

SAP BUSINESS TECHNOLOGY PLATFORM | EXTERNAL

Technical Configuration Guide

German Market Extension to Order Fulfillment for
Utilities

THE BEST RUN 

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Configuration for German Market Extension to Order Fulfillment Process

Overview

This document provides technical information about what needs to be configured to run the Workflow Management Package *German Market Extension to Order Fulfillment for Utilities*. The main audience of this document are technical personas, such as IT administrators or developers. The document describes what needs to be done to make the solution run. It mainly focuses on technical configuration aspects such as destinations, and less on business configuration aspects that can be done by a key user or business process expert.

German Market Extension to Order Fulfillment for Utilities is enabling the process to:

- Complement existing payload with the necessary data to start the process on SAP Market Communication side
- Request Business Partner related data needed to complement the payload
- Check the validity of Start of Supply date
- Start the Process on SAP Market Communication side
- Receive a response Transfer Document from SAP Market Communication
- Create Technical Master Data in S/4 Hana Utilities
- Resolve problems if they occur during above mentioned steps

Involved Solution Components

This chapter provides an overview of the solution components involved in SAP Cloud for Utilities that are used to run the Workflow Management Package *German Market Extension to Order Fulfillment for Utilities*

- SAP Integration Suite
- SAP Workflow Management (subscribed service)
- SAP Business Rule (subscribed service)
- SAP Process Visibility (subscribed service)
- SAP Market Communication for Utilities
- SAP S/4 HANA Utilities

General Prerequisites

This chapter provides an overview of general prerequisites in SAP Cloud for Utilities that need to be met to run the Workflow Management Package *German Market Extension to Order Fulfillment for Utilities*.

Note! In an order-to-provisioning scenario this artifact is used as addition to the Workflow Management Package *Order Fulfillment for Utilities in German Market Scenario*.

Procedure

Before using the Workflow Management Package *German Market Extension to Order Fulfillment for Utilities*, make sure that the following requirements are fulfilled:

1. [Global account](#) on SAP Business Technology Platform
 - You have an enterprise account on the SAP Business Technology Platform
 - You have set up the subaccount and spaces in the Cloud Foundry environment
2. SAP Business Technology Platform Services
 - You have set up the [Workflow Management Service](#) in your SAP Business Technology Platform cockpit
 - You have set up [SAP Process Visibility](#) (subscribed service)
 - You have set up the [SAP Integration Suite](#) tenant
3. Involved Solution Components
 - [SAP Market Communication for Utilities](#)
 - SAP S/4 HANA Utilities

German Market Extension to Order Fulfillment Process

SAP Integration Suite Artifacts

This chapter provides an overview of integration content in SAP Cloud for Utilities that can be used to run the Workflow Management Package *German Market Extension to Order Fulfillment for Utilities*.

List of Integration Artifacts involved in the process:

- Generate Transfer Document for SAP Market Communication for Utilities
- Request Business Partner from SAP S/4 HANA Utilities
- Trigger Start of Supply Process from SAP Cloud for Utilities
- Transfer_Document_From_Maco
- Value Mapping for Receive Transfer Document from SAP Market Communication for Utilities
- Determine Service Provider in S4HANA by ILN
- Create Technical Master Data in SAP S4HANA
- Value Mapping Cloud for Utilities

Generate Transfer Document for SAP Market Communication for Utilities

Purpose

The purpose of this Integration Flow is to generate Transfer Document for SAP Market Communication for Utilities.

Below is a breakdown of the steps the Integration Flow takes:

- The integration flow generates a structure of the transfer Document
- The integration flow logs the payload
- The integration flow sets type of the content to json

Link to the Integration Flow integration guide for more details: [Integration Guide](#).

Request Business Partner from SAP S/4 HANA Utilities

Purpose

The purpose of this Integration Flow is to retrieve all Business Partner details by its Internal ID from S/4 Hana to SAP Cloud for Utilities.

Below is a breakdown of the steps the Integration Flow takes:

- The integration flow receives a payload containing only Business Partner ID via HTTPS.
- The integration flow converts JSON to XML.
- The integration flow declares Exchange Property that will be used in the Local Integration Process
- The integration flow starts the Process Call 'Fetch Business Partner'
 - The process call maps received ID to Internal ID
 - The process call requests a reply from S/4 Hana using connection address and credentials
 - The process call fetches response with Business Partner details from S/4 Hana as a payload
 - The process call checks error information via groovy script and routes successful cases to the end, unsuccessful – to the Exception Subprocess to create error response
 - The exception subprocess modifies received error message
 - The exception process logs received error messages
- The integration flow checks if business Partner details are retrieved
- The integration flow converts received from S/4 Hana payload from XML to JSON format
- The integration flow adjusts inconsistent payload field to proper format via js-script
- The integration flow converts adjusted payload back from JSON to XML format
- The integration flow creates payload with all Business Partner details
- The integration flow transforms created payload from XML to JSON format

Link to the Integration Flow integration guide for more details: [Integration Guide](#)

Trigger Start of Supply Process from SAP Cloud for Utilities

Purpose

The purpose of this integration flow is to trigger the Start of Supply process in SAP Market Communication for Utilities.

Below is a breakdown of the steps the Integration Flow takes:

- The integration flow receives a payload via HTTPS.
- The integration flow converts the JSON payload to XML.
- The integration flow maps values from the Customer Order Payload to the SAP Market Communication for Utilities Start of Supply Payload.
- The integration flow converts XML back to JSON.
- The integration flow gets the SAP Market Communication for Utilities token.
- the integration flow calls the SAP Market Communication for Utilities system to trigger the process.

Link to the Integration Flow integration guide for more details: [Integration Guide](#)

Transfer_Document_From_Maco

Purpose

The purpose of this Integration Flow is to process all transfer documents received from MaCo and then based on Business Message ID reroute them to the corresponding process on Workflow Management Side or to trigger next Iflow or to APE-C4U system.

Below is a breakdown of the steps the Integration Flow takes:

- The integration flow receives a payload via sender Odata adapter.
- The integration flow payload is decompressing data via groovy script and logging incoming payload.
- The integration flow adjusts payload to the format which is then transformed to the format where hierarchy is derived from path, field and value in the original format.
- The integration flow logs the payload
- The integration flow converts JSON to XML.
- The integration flow is using a value mapping to map a business message id from the payload to the value of the waiting event or process (parameter named 'gate') that should be triggered. This 'gate' value decides whether to route the transfer document to workflow or Iflow or APE system.
- The integration flow sets value received from mapping as parameter.
- The integration flow checks what was the business message id and based on that is preparing different message bodies and endpoint to be triggered
- The integration flow is calling corresponding system – Workflow Management or Cloud Platform Integration or APE-C4U system.

Link to the Integration Flow integration guide for more details: [Integration Guide](#)

Value Mapping for Receive Transfer Document from SAP Market Communication for Utilities

Purpose

Value Mapping is a way to maintain technical configurations at a central location in the integration package so that they can be reused, as opposed to passing them as externalized parameters in integration flow. Some existing externalized parameters have been removed and are now directly mapped from the Value Mapping for Receive Transfer Document from SAP Market Communication for Utilities deployed along with the integration flows.

Currently, the following integration flows use value mapping to map business message id from Market Communication System to corresponding gate and waiting event id in Workflow Management:
Receive Transfer Document from SAP Market Communication for Utilities

Link to the Value Mapping integration guide for more details: [Integration Guide](#)

Determine Service Provider in S4HANA by ILN

Purpose

The purpose of this Integration Flow is to use the ILN received from ENET (which is maintained in field external number in S4HANA) and get the S4HANA Service Provider ID and Grid ID that is determined based on the value mapping. Below is a breakdown of the steps the Integration Flow takes:

- The integration flow receives a request payload from SAP Workflow Management after the MACO transfer document is received.
- The integration flow payload is searched for the ILN Numbers in payload using groovy script
- The integration flow creates the search string by concatenating all the provided ILN
- The integration flow checks if No ILN's are provided in payload processing ends.
- The integration flow makes a call to S4Hana on-premises system to get the service Provider Details.
- The integration flow uses Message Mapping to map the grid from value mapping using Groovy Script and Service Provider detail from S4Hana is mapped to output structure of Integration flow.
- The integration flow converts the payload from XML to JSON using XML to JSON converter and processing ends.

Link to the Integration Flow integration guide for more details: [Integration Guide](#)

Create Technical Master Data in SAP S/4 HANA Utilities

Purpose

The purpose of the integration flow is to create technical master data in a defined SAP S/4HANA system from the market response received from Market Communication (MACO) Cloud for the Start of Supply scenario.

Below is a breakdown of the steps the Integration Flow takes:

- The integration flow receives a request payload from SAP Workflow Management after the MACO transfer document is received.
- The integration flow converts the payload to XML format using a JSON to XML converter.
- The integration flow maps the payload to the desired API payload format. Refer to [Integration Flow Sample Input/Output](#) for an example.
- The integration flow calls SAP S/4HANA via OData to create technical master data in SAP S/4HANA.
- The integration flow captures the OData response from SAP S/4HANA and creates a payload to transfer the Installation ID and Status as a response.

Link to the Integration Flow integration guide for more details: [Integration Guide](#)

Value Mapping Cloud for Utilities

Purpose

Value Mapping and configurations for SAP Cloud for Utilities Integration.

Value Mapping is a way to maintain technical configurations at a central location in the integration package so that they can be reused, as opposed to passing them as externalized parameters in each integration flow. Some existing externalized parameters have been removed and are now directly mapped from the Central Mapping Artifact deployed along with the integration flows.

The following value mappings are used in Create Technical Master Data in SAP S/4 HANA Utilities integration flow:

- You must maintain the [MACO, VoltageLevel] <=> [S4HANA, VoltageLevel] mapping in the value mapping artifact for Voltage Levels.

The screenshot displays two sections of value mappings. The first section, titled 'Value Mappings for', shows a mapping between 'MACO, VoltageLevel' and 'S4HANA, VoltageLevel'. The second section, also titled 'Value Mappings for', shows a mapping between 'MACO, ServiceProvider' and 'S4HANA, ServiceProvider'.

MACO, VoltageLevel	S4HANA, VoltageLevel
LowVoltage	01
MediumVoltage	02
HighVoltage	03
Gas	04
Water	05
SewageWater	06
MaximumVoltage	07

MACO, ServiceProvider	S4HANA, ServiceProvider
SP_DSO_345_EXT	SP_DSO_345

Process Artifacts

The cycle consists of multiple processes that can be used in Business Rule configuration to determine sequence of processes in the cycle and/or exclude specific process or processes from the cycle.

Processes consist of one or multiple workflows that can be used to configure a process variant specific for execution of the scenario Fulfillment of the Commodity Item for Deregulated Market in Germany.

When this cycle is completed, the collection of data around the processes can take place. SAP Cloud for Utilities with Workflow Management service enables you to manage these processes, pinpoint inefficiencies and identify opportunities for improvement.

This chapter provides an overview of artifacts in SAP Cloud for Utilities that are created to run Workflow Management Package *German Market Extension to Order Fulfillment for Utilities*.

Processes

A process based on the SAP Workflow Management allows you to quickly orchestrate tasks that span across people, applications, and organizations. Table 1. represents the list of processes defined to support the *German Market Extension to Order Fulfillment for Utilities* artifact.

Table 1. Process.

Nr.	Process	Detailed Description
1.	Prepare Start-of-Supply for German Market Communication	This process adds missing values required for the Start of Supply process to the payload and gets Business Partner data from S/4 HANA Utilities. Process checks validity of the Start of Supply Date and raises a User Task in case of an invalid Start of Supply Date.
2.	Call External Service Provider for DSO Determination	This process determines the DSO from the delivery address in the web shop payload with the use of third-party web services like ENE'T ¹
3.	Handle Start-of-Supply with German Market Communication	This process initiates the Start of Supply to SAP Market Communication for Utilities and gets the Transfer Document from SAP Market Communication for Utilities. Process raises a user task that requests manual resolution for Start of Supply Rejection.
4.	Create Technical Master Data based on German MaCo	This process creates Technical Master Data in S/4 HANA Utilities.

Workflows

Table 2 represents the list of workflows defined to support the *German Market Extension to Order Fulfillment for Utilities* assigned to the processes named above as they should be configured in the Manage Process Variants (SAP's design proposal):

Table 2. Workflow.

Process Nr.	Workflow	Workflow Definition ID	Detailed Description
1.	Complement Payload Data for SAP Market Communication for Utilities	enrich_maco_data	Workflow to adds missing values required for the Start of Supply process to the payload.
	Request Business Partner Data from SAP S/4 HANA Utilities	fetch_bp	Workflow to get Business Partner data from S/4 HANA Utilities.
	Check Validity of Start of Supply Date	Check_Validity_of_Start_of_Supply_Date	Workflow to check validity of the Start of Supply Date.

¹ Please be aware SAP does not provide usage rights for third party web services.

Process Nr.	Workflow	Workflow Definition ID	Detailed Description
	User Task for Invalid Start of Supply Date	user_task_invalid_start_of_supply	Workflow to raise a User Task in case of an invalid Start of Supply Date.
2.	Get Receiver ID from ENET	enet	Example Workflow to retrieve receiver id for MaCo to determine the DSO from the delivery address in the web shop payload. C4U enables herewith the use of third-party web services like ENE'T ²
3.	Notice of Dismissal process for Supplier New	nod	Workflow to trigger the Notice of Dismissal process towards the old supplier in SAP Market Communication for Utilities.
	Get Transfer Document from SAP Market Communication for Utilities	process_transfer_document	Workflow to initiate the Start of Supply to SAP Market Communication for Utilities and get the Transfer Document from SAP Market Communication for Utilities.
	User Task to Request Manual Resolution for Rejection of Start of Supply	request_user_resolution	Workflow to raise a user task that requests manual resolution for Start of Supply Rejection.
4.	Create Technical Master Data in SAP S/4 HANA Utilities	create_tmd	Workflow to create Technical Master Data in S/4 HANA Utilities.

Variants for German Market Extension to Order Fulfillment for Utilities

The variants serve as extension points of the default process. Table 2. Workflow. represents the list of predefined variants to support the *German Market Extension to Order Fulfillment for Utilities* artifacts. Variant is Configured in the Package *Order Fulfillment for Utilities*. To ensure correct execution of the process of the *Fulfillment of Commodity Order Item for Deregulated Market* below mentioned artifacts in Table 3. Variants. should be configured as the process variant steps

² Please be aware SAP does not provide usage rights for third party web services.

in specific order:

Table 3. Variants.

Variant	Detailed Description
Prepare Start-of-Supply for German Market Communication	Variant to add missing values required for the Start of Supply process to the payload and get Business Partner data from S/4 HANA Utilities. Variant to check validity of the Start of Supply Date and raise a User Task in case of an invalid Start of Supply Date.
Call External Service Provider for DSO Determination	Variant to determine the DSO from the delivery address in the web shop payload with the use of third-party web services like ENE'T ³
Handle Start-of-Supply with German Market Communication	Variant to initiate the Start of Supply to SAP Market Communication for Utilities and get the Transfer Document from SAP Market Communication for Utilities. Variant to raise a user task that requests manual resolution for Start of Supply Rejection.
Create Technical Master Data based on German MaCo	Variant to create Technical Master Data in S/4 HANA Utilities.

Procedure

Before using the process variants to run the Workflow Management Package *German Market Extension to Order Fulfillment for Utilities*, make sure that the following requirements are fulfilled:

1. Configure Process Variants

- You have configured process variants using the Process Flexibility Cockpit
 - Open Workflow Management Package *German Market Extension to Order Fulfillment for Utilities*
 - Go-to Process Variants and create the process variant

Note! There are mandatory steps already available. Please, follow the order of steps provided above, while configuring the variant.

2. Activate Process Variants Using Process Flexibility Cockpit

³ Please be aware SAP does not provide usage rights for third party web services.

Business Rules

SAP Business Rules allows you to simplify the management of decision logic across SAP solutions, encapsulate the business logic and supports the reuse of decision logic across different business processes. Table 4. Rules. represents the list of rules to support the German Market Extension to Order Fulfillment for Utilities.

Table 4. Rules.

Rules	Detailed Description
Determine Business Message ID	Business Rule for Determine Business Message ID.
Determine Master Data Template	Business Rule to determine the Master Data Template.
Complement Payload Data for Creation of Technical Master Data in SAP S/4 HANA Utilities	Business Rule to determine values required for the creation of Technical Master Data in SAP S/4 HANA Utilities.
Check Validity of Start of Supply Date	Business Rule to Check Start of Supply Date.
Determine Deregulated Order Fulfillment Process	Business Rule to determine sequence of processes used for German Market Extension to Order Fulfillment for Utilities.

Please find more details on Business Rule configuration in the Parameters/Defaults section.

Procedure

Before using the business rules to run the Workflow Management Package German Market Extension to Order Fulfillment for Utilities, make sure that the following requirements are fulfilled:

Configure Business Rules

- Configure business rules using the Process Flexibility Cockpit,
- Open Workflow Management Package German Market Extension to Order Fulfillment for Utilities,
- Go-to Decisions and choose the Decision you would like to adjust,
- Go-to the Rules section and click *Edit* to make the necessary changes.

Activate Decisions Using Process Flexibility Cockpit

- *Save and release the version* of the decision.

Parameters / Defaults

Determine Business Message ID

Decision Table maintenance represents the list of defaults that are added missing values required for the Start of Supply process to the payload. See chapter Business Rules for more information.

Table 5

Rules	Detailed Description				
Determine Business Message ID	Project Name		Determine Business Message ID		
	Project Id		f978b659aa9942b8bdafde714c8ed153		
	Rule Name		Determine Business Message ID		
	Rule Id		a36d9289da8b4025bb012ffbefa93743		
	Input		Result		
	BUSMSGID (example value below)	Division (example value below)	Path (example value below)	DefaultValue (example value below)	Mapping (example value below)
	'BM_GPKE_SUPN_SOS_TRIG_PROC'	'01'	'd.to_bo_header.results[0].to_bo_data.results[14].value'	''99991231''	'CustomerOrder.items[0].subscriptionAspect.validTo'

Determine Master Data Template

Table 6 represents the list of defaults that are set to determine the Master Data Template. See chapter *Business Rules* for more information.

Table 6

Rules	Detailed Description	
Determine Master Data Template	Project Name	Determine Master Data Template
	Project Id	711ab9156ad742a5879882792b062dcc
	Rule Name	Determine Master Data Template
	Rule Id	050563c3168f4f9e81882931e1267074
	Input	Result
	Division (example value below)	Template (example value below)
	'01'	'ZOE_C4U_MAMELO_SPSCE'

Complement Payload Data for Creation of Technical Master Data in SAP S/4 Hana Utilities

Table 7 represents the list of defaults that are set to determine values required for the creation of Technical Master Data in SAP S/4 HANA Utilities. See chapter *Business Rules* for more information.

Table 7

Rules	Detailed Description			
Complement Payload Data for Creation of TMD	Project Name	Complement Payload Data for Creation of TMD		
	Project Id	06d37143b15547ee8f72458effd4c21f		
	Rule Name	Complement Payload Data for Creation of TMD		
	Rule Id	ccb53e8e3964b7b98b7d20797b80999		
	Input	Result		
	Template (example value below)	MACO_FIELD (example value below)	MDT_FIELD (example value below)	MDT_DEFAULT (example value below)
	'ZOE_C4U_MAMELO_SPSCE'	'MATNR'	'MATNR'	'UC-MM-01'

Check Validity of Start of Supply Date

Table represents the list of defaults that are set to Business Rule to check the validity of Start of Supply Date. See chapter *Business Rules* for more information.

Table 8

Rules	Detailed Description		
Check Validity of Start of Supply Date			
	Project Name	Check Validity of Start of Supply Date	
	Project Id	984d65ef62fc43b4aab68a10da3f1e2d	
	Rule Name	Check Validity of Start of Supply Date	
	Rule Id	78688f60968e4f58be4ba2f242981cc5	
	Input	Result	
	CheckPoint (example value below)	Key (example value below)	Value (example value below)
	'GPKE_MOVE_IN_DATE'	'days_limit_in_past'	'60'

Determine Deregulated Order Fulfillment Process

Table represents the list of defaults that are set to Business Rule to check the validity of Determine Deregulated Order Fulfillment Process. See chapter *Business Rules* for more information.

Table 9

Rules	Detailed Description		
Determine Deregulated Order Fulfillment Process			
	Project Name	DetermineBusinessMessageID	
	Project Id	f978b659aa9942b8bdafde714c8ed153	
	Rule Name	DetermineDeregulatedOrderFulfillmentProcess	
	Rule Id	0b86693864e14966b94eb577a2db3083	
	Input	Result	
	variant (example value below)	definitionId (example value below)	
	'postnextinstance1'	'callexternalserviceproviderfordsodetermination'	

Destinations

This chapter provides an overview of destinations in SAP Cloud for Utilities that are used to run Workflow Management Package *German Market Extension to Order Fulfillment for Utilities*.

Procedure

Before using Workflow Management Package *German Market Extension to Order Fulfillment for Utilities*, make sure that the following requirements are fulfilled:

1. **Configure Destinations in SAP Business Technology Platform**
 - Configure a destination with SAP Integration Suite called **CPI** and specify the URL such as <https://{cpi-tenant}.hana.ondemand.com>
 - Configure destination using SAP Business Rules called **BR** and use the service instance details to make the connection, such as <https://bpmruleruntime.{wfm-tenant}.hana.ondemand.com>
 - Configure destinations using SAP Workflow Management Service called **BPM** use service instance details to make the connection, <https://{wfm-tenant}.hana.ondemand.com>
2. In case you choose to use the ENET Service to determine the DSO Address:
 - Configure destination using ENET Service information called **ENET**, <https://{enet}.de>

SAP Help [Link](#) on how to set up destinations.

Note! Destination types are HTTP supported and based on OAuth 2.0 Client Credentials or Basic Authentication.

Communication System, Communication Arrangement

This chapter provides an overview of the communication system and arrangements in SAP Cloud for Utilities that need to be configured to run the solution.

Roles/Authorizations

In SAP Cloud for Utilities, business processes include an optional activity that is used to handle the approval process.

For more details on Roles and Authorizations visit [Authorization Configuration - SAP Help Portal](#)

Procedure

Before using the process defined to run the Workflow Management Package *German Market Extension to Order Fulfillment for Utilities*, make sure that the following roles are assigned to users (see table below).

The following roles are required to access Workflow Management. To see more information, click this [link](#).

Table 1. Roles

Role	Description
WMDeveloper	Permission to access Manage Packages that allows you to perform the following actions: <ul style="list-style-type: none">• View Workflow Management Packages• Create, edit, save, and activate Workflow Management Packages• Export and import Workflow Management Packages• Delete Workflow Management Packages
WMBusinessExpert	Permission to access Process Flexibility Cockpit that allows you to perform the following actions: <ul style="list-style-type: none">• Discover and explore pre-delivered Workflow Management Packages• Import Workflow Management Packages Configure process variants, decisions, and visibility scenarios within Workflow Management Packages
WMAdmin	Permission to access Manage Packages that allow you to perform the following actions: <ul style="list-style-type: none">• View Workflow Management Packages• Export and import packages• Delete Workflow Management Packages

Lifecycle Management

SAP recommends that you create additional accounts for testing, quality assurance, and production, so that you have distinctive separation of data and authorizations for each. Ideally, this setup follows the same separation that you use in your back-end system, minimizing external exposure of production data. New accounts are not preconfigured, so you will need to set up the SAP Business Technology Platform accordingly.