SAP BUSINESS TECHNOLOGY PLATFORM | EXTERNAL

Setup Guide

Disconnection Process using SAP Workflow Management or SAP Build Process Automation

THE BEST RUN SAP

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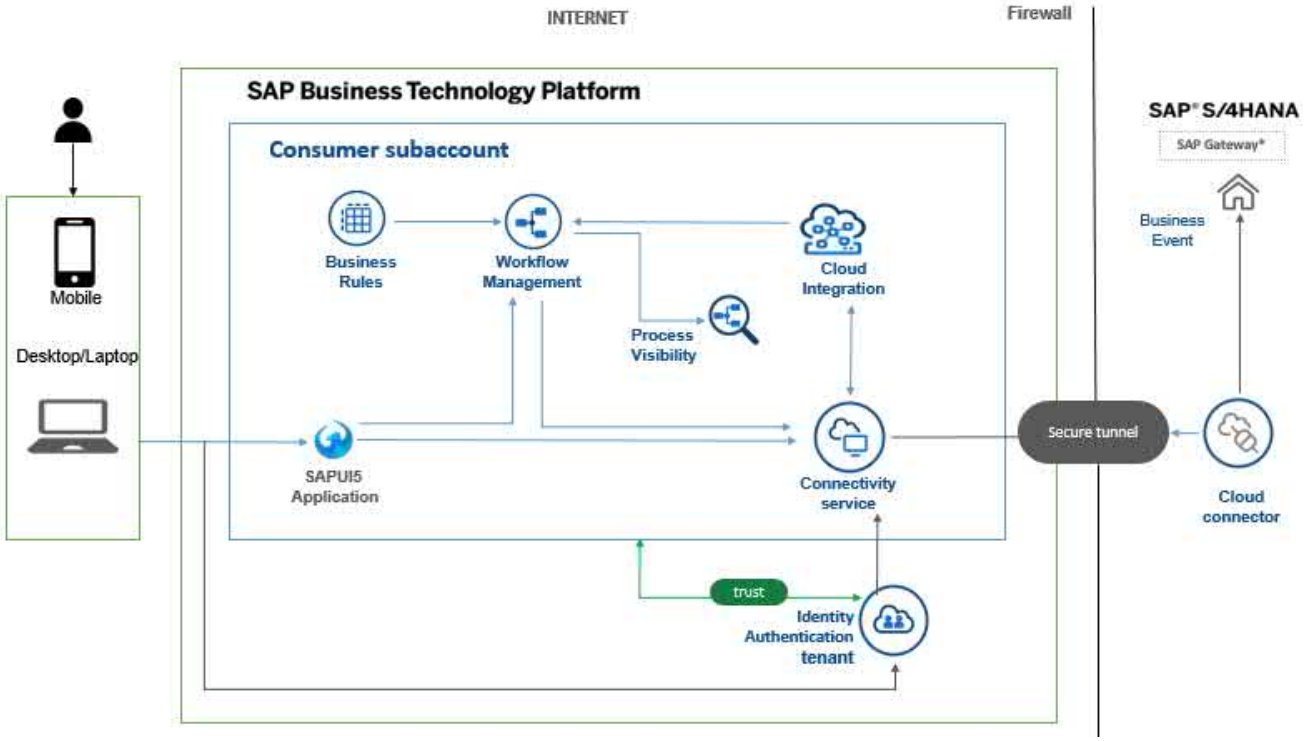
Overview

This document provides information about setting up the SAP Business Technology Platform account to consume the workflow content package Disconnection Process. The main audience of this document are technical IT/system administrators.

Disconnection process is carried out by ISU User for disconnecting utility services. The process involves creation of Service request followed by creation of disconnection document, disconnection order and updating of meter reads

Salient features of this content package are:

- Plug and Play with SAP S/4 HANA without additional development.
- New Process variants can be configured in a no-code approach.
- Agent/approver determination using Business Rules or external service.
- Pre-built integration content to call SAP S/4 HANA from SAP Workflow Management or SAP Build Process Automation.
- Out-of-the-box visibility into key process performance indicators.



Required SAP BTP Services

The workflow content package “Disconnection Process” is intended to be used for SAP S/4HANA and requires the following services in SAP Business Technology Platform.

- SAP Build Process Automation or SAP Workflow Management to orchestrate the SAP Integration Suite to consume the RFC, BAPI from SAP S/4HANA.
- SAP Connectivity service (cloud connector) to establish access to SAP S/4HANA on-premise.
- SAP Cloud Portal service or SAP Launchpad service to access the apps that are involved in the process.
- SAP Cloud Identity Services - Identity Authentication (optional).
- SAP Business Application Studio to modify/deploy the SAPUI5 applications.
- SAP BTP, Cloud Foundry runtime.

Setup and Configuration

Disconnection Process content package requires SAP Build Process Automation or SAP Workflow Management subscription or a CPEA contract. Based on which service you plan to use, follow the appropriate section to configure either SAP Build Process Automation or SAP Workflow Management.

Configure SAP Build Process Automation

Follow the setup and configuration section of SAP Build Process Automation:

1. Subscribe to SAP Build Process Automation (Standard Plan)
2. Configure Destinations for Live Process Projects
    a. Import Package Destination
    b. Business Rules Destination to support start and step conditions
3. [Optional] Configure SAP Launchpad Service for SAP Build Process Automation

Configure Process Automation Destination

A HTTP destination is required in the BTP subaccount where SAP Build Process Automation is subscribed. Create a destination with name "sap_process_automation_service" with the following configuration if it doesn't exist already. Please refer how to create a HTTP destination OAuth 2.0 Authentication (client credentials).

Name	sap_process_automation_service
Type	HTTP
Proxy Type	Internet
Authentication	OAuth2ClientCredentias
URL	<"endpoints"."api">
Client ID	<"uaa":"clientis">
Client Secret	<"uaa":"clientsecret">
Token Service URL	<"uaa":"url">/oauth/token

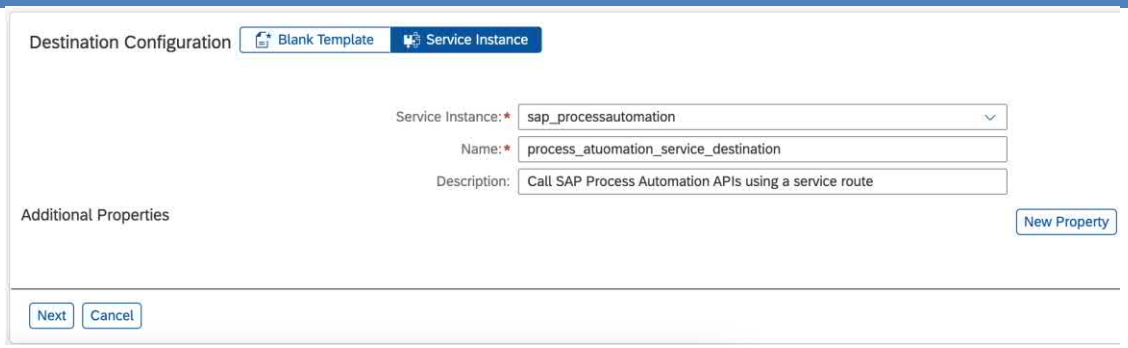
Note: While creating the service instance for SAP Build Process Automation service, make sure that at least the required scopes are assigned (help documentation to enable technical authentication to access the SAP Build Process Automation APIs). If the scopes are not assigned, you can also update the service instance with the required scopes.

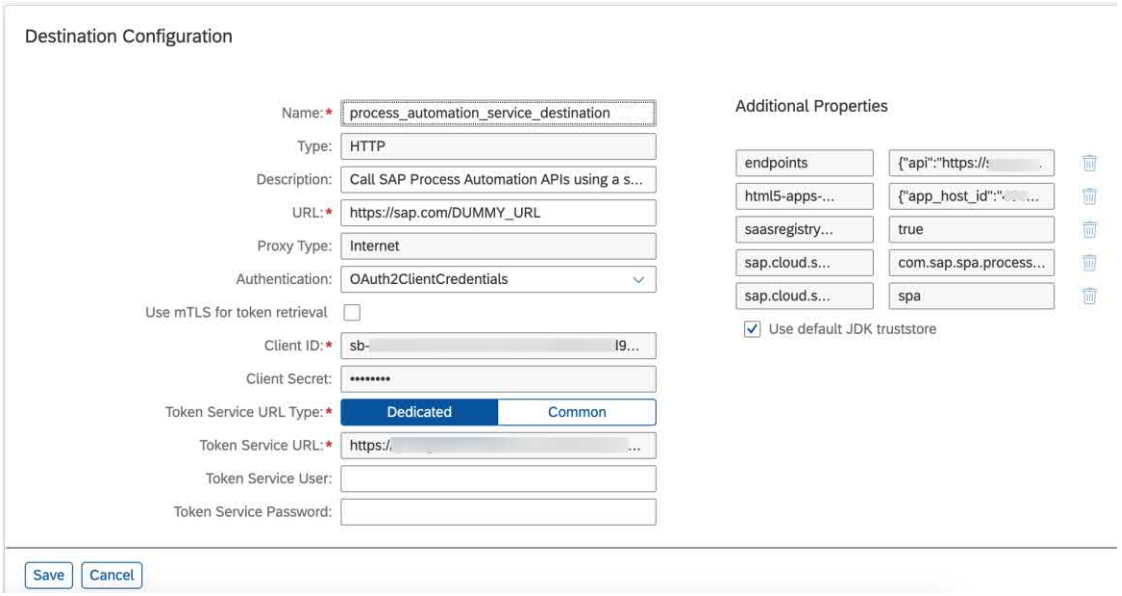
Configure OAuth2ClientCredentials SAP Build Process Automation Destination (Service Instance)

Ignore this step if there is already a destination using SAP Build Process Automation service instance created.

Create new destination to call SAP Build Process Automation APIs using a service route from SAP UI5 component. For more details, follow the help document:

https://help.sap.com/viewer/cca91383641e40ffbe03bdc78f00f681/Cloud/en-US/685f383cebb54c009b2fac633b32c90f.html.





Configure SAP Workflow Management

Disconnection Process content package requires SAP Workflow Management subscription or a CPEA contract. Follow the setup and configuration section of SAP Workflow Management.

https://help.sap.com/viewer/6f55baaf330443bd8132d071581bbae6/Cloud/en-US/d7910e2bf7f64afc9d0eb21b0cc9e84d.html

Note: While creating the service instance for Workflow service, make sure that at least the following scopes are assigned (help documentation to enable technical authentication to access the workflow APIs). If the scopes are not assigned, you can also update the service instance with the following scopes.

- WORKFLOW_INSTANCE_GET
- WORKFLOW_INSTANCE_START

Configure Workflow Email Destination

Configure workflow email destination to automatically send email notification to the involved parties. For more information on configuring the destination, see configure workflow email destination.

Configure Workflow Destination

A HTTP destination is required in the BTP subaccount where SAP Workflow Management is subscribed. Create a destination with name "Workflow" with the following configuration, if it doesn't exist already. Please refer how to create a HTTP destination OAuth 2.0 Authentication (client credentials).

Please refer help documentation how to get URL, Client ID , Client Secret and Token Service URL.
For more information refer to how to create a HTTP destination and how to use Workflow APIs

Name	Workflow
Type	HTTP
Proxy Type	Internet
Authentication	OAuth2ClientCredentials
URL	**https://api.workflow. <region-host>.hana.ondemand.com/workflow-service/rest**
Client ID	<client ID>
Client Secret	<client secret>
Token Service URL	<"uaa"."url">/oauth/token
Additional Properties:	Name: bpmprocessvisibility.triggerWorkflow **Value: system**

Configure Business Rules Destination

A HTTP destination is required in the Cloud Foundry account where SAP Workflow Management is subscribed. Create a destination with name "BUSINESS_RULES" with the following configuration, if it doesn't exist already. Please refer how to create a HTTP destination and how to access business rules APIs using OAuth 2.0 Authentication (client credentials)

Name	BUSINESS_RULES
Type	HTTP
Proxy Type	Internet
Authentication	OAuth2ClientCredentials
URL	<rule_runtime_url>/rules-service
Client ID	<client ID>
Client Secret	<client secret>
Token Service URL	<uaa.url>/oauth/token

Configure Destination to Enable Start & Step Conditions

To enable the usage of start conditions and step conditions on a process variant, create a destination for business rules with the configuration as mentioned in the following help document:

https://help.sap.com/viewer/6f55baaf330443bd8132d071581bbae6/Cloud/en-US/543b5dbd77d940b4b1f972298b559911.html?q=WM_BUSINESSRULES

Configure Cloud Integration Destination

To call an integration flow, a HTTP destination is required in the SAP BTP tenant where the SAP Workflow Management is subscribed. Create a destination called CPI with either Basic Authentication or OAuth2ClientCredentials.

Destination with Basic Authentication

Name	CPI
Type	HTTP
Proxy Type	Internet
Authentication	Basic Authentication
URL	<runtime.url>

Username	<user>
Password	<password>

Destination with OAuth2ClientCredentials Authentication

Name	CPI
Type	HTTP
Proxy Type	Internet
Authentication	OAuth2ClientCredentials
URL	<runtime.url>
Client Id	<client ID>
Client Secret	<client secret>
Token Service URL	<oauth.url.for.clientCredentials>

Please refer help documentation how to get URL, Client ID , Client Secret and Token Service URL

Additional Properties to Destination

Additionally, add the following properties in the destination for cloud integration.

WebIDEEnabled	True
WebIDESystem	CPI
WebIDEUsage	odata_gen

Configure RFC Destination

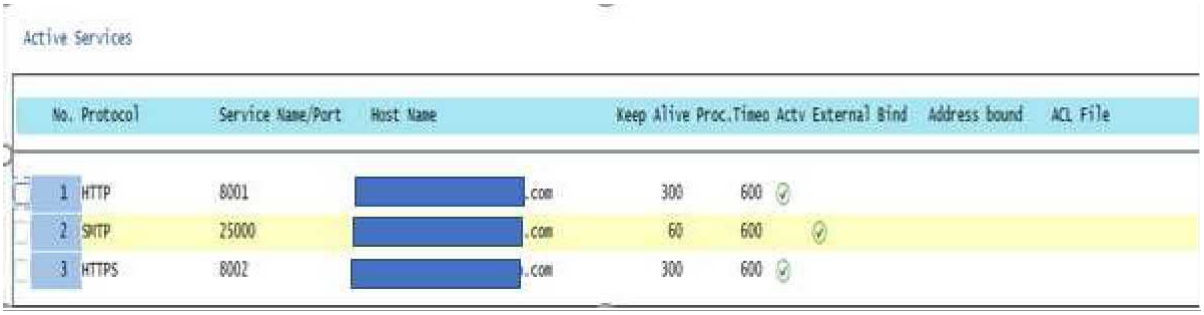
Name	S4ISU or <any name, but make sure that the destination name in iflow is a configurable parameter>
Type	RFC
Proxy Type	OnPremise
User	<USER>
Password	< PASSWORD>
Repository User	
Repository Password	
Location ID	<location ID as maintained in cloud connector>

Additional Properties	Name: jco.client.ashost Value: <abapServerHost> Name: jco.client.clientValue: <client id> Name: jco.client.sysnr Value: <systemNumber>

S4 HANA Destination Details:

Name	ISU
Type	HTTP
Proxy Type	OnPremise
Description	ISU
User	<TECHNICAL_USER>
Password	<PASSWORD>
Authentication	BasicAuthentication
Additional Properties	HTML5 Dynamic : True Product name : SAP S/4HANA Sap-client:<client id> WebIDE Enabled : True
	WebIDEUsage: Odata_gen.odata_abap

List of ICM active services in S/4HANA for Backend communication:

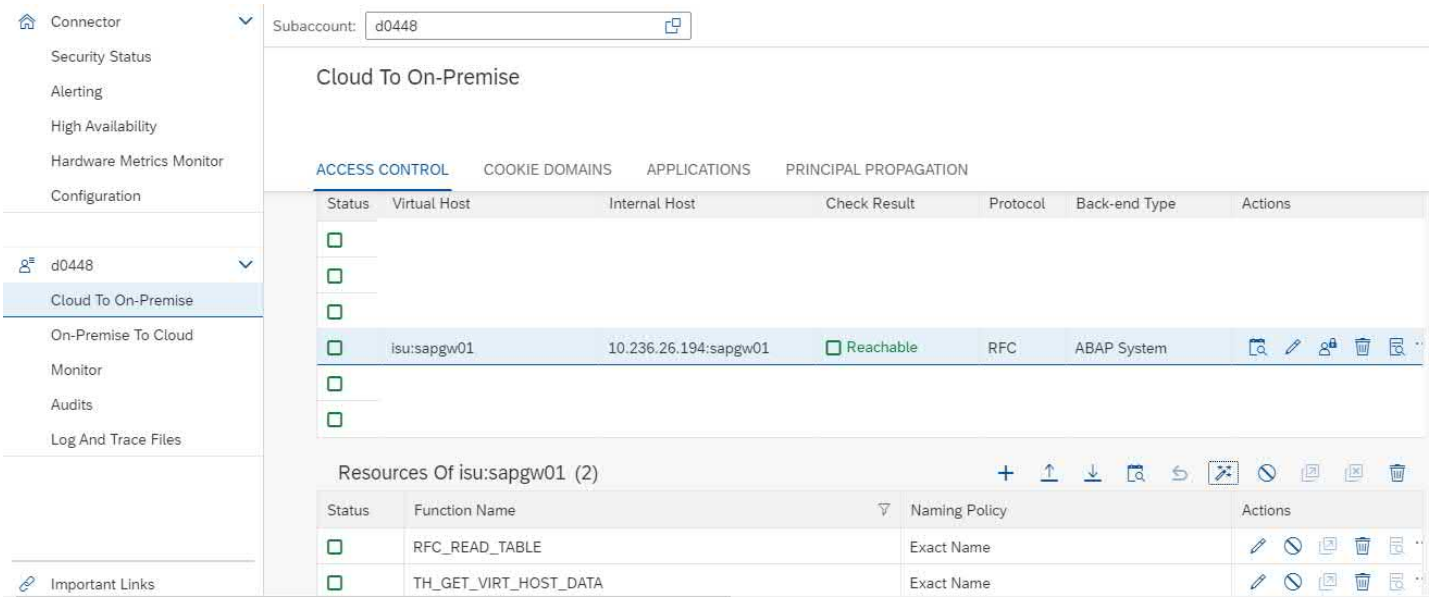


Configure Cloud Connector

For SAP S/4HANA on-premise landscape, configure cloud connector to enable secure tunnel to SAP BTP tenant for RFC calls. Please refer the help documentation to configure Cloud Connector.

Expose the Following BAPI/RFC in the SAP Cloud Connector:

- TH_GET_VRT_HOST_DATA
- RFC_READ_TABLE



RFC_READ_TABLE – This RFC is used in the integration flow to fetch F4 values for UI fields- Field Service request type, Order Code, Meter Reading Type etc

Services that need to be exposed from SAP S/4HANA on-premise using Cloud Connector

Rest Service	End Point Url	Protocol	Backend System
Read Installation Details	/zdisconnect/Installation?sap-client=<SAP client>&bp=<BusinessPartner>	HTTPS	ABAP System
Create Disconnection Details	zdisconnect/disconnect?sap-client=<SAP client>	HTTPS	ABAP System
Create Disconnection Order Details	/zdisconnect/DisconnectionOrder?sap-client==<SAP client>	HTTPS	ABAP System
Read Meter Details	/zdisconnect/meterread?sap-client=<SAP client>&discon=<DiscoDocNumber>&instl=<InstallationNo>	HTTPS	ABAP System
Create Meter Reads	zdisconnect/meterread?sap-client=<SAP client>	HTTPS	ABAP System
Retrieve Project URL for De-energization	DeEnergization/buildPSURL	HTTPS	ABAP System
Update Disconnection details	/zdisconnect/disconnect?sap-client=<SAP client>	HTTPS	ABAP System
updated Disconnection Order Details	/zdisconnect/ DisconnectionOrder?sap-client=<SAP client>	HTTPS	ABAP System

Configure SAP S/4HANA Destination

Configure a HTTP destination to connect with SAP S/4HANA on-premise or SAP S/4HANA Cloud, refer to documentation here for the same. The below is a destination configuration for for SAP S/4HANA on premise used in the workflow to identify duplicates.

Name	ISU
Type	HTTP
Proxy Type	OnPremise
User	<TECHNICAL_USER>
Password	<PASSWORD>
Authentication	BasicAuthentication
URL	http://virtualbtp:8001/sap/opu/odata/sap/API_SERVICE_REQUEST_SRV
Additional Properties	HTML5.DynamicDestination : true product.name : SAP S/4HANA sap-client : <sap-client> WebIDEEnabled : true WebIDEUsage : odata_gen,odata_abap,dev_abap

Import, Configure and deploy Integration Content

This package utilizes Cloud Integration capability within SAP Integration Suite to provide integration between SAP ERP (or SAP S/4HANA) and SAP Build Process Automation or SAP Workflow Management. Further details can be found in dedicated integration guide of the integration package "SAP Build Process Automation Integration with SAP S/4HANA for De Energization or Disconnection"

Get Installation Details

API Attributes	Values
Path	/zdisconnect/Installation? Sap-client=<SAP client>&bp=<BusinessPartner> &instl=<bp> &lang=<lang>
HTTP Method	GET
Response Payload from integration flow	[{ "bp": "1000000038", "anlage": "3000000020", "sparte": "01", "vstelle": "2000000012",

	"vertrag": "",
	"erdat": "2021-11-11",
	"ernam": "SU20159077",
	"aedat": "2021-11-12",
	"aenam": "SU20159077",
	"devices": [
	{
	"logiknr": 109,
	"equnr": "000000000001000021",
	"eqktx": "meter",
	"matnr": "000000000000000001",
	"sernr": "000000000000000023",
	"maktx": "meter",
	"vZwstand": 126,
	"nZwstand": 0
	},
	{
	"logiknr": 110,
	"equnr": "000000000001000022",
	"eqktx": "meter",
	"matnr": "000000000000000001",
	"sernr": "000000000000000024",
	"maktx": "meter",
	"vZwstand": 66,
	"nZwstand": 0
	}
	]

Payload Type	Application / JSON

Create Disconnection

API Attributes	Values
Path	zdisconnect/disconnect?sap-client=<SAP client>
CPI Path	CPI/http/DisconnectCreate
HTTP Method	POST

Payload sent by workflow (sample data)	"disconDocCreatePayload": {
	"RefObjType": "INSTLN",
	"RefObjKey": "3000000050",
	"DisProcv": "CUST",
	"DiscReason": "03",
	"ServiceRequest": "8000000175"
	}

Response Payload from integration flow	"disconDocNumber": { "mandt": "", "discno": "000000000385", "discprocv": "CUST", "discreason": "03", "status": 1, "refobjtype": "INSTLN", "refobjkey": "3000000050", "recdatepl": "0000-00-00", "datObsolt": "0000-00-00", "billrel": "X", "erdat": "2022-01-06", "ernam": "SU20159077", "aedat": "0000-00-00", "aenam": "", "begru": "", "loevm": "",

	"messageType": "S", "message": "Doc created" } Note: if message type is Not 'S' then the REST Service in backend has failed
Payload Type	Application / JSON

Create Disconnection Order Details

API Attributes	Values
Path	zdisconnect/disconnect?sap-client=<SAP client>
CPI Path	CPI/http/DisconnectionOrderCreate
HTTP Method	POST

Payload sent by workflow (sample data)	"disconOrderPayload": {
	"DisconnectionDocument": "000000000385",
	"OrderCode": "DC00",
	"OrderWerk": "1000",
	"ActDate": "25.01.2022",
	"ActTime": "18:43:08"
	}

Response Payload from integration flow	"disconOrderResponse": {
	"ORDERCODE": "DC00",
	"PLANT": "1000",
	"DATE": "25.01.2022",
	"TIME": "18:43:08",
	"DISCONNECTACTIVITY": "0001",
	"ORDER": "000001000122",
	"STATUS": "20",
	"MESSAGES": [
	"Service order is created"
	],
	"MESSAGE_TYPE": "S"
	}
	
	Note: if message type is Not 'S' then the REST Service in backend has failed

Payload Type	Application / JSON

Read Meter Details

API Attributes	Values
Path	zdisconnect/disconnect?sap-client=<SAP client>
CPI Path	CPI/http/ReadMeterDetails?&discon=${context.meterServicePayload.disconDocNumber}&instl=${context.meterServicePayload.installationNumber}
HTTP Method	POST

Payload sent by workflow (sample data)	"meterServicePayload": {
	"disconDocNumber": "000000000385",
	"installationNumber": "3000000050"
	}

Response Payload from integration flow	"meterDetailsResponse": [
	{
	"MESSAGE": ""
	}
	],

Payload Type	Application / JSON

Create Meter Reads

API Attributes	Values
Path	zdisconnect/disconnect?sap-client=<SAP client>
Cpi path	/http/MeterReadDetailsCreate
HTTP Method	POST

Payload sent by workflow (sample data)	"meterUpdateRequest": [
	{
	"material": "1",
	"serialno": "98798712",
	"register": "001",
	"mrdate": "25.01.2022",
	"mrtime": "18:43:08",
	"readingresult": "400",
	"discondoc": "000000000385"
	}
	]

Response Payload from integration flow	"meterDetailsResponse": [
	{
	"MESSAGE": ""
	}
	],

Payload Type	Application / JSON

Update Disconnection details

API Attributes	Values
Path	zdisconnect/disconnect?sap-client=<SAP client>
CPI Path	CPI/http/DisconnectUpdate
HTTP Method	POST

Payload sent by workflow (sample data)	"rejectDisconnectionPayload": {
	"DISCNO": "000000000386",
	"STATUS": 99
	}

Response Payload from integration flow	NA
Payload Type	Application / JSON

Updated Disconnection Order Details

API Attributes	Values
Path	zdisconnect/disconnect?sap-client=<SAP client>
Cpi path	/http/DisconnectionOrderUpdate
HTTP Method	POST
Payload sent by workflow (sample data)	"tecoRequest": { "DisconnectionDocument": "000000000385", "ServiceOrder": "000001000122", "Status": "TECHNICALCOMPLETE" },
Response Payload from integration flow	"tecoResponse": [{ "TYPE": "S", "ID": "CO", "NUMBER": 85, "MESSAGE": "Order 1000122 will be released after update", "LOG_NO": "", "LOG_MSG_NO": 0, "MESSAGE_V1": "1000122", "MESSAGE_V2": "", "MESSAGE_V3": "", "MESSAGE_V4": "", "PARAMETER": "", "ROW": 0, "FIELD": "", "SYSTEM": "ISUCLNT200" }, { "TYPE": "S", "ID": "IW", "NUMBER": 80, "MESSAGE": "Order saved with number 1000122", "LOG_NO": "", "LOG_MSG_NO": 0, "MESSAGE_V1": "1000122", "MESSAGE_V2": "", "MESSAGE_V3": "", "MESSAGE_V4": "", "PARAMETER": "", "ROW": 0, "FIELD": "", "SYSTEM": "ISUCLNT200" }, { "TYPE": "S", "ID": "IWO_BAPI2", "NUMBER": 110, "MESSAGE": "BAPI control was ended", "LOG_NO": "", "LOG_MSG_NO": 0, "MESSAGE_V1": "", "MESSAGE_V2": "", "MESSAGE_V3": "", "MESSAGE_V4": "", "PARAMETER": "", "ROW": 0, "FIELD": "",

	"SYSTEM": "ISUCLNT200" }],
Payload Type	Application / JSON

Retrieve Project URL for De-energization

API Attributes	Values
Path	/sap/bc/gui/sap/its/webgui?~transaction=*ES32%20EANLD-ANLAGE=<installationNumber>#
HTTP Method	POST
Payload sent by workflow (sample data)	instl: "3000000018"
Response Payload from integration flow	{"URL":"<hostname>/sap/bc/gui/sap/its/webgui?~transaction=*OLR3_CJ20N OLR3_R3_TS_SEL_OBJ-PSPID=<instln no>"}
Payload Type	Application / JSON

Determine Plant Based Approver from External Service

Disconnection process content package have the flexibility to determine approver either via Plant or Connection Object. Based on the step attribute configured in the process variant, it can either Plant or Connection Object.

Based on the Service on the Service request type for the request approver can be determined either via Business Rules or via External Service. If the Service request type is ZSR approver will be determined by Business rules, for all other cases it should be configured via External Service.

In case of approver determined via plant for any service other than ZSR, external service should be configured with following details

API Attributes	Values
Path	/http/DeEnergization/comsapcontentPlantApprover
HTTP Method	POST

Payload sent by workflow (sample data)	{
	"Vocabulary": [
	{
	"DisconnectionRequest": {
	"RequestType":"ZSR",
	"Plant": "1000"
	}
	}
	]
	}

Response Payload from integration flow	{
	"Result":[
	{
	"PlantBasedApprover":{
	"MailID": "abc@email.com",
	"UnitOfTime": < "H" OR "m" OR "Y" OR "M" OR "D" >,
	"UserID": <User Id> ,
	"Duration": ,
	"UserGroup" :<User Group>
	}
	}
	]
	}
	Note: When Status is not 200, then it is considered a failed service call.

Payload Type	Application / JSON

Determine Connection Object Based Approver from External Service

Disconnection process content package have the flexibility to determine approver either via Plant or Connection Object. Based on the step attribute configured in the process variant, it can either Plant or Connection Object.

Based on the Service on the Service request type for the request approver can be determined either via Business Rules or via External Service. If the Service request type is ZSR approver will be determined by Business rules, for all other cases it should be configured via External Service.

In case of approver determined via Connection Object for any service other than ZSR, external service should be configured with following details

API Attributes	**Values**
Path	/http/DeEnergization/comsapcontentConObjApprover
HTTP Method	POST
Payload sent by workflow (sample data)	{ "Vocabulary": [{

	"DisconnectionRequest": {
	"RequestType":"ZSR",
	"ConnectionObject": "1000000075"
	}
	}
	]
	}

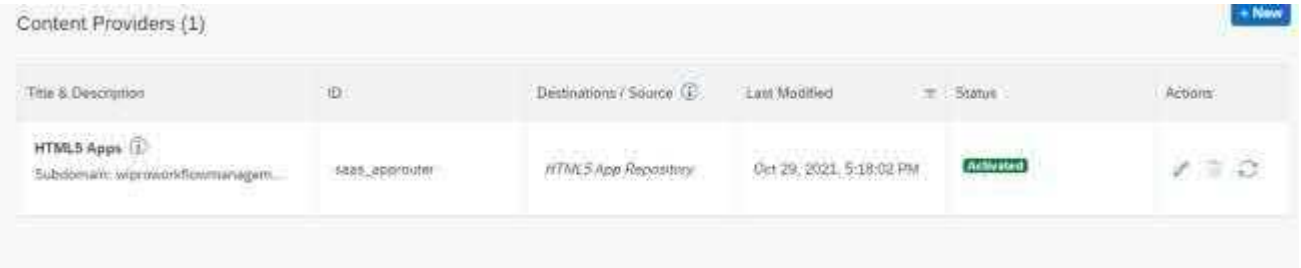
Response Payload from integration flow	{
	"Result": [
	{
	"ConnectionObjectBasedApprover": {
	"MailID": "abc@email.com",
	"UnitOfTime": < "H" OR "m" OR "Y" OR "M" OR "D" >,
	"UserID": <User Id>,
	"Duration": ,
	"UserGroup" : <User Group>
	}
	}
	]
	}
	Note: When Status is not 200, then it is considered a failed service call.

Payload Type	**Application / JSON**

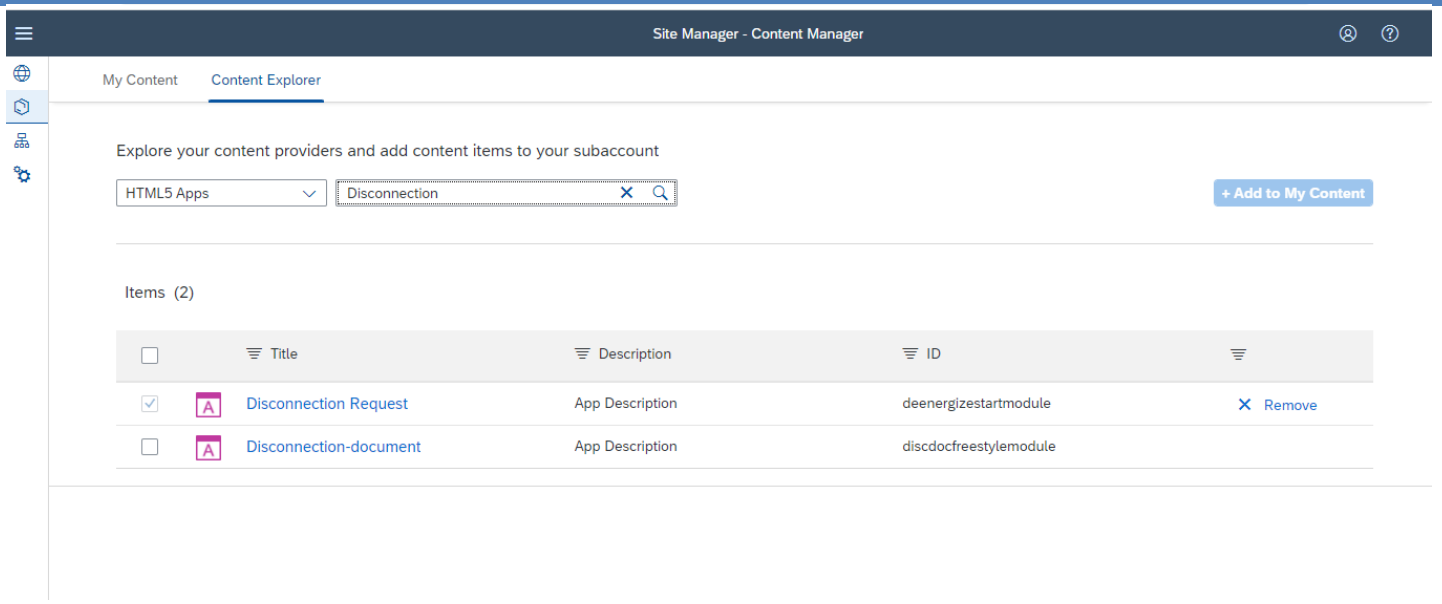
Configure SAP Central Fiori Launchpad Site for SAP Workflow Management

If you plan to use SAP Launchpad service, then configure SAP Central Fiori Launchpad Site with Workflow Applications using help documentation.

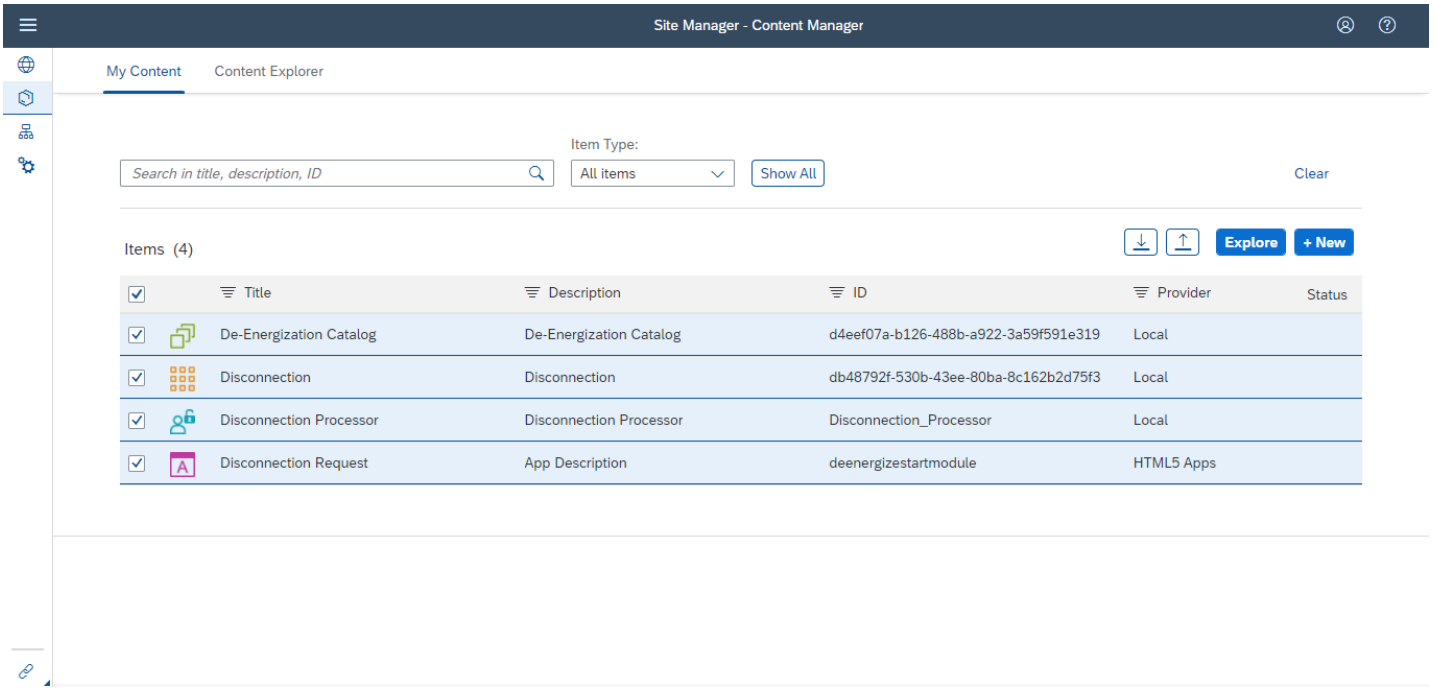
To configure the Fiori Launchpad tile we have subscribed the Launchpad service from the subaccount and launch the service. We have created the site in site Directory. In Provider manager, we have made the default HTML5 Apps content provider load the standard apps of the workflow capability and refreshed it.



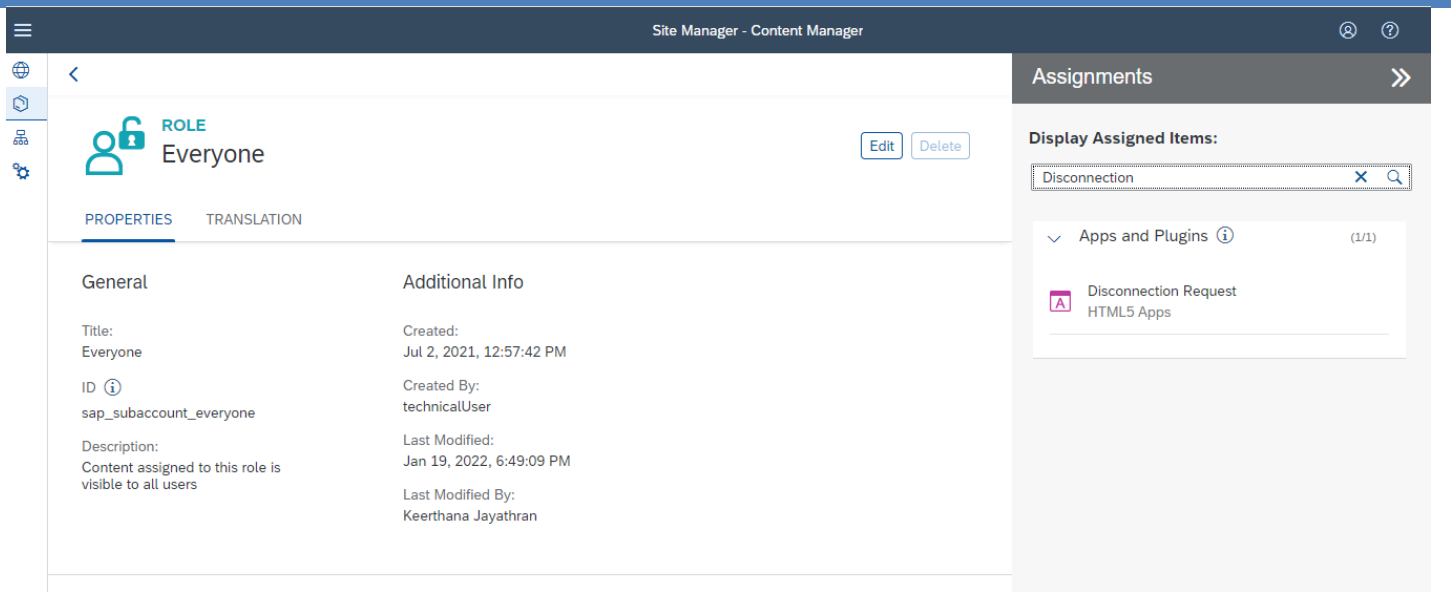
In content manager, we have content explorer where we can see all the HTML5 App, which we deployed.



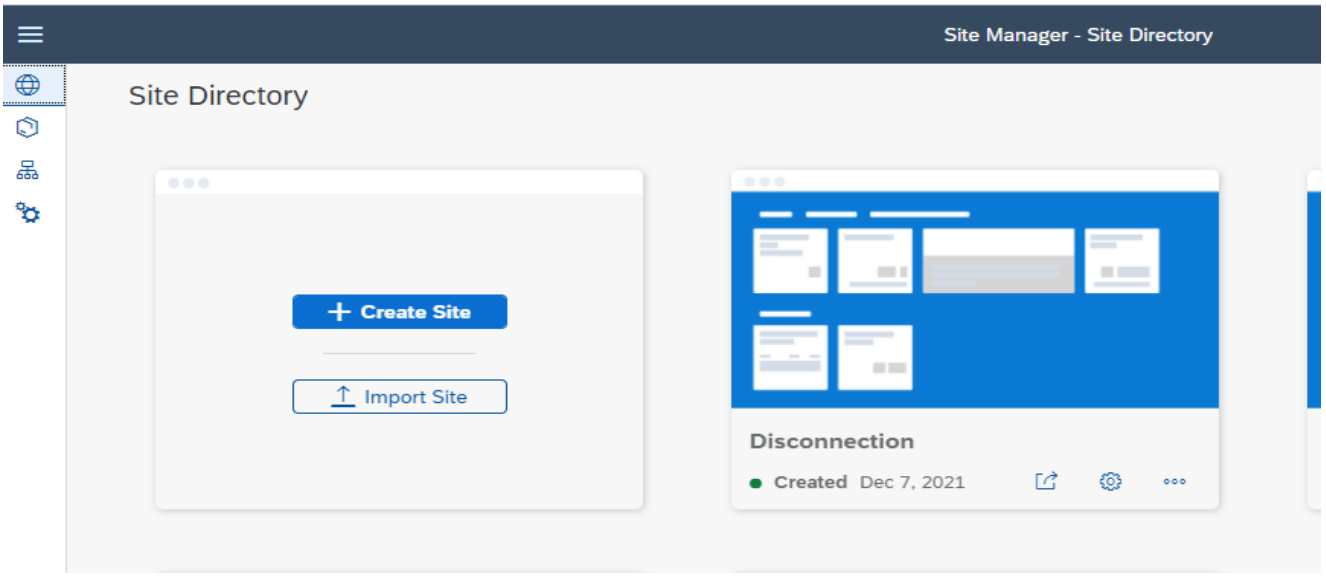
From them we need to choose our app and add it to My Content. In my content, create the local copy of the app and then change the General section data then created group, catalog.

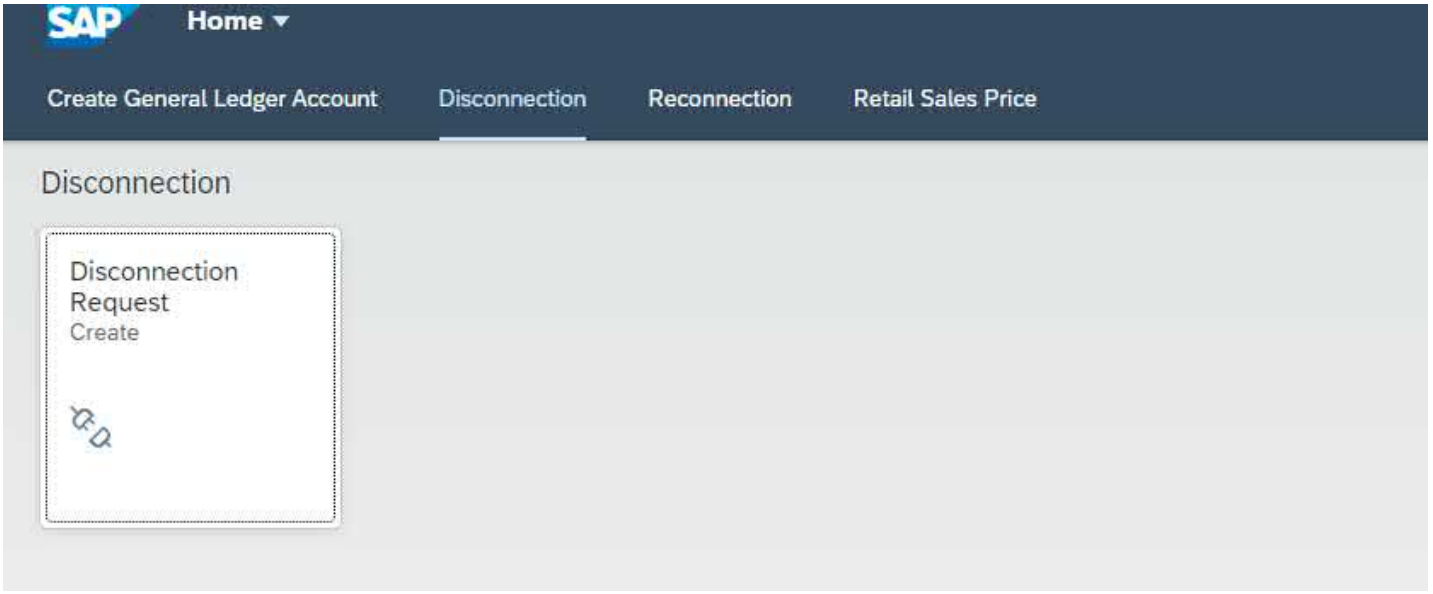


Then assign the app to the catalog and catalog to group. Then in role Everyone assign the app.



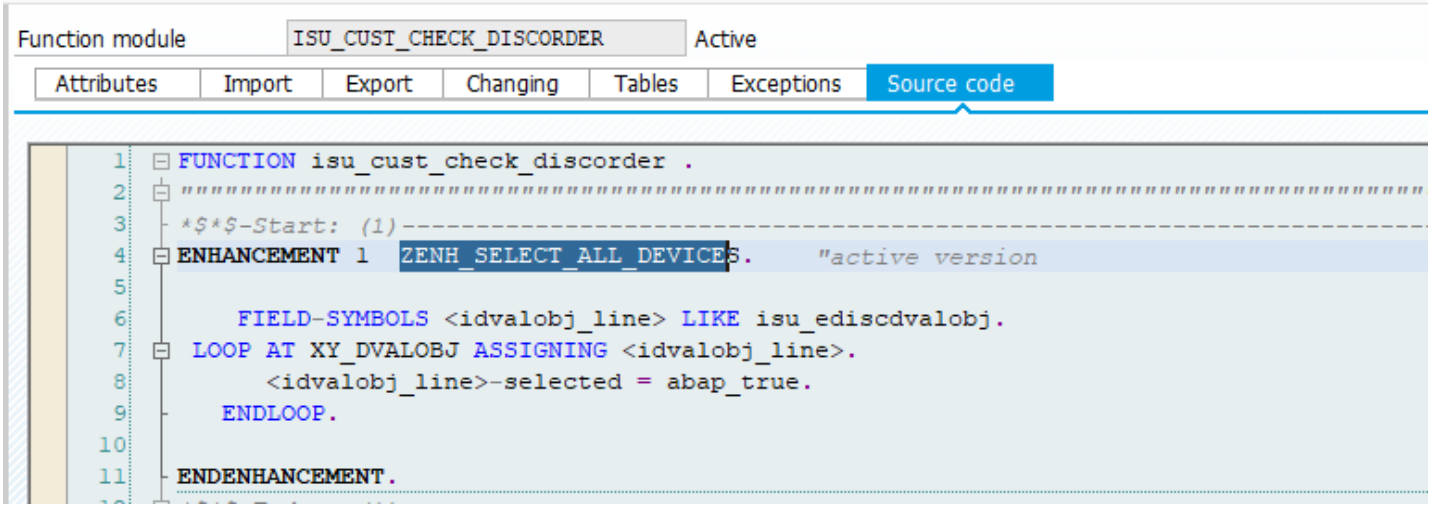
Then app can be launched from the Launchpad.



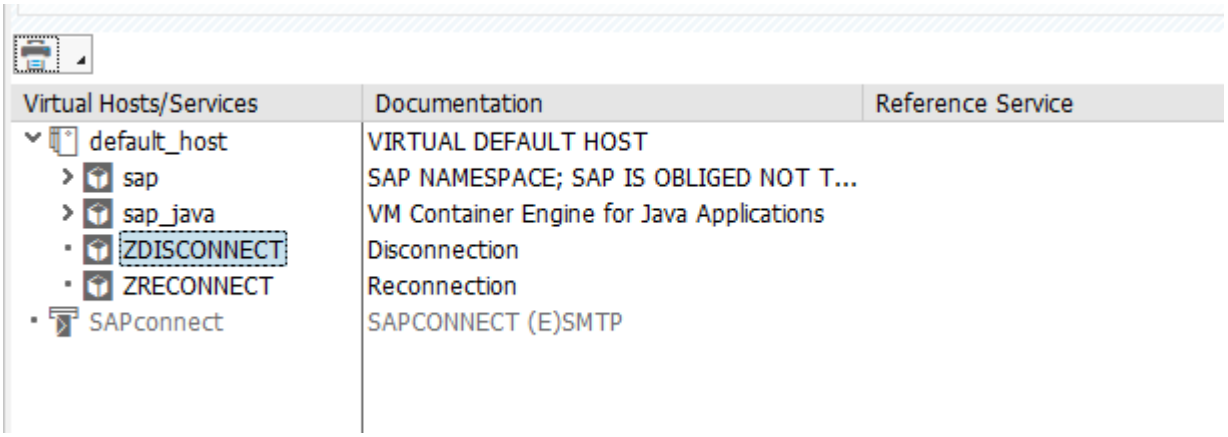


Custom Code & OData Service Details

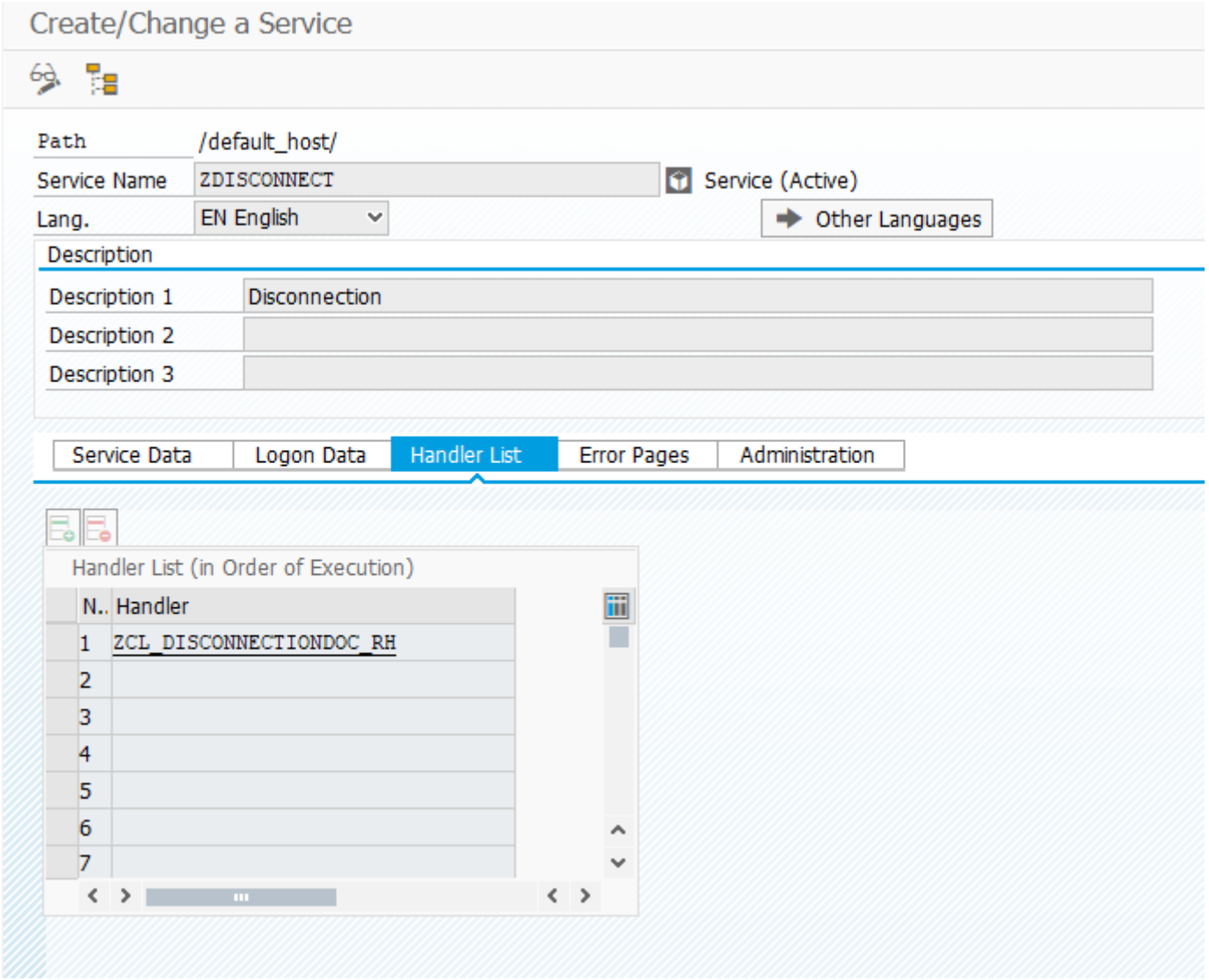
- The Function Module ISU_CUST_CHECK_DISCORDER should be enhanced with implicit enhancement as shown below



- SICF Node should be enhanced to have a new Node “ZDISCONNECT” as shown below



- The Node ZDISCONNECT should have the class ZCL_DISCONNECTIONDOC_RH in the "handlerlist" as shown below.



- The Handler class ZCL_DISCONNECTIONDOC_RH will refer to the below classes

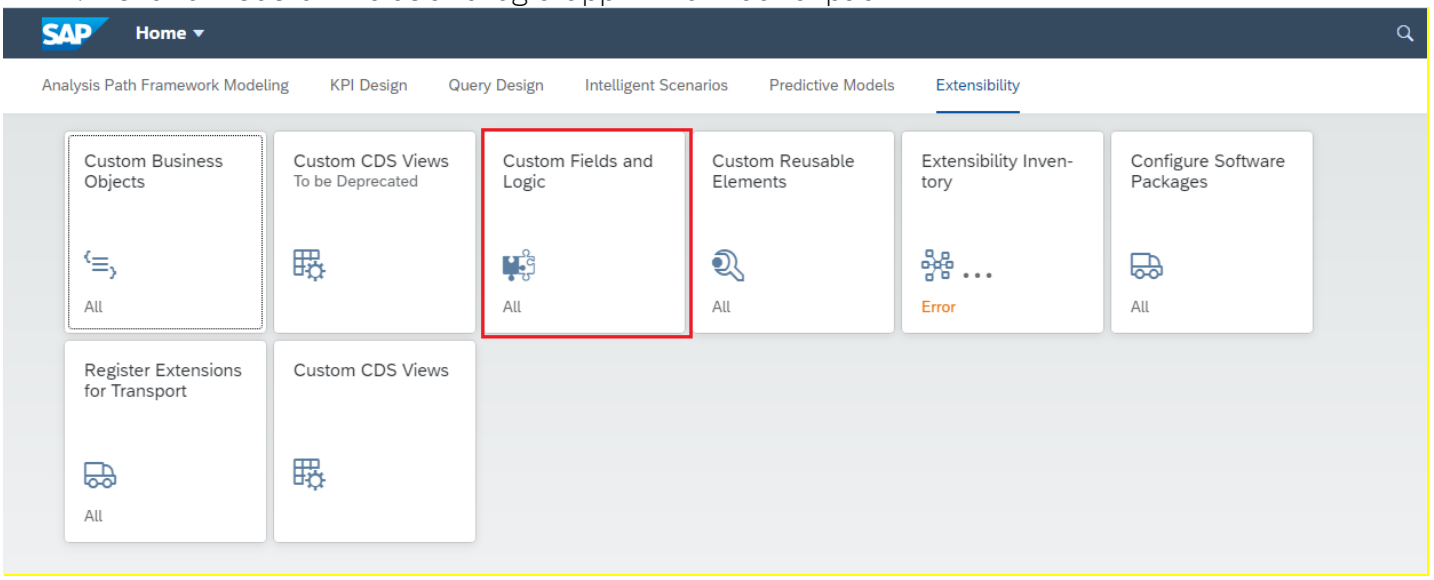
1. ZCL_REST_INSTL
2. ZCL_REST_DISCON
3. ZCL_REST_DISORD
4. ZCL_REST_MR

Note: Text files with source code for each of the class will be attached to SAP Note **3147956**

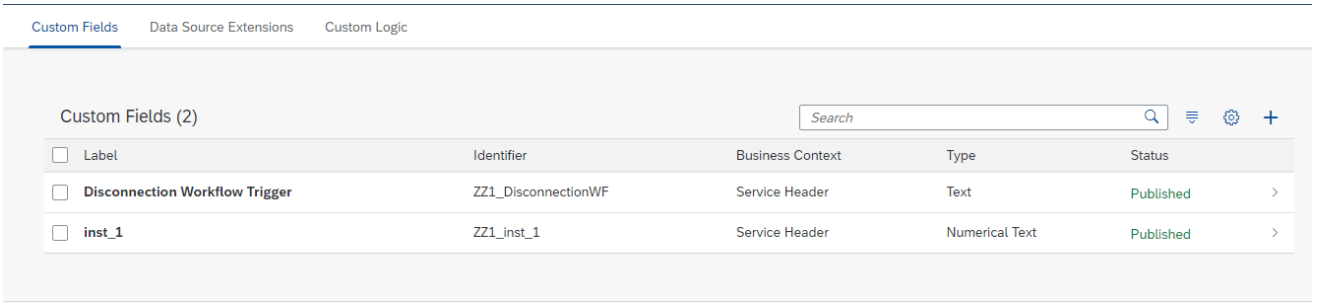
Standard API API_SERVICE_REQUEST needs to be enhanced as follows

Steps for Creating Custom fields in API API_SERVICE_REQUEST

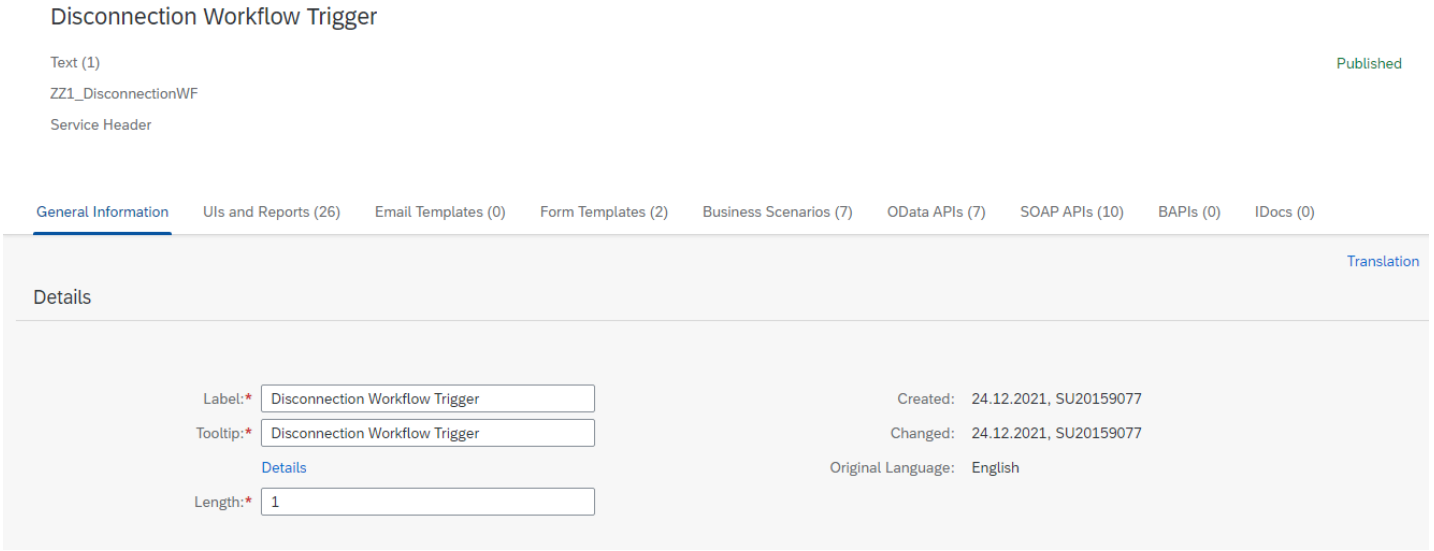
1. Click on "Custom fields and logic" app in Fiori Launchpad.



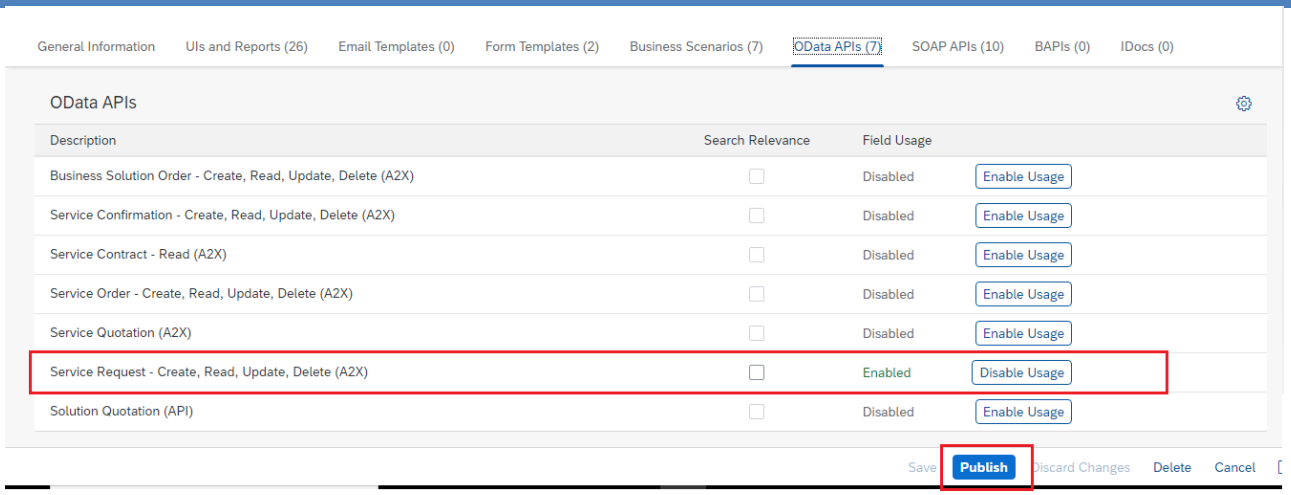
2. Click on create option to create the field to be added to the ODATA Service



3. Enter details as follows for creation of new field zz1_DisconnectionWF in the odata API



4. Click on ODATA api tab enable the odata api and publish



5. Repeat same steps for the field ZZ1_inst_1.

Register OData Services in SAP Gateway:

1. Go to t-code "/IWFND/MAINT_SERVICE"
2. Click on "Add Service"
3. Select the required System Alias
4. click on "Get Services"
5. Select "API API_SERVICE_REQUEST" and click on "Add Selected Services"
6. Enter the required package and click on OK.