

Replication, Integration, and Configuration for ICI for SAP CPQ with SAP S/4HANA (Sell Side) Adapter

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Overview

This topic describes the steps to configure the master data integration between Icertis Contract Intelligence (ICI) platform and SAP S/4HANA using SAP Cloud Integration.

This master data integration use case is a part of the larger Quote-to-Cash (Q2C) scenario involving SAP CPQ, SAP S/4HANA, and Icertis Contract Intelligence (ICI). To know more, see ICI for SAP CPQ and SAP S/4HANA (Sell side) Adapter on the Icertis Help Center.

Note: If you are using ICI version 8.3 or later, to access the latest information for ICI for SAP CPQ and SAP S/4HANA (Sell side) Adapter, click the help icon from the product UI.

SAP S/4HANA is the master for Business Partner (Customer) and Product data. The data should be synced (create, update, delete) to SAP CPQ and ICI.

Master data sync should be set up for the below scenarios:

- Event-Based (Create, Update, Delete) Realtime Sync
- Scheduled Batch Sync (Incremental Updates for date-time range)

To know more, see [Data Replication Using SOA With Data Replication Framework \(DRF\)](#).

System Requirements

The system requirements for a successful configuration:

- SAP S/4HANA
- SAP Cloud Integration
- ICI Platform

Configuration in ICI

- Contact your Icertis Contract Intelligence (ICI) implementation team to complete the configuration.
- Contact ICI Admin to configure the infrastructure level changes in ICI.

- ICI environment should be configured with Masterdata contract type for the following entities:
 - Customer
 - Product

To look up records, you can separately set up masterdata for country, product type, unit of measurement, and more.

To know how to configure the Masterdata contract type, see “Masterdata” on the Icertis Help Center.

Configuration in SAP Cloud Integration

To use the iFlow (Integration Flow), you must copy and configure it in your local environment. As a part of this configuration, the iFlow is adapted to the integration environment by providing system details of the sending and receiving systems. To know more, see [Getting Started with Integration Flow Development](#).

Viewing Prepackaged iFlows using SAP Cloud Integration (CI)

1. Access the SAP Cloud Integration Web UI.
It should be in the following format: [http://]<tenant management node URL>/itspaces.
2. On the **Discover** tab, view all prepackaged integration flows.
To know more, see [Working with Prepackaged Integration Content](#).
3. Choose the required package.
For this integration, we have the following packages:
 - Icertis Contract Intelligence (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side)
 - Icertis Contract Intelligence (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side) – Extensions

4. To view all the artifacts of the package, click **Artifacts**.
The following artifacts are included in the packages.

Icertis Contract Intelligence Integration (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side)

- Replicate Suppliers and Locations from SAP S/4HANA to ICI
- Replicate Supplier Contacts from SAP S/4HANA to ICI
- Replicate Product Master from SAP S/4HANA to ICI

Icertis Contract Intelligence Integration (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side) – Extensions

- Replicate Suppliers Extension flow – PreExit
- Replicate Suppliers Extension flow – PostExit
- Replicate Product Master Extension flow – PreExit
- Replicate Product Master Extension flow – PostExit

Based on your requirements you can now deploy the iFlows.

Configuring and deploying the iFlow using SAP Cloud Integration

1. Connect to the tenant management node of the SAP Cloud Integration system with the URL: [http://]<tenant management node URL>/itspaces.
2. On the **Discover** tab, select the package, for example, **Icertis Contract Intelligence (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side)**.
3. To view all the iFlows related to this integration package, click **Artifacts**.
4. To copy the package to the design area, in the top right corner, click **Copy**.
Note: If the integration package is being created for the first time, you see the **Integration Package Created** message. If not, you see a dialog box asking you to either create a new copy of the package or overwrite the existing integration package content. Click **Overwrite**.
5. In the left navigation bar, select **Design** mode.
The package is now visible in the design area and can be configured.

Configuring Business Partners iFlow

Replicate Business Partners from SAP S/4HANA to ICI

1. Select the **Icertis Contract Intelligence Integration (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side)** package copied in the [Configuring and deploying the iFlow using SAP Cloud Integration](#) section.
2. To view the list of iFlows, click the **Artifacts** tab.
3. Click the **Actions** symbol beside the **Replicate Business Partners from SAP S/4HANA to ICI** iFlow.
4. Click **Configure**.
The configuration is explained in the following topics. Configuration of the sender system (in this case, SAP S/4HANA) and the receiver system (in this case, ICI) and additional information.
5. Click **Save** and click **Deploy** after completing the configuration.

Sender Tab

Field Name	Value
Sender	S/4HANA
Adapter Type	SOAP
Authorization	User Role
Address	iFlow Endpoint (e.g.: BusinessPartnerReplication)

Receiver Tab

Field Name	Value
Receiver	ICI
Adapter Type	HTTP
Parameter_1	<<ICI Business API URL>> (Get it from ICI Admin)
Authentication	<p>Choose Authentication method for connecting to ICI platform. Supported authentication methods are:</p> <ul style="list-style-type: none"> • OAuth2 Client Credentials • None <p>Details of setting up OAuth authentication is mentioned in the Setting up OAuth authentication section in the document.</p>

Field Name	Value
Credential Name	<p>Name of the OAuth credential stored in the Security Material tile of Operate & Monitor integration scenarios section in SAP CI console. Further details are provided in the Setting up OAuth authentication section in the document.</p> <p>Note: This parameter is not visible if OAuth2* is not selected in the Authentication type dropdown</p>

More Tab

Field Name	Value
Logging	True or False
ICIAuthToken	<p><<ICI Authentication token>> (Get it from ICI Admin)</p> <p>This parameter is mandatory if Authentication type is set to None, if Authentication type is set to OAuth2 it is not required.</p>
Additional_Filter_Xpath_Query	<p>Add XPATH filter to further filter the business partners data coming from S/4HANA</p> <p>For example, filter(/BusinessPartner/AddressInformation/Address/PostalAddress/CountryCode, function(\$a) {\$a ='US'}) for bringing the Business partners whose country code is US</p>
BP_Roles	<p>Business Partner roles to be brought in from S/4HANA</p> <p>For example, CRM000 for Sold-to-Party FLVN00 for Vendor</p>
Extension Implemented	True (information on extensions is given in subsequent section)
Get_Person_Type_Record	<ul style="list-style-type: none"> - To fetch Person type Business Partner from S/4 HANA set it to "True". - To fetch only Organizational type Business partner set it to "False".
Recipient_BusinessSystem_ID	S/4HANA Business system ID from where the Business Partners are being fetched.
Customer MDCT Name	ICI MDCT (Master data contract type name) where the Business partner information is to be stored.

Deployment

1. Choose **Deploy** after all the above configurations are done.
2. From the left navigation bar, choose **Monitor**.
3. Choose **All** from **Manage Integration Content**.
4. Verify if the deployment was successful.
The status should be **Started**, and an endpoint URL is displayed.

Extending Business Partners iFlow

Extensions are created to add/modify/delete the field mappings which are specific to the customer requirements. Extensions provide entry and exit points in the standard iFlow, which allows customers to add customer specific enhancements on top ICI delivered iFlows, without modifying the standard iFlow.

There are 2 iFlows created as a part of Business Partner extensions:

- Replicate Business Partners Extension flow – PreExit
- Replicate Business Partners Extension flow – PostExit

Replicate Business Partners Extension flow – PreExit

Any changes in the payload schema of S/4HANA, for example, addition of new fields in the source S/4HANA payload, which needs to be mapped to ICI, must be added in this iFlow schema definition.

1. To edit the iFlows, copy the **Icertis Contract Intelligence (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side) – Extensions** to the Design area.
To know how, see [Configuring and deploying the iFlow using SAP Cloud Integration](#)
2. Select the **Icertis Contract Intelligence (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side) – Extensions** package.
3. To view the list of iFlows, click **Artifacts**.
4. Click the **Replicate Business Partners Extension flow – PreExit** iFlow.
5. Click **Edit** on the top right of the iFlow window.
6. Navigate to the **Resources** section of the iFlow and download **BusinessPartnerS4-Extension.xsd**.
7. Modify the XSD as per the updated SAP S/4HANA Business partner payload schema.
8. Upload and overwrite the existing **BusinessPartnerS4-Extension.xsd** with the updated one.
9. If required, change the mapping to map new columns to existing columns.
10. Click **Save** and click **Deploy** after completing the configuration.

Replicate Business Partners Extension flow – PostExit

Any changes in the payload schema of SAP S/4HANA or ICI, for example, addition of new fields in the source SAP S/4HANA payload, which needs to be mapped to the new fields of ICI, must be added in this iFlow schema definition.

1. To edit the iFlows, copy the **Icertis Contract Intelligence (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side) – Extensions** to the Design area.
To know how, see [Configuring and deploying the iFlow using SAP Cloud Integration](#)
2. Select the **Icertis Contract Intelligence (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side) – Extensions** package.
3. To view the list of iFlows, click the **Artifacts** tab.
4. Click the **Replicate Business Partners Extension flow – PostExit** iFlow.
5. Click on **Edit** on the right top on the iFlow window.
Navigate to the **Resources** section of the iFlow and download **BusinessPartnerS4-Extension.xsd** (SAP S/4HANA schema) & **BusinessPartners-Extension.xsd** (ICI schema) XSD files.
6. Modify the XSD files as per the updated SAP S/4HANA Business partner payload schema and target ICI payload schema.
7. Change the mapping to map new columns from SAP S/4HANA with the new columns in ICI.
8. Click **Save** and click **Deploy** after completing the configuration.

Configuring Product Master iFlow

Replicate Products from SAP S/4HANA to ICI

1. Select the **Icertis Contract Intelligence Integration (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side)** package copied in the [Configuring and deploying the iFlow using SAP Cloud Integration](#) section.
2. To view the list of iFlows, click the **Artifacts** tab.
3. Click the Actions symbol beside the **Replicate Product from SAP S/4HANA to ICI** iFlow.
4. Click **Configure**.
The configuration is explained in the following topics. Configuration of the sender system (In this case, SAP S/4 HANA) and the receiver system (In this case, ICI) and additional information.
5. Click **Save** and click **Deploy** after completing the configuration.

Sender Tab

Field Name	Value
Sender	S/4HANA
Adapter Type	SOAP
Authorization	User Role
Address	iFlow Endpoint (for example, ProductReplication)

Receiver Tab

Field Name	Value
Receiver	ICI
Adapter Type	HTTP
Parameter_1	<<ICI Business API URL>> (Get it from ICI Admin)
Authentication	<p>Choose Authentication method for connecting to ICI platform. Supported authentication methods are:</p> <ul style="list-style-type: none"> • OAuth2 Client Credentials • None <p>Details of setting up OAuth authentication is mentioned in the Setting up OAuth authentication section in the document.</p>
Credential Name	<p>Name of the OAuth credential stored in the Security Material tile of Operate & Monitor integration scenarios section in SAP CI console. Further details are provided in the Setting up OAuth authentication section in the document.</p> <p>Note: This parameter is not visible if 2* is not selected in the Authentication type dropdown.</p>

More Tab

Field Name	Value
Logging	True or False
ICIAuthToken	<p><<ICI Authentication token>> (Get it from ICI Admin)</p> <p>This parameter is mandatory if Authentication type is set to None, if Authentication type is set to OAuth2 it is not required.</p>
Additional_Filter_Xpath_Query	<p>Add XPATH filter to further filter the business partners data coming from S/4HANA</p> <p>For example, : filter(/Product/ProductTypeCode, function(\$a) {\$a ='NLAG'})</p> <p>for bringing the Products whose ProductTypecode is 'NLAG'</p>
Extension Implemented	True (information on extensions is given in subsequent section).
Product_Table_Name	ICI MDCT(Master data contract type name) where the Product information is to be stored.
Recipient_BusinessSystem_ID	S/4HANA Business system ID from where the Business Partners are being fetched.

Deployment

1. After all the above configurations are done, click **Deploy**.
2. From the left navigation bar, click **Monitor**.
3. Next, choose **All** from **Manage Integration Content**.
4. Verify if the deployment was successful.
The status should be Started, and an endpoint URL is displayed.

Extending Product Master iFlow

Extensions are created to add/modify/delete the field mappings which are specific to the customer requirements. Extensions provide entry and exit points in the standard iFlow, which allows customers to add customer specific enhancements on top ICI delivered iFlows, without modifying the standard iFlow.

There are 2 iFlows created as a part of Products extensions:

- Replicate Product Master Extension flow – PreExit
- Replicate Product Master Extension flow – PostExit

Replicate Product Master Extension flow – PreExit

Any changes in the payload schema of SAP S/4HANA, for example, addition of new fields in the source SAP S/4HANA payload, which needs to be mapped to ICI, must be added in this iFlow schema definition.

1. To edit the iFlows, copy the **Icertis Contract Intelligence (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side) – Extensions** to the Design area.
To know how, see [Configuring and deploying the iFlow using SAP Cloud Integration](#)
2. Select the **Icertis Contract Intelligence (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side) – Extensions** package.
3. To view the list of iFlows, click the **Artifacts** tab of the package.
4. Click the **Replicate Product Master Extension flow – PreExit** iFlow.
5. Click **Edit** on the right top on the iFlow window.
Navigate to the **Resources** section of the iFlow and download **ProductXSDS4-Extension.xsd**.
6. Modify the **XSD** as per the updated SAP S/4HANA Business partner payload schema.
7. Upload and overwrite the existing **ProductXSDS4-Extension** with the updated one.
8. If required change the mapping to map new columns to existing.
9. Click **Save** and click **Deploy** after completing the configuration.

Replicate Product Master Extension flow – PostExit

Any changes in the payload schema of SAP S/4HANA or ICI, for example, addition of new fields in the source SAP S/4HANA payload, which needs to be mapped to the new fields of ICI, must be added in this iFlow schema definition.

1. To edit the iFlows, copy the **Icertis Contract Intelligence (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side) – Extensions** to the Design area.
To know how, see [Configuring and deploying the iFlow using SAP Cloud Integration](#)
2. Select the **Icertis Contract Intelligence (ICI) Integration with SAP CPQ and SAP S/4HANA (Sell Side) – Extensions** package.
3. To view the list of iFlows, click the **Artifacts** tab.
4. Click the **Replicate Product Master Extension flow – PostExit** iFlow.
5. Click **Edit** on the right top on the iFlow window.
Navigate to the **Resources** section of the iFlow and download **ProductXSDS4-Extension.xsd** (SAP S/4HANA schema) & **ProductXSD-Extension.xsd** (ICI schema)
6. Modify the **XSD** as per the updated SAP S/4HANA Business partner payload schema and target ICI payload schema.
7. If required change the mapping to map new columns from SAP S/4HANA to the new columns in ICI.
8. Click **Save** and click **Deploy** after completing the configuration.

Setting up OAuth authentication

To enable OAuth authentication, you need the following details of the identity provider:

- Token Service URL
 - Client ID
 - Client Secret
1. After you get the above mentioned details, connect to the tenant management node of the SAP Cloud Integration system with the URL: [http://]<tenant management node URL>/itspaces.
 2. Navigate to the **Operate & Monitor Integration scenarios** section.
 3. Click the **Security Material** tile in the **Manage Security** section.
 4. From the **Create** dropdown, select **OAuth2 Client Credentials**.
 5. Set the below mandatory details on the screen and click **Deploy**:
 - **Name** – Provide a user friendly name
 - **Token service URL**
 - **Client ID**
 - **Client Secret**
 - **Client Authentication** – Send as Request Header
 - **Content Type** – application/x-www-form-urlencoded
 6. After deployment, the **Credential Name** parameter in the iFlow should be set to the above created credentials.

For more information, see [SAP Cloud Integration – OAuth2 Client Credentials Support in OData V2 Adapter | SAP Blogs](#).

Appendix

Out-of-the-box mapping for Product Master

Product Master	ICM Attribute Technical Name	SAP Mapping
External ID	ICMExternalId	/Product /UnformattedProductInternalID
Product Code	ICMProductCode	/Product/ProductInternalID
Product Name	ICMProductName	/Product/Description/Description
Product Description	ICMProductName	/Product/Description/Description
UOM Code	ICMUoMCode	/Product/BaseMeasureUnitCode
Product Group	ICMProductCategoryName	/Product/ProductGroupInternalID
Product Type	ICMProductType	/Product/ ProductTypeCode

isActive		/Product/DeletedIndicator
External Source System	ICMExternalSourceSystem	SenderBusinessSystemID

Out-of-the-box mapping for Business Partner

Business Partner	ICM Attribute Technical Name	SAP Mapping
External ID	ICMExternalId	/BusinessPartner/InternalID
Name	Name	/BusinessPartner/Common/Organisation/Name/FirstLineName OR /BusinessPartner/Common/Person/Name/GivenName + /BusinessPartner/Common/Person/Name/FamilyName
First Name	ICMFirstName	/BusinessPartner/Common/Person/Name/FirstName)
Last Name	ICMLastName	/BusinessPartner/Common/Person/Name/FamilyName
External Source System	ICMExternalSourceSystem	SenderBusinessSystemID
Address Type	ICMAddressType	/BusinessPartner/Common/Person/Name/FormOfAddressCode
Country	ICMCountryCode	/BusinessPartner/AddressInformation/Address/PostalAddress/CountryCode
Zipcode	ICMContractingPartyZipCode	/BusinessPartner/AddressInformation/Address/PostalAddress/StreetPostalAddress
City	ICMContractingPartyCity	/BusinessPartner/AddressInformation/Address/PostalAddress/CityName
StreetName	ICMContractingPartyAddress	/BusinessPartner/AddressInformation/Address/PostalAddress/StreetName
State	ICMContractingPartyStateorProvince	/BusinessPartner/AddressInformation/Address/PostalAddress/RegionCode
Customer Preferred Language	ICMCustomerPreferredLanguage	/BusinessPartner/AddressInformation/Address/CommunicationPreferences/ CorrespondenceLanguageCode
Phone Number	ICMPhoneNumber	/BusinessPartner/AddressInformation/Address/Telephone/Number/SubscriberID
Fax Number	ICMFaxNumber	/BusinessPartner/AddressInformation/Address/Facsimile/Number/SubscriberID
Email Address	ICMEmailAddress	/BusinessPartner/AddressInformation/Address/Email/URI
Contracting Party Type	ICMContractingPartyType	/BusinessPartner/Common/ NaturalPersonIndicator

