Standards for Web–Based Integration Adapters

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INTRODUCTION

EAI (enterprise application integration) refers to the plans, methods, and tools aimed at modernizing, consolidating, and coordinating the computer applications in an enterprise. Typically, an enterprise has existing legacy applications and databases and wants to continue to use them while adding or migrating to a new set of applications that exploit the Web, e-commerce, extranet, business-to-business (B2B) commerce, and other new technologies. Enterprise application integration is difficult mainly because there is no standard infrastructure for communication between heterogeneous systems. The four types of B2B and A2A integration challenges that most organizations encounter today are user-interface integration, application integration, business-to-business integration, and data integration.

- **User-Interface Integration**: Employees, suppliers, and other trading partners need fast access to relevant and up-to-date information without having to search through a variety of inconsistent Web sites, navigate dissimilar user interfaces, and enter multiple passwords. To access this information, users enter their chosen realm via a portal that presents a consistent interface to different applications.

- **Application Integration**: Business processes involving multiple applications require integration of application logic and functions or tasks. To facilitate this integration, applications must communicate to exchange important business information. If a business is interested in selling goods over the Web, then its Web store must be integrated with its payment server. Although these are two separate pieces of software, they are components of the same order-taking business process.

- **B2B Integration**: B2B integration is imperative for businesses to participate in a marketplace or other B2B-exchange environment. These environments bring together buyers and suppliers. When properly architected, a B2B-exchange platform can integrate catalog sources such as supplier-hosted catalogs, specialized vertical exchanges, and other online information.

- **Data Integration**: In most B2B e-commerce environments, data integration is essential, especially when data comes from many different sources. Data integration allows applications to work with data from different computing platforms, databases, and operating systems.

BACKGROUND

Distributed Web and component-based architectures will remain strategic for most organizations for the foreseeable future. Typical enterprise systems include ERP systems, mainframe transaction-processing systems, other technology legacy applications, or big hierarchical databases. For all these strategies, the challenge remains the same, that is, to make them full participants in Web-based e-commerce and business-to-business transactions.

To allow such systems to connect and interoperate on the Web, a number of protocols and languages such as XML (extensible markup language) and Java and software such as application adapters have been proposed. The section below discusses their role in application integration on the Web.

**XML**

Using XML to represent the data being exchanged between applications presents significant advantages from an integration viewpoint because it lets the receiving application obtain the data and metadata simultaneously. The application can more easily understand the data it receives as such data are self-describing. Once a system is given the metadata and data, a clear and fairly automated approach can be implemented for mapping the original data into the native format of existing applications using technologies such as the extensible style sheet language (XSLT). Implementing such automated mapping requires companies to provide dictionaries of their business terms. This can help a tool analyze new input document formats and try to associate elements to an existing internal system representation. Several current integration initiatives include XML, for example, OAG, Microsoft’s BizTalk, and RossettaNet, which are attempting to establish business semantics and process standards on top of XML technology.

**Integration Adapters**

An integration adapter is a software component used to connect an application (called target) to another application (called source) in enterprise application integration so that data from the target application can be interfaced with and transmitted to and from the source application.
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