SeeBeyond ICAN Suite

SAP (ALE) eWay Intelligent Adapter User's Guide

Release 5.0.2

Version 20040811165945.

Contents

Chapter 1

Introducing the SAP (ALE) eWay

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

In This Chapter

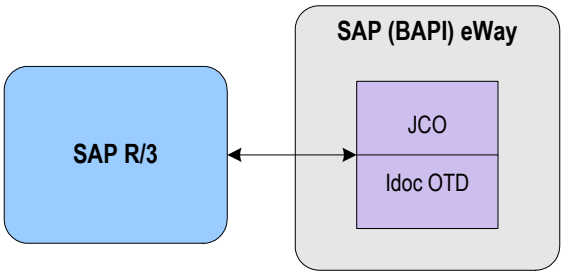
1.1 About the SAP (ALE) eWay

The SAP (ALE) IDOC Object Type Definition (OTD), when used with the SAP (BAPI) eWay and Transactional Remote Function Call (tRFC) protocol, enables ICAN Projects to exchange data with SAP R/3 software using SAP's Intermediate Documents (IDocs) via the Application Link Enabling (ALE) interface. IDocs are data containers that allow exchange of business information between an SAP R/3 system and other SAP or non-SAP R/3 systems.

SAP interfaces that are defined in the SAP Business Object Repository (BOR) as business objects that can be accessed using the tRFC protocol.

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

Figure 1 SAP (BAPI) eWay Overview



1.1.1 The SAP ALE Interface

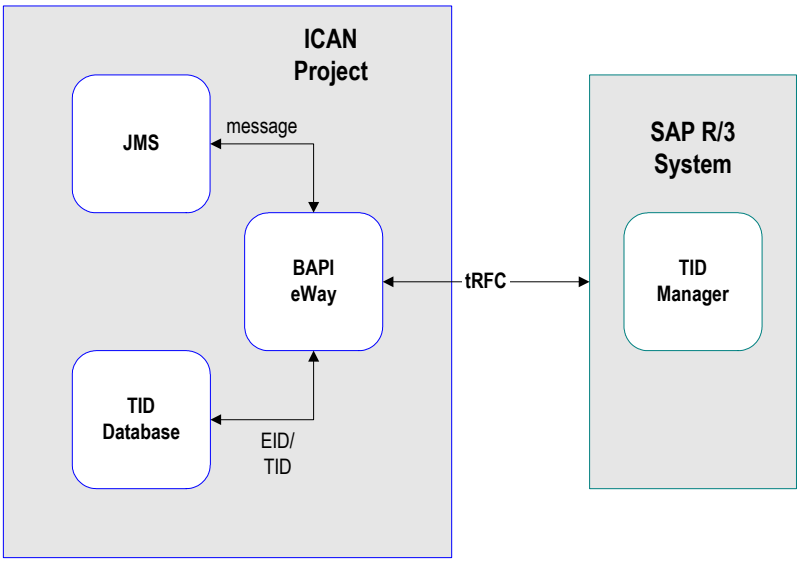
Real-time communications with an SAP R/3 system is accomplished through the use of SAP's ALE layer running on top of SAP's tRFC. Communication via tRFC is similar to non-transactional RFC, except that it adds transactional verification steps prior to committing or rolling back. tRFC is preferred over RFC because of the additional reliability which guarantees uniqueness of transactions. With tRFC, the receiving SAP R/3 system relies on an unique Transactional ID (TID) sent with the message to determine whether SAP R/3 has processed a transaction previously. 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.

SAP provides the API libraries for:

- Enabling connection to the SAP R/3 system, given the appropriate host and identification parameters
- Marshaling of arguments to and from the SAP R/3 system
- Executing (client-mode) or defining (server-mode) tRFC Services on the SAP R/3 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 R/3 system.

Figure 2 tRFC Communications



1.1.2 The SAP IDoc Format

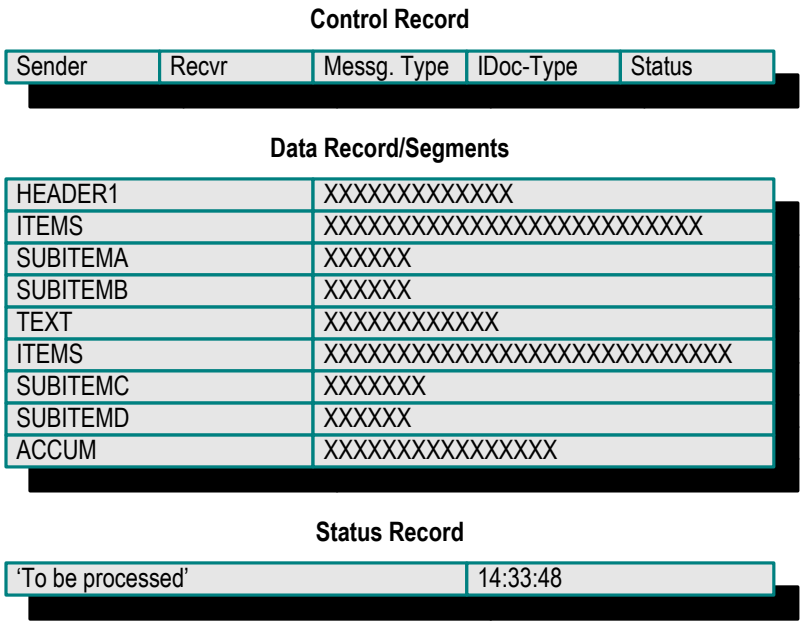
IDocs are used as containers for information, and are used to upload data to and download data from other systems. IDocs allow independence between the format and content of the message.

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 3 on page 7**. Status records, however, are not used by the ALE interface.

Figure 3 SAP IDoc Structure



Connecting to ExteSAP (ALE) OTD

1.2 The SAP (ALE) OTD Data Flows

The SAP (ALE) IDOC OTD is used in conjunction with the SAP (BAPI) eWay to control the communication protocol layer between the SAP R/3 host and ICAN, and can be configured to process data in either direction.

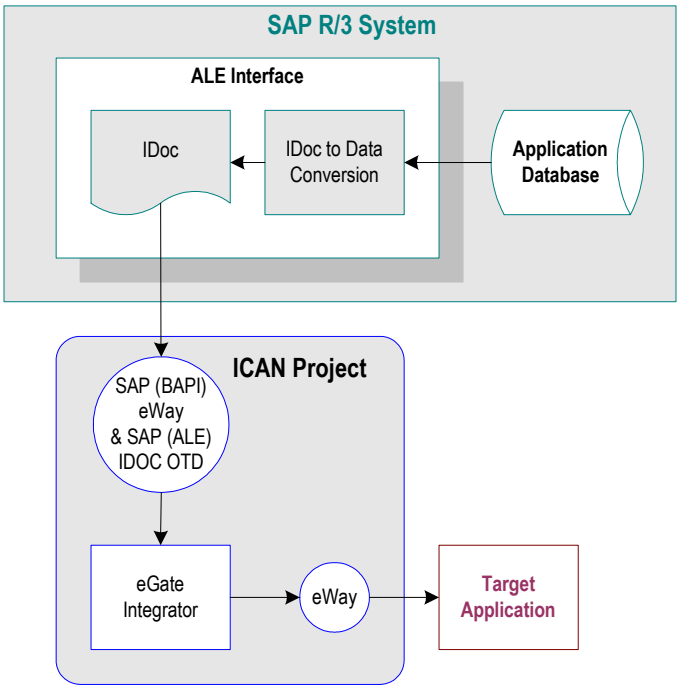
The ICAN Project, in turn, connects to another application through an eWay designed specifically for that system. This external system may be either another (differently configured) SAP R/3 system or a non-SAP R/3 system.

1.2.1 Inbound Data Flow: SAP R/3 to ICAN

The figure below describes the inbound data flow from SAP R/3 systems to ICAN. During routine operations, an application on the SAP R/3 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 (BAPI) eWay, which acts as an IDoc server.

The ICAN Project receives the IDoc data from the SAP (BAPI) 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.

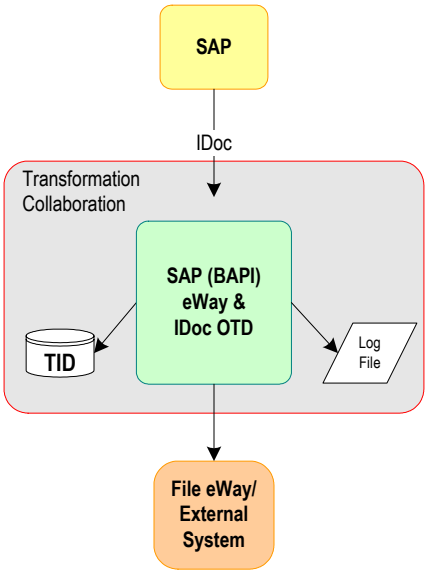
Figure 4 Inbound Data Flow: SAP R/3 to ICAN



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 (BAPI) eWay.

Note: *The generic IDOC format (IDOC_INBOUND_ASYNCHRONOUS) and specific IDOC formats may be converted by the ALE interface---to be received via tRFC to the SAP (BAPI) eWay.*

Figure 5 Inbound Message Processing Flow: SAP R/3 to ICAN



The diagram above shows the following inbound message processing flow:

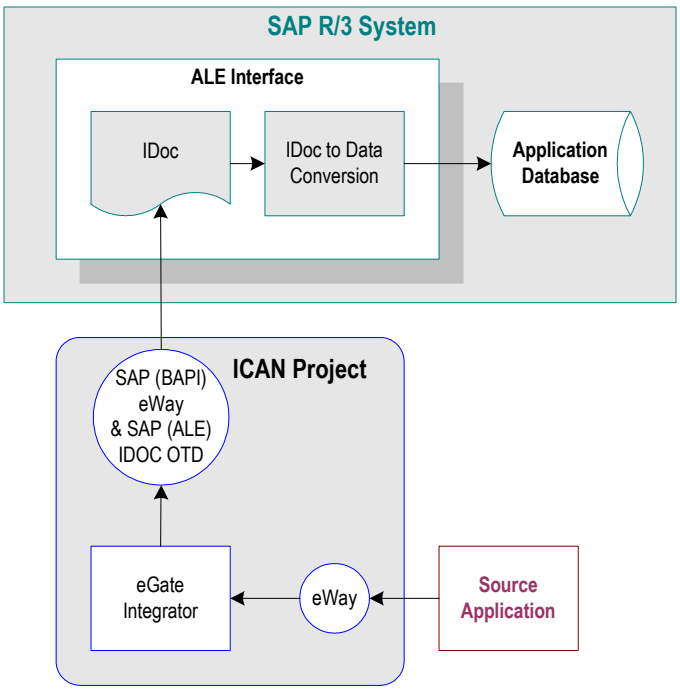
1. The eWay reads in the required configuration parameters and establishes a network connection with the SAP R/3 system, which becomes the IDoc server.
2. When the IDoc is sent from SAP R/3 via tRFC, the SAP (BAPI) eWay uses the RFC OTD, IDOC_INBOUND_ASYNCRONOUS, to receive the data.
3. Using the unmarshal method in of the SAP (ALE) IDoc OTD, the contents of the IDOC are now available for external systems.
4. The eWay verifies that the Transactional ID (TID) of the received transaction has not previously been committed (processed successfully) by this eWay.
5. 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.
6. 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.
7. If the Collaboration or Business Process fails, an exception is logged in the log file.
8. If the message sent to ICAN is unidentifiable or transformable, an exception is logged in the log file.
9. The eWay then repeats the procedure beginning with step 2.

1.2.2 Outbound Data Flow: ICAN to SAP R/3

The figure below described the outbound data flow from ICAN to the SAP R/3 system. An application external to the SAP R/3 system generates a transaction designated for an SAP R/3 application. The ICAN Project receives the transaction through an eWay, performs any necessary processing or routing, and sends the information to the SAP

(ALE) IDOC OTD. This OTD converts the data to SAP IDoc format and sends the data to the SAP (BAPI) eWay. The SAP (BAPI) eWay, in turn uses tRFC to connect to the SAP R/3 system's ALE Interface. Here, it is converted to the correct internal data format and stored in the application database.

Figure 6 Outbound Data Flow: ICAN to SAP R/3



Before the eWay can install functions on the SAP R/3 system, it must first register its program ID. This program ID is associated with an SAP RFC destination. For information about creating the RFC destination, refer to **"Defining the RFC Destination" on page 36**.

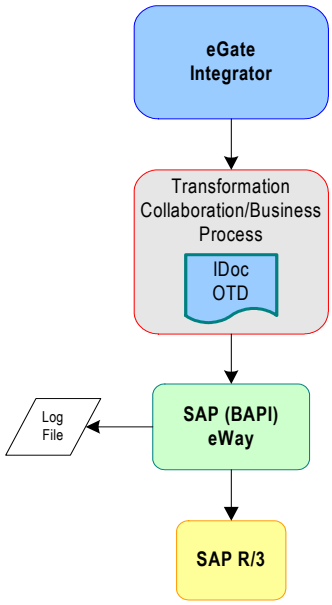
Some application external to SAP R/3 generates data and sends the data to ICAN via an eWay. ICAN then performs any necessary processing or routing, and sends the data to the SAP (ALE) eWay.

Note: *The generic IDOC format (IDOC_INBOUND_ASYNCHRONOUS) and specific IDOC formats may be converted by the ALE interface---to be sent via tRFC to the SAP (BAPI) eWay.*

Messages are sent to the SAP R/3 host via Transactional RFC (tRFC). With tRFC, the receiving SAP R/3 system relies on an unique Transactional ID (TID) sent with the message to ascertain whether or not a transaction has ever been processed by it before. The SAP (BAPI) 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 (BAPI) 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 7 Outbound Message Processing Flow: ICAN to SAP R/3



The diagram above shows the following outbound message processing flow:

1. When the Collaboration or Business Process starts to run, the eWay is initialized with its configuration properties.
2. The IDoc message format is retrieved from SAP R/3 or from the specified IDoc description file.
3. The data is unmarshaled to the IDoc OTD before being sent to the SAP (BAPI) eWay RFC OTD---IDOC_INBOUND_ASYNCRONOUS.
4. The SAP (BAPI) eWay transmits the data to SAP R/3.
5. The SAP (BAPI) eWay associates the next TID (from a persistent resetable counter) with the transformed outbound message and sends it via tRFC to the SAP R/3 host.
6. If no exceptions are raised by the receiving SAP R/3 host, the next TID is incremented.
7. 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.
8. The eWay repeats the procedure beginning with step 2.

Chapter 2

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

2.1 Supported Operating Systems

The SAP eWay is available for the following operating systems:

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

2.2 SAP R/3 Version Support Per Supported Operating System

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

Table 1 English-Language Version

Operating System	4.0B	4.5B	4.6B	4.6C	4.6D	4.7
Windows 2000 SP1	X	X	X	X	X	X
Windows 2000 SP2	X	X	X	X	X	X
Windows 2000 SP3						X
Windows XP SP1a						X
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), and 11i v2.0 (11.23)	X	X	X	X	X	X

2.3 Installation Requirements

2.3.1. 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*.

2.3.2. 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

Note: *SAP BAPI / ALE 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.*

Your SAP R/3 system must be configured to communicate with the SAP (ALE) eWay as described in **Configuring SAP R/3** on page 30.

2.3.3. Version Compatibility

Due to a major architectural change to the SAP ALE eWay, the SAP ALE v5.0.2 eWay is not compatible with SAP ALE eWay v5.0.1 and earlier. All collaborations (BPEL and

Java), in addition to all IDOC OTDs, that were built with SAP ALE eWay v5.0.1 and earlier must be deleted and rebuilt with SAP ALE eWay v5.0.2 or newer.

2.4 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 **"Locating, Importing, and Using the Sample Projects" on page 48**.

   If you plan to create an IDOC OTD directly from SAP, go to step 5. If you plan to create the IDOC OTD from a decription file, no further installation steps are required. Refer to **"Creating IDoc OTDs" on page 17** for more information about creating IDOC OTDs.
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:

- **librfccm.***
- **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.

2.5 After Installation

Ensure you have properly installed the SAP BAPI in order to connect to SAP; refer to the *SAP (BAPI) eWay Intelligent Adapter User's Guide* for installation instructions. Once you have installed the SAP ALE 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.

Chapter 3

Using the SAP (ALE) OTD Wizard

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.

In This Chapter

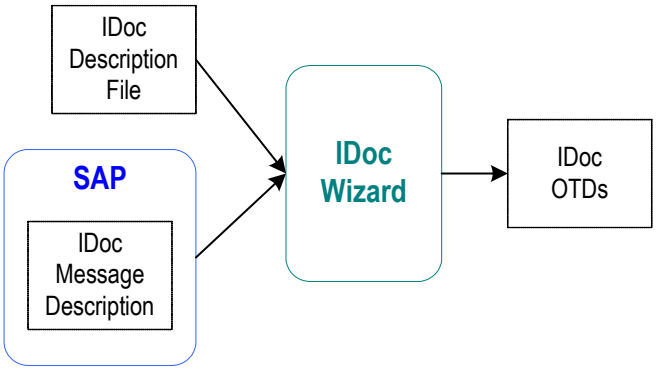
3.1 About the SAP IDoc Wizard

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.

Figure 8 SAP IDoc Wizard Overview



To export an IDoc description file from an SAP R/3 system to be used with an SAP ALE eWay IDOC OTD, see **"Exporting the IDOC File from SAP R/3" on page 23**. 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.

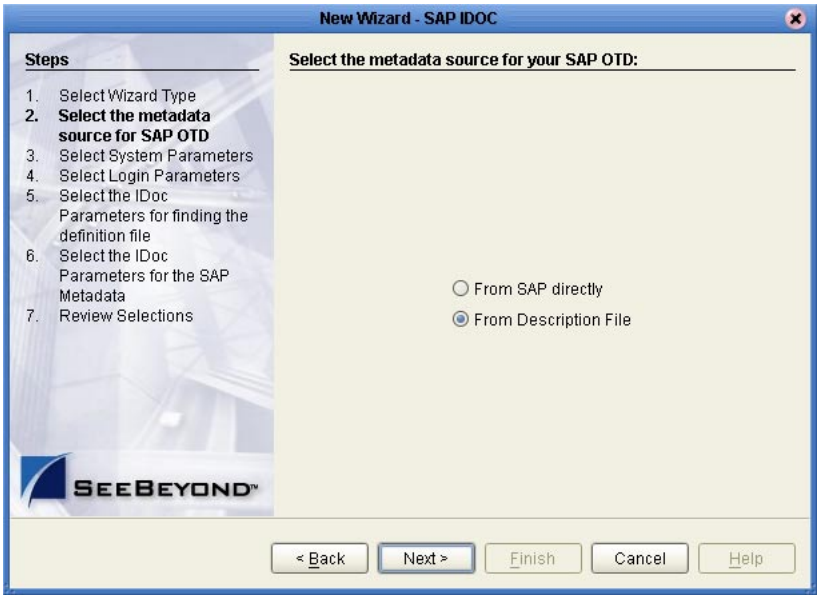
3.2 Creating IDoc OTDs

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 R/3 system as described in **"Exporting the IDOC File from SAP R/3" on page 23**.

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 9 IDoc Wizard—Metadata Selection



3 To retrieve the IDocs description file directly from the connected SAP R/3 system, select the **From SAP Directly** option and continue with the next step.

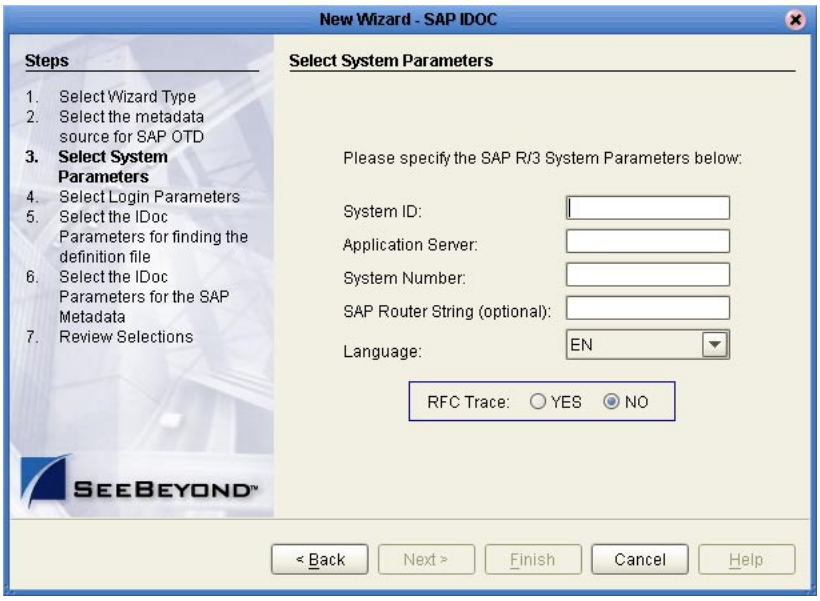
Note: *Refer to* ***"Installing the SAP eWay" on page 14*** *for a list of required modules that must be installed in order to conncet to SAP directly.*

Note: *When connecting to SAP directly, you must also use the SAP (BAPI) eWay. More specifically, all inbound and outbound SAP transactions that use the generic SAP (ALE) IDOC OTD require configuration of the SAP (BAPI) eWay RFC OTD, IDOC_INBOUND_ASYNCHRONOUS.*

To use an IDoc description file from a specified location, select the **From Description File** option and skip to step 10.

4 Click **Next**. The **System Parameters** page appears.

Figure 10 IDoc Wizard—System Parameters

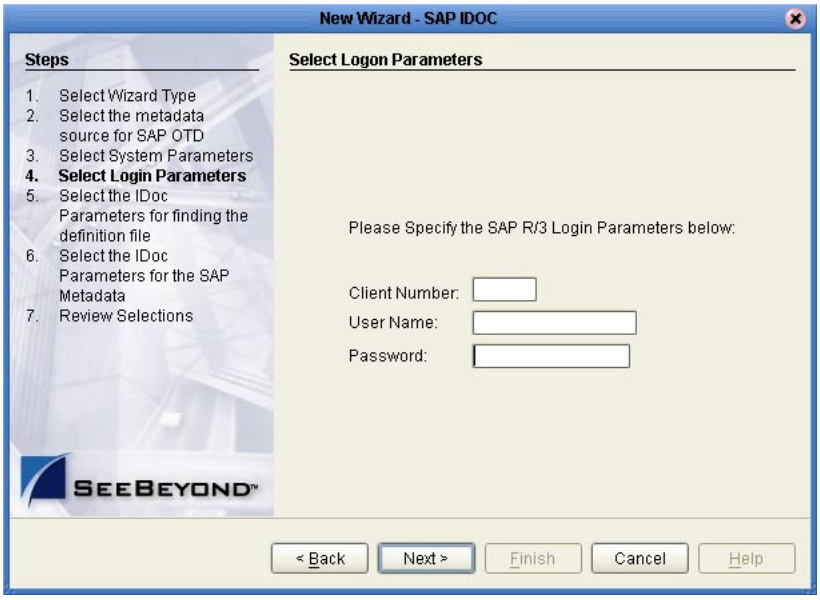


5 Enter the information for the SAP R/3 system for the SAP eWay to connect to:

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 **\edesigner\bin\dev_rfc.trc** file when an error occurs when you log into the SAP R/3 system using the wizard.

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

Figure 11 IDoc Wizard—Login Parameters

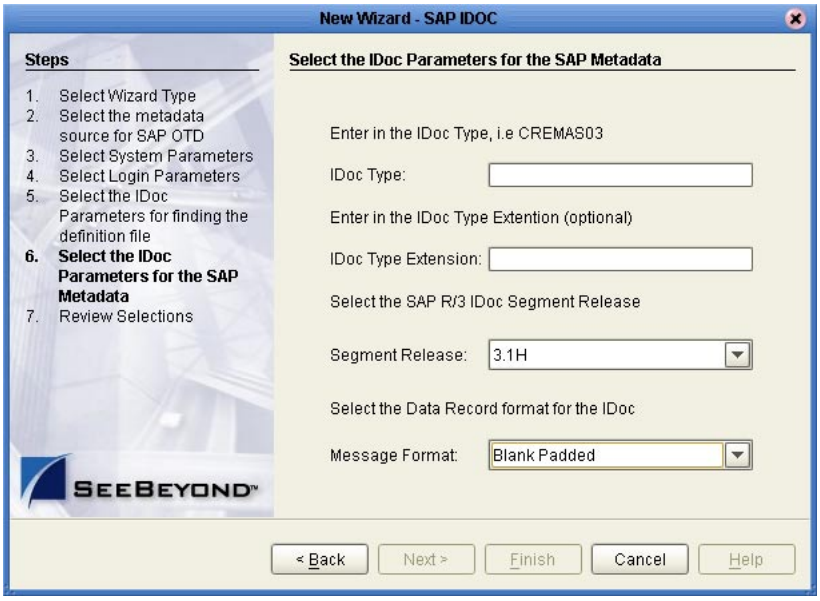


7 Enter the information to log into the SAP R/3 system:

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 12 IDoc Wizard—IDoc Metadata Parameters

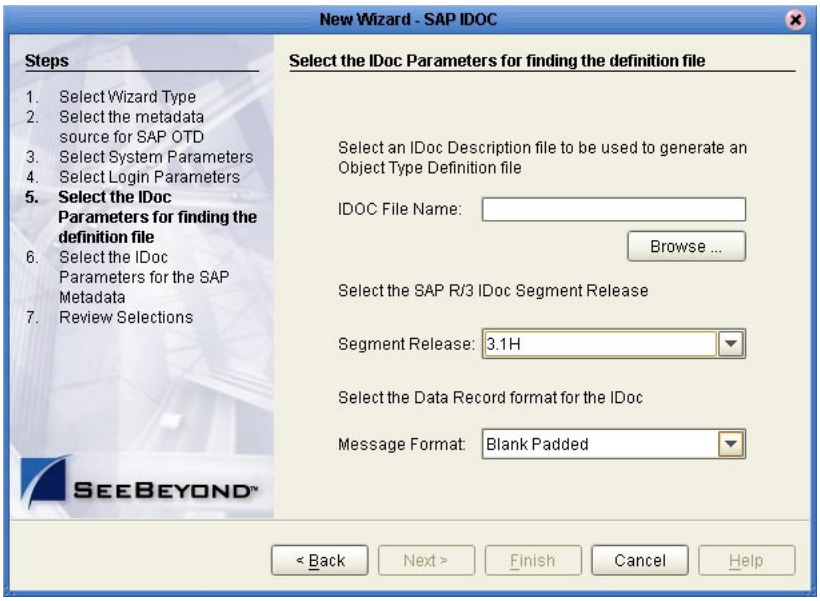


9 Enter the following information about the IDoc and continue with step 12:

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 13 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 built the Collaborations or Business Processes as described in **"Building SAP (ALE) Business Logic with eInsight" on page 54** and **"Building SAP (ALE) Business Logic with eGate" on page 57**.

3.3 IDoc OTD Methods

The SAP (ALE) eWay provides the following IDoc methods that are available for you to use in the source code for the Collaborations or Business Activities:

- **"getDataString"**
- **"marshal"**
- **"reset"**
- **"unmarshal"**

getDataString

Syntax

```
getDataString()
```

Description

Returns a string representation of the data.

Parameters

None

Return Value

String

Throws

None

marshal

Syntax

```
marshal()
```

Description

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

Parameters

None

Return Value

byte[]

Throws

MarshalException

reset

Syntax

```
reset()
```

Description

Clears the node of all data.

Parameters

None

Return Value

None

Throws

None

unmarshal

Syntax

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

Description

Unmarshals the IDoc data to an IDoc OTD.

Parameters

Name	Type	Description
bytes	byte[]	Data stream to be unmarshaled.

Return Value

None

Throws

UnmarshalException

3.4 Exporting the IDOC File from SAP R/3

The following sections describe how to create and export the IDOC file from SAP R/3 that is required to create the SAP ALE business logic. The procedures provided may vary depending on version and/or platform of SAP R/3. Refer to the current documentation for your version of SAP R/3. The procedures described in this section create the IDOC file an SAP R/3 system version 4.6 and earlier:

- **Downloading the IDoc Description File (Before 4.7)** on page 24

▪ **Saving the IDoc Description File (After 4.6)** on page 27

3.4.1 Downloading the IDoc Description File (Before 4.7)

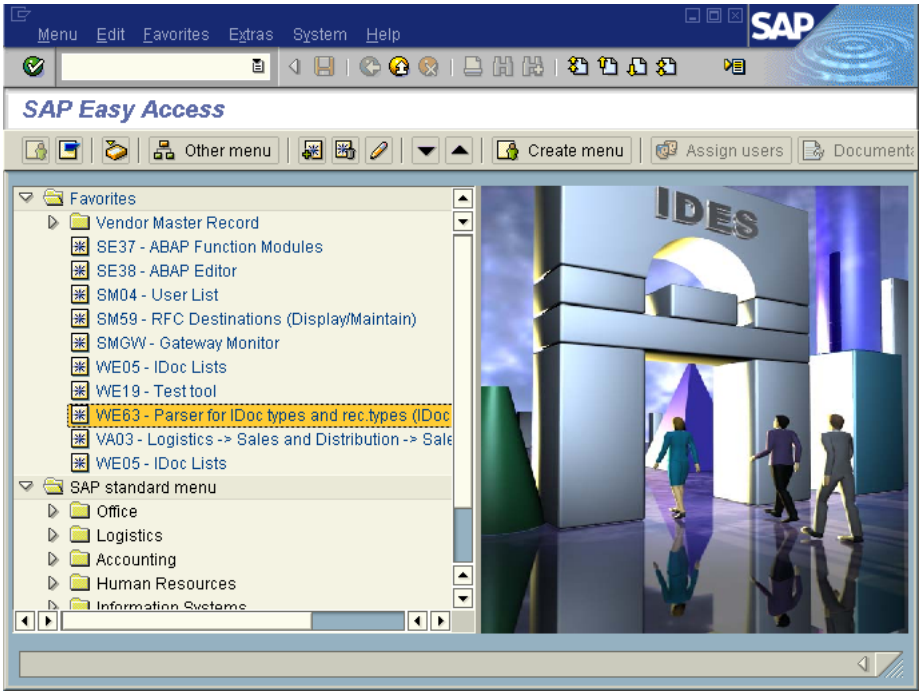
Note: *The screenshots in the procedure below show the SAPGUI version 6.2 connecting to segment version 4.6.*

To download the IDoc description file from SAP

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

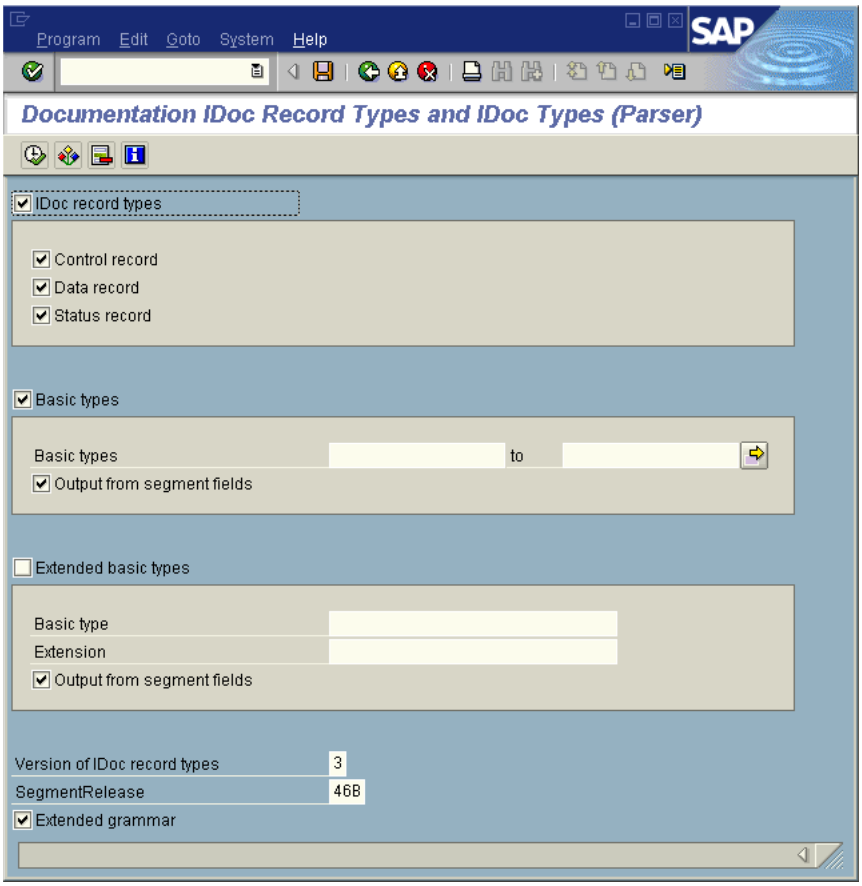
If the **SAP Easy Access** window does not display, click **Exit**.

Figure 14 SAP Easy Access Window



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

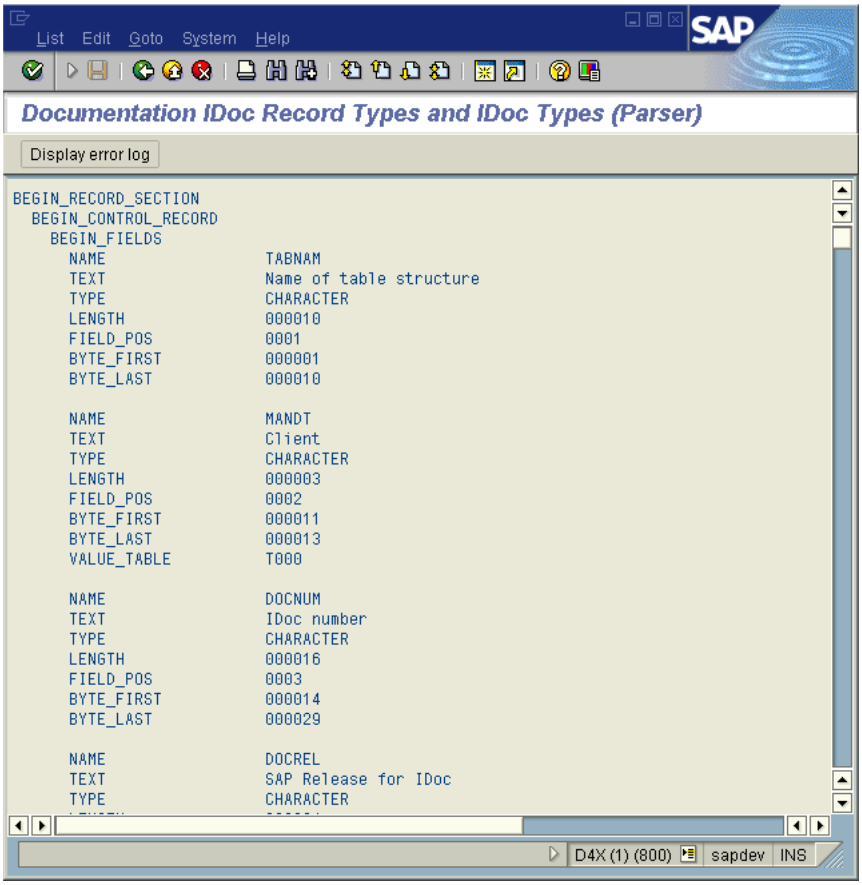
Figure 15 Documentation IDoc Record Types Window



3 In the **Basic Types** box, type or select the IDoc to be parsed.

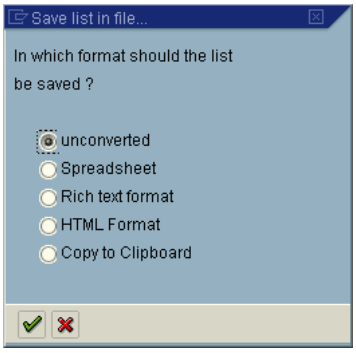
4 Select any other options needed, and click **Execute**. The **Documentation IDoc Record Types** window shows the parsed definition file.

Figure 16 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 17 Save List in File Dialog box

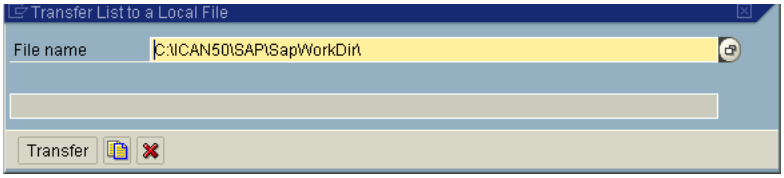


6 If necessary, select **Unconverted**.

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 18 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 17**. Use the **From Description File** option so that you can select the description file you downloaded.

3.4.2 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.

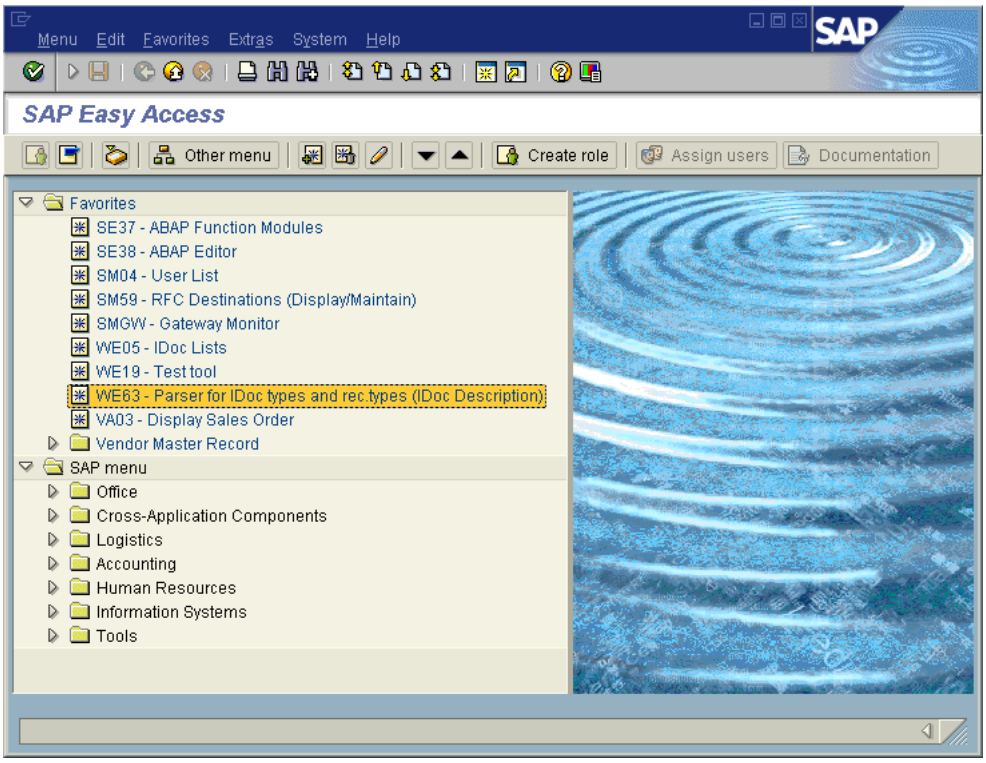
Note: *The screenshots in the procedure below show the SAPGUI version 6.2 connecting to segment version 4.7.*

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.

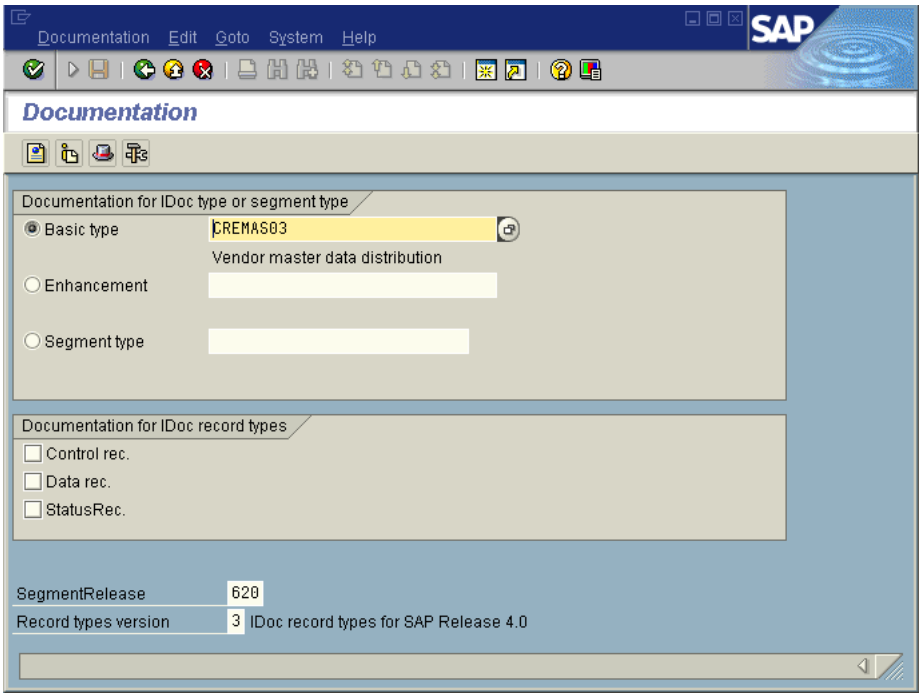
If the **SAP Easy Access** window does not display, click **Exit**.

Figure 19 SAP Easy Access Window



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

Figure 20 Documentation Window

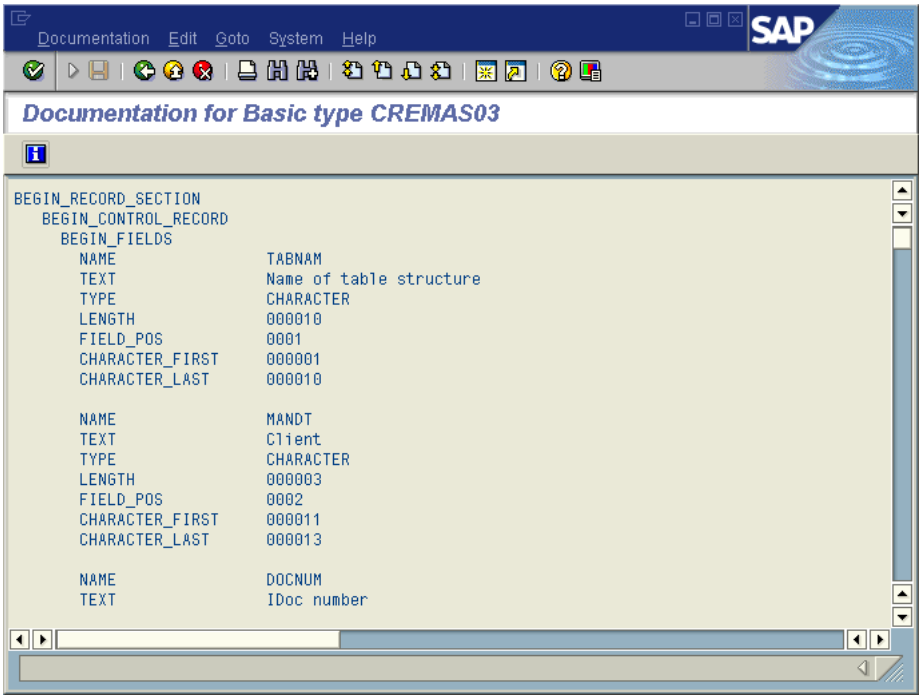


3 Enter the basic type, enhancement, and segment type information.

4 Select the IDoc record types to be included.

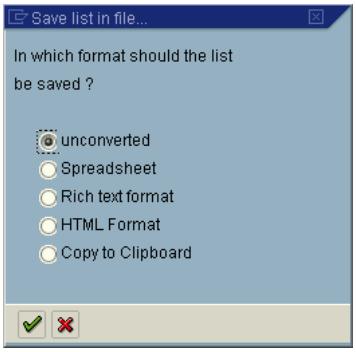
5 Click **Parser**. The **Documentation** window displays the parsed data.

Figure 21 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 22 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. Use the **From Description File** option so that you can select the description file you saved.

Chapter 4

Configuring SAP R/3

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

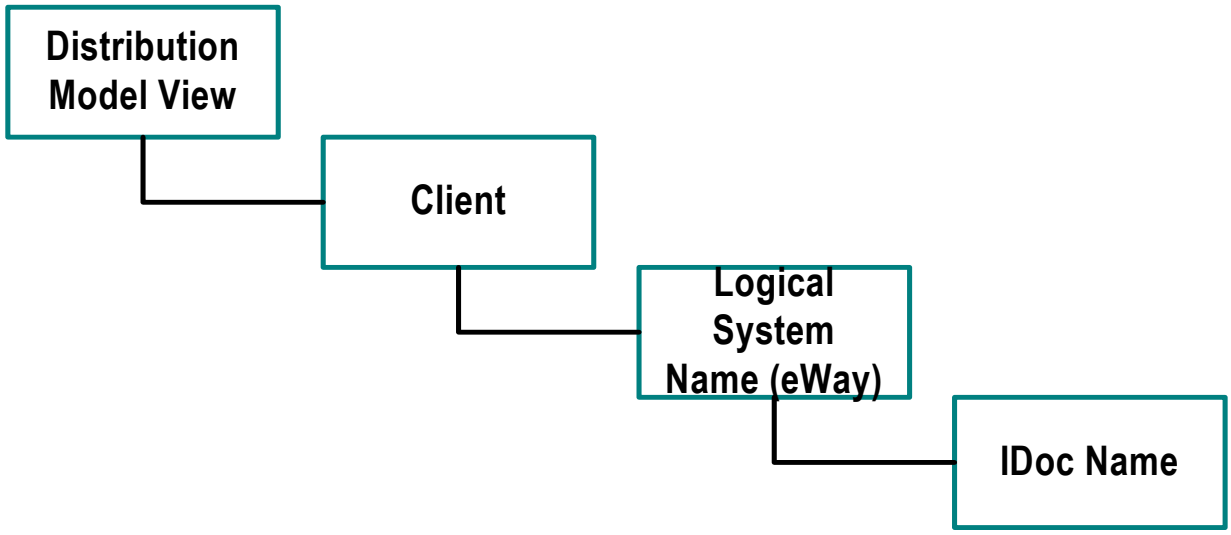
The SAP screen captures in this chapter correspond to SAPGUI version 6.2, and SAP R/3 version 4.0. They are included to illustrate the general nature of the procedures, and contain only example values. Refer to the documentation supplied with your SAP R/3 system to determine the exact procedures.

In This Chapter

4.1 SAP Hierarchies

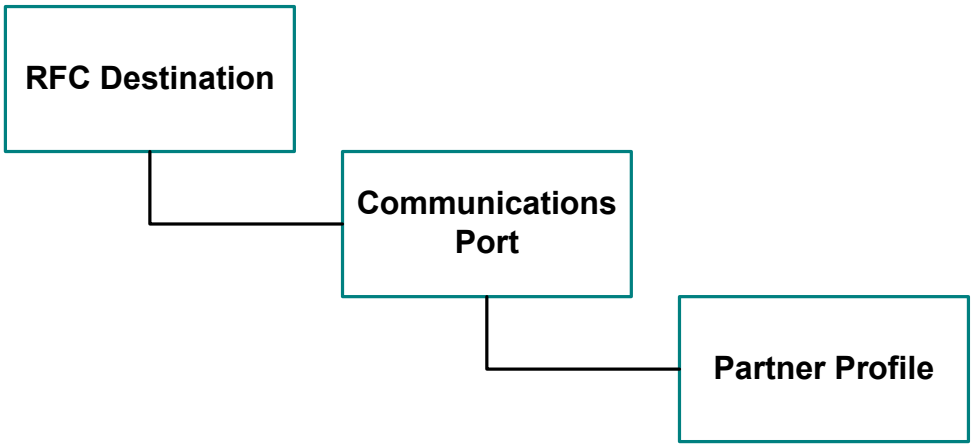
To prepare your SAP R/3 system to recognize the SAP (ALE) eWay, you must first define a Logical System in SAP to represent the eGate system as an ALE client (either sender or receiver). Next, you create a new Distribution Model view, which defines how the Logical System exchanges messages. You must link it to a Client, a Logical System (the one you just created), and an IDoc type. The Distribution Model hierarchy is depicted in Figure 23, as it appears in the SAP GUI (IMG).

Figure 23 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 24. The individual steps involved in the configuration are:

Figure 24 Communications Hierarchy



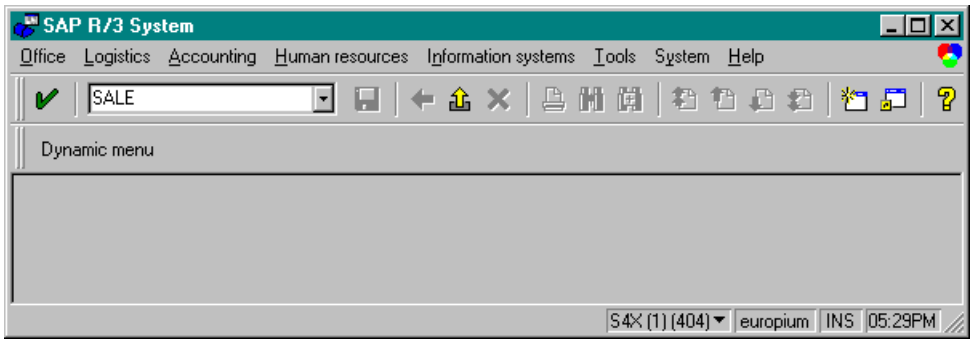
The RFC Destination defines the entity to which Remote Function Calls (RFCs) can be made; it is the same as the Logical System in the Distribution Model. The Communications Port defines a channel for communication of IDocs. The Partner Profile acts as an identifier for the eGate system, and provides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

4.2 Configuring the Distribution Model

4.2.1 Naming the Logical System

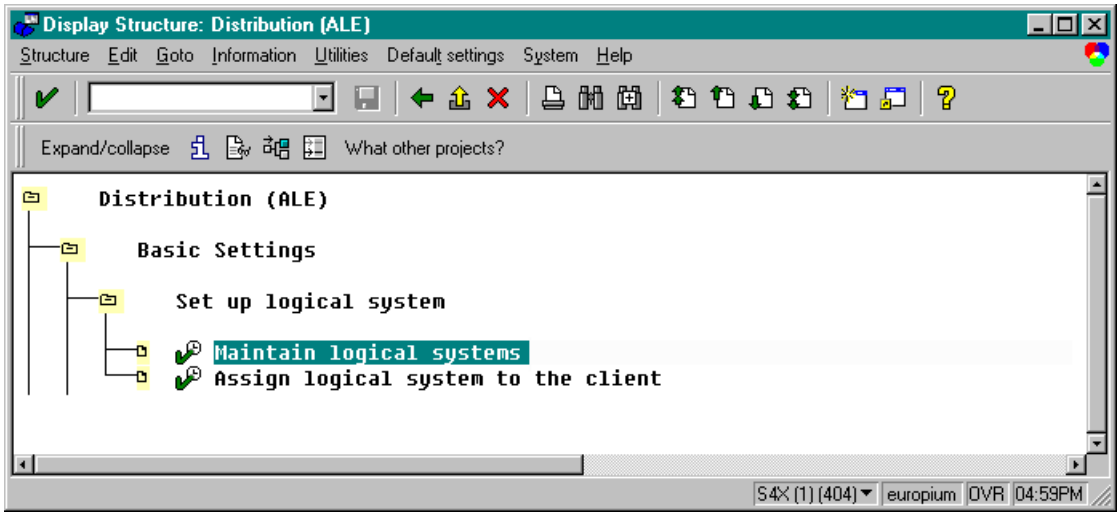
Transaction: **SALE**

Figure 25 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 26 Distribution (ALE) Structure Display Window

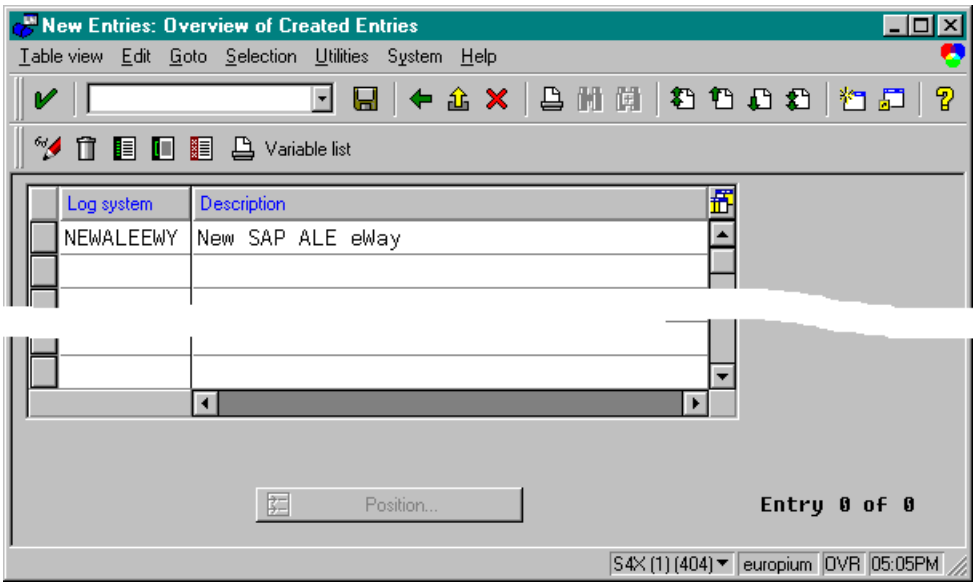


2 Expand the tree to display **Distribution (ALE)** > **Basic Settings** > **Set up logical system** > **Maintain logical systems**.

3 Select **Maintain logical systems** to display the **Logical Systems Overview** window.

4 Select **New entries** to display the **New Entries** window.

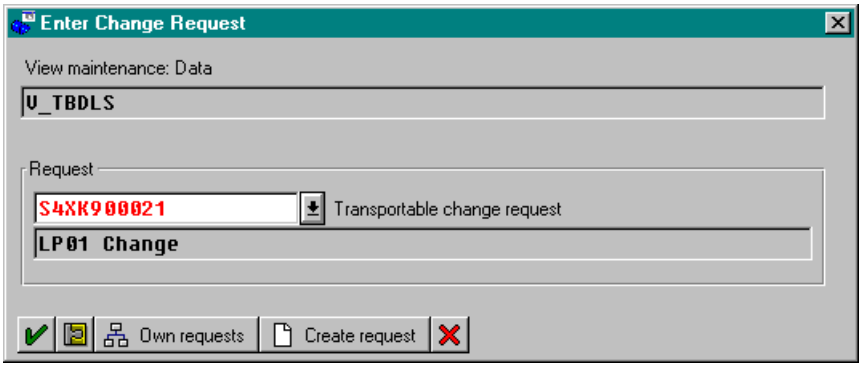
Figure 27 New Entries Window



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 28 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.

4.2.2 Specifying the Distribution Model

Cautionary Notes

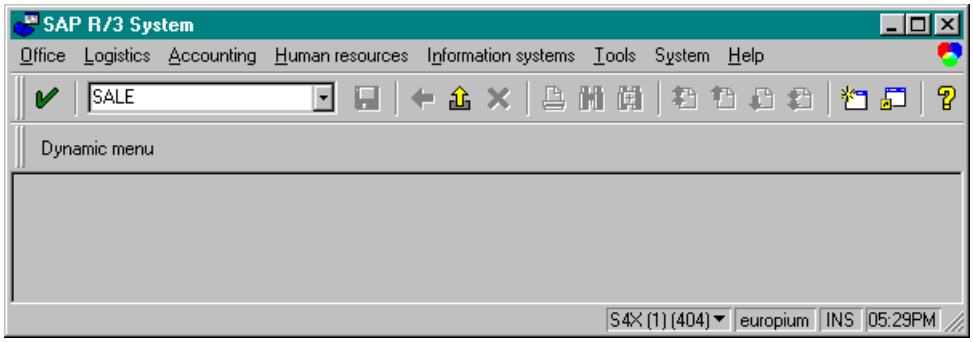
Two notes of caution are appropriate at this point:

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.

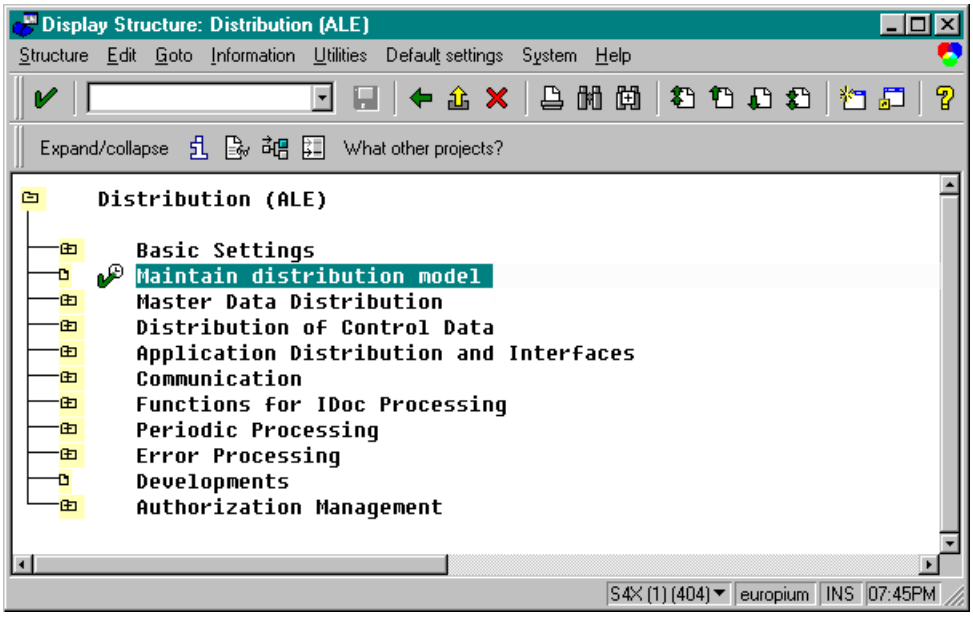
Transaction: SALE

Figure 29 SAP R/3 System Window



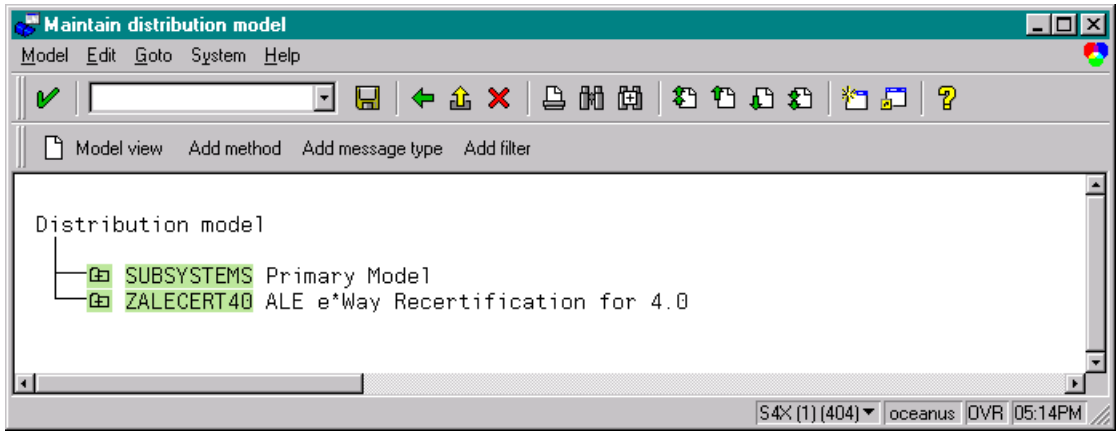
1. In the SAP R/3 System home window, type **SALE** into the command field and click **Enter** to display the **Distribution (ALE) Structure** window.

Figure 30 Distribution Structure Window



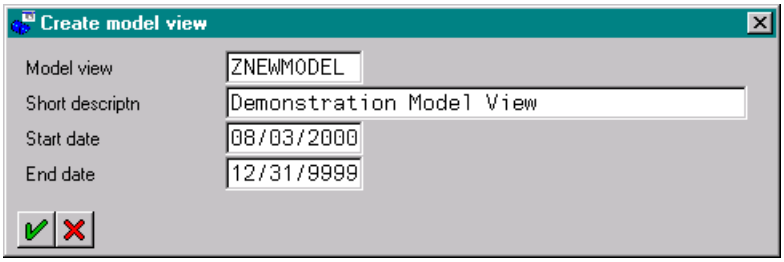
1 Click **Maintain distribution model** to displays the **Maintain Distribution Model** window.

Figure 31 Maintain Distribution Model Window



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

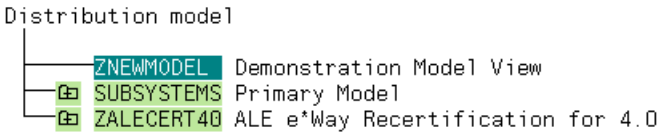
Figure 32 Create Model View Dialog Box



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).

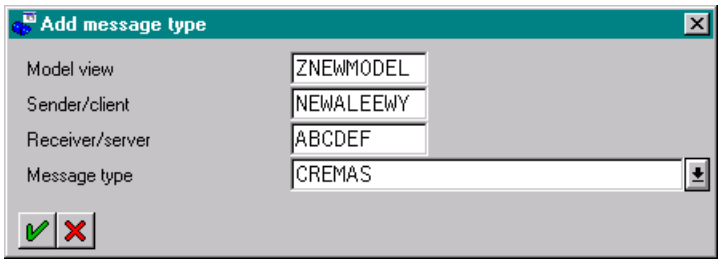
4 Select **Enter**, which returns you to the previous window. Your new Model View now appears in the tree, as shown in Figure 33.

Figure 33 Maintain Distribution Model Tree



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

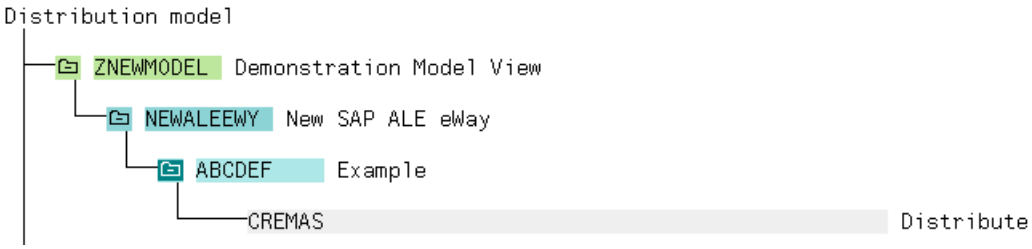
Figure 34 Add Message Type Dialog Box



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 35.

Figure 35 Maintain Distribution Model Tree



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

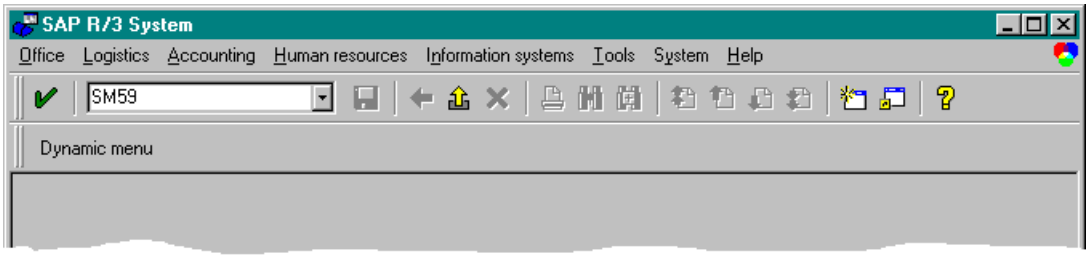
4.3 Configuring Communications

4.3.1 Defining the RFC Destination

Transaction: SM59

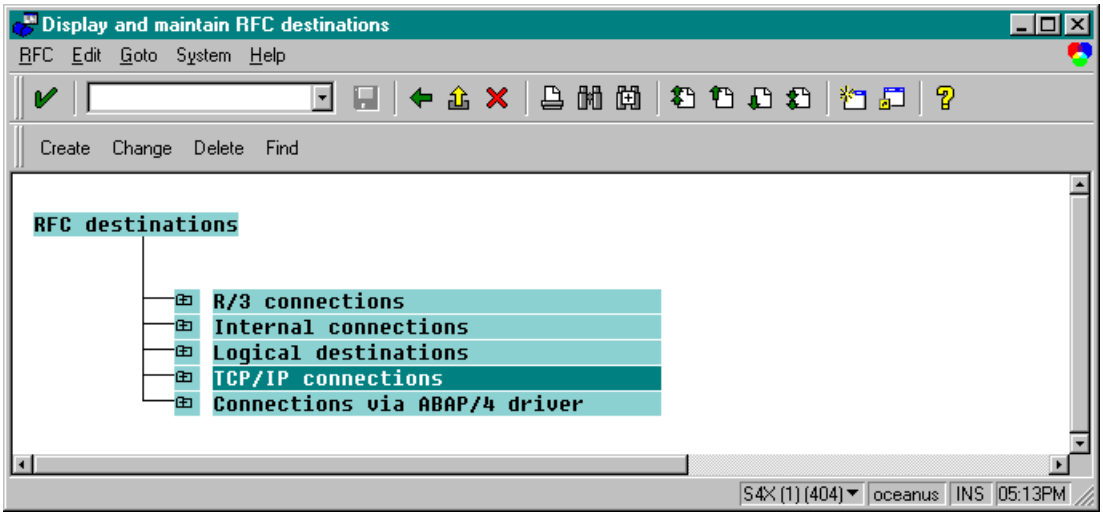
An RFC connection must be defined from the sender to the recipient. The first step is to define the RFC Destination.

Figure 36 SAP R/3 System Window



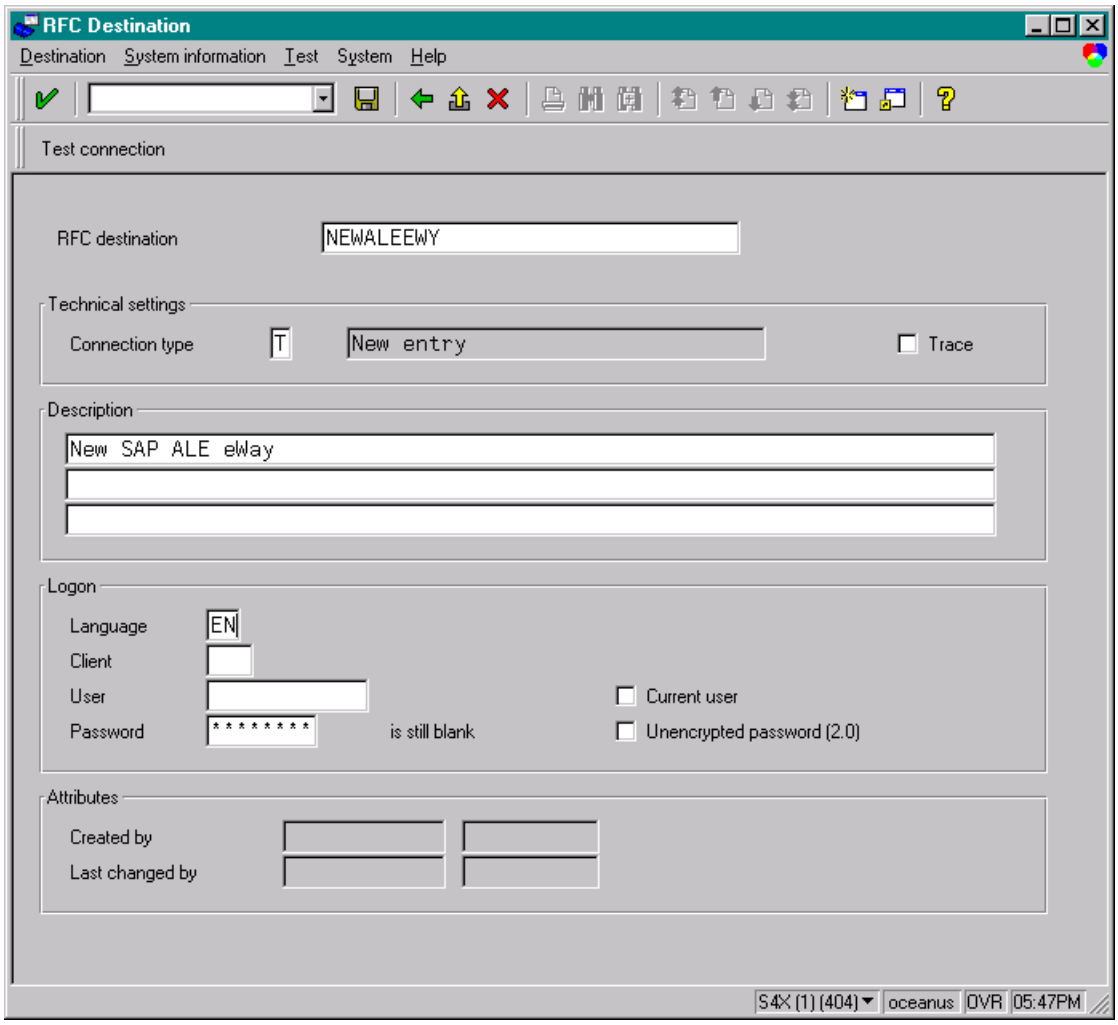
1 In the **SAP R/3 System** home window, type **SM59** into the command field and **Enter** to display the **RFC Destination Maintenance** window.

Figure 37 RFC Destination Maintenance Window



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

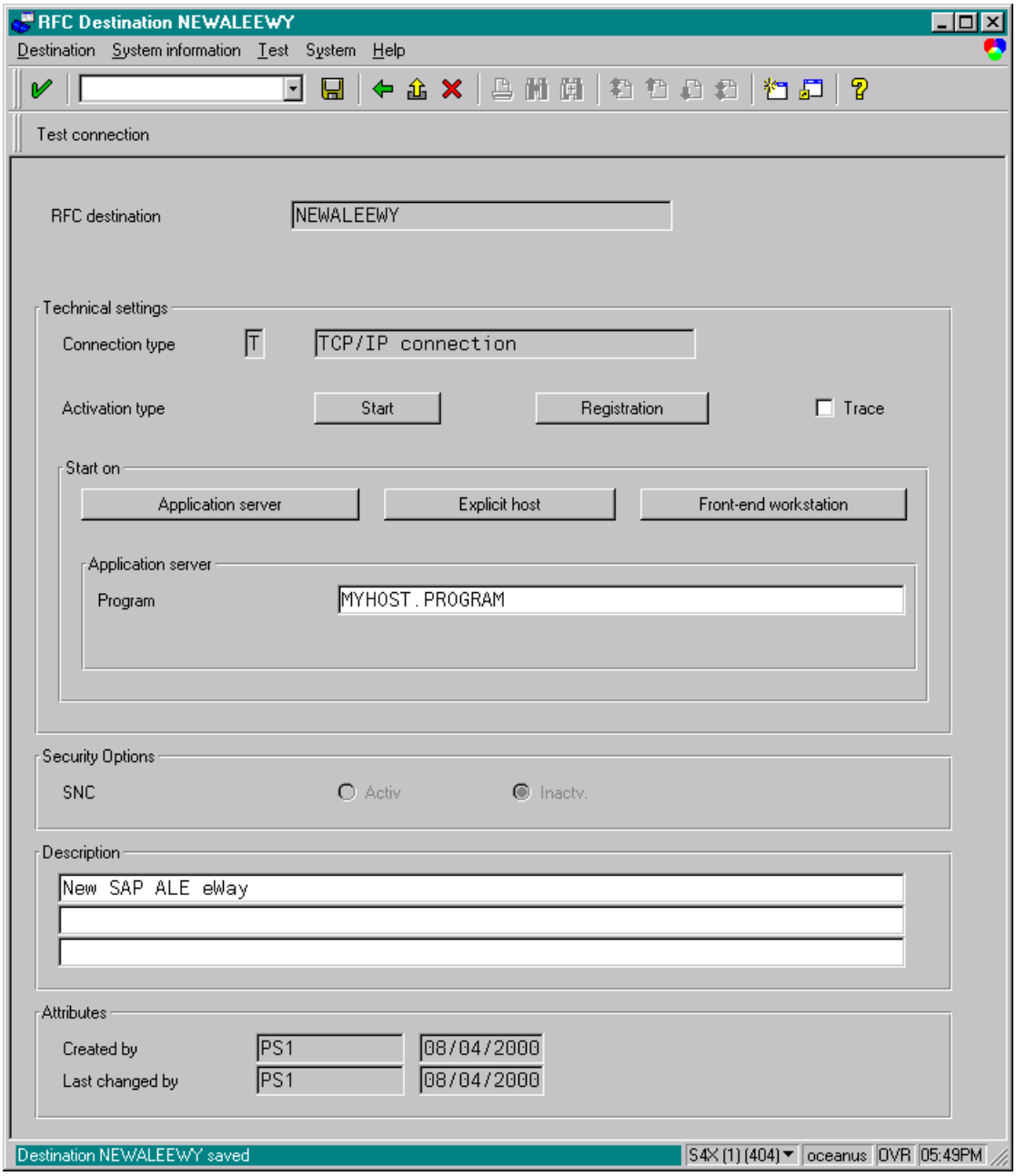
Figure 38 RFC Destination Entry Window



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 39 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**.

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 40 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

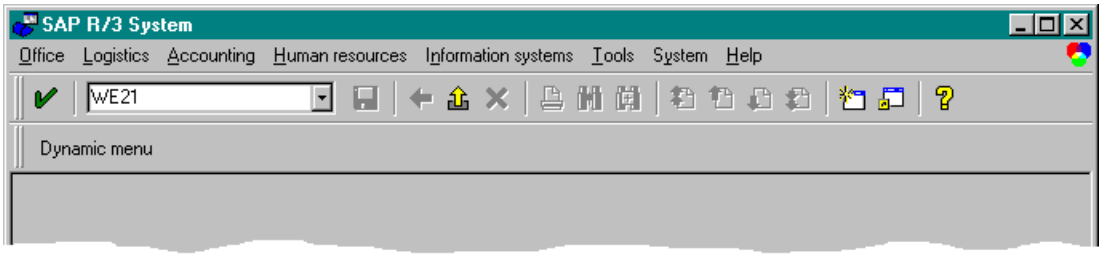
7 Save and select repeatedly to return to the *SAP R/3 System* window.

4.3.2 Defining the Communications Port

Transaction: WE21

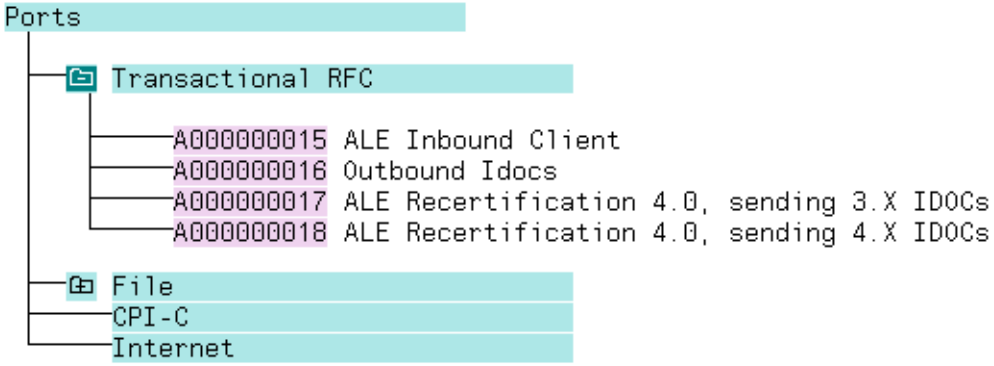
The Communications Port defines the type of connection with the Partner (see **Creating a Partner Profile** on page 41). In this step you specify the outbound file name, directory path, and any associated function modules.

Figure 41 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.

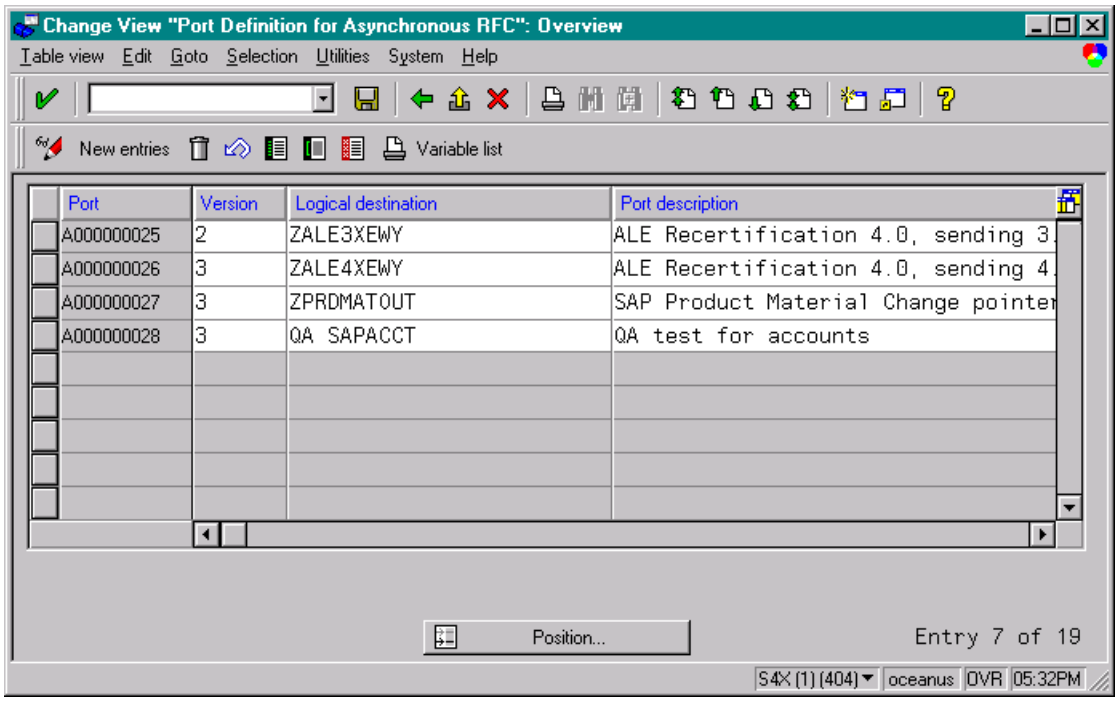
Figure 42 WF-EDI Port Definition Tree



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 43 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** .

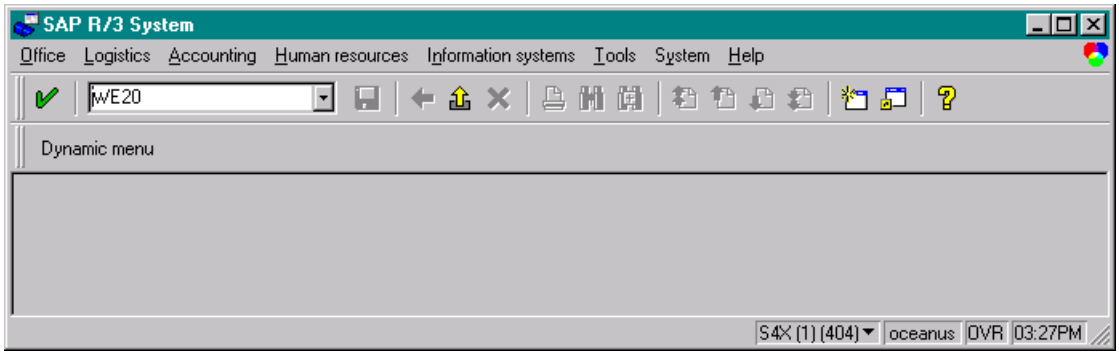
8 Select repeatedly to return to the *SAP R/3 System* window.

4.3.3 Creating a Partner Profile

Transaction: WE20

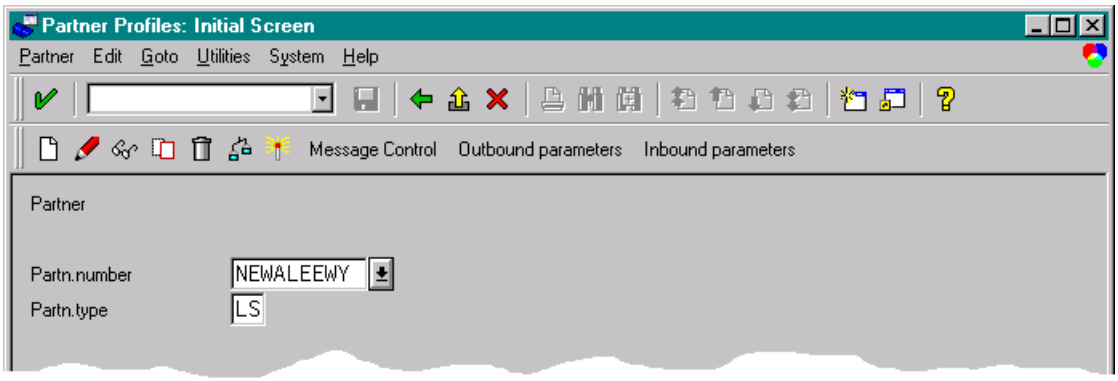
Here you create the Partner for the Logical System you created earlier. Note that the **LS** Partner Type is used for all ALE distribution scenarios.

Figure 44 SAP R/3 System Window



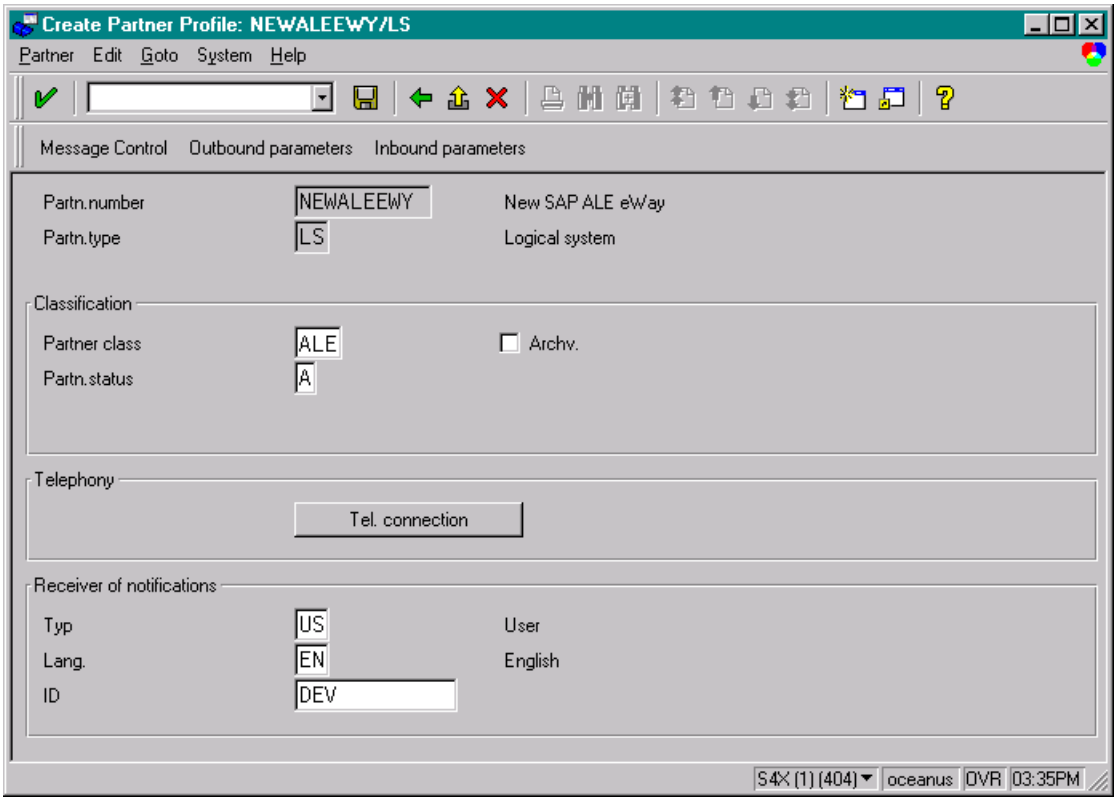
1 In the SAP R/3 System home window, type **WE20** into the command field and **Enter** to display the *Partner Profile: Initial Screen* window.

Figure 45 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 46 Create Partner Profile Window



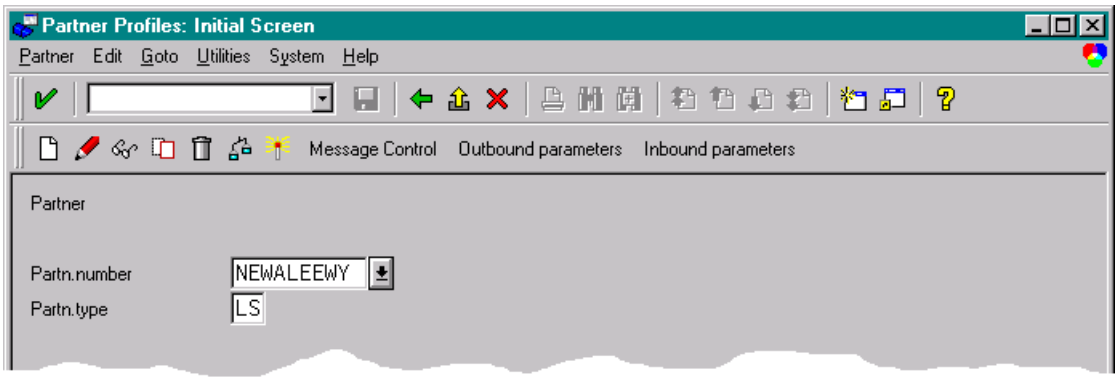
3 Select **ALE** for the Partner class and **A** (Active) for the Partner status, then **Save**  . You now have created the Partner, and need to continue to the next section to configure the Partner Profile.

4.3.4 Configuring a Partner Profile

Transaction: WE20

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

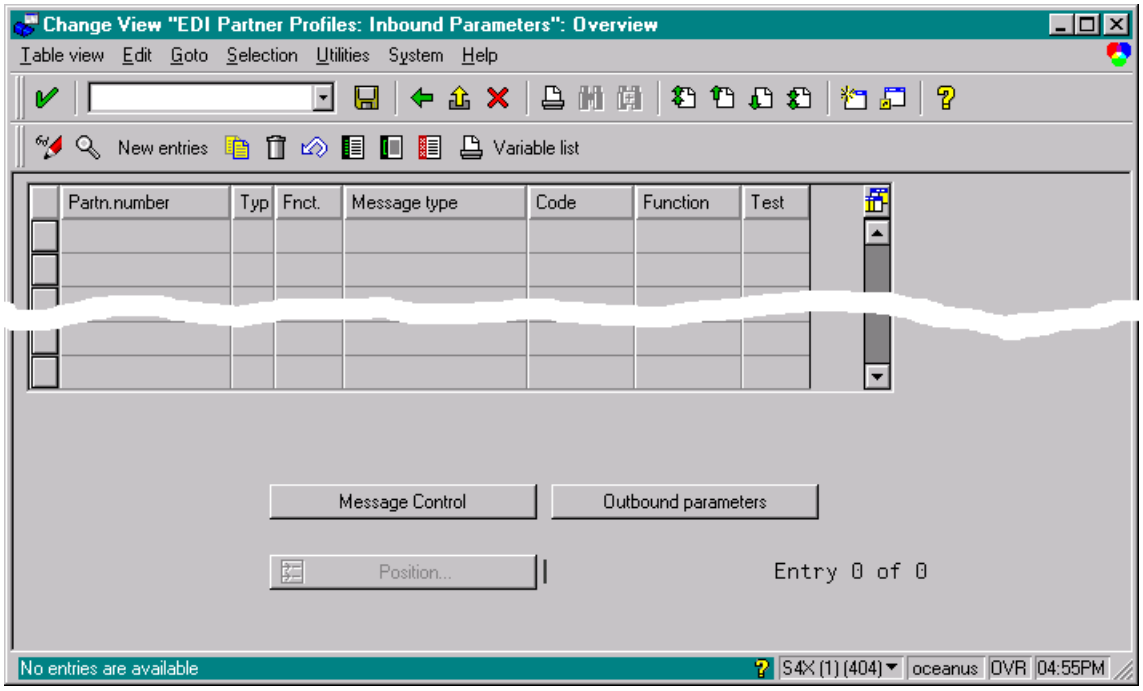
Figure 47 Partner Profile: Initial Screen



4 In the *Partner Profile: Initial Screen* window, select the desired Partner Number, for example **NEWALEEWY**.

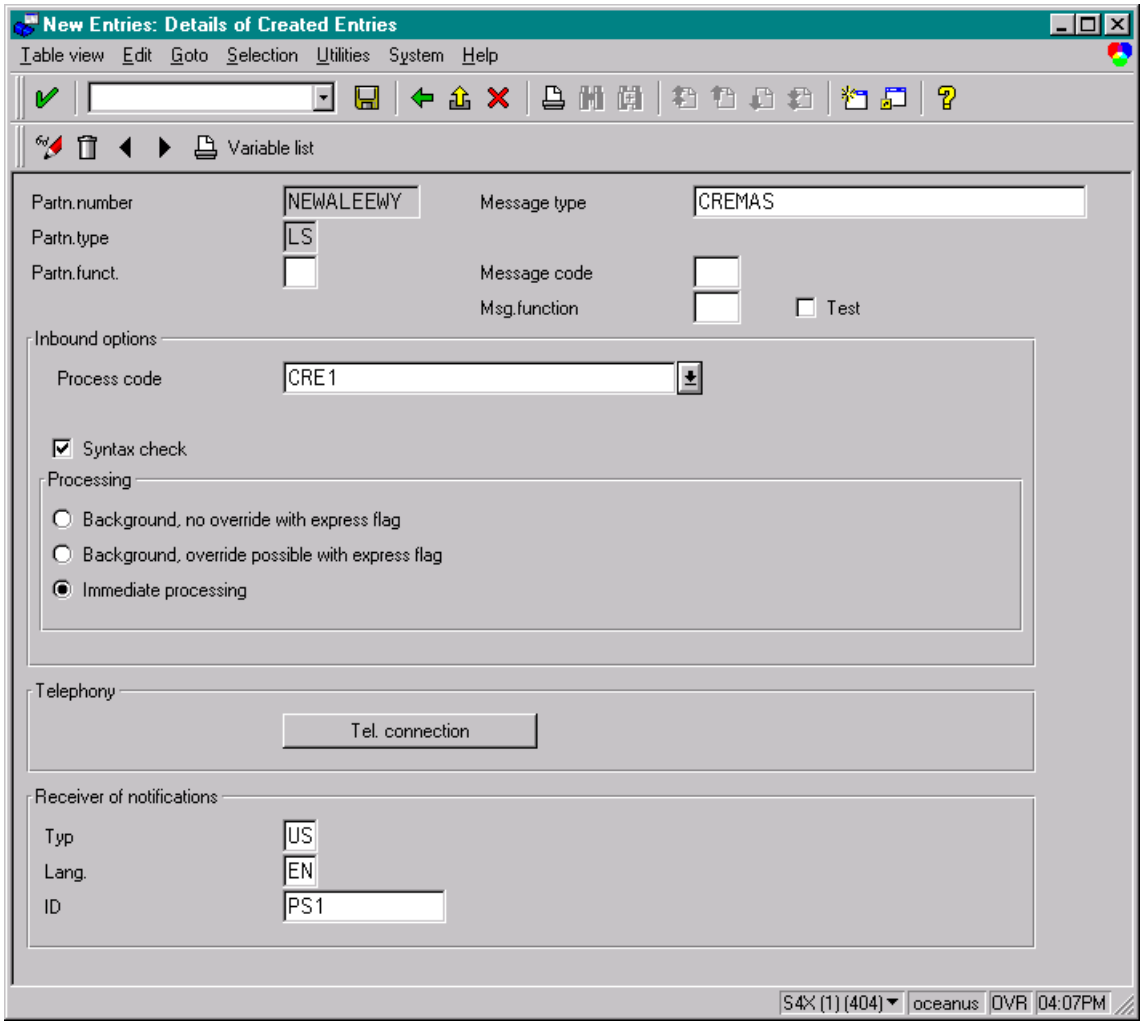
5 Selecting **Inbound parameters**, for example, displays the *EDI Partner Profile: Inbound Parameters Overview* window for **NEWALEEWY**.

Figure 48 EDI Partner Profile: Inbound Parameters Overview Window (1)



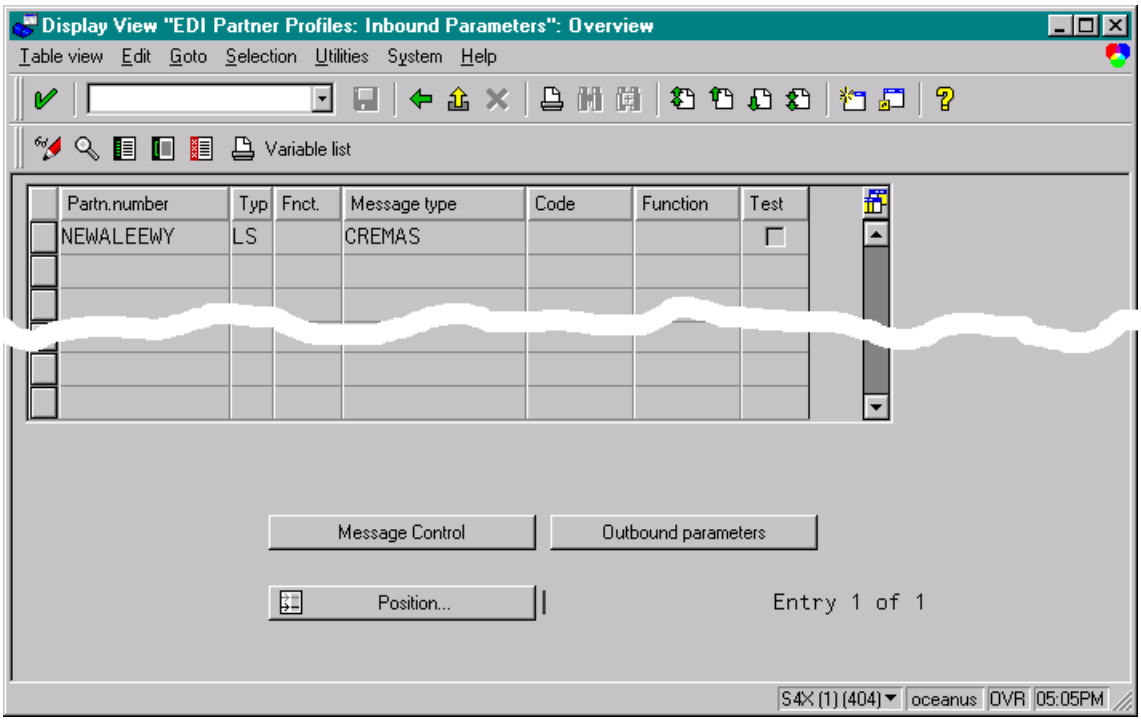
6 Select **New entries**, which displays the *New Entries: Details of Created Entries* window for **NEWALEEWY**.

Figure 49 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 50 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.

4.4 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**

Chapter 5

Locating, Importing, and Using the Sample Projects

The SAP eWay comes with sample Projects. You can import these Projects into the Enterprise Designer and use them to quickly learn how to set up SAP (ALE) 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

5.1 About the Sample Projects

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

- SAP_ALE_JCE_62 for use with eGate
- SAP_ALE_BPEL_62 for use with eInsight/eGate

Requirements

The SAP (ALE) eWay sample projects require the installation of the SAP (BAPI) eWay.

SAP Version Support

The SAP_ALE_JCE_62 Project supports SAP version 4.7. The SAP_ALE_BPEL_62 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 (SAP_ALE_JCE_62)
- Inbound and outbound Collaborations (SAP_ALE_JCE_62)
- Business Processes (SAP_ALE_BPEL_62)

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 ICAN Environments and Deployment Profiles necessary to deploy the sample Projects. To learn how to complete the Projects for deployment, refer to **"Running Sample Projects" on page 51**.

Sample Project Zip Files

The SAP (ALE) eWay sample Projects are provided as a zip file, **SAP_ALE_eWay_Sample.zip**, which contains the following files:

- **SAP_ALE_JCE.zip** for the SAP_ALE_JCE_62 Project (eGate)
- **SAP_ALE_BPEL.zip** for the SAP_ALE_BPEL_62 Project (eGate/eInsight)
- **inputCREMAS03_46B.~in** (inbound Collaboration input file)
- **CREMAS03_46B.descrfile.txt** (IDoc description file)
- **SAPALEBPELoutput1.dat** (eInsight output file)
- **SAPALEJCEoutput1.dat** (eGate output file)

Note: *The sample Projects found in the SAP_ALE_eWay_Sample.zip file require a 5.0.4 or higher version of the logical host.*

5.2 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 14**.

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 you specified during the download.

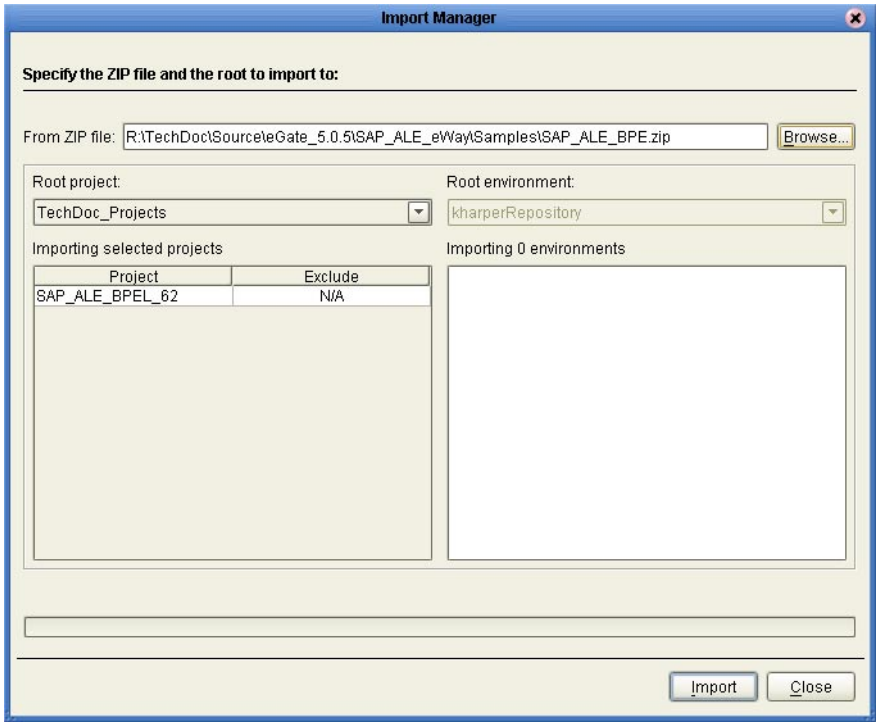
5.3 Importing the Sample Projects

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 49**.

To import the sample Projects

1. Unzip the **SAP_ALE_eWay_Sample.zip** file. This creates the following zip files:
   - **SAP_ALE_BPEL.zip** (for the eGate/eInsight Project)
   - **SAP_ALE_JCE.zip** (for the eGate 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 the desired sample file. The **Import Manager** dialog box appears similar to the following:

Figure 51 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.

5.4 Running 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. To deploy the Projects, do the following after import:

1. Create the Environment Profile – see **"Creating the Environment Profile" on page 51** .
2. Configure the eWay Environment Properties - see **"Creating the Environment Profile" on page 51**.
3. Configure the SAP R/3 application - see **"Configuring SAP R/3" on page 30**.
4. Apply the .jar files to the Logical Host - see **"Uploading JAR Files to the Logical Host" on page 52**.
5. Deploy the Project - see **"Deploying the Project" on page 53**.
6. Run the Sample Project - see **"Running the Sample Project" on page 53**

5.4.1 Creating the Environment Profile

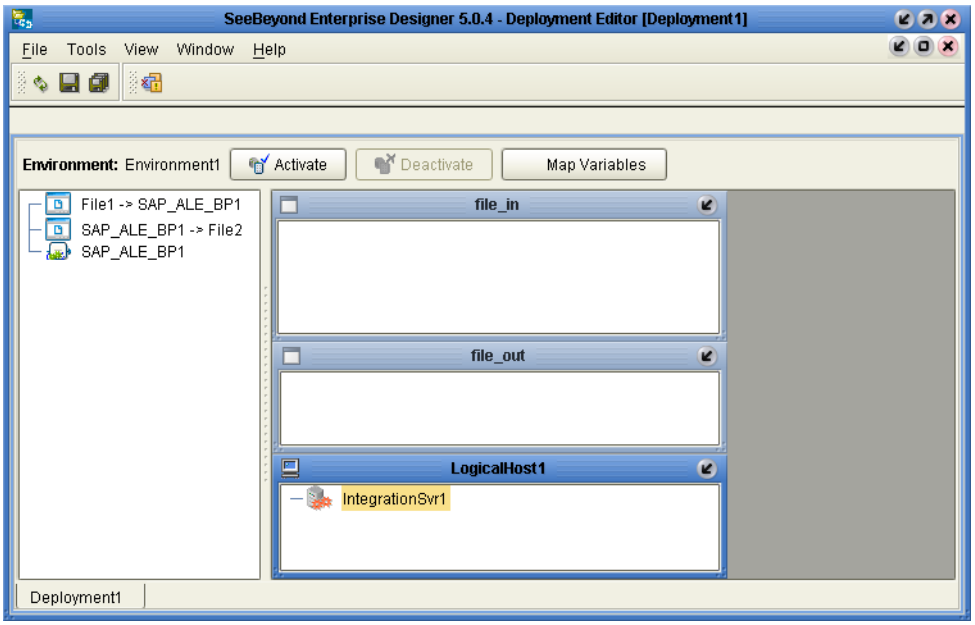
The procedure below describes how you create an eGate Environment for the SAP (ALE) sample Projects. For detailed information about creating Environments, refer to the *eGate Integrator User's Guide*.

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. The list below shows which systems to add for which Collaboration:
   - Inbound Collaboration: one inbound File eWay and one outbound File eWay
   - Outbound Collaboration: one inbound File eWay and one outbound File eWay
3. Right-click the Environment and click **New Logical Host**.
4. Right-click the Logical Host and click **New SeeBeyond Integration Server.**

Figure 52 shows the completed Environment.

Figure 52 eGate Environment for Sample Projects



After creating the Environment components, you must upload several .jar files to the Logical Host - see **"Uploading JAR Files to the Logical Host" on page 52**.

5.4.2 Uploading JAR Files to the Logical Host

Once you have added a Logical Host to the Environment, 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**

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**.

This uploads the .jar files to the Logical Host.

After the eWay configuration, you are ready to deploy the project - see **"Deploying the Project" on page 53** .

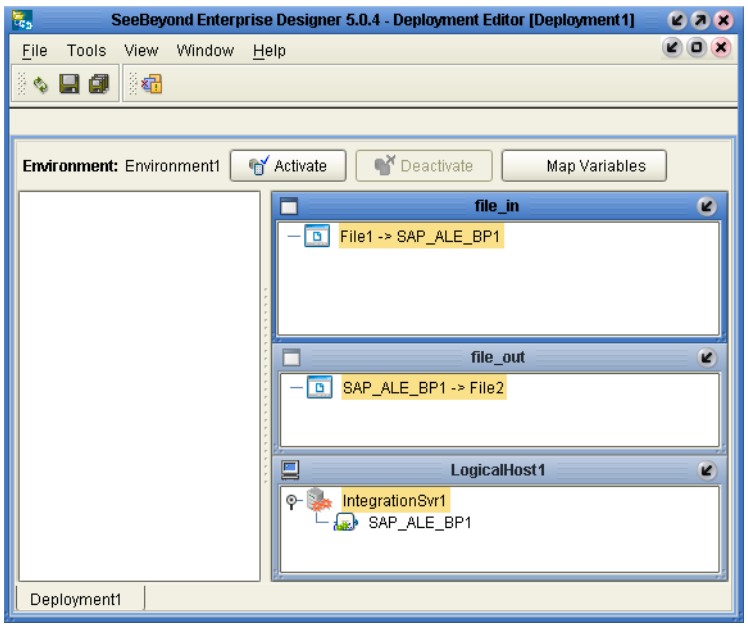
5.4.3 Deploying the Project

Once you have created the Environment and added its components, and you have uploaded the .jar files to the Logical Host, 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 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 Figure 53.

Figure 53 Deployment Profile



5.4.4 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 system as described in **"Configuring SAP R/3" on page 30**.

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 R/3 system with a previously used identifier, the existing deployment must be deactivated first.

5.5 Building SAP (ALE) Business Logic with eInsight

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

To see an example of SAP Business Processes and Connectivity Maps, import the SAP_ALE_BPEL_62 sample Project as described in **"Locating, Importing, and Using the Sample Projects" on page 48**.

5.5.1 Adding Business Processes

To add Business Processes

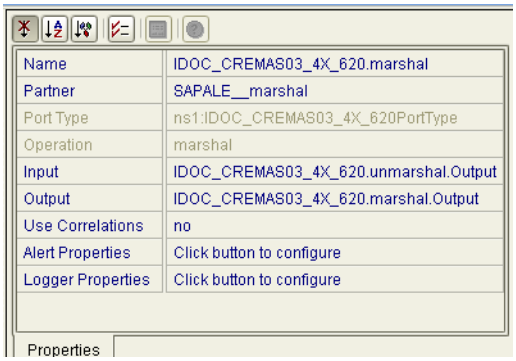
- In the **Project Explorer** tab of the Enterprise Designer, right-click the Project for which you intend to create a Business Process, click **New**, and then **Business Process**.

5.5.2 Building the 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.
2. Drag the *unmarshal* 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* and *receive* methods to the Business Process Designer canvas.
5. Click the *marshal* Business Activity and click **Show Properties**. The **Properties** dialog box appears as shown in Figure 54.

Figure 54 Inbound Marshal Properties



6 Click the **Input** box and click **unmarshal.output**.

7 Configure all other Activities by highlighting the Activity and clicking **Show Properties**. Refer to **"IDoc OTD Methods" on page 22** for Business Operations syntax.

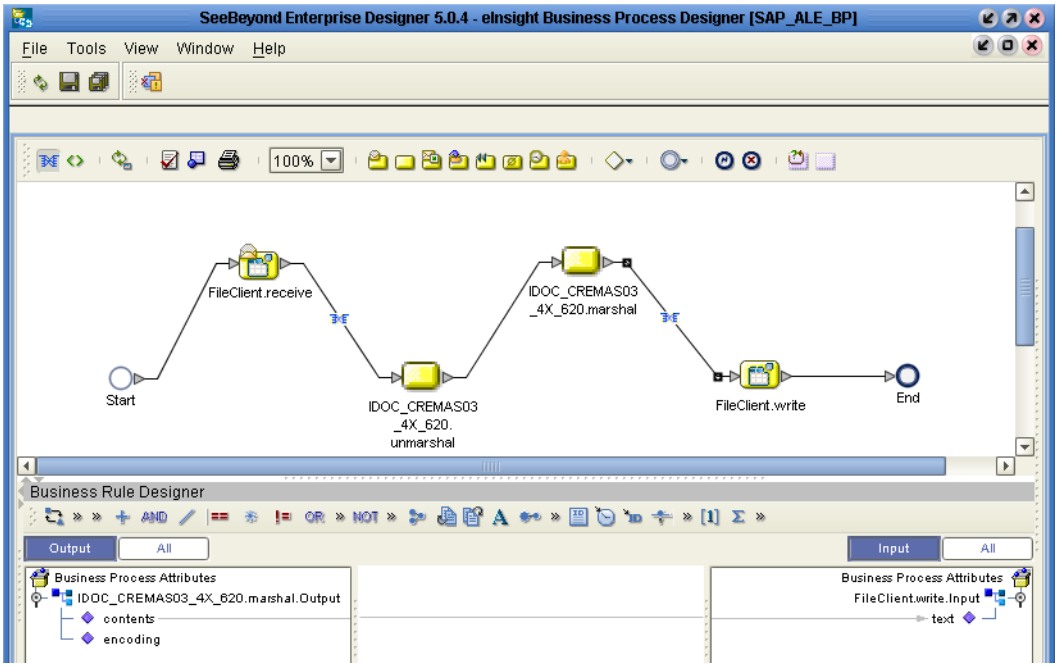
8 Link all components as described in *eInsight Business Process Manager User's Guide*.

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_62 sample Project as described in **"Importing the Sample Projects" on page 50**.

Figure 55 Inbound Business Process and Data Mapping



5.5.3 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**.

5.5.4 Building the SAP Connectivity Map

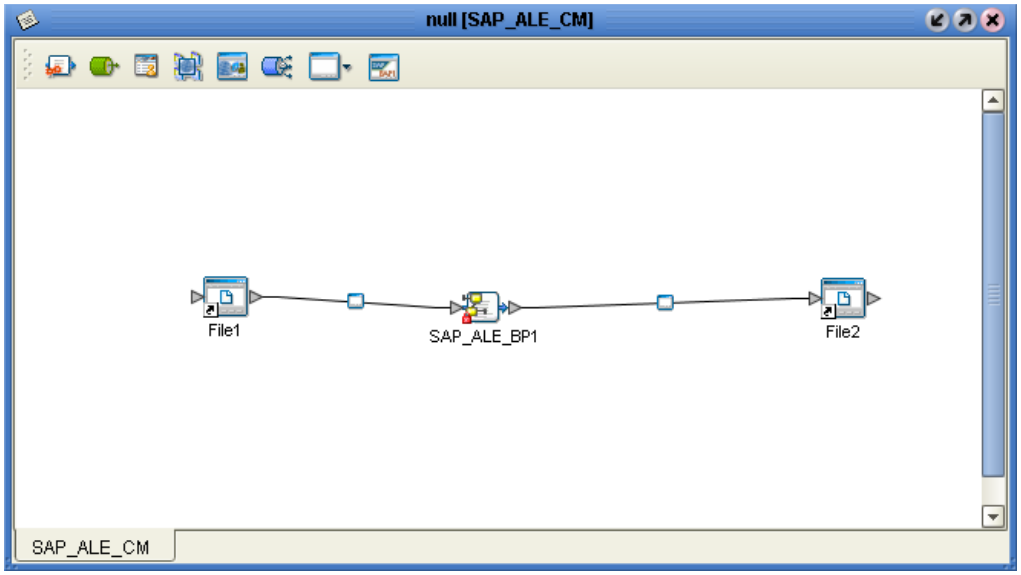
The procedure below describes how to build inbound SAP Connectivity Maps. To see an example, import the SAP_ALE_BPEL_62 sample Project as described in **"Locating, Importing, and Using the Sample Projects" on page 48**.

To build inbound SAP Connectivity Maps

1. Add the 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 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_62 sample Project as described in **"Importing the Sample Projects" on page 50**.

Figure 56 The SAP Connectivity Map



5.6 Building SAP (ALE) Business Logic with eGate

This section describes how to build the SAP Collaborations:

To see an example of SAP Collaborations and Connectivity Maps, import the SAP_ALE_JCE_62 sample Project as described in **"Locating, Importing, and Using the Sample Projects" on page 48**.

5.6.1 Building Collaborations

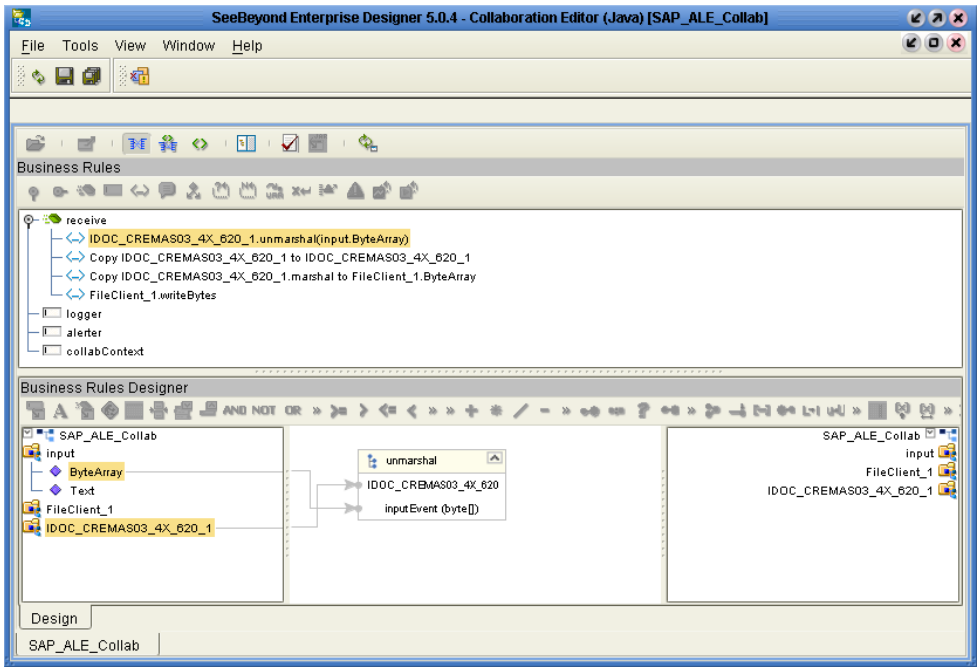
After you have built the IDoc OTDs as described in **"Creating IDoc OTDs" on page 17**, you are ready to build Collaboration Definitions.

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 22**.

The figure below shows an example of data mapping for an inbound SAP (ALE) Collaboration. To explore the business logic design for an actual Project, import the SAP_ALE_JCE_62 sample Project as described in **"Importing the Sample Projects" on page 50**.

Figure 57 Inbound Collaboration



5.6.2 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**.

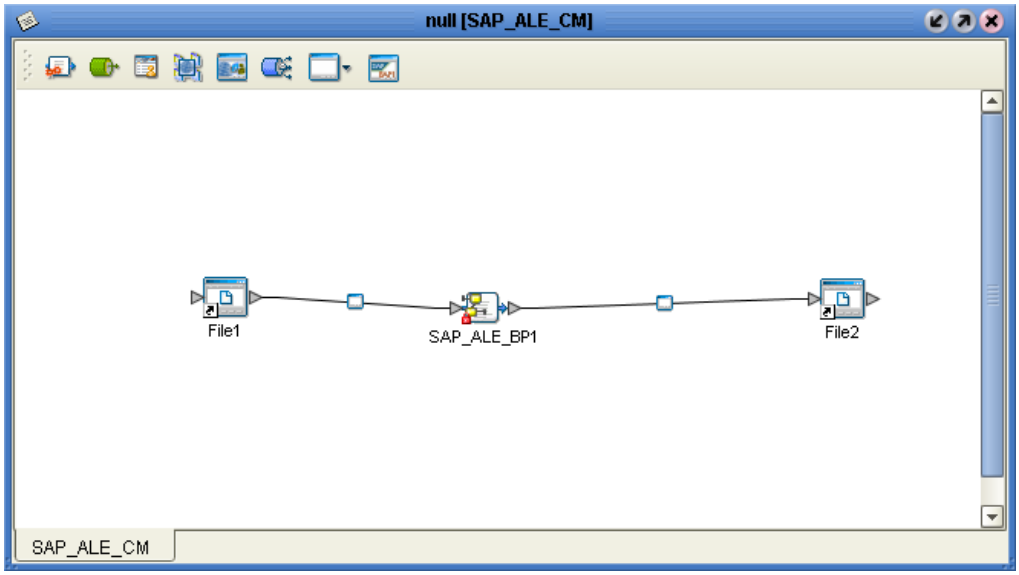
5.6.3 Building Inbound SAP Connectivity Maps

To build inbound SAP Connectivity Maps

1. Add other components such as other eWays and Collaborations to the Connectivity Map.
2. Drag the inbound Collaboration from the **Project Explorer** tab into the Collaboration icon in 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_JCE_62 sample Project as described in **"Importing the Sample Projects" on page 50**.

Figure 58 Connectivity Map



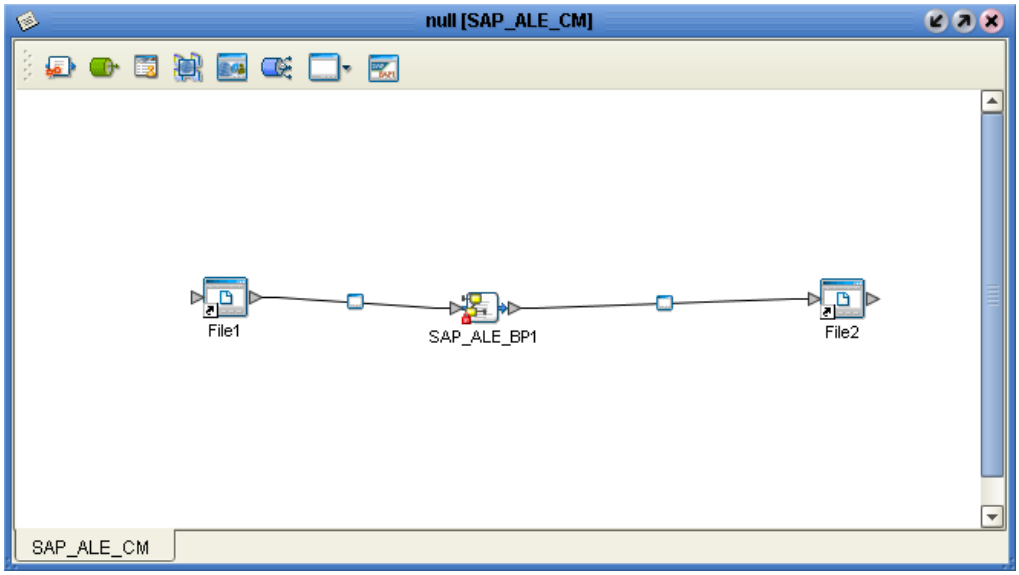
5.6.4 Building Outbound SAP Connectivity Maps

To build outbound SAP Connectivity Maps

1. Add other components such as other eWays and Collaborations to the Connectivity Map.
2. Drag the outbound Collaboration from the **Project Explorer** tab into the Collaboration icon in 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_JCE_62 sample Project as described in **"Importing the Sample Projects" on page 50**.

Figure 59 Outbound SAP Connectivity Map



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