IBM WebSphere Business Integration Connect Enterprise
and
Advanced Editions

Product Overview

Version 4.2.2

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Note:
Before using this information and the product it supports, read the information in "Notices" on page 27.

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This edition of this document applies to IBM WebSphere Business Integration Connect Enterprise Edition (5724-E87) and Advanced Edition (5724-E75), version 4.2.2.

To send us your comments about IBM WebSphere Business Integration documentation, e-mail doc-comments@us.ibm.com. We look forward to hearing from you.

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Preface

About this book

This document provides a brief overview of the IBM(R) WebSphere(R) Business Integration Connect produce family and, in more detail, the WebSphere Business Integration Connect Enterprise and Advanced Editions.

Audience

This book is intended for the reader who wants an overview of the product. Chapter 4, "Fast paths," on page 21 identifies the documents that provide more detailed information on installing, administering, and using Business Integration Connect.

Typographic conventions

This document uses the following conventions.

`courier font`	Indicates a literal value, such as a command name, filename, information that you type, or information that the system prints on the screen.
bold	Indicates a new term the first time that it appears.
italic, *`italic`*	Indicates a variable name or a cross-reference.
blue outline	A blue outline, which is visible only when you view the manual online, indicates a cross-reference hyperlink. Click inside the outline to jump to the object of the reference.
{ }	In a syntax line, curly braces surround a set of options from which you must choose one and only one.
[ ]	In a syntax line, square brackets surround an optional parameter.
...	In a syntax line, ellipses indicate a repetition of the previous parameter. For example, `option[,...]` means that you can enter multiple, comma-separated options.
< >	In a naming convention, angle brackets surround individual elements of a name to distinguish them from each other, as in `<server_name><`*`connector_name`*`>tmp.log`.
/, \	In this document, backslashes (\) are used as the convention for directory paths. For UNIX installations, substitute slashes (/) for backslashes. All IBM WebSphere InterChange Server product pathnames are relative to the directory where the IBM WebSphere InterChange Server product is installed on your system.
`%text%` and *`$text`*	Text within percent (%) signs indicates the value of the Windows `text` system variable or user variable. The equivalent notation in a UNIX environment is *`$text`*, indicating the value of the *`text`* UNIX environment variable.
ProductDir	Represents the directory where the product is installed.

Related documents

The complete set of documentation available with this product includes comprehensive information about installing, configuring, administering, and using WebSphere Business Integration Connect Enterprise and Advanced Editions.

You can download this documentation or read it directly online at the following site: http://www.ibm.com/software/integration/wbiconnect/library/infocenter

Note: Important information about this product may be available in Technical Support Technotes and Flashes issued after this document was published. These can be found on the WebSphere Business Integration Support Web site, http://www.ibm.com/software/integration/websphere/support/. Select the component area of interest and browse the Technotes and Flashes sections.

New in this release

New in release 4.2.2

This section highlights the changes to Business Integration Connect for version 4.2.2:

- Changes to software supported or required:
  - Business Integration Connect can be integrated with WebSphere Business Integration Message Broker, in addition to WebSphere InterChange Server.
  - WebSphere Business Integration Adapter for HTTP (for sending documents with or without attachments) is supported for use with InterChange Server.
  - WebSphere MQ version 5.3 or higher is now a pre-requisite for installing Business Integration Connect.
- Enhanced document-processing customization options
  User exits let you customize WebSphere Business Integration Connect to support new protocols, document-handling processes, and workflows, significantly enhancing WebSphere Business Integration Connect's ability to meet diverse customer requirements.
- A new Launch Pad improves the usability of the WebSphere Business Integration Connect installation process and includes a link to the InfoCenter.
- Improvements to administrative functions
  - An XML-document-based HTTP interface to WebSphere Business Integration Connect lets you perform basic administrative tasks, such as importing or exporting partner profiles, without using the Community Console. This new interface also facilitates the migration of participant data between test and production environments.
  - Support is now provided for deleting WebSphere Business Integration Connect participants.
  - A system administration screen has been added to the Community Console to allow the hub administrator to configure and review event processing information, as well as perform other administrative tasks.
  - An event publishing feature lets customers monitor and respond to Business Integration Connect events using their own system management programs.
  - A utility is available for archiving the non-repudiation data store.
- Extended transport protocol support
  The Community Manager and participants can exchange documents using Secure File Transfer Protocol (FTP), WebSphere MQ's implementation of JMS, or file directory.
- Additional RosettaNet Partner Interface Processes (PIPs) are supported. See "Supported PIPs" on page 22 for more information.
- Accessibility enhancements
  New features have been added to the Community Console to support screen readers.
- WebSphere Business Integration Connect meets the requirements for RosettaNet and Drummond certification.

Chapter 1. Product introduction

WebSphere Business Integration Connect allows you to establish and maintain a business-to-business (B2B) trading community to enable the exchange of business documents between companies and their suppliers. Business Integration Connect is fully scalable and designed to support the diverse protocol, document-processing, and security requirements of large and small companies alike. Businesses can integrate the information they receive from community participants with a back-end system such as WebSphere InterChange Server or WebSphere Business Integration Message Broker. A Web-based graphical user interface makes it easy to enable and manage trading partner interactions, and to administer the trading community.

Overview of a trading community

A trading community typically revolves around a hub—an enterprise that acts as the Community Manager. Businesses of various sizes, known as community participants, connect to the hub through the Internet. In addition, participants themselves can act as hubs. Figure 1 illustrates a trading community consisting of a Community Manager and a set of participants.

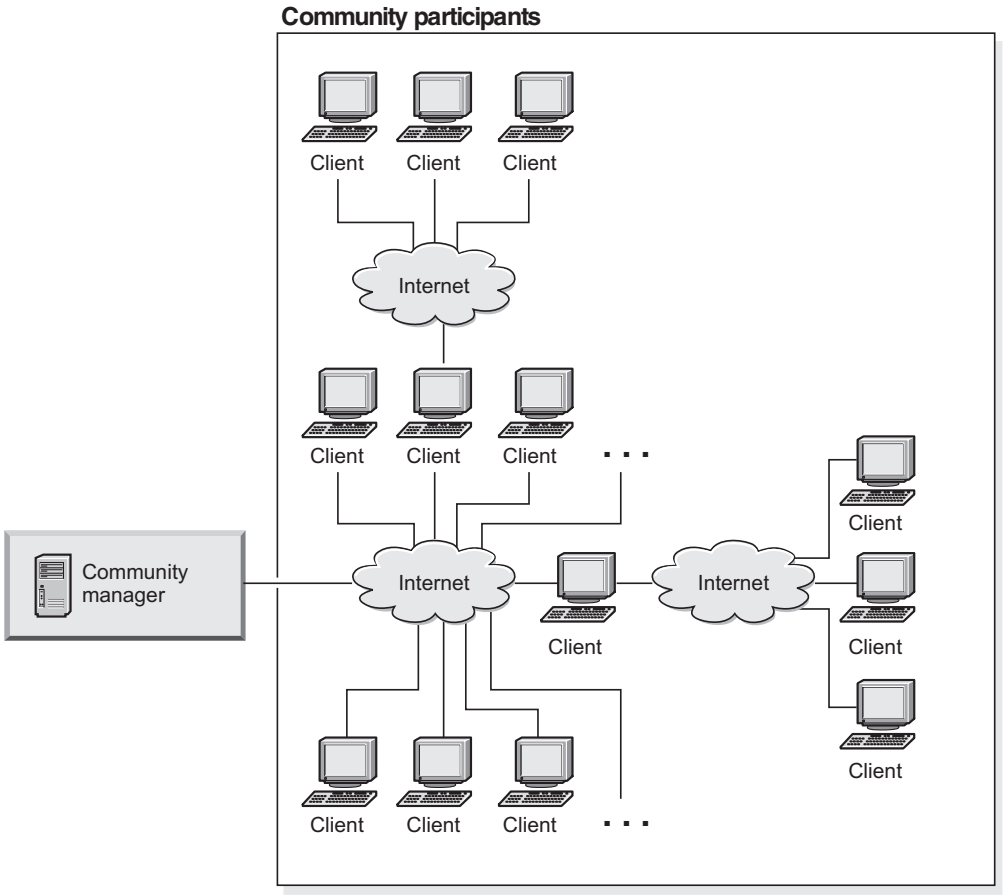

Figure 1. A trading community consisting of a Community Manager and community participants.

Business Integration Connect provides a solution for each type of participant in the trading community.

- WebSphere Business Integration Connect Enterprise Edition is ideal for the larger enterprise that wants to connect to an unlimited number of trading partners using a variety of transports and message formats. This enterprise acts as the Community Manager, establishing the community, getting partners on board, and monitoring the activity of all participants in the community.
- WebSphere Business Integration Connect Advanced Edition is suited to the customer who wants the flexibility of transport and message formats but has a more limited number of trading partners. This type of enterprise can act as a Community Manager (of its own smaller community) as well as a community participant in a larger community. The right side of the previous illustration shows an example of a client who is both a community participant (to the Community Manager) as well as a hub to its own community.
- WebSphere Business Integration Connect - Express is designed for the smaller enterprise that needs a quick and easy way to connect to a limited number of community participants to exchange business documents. This type of enterprise acts only as a community participant, not as a Community Manager.

The remainder of this document focuses on Business Integration Connect Enterprise and Advanced Editions. For information on Business Integration Connect - Express, see the InfoCenter for WebSphere Business Integration Connect - Express.

Benefits of a trading community

The benefits of participating in a trading community and exchanging business documents electronically include the reduction in cost associated with a traditional, paper-based exchange as well as a reduction in the number of errors inherent in such an exchange. After all, critical transactions involving purchase orders, invoices, shipping notices, and other documents drive your business. The ability to participate in a trading community to exchange this information efficiently and securely is key to success.

Business Integration Connect provides benefits to all types of participants in a trading community. For the Community Manager, it provides real-time visibility into the entire supply chain, which helps improve data accuracy and decrease cycle times. Community participants who use Business Integration Connect - Express can join the trading community with minimal cost and effort.

Additional benefits of a Business Integration Connect trading community include scalability, ease of use, and flexibility.

Scalability

Business Integration Connect is scalable. For example, an enterprise acting as the Community Manager can easily add additional servers to accommodate growth in the size of the trading community. See “Configuration options” on page 19 for additional details.

The Business Integration Connect - Express customer can upgrade to Enterprise or Advanced Edition should the enterprise require more sophisticated functionality or enterprise-level trading volume. For example, customers who must support additional document formats or who want to connect to additional community participants can install the Advanced Edition.

Ease of use

Ease of use is essential to the successful deployment and maintenance of a trading community. The tasks involved in planning, setting up, and running a trading community can be performed either by the enterprise itself or by an IBM Community Integration Services team. See your IBM representative for information about these services.

Joining a trading community is easy. The community participant provides some basic information (such as the types of protocols it can support) to the Community Manager. The Community Manager uses this information to define a connection between the hub and the participant. After these steps are completed, the participant is ready to send test documents.

Once defined to the community, participants can administer their own profiles and monitor the flow of their own documents, subject to the level of authorization defined by the Community Manager.

For community participants using Business Integration Connect - Express or another connectivity tool, joining a trading community is equally simple.

Flexibility

Another key requirement for a trading community is the ability to handle diverse transports, protocols, and document formats. Business Integration Connect supports a wide range of industry-standard transport and business protocols, while also providing superior customization options for tailoring document-handling and workflow to your own specific needs.

For example, you might exchange purchase orders with a subset of your trading partners through RosettaNet PIPs. With other trading partners, you might have an agreement to exchange EDI-formatted documents. You can accommodate both types of participants in your trading community.

Similarly, you can use Business Integration Connect to make a Web service available to your community participants. You can also access the Web services of your community participants. Business Integration Connect acts as a SOAP proxy.

You can exchange a wide variety of documents with community participants, using industry-standard business protocols such as RosettaNet, AS1, AS2, SOAP, cXML, XML, EDI, and binary over a variety of transports:

- The HTTP or HTTPS transport protocols can be used by all types of documents (except for binary documents with no associated packaging sent from a community participant).
- The FTP or secure FTP transport protocol can be used for EDI, XML, and binary documents that do not have packaging associated with them.
- The SMTP transport protocol can be used for EDI, XML, and binary documents that conform to the AS1 protocol
- The JMS transport protocol can be used for XML or binary documents.
- File directory can be used for XML or binary documents.

Depending on the transport protocol, Business Integration Connect supports either synchronous or asynchronous business document exchange, or both:

- For RosettaNet documents, both synchronous and asynchronous communication are supported.

- For SOAP and cXML documents, synchronous communication is supported.
- For EDI and binary documents sent over AS2, asynchronous communication is supported, although senders can receive Message Disposition Notifications (MDNs) synchronously.
- For XML documents, asynchronous communication is supported.

You have a variety of choices on how the documents are processed--everything from passthrough routing to translation into custom XML.

If the transports, business protocols, and processing options offered by Business Integration Connect do not meet your requirements, you can customize document-handling and workflow with user exits. Through the use of user exits, you can send and receive documents using customized protocols and seamlessly invoke customized packing, unpacking, validation, translation, and transformation routines.

For communication with your back-end systems, you can exchange RosettaNet Service Content (RNSC), SOAP, cXML, XML, EDI, and binary documents over a variety of transport protocols:

- The HTTP or HTTPS transport protocols can be used by all types of documents (except for binary documents with no associated packaging send from the back-end system). Note that SOAP and cMXL documents can use synchronous communication.
- The JMS transport protocol can be used for RNSC, XML, EDI, and binary documents.
- File-based transfer can be used for XML or EDI documents that have no packaging associated with them.

Business Integration Connect supports multiple security standards including third-party certificate authorities from VeriSign and Thawte, SSL support, and Non-Repudiation as required for full AS2 compliance.

See “Summary of supported business and transport protocols,” on page 23 for additional information.

Business Integration Connect components

The three major components of Business Integration Connect are the Receiver, Document Manager, and Console. A brief overview of these components is provided in the following sections. For more detailed information about the components and for a description of prerequisite and related components (such as the database and WebSphere MQ), see Chapter 3, “Technical overview,” on page 13.

Receiver

Documents sent by community participants enter the system through the Receiver. The Receiver stores the documents in a file system for the Document Manager to process.

In Figure 2 on page 5, a document intended for processing by a back-end system, such as InterChange Server or WebSphere Business Integration Message Broker, is sent from a community participant to the Receiver.

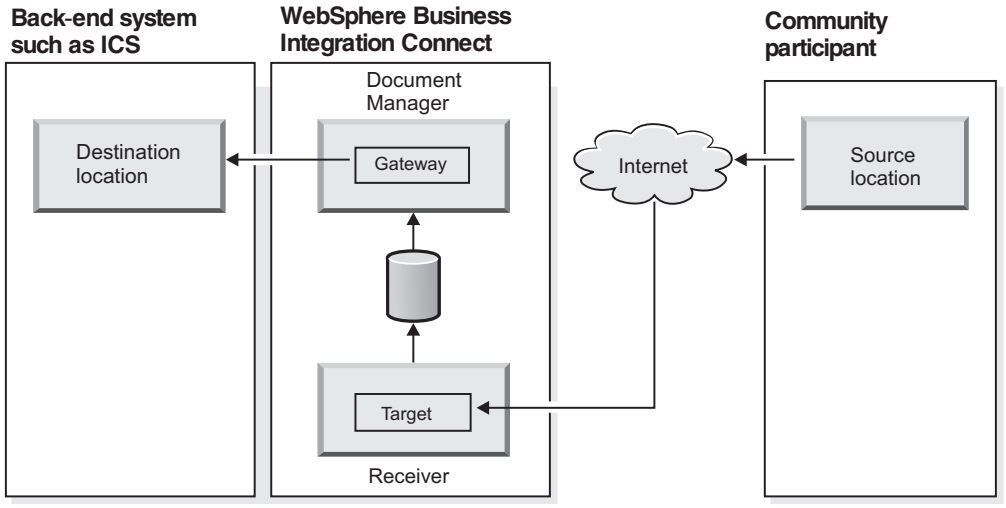

Figure 2. A document from a participant flows to InterChange Server through the Receiver and Document Manager

Documents sent from the Community Manager to community participants reverse the process. The back-end system sends the outgoing document to a directory or through the HTTP, HTTPS, or JMS protocol to a Receiver set up for the directory or protocol type. The Document Manager detects the document and routes it to the community participant. In Figure 3, a document from a back-end system such as InterChange Server is received by the participant.

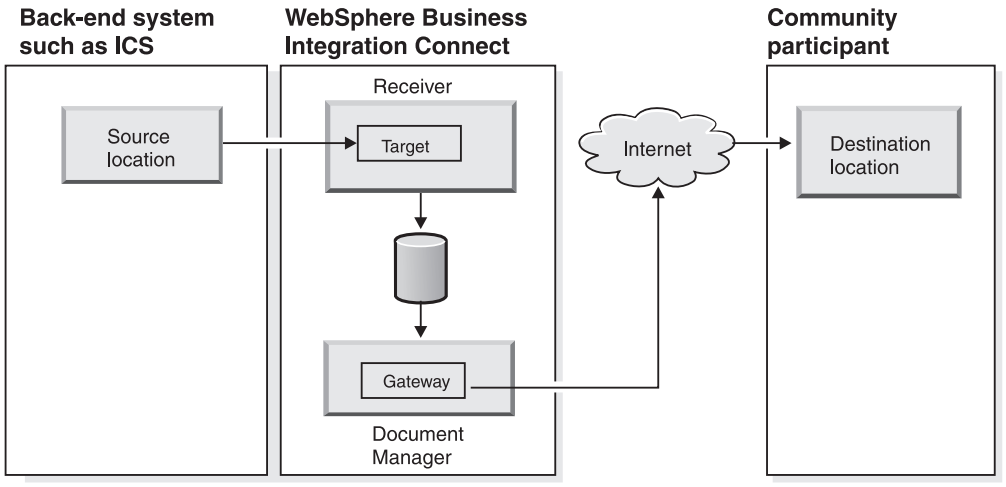

Figure 3. A document from InterChange Server flows to a participant through the Receiver and Document Manager

Document Manager

The Document Manager polls the file system for documents, performs any user-configured processing, and then delivers the document to its final destination as shown in Figure 3.

Subsystems of the Document Manager also decrypt the document (if required), perform digital signature verification (if required), perform XML transformation and validation (if required), and log entries about the processing of the document in the DB2 or Oracle repository.

Community Console

The Community Console provides a Web-based graphical user interface for configuring and administering the trading community, and for monitoring the flow of documents and processes within the community. With the Community Console, you can manage and troubleshoot current or past event, document, and process activity.

For example, if you find that documents are repeatedly failing for the same reason or from the same source, you can use the Community Console to quickly identify and resolve the problem. The Community Console gives you access to detailed reports and analysis on business processes, trends, and exception activity.

The Community Console is available to both the enterprise running Business Integration Connect as well as to all the participants in the trading community. The Community Manager has visibility to the entire community on a 24 x 7 basis. Participants can access the Community Console through a Web browser to get a real-time view of the documents, processes, and events that relate to their trading activities.

Hardware and software requirements

Business Integration Connect Enterprise and Advanced Editions require the hardware and software listed below. For a complete and detailed list, see the *Installation Guide*.

Hardware requirements

Business Integration Connect Enterprise and Advanced Editions have the following hardware requirements. Actual requirements for your system may be different, depending on the complexity of your specific environment, the throughput you require, and data object size used.

- Disk space
  - Minimum: 300 MB, additional disk space for document storage
  - Recommended: 30 GB
- Minimum and recommended memory: 2 GB RAM
- Minimum and recommended processor
  - Linux or Windows: 2 GHz Intel Xeon processor
  - AIX: 600 MHz processor
  - Solaris: SPARC III, 750 MHz processor
- Additional requirements
  - Additional servers for added capacity and redundancy
  - Multi-server installations require network attached shared storage.

Software requirements

Business Integration Connect Enterprise and Advanced Editions have the following software requirements.

Supported operating systems:

- Sun Solaris Version 8
- RedHat Linux Advanced Server Version 2.1
- SUSE Linux Enterprise Server Version 8
- AIX Version 5.2

- Microsoft Windows 2000.

Supported databases for use as a data repository:
- DB2(R) Universal Database(TM) 8.1
- Oracle 9.2.

Supported back-end WebSphere systems:
- WebSphere InterChange Server Version 4.1.1, 4.2.0, 4.2.1, or 4.2.2
- WebSphere Business Integration Message Broker Version 5, CSD 2
- WebSphere Data Interchange Server Version 3.2 CSD 7 (see the *Installation Guide* for the list of supported platforms).

Additional software requirements:
- WebSphere MQ Version 5.3 CSD 3 or later
- To view the Community Console:
  - Microsoft Internet Explorer, Version 5.0 or higher
  - Netscape, Version 6.0 or higher
- If you are planning to use File Transfer Protocol (FTP) or secure FTP, you must have an FTP server installed.
- If you are planning to use the Simple Mail Transport Protocol (SMTP) transport protocol, an SMTP -based e-mail relay server for e-mail alert delivery and SMTP message delivery.
- Dedicated servers are recommended for your database and for WebSphere MQ.

Components of Business Integration Connect Enterprise and Advanced Editions and prerequisite products can be installed on one server or can be split among multiple servers. However, the use of multiple servers is recommended for production to prevent resource constraints. For more information about Business Integration Connect configurations, see “Configuration options” on page 19.

Chapter 2. Overview of the WebSphere product family

This chapter describes how the Business Integration Connect fits into the WebSphere product family.

About WebSphere

WebSphere is the market-leading Internet infrastructure software, or middleware, for creating, running, and integrating e-business applications across a variety of computing platforms.

The WebSphere family of products fall into the following categories:

- Business Portals
- Business Integration
- Foundation & Tools.

Business Integration Connect is part of the Business Integration family of products, which allows companies to realize the benefits of end-to-end integration through six core capabilities:

- **Model** and simulate business functions and processes from an as-is and to-be state.
- **Transform** key applications, processes and data.
- **Integrate** islands of applications, processes and information.
- **Interact** with resources anytime, anywhere.
- **Manage** business effectiveness using key performance indicators to help you meet your business objectives.
- **Accelerate** integration by deploying prebuilt intelligent processes, customizing extendable business processes and leveraging industry best practices.

As its name implies, Business Integration Connect helps fulfill the **Integrate** capability. Not only does it allow you to communicate with your trading community, it extends the business integration of your enterprise to trading partners and customers.

Figure 4 on page 10 shows how Business Integration Connect fits into the WebSphere Business Integration product family.

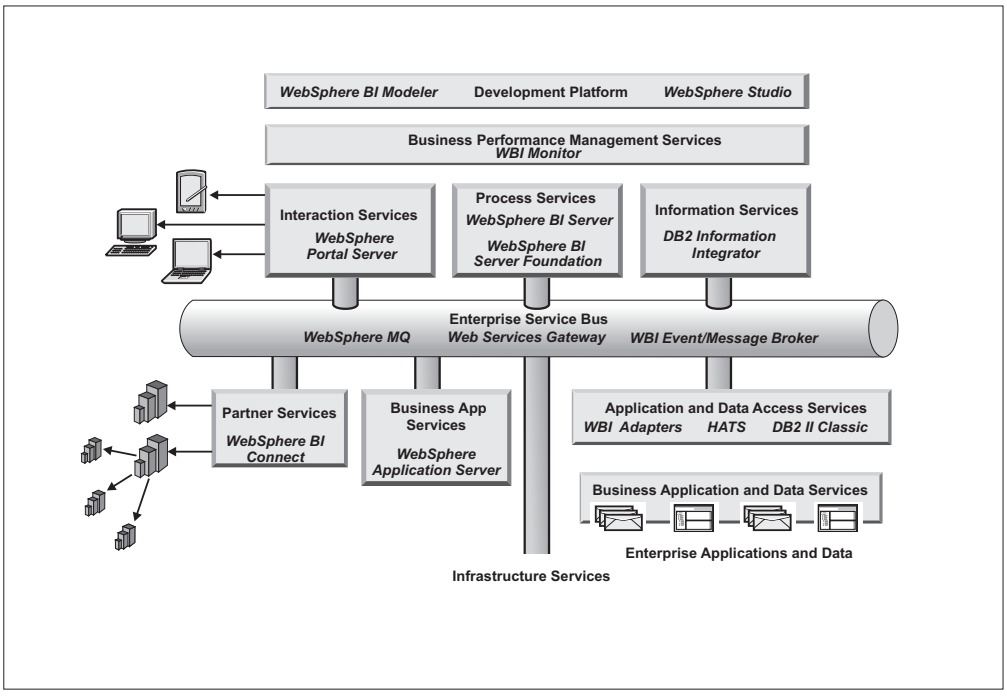

Figure 4. Business Integration Connect's role in the WebSphere Business Integration product family.

Integration with enterprise systems

All editions of Business Integration Connect provide the ability to connect to back-end integration systems. Business Integration Connect - Express provides file-based integration, while Business Integration Connect Enterprise and Advanced Editions provide both file-based integration and integration over HTTP, HTTPS, and JMS transports.

Business Integration Connect is the entry point for messages and documents coming into the enterprise. Depending on the type of message, Business Integration Connect processes the message and passes it on to another product.

Where there is a need for a direct XML transformation of the content, WebSphere InterChange Server or WebSphere Business Integration Message Broker can be used to meet that need.

Where there is a need for a specific type of optimized transformation (EDI transformation), WebSphere Data Interchange can be used.

The following illustration shows how Business Integration Connect can be integrated with WebSphere InterChange Server.

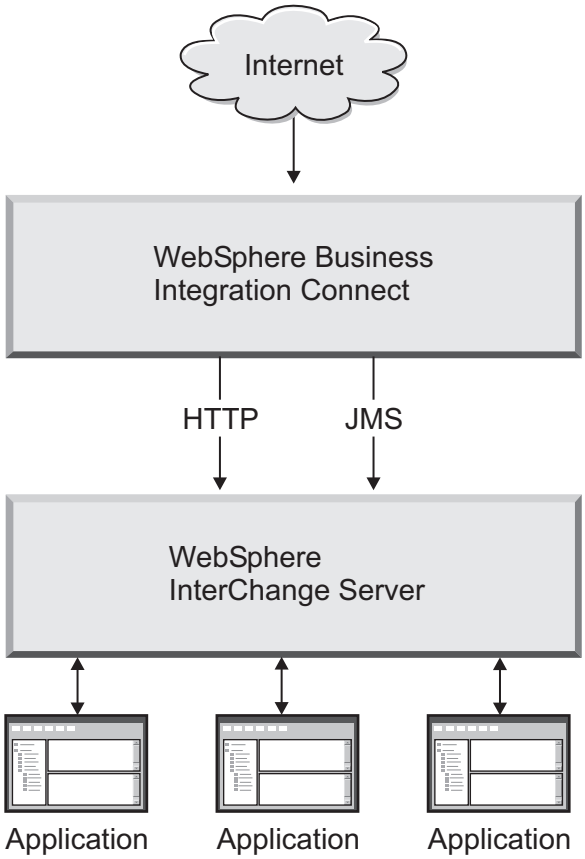

Figure 5. Document flow through Business Integration Connect to InterChange Server

A document intended for the WebSphere InterChange Server can be sent from a community participant in an XML, EDI, RosettaNet, or binary format, and can be sent (after transformation, if necessary) through the HTTP or JMS transport protocol.

The following illustration shows how Business Integration Connect can be integrated with WebSphere Data Interchange.

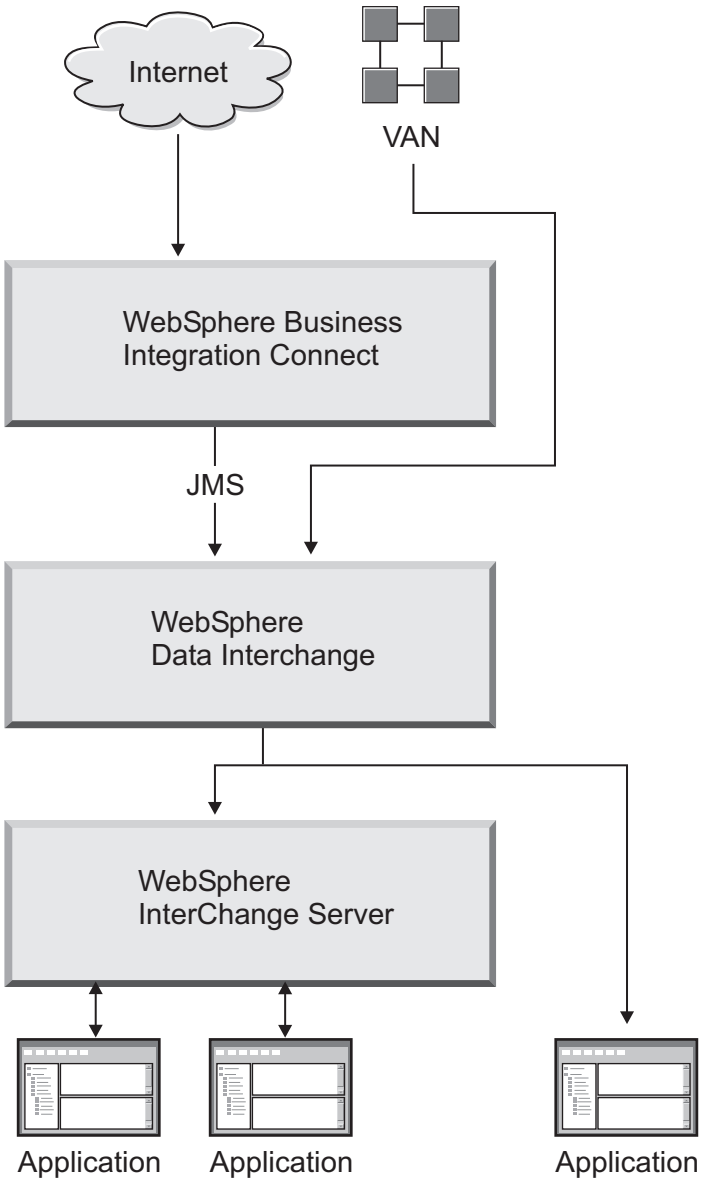

Figure 6. Document flow through Business Integration Connect to WebSphere Data Interchange

An EDI document intended for WebSphere Data Interchange is sent through the JMS transport protocol. As shown in the illustration, WebSphere Data Interchange can interact with WebSphere InterChange Server or directly with an application. In a typical WebSphere Data Interchange installation, an EDI document can also be delivered directly from a Value Added Network (VAN) to WebSphere Data Interchange.

Integration with back-end systems is described in more detail in the *Enterprise Integration Guide*.

Chapter 3. Technical overview

This chapter gives an overview of the architecture of Business Integration Connect. It also includes some sample configurations and explains how scalability is achieved. Finally, it provides a series of sample message flows to illustrate how documents are exchanged between community participants and Community Managers.

The architecture

Business Integration Connect enables business-to-business (B2B) process integration and data sharing among partners of all types and sizes. It can be thought of as a suite of distributed, multi-tier Java(TM) applications that are architected from the ground up to exploit the benefits of Java 2 Enterprise Edition (J2EE) and that work together to provide B2B functionality to enterprises. Each Business Integration Connect offering instance is deployed on a per enterprise/community basis. Enterprises and their partners benefit from reduced integration costs and faster deployment of new processes and services, using open standards and proven technology.

As described in Chapter 2, "Overview of the WebSphere product family," on page 9, the three major components of Business Integration Connect are the Receiver, the Console, and the Document Manager.

- The Receiver handles secure and reliable receipt of documents, independent of transport protocol.
- The Console is a standard J2EE component that provides Community Console access to the Community Manager and to community participants. The Community Manager can view the entire community. Participants have a more limited view, which allows them to modify their profiles and monitor the flow of their documents.
- The Document Manager function is delivered as one or more routing and processing servers, which implement the reliable routing, validation, and translation services within Business Integration Connect. When validation is required, it is performed through the use of XML schemas. When translation is required, it is performed through the use of XSLT-based transformations, optimized for performance.

Figure 7 on page 14 shows how the components work together:

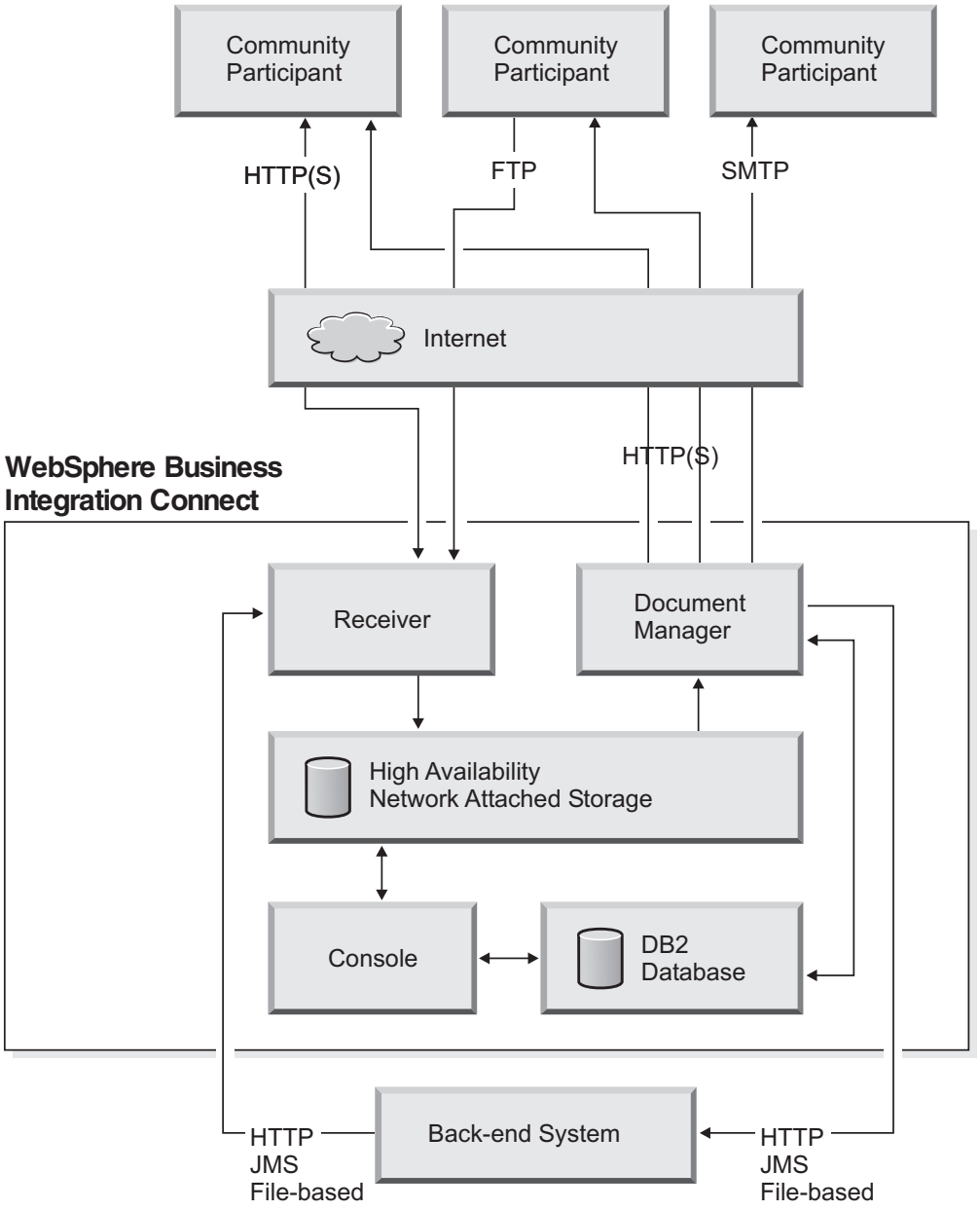

Figure 7. WebSphere Business Integration Connect components

The sections that follow describe in more detail the components and their relationship to the database and shared storage. Note that all components must have access to the same file system.

Receiver

The Receiver component accepts documents from community participants and from back-end systems and stores them. Specifically, it:

- Receives a document over a supported transport protocol
- Writes the document and metadata relating to the document to shared file services

The Receiver records any transport-specific data (for example, the source IP address and certificate information about the SSL connection) to the metadata file

and completes any transport-specific technical acknowledgment (for example, sending a 200 response to an HTTP POST).

Document Manager

The Document Manager retrieves stored data, processes it, and routes it, both to community participants and to enterprise systems. Specifically, it:

1. Reads the raw document and metadata and saves the inbound document to the non-repudiation directory on shared storage
2. Processes the data to the destination format (performing tasks such as validation and transformation, if specified) and saves the destination document to the non-repudiation directory on shared storage
3. Delivers data to its intended destination, which could be a JMS queue, a directory, or a URL.

The following sections describe how the subcomponents of the Document Manager perform the tasks presented in the previous list.

Document Processing Engine

The Document Processing Engine performs all of the processing of documents. The Document Processing Engine is responsible for:

- Unpacking documents
- Ensuring that the source of the document is authorized
- Filtering out duplicate documents
- Validating the structure and content of the document
- Translating the document into the format required by the destination
- Packaging the document for the destination, including digitally signing and encrypting the document, if needed
- Storing both the original inbound document and the final outbound document in the non-repudiation repository
- Passing the packaged document to the outbound transport engine

State Engine

The State Engine encapsulates the business rules on a per-protocol basis and executes instructions based on those rules (for example, initiating a retry when no acknowledgment has been received in the defined interval).

Alert Engine

The Alert Engine monitors activity and generates e-mail notifications. You can configure the Alert Engine to specify which alerts are generated, to whom the alerts are sent, and when the alerts are delivered.

Delivery Manager

The Delivery Manager component is responsible for transporting documents to specific destinations, maintaining a separate queue of documents for each destination. A dedicated transport mechanism exists for each destination, so problems delivering to one destination should not affect transport to other destinations.

Community Console

The Community Console is a Web-based, J2EE application for configuring, administering, and monitoring trading community activities, and responding to events. Its users are primarily: the Community Operator, the Community Manager,

and the community participant. The console provides role-based access control to the various features and views. The features of the console include:

- Screens for configuring the hub community and for managing participants.
- Tools for monitoring business-process events and exceptions
- Detailed reports and analysis on business process, trend, and exception activity
- Tools to troubleshoot document processing
- The ability to drill down to events and raw documents.

Database

A prerequisite DB2 Universal Database Enterprise or Oracle 9.2 database is used as the data repository. It is here that partner profile information is stored and events are logged. The data repository is also where guidelines and maps (for validation and translation) are stored, where the state of various processes is recorded, and where trading activity is tracked.

The information stored in the data repository is used by Business Integration Connect to provide the administrator with visibility into the entire trading community.

A prerequisite DB2 Universal Database Enterprise or Oracle 9.2 database is used as the data repository. It is here that partner profile information is stored and events are logged. The data repository is also where guidelines and maps (for validation and translation) are stored, where the state of various processes is recorded, and where trading activity is tracked.

The information stored in the data repository is used by Business Integration Connect to provide the administrator with visibility into the entire trading community.

Note that some information (for example, the raw message data in the non-repudiation and message stores) is kept on the shared file system, as described in "File System" on page 18.

Profile

The participant profile consists of configuration data that is used in document routing and console access. The profile information includes:

- Partner data
- Users
- Contacts

The participant data includes participant names and business identifiers such as DUNS numbers. A single partner can have one or more business identifiers.

Users are accounts that have access to the Business Integration Connect console. A user account gets its permissions to interact with the console based on group membership.

Contacts are similar to users; however, they cannot interact with the console, and they can only be configured to receive notifications from the alert system.

Gateways

A gateway specifies the destination information needed for the Document Manager to send a document to the Community Manager or to another participant. A

gateway is defined by a *gateway definition*, which includes a destination URI, optional login information, and transport-level settings for the gateway.

Participant connections

Connections define valid interactions between community participants. They include information about the document protocol, document type, source participant, target participant, connection type, and source and target gateways. The Document Manager uses the information in the connection to determine if translation is required and to determine the destination gateway information.

Certificates and IP addresses

The following security information is stored:

- Certificate information used to certify the sending community participant based on the client certificate used during the SSL connection
- Certificates used for encryption and digital signature validation
- IP addresses used to confirm that the source IP address is correct and that documents can be posted from that address.

Alerts configuration

Alerts are defined at a participant level and consist of a variety of attributes to describe event-based alerts or volume alerts.

You can define event-based alerts so that they will be triggered each time the event occurs or so that they will batched, based on an interval. You can also configure the alert with a contact list for notification based on a defined schedule.

Document activity

Business Integration Connect logs information to describe documents as they are routed. Details are logged about the document as it was received and as it was transmitted. The following types of information are logged:

- The format of the document, including the source participant, target participant, source protocol, target protocol, source document type, and target document type
- The format of the document, including the source participant, destination participant, source protocol, destination protocol, source document type, and destination document type
- Metrics that describe the size of the document and the time it was received and transmitted
- The state that is logged against a document, describing whether it was transmitted to the participant.

Document events

Business Integration Connect uses events to track activities and logs the events in a central event log. The events, which are classified as Informational, Warning, or Critical Errors, can be generated by different components in Business Integration Connect.

Events can be tied back to document activity when they are in relation to a document that was routed by Business Integration Connect. The events can also track non-document related activities, such as logging into the system.

Summary data

Business Integration Connect summarizes key metrics, which can be displayed in the console. The information that is summarized includes:

- The number of documents received, sent, and failed. These counts are summarized by certain attributes by hour.
- The number of events that were generated. These counts are summarized by certain detail attributes by hour.

These counts are rolled up by hour and can be correlated back to the document activity logs.

File System

The following information is stored in the shared file system:

Non-Repudiation data repository

Documents are stored on a disk that has shared access from all components of Business Integration Connect (Receiver, Console, and Document Manager). Both the original document (as it was received) and the final document (as it was sent) are stored.

Message data repository

Documents are stored in an unencrypted form for displaying to the console. This disk also has shared access from all components of Business Integration Connect (Receiver, Console, and Document Manager).

Communication using JMS

Communication between some components is done using JMS. JMS queues with reliable storage allow the flexibility of locating components on different machines while still maintaining a standard inter-component communication method.

Sample message flow

Figure 8 on page 19 shows the flow of an EDI document with AS packaging sent over the HTTP transport protocol through the Business Integration Connect server, for eventual delivery to an EDI back-end system.

In this example, it is assumed that the inbound AS2 message requested an asynchronous MDN (message disposition notification).

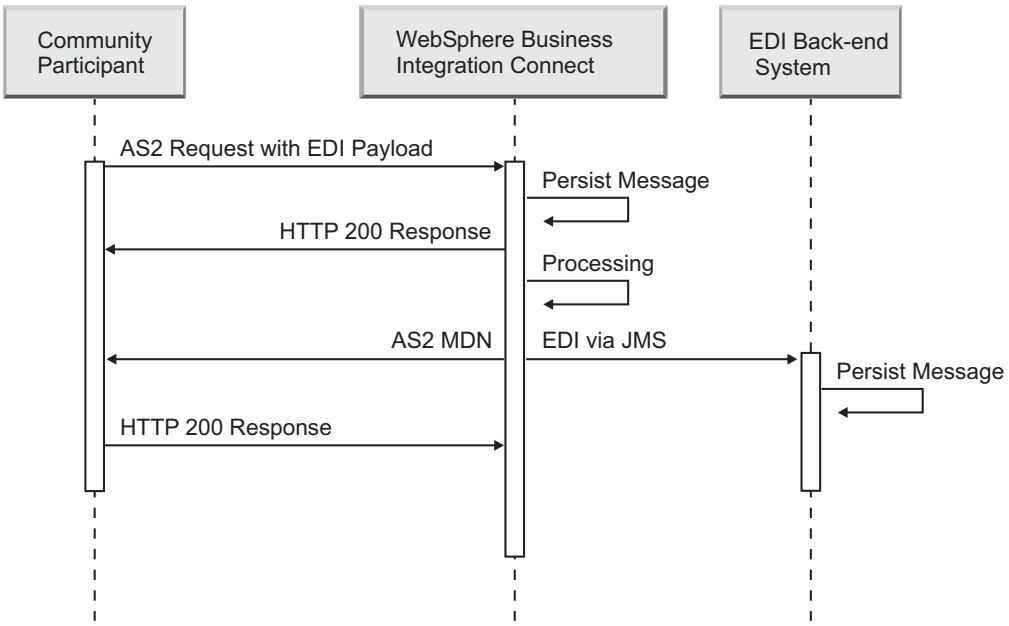

Figure 8. Sequence diagram of the delivery of an EDI document from a participant to an EDI back-end system.

1. The AS2 request with the EDI payload enters the Receiver component of Business Integration Connect.
2. The Receiver saves the document to persistent shared storage.
3. The Receiver returns an HTTP 200 response to the community participant.
4. The Document Manager picks up the document for processing by the Document Processing Engine and saves the original document to the non-repudiation database. The Document Processing Engine processes the document, which includes:
   a. Performing decryption, de-enveloping, and structure-level validation
   b. Performing authentication and authorization and duplicate checks
   c. Performing content-level validation
   d. Digitally signing or encrypting the message (or both), if specified by the configuration.
   e. Adding header information.
   f. Saving the final packaged document to the non-repudiation database
5. The Delivery Manager sends the document (in this case, using the JMS transport) to the EDI back-end system.
6. A message disposition notification (MDN) is sent to the community participant.
7. The community participant acknowledges the receipt of the MDN by sending an HTTP 200.

Configuration options

The component-based structure of Business Integration Connect means that it can be configured in a variety of ways—from a single-server configuration to a redundant configuration for high performance or failover support—to meet the needs of your business.

For example, you can install the Business Integration Connect components on one server and the prerequisite programs on another, with a firewall in front of each server. Or, you can divide the components and programs among three servers.

To achieve scalability and high performance, you might divide the components and programs among six servers. The following illustration shows such a configuration. Two servers contain instances of the Receiver and the Console, two servers contain the Document Manager, one server contains WebSphere MQ, and one server contains the DB2 database. Firewalls are set up between servers as illustrated. Note that network-attached storage, while recommended, is not required.

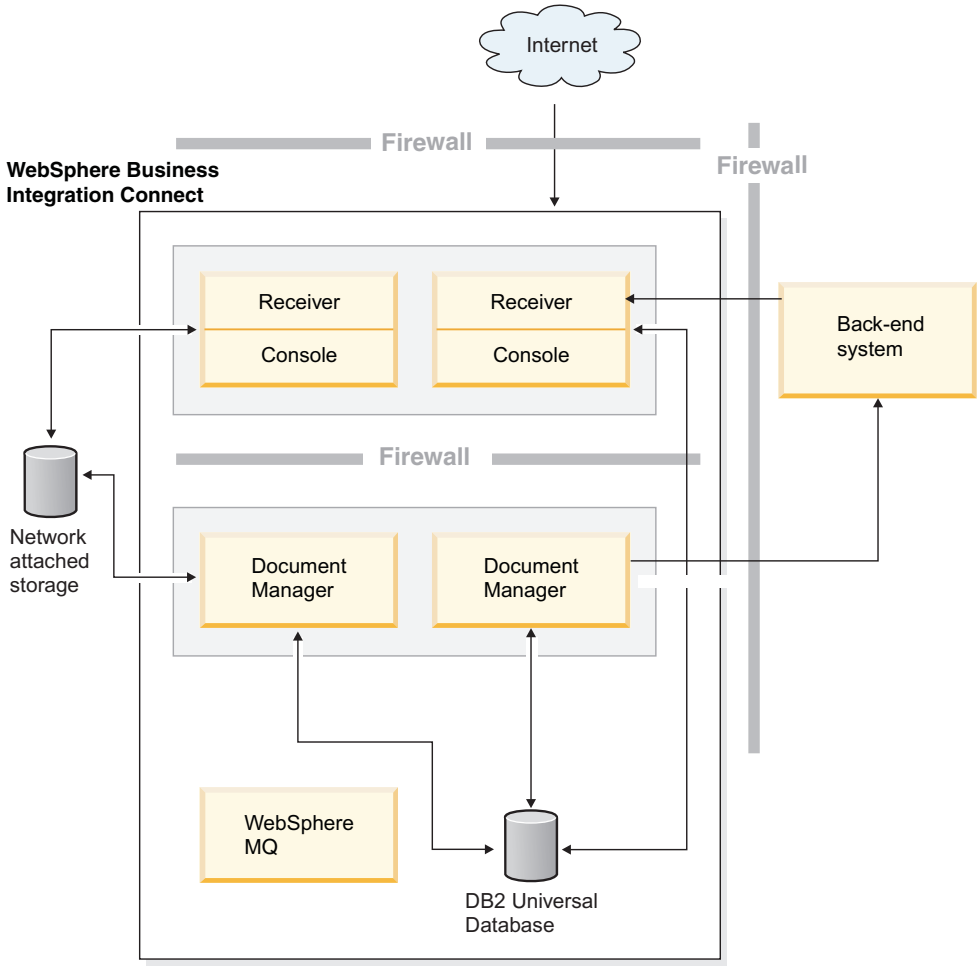

Figure 9. A sample WebSphere Business Integration Connect configuration.

All of the components in Business Integration Connect are designed to scale both horizontally and vertically, where horizontal scaling is characterized as running multiple instances across multiple servers, and vertical scaling is characterized as adding processing power to a single server.

Having the ability to run any of the components on any server allows for greater flexibility with regard to scaling the system. I/O or compute-intensive components can be deployed on servers optimized for their needs. Also, the shared work queue mechanism allows each component to scale independently of other components.

Chapter 4. Fast paths

This section describes, at a high-level, the tasks involved in setting up and running a Business Integration Connect trading community. It also includes pointers to documentation, code samples, and PIP information, you might need to help you get started.

The major steps required to establish a Business Integration Connect trading community are the following:

1. Plan the trading community:
   - Define the scope of the trading environment.
   - Define the business interactions that must be supported.
   - Explore customization options and decide whether you will need to customize any document-handling or workflow.
   - Determine how you will integrate Business Integration Connect with your back-end system.
   - Define the process you will follow for connecting businesses to the trading community.
   - Consider how you will adjust the community to respond to changing business needs.
2. Install Business Integration Connect.
3. Configure the hub and define community participants.
4. Perform administrative tasks as needed to maintain the trading community.

The documentation available to help you perform these tasks is listed below.

Business Integration Connect documentation

The InfoCenter for WebSphere Business Integration Connect Enterprise and Advanced Editions includes the following documents:

Table 1. Documentation set for WebSphere Business Integration Connect Enterprise and Advanced Editions

Book	Description and purpose
Product Overview	Presents an overview of Business Integration Connect Enterprise and Advanced Editions, and how they fit into the broader WebSphere family of products.
Installation Guide	Leads you through the process of planning for and installing Business Integration Connect.
Hub Configuration Guide	Provides step-by-step instructions for configuring the trading community hub and defining community participants. Once you have installed Business Integration Connect, proceed to this book.
Administrator Guide	Explains how to perform the administrative tasks needed to maintain the trading community.
Enterprise Integration Guide	Describes how to integrate Business Integration Connect with a back-end system such as WebSphere InterChange Server or WebSphere Business Integration Message Broker.
Programmer Guide	Explains how to create user exits to customize document-handling and workflow processing in Business Integration Connect.

Table 1. Documentation set for WebSphere Business Integration Connect Enterprise and Advanced Editions (continued)

Book	Description and purpose
Participant Guide	Covers all the information a community participant needs to participate in a Business Integration Connect trading community.
PIP Sample	The PIP Sample demonstrates how to set up Business Integration Connect and WebSphere InterChange Server to exchange messages when you implement WebSphere InterChange Server as the back-end system. Supported PIPs are included on the product CD. See "Supported PIPs" for more information.

Code samples

To help you configure and customize Business Integration Connect to meet the requirements of your enterprise, the code samples listed in Table 2 are provided on the product CD.

Table 2. Description and location of code samples included with Business Integration Connect.

Description of sample	Location on product CD
Back-end integration with ICS: HTTP Adapter with RNIF.	Integration/WBI/WICS/samples/RosettaNet/HTTP
Back-end integration with ICS: JMS Adapter with RNIF.	Integration/WBI/WICS/samples/RosettaNet/JMS
Back-end integration with ICS: HTTP integration with ICS 4.1.1, 4.2.0, or 4.2.1 using the WebSphere Business Integration Connect Servlet.	Integration/WBI/WICS/samples/WBICServlet
Back-end integration with ICS: JMS integration with ICS.	Integration/WBI/WICS/samples/JMS
Back-end integration with ICS 4.2.2 using the Adapter for HTTP.	Integration/WBI/WICS/samples/HTTP
Back-end integration with WebSphere Business Integration Message Broker.	Integration/WBI/WBIMB/samples
Use of administrative APIs for trading partner management and systems administration.	DevelopmentKits/AdministrativeAPI/samples
Use of user exits to customize workflow and document-handling.	DevelopmentKits/UserExits/samples

Supported PIPs

Supported PIPs are located in the directory, `B2BIntegrate\rosettanet`, on the product CD. They are also listed in the *Hub Configuration Guide*.

Appendix. Summary of supported business and transport protocols

This appendix summarizes the supported transport and business protocols included with Business Integration Connect. The product can also be customized to support additional protocols.

Table 3. Summary of support for XML and Binary protocols provided by Business Integration Connect

	XML	Binary
Supported version	N/A	N/A
Synchronous transactions?	No	No
Support for passthrough only or support for protocol and document translation?	Both business protocol and document translation supported for XML (XSLT).	No
Attachments supported?	No	No
Specific transactions supported?	N/A	N/A
Security	FTP/S and HTTP/S (HTTP header authentication is supported for outbound).	No
Communication between hub and participants	• JMS • HTTP/S • FTP/S • File directory	• JMS • HTTP/S • FTP/S • File directory
Back-end integration options	• JMS • HTTP/S • File directory	• JMS • HTTP/S • File directory
Samples provided?	Yes. See "Code samples" on page 22.	No

Table 4. Summary of support for AS1, AS2, RosettaNet, Soap, and cXML protocols provided by Business Integration Connect.

	AS1	AS2	RosettaNet	SOAP	cXML
Supported version	N/A	N/A	RNIF 1.1 and 2.0	• SOAP version 1.1 • WSDL version 1.1	Version 1.2.009 is preloaded.
Synchronous transactions?	No	Message Disposition Notification (MDN) only.	Yes	Both request only and request-response operations are supported.	Both cXML asynchronous and request-response (synchronous) are supported.

Table 4. Summary of support for AS1, AS2, RosettaNet, Soap, and cXML protocols provided by Business Integration Connect. (continued)

	AS1	AS2	RosettaNet	SOAP	cXML
Support for passthrough only or support for protocol and document translation?	Both business protocol and document translation supported for XML (XSLT)	Both business protocol and document translation supported for XML (XSLT).	Both business protocol and document translation supported for RNIF to RNSC and vice versa.	Passthrough only.	Passthrough support is primary usage; however, document translation is possible, but will change the behavior for synchronous cXML.
Attachments supported?	No	No	Yes	No	Yes
Specific transactions supported?	N/A	N/A	See "Supported PIPs" on page 22.	Support for RPC and document styles.	Passthrough-support only is available for Punctuate messages.
Security	Business encryption with triple DES. Digital signature hashing with SHA-1 or MD5.	HTTPS Business encryption with triple DES. Digital signature hashing with SHA-1 or MD5.	HTTPS Business encryption with triple DES, RS5, or RS2. Digital signature hashing with SHA-1 or MD5.	HTTPS	HTTPS
Communication between hub and participants	SMTP	HTTP/S	HTTP/S	HTTP/S	HTTP/S
Back-end integration options	Payload only using: • JMS • HTTP/S • File directory	• JMS • HTTP/S • File directory	• JMS (when using RNSC) • HTTP/S	HTTP/S	HTTP/S
Samples provided?	No	No	Yes. See "Code samples" on page 22 .		

Glossary

A

Action. Also known as a business action. A message with content of a business nature such as a purchase order request or a request for quote. The exchange of business actions and business signals comprise the message choreography necessary to complete a business activity specified by a given PIP.

B

Business action. See Action.

Business protocol. A set of rules and instructions (protocol) used to format and transmit information across a computer network. Examples include RosettaNet, XML, binary file, and EDI.

Business process. A predefined set of business transactions that represent the steps required to achieve a business objective.

C

Community Console. The Community Console is a Web-based tool used to configure Business Integration Connect and to manage the flow of business documents between the Community Manager and participants. The Community Manager can view information about the entire community, while participants can only edit their own profiles and monitor the flow of their own documents.

Community Manager. The company that purchases Business Integration Connect, distributes it to its trading partners, and acts as the hub community. The Community Manager has one administrative user, the manager admin, who is responsible for the health and maintenance of the Community Manager's portion of the community.

Community operator. The individual responsible for the configuration and overall health and maintenance of the system, hub-wide (hub admin). The hub admin can access all features.

Community participant. Also called the participant, partner, or trading partner. The participant sends business documents to and receives business documents from the Community Manager. Participants can access features that support their own interactions with the trading community. Features excluded from the participant's view include Community Console functions such as system configuration.

D

Document. A collection of information adhering to an organizational convention. There are multiple documents in a process.

Document flow definition. A document flow definition defines a specific business document that the Community Manager can process. Each document to be exchanged between the Community Manager and a participant must be defined using a document flow definition. For the system to receive, process, and route a business document, two or more document flow definitions (for example, one for the inbound document, the other for the outbound document) must be linked to create an interaction. See also Interaction.

Document Manager. The Document Manager polls persistent shared storage for documents, performs any user-configured processing, such as validation, digital signature verification, and transformation, and delivers the document to its final destination.

Document protocol. See Business protocol.

G

Gateway. A gateway specifies the destination information needed for the Document Manager to send a document to the Community Manager or another participant. A gateway is defined by a *gateway definition*, which includes a destination URI, optional login information, and transport-level settings for the gateway.

I

Interaction. An interaction contains all the necessary information Business Integration Connect needs to receive, process, and route documents defined by document flow definitions. See also Document flow definition.

N

Non-repudiation data repository. A non-repudiation repository is the location where Business Integration Connect stores copies of documents (and sometimes authentication information) that makes it impossible for either party to deny (repudiate) that the document was transmitted and received.

P

Package. Identifies a document packaging format used to transmit a document over the internet. For example, RNIF, AS1, and AS2.

Participant connection. A participant connection holds the information needed for the exchange of a specific document between a specific participant and another participant, such as the Community Manager. It includes the name of the participants, the interaction to execute, and the gateways to use. When a new document is received, the system determines the correct participant connection to use. Once a participant connection is found for the document, it can be processed. See also Interaction.

Participant profile. A participant profile includes information about the participant such as the participant name, the participant's business identifier such as its DUNS number, and the user IDs that have access to the Community Console.

PIP. See RosettaNet PIP.

Process. A process specifies the sequence of documents or messages to be exchanged between the Community Managers and participants to execute a business transaction.

R

Receiver. The Receiver component accepts documents from community participants and from back-end applications and stores them in a file system for the Document Manager to process. Specifically, it receives a document over a supported transport protocol, writes the document and metadata relating to the document to the shared file system, records any transport-specific data to the metadata file, and completes any transport-specific technical acknowledgment.

RosettaNet PIP (Partner Interface Process). RosettaNet PIPs define business processes between trading partners. PIPs are specialized system-to-system XML-based dialogs. A PIP depicts the activities, decisions, and Partner Role Interactions that fulfill a business transaction between two partners in a given supply chain. (In Business Integration Connect, partners are called participants.) Each participant involved in the Partner Interface Process must fulfill the obligations specified in a PIP instance. If any one party fails to perform a service as specified in the PIP implementation guide, the business transaction is null and void.

T

Target. A target is an instance of a receiver. It designates the URI of an entry point for documents coming into Business Integration Connect. It specifies a repository location from which the Document Manager is to retrieve documents. Each target supports documents sent using a single transport type. In addition, there can be multiple targets for a given transport type, one for each document format.

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