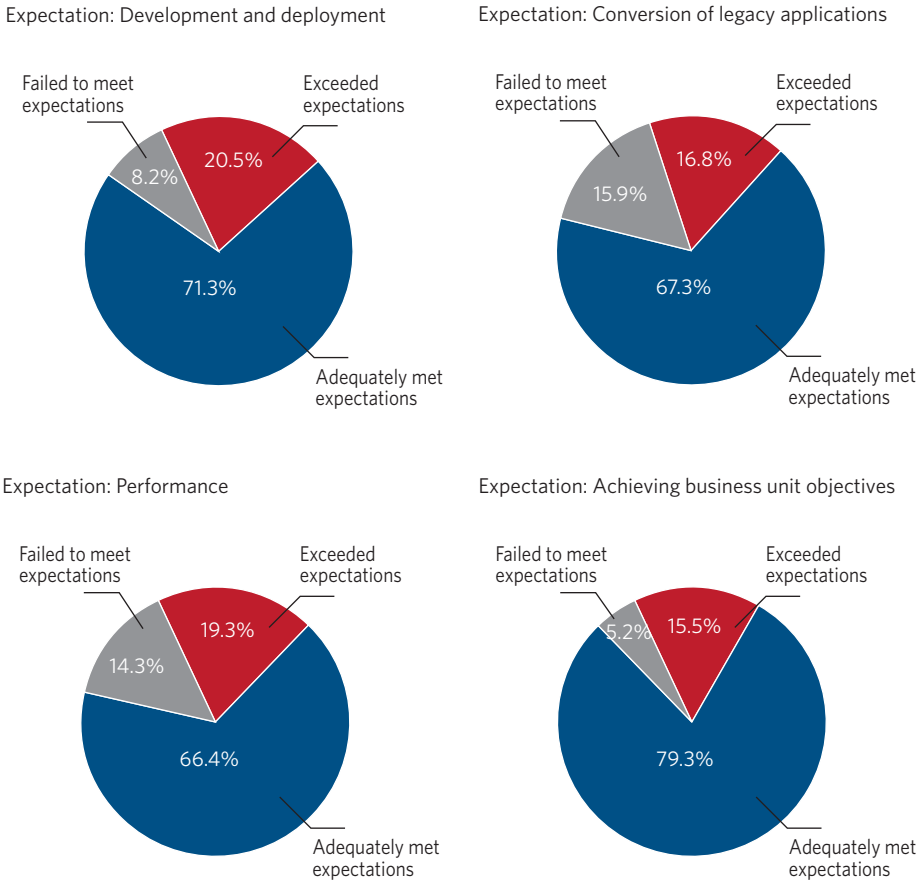
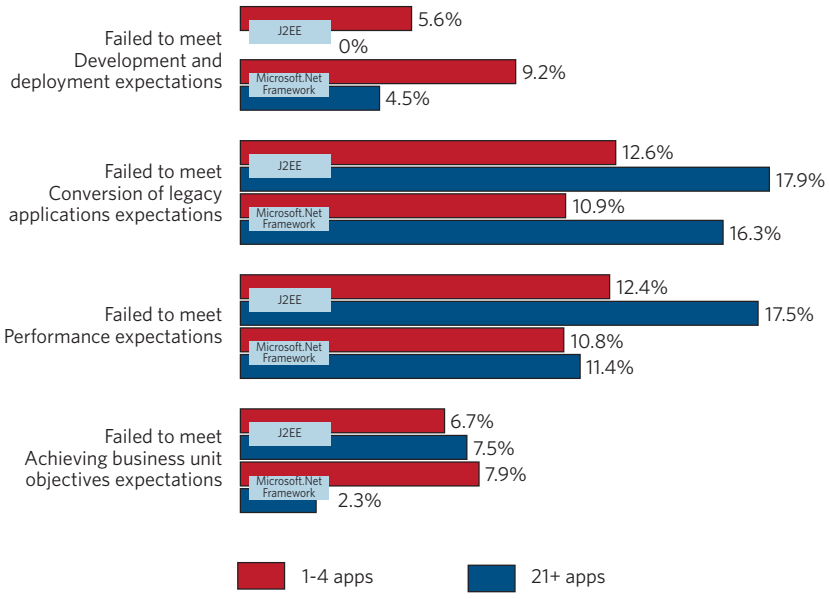


FIGURE 5A: A LOOK AT SOA SLAs

A closer look at the platform environments of SOA apps that fail to meet expectations



The State of Real-World SOA survey results indicate that those deploying more SOA apps see higher failure-of-expectations. This is a minority of respondents, as Figues 1 and 2 so clearly show. But these numbers will grow as organizations commit to deploying SOA — and as deployment expectations intensify.

New Kinds of Visibility

SOA application performance is unsustainable without end-to-end visibility into the entire transaction path. This means 24/7 awareness of all integration points, services, components, and connected back-end systems.

To ensure performance levels that satisfy customers, IT operations staff needs to know about SOA applications' linkages to other services, applications, and tools. They need real-time metrics like number of concurrent users, throughput, processing time, messages per hour, queries per day, latency, availability, rejected transaction counts.

Such monitoring must also be low-profile. Highly available SOA apps cannot afford the extra overhead of monitoring code.

These sorts of requirements mean that monitoring, measurement, and management of an SOA application environment is best handled with a single performance management toolset that provides

- Automatic discovery of services/components.
- Always-on performance and availability monitoring in production environments that doesn't add further overhead or latency to the monitored systems. Issues need to be detected in real time before they impact app performance.
- Ability to monitor all transactions at the component level, 24/7, across multiple processes and applications so IT staff can understand each service/component transaction in the context of individual transaction paths.
- Ability to monitor HTTP traffic, portals, etc., in order to track customer experience.
- Root-cause analysis that maps and models configurations, relationships, and interactions among various technologies and application elements — so information about SOA app transactions can be used to isolate underlying issues regardless of where these occur and so that the impact of infrastructure events on an app can be determined both for the present and for the future.
- Ability to establish performance baselines and leading indicators, so problems are identified early on, before app performance is affected.
- Integration of diverse management capabilities. This includes live, customizable views into the entire multi-platform SOA services/component infrastructure, so those with different responsibilities can view integrated performance data in accord with their roles and be assured that those with whom they collaborate are accessing the same dataset.
- *Collaborative, team-oriented processes and best practices* that not only help operations staff optimize performance but point out to developers where design issues impact that performance. This means integration between performance monitoring, problem management, change management, provisioning, and service-level management.

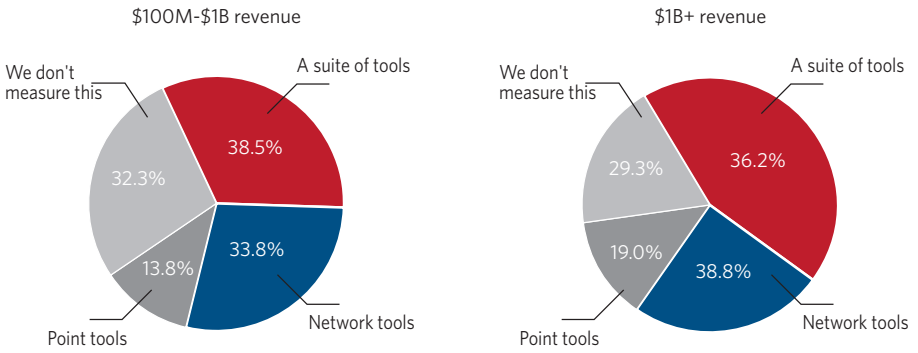
A Need for Unified SOA Application Performance Management

Among respondents to *The State of Real-World SOA* survey, the largest ones tend to run more heterogeneous IT environments and are furthest along in deploying SOA applications enterprisewide. They also use tool suites to measure SOA application performance far more than smaller firms.

As shown in Figure 6: Tool Suites Dominate the High End, more than half of respondent organizations with annual revenues exceeding $1 billion use tool suites.

FIGURE 6: TOOLS SUITES DOMINATE THE HIGH END

Type of tool(s) used to measure SOA app and web perfomance



This percentage will no doubt climb rather dramatically as SOA applications are more widely deployed into the enterprise and organizations achieve real understanding of the kinds of metrics they need to manage what they've deployed.

Two issues drive this, believes Jeff Cobb, Senior Vice President of Product Strategy and Distinguished Engineer at CA Wily. "You need to manage the environment from the browser through to back-end components. That's one issue. The other is heterogeneity. Many point solutions apply to only one protocol or one technology stack or one vendor. Given the open nature of SOA, and the fact that it's flexible, you want a management approach that leaves all your options open for application implementation vendors."

Monitoring and measuring performance in an SOA app environment must be continuous, too, as it spans platforms to robustly plumbs new and different levels of granularity.

That's not all. It must deliver up collected performance data via an interface that allows for customization by users in a variety of roles, from IT operations to application developers to business analysis to keepers of the customer experience.

"Point solutions are not comprehensive," says Cobb, "and a comprehensive solution is needed for managing all of the different complexities involved with SOA environments, including the various components that can fail."

Successful SOA demands smarter performance monitoring tools that can automatically suss out an SOA environment's business logic, components, and transaction flows. This will become especially important as organizations deploy a critical mass of SOA application business logic that decides dynamically how an SOA-based transaction should be completed. ✦