Building an Integrator for Software Components

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Abstract

Many new technologies have been developed around what are so called Component-Based Software Development (CBSD) or component-ware. Some of these technologies are COM, DCOM, CORBA, and JAVA/RMI. Each component technology has its rules which are different from the others. Therefore, it is difficult to develop any application or system based on more than one technology. This paper discusses the process of building a component integrator that integrates developed components based on COM DCOM, CORBA, and JAVA/RMI. By using the integrator, any institution or enterprise can access the best components from the different Component technology to build the perfect client application.

Keywords: Software Components, Component-Based Software Development, COM/DCOM, CORBA,

JAVA/RMI. Component integration, Component Client Code Generation.

1. Introduction

The most important feature of the Component Based Development (CBD) is reusability, which means that the same product can be reused in different software applications. This leads us to an important advantage that causes the reduction of efforts needed for building an application (i.e. not re-inviting the wheel). At the beginning, software developers build an application from scratch implementing the component technology. For the next applications, software developers will use the existing components rather than starting from scratch. In fact, the software developers can use not only their own components but also other components developed by other developers. Since software developers have different experiences with different points of view, they build software components by means of different technologies such as COM, CORBA, and JavaBean [1-23].

The components of different technologies can not inter-operate together. This is because their interface structures, component activations, and their methods of invocations are different. The best computer systems are built from hybrids of the best technology and tools available at the time. Therefore, this research will introduce an integrator system at the basic programming architecture level. The system will also activate components from different technologies. The integrator will activate DCOM (Distributed COM) components, CORBA components and JAVA/RMI components to serve a client application. The integrator will give the ability for DCOM, CORBA, or JAVA/RMI users to activate DCOM, CORBA, and JAVA/RMI components at the same time in their client applications.

Due to the differences among COM, CORBA and JAVA/RMI [6], there are needs for building an integrating system. This system manages the process of building software applications to handle different software technologies in the same time. In this case the software developers do not worry about the software components technologies, but they concentrate on the objectives of those components. Therefore, the main objective of the integrating system is to enable applications to operate the best COM components, CORBA components and Java RMI components