Solution Brief

End-to-End Performance Monitoring for Java Applications

Total Performance Visibility



Key Benefits

- ✓ **Deliver great user experience** and peak performance for Java applications
- ✓ **Be agile in responding to performance issues,** using deep diagnostics and actionable insights
- ✓ **Accurately pinpoint the root cause of application slowdowns** by monitoring and correlating performance within and beyond the Java stack
- ✓ **Optimize Java application performance** by pinpointing complex threading problems and code inefficiencies in seconds
- ✓ **Provide metrics, analysis and reports for different stakeholders**: IT operations, architects, developers, and helpdesk

> *With eG Enterprise, we can understand our whole IT infrastructure end-to-end, eliminate issues quickly, and ensure optimum performance. This is putting us one step ahead of our customers and we are now in full control of the user experience.*
>
> **Roberto Trombino**
> Partner Solutions

Java Application Monitoring Challenges

Enterprises that use Java technologies to power revenue-generating applications are faced with several challenges:

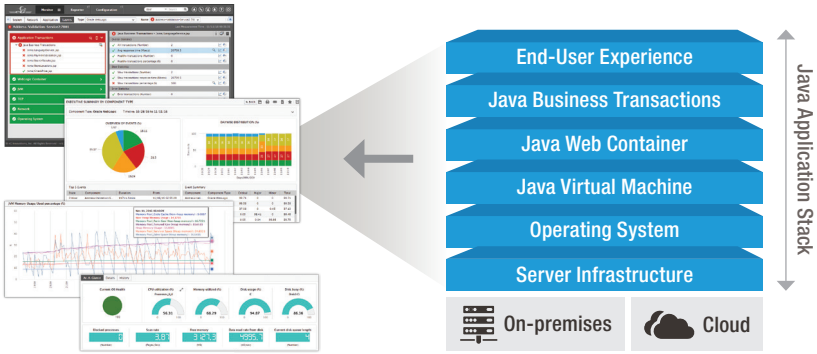
- **Java infrastructures are multi-tiered:** The inter-dependencies between tiers makes problem diagnosis a challenge. When a user complains of slow performance, which tier is the cause of the problem: Web, Java, application, or database?
- **Java applications are virtualized:** Applications are being deployed on virtual machines (VMs), on containers, as micro-services, or in the cloud. Resource contention among these components can lead to application slowdowns
- **Java application frameworks are many and varied:** Performance issues can arise from several server-side and client side processing frameworks that are used to accelerate application development

Without a clear line of sight into the performance of the entire stack supporting a Java application, it is extremely challenging to troubleshoot performance problems.

Full Stack Java Monitoring with eG Enterprise

eG Enterprise is a powerful and easy-to-use performance monitoring solution that provides in-depth diagnostic capabilities to uncover complex and costly performance issues across the Java stack. It provides actionable insight to achieve faster troubleshooting, code optimization, and infrastructure right-sizing.

From a single pane of glass, administrators can pinpoint the exact source of issues. Whether it is malfunctioning application code, remote method calls impacting transaction response time, blocked threads, memory heap issues in the JVM, or runaway processes consuming high CPU, proactive alerts enable application architects, developers and IT operations personnel to easily diagnose bottlenecks in seconds.



Using web services APIs, JMX support and byte code instrumentation, eG Enterprise gathers performance metrics from Java applications. eG Enterprise is truly cost-efficient because it is licensed by the number of servers, not by the number of JVMs.

Key Capabilities of eG Enterprise for Java Application Monitoring

Real User Experience Monitoring

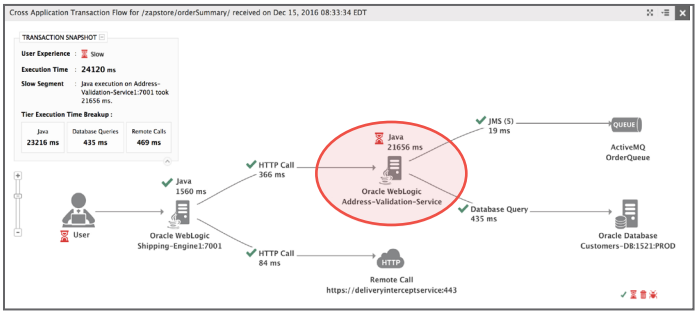
eG Enterprise's real user monitoring (RUM) captures the user experience in a completely agentless manner. With RUM, IT managers and service owners can:

- Easily identify times when user experience is poor
- Detect specific web URLs that are slow
- Identify geographic locations that are affected
- Diagnose if a slowdown is due to a client browser issue, network issue, or a server-side issue

Business Transaction Monitoring

Using a combination of byte-code instrumentation, and tag-and-follow techniques, eG Enterprise traces business transactions from web browsers and native mobile apps flowing across multiple Java tiers. With this technology, administrators can:

- Visualize transaction flow across every tier of the infrastructure
- Breakdown the transaction processing time by each tier, and pinpoint the tier that is causing slowdown
- Drill down to the exact line of application code and database query that is responsible for the application's slow performance



Java Web Container Monitoring

Bottlenecks in web containers like Tomcat, JBoss EAP, WildFly, Glassfish, WebSphere, WebLogic also affect the performance of Java applications. eG Enterprise has custom monitoring for all popular web containers. The container's work managers, thread pools, request queues, connection pools, etc. are all monitored.

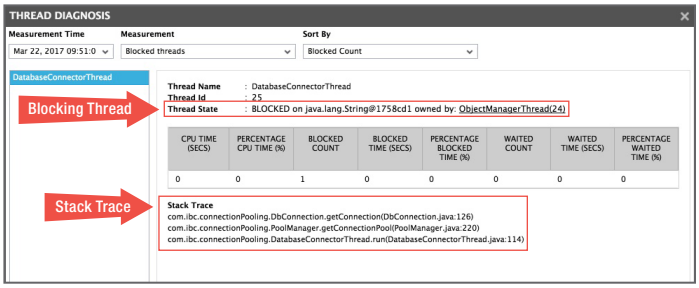
With eG Enterprise, IT operations personnel can:

- Measure a server's workload, throughput, active sessions, and cache effectiveness
- Compare processing by different servlets and identify ones that are slowing down
- Track if adequate threads have been allocated to each thread pool
- Monitor database connection pool activity and responsiveness of the database to queries

In-Depth JVM Diagnostics

When the underlying Java Virtual Machine is not functioning well, all application transactions will be slow. eG Enterprise delivers deep visibility into all aspects of the performance of the JVM engine:

- Track heap and non-heap memory usage, and detect memory leaks and out-of-memory exceptions
- Ensure garbage collection occurs optimally
- Isolate blocked and deadlocked threads, and the responsible object/line of code
- Identify the stack trace that is causing high CPU usage of one or more threads in the JVM



OS & Server Infrastructure Monitoring

eG Enterprise tracks key metrics at the operating system level (CPU, memory, disk, network traffic) and correlates these with the performance of the underlying virtualization/cloud platform, storage and network tiers, as well as that of the Java transaction, virtual machine and container layers. By doing so, it provides actionable insights and proactive alerts to ensure high service uptime, rapid diagnosis and enhanced service quality.

About eG Innovations

eG Innovations is dedicated to helping businesses across the globe transform IT service delivery into a competitive advantage and a center for productivity, growth and profit. Many of the world's largest businesses use eG Enterprise to enhance IT service performance, increase operational efficiency, ensure IT effectiveness and deliver on the ROI promise of transformational IT investments across physical, virtual and cloud environments.

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