



**How-to Guide
SAP NetWeaver '04**

How To... Migrate SAP BC Scenarios to SAP XI

Version 1.00 – October 2005

**Applicable Releases:
SAP NetWeaver '04
SAP Business Connector 4.7**

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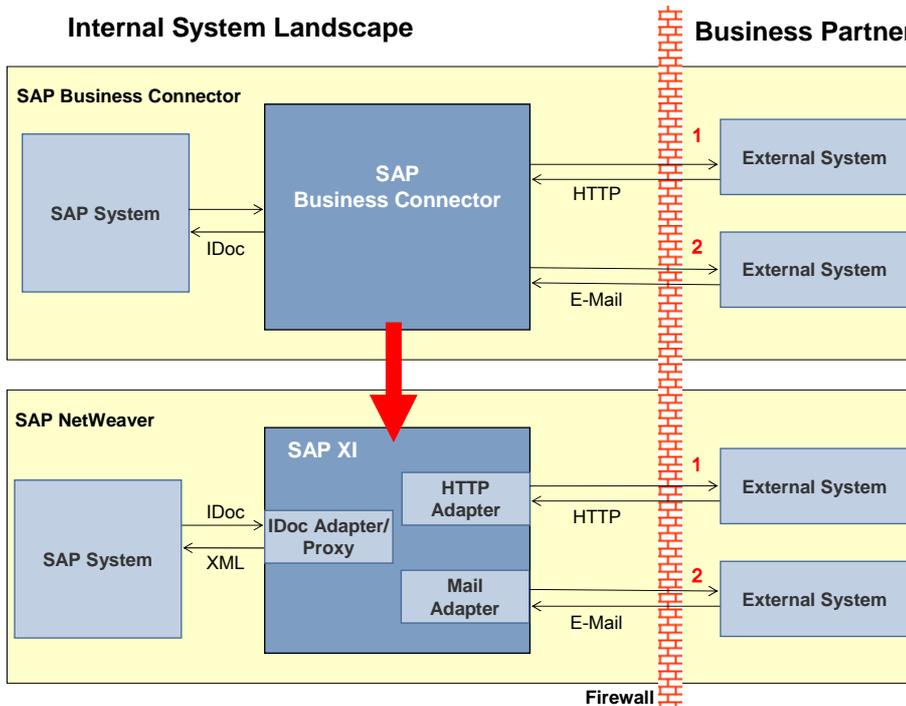
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1 Scenario

SAP Business Connector enables data exchange between an SAP system and external systems using HTTP and e-mail. SAP Exchange Infrastructure (SAP XI) replaces SAP Business Connector (SAP BC). The following figure provides an overview of the scenarios described in the document:



We distinguish between standard scenarios (that do not contain customer-specific development) and individual scenarios (that do contain services or mappings created by the customer). The following sections describe how to migrate both types of scenarios to SAP XI.

The standard scenarios are:

Scenario 1 (IDoc – HTTP, HTTP – IDoc)

An SAP system sends an IDoc to SAP BC or to SAP XI. The IDoc is converted to XML. It is sent to an external business partner by using HTTP. An external business partner sends an XML document by using HTTP to SAP BC or to SAP XI. The document is converted to an IDoc and sent to a connected SAP system in the internal system landscape.

Scenario 2 (IDoc – Mail, Mail – IDoc)

An SAP system sends an IDoc to SAP BC or to SAP XI. The IDoc is converted to XML. It is sent to an external business partner as an e-mail. An external business partner sends an e-mail to SAP BC or to SAP XI. The document is converted to an IDoc and sent to a connected SAP system in the internal system landscape.

For each of these scenarios, we describe the approach for the most common types of service development:

Flow Services

Flow services are services that are written in the proprietary graphical-based flow language of SAP BC.

Java Services

Java services are services that are written in the Java language.

There are several platforms that support Java, including SAP XI. However, the data model used in the Java services in SAP BC is proprietary.

Stylesheet Transformations

Stylesheet transformations are often used for mapping purposes. They take an XML document as input, convert it according to rules defined in the stylesheet, which is also an XML document, and produce an XML document as output.

The XML Stylesheet Transformation Language (XSLT) was defined by W3C (World Wide Web Consortium), the consortium that defines most of the common standards in modern internet communication, such as HTML and SOAP.

2 Introduction

SAP NetWeaver is the open integration and application platform from SAP. With NetWeaver '04, there is a significant overlap between the functions of SAP NetWeaver and SAP BC. Many functions provided by SAP BC are offered by SAP XI as part of SAP NetWeaver, for example, conversion of an IDoc to an XML message, mapping, routing, and adapters to connect to a large number of third-party back-end systems. SAP BC is therefore no longer needed. New or updated SAP solutions are based on SAP NetWeaver. Customers looking for a strategic integration solution for the complete application landscape should therefore now favor SAP NetWeaver.

The last version of SAP BC was SAP BC 4.7, which was released in June 2003. SAP BC has not been developed further since this release. SAP BC is not released for any further platforms (such as Windows 2003) and does not support any further JDK versions, including the current version (Version 1.4).

For information about the supported SAP BC versions, JDKs, and operating systems, see SAP Note 309834. For information about the support and maintenance strategy for SAP BC, see SAP Note 571530. Customers who still use SAP BC need to be aware of the following:

- A solution based on SAP BC cannot be a strategic, long-term solution.
- A solution based on SAP BC is based on technology that was implemented in 2003 and that is no longer further developed.
- SAP BC is supported on limited platforms and for limited JDKs only. Vendor support for some of these platforms and JDK versions will soon be discontinued.

SAP BC and SAP NetWeaver are based on different technologies: SAP BC is based on webMethods' proprietary Integration Server, whereas SAP NetWeaver is based on open standards, such as BPEL4WS (business process execution language for web services). Therefore, only parts of an SAP BC implementation, such as XSLT mappings, can be migrated to a solution based on SAP NetWeaver. Any custom

programming based on SAP BC, such as SAP BC flow language, is unlikely to be reusable in the SAP NetWeaver context.

Purpose of this Migration Guide

The purpose of this migration guide is to provide scenario-based descriptions of the migration from a company's system landscape that uses SAP BC to exchange documents with business partners, to a system landscape that uses SAP XI instead. This migration guide outlines, for certain scenarios, the individual steps a company has to take to replace an existing SAP BC implementation with SAP XI.

To understand this migration guide, we recommend that readers fulfill the following prerequisites:

- Basic knowledge of SAP BC, such as the information taught in the BIT530 training course held by SAP.
- Basic knowledge of SAP XI, such as the information taught in the BIT400 and BIT450 training courses held by SAP.

For more information about the training courses offered by SAP, see SAP Service Marketplace at <http://service.sap.com/education>.

We recommend that readers study the guides on SAP Service Marketplace at <http://service.sap.com/instguidesnw04>. The documentation required to plan, install, upgrade, and operate SAP NetWeaver '04 is provided here.

This guide only describes what is specific for a migration of solutions from SAP BC to SAP XI. The basic setup of SAP XI, the setup of connections to back-end systems, and so on, are not covered in this guide. Experience in working with the Integration Builder is mandatory.

3 Prerequisites for Standard Scenarios

All standard scenarios described here are based on IDoc exchange. For each standard scenario, the systems (SAP XI and the SAP back-end system) need to be set up for exchanging IDocs. Since this setup is not specific to migrating from SAP BC to SAP XI, it is not described in detail in this guide.

The basic steps in the back-end systems are:

- Defining the logical systems
- Maintaining the ALE distribution model
- Maintaining partner profiles and EDI ports
- Maintaining RFC destinations

The basic steps in the SAP XI system are:

- Maintaining the System Landscape Directory
- Configuring the IDoc adapter
- Maintaining the receiver determinations, interface determinations, and interface agreements
- Maintaining the communication channels

The type of scenario to migrate typically has an impact on the communication channels only.

Documentation

There are several documents that you should read before starting the actual migration. You can find the following How-To Guides on *SAP Service Marketplace* under the alias `nw-howtoguides` → *SAP Exchange Infrastructure*:

- How To – Sample IDoc Scenarios within XI3.0
This guide describes the setup for IDoc exchange in detail.
- How To Configure the IDoc Adapter
- You should also refer to the relevant documentation for each of the adapters. You can navigate to this at `help.sap.com`, by choosing *SAP NetWeaver -> Process Integration -> SAP Exchange Infrastructure -> Runtime -> Connectivity -> Adapters*. The following adapters are mentioned in this document:
 - Plain HTTP adapter
 - Mail adapter

4 Scenario 1 IDoc/HTTP

4.1 IDoc – HTTP Using SAP BC

Within the system landscape of a company, an SAP system sends an IDoc asynchronously to SAP BC. SAP BC converts the IDoc into a standard IDoc XML document. The fields of the IDoc are not modified, that is, the conversion does not involve any mapping of source fields to target fields. After conversion, SAP BC uses HTTP to send the XML document synchronously to an external URL of a business partner.

System Landscape

- An SAP system and SAP BC are installed within the same system landscape of a company.
- The following information is defined in the SAP system to allow data exchange between the SAP system and SAP BC:
 - An RFC destination and a logical system for SAP BC
 - The distribution model is maintained, if necessary
- The following information is defined in SAP BC:
 - An SAP server with an alias is defined. For this SAP server, the information that the SAP BC requires to connect to the SAP system is specified.
 - A listener is configured to listen to requests from the SAP system.
 - A routing rule with the transport type “XML” is configured for the specific sender, receiver, and message type. The routing rule determines how a message is to be routed and where it is to be routed to. The scenario described does not use an ACL, (Access Control List to restrict execution permissions for this routing rule) or pre-processing or post-processing SAP BC services.

4.2 IDoc – HTTP Using SAP XI

Check the prerequisites described above under [Prerequisites for Standard Scenarios](#).

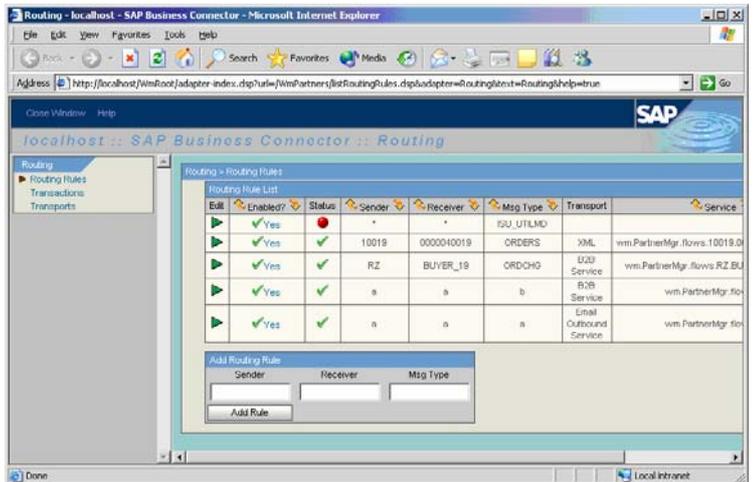
The IDoc adapter is used to receive an IDoc from an SAP back-end system and convert it to XML.

The adapter used to post this XML to an external destination is the plain HTTP adapter.

To set up the communication channel, perform the following steps:

1. Locate the routing rule in SAP Business Connector.

In the *Administration View*, choose *Adapters – Routing* to navigate to *Routing Rules*.



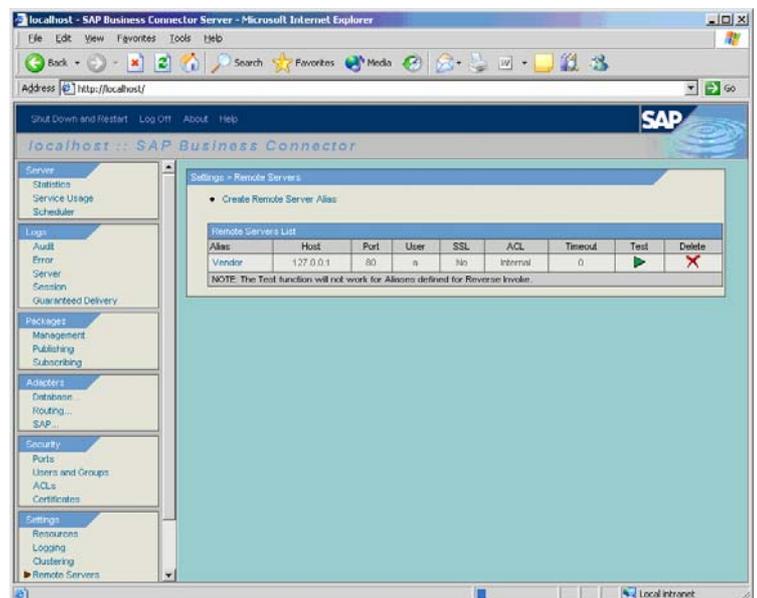
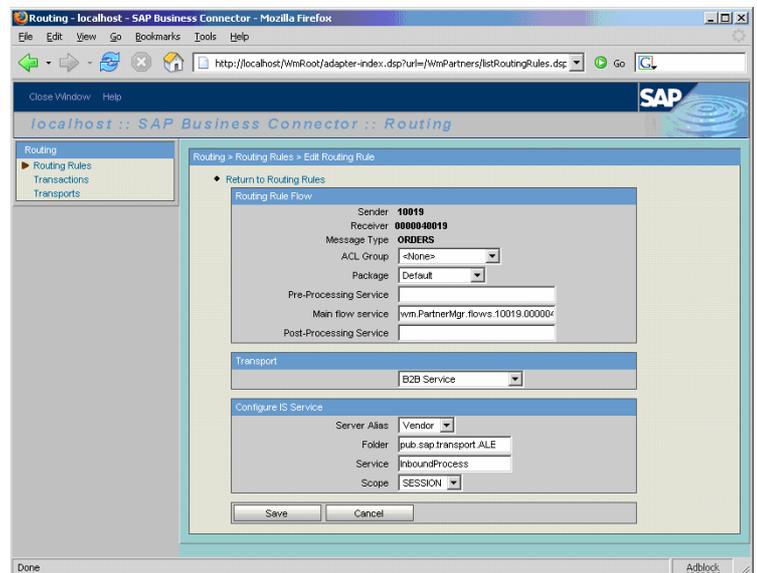
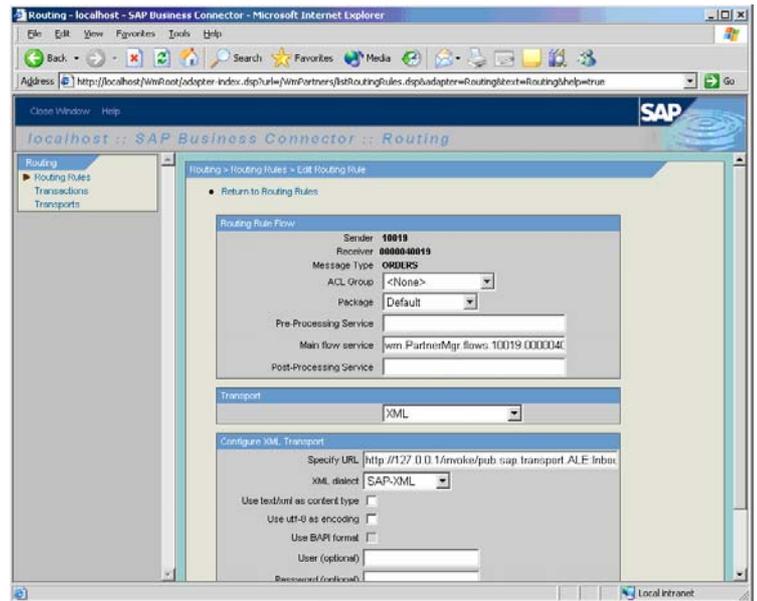
2. Select the details of the relevant routing rule.

To display the details, choose the green triangle (*Edit*).

Transport is typically set to **XML** and a URL is specified. You can use this URL in your SAP XI settings.

In some cases, *Transport* is set to **B2B Service** and the parameters *Server Alias*, *Folder* and *Service* exist. This is the same as when *Transport* is set to **XML** and has the URL `http://<serverhost>:<port>/invoke/<folder>/<service>`.

You can find `<serverhost>` and `<port>` in the definition of the remote server under *Settings* → *Remote Server* in the *Administration View*.



3. Set up the communication channel in the Integration Directory using the parameters from the SAP BC routing rule.

Use the following settings:

- *Adapter Type: HTTP Receiver*
- *Transport Protocol: HTTP 1.0*
- *Message Protocol: XI Payload in HTTP Body*
- *Adapter Engine: Integration Server*
- *Addressing Type: URL Address*
- *Target Host, Service Number, and Path* need to be set in accordance with the SAP BC routing rule.

HTTP Proxy Host and *HTTP Proxy Port* can be set if required.

All other parameters have no corresponding values in SAP BC and should be set to their default values.

The screenshot displays the 'Edit Communication Channel' configuration interface. The 'Parameters' tab is active, showing the following settings:

- Communication Channel: HTTP_KommKanal
- Party: HTTP_Destination
- Service: HTTP_Service
- Description: HTTP_KommKanal
- Adapter Type: HTTP (Receiver selected)
- Transport Protocol: HTTP 1.0
- Message Protocol: XI Payload in HTTP Body
- Adapter Engine: Integration Server
- Addressing Type: URL Address
- Target Host: 212.224.58.214
- Service Number: 5555
- Path: /invoke/pub.sap.transport.ALE/inboundProcess
- Authentication Type: Use Logon Data for Non-SAP System
- User Name: theUser
- User Password: [masked]
- Content Type: text/xml

4.3 HTTP – IDoc Using SAP BC

When SAP BC is installed within the system landscape of a company, it receives an IDoc XML document directly, that is, without a reverse invoke configuration, and synchronously from an external HTTP client. SAP BC converts the XML document into an IDoc. The fields of the XML document are not modified, that is, the conversion does not involve any mapping of source fields to target fields. After conversion, SAP BC sends the IDoc asynchronously to an SAP system that is installed within the same system landscape of the company.

System Landscape

- An SAP system and SAP BC are installed within the same system landscape of a company.
- A partner profile is defined in the SAP system so that the IDoc can be processed within the system.
- The following information has to be defined in SAP BC:
 - An SAP server with an alias is defined. For this SAP server, the information that the SAP BC requires to connect to the SAP system is specified.
 - A routing rule with the transport type “ALE (R/3 IDOC)” is configured for the specific sender, receiver, and message type. The routing rule determines how a message is to be routed and where it is to be routed to. The scenario described does not use an ACL, (Access Control List to restrict execution permissions for this routing rule) or pre-processing or post-processing SAP BC services.

4.4 HTTP – IDoc Using SAP XI

Check the prerequisites described above under [Prerequisites for Standard Scenarios](#).

Use the plain HTTP adapter to receive an XML IDoc from an HTTP client.

Check that the adapter is activated in the service maintenance (transaction **SICF**) and make sure that the adapter is assigned to the client in which the integration engine runs.

The URL to which the client posts its data typically looks as follows:

```
http://<hostname:port>/<path>?<query-string>
```

where:

hostname	Name of the host on which SAP XI runs
port	TCP port on which the HTTP server of SAP XI runs
path	Typically "sap/xi/adapter_plain"

The query string contains the following data:

- Sender namespace **?namespace=<namespace>**
- Sender interface **&interface=<interface>**
Specifies the sender interface.
- Sender service **&service=<service>**
Specifies the sender service.
- Sender party (optional) **&party=<party>**
- Sender agency (optional) **&agency=<agency>**
- Sender schema (optional) **&scheme=<scheme>**
If you do not enter values for agency and schema, the following default values are used:
agency=http://sap.com/xi/XI
scheme=XIParty
- Quality of service (BE, EO, or EOIO) (optional) **&qos=<EO | BE | EOIO>**
If the quality of service is BE, the client is sent the final status for the processing; if the quality of service is EO or EOIO, processing occurs asynchronously and the client only receives a confirmation of receipt with HTTP status '200'.
If a value is not specified for this parameter, the default value BE is used.
- Message ID (optional) **&msgguid=<msgguid>**
If the quality of service is EO or EOIO, the message ID can be passed for *Exactly Once* processing using the parameter **msgguid**. If an ID is used more than once, an HTTP status '500' is returned from the server.
The message ID contains 32 characters and may only contain the characters 0-9 and A-F. It is persisted and can therefore be checked for duplication. If the HTTP client (the sender system) cannot provide a message ID, the plain HTTP adapter generates a message ID and forwards it to the application through the Integration Engine. You can then carry out a duplication check in the application at document level, for example, by using the order number.
- Queue ID (only if quality of service is EOIO) (optional) **&queueid=<queueid>**
This queue ID can contain a maximum of 16 characters. If the first eight characters contain 'SAP_ALE_', these are removed since this value is reserved by SAP and used internally.

Namespace, interface, and service are mandatory fields.

5 Scenario 2 IDoc/Mail

5.1 IDoc – Mail Using SAP BC

Within the system landscape of a company, an SAP system sends an IDoc asynchronously to SAP BC. SAP BC converts the IDoc into a standard IDoc XML document. The fields of the IDoc are not modified, that is, the conversion does not involve any mapping of source fields to target fields. After conversion, SAP BC sends the XML document synchronously to a business partner by mail.

System Landscape

- An SAP system and SAP BC are installed within the same system landscape of a company.
- The following objects are defined in the SAP system for the data exchange between the SAP system and SAP BC:
 - An RFC destination and a logical system for SAP BC
 - A distribution model for a specific message type that points to an IDoc type
 - A partner profile
- The following information is defined in SAP BC:
 - An SAP server with an alias is defined. For this SAP server, the information that SAP BC requires to connect to the SAP R/3 system is specified.
 - A listener is configured to listen to requests from the SAP system.
 - A routing rule with the transport type “Email Outbound Service” is configured for the specific sender, receiver, and message type. The routing rule determines how a message is to be routed and where it is to be routed to.
 - The scenario described does not use an ACL, (Access Control List to restrict execution permissions for this routing rule) or pre-processing or post-processing SAP BC services. The content type in the scenario is “text/xml”.

5.2 IDoc – Mail Using SAP XI

Check the preconditions described above under [Prerequisites for Standard Scenarios](#).

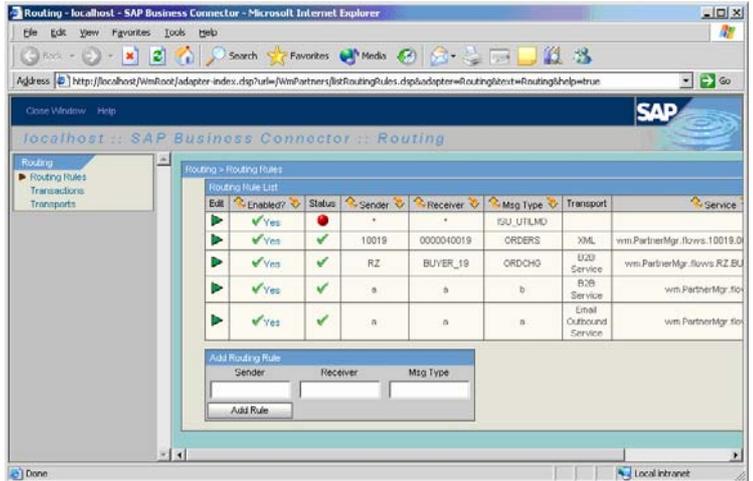
Use the IDoc adapter to receive an IDoc from an SAP back-end system and convert it to XML.

Use the mail adapter to post this XML to an external destination.

To set up the communication channel, perform the following steps:

1. Locate the routing rule in SAP Business Connector.

In the *Administration View*, choose *Adapters – Routing* to navigate to *Routing Rules*.



2. Select the details of the relevant routing rule.

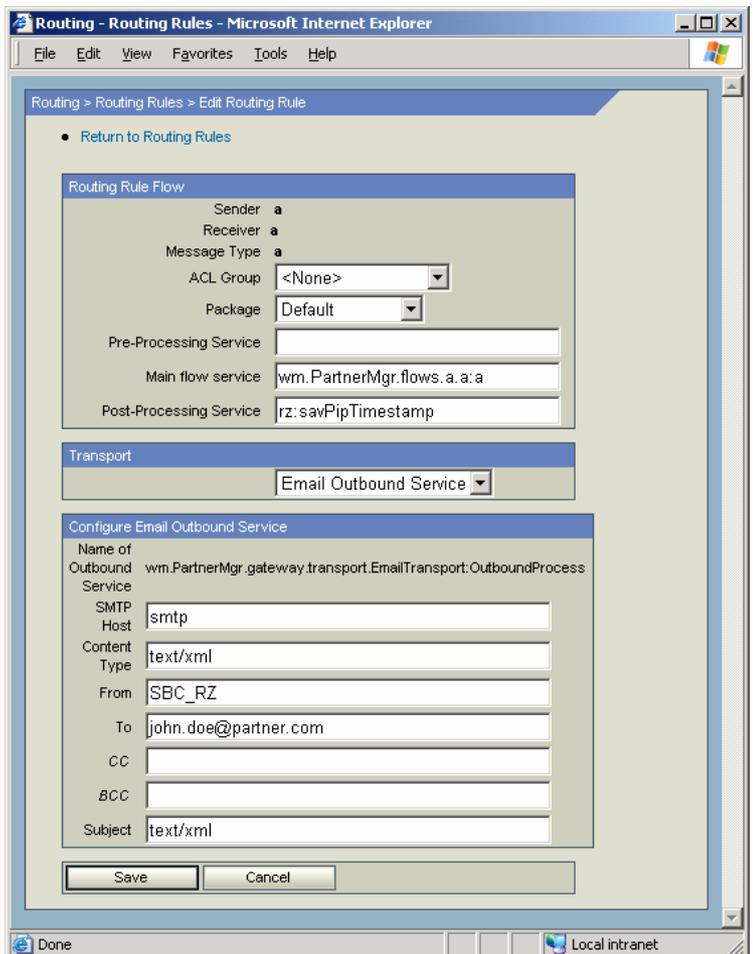
To display the details, choose the green triangle (*Edit*).

The following parameters are needed to configure a communication channel in SAP XI:

- SMTP Host
- From
- To
- Subject

The following parameters are optional:

- CC
- BCC



3. Use the values from the SAP BC routing rule to set up the communication channel in the Integration Directory in SAP XI:

- *Adapter Type: Mail Receiver*
- *Transport Protocol: XIPAYLOAD*
- *Adapter Engine: Integration Server*

In the mail adapter, the **URL** of the mail host (not the host name) is required. The URL is **smtp://<hostname>**.

You can set the user/password if required.

Do **not** select *Use Mail Package*.

Enter values for *From*, *To*, and *Subject* in accordance with the SAP BC routing rule.

If a specific *Content Type* is required, select *Advanced Mode* and enter **Name=Content-Type** and **Value=<the required content type>**.

Edit Communication Channel Status: Being Processed

Communication Channel: KommKanal1
 Party: MailReceiver
 Service: MailService
 Description: KommKanal1

Parameters Identifiers Module

Adapter Type * Mail http://sap.com/xi/XI/System SAP BASIS 6.40
 Sender Receiver
 Transport Protocol * SMTP/IMAP4
 Message Protocol * XIPAYLOAD
 Adapter Engine * Integration Server

Connection Parameters Mail Server

URL * smtp://mail.sap-ag.de
 User
 Password

Mail Attributes

Use Mail Package
 From: DUN_100
 To: rainer.zilch@sap.com
 Subject: Post von der XI
 Content Encoding: none
 Keep Attachments

Adapter Status

Active

Advanced Mode

Additional Parameters

Name	Value
Content-Type	text/xml

5.3 Mail – IDoc Using SAP BC

When SAP BC is installed within the system landscape of a company, it receives an IDoc XML document synchronously from a business partner by mail. SAP BC converts the XML document into an IDoc. The fields of the XML document are not modified, that is, conversion does not involve any mapping of source fields to target fields. After conversion, SAP BC sends the IDoc asynchronously to an SAP system that is installed within the same system landscape of the company.

System Landscape

- An SAP system and SAP BC are installed within the same system landscape of a company.
- A partner profile is defined in the SAP system so that the IDoc can be processed within the system.
- The following information has to be defined in SAP BC:
 - An SAP server with an alias is defined. For this SAP server, the information that the SAP BC requires to connect to the SAP system is specified.
 - An IMAP or POP3 server is installed, on which SAP BC is registered and to which SAP BC can log on with its e-mail listener to receive mails.
 - A routing rule with the transport type “ALE (R/3 IDOC)” is configured for the specific sender, receiver, and message type. The routing rule determines how a message is to be routed and where it is to be routed

to. The scenario described does not use an ACL, (Access Control List to restrict execution permissions for this routing rule) or pre-processing or post-processing SAP BC services.

5.4 Mail – IDoc Using SAP XI

Check the prerequisites described above under [Prerequisites for Standard Scenarios](#).

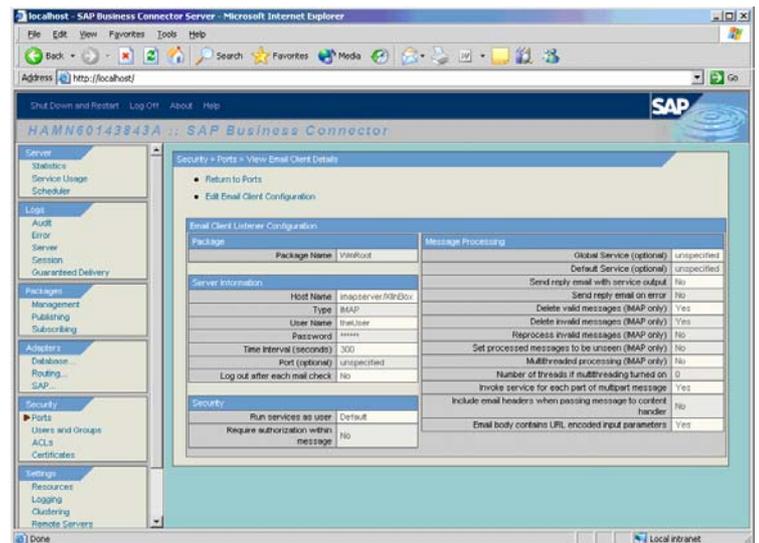
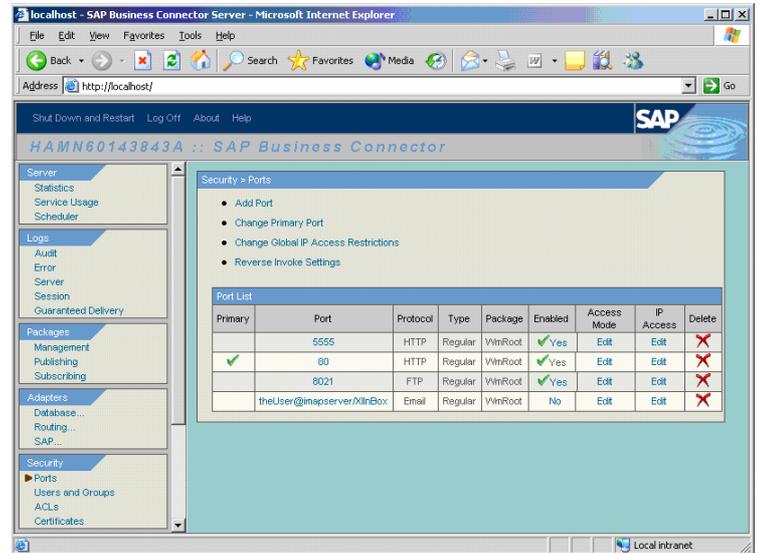
Use the mail adapter to retrieve a message from a mailbox. Use the IDoc adapter to convert the XML document and send it to an SAP back-end system as an IDoc.

To set up the communication channel, perform the followings steps:

1. Get the information for accessing the mailbox.

In the *Administration View* of SAP BC, choose *Security – Ports* from the menu on the left.

Display the details by clicking the entry in the second column of the email port (<user>@<server>).



2. Use these values to set up the communication channel in the Integration Directory.

Use the values from the SAP BC port setting. For more information, see the documentation at help.sap.com under *SAP NetWeaver -> Process Integration -> SAP Exchange Infrastructure -> Runtime -> Connectivity -> Adapters -> Mail Adapter -> Configuring the Sender Mail Adapter*.

The screenshot shows the 'Edit Communication Channel' configuration interface. The 'Communication Channel' is named 'MailSenderCommChannel'. The 'Adapter Type' is set to 'Mail'. The 'Transport Protocol' is 'IMAP4', and the 'Message Protocol' is 'XOALL'. The 'Adapter Engine' is 'Integration Server'. Under 'Connection Parameters Mail Server', the 'URL' is 'imap://imapserver/InBox', the 'User' is 'theUser', and the 'Password' is 'wqert'. The 'Poll Interval (min)' is set to 5. The 'Adapter Status' is 'Inactive'. The 'Advanced Mode' checkbox is checked.

Field	Value
Communication Channel	MailSenderCommChannel
Party	
Service	MailSender
Description	MailSenderCommChannel
Adapter Type *	Mail
Transport Protocol *	IMAP4
Message Protocol *	XOALL
Adapter Engine *	Integration Server
URL *	imap://imapserver/InBox
User	theUser
Password	wqert
Poll Interval (min) *	5
Adapter Status	Inactive

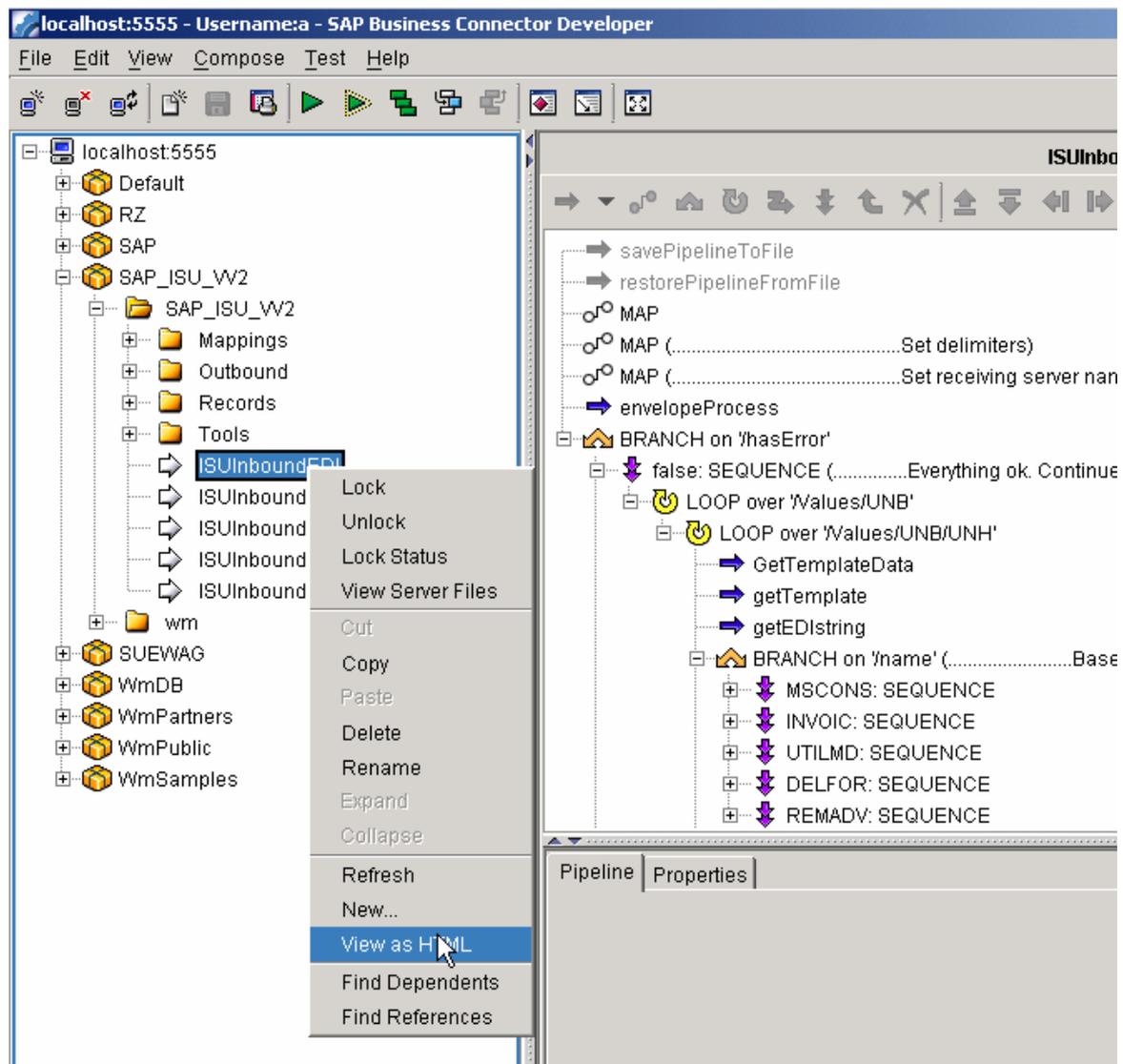
6 Migrating Flow Services

Flow services are executable units that are written in the proprietary graphical-based flow language of SAP Business Connector. Due to their graphical appearance, flow services are very descriptive. However, flow services do have some disadvantages:

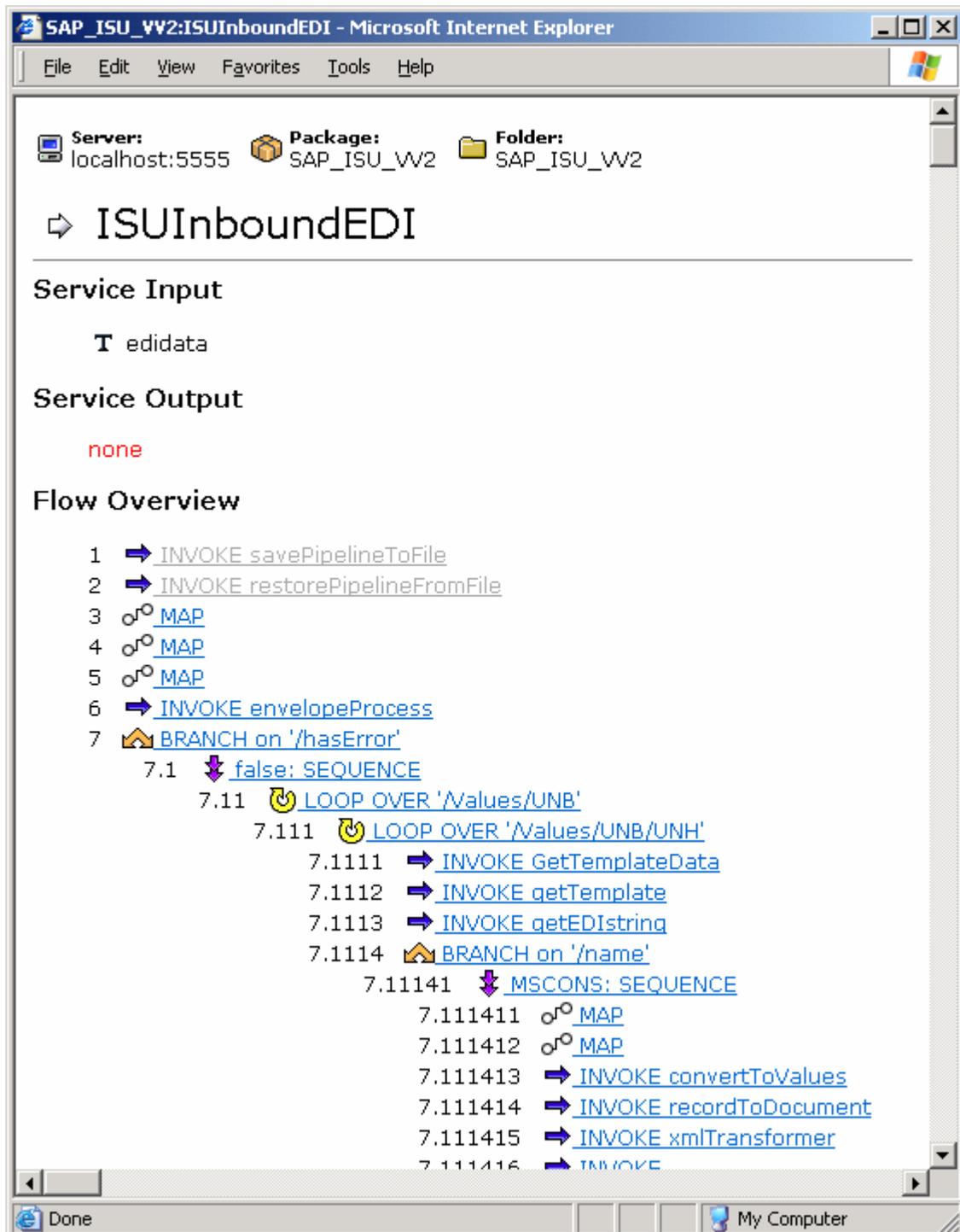
- They have less functionality than Java services, for example.
- Since they are interpreted at runtime, performance is low.

The most significant disadvantage, particularly in relation to migration, is that flow services are proprietary. No other platform supports this kind of language; even SAP XI does not support them.

You should make a diagram as descriptive as possible to ease the reimplementaion. Using SAP BC Developer, you can create HTML diagrams of flow services that can be read reasonably well. Right-click a service in the tree view on the left and choose *View as HTML*.



Generating an HTML View of a Flow Service



HTML View of a Flow Service

The generated HTML views of flow services are stored in the `html` subdirectory of the installation directory of SAP BC Developer.

You can find the complete XML representation of a flow service in the directory `<server_dir>/packages/<package>/ns/<folder>/<service>.xml`.

The meaning of these values are as follows:

- <server_dir> Installation directory of the SAP BC server
- <package> Name of the package where the service is located
- <folder> Name of the folder(s) where the service is located
- <service> Name of the service

7 Migrating Java Services

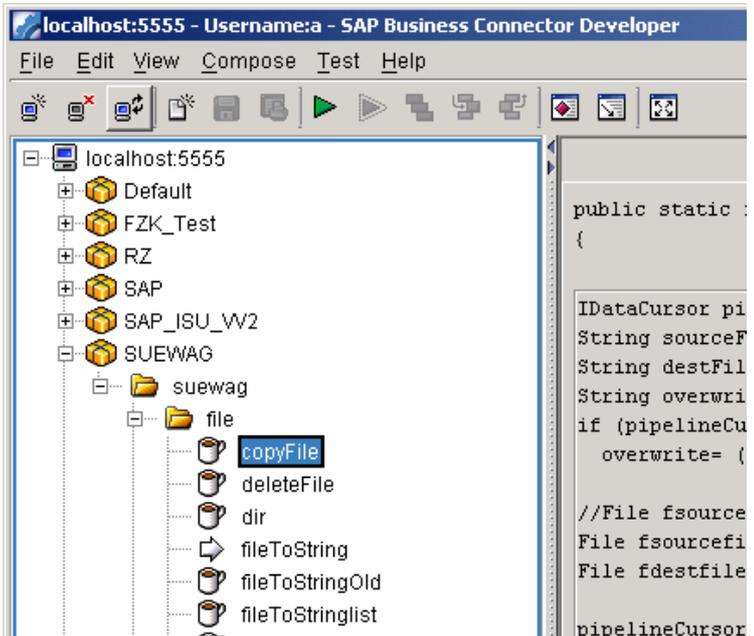
Java development in SAP BC is structured in services. A service is an executable piece of code with predefined import and export parameters, and a predefined type of return value. The services are laid out in a hierarchical structure within packages that bundle services that belong together. Technically, each service is a method of the superordinate Java class.

In SAP XI, you can create your own Java mappings and import archives with Java classes. However, there are a few restrictions on the Java classes to be imported:

- They must be stateless
- They can not access databases
- They can not call `Java.lang.System.exit`
- They can not call `Java.lang.System.setProperties`
- They can not use class loaders

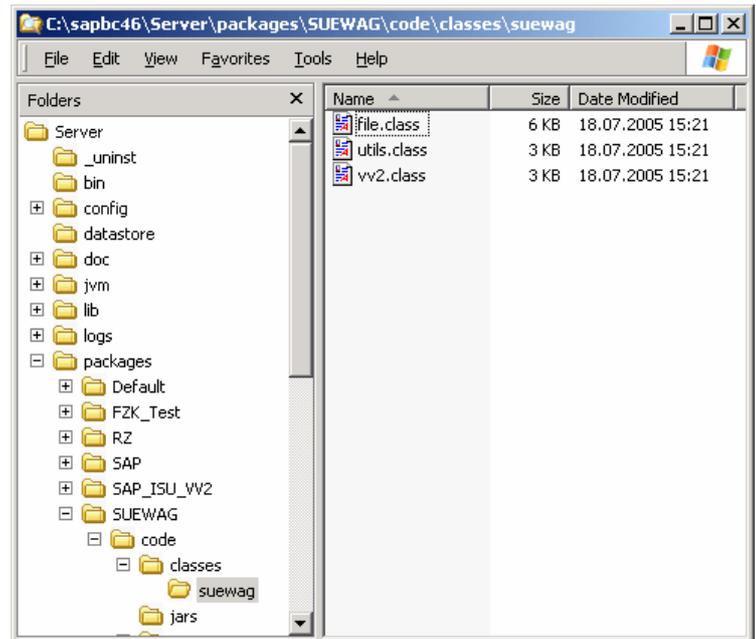
1. Locate the required Java services in SAP BC Developer.

In the example, the services in `suewag.file` in the SUEWAG package belong together. Each of them is a method of the Java class "file".



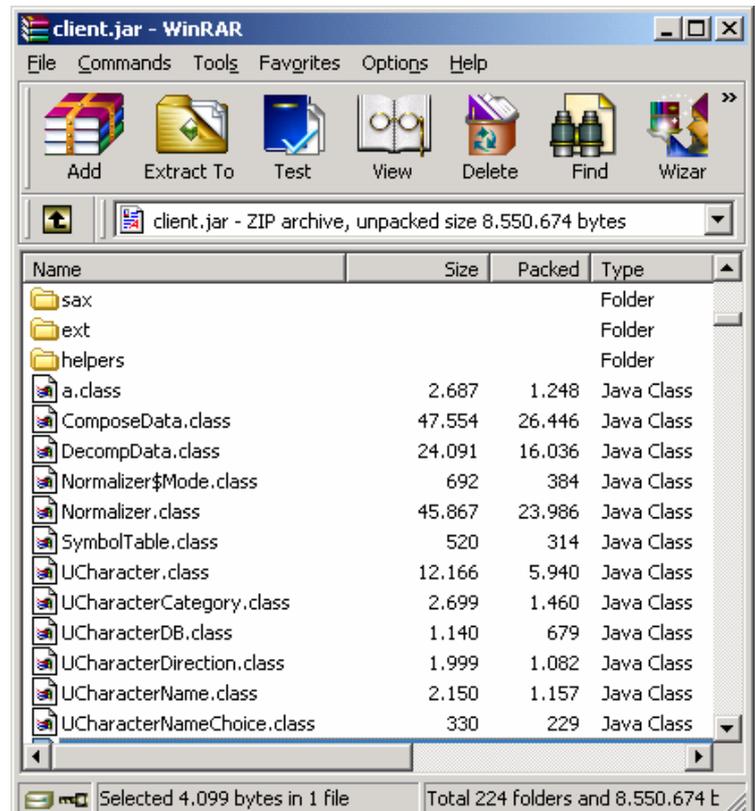
2. Locate the related class files.

You can find the class files in the `code/classes/...` subdirectory located in the directory of the package containing the relevant class.



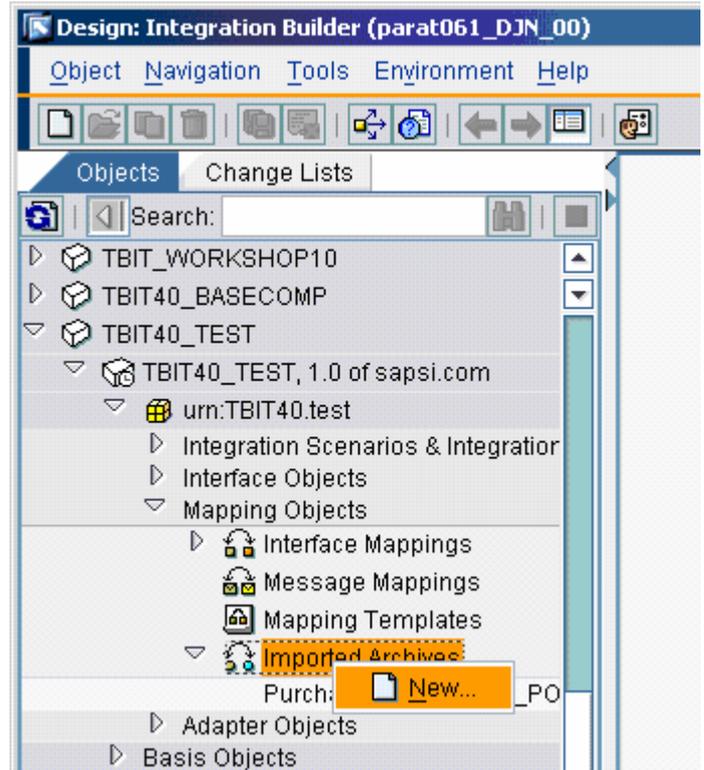
3. Insert all required class files into an archive.

An archive is a JAR or Zip file containing a bunch of class files.



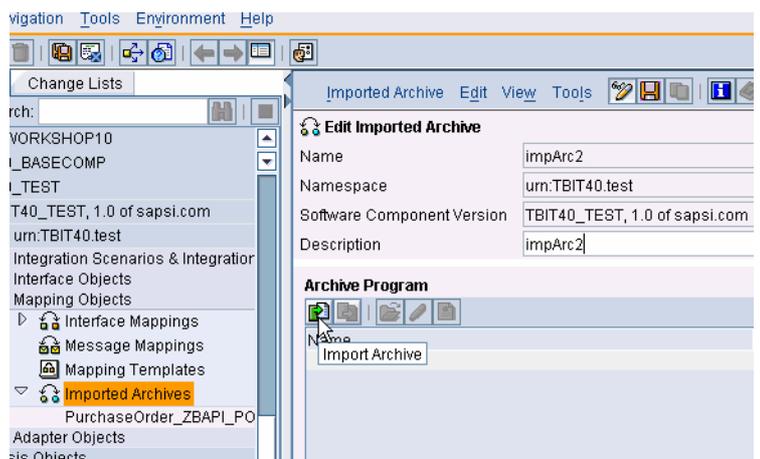
4. Create an *Imported Archive* in SAP XI.

In the *Integration Builder*, choose the appropriate namespace in your software component. Expand *Mapping Objects* and right-click *Imported Archives*. Choose *New*. Enter a *Name* and a *Description*.



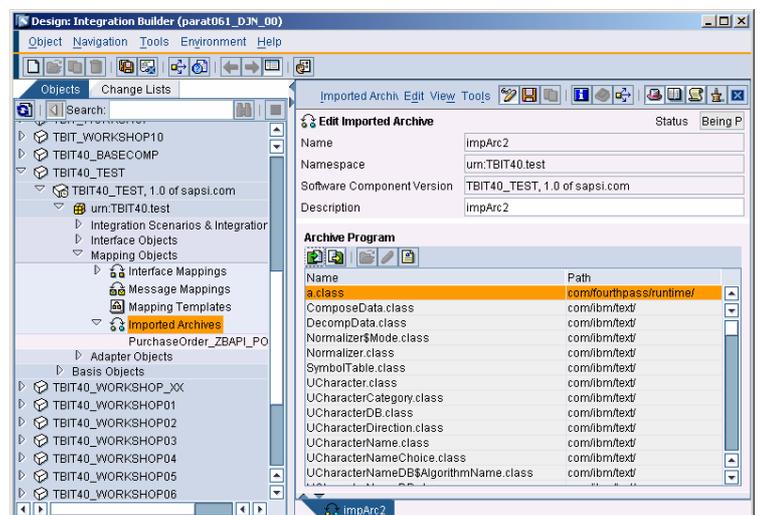
5. Import your archive.

Choose the *Import Archive* icon. A file selection box is displayed. You can choose your archive from this selection box.



6. Double-check the result.

All your class files should now appear in the list.



Structure of Java Services in SAP BC

8 Migrating XSLT Mappings

XSLT (XML Stylesheet Language Transformation) is a recommended standard defined by W3C. Since both SAP BC and SAP XI comply with this standard, stylesheets developed in SAP BC can also be used in SAP XI.

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