Integration between TMForum and SAP S/4HANA BRIM

SAP

Content

1 Introduction

The integration package offered in this collection included template IFlows designed for SAP Cloud Integration, serving as a seamless "plug&play" solution to facilitate integration between SAP S/4HANA BRIM systems and telecommunications systems. These template IFlows, while providing fundamental functionality, are also customizable by experienced integration developers to adjust to specific and unique requirements.

Package Content:

This integration package contains four distinct artifacts, including two template IFlows. These are specifically crafted to enable smooth inbound communication between the telecommunications system and the SAP S/4HANA BRIM system.

2 Replicate customer billing management data from TMForum to SAP S4HANA BRIM

This section contains an in-depth explanation of the IFlow steps and core IFlow logic of the template for TMF678 Customer Bill Management. The IFlow for API678 is rigorously structures to address three core scenarios: Customer Bill, Customer Bill On Demand and Applied Customer Billing Rate. For each of these resources, the main process employs a router to direct the CamelHttpUrl header to the corresponding local Integration Process. The following outlines each resource, detailing their technical implementation, necessary requirements and any limitations.
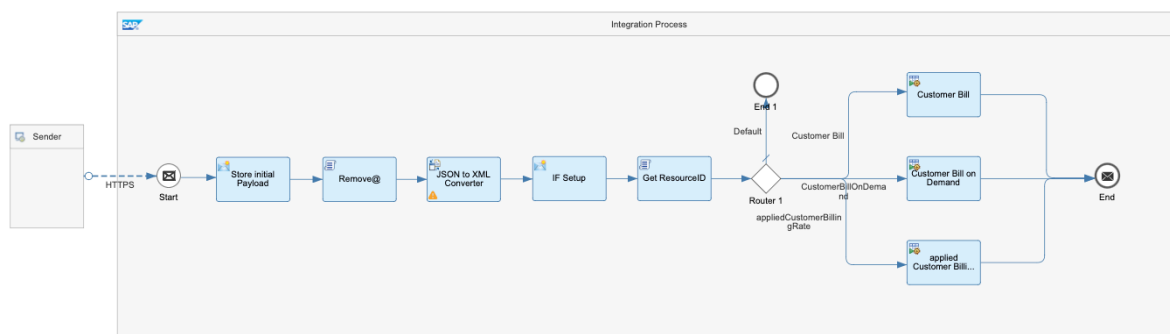
2.1 General Configurations:

In the configuration tab, the following general configurations must be tailored for each specific use case:

LocationID	Identifies the LocationID of your Cloud Connector
TMF_enableLog	Set to 'true' or 'false' to enable or disable logging of the attachment before/after each step where it is implemented, such as API calls.
Address	Specifies the Host and Port in the format http://host:port, excluding a slash at the end
CredentialName	Points to the Security Material section, storing credentials for the S/4HANA system.
RFC_Destination	RFC Destination configured in SAP BTP Cockpit pointing to SAP S/4HANA OP System.

2.2 General Prerequisites:

- Establish connection between Integration Suite tenant and S/4HANA BRIM via Cloud Connector
- Make sure, that all APIs and RFC functions you need are whitelisted in Cloud Connector

2.2.1 /CustomerBill

The IFlow for Customer Bill encapsulates the following functionalities: Retrieving a single bill using a specific document id and fetching a list of bills, filteres by document id and billing account.

Operations: GET

S/4HANA BRIM Business Object: Invoicing Document

Prerequisites

- Activate OData V4 with transaction **/IWFND/V4_ADMIN**:
  https://api.sap.com/api/CAINVOICINGDOCUMENT_0001/overview

Limitations

- The features for updating the status of a customer Bill has not been implemented, as the S/4HANA BRIM does not provide functionality for this.
- The 'billDocument' section will be omitted since it references the Document Management API from the TM Forum, meaning the attachment section will be excluded.

Additional externalized parameter:

Endpoint CustomerBill_List	URL to Convergent Invoicing Invoicing Document API
Endpoint CustomerBill_Single	URL to Convergent Invoicing Invoicing Document API

2.2.2 /Customer Bill On Demand

The IFlow for Customer Bill On Demand encompasses these key functions: It enables the retrieval of an individual bill via a specific document id and the acquisition of a list of bills, filtered by document id and billing account. Additionally, it facilitates the creation of a customer bill on demand using a rfc function, independent of the automated billing process.

Operations: GET, Post

S/4HANA BRIM Business Object: Invoicing Document

Prerequisites

- Activate OData V4 with transaction /IWFND/V4_ADMIN:
  https://api.sap.com/api/CAINVOICINGDOCUMENT_0001/overview
- RFC function: FKK_INV_INVOICE_CREATE_API (Create Invoicing Document)
- Configure RFC Destination in BTP Cockpit for FKK_INV_INVOICE_CREATE_API

Limitations

- The SD billing is not realized and out of scope

Configurations

These externalized parameters need to be adjusted depending on their configuration in S/4HANA BRIM system. Their default values can be checked in transaction SE37.

I_INVOICE_PROCESS	Default Value
I_PROCESS	Default Value
I_MAX_PROBCL	Default Value

These two externalized parameters are used in the message mappings, respectively. They can be adjusted with the desired values:

State_successful	In case the Invoicing document was created successfully.
State_unsuccessful	In case the Invoicing document could not be created.

Mappings

- When creating a customer bill on demand, S/4HANA BRIM system needs specific information that is not provided by TM Forum. This information is managed through properties with externalized parameters and is mapped using a 'getProperty' function in the mapping process.
- The response from S/4HANA BRIM following the creation of a customer bill on demand doesn't include the data required to construct the response back to TM Forum. In this case, we obtain the necessary information from the incoming request from TM Forum, store it as properties and then reuse it in the response mapping.

Additional externalized parameter:

Endpoint CustomerBill_List	URL to Convergent Invoicing Invoicing Document API
Endpoint CustomerBill_Single	URL to Convergent Invoicing Invoicing Document API

2.2.3 /appliedCustomerBillingRate

Operations: GET

S/4HANA BRIM Business Object: Invoicing Billable Item

Prerequisites:

- Activate OData V4 with transaction **/IWFND/V4_ADMIN**:
  https://api.sap.com/api/CABILLABLEITEM_0001/overview
- SAP note: https://me.sap.com/notes/3354855
- Add Custom Field ZZ_RATE in S/$HA

Changes to TMF 678 json swagger file:

- Z-field 'ZZ_RATE' added to retrieve the billing rate

Externalized Parameter:

Endpoint AppliedCustomerBillingRate	URL to Convergent Invoicing Billable Item – Read API

3 Replicate account management data from TMForum to SAP S4HANA BRIM

Ressources:

/partyAccount, /billingAccount, /settlementAccount

Operations: GET, POST

S/4HANA BRIM Business Object: Contract Account

Comments:
- Same Result for PartyAccount, BillingAccount, SettlementAccount except the Attribute @type
- Some Fields in S/4HANA are mandatory, which are not mandatory in TMForum. They are also provided in the responses. Some of them don´t have an equivalent field in TMForum, therefore "relatedParty" Table is used to pass these SAP-related values to the BAPI to create a Contract Account. The required Fields are specified in the Mapping Specification Excel as well as the attached Postman Collection TMF666_BRIM_Testing.postman_collection.json

3.1 /financialAccount

Operations: GET

S/4HANA BRIM Business Object: Contract Account Balance

Comment: This part of the Contract Account cannot be changed from outside SAP by using Standard APIs. Therefore, no POST-Operation is possible. Also the S/4 BRIM API needs a specific Contract Account Number as Parameter, so the /financialAccount Resource only works with a Contract Account Number → /financialAccount/<AccountNumber>.

3.2 /billingCycleSpecification

Operations: GET, POST

S/4HANA BRIM Business Object: Contract Account Billing Cycle

Comment: The Master Data Table of this Field cannot be changed from outside SAP by using Standard APIs. Therefore, no POST-Operation is possible.

3.3 /billFormat

Operations: GET

S/4HANA BRIM Business Object: Contract Account Determination Code for Alternative Invoice Form

Comment: The Master Data Table of this Field cannot be changed from outside SAP by using Standard APIs. Therefore, no POST-Operation is possible.

3.4 /billPresentationMedia

Operations: GET

S/4HANA BRIM Business Object: Contract Account Correspondence Variant

Comment: The Master Data Table of this Field cannot be changed from outside SAP by using Standard APIs. Therefore, no POST-Operation is possible.

Changes to TMF Swagger json File:

- Removed "@referredType" from "required"-Array in relatedParty. Reason: SAP Integration Suite cannot map Fields with "@" in their Names in Message Mappings. Message Mapping cannot be activated when a mandatory field is not mapped.

Prerequisites

- Install Cloud connector on SAP Server and establish Connection between SAP BTP Tenant and SAP S/4HANA System
- Configure RFC Destination for BAPI BAPI_ISUACCOUNT_CREATEFROMDATA

API to be activated on S/4HANA System:

- https://api.sap.com/api/CONTRACTACCOUNT_0001/resource/ → activate in Transaction /IWFND/V4_ADMIN

Mappings

- Mapping between TMF Ressources and S/4HANA BRIM APIs see Mapping Specification Excel
- Value Mappings:
    - o BillFormatKey -> BillFormatDescr (SAP DB Table: TFK2680)
    - o PaymentTermKey -> PaymentTermDescr (SAP DB Table: TE052)
    - o BillingCycleKey -> BillingCycleDescr (SAP DB Table: TFK2607)
    - o BillPresentationMediaKey -> BillPresentationMediaDescr (SAP DB Table: TFK070B)

    The Value Mappings provide only the Names for the specific Field Key, stored in the SAP System Database (DB Table mentioned in brackets). The Standard APIs only return the Key Values without a Description and there is no Standard API to retrieve it.

Limitations

To be able to POST party-/ billing- or settlement Accounts (which is all a Contract Account in SAP), a Business Partner has to be in the SAP System already. The Business Partner Object maps to the TMForum API "Customer", which is not in Scope of this implementation. So either the Business Partner is already created in the SAP System

before this API is used for POST, or the TMForum Customer API has been provided to POST Business Partners to the S/4HANA BRIM System. The attached Postman collection includes an example request for Posting a partyAccount.

Configurations

Externatized Parameters:

- **RFC_Destination**: RFC Destination configured in SAP BTP Cockpit pointing to SAP S/4HANA OP System. Default Value: ""
- **RFC_SendConfirmTransaction**: Default: ""
- **RFC_CreateNewConnection**: Default: ""
- **HTTP_ContractAccountAPI_URL**:   URL   to   Contract   Account   API,   Default: " http://host:port/sap/opu/odata4/sap/api_contractaccount/srvd_a2x/sap/api_contractaccount/0001/ ContractAccount"
- **LocationID**: Location ID of Cloud Connector. Default: ""
- **Authentication**. Default: Basic
- **CredentialName:** Name of the Credential, Default ""
- **Timeout**: Default: 60000

HTTP_RetrieveAccountBalanceAPI_URL: URL to API to retrieve Account Balances. Default: "http://host:port/sap/opu/odata4/sap/api_contractaccount/srvd_a2x/sap/api_contractaccount/0001/Contra ctAccount('${header.ResourceID}')/SAP__self.RetrieveAccountBalance(BusinessPartner='',CAContract='',Cleare dDocItemsAreSelected=True,StatisticalDocItemsAreSelected=True,DocOpenItemReconstructionDate=9999-12-31,InstlmntPlnOriglDocItmsAreSeld=True,CollvBillOriglDocItmsAreSeld=True,CAMainTransaction='',CASubTrans action='',CAStatisticalItemCode='',CAClearingReason='',CompanyCode='',FromDocumentDate=0001-01-01,ToDocumentDate=9999-12-31,FromPostingDate=0001-01-01,ToPostingDate=9999-12-31,FromNetDueDate=0001-01-01,ToNetDueDate=9999-12-31,FromCashDiscountDueDate=0001-01-01,ToCashDiscountDueDate=9999-12-31,FromDeferralDate=0001-01-01,ToDeferralDate=9999-12-31,FromClearingDate