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## A Configuring SAP for Inbound and Outbound Processing

During inbound (client) processing, IDocs are transferred to the interface and stored in the R/3 System. The document data is generated in a second step, also in the course of a workflow.

Outbound processing in SAP involves event handling. An event in SAP is defined as an occurrence of a status change in an object. Events are created when the relevant status change occurs. The following topics describe how to enable inbound and outbound SAP processing.

- [Configuring SAP Inbound Processing](#)
- [Configuring SAP Outbound Processing](#)

### Configuring SAP Inbound Processing

SAP inbound processing requires the upstream system to transfer an IDoc to the IDoc interface through the R/3 System port. For this reason, you do not have to specify a port in the inbound partner profiles; the IDoc interface only must recognize the upstream system as a port. A port definition, which provides a unique ID for the upstream system, must be available for the port. The technical parameters of this port definition can (and usually are) overwritten by the upstream system.

If the upstream system is recognized, then the IDoc is saved in the database. If a partner is defined with the corresponding message in partner profiles, the IDoc is then processed further. This is done independently in the second step. This ensures that the external system can receive the data quickly and reliably (automatically).

You must perform the following steps to configure SAP for inbound IDoc processing:

1. Configure a logical system.
2. Configure a distribution model.
3. Define an inbound partner profile.

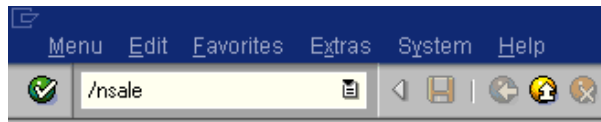
### Configuring a Logical System

In any distributed environment, each participating system must have a unique ID to avoid confusion. In SAP, the name of the logical system is used as the unique ID. This name is assigned explicitly to one client in an SAP system.

### Defining a Logical System

To define a logical system:

1. Run the **sale** transaction.

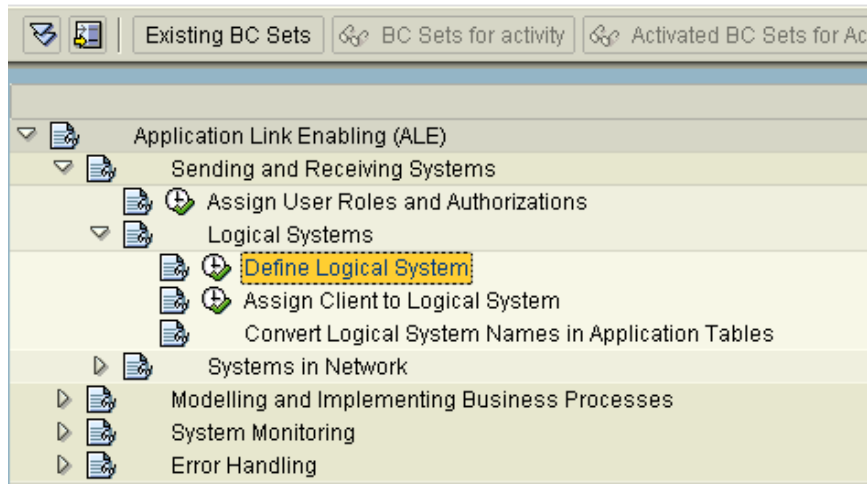


### *SAP Easy Access*

Description of the illustration ale\_saletransaction.gif

The Display IMG window is displayed.

### *Display IMG*

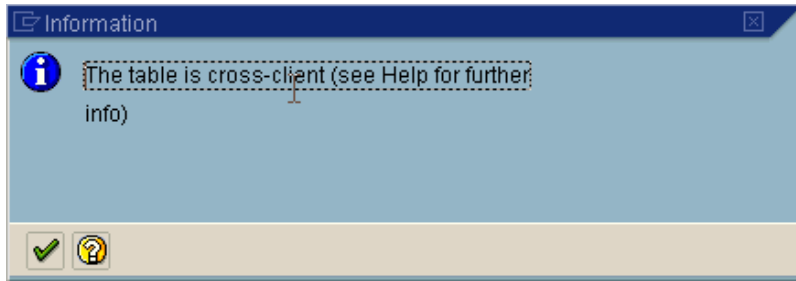


Description of the illustration ale\_inbound1.gif

Perform the following steps:

- a. Expand Sending and Receiving Systems.
  - b. Expand **Logical Systems**.
  - c. Select Define Logical System.
2. Click the IMG - Activity icon.

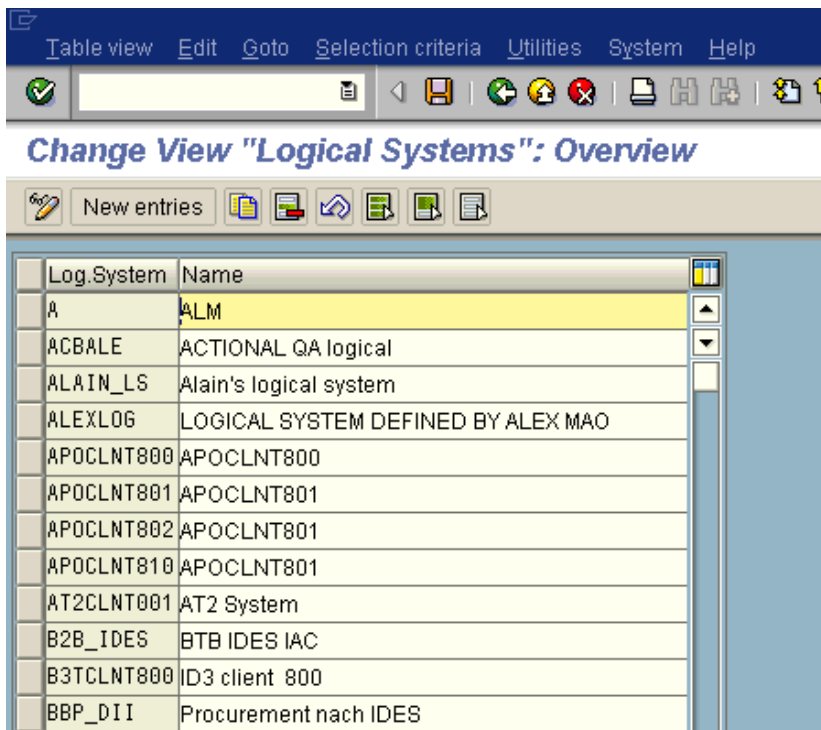
A message window is displayed. It indicates that the table is cross-client.



Description of the illustration ale\_imgmessage.gif

3. Click the **check mark** icon to continue.

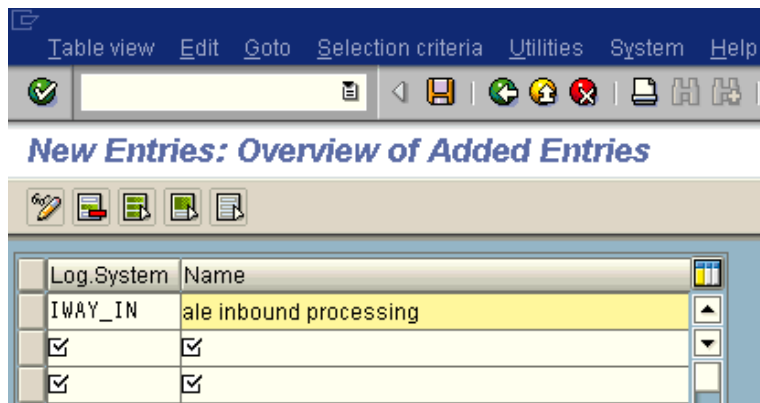
The Change View "Logical Systems": Overview window is displayed.



Description of the illustration ale\_inbound2a.gif

4. Click New Entries.

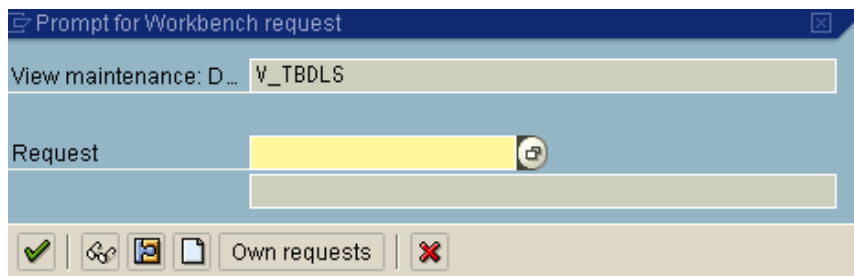
The New Entries: Overview of Added Entries window is displayed.



Description of the illustration ale\_inbound4a.gif

5. Enter the Logical System, for example, ORACLETDS, in the **Log.System** column and provide a description in the **Name** column.
6. Click Save.

The Prompt for Workbench request dialog box is displayed.



Description of the illustration ale\_inbound4.gif

7. Click the Create Request icon.

The Create Request dialog box is displayed.

Create Request

Request: Workbench request

Short description: new inbound logical system for iway

Project:

Owner: IWAY

Status: New

Last changed: 04/05/2004 11:14:22

Source client: 800

Target: Z46

Tasks

User: IWAY

Description of the illustration ale\_inbound5.gif

8. Enter a name and description for your request and click Save.

The logical system you configured, for example, ORACLETDS, is now added to the list.

IWAYMKT	IWAY marketing logical system
IWAY_IN	ale inbound processing
JRB46LS	jr logical

Description of the illustration ale\_logicalsystdisplay.gif

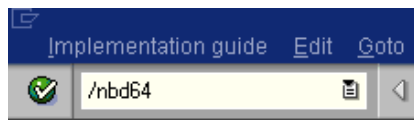
## Configuring a Distribution Model

A distribution model is used to describe the ALE message flow between logical systems. Business objects are distributed to connected recipients according to a unique distribution model that can contain rules of varying complexity depending on the type of business objects involved.

## Defining a Distribution Model

To define a distribution model:

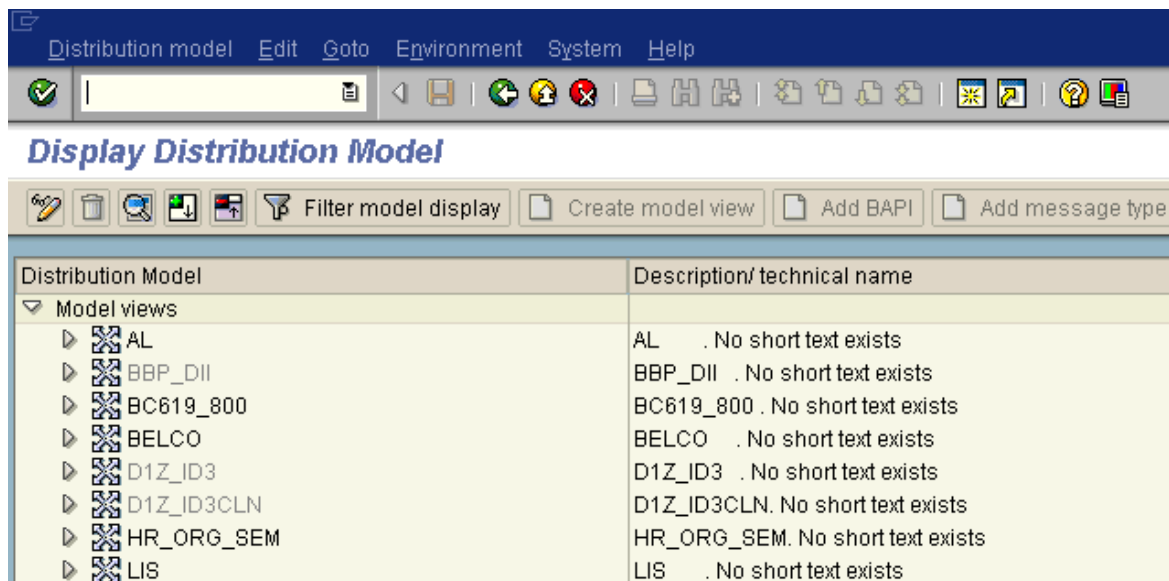
1. Run the **bd64** transaction.



## Display IMG

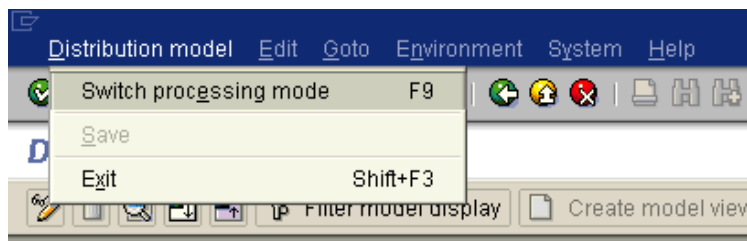
Description of the illustration ale\_nbd64.gif

The Display Distribution Model window is displayed.



Description of the illustration ale\_distmodel1.gif

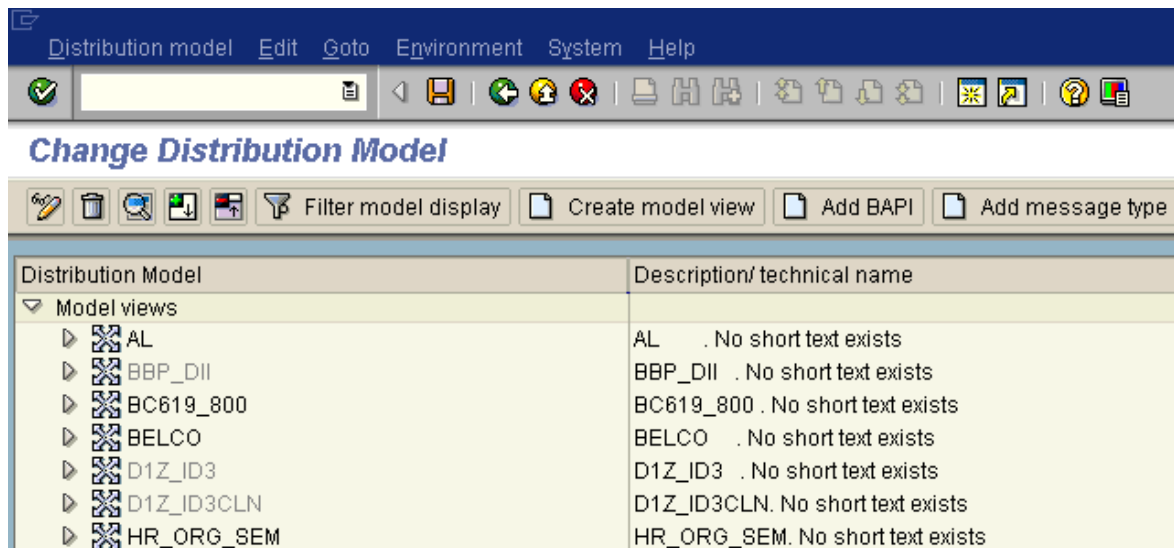
2. Click Distribution Model from the menu bar.



Description of the illustration ale\_distmodel2.gif

3. Select **Switch processing mode**.

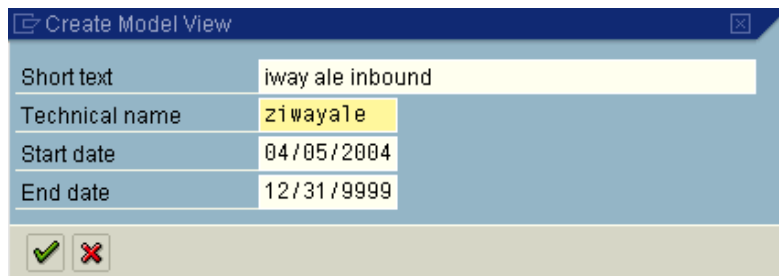
The Display Distribution Model window is switched to Change Distribution Model.



Description of the illustration ale\_distmodel3.gif

- Click Create model view.

The Create Model View dialog box is displayed.



Description of the illustration ale\_inbound7.gif

- Enter a model view name in the **Short text** field and a name in the **Technical name** field, which also serves as a description.
- Click the **check mark** icon to enter the information.

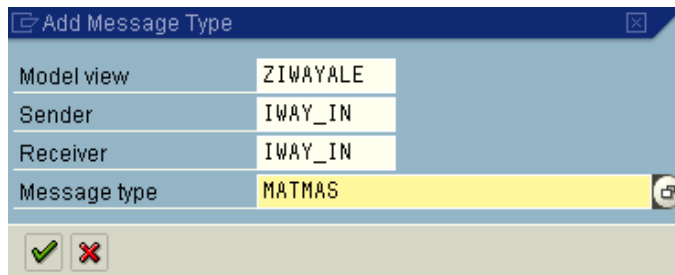
You are returned to the main Change Distribution Model window. The distribution model you configured is now added to the list.

detlef	DETLEF
iway Distribution Model for alpha class	IWAYMOD09
iway ale inbound	ZIWAYALE
iway marketing distribution model	IWAYMKT

Description of the illustration ale\_distmodel4.gif

7. Click Add message type.

The Add Message Type dialog box is displayed.



Model view	ZIWAYALE
Sender	IWAY_IN
Receiver	IWAY_IN
Message type	MATMAS

Description of the illustration ale\_inbound8.gif

Perform the following steps:

a. In the **Sender** and **Receiver** fields, enter the logical system you configured, for example, ORACLETDS.

You can click the icon to the right of each field to browse from a list of logical systems.

b. In the **Message type** field, enter the message type you want to use, for example, MATMAS.

You can click the icon to the right of each field to browse from a list of available message types.

8. Click the **check mark** icon to enter the information.

You are returned to the main Change Distribution Model window.

9. Click Save.

## Defining a Partner Profile

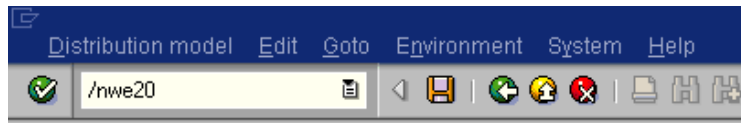
Partner profiles are a prerequisite for data exchange. This involves defining who can exchange messages with the SAP system and using which port.

## Defining a Partner Profile

To define a partner profile:

1. Run the **we20** transaction.

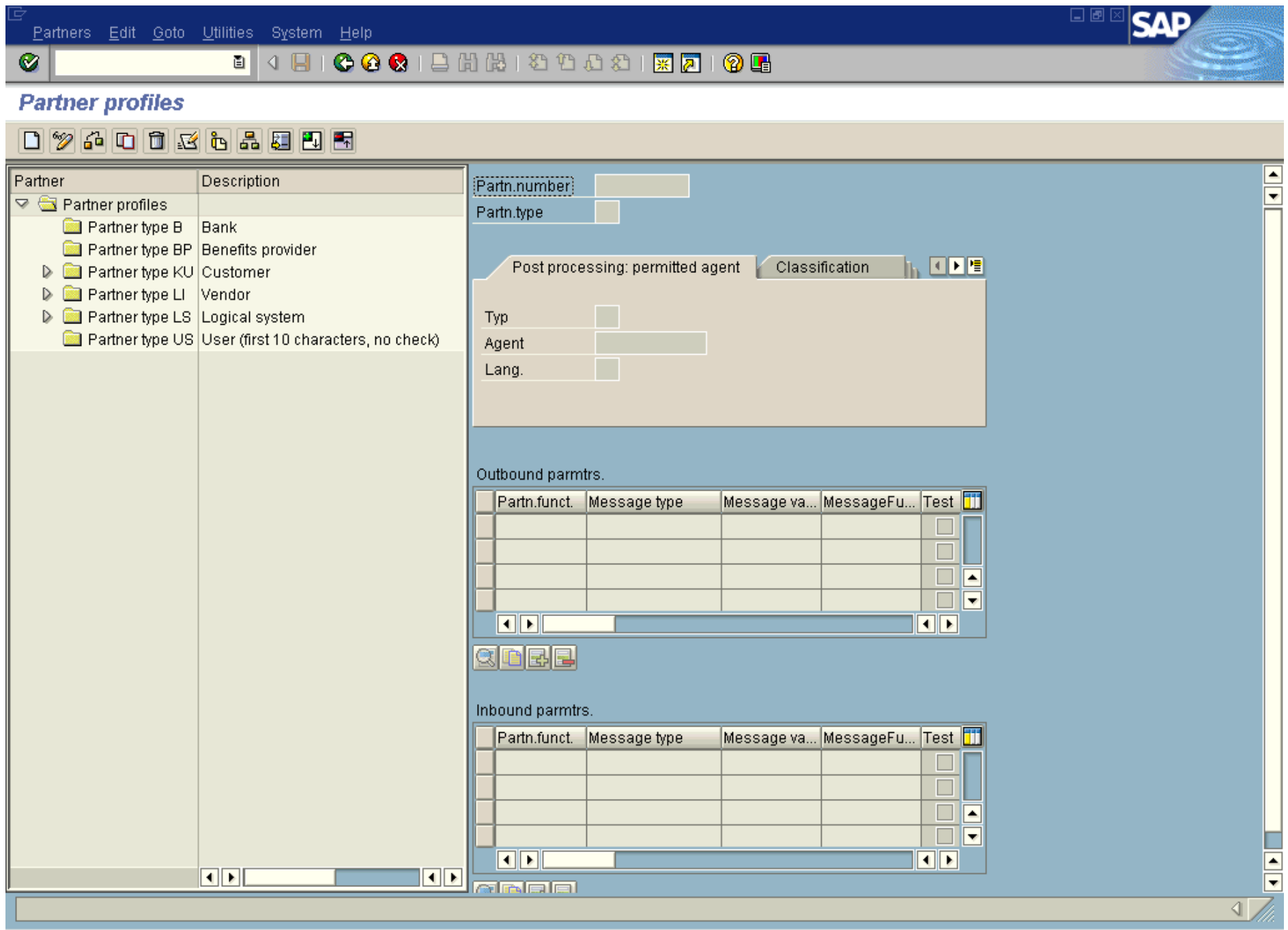




### ***Change Distribution Model***

Description of the illustration ale we20.gif

The Partner profiles window is displayed.



Description of the illustration ale\_pprofile1.gif

2. In the left pane, expand Partner type LS and select the logical system you configured from the list, for example, ORACLETDS.

In the right pane, the Partn.number field refers to the name of the logical system.

The screenshot displays the SAP Partner Profiles: Inbound parameters window. The left pane shows a tree of Partner types, with 'Partner type LS' expanded and 'IWAY\_IN' selected. The right pane shows the configuration for 'IWAY\_IN'.

**Partner List (Left Pane):**

Partner	Description
Partner type B	Bank
Partner type BP	Benefits provider
Partner type KU	Customer
Partner type LI	Vendor
Partner type LS	Logical system
A	ALM
ACBALE	ACTIONAL QA logical
ALAIN_LS	Alain's logical system
ALEXLOG	LOGICAL SYSTEM DEFINED BY AL
APOCLNT800	APOCLNT800
B2B_IDES	BTB IDES IAC
B3TCLNT800	ID3 client 800
BUYER188	.
CAMSTAR1	CAMSTAR1 Logical System
CAMSTARTES	for camstar test po extrn
CU4CLNT800	CU4 client 800
D1ZCLNT800	.
DETLEFSYS	Detlef's logical system
DTZ_800	.
GERRIT	Gerrit Denayer
ID3CLNT400	ID3 client 400
ID3CLNT800	ID3 client 800
ID3IDES801	.
ID3IDES802	.
IWAYFR	IB France Log Sys
IWAYLOG	iWay Logical System
IWAYLOG09	iway logical system for aplha class
IWAYMKT	IWAY marketing logical system
<b>IWAY_IN</b>	ale inbound processing
JRLOG2	Joe Rudich 2
JRLOGSYS	joe rudich logical system
JRXML	JRXML
JUDYLOG	Judy's Logical System

**Configuration Details (Right Pane):**

Partn.number: IWAY\_IN ale inbound processing  
Partn.type: LS Logical system

Post processing: permitted agent  
Classification

Typ: 0 ☐ Organizational unit  
Agent: 50010120 EDI Department  
Lang.: EN English

**Outbound parmtrs.**

Partn.funct.	Message type	Message va...	MessageFu...	Test
				<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>

**Inbound parmtrs.**

Partn.funct.	Message type	Message va...	MessageFu...	Test
	MATMAS			<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>

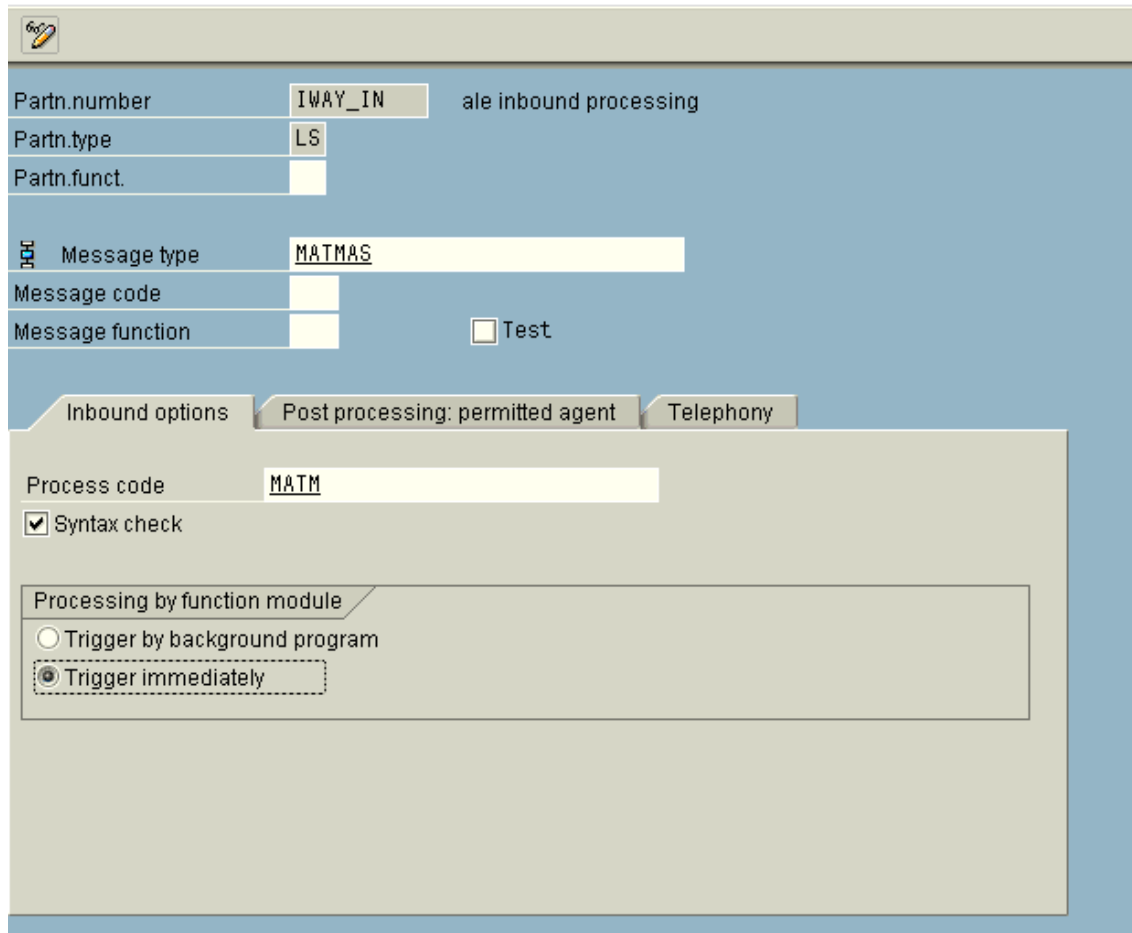
Description of the illustration ale\_pprofile2.gif

3. Click Save.

4. From the **Inbound** parameters table, click the Create inbound parameter icon.

The Partner profiles: Inbound parameters window is displayed.

## Partner profiles: Inbound parameters



Partn.number IWAY\_IN ale inbound processing

Partn.type LS

Partn.funct.

Message type MATMAS

Message code

Message function ☐ Test

Inbound options Post processing: permitted agent Telephony

Process code MATM

☒ Syntax check

Processing by function module

☐ Trigger by background program

☒ Trigger immediately

Description of the illustration ale\_inbound11.gif

5. In the **Message type** field, enter the message type you want to use, for example, MATMAS.  
You can click the icon to the right of each field to browse from a list of available message types.  
The Inbound options tab is selected by default.
6. In the **Process code** field, enter the process code you want to use, for example, MATM.  
You can click the icon to the right of each field to browse from a list of available process codes.
7. In the **Processing by function module** area, select one of the following options:
  - Trigger by background program.

In this case the adapter writes IDocs to the SAP database, which is processed immediately.

- Trigger immediately.

In this case, the adapter waits for the SAP system to process IDocs. This can take anywhere from 1 to 15 minutes.

8. Click Save.

## **Configuring SAP Outbound Processing**

Event creation must be implemented by you or by SAP. An event is created from specific application programs (the event creator) and then published systemwide. Any number of receivers can respond to the event with their own response mechanisms. An event is usually defined as a component of an object type.

SAP pseudo events are not processed by the SAP Event manager, but are called from an ABAP program or Remote Function Call (using the Destination parameter).

## **Related Concepts and Terminology**

The following topic lists and defines specific terminology related to SAP and SAP event handling.

## **Client and Server Programs**

RFC programs for non-SAP systems can function as either the caller or the called program in an RFC communication. There are two types of RFC programs:

- RFC Client
- RFC Server

The RFC client is the instance that calls the RFC to run the function that is provided by an RFC server. The functions that can be called remotely are called RFC functions, and the functions provided by the RFC API are called RFC calls.

## **SAP Gateway**

The SAP Gateway is a secure application server. No connections are accepted unless they have been preregistered previously from the SAP presentation Client. A server connection presents itself to the Gateway and exposes a Program Identifier. If the Program Identifier is found in the list of registered Program IDs, the Gateway server then offers a connection to the server, which "Accepts" a connection. This ProgramID is then linked with an RFC Destination within SAP, which enables SAP Function Modules and ALE documents (IDocs or BAPI IDocs) to be routed to the destination. The RFC Destination functions as a tag to mask the Program ID to SAP users.

An RFC server program can be registered with the SAP gateway and wait for incoming RFC call requests. An RFC server program registers itself under a Program ID at an SAP gateway and not for a specific SAP system.

In SAPGUI, the destination must be defined with transaction SM59, using connection type T and Register Mode. Moreover, this entry must contain information on the SAP gateway at which the RFC server program is registered.

## Program IDs and Load Balancing

If the Gateway Server has a connection to a particular server instance and another server instance presents itself to the gateway, then the gateway offers the connection and then begins functioning in Load Balancing mode. Using a proprietary algorithm, the Gateway sends different messages to each server depending on demand and total processing time. This may cause unpredictable results when messages are validated by schema and application.

When configuring multiple events in the Oracle Application Server using a single SAP program ID, SAP load balances the event data. For example, if multiple remote function calls or BAPIs use the same program ID (for example, ORACLETD) and multiple SAP listeners are configured with this programID, then SAP sends one request to one listener and the next to another listener, and so on.

There is a load-balancing algorithm present in the SAP Gateway Server. This mechanism is proprietary to SAP application development and might work by comparing total throughput of the connection, the number of times in wait state, and so on. This means one connection might receive nine messages and a second connection might receive one message. If five of the nine messages are rejected for schema validation and the one message on the other connection is rejected for schema validation, you might suspect that you are missing SAP event handling messages.

Load balancing in server (inbound to adapter from SAP) situations is handled by connecting multiple instances of the adapter to the SAP system. The SAP system will then load balance the connections. You cannot tune this performance.

Load balancing in client (outbound from adapter to SAP) situations is handled only by the SAP application design. If your system supports a Message Server, then you can load balance in client situations. If you have only one application server, you cannot load balance except by application server tuning, such as maximum number of connections permitted or time of day limits on connections.

The SAP system default limit is 100 RFC (communication) or adapter users. Each user takes up more than 2 MB of memory on the application server of the SAP system, and more or less on the adapter depending on the workload.

## Connection Pooling

A connection pool is a set of client connections to a specific destination. The pool may automatically create new connections to the specified remote system or return an already existing connection. It also provides methods to return a connection back to the pool when it is no longer needed.

A connection pool can check which connections are no longer in use and can be closed to save system resources. The time period after which the pool checks the connections as well as the time after which a connection will time out can be configured by the calling application.

A pool is always bound to one user ID and password, meaning that all connections taken from this pool will also use these credentials. An SAP connection is always bound to an SAP user ID and an SAP Client number.

If you log on with a pool size that is set to 1, no connection pool is created (1 userid – 1 process thread). If you log on with a pool size that is greater than 1, a pool is created with a size of n, which is the number you specified.

For more information about connection pooling, see the SAP JCO API documentation.

## Registering Your Program ID in SAPGUI

To enable your SAP system to issue the following calls or interfaces to the SAP event adapter, you must register your program ID under an RFC destination.

- Remote Function Calls (RFC)

- Business Application Programming Interfaces (BAPI)
- Intermediate Documents (IDoc)

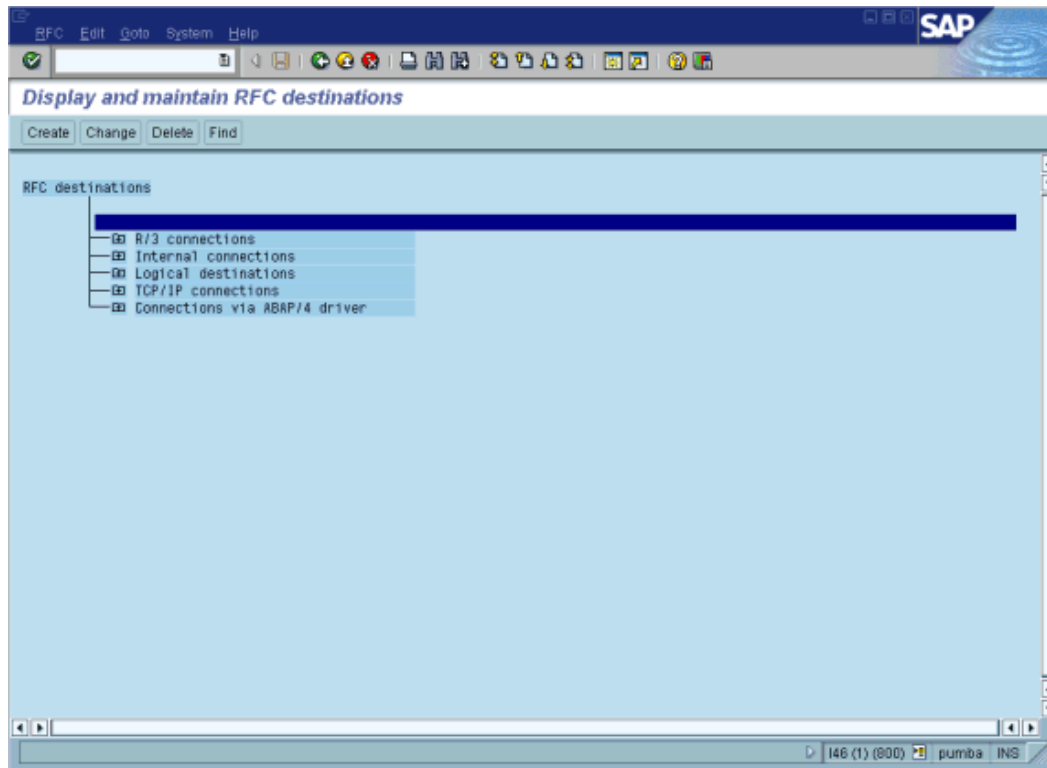
The RFC destination is a symbolic name (for example, ORACLETD5) that is used to direct events to a target system, masking the program ID. The Program ID is configured in both SAPGUI and the event adapter.

## Registering Your Program ID

To register your program ID:

1. Launch the SAP GUI and log in to the SAP system.
2. Select **Tools, Administration, Network**, and then RFC destination.
3. Run the **SM59** transaction.

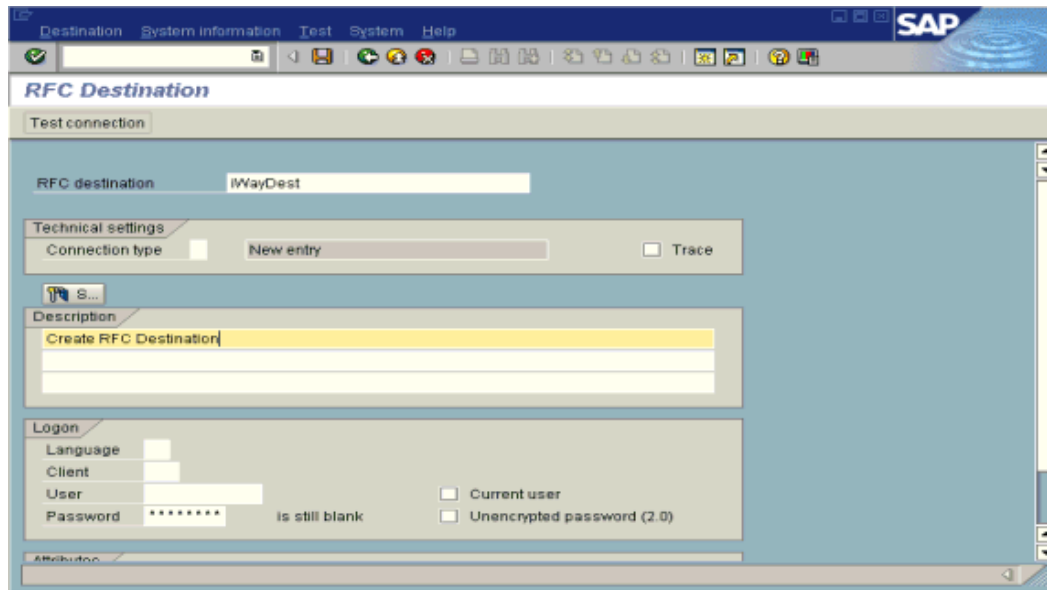
The Display and maintain RFC destinations window is displayed.



Description of the illustration iway\_sapu\_tcpipconnect.gif

4. Select TCP/IP connections and click Create.

The RFC Destination window is displayed.



Description of the illustration iway\_sapu\_rfcddestination.gif

Provide the following information:

a. In the **RFC destination** field, enter a name, for example, **ORACLETDS**.

The value you enter in this field is case sensitive.

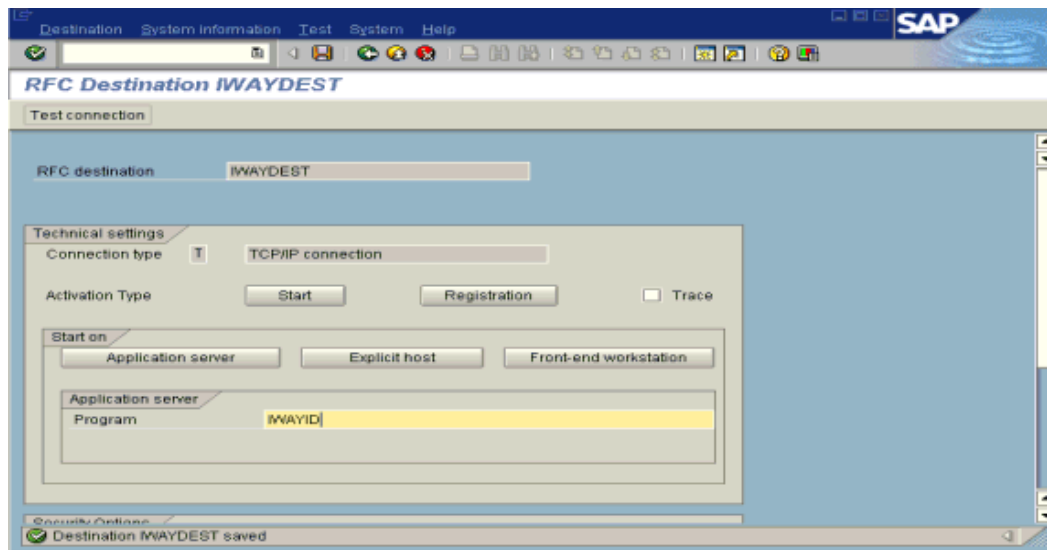
b. In the **Connection type** field, enter T for destination type TCP/IP.

c. In the **Description** field, enter a brief description.

5. Click Save from the tool bar or select Save from the Destination menu.

The RFC Destination ORACLETDS window is displayed.





Description of the illustration iway\_sapu\_iwaydest.gif

Perform the following steps:

- a. For the **Activation Type**, click Registration.
- b. In the **Program** field, enter ORACLETDS.
6. Click Save from the tool bar or select Save from the Destination menu.
7. Ensure your event adapter is running.
8. Verify that the SAP system and OracleAS Adapter for SAP are communicating.
9. Click TestConnection.

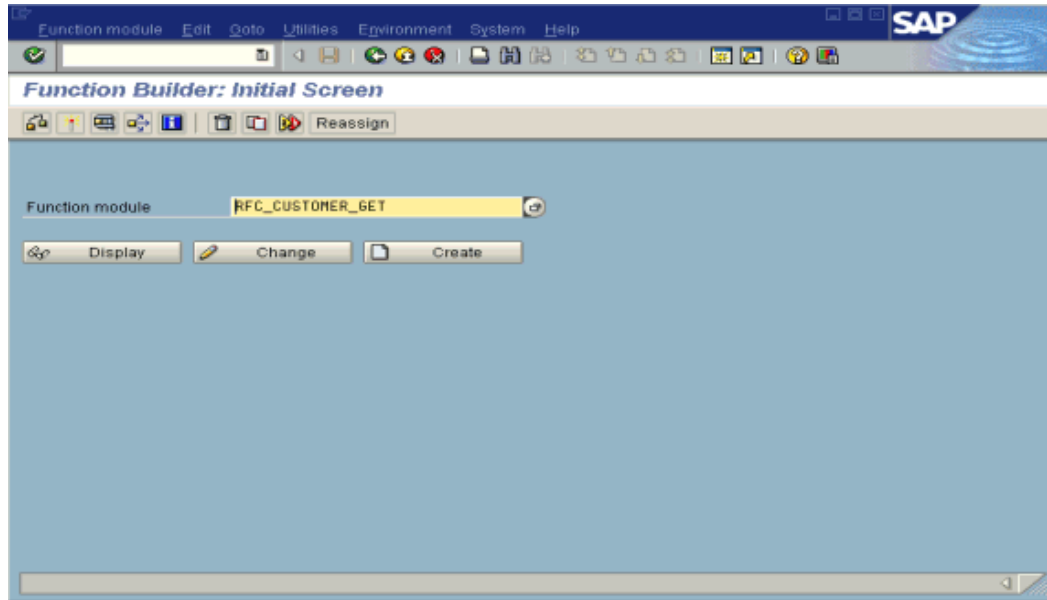
## Testing the SAP Event Adapter

In the SAP Server, the SE37 transaction enables you to send an RFC (Remote Function Call) or a BAPI (Business Application Programming Interface) to any RFC destination. For more information on RFC destination, see [Registering Your Program ID in SAPGUI](#).

## Testing the SAP Event Adapter by Sending an RFC or a BAPI Manually

To test the SAP event adapter:

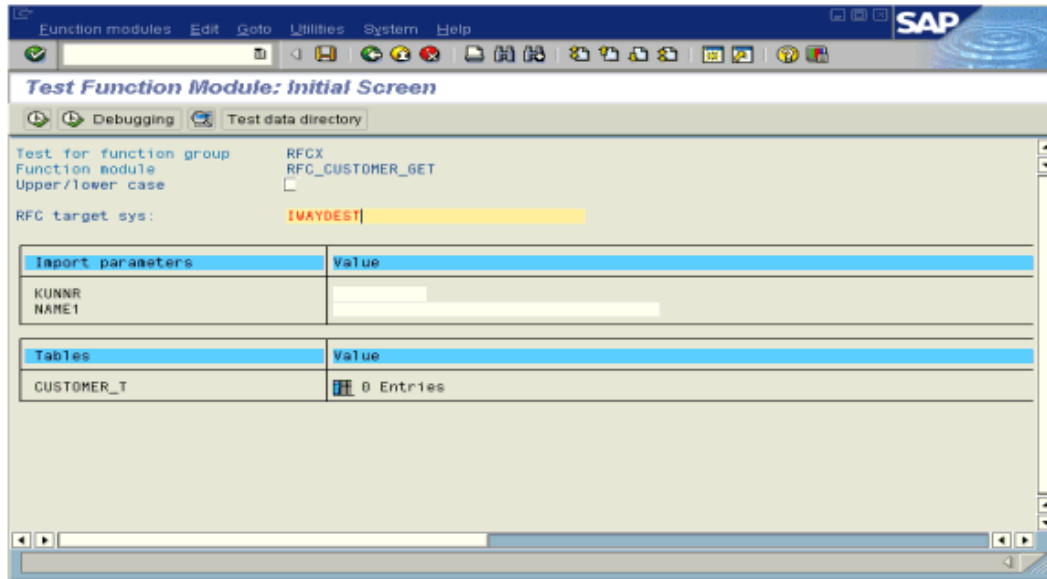
1. In the Function Builder, select a function module, for example, RFC\_CUSTOMER\_GET.



Description of the illustration iway\_sapu\_functionbuilder.gif

2. To choose single test, press F8 and click the Single Test icon or choose **Function module**, select Test and then Single Test.
3. Enter an RFC target system, for example, ORACLETD.
4. Enter input data for the particular RFC modules, for example, AB\*.
5. To execute, press F8.

The Test Function Module: Initial Screen window is displayed.



Description of the illustration iway\_sapu\_testfunctionmod.gif

6. Enter data into the SAP GUI and click Execute.

The function name and input data are transferred through RFC to create an XML document on the Oracle Application Server with the parameters input in SAPGUI.

## Application Link Embedding Configuration for the Event Adapter

The SAP event adapter receives IDocs (Intermediate Documents) from SAP. To configure an SAP system to send IDocs to the SAP event adapter, use the ALE (Application Link Embedding) configuration to:

1. Register your program ID in SAPGUI.
2. Define a port.
3. Create a logical system.
4. Create a partner profile.
5. Create a distribution model for the partner and message type.
6. Test the SAP event adapter.

## Defining a Port

A port identifies where to send messages. This port can be used only if an RFC destination was created previously.

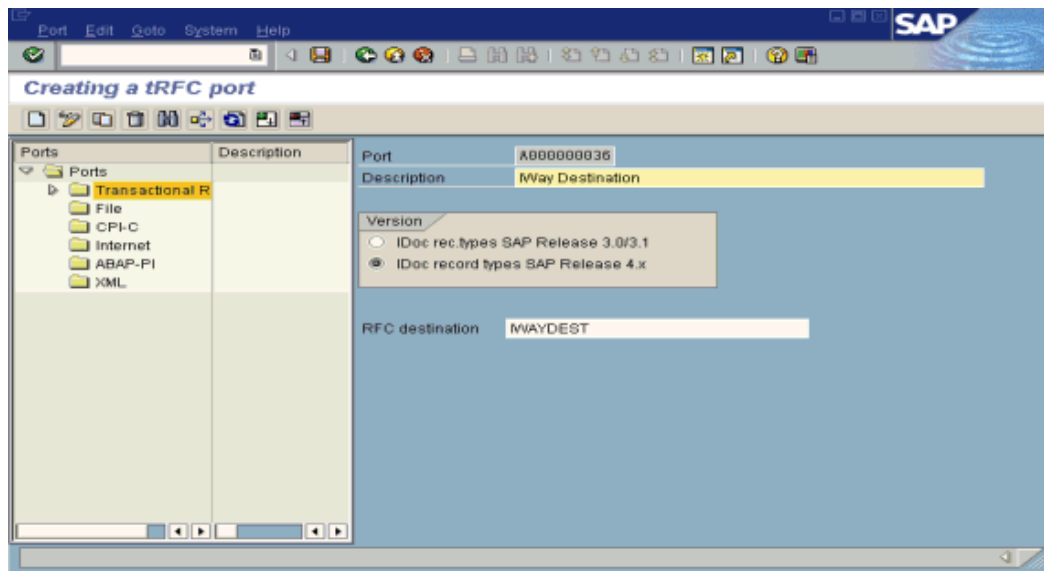
## Defining a Port

To define a port:

1. In the ALE configuration, choose **Tools, Business Communications, IDocs Basis, IDoc**, and then Port Definition.

You can also run the WE21 transaction.

The Creating a tRFC port window is displayed.



Description of the illustration iway\_sapu\_defineport.gif

2. In the left pane under **Ports**, select Transactional RFC and click Create.
3. Select Generate port name.  
The system generates the port name.
4. Enter the IDoc version you want to send through this port.
5. Click the destination you created, for example, ORACLETDS.
6. Save the session, making note of the system-generated RFC port.

## Creating a Logical System

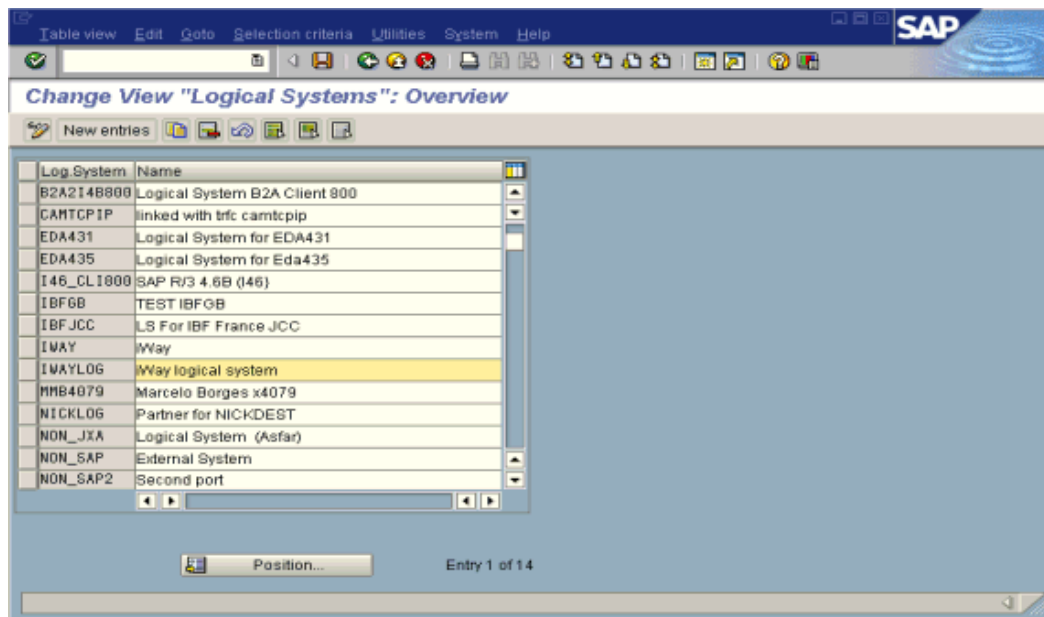
One type of partner is a logical system. A logical system manages one or more RFC destinations.

## Creating a Logical System

To create a logical system called ORACLETDS:

1. In the ALE configuration, enter the area menu selection SALE transaction.
2. Select SAP Reference IMG.
3. Expand the following nodes: **Basis Components, Application Link Enabling (ALE), Sending and Receiving Systems, Logical Systems**, and Define Logical System.
4. Click the check mark beside Define Logical System.

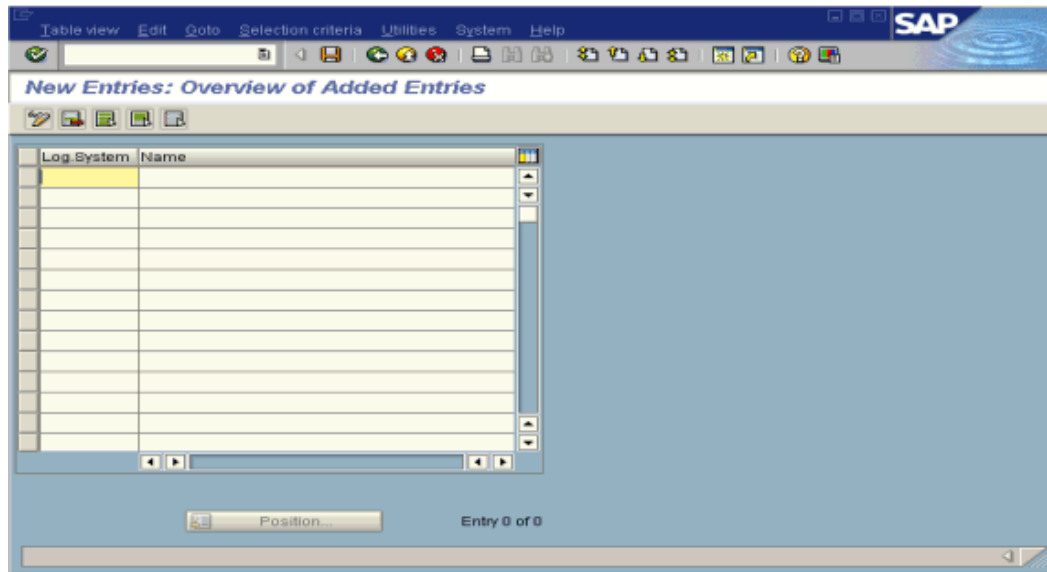
The Change View "Logical Systems": Overview window displays a list of logical systems and their names.



Description of the illustration iway\_sapu\_iwaylog.gif

5. Click New entries.

The New Entries: Overview of Added Entries window is displayed with Log.System and Name columns for new log system.



Description of the illustration iway\_sapu\_newentries.gif

6. Type an entry for Log System, for example, ORACLETD.
7. In the **Name** column, enter a name (description) for the partner profile.
8. Click Save to save the session.

## Creating a Partner Profile

A partner profile is a definition of parameters for the electronic interchange of data with a trading partner using the IDoc interface. To communicate with a partner using the IDoc interface, you must create a partner profile.

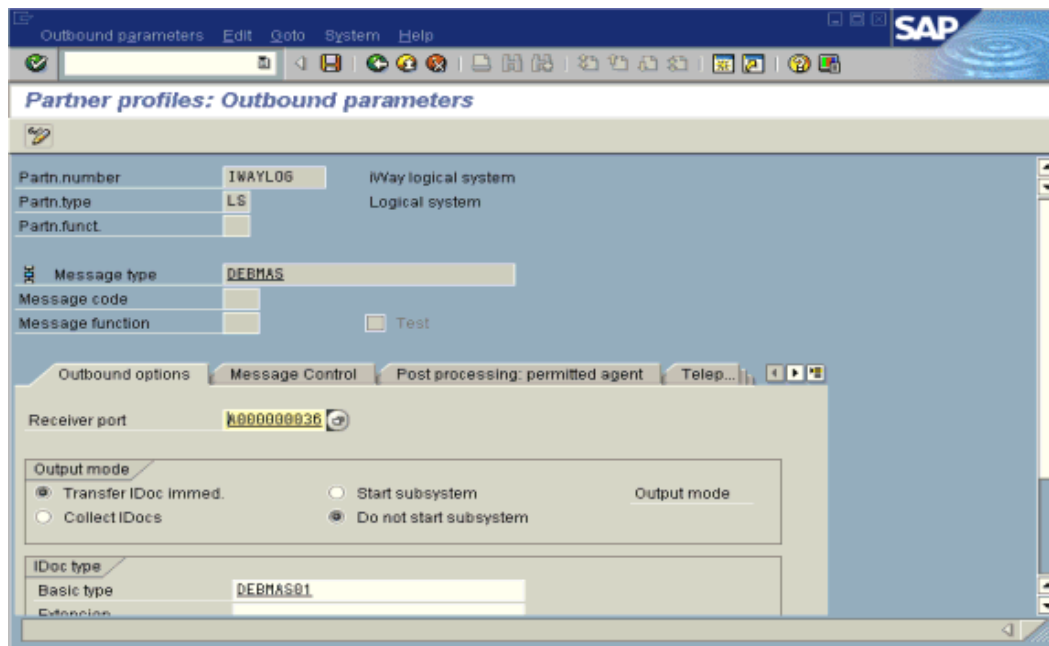
## Creating a Partner Profile

To create a partner profile:

1. In SAP GUI, choose **Tools, Business Communication, IDoc Basis**, and Partner profile.

You can also run the WE21 transaction.

The Partner profiles: Outbound parameters window is displayed and shows fields for specifying details for the partner profile.



Description of the illustration iway\_sapu\_partnerprofile.gif

Perform the following steps:

- a. Select Partner type LS (Logical system).
- b. Press F5 (Create).
2. For Type, enter USER.
3. For Agent, enter the current user ID, or you may select another agent type.
4. Under the outbound parameter table control, select Create outbound parameter.

Partner type is LS, and the Message type is DEBMAS, which is the IDoc document type.

5. Leave Partn.funct blank.
6. Click the Outbound options tab.

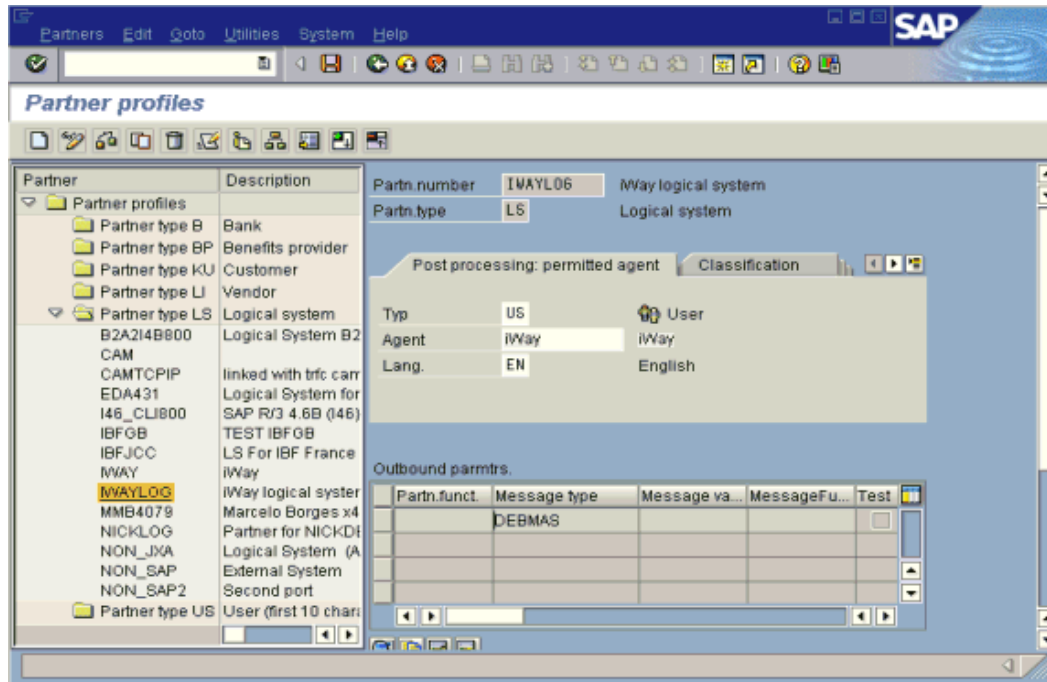
Provide the following information:

- a. Depending on your performance requirements, click Transfer IDoc Immed or Collect IDocs.
- b. For the IDoc, enter a message type, for example, DEBMAS.

c. Enter a receiver port, for example, A000000036.

7. Click Save to save the session.

The Partner profiles summary window is displayed. It contains information for the logical system that you created.



Description of the illustration iway\_sapu\_savedsession1.gif

## Collected IDocs

When using collected IDocs on any platform during inbound processing (service mode), if the DOCNUM field does not have a unique document number for each IDoc, the system creates an IDoc for each header record in the collected IDoc file and duplicates the data for each IDoc.

Make sure the DOCNUM field is included in the EDI\_DC40 structure and that each IDoc has a unique sequence number within the collected IDoc file.

## Creating a Distribution Model for the Partner and Message Type

You must create a distribution model for the partner and message type you designated.

## Creating a Distribution Model

To create a distribution model called ORAMOD:

1. In SAP GUI, choose **Tools, AcceleratedSAP, Customizing**, and then Project Management.



You can also run the BD64 transaction.

The Display Distribution Model window is displayed.

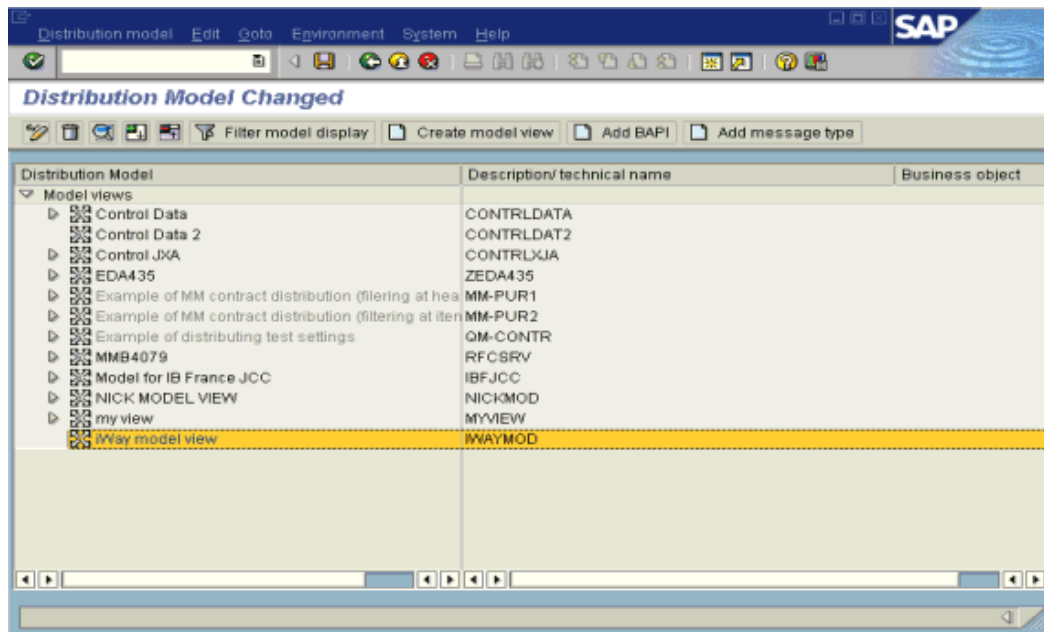
2. Select Create model view.

If required, switch the processing mode to edit within Distribution Model/Switch Processing Mode.

3. Enter a short text string and a technical name for your new model view.

4. Click Save.

The Distribution Model Changed window is displayed, showing a tree structure of the distribution model.

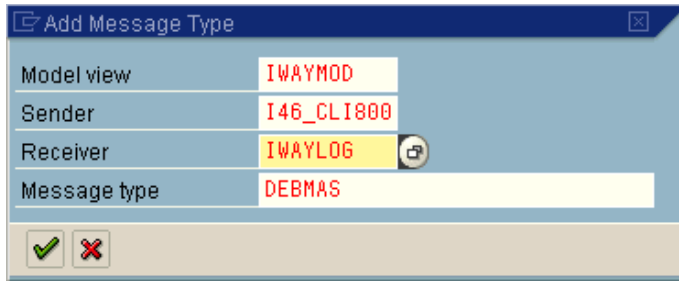


Description of the illustration iway\_sapu\_distributemodel.gif

Perform the following steps:

- In the Distribution Model tree, select a new model view.
- On the right, select Add message type.

The Add Message Type box is displayed. It contains fields for specifying the sender and receiver of the message, as well as the message type.



Model view	IWAYMOD
Sender	I46_CLI800
Receiver	IWAYLOG
Message type	DEBMAS

Description of the illustration [iway\\_sapu\\_addmessagetype.gif](#)

Provide the following information:

a. In the **Sender** field, provide the sender that points to the SAP system, which sends the IDoc, for example, I46\_CLI800.

In this case, the sender is an SAP 4.6B system.

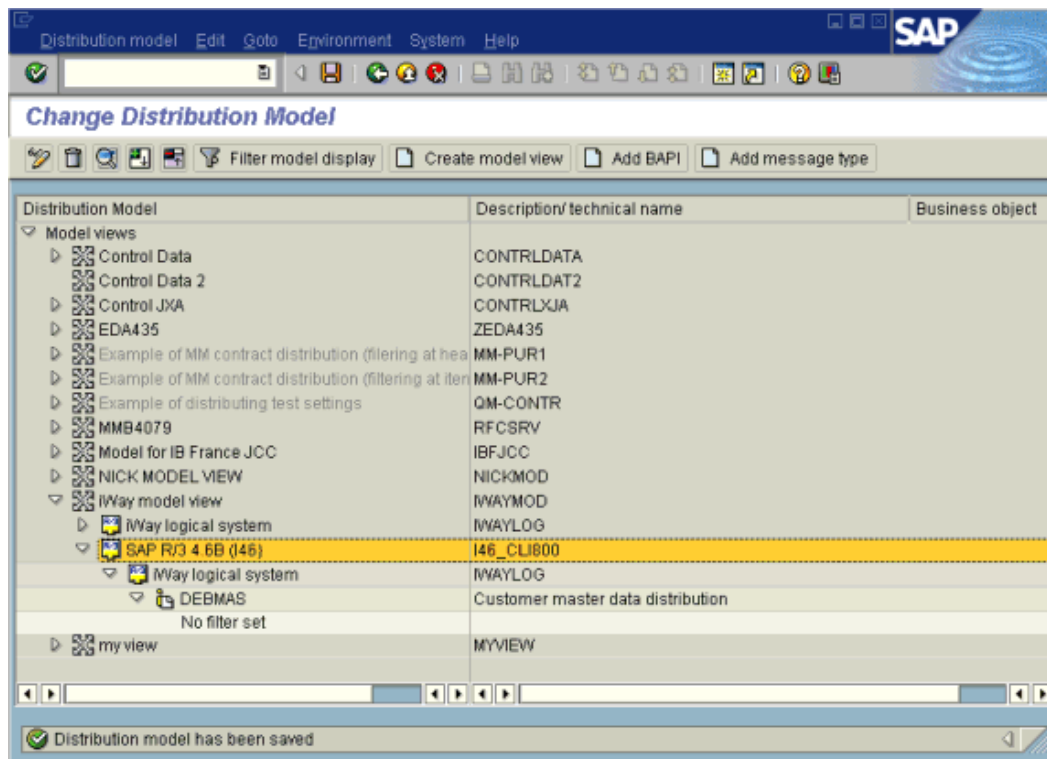
b. In the **Receiver** field, provide the logical system, for example, ORACLETDS.

c. In the **Message type** field, provide the type of IDoc, for example, DEBMAS.

5. Click the **check mark** icon.

6. Click Save.

The Change Distribution Model window displays the new model view to use to send message type, DEBMAS, from the I46\_CLI800 SAP system to the ORACLETDS logical system.



Description of the illustration iway\_sapu\_changedistmodel.gif

You are now ready to test the connection to the logical system.

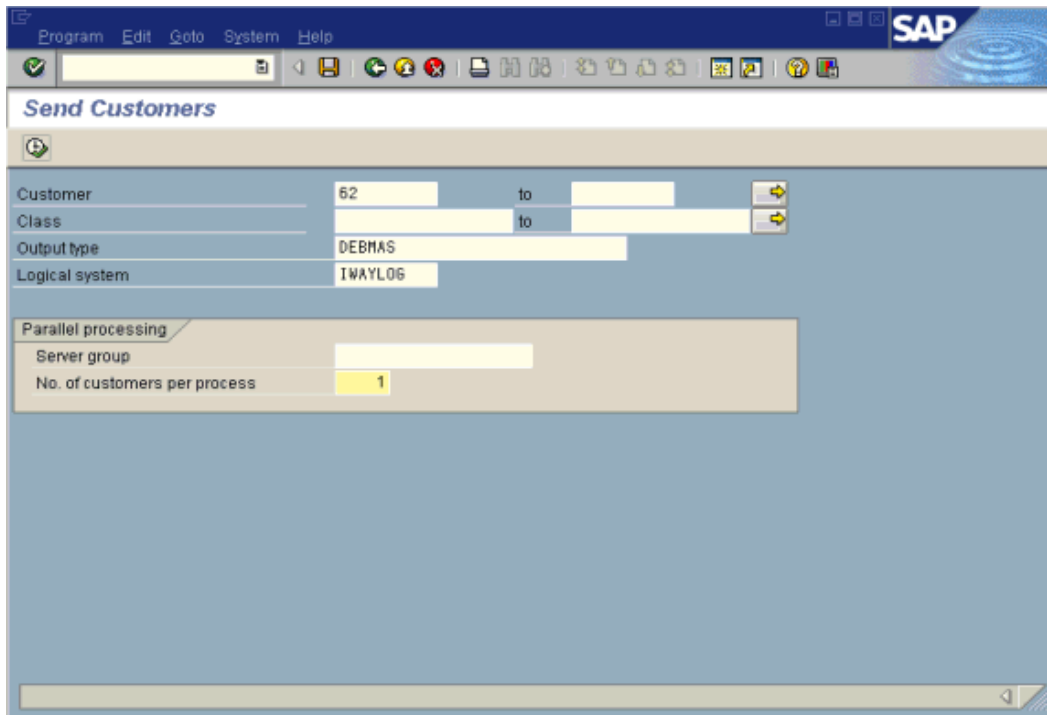
## Testing the SAP ALE Configuration

In the SAP Server, the BD12 transaction enables you to send IDocs to any logical system, for example, to an event adapter.

## Testing the SAP ALE Configuration

To test the SAP Application Link Embedding (ALE) configuration:

1. In the Send Customers window, enter the IDoc message type, for example, DEBMAS in the **Output type** field.

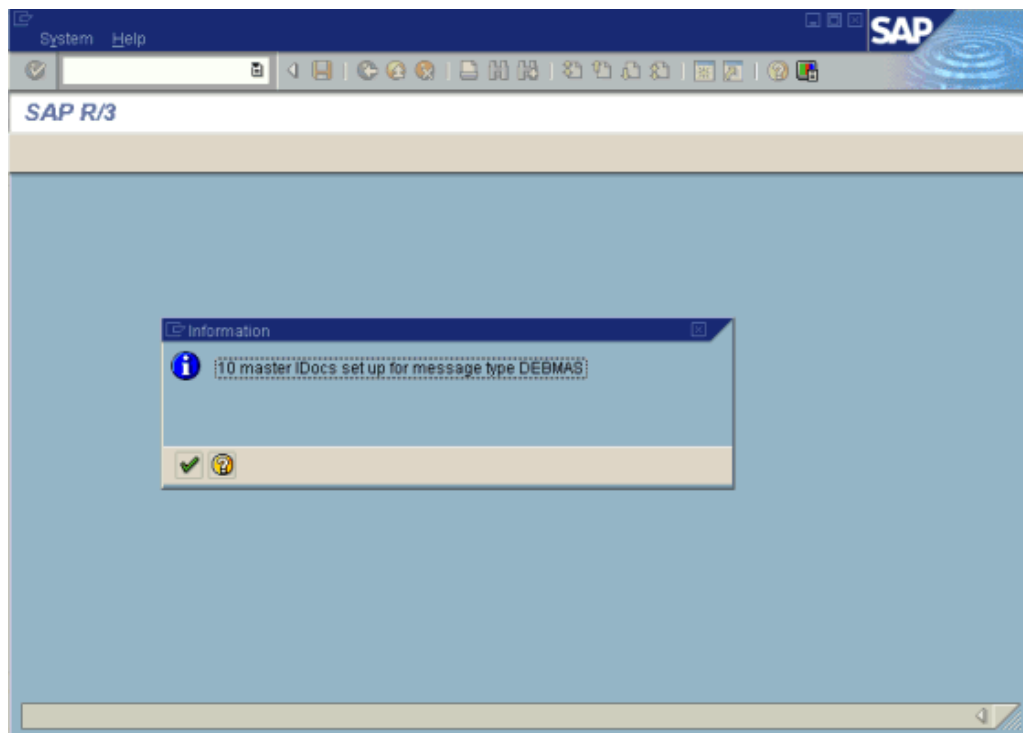


Description of the illustration iway\_sapu\_sendcustomers.gif

2. In the **Logical system** field, enter the logical system, for example, ORACLETDS.
3. Click Run.

The SAP event adapter receives the IDoc in XML format. No response is expected from the event adapter.

A confirmation window is displayed.



Description of the illustration iway\_sapu\_testcomplete.gif