



**WebSphere** software

# **IBM WebSphere Message Broker, Version 6.1 with IBM WebSphere Adapters: Communicating with enterprise information systems.**

---

Contents
<b>2 Introduction</b>
<b>2 WebSphere Message Broker</b>
<b>3 WebSphere Adapters</b>
<b>4 WebSphere Adapter nodes</b>
<b>6 Easing EIS integration</b>
<b>9 Decreasing delivery cycles and costs</b>
<b>9 Deployment scenarios</b>
<b>11 Phases of a successful deployment</b>
<b>12 Discovery</b>
<b>15 For more information</b>

## Introduction

IBM WebSphere® Message Broker is a universal enterprise service bus (ESB) solution that delivers universal connectivity and transformation across heterogeneous IT environments.

WebSphere Message Broker, Version 6.1 adds support for integrating applications directly with enterprise information systems (EIS), such as SAP, Siebel and PeopleSoft. This support is delivered as a set of inbound and outbound nodes based on IBM WebSphere Adapters technology.

This white paper discusses the value of and strategies for using the WebSphere adapter nodes provided by WebSphere Message Broker V6.1. Benefits include speeding and simplifying the tasks of creating integrated processes for greater productivity and lower cost. This paper provides scenarios in which the nodes are used to integrate an EIS into an ESB infrastructure, to expose the functional capabilities of an ESB and to synchronize EIS systems. This paper describes how developers can use the nodes to create components, create message flows based on those components, deploy the components to WebSphere Message Broker and administer the components.

## WebSphere Message Broker

WebSphere Message Broker provides the key capabilities that your business needs to transform and route business data among applications. Because WebSphere Message Broker can function as a message and protocol switch, it can be used to connect disparate applications and business data across multiple platforms. It also delivers transformation and intelligent routing for all your business information. Business data is available exactly where you want it in the format you need it.

WebSphere Message Broker offers a flexible and dynamic ESB infrastructure to simplify application integration. Its robust design, scalable architecture, high performance and ease of use enables you to implement a service oriented architecture (SOA) in stages – what we refer to as *Smart SOA*.

With this flexible combination of functions, your business has the tools to solve your integration requirements from any starting point: a simple two-application solution or a multiapplication, multiplatform design. As your business expands and integration challenges multiply, WebSphere Message Broker can accommodate the changing needs of your business by:

- *Expanding your infrastructure without increasing the complexity.*
- *Protecting your existing and ongoing investments in applications and data structures.*
- *Extending your connectivity capabilities seamlessly.*

#### **WebSphere Adapters**

IBM WebSphere Adapters enable you to quickly and easily create integrated processes to exchange information among EIS applications, such as enterprise resource planning (ERP), human resources (HR), customer relationship management (CRM) and supply-chain systems. WebSphere Adapters also enable you to bridge different technologies.

In Smart SOA solutions, new business-service applications use WebSphere Adapters to integrate multiple EIS application suites with an ESB, business process server and data transformation engines. WebSphere Adapters also *service-enable* applications, meaning that new Web services driven by message flows are insulated from the details of connection, information storage and retrieval. And the services are standards-based, implemented with Java™ 2 Enterprise Edition (J2EE) Connector Architecture (JCA) 1.5 and extensions to support rich, graphical-interface discovery tools.

WebSphere Adapters, Version 6.1 introduce an enhanced architecture to support additional, complementary products. Based on a Data Exchange Service Provider Interface (DESPI), the enhanced architecture enables the adapters to be integrated into a wide range of products in the IBM WebSphere portfolio, including WebSphere Message Broker.

#### WebSphere Adapter nodes

WebSphere Message Broker, Version 6.1 is now integrated with WebSphere Adapters, Version 6.1, packaged as native message-processing nodes. A separate WebSphere Adapter license is required in addition to the WebSphere Message Broker license to deploy a WebSphere Adapter node in a message flow to the WebSphere Message Broker environment. However, for development and unit testing on an individual developer workstation, only the WebSphere Message Broker license is required. WebSphere Adapter licensing is independent of whether you have multiple connections to a single application instance or multiple instances.

WebSphere Message Broker, V6.1 supports the following adapters:

- *IBM WebSphere Adapter for PeopleSoft Enterprise, Version 6.1*
- *IBM WebSphere Adapter for SAP Software, Version 6.1*
- *IBM WebSphere Adapter for Siebel Business Applications, Version 6.1*

IBM WebSphere Message Broker for z/OS®, Version 6.1 supports the IBM WebSphere Adapter for SAP Software V6.1.

Support for WebSphere Adapter for SAP Software V6.1 and WebSphere Adapter for Siebel Business Applications V6.1 is provided by the 6.1 versions of:

- *WebSphere Message Broker for System i™*
- *WebSphere Message Broker for Microsoft® Windows®*
- *WebSphere Message Broker for AIX®*
- *WebSphere Message Broker for UNIX®*
- *WebSphere Message Broker for Linux®*

#### *WebSphere Adapter for PeopleSoft Enterprise*

The WebSphere Adapter for PeopleSoft Enterprise, V6.1 provides bidirectional, real-time integration between PeopleSoft Enterprise versions and other e-commerce, CRM, supply chain, and ERP applications. It interacts with PeopleSoft through the PeopleTools Component Interface Java application programming interface (API). PeopleSoft Enterprise is a suite of modular industry-specific business applications for customer relationship management. WebSphere Message Broker V6.1 supports these versions of the adapter: PeopleSoft Enterprise and PeopleTools, Versions 8.22, 8.40 - 8.48 and 8.49.

#### *WebSphere Adapter for SAP Software*

WebSphere Adapter for SAP Software, V6.1 enables bidirectional integration with SAP applications running on the SAP Web Application Server, Versions 6.20-6.40, as well as with any SAP R/3, Version 4.x application. This JCA resource adapter takes full advantage of Java APIs to access Business Application Programming Interface (BAPI) change parameters through remote function calls (RFCs) and to provide the bidirectional exchange of IDocs through the Application Level Events (ALE) interface.

The adapter generates service descriptions and configuration artifacts for BAPIs, RFCs and IDocs. SAP applications can call into the WebSphere Adapter for SAP software for synchronous processing as if it were another SAP application. The Enterprise Metadata Discovery (EMD) generates the appropriate configurations, and the adapter services RFC calls from SAP applications. The adapter provides a response to the originating application. IDoc service artifacts can then be generated by loading the definitions from either a file or an SAP system. Bidirectional communication through the queued remote function call (qRFC) protocol with the SAP system is supported. WebSphere Message Broker V6.1 supports these versions of the adapter: SAP Software, SAP Web Application Server V6.20 - 7.00 and SAP R/3 V4.x applications.

### *Siebel Business Applications*

WebSphere Adapter for Siebel Business Applications V6.1 enables bidirectional integration with Siebel Business Applications. This JCA resource adapter takes full advantage of the Siebel Java Data Bean Object API to access application service interfaces (ASIs), business services and integration objects. The adapter implements EMD to generate service descriptions and configuration artifacts for integration objects and ASIs. WebSphere Message Broker supports business object, business component and search expression for business components. WebSphere Message Broker V6.1 supports these versions of the adapter: V7.05, 7.5.x, 7.7x, 7.8.x and 8.0.

### **Easing EIS integration**

Previous versions of WebSphere Message Broker supported only manually configured IBM WebSphere Business Integration Adapters. Often, this required programming skills. An adapter agent would then package and send the EIS information as an IBM WebSphere MQ message to be delivered to the WebSphere Message Broker input queue.

Now, using Version 6.1 of WebSphere Message Broker, developers can more easily integrate an EIS. The flow designer in WebSphere Message Broker provides WebSphere Adapter nodes on a graphical palette, eliminating the need for manual configuration and helping to simplify the tasks of adding and configuring EIS transactions into message flows.

Figure 1 illustrates how the flow designer in WebSphere Message Broker V6.1 provides two nodes for each EIS adapter: an input node for inbound events from the EIS and a request node for outbound events. Developers can introduce the nodes into new and existing message flows for *create*, *update*, *retrieve* and *delete* functions, and for some function execution requests.

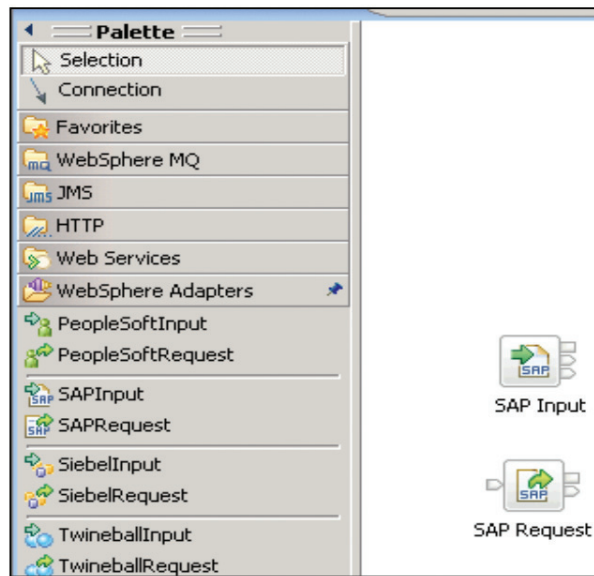


Figure 1. WebSphere Adapter nodes are available on the flow designer palette of WebSphere Message Broker.

The WebSphere Message Broker adapter-connection wizard enables developers to graphically configure EIS transactions into message flows. Instead of two sets of EIS configurations to manage, there is only one set. The new adapter components do not have to be separately installed, as required previously, and there are no separate agent components to manage. An adapter component is automatically added to the deployment broker archive (BAR) file when the message flow containing the adapter node is added.

The component is automatically deployed to an execution group in the message-broker run time. By providing integrated WebSphere Adapters, WebSphere Message Broker, Version 6.1 delivers these IT benefits:

- *A single installation experience that can make you productive quicker*
- *A familiar configuration experience for existing users*
- *Graphical discovery that can accelerate delivery from hours to minutes*
- *A common administration experience with other nodes*
- *Adapter components that are automatically deployed with message flows*
- *Availability for unit testing on an individual developer workstation*

A preferred feature of the asynchronous approach to integration with the previous WebSphere Business Integration framework architecture was the ability to host the adapter agent on a remote server with the EIS. The agent performed all the interactions with the EIS, packaging the transaction as a WebSphere MQ message and using the WebSphere MQ client or server queue to transmit to the remote WebSphere Message Broker. The adapter nodes of WebSphere Message Broker, Version 6.1 deliver a synchronous request-reply approach to connectivity. If you prefer an asynchronous approach, you can deploy WebSphere Message Broker as a remote adapter host, taking advantage of the new adapter-connection wizard capabilities.



### Decreasing delivery cycles and costs

The IT benefits of integrating WebSphere Adapters in WebSphere Message Broker can translate into the business benefits of shorter delivery cycles, lower delivery costs and return on investment (ROI).

As an ESB platform, WebSphere Message Broker enables you to integrate quickly with SAP, Siebel or PeopleSoft when making new updates. It supports an SOA environment in which new business services can be introduced with less implementation complexity. As a result, your business can gain the agility it needs in today's global economy to react to changing market needs and increased competition for market share.

### Deployment scenarios

Figures 2 through 4 illustrate deployment scenarios in which WebSphere Message Broker with adapter nodes can deliver business benefits.

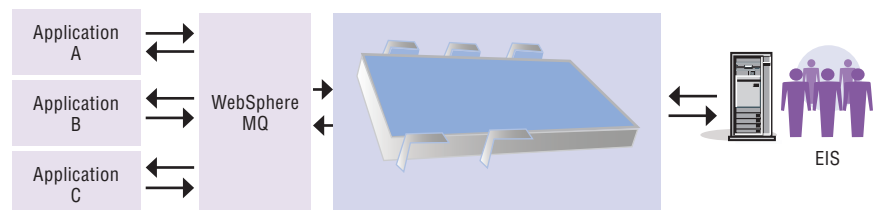


Figure 2. Scenario: Reuse of existing COBOL applications

In Figure 2, an internal, custom infrastructure communicates with different components using COBOL copybook structures over WebSphere MQ. As business requirements change, WebSphere Message Broker with integrated WebSphere Adapter nodes delivers the connectivity, routing and data transformation requirements for introducing a new EIS and integrating it into this infrastructure. For example, the EIS could be integrated as part of an SOA strategy or as a transition stage before migrating one or more of the existing COBOL applications to the EIS, as COBOL skills become scarce and expensive.

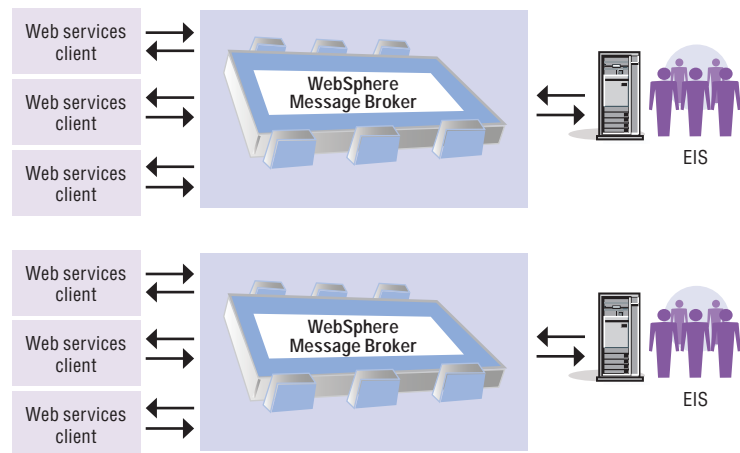


Figure 3. Scenario: Web services enablement

Figure 3 illustrates a scenario in which it's necessary to expose the functional capability in an EIS through a Web services interface. In this scenario, the EIS is accessed using the adapters at the application tier, where an API is provided. And it is accessed at the data tier, where the necessary information to fulfill a request is not exposed efficiently by the vendor's API. By using the HTTP and SOAP nodes with the EIS adapter nodes, creating and deploying a message flow is a straightforward task.

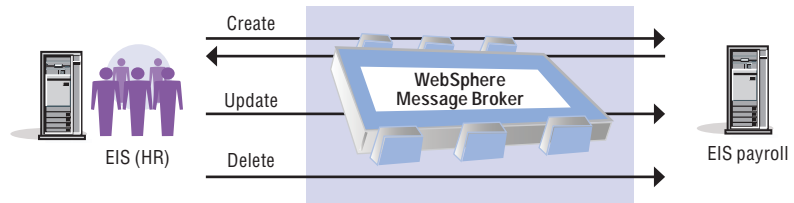


Figure 4. Scenario: Synchronization of EIS systems

Figure 4 depicts the synchronization of records between two or more solutions. In this scenario, WebSphere Message Broker mediates between an HR and payroll system. Both are typically systems of record for employee details, but such systems rarely accept and store information in an identical manner. After a change of address is submitted into the HR system, the equivalent record in the payroll system is updated. The information is then transformed to the formats acceptable to each EIS in WebSphere Message Broker.

#### Phases of a successful deployment

Deploying adapter nodes with WebSphere Message Broker, Version 6.1 involves the following phases:

- *Discovery: Discovering EIS metadata and automatically creating components to access the EIS system*
- *Development: Creating message flows, which make use of the discovered components*
- *Enablement: Configuring the broker with the location of the EIS-provider Java archive (JAR) files and native libraries*
- *Administration: Deploying all the required components to WebSphere Message Broker and administering them*

### *Discovery*

The WebSphere Message Broker adapter-connection wizard can connect to an EIS to discover the functions or records that an adapter will use to populate a logical message structure passed as input to the adapter node. The wizard first asks you to select the enterprise resource adapter to work with and the type of interaction style. The style can be inbound or outbound. Inbound corresponds to an event that occurs on the EIS and is sent to the message broker. Outbound corresponds to a request made from an adapter node to the EIS system.

The next step is to provide the location and access details to enable the wizard to connect and access the EIS system metadata. An option is available to select an appropriate interface supported for the interaction style. For example, SAP supports BAPI and ALE interfaces for outbound interaction styles.

Next, the wizard presents a find-and-discover services screen, where you can create and run a search query with the option to filter the information retrieved and limit the number of results returned. Objects are presented as a list, and the appropriate entries are selected to define an import list. After that, the wizard assigns a value from the supported operations on the object (for example, *create, delete, retrieve or update*).

The wizard steps through subsequent screens to set runtime properties and select an existing or new message-set project for the adapter artifacts using the DataObject domain. When used with adapter input or request nodes, this allows a DataObject tree to be used by the adapter, eliminating the need for multiple requests from the message flow for updates to multiple objects or for fulfilling a request. The last step of the discovery phase is to use the WebSphere Message Broker adapter-connection wizard to generate the artifacts.

### Development

The development phase is business as usual for the message-flow developer. This phase involves creating or editing an existing message flow so that it uses the WebSphere Adapter nodes. To do this, you simply select the required adapter node, and then drag and drop it onto the message flow editor, linking it into the flow. Message sets are added automatically. The WebSphere Adapter nodes are implemented as a subflow as shown in Figure 5.

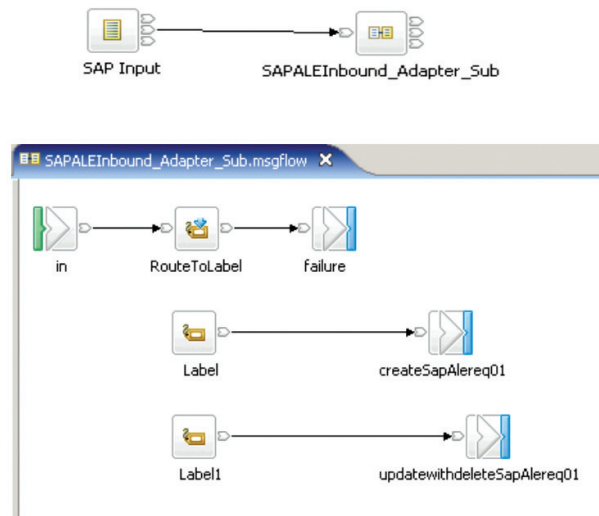


Figure 5. Example of an inbound adapter with subflow expanded

### Enablement

Your EIS provider might provide client libraries that WebSphere Message Broker requires so that it can connect to the EIS system. For example, WebSphere Message Broker requires a sapjco.jar file for connecting to an SAP system. SAP provides the file as a download from its Web site. The recommended approach is to use configurable services for adding the required JAR files to access the EIS system. This helps to ensure that no other part of WebSphere Message Broker can access the client and potentially cause conflicts.

#### *Administration*

An adapter component is automatically added to the deployment BAR file when the message flow containing the adapter node is added. Alternatively, you can deploy the adapter component and message set independently from a message flow if needed. WebSphere Message Broker logs and tracing are available for runtime diagnosis.

#### **Summary**

WebSphere Message Broker, Version 6.1 introduces adapter nodes based on WebSphere Adapters, Version 6.1. Adapter nodes simplify the use of adapters to service-enable your business. The nodes remove the need to know how the adapters are implemented. The adapter connection wizard takes the developer through the interface discovery and generation steps. The adapter component is deployed automatically with a message flow to a broker run time.

Connections to SAP can be configured in minutes instead of hours. This level of IT agility allows businesses to deliver projects on time and on budget. Business agility is derived from IT agility. A universal ESB with best-of-breed adapters. A winning combination for Smart SOA.

**For more information**

For more information about WebSphere Message Broker, visit:

[ibm.com/software/integration/wbmessagebroker](http://ibm.com/software/integration/wbmessagebroker)

For more information on WebSphere Adapters, visit:

[ibm.com/software/integration/wbiadapters](http://ibm.com/software/integration/wbiadapters)



© Copyright IBM Corporation 2007

IBM Corporation  
Software Group  
Route 100  
Somers, NY 10589  
U.S.A.

Produced in the United States of America  
12-07  
All Rights Reserved

IBM, the IBM logo, AIX, System i, WebSphere and z/OS are trademarks of the International Business Machines Corporation in the United States, other countries or both.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries or both.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries or both.

Other company, product and service names may be trademarks or service marks of others.

References in this publication to IBM products or services do not imply that IBM intends to make them available in all countries in which IBM operates.