

Java™ SOA CONNECTION 2008

> SOA technologies and tools from (and for) the Java community

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dynaTrace:

GAIN COMPLETE VISIBILITY INTO THE COMPLEXITY OF SOA ENVIRONMENTS

Service-oriented architecture (SOA) brings a host of new challenges to the table for today's application architects and developers:

- 1) Architectures are more complex than ever in terms of the number of tiers and their location;
- 2) Individual business transactions now need to execute a wider range of technologies in order to service requests;
- 3) Business transactions may exploit more asynchronous technologies than in previous architectures;
- 4) Any given customer has less control over what happens during execution since some technologies are likely 3rd party and some tiers or components may be external.

SOA, in general, is a new paradigm, so developers and architects have to twist their brains to make it work right — a shift similar to the transition from procedural to object-oriented programming, but on an architecture level. As you will see from the following case study, dynaTrace has created a solution perfectly suited for the increasing complexity brought about by new technologies such as SOA.

Challenge:

The GRZ IT Centre Linz GmbH is one of the largest computer centres in Austria and leading control centre for the GRZ IT Group. The GRZ IT Centre is not only the leading service provider for the Austrian Raiffeisen Banking Group but is also a very sought-after partner for other banks and leading Austrian companies. At the GRZ IT Centre, servers run Linux and Windows, with J2EE and Microsoft .NET used as programming platforms. A WebSphere Application Server, Microsoft IIS, a TOMCAT Servlet Engine, Oracle and Microsoft databases complete the system environment. The backend system is built on a Service Oriented Architecture (SOA) and provides business-critical services for different client applications. For that reason potential performance bottlenecks always affect several systems. The localization of potential optimization was not possible due to the distributed structure of the systems without tracing the process precisely from the client via the application layer to the Web Services and the Host. It is precisely here

that dynaTrace Diagnostics sets the standard and makes the processes, in which even context information is recorded, understandable.

Solution:

Employing an array of lightweight (<1MB) dynaTrace Diagnostics agents in a heterogeneous mix of J2EE and .NET, GRZ IT Group is able to manage the complexity of its SOA environment and improve performance by tracing issues in individual transactions down to their root cause (what dynaTrace calls the "PurePath").

The common data visibility provided by dynaTrace Diagnostics enables GRZ to share this PurePath data across its application life-cycle, enabling production to trace discrete transactions and provide developers with this information.

Results:

"In order to be able to monitor and analyze our production operation better and more efficiently we went in search of an appropriate tool. In the end our online research brought us to dynaTrace," said Johannes Mayr, Software

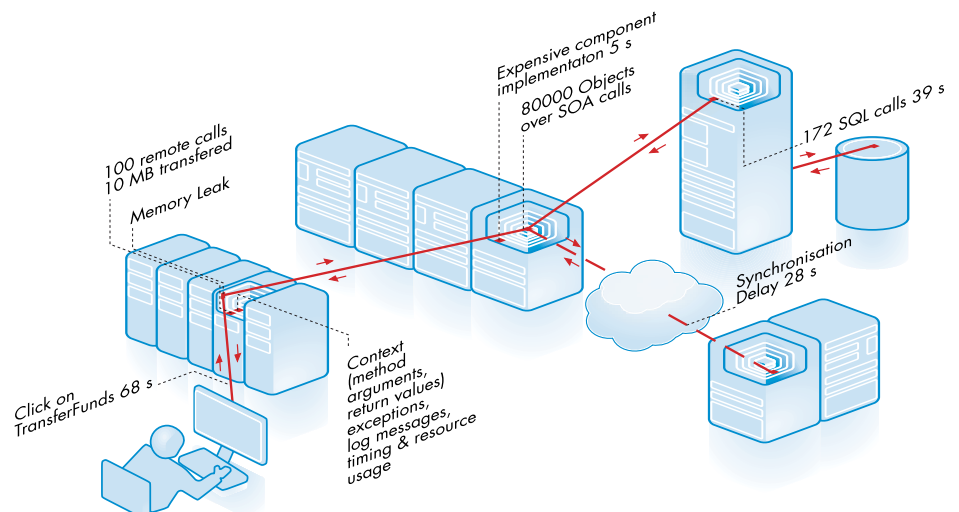


Figure 1: dynaTrace PurePath Technology®

Key dynaTrace Benefits for SOA / EAI	
Multi-Protocol Support	Deep diagnosis of SOAs with a variety of web services (e.g. via HTTP, XML, etc.)
Distributed Applications	Performance diagnosis of distributed Java SE/EE and .NET applications using pre-configured KnowledgeSensors™.
Tracing of Asynchronous/Synchronous transactions	Never again endure correlation of backend data with frontend; dynaTrace traces all transactions — synchronous or asynchronous.
Application Support	Analysis of proprietary applications, Java SE/EE and .NET Standalones and server-based applications.
PurePath Technology®	Deep tracing of individual transactions critical to the business from the end-users' perspective across multiple servers and tiers down to code level at runtime
Automated Architecture Discovery	Automatic recognition of distributed applications and their components using pre-configured KnowledgeSensors™ which can be adapted in real-time.
Client-Server Communication	Performance diagnostics of complex client-server communications (e.g. JMS, RMI) and selective differentiation between load-balancing problems in server clusters and application errors.
Connector Support	Support of connector technologies like JCA and CICS
Bottom-Up Diagnostics	Identification of Hot-spots using analyses outgoing from the network via RMI-calls down to specific transactions.
Legacy Systems	Integration of Legacy Systems using response time trend analysis
Root-Cause Analysis	Support for EAI using the rapid diagnosis and root cause isolation in distributed heterogeneous Java SE/EE and .NET applications.
Support for various Server-Platforms	Performance diagnosis of different server platforms (e.g. IBM, BEA, Microsoft, etc.) as well as proprietary Java and .NET standalone applications.
Platform-Independence	Analysis independent of the operating system used (e.g. Windows, Linux, AIX, Solaris etc.) and hardware architectures (e.g. Intel, Sparc, etc.).
Multi-VM Support	Support for multiple VM vendors (e.g. IBM, BEA, Sun, Microsoft etc.)
Scalability	Scales from a collection of JVMs to large complex production application clusters; provides the necessary flexibility for future growth.

Engineer at GRZ. “dynaTrace Diagnostics localizes possible sources of error very fast and with the least amount of effort.”

The possibility of understanding transactions spanning JVM/CLRs individually is essential for SOA. “In the area of SOA the complexity has now become so great that debugging is almost impossible without a tool such as dynaTrace Diagnostics”, Mayr argues. For that reason the GRZ IT Centre has implemented dynaTrace Diagnostics throughout the whole application lifecycle.

This holistic approach considerably improves communication between development teams, Quality Assurance and the Production department and releases more resources for more projects and tasks relevant to the business. As a result, production can trace individual transactions (PurePaths), and if needed provide developers with this information

to reconstruct and analyze them offline. If an error has been verified and localized once, it can then be corrected immediately. “In the past we had to laboriously search for the weak points by analyzing log files. Using dynaTrace Diagnostics we can see when and where an error occurs using the definition of the limit values. The PurePath Technology immediately shows us the exact locations where there is potential for optimization. With other tools just an aggregate view was possible which meant that individual transactions and outliers were not immediately recognizable”, Mayr said, referring to this new diagnostics quality as comparable to a paradigm shift.

dynaTrace Diagnostics is a paradigm shift that will save the GRZ IT Group lots of time in the future since, in addition to the operation of the computer centre and the development of standard and individual solutions for banks, the company group also develops solutions

for other industries. In addition to special solutions for hospitals, the electronic invoicing company flexdoc.at, enterprise resource planning solutions, community solutions and customer-specific applications also are part of the business activities of the GRZ IT Group.

by Ted Feyler, Senior Technical Product Manager, dynaTrace software

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