UDC 681.3

A. S. BORANBAYEV

REFERENCE ARCHITECTURE FOR WEB APPLICATIONS

(Представлена академиком НАН РК М. О. Отельбаевым)

This article presents the reference architecture for building web based applications. This reference architecture can be used as the basis when designing a particular information system.

1. Overview

This article presents the reference architecture for web based application. The reference architecture should be used as the basis when designing a parti-cular system. It is assumed that architect can select from a set of well-known elements (standard parts) and use them in ways appropriate to the desired system.

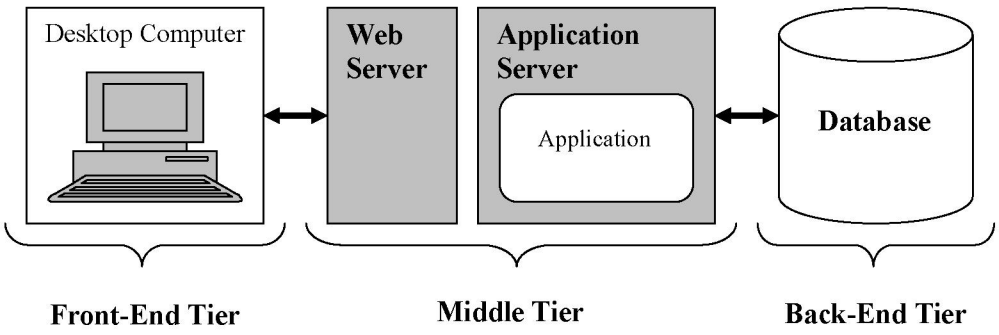
The economy and technology of today have intensified the needs for more efficient solutions of information management. If a company wants to build an e-business Website using a multi-tiered architecture, it should consider using Java 2 Enterprise Edition (J2EE) technologies. The J2EE specification provides a programming model that improves development productivity, and standardizes the platform for hosting enterprise applications.

Java was initially used for client-side development in the 1990s. Then in the late 1990s, it evolved and started to be used as a middle tier tool. Over time, Sun Microsystems added components to its middle tier, such as Enterprise JavaBeans (EJB) and Servlets. In 1999, Sun Microsystems released its J2EE specification which provided a full view of the Java middle tier solution. Since then, Java solution providers have embraced J2EE, which we will now explore [1].

Depending on the project requirements, web based applications come in two flavors - reporting or transactional. Transactional application performs a lot of business functions against incoming and outgoing data when managing transactions and controlling its state. Reporting application, on the other hand, does not apply extensive business logic to the tunneled data, its main task is to retrieve and to present big data sets to the end-user in the form of tables or lists of records. There are situations when transactional and reporting functionality need to be combined in the same web application.

2. Tiers

For both types, application functionality is distributed over three locations: user machines, the application server machine, and the database or any other resources at the back end.



For the front-end tier, there is a browser running on the desktop computer, which renders such interactive components as HTML or DHTML, with embedded scripting elements (JavaScript in most cases).

The back-end tier is constituted from one or several relational databases (such as Oracle) and/or multiple Tuxedo services (C based transaction processing system).

Application Server(s) presents the middle-tier. At this tier, the web container of WebSphere Application Server provides runtime environment for Java-based applications. The middle-tier is where the most of the architectural expertise and effort is usually applied.