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Moin uddin balkhi

## Enterprise Application Integration Controller

### Abstract

For business processes to span across organizational boundaries, ERP systems should integrate with multiple applications such as legacy systems, Electronic Fund Transfer Systems (EFT), and the Internet. Middleware is being promoted as a communication gateway that integrates disparate systems transparently. Each ERP vendor is marketing its own middleware. Middleware is principally being used for business process integration. Middleware is additionally being used internally by organizations for integration with legacy applications and Internet portals. At present, these off-the-shelf middlewares do not ensure recovery from message loss in instances when there is a message server failure, network failure, hardware failure, database failure or an incomplete message transmission. Message inconsistencies generally trigger issues such as missing number ranges for different objects e.g. (sale order, invoices), data integrity problems and non-reconciled disparate business systems.

ERP vendors partnered with hardware vendors, by propagating clustered hardware solution for solving the message loss problem. However, this solution does not guarantee recovery from message loss; in addition it requires additional hardware and is an expensive proposition. This also necessitates that a homogeneous operating system environment be maintained. Also, it has been determined through experience that failover on application server instances is not recommended for performance reasons. These instances need more resources for the transparent switchover process.

Since middleware is in the infancy phase, at present it does not have the capability to recover from message loss in case of non-availability of any of the systems. The motivation of this research is to find a software solution to minimize message loss when disparate systems are communicating with each other using a middleware.

In order to demonstrate minimization of message loss, an environment where SAP is being used as an ERP, and integration with SAP is being achieved through middleware, a JAVA swing based application is proposed that will ensure minimum message loss, and would function like an EAI controller. The core idea behind controlling and monitoring the message communication from a remote location-using controller is to provide a robust, low cost and high availability environment to EAI. The controller will monitor all the messages communication between User-End and SAP R/3 and the re-transportation of message to middleware from controller's repository in case of any message lost or complete middleware failure.

The results show the presence of such EAI controller significantly reduces message loss in the event of non-availability of any of the systems. Message recovery and message reapplication can be performed transparently. In addition, the research shows JAVA RMI is ideally suited for situations in which separate parts of a single program can exist in multiple Java environments on multiple machines. To the client and server, the program operates much like it is local to their environment and within a single memory space. The future goal of the research is to develop strategies for making the controller a robust application capable of handling diverse platforms and user interface that automatically generates java code based on UML modeling.