

# How to Send an IDoc from SAP ECC to the SAP MII IDoc Listener



## Applies to:

SAP MII 12.0 and SAP ECC. For more information, visit the [Manufacturing homepage](#).

## Summary

Sending IDocs from SAP to MII – often, there is a need to trigger downloading of information (e.g. Production Orders, Material Master, etc.) from SAP to an external system. This guide walks you through a step-by-step process of setting up the sending of IDocs to SAP MII 12.0.

**Authors:** Diana Hoppe and Michael Appleby

**Company:** SAP Labs

**Created on:** 04 December 2008

## Author Bio

Diana Hoppe holds a Bachelors Degree in Computer Science from West Chester University and is currently in the Computer Science Masters Program there. Over the past 4 years she has worked in MII Technical Support and is currently a member of the SAP MII Field Enablement Team under Jeremy Good.

Michael Appleby recently joined SAP (June, 2008). Prior to joining, he spent the previous 3 years developing MII applications for SAP customers in diverse fields including Oil & Gas Refining, Electronics Manufacturing, Steel Foundry and Products, Thermoplastics Production, and Pharmaceuticals. He has 10 years experience in IT and almost 20 years combined Manufacturing and Project management experience.

## Table of Contents

Introduction .....	3
The Step-By-Step Solution .....	3
Creating an RFC Destination on the SAP ECC Server .....	3
Registering an SAP MII IDoc Listener as an RFC Destination .....	3
Creating an IDoc Listener in SAP MII 12.0 .....	9
Set up a Processing Rule in MII .....	12
Testing the RFC Listener .....	13
Defining a Logical Port .....	14
Choosing a Partner .....	16
Creating a Partner Profile .....	17
Creating a Distribution Model for the Partner and the Message Type .....	21
Testing the IDoc send from SAP to MII .....	24
Check to See if IDocs were received in MII .....	25
Adding an Additional Message Type at a Later Date .....	26
Final Thoughts .....	27
Related Content .....	27
Copyright .....	28

## Introduction

In some cases where information needs to be “pushed” from SAP rather than “pulled”, it is necessary to configure the SAP system to send IDocs to the external system. The external system in this case needs to have a Listener, which is triggered when information is sent to it. The systems involved in this scenario are SAP ECC and SAP MII.

## The Step-By-Step Solution

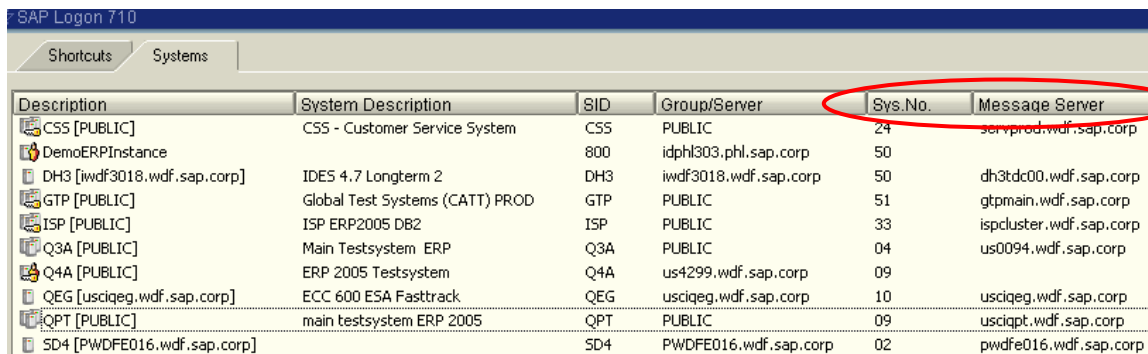
To enable your SAP ECC server to issue RFCs for the SAP MII IDoc Listener, you must define an RFC Destination on the ECC server. Each ECC server has a single RFC destination for an MII IDoc Listener that identifies where the ECC server sends all RFCs that invoke the MII IDoc Listener service.

## Creating an RFC Destination on the SAP ECC Server

### Registering an SAP MII IDoc Listener as an RFC Destination

Use the following procedure to configure the SAP MII IDoc Listener as a registered RFC Destination on the SAP ECC server. You must have the proper authorizations for SAP ECC to add an RFC Destination. If you do not have authorization, have your SAP Administrator perform the following steps.

- From the SAP Logon Pad, make a note of your SAP System number and Message Server Name



Description	System Description	SID	Group/Server	Sys.No.	Message Server
CS5 [PUBLIC]	CSS - Customer Service System	CS5	PUBLIC	24	servprod.wdf.sap.corp
DemoERPInstance		800	idphl303.phl.sap.corp	50	
DH3 [iwdf3018.wdf.sap.corp]	IDES 4.7 Longterm 2	DH3	iwdf3018.wdf.sap.corp	50	dh3tdc00.wdf.sap.corp
GTP [PUBLIC]	Global Test Systems (CATT) PROD	GTP	PUBLIC	51	gtptest.wdf.sap.corp
ISP [PUBLIC]	ISP ERP2005 DB2	ISP	PUBLIC	33	ispcluster.wdf.sap.corp
Q3A [PUBLIC]	Main Testsystem ERP	Q3A	PUBLIC	04	us0094.wdf.sap.corp
Q4A [PUBLIC]	ERP 2005 Testsystem	Q4A	us4299.wdf.sap.corp	09	
QEG [usciqeg.wdf.sap.corp]	ECC 600 ESA Fasttrack	QEG	usciqeg.wdf.sap.corp	10	usciqeg.wdf.sap.corp
QPT [PUBLIC]	main testsystem ERP 2005	QPT	PUBLIC	09	usciqpt.wdf.sap.corp
SD4 [PWDFE016.wdf.sap.corp]		SD4	PWDFE016.wdf.sap.corp	02	pwdfe016.wdf.sap.corp



My SAP System number is \_\_\_\_\_

My SAP Message Server Name is \_\_\_\_\_

- Go to the SAP ECC Logon screen. Note the Client number of the SAP System. Proceed with the Logon.



The Client Number of my SAP System is \_\_\_\_\_

- Choose *Tools* → *Administration* → *Administration* → *Network* → *RFC Destinations* (transaction SM59).

RFC Connections	Type	Comment
▶ R/2 Connections	2	
▶ ABAP Connections	3	
▶ HTTP Connections to External Server	G	
▶ HTTP Connections to ABAP System	H	
▶ Internal Connections	I	
▶ Logical Connections	L	
▶ CMC Connection	M	
▶ SNA/CPLC connections	S	
▶ TCP/IP connections	T	
▶ Connections via ABAP Driver	X	

- Choose *TCP/IP connections*.

- Choose *Create*.

The screenshot shows the SAP configuration interface for an RFC Destination named 'MII\_IDOC'. The 'Description' field is filled with 'MII IDoc Listener'. Under 'Activation Type', 'Start on Application Server' is selected. Under 'Start Type of External Program', 'Default Gateway Value' is selected. Under 'CPI-C Timeout', 'Default Gateway Value' is selected with a value of 20 seconds.

- In the *RFC Destination* field, type a meaningful name that identifies the SAP MII IDoc Listener. You must re-enter this name several times, so keep it **simple and memorable**.

**We recommend that you keep the name of the RFC Destination, ProgID, and MII IDoc Listener the same. For example, MII\_IDOC.**

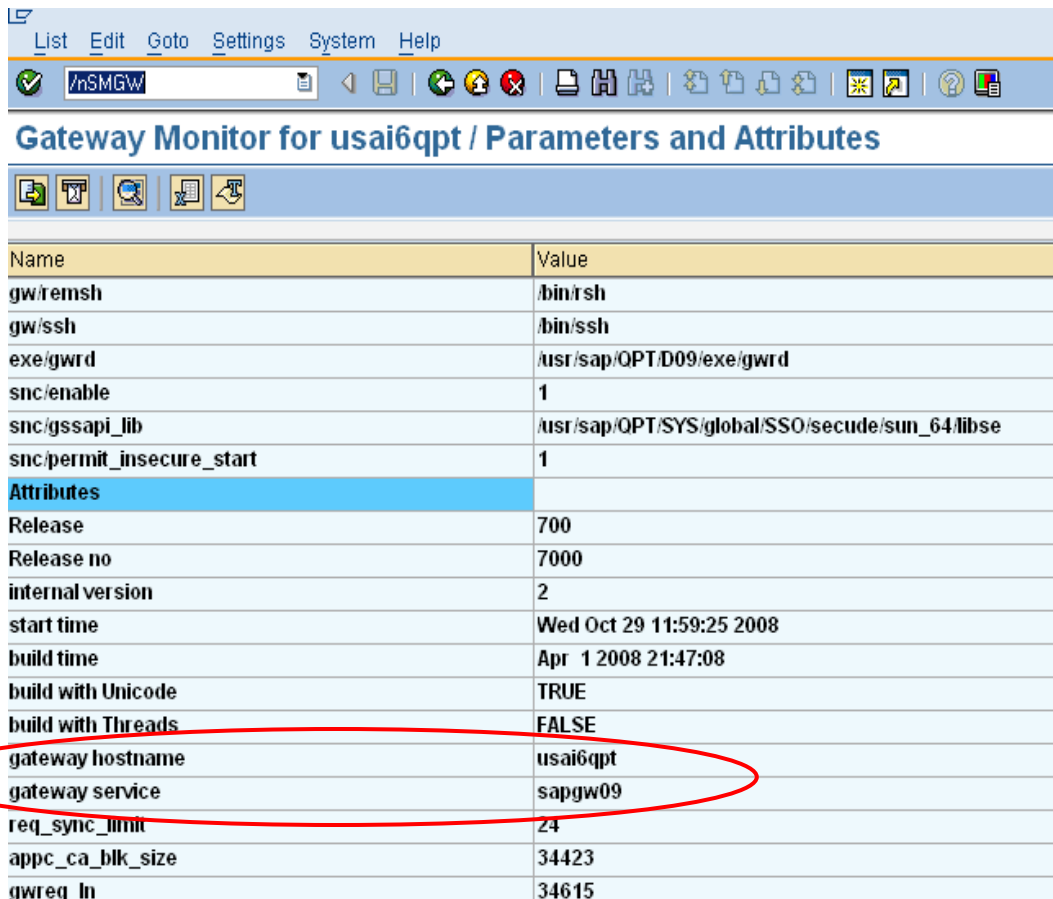
This field is case sensitive. We recommend that you pick a name that is all UPPERCASE characters.



The name of my RFC Destination is: \_\_\_\_\_

- Enter T in the *ConnectionType* field (destination type TCP/IP). T is the default *ConnectionType*.
- Enter MII\_IDoc Listener (or the meaningful name from above) in the *Description* section.
- Choose *Save* from the toolbar or select *Save* from the *Connection* menu.
- Select the *Registered Server Program* radio button.
- In the *Program ID* field, type the name of your RFC destination from above. Enter it exactly as you did in that step. This is also a case sensitive field.
- Choose *Save* from the toolbar or select *Save* from the *Connection* menu.
- Scroll down to *Gateway Options*.
- To fill in the required values in *Gateway Options*, you need to know the SAP Application Server Name and SAP system number. The following steps can help you:

Open transaction **SMGW**. Click on the menu item *Goto* → *Parameters* → *Display*. Look for the name *gateway hostname*; this is the name of the Application Server. Locate the name *gateway service*; this string consists of the prefix *sapgw* and the system number.



Name	Value
gw/remsh	/bin/rsh
gw/ssh	/bin/ssh
exe/gwrd	/usr/sap/OPT/D09/exe/gwrd
snc/enable	1
snc/gssapi_lib	/usr/sap/OPT/SYS/global/SSO/secude/sun_64.libse
snc/permit_insecure_start	1
<b>Attributes</b>	
Release	700
Release no	7000
internal version	2
start time	Wed Oct 29 11:59:25 2008
build time	Apr 1 2008 21:47:08
build with Unicode	TRUE
build with Threads	FALSE
gateway hostname	usa16qpt
gateway service	sapgw09
req_sync_limit	24
appc_ca_blk_size	34423
gwreq_in	34615



The name of my gateway host is \_\_\_\_\_

The name of my gateway service is \_\_\_\_\_

\*\* Alternately, to locate the system number, go to the SAP Logon Pad and view the properties of the server. You should find the grayed out system number there.

- Enter <sap system application server> in the *Gateway Host* field. Enter *sapgw*<sap system number> in the *Gateway Service* field.

The screenshot shows the 'Technical Settings' tab of the SAP Gateway Configuration Wizard. It contains three main sections:

- Start Type of External Program:** Radio buttons for 'Default Gateway Value' (selected), 'Remote Execution', 'Remote Shell', and 'Secure Shell'.
- CPI-C Timeout:** Radio buttons for 'Default Gateway Value' (selected) and 'Specify Timeout'. A text input field contains '60' and is labeled 'Defined Value in Seconds'.
- Gateway Options:** A table with two rows:
 

Gateway Host	usai3qpt	Delete
Gateway service	sapgw09	

- Go to the *MDMP & Unicode* tab and check the *Unicode* option. Ignore the Unicode test until the iDoc Listener is set up.

The screenshot shows the 'MDMP & Unicode' tab of the SAP Gateway Configuration Wizard. It contains two main sections:

- Communication Type with Target System:** Radio buttons for 'Non-Unicode' and 'Unicode' (selected). Below 'Non-Unicode' is an 'MDMP Settings' sub-section with 'Inactive' (selected) and 'Active' radio buttons, and a magnifying glass icon.
- Character Conversion:** Radio buttons for 'Default Setting' (selected), 'Short Dump After Conversion Error', and 'Ignore Conversion Errors'. Below this is a 'Display of Conversion Errors' sub-section with a table:
 

Error Indicator	#
	U+ 0023

- Choose *Save*.



## Creating an IDoc Listener in SAP MII 12.0

**Note:** This document illustrates a basic IDoc Listener setup; further configuration may be necessary, depending on your SAP system implementation. The properties listed within the Message Listener configuration screens are SAP specific, and are not MII properties.

- Logon to the SAP MII system.
- Click on the menu item *Message Services -> Message Listeners*
- Click on the *New* button.
- Give a name to the IDoc Listener (we recommend using the same name as the RFC Destination recorded earlier).
- Optionally, give a Description for the IDoc Listener
- Check the *Enabled* checkbox.
- In the *gwhost* field, enter the previously recorded Gateway Host.
- In the *gwserv* field, enter the previously recorded Gateway Service.
- In the *progid* field, enter the name of the previously recorded RFC Destination.

- Scroll down and set the value of the *unicode* field to 1.



The name of my IDoc Listener is: \_\_\_\_\_

**Message Listeners**

Name

SPO3\_LISTENER\_IDOC  
XMIIMESSELISTENER  
DAVISONIDOC  
XMII\_MA

Name \* MII\_IDOC  
Description  
Enabled   
Status Stopped

**Server Properties** Client Properties

Name	Value
gwzhost	usa13qpt
gwzserv	sapgw09
progid	MII_IDOC
trace	
params	
snc_myname	
snc_qop	

New Save Copy Delete Stop Server Summary Help

- Switch to the Client Properties tab and enter the following values:

*client* – Client of the SAP system previously recorded

*user* – User of the SAP system

*passwd* – Password of the SAP system

*lang* – Login language of the SAP system

*sysnr* – System number of the SAP system

*ashost* – The name of the Message Server previously recorded

- Save the Listener by clicking on the Save button.

- Start the server by clicking on the *Start Server* button.

**Message Listeners**

Name \* MIIDOC

Description

Enabled

Status Stopped

**Client Properties**

Name	Value
client	004
user	HOPPED1
alias_user	
passwd	*****
lang	en
sysnr	77
ashost	uscicpt.wdf.sap.corp

New Save Copy Delete Start Server Summary Help

## Set up a Processing Rule in MII

- In the MII menu, go to *Message Services* → *Processing Rule Editor*
- Click on the *New* button and enter a rule name.
- Select the name of your IDoc Listener from the *Server Name* dropdown list.
- Enter \* in the *Message Name* textbox.
- Click the *All* radio button as the *Message Type*.
- Click the *Category* radio button as the *Processing Type*.
- Click the *Add* button in the *Category*. Give the Category a *Name* and a *Description* in the popup entry dialog and click OK. Click the *Save* button.

**Message Processing Rules**

Name

test  
LineSpeedRule  
jctest  
XMII\_MA1

Rule Name \* MII\_IDOC

Rule Description MII\_IDOC Processing Rule

Server Name \* MII\_IDOC

Message Name \* \*

Message Type \*  All  RFC IDoc  Web Service

Processing Type \*  Transaction  Category

Category MII\_IDOC

Category Description MII\_IDOC Test

Transaction

Parameters

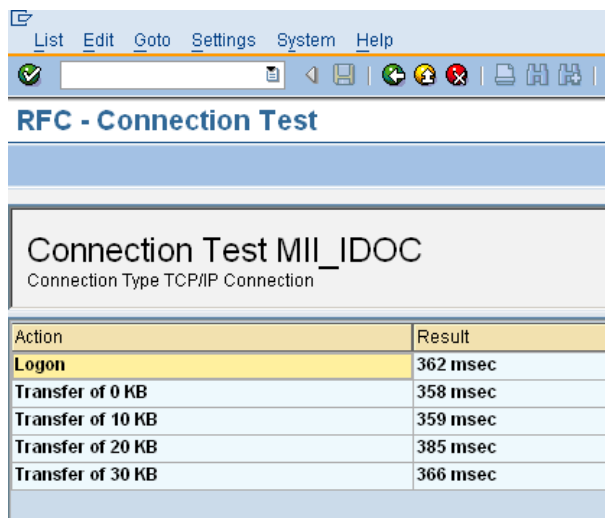
Name	Value

## Testing the RFC Listener

Use the following procedure to verify that the SAP ECC server can successfully issue an RFC to the SAP MII IDoc Listener.

In SAP ECC, complete the following steps:

- Go to Transaction SM59.
- Open the TCP/IP connections folder.
- Select the RFC Destination you previously created.
- Choose Connection Test. If the ECC server can successfully connect to the SAP MII IDoc Listener, it will display connection information as shown. If you receive an error message, review the steps for creating an RFC Destination and creating and IDoc Listener to verify your settings.



The screenshot shows the SAP SM59 interface for an RFC destination named 'MII\_IDOC'. The window title is 'RFC - Connection Test'. Below the title, it says 'Connection Test MII\_IDOC' and 'Connection Type TCP/IP Connection'. A table displays the results of the connection test:

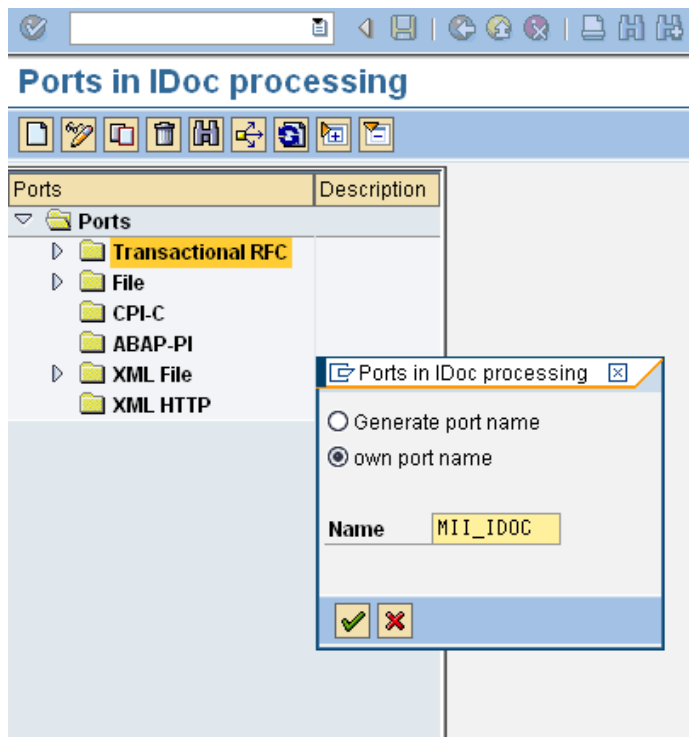
Action	Result
Logon	362 msec
Transfer of 0 KB	358 msec
Transfer of 10 KB	359 msec
Transfer of 20 KB	385 msec
Transfer of 30 KB	366 msec

## Defining a Logical Port

The lower level networking requires that a system port number be associated with the RFC Destination. The logical port identifies the port to which messages are sent. The logical port can only be used if an RFC Destination was created previously. You can define a unique logical port using transaction WE21. You can also use the following menu path:

*Tools* → *ALE* → *ALE Administration* → *Runtime Settings* → *Port Maintenance*

- Select *Transactional RFC* and choose *Port* → *Create* (or click on the *Create* icon)
- Choose your own descriptive port name (we recommend using the RFC Destination name previously recorded) or let the system generate one. Click on the green checkmark.



- Enter a short Description of your logical port, the IDoc Version you want to send via this port, and the RFC Destination previously recorded. Save this information.

### Creating a tRFC port

Ports	Description
Ports	
Transactional RFC	
File	
CPI-C	
ABAP-PI	
XML File	
XML HTTP	

Port	MII_IDOC
Description	MII IDOC Port
Version	<input type="radio"/> IDoc rec.types SAP Release 3.0/3.1 <input checked="" type="radio"/> IDoc record types SAP Release 4.x
RFC destination	MII_IDOC



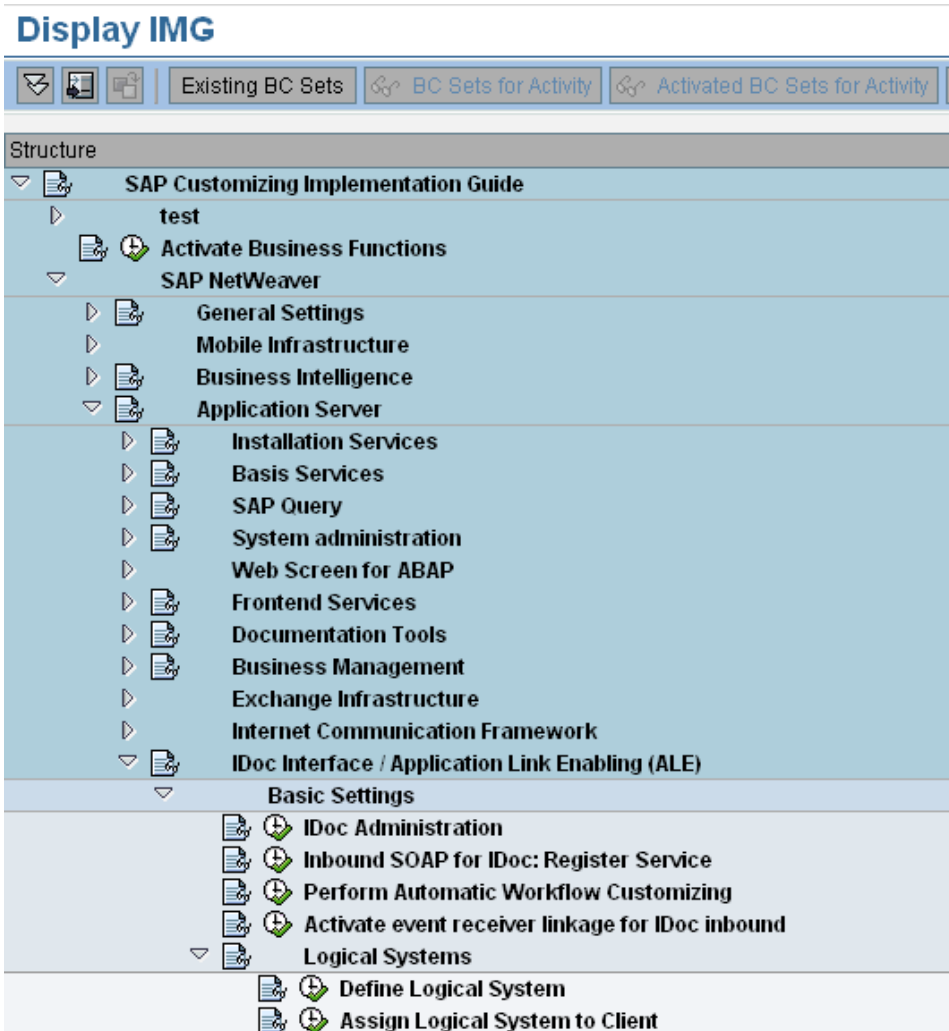
The name of my logical port is \_\_\_\_\_

## Choosing a Partner

A logical subsystem manages one or more RFC destinations. You can select a partner (logical system) using transaction SPRO\_ADMIN or use this menu path:

*Tools → Customizing → IMG → Project Administration*

- Choose SAP Reference IMG from the Goto menu or click the SAP Reference IMG button.
- Expand the following nodes: *SAP Netweaver → Application Server → IDoc Interface/Application Link Enabling (ALE) → Basic Settings → Logical Systems → Define Logical System* (execute button). You can also use transaction SALE and follow the path above starting at *IDoc Interface/Application Link Enabling (ALE)*.





- View the list and select a logical system that is not the same as the current system + client you are logged into. For example, if you are logged into QEG (003) then choose the logical system QEGCLNT004 and not QEGCLNT003.

**Note:** You will not have rights to create a logical system, you just need to view the list and make a note for use it in the next step.



The logical system is \_\_\_\_\_

## Creating a Partner Profile

Use transaction WE20 to create a partner profile or use this menu path:

*Tools* → *ALE* → *ALE Administration* → *Runtime Settings* → *Partner Profiles*

- Click on *Partner Type LS* (just highlight it, don't expand it). From the *Partners* menu click on *Create* (or just click on the *Create* icon).
- In the *Partner No.* field, type the logical system recorded earlier. In the *Partn. Type* field, type LS.
- On the Post processing: permitted agent field type the following values:

*Ty.* – O (Organization Unit, the letter O)

*Agent* – 50010120

- Save the Partner Profile.

### Partner profiles

**Partner** | Description

- Partner Profiles
  - Partner Type B | Bank
  - Partner Type BP | Business Pa
  - Partner Type GP | Business Pa
  - Partner Type KU | Customer
  - Partner Type LI | Vendor
  - Partner Type LS** | Logical syste
  - Partner Type US | User (first 10

**Partner No.** QPTCLNT008

**Partn.Type** LS      **Logical system**

Post processing: permitted agent      Classification

Ty. 0      User

**Agent** 50010120      **Armin Fischer**

**Lang.** EN      **English**

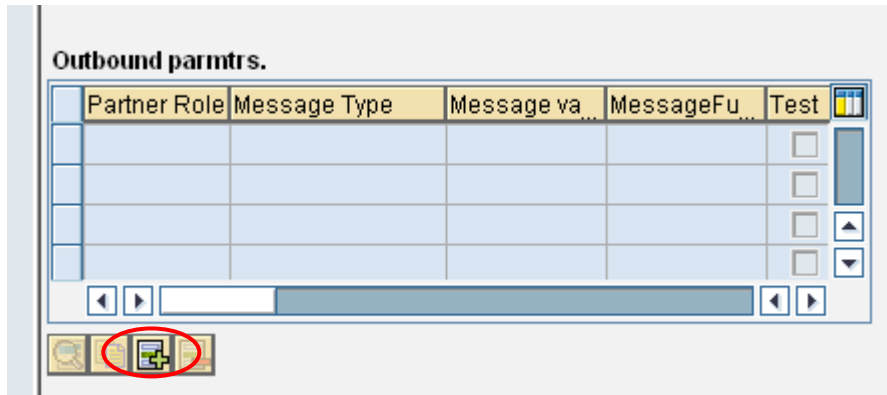
**Outbound parmtrs.**

Partner Role	Message Type	Message va...	MessageFu...	Test
				<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>

**Inbound parmtrs.**


Partner Role	Message Type	Message va...	MessageFu...	Test
				<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>

- In the Outbound parmtrs. table, click on the + sign to add a row. This will take you to the Outbound parameters screen.



- Enter the *Message Type* as SYNCH. On the Outbound Options tab enter the *Receiver port* as the name of the logical port you recorded earlier. Click on the *Transfer iDoc Immed.* radio button. Enter SYNCHRON in the *Basic type* field. Save.


## Partner profiles: Outbound parameters



Partner No.  **QPTCLNT008**


Partn.Type  **Logical system**

Partner Role

 Message Type

Message code

Message function   Test

Outbound Options | Message Control | Post Processing: Permitted Agent | Tele... 

Receiver port

Output Mode

Transfer IDoc Immed.  Start subsystem **Output Mode**

Collect IDocs  Do not start subsystem

IDoc Type

Basic type

Extension

View

Cancel Processing After Syntax Error

Seg. release in IDoc type  Segment Appl. Rel.

- Add one more Outbound parameter with the following values:

*Message Type:* LOIPRO

*Receiver port:* Same as before

*Basic type:* LOIPRO01

- Check the *Transfer IDoc Immed.* radio button. Save.

**Note:** There is a one-to-one correspondence between the Message Type or types you enter here and what you will enter in the Distribution Model step. The **Synch** type is an exception that does not get entered in the Distribution Model.



My Message Types are (excluding Synch):

---

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

After you define a Partner and a Partner Profile, you can create a distribution model that triggers the creation of a communication IDoc.

Go to transaction BD64 or use the following menu path: *Tools* → *Customizing* → *IMG* → *Execute Project* → *SAP Reference IMG* → *SAP NetWeaver* → *Application Server* → *IDoc Interface/Application Link Enabling (ALE)* → *Modelling and Implementing Business Processes* → *Maintain Distribution Model and Distribute Views*

- Change to Edit Mode
- Click *Create model view*.
- Enter a *Short text* string and a *Technical name* for your new model view.

**Change Distribution Model**

Distribution Model	Description/technical name
JB create model	JBM_MVIEW
MDM Demo Model	MDMDEMO
MITII - PLM Accessibility Test	PLM_ACC
MM-PUR BUS2012.CreateFromData	BUS2012
MM-SUS	MM.SUS
Mode	MII_IDOC_DH
PLM	MII_IDOC
OEBC	
OPT	20.11.2008
Optcl	31.12.9999
R/3 B	
RPM	
SAP2XMII	SAP2XMII
SMBONE	SMBONE
SMI	SMI
TESTMODEL	TESTMODEL
US Product Data Replication	US_PDR

- Save your Distribution Model
- Select your new model view in the Distribution Model tree and choose *Add message type*.

- In the dialog box, enter the Sender (for example, the logical system you are currently logged onto – QPTCLNT004). Enter the receiver (for example, the logical system previously recorded in “Choosing a Partner”). Enter the Message Type (for example, LOIPRO). Do an *Add message type* for each of the message types you recorded previously (with the exception of SYNCH).

## Change Distribution Model

Distribution Model	Description/ technical
HR Data ALA to OPT	ALA_OPT
HR to CRM 4.0 (Without Qualifications) Test EIC	NWTCLNT003
HR to SRM/CRM 4.0 (Without Qualifications)	Q5UCLNT705
HR2EREC	OPT2PES
ID3(HR) to DM.Ic(Recruitment)	ID3.DM.I
ID3(P	
ID3->	
IDES	
IDES	
JB cr	
MDM	
<b>MIIDOC</b>	
MITII	
MM-PUR BUS2012.CreateFromData	BUS2012
MM-SUS	MM-SUS
Material Distribution All	ZMATMAS
Model View for Testing - Bindu	BINDU_MV

Model view	MII_IDOC
Sender	QPTCLNT004
Receiver	QPTCLNT008
Message Type	LOIPRO



Reminder - the Receiver System is: \_\_\_\_\_

- Save the Distribution Model.
- Select your Distribution Model again and from the top menu bar, click on *Environment* → *Generate Partner Profile*.

- Select *Partner System* and enter the Receiver recorded in the previous step.

### Generate Partner Profile

**Model View** MII\_IDOC to    
 **Partner System** QPTCLNT008 to    
 Check Run

**Default Parameters for Partner Profile**

**Postprocessing: Authorized Users**

**Ty.** US **User**  
**ID** HOPPED1 **HOPPED1**

**Outb. Parameters**

**Version** 3 **IDoc record types from Version 4.0 onwards**  
**Pack. Size** 100 **IDocs**

**Output Mode**

Transfer IDoc immediately  
 Collect IDocs and transfer

**Inb. Parameters**

**Processing**

Trigger immediately  
 Trigger by background program

- Do a **Save**. You will be presented with the *Variant Attributes* screen – no entries are needed here, just hit the back button twice to get back to the *Change Distribution Model* screen. Double-check and make sure your model has an “expand” arrow next to it.

ServiceMaster	SRVMS
td distribution model	TD_MODEL
test by Bryant	ZTRAINING
test for idoc hua	ZOPTHUA
MI_IDOC_DH	MI_IDOC
OPTCLNT004	OPTCLNT004
OPTCLNT008	OPTCLNT008
LOIPRO	Production order

## Testing the IDoc send from SAP to MII

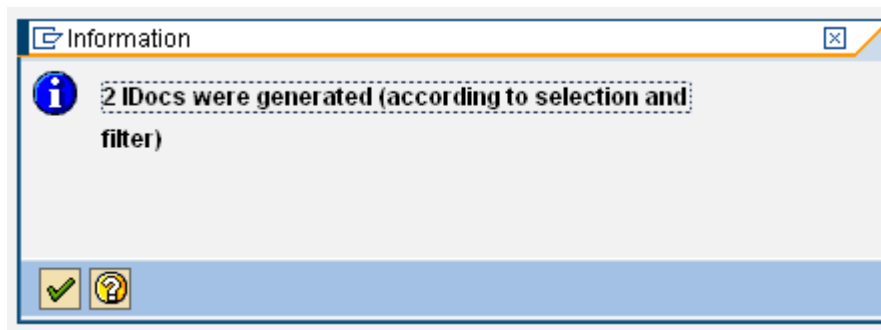
- Go to transaction *POIT* and enter the *Optimization system* as the Receiver System that you recorded in the *Distribution Model* step.
- Under *Selection parameters* enter *Entry type* as **A**.
- Enter *Start* and *Finish* dates that contain – and this is very important – a **few** production orders. Note: the date format (for example dd.MM.yyyy) can vary depending on how the system was set up.
- Further filter your production orders by scrolling down to the *Production order* section. Click on the *Production orders for* radio button. Enter a Plant number and a Material (you will need your own plant and material here).

Production order

No production orders  
 Production orders for global selection  
 Production orders for

Plant	1000	to		↓
Material	ED-BIKE	to		↓
MRP controller		to		↓
Work center		to		↓

- Click the Execute button. You should receive a popup that tells you how many IDocs were generated.





## Check to See if IDocs were received in MII

- Go to *Message Services* → *Message Monitor* in the MII menu.
- Leave all the default settings, just make sure the *From Time* and *To Date* time interval covers the time period in which you sent the IDocs from SAP.
- Click the *Search* button. You should see the received IDocs.

<input type="checkbox"/>	Status	Server Name	Message Type	Message Name	Message Category	Received Time	Processing Time
<input type="checkbox"/>		MIJ_IDOC	IDoc	LOIPRO01	MIJ_IDOC	2008-11-20 12:00:31.453	
<input type="checkbox"/>		MIJ_IDOC	IDoc	LOIPRO01	MIJ_IDOC	2008-11-20 12:00:32.093	
<input type="checkbox"/>		MIJ_IDOC	IDoc	LOIPRO01	MIJ_IDOC	2008-11-20 12:04:05.303	

## Adding an Additional Message Type at a Later Date

- Open transaction WE20 (Partner profiles).
- Expand the Partner Type LS folder in the left-hand pane.
- Locate your Logical system from the list.
- Click on the change icon.
- Click on the plus sign in the *Outbound parmtrs.* Table.
- Enter the Message Type, Receiver port, and the Basic type as you did in the *Creating a Partner Profile* section above. *Save.*
- Open transaction BD64 (Display Distribution Model).
- Click on the change icon.
- Select your model in the Distribution Model tree and click on the *Add message type* button.
- Enter the Sender, Receiver, and Message Type as you did in the *Creating a Distribution Model for the Partner and the Message Type* section above. *Save.*

## Final Thoughts

Our hope is that this document will make the process of sending an IDoc from SAP ECC to SAP MII easier.

- Troubleshooting: If you experience any problems, carefully review all steps. We cannot guarantee the information in this document will work in all situations. It may be necessary to defer to the iDoc technical experts.

## Related Content

For further information, please go to <http://help.sap.com> and review SAP documentation.

Also check out the SAP Community Network - <https://www.sdn.sap.com/irj/sdn> for articles, Wikis, and Forums.

## Copyright

© 2008 SAP AG. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP AG. The information contained herein may be changed without prior notice.

Some software products marketed by SAP AG and its distributors contain proprietary software components of other software vendors.

Microsoft, Windows, Outlook, and PowerPoint are registered trademarks of Microsoft Corporation.

IBM, DB2, DB2 Universal Database, OS/2, Parallel Sysplex, MVS/ESA, AIX, S/390, AS/400, OS/390, OS/400, iSeries, pSeries, xSeries, zSeries, System i, System i5, System p, System p5, System x, System z, System z9, z/OS, AFP, Intelligent Miner, WebSphere, Netfinity, Tivoli, Informix, i5/OS, POWER, POWER5, POWER5+, OpenPower and PowerPC are trademarks or registered trademarks of IBM Corporation.

Adobe, the Adobe logo, Acrobat, PostScript, and Reader are either trademarks or registered trademarks of Adobe Systems Incorporated in the United States and/or other countries.

Oracle is a registered trademark of Oracle Corporation.

UNIX, X/Open, OSF/1, and Motif are registered trademarks of the Open Group.

Citrix, ICA, Program Neighborhood, MetaFrame, WinFrame, VideoFrame, and MultiWin are trademarks or registered trademarks of Citrix Systems, Inc.

HTML, XML, XHTML and W3C are trademarks or registered trademarks of W3C®, World Wide Web Consortium, Massachusetts Institute of Technology.

Java is a registered trademark of Sun Microsystems, Inc.

JavaScript is a registered trademark of Sun Microsystems, Inc., used under license for technology invented and implemented by Netscape.

MaxDB is a trademark of MySQL AB, Sweden.

SAP, R/3, mySAP, mySAP.com, xApps, xApp, SAP NetWeaver, and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP AG in Germany and in several other countries all over the world. All other product and service names mentioned are the trademarks of their respective companies. Data contained in this document serves informational purposes only. National product specifications may vary.

These materials are subject to change without notice. These materials are provided by SAP AG and its affiliated companies ("SAP Group") for informational purposes only, without representation or warranty of any kind, and SAP Group shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP Group products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.

These materials are provided "as is" without a warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement.

SAP shall not be liable for damages of any kind including without limitation direct, special, indirect, or consequential damages that may result from the use of these materials.

SAP does not warrant the accuracy or completeness of the information, text, graphics, links or other items contained within these materials. SAP has no control over the information that you may access through the use of hot links contained in these materials and does not endorse your use of third party web pages nor provide any warranty whatsoever relating to third party web pages.

Any software coding and/or code lines/strings ("Code") included in this documentation are only examples and are not intended to be used in a productive system environment. The Code is only intended better explain and visualize the syntax and phrasing rules of certain coding. SAP does not warrant the correctness and completeness of the Code given herein, and SAP shall not be liable for errors or damages caused by the usage of the Code, except if such damages were caused by SAP intentionally or grossly negligent.