



Business Transaction Monitoring: Not the Be-All and End-All of APM

Tips and Tricks to Uncover the Root Cause of Application Slowdowns

An eG Innovations White Paper

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Introduction

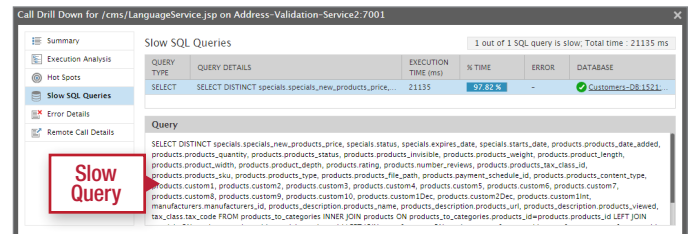
In today's digital business economy, it is imperative for IT and web operations teams to monitor how users interact with web applications and what experience they see. Using a **real user monitoring** (RUM) tool, they can track the experience of users accessing a web application. RUM tools also provide sufficient insight to identify whether an application is slow, and if so, where the problem lies: whether it is a front-end issue, a network issue, a content download problem, or due to server-side processing. When the server-side processing is causing slowness, application owners need to understand which of the application tiers – middleware, backend database, external application access, message queues, etc. – is responsible for the slowness and why.

How Business Transaction Monitoring Helps

Business transaction monitoring is the approach commonly used to identify and diagnose server-side processing slowness in websites and web applications. Using byte-code instrumentation and tag-and-follow techniques, business transaction tracing highlights the time spent at each of the application tiers by following each request as it is processed through the application front end, middleware and back end. Using this information, IT operations teams and web application managers can identify problems such as:

- Badly designed business logic in the application code that can take up excessive time to process
- Poorly written database queries that require a lot of time to execute
- Web service calls to third-party, external components that are taking time

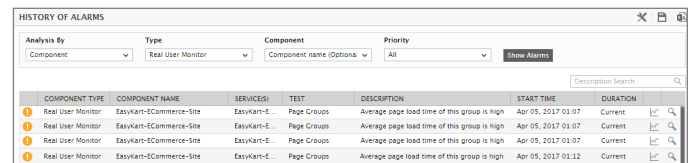
Business transaction tracing is one of the critical dimensions of **application performance monitoring** (APM). With no application code changes, business transaction tracing provides insights that help an IT Ops staff to identify where the problem lies. Web developers can identify which portion of their Java or .NET code they need to optimize. They can also analyze to see which queries need to be tuned for faster response (for example, by making better use of database table indexes).



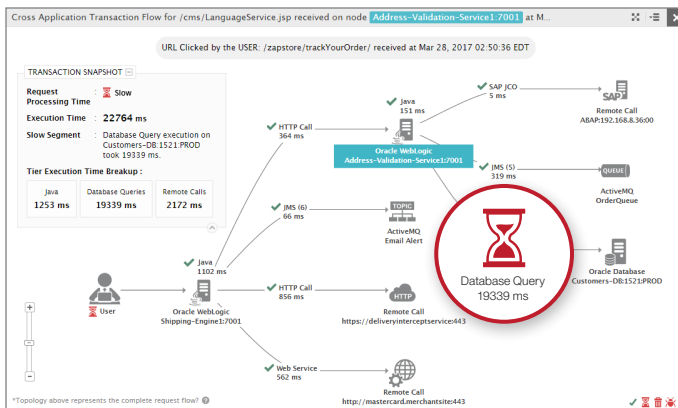
Identifying a database query that is slowing application access

The Scope of Business Transaction Tracing and Where It Stops

Business transaction tracing is an important component of an application performance monitoring strategy. At the same time, a key question is whether business transaction tracing is sufficient for ensuring peak application performance. To answer this, **consider a scenario where there is a database slowdown in the backend that is affecting all accesses to the database.**



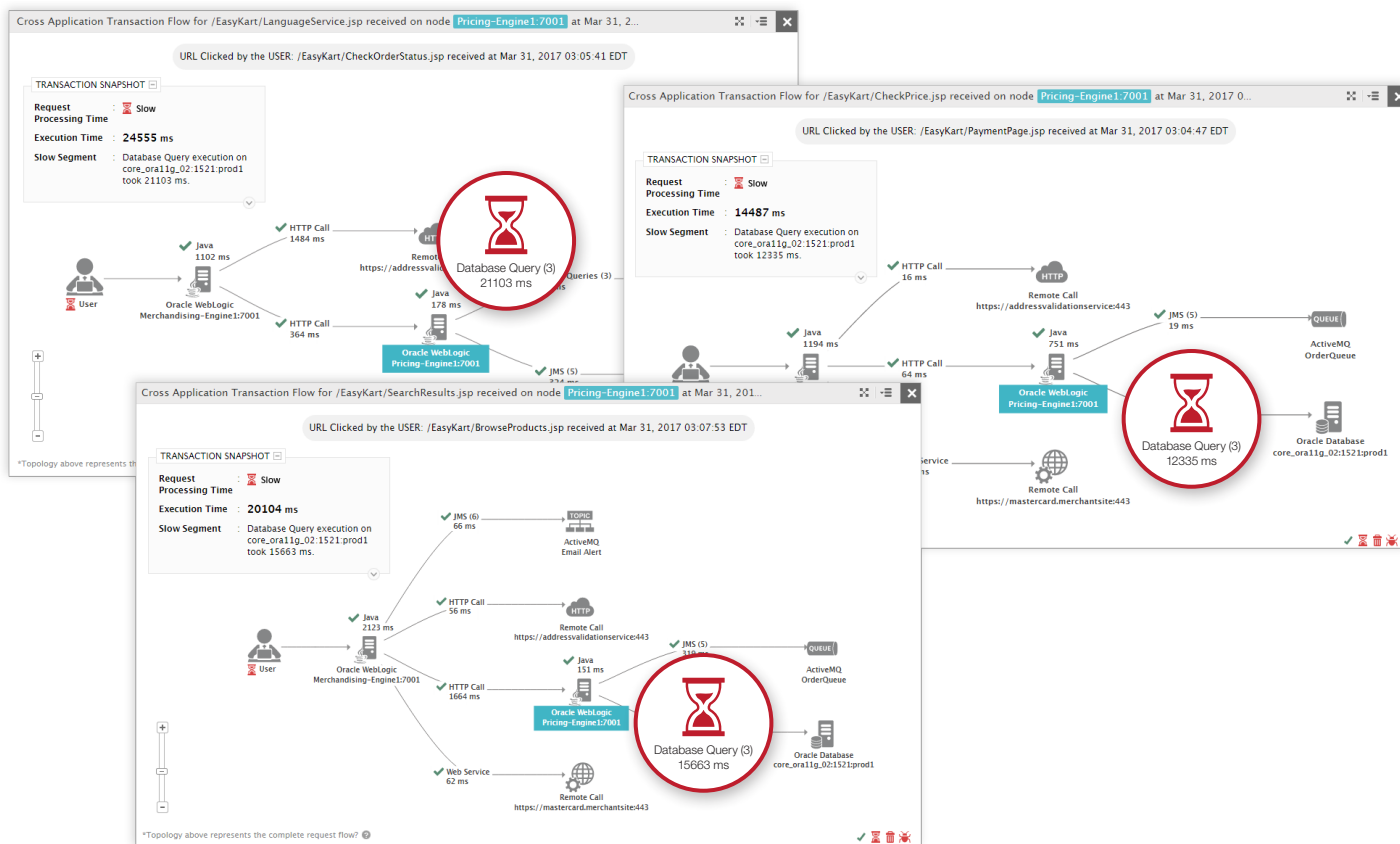
Real user monitoring reporting slowness in accessing a website for different transactions



Transaction monitoring pinpoints the exact cause of slowness

Here is what business transaction tracing can provide you in such a scenario:

- Business transaction tracing shows that database processing is slowing down web accesses
- Drill-downs provide details of the queries that are slow
- Since there is a database-wide slowdown, transaction tracing points to different queries that are slow, making it impossible to pinpoint one or multiple queries that are slowing the application



Database query processing is causing the web application to be slow

In such a scenario, transaction tracing will help identify the application tier (in this case, the database) that is responsible for slowness, but cannot pinpoint the root cause of the problem.

This scenario highlights where transaction tracing is useful as well as its limitations: Transaction tracing is very effective when application performance is affected by code-level issues. However, when there is an infrastructure slowdown, transaction tracing is not sufficient for diagnosing this issue and identifying the root cause for application slowdown.

Why Application Performance Monitoring Cannot be Considered Independent from Infrastructure Monitoring

Most APM tools offer user experience monitoring and transaction tracing capabilities. But, when there is infrastructure slowness affecting the application, these APM tools cannot always pinpoint the root cause of problems. This is where unified infrastructure monitoring comes in. To be able to truly diagnose the root cause of application slowness, IT operations teams need:

- Visibility into the availability, performance and usage of every tier of the infrastructure – virtualization, cloud, storage, networking, Active Directory, etc.
- Analysis of metrics from each tier to be able to see performance abnormalities proactively
- Correlation of metrics across the different tiers, to be able to determine the exact cause of slowness.

Some examples of infrastructure problems that can affect application performance include:

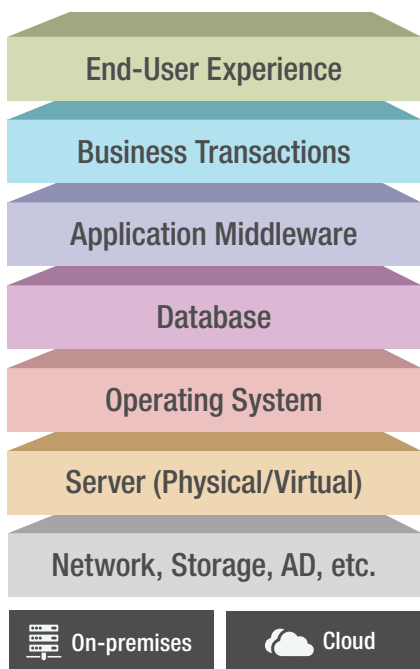
- Network connectivity issues in the data center
- Failure in a SAN array slowing down all I/O accesses
- Backup jobs running on a database server, causing slowness for all applications
- Resource contention at the virtualization tier, affecting applications hosted on a virtual infrastructure
- Database-specific problems like index fragmentation, redo log contention, etc.

Without sufficient visibility into the performance of supporting infrastructure tiers, it is hard to narrow down the root cause of a slow business transaction. Ultimately, the application has to work in concert with various infrastructure components that it relies on, as a problem in any of the dependent tiers can ripple and affect application performance.

Converged Application and Infrastructure Monitoring

IT organizations should consider using application performance monitoring tools that provide converged performance visibility of applications and the infrastructure. Without forcing you to toggle between separate management consoles for each part of the infrastructure, your APM tool should provide correlated visibility across user experience, business transactions, applications, databases, and the supporting infrastructure tiers such as network, storage, virtualization, cloud, containers, etc. This is true “full-stack” application performance monitoring.

To summarize, business transaction monitoring is a key piece of the application performance monitoring framework, but not the solution in and of itself for root cause diagnosis and problem resolution. IT teams need deeper, far-reaching, infrastructure-wide correlated visibility for accurate problem diagnosis and faster resolution to effectively support today’s digital business.

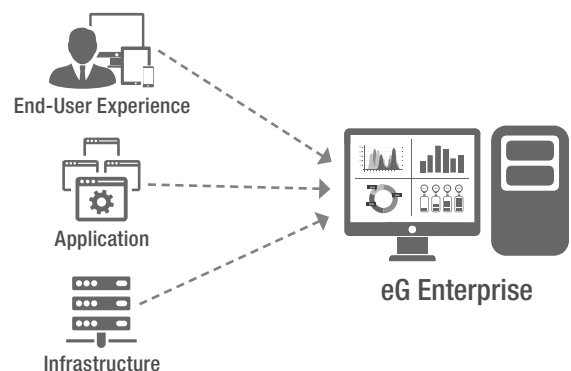


Full stack application and infrastructure performance monitoring

eG Enterprise Converged IT Monitoring: From User Experience to Application Transactions, and Throughout the Infrastructure

eG Enterprise is a full-stack application performance monitoring (APM) solution that provides holistic visibility and performance analysis of end-user experience, business transactions, application code, and infrastructure dependencies – all from a single pane of glass. This converged view of the application environment allows line of business owners and IT admins to easily isolate the root cause of issues, and avoid finger-pointing and lengthy war room sessions. Diagnosing and troubleshooting application slowdowns is simplified to just a few clicks.

- Measure the user experience as your customers access websites and web applications in real time
- Trace Java and .NET application transactions and understand which tier of the application architecture is causing slowness
- Dive down to the application code and database queries for problem diagnosis
- View end-to-end service topology maps and understand infrastructure dependencies with the application
- Auto-correlate infrastructure performance alerts with the application and pinpoint whether any supporting infrastructure tier, such as network, server, storage, virtualization, cloud, etc., is the actual cause of application slowness



Unified IT monitoring with eG Enterprise

Use eG Enterprise to ensure peak performance of your business-critical applications through development, testing, pre-production, and production rollout.

Next Steps

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✉ | Email us at info@eginnovations.com



LIVE DEMO

Request a personal walkthrough to learn first-hand how eG Enterprise can help improve performance and operations in your business environment.



FREE TRIAL

15-days of free monitoring and diagnosis, in your own infrastructure. Try it and learn exactly how eG Enterprise helps you ensure a great end-user experience and improve IT operations.

About eG Innovations

eG Innovations provides the world's leading enterprise-class performance management solution that enables organizations to reliably deliver mission-critical business services across complex cloud, virtual, and physical IT environments. Where traditional monitoring tools often fail to provide insight into the performance drivers of business services and user experience, eG Innovations provides total performance visibility across every layer and every tier of the IT infrastructure that supports the business service chain. From desktops to applications, from servers to network and storage, eG Innovations helps companies proactively discover, instantly diagnose, and rapidly resolve even the most challenging performance and user experience issues.

eG Innovations' award-winning solutions are trusted by the world's most demanding companies to ensure end user productivity, deliver return on transformational IT investments, and keep business services up and running. Customers include 20th Century Fox, Allscripts, Anthem Blue Cross and Blue Shield, Aviva, AXA, Biogen, Cox Communications, Denver Health, eBay, JP Morgan Chase, PayPal, Southern California Edison, Samsung, and many more.

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