

# CODE PROFILING & PERFORMANCE ANALYSIS

In order to allow companies to identify possible bottlenecks in the software and/or architecture of their IT systems, *Best Practices*, *Guidelines* and *Tools* are of paramount importance as they enable analyzing the relevant performances. Based on its long and in-depth experience in the delivery of mission-critical solutions, Technology Reply has engineered a solution that - basing on OpenSource and/or Sales tools, reference Best Practices and testing methods - enables to analyze system performances and to highlight its critical points (bottlenecks) estimating the maximum load the system can bear.

## THE SCENARIO

Companies and business require to be able to use *Best Practices*, *Guidelines* and *Tools* for analyzing the performances of a software system and identifying possible *bottlenecks* in the relevant software and/or underlying architecture.

The dynamic (*Profiling*) and the performance-based (*Performance*) analysis enables to provide higher quality structures and to preventively identify possible anomalies due to strong concurrency.

## THE CHALLENGE

- Provide an integrated Code Profiling and Performance Analysis solution that highlights possible bottlenecks as well as general Information System performances.
- Assess the scalability level of the architecture as the load continues to increase till a breakpoint is achieved.
- Identify the actions to be performed on the code and on the infrastructure in order to achieve an optimal exploitation of resources.

## THE SOLUTION

Based on its long and in-depth experience in the delivery of mission-critical solutions, Technology Reply has engineered a solution that - based on OpenSource and/or Sales tools, reference Best Practices and testing methods - enables to analyze system performances and to highlight its critical points (bottlenecks) estimating the maximum load the system can bear.

The data resulting from the analysis is saved in text form, stored in Excel or in Oracle Databases, extracted from here and displayed in aggregated mode using statistical tools such as weighted averages of response times.

## THE TOOLS

Technology Reply uses a set of standard tools for code *Profiling*, load induction and for measuring response times. Tools are used in a combined and integrated way in order to ensure comprehensive and analytical results.

As regards profiling, the following tools are used:

- EJ-Technologies JProfiler
- Borland Optimizelt
- Oracle AD4J (monitoring and profiling)
- Java internal profiler

As far as performance analyses are concerned, the following tools are used:

- Apache JMeter
- RadView WebLoad
- NRRGlobal AppsLoader
- Custom WebBased loader

The analysis performed is an analysis based on the induction of a load simulated by application paths which are jointly defined with the application user in order to map the relevant usage modes. The load can be induced either in a constant way or

through a ramp that, at predefined time intervals, enables to add new users into the system to be tested.

The resulting data is summarized in a report which describes the results achieved both in a graphic and in a table mode, also providing an assessment of the actual application load and listing any occurring SOAP problems (http and XML). The Web-based Services are the key element delivering a broad-reaching interoperability guarantee of the system with other entities.

### THE ADVANTAGES

The solution implemented by Technology Reply has been successfully deployed at different customers and has enabled a more effective delivery of new systems as well as the solving of performance problems occurring in systems which are already operating.

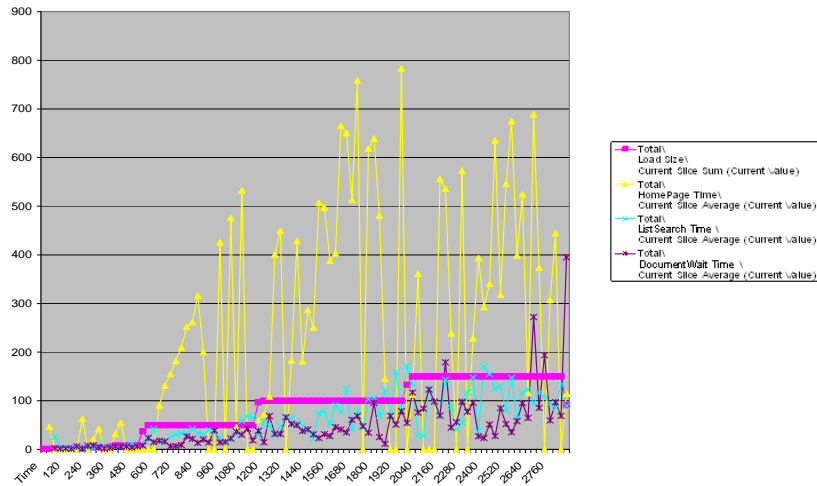
### THE TECHNOLOGIES

- Profiling:
  - JProfiler
  - OptimizeIt
  - Ad4J
  - Profiler Java
  
- Performance Analysis:
  - Apache JMeter
  - RadView WebLoad
  - NRGlobal AppsLoader
  - Custom WebBaset loader
  
- Display of results:
  - MS Excel
  - MS Word
  - Acrobat PDF

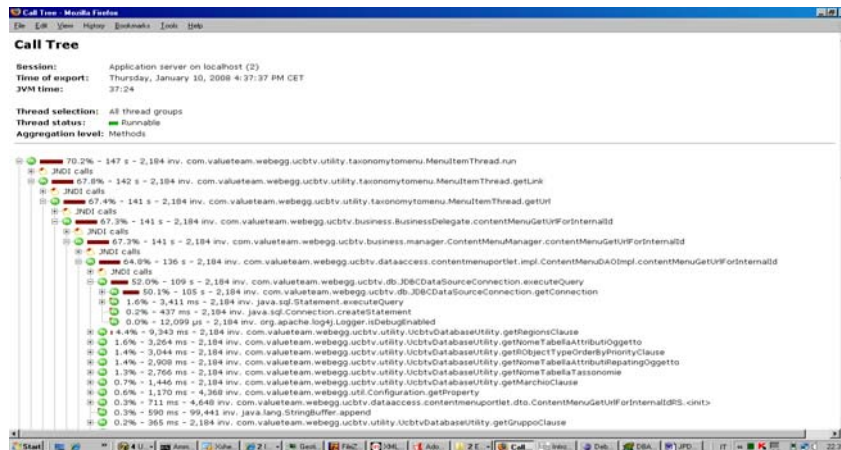
### THE RESULT

It is possible to analyze the system performance, focusing on the critical points (bottleneck) and to assess the maximum load.

The example of a chart highlighting response times against the load is displayed below:



Example of the result of a code profiling session that highlights response times, resource usage (e.g. memory) of each single object, i.e. of each call to a specific method:



Technology Reply is the company of the Reply group specialized in ORACLE technology: besides being an Oracle Advantage Partner, it has been Beta Site Oracle DB, partner and competence center on Oracle Collaboration Suite for years. The Technology Reply mission is to support customers in their technology innovation processes by designing, developing and managing systems based on Oracle Internet Platform Track and targeted to data dissemination and knowledge transfer. Leveraging its in-depth competence and experience, Technology Reply boasts a team of professionals that support customers in each phase of a system design and deployment: from initial assessment to requirements analysis and architecture definition, including the drafting of functions and technology requirements as well as the development, deployment and evolution of systems.