



## Company

UBS

## Industry

Financial Services

## Location

Switzerland / Global

## Application environment

J2EE with IBM WebSphere Portal Server on Solaris and WebSphere Application Server and DB2 on zOS

## Testing environment

HP Performance Center / LoadRunner

## Challenge

Precise diagnosis of performance and stability problems in business-critical J2EE applications under load

- Analysis of individual transactions / requests
- Visibility down to code level
- Rapid resolution in a project with an aggressive timeline

Support of the complete application lifecycle, particularly test and development

- Simple integration into LoadRunner load tests and the UBS development process
- Easy installation and usage to achieve a high adoption rate within UBS development and testing departments
- Cost reduction by implementing a standard performance solution as basis for a strategic performance engineering process

## Solution

dynaTrace Continuous APM for Java applications in load tests and during development

## Results

Rapid root cause analysis of J2EE performance and stability problems

- Problem diagnosis in the J2EE architecture in hours instead of days, months or never
- Detection of unanticipated weak points
- Localization of performance deficiencies in third party components
- More objective and efficient communication between the departments - finger pointing was eliminated completely

Increase of test throughput:

- Automatic recording of all necessary root cause data during the very first test run
- No manual gathering and analysis of log files

Supporting development in proactive performance engineering



# UBS

UBS is a leading global wealth manager, investment banking and securities firm, and one of the largest global asset managers. In Switzerland, UBS is the market leader in retail and commercial banking. With headquarters in Zurich and Basel, Switzerland, UBS operates in over 50 countries and all major international centers, employing more than 75,000 people around the world.

**Challenge:** For its 6,000+ customer advisors, UBS wanted to build a groundbreaking portal system with the highest requirements for performance and stability. This "Client Advisor Workbench", based on the newest portal technology, will be operated in conjunction with more than one-hundred other business-critical applications in a single IBM WebSphere cluster. Due to the project's aggressive time-to-market goals, the implementation phase represented a significant challenge to the UBS employees and partners working on it. Point Software AG, an expert in complex software project management and implementation, was hired as both a consultant and portlet developer.

Due to the breadth and complexity of features to be implemented in the Client Advisor Workbench, performance testing and tuning started somewhat late in the process. First, load tests with HP LoadRunner showed that in over 70% of all transactions, UBS' ambitious performance goals (such as response times under 2.5 seconds) could not be fulfilled at launch. Additionally, these performance issues impacted the stability of the larger application cluster. To meet the release deadline and reach mandated quality targets, all stability problems and performance bottlenecks had to be identified and eliminated quickly. Further, UBS needed to reduce repeated test runs for problem verification, so that enough time remained for other important testing.

Once the immediate challenges with the Client Advisor Workbench were addressed, UBS wanted to optimize their existing development processes for proactive verification and tuning of application performance. UBS sought one strategic performance management solution for the complete development process, as the different tools used had not proven to be sufficiently successful nor were they widely adopted. Additionally, training, maintenance and integration of these various tools into different development locations and environments proved expensive.

**Solution:** UBS turned to Point Software – a long-time partner with deep knowledge of their processes, system architectures, and applications – to optimize the performance and stability of their portal system. To accelerate the problem resolution process, a task force was formed consisting of Point Software and representatives from the bank's primary stakeholder groups.

The task force quickly decided that no significant improvement was possible with existing tools, and, on Point Software's recommendation, evaluated and implemented dynaTrace and its [PurePath transaction tracing technology](#) (Fig. 1). Using dynaTrace, performance weaknesses were first localized in interdisciplinary workshops. Next, Point Software's certified performance specialists executed a performance analysis with dynaTrace during load tests with LoadRunner. This approach proved effective – additional critical performance bottlenecks in different projects were identified in the same way.

***"We diagnosed problems in our J2EE architecture within hours - without the comprehensive insight from Point Software and dynaTrace, this would have taken days or months, or may never have happened at all."***

***"We were able to identify problems with dynaTrace we had never seen before, and discovered weak points that could not have been found with any other product."***

***In theory, it is possible to isolate individual methods with other products too, but not that quickly. With others, we would not have known to analyze a specific component in a certain individual transaction, and would have to apply it to everything, creating enormous overhead and corrupting the measured data."***

***"Whenever a specialist team is trying to identify a concrete problem now, we fully rely on dynaTrace. We no longer use anything else"***

***"We don't have any other performance solution that we want to employ so broadly. We have a profiler but developers do not find them that helpful. Those I showed dynaTrace really like it. dynaTrace's user-friendliness simplifies implementation tremendously."***

***"The training on dynaTrace can be done effectively in two hours: half an hour for the installation and one-and-a-half hour to explain the most important functionalities. From then on, my colleagues can use it."***

***"In the final expansion phase, all UBS developers will use dynaTrace. That's 2,000 people worldwide and 1,500 alone in our Swiss headquarters."***

**Results:** "We diagnosed problems in our J2EE architecture within hours - without the comprehensive insight from Point Software and dynaTrace, this would have taken days or months, or it may never have happened at all", said Thomas Tammann, Performance Engineer at UBS. "We were able to identify problems with dynaTrace we had never seen before, and discovered weak points that could not have been found with any other product. In theory, it is possible to isolate individual methods with other products too, but not that quickly. With others, we would not have known to analyze a specific component in a certain individual transaction, and would have had to apply it to everything, creating enormous overhead and corrupting the measured data."

[dynaTrace smoothly integrated into UBS's existing load test environments](#), greatly simplifying collaboration between test teams and developers, accelerating the problem resolution process. Developers not only have the option to determine which critical components and methods to examine closely, but can also [analyze code-level performance reports offline](#) without having to be present for the tests. The precise results dynaTrace provided from each test led to more objective and efficient communication between departments – completely eliminating finger-pointing.

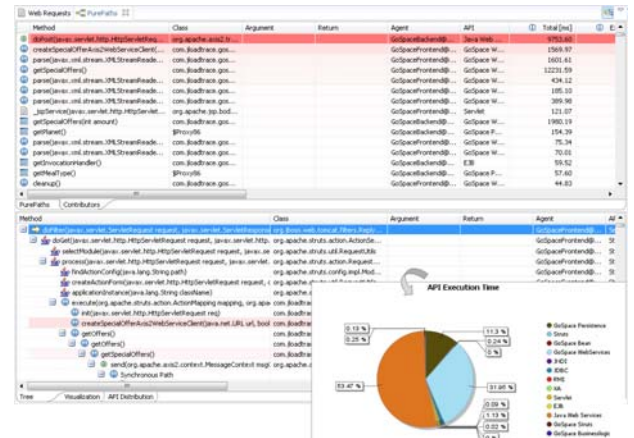
With dynaTrace's extensive analysis, Point Software also pinpointed performance deficiencies in 3<sup>rd</sup> party components. dynaTrace reports were used as objective evidence shared with appropriate software vendors. With detailed diagnostic reports, available offline, they could see exactly which components caused performance problems and, in most cases, immediately correct the underlying issues as part of the original warrantee.

Additionally, dynaTrace's solution helped increase test throughput, as performance problems were recorded during the first test run, eliminating need for additional test-fix cycles. With dynaTrace, log files no longer need to be correlated manually from different sources, which by itself is a huge time saving for test and development teams. "Whenever a specialist's team is trying to identify a concrete problem now, we fully rely on dynaTrace," said Tammann. "We no longer use anything else."

The final result of the "Client Advisor Workbench" improvement project was that response times of all analyzed transactions came in under the ambitious 2.5 second target. Point Software was able to use dynaTrace to diagnose synchronization problems of the UBS portal system in IBM's "Parallel Portlet Rendering". They also diagnosed inefficient source code not only in the application itself but also in UBS' central in-house framework. dynaTrace also detected [interactions of applications in a common cluster](#) that led to instability by blocking common resources, thus starving other applications. With dynaTrace, application infrastructure – such as the size of connection and thread pools, for instance – could also be optimized.

**Next steps:** UBS' Tammann reports that not only is the Client Advisor Workbench rollout well under way, but more and more developer teams at UBS want to apply dynaTrace proactively on their workstations and in their build environments for other applications as well. "We don't have any other performance solution that we want to employ so broadly. We have profilers, but developers don't find them that helpful. Those I showed dynaTrace really liked it. dynaTrace's user friendliness simplifies implementation tremendously."

And such user-friendliness isn't limited to implementation. "The training on dynaTrace can be done effectively in two hours: half an hour for the installation and one-and-a-half hours to explain the most important features," said Tammann. "From then on, my colleagues can use it. In the final expansion phase, all UBS developers will use dynaTrace. That's 2,000 people worldwide and 1,500 alone in our Swiss headquarters."



**Figure 1: dynaTrace PurePath view**