

Transaction-Centric vs. Infrastructure Centric Application Performance Management

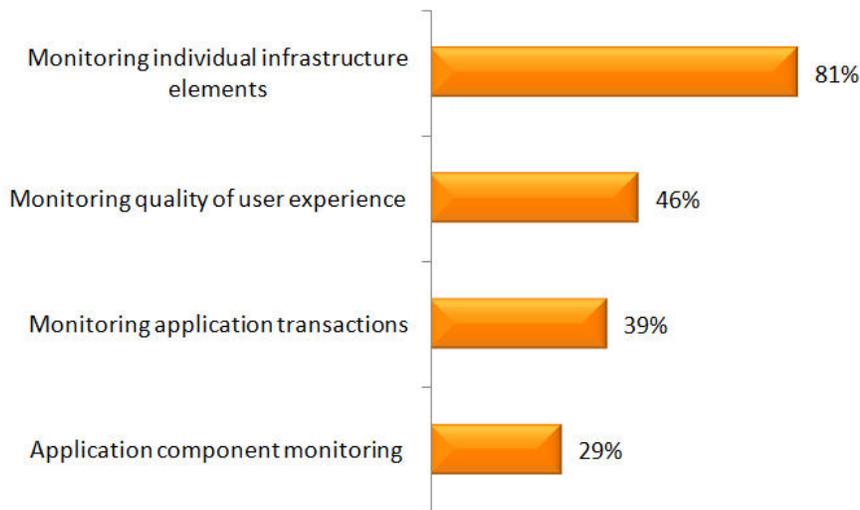
Based on 2011 TRAC survey results
Prepared for Dell

Introduction

TRAC's recent survey shows that when it comes to managing application performance, the approaches that organizations are taking vary significantly based on how the data is being collected, types of metrics captured and how these solutions are deployed and managed. The research also shows that the effectiveness of these approaches predominantly depends on types of application environments that are being managed. Figure 1 shows that the approach taken by the majority of organizations for application performance management (APM) is based on monitoring individual infrastructure elements. However, the research also shows that organizations who are managing emerging multi-tier applications are increasingly implementing an infrastructure-centric approach towards application performance management.

This report from TRAC Research examines the major differences between transaction-centric and infrastructure-centric approaches for APM and analyzes the pros and cons of these technologies in different use cases.

Figure 1: Approaches for Managing Application Performance



Source: TRAC Research, September 2011

More than 400 organizations worldwide participated in TRAC's 2011 research around key areas of Web and application performance management.

Demographics of the research:

Company size:

- 25% - small
- 41% - medium
- 34% - large

Geography:

- 51% - North America
- 24% - EMEA
- 20% - APAC

Overview of Infrastructure-Centric and Transaction Centric Approaches for APM

Infrastructure-centric APM (ICAPM) is a group of technologies that provide visibility into application performance by monitoring individual infrastructure elements such as network, server or database. This class of technology is not homogeneous and consists of solutions that range from monitoring network traffic to solutions for monitoring server utilization or database queries. Some of these technologies are also able to capture metrics about the performance of application transactions, but these views are often limited to metrics such as average transaction response times and resource utilization. Additionally, these tools do not provide granular performance data for each transaction and lack visibility into application components.

Transaction-centric application performance management (TCAPM) consists of solutions for both active and passive monitoring, as well as tools that are being used horizontally or for a deeper dive into application performance. These solutions use a number of approaches to group application transactions, and they range from byte code injection and instrumentation to groupings based on user, session, location, business function and / or error condition.

Some of the key differences between these two approaches are reflected in the types of data being collected and in the context in which this data is presented and used. Key characteristics of solutions for transaction-centric APM include the ability to provide both a business context of application performance and information about transaction payload or map transactions to business processes that are being supported. Additionally, this approach allows organizations to map dependencies between different infrastructure elements that are impacting application performance, and to see deeper into application components and how they affect the quality of user experience.

On the other side, Infrastructure-Centric APM solutions provide more granular insight into individual IT domains. For example, network-based APM solutions are able to collect visibility into the health of network devices and granular information about network traffic. Some of them are also able to collect packet level data.

From the technology perspective, the biggest difference between these two approaches is that TCAPM solutions enable end-user organizations to monitor application performance across multiple infrastructure tiers and hosts while ICAPM solutions are typically able to monitor performance of individual hosts, but do not provide correlation between these hosts.

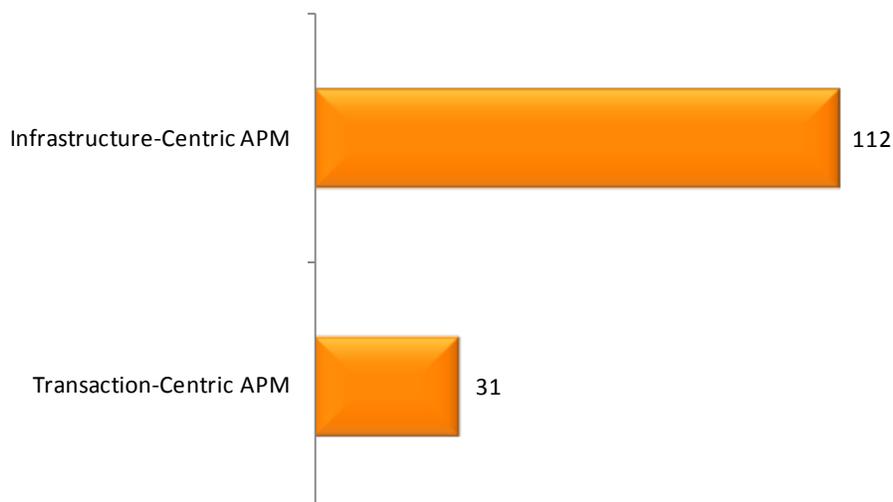
Many end-user organizations are using both of these approaches in parallel, as these solutions complement each other and data collected creates significant synergies. The ability to use a single platform to provide data that would be relevant to multiple stakeholders is one of the capabilities that organizations are becoming increasingly interested in. Having this capability, especially when

enhanced with custom levels of access to the data collected, allows organizations to facilitate collaboration between different IT teams and reduce the amount of finger-pointing. In return, organizations that have this capability are more likely to reduce time spent troubleshooting performance issues, cut back on man hours spent in war room meetings and be able to allocate their IT resources to tasks that can create business value for their organizations.

Market Context

One of the key market trends driving the adoption of solutions of transaction-centric application performance management is the emergence of modern application architectures. These new applications are brought about by new designs and use cases of web-based applications and increased adoption of virtualization and cloud technologies, and allow organizations to improve scalability of their IT environments, design and roll out new services faster and dynamically adapt to changes in their business environments. However, managing these applications requires a new set of capabilities, and organizations are looking for true end-to-end visibility into transaction flow. TRAC's research shows that organizations using multi-tier applications are more likely to take a transaction-centric approach for APM, as compared to their peers. Figure 2 shows that organizations taking a transaction-centric approach to APM are more effective in identifying and resolving issues with application performance in a timely manner, as compared to their peers that are adopting an infrastructure-centric approach.

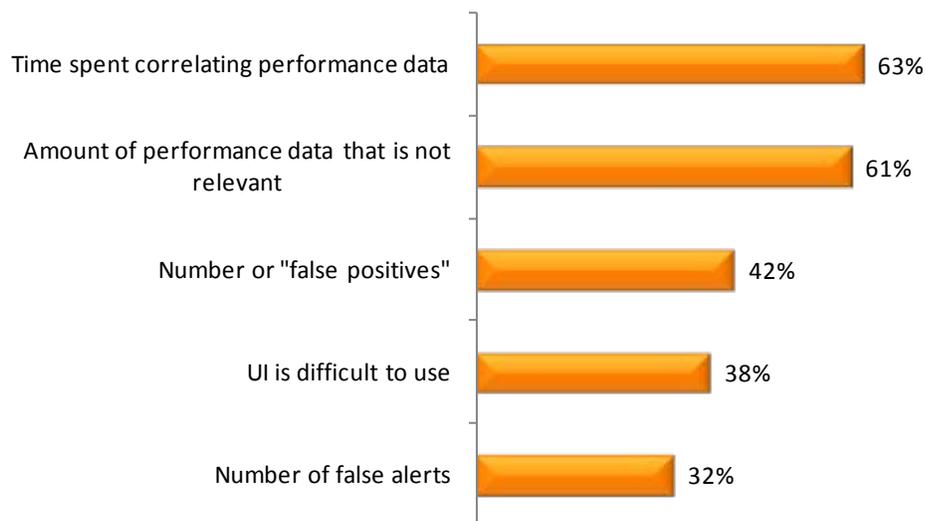
Figure 2: Average Mean Time to Repair (in Minutes) for Issues with Multi-Tier Applications per Incident



Source: TRAC Research, September 2011.

Organizations that participated in TRAC's research also reported that one of their key goals is to be able to monitor a transaction from the point of end-user's interaction with the application to the point where the transaction is processed. Additionally, 41% of organizations that participated in TRAC's recent research are using 10 or more products for managing different aspects of IT performance initiatives, while 22% are using 30 or more. As organizations are looking for end-to-end visibility into performance of IT services, many of them are trying to achieve that goal by deploying a number of point solutions addressing individual IT domains. However, these organizations also reported that correlating performance data collected from different sources is the key challenge of making this information actionable (Figure 3).

Figure 3: Key Challenges for Improving Usability of APM Data



Source: TRAC Research, September 2011

These organizations also report that their ability to troubleshoot and repair issues with application performance did not improve with the addition of new point solutions. The increased number of tools that organizations are using to address the growing complexity of managing IT infrastructure allows organizations to collect more performance data and get deeper views within individual IT domains, but it does not necessarily enable them to be more effective when dealing with key issues of application performance. With the growing complexity of IT environments, organizations increasingly understand that they need a common language between different IT "silos", and are using visibility into application transaction performance as one of the key vehicles for understanding how different IT domains impact the overall health of business services.

Market Insight

It should be noted that transaction-centric APM solutions are not replacing IT domain-specific products, but often co-exist with them, providing the additional level of visibility needed to address performance issues. Therefore, it is becoming increasingly important that these two types of solutions include capabilities that allow user organizations to correlate and normalize performance data and use a single interface for managing different aspects of application performance. As a result, vendors that are providing solutions for transaction-centric APM are increasingly focusing on enabling end-user organizations to import data from domain-specific tools into their solution, as well as to feed data collected by their solution into other IT management tools.

Pros and Cons of each approach

	Infrastructure-Centric APM (ICAPM)	Transaction-Centric APM (TCAPM)
Expertise in each of key IT domains	<ul style="list-style-type: none"> • Deeper expertise for each IT domain and by collecting more detailed information for IT elements that they are monitoring. 	<ul style="list-style-type: none"> • Ability to point to an IT domain that is causing performance issues. • Most tools do not provide a deep view into each IT element.
Management overhead	<ul style="list-style-type: none"> • Typically, deployed as agent-less technologies which creates less overhead on the infrastructure. • Typically, easier to deploy and manage. 	<ul style="list-style-type: none"> • Agent-based solutions typically generate between 2% and 5% overhead in production while some solutions can create up to 20% of overhead. • Solutions can use agent-based and agent-less solutions.
Instrumentation	<ul style="list-style-type: none"> • Typically easier to instrument and deploy. 	<ul style="list-style-type: none"> • Some TCAPM solutions could require several FTEs to instrument and manage solution on ongoing basis.
Managing different application types	<ul style="list-style-type: none"> • More effective in managing client-server based applications. 	<ul style="list-style-type: none"> • More effective in managing dynamic environments and modern application architectures.
Depth of application performance data	<ul style="list-style-type: none"> • No visibility into application components or code-level data. 	<ul style="list-style-type: none"> • Deeper view into application components and full visibility into transaction flow.
End-to-end visibility	<ul style="list-style-type: none"> • Visibility limited to individual segments of application delivery chain. 	<ul style="list-style-type: none"> • Ability to trace transaction across different infrastructure elements. • Many solutions provide capabilities for user experience monitoring integrated with transaction monitoring.
Job role specific data	<ul style="list-style-type: none"> • Typically provide data relevant for a single job role associated with a single technology tier. • Data predominantly used by job roles in charge of managing application performance in 	<ul style="list-style-type: none"> • Cross-tier correlated data often used by multiple job roles. • The majority of solutions used in both production and pre-production.

Market Insight

Context of performance data	production at the OS process and log levels, not necessarily the application or end-user levels	
	<ul style="list-style-type: none">• Data provided in the context of individual IT issue.• Some providers of network-based APM solutions are introducing service level dashboards to measure the impact of the performance of networked applications on business services.	<ul style="list-style-type: none">• Delivered in the context of business processes supported.• Provides a unified view of application performance across different IT "silos".
User profile	<ul style="list-style-type: none">• Deployed by organizations from wide range of industry sectors and market segments (SMB, large enterprise, etc.).	<ul style="list-style-type: none">• Due to robustness of monitoring features and architecture that these products include, deployments of these solutions are still predominantly limited to larger enterprises and higher end of the SMB market

Key Takeaways

Organizations that are evaluating both infrastructure-centric and transaction centric approaches for APM should be aware that:

- An optimal approach for APM is determined by specific requirements of end-users, types of application infrastructure being managed and metrics that they are looking to collect.
- There are synergies between these two approaches. Organizations that are getting the most value from deploying these solutions have capabilities that allow them to share performance data between these tools.
- Solutions for transaction-centric APM are more effective in managing complex, multi-tier applications.
- End-to-end visibility into application transaction allows organizations to establish a common language between different IT domains and troubleshoot performance issues faster.

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TRAC Research is a business-to-business (B2B) market research and analyst company that specializes in IT performance management. The company's research approach is based on four key attributes of true market research: Trusted, Relevant, Actionable and Credible. Our mission is to facilitate open conversations between technology vendors and end-users centered on unbiased, primary market research. Areas of coverage include: managing application performance over the WAN, application performance monitoring, Business Service Management (BSM), network monitoring, end-user experience monitoring, application delivery, managed network services, virtualization management, Cloud management and data center management. For more information about TRAC Research visit www.trac-research.com.