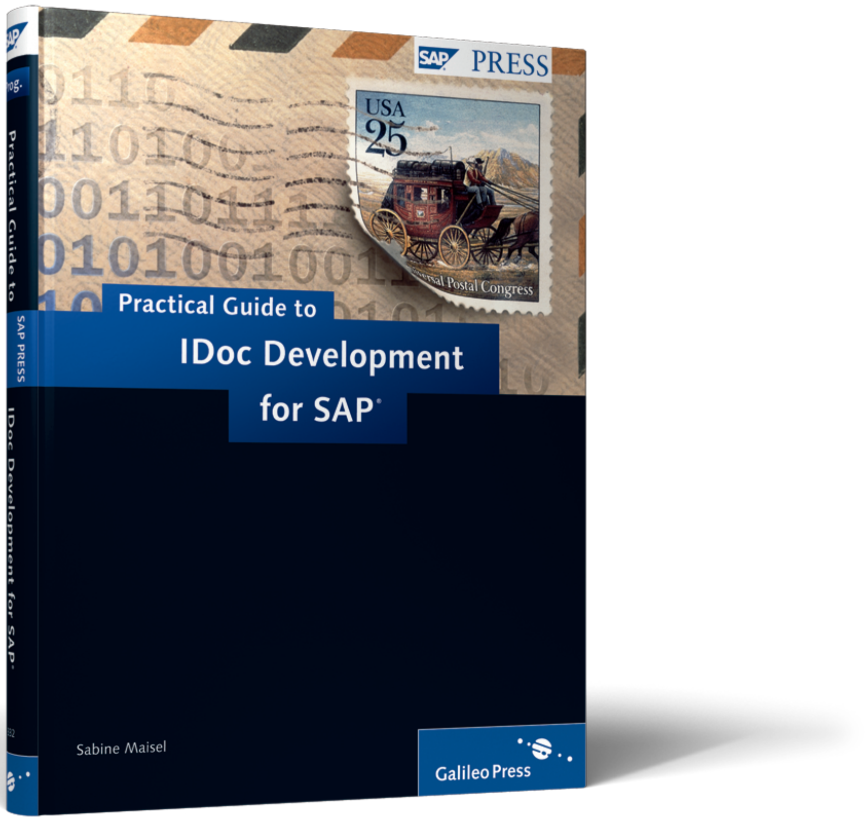
Sabine Maisel

Practical Guide to IDoc Development for SAP®



Galileo Press

Bonn • Boston

Contents at a Glance

Contents

In the sending system, it's necessary to generate IDocs so that they can be sent to the receiving system. How this is done depends on the type of data and the application. This chapter describes the different generation options and their use.

2 Generating IDocs

SAP has provided tools for the generation of IDocs in all locations where they are used in ALE scenarios or classic EDI, and they can usually be activated using the Customizing settings. However, there are different methods of IDoc generation depending on the type of data and the location where the IDoc will be generated. This chapter presents the most common methods of IDoc generation. Usually the IDoc administrator — not the developer — implements the settings required for creating the partner profiles, for instance, so they are outlined only briefly, and more importance is attached to the functional process flow.

2.1 Standard Methods for the IDoc Generation

Initially, you must distinguish between the generation of master data and the generation of transaction data because there are different requirements on the generation process or the generation frequency depending on the type of data. A special tool is available to generate master data, called the *Shared Master Data Tool* (SMD). Transaction data IDocs are generated via the already-existing message control. There are also some special functions for IDocs that are directly generated in a process.

2.1.1 Shared Master Data Tool

Master data in the IDoc

The SMD is a special tool for sending master data via IDoc. Master data is characterized by a relatively long retention period in the system during which the data is changed rarely. Master data usually consists of multiple views that are not used all the time. You can omit views, including those that contain mandatory fields, because the check of whether all mandatory fields are populated is only carried out if the view is actually used. This enables you to select from the wealth of information that is offered for a specific object and use exactly the data that is actually required within your enterprise.

To distribute data using IDocs, an automated process is desirable that responds to the creation and modification of master data without requiring further user interventions. Also, empty views are not supposed to be transferred.

Automation and control via views

The SMD takes these requirements into account. The technical implementation of automation and control via views entails that already-existing procedures can be used for both functions. For automation, you revert to recording changes, which is implemented by default; for control via views, you use the option (which originated from batch input processing) to control irrelevant fields using a NO_DATA character. Then, the IDocs are regularly generated via background jobs.

Additionally, for almost all objects, you also have the option to explicitly generate IDocs or to request IDocs. You can use this option if waiting for periodically scheduled jobs is impossible.

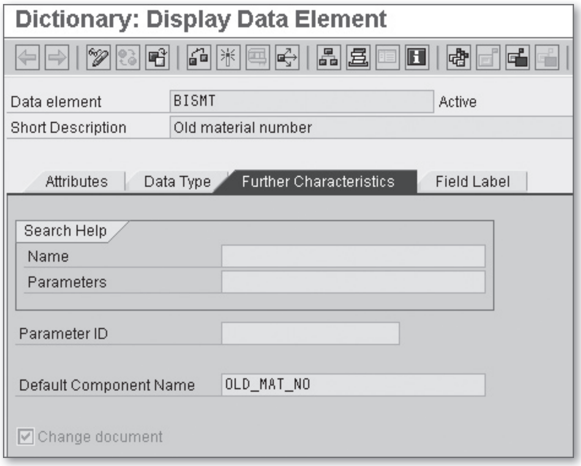
Recording Changes

Change pointer

For consistency reasons, changes to the master data are updated independently of the use of ALE in SAP systems. For each individual data element of the tables concerned, SAP has stipulated whether a change should be logged or not. Figure 2.1 shows the CHANGE DOCUMENT FLAG, which is activated in this case as an example of BISMT (*Old Material Number*) from the MARA TABLE.

Writing the history in the application

For updating the changes, you always call the CHANGEDOCUMENT_OPEN function module, which prepares the writing of the change history. Then, all changes to be written are collected, and the process is concluded using the CHANGEDOCUMENT_CLOSE function module. Because IDocs are supposed to be generated wherever changes are updated by default, the CHANGEDOCUMENT_CLOSE function module has an ALE share in addition to its standard function. This enables you to generate *change pointers* for ALE for the desired message types. In all Unicode-enabled releases, this is done using the CHANGE_POINTERS_CREATE_LONG function module; in old releases, this is done using the CHANGE_POINTERS_CREATE function module.



Data element: BISMT Active
Short Description: Old material number
Name:
Parameters:
Parameter ID:
Default Component Name: OLD_MAT_NO
☑ Change document

Figure 2.1 Characteristics of Data Elements

Generating change pointers directly

You also have the CHANGE_POINTERS_CREATE_DIRECT function module as a second option to generate change pointers. This function module is called by applications that are not connected to the previously described change management for documents.

In both cases, change pointers are only written if you use the SMD for performance reasons. In the ALE Customizing, you can specify whether this is the case and for which master data you require change pointers. There is a separate Transaction code SALE for the ALE Customizing that takes you directly to the correct position in the menu tree. Figure 2.2 shows the menu path in Customizing in which you make the necessary settings.

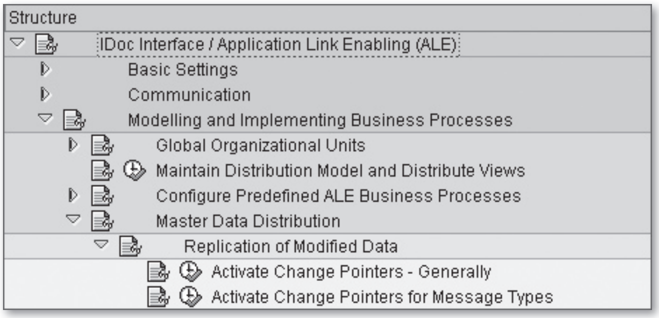
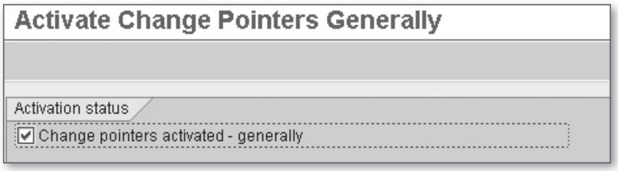

Structure
IDoc Interface / Application Link Enabling (ALE)
Basic Settings
Communication
Modelling and Implementing Business Processes
Global Organizational Units
Maintain Distribution Model and Distribute Views
Configure Predefined ALE Business Processes
Master Data Distribution
Replication of Modified Data
Activate Change Pointers - Generally
Activate Change Pointers for Message Types

Figure 2.2 Activating Change Pointers for the SMD

Activating change pointers

Initially, you activate the generation of change pointers generally. As a result, the share of the `CHANGEDOCUMENT_CLOSE` function module that has not been used up to now and that is responsible for the SMD is run through. This must be set once only for all master data. Figure 2.3 shows the appropriate functionality.


Activate Change Pointers Generally

Activation status

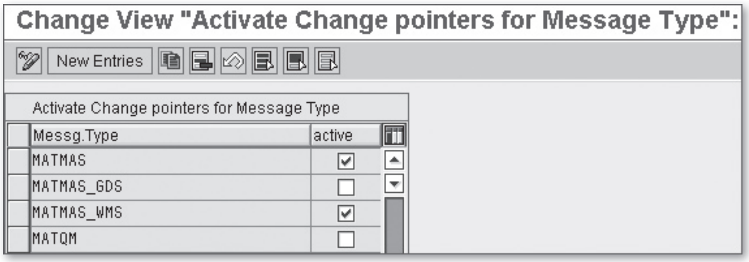
[✓] Change pointers activated - generally

Figure 2.3 Activate Change Pointers Generally

Activating change pointers for object

If the change pointers are activated generally, you can specify in a second step for which message type you require the generation of change pointers. This is done in the second menu subitem (Activate Change Pointers for Message Types) and has been implemented for the message types, `MATMAS` and `MATMAS_WMS` (see Figure 2.4). No change pointers are written for `MATCOR` and `MATMAS_GDS`, which have not been activated.

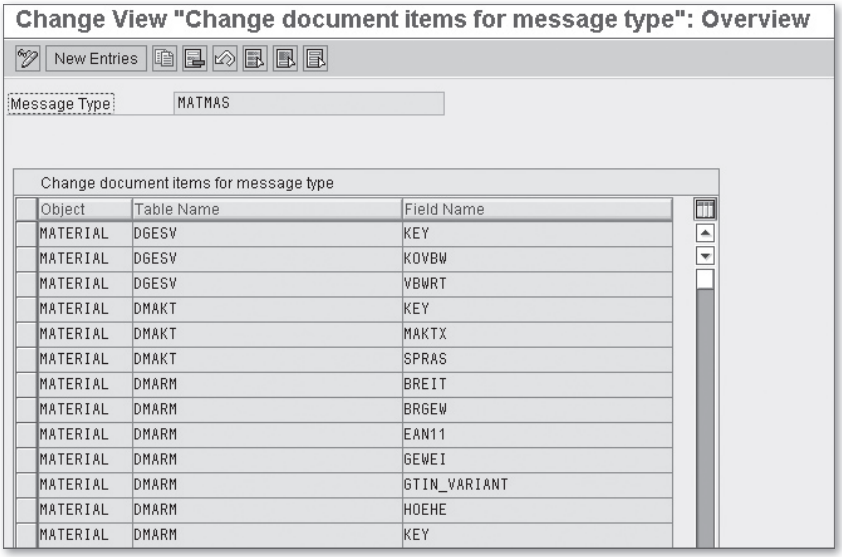
In this context, it's important that a change pointer isn't written for each changed field because there are fields whose values are not significant for the downstream system. By means of Transaction BD52, SAP provides fields for each message type connected to the SMD, which are relevant for changes from SAP's point of view. For the material master, the DMAKT-SPRAS field is important, for example. In the transaction, you enter the fields that are used within your enterprise. If you've made changes to the corresponding master data tables via the SAP enhancement concept and use customer-specific fields, you can also set the customer-specific fields here. Refer to Chapter 4, Changes to IDocs, to learn how to provide these fields.


Change View "Activate Change pointers for Message Type":

Activate Change pointers for Message Type

Messg.Type	active
MATMAS	✓
MATMAS_GDS	☐
MATMAS_WMS	✓
MATQM	☐

Figure 2.4 Activate Change Pointers for Message Type


Change View "Change document items for message type": Overview

Message Type: MATMAS

Change document items for message type

Object	Table Name	Field Name
MATERIAL	DGESV	KEY
MATERIAL	DGESV	KOVBW
MATERIAL	DGESV	VBWRT
MATERIAL	DMAKT	KEY
MATERIAL	DMAKT	MAKTX
MATERIAL	DMAKT	SPRAS
MATERIAL	DMARM	BREIT
MATERIAL	DMARM	BRGEW
MATERIAL	DMARM	EAN11
MATERIAL	DMARM	GEWEI
MATERIAL	DMARM	GTIN_VARIANT
MATERIAL	DMARM	HOEHE
MATERIAL	DMARM	KEY

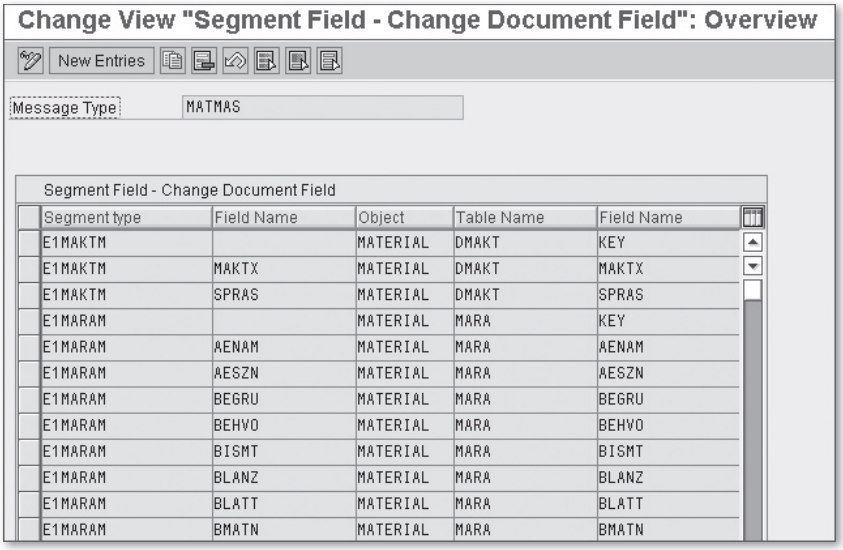
Figure 2.5 Change-Relevant Fields in Transaction BD52

Change-relevant fields

Figure 2.5 shows a section of the fields for the MATMAS message type, which are provided by SAP as change-relevant. The message type is directly referenced to fields and tables of the material master except for the KEY field. This field isn't part of the respective table but assumes a very important, additional control role: It ensures that the creation of a table entry can be sent via IDoc. If the KEY field is specified in Transaction BD52, a change pointer is written during the creation of the corresponding object, for example, during the initial creation of the material for the MARA-KEY dummy field or during the creation of a text in a new language for the MAKT-KEY dummy field. Imagine that the key value of the table concerned is changed from "empty" to the new value. As a result, all fields of this table are transferred.

Assigning change-relevant fields

Additionally, for each of the change-relevant fields, you must specify to which field in which segment of the IDoc type it belongs. This is done in Transaction BD66, which is shown in Figure 2.6. The DMAKT-SPRAS sample field from Transaction BD52 belongs to the `E1MAKTM` IDoc segment and to the field that is also called "SPRAS." For your own fields, you must specify this using the New Entries button.


Change View "Segment Field - Change Document Field": Overview
New Entries

Message Type: MATMAS

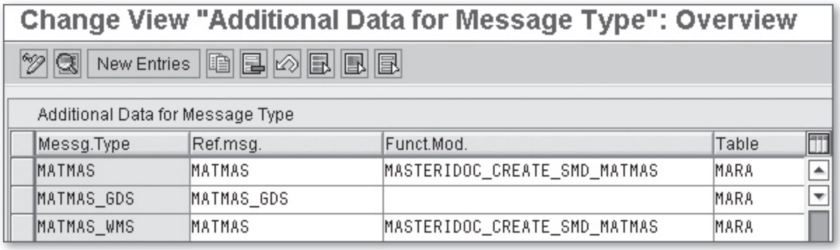
Segment Field - Change Document Field

Segment type	Field Name	Object	Table Name	Field Name
E1MAKTM		MATERIAL	DMAKT	KEY
E1MAKTM	MAKTX	MATERIAL	DMAKT	MAKTX
E1MAKTM	SPRAS	MATERIAL	DMAKT	SPRAS
E1MARAM		MATERIAL	MARA	KEY
E1MARAM	AENAM	MATERIAL	MARA	AENAM
E1MARAM	AESZN	MATERIAL	MARA	AESZN
E1MARAM	BEGRU	MATERIAL	MARA	BEGRU
E1MARAM	BEHVO	MATERIAL	MARA	BEHVO
E1MARAM	BISMT	MATERIAL	MARA	BISMT
E1MARAM	BLANZ	MATERIAL	MARA	BLANZ
E1MARAM	BLATT	MATERIAL	MARA	BLATT
E1MARAM	BMATN	MATERIAL	MARA	BMATN

Figure 2.6 Assignment of IDoc Fields to Change-Relevant Fields

Evaluating change pointers

The change pointers are then evaluated. It just depends on the object concerned which function module is used here. When you call Transaction BD60, you can view these function modules and replace them with your own function modules if you want to make so many changes to the standard functionality that you don't want to enhance or modify the SAP original. Figure 2.7 shows another example of the material master data. There, the function module that uses change pointers to generate IDocs is called MASTERIDOC_CREATE_SMD_MATMAS.



Change View "Additional Data for Message Type": Overview

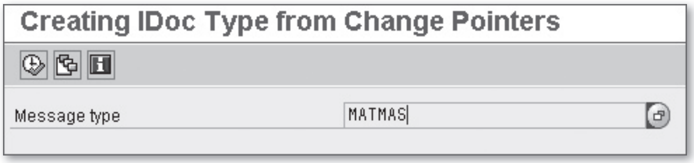
Additional Data for Message Type

Messg.Type	Ref.msg.	Funct.Mod.	Table
MATMAS	MATMAS	MASTERIDOC_CREATE_SMD_MATMAS	MARA
MATMAS_GDS	MATMAS_GDS		MARA
MATMAS_WMS	MATMAS	MASTERIDOC_CREATE_SMD_MATMAS	MARA

Figure 2.7 Function Modules to Evaluate Change Pointers

"RBDMIDOC" background job

The RBDMIDOC report, which must be scheduled at regular intervals, must then use these function modules to generate IDocs from the change pointers and update which change pointers have been processed. As a transfer value, you can specify for which message type you want to implement the evaluation. For this purpose, you specify the appropriate type (here: MATMAS) in the Message Type field in the initial screen of the RBDMIDOC report. This is illustrated in Figure 2.8.



Creating IDoc Type from Change Pointers

Message type: MATMAS

Figure 2.8 Initial Screen of the "RBDMIDOC" Report

Changes in the SMD

For sending IDocs using the SMD and for change pointers, the application and the ALE communication layer interact closely. Figure 2.9 schematically shows the process flow of IDoc generation. The entire process of writing change pointers takes place in the application; the evaluation of the change pointer and the generation of IDocs are carried out by the ALE communication layer.

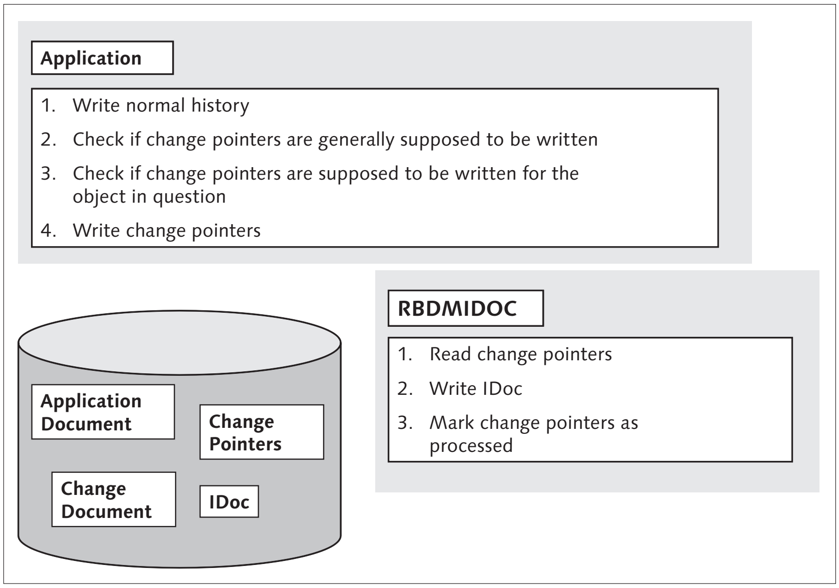

Application
1. Write normal history
2. Check if change pointers are generally supposed to be written
3. Check if change pointers are supposed to be written for the object in question
4. Write change pointers
RBDMIDOC
1. Read change pointers
2. Write IDoc
3. Mark change pointers as processed
Application Document
Change Pointers
Change Document
IDoc

Figure 2.9 IDoc Generation Using the SMD

Note that when you send IDocs via change pointers, you only send those views in which changes have actually been made. If a new view has been created, all its fields are transferred; if a view has been changed, only the changed fields are transferred to increase performance. Chapter 4, Changes to IDocs, uses the example of the material master to describe how you can change this default behavior using a minor modification.

You can find the change pointers in the `BDCP` table and the corresponding status records in the `BDCPS` table. As of SAP NetWeaver Application Server 6.20 (SAP NetWeaver AS), processing with higher performance is possible via a shared table called `BDCP2`. However, this new procedure isn't supported for all message types. Whether it's applicable for your message type is indicated in the detail view of Transaction BD60. As of Release 7.1, only the new processing using Table `BDCP2` is available for all message types.

Distribution lock

For the distribution via the SMD, you must consider some specifics for some master data. You can set a distribution lock for the material master to generally prevent the sending of a material. For this purpose, you must make a short detour. In the design data of the material in the MARA table, there is a cross-plant material status (MARA-MSTAE field). This status refers to an existing entry in the T141 table. Here, you can assign additional properties for each status value. If the DLOCK field provided here is selected, the distribution lock is set.

For contracts (BLAORD message type), only released contracts are transferred using the SMD.

Reducing Messages

The second requirement on the distribution of master data arises from the distribution of all master data to individual views and the option to define, in Customizing, which fields of a view are actually supposed to be used. This is scalable for the IDoc transfer by using the reduced message types.

Reduced message type

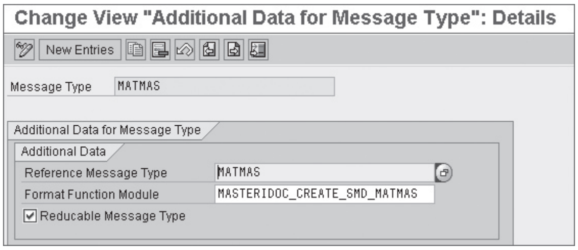
A reduced message type always relates to an existing message type but transfers less data. The reduction isn't possible for all message types; so the developer of the message type must explicitly define it as reducible. All views and fields that must be transferred as a minimum are predefined here; all other views and fields can be selected additionally if required. Transaction BD60 in the detail view for a message type is the transaction for defining a message type as reducible. By calling Transaction BD65, you define the mandatory fields.

For each delivered message type, SAP specifies whether it's reducible. Because this involves functions in the generation and update module for the corresponding IDoc, customers can't simply set the message type to reducible retroactively. The mandatory fields that SAP provides with Transaction BD65 correspond to the Customizing that SAP provides for transactions that are used to maintain master data, for instance, Transaction MAT1 for maintaining the material master. If you make changes to the mandatory fields in the application's Customizing, you also adapt them in Transaction BD65 so that custom-developed mandatory fields are also mandatory for reducing in the IDoc. Figure 2.10 shows a section of the data for the MATMAS message type.

BD60 – Detail

SAP defines message type as reducible

→



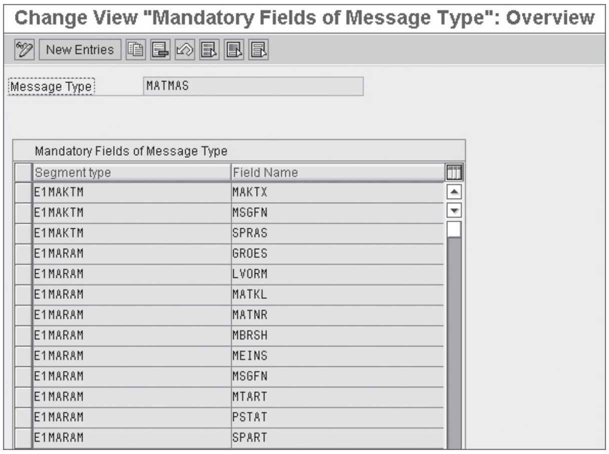
Change View "Additional Data for Message Type": Details

Message Type	MATMAS
Reference Message Type	MATMAS
Format Function Module	MASTERIDOC_CREATE_SMD_MATMAS
☑ Reducable Message Type	

BD65

Define mandatory fields (both SAP and you)

→



Change View "Mandatory Fields of Message Type": Overview

Message Type: MATMAS

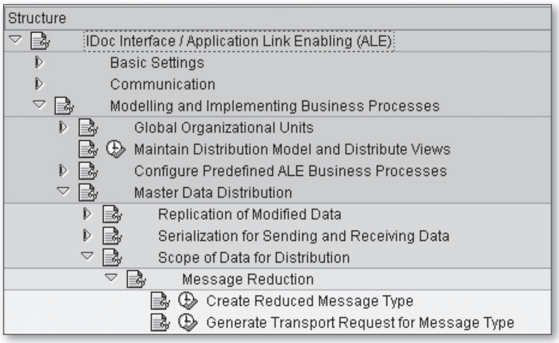
Mandatory Fields of Message Type

Segment type	Field Name
E1MAKTM	MAKTX
E1MAKTM	MSGFN
E1MAKTM	SPRAS
E1MARAM	GROES
E1MARAM	LVORM
E1MARAM	MATKL
E1MARAM	MATNR
E1MARAM	MBRSH
E1MARAM	MEINS
E1MARAM	MSGFN
E1MARAM	MTART
E1MARAM	PSTAT
E1MARAM	SPART

Figure 2.10 Basic Maintenance for Reducible Message Types

Reduction in Customizing

You then create your own reduced message types in Customizing of Transaction SALE. Under the Create Reduced Message Type menu item or via Transaction BD53 you can find the initial screen as shown in Figure 2.11.

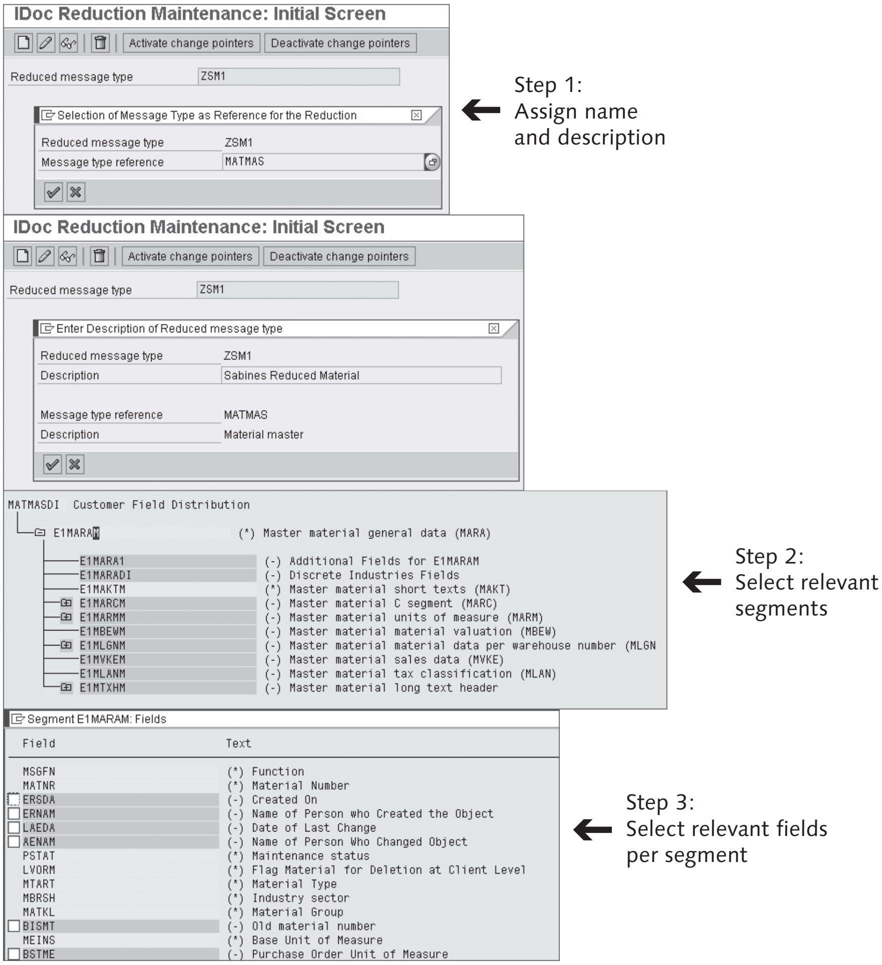


Structure
IDoc Interface / Application Link Enabling (ALE)
Basic Settings
Communication
Modelling and Implementing Business Processes
Global Organizational Units
Maintain Distribution Model and Distribute Views
Configure Predefined ALE Business Processes
Master Data Distribution
Replication of Modified Data
Serialization for Sending and Receiving Data
Scope of Data for Distribution
Message Reduction
Create Reduced Message Type
Generate Transport Request for Message Type

Figure 2.11 Create Reduced Message Type

Reduction steps

When you specify the name of the new reduced message type (see Figure 2.12), you must consider the naming rules for your own objects (the name must start with Y or Z or your own namespace).



Reduced message type ZSM1

Selection of Message Type as Reference for the Reduction

Reduced message type	ZSM1
Message type reference	MATMAS

Reduced message type ZSM1

Enter Description of Reduced message type

Reduced message type	ZSM1
Description	Sabines Reduced Material
Message type reference	MATMAS
Description	Material master

```
MATMASDI  Customer Field Distribution
  └⊟ E1MARAM                    (*) Master material general data (MARA)
      ├──E1MARA1                  (-) Additional Fields for E1MARAM
      ├──E1MARADI                 (-) Discrete Industries Fields
      ├──E1MAKTM                  (*) Master material short texts (MAKT)
      ├⊞ E1MARCM                  (-) Master material C segment (MARC)
      ├⊞ E1MARMM                  (-) Master material units of measure (MARM)
      ├──E1MBEWM                  (-) Master material material valuation (MBEW)
      ├⊞ E1MLGNM                  (-) Master material material data per warehouse number (MLGN
      ├──E1MVKEM                  (-) Master material sales data (MVKE)
      ├──E1MLANM                  (-) Master material tax classification (MLAN)
      └⊞ E1MTXHM                  (-) Master material long text header
```

Segment E1MARAM: Fields

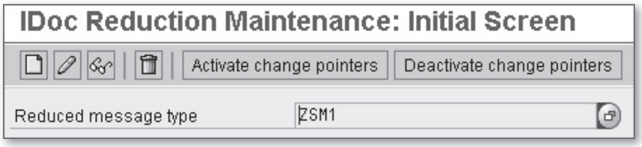
Field	Text
MSGFN	(*) Function
MATNR	(*) Material Number
☐ ERSDA	(-) Created On
☐ ERNAM	(-) Name of Person who Created the Object
☐ LAEDA	(-) Date of Last Change
☐ AENAM	(-) Name of Person Who Changed Object
PSTAT	(*) Maintenance status
LVORM	(*) Flag Material for Deletion at Client Level
MTART	(*) Material Type
MBRSH	(*) Industry sector
MATKL	(*) Material Group
☐ BISMT	(-) Old material number
MEINS	(*) Base Unit of Measure
☐ BSTME	(-) Purchase Order Unit of Measure

Figure 2.12 Creating a Reduced Message Type

Segments and fields that are green in the SAP system and displayed with an * behind the name are mandatory and can't be reduced. Fields and segments that are red or marked with – are optional and not selected; segments or fields that are white or marked with + are optional and selected in the respective reduced message type. You now specify which segments you want to have in addition to the mandatory segments by selecting the segment and clicking Select. As soon as you've activated a segment, you can select the fields within the segment you want to have in addition to the mandatory fields, and then click Select again.

Change pointers for reduced message types

If you want to generate change pointers for custom reduced message types, you can activate the generation in Transaction BD53 using the Activate Change Pointers button. Of course, you can also activate the change pointers for the reduced message type in Customizing of Transaction SALE. Here, you must make sure that you not only set the flags for generating change pointers but also copy all standard field assignments and mandatory field assignments, which is automatically done in Transaction BD53. In Transaction BD53, you can also disable the writing of change pointers using the Deactivate Change Pointers button (see Figure 2.13).


IDoc Reduction Maintenance: Initial Screen
Activate change pointers
Deactivate change pointers

Reduced message type: ZSM1

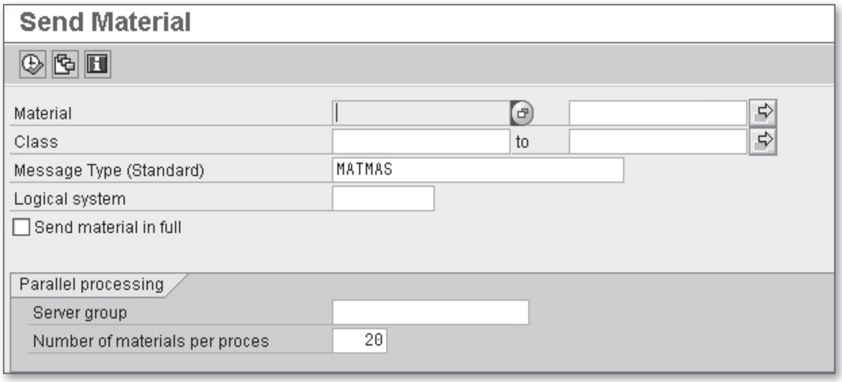
Figure 2.13 Activate the Change Pointer for Reduced Message Types

Directly Generating or Requesting Master Data

If you want to publish the creation or change of material master data without waiting for IDocs that are generated from change pointers, you can use Transaction BD10. In Table 7.5 of Chapter 7, Section 7.3, Transaction Code Overview, you can also find the transactions that belong to other master data.

Sending master data

Because master data usually offers the option of reduction, these transactions "expect" you to enter the message type you want to use for sending and the logical target systems you want to send to. Additionally, you can select the objects you want to generate IDocs for. However, this is only possible via the material numbers or the class membership of the object (see Figure 2.14).


Send Material

Material	to
Class	to
Message Type (Standard)	MATMAS
Logical system	

☐ Send material in full

Parallel processing

Server group	
Number of materials per proces	20

Figure 2.14 Targeted Sending of Material Master IDocs

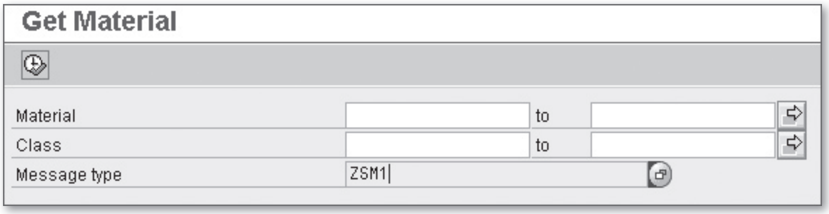
Sending the material

If you activated the Send Material in Full flag and also set the distribution of classification IDocs to the same partner, the system generates the classification IDoc that belongs to the material additionally to the material IDoc itself. The specifications for the parallel processing help you increase the performance if you send a high quantity of data, for instance, for initial data load. If you leave the Logical System field empty, the data is sent to all partners that are available in Transaction BD64. If a selection is made, Transaction BD64 checks whether the selected logical system is permitted as a receiver of the material master IDocs. If there is a positive result, the system sends the IDoc.

If you are the receiver of master data IDocs and know that the sending system has changed or has newly created data, you can request a corresponding master data IDoc. The name of the appropriate message type starts like the master data IDoc but uses another abbreviation at the end, that is, `FET` (for "fetch") instead of `MAS`. For example, the name is `MATMAS` for the message type of the material master IDocs and `MATFET` for the fetch IDoc.

Fetch IDoc

These *fetch IDocs* must be maintained as usual in the distribution model (see Figure 1.4 in Chapter 1, Section 1.3, Differentiation of ALE and EDI) — just in the other direction; here, the partner that receives the master data IDoc sends the fetch IDoc. Fetch IDocs always transfer the object key for which master data IDocs are requested and the message type that is supposed to be used to send the data. You can use Transaction BD11 to "get" material masters (see Figure 2.15).

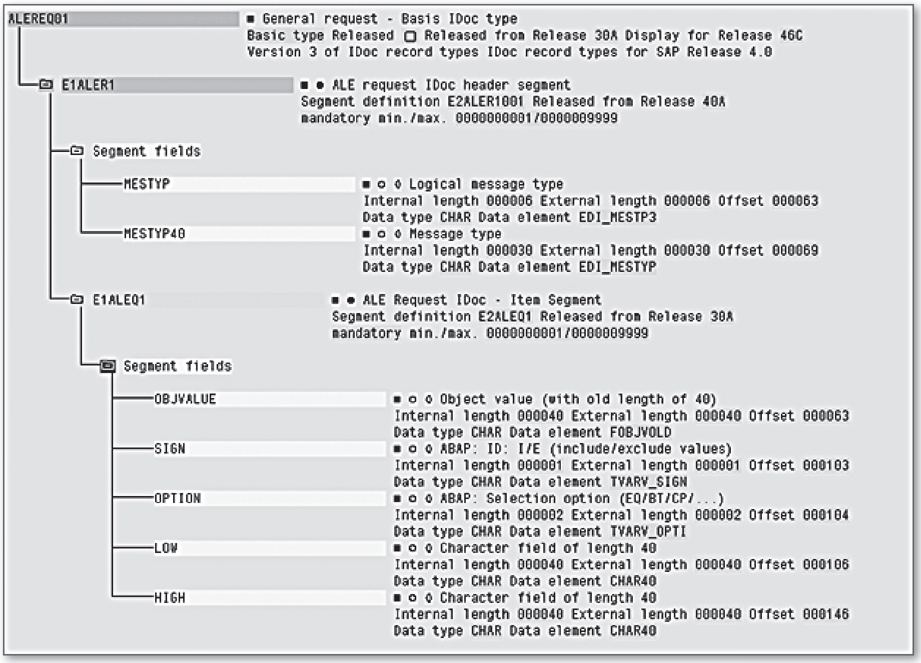


Get Material

Material		to	
Class		to	
Message type	ZSM1		

Figure 2.15 Requesting the Material Master IDoc

"ALEREQ01" IDoc type The same ALEREQ01 IDoc type is assigned to all fetch message types. It contains the segments shown in Figure 2.16.

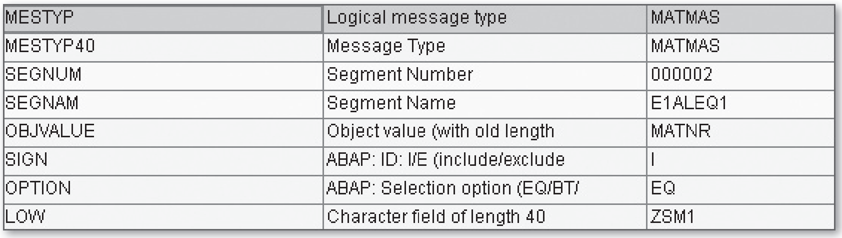


```
ALEREQ01                ■ General request - Basis IDoc type
                        Basic type Released ▢ Released from Release 30A Display for Release 46C
                        Version 3 of IDoc record types IDoc record types for SAP Release 4.0
  E1ALER1                    ■ ● ALE request IDoc header segment
                             Segment definition E2ALER1001 Released from Release 40A
                             mandatory min./max. 0000000001/0000009999
    Segment fields
      MESTYP                       ■ ○ ◊ Logical message type
                                   Internal length 000006 External length 000006 Offset 000063
                                   Data type CHAR Data element EDI_MESTP3
      MESTYP40                     ■ ○ ◊ Message type
                                   Internal length 000030 External length 000030 Offset 000069
                                   Data type CHAR Data element EDI_MESTYP
    E1ALEQ1                    ■ ● ALE Request IDoc - Item Segment
                               Segment definition E2ALEQ1 Released from Release 30A
                               mandatory min./max. 0000000001/0000009999
      Segment fields
        OBJVALUE                     ■ ○ ◊ Object value (with old length of 40)
                                     Internal length 000040 External length 000040 Offset 000063
                                     Data type CHAR Data element FOBJVOLD
        SIGN                         ■ ○ ◊ ABAP: ID: I/E (include/exclude values)
                                     Internal length 000001 External length 000001 Offset 000103
                                     Data type CHAR Data element TVARV_SIGN
        OPTION                       ■ ○ ◊ ABAP: Selection option (EQ/BT/CP/...)
                                     Internal length 000002 External length 000002 Offset 000104
                                     Data type CHAR Data element TVARV_OPTI
        LOW                          ■ ○ ◊ Character field of length 40
                                     Internal length 000040 External length 000040 Offset 000106
                                     Data type CHAR Data element CHAR40
        HIGH                         ■ ○ ◊ Character field of length 40
                                     Internal length 000040 External length 000040 Offset 000146
                                     Data type CHAR Data element CHAR40
```

Figure 2.16 "ALEREQ01" IDoc Type

Example of "MATFET" IDoc

The actually sent fetch message contains information on the message type that is expected as the response, the short and the long name (before or after Release 4.0), and the keys of elements that are supposed to be sent as a response. Figure 2.17 shows a `MATFET` IDoc that request the `ZSM1` material. For the `MATMAS` IDoc, both the long and the short name is "MATMAS" because this is a very old message type.



MESTYP	Logical message type	MATMAS
MESTYP40	Message Type	MATMAS
SEGNUM	Segment Number	000002
SEGNAM	Segment Name	E1ALEQ1
OBJVALUE	Object value (with old length	MATNR
SIGN	ABAP: ID: I/E (include/exclude	I
OPTION	ABAP: Selection option (EQ/BT/	EQ
LOW	Character field of length 40	ZSM1

Figure 2.17 MATFET IDoc

Because master data is usually exchanged between different systems of the same enterprise, logical systems are used as partners like they are used in ALE.

2.1.2 Message Control

Message control

The message control is a standard function of SAP, which triggers a data transfer for all transaction data that is supposed to be received by other enterprises, too. This can be done using a printer, fax, or an IDoc. For processing using IDocs, you can use *transmission medium 6* for processing using partner functions, and you can use *transmission medium A* for processing using logical systems. All the required settings for the message control are in Transaction NACE.

You use the *condition technique* to specify when you generate which messages in which way. The key for the conditions is composed of the application you're in (e.g., "EF" for purchasing), the output type you want to generate (e.g., "NEU" for a purchase order), and the partner role everything will be sent to (e.g., partner "vendor" in its role as goods vendor).

"EDI_ PROCESSING" function

In *message determination*, the actual message is generated using the `RSNAST00` report. The `EDI_PROCESSING` function that is used here transfers the message as an EDI message using the IDoc; it belongs to transmission medium 6. Depending on the system setting, you can call the `RSNAST00` report directly upon saving the document or at regular intervals as a batch job.

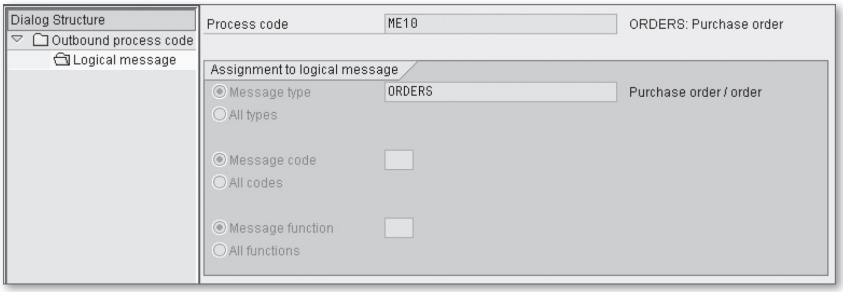
In *message control*, an EDI communication is usually assumed so that you work with partners and not with logical systems.

Outbound partner profile

The information on how an IDoc is sent to the receiver (e.g., via RFC or file) and whether an EDI subsystem is supposed to be used if necessary, is set in the *outbound partner profile* in Transaction WE20 both for the communication with partners and for the communication with logical systems.

Process code

Here, you also specify which IDoc type is supposed to be used. If you work with the message control, in the outbound partner profile under the Message Control tab, you specify which process code (and which underlying function module) will be used to populate the IDoc data. You can find the valid process codes for the respective output type in Transaction WE41 (Figure 2.18).



Process code: ME10 — ORDERS: Purchase order

Message type: ORDERS — Purchase order / order

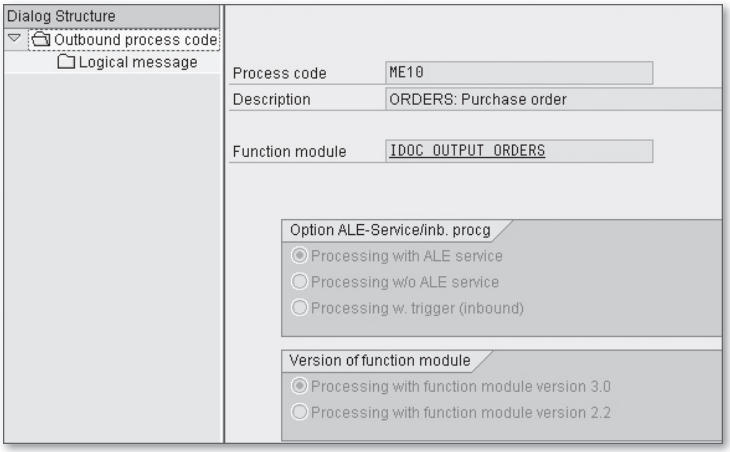
Message code:

Message function:

Figure 2.18 Assignment of the Process Code to the Message Type

Message codes and message functions

You can also specify the optional *message codes* and *message functions*, which you know from the partner profiles, to be able to use different process codes for updating the IDocs. Message codes and functions are freely selectable, and you don't need to adhere to naming rules. However, this also means that no input help is provided in Transaction WE20, so you must ensure the correct spelling of the names yourself. In the details of the sample process code for the `ORDERS` generation, which is shown in Figure 2.19, you can view the link to the associated function module.



Process code: ME10
Description: ORDERS: Purchase order
Function module: IDOC_OUTPUT_ORDERS

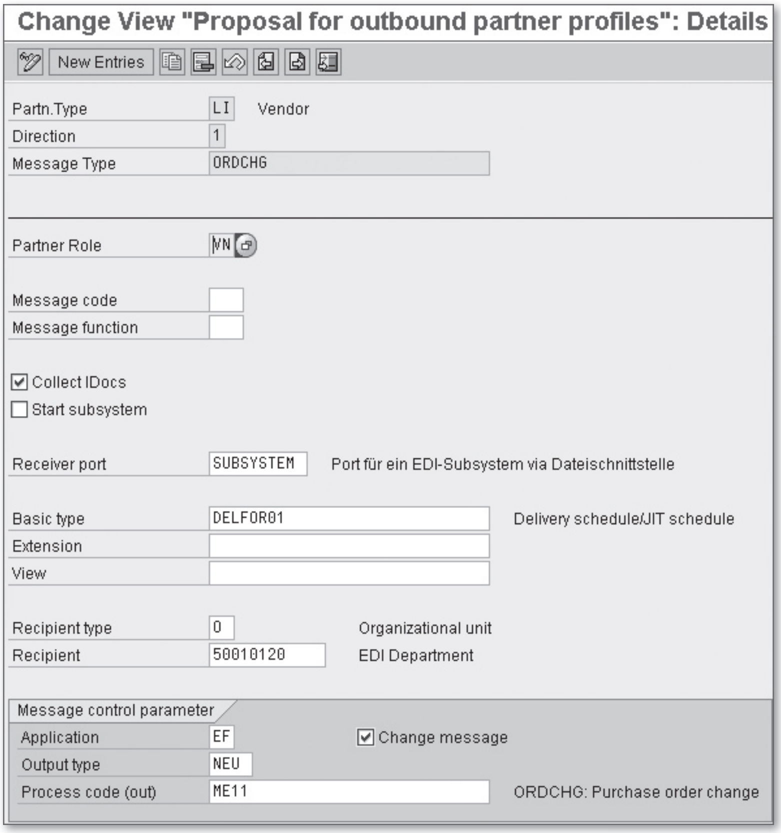
Option ALE-Service/inb. procg
[✓ Processing with ALE service]
Processing w/o ALE service
Processing w. trigger (inbound)

Version of function module
[✓ Processing with function module version 3.0]
Processing with function module version 2.2

Figure 2.19 Assignment of the Process Code to the Function Module

ALE services Under Option ALE-Service/Inb. Procg, you can select whether the ALE services are supposed to be used or not. The ALE services represent options of IDoc manipulation using filters and rules. Chapter 4, Section 4.1, Customizing, discusses the ALE services topic in more detail.

Default values Because you often require a lot of partner profiles — especially if you work with partners — you have the option to create templates to save some time. The partner profile from Transaction WE20 can be created from this template, so you don't need to create it manually. Transaction WE24 is the transaction for the template in the outbound processing (see Figure 2.20). Transaction WE27 is the corresponding transaction for the inbound processing.


Change View "Proposal for outbound partner profiles": Details
New Entries

Partn.Type	LI	Vendor
Direction	1	
Message Type	ORDCHG	
Partner Role	VN	
Message code		
Message function		

☑ Collect IDocs
☐ Start subsystem

Receiver port	SUBSYSTEM	Port für ein EDI-Subsystem via Dateischnittstelle
Basic type	DELFOR01	Delivery schedule/JIT schedule
Extension		
View		
Recipient type	O	Organizational unit
Recipient	50010120	EDI Department

Message control parameter

Application	EF	☑ Change message
Output type	NEU	
Process code (out)	ME11	ORDCHG: Purchase order change

Figure 2.20 Default Values for Outbound Partner Profiles

2.1.3 Special Functions

Warehouse management example

In some cases, a specific business process can be implemented completely locally on an SAP system or distributed across multiple SAP or non-SAP systems. IDocs are only generated when processes are distributed across multiple systems, and the generation can be activated via the Customizing functions of the respective application. Warehouse management is an example of this direct IDoc generation. The default setting of warehouse management assumes that your warehouse is managed by your SAP system. If this isn't the case, you can activate the connection of your warehouse system via ALE in Customizing. This connection causes a `WMTORD` IDoc to be generated directly when you create a warehouse transport request to notify the external warehouse of what is supposed to be transported. However, these special cases can't be described in general but instead must be named and set up in cooperation with the individual end-user. Because all transactions that are required for such a special case are module-specific, they are not discussed further here, but just be aware that such special cases exist.

IDoc – BAPI interface

Within the scope of ALE scenarios, there can also be cases in which sample postings are implemented synchronously via BAPI, and the actual postings are implemented asynchronously via IDoc. Then, the BAPI is created on the development side, and the appropriate IDoc is generated using Transaction BDBG. You can also use this transaction if SAP doesn't provide an IDoc for a BAPI and you still require it for a distribution scenario that isn't provided for by SAP. Again in this case, you must observe the naming rules for customer objects.

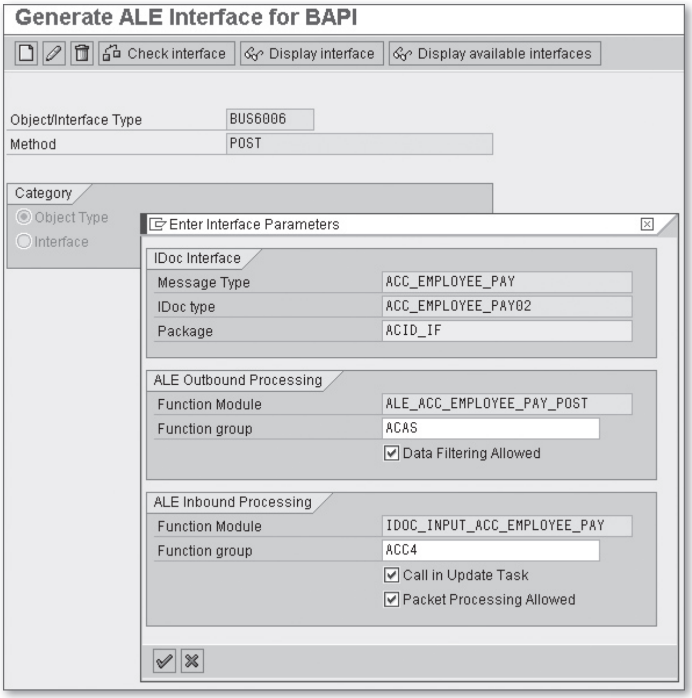
Figure 2.21 shows an IDoc generated by SAP in the SAP namespace. In the IDoc Interface tab, you can view the names for the message type and the IDoc type; in the ALE Outbound Processing tab, you can view the function group in which the IDoc modules are located as well as the name of the module that generates the IDoc; and in the ALE Inbound Processing tab, you can view the name of the module that extracts the IDoc in the receiving system and triggers the update.

BAPI processing

The process of generating an IDoc from a BAPI is as follows:

1. The sending system wants to call the BAPI and checks whether this is supposed to be carried out locally or remotely.
2. If the call is remote and is supposed to be carried out transactionally, the function module that is generated in Transaction BDBG is called in the sending system. This function module transfers the transfer parameters of the BAPI to the IDoc format.
3. After you've made the settings in the customer distribution model and in Transaction WE20, this generated IDoc is transferred to the receiving system.
4. In the receiving system, the `BAPI_IDOC_INPUT1` function module is called using the `BAPI` process code or `BAPI_IDOC_INPUTP` using the `BAPP` process code; this depends on whether one or more data records are received simultaneously. These function modules call the inbound function module that is generated in Transaction BDBG, which extracts

the IDoc and uses the transferred data to call the original BAPI that carries out the actual update.



Object/Interface Type	BUS6006
Method	POST

IDoc Interface

Message Type	ACC_EMPLOYEE_PAY
IDoc type	ACC_EMPLOYEE_PAY02
Package	ACID_IF

ALE Outbound Processing

Function Module	ALE_ACC_EMPLOYEE_PAY_POST
Function group	ACAS
	✓ Data Filtering Allowed

ALE Inbound Processing

Function Module	IDOC_INPUT_ACC_EMPLOYEE_PAY
Function group	ACC4
	✓ Call in Update Task
	✓ Packet Processing Allowed

Figure 2.21 IDoc Interface to a BAPI

Asynchronous BAPIs

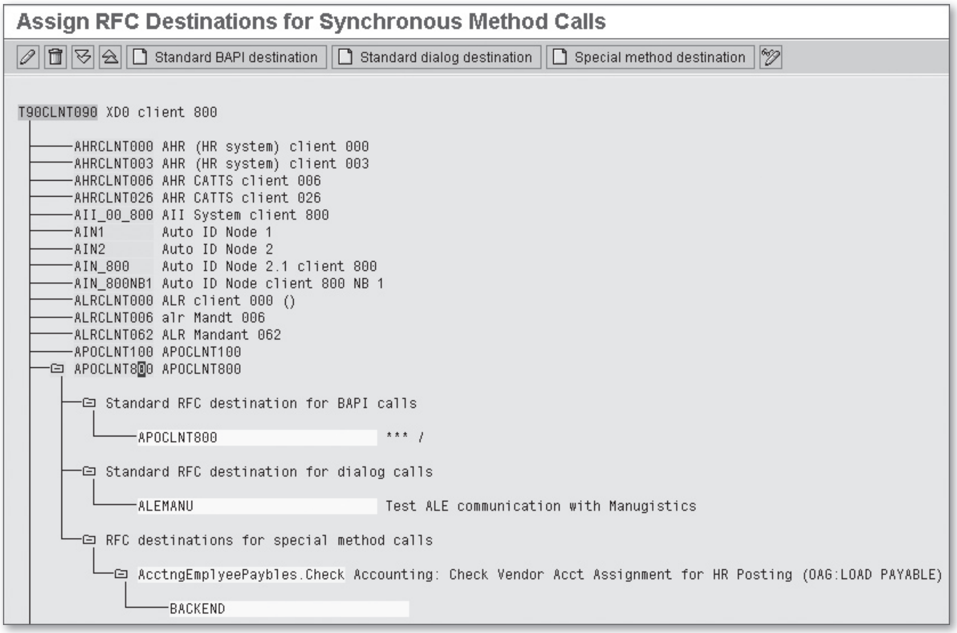
Because both cases represent an ALE scenario, you maintain the customer distribution model for BAPIs and IDocs. For the BAPIs, you enter the methods that must be processed both synchronously and asynchronously via IDocs. Additionally, you require partner profiles for the transactional case as usual. If you have these partner profiles generated from the distribution model, the system automatically knows for which BAPIs there are message types and thus for which it requires a partner profile.

Determining the target system for synchronous BAPIs

Use Transaction BD97 to maintain the destination for the synchronous BAPI call in a remote system. This can be done both generally for all method calls and only for special BAPIs and for dialog calls. You need the dialog calls if you want to work with the IDoc tracing in Transaction BD87. The distinction with regard to dialogs is made for security reasons.

Because a dialog user must be used in the RFC destination, this user should have only a few authorizations.

Figure 2.22 shows an example for each of the three cases.


Assign RFC Destinations for Synchronous Method Calls
Standard BAPI destination
Standard dialog destination
Special method destination

```
T90CLNT090 XD0 client 800
 ├──AHRCLNT000 AHR (HR system) client 000
 ├──AHRCLNT003 AHR (HR system) client 003
 ├──AHRCLNT006 AHR CATTS client 006
 ├──AHRCLNT026 AHR CATTS client 026
 ├──AII_00_800 AII System client 800
 ├──AIN1       Auto ID Node 1
 ├──AIN2       Auto ID Node 2
 ├──AIN_800    Auto ID Node 2.1 client 800
 ├──AIN_800NB1 Auto ID Node client 800 NB 1
 ├──ALRCLNT000 ALR client 000 ()
 ├──ALRCLNT006 alr Mandt 006
 ├──ALRCLNT062 ALR Mandant 062
 ├──APOCLNT100 APOCLNT100
 ├──APOCLNT800 APOCLNT800
 │    ├── Standard RFC destination for BAPI calls
 │    │    └──APOCLNT800                        *** /
 │    ├── Standard RFC destination for dialog calls
 │    │    └──ALEMANU                           Test ALE communication with Manugistics
 │    └── RFC destinations for special method calls
 │         └── AcctngEmplyeePaybles.Check Accounting: Check Vendor Acct Assignment for HR Posting (OAG:LOAD PAYABLE)
 │              └──BACKEND
```

Figure 2.22 Customizing for Synchronous BAPI Calls in ALE Scenarios

The standard destination for BAPI calls for the `APOCLNT800` logical system is `APOCLNT800`, the destination for the dialog calls is called `ALEMANU`, and the `BACKEND` destination is used for the `AcctngEmplyeePaybles.Check` method only.

2.2 Use of Logical Systems in the Message Control

"ALE_PROCESSING" subroutine

Transaction data may be exchanged within ALE scenarios. For example, this could be the scenario of central sales/decentralized shipping. Here, purchase orders, deliveries, and invoices are exchanged between plants of the same enterprise. For this case, in message control, you simply use the customer or vendor as the partner. Instead of "6" for the EDI processing, however, you enter "A" for the ALE processing as the transmission medium for the found message. As a result, the system no longer uses the `EDI_PROCESSING` subroutine and instead uses the `ALE_PROCESSING` subroutine.

Message control and ALE

You then maintain a customer distribution model as usual and use a logical system as the sender and a logical system as the receiver of the message. After the message control within the application, the transmission medium A reads the customer distribution model and replaces the partner found in the message control with the logical system found in the model. For this purpose, you need the assignment of output types to message types. They are available in the process codes in the outbound processing in Transaction WE41 and in the settings that you made for the message control in the outbound partner profile in Transaction WE20.

Uniqueness of the assignment

The data from Transaction WE20 is evaluated in the `ALE_PROCESSING` subroutine. Because the subsequent receiver isn't yet determined in this first step, the system searches using the "Logical System" partner type and the output type only. If more than one entry is found in Transaction WE20, for example, `NEU – ORDERS`, which would be the standard, and `NEU – ZSMORD` for a self-programmed message type, `ALE_PROCESSING` cancels with an error. You establish the required uniqueness by using your own output types for your own message types.

The search via the "Logical System" partner type and the partner type results in the benefit of a reduced number of partner profiles. Then you can just have a partner profile for the logical system instead of a partner profile for each vendor or customer.

2.3 Summary

In this chapter, we've taken a closer look at the creation of IDocs. You've learned which methods for creation exist and how they are related to the different needs of different processes or data types. The decision as to which one should be used is made by SAP.

Now let's take it a step further regarding our work with IDocs. The next chapter will teach you how to test the creation and the posting of IDocs.

Index