An architecture for re-engineering of client/server applications

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1. Introduction

Before the spread of web platform and standard technologies (http, Java, XML, Corba, UML, etc.), many companies developed their client/server application by means of integrated development environment (i.e.: CASE tools) that allowed high productivity and cross-platform code generation. Against, such products imposed a series of ties:
- use of owner programming languages;
- generation of redundant executable code;
- use of owner middlewares for the communication between client component and server, often based on not-standard protocols and with low performances;
- generation of project resources (windows, string tables, routines, images, etc.) not handling with other market products;
- installation on the client of run-time components for the execution of application;

After the advent of technologies that facilitate the distribution of the application, the communication between client and server, and guarantee independence from development environments, the use of these development environments are revealed uneconomical for many companies. Moreover, many of these products, today, do not came more developed and maintained from suppliers, creating therefore large problems of maintenance of the existing applications to the companies that in the past has used it. This phenomenon is provoking one strong increase of the market requests for re-platforming applications that introduce such problems towards architectures using standard technologies. Obviously, in this context, it is crucial for a company as Netsiel, leader in Italy for re-engineering services, to introduce architectural solutions that hold account of the more different customer requirements.

2. Architecture of reference

The Netsiel’s architecture for re-platforming client-server applications, is composed by the following components:
- a presentation component implemented through Java Applet shown inside the more diffuse web browsers (IE and Netscape). The use of the applet concurs to reply integrally the initial application windows, maintaining a productive interface for the final user;
- a web server component used for start-up and application deployment carried out through the download of jar archives on the client. In particular, the download process of executable code has been efficiented using caching mechanisms of Plug-in Java vs 1.3;
- an application/transaction server in order to perform migration of server component and business logic of application, using EJB, COM/COM+ or Cobol programs with CICS used as transaction environment on OS/390;
- a communication component, based on standard protocols (CORBA, TCP/IP sockets), for the communication between client and application/transaction server.

3. A real case

For a customer leader in the telecommunication field, an instance of the architecture previously described was implemented in order to carry out the re-platforming of an application developed with HPS. In this case, the transaction server was the CICS/OS390, while the communication middleware was developed using socket interfaces. The migration, HPS-Cobol for Server and HPS-Java for Client, was performed through automatic conversion tools. In the first case, we obtained a conversion to 100% of the code, while in HPS-Java migration was converted window layouts and event manager code.

4. Conclusions

In this paper we have described a Netsiel’s architectural approach used to re-engineering client-server application. We have introduced also the real case of a re-platform project for application of large dimensions composed from 5,000 Java classes and 10,000 Cobol programs.