Extending Application Performance Management (APM) With Synthetic Monitoring and Testing

Performance Optimization for State-of-the-Art Application Environments

EMA™

*IT & DATA MANAGEMENT RESEARCH,
INDUSTRY ANALYSIS & CONSULTING*

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Overview

Modern businesses run on software. Agile development and Continuous Delivery practices push new features and functions into production faster than ever before. These accelerated delivery cycles reflect an increasingly competitive business climate, with the majority of companies now engaged in Business to Business, Business to Consumer, and/or generalized eBusiness services.

At the same time, participation in the digital economy is no longer a differentiating factor supporting outsized revenue growth; eBusiness is now "business as usual" for the vast majority of companies, with few businesses capable of surviving without a robust online presence.

From a technical perspective, these shifts are complicating both Application Performance Management (APM) and User Experience Management (UEM). The increasing frequency of API-connected transactions and component-based microservices, for example, necessitates support for API integrations as part of APM monitoring. Cloud computing has had an impact as well. Large-scale adoption of public Software as a Service (SaaS), Infrastructure as a Service (IaaS), and virtualized private clouds means that a growing number of "applications" are now being deployed as hybrid or integrated services. Often, the "back end" infrastructure supporting hybrid deployments consists of component-based services such as Service Oriented Architecture (SOA) deployments. In each case, the execution strategies are somewhat different as are the APM and UEM technologies required to monitor and manage end-to-end execution.

Regardless of how modern applications are implemented, however, the research finds that more than 50% of IT organizations lack the tools they need to fully manage the application layer. Even fewer have access to toolsets capable of tracing transaction execution and determining topologies across the broad array of execution elements that make up a component-based transaction. And without insight into topologies and dependencies, it becomes increasingly difficult to determine which infrastructure elements support which application. As a result, the root-cause analysis process has become long, drawn out, and expensive.
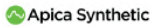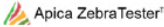
The fact that these types of applications are now part of normal "business as usual" provides a powerful argument in favor of APM and UEM investments capable of solving these challenges. Yet while a combination of the two product types is ideal, it is rare to find pre-integrated APM/UEM solutions that actually work as expected.
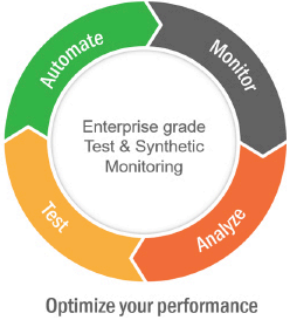
This Enterprise Management Associates (EMA) white paper discusses today's industry trends in the context of extending APM with UEM in the form of synthetic monitoring and testing. The Apica WebExcellence Suite (see Figure 1) delivers scalable, production-grade synthetic transactions, load testing, and script recorders in a form factor that is easily integrated with incumbent APM solutions. This extensibility not only augments the value proposition of existing APM solutions, it provides a unique, application-focused perspective supporting drill-down from APM dashboards into Apica-supplied correlation, root-cause analysis, and reporting functionality.

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Figure 1. Apica WebExcellence Suite

New Breed of Enterprise Applications

Today's IT organizations are supporting a new breed of integrated, connected, and high-bandwidth applications. As Figure 2 shows, almost 70% are now running "hybrid" transactions that share data across internal and external systems. This percentage has nearly doubled over the past two years.

Because these applications execute, in part, on platforms external to the enterprise, a significant portion of their execution path cannot be traced and measured by traditional APM solutions. UEM solutions such as synthetic transaction technology can fill this gap. However, it is almost always the case that APM and UEM solutions are separate, disconnected products versus integrated solutions whose data is cross-correlated.
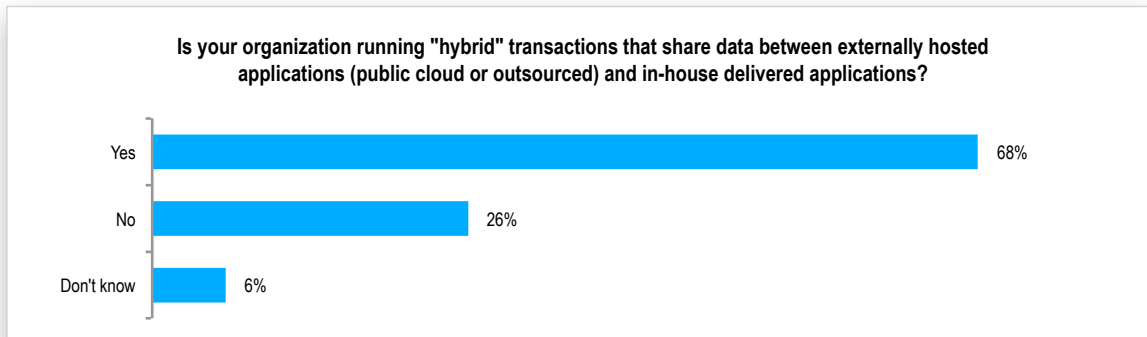

Figure 2. Percentage of companies reporting "hybrid" deployments has nearly doubled in past two years

Likewise, as Figure 3 shows, these integrated applications often rely on Application Programming Interfaces (APIs) to connect with partners, suppliers, and customers. In EMA's latest API-focused research, 95% of survey respondents reported that their companies were actively utilizing both provider and consumer APIs.[1] Ninety-five percent (95%) of these API users rated provider APIs as "critical" or "very important" to the business; 90% rated consumer APIs in a similar way. Yet the vast majority are still monitoring API-connected transactions from a silo versus an end-to-end perspective.

One reason for this is that, although API connectivity has played a significant role in cross-company integrations for many years, the growth of standards-based Simple Object Access Protocol (SOAP) and Representational State Transfer (REST) protocols in recent years has created a challenge for incumbent APM providers. Without specific support for these protocols, it becomes difficult to trace execution through the web of APIs and other integrations supporting complex services. This can become an issue for traditional APM solutions designed to monitor the relatively static, less dynamic application ecosystems of past years.

When APM solutions have little or no visibility into these types of services and technologies, identifying and troubleshooting performance problems across the application environment becomes problematic. Combining UEM solutions such as synthetic transactions with APM—particularly in cases where the analytics within one solution are capable of correlating metrics collected by the other—may well be the ideal management scenario for these sophisticated execution environments.
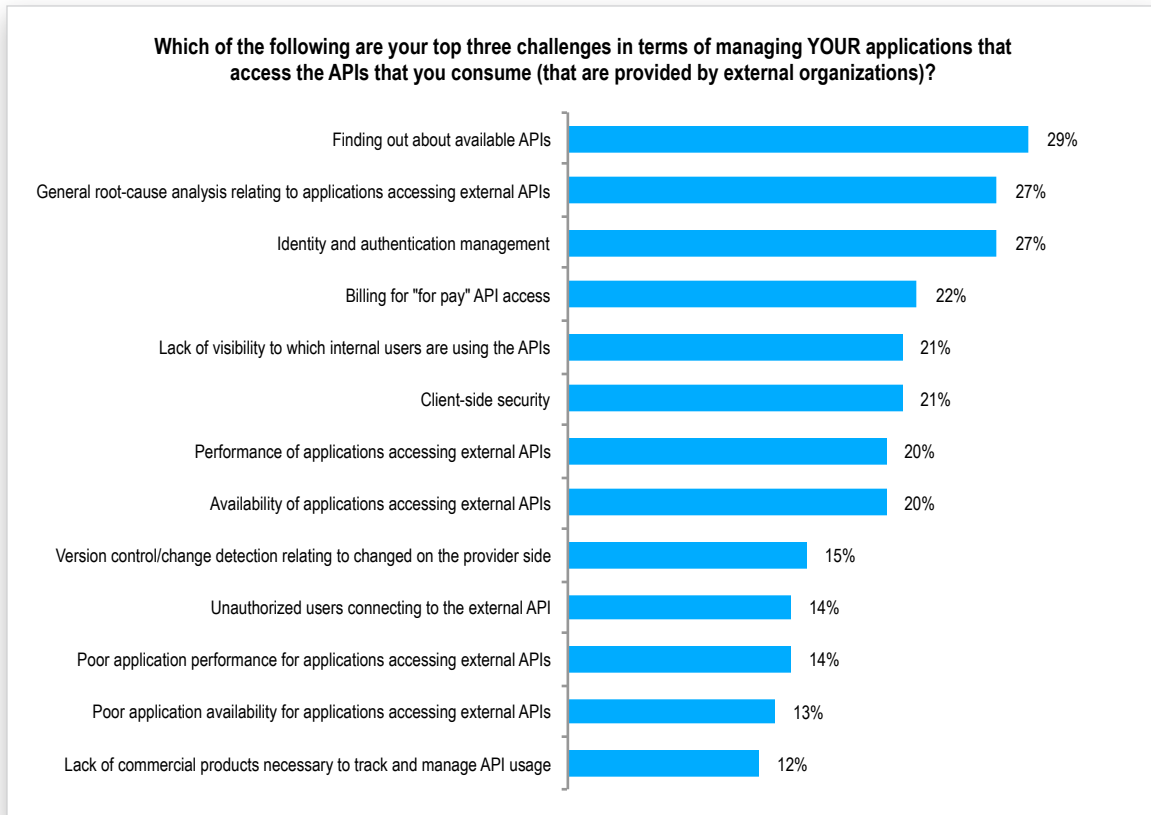
Which of the following are your top three challenges in terms of managing YOUR applications that access the APIs that you consume (that are provided by external organizations)?

Challenge	%
Finding out about available APIs	29%
General root-cause analysis relating to applications accessing external APIs	27%
Identity and authentication management	27%
Billing for "for pay" API access	22%
Lack of visibility to which internal users are using the APIs	21%
Client-side security	21%
Performance of applications accessing external APIs	20%
Availability of applications accessing external APIs	20%
Version control/change detection relating to changed on the provider side	15%
Unauthorized users connecting to the external API	14%
Poor application performance for applications accessing external APIs	14%
Poor application availability for applications accessing external APIs	13%
Lack of commercial products necessary to track and manage API usage	12%

Figure 3. While more than 90% of companies are utilizing APIs, more than one-quarter report challenges relating to root-cause analysis.

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[1] EMA, "Back to the Future with the 'API Economy': Management Strategies for a New Wave of Integrated Applications," July 2015. Available for download at www.emausa.com.

Value Proposition of Apica Combined with APM

As both on-premises and SaaS-based APM solutions gain market momentum, many companies are searching for complementary UEM solutions that complete the end-to-end execution picture. And while each APM solution has its own analytics and other differentiators, all have one thing in common—such solutions are designed to monitor execution in context with underlying technology elements, which may include infrastructure, code, integrations, and related components.

Capabilities such as those Apica offers—transaction monitoring, load testing, and monitoring of APIs and non-standard "applications" such as streaming, for example—are outside the scope of coverage of many traditional APM solutions. Yet when companies are running both APM and UEM, they typically run as standalone tools, reinforcing each other's findings but forcing IT specialists to manually integrate and cross-correlate information across toolsets.

Apica's synthetic monitoring solutions yield significant value in standalone mode, particularly for DevOps activities, pre-deployment load testing, and post-deployment 24x7 monitoring. However, Apica is also purpose-built to share transaction data with APM solutions to support troubleshooting and root cause analysis functions.

Apica includes a built-in correlation function, a distinctive feature that sets it apart from much of the competition. Used in conjunction with APM, this feature connects performance issues identified in Apica to performance issues identified by the APM tool. Users can drill down from Apica and into APM to see the root cause.

Apica can also "tag" transaction headers to provide visibility into application flows across on- and off-premises systems. From the Apica perspective, integrations are a two-way street; the tags or labels can be sent to and identified by APM analytics as being part of a single transaction. This adds detailed execution information to standard APM analysis routines, supporting continuous testing versus periodic sampling.

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EMA Perspective

Apica provides a strong value proposition across the lifecycle. Preproduction performance and load testing can reveal code design and potential execution issues supporting bug fixes and hardware/software provisioning. Postproduction, Apica supports monitoring of API-connected services and microservices, as well as "modern" technologies such as audio and video streaming, in addition to traditional, business-facing applications. When integrated with APM, these features flow data into correlation and analytics algorithms, supplying an additional dimension of visibility into execution of both traditional and non-traditional applications.

Apica's "continuous testing" of transactions automates visibility into end-to-end execution on an ongoing basis, which incumbent APM solutions often lack. In addition, Apica's two-way API provides a basis for automated correlation of execution issues identified by synthetics to underlying causes by sharing data with APM solutions. Apica also supports transaction tagging, which is not a supported feature of many APM solutions.

In short, Apica adds value across the lifecycle, both as a standalone solution and as an integration with other application-focused toolsets, by supporting software testing, load testing, and ongoing production testing. All such tests utilize the same scripts.

For more information on the Apica Web Excellence Suite, please visit www.apicasystem.com.

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About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help EMA's clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise line of business users, IT professionals and IT vendors at www.enterprisemanagement.com or blogs.enterprisemanagement.com. You can also follow EMA on Twitter, Facebook or LinkedIn.

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