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

THE BEST-RUN BUSINESSES RUN SAP

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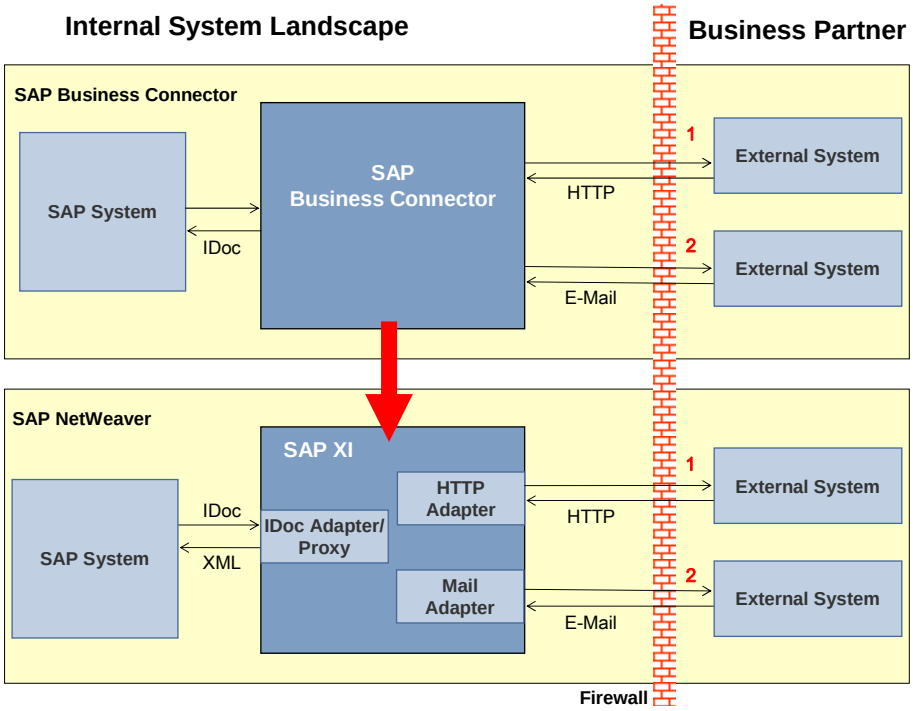
1 (Business) Scenario

The SAP Business Connector enables data exchange between an SAP system and external systems via HTTPand e-mail. The SAP Business Connector is replaced by SAP NetWeaver Process Integration / SAP NetWeaver Exchange Infrastructure (in the following shortly referred to as SAP XI).
The figure below shows an overview of the scenarios described in the following chapters:



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). On the following pages you will find the description of how to migrate both kind of scenarios to SAP XI.

> Note that this document provides the general procedure to migrate from SAP Business Connector to SAP NetWeaver Process Integration / SAP NetWeaver Exchange Infrastructure. The recommendations and guidelines are valid for SAP NetWeaver PI 7.1, as well as for the earlier releases SAP NetWeaver PI 7.0 and SAP NetWeaver XI 3.0. Note that however the examples and screenshots provided in this document refer to SAP NetWeaver XI 3.0.

The standard scenarios are:

Scenario 1 (IDoc – HTTP, HTTP – IDoc)
An SAP system sends an IDoc to SAP BC/ to SAP XI. The IDoc is converted to XML. It is sent to an external business partner via HTTP.
An external business partner sends an XML document using HTTP to the SAP BC/ 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/ 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/ to SAP XI. The document is converted to an IDoc and sent to a connected SAP system in the internal system landscape.

For the individual scenarios there is a description of the approach for the most common types of services development:

Flow Services

Flow services are services that are written in the Business Connector proprietary graphical based flow language.

Java Services

Java services are services that are written in the Java language.
Basically there are several platforms supporting Java, also SAP XI does. However the data model used in the Java services on 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 an XML document itself) and produce an XML document as output.
The XML Stylesheet Transformation Language (XSLT) was defined by the W3C, the consortium that defines most of the common standards in modern internet communication like HTML, SOAP an others.

2 Introduction

SAP NetWeaver is SAP's open integration and application platform. With NetWeaver '04 there is a significant overlap between the functionality of SAP NetWeaver and the SAP Business Connector. Many functions provided by SAP BC are offered by SAP Exchange Infrastructure as part of SAP NetWeaver, e.g. conversion of an IDoc to an XML message, mapping, routing and adapters for the connectivity to a large number of third party backend systems. Therefore SAP BC has become dispensable. New or updated SAP solutions are based on SAP NetWeaver. Hence, customers looking for a strategic integration solution for the complete application landscape should prefer SAP NetWeaver.

The last version of SAP BC is SAP BC 4.7 released in June 2003. Beyond this release there is no further development of SAP BC. Additionally, SAP BC is not released for any further platforms (e. g. Windows 2003) and does not support any further JDK versions, not even the current one (1.4).

The supported SAP BC versions, JDKs and operating systems are described in SAP note 309834. The support and maintenance strategy for SAP BC can be found in SAP note 571530. Customers who still use SAP BC need to be aware of the following:

- An SAP BC based solution cannot be a strategic, long-term solution.
- An SAP BC based solution is based on technology implemented in 2003 which is not developed any further.
- SAP BC is supported on limited platforms and for limited JDKs only. Soon several of these platforms and JDK versions will run out of the vendor's support.

SAP BC and SAP NetWeaver are based on different technologies: SAP BC is based on webMethods' proprietary Integration Server while SAP NetWeaver is based on open standards, e. g. BPEL4WS (business process execution language for web services). Therefore only parts of a SAP BC implementation can be migrated to a solution based on SAP NetWeaver, e.g. XSLT mappings. Any custom programming done on the basis of SAP BC will likely not be reusable in the SAP NetWeaver context, e.g. SAP BC flow language.

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 using SAP BC for exchanging documents with business partners to a system landscape in which SAP XI is used instead. This migration guide describes for certain scenarios step by step what a company has to do in order to replace a SAP BC implementation with SAP XI.

In order to be able to understand this migration guide it is recommended that the reader of this guide meets the following prerequisites:

- Basic knowledge of SAP BC, e.g. as it is taught in SAP's training class BIT530.
- Basic knowledge of SAP XI, e.g. as it is taught in SAP's training classes BIT400 and BIT450.

More information about SAP's training courses can be found on the SAP Service Marketplace at http://service.sap.com/education.

It is recommended to study the guides on the SAP Service Marketplace at http://service.sap.com/instguidesnw04. The documentation required to plan, install, upgrade, and operate SAP NetWeaver '04 is provided there.

The relevant guides for SAP NetWeaver PI 7.0 and SAP NetWeaver PI 7.1 can be found at http://service.sap.com/instguidesnw70 and http://service.sap.com/instguidesnwpi71, respectively.

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 backend systems etc. is not subject of 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 every standard scenario the systems (the SAP XI as well as the SAP backend system) need to be set up for exchanging IDocs. As this setup is not specific for migrating from SAP BC to SAP XI it is not described in detail in this guide.

The basic steps in the backend 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 Receiver Determinations, Interface Determinations and Interface Agreements
- Maintaining the Communication Channels

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

Documentation
There are several documents that you should read before starting the actual migration. In *SAP Service Marketplace* alias /nw-howtoguides -> SAP Exchange Infrastructure you can find the following How-To-Guides:

- How To - Sample IDoc Scenarios within XI3.0
  It describes the setup for IDoc exchange in detail.
- How To Configure the IDoc Adapter
- Also consider the documentation for the different adapters. You can find it under: **`help.sap.com`**, select *SAP Netweaver->Process Integration->SAP Exchange Infrastructure->Runtime->Connectivity->Adapters*. The Adapters mentioned in this document are:
  - 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 an SAP BC. The SAP BC converts the IDoc into a standard IDoc XML document. The fields of the IDoc are not modified, i. e. no mapping is involved from the source fields to the target fields during the conversion. After the conversion the SAP BC sends the XML document synchronously to an external URL of a business partner via HTTP.

System Landscape

- An SAP system and an SAP BC are installed within the same system landscape of a company.
- In the SAP system the following information is defined to allow data exchange between the SAP system and SAP BC:
  - An RFC destination and a logical system for SAP BC are defined.
  - If necessary the distribution model is maintained.
- In the SAP BC the following information is defined:
  - An SAP server with an alias is defined. For this SAP server the information is specified that the SAP BC requires for connecting to the SAP system.
  - A listener is configured in order to listen to requests from the SAP system.
  - A routing rule for the specific sender, receiver and message type with the transport "XML" is configured. The routing rule determines how and where a message is to be routed to.
    In the described scenario no ACL (access control list to restrict execution permissions for this routing rule), no pre-processing and no post-processing SAP BC services are used.

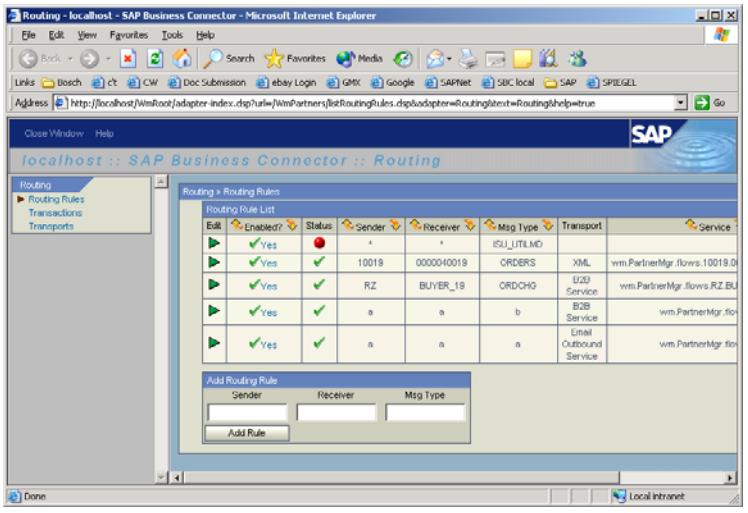
4.2 IDoc - HTTP Using SAP XI

Check the preconditions described in Prerequisites for Standard Scenarios.
To receive an IDoc from an SAP backend system and convert it to XML the IDoc Adapter is used.
The Adapter used to post this XML to an external destination is the Plain HTTP Adapter.

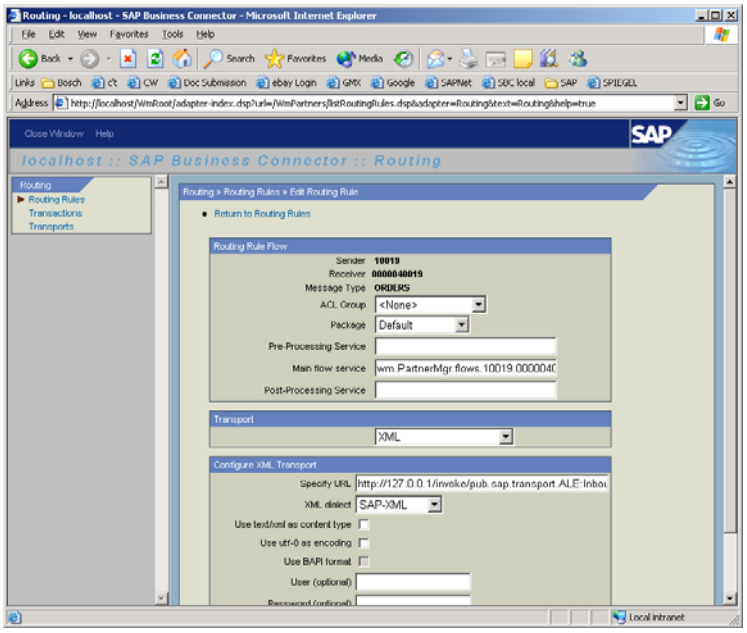
Follow the steps below to set up the Communication Channel.

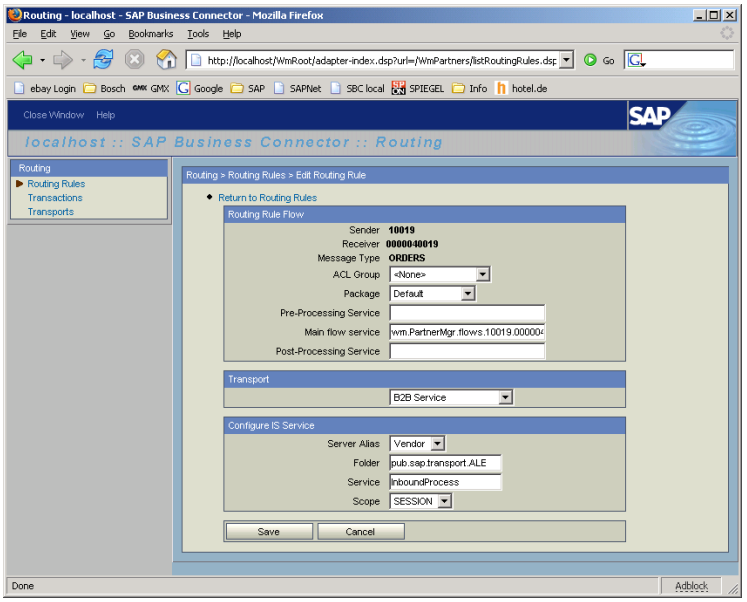
1. Locate the Routing Rule in the SAP Business Connector.

   From the *Administration View* choose *Adapters – Routing* to get the *Routing Rules*.



2. Select the details of the respecting Routing Rule



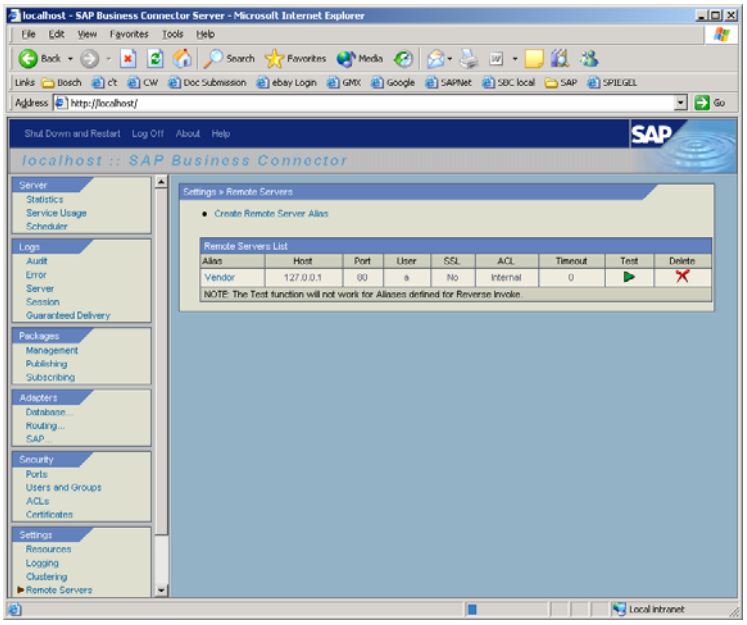


To display the details click on the green triangle *(Edit)*.

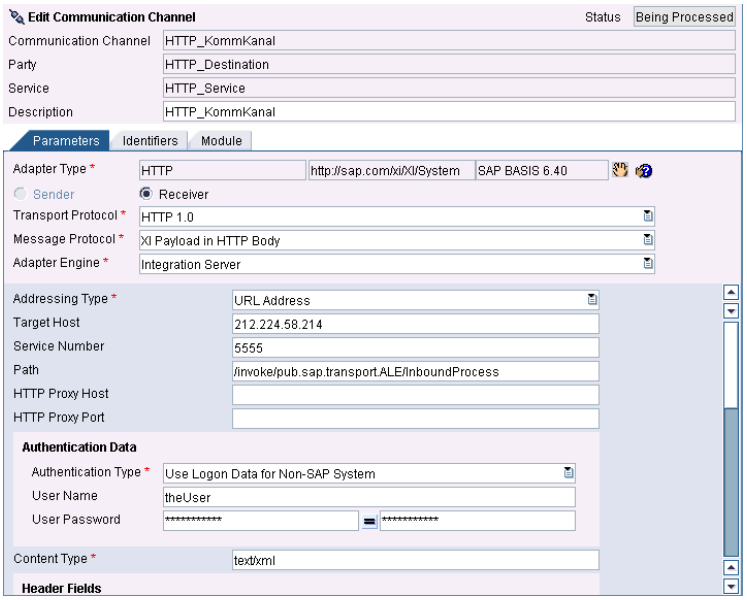
You will typically find *Transport* set to **`XML`** and a specified URL. You can use the URL in your SAP XI settings.

In some cases Transport is set to **`B2B Service`** with the parameters *Server Alias*, *folder* and *service*. This is equivalent to *Transport* **`XML`** with URL **`http://<serverhost>:<port>/invoke/<folder>/<service>`**

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



3. Setup 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-Protcol* **`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 according to the SAP BC Routing Rule.

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

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

4.3 HTTP – IDoc Using SAP BC

An SAP BC that is installed within the system landscape of a company receives an IDoc XML document directly, i.e. without a reverse invoke configuration, and synchronously from an external HTTP client. The SAP BC converts the XML document into an IDoc. The fields of the XML document are not modified, i.e. no mapping is involved from the source fields to the target fields during the conversion. After the conversion the 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 an SAP BC are installed within the same system landscape of a company.
- In the SAP system a partner profile is defined so that the IDoc can be processed within the system.
- The following information has to be defined in the SAP BC:
  - An SAP server with an alias is defined. For this SAP server the information is specified that the SAP BC requires for connecting to the SAP system.
  - A routing rule for the specific sender, receiver and message type with the transport “ALE (R/3 IDOC)” is configured. The routing rule determines how and where a message is to be routed. In the described scenario no ACL (access control list to restrict execution permissions for this routing rule), no pre-processing and no post-processing SAP BC services are used.

4.4 HTTP – IDoc Using SAP XI

Check the preconditions described in 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 where the integration engine runs.
The URL the client posts its data to typically looks like this:

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

with

hostname	Name of the host SAP XI runs on
port	TCP-port where SAP XI’s http-Server runs on
path	typically “sap/xi/adapter_plain”

The query string contains the following data:

- Sender namespace **`?namespace=<namespace>`**
- Sender interface **`&interface=<interface>`**
  These details define 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>`**

In the case of BE, the client is sent the end status for the processing; in the case of EO and 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, it is given the default value BE.

- Message ID (optional) **`&msgguid=<msgguid>`**

  For EO and 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 is 32 characters long and must only comprise the characters 0 to 9 and A to 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 have a maximum of 16 characters. If the first eight characters contain 'SAP_ALE_', this is removed since this value is reserved by SAP and is used internally.

The mandatory fields are namespace, interface and service.

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 an SAP BC. The SAP BC converts the IDoc into a standard IDoc XML document; hereby the fields of the IDoc are not modified, i.e. no mapping is involved from the source fields to the target fields during the conversion. After the conversion the SAP BC sends the XML document synchronously to a business partner via mail.

System Landscape

- An SAP system and an SAP BC are installed within the same system landscape of a company.
- In the SAP system the following objects are defined for the data exchange between the SAP system and the SAP BC :
  - An RFC destination and a logical system for the 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 the SAP BC:
  - An SAP server with an alias is defined. For this SAP server the information is specified that the SAP BC requires for connecting to the SAP R/3 system.
  - A listener is configured in order to listen to requests from the SAP system.
  - A routing rule for the specific sender, receiver and message type with the transport “Email Outbound Service” is configured.
    The routing rule determines how and where a message is to be routed. In the described scenario no ACL (access control list to restrict execution permissions for this routing rule), no pre-processing and no post-processing SAP BC services are used. Furthermore, in the described scenario the content type is “text/xml”.

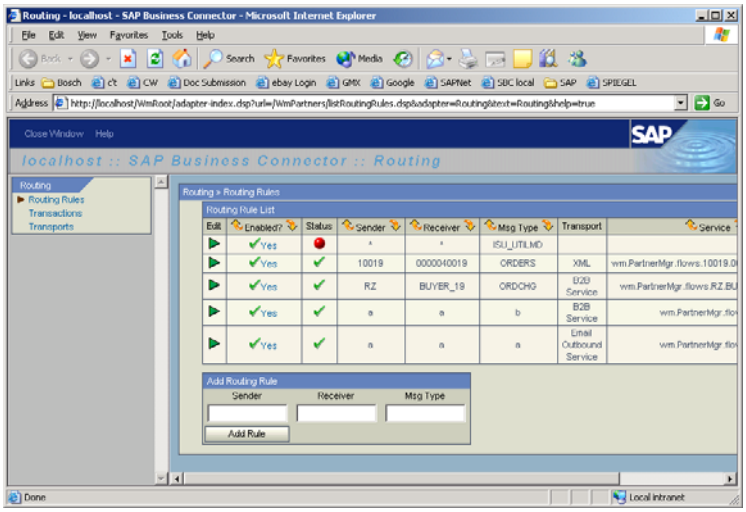
5.2 IDoc – Mail Using SAP XI

Check the preconditions described in Prerequisites for Standard Scenarios.
Use the IDoc Adapter to receive an IDoc from an SAP backend system and convert it to XML.
Use the Mail Adapter to post this XML to an external destination.

Follow the steps below to set up the communication channel:

1. **Locate the Routing Rule in the SAP Business Connector**

   From the *Administration View* choose *Adapters – Routing* to get the *Routing Rules*.



2. **Select the details of the respecting Routing Rule**

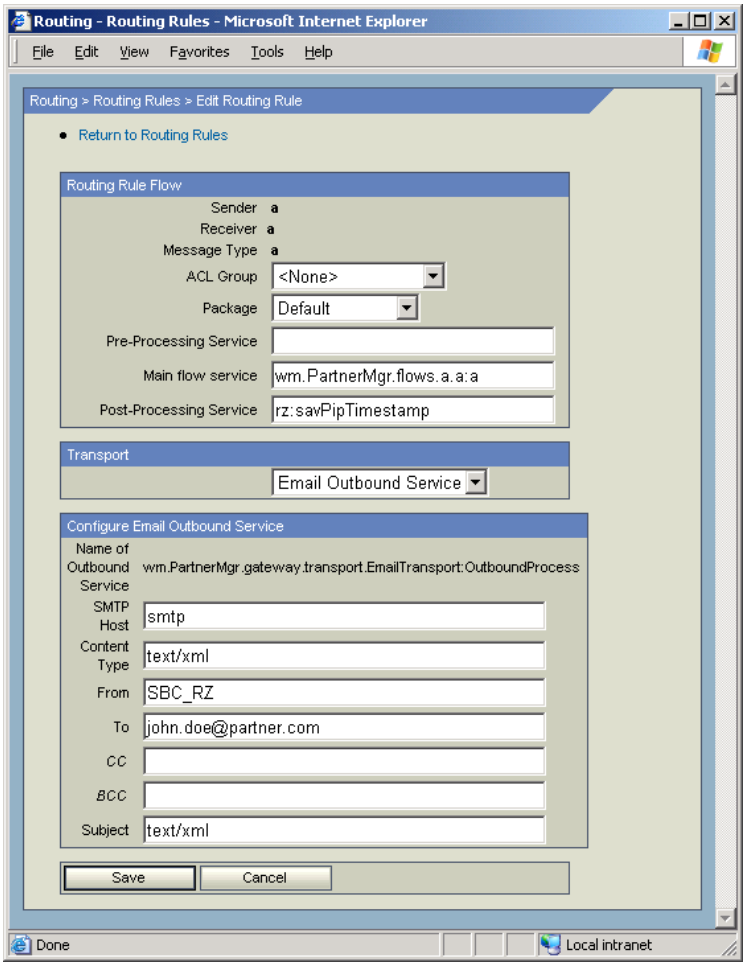
   To display the details click on the green triangle *(Edit)*.

   The following parameters are needed for the configuration of a communication channel in SAP XI:

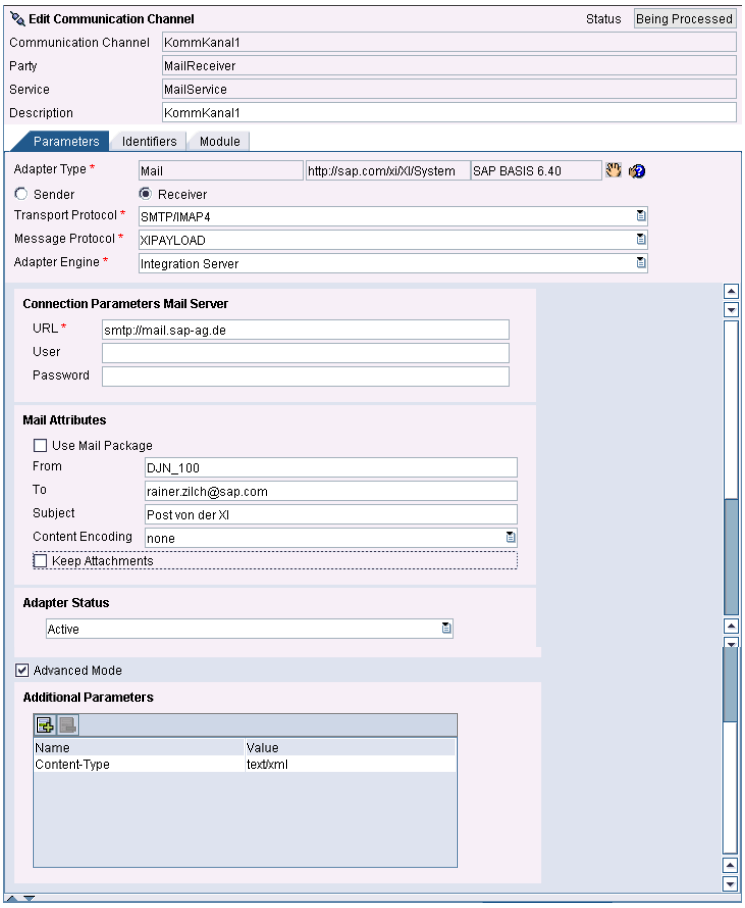
   - SMTP Host
   - From
   - To
   - Subject

   The following parameters are optional:

   - CC
   - BCC



3. **Using 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>`**.

Optionally you can set the user/password if required.

Do not select *Use Mail Package*.

Enter *From*, *To*, *Subject* according to 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>`**

5.3 Mail - IDoc Using SAP BC

An SAP BC that is installed within the system landscape of a company receives an IDoc XML document synchronously from a business partner via mail. The SAP BC converts the XML document into an IDoc.The fields of the XML document are not modified, i.e. no mapping is involved from the source fields to the target fields during the conversion. After the conversion the 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 an SAP BC are installed within the same system landscape of a company.
- In the SAP system a partner profile is defined so that the IDoc can be processed within the system.
- In the SAP BC the following information has to be defined:
  - An SAP server with an alias is defined. For this SAP server the information is specified that the SAP BC requires for connecting to the SAP system.
  - An IMAP or POP3 Server is installed, on which the SAP BC is registered and to which the SAP BC can log on with its Email Listener in order to receive mails.
  - A routing rule for the specific sender, receiver and message type with the transport “ALE (R/3 IDOC)” is configured. The routing rule determines how and where a message is to be routed. In the described scenario no ACL (access control list to restrict execution permissions for this routing

rule), no pre-processing and no post-processing SAP BC services are used.

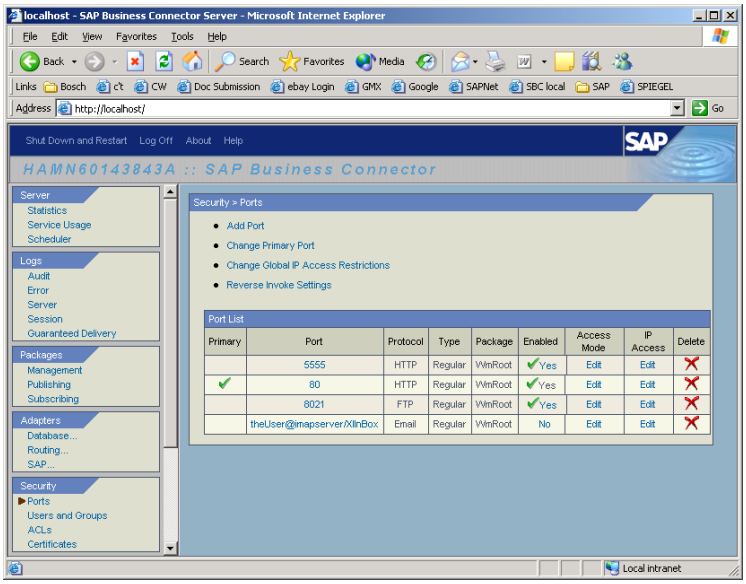
5.4 Mail - IDoc Using SAP XI

Check the preconditions described in 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 backend as an IDoc.

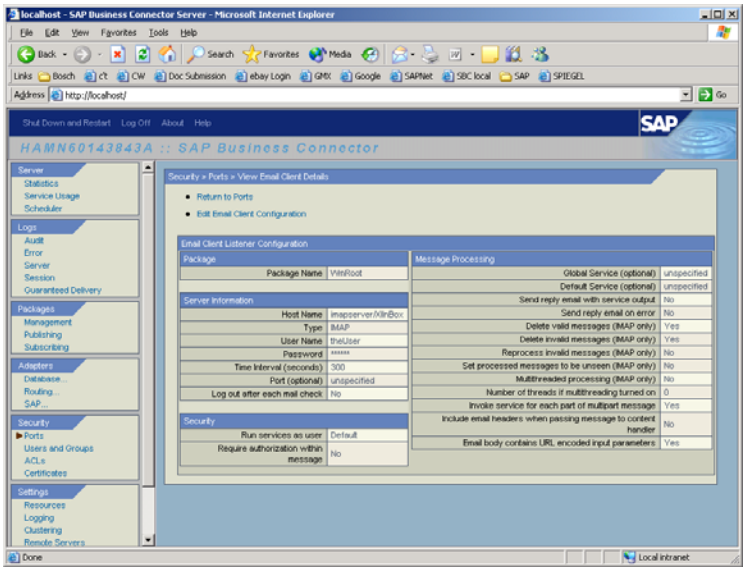
Follow the steps below to setup the communication channel.

1. **Get the information for accessing the mailbox**

   In the administration view of the SAP BC choose Security – Ports from the menu on the left.

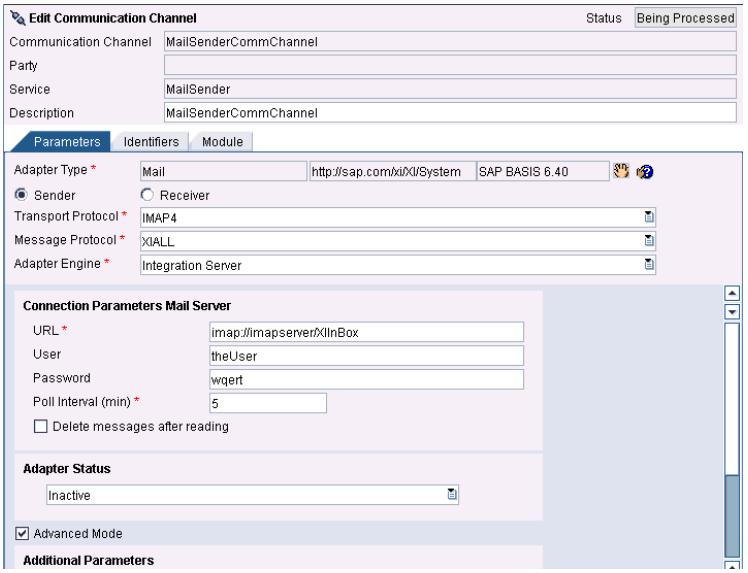


   Display the details by clicking on the entry in the second colon of the email port (<user>@<server>).



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

   Use the values from the SAP BC's port setting and see the documentation "Configuring the Sender Mail Adapter" for further details.

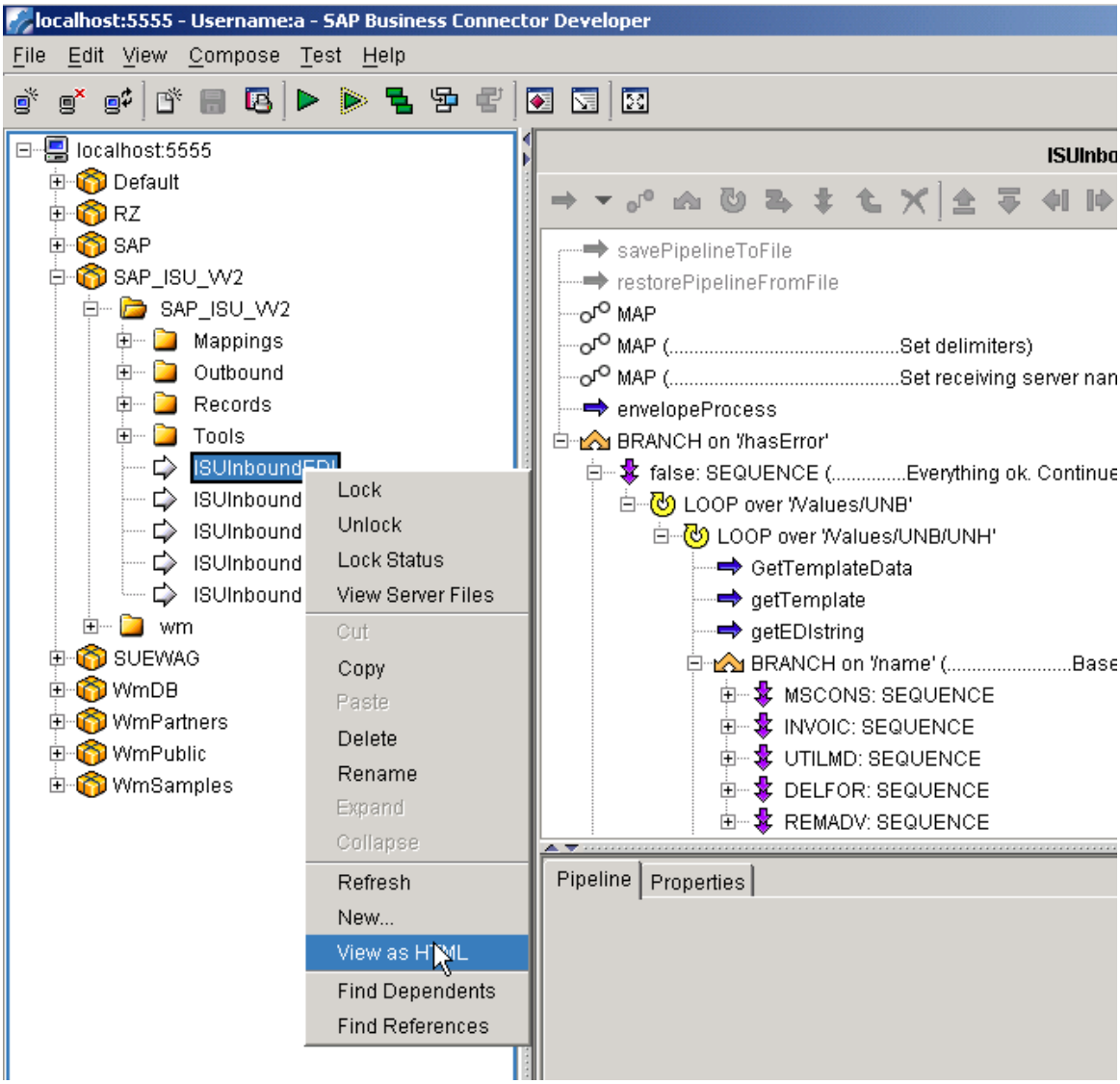


6 Migrating Flow Services

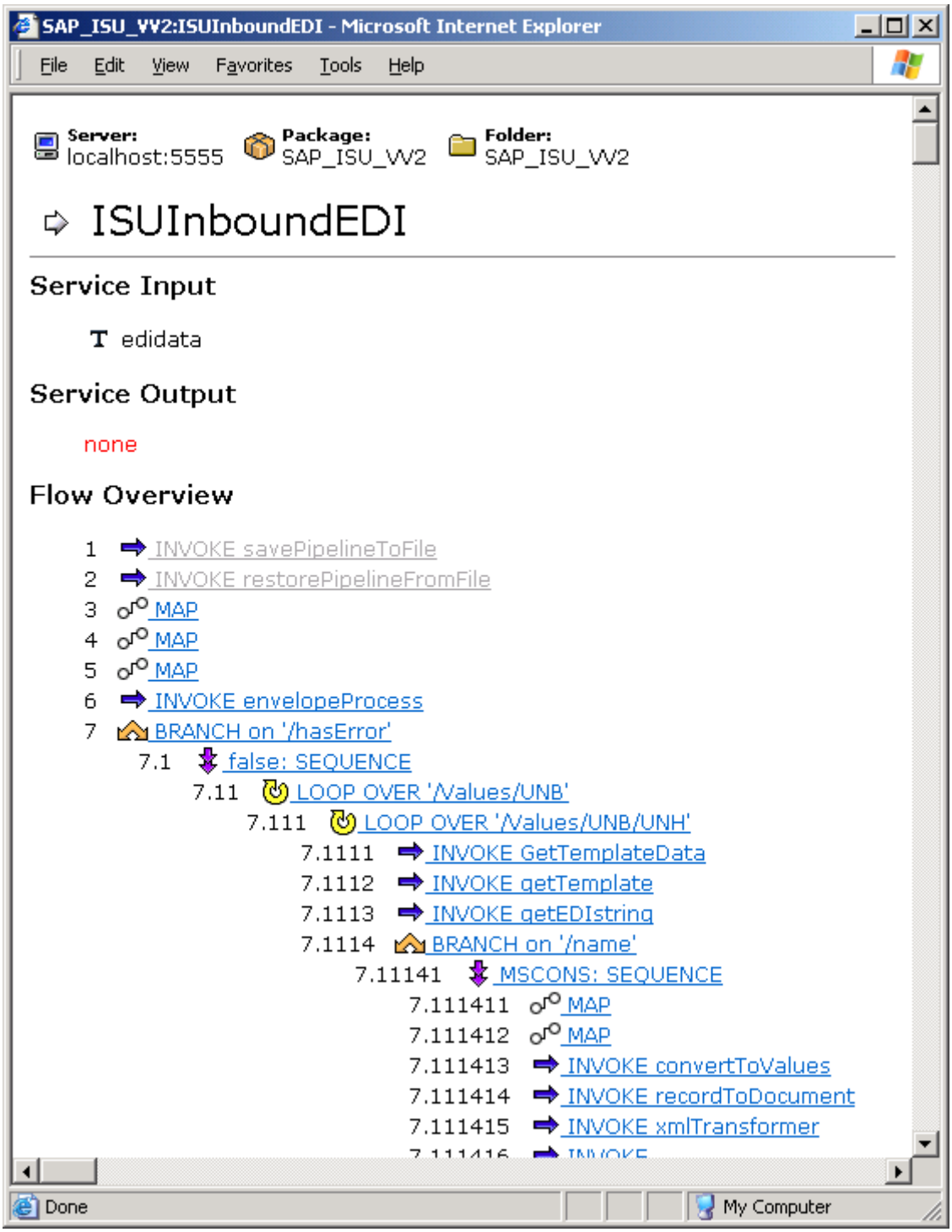
Flow services are executable units that are written in the SAP Business Connector proprietary graphical based flow language. Due to their graphical appearance flow services are very descriptive. However flow services have some disadvantages:

- They have less functionality than e.g. Java services
- Since they are interpreted at runtime the performance is low.

The most severe disadvantage particularly with regard to migration is that flow services are proprietary. No other platform supports this kind of language and even SAP XI does not support them.
The only thing you can do is getting a diagram as descriptive as possible to ease the reimplementation. You can create pretty well readable html diagrams of flow services using the SAP BC Developer. 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 subdirectory `html` of the installation directory of the 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`

With

- <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

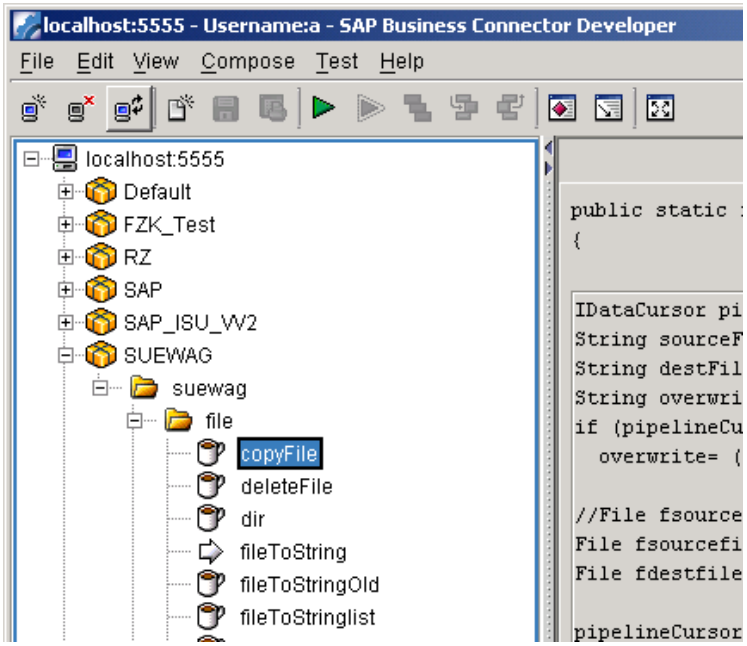
Java development on the SAP BC is structured in so called services. A service is an executable piece of code with pre-defined import-/export parameters, a pre-defined type of return value respectively. The services are laid out in a hierarchical structure within packages that bundle services that belong together. Technically each service is a method of the overlying Java class.

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

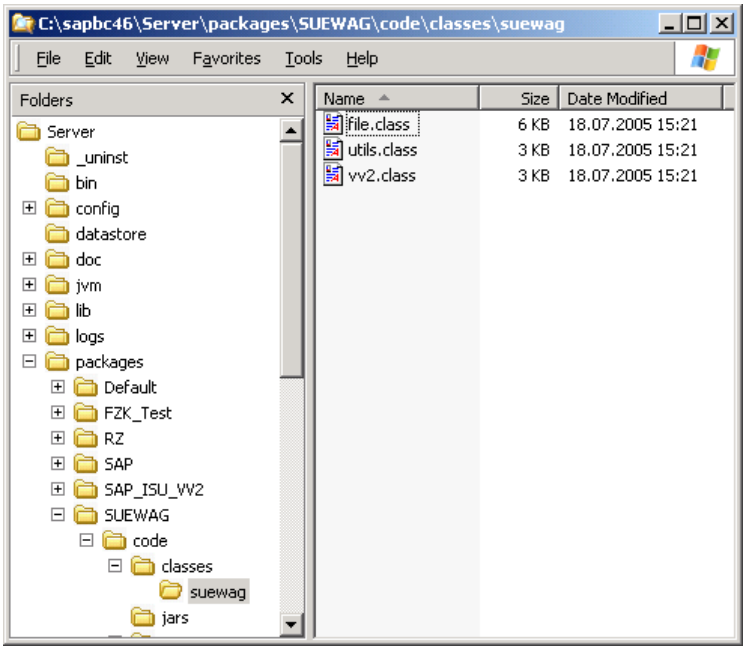
- They need to be stateless
- They may not access databases
- They may not call Java.lang.System.exit
- They may not call Java.lang.System.setProperties
- They may not use Class Loaders

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".

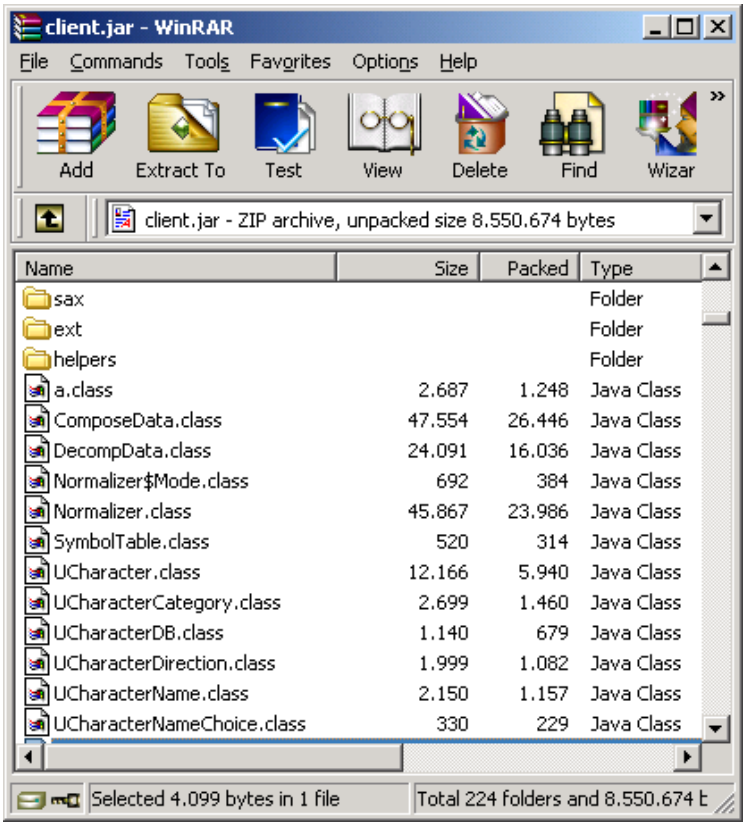


2. Locate the related class files.



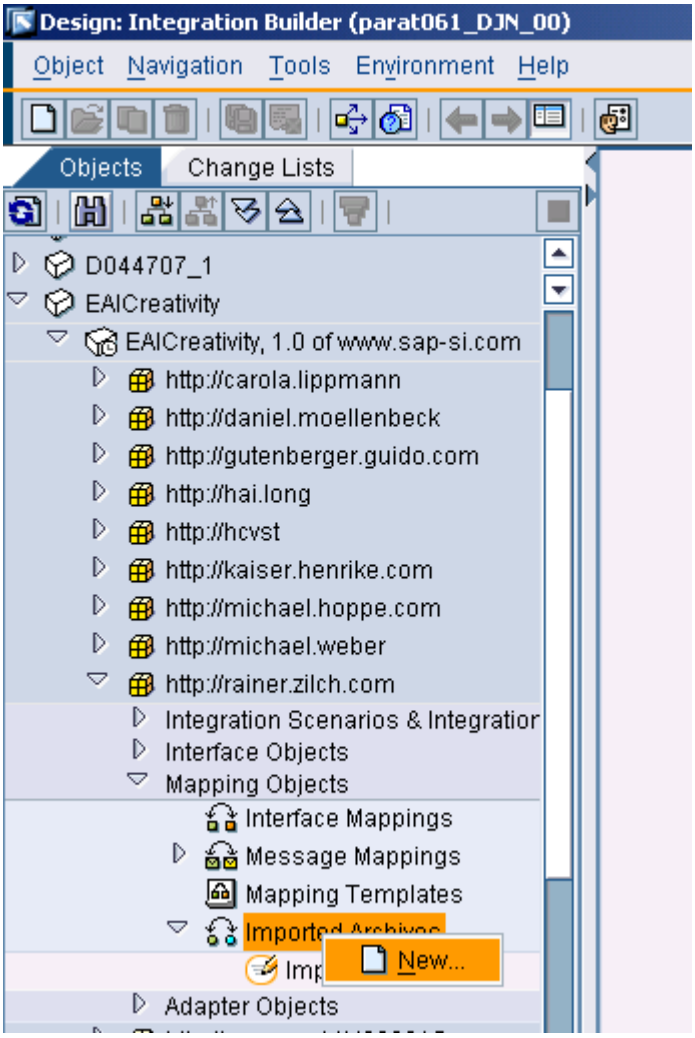
You can find the class files in the subdirectory `code/classes/...` located in the directory of the package containing the respective class.

3. Put all required class files into an archive.



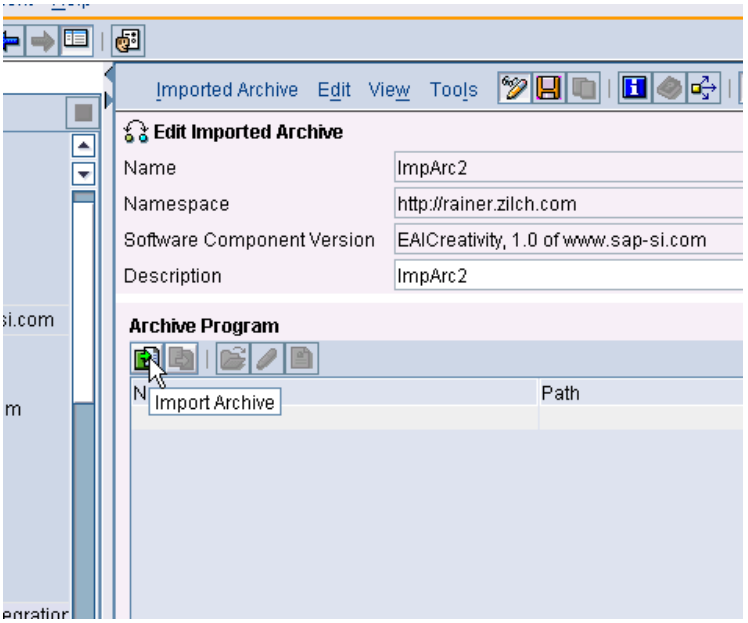
An archive technically is a jar or zip file containing a bunch of class files.

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 on *Imported Archives*. Click on *New… .* Enter a *Name* and a *Description.*

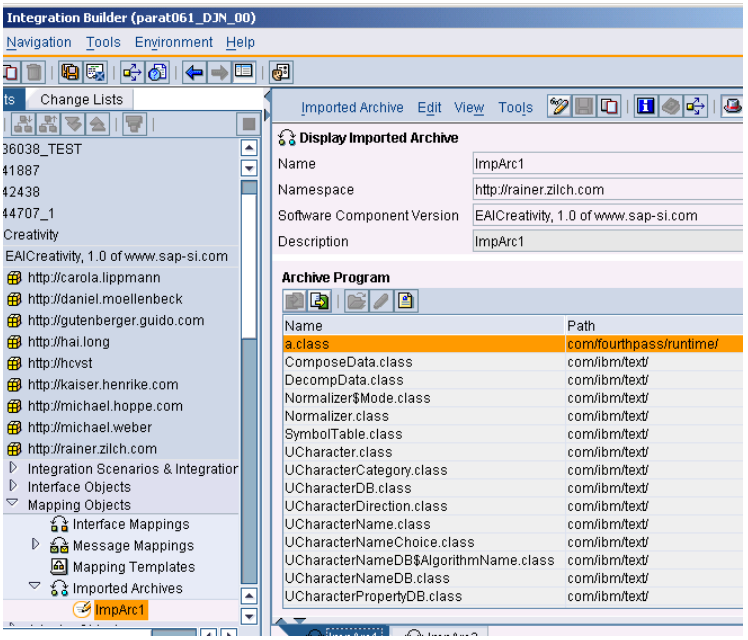
5. Import your archive



After clicking the *Import Archive* icon you get a file selection box where you can choose your archive.

6. Double-check the result.

   Now all your class files should appear in the list



Structure of Java Services in SAP BC

8 Migrating XSLT

XSLT (XML Stylesheet Language Transformation) is a recommended standard defined by the W3C (World Wide Web Consortium). As both SAP BC and SAP XI comply with this standard, stylesheets developed on the SAP BC can be used in SAP XI.

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