Solution Brief

Evolving APM: Big Data Approach, Integrated End-user Experience Monitoring Bring Deep End-to-end Application Visibility

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Abstract: *In today's highly complex IT environment with multi-tier application architectures delivering apps and services, detecting and diagnosing code level performance problems can be like looking for a needle in a haystack. While it may be plain to the end user that there is a problem, understanding where that problem originates and exactly what is causing it is difficult, and time consuming. Riverbed OPNET AppInternals Xpert addresses this challenge by combining end-user experience, transaction tracing, and application component monitoring for deep end-to-end application visibility. This latest release facilitates bi-directional workflows between operations and application development to expedite problem resolution.*

Overview

Application environments and the underlying IT infrastructure that supports them are becoming much more dynamic and complicated. New architectures are being deployed to help accelerate time to market, applications are distributed and modular, leveraging web-based or Service Oriented Architectures (SOA). In addition the process of building new software is being streamlined with organizations leveraging agile development cycles. At the same time the underlying infrastructure is evolving as well, with server virtualization technologies enjoying widespread adoption to provide a more dynamic infrastructure, albeit more abstracted and complicated to manage.

It is with that environment in mind that Riverbed released a new version of OPNET AppInternals Xpert. The latest version leverages existing big data capabilities within its Transaction Trace Warehouse, integrates end-user experience monitoring, and integrated development environment (IDE) tools.

Riverbed OPNET AppInternals Xpert 8.5

The latest release from Riverbed of OPNET AppInternals Xpert provides organizations with the following capabilities:

- **Big data approach to Application Performance Management (APM)**. The Transaction Trace Warehouse feature within OPNET AppInternals Xpert stores and indexes all transactions, providing organizations with a repository of data for both operations and developers to search and query with "Google-like" ease - providing information from transaction maps down to specific lines of application code to help facilitate troubleshooting or conduct forensic analysis. This big data approach enables organizations to store billions of transactions, quickly find all the transactions that are relevant to a performance incident, and enables application developers to drill down to the actual code involved.
- **Integrated end-user experience monitoring (EUE)**. This new capability will enable operations to quickly identify and isolate performance problems. Additionally, response time composition analysis provides greater insight into where the time was spent end-to-end, quickly pinpointing where the problems exist. The solution reports on key metrics like Apdex, response time and page views. Performance data includes information on geographic location, browser, device or platform, applications, and transactions. The lightweight JavaScript required to capture the end-user experience can be injected in one of three ways, leveraging web server instrumentation, Riverbed OPNET AppInternals Xpert agent or through the Riverbed Stingray Traffic manager, which can add the JavaScript mid-stream.

- **Facilitates bi-directional workflows**. Riverbed OPNET AppInternals Xpert will allow both operations teams and application developers to share the same tool to identify and isolate problems. This visibility extends from a high-level dashboard view all the way down to the actual lines of code. This allows operations teams to take on early diagnostic tasks and then hand off the problem to the applications teams to isolate application performance problems down to an individual code session or process leveraging an Integrated Development Environment (IDE). Conversely, application developers can use the integrated capabilities to quickly identify where and when their code is used in the production environment. Essentially, these bi-directional workflows enable organizations to create full lifecycle APM and can begin before the application has even been deployed into a production environment.

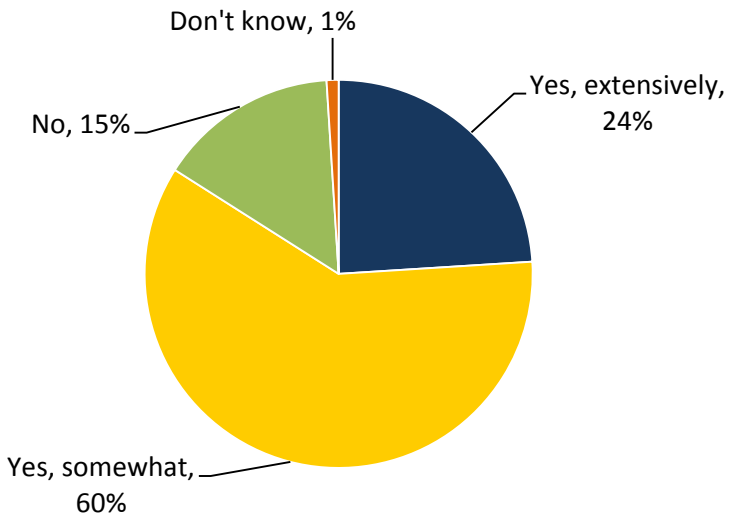
Analysis

This release of Riverbed OPNET AppInternals Xpert is well timed to address a number of challenges facing IT and application developers. More specifically, ESG data reveals that:

- **SOA and web-based apps are growing.** The ability to accurately troubleshoot problems or optimize an application environment becomes far more complex with service oriented architectures and web-based services. The same distributed and modular environment that helps to accelerate the development and deployment of applications also serves to complicate problem identification and monitoring as the application or service is spread across numerous VMs, databases, servers, networks and potentially even data centers. Indeed, these new architectures are gaining significant traction in the enterprise as Figure 1 illustrates.[1]

Figure 1. Deployment of SOA and Web-based Services

Has your organization deployed any new web-based (i.e., SOA, web services, etc.) applications in its data centers over the past few years? (Percent of respondents, N=280)

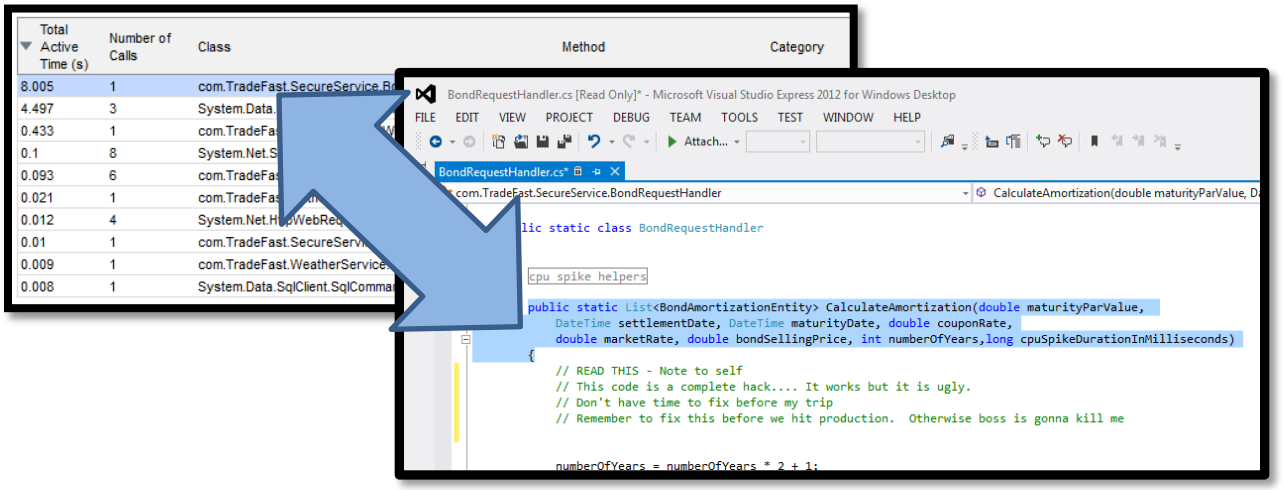


Source: Enterprise Strategy Group, 2012.

[1] Source: ESG Research Report, *Data Center Networking Trends*, January 2012.

- **Early warning alerting is important in 24x7 environments.** Riverbed OPNET AppInternals Xpert has the ability to not only capture and store billions of transactions, but analyze them as well. Given the pressure to keep applications not only available but optimized for performance, it will be critical for organizations to spot small problems or anomalies before they become big ones that degrade performance or actually impact availability. By taking a big data approach to storing and indexing all the transactions, Riverbed OPNET AppInternals Xpert can leverage historical data to understand trends and any deviations from normal operating parameters and can proactively alert operations and applications team to take corrective action.
- **Tighter integration between Dev and Ops should be welcomed. –** Riverbed's ability to more tightly link operations and application developers should be well received as in many cases both these organizations are separately working on the same problem. In fact in a recent ESG survey, almost half (44%) of respondents indicated that better APM tools would enable them to have better ongoing application maintenance support.[2] With Riverbed OPNET AppInternals Xpert there is bi-directional support with Integrated Development Environments (IDE) like Microsoft Visual Studio and Eclipse. This will allow operations teams to drill down from the transaction trace to the code to highlight the affected calls or methods for developers. While developers and QA staff can quickly debug new releases by understanding where code is being used and who is using it in the production environment.

Figure 2. Bi-directional Workflow



- **Demand to accelerate application deployments**. According to ESG research major application deployments and upgrades rank in the top ten most important IT priorities reported by respondents for 2013.[3] However, it is not enough to just deploy applications, in order to gain a competitive advantage organizations must continually strive to accelerate the time to transition them from development to production. Certainly new technologies and agile development approaches have helped to improve the process. Virtualization technologies and software based application delivery controllers (ADC) like Riverbed's Stingray Traffic Manager can help to expedite the process by enabling seamless transitions from development to

[2] Source: ESG Research Brief, *Are Legacy Networks Holding Back Application Deployments*, Aug 2012
[3] Source: ESG Research Report, *2013 IT Spending Intentions Survey*, January 2013

production. Riverbed OPNET AppInternals Xpert can play a significant role in helping to reduce the risk associated with these accelerated deployment schedules by enabling end-to-end testing and implementing a full APM lifecycle approach.

What's Next

Riverbed OPNET AppInternals Xpert 8.5 offers significant enhancements and its features are well timed to enable organizations to deal with significant trends like SOA, agile development, and the requirement to be more responsive to the business. Seeing as this is one of the first major releases for the combined Riverbed/OPNET organization, Riverbed should take extra steps to:

- **Educate the market on the new capabilities.** This would include not only the new features but also reinforcing existing big data analytics capabilities such as the abilities to store and index all traces and then have the ability to search and/or analyze the data. These efforts should extend beyond the end users and include the combined companies' field sales and channel partners.
- **Demonstrate the value of these new capabilities**. Many technology executives have commented on the fact that changing technology is easier than changing culture – like getting the applications teams and operations teams to be more tightly integrated. Riverbed has an opportunity with OPNET AppInternals Xpert to be able to demonstrate how their technology can help drive business benefits and increased productivity. Highlighting customer use cases that provide that information will help to accelerate the cultural change that may need to take place in your organization.

The Bigger Truth

Organizations rely on applications to power their business and drive growth. These applications have to serve customers, partners, suppliers, and employees 24x7 with little or no tolerance for downtime. For mission-critical application environments, organizations will typically create redundant infrastructures and cluster applications to avoid an outage. This is justified because of the high cost of downtime. However, equally important is the need to identify when an application's performance has degraded. While a five to ten percent reduction in performance may not trigger a call to complain, over time the impact of lost transactions or disengaged customers could far outweigh an actual outage. Therefore, it is critical for organizations to find and resolve application performance issues as quickly as possible. In order to find and fix these issues quickly, it will be necessary for app and ops teams to take an integrated, rather than siloed, approach to transitioning apps from development to operations and troubleshooting problems.

The enhancements to Riverbed OPNET AppInternals Xpert were designed to help bridge the gap between application developers and operations teams and dramatically reduce the time to find and fix application performance problems. The end-user experience monitoring capabilities enable end-to-end application performance monitoring, regardless of device or location. Leveraging the big data capabilities will allow organizations to be more proactive in addressing application performance issues. Customers should also appreciate the improvements to usability that should help accelerate time to value and productivity.