WAZEE GROUP

xBroker™

www.wazeegroup.com

Benefits:

- **Provides a turn key web services platform**
- **Straightforward architecture and design**
- **New services are easily developed and deployed**

Features:

- **Content-based Security**
- **Concurrent Request Management**
- **Synchronous To Asynchronous Morphing**
- **XML-based Logging**
- **XML Database Adapter**

Environment:

- **Java**
- **J2EE**
- **Standard XML libraries**
- **jxBeans (optional)**

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Web Services Platform

Introduction

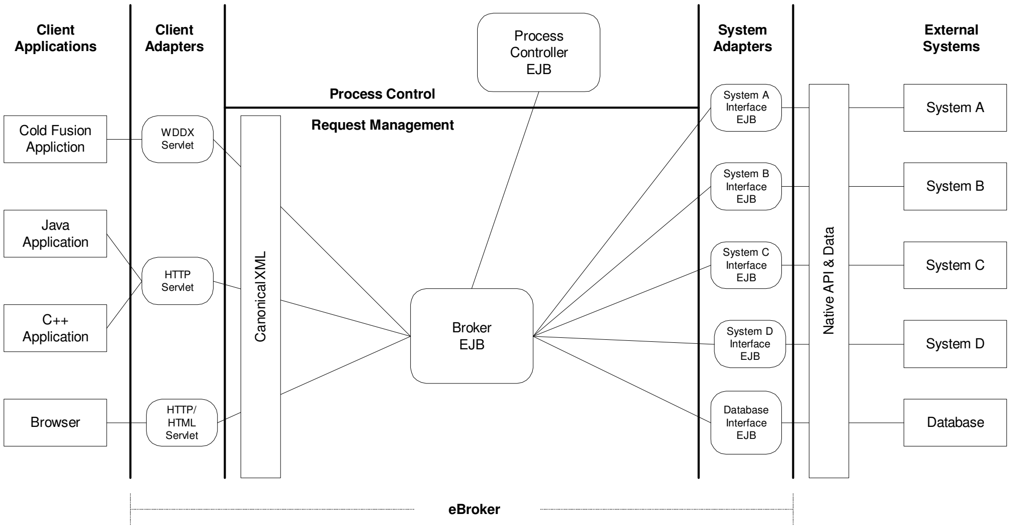
In early 2002, a client approached Wazee Group with a need to replace its "work-in-progress" EAI solution. The system under development was going to be expensive to scale and knowledgeable, skilled developers were scarce. The client had several end user applications and numerous back end systems that required integration with a high level of process automation. Wazee Group decided that a web services architecture was the best solution for the client and quickly developed and deployed the xBroker™ platform. The xBroker™ server not only validated the web services approach but wildly exceeded the client's expectations.

Overview

The architecture of the xBroker™ is based on a web services paradigm with a J2EE architecture. The client applications can request for a service to be performed and the xBroker™ system will carry out the required processing. At the completion of the processing the xBroker™ will return a reply and any associated data to the client application.

The requests from the client applications can be of any form and communicated via any protocol. Once inside the xBroker™ , each request is converted into a canonical XML structure. This structure is maintained throughout xBroker™ until the request is sent to the external systems. At this point the canonical XML request is converted into the native representation and relayed to the external system.

The architecture is based on the J2EE technologies. The core J2EE APIs are the Enterprise JavaBeans (EJB), Java Message Service (JMS), Java Naming and Directory Interface (JNDI), Java Database Connectivity (JDBC), and Servlets. The standard APIs are strictly enforced; no vendor-specific APIs are used. xBroker™ has been deployed on both JBoss and ATG Dynamo application servers. A diagram of the high level partitioning is shown



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The xBroker™ architecture is partitioned into four major layers:

- ***Client Adapters*** are responsible for interfacing with client applications. It converts the client's communication protocol and native data into a canonical XML-based request and forwards the request to the Request Management layer.
- ***Request Management*** provides a single point of control for all inbound requests. The main component of this layer is the Broker Enterprise JavaBean (EJB). The Broker is responsible for inbound request authorization, asynchronous request processing, concurrent request management, request routing, and request logging.
- ***Process Control*** provides complex processing by issuing one or more requests. Each request in the Process Control layer is represented as a process that can communicate with the adapters (via the Broker EJB) or other processes in the Process Control layer.
- ***System Adapters*** contain specific parameters and parsing information required to communicate with one (and only one) external system. System Adapters send and receive data using the protocol required by the external system such as Telnet, HTTP, custom APIs, etc.

Requests are mapped to Java "Handler" classes. The handler classes can be coded in Java or higher level frameworks such as jxBeans.

Unique Features

There are several key features to the xBroker™ platform. A few of the unique ones are:

- ***Content-based Security*** allows authorization to be based not only on the request type but also on the content of the request. For example, the Southwest Users Group can only view client addresses that contain a Texas, Oklahoma, or New Mexico address.
- ***Concurrent Request Management*** allows control over simultaneous requests targeted toward the same business data. With simple configuration, the xBroker™ will enforce service locking much in the way that databases enforce data locking.
- ***Synchronous to Asynchronous Morphing*** can change long running requests from synchronous to asynchronous requests. If a request is fulfilled within a specified period, the reply is returned to the client as a synchronous request. If the request exceeds the time period, a request id and status is returned to the client. The client can then poll the xBroker™ for the status of request. When the request is completed, the client can retrieve the reply to the original request.
- ***XML-based Logging*** permits any XML request/reply to be logged into a database at run time with a simple configuration. The XML logs can then be queried for error analysis, debugging, or business activity monitoring.
- ***XML Database Adapter*** allows rapid development of data access. Any SQL statement can be implemented via the configuration of three items, the Query Type Mapping File which maps the inbound XML request to one or more query types, the Query Parameter Mapping File which maps inbound data (or data in the result set of a preceding query) to a SQL parameter, and a XSL style sheet that maps the data in the result sets to the XML reply.

xBroker™ can be deployed on all popular J2EE application servers.

XML Database Adapter allows cascading of database statements which maximizes reuse and increases run time performance.

Summary

The xBroker™ platform was developed in early 2002 and has steadily evolved since that time. The architecture is very straightforward and extremely effective. For one client, it has allowed over 530 different services to be developed and deployed very quickly with great success.

Although the xBroker™ is not a commercial product, the platform is available to the clients of Wazee Group.

For more information or account references, please contact Jim Ladd via email: jladd@wazeegroup.com

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