IBM

Migrating from Trading Partner Interchange to WebSphere Business Integration Connect 4.2

Methodology Document

Contents

Introduction

This document describes a methodology for migrating your B2B environment from Trading Partner Interchange (TPI) to IBM® WebSphere® Business Integration Connect 4.2.

The document begins with a brief overview of WebSphere Business Integration Connect, to familiarize you with the components. It then lists the steps required to plan for migration and to perform the actual migration. Finally, it provides examples of typical scenarios to show you how you would update WebSphere Business Integration components (such as business objects) to work with WebSphere Business Integration Connect.

The migration from TPI to WebSphere Business Integration Connect can be performed in one of two ways:

- You can do the planning, installation, and migration of company and trading-partner information, following the steps in the Methodology section.

- You can contract with IBM to provide the migration services.

Overview of WebSphere Business Integration Connect

IBM WebSphere Business Integration Connect enables the secure, cost-effective, and reliable exchange of information between companies and their trading partners. With WebSphere Business Integration Connect, businesses can streamline their supply chain, which improves efficiencies in internal processes and fosters improved interactions with suppliers and customers.

WebSphere Business Integration Connect benefits any size business and helps companies overcome the obstacles of managing information with trading partners. It can be used to connect any number of trading partners using a wide range of industry-standard protocols such as RosettaNet, AS2, and XML and supports operating system platforms such as AIX®, Linux®, Solaris, and Microsoft® Windows® 2000.

From a B2B architectural standpoint, the WebSphere Business Integration Connect product is similar to TPI. Both TPI and the WebSphere Business Integration Connect products allow for connections with trading partners over a variety of communication mechanisms. The two products provide for security (authentication, privacy, authorization, and non-repudiation, for example) between trading partners. Both products also provide for back-end integration to support B2B business processes (file-based, Java™ Message Service (JMS), FTP, and so on.). Finally, both products support Trading Partner Management.

WebSphere Business Integration Connect, however, enables you to extend integration beyond your enterprise to create a *community* of businesses that exchange information and share processes.
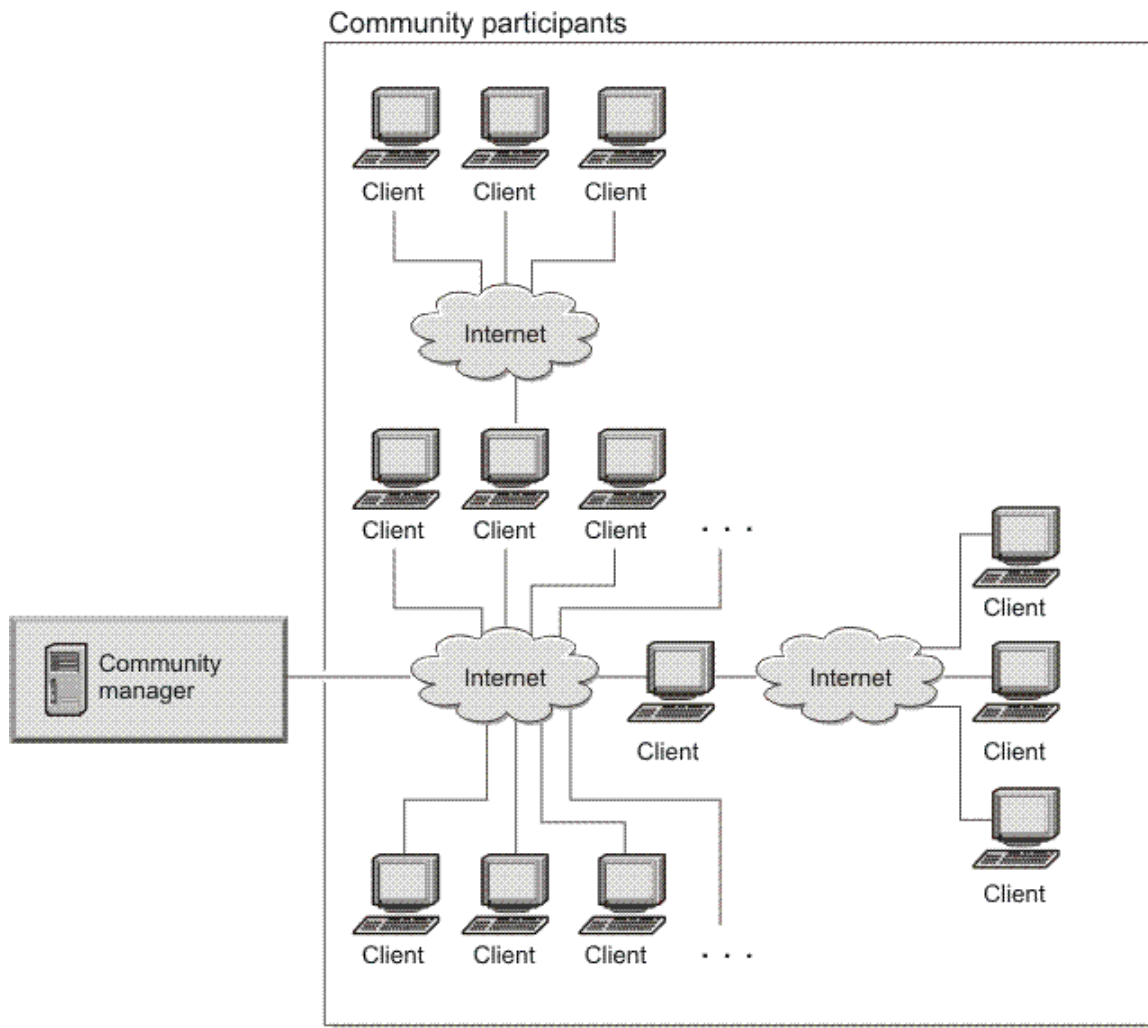
Figure 1. A WebSphere Business Integration Connect trading community

WebSphere Business Integration Connect provides benefits to you, as the Community Manager, as well as to your trading partners.

As the Community Manager, you have the ability to:

- Manage all interactions through a single console, providing you with significantly improved operational management
- Rapidly enable partners to become active participants in the integrated community

Your trading partners can perform self-service document tracking and profile updating through the browser-based console.

WebSphere Business Integration Connect is built on WebSphere Application Server, the mature and strategic IBM middleware platform. In addition to the features already mentioned, it provides:

- RosettaNet public process and attachment handling
- Remote service and support through Web login
- Split deployment options for DMZ support
- Distributed deployment options for built-in high availability and scalability
- XML transformation using XSLT
- Trading-partner and document-level permissions
- Granular user and group permissions and roles
- Extensive alert and notification system
- Extensible support (through the use of user exits) for additional protocols and data handling

WebSphere Business Integration Connect editions

The three editions of WebSphere Business Integration Connect Version 4.2 include:

- WebSphere Business Integration Connect - Express, which is designed for small and medium businesses that want to integrate with a small number of trading partners as quickly and simply as possible. Note that with WebSphere Business Integration Connect – Express, you can exchange EDI documents within AS2 messages or any type of document through the HTTP protocol.

- WebSphere Business Integration Connect, Advanced Edition, which is designed for companies that want to connect to a growing number of trading partners.

- WebSphere Business Integration Connect, Enterprise Edition, which contains the same technology as the Advanced Edition but which is priced to manage larger trading communities.

Note: In this document, WebSphere Business Integration Connect refers to the Enterprise or Advanced edition, unless otherwise noted.

WebSphere Business Integration Connect architecture

WebSphere Business Integration Connect provides the ability to instantiate multiple distinct document flows per trading partner and across trading partners.
This document exchange approach delivers flexibility in the creation of a focused, process-level integration framework that can optimize specific key SLAs on either a document- or trading-partner level. This approach is different from the TPI architecture, which simply conducts business with a trading partner on a transport basis. WebSphere Business Integration Connect provides a more granular trading relationship that optimizes the B2B interactions between partners.

WebSphere Business Integration Connect uses connection components for interacting with partners. Each component is defined as an entity once, and then reused to build the

specific trading-partner exchange relationship. Because this architecture differs from TPI, it is necessary to define the connection capabilities via the Web-based user interface (known as the Community Console in the Enterprise and Advanced editions and the Console in the Express edition). Because most customers use connections (in terms of transport and security) in the same manner, the connection information might require only a one-time setup in WebSphere Business Integration Connect, which is then attributed to new trading partners (somewhat like a template solution).

Because of the different underlying data schema of TPI and WebSphere Business Integration Connect, you cannot directly export profile information from TPI and import it into WebSphere Business Integration Connect in an automated fashion. Certificates, however, can be exported from TPI and imported directly into WebSphere Business Integration Connect.

WebSphere Business Integration Connect is also different from TPI in that WebSphere Business Integration Connect acts as a true document hub. In TPI, your company profile is configured as a Company, and each trading partner is configured as a Partner. In WebSphere Business Integration Connect, both sides are configured as participants of the community integration. When WebSphere Business Integration Connect receives a document, it simply processes it and forwards it to a destination. So when an external document comes into WebSphere Business Integration Connect from a trading partner (known in WebSphere Business Integration Connect terminology as a community participant), WebSphere Business Integration Connect forwards it to an internal *gateway* for delivery to its destination (for example, a file system or JMS for internal integration).
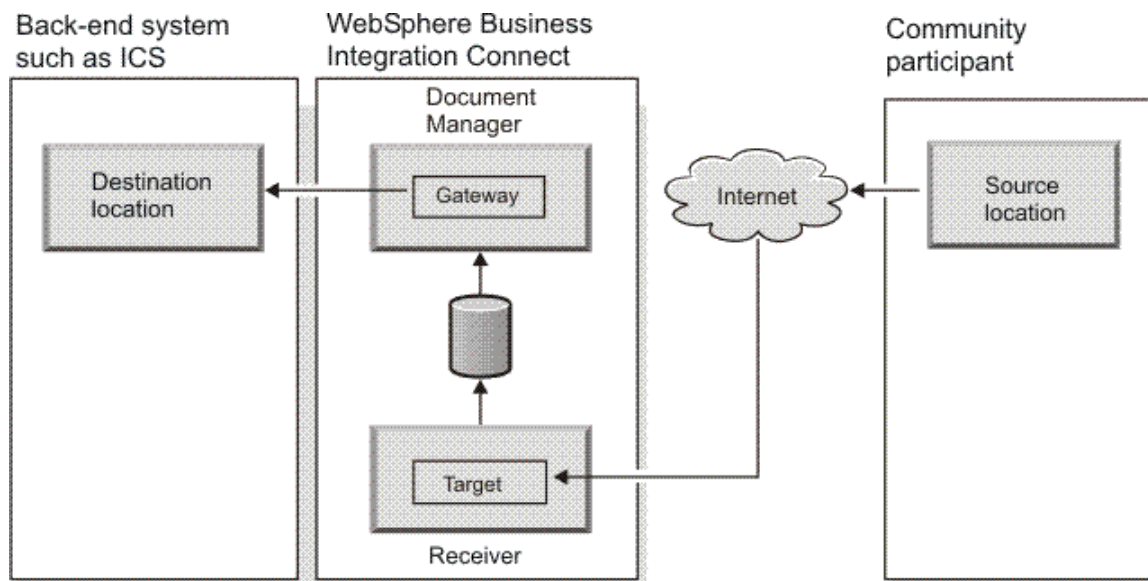
Figure 2. Document flow from trading partners

When an internal document comes into WebSphere Business Integration Connect, it forwards the document to an external trading partner gateway for delivery (for example, via HTTP or FTP over the Internet). Think of the back-end system as the participant on the internal side.
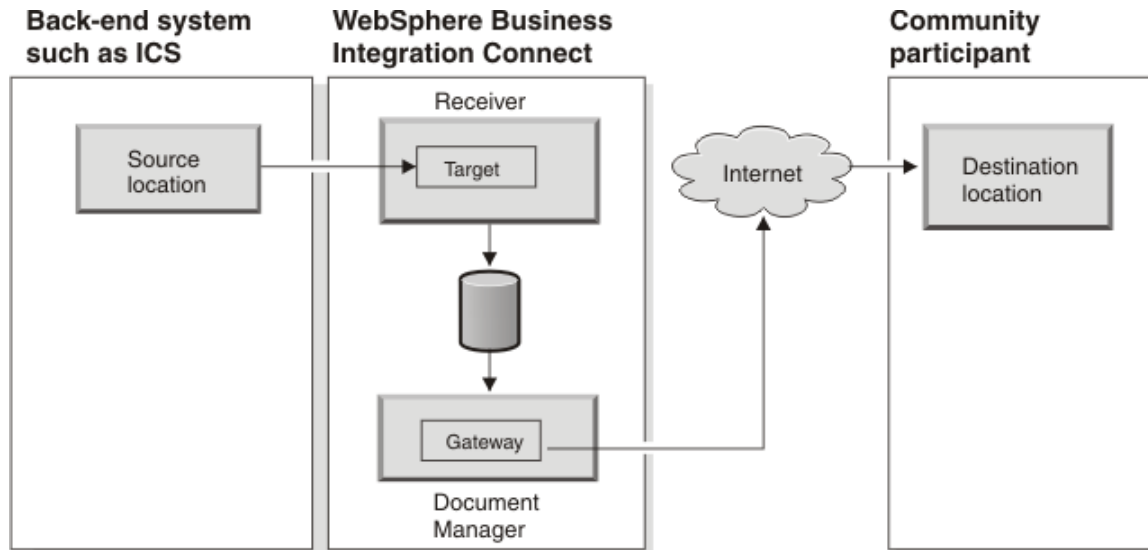
Figure 3. Document flow to trading partners

WebSphere Business Integration Connect has a variety of transport/packaging mechanisms to interact with trading partners, such as XML using EDI-INT over HTTP.

Figure 4 demonstrates the many options available when building a communication link between trading partners and internal applications.
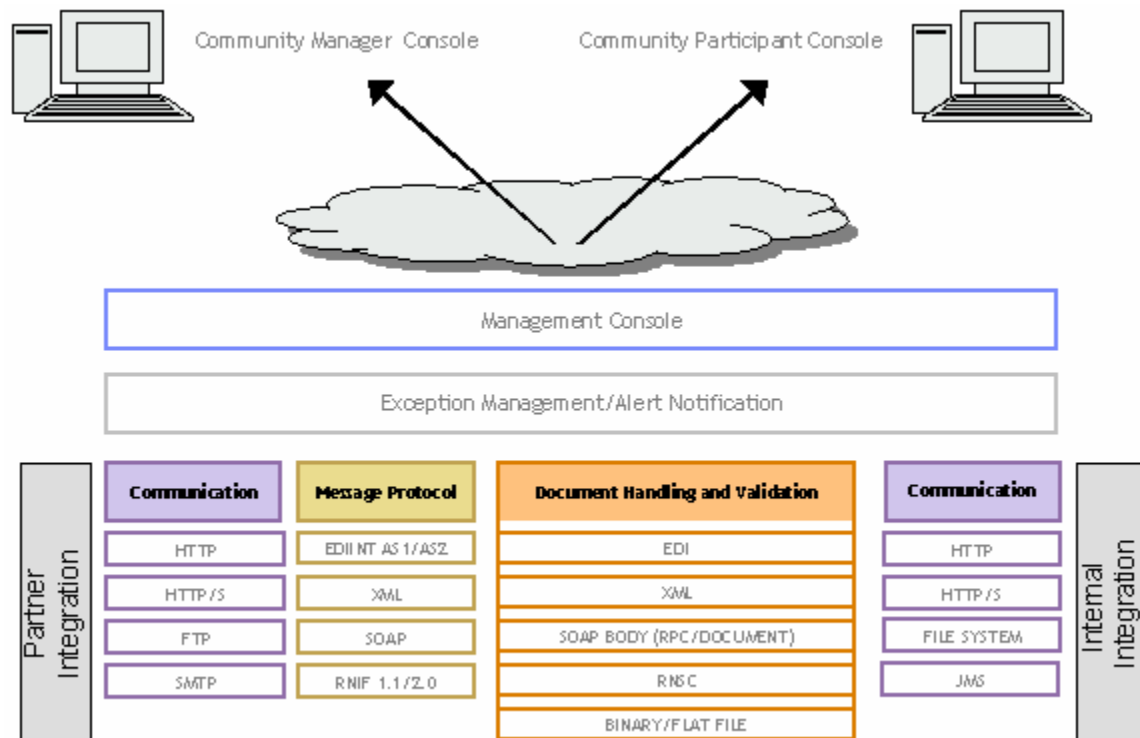
Figure 4. WebSphere Business Integration Connect integration options

Methodology

This section describes the method used to migrate from a TPI environment to WebSphere Business Integration Connect. It includes the following steps:

1. Planning for migration, which includes gathering information about your current environment and trading activity
2. Planning for installation, which includes understanding the software needed to migrate
3. Installing WebSphere Business Integration Connect
4. Configuring the WebSphere Business Integration Connect server
5. Setting up your company profile
6. Setting up your trading-partner profiles
7. Archiving documents
8. Modifying your backend systems

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

You can download this documentation or read it directly online at the following site:

http://www.ibm.com/software/integration/wbiconnect/library/infocenter

Planning for migration

To plan for a successful migration, gather information about your current environment, so you can select the appropriate WebSphere Business Integration Connect edition and plan for its configuration. The answers to the questions posed in this section will help you determine whether you will need custom development (which can be achieved through user exits) to meet your existing needs.

Current environment

Table 1 can assist you in determining if your current environment supports WebSphere Business Integration Connect.

For each environment, indicate the following information:

Table 1. Description of your current environment

	Environment 1	Environment 2	Environment 3
On which hardware platform (including memory and number of processors) is TPI currently running?			
On which operating system (including version) is TPI currently running?			
Which database type (and version) do you use?			
Do you currently run WebSphere MQ in your environment?			
Which type of backend integration do you use (for example, FTP, MQ, JMS, TPI Connector, or custom)?			
To what backend systems (for example, WebSphere Business Integration InterChange Server, MQ Series, or Gentran) does TPI send documents for integration?			

After you answer the questions in the table, you should have the information you need to modify your existing TPI architecture diagrams to plug in WebSphere Business Integration Connect.

Note that much of the diagram depends on the network security requirements and whether you plan to distribute the WebSphere Business Integration Connect components.

Here are some points to consider in regard to Table 1:

- If your systems meet the minimum requirements (for operating system version, processor, memory, and so on), you can install WebSphere Business Integration Connect on the non-production environment, disable TPI, and use a phased approach to move your trading partners to WebSphere Business Integration

Connect.

A phased approach means that partners might need to change the URL they use to send documents to you.

If your systems do not meet the minimum requirements, you will need to consider upgrading or replacing the systems.

▪ If you plan to distribute any of the components, you might need additional hardware and software.

▪ If you currently use the bundled database (Sybase) with TPI, you will need to utilize an external enterprise database.

If you have an enterprise database system in-house for other applications, and it is not fully utilized, you can use it for WebSphere Business Integration Connect. If your transaction volumes are light, you can co-locate the database on the WebSphere Business Integration Connect system.

If you do not have an enterprise database system, you can use the limited-use DB2® database, provided by IBM at no charge.

▪ If you do not currently have an MQ server in your environment, you can use the limited-use WebSphere MQ Server, provided by IBM at no charge.

If the system to be used for WebSphere Business Integration Connect is not fully utilized and if your transaction volumes are light, you can co-locate the MQ server on the WebSphere Business Integration Connect system.

▪ If you currently use the TPI Connector between TPI and WebSphere Business Integration InterChange Server, you can use the JMS Adapter to accomplish the same level of integration. (See Scenario 1: Migrating to WebSphere Business Integration Connect for document trading.)

▪ If you use MQ or JMS for integration, you can use a JMS target to populate the MQ queue. (See the Modifying backend integration section of this document.)

▪ If you use FTP integration, you can use an FTP target to accomplish the same level of integration. (See the Modifying backend integration section of this document.)

▪ If you used the TPI application programming interface (API) to write custom code to integrate to the backend system, you might have to re-write the code using the WebSphere Business Integration Connect User Exit and API framework.

The WebSphere Business Integration Connect Programmer Guide contains information on the User Exit and API framework.

Profile configuration

Consider the following questions about your profiles:

- How many Company profiles do you have?

  WebSphere Business Integration Connect natively supports only one Company Profile (Community Manager), but it can be used to allow multiple inbound control IDs. When more than one control IDs is configured, you can receive documents to the specific ID listed in the inbound message over a single URL. Once the message comes in, you can pass it on to your integration server, which can then route it to the appropriate division based on the ID. Each division would use the same private and public keys as the primary. If you require different keys, you can configure each division as a community participant and route documents to the backend system through an integration gateway.

- How many trading partners do you have?

  You can expect between 8 to 24 hours of effort to connect each partner. The effort for ramping of a partner is very dependent on good communication with the partner's B2B personnel; the actual time to configure WebSphere Business Integration Connect is minimal. The configuration includes contact information, user login information, security (certificates), and document flows.

- What percentage of your trading partners would be considered strategic, mid-tier, or smaller partners?

  This question will help you identify which partners to ramp first. The top 10% of your partners are likely responsible for 90% of your trading activity.

- How geographically dispersed are the trading partners?

  Partners located in other countries might take longer to bring online because of a possible language gap. If communication to partners located in other countries is particularly difficult, you should increase your effort estimate for those partners.

- Do you expect the number of trading partners to increase, decrease, or stay about the same over the next 12 months?

  If you have a partner ramping schedule that is being implemented for TPI, you will want to create a ramping plan for WebSphere Business Integration Connect and apply the proper amount of resource to ensure that ramping and migration can occur in parallel.

- Do you use secondary IDs?

  If you use secondary IDs, you will need to configure multiple IDs in the trading partner (Participant) profile.

- Describe the process used to deploy a new partner (for example, exchange of profiles and certificates).

  The question will help you identify changes to the current process that will be needed to accommodate the deployment of WebSphere Business Integration Connect partners. This process will drive your partner ramping plan.

Trading activity
Consider the following questions about your trading activity:

- Which specific types of documents (for example, XML, EDI, and binary files) do you exchange with your trading partners?

  This question will help you determine how to configure you document flows. Because TPI does not have the capability to do XSLT translation or validation, it is recommended that you use "Pass Through" action for the initial configuration and setup translation and validation after the migration is successful.

- Which business protocol/transports (for example, AS1, AS2, RosettaNet, ebXML, FTP, MQ, JMS, Secure Web Mailbox, or bundled SMTP) do you currently use?

  This question will help you identify which targets and gateways to configure to successfully trade with your partners. If you are using ebXML or CIDX for trading with any partners, contact your IBM Account Representative to determine when these protocols will be available in the product. These protocols can be added through the User Exit Framework by your developers or by utilizing IBM services. If you use these protocols for only a few partners, you might want to run both systems in parallel until the protocols have been added to the product.

- Do you have partners who send files to TPI from an e-mail client such as Outlook, Lotus® Notes®, or Netscape mail?

  If you currently receive messages from partners who use an e-mail client with attachments to send messages into TPI, you will need to contact your IBM Account Representative to determine when this feature will be available in the product. This feature can be added through the User Exit Framework by your developers or by utilizing IBM services. If you use this feature for only a few partners, you might want to run both systems in parallel until the feature has been added to the product.

The WebSphere Business Integration Connect Programmer Guide contains information on developing user exits.

- What volume of traffic do you trade on average and during peak hours on a monthly basis? (Fill in the chart below in the following format: Average/Peak.)

Table 2. Types of documents traded

	XML	EDI (X12)	Binary
AS1			
AS2 (Asynchronous MDN)			
AS2 (Synchronous MDN)			
FTP			
RosettaNet			
ebXML			
MQ			
JMS			
Secure Web Mailbox			
SMTP (e-mail)			

The answers in Table 2 will help you determine how to size your hardware. If you have many partners with many transactions per month, you will want to utilize hardware with enough processing power to accommodate the load. See Appendix C: Sizing information for sizing considerations.

Management of trading activity

Consider the following questions about your trading-activity management:

- How do you currently monitor trading activity (for example, custom reports, log files, or Tracker)?

  WebSphere Business Integration Connect has a more robust monitoring capability than TPI Tracker. With WebSphere Business Integration Connect, you can drill down to the contents of a message. If you created custom reports using an external reporting product, it is likely those reports will need to be re-written. WebSphere Business Integration Connect provides reports that might be sufficient to replace some of the custom reports you have created.

- Which events are the most important to you?

  Identify which events are important enough to warrant sending e-mail alerts to your B2B personnel. You can configure WebSphere Business Integration Connect to send e-mail alerts at a more granular level than with TPI.

- Do you send alerts via e-mail to partners when your system detects problems with a received document?

Again, you identify which events are important enough to warrant sending e-mail alerts to your trading partners.

Planning for installation

This section describes the information you need to know before you install WebSphere Business Integration Connect. The deployment options for the WebSphere Business Integration Connect Enterprise and Advanced editions are described, and software dependences for all editions of WebSphere Business Integration Connect are listed.

WebSphere Business Integration Connect deployment options

WebSphere Business Integration Connect is composed of several components that can reside on a single server or multiple servers. The ability to distribute components across multiple servers provides better support for DMZs and workload balancing than TPI provides. See Appendix D: Security configuration scenarios for information on security considerations.

While TPI requires a separate product to distribute a receiver component into a DMZ, WebSphere Business Integration Connect provides this support as a base feature. Single DMZ and double DMZ deployment options are possible with WebSphere Business Integration Connect, which will communicate to applications in the internal network. Alternatively, internal applications can request data from WebSphere Business Integration Connect, so that no connections whatsoever cross from a DMZ zone to an internal network zone. The security requirements can dictate the ideal location of each component.

A result of the flexible deployment options of WebSphere Business Integration Connect is that there are multiple components to deploy. If all the components are placed on a single server, the product's footprint will be larger than a TPI deployment, which only has one component. Consequently, a distributed installation for WebSphere Business Integration Connect is recommended.

The way you distribute the Document Manager, Receiver, Console, database, and WebSphere MQ depend on your performance, high-availability, and security requirements. The following illustration shows a sample configuration:
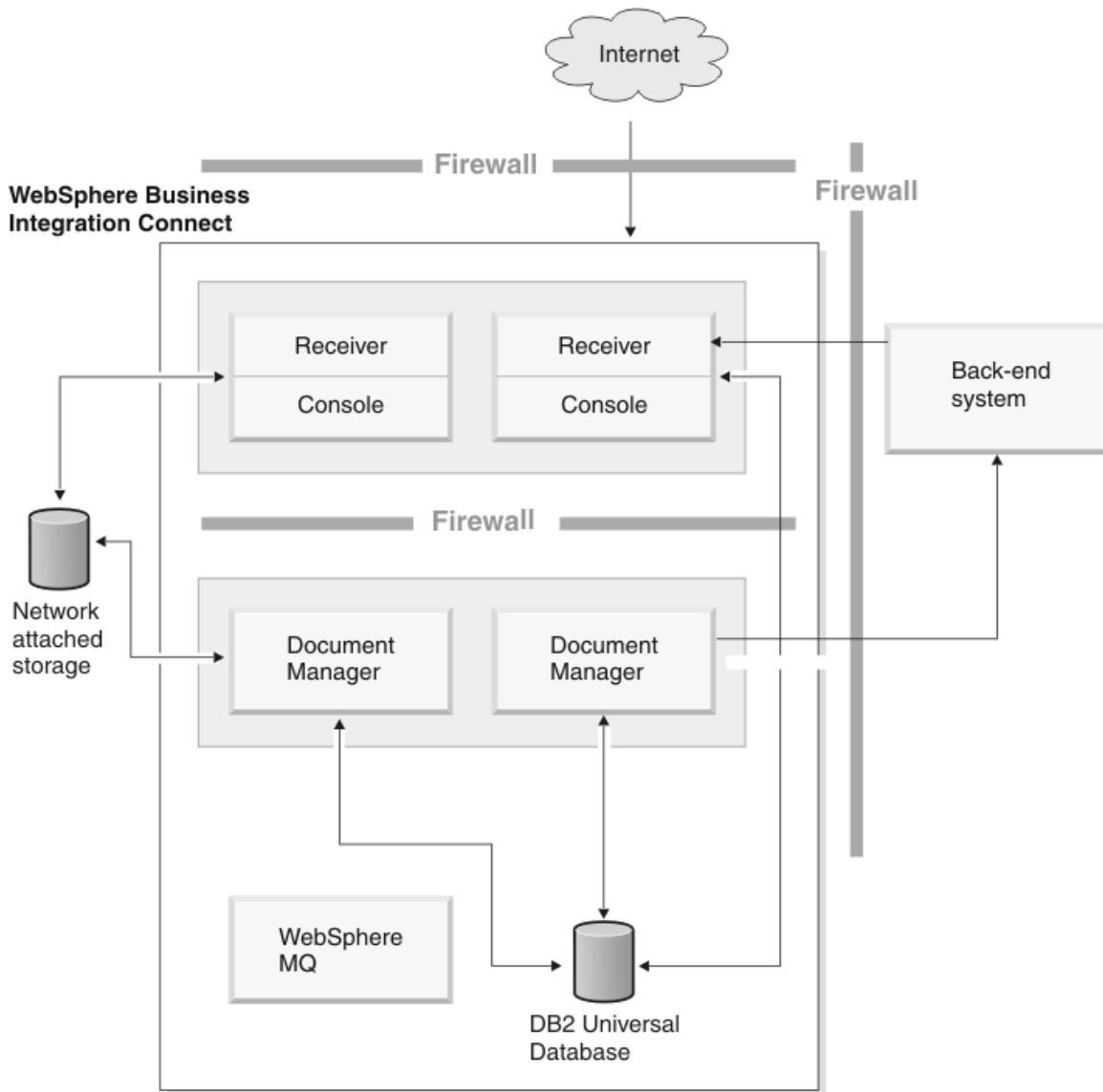
Figure 5. Sample WebSphere Business Integration Connect installation

WebSphere Business Integration Connect (Enterprise and Advanced editions) dependencies

TPI Server includes a bundled SQL Anywhere database. TPI also supports an optional external database (IBM DB2, Microsoft SQLServer, or Oracle). WebSphere Business Integration Connect requires an external database (IBM DB2 or Oracle) and WebSphere MQ for messaging.

Depending on which version of TPI is currently installed, you might need to upgrade your software before installing WebSphere Business Integration Connect. The software dependencies are listed in Table 3.

Note: Check the *WebSphere Business Integration Connect Installation Guide* for the fix pack versions.

Table 3. WebSphere Business Integration Connect Enterprise and Advanced editions – software dependencies

Software	Supported versions
Operating system	Microsoft Windows 2000 AIX 5.2 Solaris 8 RedHat Linux AS2.1 SuSE Linux Enterprise 8.0
Database	DB2 8.1 Oracle 9.2
Messaging	WebSphere MQ 5.3
WebSphere Business Integration (optional)	JMS Adapter 2.3.1 or later JText Adapter (any version) Web Services Adapter (any version)

WebSphere Business Integration Connect - Express dependencies

The software dependencies for WebSphere Business Integration Connect – Express are listed in Table 4:

Table 4. WebSphere Business Integration Connect - Express software dependencies

Software	Supported versions
Operating system	Microsoft Windows 2000 RedHat Linux AS2.1 SuSE Linux Enterprise 8.0 OS/400® V5.2
WebSphere Business Integration (optional)	JText Adapter (any version)

WebSphere Business Integration Connect - Express does not require an external database or messaging system.

Installing WebSphere Business Integration Connect

To install WebSphere Business Integration Connect, follow the instructions in one of the following documents:

- For WebSphere Business Integration Connect Enterprise and Advanced editions, refer to the *WebSphere Business Integration Connect Installation Guide*.

- For WebSphere Business Integration Connect – Express, refer to the *WebSphere Business Integration Connect – Express User Guide*.

Configuring the WebSphere Business Integration Connect server

Note: The following sections apply to the WebSphere Business Integration Connect Enterprise and Advanced editions. For information on entering company and partner profile information in the WebSphere Business Integration Connect – Express Console, see the *WebSphere Business Integration Connect – Express User Guide*.

After you install WebSphere Business Integration Connect, you log in to the console, to configure the server and begin the process of entering your company and trading partner profile information and performing other migration activities. The following illustration shows the Community Console for the Enterprise and Advanced editions:
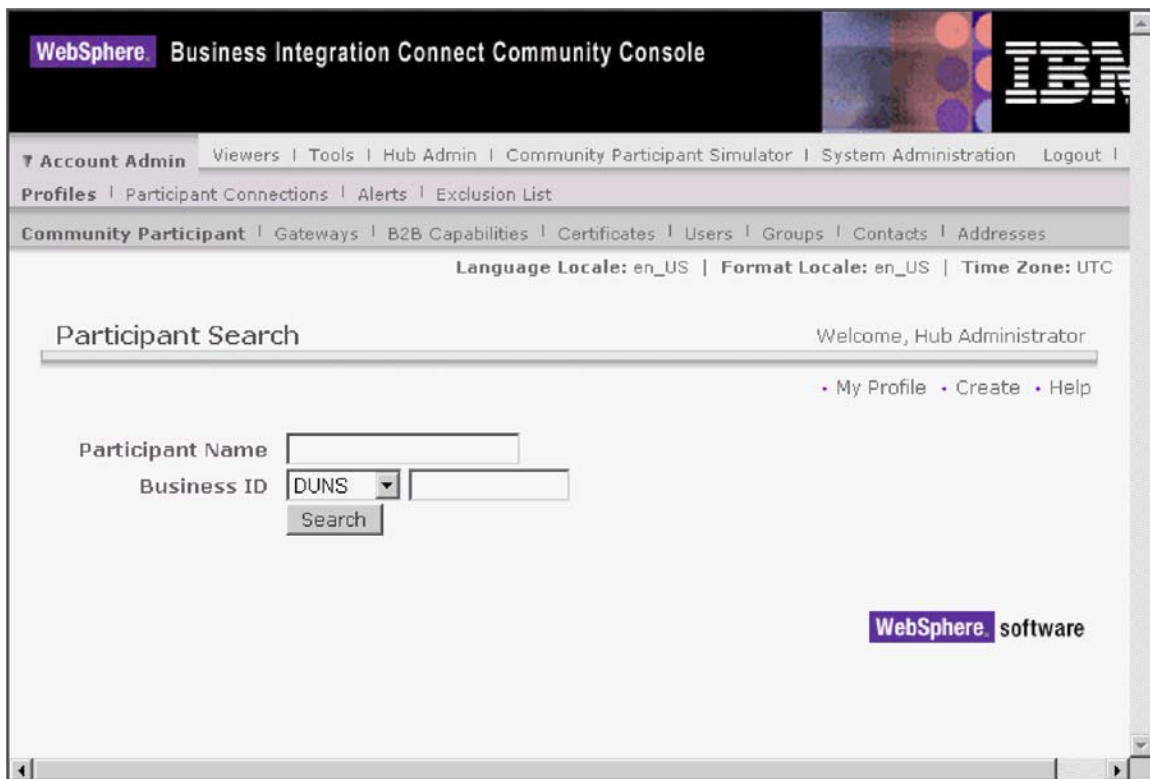

Figure 6. Community Console

Note that to perform some of the configuration tasks from the Community Console, you must be logged in as the Hub Admin user. The Hub Admin is the user that is created when you install WebSphere Business Integration Connect.

Creating targets

As shown in Figure 2 and Figure 3, targets act as the "listeners" for documents coming into WebSphere Business Integration Connect. These listeners are needed for both the internal and external side. For example, for the internal side (from a backend system), you might use a JMS target; for the external side (from a trading partner), you might use an HTTP target.
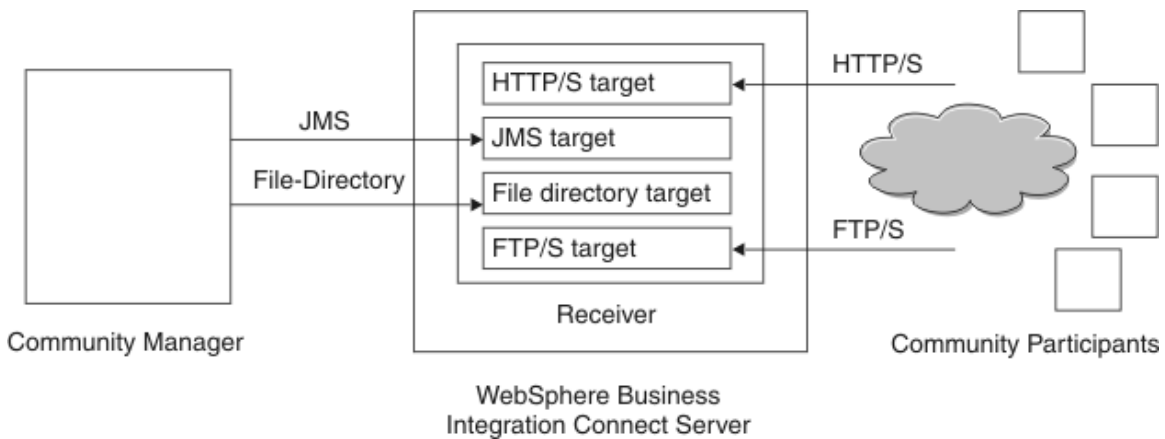
Figure 7. WebSphere Business Integration Connect targets

Use the information configured in the TPI Company Profile Inbound Transport screen to create the targets that external trading partners will use.

You create targets from the **Hub Admin > Hub Configuration > Targets** screen.

Creating document flows

Unlike TPI, WebSphere Business Integration Connect has a concept of Document Flow Definitions, which must be configured before documents can be traded. The Document Flow Definitions consist of packages (enveloping rules), protocols (document categories), and document flows (specific document formats). You specify a Document Flow Definition for each side of the trading relationship. You also create valid interactions between the source and target.

Figure 8 shows the Document Flow Definitions that are installed when you install WebSphere Business Integration Connect:
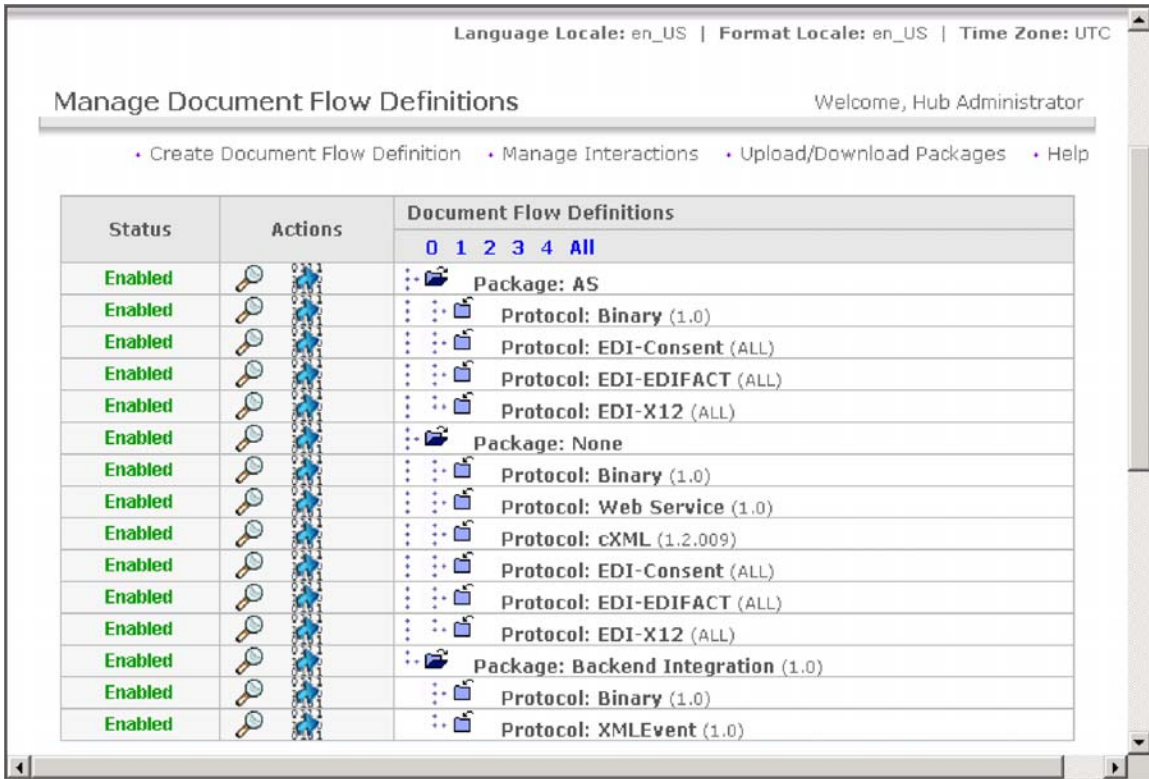
Figure 8. Document Flow Definitions

To add RosettaNet PIPs, you upload the RosettaNet packages that are delivered on the installation medium. See the *Hub Configuration Guide* for a complete list of the RosettaNet PIPs provided with WebSphere Business Integration Connect.

If you will be trading XML documents and would like to extract routing information from the document content, you set up XML formats. In TPI, similar XML format information was configured in the Company Profile. To configure the XML formats in WebSphere Business Integration Connect, use the information found in the TPI Company Profile XML screen. Figure 9 is an illustration of the View XML Formats screen:

Figure 9. XML Formats screen

Setting up company profile information

The profile data that exists for your company must be manually entered into the WebSphere Business Integration Connect environment. Gather you existing company information, which is located in the TPI Company Profile.

The following steps need to be taken to create the Company Profile information. These steps are described in more detail in the *Hub Configuration Guide*.

1. Create a participant profile for your company. Use **Account Admin > Profiles > Community Participant > Create**. Select the participant type of **Community Manager**.

2. Configure the B2B Capabilities of the Community Manager profile. Use **Account Admin > Profiles > Community Participant**, and select the Community Manager profile. Then use **B2B Capabilities**. Specify which Document Flow Definitions WebSphere Business Integration Connect will send and receive to and from internal back-end applications.

3. Configure the Community Manager's gateways for back-end integration transport. Use **Account Admin > Profiles > Community Participant**, and select the Community Manager profile. Then use **Gateways**. Options include JMS, File, FTP, and HTTP. See Modifying backend integration for more information.

4. Configure the Community Manager's certificates. The certificates will reside in the profile of the Hub Operator (Community Operator) as opposed to the Community Manager profile. When logged in as the Hub Admin, use the **Account Admin > Profiles > Community Participant** page, selecting the Community Manager profile, and then select **Certificates**. See the Migrating certificates section for details.

5. Configure the users, groups, and contacts associated with the Community Manager profile. Note that TPI and WebSphere Business Integration Connect can support both administrative users and regular users.

    WebSphere Business Integration Connect provides more granular user and group setup and permissions than TPI. Additionally, with WebSphere Business Integration Connect, you have the ability to configure contacts. Contacts are similar to users except that they cannot log into the system; however they can receive alerts.

    You use the **Admin > Profiles > Community Participant** page, selecting the Community Manager profile, and then select **Users**, **Groups**, and **Contacts** to enter the information. You set permissions from the **Hub Admin > Hub Configuration > Permissions** page.

6. Configure the Community Manager address information, using information from the TPI Company Profile. You use the **Admin > Profiles > Community Participant** page, selecting the Community Manager profile, and then select **Addresses**.

Setting up partner profiles

The profile data that exists for TPI partners must be manually entered into the WebSphere Business Integration Connect environment. You create a profile for each trading partner, using the participant type Community Participant.

The following steps need to be taken to create the Partner Profile information. Note that you must be logged in as the Hub Admin to create participants. Obtain the information for each trading partner from the TPI Partner Profile.

1. Configure partner information in WebSphere Business Integration Connect as a Participant Profile of type Community Participant. Use **Account Admin > Profiles > Community Participants > Create**. Select the participant type of **Community Participant**.

2. Configure the participant's B2B Capabilities. Use **Account Admin > Profiles > Community Participant**, and select the participant from the list. Then use **B2B Capabilities** to specify which Document Flow Definitions this trading partner has permission to send and receive.

3. Configure the participant's gateways for B2B transport. Use the transport information found in the TPI Partner's Outbound Transport screen. To enter the information in the Community Console, use **Admin > Profiles > Community Participant** page, select the participant from the list, and then select **Gateways**.

4. Configure the participant's certificates. See the Migrating certificates section for details.

5. Configure the users, groups, and contacts associated with the participant. You use the **Admin > Profiles > Community Participant** page, selecting the participant from the list, and then select **Users**, **Groups**, and **Contacts** to enter the information. You can set permissions from the **Hub Admin > Hub Configuration > Permissions** page.

    Note that, because WebSphere Business Integration Connect has a Web-based console, partner users can log into the system over the Internet. Partner users can configure their own profiles, and they have visibility into documents they have sent and received.

6. Enter the participant address information. You use the **Admin > Profiles > Community Participant** page, selecting the participant from the list, and then select **Addresses**.

Migrating certificates

Certificates must be migrated from the TPI certificate store to the certificate store of WebSphere Business Integration Connect. You migrate the certificates by exporting them from TPI and importing them into WebSphere Business Integration Connect. You use the following export formats:

- DER-encoded binary X.509 for public certificates
- PKCS #12 for public-private key pairs

Export the TPI Company certificate as a PKCS #12 .p12 file (for example, company.p12). Export each TPI Partner certificate as a DER .cer file (for example, partner1.cer).

Use the following guidelines to import these certificates into WebSphere Business Integration Connect for the different security options available. You can find detailed instructions for each of these steps in the *WebSphere Business Integration Connect Hub Configuration Guide*.

Table 5. Setting up security

Security option	Setup instructions
Outbound digital signature	Load the company.p12 file as a PKCS12 Digital Signature Certificate in the Hub Operator's profile.
Inbound digital signature	Load the partner1.cer as a Digital Signature Certificate in the trading partner's profile. Also load the signer of the partner1.cer certificate (partner1.cer for self-signed and the certificate authority's *.cer for certificate authority (CA)-signed) as a Root Certificate in the Hub Operator's profile.
Outbound encryption	Load partner1.cer as an Encryption Certificate in the trading partner's profile.
Inbound encryption	Load company.p12 as a PKCS12 Encryption Certificate in the Hub Operator's profile.
Outbound Server SSL	If it is self-signed, load partner1.cer as a Root Certificate in the Hub Operator profile. If the certificate is CA-signed, load the CA certificate as a Root Certificate in the Hub Operator profile.
Inbound Server SSL	Use the ikeyman tool (which is used to manage certificates in the WebSphere Business Integration Connect embedded web server) to add the company.p12 file to the receiver.jks key store.
Outbound client SSL	Load the company.p12 file as a PKCS12 SSL Client Certificate in the Hub Operator profile.
Inbound client SSL	Use the ikeyman tool to load partner1.cer into the receiverTrust.jks key store. If the certificate is CA-signed, also load the CA certificate into receiverTrust.jks. Run the bcgClientAuth.jacl script to enable Client SSL.

Setting up participant connections

Participant connections correlate a source participant and its gateway, a destination participant and its gateway, a document type (Document Flow Definition), and the action to take to process the document. Because the concept of participant connections did not exist in TPI, you need to configure these connections. Use **Account Admin > Participant Connections**.

Archiving transaction metadata

Although TPI and WebSphere Business Integration Connect maintain similar information for transaction history, the underlying schemas are not similar. If you need to maintain historical TPI transactional information, archive the TPI data or create custom reports to query this information.

Archiving raw document data

TPI and WebSphere Business Integration Connect both maintain historical message stores in their file systems, although the file system hierarchies are not identical. It is recommended that you archive TPI messages in a directory for future retrieval.

Modifying backend integration

This section describes the changes that are needed for exchanging information with backend systems.

Backend integration – File-based

File-based back-end integration is the default for TPI. When you use WebSphere Business Integration Connect, you configure documents coming from the back-end applications to WebSphere Business Integration Connect (and onto a trading partner) using a WebSphere Business Integration Connect target of type File. Documents coming from the trading partner that need to be forwarded to back-end applications using the file system are configured using the Community Manager's gateway of type File. The file directories that are utilized can reside anywhere that is accessible by the WebSphere Business Integration Connect Receiver (from back-end applications) and the WebSphere Business Integration Connect Document Manager (to back-end applications).

One difference from TPI is that binary data cannot be sent from back-end applications to WebSphere Business Integration Connect using the file system. WebSphere Business Integration Connect requires routing information for binary data, which is provided in the transport level headers when you use JMS or HTTP for back-end integration.

Backend integration – MQ/JMS

You configure documents coming from the back-end applications to WebSphere Business Integration Connect (and onto a trading partner) using a WebSphere Business Integration Connect target of type JMS. Documents coming from the trading partner that need to be forwarded to back-end applications using JMS are configured using the Community Manager's gateway of type JMS. The queues and JNDI locations that are utilized can reside anywhere that is accessible by the WebSphere Business Integration Connect Receiver (from back-end applications) and WebSphere Business Integration Connect Document Manager (to back-end applications).

TPI supports back-end integration using either native MQ or JMS. WebSphere Business Integration Connect supports JMS only; however the JMS API can be used to connect to any MQ environment. In TPI, the JMS configuration information was located in the Company profile, Integration screen. Copy the JMS configuration including inbound and

outbound queues, as well as the connectivity information provided by the JNDI URL and Factory, into WebSphere Business Integration Connect.

See the *WebSphere Business Integration Connect Enterprise Integration Guide* for more information on using JMS for back-end integration.

Backend integration – WebSphere Business Integration

If you are using the TPI Connector for back-end integration to WebSphere Business Integration, you will need to migrate to one of the technology adapters supported by WebSphere Business Integration Connect: JMS Adapter, JText Adapter, or Web Services Adapter.

WebSphere Business Integration Connect and WebSphere Business Integration

JMS Adapter is the preferred option when using WebSphere Business Integration. The JMS Adapter needs to be version 2.3.1 or later, in order to support JMS Properties. The JText Adapter can be used; however transport-level headers containing metadata such as document identifiers and routing information will not be included. Finally, the Web Services Adapter can be used when using the SOAP proxy protocol in WebSphere Business Integration Connect.

To utilize one of these adapters, configure the target (from the backend application) and gateway (to the backend application) to utilize a transport of type JMS, HTTP, or File.

On the WebSphere Business Integration side, you will need to deploy the chosen adapter, and alter business objects and maps to utilize the adapter. Generally the main business object representing the document will not change; only the dynamic or static meta-objects, which dictate how the adapters are to behave, need to be modified. The TPI connector requires a dynamic meta-object which contains document metadata such as routing IDs. The JMS Adapter has a similar concept, and document metadata is set using a dynamic meta-object that corresponds to transport level headers (JMS properties).

If you are using RosettaNet, the RosettaNet public process logic (such as timeouts, retries, and exceptions) is now included within WebSphere Business Integration Connect, while TPI simply provided the transport support. Public processing logic contained in an InterChange Server collaboration is no longer needed. Simply retain the private process logic within the InterChange Server and send and receive information to and from WebSphere Business Integration Connect using the JMS Adapter. WebSphere Business Integration Connect performs the RosettaNet Public Processing and transport services.

RosettaNet attachments were not possible with TPI. If you would like to take advantage of this new feature, configure the attachment data handler within the InterChange Server.

Samples of migrating to the JMS Adapter can be found in:

- Scenario 1: Migrating to WebSphere Business Integration Connect for document trading (for non-RosettaNet exchanges)

- Scenario 2: Migrating to WebSphere Business Integration Connect for RosettaNet exchanges

WebSphere Business Integration Connect-Express and WebSphere Business Integration

Because WebSphere Business Integration Connect - Express supports only file-based back-end integration, JText is the only option for communication to WebSphere Business Integration.

On the WebSphere Business Integration side, you must deploy the JText adapter and alter business objects and maps to utilize the adapter. Generally the main business object representing the document will not change; only the dynamic or static meta-object, which dictates how the JText Adapter is to behave, needs to be modified.

Details for migrating to the JText Adapter can be found in Scenario 3: Migrating to WebSphere Business Integration Connect – Express for document trading.

Appendix A: Scenarios

This appendix describes the changes needed to WebSphere Business Integration objects (such as business objects) when you migrate from TPI to WebSphere Business Integration Connect. Three of the most common migration scenarios are presented:

- Scenario 1: Migrating to WebSphere Business Integration Connect for non-RosettaNet document trading

- Scenario 2: Migrating to WebSphere Business Integration Connect for RosettaNet exchanges

- Scenario 3: Migrating to WebSphere Business Integration Connect - Express for document trading

Note that the first two scenarios relate to the WebSphere Business Integration Connect Enterprise and Advanced editions.

Scenario 1: Migrating to WebSphere Business Integration Connect for document trading

The JMS Adapter is the preferred replacement for the TPI Connector when you migrate to WebSphere Business Integration Connect. For non-RosettaNet document-trading scenarios, the changes needed to switch to the JMS Adapter are minimal.

To change to the JMS Adapter, refer to the *Adapter for JMS User Guide* and complete the following tasks:

1. Install and configure the JMS Adapter. See Figure 10 for a sample of configuring the JMS adapter.

2. Create JMS static and dynamic meta-objects. See Figure 11 for a sample of a JMS meta-object.

3. Modify the business object that represents the document to be traded so that it utilizes a JMS dynamic meta-object instead of the TPI route-info meta-object. See Figure 12 and Figure 13 for samples of a business object for the TPI adapter and the equivalent business object for the JMS adapter.

   This JMS dynamic meta-object contains JMS Properties that will be used to create the JMS transport-level headers. The headers are needed for the WebSphere Business Integration Connect packaging type of Back-End Integration.

4. Update maps or the collaboration (or both) to populate the JMS dynamic meta-object instead of the TPI route-info meta-object.

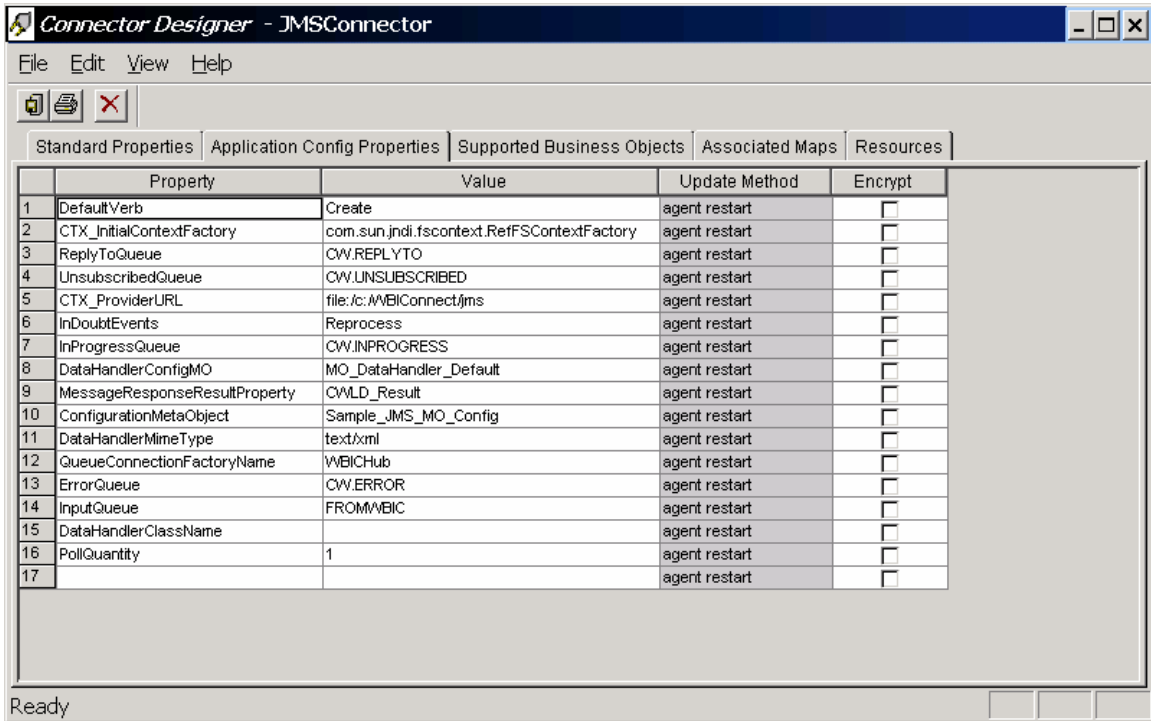The following illustration is a sample of the information you would use to configure the JMS adapter.

Figure 10. Sample JMS adapter configuration

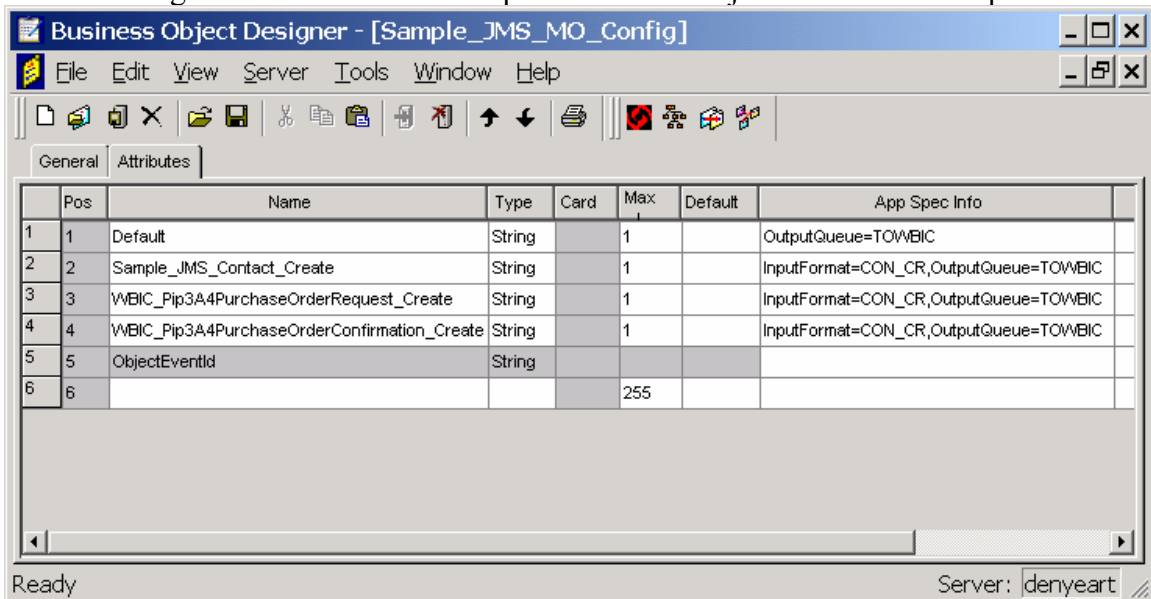The following illustration shows a sample static meta-object for the JMS adapter:

Figure 11. Sample JMS adapter static meta-object

The following illustration shows a sample TPI Adapter XML business object to be migrated:

	Pos	Name	Type	Card	Max L	Default	App Spec Info	Comments
1	1	XMLDeclaration	String		255		type=pi	
2	2	DocType	String		255		type=doctype	
3	3	⊟ TLO	WBIC_TLO_Tester	1			Tester	
3.1	3.1	From	String		255		From;type=pcdata	
3.2	3.2	To	String		255		To;type=pcdata	
3.3	3.3	ObjectEventId	String					
4	4	⊟ TPIRouteInfo	TPIRouteInfo	1			type=cw_mo_cfg	
4.1	4.1	SenderId	String		0	22222222		
4.2	4.2	UniqueId	String		1			
4.3	4.3	OriginalName	String		1	testConsu		
4.4	4.4	ReceiverId	String		0	11111111		
4.5	4.5	DocumentType	String		0	XML		
4.6	4.6	BOPrefix	String		0	WBIC		
4.7	4.7	WaitForMDN	String		0	true		
4.8	4.8	BackupRequired	String		0	true		
4.9	4.9	ObjectEventId	String					
5	5	ObjectEventId	String					
6	6				255			

Figure 12. Sample TPI adapter XML business object

The following illustration shows the equivalent business object for the JMS adapter. Note the JMS properties.

	Pos	Name	Type	Card	Default	App Spec Info	Comr
1	1	XMLDeclaration	String		xml version="1.0"	type=pi	
2	2	DocType	String		DOCTYPE Tester	type=doctype	
3	3	⊟ TLO	WBIC_TLO_Tester	1		Tester	
3.1	3.1	From	String			From;type=pcdata	
3.2	3.2	To	String			To;type=pcdata	
3.3	3.3	ObjectEventId	String				
4	4	⊟ JMSDynMO	JMSDynMO	1		type=cw_mo_conn	
4.1	4.1	CorrelationId	String				
4.2	4.2	⊟ JMSProperties	JMSProperties	1			
4.2.	4.2.1	x_aux_sender_id	String		987654321	name=x_aux_sender_id;type=string	
4.2.	4.2.2	x_aux_receiver_id	String		123456789	name=x_aux_receiver_id;type=string	
4.2.	4.2.3	x_aux_process_version	String		1.0	name=x_aux_process_version;type=string	
4.2.	4.2.4	x_aux_protocol	String		CustomXML	name=x_aux_protocol;type=string	
4.2.	4.2.5	x_aux_process_type	String		Tester	name=x_aux_process_type;type=string	
4.2.	4.2.6	x_aux_system_msg_id	String			name=x_aux_system_msg_id;type=string	
4.2.	4.2.7	x_aux_protocol_version	String		1.0	name=x_aux_protocol_version;type=string	
4.2.	4.2.8	content_type	String		application/xml	name=content_type;type=string	
4.2.	4.2.9	x_aux_process_instance_id	String			name=x_aux_process_instance_id;type=string	
4.2.	4.2.1	x_aux_production	String			name=x_aux_production;type=string	
4.2.	4.2.1	x_aux_payload_root_tag	String			name=x_aux_payload_root_tag;type=string	
4.2.	4.2.1	ObjectEventId	String				
4.3	4.3	OutputQueue	String		TOWBIC		
4.4	4.4	InputFormat	String		MQSTR		
4.5	4.5	OutputFormat	String		MQSTR		
4.6	4.6	ObjectEventId	String				
5	5	ObjectEventId	String				
6	6						

Figure 13. Sample JMS adapter XML business object
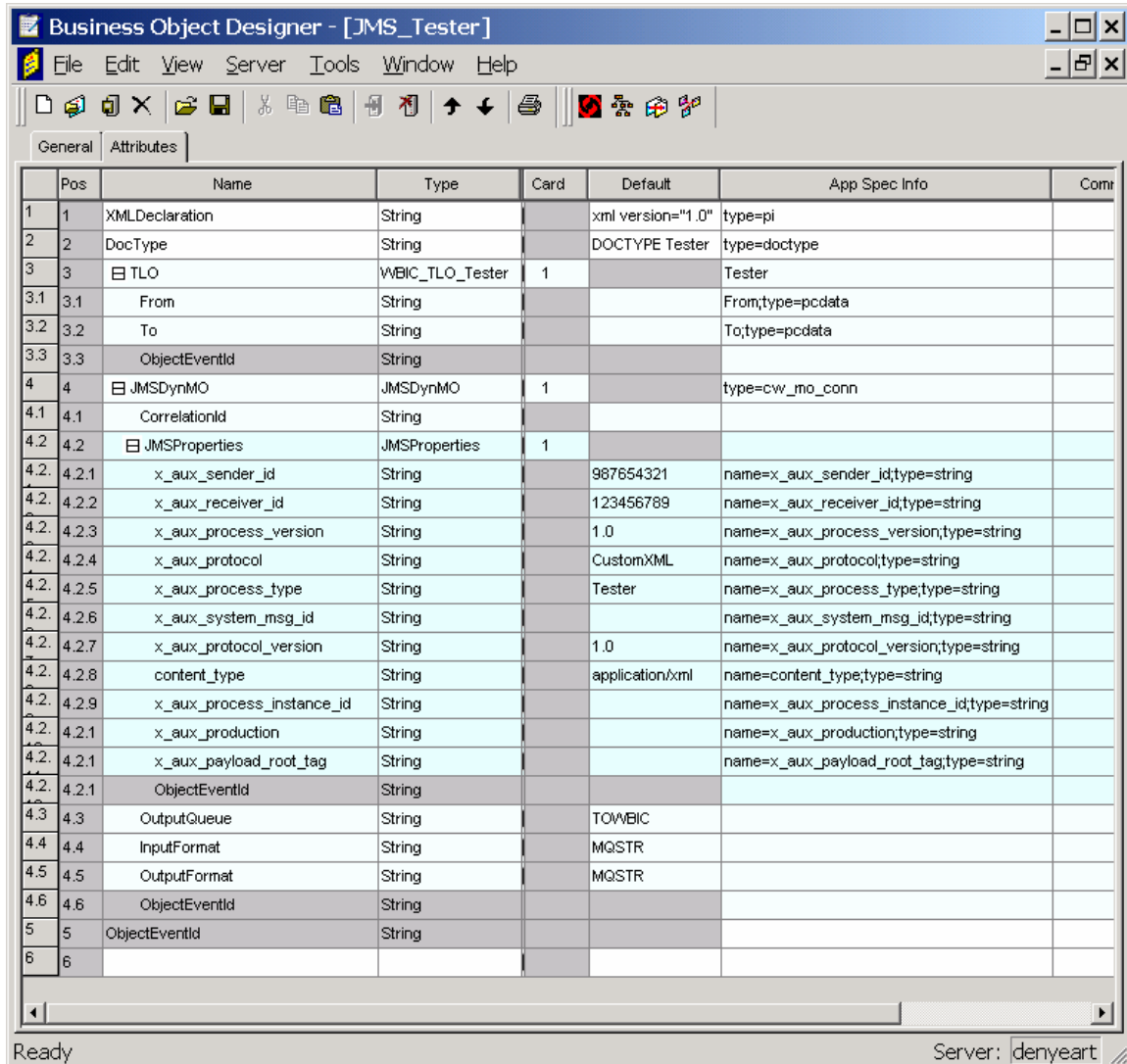
This business object creates a simple XML document such as the following:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE Tester>
<Tester>
      <From>987654321</From>
      <To>123456789</To>
</Tester>
```

Scenario 2: Migrating to WebSphere Business Integration Connect for RosettaNet exchanges

The JMS Adapter is the preferred replacement for the TPI Connector when you migrate your environment to WebSphere Business Integration Connect. The migration steps for a RosettaNet solution include the same steps for migrating to the JMS Adapter as the document trading example in Scenario 1.

To change to the JMS Adapter, refer to the *Adapter for JMS User Guide* and complete the following tasks:

1. Install and configure the JMS Adapter. See Figure 14 for a sample of configuring the JMS adapter.

2. Create JMS static and dynamic meta-objects. See Figure 15 for a JMS meta-object sample.

3. Modify the business object that represents the document to be traded so that it uses a JMS dynamic meta-object instead of the TPI route-info meta-object. See Figure 16 for a sample business object.

   This JMS dynamic meta-object contains JMS Properties that will be used to create the JMS transport level headers. These headers are needed for the WebSphere Business Integration Connect packaging type of Back-End Integration.

4. Update maps or the collaboration (or both) to populate the JMS dynamic meta-object instead of the TPI route-info meta-object.

Note that the following features of the WebSphere Business Integration RosettaNet solution are no longer needed:

- RosettaNet public processing collaboration logic

  Because the RosettaNet public processing logic (such as RosettaNet timeouts, retries, and exceptions) is now located within WebSphere Business Integration Connect, the RosettaNet public processing collaboration logic is no longer needed in the InterChange Server. You can simplify the collaboration to include only the private processing logic; that is, the collaboration needs to contain only the logic to integrate with back-end applications and to pass a service content XML business object to and from WebSphere Business Integration Connect. This business object includes a dynamic JMS meta-object that represents the JMS transport headers. WebSphere Business Integration Connect uses these headers to build the RosettaNet Preamble (RNIF 1.1 and 2.0), Service Header (RNIF 1.1 and 2.0), and Delivery Header (RNIF 2.0 only).

- Message Control Document (MCD) child business object

  The JMS dynamic meta-object containing the JMS transport headers has taken the place of the MCD business object. The MCD is no longer needed and can be removed from the business object.

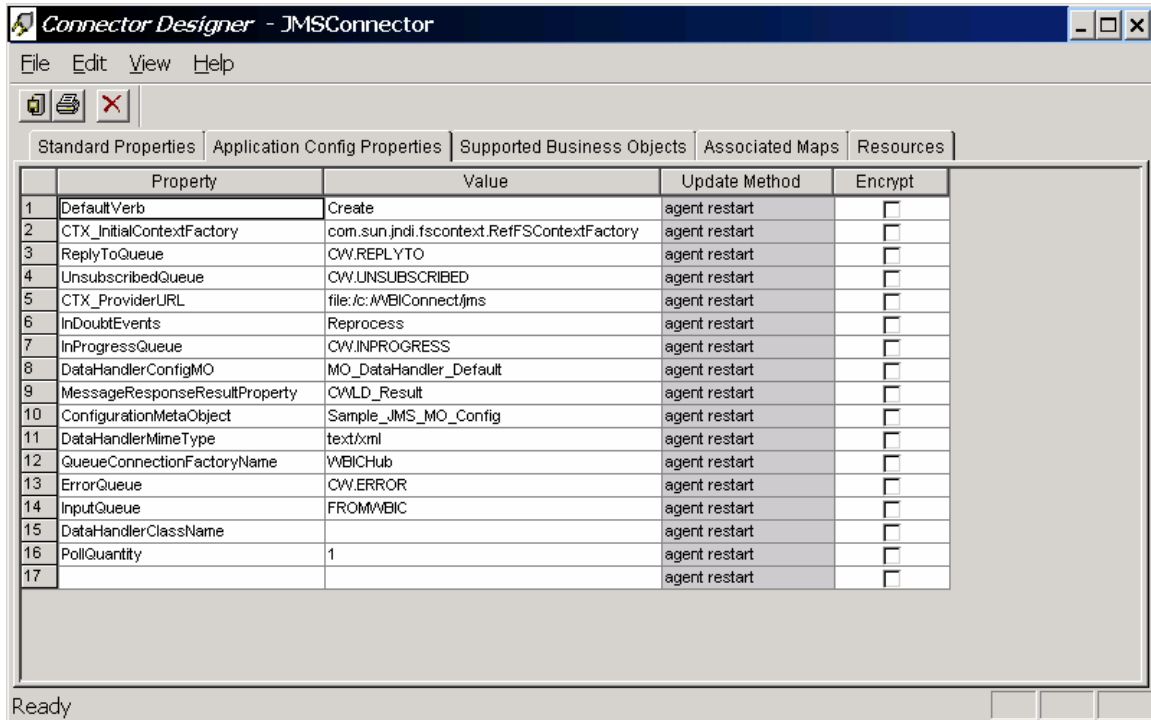The following illustration is a sample of the information you would use to configure the JMS adapter.

Figure 14. Sample JMS adapter configuration

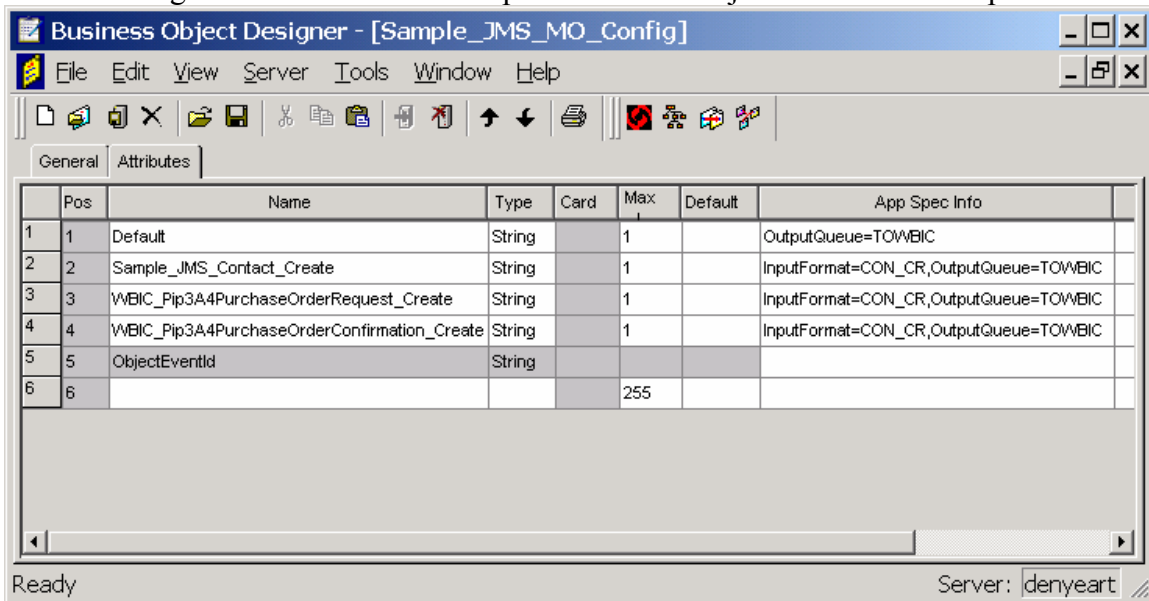The following illustration shows a sample static meta-object for the JMS adapter:

Figure 15. Sample JMS adapter static meta-object

A business object for the JMS adapter is shown in Figure 16.

Figure 16. Sample RosettaNet business object for the JMS adapter

Scenario 3: Migrating to WebSphere Business Integration Connect – Express for document trading

The JText Adapter is the preferred replacement for the TPI Connector when you migrate to WebSphere Business Integration Connect – Express. The changes needed to switch to the JText Adapter are minimal.

To change to the JText Adapter, refer to the *Adapter for JText User Guide* and complete the following tasks:

1. Install and configure the JText Adapter. See Figure 17 for a sample of configuring the adapter.

2. Create JText meta-objects. See Figure 18 for a sample meta-object.

3. Modify the business object that represents the document to be traded so that it uses a JText dynamic meta-object (optional) instead of the TPI route-info meta-object. See Figure 19 and Figure 20 for samples of a business object for the TPI adapter and the equivalent business object for the JText adapter.

4. Update maps or the collaboration (or both) to populate the optional JText dynamic meta-object instead of the TPI route-info meta object

The following illustration is a sample of the information you would use to configure the JText adapter.

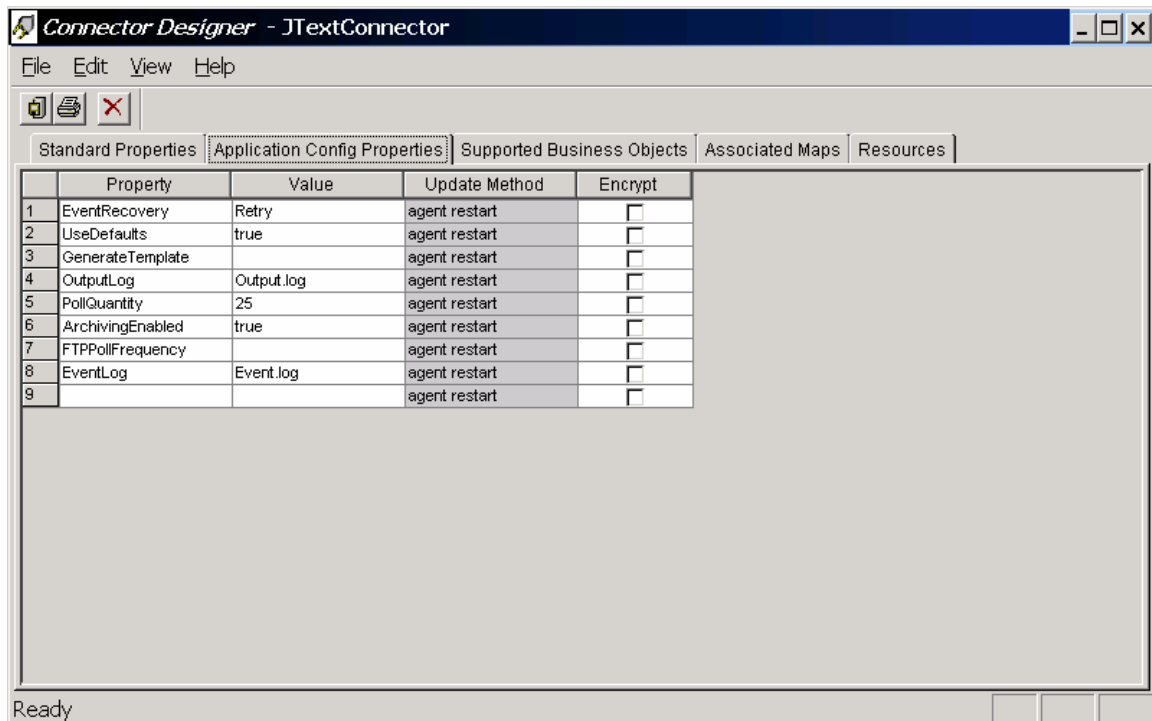**Figure 17. Sample JText adapter configuration**

The following illustration shows a sample static meta-object for the JText adapter:

Figure 18. Sample JText adapter static meta-object

The following illustration shows a sample TPI Adapter XML business object to be migrated:

Figure 19. Sample TPI Adapter XML business object

The following illustration shows the equivalent business object for the JText adapter.

	Pos	Name	Type	Card	Default	App Spec Info	Comments
1	1	XMLDeclaration	String		xml versio	type=pi	
2	2	DocType	String		DOCTYPE	type=doctype	
3	3	⊟ TLO	WBIC_TLO_Tester	1		Tester	
3.1	3.1	From	String			From;type=pcdata	
3.2	3.2	To	String			To;type=pcdata	
3.3	3.3	ObjectEventId	String				
4	4	ObjectEventId	String				
5	5						

Figure 20. Sample JText adapter XML business object

Appendix B: Additional services available

You can contract with IBM to provide the following WebSphere Business Integration Connect services:

Partner Integration Planning

Partner Integration Planning includes community definition and ramp-up planning.

Community definition provides you with business objectives for undertaking the B2B initiative and elements for project success. A best-practice partner recruitment approach and activation timeline are captured.

The target set of partners and B2B message requirements are identified, based on your unique business goals as well as tactical and strategic values. In addition to an industry-proven implementation strategy, you receive a map of forecasted B2B process exchange.

Ramp-up planning provides you with an industry-proven community ramp-up strategy tailored to your needs and a ramp-up master schedule with roles and responsibilities. The ramp-up strategy incorporates a phase and step approach to ensure that each partner is aware of tasks and next steps to ensure the success of your B2B initiative.

One of the greatest challenges when building a community is not the technology but partner recruitment, commitment, and rapid execution. Therefore, it is important to launch your B2B initiative with a sound strategy and well-defined activities.

Partner Activation

The Partner Activation service allows you to quickly add partners to WebSphere Business Integration Connect as well as ensure reliable partner connection and message guideline compliance. The ability of each partner to reliably and securely connect, correctly initiate, receive, and respond to B2B processes is thoroughly tested. Other features of this service include:

- Holding a kick-off meeting with the partner's test team
- Testing the system for B2B process and message compliance
- Identifying and analyzing any errors
- Communicating all required changes to the partner team
- Retesting until compliance is achieved.

Additionally, the service ensures that the partner can correctly handle exceptions, large files, and expected peak production volume.

Partner Management

The Partner Management service provides you and your partners with 24x7 call center and B2B process monitoring. Optionally, community announcements are provided, as

well as a back-up resource to you for WebSphere Business Integration Connect configuration, partner administration, process usage, and user support.

The service includes:

- Monitoring of events, process states, volume trends, and the overall health of the B2B process exchange
- Troubleshooting of failed B2B processes and sending alert notifications to the affected partner or you, ensuring around-the-clock process exception management

You and your partners request support through a toll-free number or e-mail. All service requests and issues are tracked and managed to resolution.

Knowledge Transfer

Knowledge Transfer provides practical education for technical professionals responsible for managing WebSphere Business Integration Connect. Students gain insight into best practices developed specifically for WebSphere Business Integration Connect hubs.

Partner Internal Readiness

Partner Internal Readiness gives you visibility into the readiness of your partners and enables them to rapidly achieve readiness. Each trading partner answers a series of questions via an online form, so that you have a detailed assessment of each partner's readiness to participate. Partners are provided with technical expertise, best-practice methodologies, and an integration schedule.

Readiness Assessment

The Readiness Assessment service collects individual partner readiness audits and synthesizes the data into formal recommendations. The service includes a detailed assessment of the readiness of partners to participate based on business and technical capabilities, with a report of their estimated readiness schedule for each B2B process.

You can select from a set of over 100 questions designed to provide a comprehensive view into the readiness of your trading community, or you can develop questions customized for your B2B initiative.

Readiness Management

The Readiness Management service enables partners to rapidly achieve B2B readiness by providing technical expertise, best practice methodologies, schedule tracking, and issue management. Readiness Management provides you with confirmation that your partner's back-end application and gateway have been configured and tested for support of the required B2B processes.

The service provides each partner with schedule tracking and technical support for B2B system design, B2B software installation and configuration, back-end application integration with the B2B system, and internal integration testing. An integration project plan is used to track progress, manage issues to resolution, and provide weekly status

updates. Additionally, a design review is conducted to verify that your requirements and those of your partner have been met.

Business Process Configuration

Business Process Configuration provides you with all the customized guidelines, schemas, and translation maps you need for WebSphere Business Integration Connect. The following guidelines are developed:

- Canonical message guidelines for a normalized interface to your back-end applications
- Message guidelines to interface your partners to WebSphere Business Integration Connect

Schemas developed from these guidelines are used during WebSphere Business Integration Connect run-time execution to validate the structure, syntax, and content of the message that supports the B2B business process. Additionally, translation maps are developed that enable the bi-directional translation of file formats from a partner's message guideline to your message guideline.

Message Guideline Development

The Message Guideline Development service provides you with a normalized interface to your back-end applications or with a message guideline that can be used to interface partners to WebSphere Business Integration Connect.

By developing message guidelines, you can reduce the development and operational costs that are incurred when interfaces to multiple back-end applications are required as well as when multiple B2B trading protocols need to be accommodated with different transformation maps.

A message guideline is a normalized business message format that is defined by a standard format, document hierarchy, sequential order, and specific data elements for each business document.

Your business process requirements are analyzed so that message guidelines can be designed and developed. Message guideline documentation is provided to you via a formal review and signoff.

Schema Development

The Schema Development service delivers an XML schema that is based on your or on your partner's message guidelines.

The developed schema is used during WebSphere Business Integration Connect run-time execution to validate the structure, syntax, and content of the message that supports the B2B business process. You will receive a tested XML schema that is ready for

production implementation. You will not need to develop an expertise in or dedicate resources to XML schema development, but instead can focus on your core competencies.

Your business process requirements and business message guidelines are analyzed so that an XML schema can be designed and developed. The tested XML schema is provide to you via a formal review and signoff.

Translation Map Development

The Translation Map Development Service enables the bi-directional translation of file formats from the partner's message guideline to your message guideline.

You will receive high-quality translation maps. You will not need to develop an expertise in or dedicate resources to translation map development, but instead can focus on your core competencies.

Your business process requirements are analyzed so that a translation map can be designed and developed. The translation map documentation and test results are provided to you via a formal review and signoff.

For more information about obtaining these services, contact your IBM representative or visit the following web site:

www.ibm.com/services

Appendix C: Sizing information

This appendix discusses sizing and overall hardware.

To determine the overall hardware requirements, consider the following factors:

Table 6. Sizing considerations

Size of your trading community	How many community participants do you have, and what is the on-ramping rate. Consider future growth (for example, if your community has 200 participants but will eventually have 250 participants).
Types of traffic	Is the traffic real-time or batched? What are the response requirements (for example, do you need to provide synchronous MDN responses)?
Quality of Service requirements	What is the response requirement from the gateway, EDI transformation engine, and internal integration components? Is latency acceptable?
Document volume	How many documents (by type) are processed and how does this vary with time?
Document size	What is the maximum document size and how does this correlate with volume?
Peaks versus steady state	Do the documents maintain an even flow across the business day or does it reflect a batch profile?

Table 7 provides the default hardware guidelines for basic configurations:

Table 7. Hardware configuration guidelines

Processor	A rack-mountable type (for example, the IBM xSeries 335 or 345) is optimal. The processor needs to have a reasonable performance rating. Dual processors provide the best price for performance.
RAM	On a single processor, 1 GB is recommended. For dual processors, 2 GB is recommended.
Hard disk	Use mirrored disks – see later comments on shared file systems and network attached storage (NAS).
Network	Hardware NIC should be sized in accordance with the network performance. 1 GB Ethernet support for the server and the actual network should support 1 GB Switched.

This configuration is based on small document sizes with a steady delivery profile. The number of Document Manager instances is determined based on the monthly volume of documents. As a basic rule of thumb, there should be a Document Manager per processor allocated for each one million documents processed per month using a normal business

calendar. However, given document size and send/receive profile, a single Document Manager could support upwards of 2 to 4 million documents per month.

In some cases, a single physical platform can be used. In those cases, the optimal recommended configuration is a two-processor Intel® or two-processor AIX machine. DB2 and WebSphere MQ can be run directly on the platform and the WebSphere Business Integration Connect product can use the local file system. Each component runs on its own WebSphere Application Server instance; therefore, a dual-processor configuration provides greater scalability and predictable performance.

If you need to support more than two million messages per month, consider a distributed/split topology with the Receiver and Console components running on a separate processor. This solution architecture is also recommended when you have different security requirements for the Receiver and Document Manager.

Additional hardware might be required to provide for redundancy and High Availability.

From a storage perspective, WebSphere Business Integration Connect works with any shared file system. In stand-alone mode, NAS is not required. In distributed topologies, the recommended solution is to use NAS, although basic shared file systems will work as well (for example, NFS mounts between the WebSphere Business Integration Connect components). The NAS recommendation provides higher availability and scalability for overall operations. Note that the database and MQ need not reside on NAS; they can have their own storage system or can use the storage of the database artifacts and JMS/MQ persistence.

Appendix D: Security configuration scenarios

This appendix describes the most common deployment scenarios for WebSphere Business Integration Connect.

Overview

As described earlier in this document, WebSphere Business Integration Connect consists of three components (Receiver, Document Manager, Community Console), which all rely on a shared database, queue manager, and a Network Attached Storage (NAS) file system. Each component can be deployed on a different system or on a single system, depending on your security and throughput requirements.

All WebSphere Business Integration Connect operational data is stored in a database and is protected by the normal database security mechanisms. The database itself can run on a dedicated server. WebSphere Business Integration Connect provides significant support for integration/utilization of firewalls through support for n-tier physical architectures. This flexibility enables fire walling between tiers: transport, presentation, business logic, persistence.

All WebSphere Business Integration Connect events are written to messaging queues on the WebSphere MQ Server. Each component posts transaction and error events to the queues, where the Document Manager picks up the events and persists them to the database.

Firewalls work in conjunction with proxy servers, providing the ability to filter protocols, addresses, communication ports, and IP packets. In some cases, the proxy server and firewall are one and the same machine. The Firewall Security Administrator should be consulted when you are setting up the environment, because the policies of the Firewall Security Administrator might affect the design of the proposed system.

The Firewall has the ability to section off different communication zones to the Internet. These De-Militarized Zones or DMZs expose systems to the Internet without compromising any systems in the enterprise. The enterprise can then control the information Internet users or businesses can access.

WebSphere Business Integration Connect Split File System Deployment

A split file system deployment (as illustrated in Figure 21) is used when you have very strict security requirements. In this scenario, inbound processing and outbound processing are separated so there are no unsecured documents sitting in the DMZ and no inbound connections are made through the inner firewall.

In this scenario, all documents from participants must be encrypted. The Inbound Receiver, a secondary database to hold the Inbound Receiver's configuration/target

information, a secondary Network Attached Storage (NAS) for file sharing, and the Queue Manager for all components are deployed in the DMZ. The Outbound Receiver, Inbound Document Manager, Outbound Document Manager, Console, Primary Data Store (DB2 or Oracle), and the primary NAS are all deployed inside the enterprise.
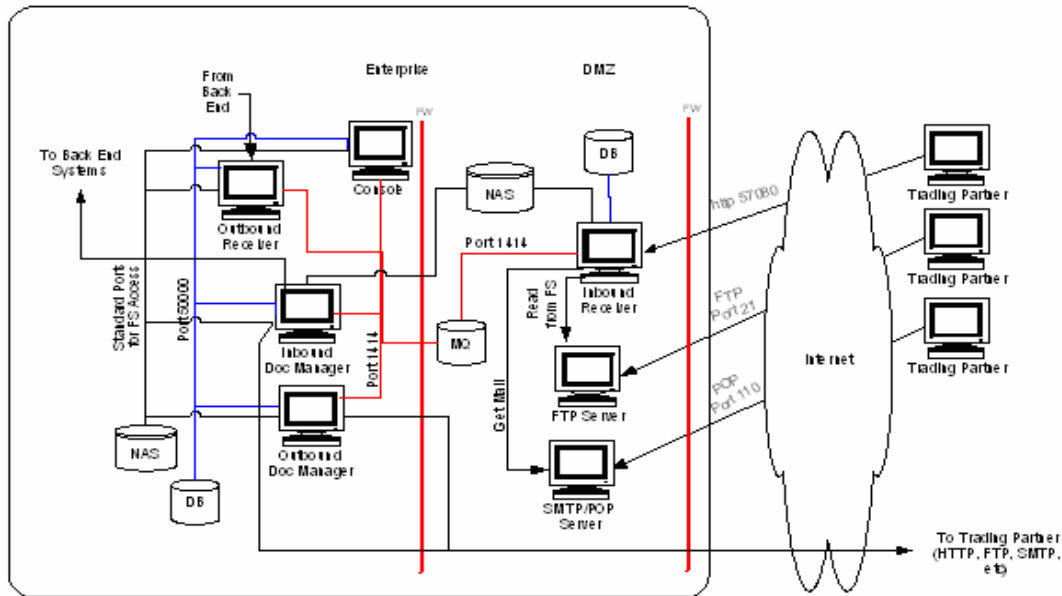
Figure 21. Split deployment scenario

The secondary database in the DMZ contains only the non-sensitive target information that the Inbound Receiver requires; it can be co-located on the Inbound Receiver system. The primary database inside the enterprise contains all configuration information for the WebSphere Business Integration Connect components inside the enterprise and also all of the runtime transactional data; this server should be dedicated to WebSphere Business Integration Connect and sized based on average transaction size and throughput requirements.

The NAS in the DMZ is used by the Inbound Receiver to write all inbound transactions to the "router_in" or "sync_in" (or both) directories. The Inbound Document Manager polls these directories and picks up the files for processing. This file system can be co-located on the Inbound Receiver system and should allow access only to login IDs in the bcgusers group. The NAS inside the enterprise provides a shared location for all the WebSphere Business Integration Connect components inside the enterprise. The Outbound Receiver writes files received by an integration target to the "router_in" or "sync_in" (or both) directories. The Outbound Document Manager polls these directories and picks up the files for processing.

The WebSphere MQ Server in the DMZ is used by all WebSphere Business Integration Connect components to allow intercommunication between the components and to provide queues for temporarily storing of event information. The Document Managers

pull the events off the queues and post them to the database. No information is permanently persisted in the queues, and the events are not of a sensitive nature.

Deployment Considerations

Keep the following points in mind when you are implementing a split-deployment configuration:

- The WebSphere Business Integration Connect components, WebSphere MQ, NAS, and the database can be co-located on the same machine or distributed over many machines, depending on your performance and security requirements.

- When installing the Inbound Receiver, be sure to point to the secondary database, WebSphere MQ, and the shared file system in the DMZ.

- When installing all the components inside the enterprise, be sure to point to the primary database, the NAS inside the enterprise, and WebSphere MQ in the DMZ.

- The Inbound Receiver only needs access to the following tables in the secondary database: PR_RCVCONFIG, PR_RCVCONFIG_LOC, PR_TRANSPORT, PR_TRANSPORT_LOC, PR_DESTTYPE and PR_DESTTYPE_LOC. Although a second Console is not shown in Figure 21, you might need to install a second Console and point it at the database in the DMZ so you can initially configure the Inbound Receiver. After initial configuration, the target information should not often change.

- The Inbound Document Manager must have access to the shared file location in the DMZ so it can poll the "router_in" or "sync_in" (or both) directories.

- You must manually edit the Inbound Document Manager's "bcg.properties" file to ensure polling of the "router_in" or "sync_in" (or both) directories in the DMZ. The following attributes must be changed to point to the shared file system in the DMZ:
    - bcg.vms_inbound_directory.main=
    - bcg.vms_inbound_directory.main=
    - bcg.vms_inbound_directory.synchronous=
    - bcg.vms_receiver_reject_dir
    - bcg.vms_receiver_tmp_dir=
    - bcg.delivery.responseDir=
    - bcg.receiver.persistpath=

The advantage of this configuration is that it is very secure. All connections are established from the enterprise to the DMZ for file GETs from the file system and MQ GETs of events. No connections are established from the DMZ into the network. Unencrypted data is only persisted inside the enterprise (not in the DMZ). All inbound ports can be blocked in this scenario.

Some potential disadvantages are that multiple Receivers and Document Managers are needed to meet this level of security, which may increase hardware costs. The Community Console access is limited to people inside the network; some customers use VPN access for key participants to allow access to the console. Finally, installation and testing are more complex.

Split File System Deployment Data Flow

Because of the complexity of this deployment scenario, it is important to understand exactly how documents flow in and out of the system. AS2 transactions are used in this sample. The return path of the acknowledgment (MDN) is dependent on whether you are requesting synchronous MDNs or asynchronous MDNs.

Inbound document flow

Documents flow into the system as follows:

1. The Community Participant sends an AS2 document to the target on the Inbound Receiver.

2. The AS2 packaged document is received at the target on the Inbound Receiver. The Receiver separates the metadata and payload and writes the files to the "router_in" or "sync_in" (or both) directories located on the Inbound Receiver System. The Receiver returns an http 200 OK (if the MDN is asynchronous) to the participant.

3. The Inbound Document Manager polls the "router_in" or "sync_in" (or both) directories located on the Inbound Receiver system and picks up the encrypted files for processing.

4. The Inbound Document Manager sends back an acknowledgment if it is requested. The path of the returned MDN is dependent on whether it is a synchronous or asynchronous acknowledgment request. If synchronous, it will go back with the 200 OK through the same connection from which the message came (which is being held open until the MDN is returned). If asynchronous, it will follow the normal outbound path from the Inbound Document Manager back to the participant. Asynchronous MDNs are returned to a location based on the "Receipt-Delivery-Option" value in the inbound message header.

5. The Inbound Document Manager routes the payload to the backend systems.

Outbound document flow

Documents flow out of the system as follows:

1. The Outbound Receiver picks up the payload and any associated metadata from the backend systems using an integration target.

2. The Outbound Receiver writes the payload and metadata to the "router_in" or "sync_in" (or both) directories located on the Network Attached Storage system.

3. The Outbound Document Manager polls the "router_in" or "sync_in" (or both) directories located on the Network Attached Storage system and picks up the files for processing.

4. The Outbound Document Manager signs and encrypts the payload if required, creates an AS2 package, and routes the document to the participant.

5. The participant receives the AS2 document and sends back an acknowledgment, if requested.

WebSphere Business Integration Connect with Reverse Proxy

A reverse proxy deployment (as illustrated in Figure 22) is used when all enterprise software must be installed inside the network behind the firewall. Typically the use of reverse proxies is already being done for other applications within your organization. Proxy servers in this scenario need to work in reverse; that is, a one-to-many configuration is created. Within the WebSphere Business Integration Connect infrastructure, the Receiver component actually provides the proxy function, although it can be augmented with a reverse proxy as shown in Figure 22.
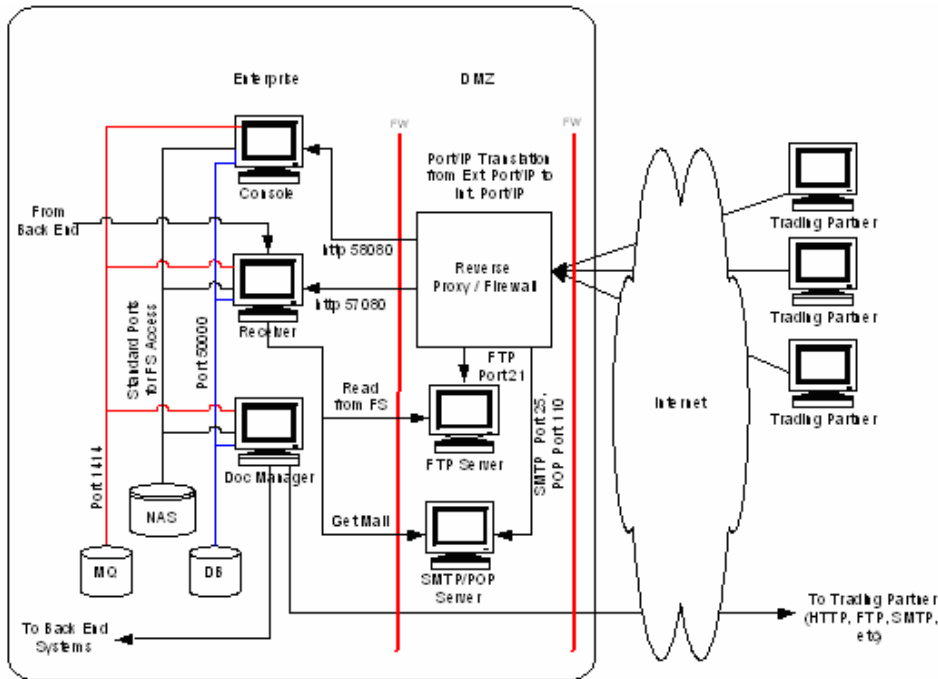

Figure 22. Reverse proxy scenario

All WebSphere Business Integration Connect components are deployed inside the enterprise, and inbound transactions are passed into the enterprise from a reverse proxy server. Some reverse proxies are capable of providing Port Address Translation, effectively hiding internal port numbers from the Internet. In this scenario, the reverse

proxy is handling HTTP, FTP, and SMTP transactions from the Internet and passing them into the enterprise; this is not always the case, as some proxies handle only HTTP. Typically, the internal firewall can be configured to do packet and IP filtering to allow specific packets from specific IP addresses (in this case, the IP of the proxy) into the enterprise. Each component, the database, MQ, and NAS all function much the same as in the split scenario, except that inbound and outbound transactions are not separated because all components are inside the enterprise.

Deployment Considerations

Keep the following points in mind when you are implementing a reverse-proxy configuration:

- Because proxies vary, the actual deployment method is dependent on the capabilities of the proxy.

- The ports for the Receiver's targets must be opened through the inner firewall.

- It is assumed that outbound transactions do not go through the proxy.

The advantages of this scenario are that the proxy is the only machine that can traverse the firewall, which makes it more difficult for unauthorized persons to gain access to the enterprise. If you are using Network Address Translation and Port Address Translation at the proxy /firewall, unauthorized persons cannot obtain the addresses of any machine inside the enterprise. Another advantage is that all sensitive data is secure inside the enterprise.

Some potential disadvantages are that you must open ports through the inner firewall into the enterprise so the Proxy can pass the transactions to the Receiver. This configuration also provides an additional point of failure for inbound transactions and can add latency to the transactions. Finally, some proxies change the headers of the transaction, causing interoperability to fail; this situation is rare, however, and usually can be resolved by ensuring the proxy is configured for pass-through only.

Reverse Proxy Deployment Data Flow

This section describes how documents flow in and out of the system. AS2 transactions are used in this sample. The return path of the acknowledgment (MDN) is dependent on whether you are requesting synchronous MDNs or asynchronous MDNs.

Inbound document flow

Documents flow into the system as follows:

1. The Community Participant sends an AS2 document to the URL on the proxy server.

2. The AS2 packaged document is received at the proxy and passed to the Receiver.

3. The Receiver separates the metadata and payload and writes the files to the router_in directory located on the NAS. The Receiver returns an http 200 OK to the proxy (if the MDN is asynchronous) and the proxy forwards the http 200 OK to the participant.

4. The Document Manager polls the "router_in" or "sync_in" (or both) directories located on the NAS and picks up the file for processing.

5. The Document Manager sends back an acknowledgment if it is requested. The path of the returned MDN is dependent on whether it is a synchronous or asynchronous acknowledgment request. If synchronous, it will go back with the 200 OK through the same connection from which the message came (which is being held open until the MDN is returned). If asynchronous, it will follow the normal outbound path from the Document Manager back to the participant. Asynchronous MDNs will be returned to a location based on the "Receipt-Delivery-Option" value in the inbound message header.

6. The Document Manager routes the payload to the backend systems.

Outbound document flow

Documents flow out of the system as follows:
1. The Receiver picks up the payload and any associated metadata from the backend systems using an integration target.

2. The Receiver writes the payload and metadata to the "router_in" or "sync_in" (or both) directories located on the Network Attached Storage system.

3. The Document Manager polls the router_in directory located on the Network Attached Storage system and picks up the files for processing.

4. The Document Manager signs and encrypts the payload if required, creates an AS2 package, and routes the document to the participant.

5. The participant receives the AS2 document and sends back an acknowledgment, if requested.

WebSphere Business Integration Connect with Receiver and Console in DMZ

A deployment in which the Receiver and Console are in the DMZ (as illustrated in Figure 23) and the Document Manager is inside the enterprise is used when you want good security and have no limitations on which ports can be opened through the inner firewall. This configuration is discussed in the *WebSphere Business Integration Connect Installation Guide* as a Split Topology and is easy to deploy. "Split" in this case simply means that the Receiver and Console are on a machine in the DMZ and the Document Manager is on a machine inside the enterprise. Optionally, a firewall can be added between the Document Manager and the backend system, effectively creating a second DMZ and moving the enterprise further away from the Internet. This provides an extra level of security with no ports needing to be opened between the enterprise and the second DMZ, if JMS integration is used to retrieve the documents from the MQ server.
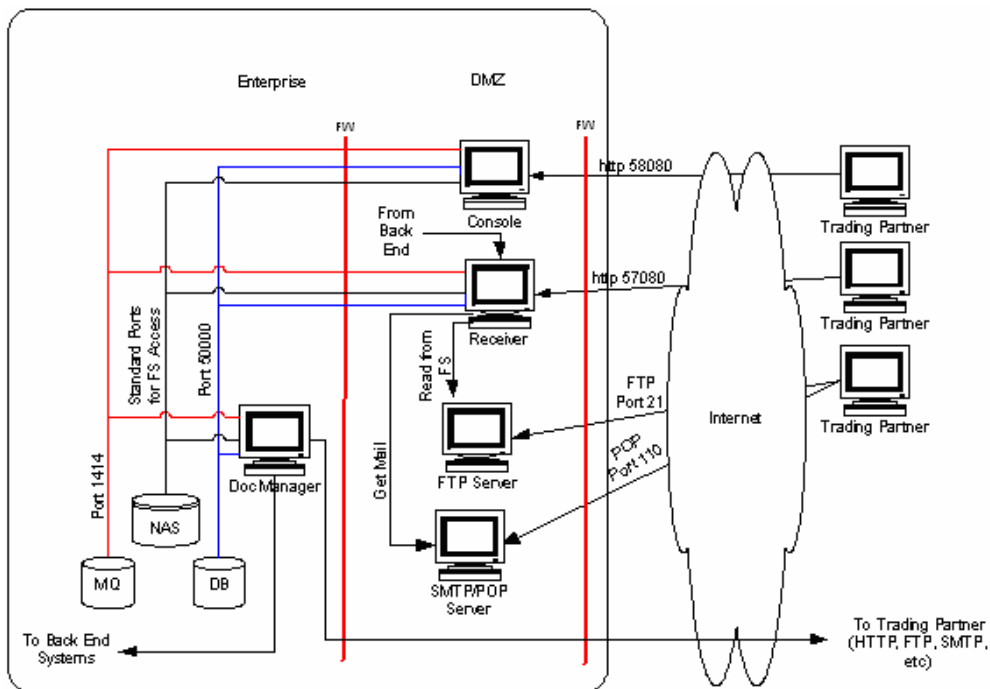
Figure 23. Scenario with components split between machines

Deployment Considerations

Keep the following points in mind when you are implementing this type of configuration:

- The ports assigned to the database, MQ queue manager, and access to NAS will need to be opened through the inner firewall.

- Packet filtering should be used at the inner firewall to accept only connections from the IP addresses of Receiver and Console machines.

- Access to common file share on NAS should be limited to the bcgusers group.

The advantages of this configuration are that it is easy to deploy and all sensitive data is secure inside the enterprise.

A potential disadvantage is that you must open ports through the inner firewall into the enterprise so the Receiver and Console can communicate with the database, queue manager, and NAS.

Receiver/Console DMZ Deployment Data Flow

This section describes how documents flow in and out of the system. AS2 transactions are used in this sample. The return path of the acknowledgement (MDN) is dependent on whether you are requesting synchronous MDNs or asynchronous MDNs.

Inbound document flow

Documents flow into the system as follows:

1. The Community Participant sends an AS2 document to the target on the Receiver.

2. The AS2 packaged document is received at the target on the Receiver. The Receiver separates the metadata and payload and writes the files to the router_in directory located on the NAS. The Receiver returns an http 200 OK to the proxy (if the MDN is asynchronous).

3. The Document Manager polls the router_in directory located on the NAS and picks up the file for processing.

4. The Document Manager sends back an acknowledgment if it is requested. The path of the returned MDN is dependent on whether it is a synchronous or asynchronous acknowledgment request. If synchronous, it will go back with the 200 OK through the same connection from which the message came (which is being held open until the MDN is returned). If asynchronous, it will follow the normal outbound path from the Document Manager back to the participant. Asynchronous MDNs will be returned to a location based on the "Receipt-Delivery-Option" value in the inbound message header.

5. The Document Manager routes the payload to the backend systems.

Outbound document flow

Documents flow out of the system as follows:

1. The Receiver picks up the payload and any associated metadata from the backend systems using an integration target.

2. The Receiver writes the payload and metadata to the router_in directory located on the Network Attached Storage system.

3. The Document Manager polls the router_in directory located on the Network Attached Storage system and picks up the files for processing.

4. The Document Manager signs and encrypts the payload if required, creates an AS2 package, and routes the document to the participant.

5. The participant receives the AS2 document and sends back an acknowledgment, if requested.

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