

USER GUIDE | PUBLIC
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User Guide for Process and Data-Exchange Framework for Utilities

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1 Process and Data-Exchange Framework for Utilities: User Guide

Solution	Process and data-exchange framework for Utilities
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Based On	SAP Utilities
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In the utilities industry, it's common for business processes to span both multiple systems within an organization and multiple companies, that is, other market participants. As an example, let's say that a residential customer decides to change their energy supplier. The agent at the new supplier enters the information into the SAP system and runs a change of supplier (CoS) transaction to initiate the process. This creates various communications across multiple systems within the new company. It also initiates communications with an intermediary energy distribution provider and with the company the customer is leaving to ensure that the change happens smoothly.

This entire process (and others like it) and the formats for data-exchange are defined by legal authorities and are binding for all market participants. So that the market participants can comply with all of these requirements, this solution provides a generic framework to manage the intercompany data-exchange processes as required by the deregulated energy market to ensure the reliable supply of energy to customers with the supported corresponding market communications.

The framework allows you to do the following:

- Easily create or change process definitions, formats, and deadlines
- Handle the inbound and outbound market messages
- Execute and monitor processes
- Handle exceptions

For more information about SAP Utilities, see http://help.sap.com/utilities.

2 Introduction

This document provides all of the information you need to navigate through and optimize the performance of the "process and data-exchange framework for Utilities" solution. We recommend that you refer to it as necessary during the hands-on operation of the "process and data-exchange framework for Utilities" solution.

You should be familiar with the terminology and functions associated with SAP Utilities and its functional area "intercompany data exchange" (IDE). For more information, see http://help.sap.com/utilities.

2.1 Glossary

The following table lists some of the most common terms used within the solution.

Term	Definition
Business Configuration Set (BC Set)	A snapshot of Customizing settings which is attributable and reusable. The BC Set transports Customizing settings into another system, comparing them with the existing Customizing tables, and imports them into the IMG activities (BC Set activation).
Business Partner (BP)	A natural or legal person or a group of natural or legal persons, not part of your own organization but with whom a business interest exists. In this Configuration Guide, the business partner is a customer.
Business Process Exception Management (BPEM)	Business Process Exception Management (BPEM) is used to analyze and monitor mass activities and online transactions. The BPEM process monitoring allows you to identify successful and incorrect processes at a glance. Problem messages that occur during processes are added to a clarification work list, using BPEM, and are distributed to the employees responsible.
Change of Supplier (CoS)	A registration, which has been confirmed by the relevant meter point administrator, in relation to a new supplier undertaking responsibility for that metering point.

Term	Definition
Customizing	Overall implementation procedure to set up one or more SAP systems at a customer site. The procedure aims to: • Adjust the company-neutral and industry-specific delivered functions to your company's business requirements • Enhance SAP functions in the company • Implement SAP functions in your company quickly, safely, and cost effectively
Distribution System Operator (DSO)	A company that runs, maintains, and extends distribution grids. In the system, the distributor is modeled as a service provider to which a service type belonging to the service category 'distribution' is allocated.
Intercompany Data Exchange (IDE)	A key functional area of SAP for Utilities that supports cross-company exchange of settlement data based on international standards such as EDI, XML, and Microsoft Excel. Intercompany data exchange manages data transfer between retailers, distributors, and independent service operators with special regard to the requirements in deregulated energy markets.
Intermediate Document (IDoc)	Standard SAP format for electronic data interchange between systems. Different message types (for example, delivery confirmations, or purchase orders) normally represent the different specific formats, known as IDoc types. Multiple message types with related content can be assigned to one IDoc type.
Master Data	The information that remains the same over a long period of time in the system. Master data contains information that is needed often and in the same form. Examples are information on business partners and points of delivery.

Term	Definition
Point of Delivery (PoD)	Point to which a utility service is supplied, or for which a utility service can be determined. A point of delivery has an external number (point of delivery ID). This point of delivery ID is used for communication with external systems. There are two types of communication: • Technical communication This refers, for example, to communication with a remote meter reading system. This type of communication is used in SAP IS-U/EDM to import profile values. • Communication in a deregulated energy market This refers to communication between different market partners in a deregulated energy market. This communication can, for example, be the exchange of consumption information between a distributor and a supplier. When defining a point of delivery, you can distinguish between the following roles: • Technical point of delivery You indicate that a point of delivery is a technical point of delivery in the following cases: You require the point of delivery for technical communication with systems that do not operate with standard point of delivery ID used on the market. You require the point of delivery for technical communication with systems, whose measurement systems do not meet market requirements. You can allocate a technical point of delivery to logical registers or installations. • Deregulation point of delivery You indicate that a point of delivery is a deregulation point of delivery if you require it for communication in a deregulated energy market. You can allocate a deregulation point of delivery to installations.
process and data-exchange framework for utilities	A solution that can be used for business processes which cross multiple systems within an organization. It can also be used for business processes across companies for other market participants.

Term	Definition
Process Document (PDoc)	The process document controls and documents all the process steps of a process such as the change of supplier process. It is the central monitoring object of the "process and data-exchange framework for utilities" solution. It offers additional information such as on related processes, activities, a log, as well as on technical and business exceptions. It allows the user to access messages involved in a process. Technically, it is based on the switch document of SAP Utilities.
SAP NetWeaver Process Integration (SAP NetWeaver PI)	SAP NetWeaver Process Integration is an open integration and application platform that provides tools that enable you to create a service-oriented architecture for business applications (enterprise SOA).
Service Provider	A company that offers one or more of the following services (service types): energy generation, energy sales, energy supply, energy transmission, energy distribution, meter installation and maintenance, meter reading.

2.2 Prerequisites

Use

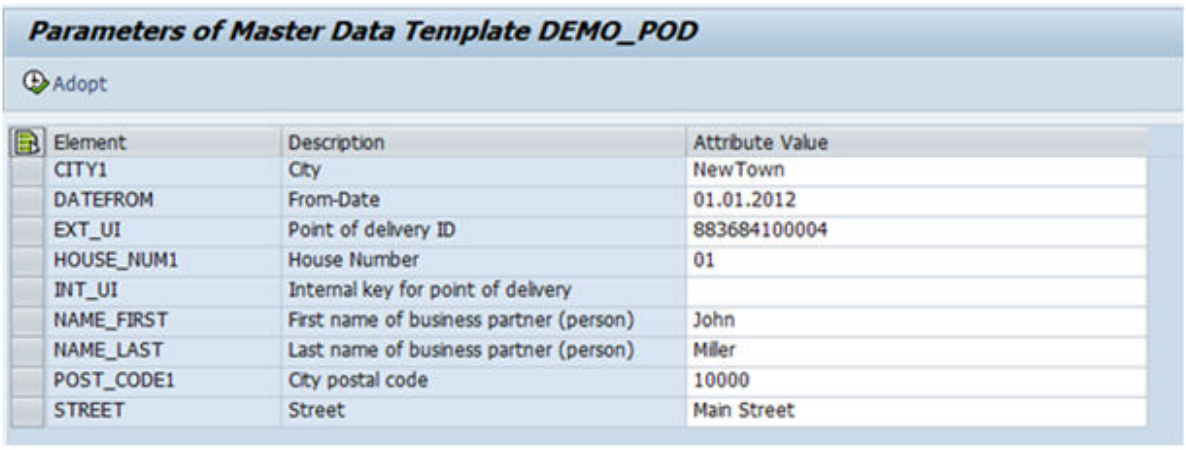
You must ensure that the following prerequisites have been met before running the "process and data-exchange framework for Utilities" solution:

- You have activated the BC Set(s) as described in the Configuration Guide
- You have configured the necessary Customizing settings as described in the Configuration Guide for the "process and data-exchange framework for Utilities" solution:
- You have configured the standard Customizing settings for SAP Utilities.
- You have configured the standard settings for Intercompany Data Exchange in Customizing for *SAP Utilities* under *Intercompany Data Exchange*.
- You have configured the settings for the "process and data-exchange framework for Utilities" solution in Customizing for *SAP Utilities* under *Intercompany Data Exchange* > *Process and Data-Exchange Framework for Utilities*.
- You have used transaction `/IDXPF/MAIN` to access the specific area menu for those elements of Customizing that require master data to be created before Customizing can be carried out.
- You have created service providers and their data-exchange processes.
  You must create at least two service providers (one as distribution system operator (DSO) and another as a supplier.
- You have created master data in transaction `EPRODCUST`.

Example

To show how to create the point of delivery and business partner, you can refer to the `DEMO_POD` master data template shown below.

> **i** Note
>
> This template is provided here only as an example. It is not available in the system.



Parameters of Master Data Template DEMO_POD

Adopt

Element	Description	Attribute Value
CITY1	City	NewTown
DATEFROM	From-Date	01.01.2012
EXT_UI	Point of delivery ID	883684100004
HOUSE_NUM1	House Number	01
INT_UI	Internal key for point of delivery	
NAME_FIRST	First name of business partner (person)	John
NAME_LAST	Last name of business partner (person)	Miller
POST_CODE1	City postal code	10000
STREET	Street	Main Street

Template to Show How to Create Master Data

3 Main Menu

To access the main *SAP Easy Access* menu for the “process and data-exchange framework for Utilities” solution, call transaction `/IDXPF/MAIN`.

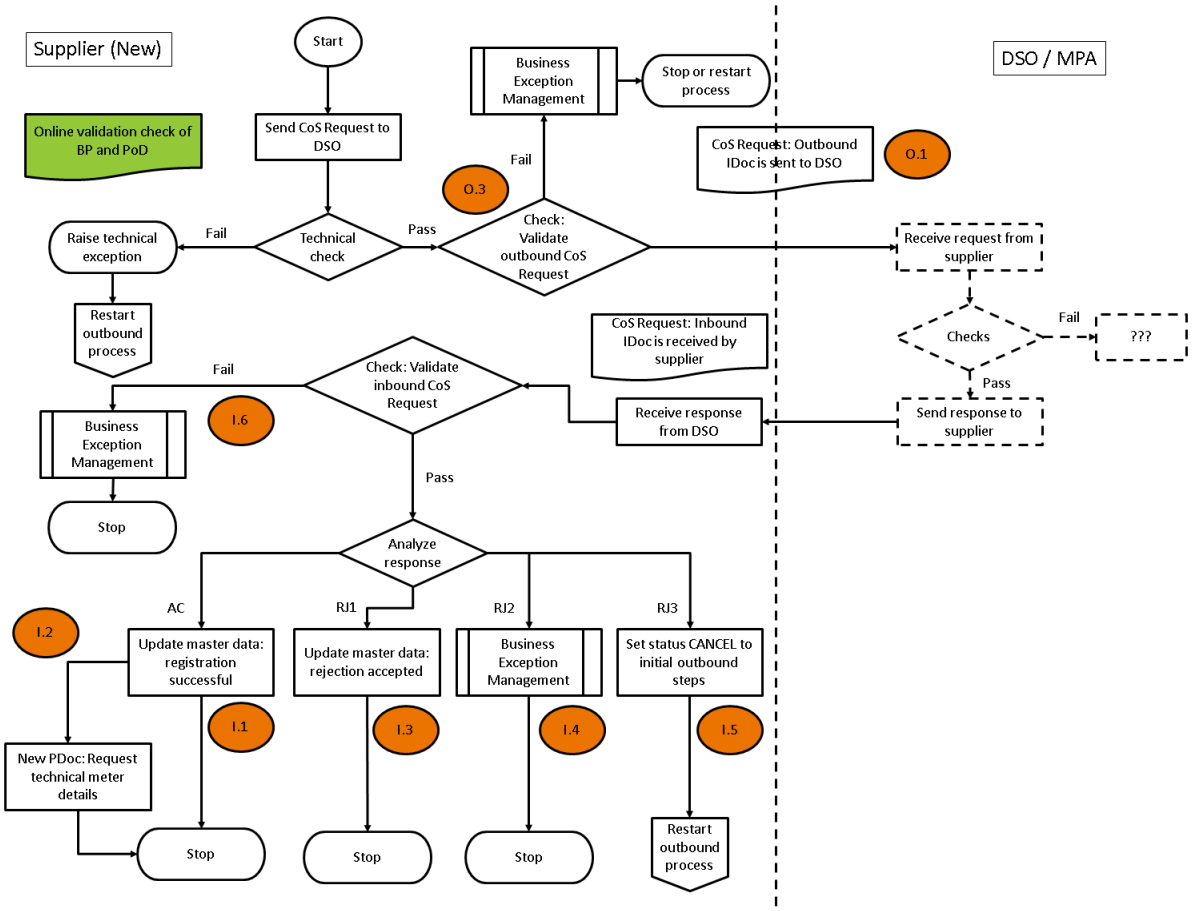
This menu contains the following transactions:

- `/IDXPF/DISP_CUST` – *General Customizing*
  Use this transaction to link directly to the Customizing for Process and Data-Exchange Framework for Utilities.
- `/IDXPF/PDOCMON01` – *Monitoring of Process Documents*
  Use this transaction for monitoring outbound and inbound process flows.
- `/IDXPF/LOGMON01` – *Monitoring of Logs*
  Use this transaction for monitoring the main messages that are logged.
- `/IDXPF/MASS` – *Mass Activity*
  Use this transaction to trigger outbound flows. If the SAP NetWeaver Process Integration connection is offline, use this transaction to retrigger flows.
- `/IDXPF/REJOUTAGT` – *Response code def. for Service Prov*.
  Use this transaction to define a data-exchange process for a response code and outcome code.

4 Change of Supplier for a Metered Customer

In this document, the Change of Supplier (CoS) process is used as an example for the "process and data-exchange framework for utilities" solution. This example process shows the functions that are available when using the solution's infrastructure.

The following graphic shows the CoS process step-by-step. The process flows are described in the following chapters:



Example Process: Change of Supplier

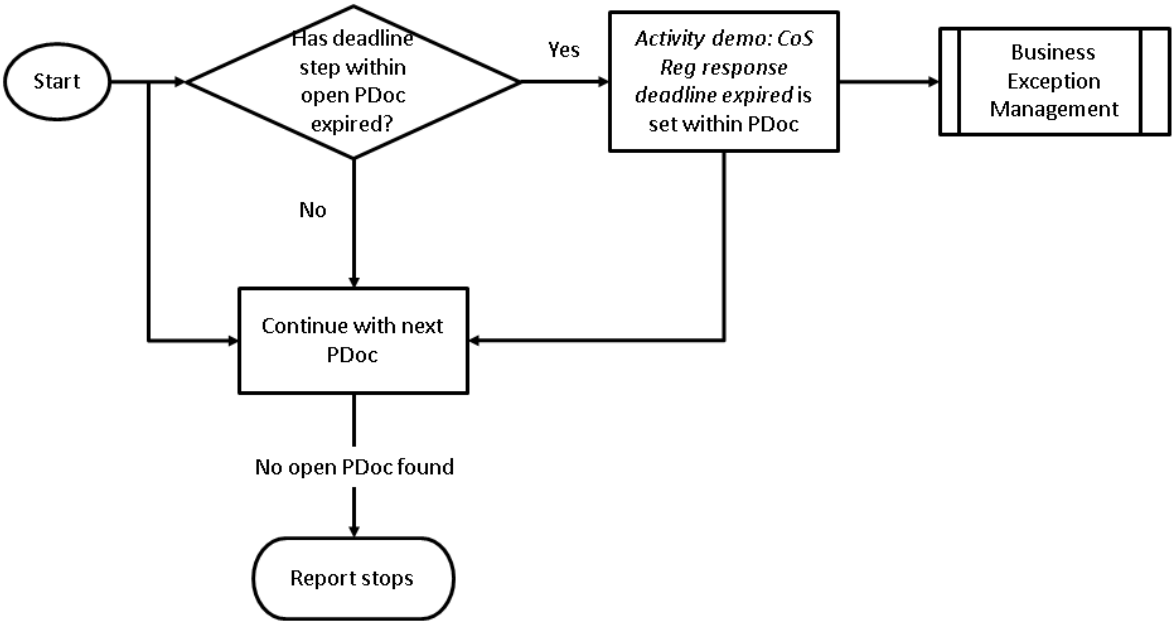
The new supplier sends a registration request to the new distribution system operator (DSO). These process flow steps in the outbound flow are represented in the graphic by the circles labeled as "O". For example, the process "Send CoS Request" is labeled as "O.1".

The request is answered by a response that is sent by the DSO to the supplier. These process flow steps in the inbound flow are represented in the graphic by the circles labeled "I". For example, the process "Request acceptance is sent by the DSO" is labeled as "I.1".

The response can be one of the following:

- Response code AC: An acceptance is received.
- Response code RJ1: The rejection is accepted by the supplier.
- Response code RJ2: The rejection is not accepted by the supplier. An exception is raised in Business Process Exception Management (BPEM) by the supplier. The process is stopped.
- Response code RJ3: The rejection is not accepted by the supplier. The process restarts. The old process steps are set to *Obsolete / Reversed* and the outbound process restarts once.

To check for deadlines, mass report `/IDXPF/RP_API_TRIGG_PROC_MASS` can be triggered via batch processing or online. If the deadline of a process step has expired, a BPEM exception is triggered and can be accessed from the process document. Otherwise, the process continues.



Report /IDXPF/RP_API_TRIGG_PROC_MASS – Checks for Deadline Expiry

The following chapters explain the outbound and inbound flow in the example CoS process in more detail.

The process steps for the example CoS Scenario are delivered in the BC Set. For more information, see the Configuration Guide for the “process and data-exchange framework for utilities” solution.

4.1 Outbound Flow: Send Registration Request to DSO

The following list is an overview of the outbound process flows:

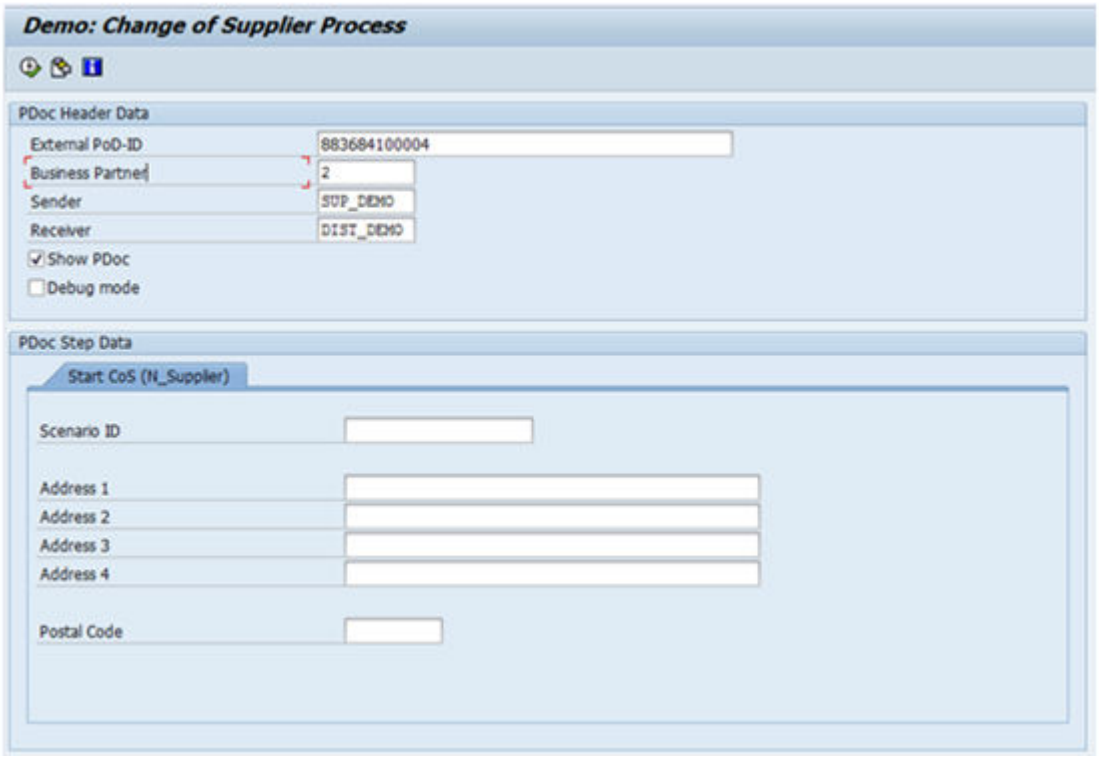
- Process flow O.1: Sending CoS registration request
- Process flow O.2: Expired deadline within deadline step 106
- Process flow O.3: Validation check fails

4.1.1 Process Flow O.1: Sending CoS Registration Request

Use

A supplier sends a CoS registration request to a distribution system operator (DSO) and the process is waiting for a response from the DSO (an open deadline is created). This process step simulates a successful outbound flow to the DSO.

Use transaction `/IDXPF/COS_DEMO` to send a registration request to the DSO:



Start CoS Process by Triggering Outbound Process

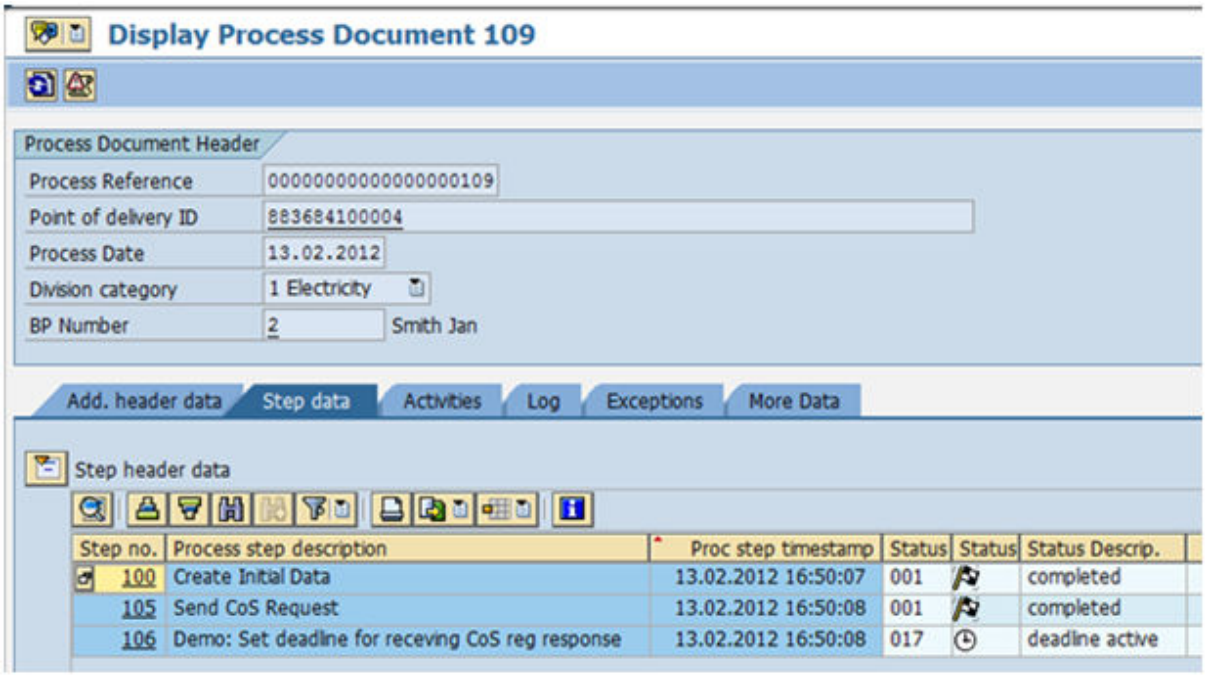
Procedure

1. Enter the ID of the PoD that was created as part of the prerequisites in **Chapter 1.1**.

2. Enter a valid business partner and the service providers for sender and receiver.
3. **Optional:** Enter the information on the *Start Cos (N_Supplier)* tab.
4. Choose *Execute*.

Result

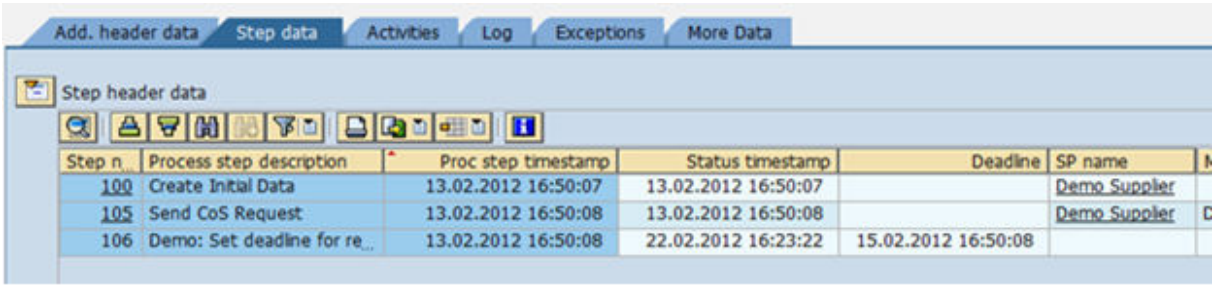
A process document (PDoc) is created. Because you have set the *Show PDoc* checkbox in the transaction above, the PDoc is now shown on your screen. To access a PDoc later, use transaction `/IDXPF/PDOCMON01`. Alternatively, you can enter the IDoc number on the selection screen of transaction `WE02` to get to the PDoc created (or updated).



Process Document for Outbound Process Flow O.1

Example

This PDoc displays three process steps that show a successful outbound process flow O.1. The last step (process step 106) is a deadline step. This means that the inbound process must be processed within this deadline.



Deadline for Step 106

4.1.2 Process Flow O.2: Expired Deadline in Deadline Step 106

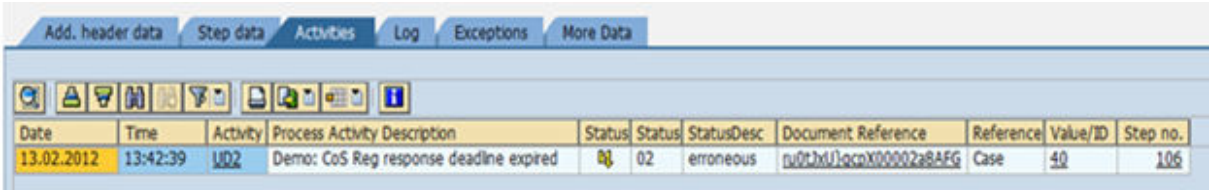
An expired deadline from process flow O.1 creates a business exception.

You can set the deadline to 1 minute. To do this, change the deadline for period type `DEMO_DDLN1`. You do this in Customizing for *Process and Data-Exchange Framework for Utilities* under *Process Configuration* > *Define Period Type for Hour/Minute/Second*.

After the expiration of the deadline, run report `/IDXPF/RP_API_TRIGG_PROC_MASS`. This report checks open deadlines and creates BPEM exceptions in the case of deadlines having expired.

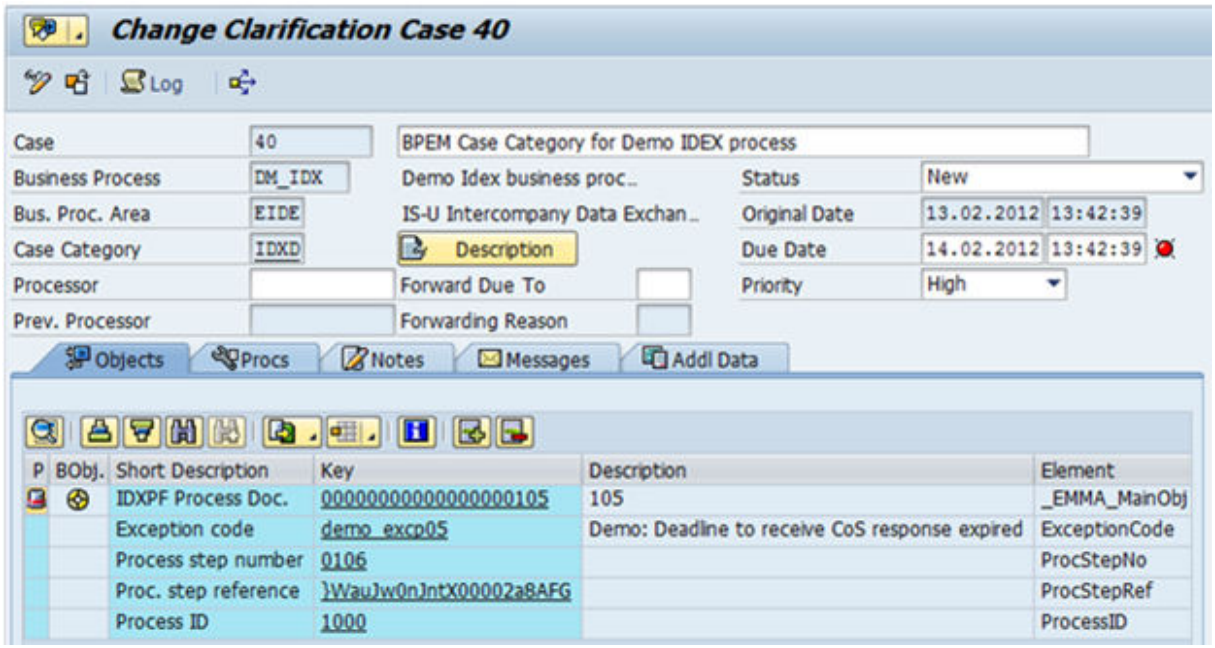
To configure the BPEM, see the Configuration Guide for “process and data-exchange framework for utilities”.

Check the PDoc again – a BPEM exception was created:



Expiration of Deadline in Deadline Step 106

The “process and data-exchange framework for utilities” solution allows you to access the BPEM case for further processing from the process document:



BPEM Case Category for Demo IDEX Process

4.1.3 Process Flow O.3: Validation Check Fails

Use

A supplier sends a registration request to the DSO and the validation check fails.

Possible reasons for which a validation check can fail in the example process are as follows:

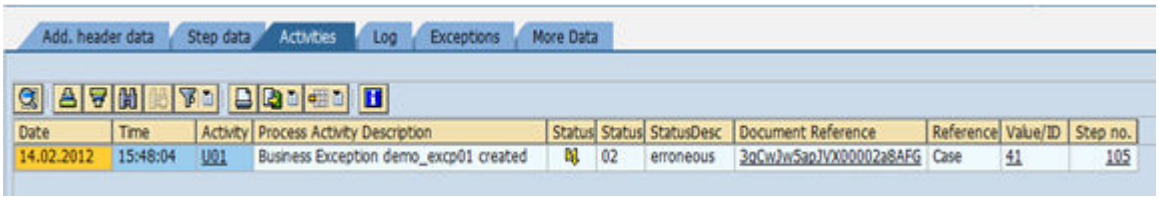
- A duplicate CoS registration exists
- The meter point is already supplied
- Mandatory data is not completed in an incoming IDoc

In our example, let's consider the possibility that a duplicate CoS registration exists.

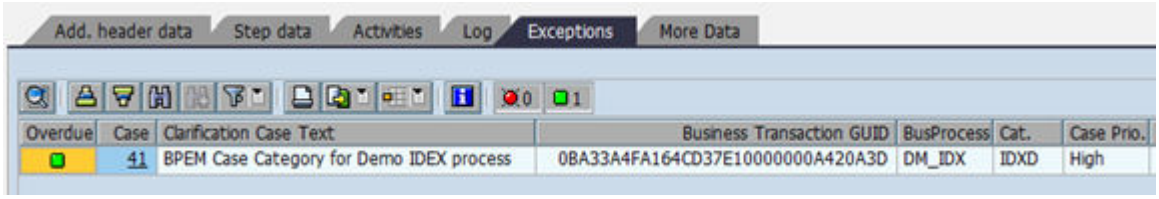
Procedure

1. Recreate the master data.
2. Use transaction `/IDXPF/COS_DEMO` to send the outbound IDoc to the DSO and check the resulting process document.
3. Use transaction `/IDXPF/COS_DEMO` to resend the same outbound IDoc and check the result in the PDoc.

The following error is displayed:



Activity U01 Is Created



Exception Is Created for Category IDXD

4.2 Inbound Flow: Receipt Response from DSO

Use

The following list is an overview of the inbound process flows:

- Process flow I.1: Acceptance received – All checks are successful
- Process flow I.2: Process for MTD checks is also started
- Process flow I.3: Registration rejection by the DSO is sent (response code = RJ1)
- Process flow I.4: Rejection has not been accepted by supplier (response code = RJ2)
- Process flow I.5: Rejection has not been accepted by supplier – All checks are successful and process Is repeated (response code = RJ3)
- Process flow I.6: Validation check fails

Procedure

To create the inbound flow, use IDoc basic type `/IDXPF/COS_RES_DEMO`.

1. Call transaction **`WE19`** (test tool for IDoc processing) to fill the segments as follows:

   Segment /IDXPF/SG_HEADER_DEMO

Field Name	Value	Optional
TRANSACTIONID	**<Any value>**	
CREATIONDATE	**<Any value>**	X

Field Name	Value	Optional
SENDERID	**DEM**	
SENDERPARTY	**MPA_D**	
SENDERROLE	**1001** (Service Type for DSO)	
tRECIPIENTID	**DEM**	
RECIPIENTPARTY	**SUP**	
RECIPIENTROLE	**1002** (Service Type for Supplier)	
SCENARIOID	**<Any value>**	X

Segment /IDXPF/SG_EXTPOD_HDR_DEMO

Field Name	Value	Optional
EXTPODID	**<PoD>**	
EFF_FROM_DATE	**<Any date value>**	X
EFF_TO_DATE	**<Any date value>**	X

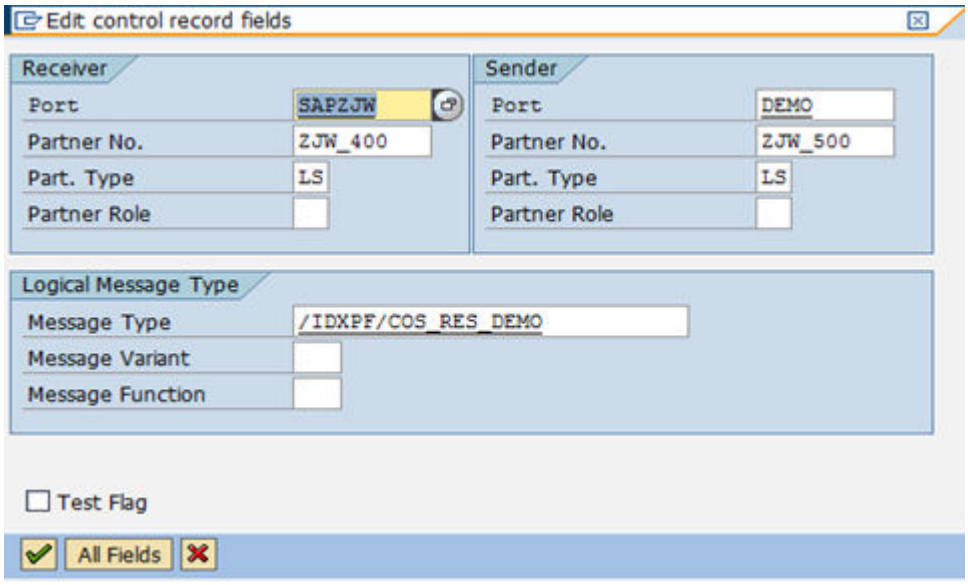
The **<PoD>** should be the same PoD that was used in the outbound flow.

Segment /IDXPF/SG_RESPONSE_DEMO

Field Name	Value	Optional
RESPONSECODE	**<AC, RJ1, RJ2, RJ3>**	
REFERENCE_TRANS_ID	**<PDoc number>**	

The **<PDoc number>** should be the PDoc number that was created in the outbound flow.

2. In the sending IDoc, complete the corresponding ALE control fields as follows :



ALE Control Record Fields

3. Trigger the inbound function; the inbound function module is `/IDXPF/COMEV_PROCESS_IN`.
An IDoc is created.

4.2.1 Process Flow I.1: Acceptance Received & All Checks Successful

Use

A registration request acceptance is sent by the DSO, it is received, and the process is completed.

Procedure

1. Complete the inbound IDoc in accordance with Inbound Flow: Receipt Response from DSO [page 16].
2. In segment `/IDXPF/SG_RESPONSE_DEMO`, enter the following data:

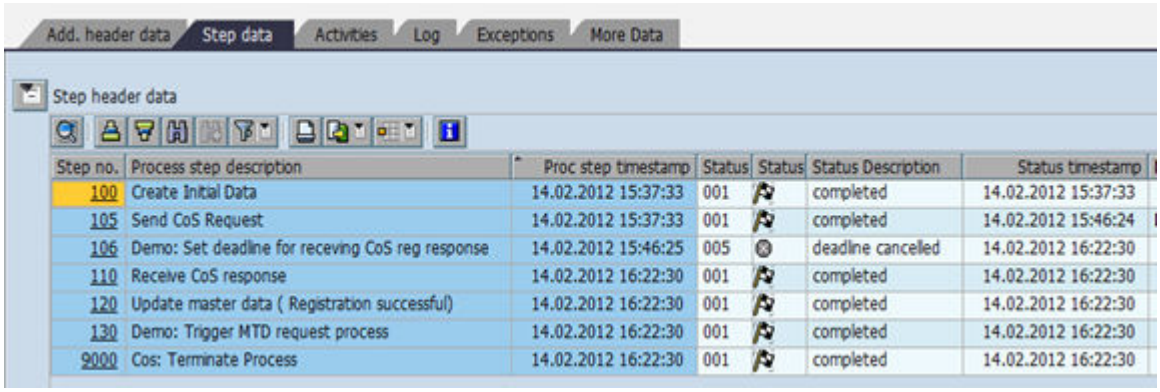
Field Name	Value
`RESPONSECODE`	**`AC`**
`REFERENCE_TRANS_ID`	**`PDoc number`**

3. In segment `/IDXPF/SG_EXTPOD_HDR_DEMO`, enter the PoD number in the `EXTPODID` field.
4. Trigger the inbound function; the inbound function module is `/IDXPF/COMEV_PROCESS_IN`.
An IDoc is created.

5. Look up the PDoc you created in Process Flow O.1: Sending CoS Registration Request [page 12] using transaction `/IDXPF/PDOCMON01`.

Result

The step data for the PDoc is as follows:



Step no.	Process step description	Proc step timestamp	Status	Status	Status Description	Status timestamp
100	Create Initial Data	14.02.2012 15:37:33	001		completed	14.02.2012 15:37:33
105	Send CoS Request	14.02.2012 15:37:33	001		completed	14.02.2012 15:46:24
106	Demo: Set deadline for receving CoS reg response	14.02.2012 15:46:25	005		deadline cancelled	14.02.2012 16:22:30
110	Receive CoS response	14.02.2012 16:22:30	001		completed	14.02.2012 16:22:30
120	Update master data (Registration successful)	14.02.2012 16:22:30	001		completed	14.02.2012 16:22:30
130	Demo: Trigger MTD request process	14.02.2012 16:22:30	001		completed	14.02.2012 16:22:30
9000	Cos: Terminate Process	14.02.2012 16:22:30	001		completed	14.02.2012 16:22:30

Successful Registration of CoS Process

4.2.2 Process Flow I.2: Additional Process Document for MTD Checks

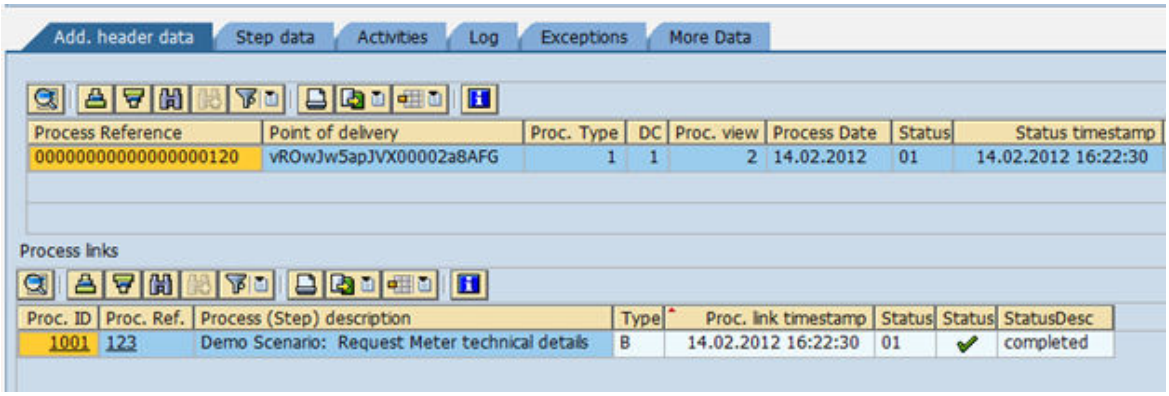
Use

A supplier requests technical meter details from the DSO.

Procedure

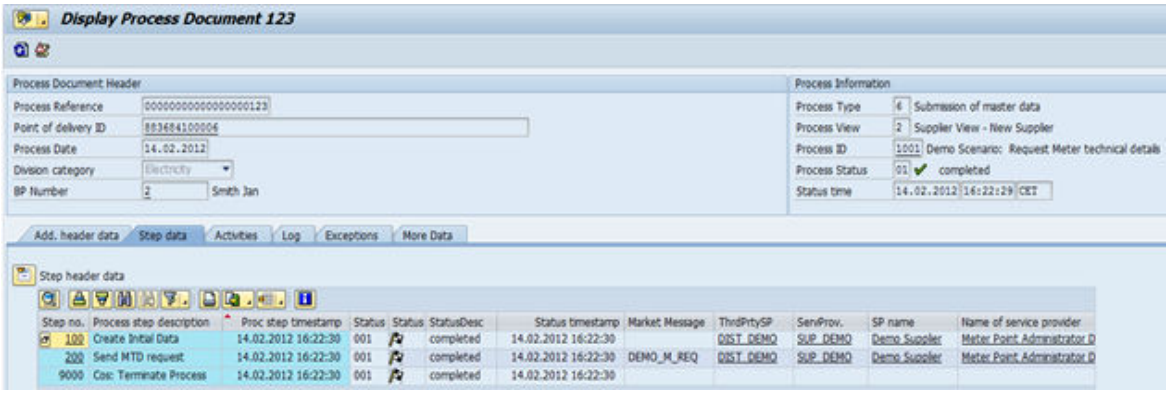
1. Look up the PDoc you created in Process Flow O.1 [page 12] and that you completed in Process Flow I.1 [page 18].
   On the *Step data* tab, step 130 (“Demo: Trigger MTD request process”) has been triggered automatically.

2. Check the *Add. header data* tab under *Process links*. An additional process document with process ID 1001 and PDoc number 123 has been created:



Second PDoc Created from Process Step 130: Trigger MTD Process

3. Use the hyperlink in the PDoc ID (“123”) to access the new PDoc:



New PDoc

The steps 100, 200, and 9000 have been created automatically. The example process sets the process to *Completed* when the `DEMO_M_REQ` message is sent successfully.

4.2.3 Process Flow I.3: Registration Rejection by the DSO Is Sent (RC = RJ1)

Use

The DSO sends a rejection of the registration request, which is accepted by the supplier.

Procedure

1. Complete the inbound IDoc in accordance with Inbound Flow: Receipt Response from DSO [page 16].

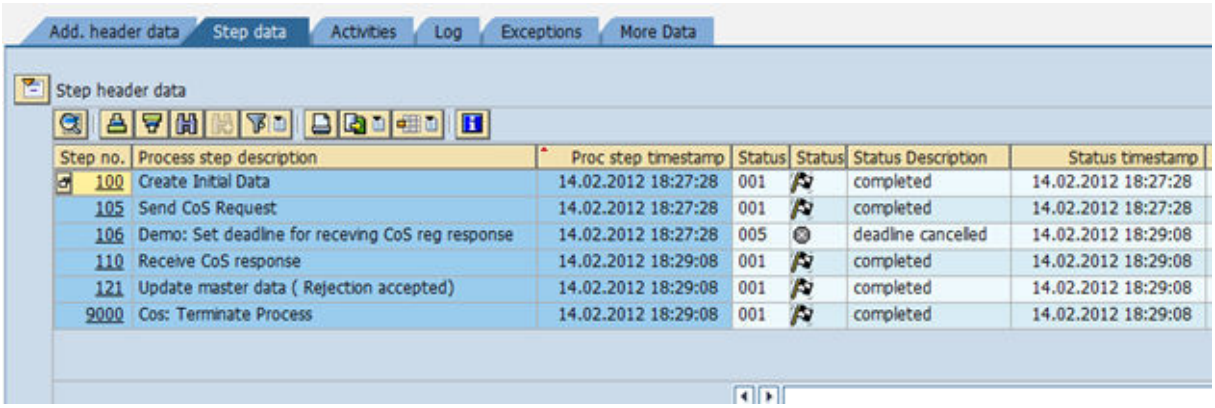
2. In segment `/IDXPF/SG_RESPONSE_DEMO`, enter the following data:

Field Name	Value
`RESPONSECODE`	**`RJ1`**
`REFERENCE_TRANS_ID`	**`PDoc number`**

3. In segment `/IDXPF/SG_EXTPOD_HDR_DEMO`, enter the PoD number in the `EXTPODID` field.
4. Trigger the inbound function; the inbound function module is `/IDXPF/COMEV_PROCESS_IN`.
   An IDoc is created.
5. Look up the PDoc you created in Process Flow O.1: Sending CoS Registration Request [page 12] using transaction `/IDXPF/PDOCMON01`.

Result

The step data for the PDoc is as follows:



Acceptance of Rejection from DSO

The process is completed and the status of the process document is set to *Completed* accordingly. The status for step 106 (deadline step) is set to *Deadline cancelled*.

4.2.4 Process Flow I.4: Rejection Not Accepted by Supplier

Use

A registration request rejection by the DSO is sent and received, but is not accepted by the supplier. All checks are successful. The process stops (but remains active) with a business exception to be resolved, and a BPEM case is created.

Procedure

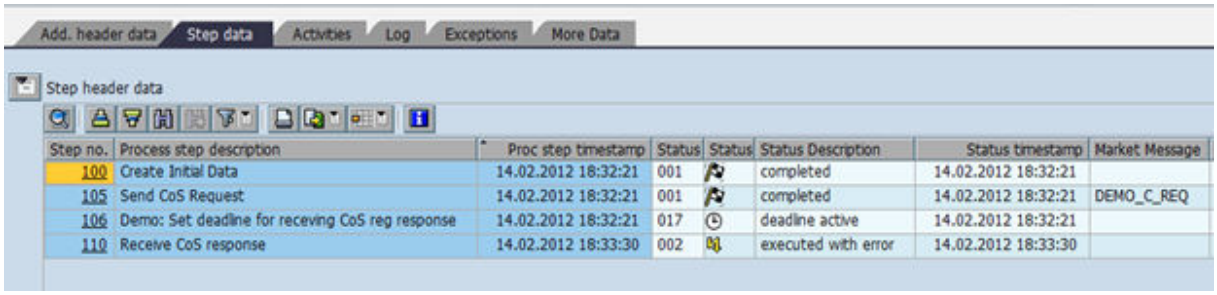
1. Complete the inbound IDoc in accordance with Inbound Flow: Receipt Response from DSO [page 16].
2. In segment `/IDXPF/SG_RESPONSE_DEMO`, enter the following data:

Field Name	Value
`RESPONSECODE`	**`RJ2`**
`REFERENCE_TRANS_ID`	**`PDoc number`**

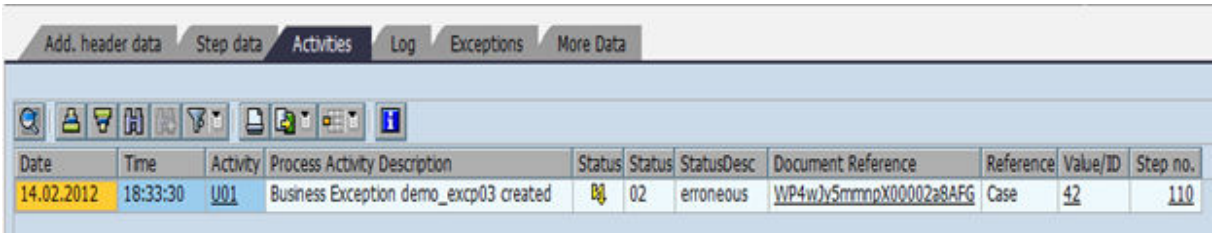
3. In segment `/IDXPF/SG_EXTPOD_HDR_DEMO`, enter the PoD number in the `EXTPODID` field.
4. Trigger the inbound function; the inbound function module is `/IDXPF/COMEV_PROCESS_IN`.
   An IDoc is created.
5. Look up the PDoc you created in Process Flow O.1: Sending CoS Registration Request [page 12] using transaction `/IDXPF/PDOCMON01`.

Result

The step data for the PDoc is as follows:



Rejection Not Accepted and Business Exception Created



Business Exception with Activity U01

4.2.5 Process Flow I.5: Rejection Not Accepted By Supplier

Use

A registration request rejection by the DSO is sent and received, but it is not accepted by the supplier. The process steps are repeated, meaning that the registration request from process flow O.1 is sent again.

Procedure

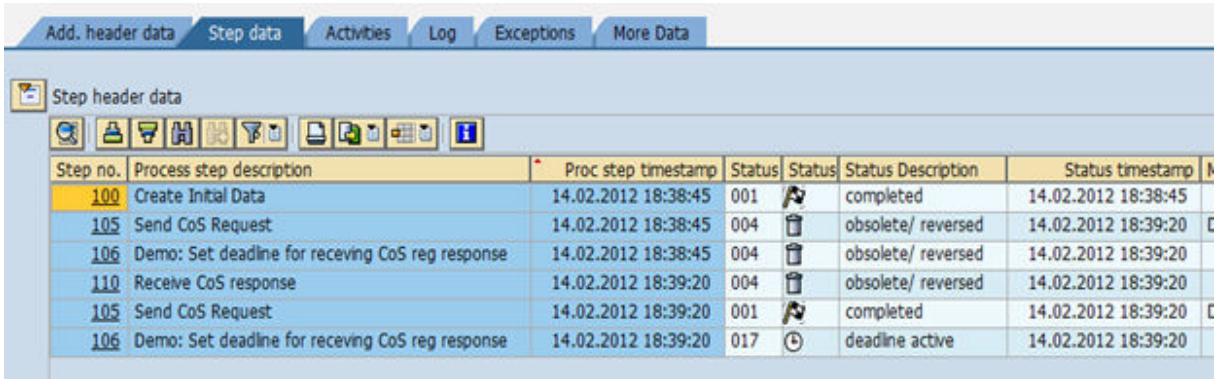
1. Complete the inbound IDoc in accordance with Inbound Flow: Receipt Response from DSO [page 16].
2. In segment `/IDXPF/SG_RESPONSE_DEMO`, enter the following data:

Field Name	Value
`RESPONSECODE`	**`RJ3`**
`REFERENCE_TRANS_ID`	**`PDoc number`**

3. In segment `/IDXPF/SG_EXTPOD_HDR_DEMO`, enter the PoD number in the `EXTPODID` field.
4. Trigger the inbound function; the inbound function module is `/IDXPF/COMEV_PROCESS_IN`.
   An IDoc is created.
5. Look up the PDoc you created in Process Flow O.1: Sending CoS Registration Request [page 12] using transaction `/IDXPF/PDOCMON01`.

Result

The step data for the PDoc is as follows:



Step no.	Process step description	Proc step timestamp	Status	Status	Status Description	Status timestamp
100	Create Initial Data	14.02.2012 18:38:45	001		completed	14.02.2012 18:38:45
105	Send CoS Request	14.02.2012 18:38:45	004		obsolete/ reversed	14.02.2012 18:39:20
106	Demo: Set deadline for receving CoS reg response	14.02.2012 18:38:45	004		obsolete/ reversed	14.02.2012 18:39:20
110	Receive CoS response	14.02.2012 18:39:20	004		obsolete/ reversed	14.02.2012 18:39:20
105	Send CoS Request	14.02.2012 18:39:20	001		completed	14.02.2012 18:39:20
106	Demo: Set deadline for receving CoS reg response	14.02.2012 18:39:20	017		deadline active	14.02.2012 18:39:20

Reprocessing Steps 105 and 106

Steps 105 and 106 are created a second time (which results in sending another registration request). The previous steps 105, 106, and 110 are set to *Obsolete / Reversed*.

4.2.6 Process Flow I.6: Validation Check Fails

Use

A registration request response is sent by the DSO. It is received but validation of the inbound CoS response fails. The process is stopped and a business exception is created for resolution. This process flow describes what happens if invalid business data such as a non-existent response code is entered.

Procedure

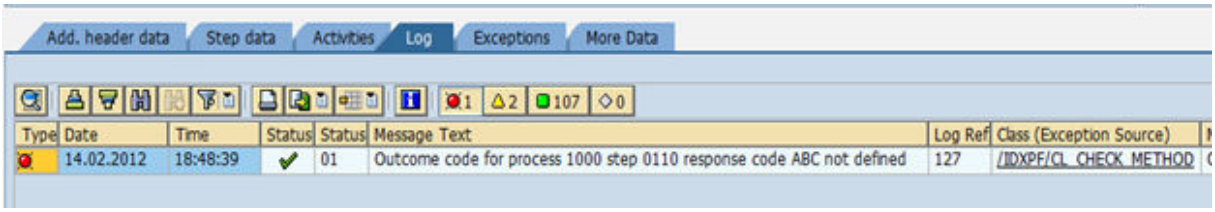
1. Complete the inbound IDoc in accordance with Inbound Flow: Receipt Response from DSO [page 16].
2. In segment `/IDXPF/SG_RESPONSE_DEMO`, enter the following data:

Field Name	Value
`RESPONSECODE`	**`ABC`** (or any other invalid response code)
`REFERENCE_TRANS_ID`	**`PDoc number`**

3. In segment `/IDXPF/SG_EXTPOD_HDR_DEMO`, enter the PoD number in the `EXTPODID` field.
4. Trigger the inbound function; the inbound function module is `/IDXPF/COMEV_PROCESS_IN`.
   An IDoc is created.
5. Look up the PDoc you created in Process Flow O.1: Sending CoS Registration Request [page 12] using transaction `/IDXPF/PDOCMON01`.

Result

The log in the PDoc is as follows:



Error Entry Shown in the PDoc Log: Response Code ABC Is Not Defined

5 Configuration and Customizing

Configuration

For configuration information, see the administration guide on SAP Help Portal .

Customizing

Additional information can be found in the documentation for the individual Customizing activities. You can access these in Customizing for *SAP Utilities* under *Intercompany Data Exchange* > *Process and Data-Exchange Framework for Utilities* .

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