



WebSphere software

Creating and delivering a complete application-integration solution.

Using PeopleSoft 8 with WebSphere software

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Introduction

Business is conducted as a sequence of interactions. A customer contacts a supplier to place an order, the order is taken by sales, and it's passed on to accounting and manufacturing. Through other departments, goods or services are delivered, the customer settles the invoice and the process is complete.

Each interaction in a process that involves people and systems includes passing of information. The goal of computing technology is to make this kind of information processing more efficient. And, when business is complex and rapidly changing, the challenge – for people and systems – is to change behavior to keep pace. At the same time, the connected world of e-business makes these internal processes more visible to the outside world of customers, suppliers and trading partners. And, divisions in the processing of information are no longer just inefficiencies a business can conceal. In today's world, disconnects are problems that directly impact a company's success.

Integration is the task of bridging these disconnects, facilitating the interactions to help businesses operate more efficiently. It also enables greater effectiveness because each resource can change at its own pace in response to business requirements while remaining connected to others. Integration architecture is focused on the design of solutions that enables nodes, applications, networks and systems to work together within an enterprise or among enterprises. These solutions may use different technologies, vendors, platforms and styles of computing.

This white paper explains how you can create a complete integration solution for PeopleSoft 8 software, so that it can interact with other applications smoothly. It also discusses various approaches for the integration of PeopleSoft 8 with the IBM WebSphere® product family.

Business requirements that drive the need for integration

A distinct set of business requirements drives the need for a strong integration architecture within an enterprise. In your business, more than ever you may want to:

- *Leverage existing infrastructure investments*
- *Reduce costs of managing disparate systems*
- *Support new and existing industry and government regulations*
- *Reach new markets with greater speed and efficiency*
- *Reduce problems and unplanned outages*
- *Provide additional capability and access to additional systems and data to end users*
- *Increase reliability and end-to-end transactional integrity*
- *Improve response time, performance and scalability*
- *Respond to and meet expectation levels for connectivity and integration*

Five styles of integration

To help you choose an integration-infrastructure solution, IBM offers five approaches, or styles, of integration as shown in Figure 1.

- *User interaction*
Creates a single interactive user experience across applications and devices. Presenting a single, tailored user interaction and making it available through virtually any device, which can enable full transactional support and integration with multiple business systems. This can mean higher customer loyalty, more effective collaboration and new business opportunities. You can gain sophisticated user-interaction solutions with IBM WebSphere Portal for Multiplatforms, Version 4.1.
- *Application connectivity*
Connects applications to share and leverage information. Business assets are efficiently connected to allow information across disparate systems to be available across the enterprise. IBM WebSphere MQ Integrator and IBM CrossWorlds® solutions can help you achieve connectivity integration.

- *Process integration*

Changes how businesses run through process automation. It brings application connectivity to the next level by allowing your business to modify how it operates through the modeling, automation and monitoring of processes across people and heterogeneous systems inside and outside the enterprise. IBM MQSeries® Workflow and CrossWorlds solutions comprise a leading process-integration solution.

- *Build to integrate*

Builds and deploys new integration-ready applications that leverage Web services and existing software. Instead of traditional silos, new solutions need to be implemented in a manner that enables them to be immediately integrated with existing software assets. IBM WebSphere Application Server and IBM WebSphere Studio families can help you implement build-to-integrate solutions.

- *Information integration*

Integrates many forms of business information across and beyond the enterprise. Instead of simply accessing individual information sources, the IBM DB2® family of products allows information integration with coherent search, access, replication, transformation and analysis over a unified view of information assets to help meet your business needs.

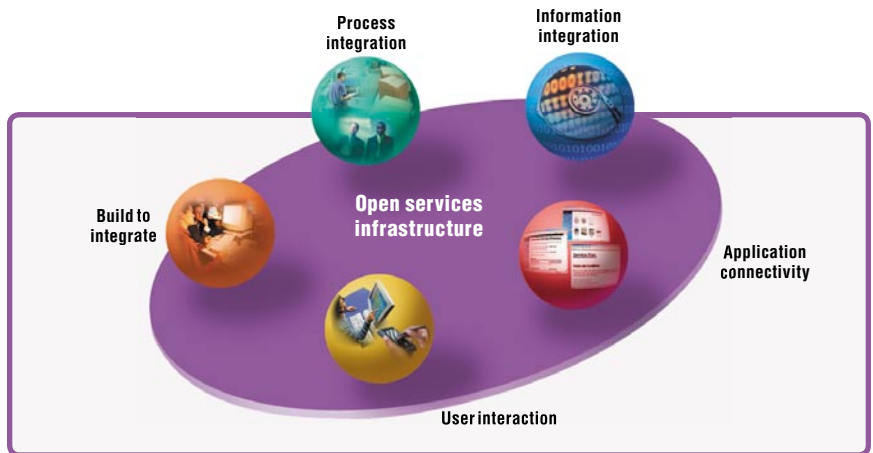


Figure 1. Five business integration styles from IBM

Let's look at how you can use these five styles of integration to build a complete solution for a hypothetical travel reservation Web site. First, you need an interface for your customers who want to make a travel reservation on the Web site. With WebSphere Portal solutions, you can create an interface point where sophisticated user interactions can take place. Next, you must integrate existing applications from outside of the enterprise – customer information, billing systems and airline, hotel and car rental reservations – to the portal so that customers can make reservations without leaving the portal application. You can use application-connectivity solutions with WebSphere MQ Integrator and CrossWorlds software to help you accomplish this task.

After applications are connected to the portal, you have to manage them as a process. What if a hotel reservation is made without an airline reservation? Can all the reservations be canceled if the customer cancels the airline reservation? In order to answer these types of questions, you need to include process management with your applications. You can implement effective process management using process-integration solutions with WebSphere MQ Workflow, CrossWorlds software and WebSphere Application Server. After the reservations are made, you might want to send a confirmation e-mail message to the customer and let them make changes to the reservations. You can build this solution with IBM WebSphere Studio Application Developer and use WebSphere Application Server to host the solution. Finally, if you need to access customer credit information in a database to verify the customer's credit history, you can use information-integration solutions with DB2 data management tools.

PeopleSoft

PeopleSoft is a customer relationship management (CRM) and enterprise resource planning (ERP) software company, whose software products have human resource management, financial and supply chain management components. PeopleSoft 8, with its server-centered, browser-based Internet architecture, enables centralized integration points that let WebSphere software become the ideal platform on which to build an integration solution. Its presentation layer is already running on IBM WebSphere Application Server Advanced Single Server Edition for Multiplatforms. WebSphere Application Server is automatically installed during the PeopleSoft 8 installation, which allows users to host PeopleSoft 8 presentation servlets.

For PeopleSoft 8 to interface with end users through Web browsers, Web presentation layer components need to run inside the servlet engine of WebSphere Application Server. Taking advantage of built-in integration features of WebSphere Application Server and other products in the WebSphere family – such as WebSphere MQ and WebSphere MQ Integrator – can give customers a competitive advantage by reducing costs, simplifying integration efforts and centralizing the integration points. These products fit together to create a complete integration solution for PeopleSoft 8, so that it can smoothly interact with other WebSphere software applications.

WebSphere software

The WebSphere software platform for e-business consists of several products working together to enable disparate enterprise applications to communicate with each other across multiple hardware and software platforms. WebSphere software addresses different integration issues with unique and effective solutions.

Integration challenges

Corporations will and should be able to continue to adopt best-of-breed applications for business-critical functions and for integration of these applications with already-existing systems. The simplest form of integration – using batch files for moving massive data from one application to another – is still a simple and well-known method of integration at a data level. As business environments require more immediate responses and automated business processes in real time, a company's information needs to flow from one application to another in a nondisruptive and security-rich environment. For example, a call center representative using PeopleSoft 8 customer relationship management (CRM) software should be able to immediately check customer information (such as credit history and profile) stored in an IBM CICS® application when a customer call is received.

Building a solution

One way of approaching business integration is by comparing it to a short commuter trip. For example, if you are traveling from New York to Boston, you first decide whether you want to fly, drive or ride a train, round trip or one way. With business integration, you need to decide how you want to send a message (data) from one application to another application and whether you want to receive a return message in a transaction. You make this decision according to the transport protocol you want to use. You have two options from which to choose if you are using PeopleSoft 8 with WebSphere software – messaging technology and HTTP.

Messaging enables highly available delivery of data between applications and can be implemented using WebSphere MQ in conjunction with WebSphere Application Server. This is like one-way travel. You are free to continue your next journey without having to consider the trip home. HTTP is a popular Internet transport protocol. It is a choice for synchronous communication but does not guarantee the delivery of the data. WebSphere Application Server natively supports this protocol. This is like round-trip travel, where you must return home before you can take your next trip.

After you determine which protocol best suits your requirements, you next decide whether the communication between applications is to be synchronous or asynchronous. If you want your application to wait for the reply after it initiates a request, you will use synchronous communication. This can be implemented using HTTP or WebSphere MQ messaging. If you want your application to continue to the next step without waiting for the reply from the other application, you can use asynchronous communication.

This can be implemented using WebSphere MQ messaging. After you make these decisions, you can implement the integration approach using the PeopleSoft 8 integration infrastructure. Figure 2 shows the PeopleSoft 8 three-tier architecture. The presentation layer (first tier) runs on a Web server. The business-logic layer (second tier)—consisting of several processors and engines—runs on a transaction server technology-based PeopleSoft application server. Business data (third tier) is stored in the database server.

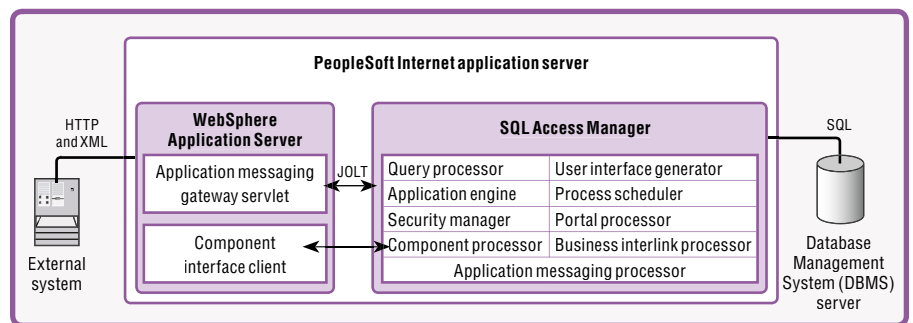


Figure 2. WebSphere software and PeopleSoft 8 Internet architecture using HTTP

An HTTP request is posted to the Web server and is relayed to the appropriate processors in the application server. When using HTTP there are two ways you can retrieve data from and put data into PeopleSoft 8 application server – through application messaging and through component interface.

Application messaging

Application messaging is an asynchronous method of publishing and subscribing in PeopleSoft 8. Applications can subscribe to and publish XML messages coming from PeopleSoft 8 through application messaging. Application messaging consists of a message, a channel and a node. With a message, you define the structure of how the data appears. Channels are logical groupings of related messages. For example, account data, personal profile and expense report are examples of a logical grouping for channels. Publication and subscription of the messages are at the node level. Each of the applications in PeopleSoft 8 and in third-party applications are message nodes. If you want to send billing information from your legacy system to the PeopleSoft 8 accounts receivable component, the information will be posted using the HTTP post method from the legacy system. It is then brought into the accounts receivable application through PeopleSoft 8 application messaging.

For inbound messaging, since HTTP post is the only way to post a message to application messaging, WebSphere MQ messaging triggers a utility program provided by PeopleSoft 8 to bring the data into PeopleSoft 8 through the application-messaging interface. For outbound messaging, the WebSphere MQ handler converts an HTTP post message from the application-messaging interface into a WebSphere MQ XML message and puts it into the specified queue.

Component interface

With component interface, applications can invoke PeopleSoft 8 business logic synchronously using JavaBeans, Enterprise JavaBeans (EJB) or XML bindings in WebSphere Application Server. If you want a client outside PeopleSoft 8 to be able to change a bill status in the billing system, you could write a Java™ client using the component interface with EJB or JavaBeans components.

You would search for the bill (using the find method), access the bill (using the get method), change the status (using the set method) and finally, save the change (using the save method). By using WebSphere MQ messaging as the transport instead of HTTP, you can be confident about the delivery of your message and can store and forward messages, depending on the network availability.

Java code – EJB modules or servlets – that invoke PeopleSoft 8 business logic using the component interface can be initiated by a WebSphere MQ message arriving in WebSphere Application Server through Java Message Service (JMS), the messaging service provided by the Java 2 Platform, Enterprise Edition (J2EE) environment. WebSphere MQ is used as the underlying transport for JMS, as shown in Figure 3. It sends the data to a Web server, and the data is relayed to the application server through PeopleSoft 8 integration architecture. Application messaging and component interface are used to send data into PeopleSoft 8 and to get the data from PeopleSoft 8 with WebSphere MQ software.

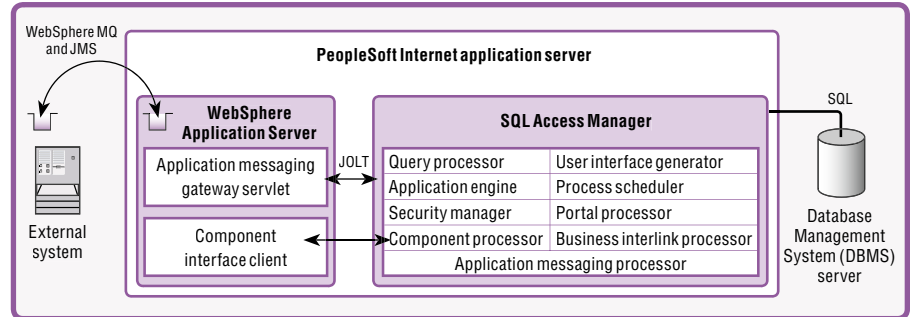


Figure 3. WebSphere software and PeopleSoft 8 Internet architecture using WebSphere MQ messaging

The integration solution

The WebSphere platform can enable PeopleSoft 8 integration infrastructure. You can extend the solution and address other integration issues like message formatting, content-based routing and process integration. The result is a hub-and-spoke model, using a message broker rather than the traditional point-to-point connection. Using a hub-and-spoke approach helps minimize the complexity of integration and can help reduce maintenance cost.

WebSphere MQ Integrator is an industry-leading message broker, providing intelligent routing and data transformation. You can implement a tiered approach by placing the broker in the middle of the integration solution, physically separated from each application, which makes it easy to add more applications for future integration. And it gives a centralized place where the changes can be made one time.

WebSphere MQ is used in the connection layer. WebSphere MQ Integrator is used in the application data-integration layer, while IBM WebSphere MQ Workflow and CrossWorlds solutions are used in the process-integration layer. In the complete integration solution, WebSphere MQ messaging lets you move data from PeopleSoft 8 to other applications and from other applications to PeopleSoft 8. WebSphere MQ Integrator handles the formatting and routing of messages based on the content of the message in and out of PeopleSoft 8 and other applications. WebSphere MQ Workflow and IBM CrossWorlds InterChange Server manage and execute business processes that comprise several applications – PeopleSoft 8, CICS, CRM and Web applications.

Use portals to increase data sharing

After you have routed and formatted data and information, you need to be able to share that data with other applications. An integrated environment can help you achieve that goal. In the integrated environment, data can be readily shared among applications. The data, such as customer needs and buying habits, becomes information that is critical in the business decision-making process. It also makes the data useful to users who need more personalized information, like sales representatives who need to know what products a customer has purchased in the past or an accounting team that wants to know how timely a customer pays his bills. Figure 4 shows how WebSphere Portal provides a single point of user interaction with dynamic information, applications, processes and people to help build successful business-to-employee (B2E), business-to-business (B2B) and business-to-consumer (B2C) portals. WebSphere Portal also supports a wide variety of pervasive computing devices, enabling users to interact with their portals virtually anytime, anywhere – using nearly any device, wired or wireless.

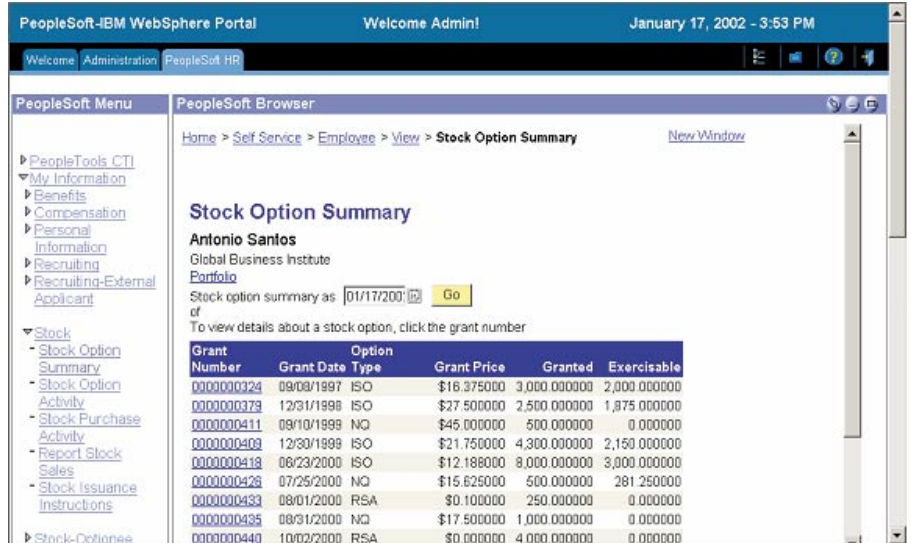


Figure 4. Presenting PeopleSoft data through WebSphere Portal

WebSphere Portal is the key for user-interaction integration – to access multiple data sources and bring the correct information directly to users. An integrated portal allows you to search for personalized information that flows through several applications. Web services, messaging, XML, database access and Java Connection Architecture (JCA) are some of the methods you can use to tap into your data sources from WebSphere Portal.

Portal integration with PeopleSoft 8

IBM provides prebuilt, standards-based portlets that access PeopleSoft 8 with single sign-on and transaction support. It also provides a development tooling environment with WebSphere Studio Application Developer – without requiring special Java skills.

The modular architecture of portlet integration provides flexibility to help you update connector technology that accesses PeopleSoft 8 without affecting portlet functions. Portlets use the connector to access PeopleSoft 8 through the application’s own native interface. Portlets use JavaServer Pages (JSP) for the user interface and for functions that can be easily modified to change the look and feel of the portlet. JSP tag libraries help reduce development time by freeing developers from writing low-level functions for connections, security and data beans.

Summary

The PeopleSoft 8 Internet architecture can leverage the WebSphere platform for integration and user experience. Considering the complex nature of application integration, one of the ways of minimizing the risk of failure and reducing the cost involved in maintenance of application integration is to adopt open industry standards and to centralize the integration point. The WebSphere software platform provides an environment where you can build your business integration solution to accomplish those goals. WebSphere software provides open-standards tools and built-in functionality that help you to integrate disparate enterprise applications running on multiple platforms. WebSphere Portal enables personalized, aggregated information to be delivered to users through this integrated environment.

For more information

For more information about WebSphere software, visit ibm.com/websphere.



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