Bank Application System Integration based on SOA and EAI

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Abstract—With the development of Chinese financial industry, it is more and more important to achieve banking application system integration, resource organization and information sharing. This article describes the design and realization of the bank application integration framework according to the bank synthetic operational system with the service flow as the drive. The description is based on a unified planning, a set of various key technologies and standards. The organization and sharing of information between the bank application systems are discussed. By analyzing services oriented software, development characters and the integration methods, a bank application integration system of the commercial bank with great interoperability, reusability, agility is to be realized.

Keywords: bank application system; EAI; business flow; information sharing; SOA

I. INTRODUCTION

Enterprise Application Integration is meant to solve the problem of information interaction and sharing between different existing systems in the enterprise. As computer technology develops and a constant increase in the application of information technology, almost every enterprise has its own problem to bridge among several databases and application programs. Enterprise Application Integration (EAI) provides an open framework which makes current assets available to the up coming business needs. By rapidly adding new system application, enterprises could gain further from existing system as well as to integrate the old ones for enhanced competitiveness.

Traditionally enterprise application integration centers on dataset integration, application level interface integration, business logic integration. We require a functional oriented EAI scheme to achieve loose coupling to facilitate the refactoring of business process and optimization. Through the defined process to deploy services we get a model for system architecture as well as for programming. This article uses SOA and Web service how to construct a banking application system integration based on EAI pattern for better reusability and extension capacity.

II. KEY TECHNOLOGIES

A. SOA

SOA is a solution for designing and setting up the loosing coupling software system, it can publish business functions in the manner of programmable and accessible services, and the other application can use these services by using the published and findable interface. So, the key conception of SOA is services, and any application of SOA is regarded as a service to be called and administrated. SOA defines design principles:

- Functions are divided into less and reused model using modularization.
- Loosing coupling clients and servers do not need close dependence.
- Encapsulation encloses function modularization; inside widgets define and encapsulate commendably interfaces.

W3C defined SOA as following: the service provider delivers ultimately wanted results to service users by the aid of accomplishing a set of work. The ultimate results usually change the status of users, provider or both. To some extent, SOA is a model which is used for designing, developing, deploying and administrating discrete logic units under computer environment.

SOA has three roles, shown as Figure 1. Service broker registers and makes classifications of the published service providers, it also provides search service; Service provider publishes its own service, and also makes response to the request; Service requester seeks requisite service by using service broker, and makes use of the service. The components of SOA must have one or more of the above mentioned roles. These roles carry out such operations as “find”, “publish”, and “bind”. “Find” operation helps service requester to find special service aid by service broker; “Publish” operation helps service provider to register its own function and interface; “Bind” operation helps service requester to use the provided services in deed.

![Figure 1. Web services-based SOA framework](image)

Service is a basic establishment in SOA and it lies in abstract layer between business requirement and bottom technology. In course of developing software system based on SOA, firstly, we need know the dynamic relation between function requirements and acquired services and relation between services and bottom technology of the implemented services. Secondly the basic services must meet the requirement of definition definitude and function...
singularity in SOA. Each single deployment services independ on else system. Lastly the whole system function is implemented by the services process organization.

B. Web services

Web services are a new generation of web application. It combines the advantages of the component-oriented methods and web techniques, and they can describe its own services. It can also publish, locate and transfer modularized application in web. The provided functions of web services may be simple, but it also contains extraordinary complicated business logic. Once web services are deployed, the other applications can find and request them. There are the key techniques of web services, shown as Figure 2.

From the structural aspects, the core of web services is services. Web services represent a kind of implementation of SOA, and it is the most popular one. In addition, the three operations of SOA can only process when the components of SOA interact. Therefore some standardized technologies are used in web services, including UDDI, WSDL, HTTP, SOAP, XML and so on. Web services become the best choice for developing SOA application. The web services architecture may detach five layers: transport layer, message layer, description layer, security layer and composite services layer.

The operation mode of web services is similar to the SOA design. Services provider publishes services WSDL description information in the UDDI register centre. Then through querying UDDI registering centre, services requester gains the used services WSDL documents which to provide the web services interoperability information. Lastly services requester sends SOAP request to the services provider, and then services provider returns SOAP response messages to services requester.

C. SOA Hierarchy based on Web Services

Business organization should optimize their business processes, then business and IT organization should optimize their services. Partly the services of a business organization serves them, it also serves external requests. The services implementation adopts infrastructural components. There is the hierarchy of reference model based on web services and SOA, shown as Figure 4.

Application layer is the service bus of the local frontal application and external application. A business process is consisted of a series of activities. A basic activity corresponds a service. A business process is a pack of services. Since business process is made up of services, a business process becomes a services flow.

Services bus is the facility that uses local business process in response to the services requester. It separates application layer and the infrastructural components that implement those services. The requested services may be basic services or the static combination of services or dynamically assembled services.

D. The Characteristics of Web Services-based SOA communication striding over firewall

Web services exchange data using SOAP-based XML documents and common communication mode, such as HTTP, FTP, and SMTP and so on. So, the communication based on web services techniques can permeate firewall breezily. Any device which supports HTTP and XML could access to web services, and any web services could access to other web services.

1) Implement easily: A large number of free tools are provided by IT companies, including IBM and Microsoft, to build and deploy web services. Existing JavaBeans and COM components can be easily translated to web services for providing services.

2) Loose coupling: Web services have a loosing coupling structure. Any one of web services can change its own running mechanism, but does not affect other services. When web services are updated, the clients who call the services can get the updating with that.

3) Software along with data can be reused: Web services allow codes to be reused, as well as data that behind the codes.

These characteristics can expand greatly web services functions, truly implement mutual operation, and they may use the loosing coupling model to use and expand each kind of data and the services resources. The specific function is completed by the dynamic binding different services. In researching and designing the dynamic E-business application framework, we find an almost perfect solution for many existing and likely-to-appear problems.

III. ANALYZING APPLICATION INTEGRATION

With the development and improvement of EAI technology, it is possible to provide constructing such framework for the bank. The organization pattern based on EAI is not only to meet the current bank ing organization and the reconstruction requirements of the kernel business system, but also be able to construct the basic framework platform of the oriented future and continuable
Commercial bank integrated system includes the central client platform and the client platform. The central client platform based on the EAI technology completes all the members of the trade data sharing between the systems to achieve the integration of regional business. The client platform achieves the unification of business-oriented scheduling and carry out an effective system integration in the system.

IV. REALIZATION OF BANKING APPLICATION SYSTEM

The kernel of commercial bank business system building is the front commercial bank of the development and deployment, also known as a member of client platform development. Because of many independent commercial bank subsystems, the member of client platform is used to exchange data in the different systems. Therefore, the paper selects the EAI development platforms BusinessWare (referred to as BW) to integrate subsystem in different members.

A. Realize the framework of the former business

Due to different operation environment of various application system, there is difficulty to communicate between systems before the client platform is realized. Every commercial bank subsystem works independently to provide the service for the clients. For example, a business involves the reception system, card system and bill system. The business begins from the reception system, the card system deals with the business flow and returns the result to the reception system. Then the reception system sends the request to the account system for the business disposal. Finally, he account system returns the disposed result to the reception system. The business flow lacks the necessary communication between subsystems which to induce the waste system sources and reduce the service efficiency.

B. Realize the framework of the end business

The realization of the client platform solves the communication between the subsystems. With development and innovation of commercial bank business, there needs to form a middle business platform to realize the different commercial bank subsystems, such as the provincial accounting subsystem, network bank subsystem, telephone bank subsystem and so on. MIFController realizes the combination of atomic transactions, sets up all kinds of combinations transaction for the corresponding treatment, provides services.
EAI is the most effective method for information sharing across the enterprises. Web Service and SOA based EAI scheme conveniently integrate the existing and newly developed systems alike. The loose association, dynamic binding are great advantages in setting up seamless cross platform interoperate information sharing system. Development and implementation of commercial bank business system integrates greatly the commercial bank application subsytems and promotes greatly the process of information, optimizes business processes.

REFERENCES


