

SeeBeyond ICAN Suite

SAP (ALE) eWay Intelligent Adapter User's Guide

Release 5.0



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Version 20031222103507.

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About This Guide

This chapter provides an overview of the this user's guide; including its contents and writing conventions.

In This Chapter

- **Contents of This Guide** on page 6
- **Writing Conventions** on page 7
- **Supporting Documents** on page 8
- **SeeBeyond Web Site** on page 8

1.1 Contents of This Guide

This guide contains the following information:

- **Chapter 2, “Introducing the SAP (ALE) eWay” on page 9** provides an overview of the SAP Application Link Enabling (ALE) eWay and provides a brief overview of the steps necessary to use the SAP eWay in eGate Projects.
- **Chapter 3, “Installing the SAP (ALE) eWay” on page 19** describes how to install the SAP eWay, its documentation, and its sample Projects.
- **Chapter 4, “Configuring SAP (ALE) eWays” on page 21** describes how to build a SAP eWay Project.
- **Chapter 5, “Building SAP (ALE) Project Business Logic” on page 31** describes how to build the business logic for the SAP eWay by creating Object Type Definitions (OTDs).
- **Chapter 6, “Working with SAP (ALE) Sample Projects” on page 53** describes how to import and use the sample Projects provided with the SAP eWay.
- **Chapter 7, “Configuring the SAP System for eWay Connections” on page 59** describes how to configure the SAP system to work with the SAP eWay.
- **Chapter 8, “Managing Deployed eWays” on page 77** describes how to monitor and reconfigure deployed eWays.

1.2 Writing Conventions

The following writing conventions are observed throughout this document.

Table 1 Writing Conventions

Text	Convention	Example
Button, file, icon, parameter, variable, method, menu, and object names.	Bold text	<ul style="list-style-type: none"> ▪ Click OK to save and close. ▪ From the File menu, select Exit. ▪ Select the logicalhost.exe file. ▪ Enter the timeout value. ▪ Use the getClassName() method. ▪ Configure the Inbound File eWay.
Command line arguments and code samples	Fixed font. Variables are shown in <i>bold italic</i> .	<code>bootstrap -p <i>password</i></code>
Hypertext links	Blue text	For more information, see “Writing Conventions” on page 7.

Additional Conventions

Windows Systems

For the purposes of this guide, references to “Windows” will apply to Microsoft Windows Server 2003, Windows XP, and Windows 2000.

Path Name Separator

This guide uses the backslash (“\”) as the separator within path names. If you are working on a UNIX system, please make the appropriate substitutions.

1.3 Supporting Documents

The following SeeBeyond documents provide additional information about the Integrated Composite Application Network (ICAN) Suite:

- *SeeBeyond ICAN Suite Primer*
- *SeeBeyond ICAN Suite Installation Guide*
- *eGate Integrator User's Guide*
- *eGate Integrator Tutorial*
- *SeeBeyond ICAN Suite Deployment Guide*

1.4 SeeBeyond Web Site

The SeeBeyond Web site is a useful source for product news and technical support information at www.seebeyond.com.

Introducing the SAP (ALE) eWay

This chapter provides an overview of the SAP (ALE) eWay and its Intermediate Document (IDoc) format.

In This Chapter

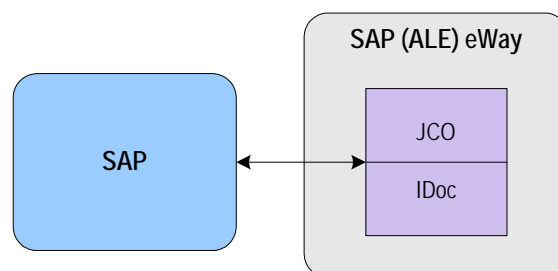
- [About the SAP \(ALE\) eWay](#) on page 9
- [The SAP \(ALE\) eWay Data Flows](#) on page 13
- [Supported Operating Systems](#) on page 17
- [System Requirements](#) on page 17
- [External System Requirements](#) on page 17
- [Quick Overview: Implementing SAP \(ALE\) eWays in eGate Projects](#) on page 18

2.1 About the SAP (ALE) eWay

The SAP (ALE) eWay connects eGate to SAP enterprise-management software within a network of diverse hardware and software systems. Using one or more SAP eWays, eGate can act as a bus, linking SAP applications and other software systems, or differently-configured SAP systems. This eWay allows bidirectional data exchange between eGate and an SAP system via SAP's ALE interface method, which employs SAP's IDoc format.

The SAP (ALE) eWay and the SAP system communicate via the JCo and IDoc libraries as shown below.

Figure 1 SAP (ALE) Overview



2.1.1 The ALE Interface

Real-time communications with an SAP system is accomplished through the use of SAP's ALE layer running on top of SAP's Transactional Remote Function Call (tRFC); a version of Remote Procedure Call which guarantees uniqueness of transactions. SAP provides the API libraries for:

- Enabling connection to the SAP system, given the appropriate Host and Identification parameters
- Marshaling of arguments to and from the SAP system
- Executing (client-mode) or defining (server-mode) tRFC Services on the SAP system

ALE supports the transfer of information between applications by means of messaging, rather than file transfer. Transactions are exchanged using the SAP IDoc format, which is basically a fixed message. The IDoc file is interpreted by correlating with an IDoc Description file or an IDoc message description obtained from the SAP system.

2.1.2 BAPI Versus ALE-BAPI

SAP's ALE-BAPI mechanism also provides access to processes and data residing in the SAP system, but with one major difference: that access is asynchronous. In other words, data retrieved from the SAP system is not guaranteed to be the most current; there could have been several seconds lapse between when data was captured into an BAPI and when it was sent out via ALE to the external system. Also, if data in an BAPI is sent into SAP, it may not be posted immediately into the database tables. Another difference is data communicated through BAPIs tend to be overly comprehensive and lengthy.

In contrast, BAPIs provide synchronous access to SAP. That is, a request by an external process for data to be retrieved from or posted into the SAP system is executed immediately and control is returned to the caller only when the transaction has completed (or failed). Moreover, the data exchanged is brief as compared with BAPIs.

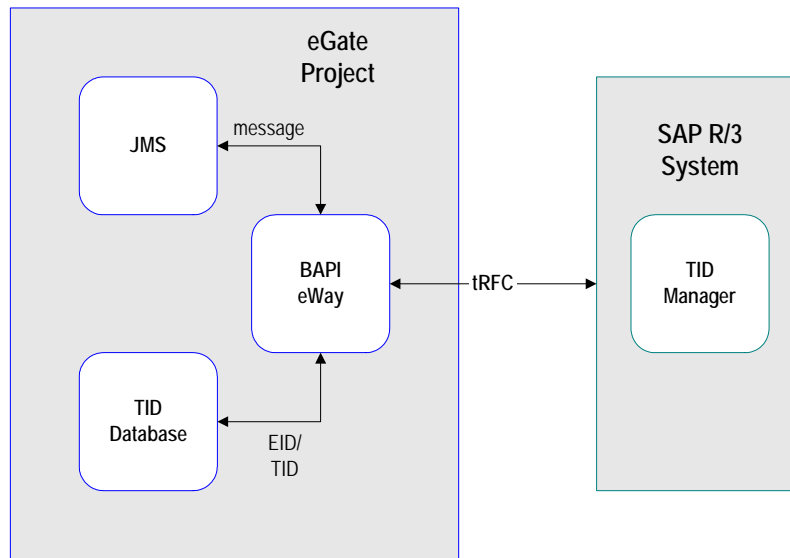
Topic	ALE-BAPI	BAPI
Communication	Asynchronous	Synchronous
Data from SAP	Sending may lag capture into BAPI	Immediate sending
Data to SAP	Posting may lag receipt of data	Immediate posting
Data content	Lengthy and overly comprehensive	Brief and selective

2.1.3 tRFC Communications

Messages can be sent to the SAP R/3 host via Transactional RFC (tRFC) or regular RFC. To use the tRFC mode, the **Transaction mode** property must be enabled as described in [Specifying the Transaction Mode](#) on page 25. Otherwise, the eWay sends or receives the message via regular RFC, which has been described previously.

With tRFC, the receiving SAP system relies on a unique Transactional ID (TID) sent with the message to ascertain whether or not a transaction has ever been processed by it before. This TID is assigned by the SAP R/3 system. Every message received from this eWay is checked against an internal TID database to ensure that it has not already been processed.

Figure 2 tRFC Communications

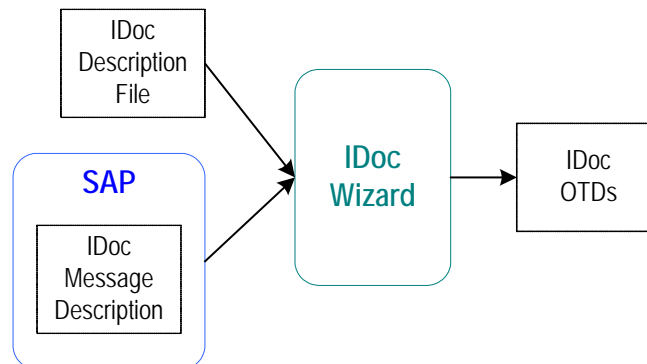


2.1.4 The SAP IDoc Wizard

The SAL (ALE) eWay includes the SAP IDoc wizard. The wizard parses the SAP IDoc description files and builds the corresponding OTD. You can have the wizard build the IDoc OTD using a description file from a specified location or by connecting to SAP and retrieving the IDoc structure for the required message format.

For detailed information about using the SAP IDoc wizard to create IDoc OTDs, refer to [Building SAP \(ALE\) Project Business Logic](#) on page 31.

Figure 3 SAP IDoc Wizard Overview



2.1.5 The SAP (ALE) eWay Features

The SAP (ALE) eWay includes the following features:

- Provides inbound and outbound access for SAP R/3 systems via the ALE interface
- Executes (client-mode) or defines (server-mode) RFC Services on the SAP system.

2.1.6 The SAP IDoc Format

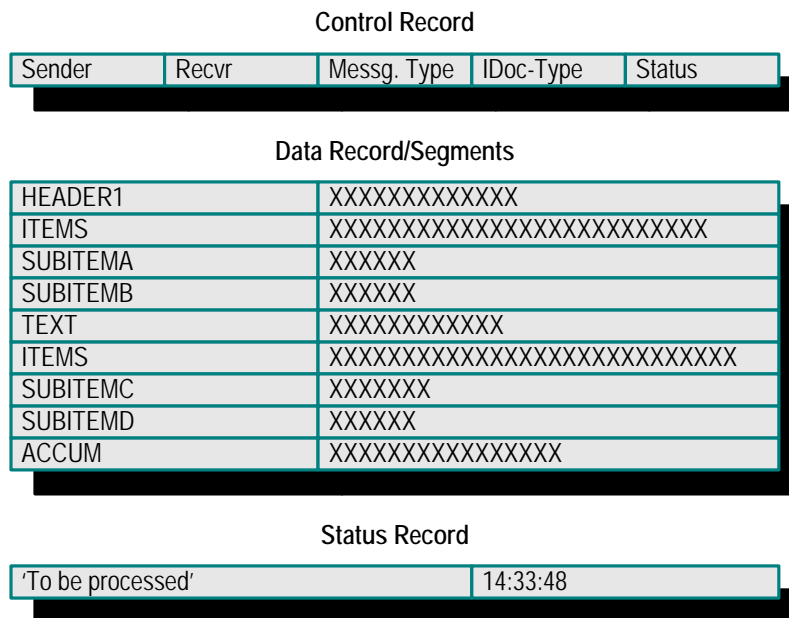
IDocs are used as containers for information, and are used to upload data to and download data from other systems. IDocs allow independence between the format and content of the message.

Several hundred IDocs are supplied with each R/3 system, serving as templates for a wide variety of applications. The IDoc hierarchy is represented by the following terminology:

- **Message Types** are related to specific applications such as Orders.
- **IDoc Types** are different versions of standard Message Types, such as Orders for specific items or services.

A typical SAP IDoc consists of Control, Data, and Status records, as shown in [Figure 4 on page 12](#). Status records, however, are not used by the ALE interface.

Figure 4 SAP IDoc Structure



2.2 The SAP (ALE) eWay Data Flows

The SAP eWay controls the communication protocol layer between the SAP host and eGate, and can be configured to process data in either direction.

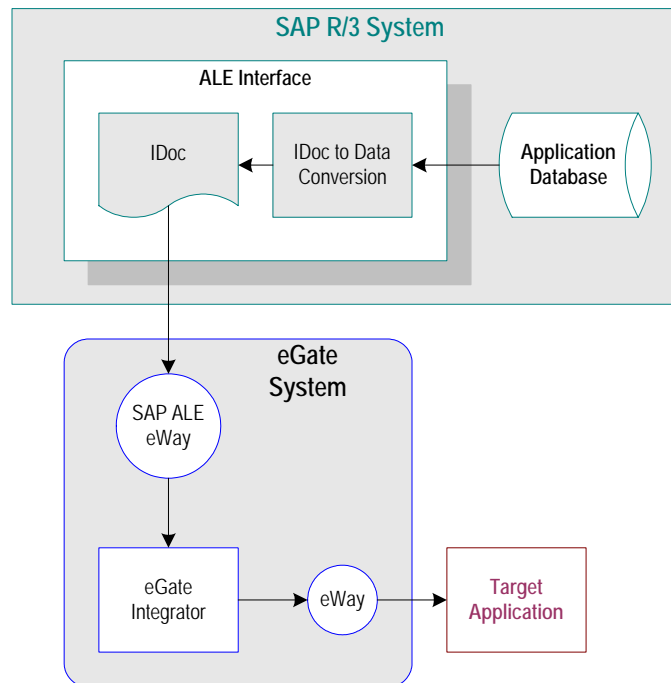
The eGate system, in turn, connects to another application through an eWay designed specifically for that system. This external system may be either another (differently configured) SAP system or a non-SAP system.

2.2.1 Inbound Data Flow: SAP to eGate

The figure below describes the inbound data flow from SAP systems to eGate. During routine operations, an application on the SAP system generates a transaction designated for an external system. The ALE interface converts the data from the internal data format to the IDoc format, and sends it to the SAP (ALE) eWay, which acts as an IDoc server.

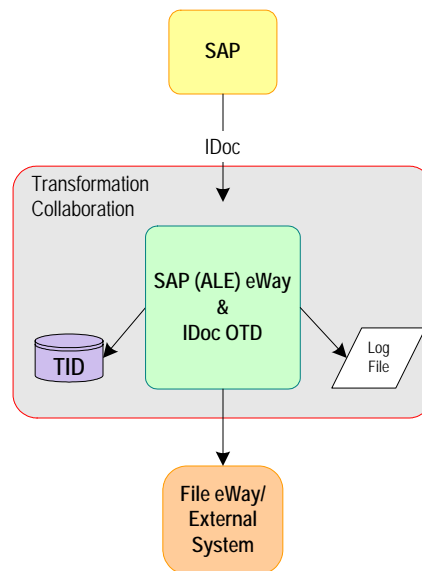
The eGate system receives the IDoc data from the eWay, performs any necessary processing or routing, and sends the information to another eWay connected to the recipient system. Here, it is converted to the correct format for the target application.

Figure 5 Inbound Data Flow: SAP to eGate



During routine operation, some application on the SAP R/3 system generates a transaction designated for a target application. The data is converted to IDoc format by the ALE Interface and sent via tRFC to the SAP (ALE) eWay.

Figure 6 Inbound Message Processing Flow: SAP to eGate



The diagram above shows the following inbound message processing flow:

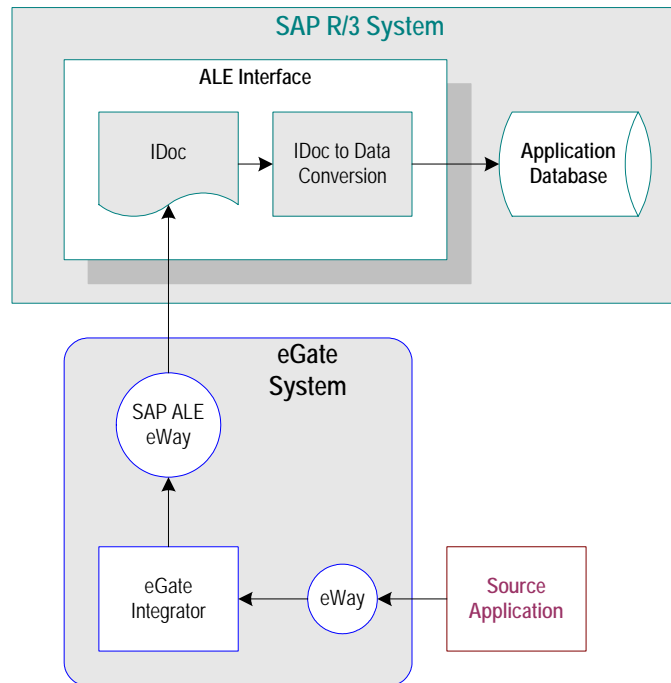
- 1 The eWay reads in the required configuration parameters and establishes a network connection with the SAP system, which becomes the IDoc server.
- 2 When the IDoc is sent from SAP via tRFC, the SAP eWay receives it via the *receiveIDoc* method in the IDoc OTD.
- 3 The eWay verifies that the Transactional ID (TID) of the received transaction has not previously been committed (processed successfully) by this eWay.
- 4 A file-based DBMS is used to track transactions that have been committed successfully or rolled back, each with a timestamp. To expedite database searches, the database is purged periodically to delete all entries that have exceeded their specified lifetimes.
- 5 If identified successfully, the process moves on to the next step. If not, the eWay composes the appropriate response and logs an exception in the log file.
- 6 If the Collaboration fails, an exception is logged in the log file.
- 7 If the message sent to eGate is not identifiable and/or transformable, an exception is logged in the log file.
- 8 The eWay then repeats the procedure beginning with step 2.

2.2.2 Outbound Data Flow: eGate to SAP

The figure below described the outbound data flow from eGate to the SAP system. An application external to the SAP system generates a transaction designated for an SAP application. The eGate system receives the transaction through an eWay, performs any necessary processing or routing, and sends the information to the SAP (ALE) eWay. This eWay converts the data to SAP IDoc format and sends it to the SAP system's ALE

Interface. Here, it is converted to the correct internal data format and stored in the application database.

Figure 7 Outbound Data Flow: eGate to SAP



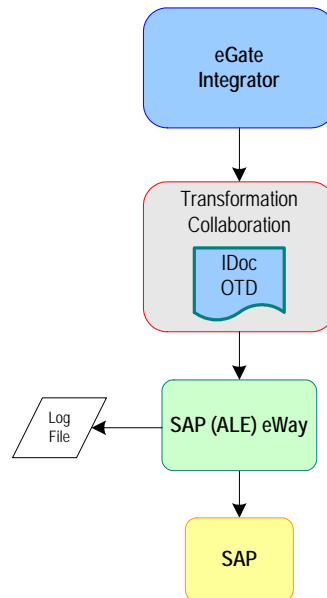
Before the eWay can install functions on the SAP system, it must first register its Program ID. This Program ID is associated with an SAP RFC Destination, which should have been set up previously on SAP (transaction **SM59**).

Some application external to SAP generates data and sends the data to eGate via an eWay. eGate then performs any necessary processing or routing, and sends the data to the SAP (ALE) eWay.

Messages are sent to the SAP R/3 host via Transactional RFC (tRFC). With tRFC, the receiving SAP system relies on a unique Transactional ID (TID) sent with the message to ascertain whether or not a transaction has ever been processed by it before. The SAP (ALE) eWay assumes that all messages handled are new and assigns a new TID to each message (the counter is persistently stored by the eWay).

Dynamic routing of messages to different SAP R/3 hosts is not supported by the eWay, because the required routing information is not inherently part of the IDoc message format. In client mode, a single instance of the SAP (ALE) eWay can establish an SAP R/3 connection with only one host (and as one user) at a time. Additional instances are required to connect to a different SAP R/3 host or as a different user.

Figure 8 Outbound Message Processing Flow: eGate to SAP



The diagram above shows the following outbound message processing flow:

- 1 When the Collaboration starts to run, the eWay is initialized with its configuration properties.
- 2 The IDoc message format is retrieved from SAP or from the specified IDoc description file.
- 3 The data is unmarshaled to the IDoc OTD and sent to SAP via the SAP (ALE) eWay.
- 4 The eWay associates the next TID (from a persistent resettable counter) with the transformed outbound message and sends it via tRFC to the SAP host.
- 5 If no exceptions are raised by the receiving SAP host, the next TID is incremented.
- 6 If exceptions are raised, and the error is unrecoverable because re-transmission is not feasible, the offending outbound message is logged in the log file.
- 7 The eWay repeats the procedure beginning with step 2.

2.2.3 SAP R/3 Version Support Per Supported Operating System

The table below shows which version of SAP R/3 are supported per supported operating system.

Table 2 English-Language Version

Operating System	4.0B	4.5B	4.6B	4.6C	4.7
Windows 2000 SP1	X	X	X	X	X
Windows 2000 SP2	X	X	X	X	X
Windows 2000 SP3					X
Windows XP SP1a					X
Windows Server 2003					X
Sun Solaris 8	X	X	X	X	X
Sun Solaris 9	X	X	X	X	X
IBM AIX 5.1	X	X	X	X	X
IBM AIX 5.2					X
HP-UX 11.0	X	X	X	X	X
HP-UX 11i	X	X	X	X	X

2.3 Supported Operating Systems

The SAP eWay is available for the following operating systems:

- Windows Server 2003, Windows XP SP1a, and Windows 2000 SP3
- HP-UX 11.0 and 11i
- IBM AIX 5.1 and 5.2
- Sun Solaris 8 and 9

2.4 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*.

2.5 External System Requirements

The SAP 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
- Supports SAP JCo 2.1.x and IDoc 1.0.1 libraries

Your SAP R/3 system must be configured to communicate with the SAP (ALE) eWay as described in [Configuring the SAP System for eWay Connections](#) on page 59.

2.6 Quick Overview: Implementing SAP (ALE) eWays in eGate Projects

This section provides a quick overview of the overall process of implementing SAP (ALE) eWays in the process of building and deploying a eGate Projects.

- 1 Install the SAP eWay, its documentation, and its sample Projects as described in [“Installing the SAP \(ALE\) eWay” on page 19](#).
- 2 Create a Project as described in the *eGate Integrator User’s Guide*.
- 3 Create an IDoc OTD as described in [“Building SAP \(ALE\) Project Business Logic” on page 31](#).
- 4 For eInsight, build the Business Processes and Connectivity Maps as described in [“Building SAP \(ALE\) Business Logic with eInsight” on page 44](#).
- 5 For eGate, build the Collaboration and Connectivity Maps as described in [“Building SAP \(ALE\) Business Logic with eGate” on page 49](#).
- 6 Configure the logical properties of the eWay as described in [“Configuring Logical eWay Properties” on page 22](#).
*You must change the **Transaction Mode** property to **Transactional**. The non-transactional mode is not supported in this release.*
- 7 Create an eGate Environment and add the SAP eWay as described in [“Adding SAP \(ALE\) eWays to Environments” on page 26](#).
- 8 Configure the physical properties of the eWay as described in [“Configuring Physical eWay Properties” on page 26](#).
- 9 Configure the other components in the Environment. For an example, refer to [“Creating eGate Environments for the Sample Projects” on page 56](#).
- 10 Apply the .jar files to the Logical Host as described in [“Uploading JAR Files to the Logical Host” on page 57](#).
- 11 Create and activate the Deployment Profile as described in the *eGate Integrator User Guide*. For an example, refer to [“Creating Deployment Profiles for Sample Projects” on page 57](#).

Installing the SAP (ALE) eWay

This chapter describes how to install the SAP eWay, its documentation, and the SAP (ALE) sample Projects.

In This Chapter

- “Installing the SAP eWay” on page 19
- “After Installation” on page 20

3.1 Installing the SAP 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*:
 - ♦ **SAPALEeWay.sar** (to install the SAP eWay)
 - ♦ **FileeWay.sar** (to install the File eWay, used in the sample Projects)
 - ♦ **SAPALEeWayDocs.sar** (to install the user guide and the sample Projects)
- 2 In the Enterprise Manager, click the **DOCUMENTATION** tab.
- 3 Click **SAP (ALE) 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 “[Working with SAP \(ALE\) Sample Projects](#)” on page 53.

- 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.

3.2 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 SAP (ALE) eWays

This chapter describes how to implement the SAP (ALE) eWay in an eGate Project. There are several steps to take for the implementation. Each eWay implementation consists of adding and configuring the eWay as a logical component and as a physical component.

The logical eWay component is defined in the Connectivity Map for the eGate Project in Enterprise Designer. The physical eWay component is defined in the eGate Environment.

This chapter describes each step, and also provides information about reconfiguring eWays once they have been deployed.

In This Chapter

- [Adding SAP \(ALE\) eWays to Connectivity Maps](#) on page 21
- [Configuring Logical eWay Properties](#) on page 22
- [Adding SAP \(ALE\) eWays to Environments](#) on page 26
- [Configuring Physical eWay Properties](#) on page 26

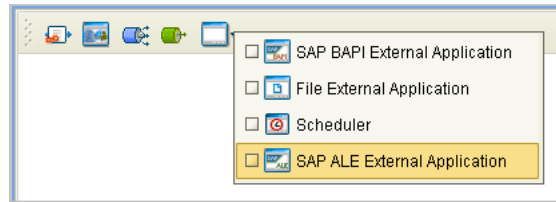
4.1 Adding SAP (ALE) eWays to Connectivity Maps

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

To add SAP (ALE) 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 (ALE) eWay.
- 2 Create or click a Connectivity Map.
- 3 On the Connectivity Map toolbar, click the **External Applications** icon, and click **SAP ALE External Application** as shown below.

Figure 9 Selecting the SAP External Application



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

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

To continue, refer to **“Building SAP (ALE) Project Business Logic” on page 31** to complete the Connectivity Map and create the eGate Collaborations and eInsight Business Processes. Once those items are complete, you can configure the logical and physical eWay properties as described in the sections below.

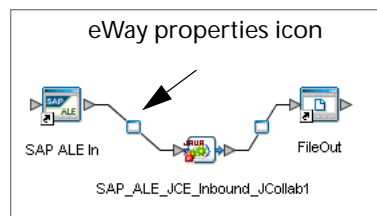
4.2 Configuring Logical eWay Properties

After completing the Connectivity Map and linking its components, you can configure the newly created SAP eWay as described below.

To configure logical eWay properties

- 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.

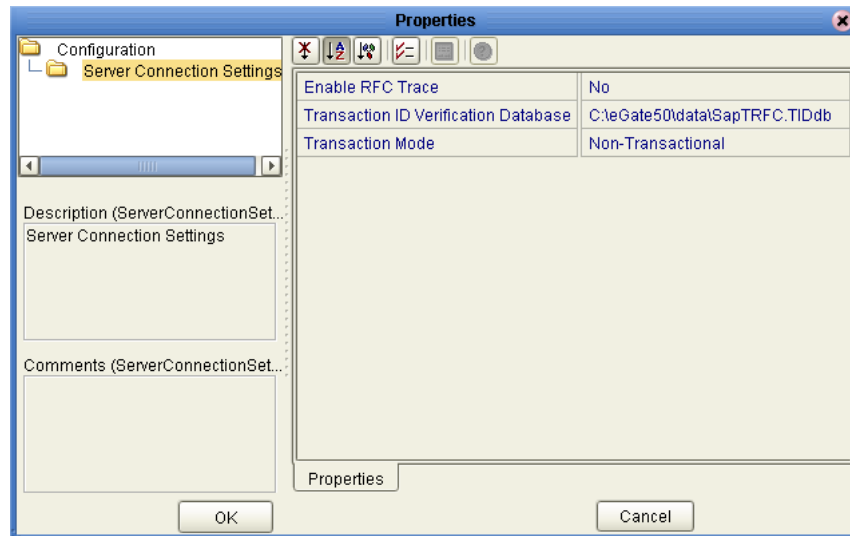
Figure 10 eWay Properties Icon



- 3 Double-click the eWay properties icon. The **Templates** dialog box appears.
- 4 To configure the inbound eWay, click **Inbound SAP (ALE) eWay** and click **OK**.
To configure the outbound eWay, click **Outbound SAP (ALE) eWay** and click **OK**.
The **Properties** dialog box appears.

The **Properties** dialog box shows the logical eWay properties as shown below. Which properties appear depends on whether this an inbound or outbound eWay.

Figure 11 Logical Inbound eWay Properties



- Specify the eWay properties. The list below shows the properties and the relevant page for more information:

Property	Available For	Page reference
Enable ABAP Debug Window	Outbound	page 23
Enable RFC Trace	Inbound/Outbound	page 24
Maximum TID Database Rows	Outbound	page 24
Transaction ID Verification Database	Inbound/Outbound	page 25
Transaction Mode <i>Note: You must changes this property to Transactional.</i>	Inbound/Outbound	page 25
Use Load Balancing	Outbound	page 25

The sections below describe the eWay properties in detail. When you have completed configurations for the eWay and all other components in the Connectivity Map, create the Environment for the Project and add the eWay as described in **“Adding SAP (ALE) eWays to Environments” on page 26**. You can then configure the physical properties of the eWay as described in **“Configuring Physical eWay Properties” on page 26**.

4.2.1 Enabling the ABAP Debugging Window

You enable the ABAP debugging window for outbound eWays with the **Enable ABAP Debug Window** property. To display logical eWay properties in the Connectivity Map, refer to **“Configuring Logical eWay Properties” on page 22**.

Enabling the **Enable ABAP Debug Window** property opens the ABAP/4 debugging window on the Logical Host where this Business Object Server (BOS) resides. The window shows the debug information for the RFC-enabled ABAP/4 application that is called on the R/3 system.

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

Default

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

4.2.2 Enabling RFC Trace

You enable RFC tracing for inbound and outbound eWays 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. To display logical eWay properties in the Connectivity Map, refer to **“Configuring Logical eWay Properties” on page 22**.

Default

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

Required Values

Yes or No.

Additional Information

The location of the trace file is as follows.

Operating System	Location
UNIX	In a dev_rfc file located in the directory where the eWay was started.
Windows	Under directory %WINDIR%\System32\ with a filename of rfc<number>.trc, for example, rfc00310_0156.trc

4.2.3 Setting The Maximum Transaction ID 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. To display logical eWay properties in the Connectivity Map, refer to **“Configuring Logical eWay Properties” on page 22**.

Set this property only if Transactional RFC (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.

Default

The default is 200 rows.

4.2.4 Specifying The Transaction ID Verification Database Location

You specify the location of the Transaction ID Verification database for inbound and outbound eWays with the **Transaction ID Verification Database** property. To display logical eWay properties in the Connectivity Map, refer to [“Configuring Logical eWay Properties” on page 22](#).

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:

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

Default

The default location is as follows:

C:\eGate50\data\SapTRFC.TIDdb

4.2.5 Specifying the Transaction Mode

You specify the transaction mode for outbound eWays with the **Transaction Mode** property. To display logical eWay properties in the Connectivity Map, refer to [“Configuring Logical eWay Properties” on page 22](#).

The transaction mode specifies whether Transactional RFC (tRFC) is enforced. With tRFC, transactions have unique TIDs and are processed only once by this eWay.

*You must change the **Transaction Mode** property to **Transactional**. The non-transactional mode is not supported in this release.*

Default

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

4.2.6 Enabling Load Balancing

You enable load balancing for outbound eWays with the **Use Load Balancing** property. To display logical eWay properties in the Connectivity Map, refer to [“Configuring Logical eWay Properties” on page 22](#).

This property allows you to take advantage of the workload balancing provided by SAP since the R/3 release 3.0C. Workload balancing is available in a SAP system to automatically route requests to the application server within a group of servers that has the best response time determined at that moment by a SAP message server.

If you disable load balancing, use the **System number** property as described in [“Specifying The System Number” on page 30](#).

Default

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

4.3 Adding SAP (ALE) eWays to Environments

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

To add eWays to Environments

- 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-clicking the Environment and click **New SAP ALE External Application**.

This adds an SAP (ALE) eWay to the Environment. You can now specify the physical properties for the eWay as described in the section below.

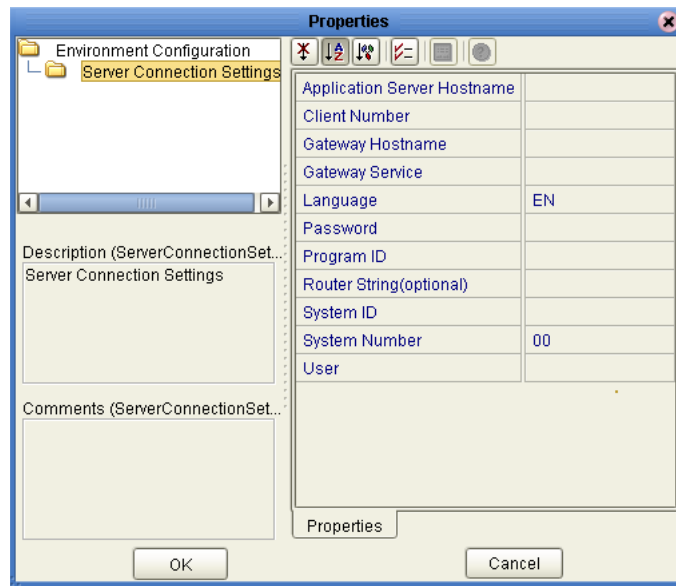
4.4 Configuring Physical eWay Properties

Once you have added the SAP (ALE) eWay to an eGate Environment, you can configure the eWay as described below. For information about adding eWays to Environment, refer to the section above.

To configure physical eWay properties

- 3 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 (ALE) eWay.
- 4 Expand the Logical Host, right-click the SAP (ALE) eWay and click **Properties**. The **Properties** dialog box appears.

Figure 12 Environment eWay Properties



- Specify the properties. The table below shows where to find detailed configuration information for each eWay property.

For this eWay property	Refer to
Application server hostname	page 27
Client number	page 28
Gateway hostname	page 28
Gateway service	page 28
Language	page 28
Password	page 29
Program ID	page 29
Router string	page 29
System ID	page 30
System Number	page 30
User	page 30

- Click **OK**.

4.4.1 Specifying The Application Server Name

You can specify the host name of the SAP R/3 application server in the eWay properties in the eGate Environment with the **Application server hostname** property. To display the eWay Environment properties, refer to **“Configuring Physical eWay Properties” on page 26**.

Default

There is no default setting.

4.4.2 Specifying the Client Number

You can specify the SAP client number in the eWay properties in the eGate Environment with the **Client number** property. To display the eWay Environment properties, refer to [“Configuring Physical eWay Properties” on page 26](#).

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

Default

There is no default setting.

Required Values

An alphanumeric string. Do not omit leading zeros.

4.4.3 Specifying The Name of The Gateway

You can specify the gateway hostname of the SAP R/3 application server in the eWay properties in the eGate Environment with the **Gateway hostname** property. To display the eWay Environment properties, refer to [“Configuring Physical eWay Properties” on page 26](#).

Default

There is no default setting.

4.4.4 Specifying The Gateway Service

You can specify the gateway service in the eWay properties in the eGate Environment with the **Gateway service** property. To display the eWay Environment properties, refer to [“Configuring Physical eWay Properties” on page 26](#).

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

Default

There is no default setting.

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*.

4.4.5 Specifying The Language

You can specify the language used for SAP R/3 access in the eWay properties in the eGate Environment with the **Language** property. To display the eWay Environment properties, refer to [“Configuring Physical eWay Properties” on page 26](#).

Default

The default is EN, English.

4.4.6 Specifying The Password

You can specify the password for the SAP user in the eWay properties in the eGate Environment with the **Password** property. To display the eWay Environment properties, refer to [“Configuring Physical eWay Properties” on page 26](#).

You must specify the user before specifying the password. For information, see [“Specifying The User Name” on page 30](#).

Default

There is no default setting.

4.4.7 Specifying The Program ID

You can specify the program ID for the SAP service in the eWay properties in the eGate Environment with the **Program ID** property. To display the eWay Environment properties, refer to [“Configuring Physical eWay Properties” on page 26](#).

Default

There is no default setting.

Required Values

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

4.4.8 Specifying The Router String

You can specify the router string in the eWay properties in the eGate Environment with the **Router string** property. To display the eWay Environment properties, refer to [“Configuring Physical eWay Properties” on page 26](#).

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

Default

There is no default setting.

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.

4.4.9 Specifying The System ID

You can specify the ID of the SAP R/3 system in the eWay properties in the eGate Environment with the **System ID** property. To display the eWay Environment properties, refer to **“Configuring Physical eWay Properties” on page 26.**

Default

There is no default setting.

4.4.10 Specifying The System Number

You can specify the system number of the SAP R/3 application server in the eWay properties in the eGate Environment with the **System number** property. To display the eWay Environment properties, refer to **“Configuring Physical eWay Properties” on page 26.**

Use this property when you are not using SAP load balancing. For information, refer to **“Enabling Load Balancing” on page 25.**

Default

There is no default setting.

4.4.11 Specifying The User Name

You can specify the SAP user name in the eWay properties in the eGate Environment with the **User** property. To display the eWay Environment properties, refer to **“Configuring Physical eWay Properties” on page 26.**

You must define this property before specifying the password as described in **“Specifying The Password” on page 29.**

Default

There is no default setting.

Building SAP (ALE) Project Business Logic

This chapter describes how to build the business logic for SAP (ALE) 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 IDoc wizard to create the IDoc 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 IDoc Wizard](#) on page 31
- [Downloading the IDoc Description File \(Before 4.7\)](#) on page 32
- [Saving the IDoc Description File \(After 4.6\)](#) on page 35
- [Creating IDoc OTDs](#) on page 38
- [IDoc OTD Methods](#) on page 42
- [Building SAP \(ALE\) Business Logic with eInsight](#) on page 44
- [Building SAP \(ALE\) Business Logic with eGate](#) on page 49
- [Completing the Project](#) on page 52

5.1 About the SAP IDoc Wizard

The SAP IDoc wizard is used to create IDoc OTDs. These OTDs can then later be used in Collaboration Definitions to create the business logic behind the Collaborations.

You can create IDoc OTDs in one of two ways:

- Let the IDoc wizard connect and retrieve the IDoc message format directly from the SAP R/3 system.
- Provide the location for a saved IDoc description file.

The section below describes how to download or save an IDoc description file from an SAP R/3 system. Separate instructions are included for versions 4.6 and earlier and 4.7 and later due to the significant SAPGUI changes that distinguish those versions.

5.2 Downloading the IDoc Description File (Before 4.7)

Follow the instructions below to download an IDoc description file from an SAP R/3 system version 4.6 and earlier.

Note: The screenshots in the procedure below show the SAPGUI version 6.2 connecting to segment version 4.6.

To download the IDoc description file from SAP

- 1 Log into the SAPGUI, and close the system messages. The **SAP Easy Access** window appears.


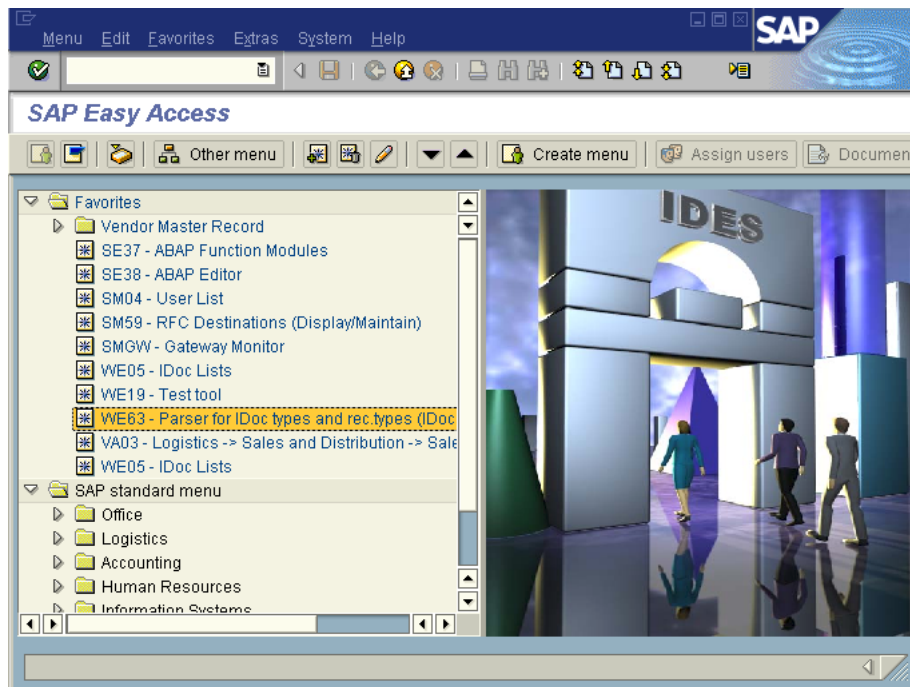
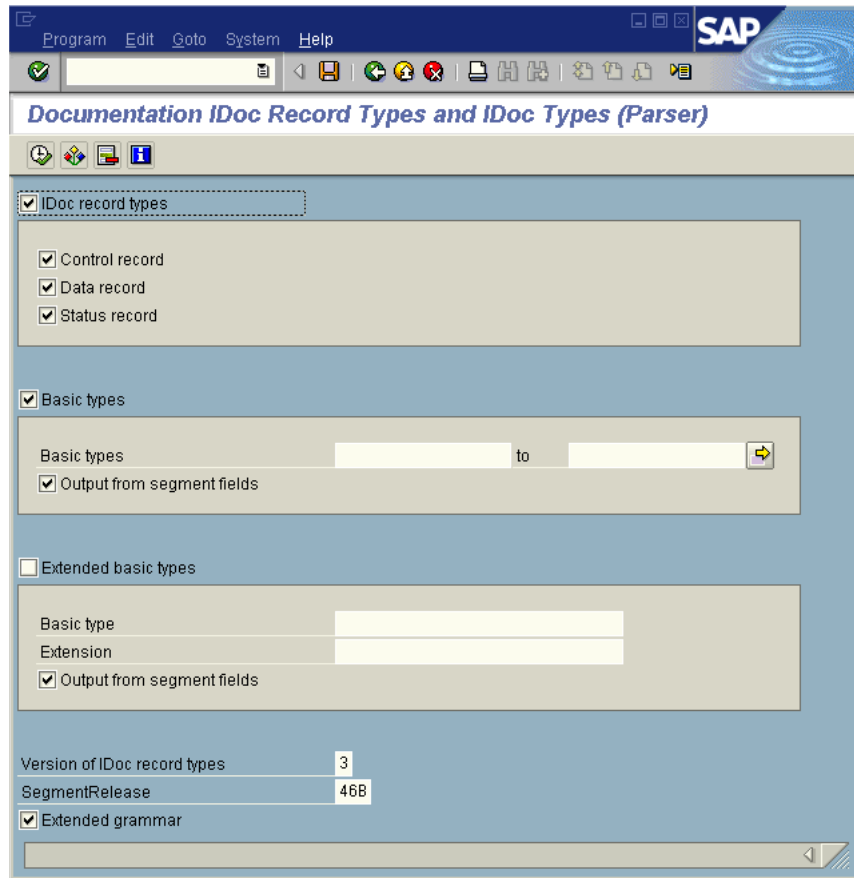
If the **SAP Easy Access** window does not display, click **Exit** .

Figure 13 SAP Easy Access Window



- 2 Double-click **WE63**. The **Documentation IDoc Record Types** window appears.

Figure 14 Documentation IDoc Record Types Window




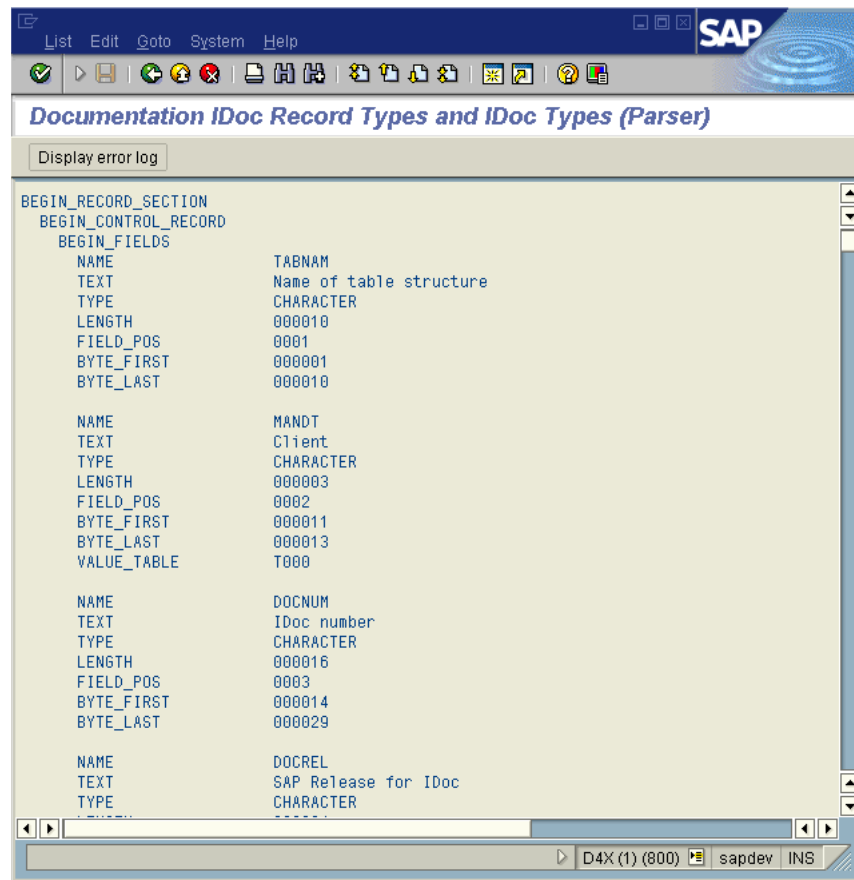
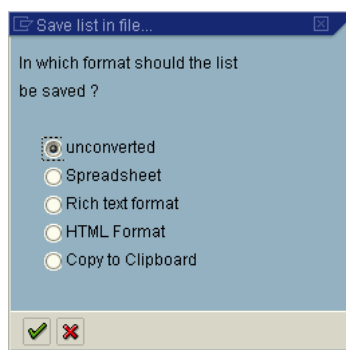
- 3 In the **Basic Types** box, type or select the IDoc to be parsed.
- 4 Select any other options needed, and click **Execute** . The **Documentation IDoc Record Types** window shows the parsed definition file.

Figure 15 Documentation IDoc Record Types Window—Parsed Definition File



- 5 On the **System** menu, click **List**, **Save**, and then **Local File**. The **Save List in File** dialog box appears.

Figure 16 Save List in File Dialog box




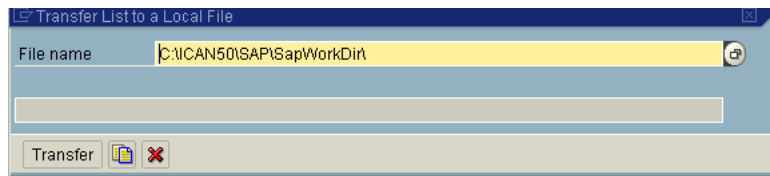
- 6 If necessary, select **Unconverted**.
- 7 Click **Save** . The **Save As** dialog box appears.
- 8 Navigate to the folder where you want to save the description file and click **Save**. The **Transfer List to a Local File** dialog box displays.

Figure 17 Transfer List to a Local File Dialog Box



- 9 Enter the name and path of the local file to receive the IDoc description file.
- 10 Click Transfer. This downloads the file.

Once you have downloaded the IDoc description file, create the IDoc OTD using the IDoc wizard as described in “[Creating IDoc OTDs](#)” on page 38. Use the **From Description File** option so that you can select the description file you downloaded.

5.3 Saving the IDoc Description File (After 4.6)

Follow the instructions below to download an IDoc description file from an SAP R/3 system version 4.7 and later.

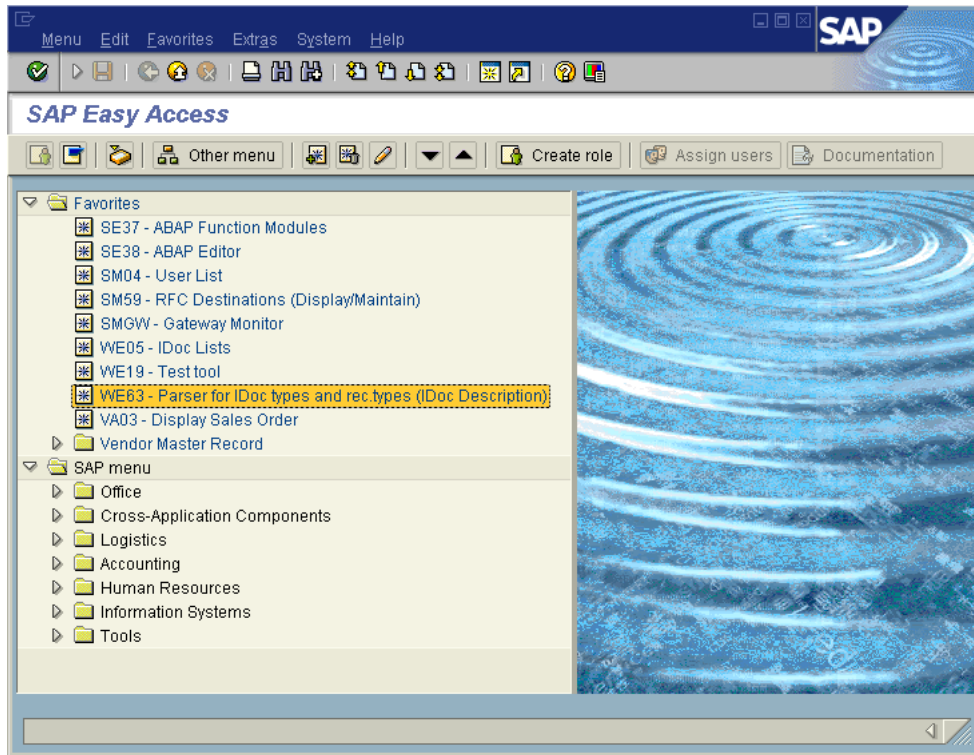
Note: *The screenshots in the procedure below show the SAPGUI version 6.2 connecting to segment version 4.7.*

To save the IDoc description file from SAP

- 1 Log into the SAPGUI, and close the system messages window. The **SAP Easy Access** window appears.

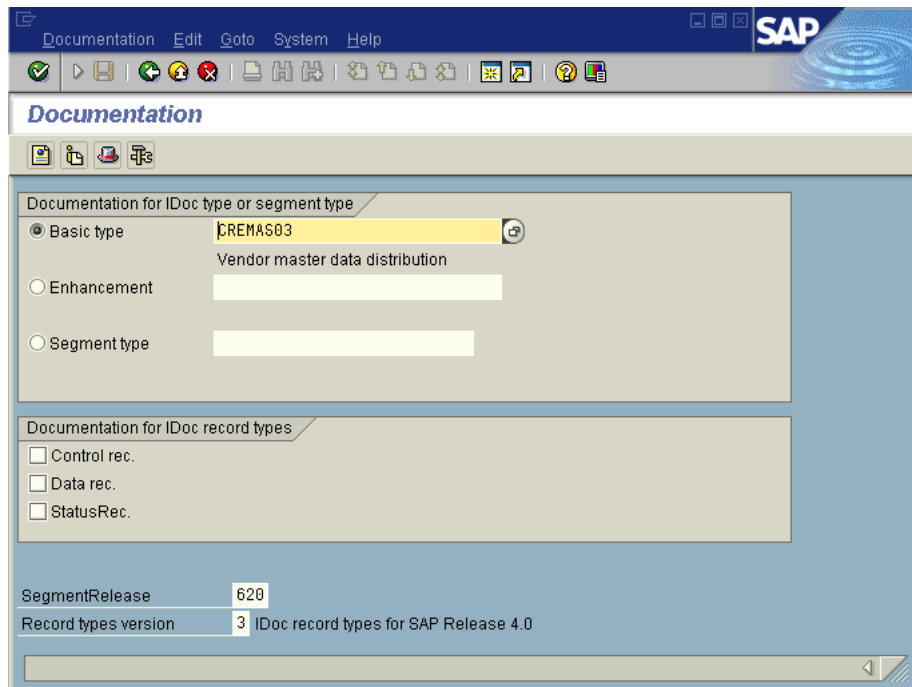
If the **SAP Easy Access** window does not display, click **Exit** .

Figure 18 SAP Easy Access Window



- 2 Double-click **WE63**. The **Documentation** window appears as shown below.

Figure 19 Documentation Window



- 3 Enter the basic type, enhancement, and segment type information.


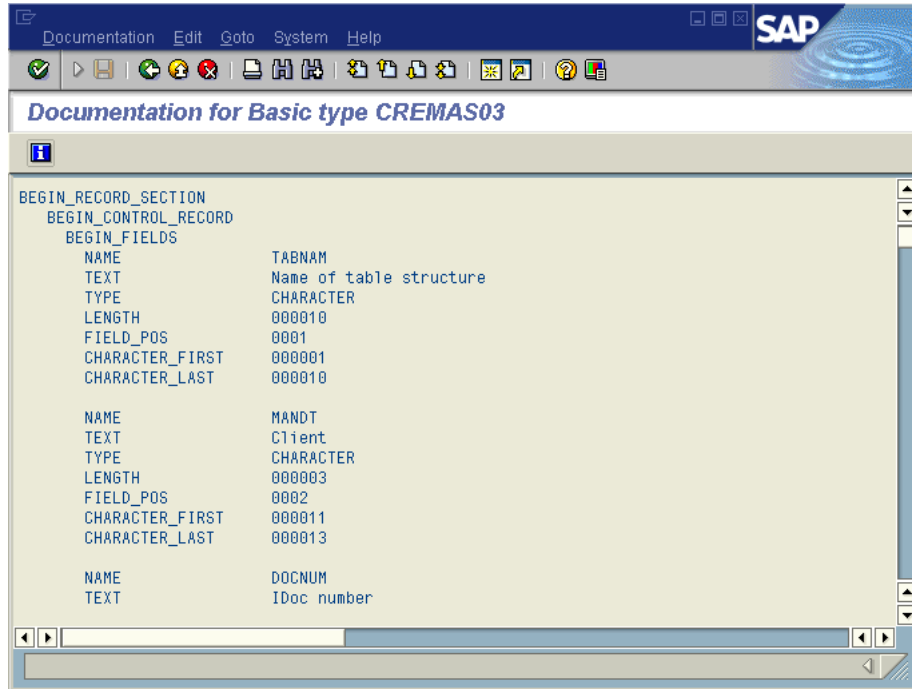
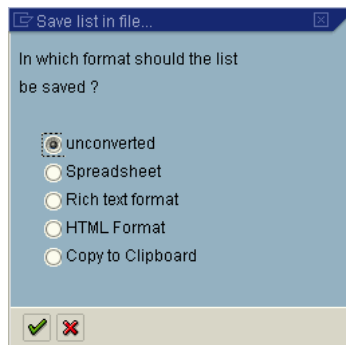
- 4 Select the IDoc record types to be included.
- 5 Click **Parser** . The **Documentation** window displays the parsed data.


Figure 20 Documentation Window—Parsed Definition File



- 6 On the **System** menu, click **List**, **Save**, and then **Local File**. The **Save List in File** dialog box appears.

Figure 21 Save List in File Dialog box



- 7 If necessary, select **Unconverted**.
- 8 Click **Save** . The **Save As** dialog box appears.
- 9 Navigate to the folder where you want to save the description file and click **Save**.

Once you have saved the IDoc description file, create the IDoc OTD using the IDoc wizard as described in the next section. Use the **From Description File** option so that you can select the description file you saved.

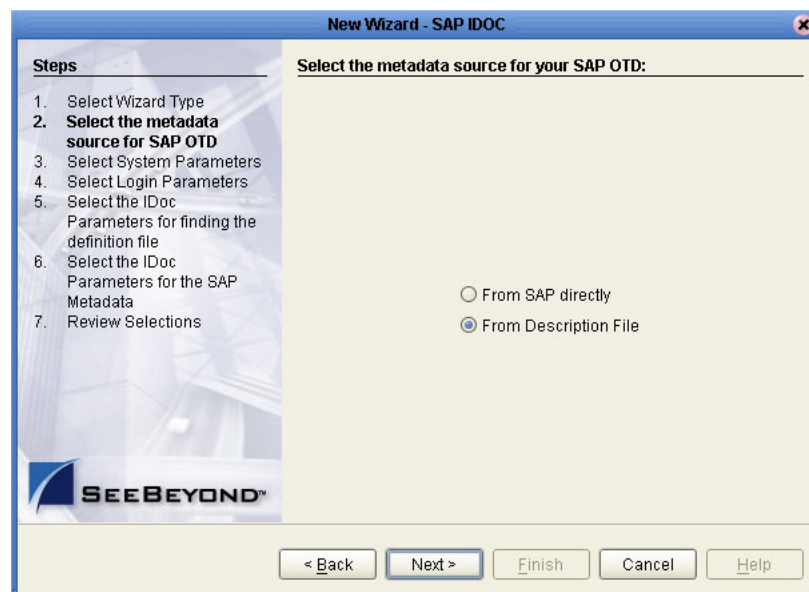
5.4 Creating IDoc OTDs

You create IDoc OTDs with the SAP IDoc wizard in the Enterprise Designer. You can choose to have the wizard connect to the SAP R/3 system and retrieve the IDoc message format automatically, or you can have the wizard use an IDoc definition file from a specified location. The IDoc definition file would be saved or downloaded from the SAP system as described in the previous section.

To create IDoc OTDs

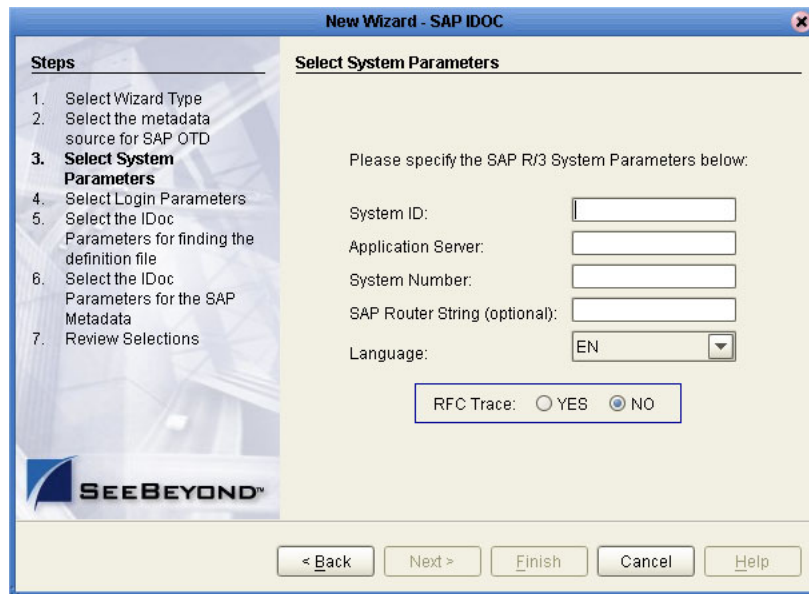
- 1 In the Explorer tab of the Enterprise Designer, right click the Project, click **New**, and click **Object Type Definition**. The **New Object Type Definition** dialog box appears.
- 2 Click **SAP IDoc** and click **Next**. The **Select metadata** page appears.

Figure 22 IDoc Wizard—Metadata Selection



- 3 To retrieve the IDocs description file directly from the connected SAP system, select the **From SAP Directly** option and continue with the next step.
To use an IDoc description file from a specified location, select the **From Description File** option and continue with step 10.
- 4 Click **Next**. The **System Parameters** page appears.

Figure 23 IDoc Wizard—System Parameters

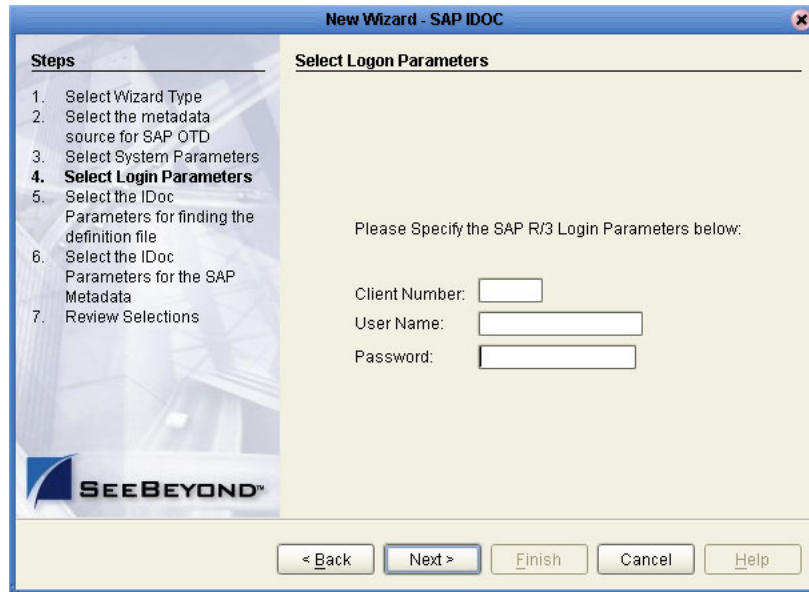


- 5 Enter the information for the SAP R/3 system for the SAP eWay to connect to:

For this option	Enter
System ID	System ID of the SAP R/3 system.
Application server	Host name of the SAP R/3 system.
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 24 IDoc Wizard—Login Parameters

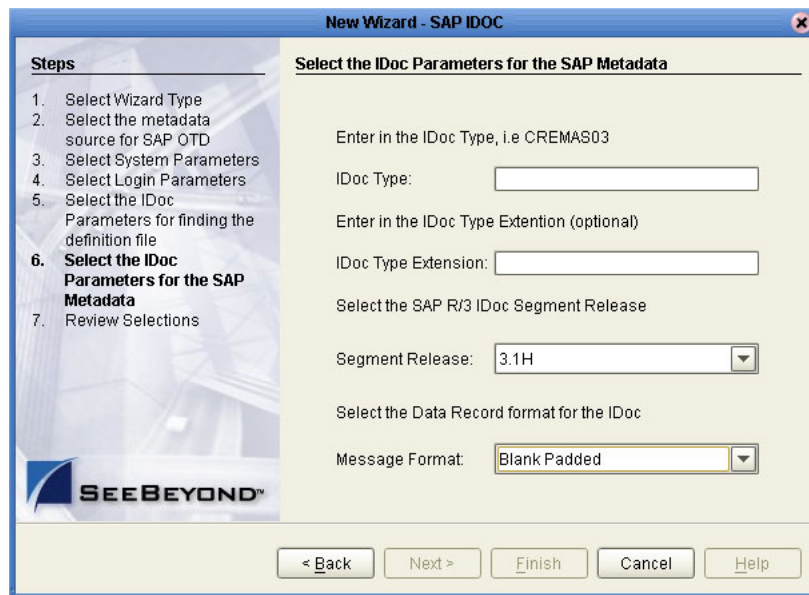


7 Enter the information to log into the SAP system:

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 **IDoc Metadata Parameters** page appears.

Figure 25 IDoc Wizard—IDoc Metadata Parameters

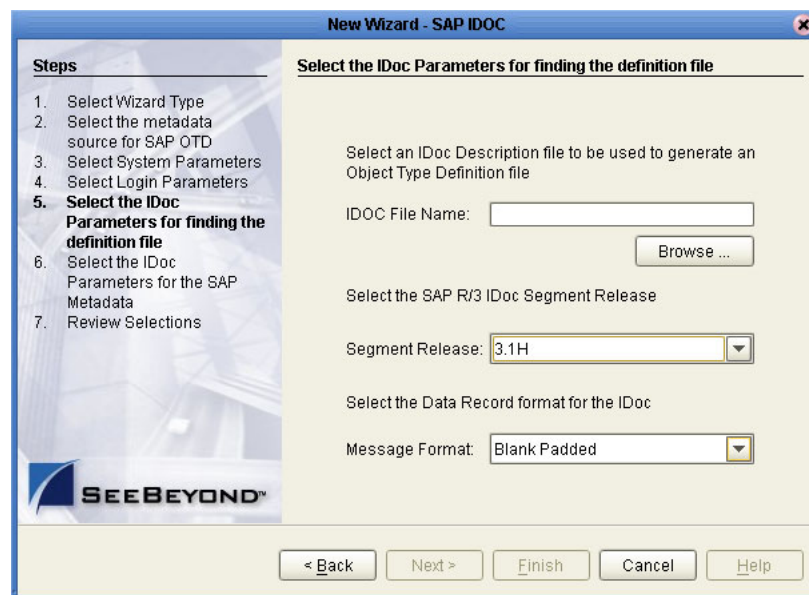


9 Enter the following information about the IDoc and continue with step 12:

For this option	Enter
IDoc type	IDoc type, for example, CREMAS03. You cannot use a wild card.
IDoc type extension	Extension for this IDoc type (optional).
Segment release	SAP R/3 IDoc segment release for this IDoc, for example, 4.6C.
Message format	Blank padded or CR-LF.

10 Click **Next**. The **Definition File Parameters** page appears.

Figure 26 IDoc Wizard—Definition File Parameters



11 Enter the following information about the IDoc definition file:

For this option	Enter
IDoc File Name	The path and filename for the IDoc description file to be used.
Segment release	SAP R/3 IDoc segment release for this IDoc, for example, 4.6C.
Message format	Blank padded or CR-LF.

12 Click **Next**. The **Review Selection** page appears.

13 Review your selections and click **Finish**. The OTD Editor window appears, displaying the OTD.

You can now build the Collaborations or Business Processes as described in **“Building SAP (ALE) Business Logic with eInsight” on page 44** and **“Building SAP (ALE) Business Logic with eGate” on page 49**. The section below describes the IDoc methods

(operations) that are available for you to use in the source code for the Collaborations or Business Activities.

5.5 IDoc OTD Methods

The SAP (ALE) eWay provides the following IDoc methods:

- `sendIDocs`
- `receiveIDocs`
- `marshal`
- `unmarshal`

`sendIDocs`

Syntax

```
sendIDocs(Object input)
```

Description

Sends IDocs to an SAP R/3 system.

Parameters

Name	Type	Description
<i>input</i>	Object	IDocs object to be sent.

Return Value

None.

Throws

Exception

`receiveIDocs`

Syntax

```
receiveIDocs(com.sap.mw.idoc.jco.JCoIDoc.JCoDocumentList docList)
```

Description

Receives IDOCs from an SAP R/3 system.

Parameters

Name	Type	Description
<i>doclist</i>	<code>com.sap.mw.idoc.jco.JCoIDoc.JCoDocumentList</code>	IDoc list.

Return Value

Depends on the IDoc selected.

Throws

Exception

marshal

Syntax

```
marshal()
```

Description

Marshals the data of the IDoc OTD to a byte array.

Parameters

None.

Return Value

byte[]

Throws

MarshalException

unmarshal

Syntax

```
unmarshal(byte[] bytes)
```

Description

Unmarshals the IDoc data to an IDoc OTD.

Parameters

Name	Type	Description
<i>bytes</i>	byte[]	Data stream to be unmarshaled.

Return Value

None.

Throws

UnmarshalException

5.6 Building SAP (ALE) Business Logic with eInsight

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

- **Adding Business Processes** on page 44
- **Building Inbound SAP Business Processes** on page 44
- **Building Outbound SAP Business Processes** on page 46
- **Adding Connectivity Maps** on page 47
- **Building Inbound SAP Connectivity Maps** on page 47
- **Building Outbound SAP Connectivity Maps** on page 48

To see an example of SAP Business Processes and Connectivity Maps, import the SAP_ALE_BPEL_D4X sample Project as described in **“Working with SAP (ALE) Sample Projects”** on page 53.

5.6.1 Adding Business Processes

To add Business Processes

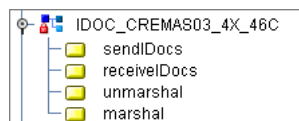
- In the **Project Explorer** tab of the Enterprise Designer, right-click the Project for which you intend to create a Business Process, click **New**, and then **Business Process**.

5.6.2 Building Inbound SAP Business Processes

To build inbound SAP Business Processes

- 1 In the **Project Explorer** tab of the Enterprise Designer, expand the IDoc OTD. This displays the IDoc OTD methods.

Figure 27 IDoc OTD Methods





- 2 Drag the *receiveIDocs* and *marshal* IDoc OTD methods to the Business Process Designer canvas.
- 3 Expand the **SeeBeyond**, **eWays**, **File**, and **FileClient** folders in the **Project Explorer** tab.
- 4 Drag the *write* method to the Business Process Designer canvas.
- 5 Click the *marshal* Business Activity and click **Show Properties** . The **Properties** dialog box appears as shown below.

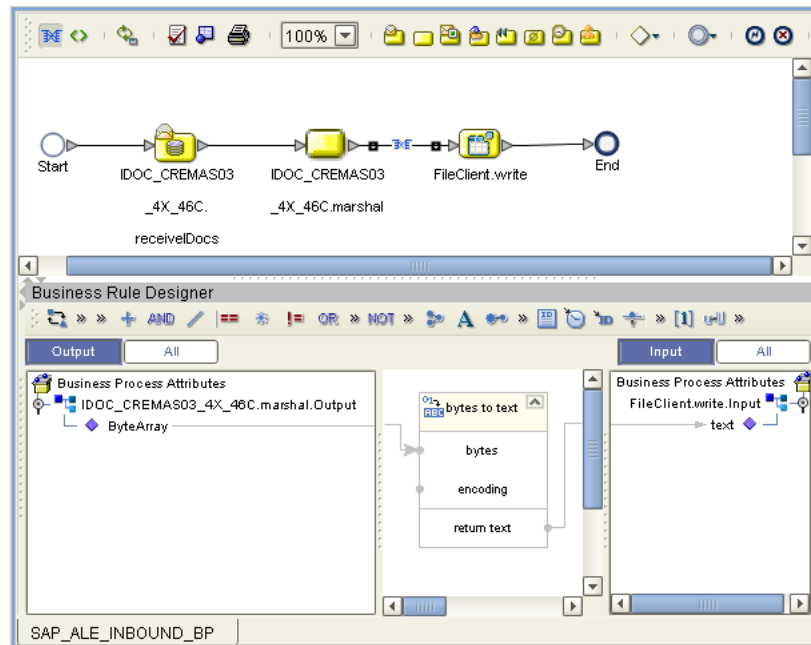
Figure 28 Inbound Marshal Properties

Name	IDOC_CREMAS03_4X_47.marshal
Partner	SAPALE_marshal_Receiver
Port Type	ns0:IDOC_CREMAS03_4X_47_WebService
Operation	marshal
Input	IDOC_CREMAS03_4X_47.marshal.Input
Output	IDOC_CREMAS03_4X_47.marshal.Output
Use Correlations	no
Alert Properties	Click button to configure
Logger Properties	Click button to configure
Properties	

- 6 Click the **Input** box and click **receiveIDocs.output**.
- 7 Configure all other Activities by highlighting the Activity and clicking **Show Properties** . Refer to “**IDoc OTD Methods**” on page 42 for Business Operations syntax.
- 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 inbound 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_ALE_BPEL_D4X sample Project as described in “**Importing the Sample Projects**” on page 54.

Figure 29 Inbound Business Process and Data Mapping



5.6.3 Building Outbound SAP Business Processes

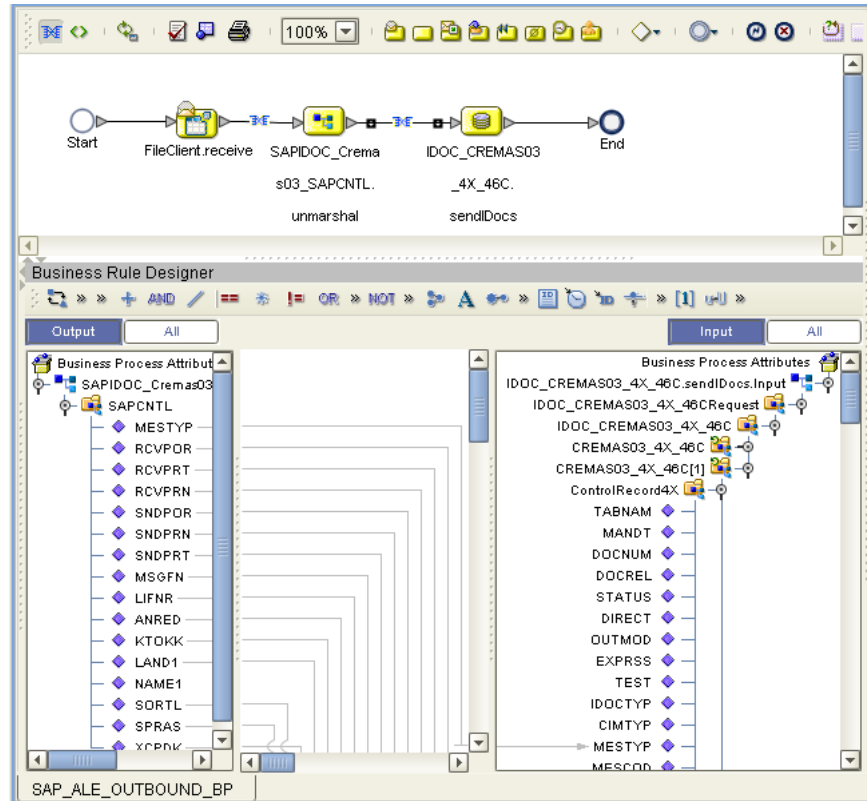
To build outbound SAP Business Processes

- 1 In the **Project Explorer** tab of the Enterprise Designer, expand the IDoc OTD. This displays the IDoc OTD methods.
- 2 Drag the *unmarshal* and *sendIDocs* IDoc OTD methods to the Business Process Designer canvas.
- 3 Expand the **SeeBeyond**, **eWays**, **File**, and **FileClient** folders in the **Project Explorer** tab.
- 4 Drag the *receive* method to the Business Process Designer canvas.
- 5 Configure all other Activities by highlighting the Activity and clicking **Show Properties** . Refer to **“IDoc OTD Methods” on page 42** for Business Operations syntax.
- 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 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_ALE_BPEL_D4X sample Project as described in **“Importing the Sample Projects” on page 54.**

Figure 30 Outbound Business Process and Data Mapping



5.6.4 Adding Connectivity Maps

To add Connectivity Maps

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

5.6.5 Building Inbound SAP Connectivity Maps

The procedure below describes how to build inbound SAP Connectivity Maps. To see an example, import the SAP_ALE_BPEL sample Project as described in **“Working with SAP (ALE) Sample Projects” on page 53.**

To build inbound SAP Connectivity Maps

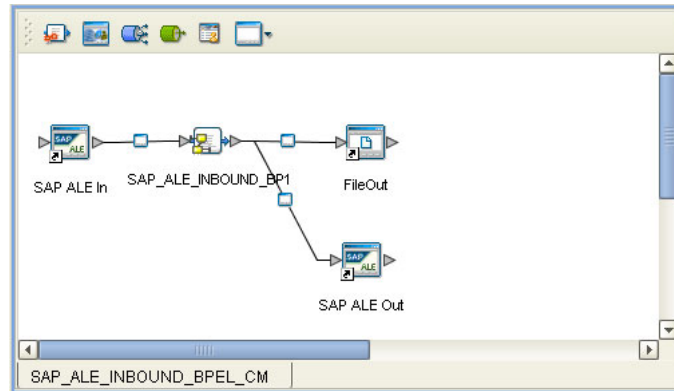
- 1 Add two SAP (ALE) eWays and other necessary components to the Connectivity Map. For detailed information about using the Connectivity Map, refer to the *eGate Integrator User's Guide*.

Note: You must create a second outbound eWay for inbound SAP Business Processes.

- 2 Drag the inbound Business Process from the **Project Explorer** tab to the Connectivity Map.
- 3 Link and configure all components. For details, refer to the *eGate Integrator User's Guide*.

The figure below shows an example of an inbound SAP Connectivity Map. To explore the Connectivity Map for an actual Project, import the SAP_ALE_BPEL_D4X sample Project as described in **“Importing the Sample Projects”** on page 54.

Figure 31 Inbound SAP Connectivity Map



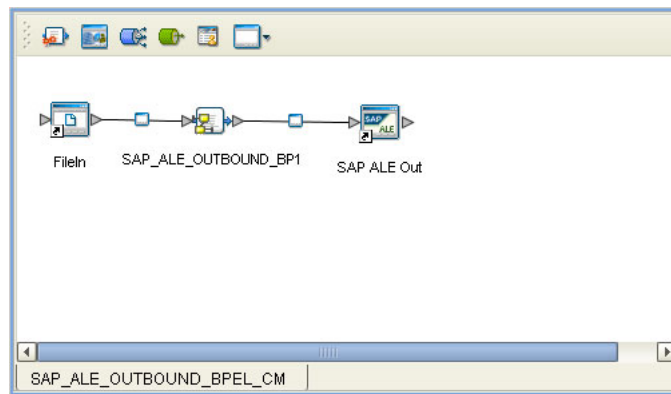
5.6.6 Building Outbound SAP Connectivity Maps

To build outbound SAP Connectivity Maps

- 1 Add an SAP (ALE) eWay and other necessary components to the Connectivity Map. For detailed information about using the Connectivity Map, refer to the *eGate Integrator User's Guide*.
- 2 Drag the outbound Business Process from the **Project Explorer** tab to the Connectivity Map.
- 3 Link and configure all components. For details, refer to the *eGate Integrator User's Guide*.

The figure below shows an example of an outbound SAP Connectivity Map. To explore the Connectivity Map for an actual Project, import the SAP_ALE_BPEL_D4X sample Project as described in **“Importing the Sample Projects”** on page 54.

Figure 32 Outbound SAP Connectivity Map



5.7 Building SAP (ALE) Business Logic with eGate

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

- **Building Collaborations** on page 49
- **Adding Connectivity Maps** on page 51
- **Building Inbound SAP Connectivity Maps** on page 51
- **Building Outbound SAP Connectivity Maps** on page 51

To see an example of SAP Collaborations and Connectivity Maps, import the SAPALE_JCE sample Project as described in **“Working with SAP (ALE) Sample Projects”** on page 53.

5.7.1 Building Collaborations

After you have built the IDoc OTDs as described in **“Creating IDoc OTDs”** on page 38, you are ready to build Collaboration Definitions.

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 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*. For information about IDoc methods, refer to **“IDoc OTD Methods”** on page 42.

The figure below shows an example of data mapping for inbound and outbound SAP (ALE) Collaborations. To explore the business logic design for an actual Project, import the SAPALE_JCE sample Project as described in **“Importing the Sample Projects”** on page 54.

Figure 33 Inbound Collaboration

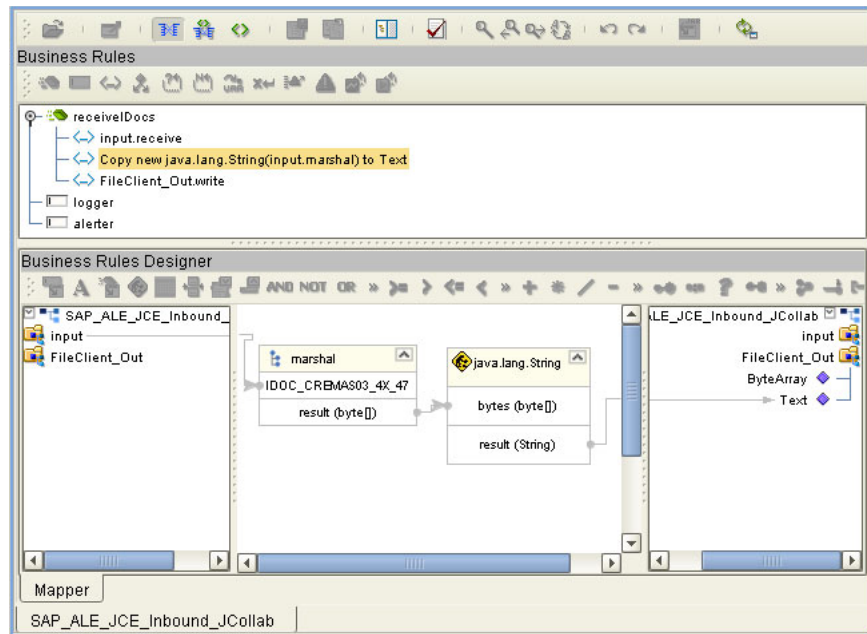
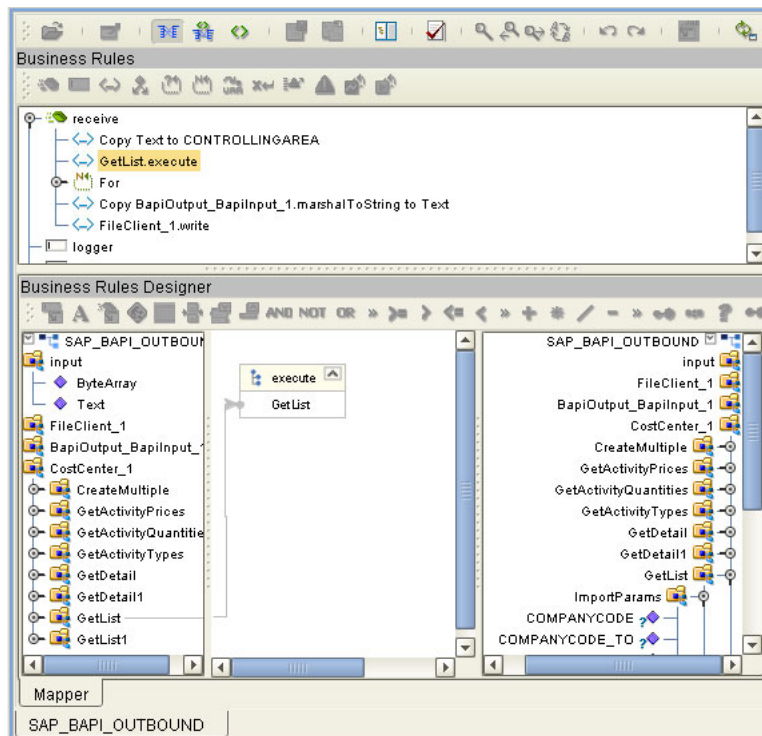


Figure 34 Outbound Collaboration



5.7.2 Adding Connectivity Maps

To add Connectivity Maps

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

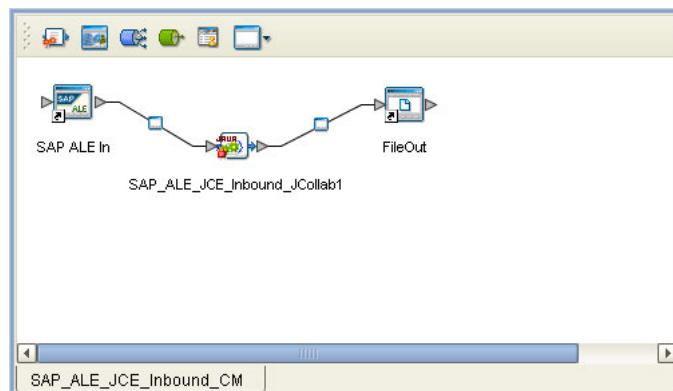
5.7.3 Building Inbound SAP Connectivity Maps

To build inbound SAP Connectivity Maps

- 1 Add the SAP (ALE) eWay to the Connectivity Map as described in **“Adding SAP (ALE) eWays to Connectivity Maps” on page 21**.
- 2 Add other components such as other eWays and Collaborations to the Connectivity Map.
- 3 Drag the inbound Collaboration from the **Project Explorer** tab into the Collaboration icon in the Connectivity Map.
- 4 Link and configure all components. For details, refer to the *eGate Integrator User’s Guide*.

The figure below shows an example of an inbound SAP Connectivity Map. To explore the Connectivity Map for an actual Project, import the SAPALE_JCE sample Project as described in **“Importing the Sample Projects” on page 54**.

Figure 35 Inbound SAP Connectivity Map



5.7.4 Building Outbound SAP Connectivity Maps

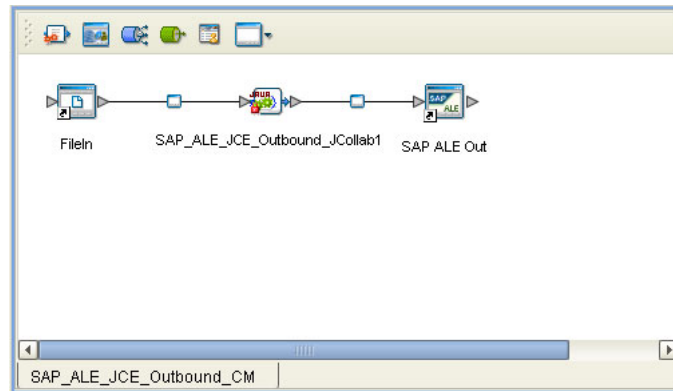
To build outbound SAP Connectivity Maps

- 1 Add the SAP (ALE) eWay to the Connectivity Map as described in **“Adding SAP (ALE) eWays to Connectivity Maps” on page 21**.
- 2 Add other components such as other eWays and Collaborations to the Connectivity Map.
- 3 Drag the outbound Collaboration from the **Project Explorer** tab into the Collaboration icon in the Connectivity Map.

- 4 Link and configure all components. For details, refer to the *eGate Integrator User's Guide*.

The figure below shows an example of an outbound SAP Connectivity Map. To explore the Connectivity Map for an actual Project, import the SAPALE_JCE sample Project as described in **“Importing the Sample Projects” on page 54**.

Figure 36 Outbound SAP Connectivity Map



5.8 Completing the Project

The procedure below provides a quick overview of the remaining steps to complete SAP Projects:

To complete the Project

- 1 Configure the logical properties of the eWay as described in **“Configuring Logical eWay Properties” on page 22**.
You must change the Transaction Mode property to Transactional. The non-transactional mode is not supported in this release.
- 2 Create an eGate Environment and add the SAP eWay as described in **“Adding SAP (ALE) eWays to Environments” on page 26**.
- 3 Configure the physical properties of the eWay as described in **“Configuring Physical eWay Properties” on page 26**.
- 4 Configure the other components in the Environment. For an example, refer to **“Creating eGate Environments for the Sample Projects” on page 56**.
- 5 Apply the .jar files to the Logical Host as described in **“Uploading JAR Files to the Logical Host” on page 57**.
- 6 Create and activate the Deployment Profile as described in the *eGate Integrator User Guide*. For an example, refer to **“Creating Deployment Profiles for Sample Projects” on page 57**.

Working with SAP (ALE) Sample Projects

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

There are two sample projects, one for use with the eGate, and one for use with eGate in combination with eInsight.

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

In This Chapter

- **About the Sample Projects** on page 53
- **Locating the Sample Projects** on page 54
- **Importing the Sample Projects** on page 54
- **Creating eGate Environments for the Sample Projects** on page 56
- **Creating Deployment Profiles for Sample Projects** on page 57
- **Deploying the Sample Projects** on page 58

6.1 About the Sample Projects

The SAP (ALE) eWay includes sample Projects that you can import to see how a eGate Projects with the SAP (ALE) eWay can be built.

The following projects are included:

- SAPALE_JCE for use with eGate
- SAP_ALE_BPEL_4DX for use with eInsight/eGate

SAP Version Support

The SAPALE_JCE Project supports SAP version 4.7. The SAP_ALE_BPEL_4DX eInsight Project supports SAP versions 4.6 and earlier.

Sample Project Contents

Each Project contains the following:

- Input data
- IDoc description file

- IDoc OTDs
- Connectivity Maps
- Collaborations Definitions (SAPALE_JCE)
- Inbound and outbound Collaborations (SAPALE_JCE)
- Inbound and outbound Business Processes (SAP_ALE_BPEL_4DX)

The sample Projects provide a Project that allows you to browse its configurations to learn how inbound and outbound SAP Projects are designed. The Projects do not include eGate Environments and Deployment Profiles necessary to deploy the sample Projects. To learn how to complete the Projects for deployment, refer to **“Preparing Sample Projects for Deployment” on page 55**.

Sample Project Zip Files

The SAP (ALE) eWay sample Projects are provided as a zip file, **SAP_ALE_eWay_Sample.zip**, which contains two zip files and an input file:

- **SAP_ALE_JCE.zip** for the SAP_ALE_JCE Project (eGate only)
- **SAP_ALE_BPEL.zip** for the SAP_ALE_BPEL Project (eGate/eInsight)
- **SAP_ALE_Inbound.~in** (inbound Collaboration input file)
- **CREMAS03_46B.descrfile.txt** (IDoc description file)

6.2 Locating the Sample Projects

The eWay sample Projects are included in the **SAPALEeWayDocs.sar**. This file is uploaded separately from the SAP eWay sar file during installation. For information, refer to **“Installing the SAP eWay” on page 19**.

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

6.3 Importing the Sample Projects

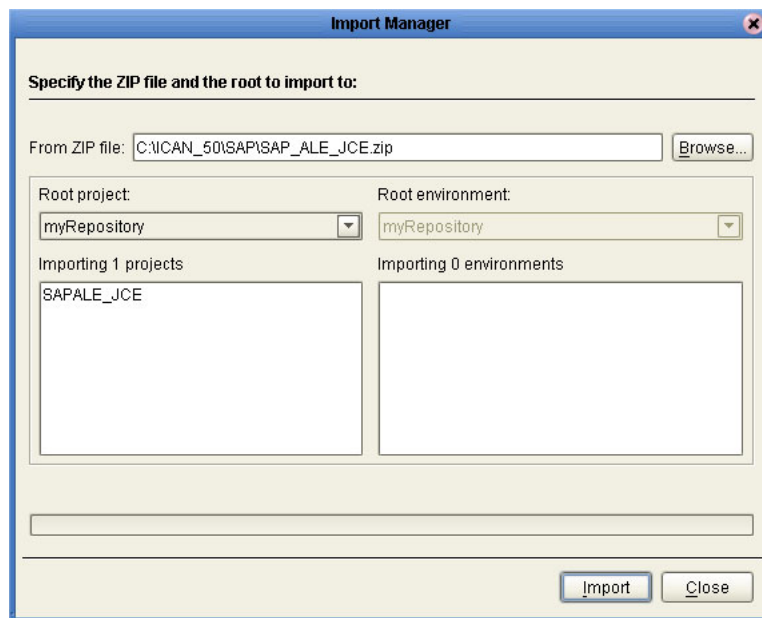
You can import the SAP sample Projects as described below. To find out where the Projects reside, refer to **“Locating the Sample Projects” on page 54**.

To import the sample Projects

- 1 Unzip the **SAP_ALE_eWay_Sample.zip** file. This creates two zip files:
 - ♦ **SAP_ALE_JCE.zip** (for the eGate only Project)
 - ♦ **SAP_ALE_BPEL.zip** (for the eGate/eInsight Project)

- 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 Click **SAP_ALE_JCE.zip** or **SAP_ALE_BPEL.zip**. The **Import Manager** dialog box appears similar to the following:

Figure 37 Import Manager Dialog Box



- 5 Click **Import**.
- 6 When the Project is imported, right-click the Repository and click **Refresh All from Repository**.
- 7 You can now explore the Connectivity Maps, the OTDs, and the business logic for the Collaborations or Business Processes.

6.3.1 Preparing Sample Projects for Deployment

The sample Projects do not include the eGate Environments, Deployment Profiles, and the physical configurations for the eWays needed to deploy the Projects. To deploy the Projects, do the following after import:

- 1 Create an eGate Environment and add the SAP eWay as described in the next section.
- 2 Configure the physical properties of the eWay as described in **“Configuring Physical eWay Properties” on page 26**.
- 3 Configure the other components in the Environment. For an example, refer to **“Creating eGate Environments for the Sample Projects” on page 56**.
- 4 Apply the .jar files to the Logical Host as described in **“Uploading JAR Files to the Logical Host” on page 57**.

- 5 Create and activate the Deployment Profile as described in “**Creating Deployment Profiles for Sample Projects**” on page 57.

6.4 Creating eGate Environments for the Sample Projects

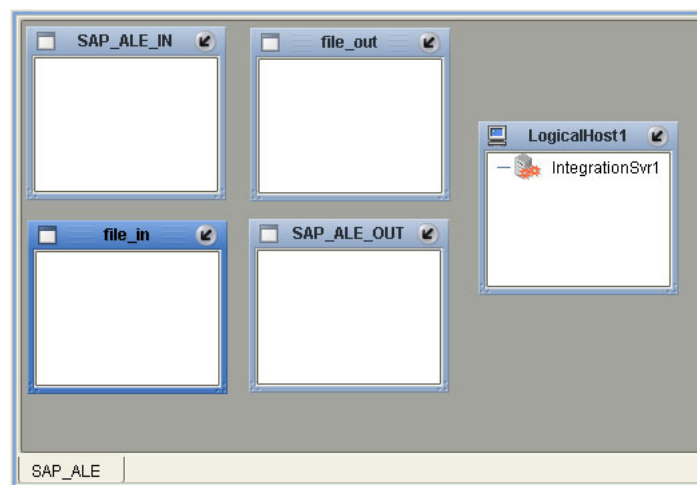
The procedure below describes how you create an eGate Environment for the SAP (ALE) sample Projects. For detailed information about creating Environments, refer to the *eGate Integrator User’s Guide*.

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 ALE External System** to add an SAP eWay. The list below shows which systems to add for which Collaboration:
 - ♦ Inbound Collaboration: one inbound SAP (ALE) eWay and one outbound File eWay
 - ♦ Outbound Collaboration: one inbound File eWay and one outbound SAP (ALE) eWay
- 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 38 eGate Environment for Sample Projects



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

6.5 Uploading JAR Files to the Logical Host

Once you 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 folder where the .jar files reside.
- 3 Double-click the files and click **OK**.
- 4 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 Physical eWay Properties” on page 26**.

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

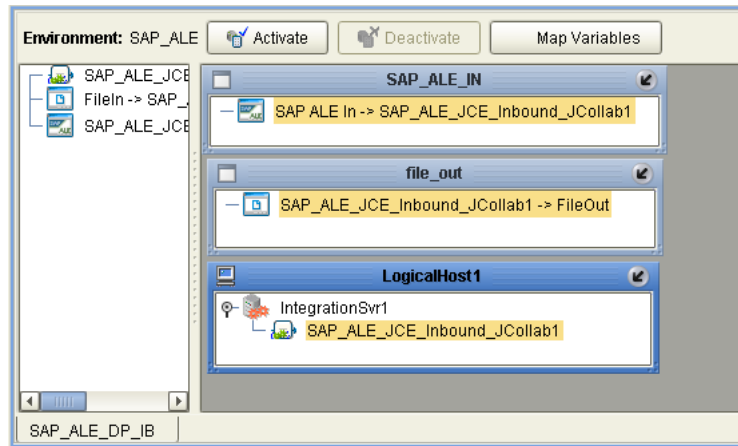
6.6 Creating Deployment Profiles for Sample Projects

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

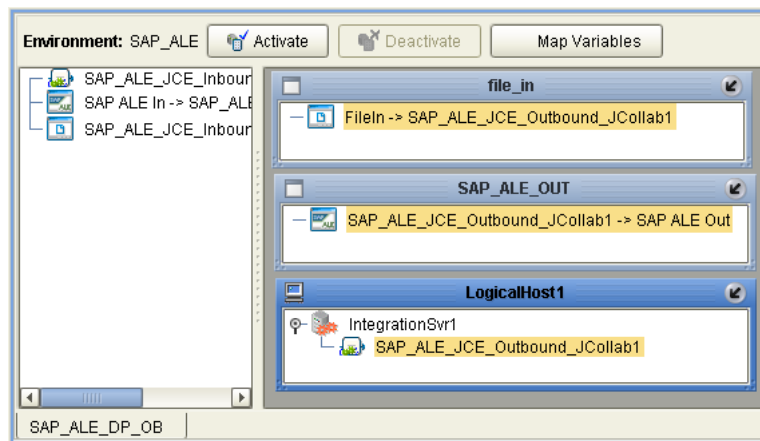
- 1 In the Project Explorer tab of the Enterprise Designer, right-click the Project and click **New Deployment Profile**.
- 2 Enter the name for the inbound Deployment Profile, and select the Environment you created for the sample.
- 3 Double-click the inbound Deployment Profile. Drag the Project components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

Figure 39 Inbound Deployment Profile



- 4 Repeat steps 1 through 3 to create the outbound Deployment Profile as shown below.

Figure 40 Outbound Deployment Profile



6.7 Deploying the Sample Projects

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 system as described in **“Configuring the SAP System for eWay Connections” on page 59**.

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.

Configuring the SAP System for eWay Connections

For the SAP eWay to interact successfully with the SAP system, you must configure the SAP system as described in this chapter. This configuration is non-intrusive; it does not interfere with other SAP R/3 operations.

The SAP screen captures in this chapter correspond to SAPGUI version 6.2, and SAP version 4.0. They are included to illustrate the general nature of the procedures, and contain only example values. They are not meant to replace the SAP documentation supplied with your system. Refer to the documentation supplied with your SAP system to determine the exact procedures.

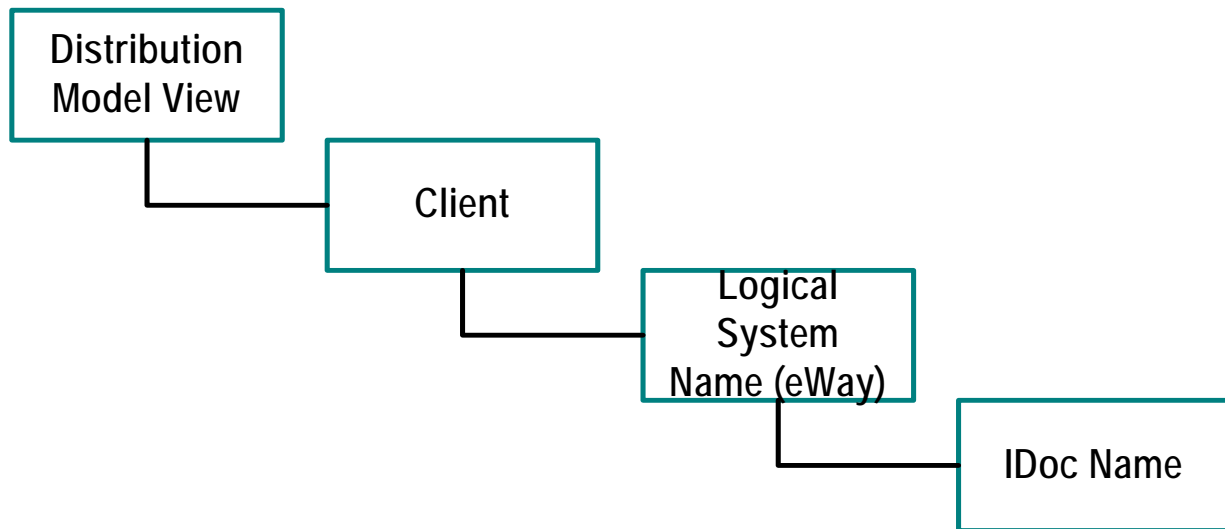
In This Chapter

- **SAP Hierarchies** on page 59
- **Naming the Logical System** on page 61
- **Specifying the Distribution Model** on page 63
- **Defining the RFC Destination** on page 66
- **Defining the Communications Port** on page 69
- **Creating a Partner Profile** on page 70
- **Configuring a Partner Profile** on page 72
- **Security Issues** on page 76

7.1 SAP Hierarchies

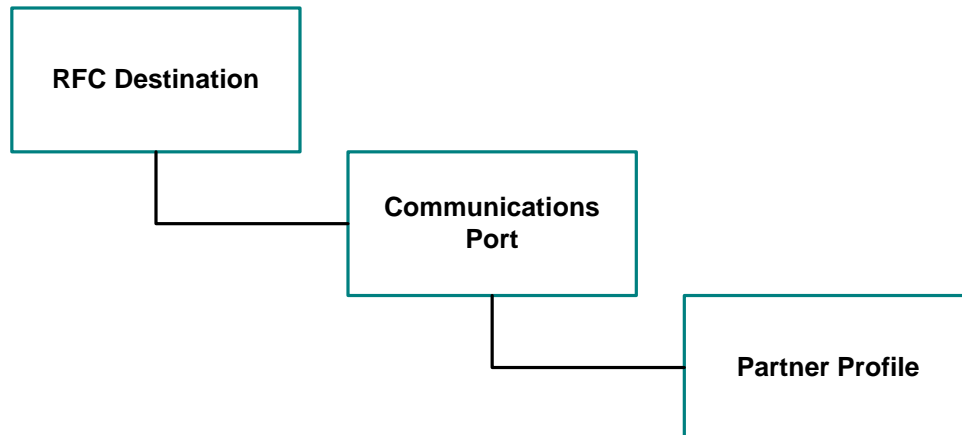
To prepare your SAP R/3 system to recognize the SAP (ALE) eWay, you must first define a Logical System in SAP to represent the eGate system as an ALE client (either sender or receiver). Next, you create a new Distribution Model view, which defines how the Logical System exchanges messages. You must link it to a Client, a Logical System (the one you just created), and an IDoc type. The Distribution Model hierarchy is depicted in Figure 41, as it appears in the SAP GUI (IMG).

Figure 41 Distribution Model Hierarchy



Following this high-level setup, you need to define Communications parameters in SAP to specify the correct routing of IDocs (either inbound to or outbound from SAP). The hierarchy of this Communication system is shown in Figure 42. The individual steps involved in the configuration are:

Figure 42 Communications Hierarchy



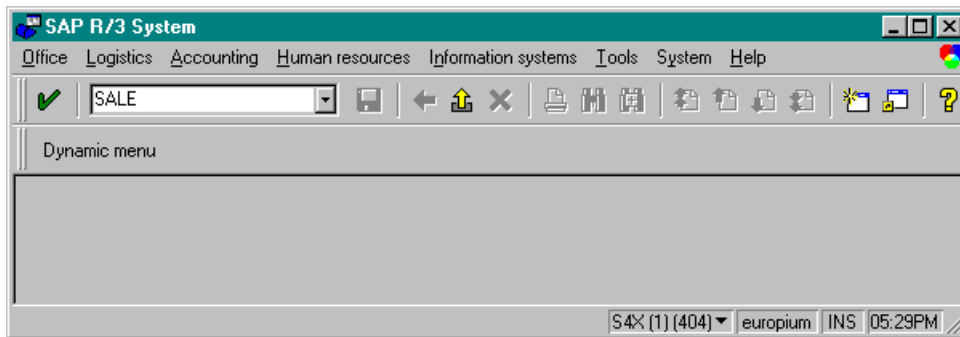
The RFC Destination defines the entity to which Remote Function Calls (RFCs) can be made; it is the same as the Logical System in the Distribution Model. The Communications Port defines a channel for communication of IDocs. The Partner Profile acts as an identifier for the eGate system, and provides a communications gateway by incorporating elements of the ALE interface.

7.2 Configuring the Distribution Model

7.2.1 Naming the Logical System

Transaction: SALE

Figure 43 SAP R/3 System Window




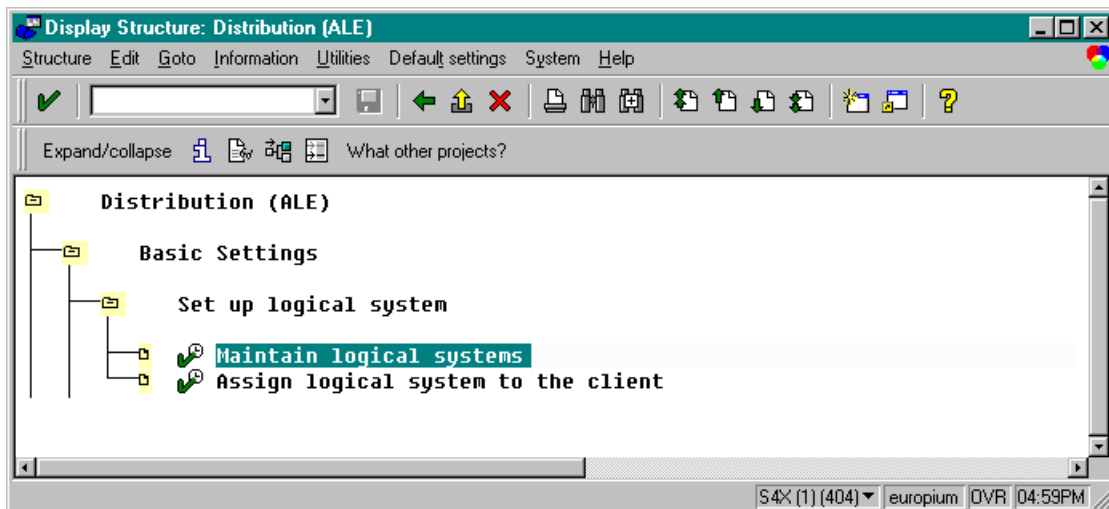
- 1 In the SAP R/3 System home window, type SALE into the command field and Enter  to display the *Distribution (ALE) Structure* window.

Figure 44 Distribution (ALE) Structure Display Window





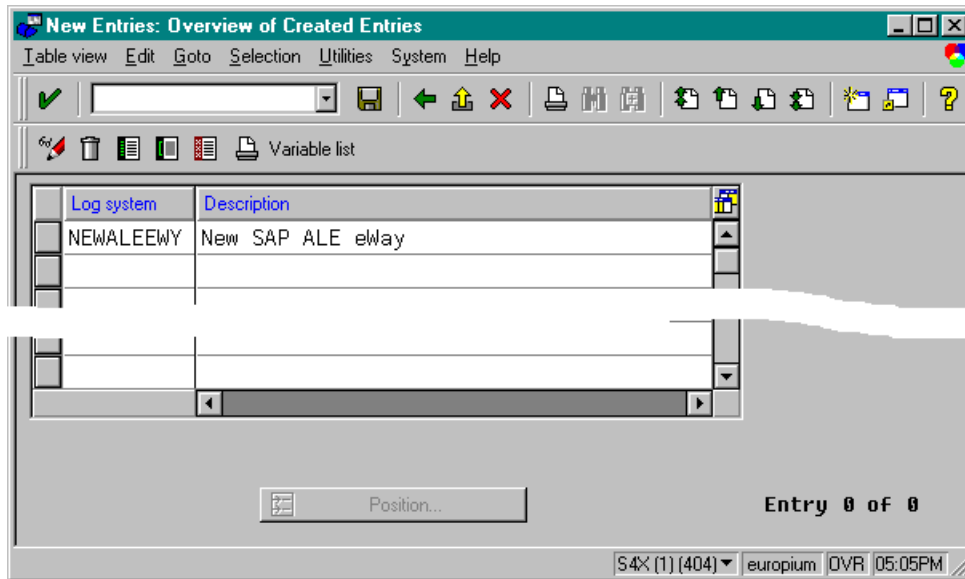
- 2 Expand the tree to display Distribution (ALE) > Basic Settings > Set up logical system > Maintain logical systems.
- 3 Select  **Maintain logical systems** to display the **Logical Systems Overview** window.
- 4 Select  to display the **New Entries** window.

Figure 45 New Entries Window




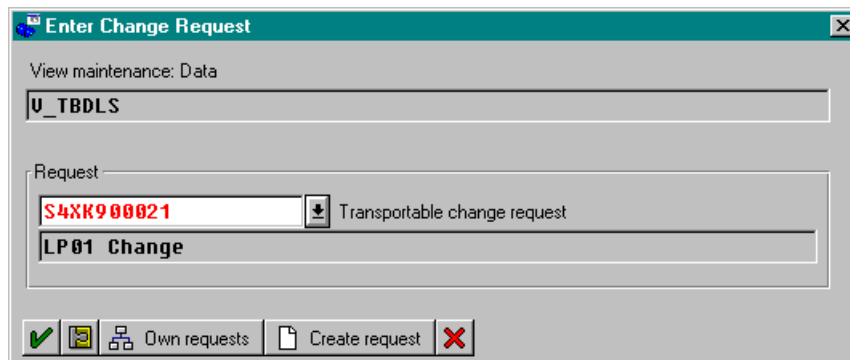





- 5 Enter the logical name for your SAP eWay using capital letters and a brief descriptive name.
- 6 Click  Save. The **Change Request Entry** window appears.

Figure 46 Change Request Entry Window (1)



- 7 Select  Create request, to display the **Create Request** window.
- 8 Enter a short description (e.g., *eWay Test*) and click  Save. The **Change Request** entry window appears.
- 9 Select  to enter the new data into the system. You are now returned to the **Logical Systems Overview** window, and the new Logical System appears in the list.
- 10 Click **Save** .and select  repeatedly until the **SAP R/3 System** window appears.

7.2.2 Specifying the Distribution Model

Cautionary Notes

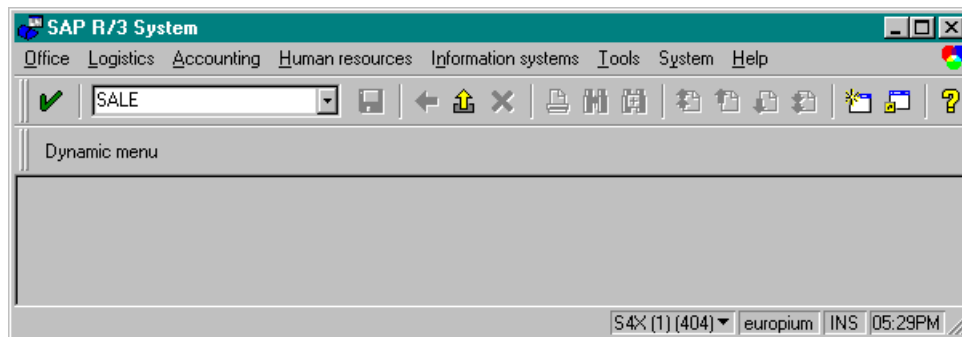
Two notes of caution are appropriate at this point:

- 1 Avoid placing eGate in the SAP Primary Model View. Use the SAP Primary Model View only as a template for your custom model view.
- 2 You should use the Z prefix when defining a name. This prefix is reserved for external use, and is not used in any standard SAP names.

Following these rules should prevent any interference with standard SAP functionality or conflicts with standard SAP terminology.

Transaction: SALE

Figure 47 SAP R/3 System Window




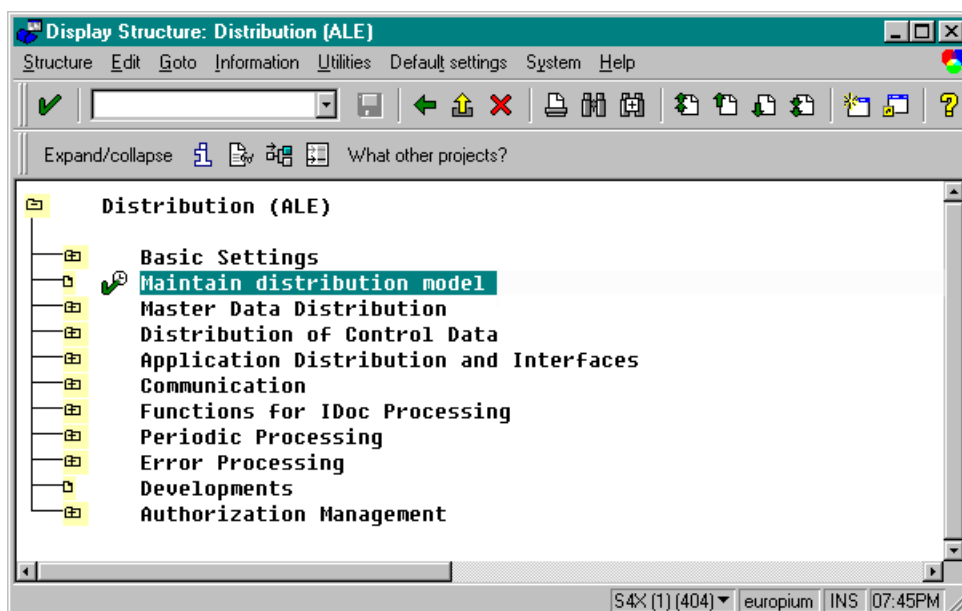
- 1 In the SAP R/3 System home window, type SALE into the command field and click Enter  to display the **Distribution (ALE) Structure** window.

Figure 48 Distribution Structure Window




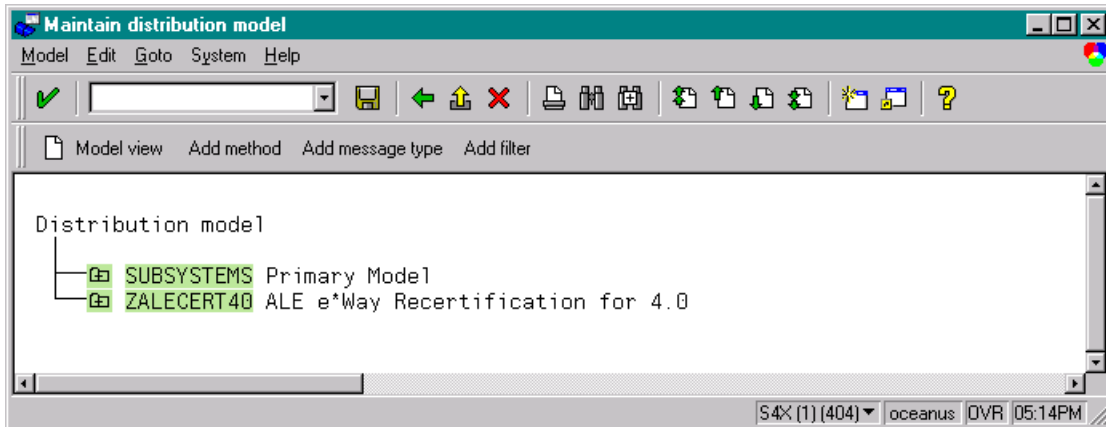
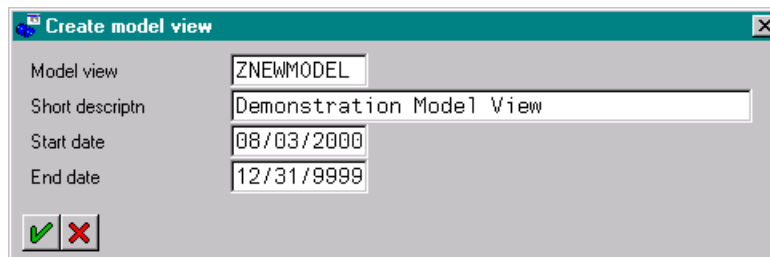
- 1 Click  **Maintain distribution model** to displays the **Maintain Distribution Model** window.

Figure 49 Maintain Distribution Model Window



- 2 Select the Menu path **Edit > Model View > Create** to display the **Create Model View** dialog box.

Figure 50 Create Model View Dialog Box




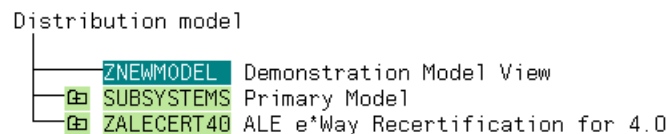
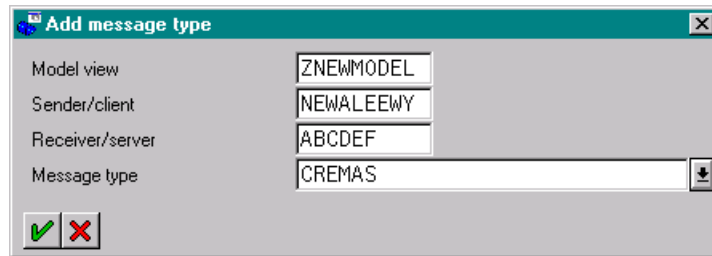
- 3 Enter the logical name you want for the new Distribution Model View, along with a brief descriptive name or message (for your own use).
- 4 Select Enter , which returns you to the previous window. Your new Model View now appears in the tree, as shown in Figure 51.

Figure 51 Maintain Distribution Model Tree



- 5 Highlight the new entry and select **Add Message Type**. This displays the **Add Message Type** dialog box.

Figure 52 Add Message Type Dialog Box




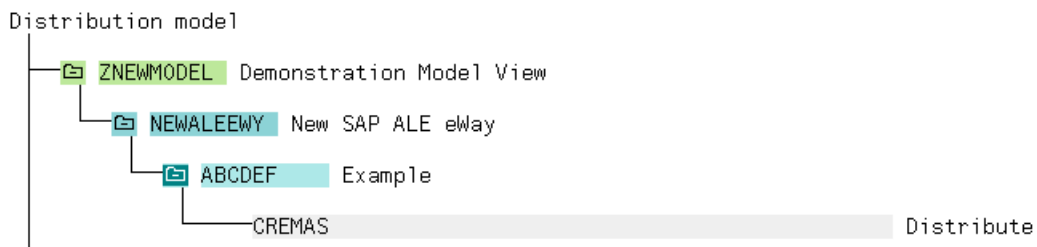



- 6 Type the desired values for the four parameters into the text boxes, or select them from the drop-down menus. For example, CREMAS is the message type used for Creditor Master Data.
- 7 Select Enter , which returns you to the previous window. The values you selected now appear in the Distribution Model tree, as shown in Figure 53.

Figure 53 Maintain Distribution Model Tree



- 8 Save , your entry, click Back  and then Cancel  to return to the **Distribution Structure** window.

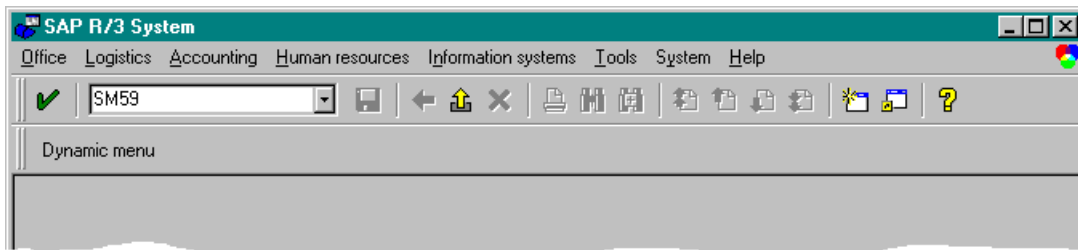
7.3 Configuring Communications

7.3.1 Defining the RFC Destination

Transaction: SM59

An RFC connection must be defined from the sender to the recipient. The first step is to define the RFC Destination.

Figure 54 SAP R/3 System Window




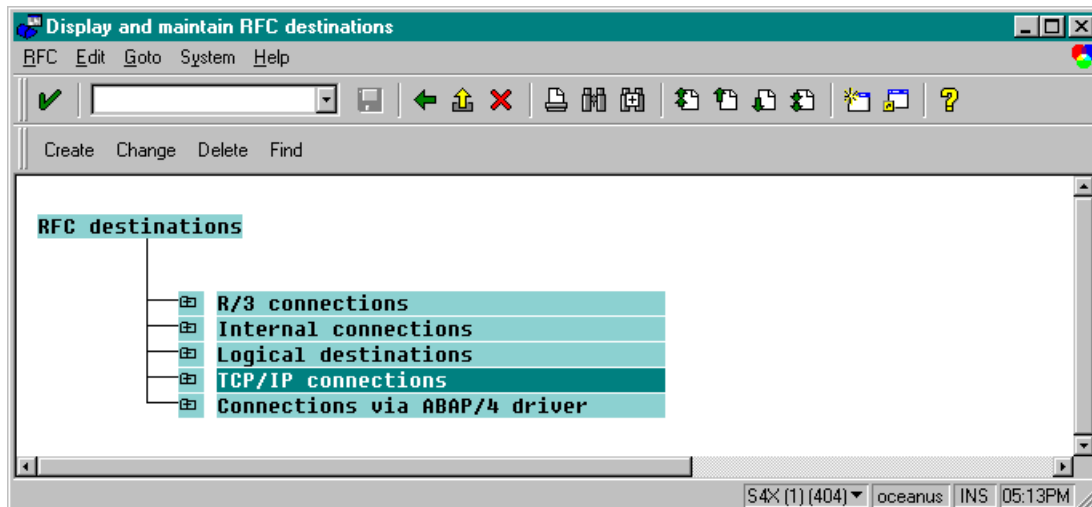
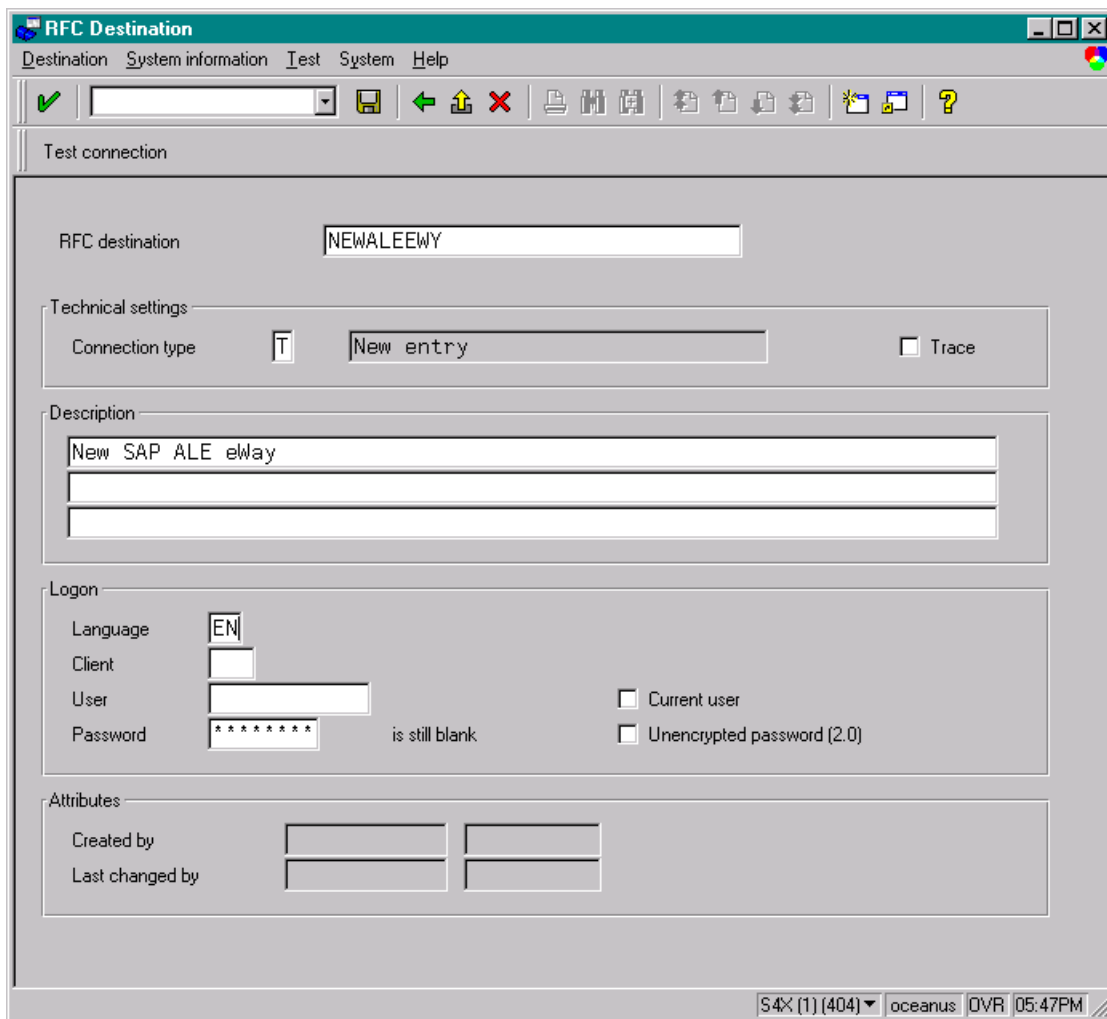
- 1 In the **SAP R/3 System** home window, type SM59 into the command field and Enter  to display the **RFC Destination Maintenance** window.

Figure 55 RFC Destination Maintenance Window



- 2 Select the **TCP/IP connections** option and then **Create** to display the **RFC Destination** entry window.

Figure 56 RFC Destination Entry Window




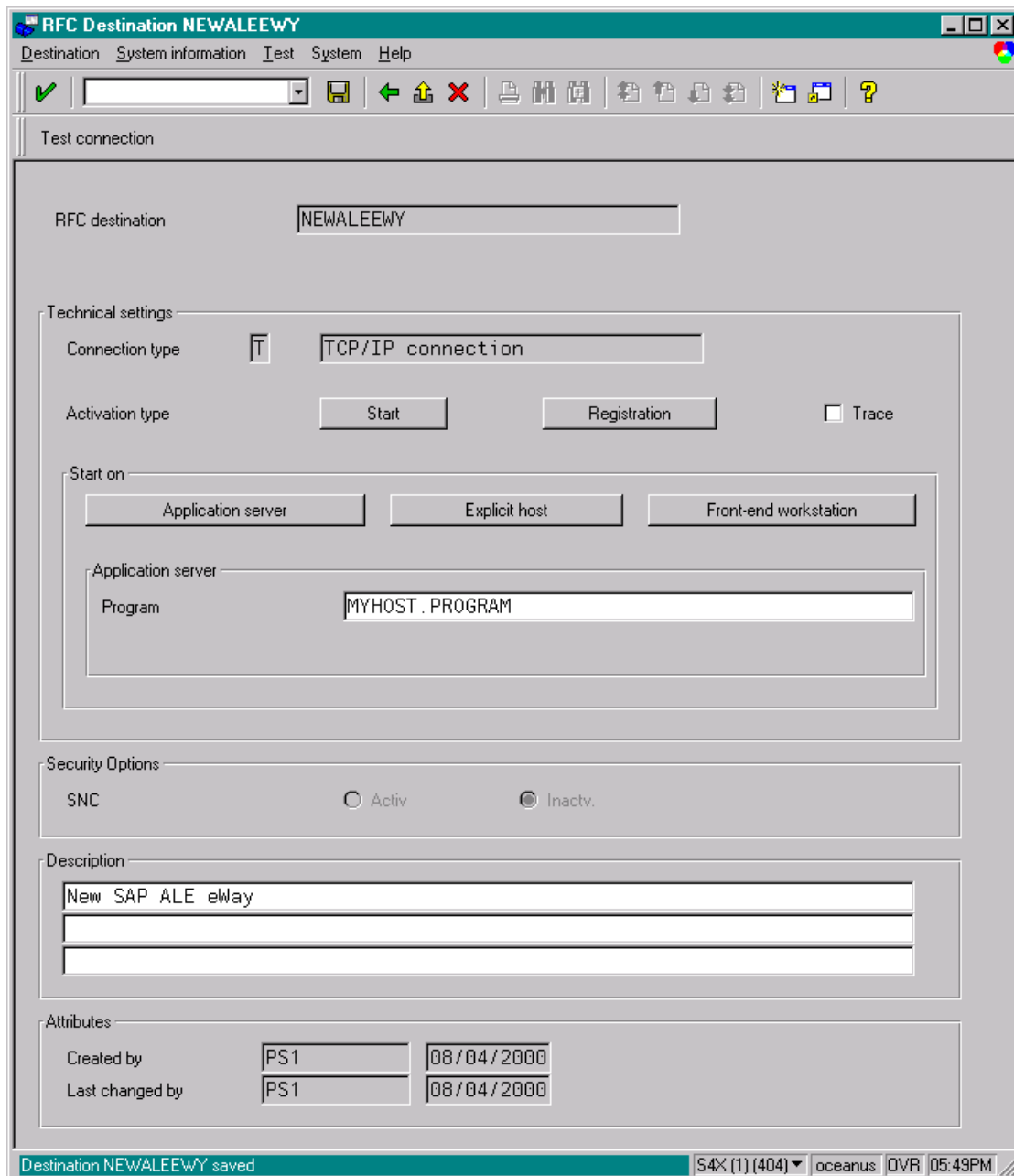
- 3 Type in the name of the RFC Destination (use the Logical System name), an accompanying Description, and enter <T> for the Connection Type (TCP/IP).
- 4 Save , which returns a confirmation message and displays the **RFC Destination** window corresponding to your entry.

Figure 57 RFC Destination Window





- 5 Click **Registration** for the Activation type and type in a Program ID of the form <hostname>.<program name>, and a Description.

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 [“Specifying The Program ID” on page 29](#).

- 6 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 58 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

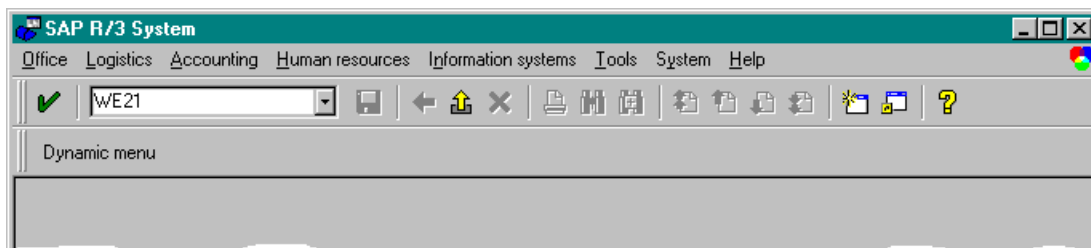
7 Save  and select  repeatedly to return to the SAP R/3 System window.

7.3.2 Defining the Communications Port

Transaction: WE21

The Communications Port defines the type of connection with the Partner (see [Creating a Partner Profile](#) on page 70). In this step you specify the outbound file name, directory path, and any associated function modules.

Figure 59 SAP R/3 System Window




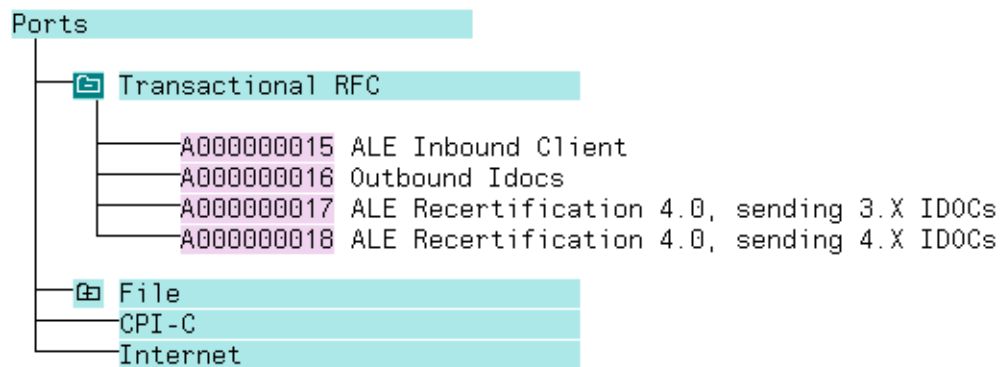
1 In the SAP R/3 System home window, type WE21 into the command field and click  to display the WF-EDI Port Definition window.

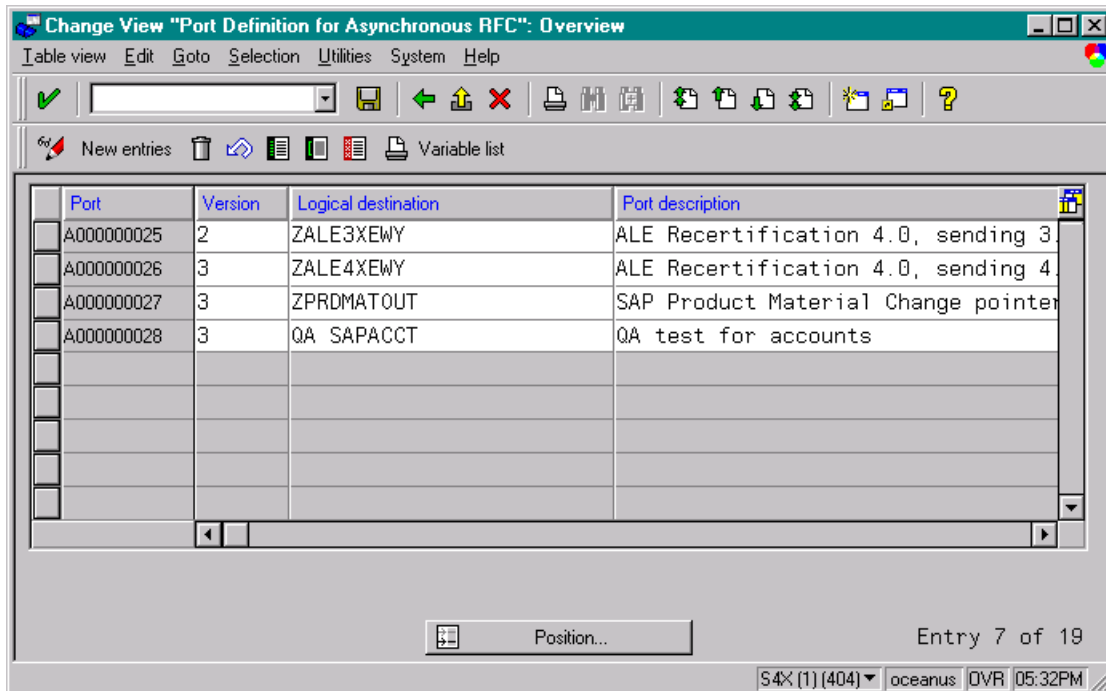
Figure 60 WF-EDI Port Definition Tree





2 Expand the tree under Transactional RFC to display the currently-defined Ports.

- 3 Select the desired Port from the list, or select Change to display the *Port Definition for Asynchronous RFC Overview* window.

Figure 61 Port Details Window



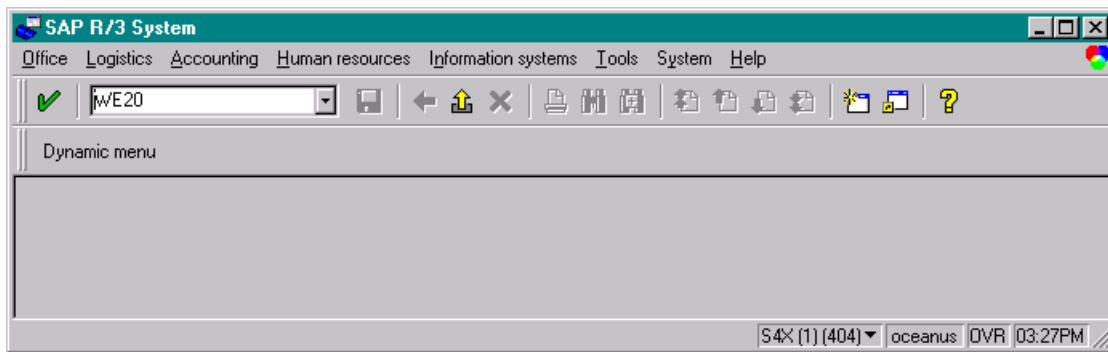
- 4 Type in a Version (specifies IDoc record type), Logical destination, and **Description**, matching the entries made previously.
- 5 Select Enter, which displays the *Change Request Query* dialog window. [Note that you must have CTS (Correction and Transport System) turned on for this screen to be displayed.]
- 6 Select Create Request, which displays the *Create Request* dialog window.
- 7 Enter a Short description and Save .
- 8 Select  repeatedly to return to the *SAP R/3 System* window.

7.3.3 Creating a Partner Profile

Transaction: WE20

Here you create the Partner for the Logical System you created earlier. Note that the LS Partner Type is used for all ALE distribution scenarios.

Figure 62 SAP R/3 System Window




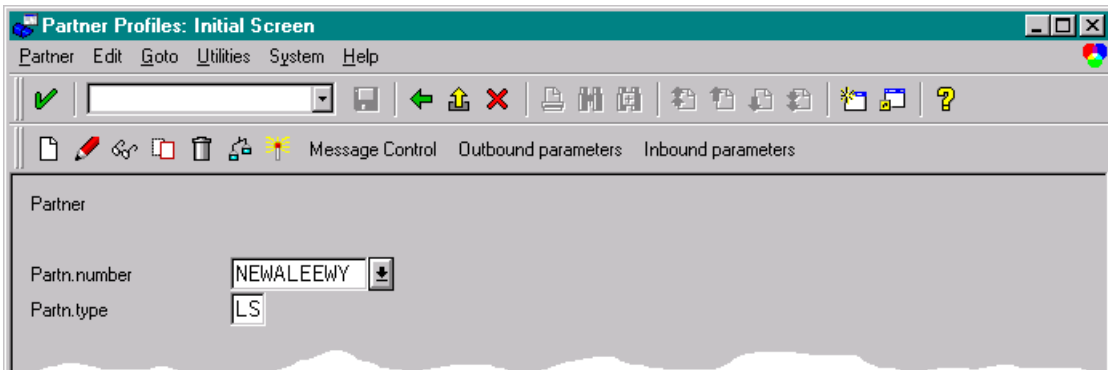
- 1 In the SAP R/3 System home window, type WE20 into the command field and Enter  to display the *Partner Profile: Initial Screen* window.

Figure 63 Partner Profile: Initial Screen Window




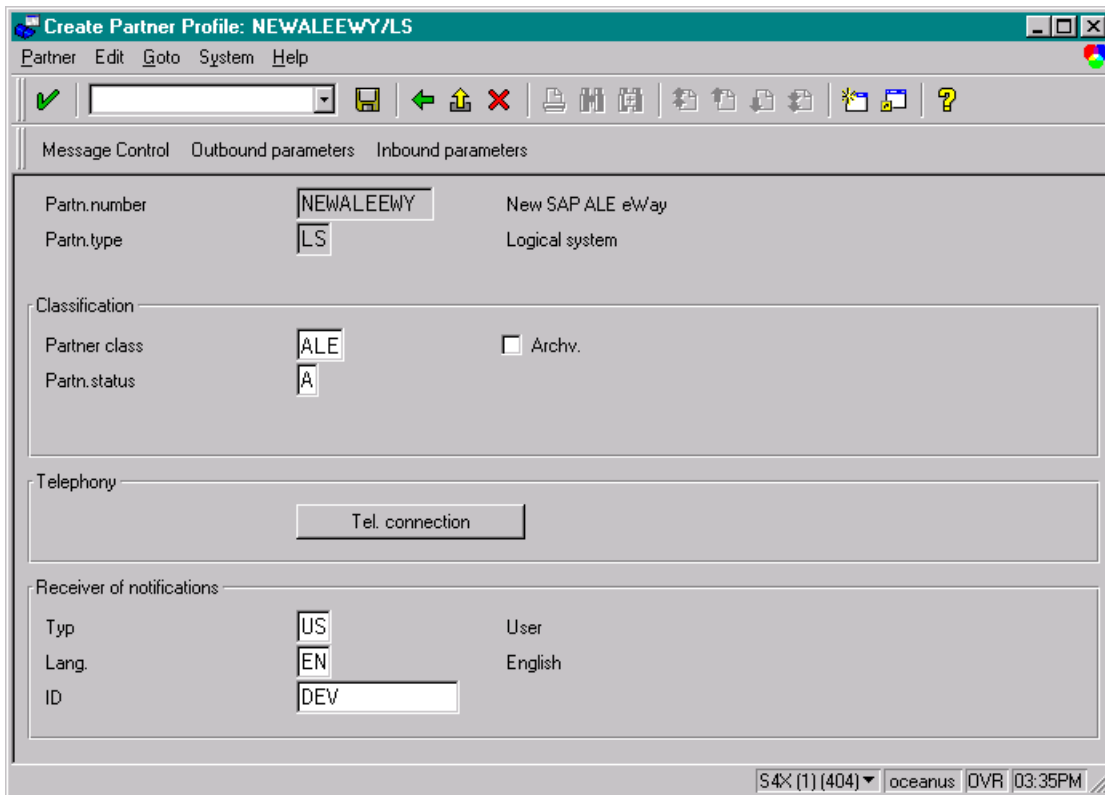

- 2 Type the name of the logical system created previously into the Partner number field, select LS for the Partner type, and select . This creates the Partner, and displays the *Create Partner Profile <Partner Number>* window.

Figure 64 Create Partner Profile Window



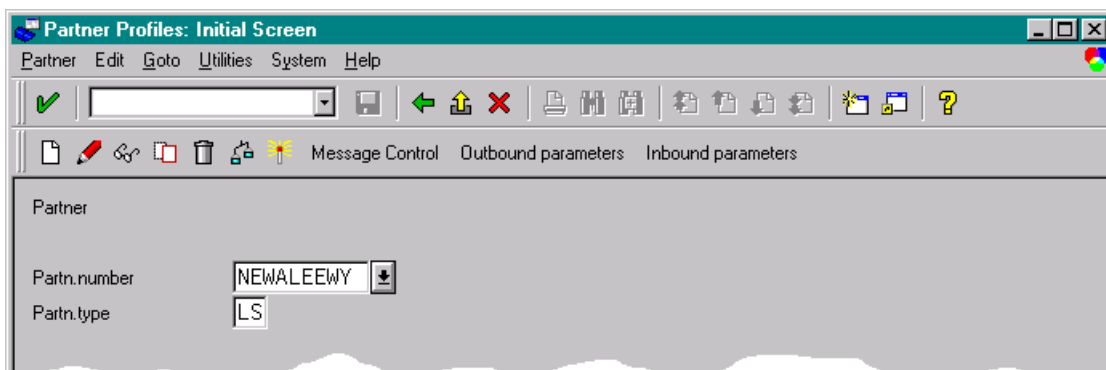
- 3 Select ALE for the Partner class and A (Active) for the Partner status, then Save . You now have created the Partner, and need to continue to the next section to configure the Partner Profile.

7.3.4 Configuring a Partner Profile

Transaction: WE20

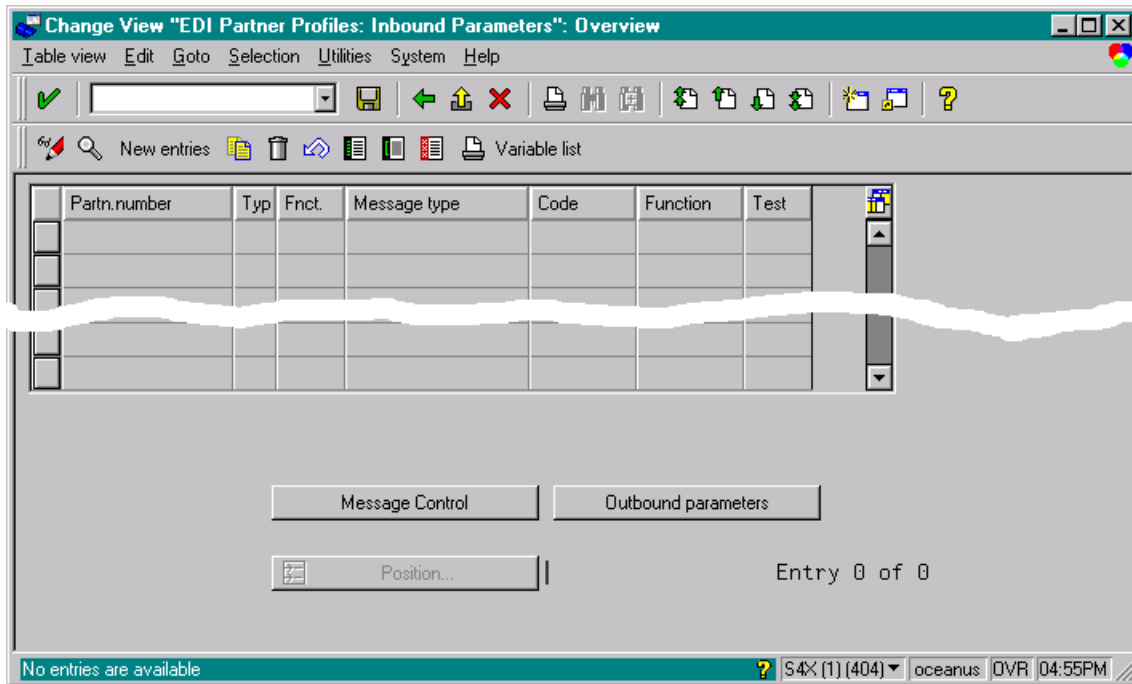
In this section, you configure the Inbound or Outbound Parameters in the Partner Profile.

Figure 65 Partner Profile: Initial Screen



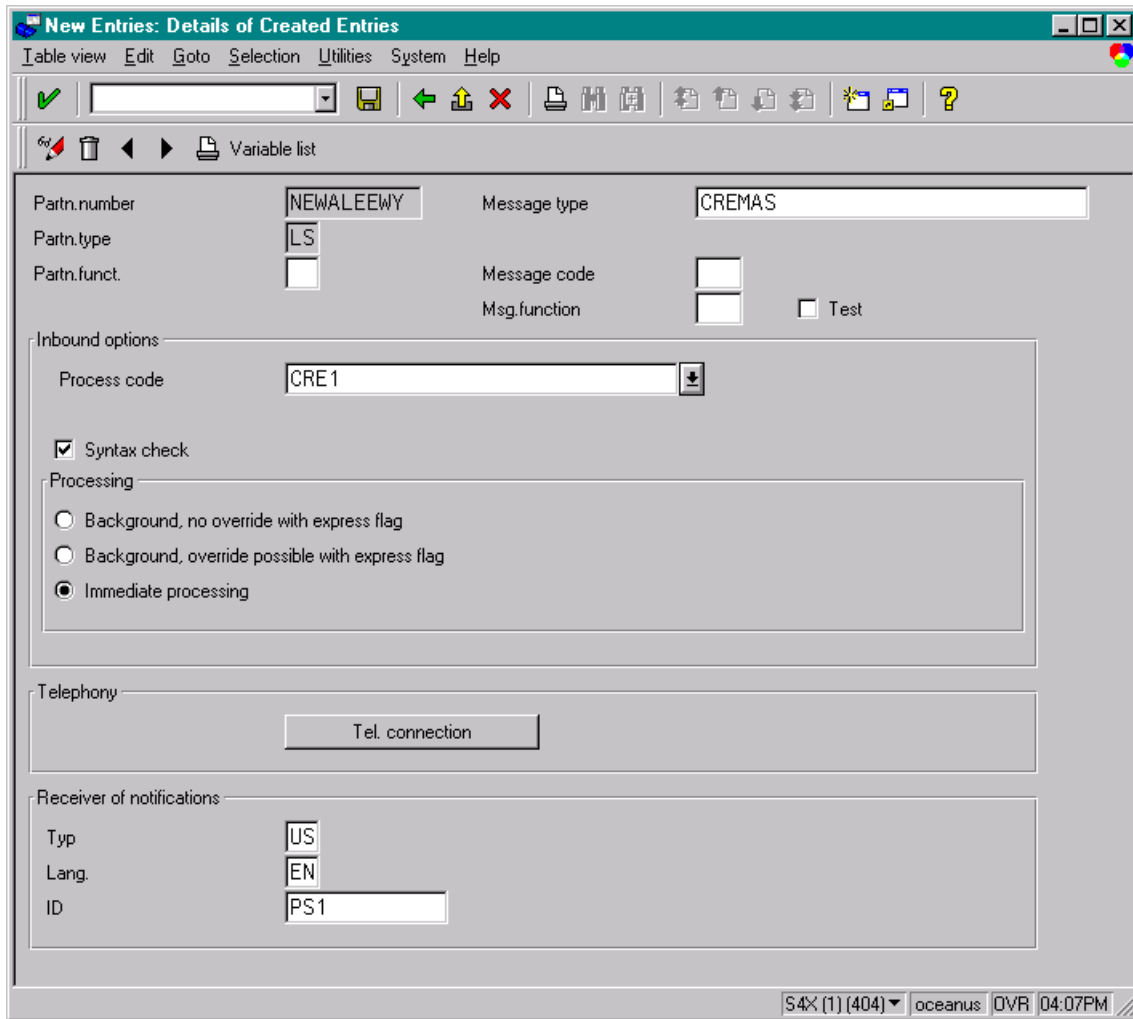
- 4 In the *Partner Profile: Initial Screen* window, select the desired Partner Number, for example NEWALEEWY.
- 5 Selecting Inbound parameters, for example, displays the *EDI Partner Profile: Inbound Parameters Overview* window for NEWALEEWY.

Figure 66 EDI Partner Profile: Inbound Parameters Overview Window (1)



- 6 Select New entries, which displays the *New Entries: Details of Created Entries* window for NEWALEEWY.

Figure 67 New Entries: Details of Created Entries Window




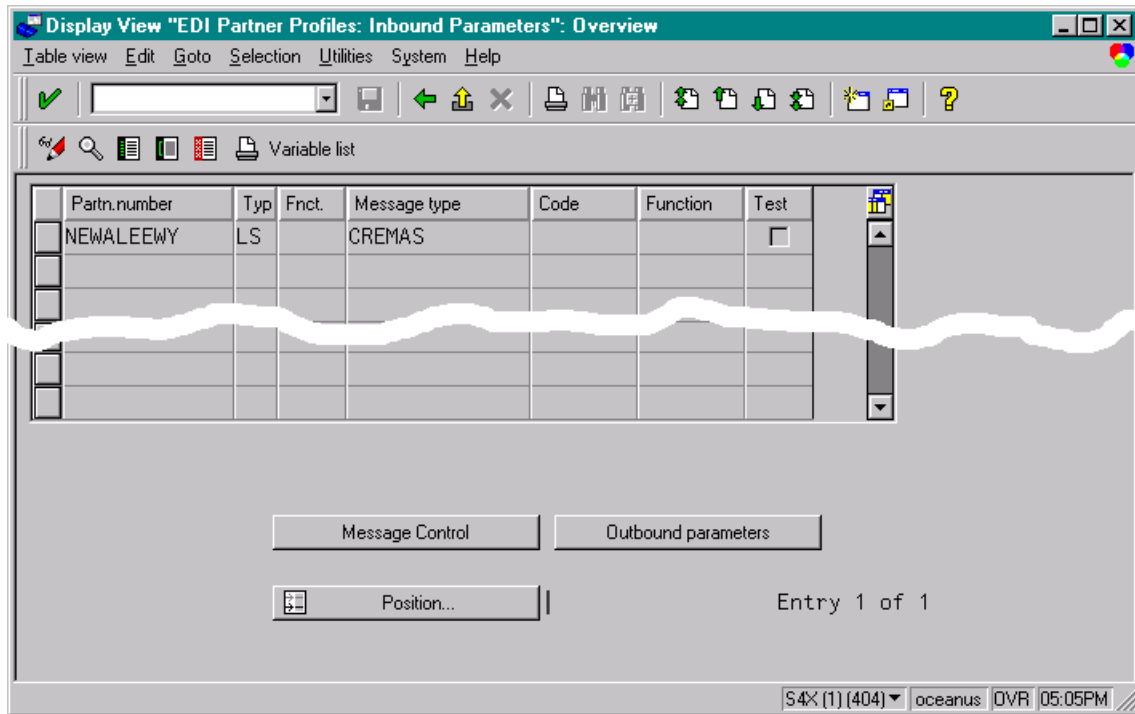


- 7 Select CREMAS as a Message type and CRE1 as a Process code from the drop-down menus, then Save . The entries now appear in the list in the *EDI Partner Profile: Inbound Parameters Overview* window.

Figure 68 EDI Partner Profile: Inbound Parameters Overview Window (2)



- 8 Follow the same procedure for Outbound parameters, if appropriate.
- 9 After making your entries, save  and exit  to the main *SAP R/3 System* window.

7.4 Security Issues

SAP uses *authorization objects* to allow access to various levels of operation. A minimum set of authorization objects required for the ALE eWay to operate is described below. Please use this only as a reference for setting up your own profiles.

These settings are located under Cross-Application Authorization Objects. Please refer to your 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 IDoc Type

Under ALE/EDI > Distributing master data and ALE/EDI, select:

- Receiving IDocs via RFC

Managing Deployed eWays

This chapter describes how to manage deployed SAP eWays. Once you have implemented an SAP eWay into an eGate Project and Environment, and have deployed the Project by activating the Deployment Profile, you can monitor the eWay using the Enterprise Manager. This chapter includes information about monitoring eWays as well as reconfiguring deployed eWays.

In This Chapter

- [Reconfiguring Deployed eWays](#) on page 77
- [Monitoring SAP \(ALE\) Collaborations](#) on page 78
- [Log Files and Alerts](#) on page 78

8.1 Reconfiguring Deployed eWays

This section describes how you reconfigure the logical and physical properties of eWays in Projects that have already been deployed. The logical properties are configured in the Connectivity Map

8.1.1 Reconfiguring Logical eWay Properties

To reconfigure a currently deployed eWay, you change the configuration and then reactivate the Deployment Profile. If you also made changes to the logical properties of the eWay in the Connectivity Map, apply the changes to the Logical Host as described in the next section.

The procedure below describes how you reconfigure the logical eWay properties.

To configure logical eWay properties

- 1 Configure the logical properties in the Connectivity Map as described in [“Configuring Logical eWay Properties” on page 22](#).
The Transaction Mode property must be set to Transactional. The non-transactional mode is not supported in this release.
- 2 In the **Project Explorer** tab, double-click the Deployment Profile for the Project.
- 3 Click **Reactivate**.

8.1.2 Reconfiguring Physical eWay Properties

To reconfigure a currently deployed eWay, you change the configuration and then apply the changes to the Logical Host as described below. If you also made changes to the logical properties of the eWay in the Connectivity Map, you must also reactivate the Deployment Profile as described in the *eGate Integrator User's Guide*.

The procedure below describes how you reconfigure the physical eWay properties.

To reconfigure physical eWay properties

- 1 Configure the physical properties in the Environment as described in **“Configuring Physical eWay Properties” on page 26**.
- 2 In the **Environment Explorer** tab, right-click the Logical Host that contains this eWay.
- 3 Click **Apply**.

8.2 Monitoring SAP (ALE) Collaborations

You monitor eGate SAP (ALE) Collaborations with the Enterprise Manager. For more information using the Enterprise Manager, refer to the *eGate Integrator System Administration Guide* and the *eGate Integrator User's Guide*.

8.3 Log Files and Alerts

SAP (ALE) alerts are logged in the Logical Host log file. For information about this log file, and how to change the logging level in Enterprise Manager, refer to the *eGate Integrator System Administrator Guide*.

Note: *If an alert is logged that the JCo library is not found, refer to **“Uploading JAR Files to the Logical Host” on page 57**.*

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