

SeeBeyond ICAN Suite

SAP (BAPI) eWay Intelligent Adapter User's Guide

Release 5.0.2



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Introducing the SAP (BAPI) eWay

The SAP (BAPI) eWay provides ICAN Projects with the ability to exchange data with SAP R/3 software. This chapter provides an overview of the SAP (BAPI) eWay.

In This Chapter

- [About the SAP \(BAPI\) eWay](#) on page 6
- [The SAP \(BAPI\) eWay Data Flows](#) on page 8

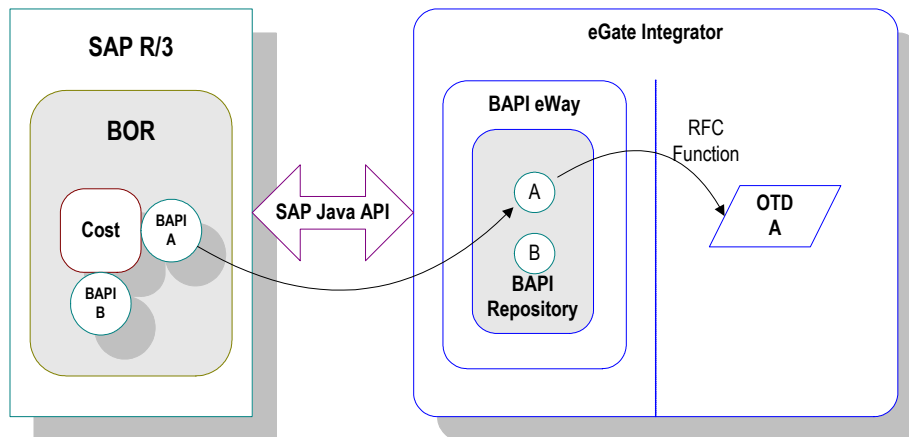
1.1 About the SAP (BAPI) eWay

The SAP (BAPI) eWay enables ICAN Projects to exchange data with SAP R/3 software using Business Application Programming Interfaces (BAPIs). BAPIs are standard SAP interfaces that are defined in the SAP Business Object Repository (BOR) as business objects that can be accessed using the Remote Function Call (RFC) protocol.

The SAP R/3 software uses ABAP function modules (functions), some of which can be called from external non-SAP systems. The functions that are enabled to be called remotely are named Remote Function Modules (RFMs).

The SAP (BAPI) eWay uses the SAP Java Connector (JCo) to allow Java applications to access BAPIs and RFMs. Applicable BAPI methods are held in the eWay server's repository, and are invoked by an RFC call from SAP R/3. When invoked, they are passed as an RFC function into an ICAN Object Type Definition (OTD). OTDs define the business logic for Collaborations and Business Processes.

Figure 1 BAPI eWay



The functionality of the SAP (BAPI) eWay simplifies the process of determining the requisite **IMPORT**, **EXPORT** and **TABLE** parameters—marshaling all the necessary data using the correct type and format, calling the RFM that represents the BAPI, and then extracting and parsing data from the **EXPORT** and/or **TABLE** parameters.

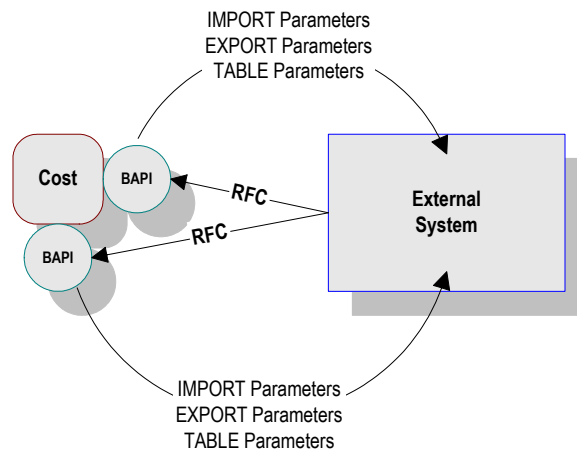
1.1.1 Invoking BAPI Methods

Before it can be invoked, a BAPI or RFM requires the following parameters:

- **IMPORT** parameters: data provided to the BAPI
- **EXPORT** parameters: data returned by the BAPI
- **TABLE** parameters - data provided to and/or returned by the BAPI

The detailed metadata for these parameters such as descriptions of their value types and mandatory or optional nature, can be found under SAP transaction **SE37**.

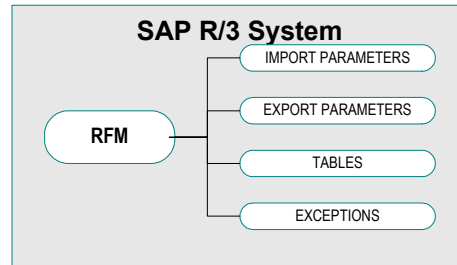
Figure 2 Required Information



1.1.2 Remote Function Calls

A Remote Function Call (RFC) is SAP's term for a call to a function, or function module, in one system (the server) from another system (the client). An SAP Remote Function Module (RFM) has four main components, as shown in Figure 3.

Figure 3 Remote Function Module



When making a call to a Remote Function Module, two different environments are involved (server and client). As a result, information is passed in a different manner than if the function call was being performed locally.

- **Import/Export Parameters**

The actual values must be passed between systems, instead of being done by reference.

- **Tables**

The entire contents of a table must be passed, creating a local copy on the server. After the RFC is completed, then the original table (on the client) is updated.

1.2 The SAP (BAPI) eWay Data Flows

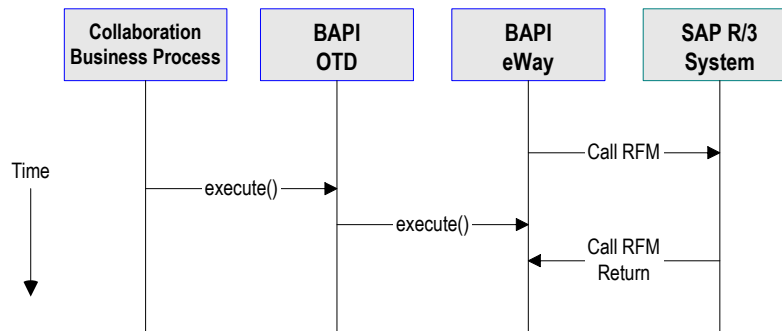
When the SAP (BAPI) eWay communicates with the SAP R/3 software, it uses the RFC protocol. The list below shows the RFC types of communication used:

- Outbound (ICAN to SAP R/3): non-transactional (regular) RFC
- Inbound (SAP R/3 to ICAN): non-transactional and transactional RFC (tRFC)

1.2.1 Outbound Data Flow: ICAN to SAP R/3

Outbound communications occur when the eWay receives data from ICAN and sends it to SAP R/3 by calling a specific BAPI or RFM. The communication protocol used is non-transactional RFC. The figure below shows the outbound process.

Figure 4 Outbound Data Flow: ICAN to SAP R/3



The figure above shows the following steps for the outbound data flow:

- 1 The Collaboration or Business Process populates the appropriate BAPI or RFC **Import** and **Table** parameter nodes with data from an inbound OTD.
- 2 The eWay logs onto the SAP R/3 application using preconfigured properties.
- 3 The eWay calls the BAPI OTD's **execute()** method. Any work performed is immediately committed by SAP R/3 through autocommit.
- 4 The SAP R/3 applications returns successfully.

1.2.2 Inbound Data Flow: SAP R/3 to ICAN

For the inbound data flow, the eWay can receive data from SAP R/3 via RFC or tRFC. The sections below describe each protocol.

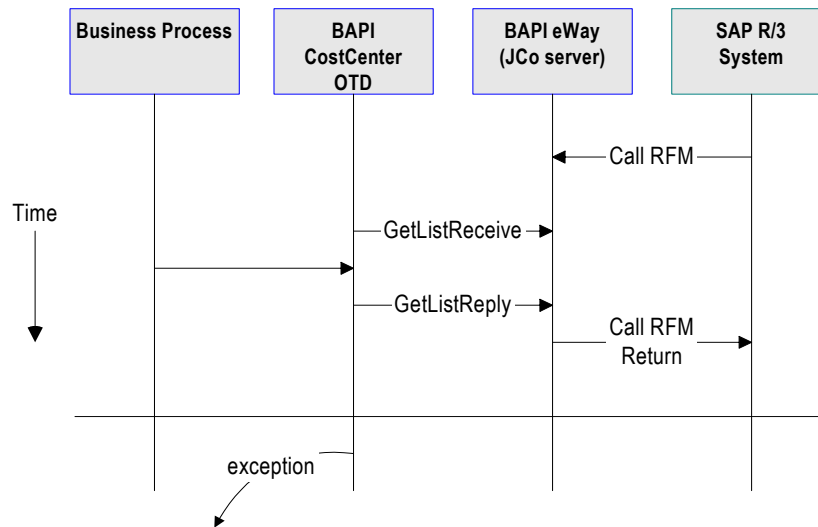
To enable the eWay to receive data from SAP R/3, the eWay must be configured in the SAP R/3 application with an RFC destination. For information, refer to [“Creating the RFC Destination for the eWay” on page 36](#).

Note: Inbound communications are supported for eInsight Business Processes, but not for eGate Integrator Collaborations.

Inbound Data Flow via RFC

RFC provides a simple non-transactional data transmission from SAP R/3 as shown in the figure below. The sequence diagram uses a sample CostCenter OTD to describe the RFC server sequence.

Figure 5 Inbound Data Flow via RFC



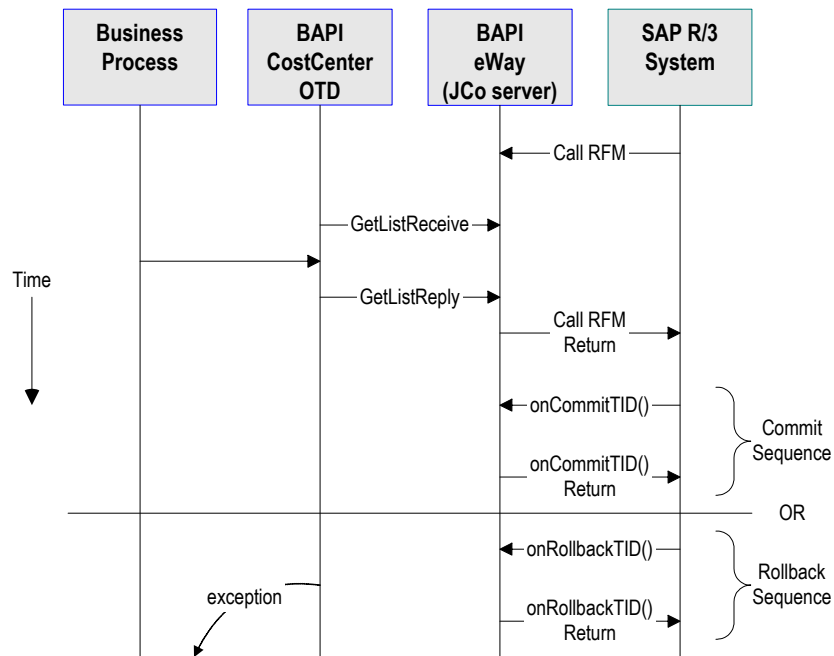
The figure above shows the following steps for the inbound data flow via RFC:

- 1 The Business Process is activated when an RFM call is received from SAP R/3.
- 2 Finding that data from an RFM is available, the Business Process accesses all pertinent data nodes and sends the gathered information to other ICAN components.
- 3 The eWay returns the results of the RFM execution back to SAP.

Inbound Data Flow via tRFC

Communication via tRFC is the similar to RFC, except that it adds transactional verification steps prior to committing or rolling back. tRFC is preferred over RFC because of the additional reliability. By using unique TIDs associated with a BAPI/RFM call, SAP R/3 processes the data once, and only once. The figure below shows inbound data flow via tRFC.

Figure 6 Inbound Data Flow via tRFC



The figure above shows the following steps for the inbound data flow via tRFC:

- 1 The Business Process is activated when an RFM call is received from SAP R/3.
- 2 Finding that data from an RFM is available, the Business Process accesses all pertinent data nodes and sends the gathered information to other ICAN components.
- 3 The eWay returns the results of the RFM execution back to SAP R/3.
- 4 If the RFM call returned successfully without exceptions, SAP R/3 informs the eWay that the data can be committed by calling `onCommitTID()`.
- 5 The eWay updates the TID in the file database as being **Committed**, commits the data, and sends an `onCommitTID()` return to SAP R/3.
- 6 If the RFM call did not return successfully, SAP R/3 informs the eWay that the data must be rolled back by calling `onRollbackTID()`.
- 7 The eWay rolls back the data and throws an exception. It also sends an `onRollbackTID()` return to SAP R/3, confirming that the data was rolled back and not committed.

Installing the SAP (BAPI) eWay

This chapter describes the requirements and procedures for installing the SAP (BAPI) eWay. Procedures for implementing sample projects, are described in [Chapter 5](#).

Chapter Topics

- [“Supported Operating Systems” on page 12](#)
- [“System Requirements” on page 13](#)
- [“Installing the SAP \(BAPI\) eWay” on page 13](#)
- [“After Installation” on page 15](#)

2.1 Supported Operating Systems

The SAP eWay is available for the following operating systems:

- Windows 2000, Windows XP, Windows Server 2003
- HP-UX 11.0, 11i (PA-RISC), and 11i v2.0 (11.23)
- IBM AIX 5.1L and 5.2
- Sun Solaris 8 and 9

In addition to the above listed operating systems, this eWay is supported on WebSphere Application Servers in outbound mode for Java Collaborations only. Refer to the *eGate Integrator User’s Guide* for additional information regarding the running of this eWay on this application server.

2.1.1. SAP R/3 Version Support

The table below lists which SAP R/3 Enterprise version can be used with which eWay-supported operating system.

Table 1 SAP R/3 Version Support per Operating System

Operating System	4.0B	4.5B	4.6B	4.6C	4.6D	4.7
Windows 2000 SP1 and SP 2	X	X	X	X	X	X
Windows 2000 SP3						X
Windows XP SP1a						X

Table 1 SAP R/3 Version Support per Operating System (Continued)

Operating System	4.0B	4.5B	4.6B	4.6C	4.6D	4.7
Windows Server 2003						X
Sun Solaris 8 and 9	X	X	X	X	X	X
IBM AIX 5.1L	X	X	X	X	X	X
IBM AIX 5.2						X
HP-UX 11.0, 11i (PA-RISC), 11i v2.0 (11.23)	X	X	X	X	X	X

2.2 System Requirements

The system requirements for the SAP eWay are the same as for eGate Integrator. For information, refer to the *SeeBeyond ICAN Suite Installation Guide*.

2.2.1. External System Requirements

The SAP (BAPI) eWay supports the following software on external systems:

- SAP R/3 Enterprise, version 4.0B, 4.5B, 4.6B, 4.6C, 4.6D, and 4.7
- SAP JCo 2.1.x

Note: SAP (BAPI) eWays can run on a 64-bit JVM, but only after the correct 64-bit JCO files (version 2.1.3 or later) have been applied. SAP customers who use 64-bit JVM must download the JCO files from the Web site for SAP Service Marketplace.

The SAP R/3 application must be configured to communicate with the SAP (BAPI) eWay as described in [Configuring SAP R/3](#) on page 36.

2.3 Installing the SAP (BAPI) eWay

During the eGate Integrator installation process, the Enterprise Manager, a web-based application, is used to select and upload products as .sar files from the eGate installation CD-ROM to the Repository.

The installation process includes installing the following components:

- Installing the Repository
- Uploading products to the Repository
- Downloading components (such as Enterprise Designer and Logical Host)
- Viewing product information home pages

Follow the instructions for installing the eGate Integrator in the *SeeBeyond ICAN Suite Installation Guide*, and include the following steps:

- 1 During the procedures for uploading files to the eGate Repository using the Enterprise Manager, after uploading the **eGate.sar** file, select and upload the following below as described in the *SeeBeyond ICAN Suite Installation Guide*:
 - ♦ **SAPBAPIeWay.sar** (to install the SAP eWay)
 - ♦ **FileeWay.sar** (to install the File eWay, used in the sample Projects)
 - ♦ **SAPBAPIeWayDocs.sar** (to install the user guide and the sample Projects)
- 2 In the Enterprise Manager, click the **DOCUMENTATION** tab.
- 3 Click **SAP (BAPI) eWay**.
- 4 In the right-hand pane, click **Download Sample**, and select a location for the .zip file to be saved.

For information about importing and using the sample, refer to **“Locating, Importing, and Using the Sample Projects” on page 41**.

- 5 Download the following files from your support account at www.service.sap.com:
 - ♦ **sapjco.jar**
 - ♦ **sapidocjco.jar**
 - ♦ **sapidoc.jar**

For Windows:

- ♦ **librfc32.dll** (Windows)
- ♦ **sapjcorfc.dll** (Windows)

For UNIX:

- ♦ **librfcm.***
- ♦ **libsapjcorfc.***

For the file extensions, use ***.so** for Solaris, ***.sl** for HP-UX, and ***.0** for AIX.

- 6 Copy the three JCo .jar files to the following directory:
ICANSuite\edesigner\usrdir\lib\ext
where *ICANSuite* is the folder where you installed eGate Integrator.
- 7 On Windows operating systems, copy the two DLL files to the following folder:
WINNT\system32
- 8 On UNIX operating systems, add the DLL files to the library path.
- 9 Restart Enterprise Designer.

2.4 After Installation

Once you have installed the SAP eWay, you must then incorporate it into an eGate Project and Environment in Enterprise Designer. The next chapters description how you add the eWay to an eGate Project and an eGate Environment, how you configure the eWay and how to build the necessary OTDs.

Configuring the SAP (BAPI) eWay Properties

This chapter describes how to configure the SAP (BAPI) eWay properties to enable data exchange between the SAP R/3 software and an ICAN project.

This Chapter Includes:

- [Locating the eWay Properties](#) on page 16
- [Configuring the eWay Properties](#) on page 17
- [Configuring the eWay Environment Properties](#) on page 23

3.1 Locating the eWay Properties

Many eWays contain a unique set of default configuration parameters that are accessible from two locations:

- From the **Connectivity Map** – which contains parameters specific to client (outbound) or server (inbound) eWay connection settings.
- From the **Environment Explorer** tree – which contains parameters specific to client (outbound) or server (inbound) Environment settings.

Note: *You must set configuration parameters for the SAP (BAPI) eWay in both locations.*

3.2 Configuring the eWay Properties

When you connect an External Application to a Collaboration, Enterprise Designer automatically assigns the appropriate eWay to the link. Each eWay is supplied with a template containing default configuration properties (inbound or outbound) that are accessible on the Connectivity Map.

Accessing the Connectivity Map Properties requires:

- Adding an SAP (BAPI) eWay to a Connectivity Map
- Configuring the eWay

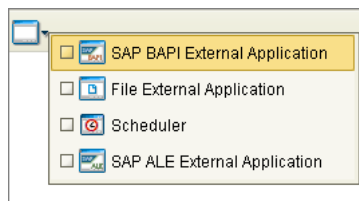
3.2.1 Adding an SAP (BAPI) eWay to the Connectivity Map

To start implementing the SAP eWay in an eGate Project, you add the SAP eWay to the Project's Connectivity Map.

To add SAP (BAPI) eWays to Connectivity Maps

- 1 In the **Project Explorer** tab of the Enterprise Designer, create or click the Project to which you want to add the SAP (BAPI) eWay.
- 2 Create or click a Connectivity Map.
- 3 On the Connectivity Map toolbar, click the **External Applications** icon, and click **SAP BAPI External Application** as shown below.

Figure 7 Selecting the SAP External Application



This adds the SAP (BAPI) icon to the Connectivity Map toolbar.

- 4 Drag the SAP (BAPI) icon onto the Connectivity Map canvas.
- 5 To rename the external application, right-click the icon, click **Rename**, and enter a new name.

3.2.2 Configuring the eWay

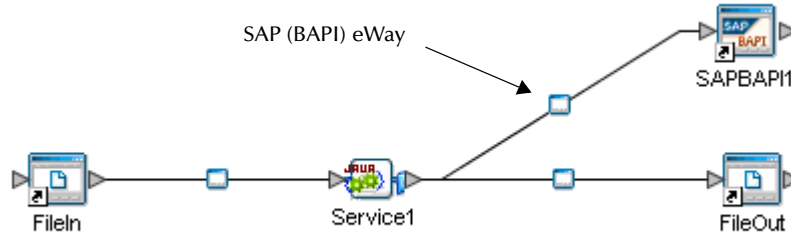
After completing the Connectivity Map and linking its components, you can configure the type of eWay (inbound or outbound) required for the project.

To configure the eWay

- 1 In the **Project Explorer** tab of the eGate Enterprise Designer, expand the Project which contains the Connectivity Map where you want to configure logical eWay properties.

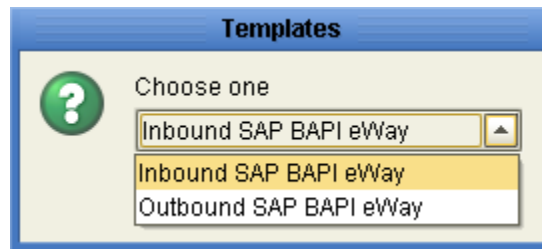
- 2 Click the Connectivity Map. The Connectivity Map appears, showing the eWay properties icon.

Figure 8 eWay Properties Icon



- 3 Double-click the eWay properties icon. The **Templates** dialog box appears.

Figure 9 SAP (BAPI) eWay Templates Window

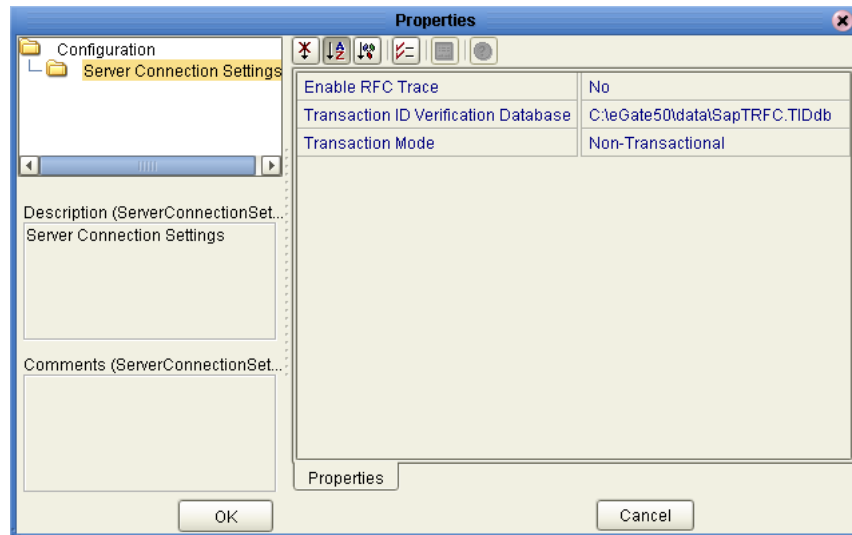


- 4 To configure the inbound eWay, click **Inbound SAP (BAPI) eWay**.
To configure the outbound eWay, click **Outbound SAP (BAPI) eWay** and click **OK**.
- 5 The **Properties** window opens and displays the default properties for the selected eWay.

3.2.3 Configuring the Inbound eWay Properties

The Inbound eWay Properties include parameters required to connect ICAN to the SAP R/3 software. The following server connection settings are configured in the Inbound eWay Properties window, see Figure 10 below.

Figure 10 Inbound eWay Properties window



Enable RFC Trace

Description

You enable RFC tracing with the **Enable RFC Trace** property. The trace file contains RFC API calls, and data sent to and received from the SAP R/3 host. The trace file is located in the *logicalhost*\stcis folder, where *logicalhost* is the name of the Logical Host. The trace file is *rfcnumber.trc*, for example, *rfc00310_0156.trc*.

Required Values

Yes or No.

Default

The default mode is **No**; the RFC tracing is disabled.

Transaction ID Verification Database

Description

You specify the location of the Transaction ID Verification database with the **Transaction ID Verification Database** property.

Specify the name of the file-based database which persists the TIDs. Provide the path to the database file that records the disposition of all transactions outgoing from this eWay. The database records whether transactions are:

- C (committed)
- U (unprocessed or rolled-back)
- R (reserved or pending)

Required Values

A valid path to the database file.

Default

The default location is:

C:\eGate50\data\SapTRFC.TIDdb

Transaction Mode

Description

You specify the transaction mode with the **Transaction Mode** property. The transaction mode specifies whether tRFC is enforced. With tRFC, transactions have unique TIDs and are processed only once by this eWay.

Required Values

A transaction mode of **Non-Transactional** or **Transactional RFC(tRFC)**

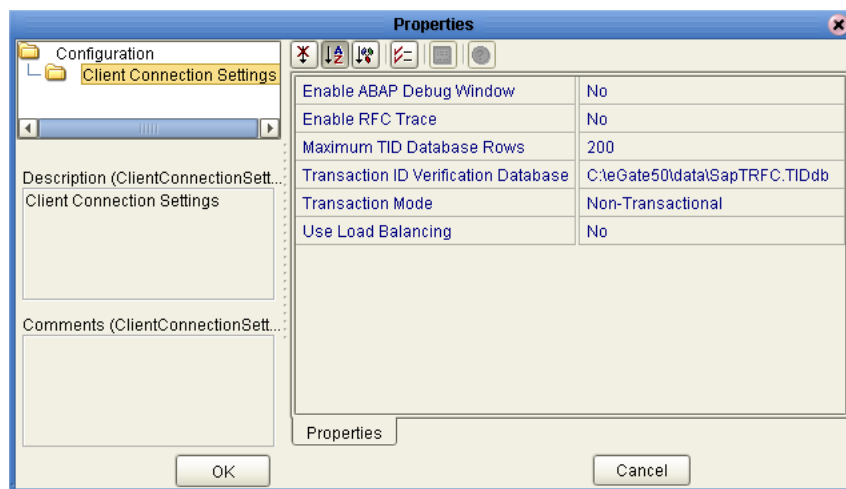
Default

The default mode is **Non-Transactional**.

3.2.4 Configuring the Outbound eWay Properties

The Outbound eWay Properties include parameters required to connect the SAP R/3 software to ICAN. The following server connection settings are configured in the Outbound eWay Properties window, see Figure 11 below.

Figure 11 Inbound eWay Properties window



Enable ABAP Debug Window

Description

You enable the ABAP debugging window with the **Enable ABAP Debug Window** property.

Enabling the **Enable ABAP Debug Window** property opens the ABAP debugging window on the Logical Host where this Business Object Server (BOS) resides. The

window shows the debug information for the RFC-enabled ABAP application that is called by SAP R/3.

This property only works if the SAPGUI software is installed on the Logical Host for this BOS.

Required Values

Yes or No.

Default

The default mode is **No**; the ABAP Debug window is disabled.

Enable RFC Trace

Description

You enable RFC tracing with the **Enable RFC Trace** property. The trace file contains RFC API calls, and data sent to and received from the SAP R/3 host. The trace file is located in the *logicalhost\stcis* folder, where *logicalhost* is the name of the Logical Host. The trace file is *rfcnumber.trc*, for example, *rfc00310_0156.trc*.

Required Values

Yes or No.

Default

The default mode is **No**; the RFC tracing is disabled.

Maximum TID Database Rows

You specify the maximum amount of rows for the Transaction ID (TID) database for outbound eWays with the **Maximum TID Database Rows** property.

Set this property only if tRFC is used. This property specifies the maximum number of rows in the outbound TID database that are kept before the oldest rows are purged and their corresponding TIDs confirmed on SAP R/3. Confirmation allows SAP R/3 to remove those TIDs from its TID tracking database and reduce resource consumption.

Required Values

At least 1 row.

Default

The default is 200 rows.

Transaction ID Verification Database

Description

You specify the location of the Transaction ID Verification database with the **Transaction ID Verification Database** property.

Specify the name of the file-based database which persists the TIDs. Provide the path to the database file that records the disposition of all transactions outgoing from this eWay. The database records whether transactions are:

- C (committed)
- U (unprocessed or rolled-back)
- R (reserved or pending)

Required Values

A valid path to the database file.

Default

The default location is:

C:\eGate50\data\SapTRFC.TIDdb

Transaction Mode

Description

You specify the transaction mode with the **Transaction Mode** property. The transaction mode specifies whether tRFC is enforced. With tRFC, transactions have unique TIDs and are processed only once by this eWay.

Required Values

A transaction mode of **Non-Transactional** or **Transactional RFC(tRFC)**

Default

The default mode is **Non-Transactional**.

Use Load Balancing

You enable load balancing for outbound eWays with the **Use Load Balancing** property.

This property allows you to take advantage of the workload balancing provided by SAP R/3. SAP R/3 provides workload balancing to automatically route requests to the application server within a group of servers that has the best response time determined at that moment by an SAP message server.

If you disable load balancing, use the **System number** property as described in [“System Number” on page 26](#).

Required Values

Yes or **No**.

Default

The default mode is **No**; load balancing is disabled by default.

3.3 Configuring the eWay Environment Properties

Before you can configure the physical eWay properties, you must add the eWay to an Environment. The procedure below describes how to add an SAP (BAPI) eWay to an eGate Environment. For detailed information about creating eGate Environments, refer to the *eGate Integrator User's Guide*.

To add an eWay to the Environment

- 1 In the **Environment Explorer** tab of the Enterprise Designer, click the Repository and expand or create the Environment to which you want to add an eWay.
- 2 Right-click the Environment and then click **New SAP BAPI External Application**. The **Create an External System** window appears.
- 3 Enter an External System Name, and choose an External System Type (inbound or outbound).

Once you have added the SAP (BAPI) eWay to an eGate Environment, you can configure the eWay. The eWay Environment configuration properties contain parameters that define how the eWay connects to and interacts with other eGate components within the Environment.

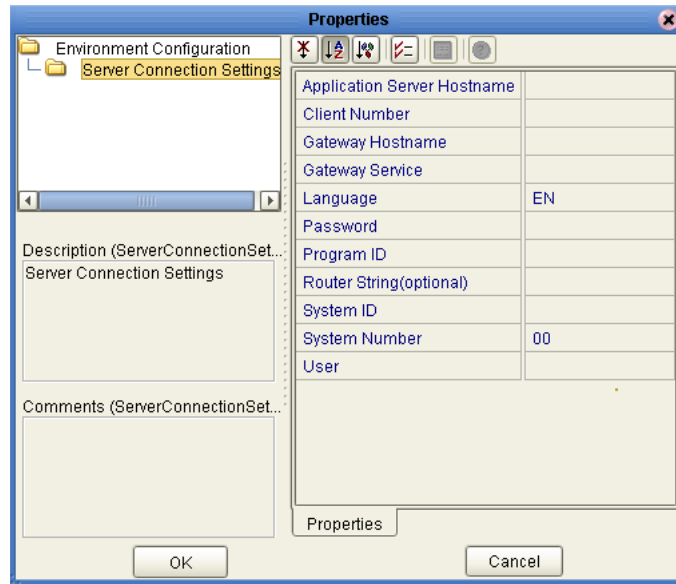
To configure the physical eWay properties

- 1 In the **Environment Explorer** tab of the Enterprise Designer, click the Repository and expand the Environment that contains the Logical Host for which you want to configure an SAP (BAPI) eWay.
- 2 Expand the Logical Host, right-click the SAP (BAPI) eWay and click **Properties**. The **Properties** dialog box appears.

3.3.1 Configuring the Inbound eWay Environment Properties

The inbound eWay Environment properties include server connection parameters that are required to implement the project, and are configured in the inbound eWay Environment **Properties** window, see Figure 12 below.

Figure 12 Environment eWay Properties



Application Server Hostname

You can specify the host name of the SAP R/3 application server in the eWay Environment properties with the **Application server hostname** property.

Required Values

Any valid Hostname.

Default

There is no default setting.

Client Number

You can specify the SAP client number in the eWay Environment properties with the **Client number** property.

The SAP client number is used to access the R/3 system.

Required Values

An alphanumeric string. Do not omit leading zeros.

Default

There is no default setting.

Gateway Hostname

You can specify the gateway hostname of the SAP R/3 application server in the eWay Environment properties with the **Gateway hostname** property.

Required Values

An alphanumeric string. Do not omit leading zeros.

Default

There is no default setting.

Gateway Service

You can specify the gateway service in the eWay Environment properties with the **Gateway service** property.

The gateway service of the SAP R/3 system sends transactions.

Required Values

The SAP recommended value is the string *sapgw* concatenated with the SAP system number. For example, if the system number is *01*, the gateway service is *sapgw01*.

Default

There is no default setting.

Language

You can specify the language used for SAP R/3 access in the eWay Environment properties with the **Language** property.

Required Values

Default

The default is **EN**, English.

Password

You can specify the password for the SAP user in the eWay Environment properties with the **Password** property.

You must specify the user before specifying the password.

Required Values

An alphanumeric string.

Default

There is no default setting.

Program ID

You can specify the program ID for the SAP service in the eWay Environment properties with the **Program ID** property.

Required Values

Program ID shown in the SAPGUI transaction SM59. This entry must match the SAPGUI exactly; this entry is case sensitive.

Default

There is no default setting.

Router String (optional)

You can specify the router string in the eWay Environment properties with the **Router string** property.

This property is optional; use it only to gain access to an SAP system that is behind a firewall.

Required Values

The string is composed of the hostnames or IP addresses of all the SAP routers that are in between this BOS and the SAP gateway host. For example, if there are two routers, *saprouter1*, and *saprouter2*, in order, from the BOS to the application server, as follows:

```
saprouter1: 204.79.199.5 saprouter2: 207.105.30.146
```

The router string in this case is as follows:

```
/H/204.79.199.5/H/207.105.30.146/H/
```

Do not omit the “/H/” tokens to begin, separate, and end the routers.

Default

There is no default setting.

System ID

You can specify the ID of the SAP R/3 system in the eWay Environment properties with the **System ID** property.

Required Values

Any valid SAP System ID.

Default

There is no default setting.

System Number

You can specify the system number of the SAP R/3 application server in the eWay Environment properties with the **System number** property.

Use this property when you are not using SAP load balancing. For information, refer to [“Use Load Balancing” on page 22](#).

Required Values

Any numeric value.

Default

There is no default setting.

User Name

You can specify the SAP user name in the eWay Environment properties with the **User** property.

You must define this property before specifying the password.

Required Values

Any alphanumeric value.

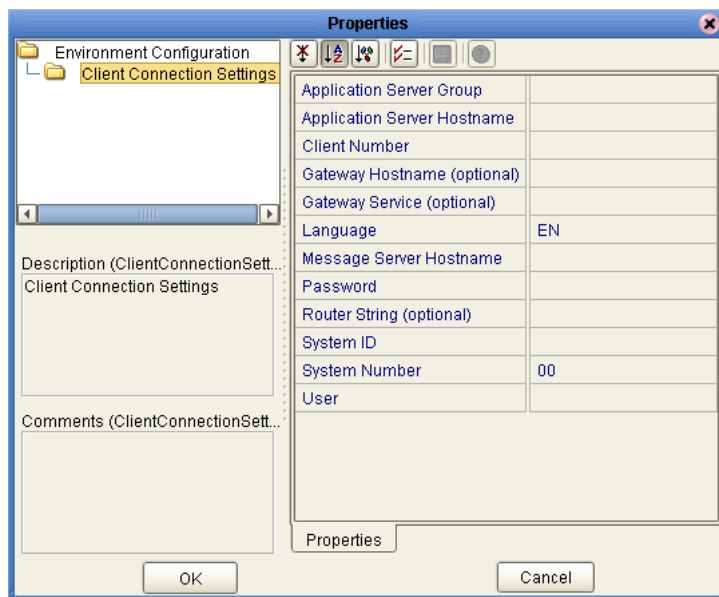
Default

There is no default setting.

3.3.2 Configuring the Outbound eWay Environment Properties

The outbound eWay Environment properties include client connection parameters that are required to implement the project, and are configured in the outbound eWay Environment **Properties** window, see Figure 13 below.

Figure 13 Outbound eWay Environment Properties Window



Application Server Group

You can enter the name of the group of SAP Application Servers that will be sharing the workload. This parameter should be configured **ONLY** when using SAP Load Balancing.

Required Values

There are no required values.

Default

There is no default setting.

Application Server Hostname

You can specify the host name of the SAP R/3 application server in the eWay Environment properties with the **Application server hostname** property.

Required Values

Any valid Hostname.

Default

There is no default setting.

Client Number

You can specify the SAP client number in the eWay Environment properties with the **Client number** property.

The SAP client number is used to access the R/3 system.

Required Values

An alphanumeric string. Do not omit leading zeros.

Default

There is no default setting.

Gateway Hostname (optional)

You can specify an Optional Gateway host name for the Application Server. This parameter should be configured when **NOT** using SAP Load Balancing.

Do not specify any optional Router String here, as the value is prepended to the Gateway Hostname.

Required Values

An alphanumeric string. Do not omit leading zeros.

Default

There is no default setting.

Gateway Service (optional)

You can specify an Optional Gateway Service for the Application Server. This parameter should be configured when **NOT** using SAP Load Balancing.

Required Values

The SAP recommended value is the string *sapgw* concatenated with the SAP system number. For example, if the system number is *01*, the gateway service is *sapgw01*.

Default

There is no default setting.

Language

You can specify the language used for SAP R/3 access in the eWay Environment properties with the **Language** property.

Required Values

There are no required values.

Default

The default is **EN**, English.

Password

You can specify the password for the SAP user in the eWay Environment properties with the **Password** property.

You must specify the user before specifying the password.

Required Values

An alphanumeric string.

Default

There is no default setting.

Router String (optional)

You can specify the router string in the eWay Environment properties with the **Router string** property.

This property is optional; use it only to gain access to an SAP system that is behind a firewall.

Required Values

The string is composed of the hostnames or IP addresses of all the SAP routers that are in between this BOS and the SAP gateway host. For example, if there are two routers, *saprouter1*, and *saprouter2*, in order, from the BOS to the application server, as follows:

saprouter1: 204.79.199.5 *saprouter2:* 207.105.30.146

The router string in this case is as follows:

/H/204.79.199.5/H/207.105.30.146/H/

Do not omit the *"/H/"* tokens to begin, separate, and end the routers.

Default

There is no default setting.

System ID

You can specify the ID of the SAP R/3 system in the eWay Environment properties with the **System ID** property.

Required Values

Any valid SAP System ID.

Default

There is no default setting.

System Number

You can specify the system number of the SAP R/3 application server in the eWay Environment properties with the **System number** property.

Use this property when you are not using SAP load balancing. For information, refer to [“Use Load Balancing” on page 22](#).

Required Values

Any numeric value.

Default

There is no default setting.

User

You can specify the SAP user name in the eWay Environment properties with the **User** property.

You must define this property before specifying the password.

Required Values

Any alphanumeric value.

Default

There is no default setting.

Using the SAP (BAPI) OTD Wizard

This chapter describes how to build the business logic for SAP (BAPI) Projects. Project business logic is contained in Business Processes for eInsight, and in Collaborations for eGate Integrator used without eInsight.

To build SAP Project business logic, you use the SAP BAPI wizard to create the BAPI and RFC OTDs. You then create the Business Processes or Collaborations, and the Connectivity Maps.

This chapter also includes a final section with an overview of completing SAP Projects after you have built the business logic.

In This Chapter

- [About the SAP BAPI Wizard](#) on page 31
- [Creating BAPI and RFC OTDs](#) on page 31
- [BAPI and RFC OTDs](#) on page 34

4.1 About the SAP BAPI Wizard

The SAP BAPI wizard is used to create BAPI OTDs. These OTDs can then later be used in Collaboration Definitions to create the business logic behind the Collaborations. With the BAPI wizard, you create BAPI and RFC OTDs.

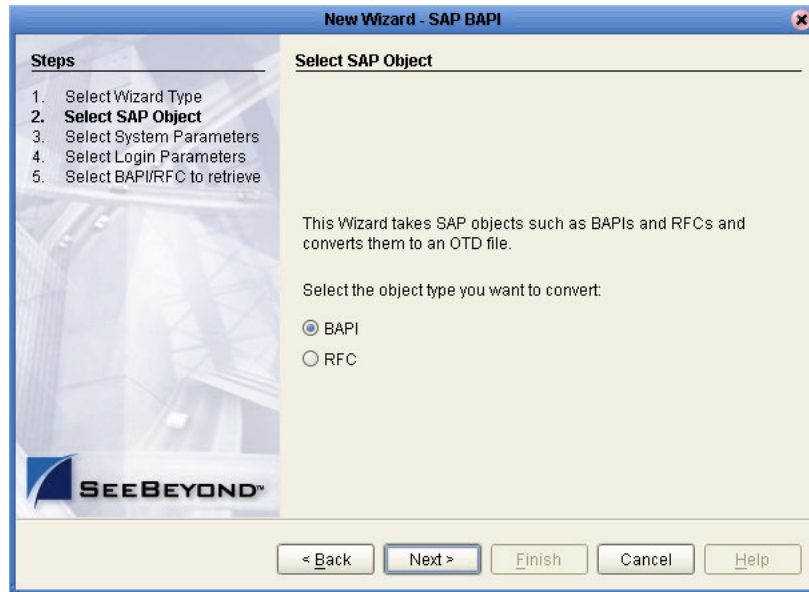
4.2 Creating BAPI and RFC OTDs

You create BAPI and RFC OTDs with the SAP BAPI wizard in the Enterprise Designer.

To create BAPI OTDs

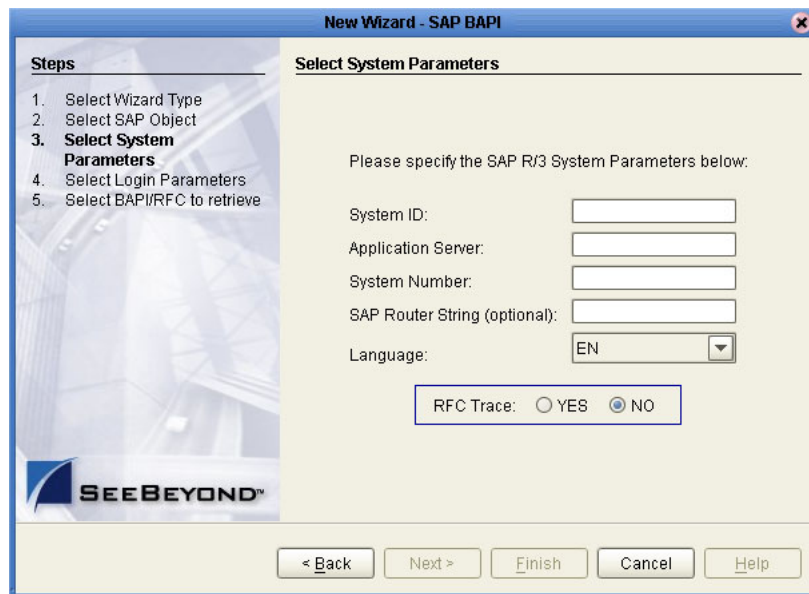
- 1 In the Explorer tab of the Enterprise Designer, right click the Project, click **New**, and click **Object Type Definition**. The **New Object Type Definition Wizard** dialog box appears.
- 2 Click **SAP BAPI** and click **Next**. The **Select SAP Object** page appears.

Figure 14 BAPI Wizard—SAP Object Selection



- 3 To convert a BAPI object to OTDs, select the **BAPI** option.
To convert an RFC object to OTDs, select the **RFC** option.
- 4 Click **Next**. The **System Parameters** page appears.

Figure 15 BAPI Wizard—System Parameters



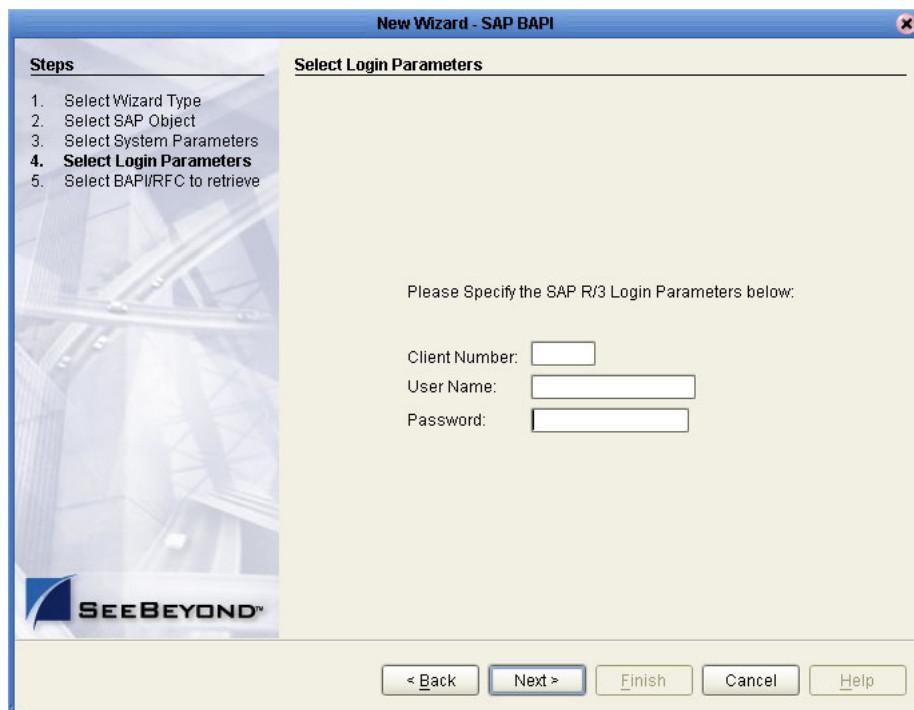
- 5 Enter the information for the SAP R/3 system for the SAP eWay to connect to:

For this option	Enter
System ID	System ID of the SAP R/3 system.
Application server	Host name of the SAP R/3 system.

For this option	Enter
System number	System number of the SAP R/3 system.
SAP Routing String	Router string of hostnames/IP addresses of all SAP routers between this BOS and the SAP gateway host (optional).
Language	Language used for SAP R/3 access.
RFC Trace	NO to disable RFC tracing (default); YES to enable RFC tracing, which creates the <code>\designer\bin\dev_rfc.trc</code> file when an error occurs when you log into the SAP system using the wizard.

6 Click **Next**. The **Login Parameters** page appears.

Figure 16 BAPI Wizard—Login Parameters

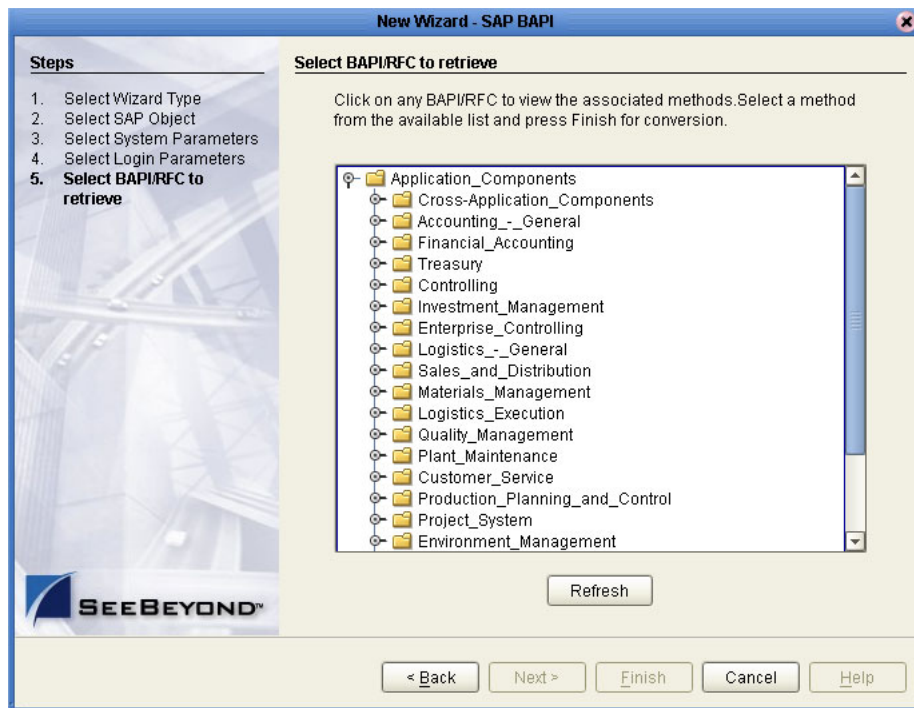


7 Enter the information to log into the SAP system:

For this option	Enter
Client Number	Client number of the SAP R/3 system.
User name	User name.
Password	Login password.

8 Click **Next**. The **Select BAPI/RFC** page appears, showing the application components

Figure 17 BAPI Wizard—Select BAPI/RFC



In the BAPI tree, you can cascade to a particular SAP application component and select a BAPI or RFC.

- 9 Expand the SAP application component folder, click a BAPI or RFC, and click **Finish**. The **OTD Editor** window appears, displaying the OTD.

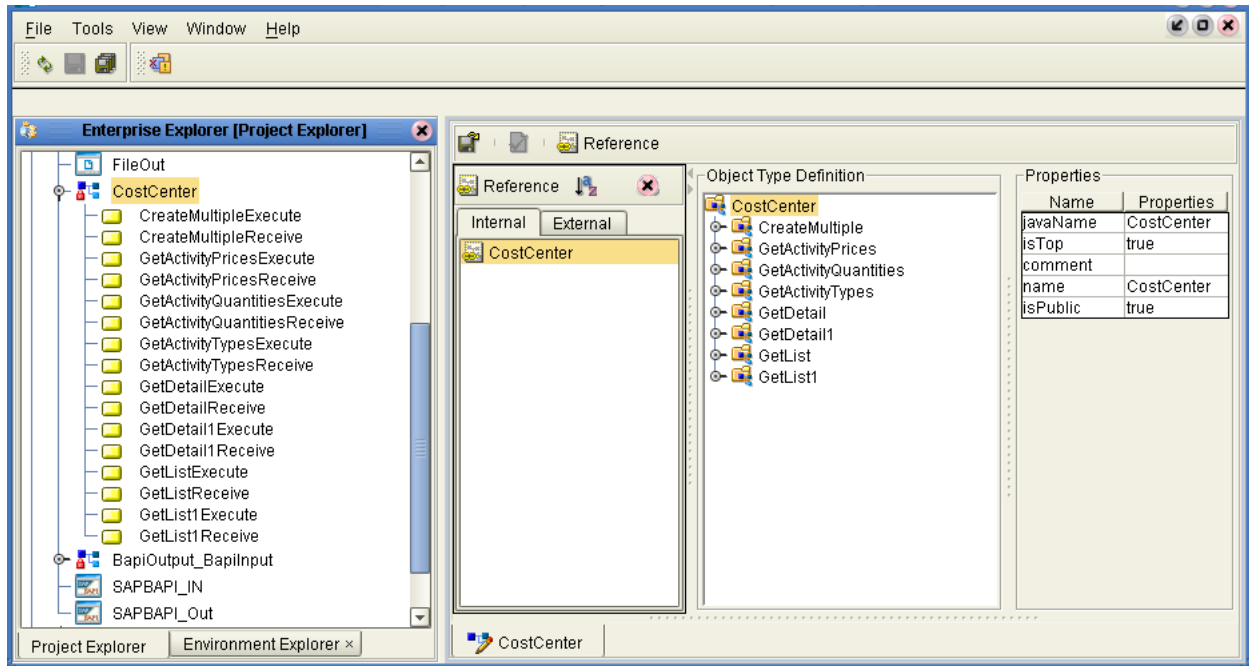
For information about the BAPI and RFC OTDs, refer to the section below.

You can now build the Collaborations or Business Processes as described in [“Building SAP \(ALE\) Business Logic with eInsight” on page 42](#) and [“Building SAP \(ALE\) Business Logic with eGate” on page 47](#). The section below describes the BAPI methods (operations) that are available for you to use in the source code for the Collaborations or Business Activities.

4.3 BAPI and RFC OTDs

When an OTD is built for an SAP R/3 business object such as Application Components→Controlling→CostCenter. This creates an OTD which has methods corresponding to all BAPIs in the SAP R/3 business object.

Figure 18 CostCenter OTD



The figure above shows the CostCenter OTD. The OTD has nodes for each of the BAPIs in the CostCenter business object. The OTD also has WSDL operations such as GetListExecute and GetListReceive. These WSDL operations are used when the OTD is used in a Business Process. The execute methods are used for client mode operations. The receive methods are used for server mode operations.

Configuring SAP R/3

For the SAP (BAPI) eWay to interact successfully with SAP R/3, you must configure the SAP R/3 application as described in this chapter.

The SAP screen captures in this chapter correspond to SAPGUI version 6.2, and SAP version 4.7. They are included to illustrate the general nature of the procedures, and contain only example values. Refer to the documentation supplied with SAP R/3 to determine the exact procedures.

In This Chapter

- [Creating the RFC Destination for the eWay](#) on page 36
- [Security Issues](#) on page 40

5.1 Creating the RFC Destination for the eWay

For the SAP (BAPI) eWay to receive communications from SAP R/3, you must set the eWay up as an RFC destination in SAP R/3 as described below.

To create the RFC destination for the eWay


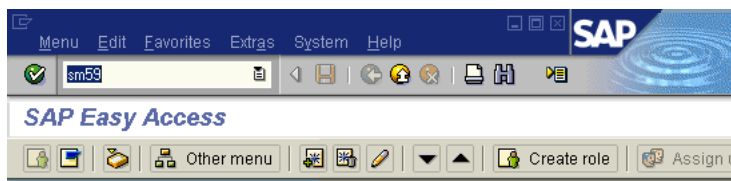
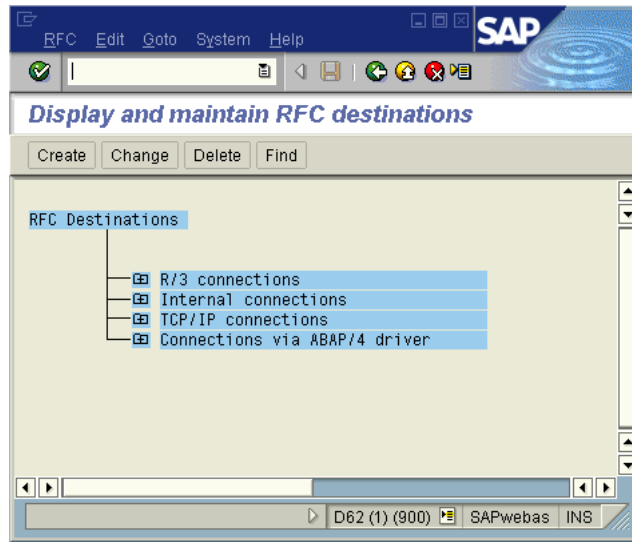
- 1 In the SAP window, click  to display the navigation box if necessary.
- 2 Type **SM59** as shown below and press ENTER.

Figure 19 Navigating to the SM59 Transaction



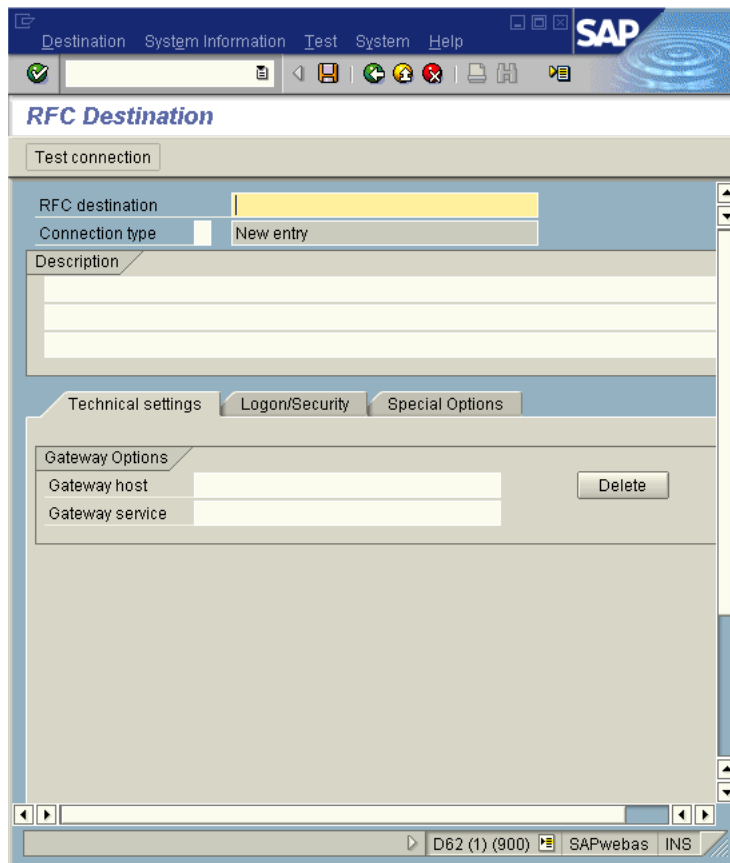
This displays the **RFC Destination Maintenance** window.

Figure 20 RFC Destination Maintenance Window



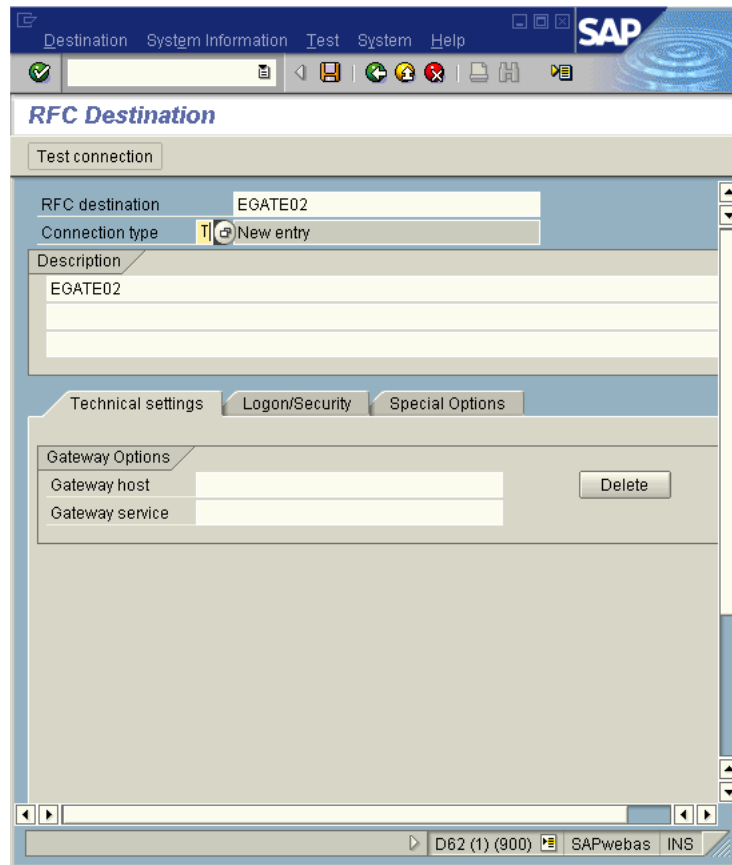
- 3 Click **TCP/IP connections** and **Create** to display the **RFC Destination** entry window.


Figure 21 RFC Destination Entry Window



- 4 Type in the name of the RFC Destination (use a Logical System name), an accompanying Description, and enter <T> for the Connection Type (TCP/IP).

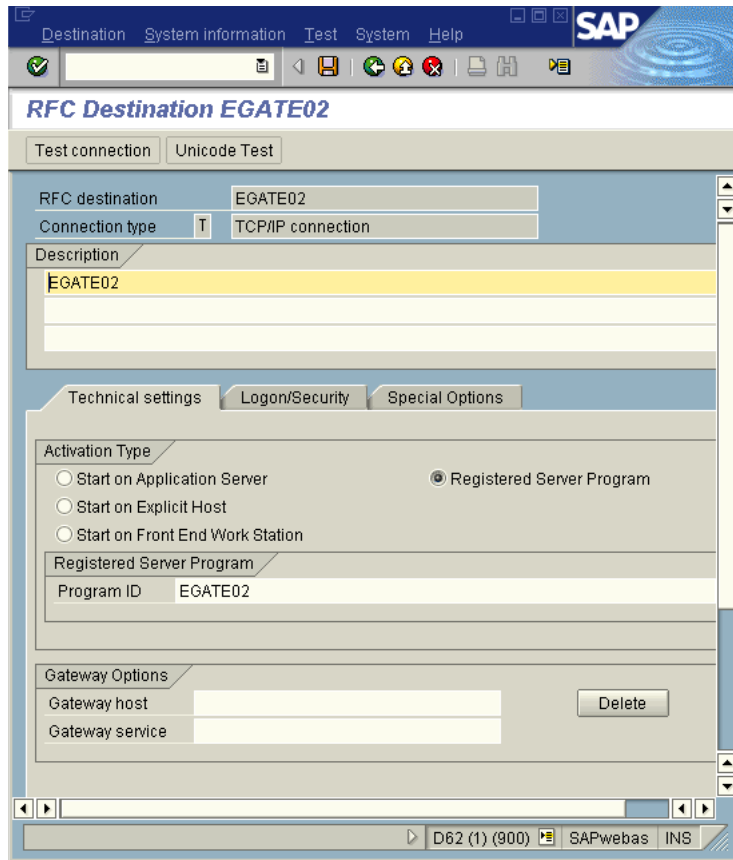
Figure 22 RFC Destination



- 5 Click **Save** , which displays the **RFC Destination** window corresponding to your entry.
- 6 Select the **Registered as Server Program** option.
- 7 Enter the Program ID and click **Save**.

This program ID must be exactly the same as that specified in the eWay **Program ID** property. This value is case sensitive. For information, refer to [“Program ID” on page 25](#).

Figure 23 RFC Destination Window



- 8 Click **Test Connection**, which tests the connection for logon speed and message transfer speed. When the eWay is running, the results are displayed in a table; otherwise, return code 3 is displayed.

Figure 24 Connection Test Results

Connection test STCDGW	
Connection type:	TCP/IP connection
Logon:	255 msec
0 KB:	496 msec
10 KB:	491 msec
20 KB:	504 msec
30 KB:	505 msec

5.2 Security Issues

SAP R/3 uses *authorization objects* to allow access to various levels of operation. A minimum set of authorization objects required for the SAP (BAPI) eWay to operate is described below. Use this only as a reference for setting up your own profiles.

These settings are located under **Cross-Application Authorization Objects**. Refer to the SAP R/3 documentation for additional information.

Function Group Access

Under **Auth. check for RFC access**, select:

- ARFC
- EDIN
- ERFC
- RFC1
- SCCR
- SYST
- ZDG1

Permission for Processing BAPI Type

Under **BAPI/EDI > Distributing master data and BAPI/EDI**, select:

- Receiving BAPIs via RFC

Locating, Importing, and Using the Sample Projects

The SAP eWay comes with sample Projects. You can import these Projects into Enterprise Designer and use them to quickly learn how to set up SAP (BAPI) eWays in ICAN Projects, Environments, and Deployment Profiles.

There is a sample Project for use with the eGate, and another for use with eGate in combination with eInsight.

This chapter describes how you import and use the sample Projects.

In This Chapter

- [About the Sample Projects](#) on page 41
- [Locating and Importing the Sample Projects](#) on page 42
- [Running the Sample Projects](#) on page 43
- [Building SAP \(BAPI\) Business Logic with eInsight](#) on page 47
- [Building SAP \(BAPI\) Business Logic with eGate](#) on page 53

6.1 About the Sample Projects

The SAP (BAPI) eWay includes the following sample Projects that you can import. This enables you to see how ICAN Projects can be to work with SAP R/3 applications.

- SAP_BAPI_JCE for use with eGate
- SAP_BAPI_BPEL for use with eInsight/eGate
- SAP_BAPI_TRFC_JCE for use with eGate
- SAP_BAPI_TRFC_BPEL for use with eInsight/eGate

SAP Version Support

The sample Projects supports SAP version 4.6x and 4.7.

Sample Project Contents

Each Project contains the following:

- Input data

- Connectivity Maps
- Inbound and Outbound Collaborations
- Inbound and outbound Business Processes

The sample Projects provide a Project that allows you to browse its configurations to learn how ICAN SAP Projects are designed. The Projects do not include Environments and Deployment Profiles necessary to deploy the sample Projects. To learn how to complete the Projects for deployment, refer to [“Deploying the Project” on page 45](#).

Sample Project Zip Files

The SAP (BAPI) eWay sample Projects are provided in the zip file:
SAP_BAPI_eWay_Sample.zip

This file contains four sample Project zip files and three input files:

- **SAPBAPI_JCE_504.zip** for the SAP_BAPI_JCE Project (eGate only)
- **SAPBAPI_BPEL_504.zip** for the SAP_BAPI_BPEL Project (eGate/eInsight)
- **SAPBAPI_JCE_TRFC_504.zip** for the SAP_BAPI_JCE Project (eGate only)
- **SAPBAPI_BPEL_TRFC_504.zip** for the SAP_BAPI_BPEL Project (eGate/eInsight)
- **inputBAPI_Inbound.~in** (inbound Collaboration input file)
- **inputBAPI_Outbound.~in** (outbound Collaboration input file)
- **inputALEData.txt**

Note: The sample Projects found in the *SAP_BAPI_eWay_Sample.zip* file require eGate 5.0.4 or higher.

6.2 Locating and Importing the Sample Projects

The eWay sample Projects are included in the **SAPBAPIeWayDocs.sar**. This file is uploaded separately from the SAP eWay .sar file during installation. For information, refer to [“Installing the SAP \(BAPI\) eWay” on page 13](#).

Once you have uploaded the **SAPBAPIeWayDocs.sar** to the Repository and you have downloaded the sample Projects (**SAP_BAPI_eWay_Sample.zip**) using the **DOCUMENTATION** tab in the Enterprise Manager, the sample zip file resides in the folder you specified during the download.

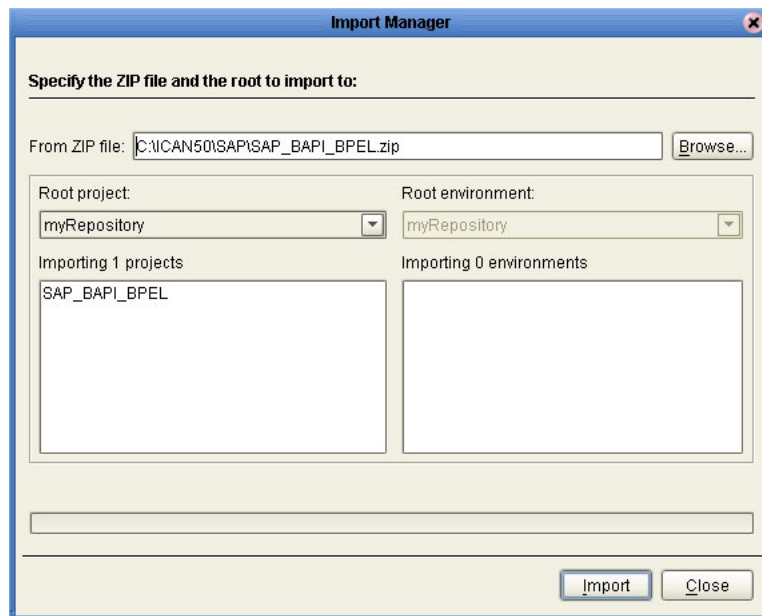
Before using a sample project, you must first import it into the SeeBeyond Enterprise Designer using the **Import Manager**.

To import the sample Projects

- 1 Unzip and save the contents of the **SAP_BAPI_eWay_Sample.zip** file.
- 2 In the **Project Explorer** tab of the Enterprise Designer, right-click the Repository and click **Import**. The **Import Manager** dialog box appears.
- 3 Click **Browse** and navigate to the folder where you unzipped the sample zip file.

- 4 Select a zip file and click Open. The **Import Manager** dialog box appears.

Figure 25 Import Manager Dialog Box



- 5 Click **Import**. A dialog box confirms that the Project import was successful.
- 6 Click **OK** and click **Close**.

You can now explore the Connectivity Maps, the OTDs, and the business logic for the Collaborations or Business Processes.

6.3 Running the Sample Projects

The sample Projects do not include the eGate Environments, Deployment Profiles, and the physical configurations for the eWays needed to deploy the Projects. The steps required to run the sample projects include:

- Configure the eWay Properties – see [“Configuring the eWay Properties” on page 17](#)
- Create the Environment Profile – see [“Creating the Environment Profile” on page 44](#)
- Configure the eWay Environment Properties – see [“Configuring the eWay Environment Properties” on page 23](#)
- Create an RFC destination for the eWay – see [“Creating the RFC Destination for the eWay” on page 36](#).
- Apply the .jar files to the Logical Host – see [“Uploading JAR Files to the Logical Host” on page 44](#)
- Deploy the Project – see [“Deploying the Project” on page 45](#)

- Run the Sample Project – see [“Running the Sample Project” on page 46](#)

6.3.1 Creating the Environment Profile

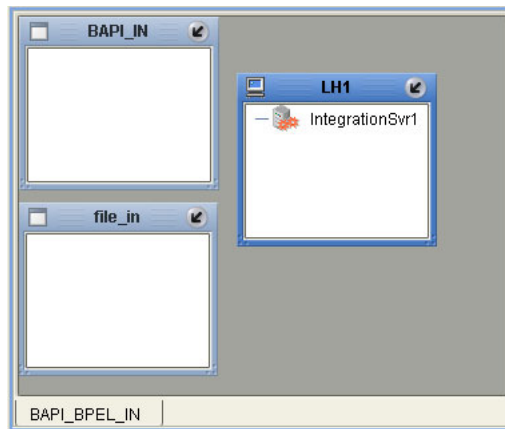
The procedure below describes how you create an eGate Environment for the SAP (BAPI) sample Projects. For detailed information about creating Environments, refer to the *eGate Integrator User’s Guide*.

To create eGate Environments for the sample Projects

- 1 In the Environment Explorer tab of the Enterprise Designer, right-click the Repository and click **New Environment**.
- 2 Right-click the Environment and click **New File External System** to add a File eWay and **New SAP BAPI External System** to add an SAP eWay. Which external systems to add and how many depends on the design of the Project.
- 3 Right-click the Environment and click **New Logical Host**.
- 4 Right-click the Logical Host and click **New SeeBeyond Integration Server**.

The figure below shows the completed Environment.

Figure 26 eGate Environment for Inbound Sample Project (eInsight)



After creating the Environment components, you must upload several .jar files to the Logical Host as described in the next section.

6.3.2 Uploading JAR Files to the Logical Host

Once you have added a Logical Host to the Environment as described in the section above, you must upload the .jar files listed below to the Logical Host. You must upload these files before you run the sample Projects.

- ♦ **sapjco.jar**
- ♦ **sapidocjco.jar**
- ♦ **sapidoc.jar**

You installed these .jar files during the installation in the following directory:

`ICANSuite\edesigner\usrdir\lib\ext`

where *ICANSuite* is the folder where you installed eGate Integrator.

To upload .jar files to the Logical Host

- 1 In the Environment Explorer tab in the Enterprise Designer, right-click the Logical Host, and click **Upload File**. The **Upload Third-Party Files** dialog box appears.
- 2 Click **Add** and navigate to the folder where the .jar files reside.
- 3 Double-click the files and click **OK**.

This uploads the .jar files to the Logical Host.

Once the files are uploaded to the Logical Host you configure the physical properties of the eWay as described in **“Configuring the eWay Environment Properties” on page 23**.

After the eWay configuration, you are ready to create the Deployment Profile as described in the section below.

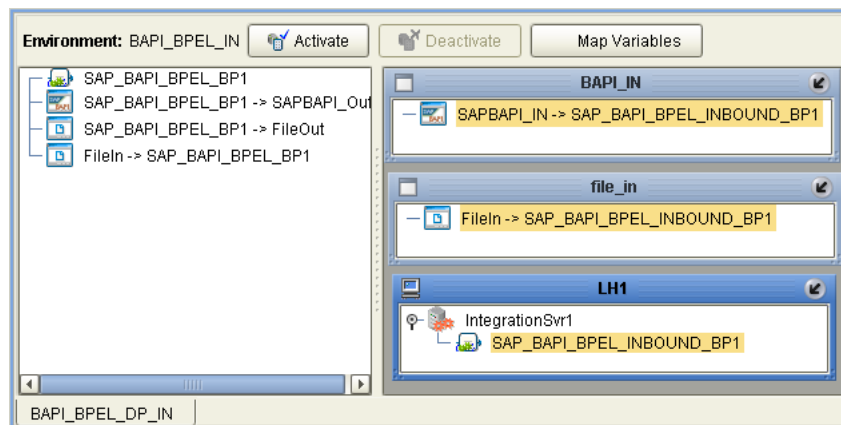
6.3.3 Deploying the Project

Once you have created the Environment and added its components, and you have uploaded the .jar files to the Logical Host as described in the section above, you can create the Deployment Profiles for the sample. The procedure below describes how to create Deployment Profiles for the inbound and outbound Collaborations.

To create Deployment Profiles for sample Projects

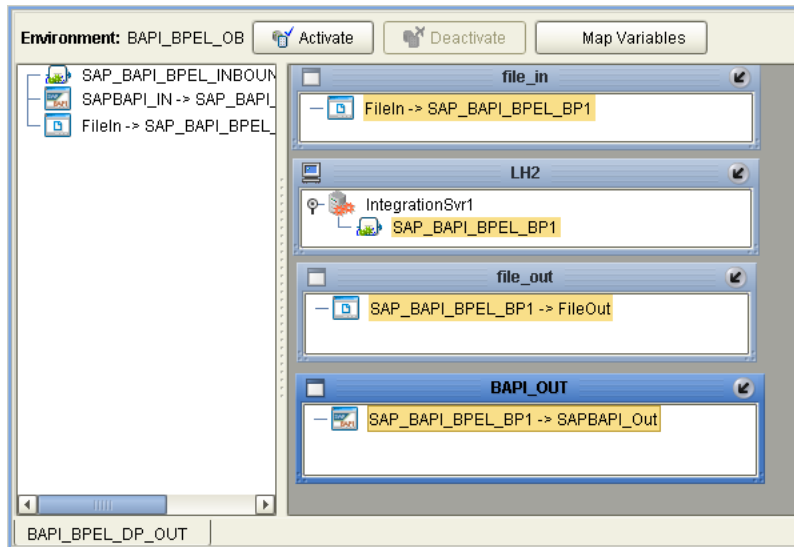
- 1 In the Project Explorer tab of the Enterprise Designer, right-click the Project and click **New Deployment Profile**.
- 2 Enter a name for the Deployment Profile, and select the Environment you created for the sample.
- 3 Double-click the Deployment Profile. Drag the Project components to the Environment component as shown in the figure below. The figure below shows the deployment profile for the inbound eInsight sample Project.

Figure 27 Inbound Deployment Profile (eInsight)



The figure below shows the deployment profile for the outbound eInsight sample Project.

Figure 28 Outbound Deployment Profile (eInsight)



6.3.4 Running the Sample Project

For instruction on how to deploy the sample Projects see the *eGate Integrator User's Guide*. Before you deploy the Projects, make sure you configure the SAP R/3 application as described in ["Configuring SAP R/3" on page 36](#).

Notes on Reactivating Inbound Projects

SAP prohibits multiple JCo servers from being registered with the same identifier. When the inbound Project is first deployed, a JCo server is created and registered with SAP with the identifier, which is specified in the environment configuration properties for the SAP eWay. If you reconfigure an existing Project or create a new inbound SAP Project for an SAP system with a previously used identifier, the existing deployment must be deactivated first.

6.4 Building SAP (BAPI) Business Logic with eInsight

This section describes how to build the SAP business logic with eInsight in the following sections:

- [Adding a New Business Processes](#) on page 47
- [Building an Inbound SAP Business Processes \(RFC\)](#) on page 47
- [Building Outbound SAP Business Processes \(RFC\)](#) on page 48
- [Building an Inbound SAP Business Processes \(tRFC\)](#) on page 50
- [Building an Inbound SAP Business Processes \(tRFC\)](#) on page 50

To see an example of SAP Business Processes and Connectivity Maps, import the SAP_BAPI_BPEL sample Project as described in [“Locating, Importing, and Using the Sample Projects”](#) on page 41.


6.4.1 Adding a New Business Processes

To add Business Processes

- In the **Project Explorer** tab of the Enterprise Designer, right-click the Project for which you intend to create a Business Process, click **New**, and then **Business Process**.

6.4.2 Building an Inbound SAP Business Processes (RFC)

To build an inbound SAP Business Processes

- 1 In the **Project Explorer** tab of the Enterprise Designer, expand the BAPI OTD. This displays the BAPI OTD methods.
- 2 Expand the **SeeBeyond**, **eWays**, **File**, and **FileClient** folders in the **Project Explorer** tab. You can now begin dragging the appropriate methods to the Business Process Designer canvas.
- 3 Drag the *GetListReceive* method of the **CostCenter** OTD to the Business Process Designer canvas. This creates two Activities on the canvas: **GetListReceive.Receive** and **GetListReceive.Reply**. The *receive* Activity is used to receive the RFM call from SAP. The *reply* Activity is used to return the results of the RFM call back to SAP.
- 4 Drag the *receive* method of the **FileClient** OTD to the Business Process Designer canvas.
- 5 Drag the *unmarshal* method of the **BapiOutput_BapiInput** OTD to the Business Process Designer canvas.
- 6 Configure all other Activities by highlighting the Activity and clicking **Show Properties** .
- 7 Link all components as described in *eInsight Business Process Manager User's Guide*.

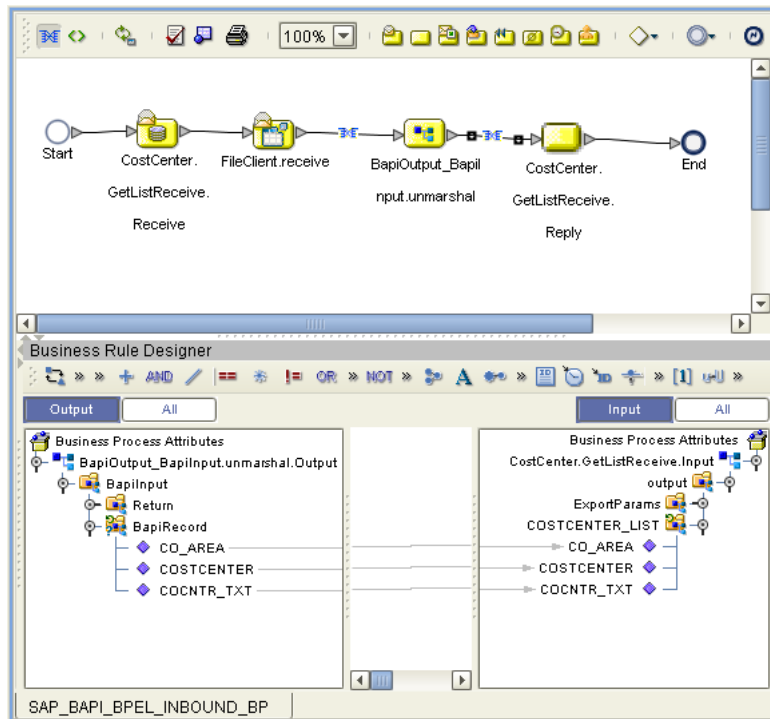
- 8 To create data mappings, right-click the link between the Activities and click **Add Business Rule**.
- 9 In the **Business Rule Editor** window, create the code and the data mappings. For details, refer to the *eInsight Business Process Manager User's Guide*.

The figure below shows an example of an inbound SAP Business Process including the data mapping in the **Business Rule Editor** window. This example shows the following process

- 1 The eWay receive an RFM call from SAP
- 2 The eWay reads sample data from a file
- 3 The eWay unmarshals it to the reply Activity to send it back to SAP as results of the RFM call.

To explore the business logic design for an actual Project, import the SAP_BAPI_BPEL sample Project as described in **"Importing the Sample Projects"** on page 44.


Figure 29 Inbound Business Process and Data Mapping



6.4.3 Building Outbound SAP Business Processes (RFC)

To build outbound SAP Business Processes

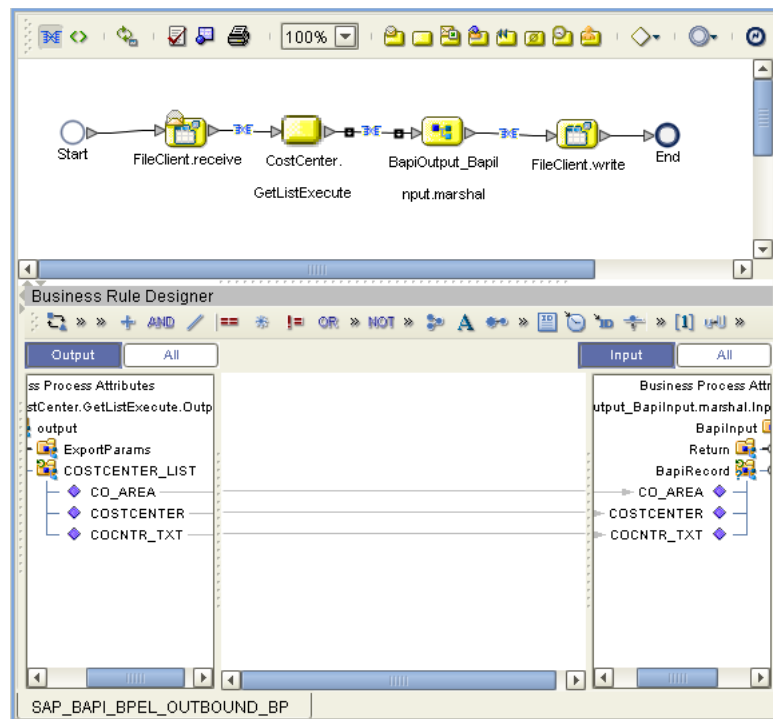
- 1 In the **Project Explorer** tab of the Enterprise Designer, expand the BAPI OTD. This displays the BAPI OTD methods.
- 2 Expand the **SeeBeyond**, **eWays**, **File**, and **FileClient** folders in the **Project Explorer** tab. You can now drag the appropriate methods to the Business Process Designer canvas.

- 3 Drag the *receive* method of the **FileClient** OTD to the Business Process Designer canvas.
- 4 Drag the *GetListExecute* method of the **CostCenter** OTD to the Business Process Designer canvas. This Activity executes the necessary BAPI methods on SAP, and retrieves the results back to the Activity synchronously.
- 5 Drag the *marshal* method of the **BapiOutput_BapiInput** OTD to the Business Process Designer canvas. This method stores the results returned by the BAPI.
- 6 Drag the *write* method of the **Fileclient** OTD to the Business Process Designer canvas.
- 7 Configure all other Activities by highlighting the Activity and clicking **Show Properties** .
- 8 Link all components as described in *eInsight Business Process Manager User's Guide*.
- 9 To create data mappings, right-click the link between the Activities and click **Add Business Rule**.
- 10 In the **Business Rule Editor** window, create the code and the data mappings. For details, refer to the *eInsight Business Process Manager User's Guide*.

The figure below shows an example of an outbound SAP Business Process including the data mapping in the **Business Rule Editor** window.

To explore the business logic design for an actual Project, import the SAP_BAPI_BPEL sample Project as described in **“Locating and Importing the Sample Projects”** on page 42.

Figure 30 Outbound Business Process and Data Mapping




6.4.4 Building an Inbound SAP Business Processes (tRFC)

To build an inbound SAP Business Processes

- 1 In the **Project Explorer** tab of the Enterprise Designer, expand the BAPI OTD. This displays the BAPI OTD methods.
- 2 Expand the **SeeBeyond**, **eWays**, **File**, and **FileClient** folders in the **Project Explorer** tab. You can now begin dragging the appropriate methods to the Business Process Designer canvas.
- 3 Drag the *IDOC_INBOUND_ASYNCHRONOUSReceive* method of the **RFC_IDOC_INBOUND_ASYNCHRONOUS** OTD to the Business Process Designer canvas. This creates two Activities on the canvas:
 - ♦ RFC_IDOC_INBOUND_ASYNCHRONOUS.IDOC_INBOUND_ASYNCHRONOUSReceive.Receive
 - ♦ RFC_IDOC_INBOUND_ASYNCHRONOUS.IDOC_INBOUND_ASYNCHRONOUSReceive.Reply.

The *receive* Activity is used to receive the RFM call from SAP. The *reply* Activity is used to return the results of the RFM call back to SAP.

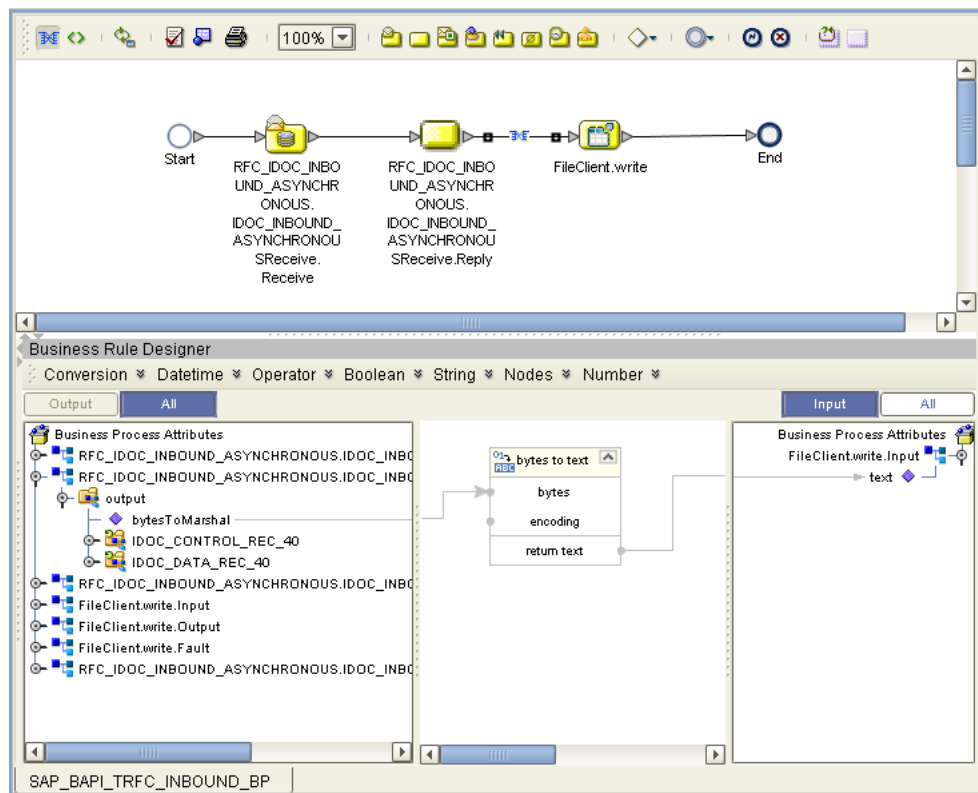
- 4 Drag the *write* method of the **FileClient** OTD to the Business Process Designer canvas.
- 5 Configure all other Activities by highlighting the Activity and clicking **Show Properties** .
- 6 Link all components as described in *eInsight Business Process Manager User's Guide*.
- 7 To create data mappings, right-click the link between the Activities and click **Add Business Rule**.
- 8 In the **Business Rule Editor** window, create the code and the data mappings. For details, refer to the *eInsight Business Process Manager User's Guide*.

The figure below shows an example of an inbound SAP Business Process including the data mapping in the **Business Rule Editor** window. This example shows the following process

- 1 The eWay receives an RFM call from SAP
- 2 The eWay reads sample data from a file
- 3 The eWay marshals the text to bytes and writes the results to a file.


To explore the business logic design for an actual Project, import the SAP_BAPI_BPEL sample Project as described in **["Importing the Sample Projects" on page 44](#)**.

Figure 31 Inbound Business Process and Data Mapping



6.4.5 Building Outbound SAP Business Processes (tRFC)

To build outbound SAP Business Processes

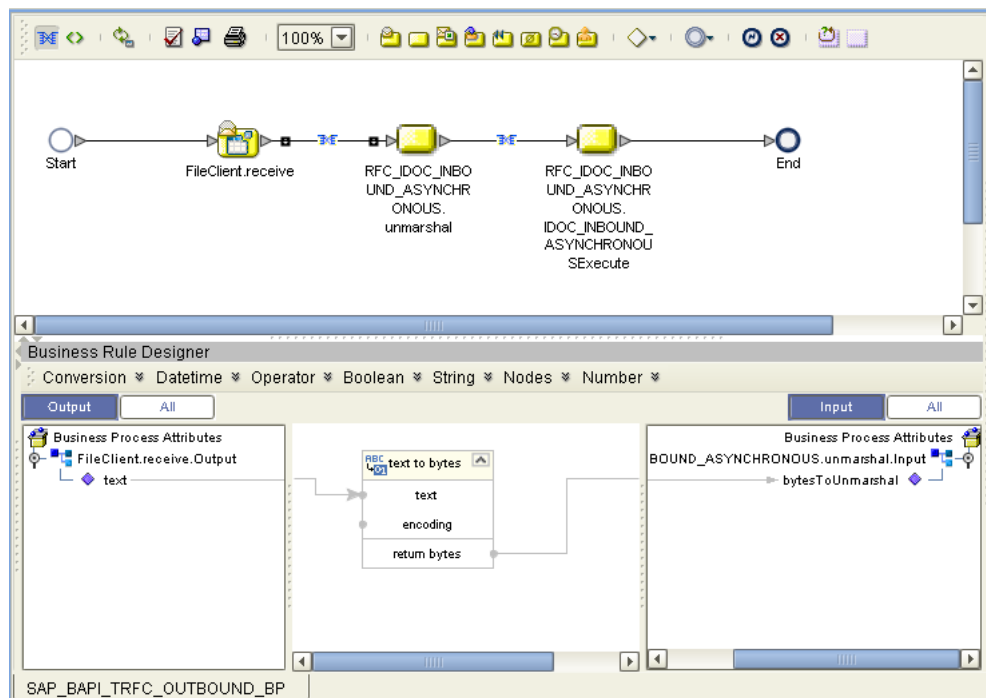
- 1 In the **Project Explorer** tab of the Enterprise Designer, expand the BAPI OTD. This displays the BAPI OTD methods.
- 2 Expand the **SeeBeyond**, **eWays**, **File**, and **FileClient** folders in the **Project Explorer** tab. You can now begin dragging the appropriate methods to the Business Process Designer canvas.
- 3 Drag the *Receive* method of the **FileClient** OTD to the Business Process Designer canvas.
- 4 Drag the *unmarshal* method of the **RFC_IDOC_INBOUND_ASYNC...** OTD to the Business Process Designer canvas. This Activity unmarshals the text and returns bytes back to the Activity asynchronously.
- 5 Drag the *RFC_IDOC_INBOUND_ASYNC...IDOC_INBOUND_...EXECUTE* method from the same OTD. This Activity stores the results returned by the BAPI.
- 6 Configure all other Activities by highlighting the Activity and clicking **Show Properties** .
- 7 Link all components as described in *eInsight Business Process Manager User's Guide*.

- 8 To create data mappings, right-click the link between the Activities and click **Add Business Rule**.
- 9 In the **Business Rule Editor** window, create the code and the data mappings. For details, refer to the *eInsight Business Process Manager User's Guide*.

The figure below shows an example of an outbound SAP Business Process including the data mapping in the **Business Rule Editor** window.

To explore the business logic design for an actual Project, import the SAP_BAPI_TRFC_BPEL sample Project as described in **“Locating and Importing the Sample Projects” on page 42**.

Figure 32 Outbound Business Process and Data Mapping



6.5 Building SAP (BAPI) Business Logic with eGate

This section describes how to build the outbound SAP Collaborations in the following sections:

- [Building Inbound Collaborations \(RFC\)](#) on page 53
- [Building Outbound Collaborations \(RFC\)](#) on page 54
- [Building Inbound Collaborations \(tRFC\)](#) on page 55
- [Building Outbound Collaborations \(tRFC\)](#) on page 56

To see an example of SAP Collaborations and Connectivity Maps, import the SAP_BAPI_JCE sample Project as described in [“Locating, Importing, and Using the Sample Projects”](#) on page 41.

6.5.1 Building Inbound Collaborations (RFC)

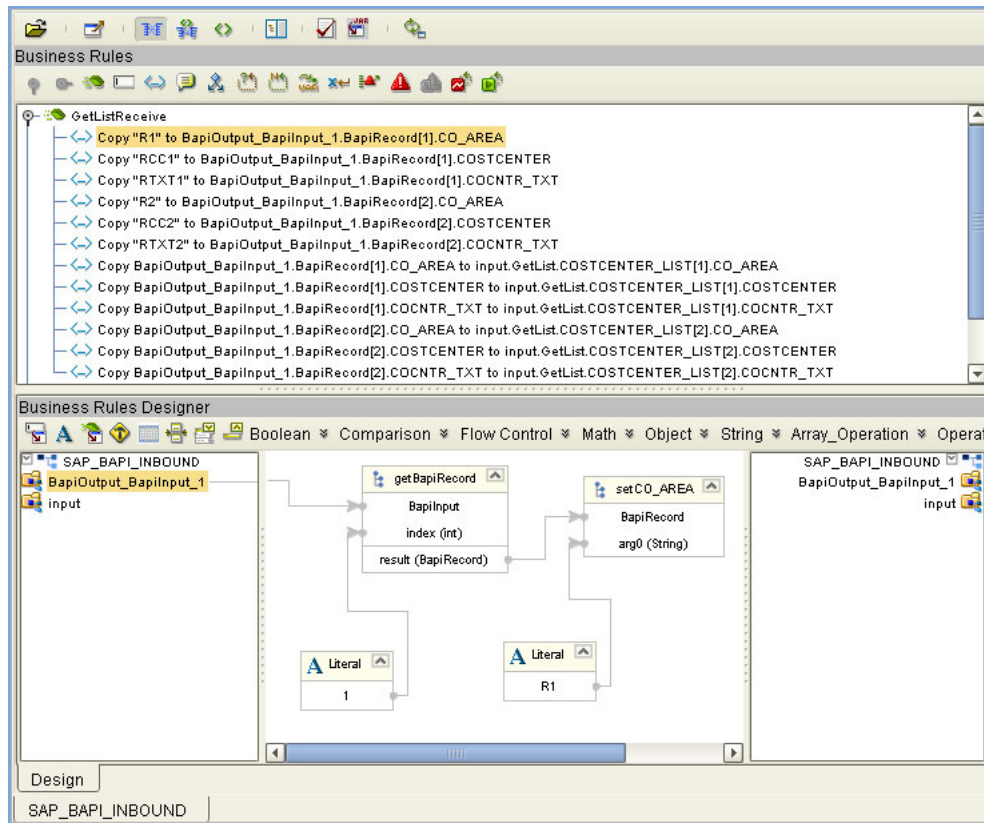
After you have built the BAPI OTDs as described in [“Creating BAPI and RFC OTDs”](#) on page 31, you are ready to build Collaborations.

To build Collaborations

- 1 In the **Project Explorer** tab of the Enterprise Designer, right-click the Project, click **New**, and then **Collaboration Definition (Java)**.
- 2 Complete the **Collaboration Definition** wizard. For details about this wizard, refer to the *eGate Integrator User's Guide*.
- 3 Map the relevant import parameters for the desired BAPI and select the *execute* method to execute the BAPI on the SAP system.
- 4 In the **Collaboration Editor** window, create the source code and the data mappings for the Collaboration. For details, refer to the *eGate Integrator User's Guide*.

The figure below shows an example of data mapping for an outbound SAP (BAPI) Collaboration. In this example hard-coded values are first copied to the BapiOutput_BapiInput OTD, and then copied to the CostCenter GetList function Module. To explore the business logic design for an actual Project, import the SAP_BAPI_JCE sample Project as described in [“Locating and Importing the Sample Projects”](#) on page 42.

Figure 33 Inbound Collaboration



6.5.2 Building Outbound Collaborations (RFC)

After you have built the BAPI OTDs as described in [“Creating BAPI and RFC OTDs” on page 31](#), you are ready to build Collaborations.

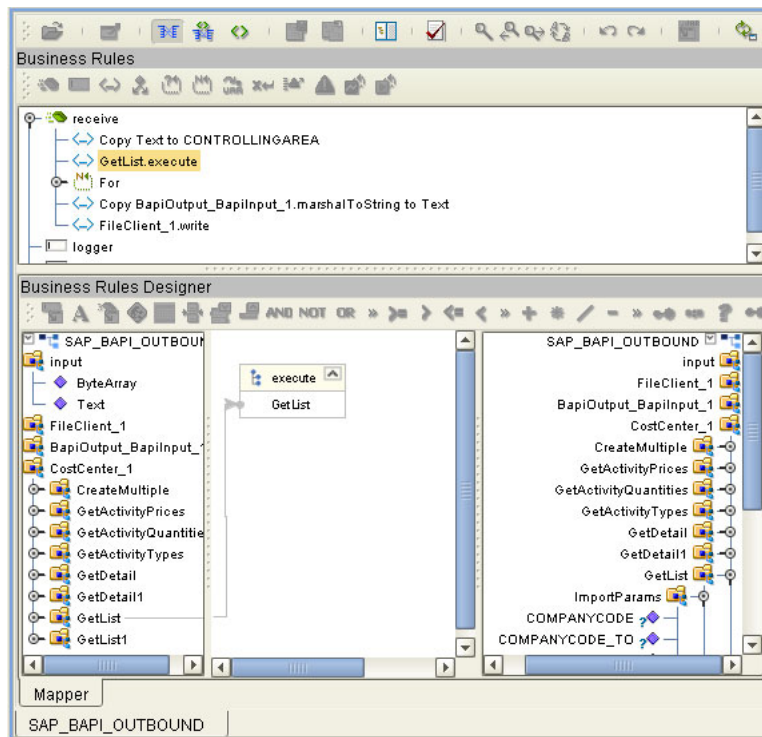
To build Collaborations

- 1 In the **Project Explorer** tab of the Enterprise Designer, right-click the Project, click **New**, and then **Collaboration Definition (Java)**.
- 2 Complete the **Collaboration Definition** wizard. For details about this wizard, refer to the *eGate Integrator User’s Guide*.
- 3 Map the relevant import parameters for the desired BAPI and select the *execute* method to execute the BAPI on the SAP system.
- 4 In the **Collaboration Editor** window, create the source code and the data mappings for the Collaboration. For details, refer to the *eGate Integrator User’s Guide*.

The figure below shows an example of data mapping for an outbound SAP (BAPI) Collaboration. In this example, input text is copied to the **CONTROLLINGAREA** value of the **CostCenter** OTD. An *execute* method is then used to loop through all the text values and copy the **CO_AREA**, **COSTCENTER**, and **COCNTR_TXT** values to the **BapiOutput_BapiInput** OTD. These values are then marshaled and the results written to a text file. To explore the business logic design for an actual Project, import the

SAP_BAPI_JCE sample Project as described in **“Locating and Importing the Sample Projects” on page 42.**

Figure 34 Outbound Collaboration



6.5.3 Building Inbound Collaborations (tRFC)

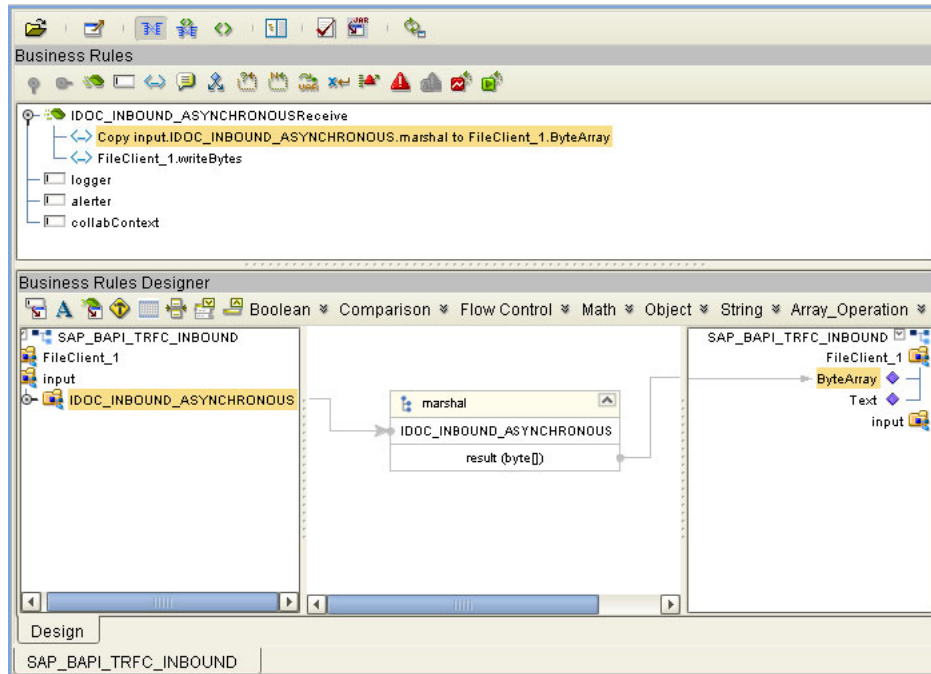
After you have built the BAPI OTDs as described in **“Creating BAPI and RFC OTDs” on page 31**, you are ready to build Collaborations.

To build Collaborations

- 1 In the **Project Explorer** tab of the Enterprise Designer, right-click the Project, click **New**, and then **Collaboration Definition (Java)**.
- 2 Complete the **Collaboration Definition** wizard. For details about this wizard, refer to the *eGate Integrator User’s Guide*.
- 3 Map the relevant import parameters for the desired BAPI and select the *execute* method to execute the BAPI on the SAP system.
- 4 In the **Collaboration Editor** window, create the source code and the data mappings for the Collaboration. For details, refer to the *eGate Integrator User’s Guide*.

The figure below shows an example of data mapping for an outbound SAP (BAPI) Collaboration. In this example, an IDoc is received from SAP, marshaled into a single message, placed into a byte array, and then written out to a file. To explore the business logic design for an actual Project, import the SAP_BAPI_TRFC_JCE sample Project as described in **“Locating and Importing the Sample Projects” on page 42.**

Figure 35 Inbound Collaboration



6.5.4 Building Outbound Collaborations (tRFC)

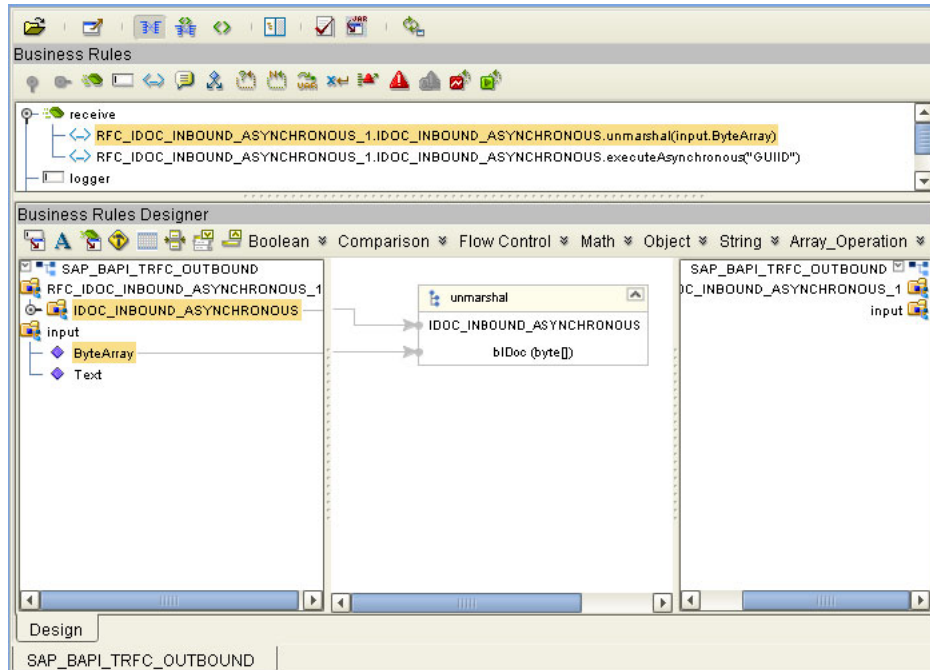
After you have built the BAPI OTDs as described in [“Creating BAPI and RFC OTDs” on page 31](#), you are ready to build Collaborations.

To build Collaborations

- 1 In the **Project Explorer** tab of the Enterprise Designer, right-click the Project, click **New**, and then **Collaboration Definition (Java)**.
- 2 Complete the **Collaboration Definition** wizard. For details about this wizard, refer to the *eGate Integrator User’s Guide*.
- 3 Map the relevant import parameters for the desired BAPI and select the *execute* method to execute the BAPI on the SAP system.
- 4 In the **Collaboration Editor** window, create the source code and the data mappings for the Collaboration. For details, refer to the *eGate Integrator User’s Guide*.

The figure below shows an example of data mapping for an outbound SAP (BAPI) Collaboration. It describes how an iDoc is sent to SAP. The process requires the input byte file to be unmarshaled and delivered asynchronously. An additional parameter called “GUIID” is also passed into SAP. To explore the business logic design for an actual Project, import the SAP_BAPI_TRFC_JCE sample Project as described in [“Locating and Importing the Sample Projects” on page 42](#).

Figure 36 Outbound Collaboration



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