How to Configure Integration between SAP ERP and SAP Cloud for Customer using SAP HCI
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1 Introduction

Business Scenario
Historically, SAP customers have made large investments in on-premise Sales and Distribution application capabilities. The SAP SD module continues to be viable in the corporate system landscape, but many customers want to enable a fresh and intuitive user experience, increased functionality, and faster delivery of new functionality. The hybrid integration scenario is a great enabler of application delivery via the cloud, because it allows the customer to preserve the investment already made in the on-premise SAP SD module. By the utilization of iFlow solution content delivered by SAP, a bridge between the on-premise SAP SD module and the SAP Cloud for Customer system is established, thus allowing the customer to take advantage of the strengths of both.

Background Information
This document details the steps required to enable bi-directional communication between an SAP Cloud for Customer and the on-premise SAP Sales and Distribution module.

Prerequisites

SAP ERP
The ERP system must contain the following ABAP components:
1. SAP_BASIS 700 SP18 or higher
2. SAP_APPL 600 SP15 or higher

SAP Cloud for Customer
1. Initial setup and configuration was performed in tenant, as per the SAP Cloud for Customer Administrator Guide.
2. The tasks described in this document should be performed by a qualified SAP Basis Administrator or SAP PI expert, with a solid conceptual understanding of SSL and certificate-based encryption concepts.
2 Connect Phase: Check and Prepare SAP ERP System

2.1 Install Add-on on SAP ERP System

Note: Remember to update the SPAM to the latest support pack prior to the installation of the Add-on.

Use transaction SAI Tư to install SAP Add-on CODERINT 600 and use transaction SPAM to implement the support packages in the ERP system.

1. Copy the installation package and support packages to the EPS/in directory within the “trans” directory.

2. Call transaction SAI Tư and load the packages from the menu Installation Package→Load Package→From Application Server
3. Click Back
4. Click on Start to start the deployment of the Add-on.

5. Double check that the CODERINT add-on is selected and click continue.
6. Click Continue. It is possible to install the add-on together with all the support packages. Select the target support package, and click Continue.

7. Click Continue
8. Click No

9. Select the method of import and click the import button

2.2 Execute Business Configuration Set COD_BYD_ERP_INT

1. Call transaction SCPR20 and enter the BC Set.
2. Activate the BC Set clicking in the Activate BC Set button or press the F7 key.

3. Create a transport request that can be used for the activation in other systems.

4. Press Enter
2.3 Create copy of Security Roles

1. Call transaction PFCG
2. Enter the role SAP_SD_COD_INTEGRATION and create a copy of it

2.4 Create SAP ERP User

1. From transaction SU01, create a service account with the type C or B and assign the custom roles created from:

   SAP_SD_COD_INTEGRATION  
   SAP_SD_COD_INTEGRATION_EXT

When certificate authentication is used to connect to HCI, then the CODINTEG user is mapped to the HCI client certificate in the next section.
3 Connect Phase: Set up Secure Connection between ERP-HCI-Cloud Systems

3.1 Download Root SSL certificate for SAP HCI

1. Open a web explorer and enter the URL of the worker node that was provided in the onboarding e-mail adding the path /cxl at the end, for example:

   https://<host>:<port>/cxl

2. When connected use the web explorer to get the certificate, for example in Google® Chrome you click on the lock icon at the left end of the URL and then click on certificate information.

3. In the Certification Path tab select first root certificate Baltimore CyberTrust Root and click View Certificate.
4. Select the Details tab and click the Copy to File… button.

5. Click Next
6. Select Base-64 encoded x.509 (.CER) and click Next.

7. Select the location of the file and click Next.
8. Click Finish

9. Follow the same steps for the second root certificate, Cybertrust Public SureServer SV CA.
3.2 Load Root Certificate Used to Sign HCI SSL Server Certificate into SSL Client

1. Call transaction STRUST

![Trust Manager screenshot showing System PSE, SNC SAPCryptolib, SSL server Standard, SSL client SSL Client (Anony), SSL client BCM, SSL client SSL Client (SDe), and SSL client PAYPAL.]

2. Open the SSL Client SSL client Standard PSE

![Trust Manager screenshot highlighting SSL client SSL Client (Standard).]

3. In the Certificate area, click the Import Certificate button.
4. Depending of the format of the certificate, select either Binary or Base64 and find the root certificate used to sign the HCI SSL server certificate (Import the two certificates that were saved in the previous step).

5. Add the imported certificate to the certificate list by clicking Add to Certificate List.

6. Repeat the previous two steps for the second root certificate, and save the changes.
3.3 Load Root Certificate Used to Sign HCI SSL Client Certificate for x.509 Authentication into SSL Server Standard

1. Call transaction STRUST

2. Open the SSL Server Standard PSE

3. In the Certificate area click in the Import Certificate button.
4. Depending on the format of the certificate, select either Binary or Base64 and find the root certificate used to sign the HCI SSL client certificate (in most of the cases is SAP Passport).

5. Add the imported certificate to the certificate list by clicking Add to Certificate List.

6. Save the changes.
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Trust Manager
3.4 Export Public Key for SSL Client

1. Call transaction STRUST

2. Open the SSL Client SSL client Standard PSE

3. Double click in the Own certificate. This will load the certificate to the Certificate section.
4. Click the Export button.

5. Save the certificate into a file.
4 Configure Phase: Configure Integration in Cloud Solution

4.1 Activate SAP ERP Integration in Scoping

In this section, you activate SAP Cloud for Customer with SAP ERP, and specify the scope of the integration between the systems.

1. Connect to the SAP Cloud for Customers system using an Internet browser, and open the Business Configuration tab.

2. Click in All Current Projects.

3. Select the project and click on Edit Project Scope.
4. **Click Next**

**EDIT PROJECT SCOPE: FIRST IMPLEMENTATION**

1. Country and Type of Business
2. Implementation Focus
3. Scoping
4. Questions
5. Review

[Prev. Next Finish Cancel Save Draft]

**IMPLEMENTATION FOCUS**
You can implement capabilities from the complete SAP solution.

Select Implementation Focus

- [ ] For Implementation
- [ ] Implementation Focus
- [ ] SAP Cloud for Customer

5. **Click Next**, and under Communication and Information Exchange ➔ Integration with External Application and Solutions, select Integration with SAP ERP, Integration of Master Data and Integration into Sales, Service and Marketing Processes.

6. **Click Next**, and under Communication and Information Exchange ➔ Integration with External Application and Solutions ➔ Integration with SAP ERP, select the following scenarios:
   - Do you want to replicate accounts and contacts from your cloud solution to your SAP ERP solution?
   - Do you want to replicate accounts and contacts from your SAP ERP application to your cloud solution?
   - Do you use your SAP ERP system to calculate prices for opportunity items in your cloud solution?
7. Under Communication and information Exchange ➔ Integration with External Application and Solutions ➔ Integration of Master Data, select the following scenario: Do you want to replicate product data from an external application or solution to your cloud solution?

<table>
<thead>
<tr>
<th>Group: Integration of Business Partner Data with SAP ERP (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Option</strong></td>
</tr>
<tr>
<td>Do you want to replicate accounts and contacts from your cloud solution to your SAP ERP solution?</td>
</tr>
<tr>
<td>Do you want to block prospects created in Cloud solution, from being replicated to your SAP ERP solution?</td>
</tr>
<tr>
<td>Do you want to replicate accounts and contacts from your SAP ERP solution to your cloud solution?</td>
</tr>
</tbody>
</table>

8. Under Communication and information Exchange ➔ Integration with External Application and Solutions ➔ Integration into Sales, Services and Marketing Processes, select the following scenario:

<table>
<thead>
<tr>
<th>Group: Products (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Option</strong></td>
</tr>
<tr>
<td>Do you want to replicate product data from an external application or solution to your cloud solution?</td>
</tr>
<tr>
<td>Do you want to replicate product category data from an external application or solution to your cloud solution?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group: Opportunities (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Option</strong></td>
</tr>
<tr>
<td>Do you want to replicate opportunities from your cloud solution to an external application or solution?</td>
</tr>
<tr>
<td>Do you want to replicate opportunities from an external application or solution to your cloud solution?</td>
</tr>
<tr>
<td>Do you want to create follow up documents for opportunities from your cloud solution to an external application or solution?</td>
</tr>
</tbody>
</table>

Do you want to create follow up documents for opportunities from your cloud solution to an external application or solution?

9. Click Next, and then Finish.
4.2 Set Up Communication System

1. Under the tab Administrator, click in Communication Systems.

2. Click New to create a new communication system.

3. Enter the information about the backend ERP system. It is important to note that all the information requested on the screen below is associated with the ERP system (logical system name, SAP client, and so on) with the exception of the host name, which should be the hostname of the worker node of SAP HCI system. In addition, make sure to check the option of “SAP Business Suite”.

![Communication Systems table]

<table>
<thead>
<tr>
<th>Communication System ID</th>
<th>Host Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCOUNT_360_INTEGRATION</td>
<td>Account_360_Inegration</td>
</tr>
<tr>
<td>OAP_ID</td>
<td>dummy</td>
</tr>
</tbody>
</table>
4. Click on Actions → Set to Active

5. Click on Save and Close.

4.3 Configure Communication Arrangements

Note: You can find a list of all the communication arrangements and the corresponding service interfaces in the see Integration Flows spreadsheet.

Mass Configuration of Communication Arrangements

1. In the Cloud for Customer system select ADMINISTRATOR workcenter select the task Communication Arrangement for On-Premise Systems.
2. In the Select Communication System step maintain the SAP backend integration system and middleware.

   ![Select Communication System Interface](image)

   You can create or update communication arrangements by selecting the on-premise system.

   **INTEGRATION DETAILS**
   - Integration with: SAP CRM System, SAP ERP System
   - Integration Middleware: HCI, PI

3. In the Communication System details section maintain the SAP ERP System Instance ID and the Code List Mapping as SAP On-Premise Integration.
4. Click Next

5. Under Communication Arrangements tab, select the communication scenarios relevant for your scope. Click Select All in case you want to configure all of the communication scenarios.

   Note: In case you do not see any of the configuration scenarios, re-check the project scoping to add the necessary scoping elements. In the Communication Arrangements step select the communication scenarios relevant for your scope and click Next.


7. Under Outbound tab, adjust the Port and Path if required.

8. Click Next
9. Under **INBOUND COMMUNICATION CREDENTIALS**, select the Authentication Method. For example in this case, SSL Client Certificate is selected. Click **Edit Credentials**.

10. In the Certificate tab, choose **Upload Certificate** and choose the HCI client certificate.
11. Click OK

12. For OUTBOUND COMMUNICATION CREDENTIALS, click Download.

13. Download the C4C Client Certificate x.509(example C4CSSLClien...ert) and choose Save. This file has to be uploaded later to HCI iFlow configuration.
14. Click Finish.

**NEW COMMUNICATION ARRANGEMENT: SAP ERP SYST**

1. In the SAP Cloud for Customers system select the Administrator Work Center.

15. Under Confirmation, click Close.

**Configure Communication Arrangements for Outbound Communication**

1. In the SAP Cloud for Customers system select the Administrator Work Center.
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2. Under Integration section select hyperlink Communication Arrangements

3. Edit the communication Arrangements with outbound interfaces, adding the correct URL for the HCI web server. The following table shows an example of the URL that have to be used where we use the Business System or Business Component, For example:

<table>
<thead>
<tr>
<th>Customer Replication</th>
<th>/cx/ErP/BP_MASTER_REPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Address Replication</td>
<td>/cx/ErP/BP_ADDRESS_REPLICATION</td>
</tr>
<tr>
<td>Customer Contact Replication</td>
<td>/cx/ErP/BP_CONTACT_REPLICATION</td>
</tr>
<tr>
<td>Opp with Follow Up</td>
<td>/cx/ErP/OPPORTUNITY_FOLLOWUP</td>
</tr>
<tr>
<td>Sales Doc Print Preview</td>
<td>/cx/ErP/OPPT_PRINT_PREVIEW</td>
</tr>
<tr>
<td>Product Pricing</td>
<td>/cx/ErP/SALESORDERPRICING_REQUEST</td>
</tr>
<tr>
<td>Query Sales Order</td>
<td>/cx/ErP/SALESORDER_REQUEST</td>
</tr>
</tbody>
</table>

For example, here is URL:

/cx/ErP/BP_MASTER_REPLICATION

4. Select one of the communication arrangements, and click Edit.

5. Click in the Technical Data Tab.
6. Click in Edit Advance Settings button.

7. Click in the Outbound Tab.

8. Select each of the outbound services and edit SSL port and Path.
9. Click on Save and Reactivate.

**Status:** Active  **Communication Method:** Direct Connect

**Save and Reactivate**  **Save as Draft**  **Close**

**Outbound**

**Technical Data**

<table>
<thead>
<tr>
<th>Enabled</th>
<th>Use B.</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
<td>Business Partner Replication to SAP ERP</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>Business Partner Address Replication to SAP ERP</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>Business Partner Contact Address Replication to SAP ERP</td>
</tr>
</tbody>
</table>

**Details: Business Partner Replication to SAP ERP**

<table>
<thead>
<tr>
<th>Use Basic Settings</th>
<th>Application Protocol</th>
<th>Protocol</th>
<th>Host Name</th>
<th>Port</th>
<th>Path</th>
<th>Service URL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Format Conversion</td>
<td>HTTP</td>
<td><a href="mailto:001503643461961@neo.ondemand.com">001503643461961@neo.ondemand.com</a></td>
<td>443</td>
<td>testCODEREPRP_MASTER_REPLICATION</td>
<td><a href="https://services4004.sap.com/4004-codereprp/4004-codereprp">https://services4004.sap.com/4004-codereprp/4004-codereprp</a></td>
</tr>
</tbody>
</table>

**Note.**

- Once SAP HCI is configured, you can check if there is connectivity from the cloud system to the HCI system by selecting one of the outbound services and click Check Connection.
- This will only check connectivity with the HCI, and the specific service. If there is any problem with SSL certificates or authentication, it will show an error here.
- If the message “Error accessing service; Service Ping ERROR: Method Not Allowed (405)” shows it means that there is connectivity and the authentication works, this can be taken as successful test.
10. Click on Save and Reactivate. Repeat the previous steps for the rest of the communication arrangements with outbound services.

4.4 Automated Configuration of Code List Mapping

1. Log in to the Cloud for Customer system.
2. In the Business Configuration WorkCenter, choose DOWNLOAD CODE LIST.

3. Click on link Download Code List.
4. Enter the Code List Mapping Group, Language, Delimiter and Select Download.

DOWNLOAD CODE LISTS AND CODE MAPPINGS

Close

You can download the code lists and code list mappings created for integrating the Cloud solution with an external application or solution.

Code List Mapping Group: 03 - SAP On Premise Integration

Language: EN - English
CSV Delimiter: ,
Local Code: Download

5. Enter the name of file you want to download in .zip format. For example codeList.zip.

6. The Code List will be downloaded in the path you have mentioned.
7. Log onto the ERP Backend that the Cloud for Customer is connected to.
8. Enter the transaction SE38 and run the report CODD_CODE_LIST_MAPPING.
9. Choose execute.
10. Alternately you can Execute the program CODD_CODE_LIST_MAPPING using the below options.

<table>
<thead>
<tr>
<th>Transaction code</th>
<th>CODD_CODE_LIST_MAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP ERP IMG menu</td>
<td>Integration With Other mySAP.com Components → Integration With SAP Cloud for Customer → Download ERP Customizing Information for Code Lists</td>
</tr>
</tbody>
</table>

11. Enter the main language and following details:
12. Merged customized directory is where you want the merged code list mappings filled.
13. Cloud for Customer Business configuration File is the codeList.zip file that was downloaded from the Cloud for Customer system.
15. After this the CodeOutput.zip file is saved in the directory mentioned, this zip contains all the code lists for the mentioned languages.
16. Log in to the Cloud for Customer system again.
18. Choose Upload Code List:
19. Enter the Code List Mapping Group and select upload.

**UPLOAD CODE LISTS AND CODE LIST MAPPINGS**

You can upload the zip archive file containing code lists and code list mappings that was downloaded from external application or solution.

- **Code List Mapping Group:** 03 - SAP On Premise Integration

  - *CSV Delimiter:*
  - Local and External Code: Upload

20. Choose the CodeOutput.zip file that was generated in the Merged Customizing Directory, mentioned in the ERP Backend.
21. Now the code list mapping in Cloud for Customer is updated.

4.5 Create ID Mapping for Sales Org

1. Under the context menu for the tab ADMINISTRATOR, select the option ID MAPPING FOR INTEGRATION.

2. Click on Edit ID Mapping for Integration.
3. In the “Mapping Of” field, select ERP Sales Organization and in the System Instance ID, select the communication system created in previous steps, and click Go.

4. Enter the external ID of the sales organization that will be mapped from ERP with the sales organization on Cloud for Customers.

5. Click Save

4.6 Create ID Mapping for Product Category

1. Under the context menu for the tab ADMINISTRATOR, select the option ID MAPPING FOR INTEGRATION.
2. Click on edit ID Mapping for integration.

3. In the “Mapping Of” field, select ERP Product Categories and in the System Instance ID field, select the communication system created in previous steps, and click Go.

4. Enter the external ID of the product category to be mapped from ERP with the product category on Cloud for Customers.
5. Click Save.
5 Configure Phase: Configure Integration in SAP ERP

5.1 Add an Authorization Profile for a role

1. Call transaction PFCG
2. Enter the role SAP_SD_COD_INTEGRATION_EXT and create a copy of it.

3. Look for the security object S_SERVICE under Cross-application Authorization Objects, and change the field SRV_NAME.
4. Add the following services:

ECC_SALESORDER009QR
ECC_CUSTOMERQUOTE006QR

5. Save and generate the profile.

5.2 Configure SSL Client Certificates for On-Premise

1. Call transaction SM30
2. Enter the name of the view VUSREXTID in the Table/View field and click the Maintain button.

3. In the external ID type enter ‘DN’, and click Continue.

4. Create a new entry by clicking in the New Entries button.
5. Click the Import button to import the public client certificate from the SAP HCI system.

6. Select the file that contains the public certificate and click Open.

7. Enter the sequence, by example 000, the User id created in the previous step and check the Activated check box.
8. Click the Save button.

5.3 Register Service for IDoc Inbound
1. Open the Transaction SRTIDOC.
2. Select the Register service checkbox and maintain the following values.

3. Choose execute.

5.4 Automatically Generate Integration Settings for Data Exchange
1. To Automatically Generate Connectivity settings for Data Exchange navigate using one of the following paths.
2. Choose SAP HANA Cloud Integration as the middleware and choose Next.
3. Select the scope of Integration exactly as scoped in the SAP Cloud for Customer Solution and choose Next.

### Generate Integration Settings: Step 2 of 5 - Scoping Selection

#### Scope

<table>
<thead>
<tr>
<th>Organization Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you want to replicate organization structures from SAP ERP to your cloud solution?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you want to replicate accounts and contacts from SAP ERP to your cloud solution?</td>
</tr>
<tr>
<td>Do you want to replicate accounts and contacts from your cloud solution to SAP ERP?</td>
</tr>
<tr>
<td>Do you want to replicate account hierarchies from SAP ERP to your cloud solution?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you want to replicate employees from SAP ERP to your cloud solution?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you want to replicate products from SAP ERP to your cloud solution?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you want to create follow-up documents for opportunities from your cloud solution in SAP ERP?</td>
</tr>
<tr>
<td>Do you want to use SAP ERP to calculate prices for opportunity items in your cloud solution?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sales Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you want to create follow-up documents for sales quotes from your cloud solution in SAP ERP?</td>
</tr>
<tr>
<td>Do you want to use SAP ERP to calculate prices for sales quote items in your cloud solution?</td>
</tr>
</tbody>
</table>

4. Choose the Logical system of Cloud for Customer that you want to connect to. In case the logical system is not created, you can create one using the button Create Logical System. Choose Next.
5. Enter the HCI system worker node URL and choose Next.

6. In the Summary screen select the Generate button to generate the configuration entities.
7. In the confirm pop-up screen choose Yes

8. In the log you can check which entities were created.
5.5 Maintain Requirement Routine

1. Call transaction VOFM and click on menu Requirements → Output Control.

2. At the bottom of the table enter an unused number greater than 600 and assign application V1.

3. Click Save
4. Select the new entry and click on Source Text.

5. Insert the following code, save and activate.

```
FORM kobed_xxx.
  "We only trigger the confirmation back to 'Cloud for Customer'
  "if the document is complete and if an opportunity document is
  "referenced.
  IF komkbv1-uvall EQ 'C' AND
  cl_cod_oppt_confirmation=>is_relevant( komkbv1 ) = abap_true.
  sy-subrc = 0.
  ELSE.
  sy-subrc = 4.
  ENDIF.
ENDFORM.
```

5.6 Maintain Output Determination Procedure

1. In the SAP IMG Follow the Navigation path
Sales and Distribution ➔ Basic Functions ➔ Output Control ➔ Output Determination ➔ Output Determination Using the Condition Technique ➔ Maintain Output Determination for Sales Documents ➔ Maintain Output Determination Procedure.

Alternatively call transaction SM34 to maintain view VVC_T683_XX_V1.

2. Mark the output determination procedure assigned to the order type Inquiry Output. In the Customizing delivered as standard, this is procedure V05000.

3. Choose Control Data within the Dialog Structure view.
4. Choose *New Entries* and assign the output COD1.

5. Save the entry and return to the procedures
6. Repeat the process for other output determination procedures mentioned in the Integration guide.

**5.7 Maintain Output Record**

1. Call transaction VV11 and use the output type COD1.

2. From menu output conditions, select Create with template.
3. Create the following entries:

3. Create the following entries:

5.8 **Activate Event Linkage**

1. Call transaction SWETYPV.

2. Open object type BUS2030 and the event CREATED, Choose Details, and check the Linkage Activated checkbox.
5.9 Maintain Endpoints for Services

1. In the ERP system navigate using the following IMG Path alternatively you can also use SOAMANAGER transaction in the ERP system:

<table>
<thead>
<tr>
<th>Transaction code</th>
<th>SOAMANAGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP ERP IMG menu</td>
<td>Integration With Other mySAP.com Components → Integration With SAP Cloud for Customer → Communication Setup → Manually Adjust Integration Settings for Data Exchange → Configuration in SOA Management</td>
</tr>
</tbody>
</table>

2. Click on Web Service Configuration.
3. Search for the following Object SalesOrderPricingInformationQueryResponse_In.

![Search Criteria](image1)

4. Click on the Web service name.

![Search Criteria](image2)

5. On the Configurations tab choose Create Service.

![Web Service Configuration](image3)

6. On the guided activity Service and binding Name enter the Service Name and Binding Name.
7. Choose Next.

9. Choose Next.

11. On the Configurations Tab you can see the created Binding, choose the display icon to view the calculated URL.

12. On the Transport setting tab, you can view the url in the Calculated Access URL field. This url should be maintain as endpoint in the HCI system iFlow.

13. Perform the previous steps for the following services:
5.10 Activate Change Pointers for IDOCs

1. Call transaction SALE, IDOC Interface / Application Link Enabling (ALE) -> Modeling and Implementing Business Processes -> Master Data Replication -> Replication of Modified Data

2. Click on Activate Change Pointers – Generally and enable the setting.

3. Click back and open the option Activate Change Pointer for Message Types, and select the active checkbox for the message types mentioned in the configuration Guide:

   For example:
All the customization activities necessary to integrate SAP ERP with SAP Cloud for Customer are defined in a hierarchical structure in the SAP Implementation Guide structure. The necessary documentation is also made available with the activity.

5.11 SAP Customizing Implementation Guide in the ERP system
5.12 Area Menu

An area menu is now available to consolidate all the commonly used transactions for integrating SAP ERP with the SAP Cloud for Customer solution. You can access this area menu in the transaction COD_INT_MENU.

![Area Menu Screenshot]

**SAP Easy Access Integrating SAP Cloud for Customer with SAP ERP**

- **Favorites**
- **SAP Menu**
  - Monitor and Process Errors
    - Monitor IDocs
    - Integration Engine Monitoring
    - Monitor Scheduled Background Jobs
    - Monitor Transaction RFC Queue
    - Reprocess IDocs After Inbound ALE Errors (Technical Errors)
    - Reprocess IDocs After Inbound ALE Errors (Application Errors)
    - Reprocess Outbound IDocs with Errors
    - Monitor Web Service Errors
    - Forward Error Handling
    - Analyse Application Log
  - Periodic Processing
    - Generate IDocs from Change Pointers
    - Delete Change Pointers
    - Send Collected Outbound IDocs
    - Process Collected Inbound IDocs
    - Distribute Time-Dependent Account Hierarchy
  - Initial Loading or Resending Objects from SAP ERP to SAP Cloud for Customer
    - Load or Resend Materials
    - Load or Resend Employees
    - Load or Resend Organizational Hierarchy
    - Load or Resend Business Partners
    - Run Consistency Check Before Loading or Resending Account Hierarchy
    - Load or Resend Account Hierarchy
6 SAP HCI Configuration

The Hana Cloud Integration can be configured in two ways:
- Using SAP Web UI
- Using SAP Eclipse

6.1 Configure and Deploy the iFlow Using SAP Web UI

Mass Configuration of iFlows on the Web UI.

1. Connect to the tenant management node of the HCI system to the url http://<tenant management node>/itspaces
2. Hover your mouse on the content package, for example: SAP Cloud for Customer Integration with SAP ERP (select the required version) and choose Copy to Workspace.

3. If the Integration package is being created first time, then you would see the message ‘Integration Package Created’. If not, you will see the below pop-up asking to either create a new copy of the package or to overwrite the existing integration package content.

3. Copy to workspace

Messages

1. Could not copy integration package due to duplicate resource values of the following integration content(s)

Create copy  Overwrite  Close

4. Select the Design mode to configure the iFlows.
5. Select the Integration Package copied. You should see all the iFlows under the package.
6. Click on the Package Content. All the iFlows will be shown/listed in the right side of the page.

7. Select the iFlows you want to configure and choose Actions button in the right and select Configure. Note: You can also configure a single iFlow or do a mass configuration by checking multiple artifacts

8. Confirm the Information message by choosing OK.

Supports Mass Configuration of SOAP/Idoc adapter. Please be patient, operation might take few seconds.
9. Configure the sender system (in this example ERP) and receiver system (in this example COD) details. Choose Certificate based authentication from the dropdown and import the ERP Client certificate using Browse button. For the receiver, enter the host name and port details of the COD system.

10. Choose Deploy.

11. The integration flows are deployed in the HCI tenant.

6.2 View and Extend the Deployed iFlow Using SAP Eclipse

Download the iFlow projects on your desktop

1. Connect to the tenant management node of the HCI system to the url http://<tenant management node>/itspaces

2. Click in the link SAP Cloud for Customer Integration with SAP ERP.

3. Select the check box Artifacts and click on the download button on the right.
4. To download single iFlow. Select actions button in the row of iFlow and select Download.

5. Once the artifact was downloaded save it into a directory

Example directory:

```
\HCL-ERP-Content
```

### Extract artifacts from zip file

1. Extract all the zip files.

### Import the iFlow projects into the local workspace

1. Open eclipse and open the Integration Designer perspective
2. In the Project Explorer are right click and select the option Import à Import.

3. Select the option General à Existing Projects into Workspace and click Next.

4. In the next screens browse for the directory where you extract the zip files and click Finish.
5. Now all the artifacts (projects) were imported into Eclipse
7 Appendix

7.1 SAP Cloud for Customer Configuration
Manually Create or Edit Communication Arrangements

1. Under the tab Administrator, click in Communication Arrangements.

2. Create the communication arrangements for the scenarios mentioned in the configuration guide:

3. For example, to create the CA for Product Replication, Click in New.

4. Select the CA to be created, and click Next.
5. Select the communication system and the code list mapping, and click Next.

6. Select the protocol “Web Service” and the required authentication method. For example, in the case shown below, User ID and Password are selected.

7. Edit the password or the certificate of the service account by clicking “Edit Credentials”.

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Note. If certificate is used, the client x.509 certificate from HCI will have to be uploaded here under the certificate tab.

8. In the case of a communication agreement that has outbound communication, configure the outbound communication.

9. Click Next and then Finish.
How to Configure Integration between SAP ERP and SAP Cloud for Customer using SAP HCI

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Note: For more information refer to the link Communication Arrangement Setup.

Maintain Code List Mapping

1. Connect to the SAP Cloud for Customers system using an Internet browser, and open the Business Configuration tab.

2. Click in All Current Projects.

3. Select the project, and click on Open Activity List.
4. Click the Fine-Tune tab à Code List Mapping for Integration with External Application and Solutions.

7.2 SAP ERP Configuration

Report RCOD_CREATE_CONNECTIVITY_MW

Note: The report RCOD_CREATE_CONNECTIVITY_SIMPL does all the tasks that are performed in the following report.

1. Call transaction SE38 and execute program RCOD_CREATE_CONNECTIVITY_MW.

2. Select the option On-Premise SAP HANA Cloud Integration.
3. Pick the logical system name that was created previously using the input help.

![Logical System](image)

4. Enter the hostname, server (port number of HCI system) and SSL Client Certificate (PSE that contains the certificate to connect to HCI system). In case there is a proxy system, please add the corresponding parameters.

![Security Options](image)

5. If required you can change the prefix used for the creation of RFC destination and ALE ports from the Naming Proposals tab.

![Naming Proposals](image)

6. When ready, you can execute the program for the creation of the required configuration.
Define Logical System

Creating Logical system representing the Cloud Solution.

1. Open one of the communication arrangements previously created.

   ![Diagram of Create Connectivity Settings for Integration with Cloud for Customer]

   - Integration: Set up and maintain communication with external systems
   - Communication Systems: Communication Arrangements

2. Select the communication arrangement and click Edit.
3. The logical system name is the “My System” field. Right click in the field and click Copy.

4. Call transaction BD54 on SAP ERP.

5. Create the logical system by clicking New Entries.

6. Enter the logical system name and a description.
7. Click Save

Define Number Interval for Customers

1. Call transaction SNUM and enter the object DEBITOR.

2. Click Ranges.

3. Click Change Intervals

4. Create the intervals as shown as follows, using a number range that is available in the system.
Define Number Intervals for Customer Contacts

1. Call transaction SNUM, and enter the object PARTNER.

2. Click on Ranges.

3. Click on Change Intervals.
4. Create the intervals as shown, using a number range that is available in the system.
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Maintain Agent Assignment for Standard Tasks

1. Call transaction PFTS, enter the standard task 38000001 and choose Display.

2. From the menu, choose Additional Data à Agent Assignment à Maintain.

3. Select the entry Edit Customer Inquiry, and click on Attributes.
4. In the Task dialog box select the radio button General Task, and choose Transfer.

5. Repeat the previous steps for the following tasks:
   38000002
   38000003
   38000005

**Maintain Agent Assignments in the Workflow Template**

1. Call transaction SWDD, and enter WS38000001.
2. In the control tab, use the dropdown box to select the method to use for agent assignment, either by example by role or organization.

3. Follow the previous steps for the following tasks:
   Create Quotation referencing Inquiry
   Create Order referencing Inquiry
   Display Inquiry for follow-on processing

4. Save and activate the workflow template.

**Send IDOCs from ERP to SAP Cloud for Customer**

1. In transaction SE38 create a variant for program RSEOUT00 to process the following basic types

<table>
<thead>
<tr>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADR3MAS03</td>
</tr>
<tr>
<td>ADRMAS03</td>
</tr>
<tr>
<td>ORDERS05</td>
</tr>
<tr>
<td>DEBMAS06</td>
</tr>
<tr>
<td>MATMAS05</td>
</tr>
</tbody>
</table>

   For example:
2. In transaction SM36 create a background job with the steps required to execute the program RSEOUT00 for the variants created in the previous step.

Create Variant for Program RBDMIDOC to Create IDOCs from Change Pointers

1. In transaction SE38 create variants for program RBDMIDOC for the message types:
   Refer to the configuration guide for other message types

   For example:

   1. ADR3MAS
   2. ADRMAS
   3. DEBMAS_CFS
   4. MATMAS_CFS
2. From transaction SM36 schedule a job that executes different steps to create the IDOCs for all the message types mentioned in the previous step.

3. Note: Depending on how often you want to process the outgoing messages from ERP, you can define the frequency of the job. A typical frequency setting is every 5 minutes.

**Process IDOCs Sent from the Cloud Solution**

1. In transaction SE38 create a variant to process the following message types for program RBDAPP01

   - ADR3UPD
   - ADRUPD
   - DEBMAS
   - INQUIRY_CREATE_FROMDATA2

   Note, message type ADRUPD and ADR3UPD have to be process first and separate from DEBMAS.

2. From transaction SM36 schedule a background job that will execute multiple instances of the program RBDAPP01 in multiple steps, see the screenshot below as an example:
Note. Depending on how often you want to process the incoming messages to ERP, you can define the frequency of the job. A typical frequency setting is every 5 minutes.

7.3 SAP HCI Configuration

Using Eclipse and the Integration Designer adjust the hostname for the COD2ERP and ERP2COD scenario

1. Select one of the artifacts (projects). Now all the artifacts (projects), expand the section src.main.resources and open the file parameters.prop

2. For the scenarios that flow from SAP Cloud for Customers to SAP ERP On-premise replace the hostname, port and client of the ERP system.

3. Note. The hostname is the actual DNS name on how the ERP system will be accessible from the internet, in most of the cases this should be the Internet DNS name of the reverse proxy, the same applies for the port, which is the port number of the SSL service on how the system is accessible from the Internet.

4. The same has to be repeated for the rest of the artifacts (projects) with the difference for the scenarios where the data flows from SAP ERP On-premise to SAP Cloud for Customers where the hostname and ports are for the SAP Cloud for Customers system.
Configure iFlows using Eclipse Certificate Based Authentication

Add x.509 sender certificate to iFlows for COD2ERP scenarios

Note: This Procedure is relevant if you are using Certificate based authentication.

1. In the case of the scenarios where the data flows from SAP Cloud for Customers to the SAP ERP On-premise we need to add the x.509 client certificate from the SAP Cloud for Customers system into the iFlow. First we need to download the certificate from the SAP Cloud for Customers, Connect to the SAP Cloud for Customers system using an Internet browser and open the Administrator tab.

2. Click in the communication arrangements link.
3. Select one of the communication arrangements that was created in previous steps and click on Edit.
4. Select Technical Data tab

**BUSINESS DATA**

**TECHNICAL DATA**

**COMMUNICATION SYSTEM**

Communication System ID: Q5ECLNT004
System Instance ID: Q5ECLNT004
Code List Mapping: SAP On Premise Integration

5. In the outbound basic settings section we will download the client certificate clicking in the download button

**OUTBOUND COMMUNICATIONS: BASIC SETTINGS**

Outbound Communication Enabled: 
Application Protocol: Format Conversion
*Authentication Method: SSL Client Certificate
Certificate: SAP Business ByDesign System Key Pair
Host Name: ifimaplad9sodw003avldmo-sc0w003.bsn.neo.ondemanc

6. Select the location where you want to download the certificate, type the name of the file and click on Save

7. Once we have the x.509 client certificate from the SAP Cloud for Customers available, now we can uploaded to the iFlow, within the artifact (project) using eclipse. For this we need to open the iFlow selecting project (projects with the name COD2ERP) à src.main.resources.scenarioflows.integrationflow à the iFlow name
8. Double click on the sender (COD)

9. Click in browse
10. Select the certificate that was exported in previous steps and click Open

11. Now the certificate was imported into the iFlow

12. Click on Save to save the changes in the iFlow and close it
Note. You can follow the same steps from 7 to 12 to import the certificate into the rest of the iFlows used for SAP Cloud for Customers to SAP ERP On-premise.

**Add x.509 sender certificate for to iFlows for ERP2COD scenarios**

Note: This Procedure is relevant if you are using Certificate based authentication.

1. From the SAP ERP On-premise system call transaction STRUST

2. Open the SSL Client SSL client Standard PSE
3. Double click in the own certificate. This will load the certificate into the Certificate section.

4. Click the Export button.

5. Save the certificate into a file.
6. From Eclipse open one of the iFlows used for communication from SAP ERP to SAP Cloud for Customers opening the artifact à src.main.resources.scenarioflows.integrationflow à the iFlow

7. Open the sender ERP system
8. Click browse

9. Select the file that was exported in previous steps and click Open
10. Save and close the iFlow

Note. You can follow the same steps from 6 to 12 to import the certificate into the rest of the iFlows used for SAP ERP On-premise to SAP Cloud for Customers.

Configure iFlows using Eclipse for Basic Authentication (Optional)
Create credentials artifact for basic authentication and assign to iFlow

1. There is an option to configure basic authentication from HCI to either SAP Cloud for Customers using basic authentication instead of x.509 certificates. For this the first step is to deploy a basic authentication artifact, from Eclipse open the tenant by double clicking in the tenant name from the node explorer section in the integration designer perspective.
2. Click in the Deployed Artifacts tab

3. Click in the Deploy … button

4. Select Basic Authentication and click Next
5. Select the Type Default, Enter a name, description, the user ID and password for the user used to connect to the remote system and click Finish
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6. Click OK when it finishes the deployment of the artifact

![Image of Deploy Credentials for sodw003](image1)

Deployment of Credentials artifact(s) for participant sodw003 successfully finished.

7. Now this artifact will be showed in the deployed artifacts tab

![Image of Deployed Artifacts](image2)

8. To use the artifact to login to a remote system, we need to configured from within the iFlow in the receiver system, open the iFlow that needs to be adjusted

![Image of Integration Process](image3)

9. Select the connection to the receiver system and double click on it

![Image of Connection Selection](image4)
10. Select the Adapter Specific tab

![Configuration screen with Adapter Specific tab highlighted]

11. Select the checkbox option for Connect using Basic Authentication

![Configuration screen with Connect using Basic Authentication checkbox selected]

12. Enter the name of the Basic Authentication artifact that was deployed before
13. Save and close the iFlow.

**Configure iFlow to accept basic authentication**

*Note: Available from 1405 version of Cloud for Customer.*

1. In case it is desired to use basic authentication to connect from SAP Cloud for Customers or SAP ERP On-premise to SAP HCI using basic authentication, this has to be configured within the iFlow on the sender system, using Eclipse open the iFlow.

   ![Image of iFlow configuration](image)

   - com.sap.scenarios.erp2cod.customermaster.replicate
   - com.sap.scenarios.erp2cod.material.replicate
   - src.main.resources
   - src.main.resources.mapping
   - src.main.resources.scenarioflow.integrationflow
   - com.sap.scenarios.erp2cod_material_replicate.ifw
   - src.main.resources.wsdl
   - META-INF
   - build.properties
   - com.sap.scenarios.erp2cod.opportunity.replicate
   - com.sap.scenarios.erp2cod.servicerequest.confirmation

2. Select the sender system
3. Select the check box Allow Basic Authentication

4. Now it is possible to use a valid SCN user that was provided with the required permissions to consume the web service for this specific scenario

5. Save and close the iFlow

**Deploy project from Eclipse to SAP Hana Cloud Integration**

1. Once the artifact were adjusted we can deploy them to the tenant selecting the artifact (project) and right click on it
2. Click in the option of Deploy Integration Content
3. Enter the name of the HCI tenant and click OK

4. Click OK

Check if the projects got deployed from the Deployed Artifacts

1. From Deployed Artifact tab sort the artifact using the Deployed On column to see the latest deployed artifact
2. From there you will see all the deployed artifacts and validate that the artifact was deployed.