

# **SAP e-Invoice for India - Integration with GSP (GST Suvidha Provider)**

**Via SAP Cloud Integration Service in Neo environment**

**GSP Integration Set Up Guide**

## Document History

| Version | Date       | Change  |
|---------|------------|---|
| 1.0     | 2020-02-06 | First release of the EInvoice GSP Setup Guide   |
| 1.1     | 2020-03-02 | Created Section 4.1 'Base 64 encoded X.509(.cer) format conversion' in FAQ  |
| 1.2     | 2020-06-09 | Updated Screenshots for section 3.2 'Deploy Integration Flow'   |
| 1.3     | 2020-09-23 | <ul style="list-style-type: none"><li>• Updated section 3.2 Deploy Integration flow</li><li>• Updated section 3.1 Certificate set-up and connection test. Added step 4 to Deploy IRP Signed Content Verification Public Key Certificate</li><li>• Updated Section 4.4 Adding User Credentials to SAP Cloud Integration</li></ul>                                    |
| 1.4     | 2021-03-24 | <ul style="list-style-type: none"><li>• Updated the complete document to reflect the latest SAP Branding changes for SAP Business Technology Platform(BTP), SAP Cloud Integration and Integration Flow.</li><li>• Updated Section 3.2 'Deploy Integration Flow' with details on new field userGSTIN_publicAPI in step 4 'Deploying GSP Integration flow'.</li></ul> |

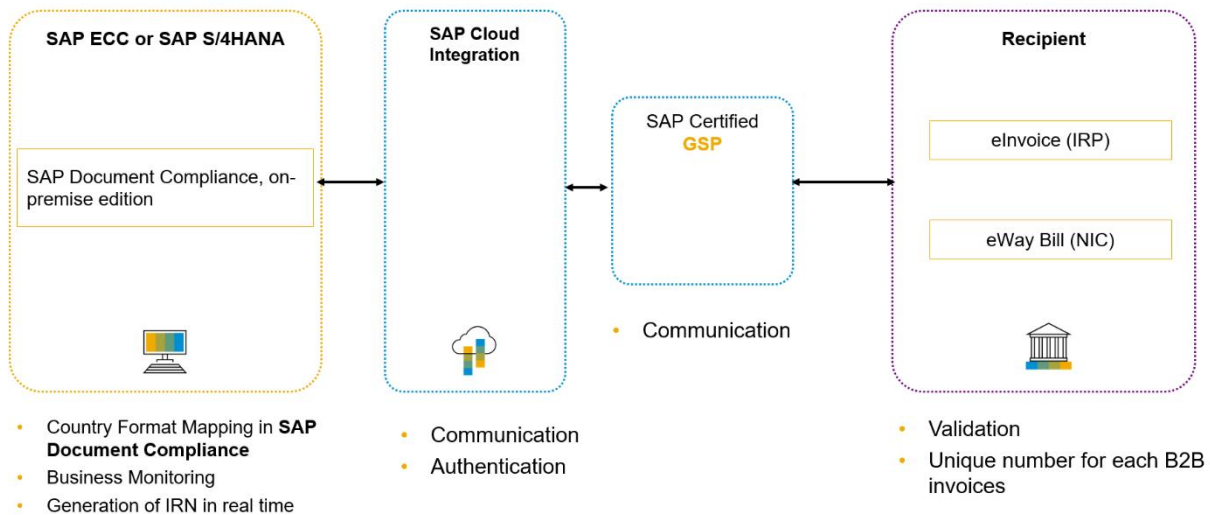
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# 1 Introduction

Using the SAP Solution for eInvoice India, you can register the invoice with the Invoice Reference Portal (IRP) and subsequently generate Invoice Reference number (IRN) as per the legal requirement in India.

The eInvoice solution requires the integration between SAP Business Application (ERP/S4HANA) and GSPs. This document describes the steps to adapt and deploy the SAP Cloud Integration content flow to establish the communication between SAP Business Application and GSPs.



## Note:

SAP offers two Cloud environments, namely Neo and Cloud Foundry and this document is intended for the setting-up of eInvoice India integration for Neo environment.

## 2 Prerequisites

Ensure the following prerequisites are met:

- SAP E-Invoice (EINV) for India solution is available in your landscape. For more information on installation and implementation, see [SAP Note: 2884058](#)
- Provisioned live SAP Cloud Integration production and/or pre-production tenants.
  - A sample of the URL's you'll need are:
    - Account URL: <https://account.hana.ondemand.com>
    - Web UI URL: <https://xxx-tmn.avt.eu1.hana.ondemand.com/itspaces>
    - Runtime URL: <https://xxx-iflmap.avtsbhf.eu1.hana.ondemand.com>  
Use your P-user or S-user credentials to login. If you get HTTP status 403 error, then send a mail to [service@sap.com](mailto:service@sap.com).
  - User role:
    - SAP Cloud Integration service user should have the `ESBMessaging.Send` role.
    - User should have `AuthGroup.Administrator` role to perform steps related to KeyStore, client certificate mapping and User credentials.
- For production access via GSP:  
Kindly contact GSP for Production access details.
- For sandbox access via GSP, request the IRP user credentials from GSP directly.
- Completed registration with GST Suvidha Provider (GSP) system and have received the following:
  - GST Suvidha Provider (GSP) integration/set up manual.
  - Trusted certificates from GSP for SSL handshake.
  - IRP public key certificate (SAP Cloud Integration expects the certificate in Base-64 encoded X.509 (.CER) format). See [FAQ 4.1](#).
  - IRP signed content verification public key. (SAP Cloud Integration expects the certificate in Base-64 encoded X.509 (.CER) format). See [FAQ 4.1](#).
  - IRP user credentials per GSTIN.
  - Other required technical details from GSP.
  - Two Integration Flows (.zip files) from GSP and save to any local location in your desktop.
    - GSP integration flow [Integration Flow specific to GSP]
    - Router integration flow [Routes elnvoice request from SAP business application to specific GSP Integration Flow]

# 3 Establishing the connection between SAP Cloud Integration and GSP

This section details the procedure to establish a connection between SAP Cloud Integration and GSP (GST Suvidha Provider).

## 3.1 Certificate set-up and connection test

(only first-time activity or in case of changes in certificate from IRP/GSP)

1. Deploying SSL certificate:  
In the SAP Cloud Integration Web UI URL, go to **Monitor > Manage Security > Keystore > Add Certificate** (fill parameters here) > click **Deploy** > click **Ok**.

### Note:

To perform the above operation, you need to have the role as `AuthGroup.Administrator`. For more information, see [FAQ 4.2](#).

2. Connection test (recommended):  
In the SAP Cloud Integration Web UI URL, go to **Monitor > Manage Security > Connectivity tests** > enter GSP base URL without https and port > click **Send**. On successful connection, system displays a successful response message. For more information, see [FAQ 4.3](#).
3. Deploying IRP public key certificate:  
In the SAP Cloud Integration Web UI URL, go to **Monitor > Manage Security > Keystore > Add Certificate** > browse IRP public key certificate {the public key certificate must be converted to Base-64 encoded `x.509 (.CER)` format as detailed in [FAQ 4.1](#)} > Enter alias name as `irpcert` > click **Deploy** > click **Ok**.  
For more information, see [FAQ 4.2](#).
4. Deploying IRP signed content verification public key certificate:  
This Certificate is used to validate the signed content fields such as SignedQRCode and SignedInvoice received from IRP.  
In the SAP Cloud Integration Web UI URL, go to **Monitor > Manage Security > Keystore > Add Certificate** > browse IRP signed content verification public key certificate {the public key certificate must be converted to Base-64 encoded `x.509 (.CER)` format as detailed in [FAQ 4.1](#)} > Enter alias name as `jwtcert` > click **Deploy** > click **Ok**.  
For more information, see [FAQ 4.2](#).
5. Adding IRP user credentials as per GSTIN:  
In SAP Cloud Integration Web UI URL, go to **Monitor > Manage Security > Security Material > Add** > Click **User Credentials** (fill parameters here) > click **Deploy**.  
For more information, see [FAQ 4.4](#).

| Field                     | Description  |
|---------------------------|--|
| Name                      | GSTIN of the business place to which the user belongs/ GSTIN of the business place with suffix '_einv' |
| Description               | Any relevant text (optional)   |
| User                      | User ID created in IRP portal (production) or received from GSP (pre-production)                       |
| Password/ Repeat password | Password   |

6. Deploying client certificate to SAP Cloud Integration (optional but highly recommended):
7. Download the client certificate from source system.

**Note:**

This option does not work with self-signed certificates. This certificate to user mapping functionality works only if there exists a certificate in the source system's trust store which is signed by one of the root CA's supported by SAP Cloud Integration.

In the SAP Cloud Integration Web UI URL, go to **Monitor > Manage Security > Manage Certificate-to-User Mappings** > click **Add** > Add user name as SAP Cloud Integration user name (this user must have `ESBMessaging.Send` role assigned) and certificate as client certificate from the source system. For more information, see [FAQ 4.6](#).

## 3.2 Deploy Integration Flow

1. Creating content package: (one-time activity)  
In the Web UI URL of the tenant, go to **Design > Create > In Header**, give a meaningful name (technical name), short description and click **Save**.  
The content package is created.
2. Updating content package  
When you already have previous version of integration flow deployed in your tenant and need to replace it with new integration flow, then follow below instructions

- Choose the content package under which the previous integration flow is deployed.
- Click **Edit** button (seen in left side)
  - Go to **Artifacts** tab, checkmark the integration flow.
  - Click on action icon -> **configure**. Copy the values of the fields maintained over there locally, as it can be used later if GSP confirms these parameters are valid or get the exact latest externalized parameters values. Close the configure pop-up screen.
  - checkmark the integration flow, then click on action icon -> **Delete**.

**Note:**

Repeat this 'Updating content package' step for each of the router and GSP integration flows.

3. Deploying Router Integration flow:

1. Within the same content package, in artifacts tab, click **Add > Integration flow > Upload** > browse to the router integration flow (.zip file), give a name, description, sender, receiver > click **Ok**.  
Integration flow is successfully added.
2. Select the Router integration flow. System displays the integration flow screen.
3. To configure and deploy:  
In Artifacts screen, against the router integration flow, click **Actions > Configure** > verify the value as shown in the image below:

**Sender**

Sender:

Adapter Type:

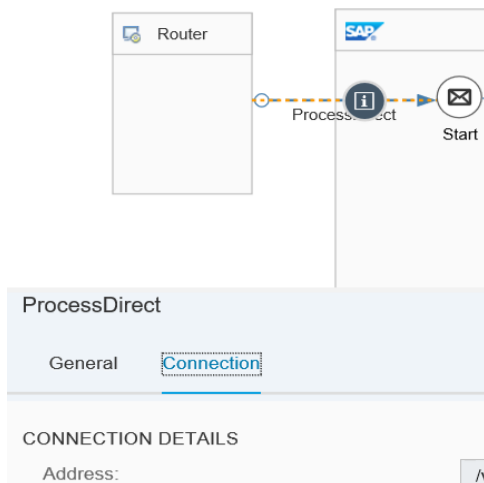
**Connection**

Address:

4. Click **Save** then **Deploy**.

4. Deploying GSP Integration flow:

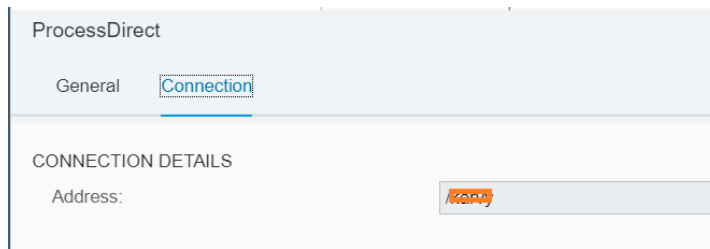
1. In the content package, in **Artifacts** tab, click **Add > Integration flow > Upload** > browse to the GSP integration flow (.zip file), give a name, description, sender, receiver > click **Ok**. Now, integration flow is successfully added.  
Select the GSP integration flow. System displays the integration flow screen.



For more information, see [FAQ 4.5](#).

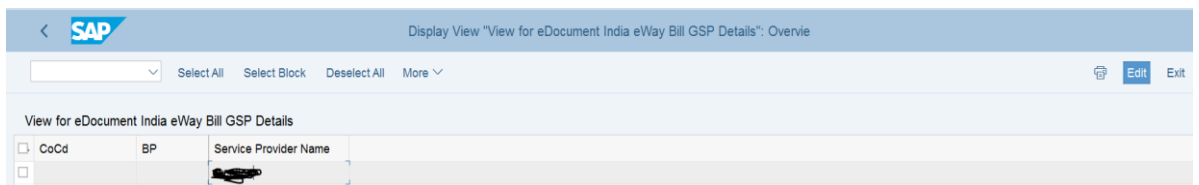
2. Double click the **ProcessDirect > Connection Details > Address** > make note of this value (sample: /gsp)





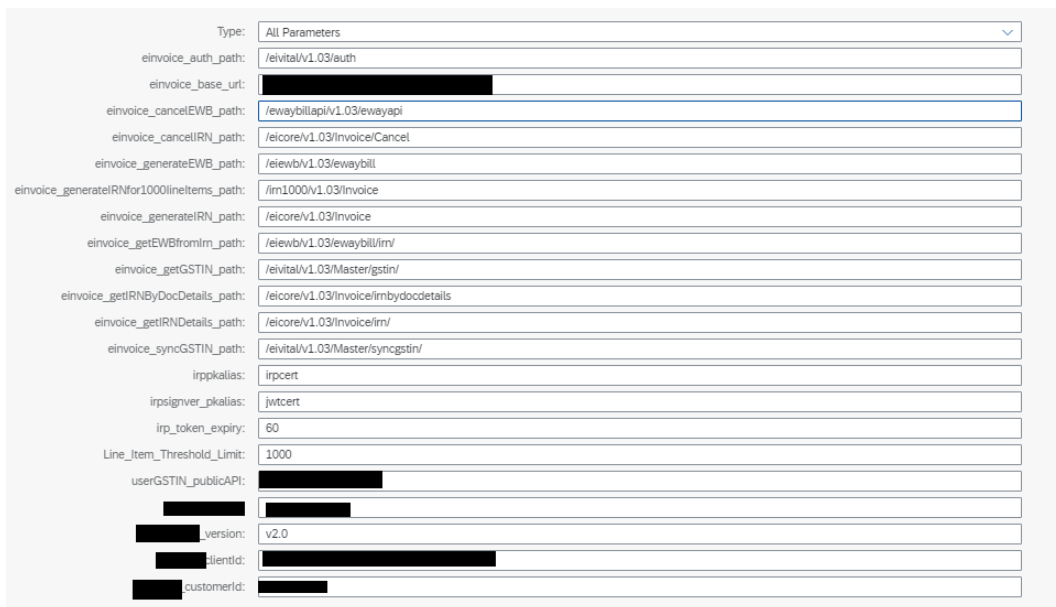
**Note:**

You should enter the service provider name as same as the address value (without slash) in the business application > **sm30** > in view **EDOINEINVGSPV**



After that to configure and deploy:

In Artifacts screen, against the GSP integration flow, click **Actions > Configure** > Define the externalized parameters as provided by GSP to SAP customer. In case of updating the new integration flow, use the parameters copied as suggested in the [step 2](#). After updating the parameters, click **Save** then **Deploy**.



**Note:**

- o irppkalias value is the same as the alias of the IRP public key certificate you deployed (irpcert).
- o irpsigner\_pkalias value is the same as the alias of the IRP signed content verification public key certificate you deployed (jwtcert).
- o In field userGSTIN\_publicAPI, you enter one of the GSTIN which needs to be used for making public API calls such as getGSTIN and syncGSTIN and this field is mandatory only for public API calls

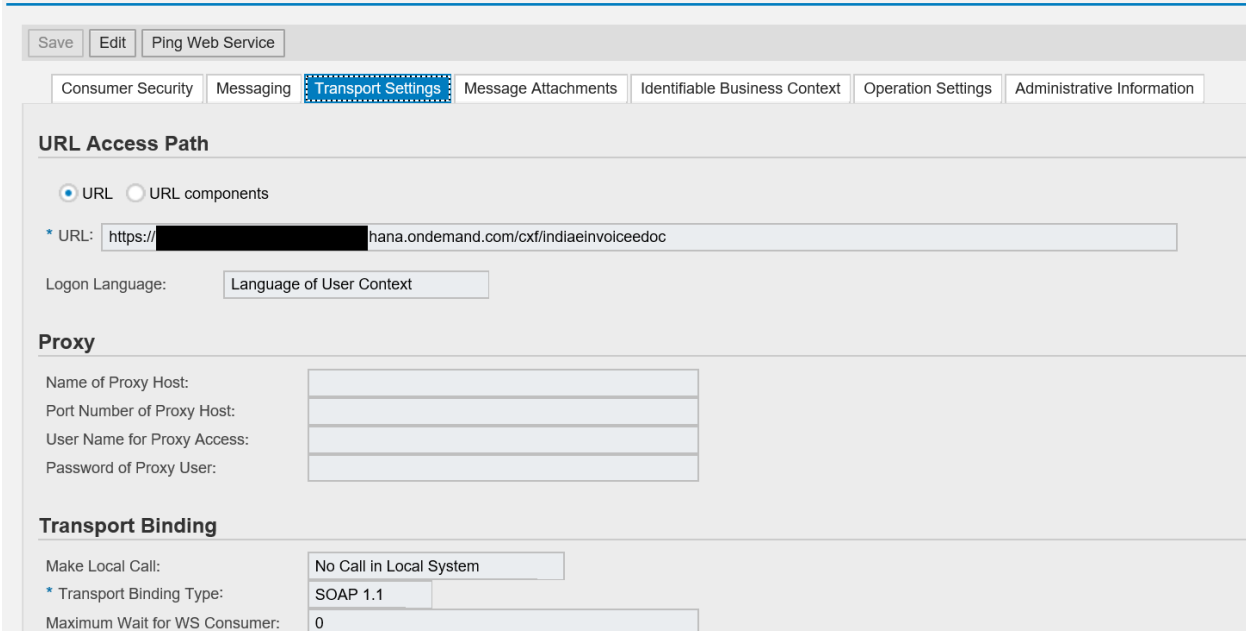
**Important:**

- After the successful deployment, verify that the integration flows are in the Started state by clicking **Monitor > Manage integration content**.
- To obtain the EndPoint URL:
  1. Click **Monitor > Manage integration content**
  2. Choose the Router Integration flow.
  3. The EndPoint URL can be found on the right side of the page.



4. This URL has to be configured in the SOA Manager.

**Configuration: Consumer Proxy 'CO\_EDO\_IN\_EINV\_TRANS', Logical Port 'EDOC\_IN\_EINV\_PORT'**



- Any issues with:
  - SAP Cloud Integration **tenant:** Report under SAP component: LOD-HCI-PI-OPS
  - **invoice:** Report under SAP component: CA-GTF-CSC-EDO-IN-IV

- **GSP system access:** Report through GSP defined support mechanism

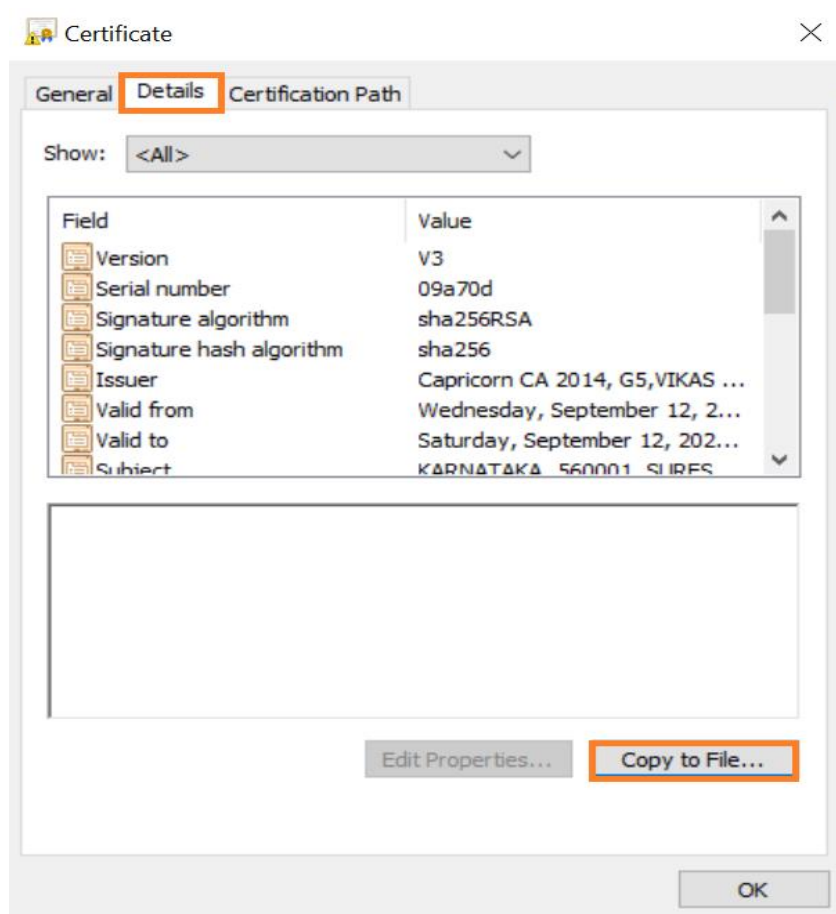
## 4 FAQs

### 4.1 Base-64 encoded X.509(.CER) format conversion

This conversion is relevant only for IRP public key certificate received from GSP.

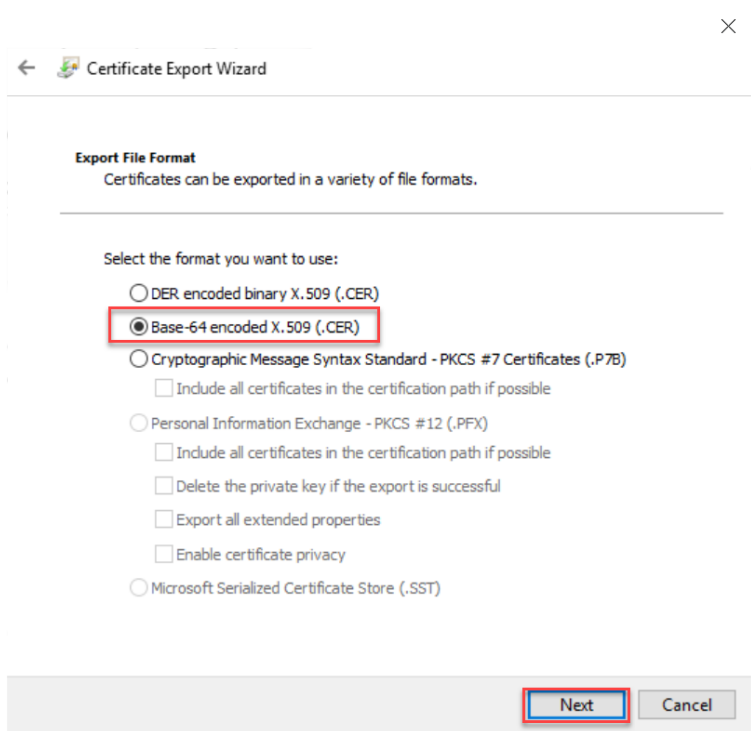
To convert the IRP public key to Base-64 encoded X.509(.CER) format:

1. Double click the certificate saved in the local desktop. Go to **Details** -> **Copy to File...**

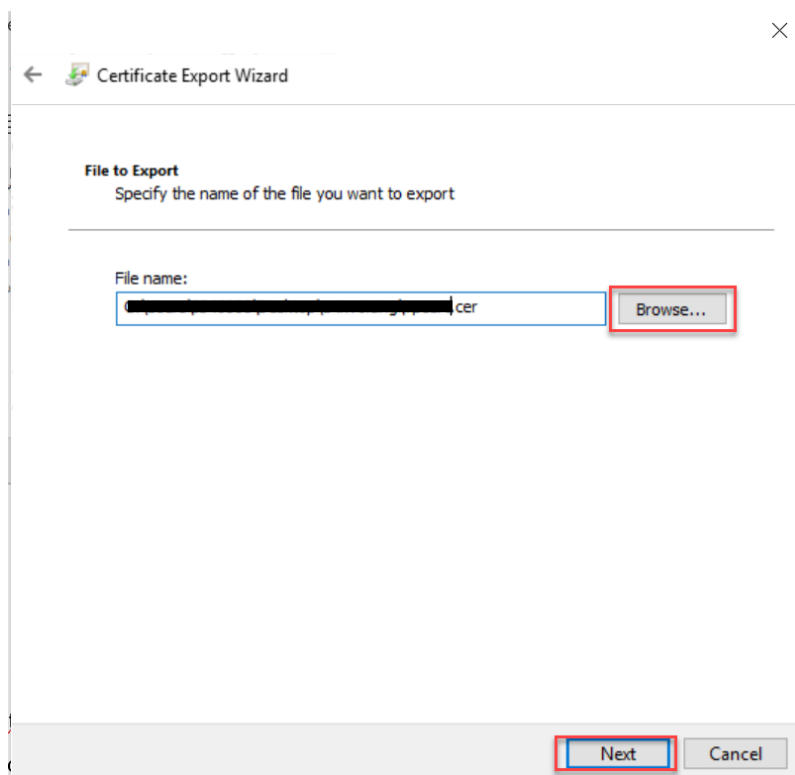


A new window opens. Click **Next**.

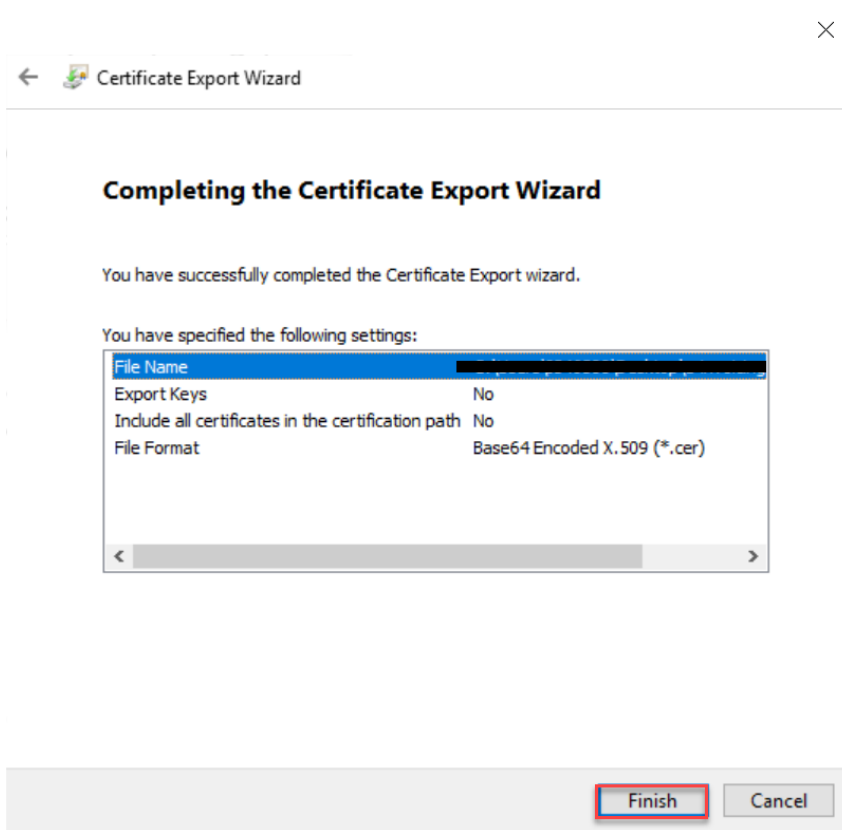
2. Select Base-64 encoded X.509(.CER) and click **Next**.



3. Browse the path where the certificate has to be saved and click **Next**.



4. Click **Finish**. Certificate will be saved in the selected location.



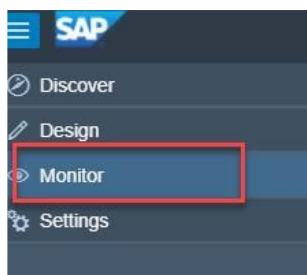
Add the above converted IRP public key certificate to SAP Cloud Integration.

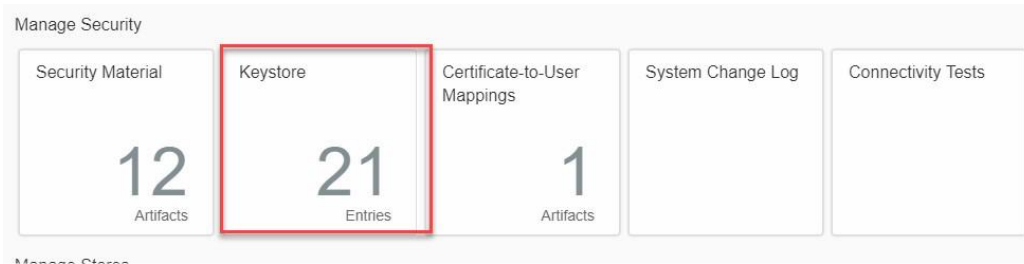
## 4.2 Adding New Certificates to the SAP Cloud Integration

You can add the security artifacts like keystore entries by following the process detailed here.

You should have Tenant Admin authorizations (AuthGroup.Administrator role) for the tenant to perform this operation.

1. Navigate to **Monitor** > **Manage Security** > Keystore.



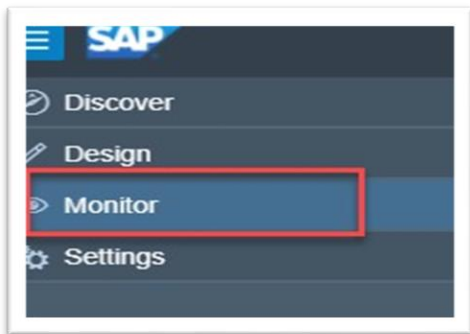


2. Click **Add > Certificate > Add Certificate**.
3. Enter an alias to identify the certificate. Browse the certificate from local desktop.
4. Click **Deploy**.

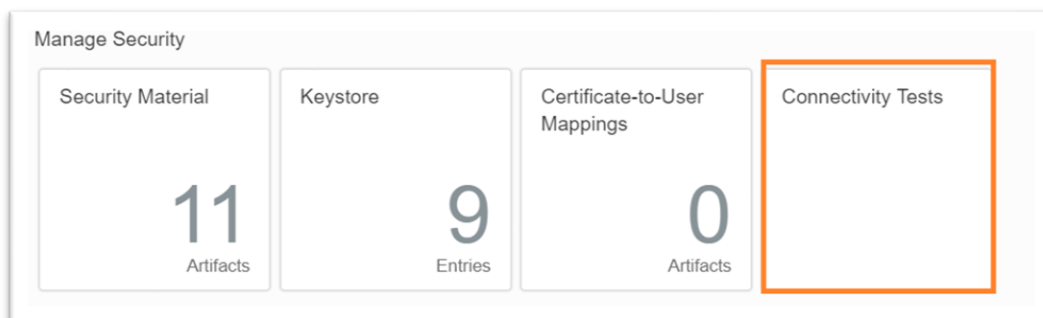
### 4.3 Connectivity Test

To check the connectivity with GSP, follow the steps:

1. Go to **Monitor**



2. Choose **Manage Security > Connectivity tests**



3. Enter the host URL without any Protocols and enter the port number. Click **Send**.

The screenshot shows a 'Request' form with the following elements:

- \*Host:** A text input field containing 'www.example.org'.
- \*Port:** A text input field containing '443'.
- Authenticate with Client Certificate
- Validate Server Certificate
- Send**: A blue button with a white border, highlighted with an orange rectangle.

4. On successful connection, you can see a response as shown below:

The screenshot shows a 'Response' form with the following elements:

- Successfully reached host at [redacted] in:443
- Client Certificate Used:
- Certificates:
  - 1 dn=CN=[redacted]  
issuerDN=CN=Amazon, OU=Server CA 1B, O=Amazon, C=US  
subjectAlternativeNames=DNSName=[redacted]  
validUntil=Mar 07, 2019, 17:30:00  
serialNumber=0xAA2BB42565C2634EA67F40F984CB420
  - 2 dn=CN=Amazon, OU=Server CA 1B, O=Amazon, C=US  
issuerDN=CN=Amazon Root CA 1, O=Amazon, C=US  
validUntil=Oct 19, 2025, 05:30:00  
serialNumber=0x67F94578587E8AC77DEB253325BBC998B560D
  - 3 dn=CN=Amazon Root CA 1, O=Amazon, C=US

## 4.4 Adding User Credentials to SAP Cloud Integration

To add User Credentials (per GSTIN credentials provided by GSP/IRP) to SAP Cloud Integration:

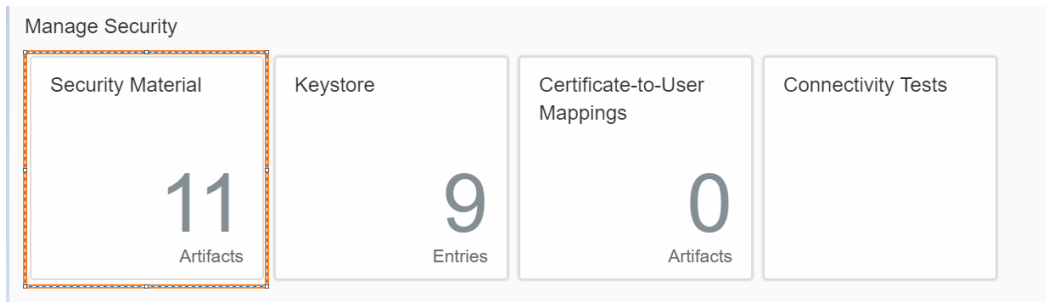
You register the user as per the business place specified in IRP. Use the following steps to add these IRP users in SAP Cloud Integration:

Note:

For the production system, if you are already using the eWay bill solution, then the user credentials need not be added again since the same credentials are valid for IRN (Invoice Registration Number) generation.

1. Go to Security material. Navigate to **Monitor > Manage Security > Security Material**.

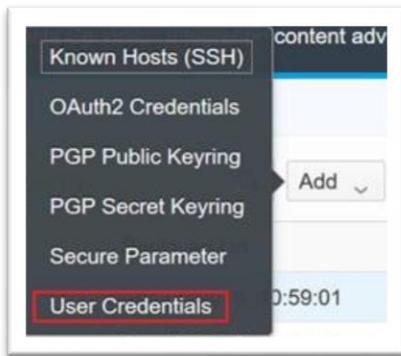




2. Add a new user credential.



3. Click **User Credentials**.



4. **Add** and Deploy the user credentials.

Add User Credentials

\*Name:

Description:

\*User:

Password:

Repeat Password:

SuccessFactors

Deploy
Cancel

Note:

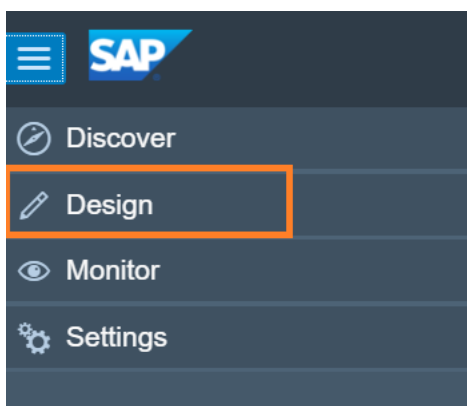
- In the Name field, enter the GSTIN of the business place to which the user belongs.
- In Production, IRP allows the existing eWay Bill API credentials to be used for elnvoice as well.
- However, if the user credentials are created explicitly for elnvoice, then, maintain the name field with the suffix `_einv` (Example: `27AAAPI3182M002_einv`).
- The suffix is case sensitive.

| Field                     | Description   |
|---------------------------|---|
| Name                      | GSTIN of the business place to which the user belongs/ GSTIN of the business place with suffix '_einv'. |
| Description               | Any relevant text (optional)  |
| User                      | User ID created in IRP portal (production) or received from GSP (pre-production)                        |
| Password/ Repeat password | Password  |

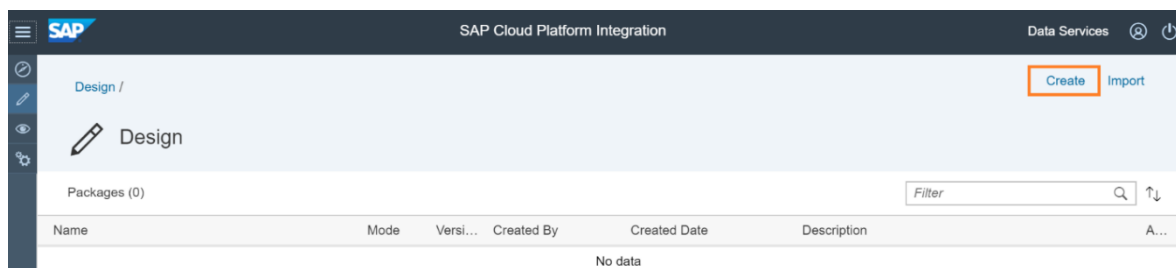
## 4.5 Creating content package and Deploying GSP Integration flow

### 4.5.1 To create a content package

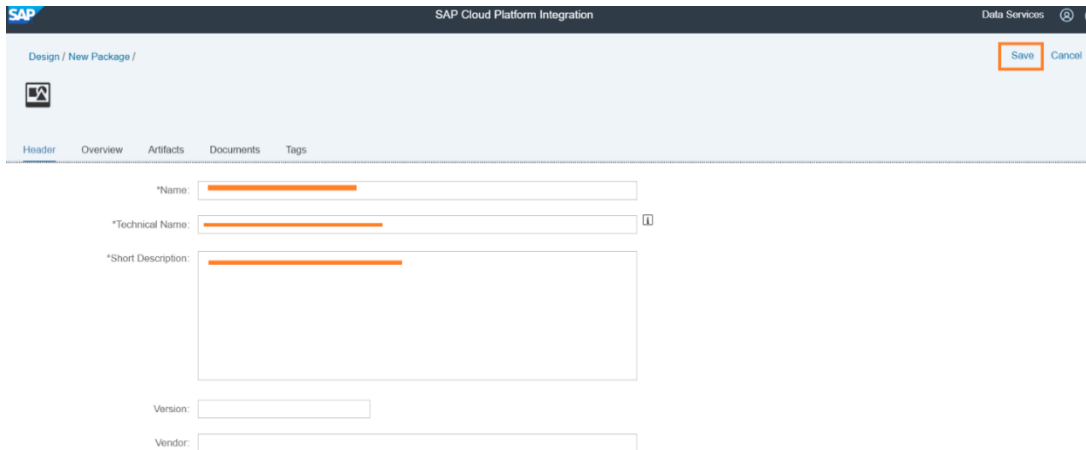
1. Go to **Design**.



2. Choose **Create**.

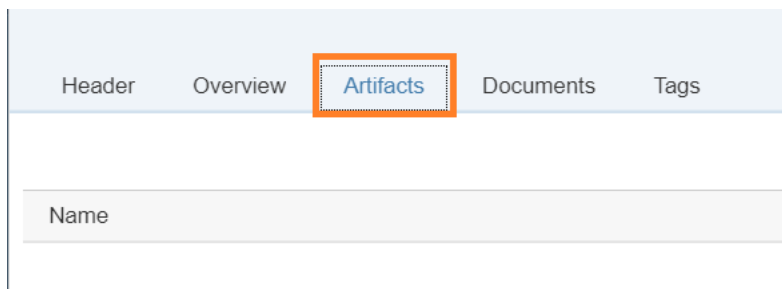


3. Enter appropriate Name and Description and click **Save**.

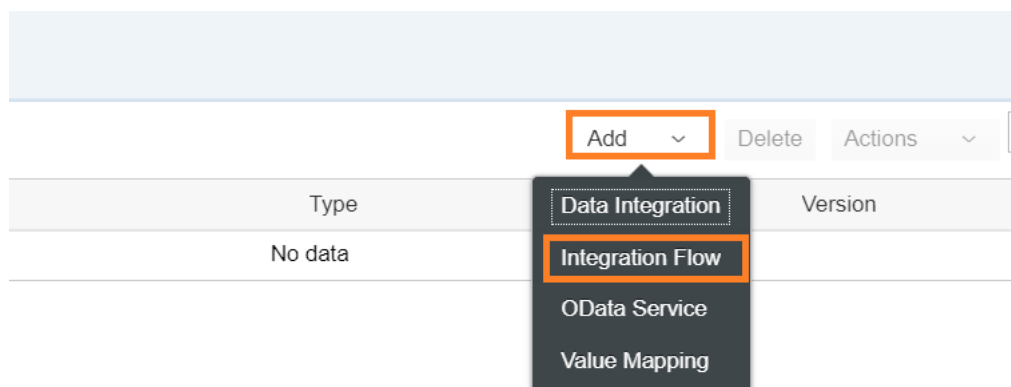


## 4.5.2 To deploy GSP Integration flow

1. Choose **Artifacts**.



2. Click **Add** and choose **Integration Flow**.



3. Select **Upload**.
4. Browse for the appropriate Integration flow (.zip file)
5. Enter the Name and Description and click **Ok**.

## 4.6 Deploying Client Certificate to SAP Cloud Integration

To enable certificate-based authentication between source system to SAP Cloud Integration, the certificate presented by source system should be signed by one of the Certification Authorities (CA) approved by SAP load balancer component.

Refer to the below SAP help document on the list of supported CAs.

<https://help.sap.com/viewer/368c481cd6954bd0435479fd4eaf/Cloud/en-US/4509f605e83c4c939a91b81eb3a6cdea.html>

To deploy client certificate to SAP Cloud Integration, follow the steps:

For inbound HTTP connections to SAP Cloud Integration, you define Authorization options for the communication user associated with the sender system to define how it accesses the Cloud Integration components. We recommend that you use Client-Certificate with certificate-to-user mapping. Under this option, the authentication of a sender is performed based on a client certificate. With a certificate-to-user mapping, the certificate is mapped to a user, whose authorizations are checked on the tenant.

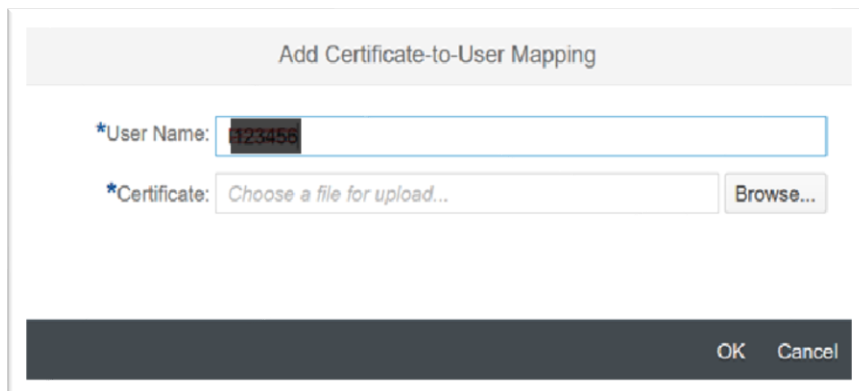
1. Navigate to **Monitor > Manage Security > Certificate-to-User Mappings**.

| Security Material | Keystore      | Certificate-to-User Mappings | Connectivity Tests |
|-------------------|---------------|------------------------------|--------------------|
| 22<br>Artifacts   | 16<br>Entries | 1<br>Artifacts               |                    |

2. Click **Add**.
3. Enter the service user and deploy the client certificate obtained from SAP ERP.

Note: the service user should have the `ESBMessaging.Send` role assigned to it.

For more information on how to obtain client certificate from SAP ERP, refer the section 'Configure Service Providers and Consumer Proxies' in 'SAP\_Document\_Compliance\_e-Invoicing\_for\_India\_Implementation\_Guide' document attached to SAP Note [2884058](#).



The image shows a dialog box titled "Add Certificate-to-User Mapping". It contains the following elements:

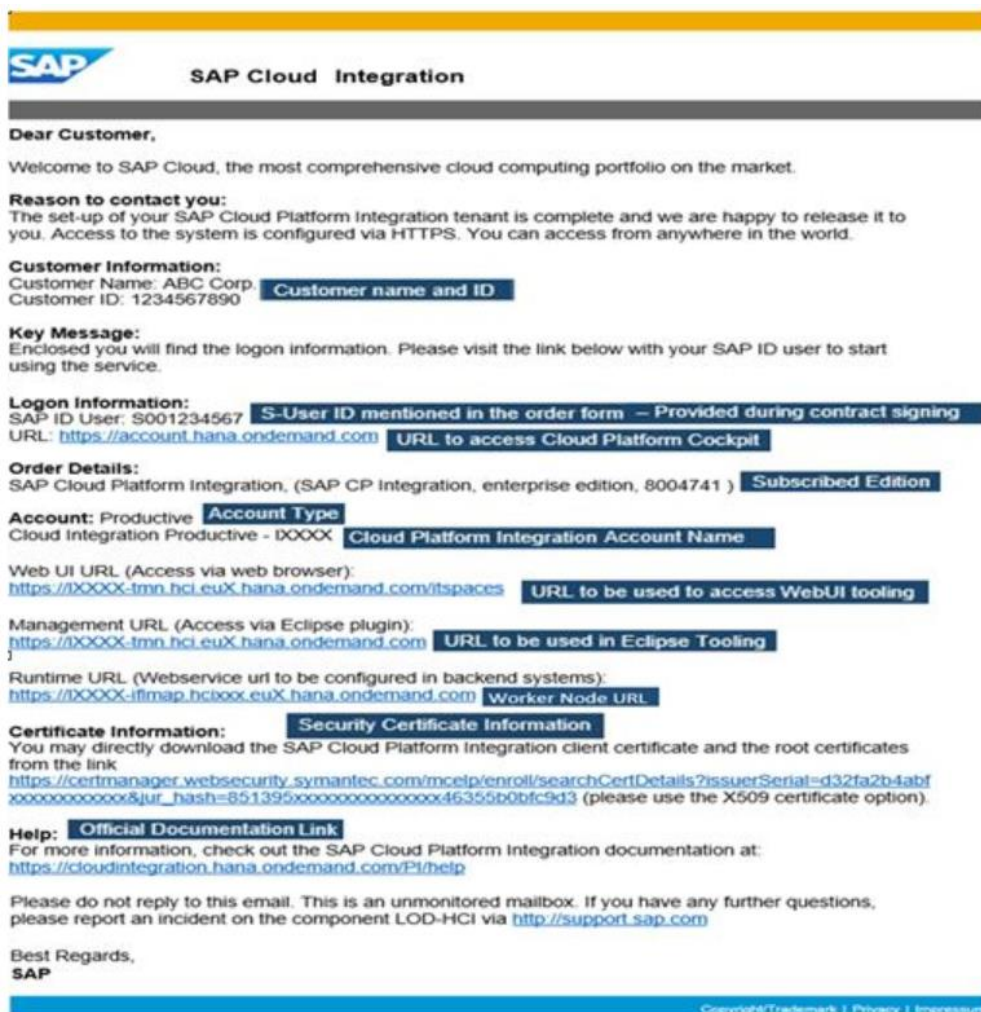
- A title bar with the text "Add Certificate-to-User Mapping".
- A field labeled "\*User Name:" with a text input box containing the value "123456".
- A field labeled "\*Certificate:" with a text input box containing the placeholder text "Choose a file for upload..." and a "Browse..." button to its right.
- At the bottom right of the dialog, there are two buttons: "OK" and "Cancel".

# 5 Appendix

## 5.1 About SAP Cloud Integration tenant

With SAP eInvoice solution, you get two Cloud Integration tenants. For each tenant, you get a welcome email outlining the details about the tenant.

We recommend that you use one tenant for development/testing, and another for production.



## 5.2 Adding Members to the SAP Cloud Integration Account

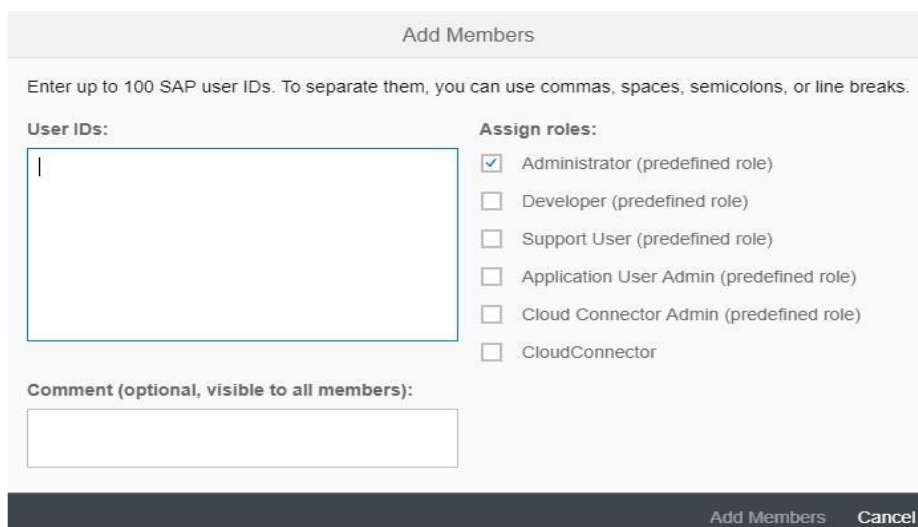
To add members to the SAP Cloud Integration account, follow the steps:

1. Logon to the Account URL with the SAP ID user provided in the mail.

2. Add members and assign roles to this account by navigating to **Members > Add Members**.



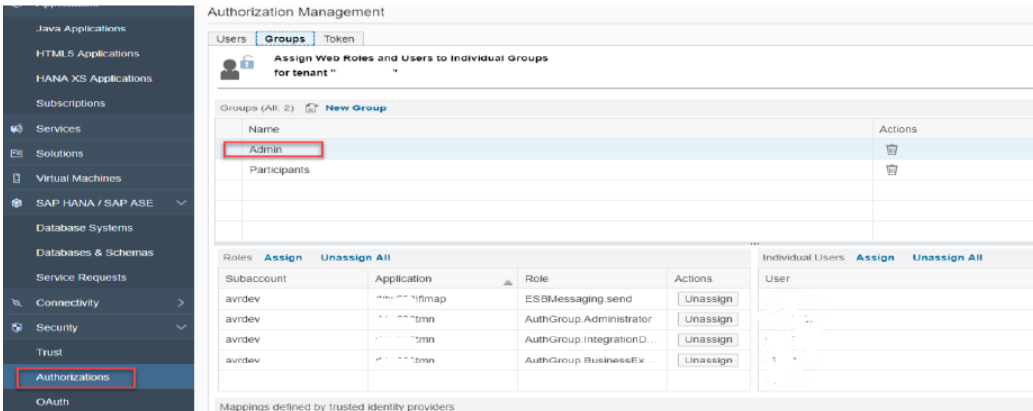
3. Assign the following roles:
  - Administrator: Assign the role of Administrator to the user who is supposed to have the full permissions of an administrator.
  - Application User Admin: Assign the role of Application User Admin to the user who is supposed to have restricted administrator privileges.

A screenshot of a dialog box titled 'Add Members'. At the top, it says 'Enter up to 100 SAP user IDs. To separate them, you can use commas, spaces, semicolons, or line breaks.' Below this is a text input field labeled 'User IDs:'. To the right of the input field is a section titled 'Assign roles:' with five checkboxes: 'Administrator (predefined role)' (checked), 'Developer (predefined role)', 'Support User (predefined role)', 'Application User Admin (predefined role)', and 'Cloud Connector Admin (predefined role)'. Below the roles section is a text input field labeled 'Comment (optional, visible to all members):'. At the bottom right of the dialog are two buttons: 'Add Members' and 'Cancel'.

## 5.3 Providing authorizations to SAP Cloud Integration Users

To provide authorizations to the SAP Cloud Integration Users:

1. Logon to the Account URL with the SAP ID user provided in the mail.
2. In the Navigation pane, choose **Security > Authorizations**
3. Create a Group and assign Roles and users for this Group.



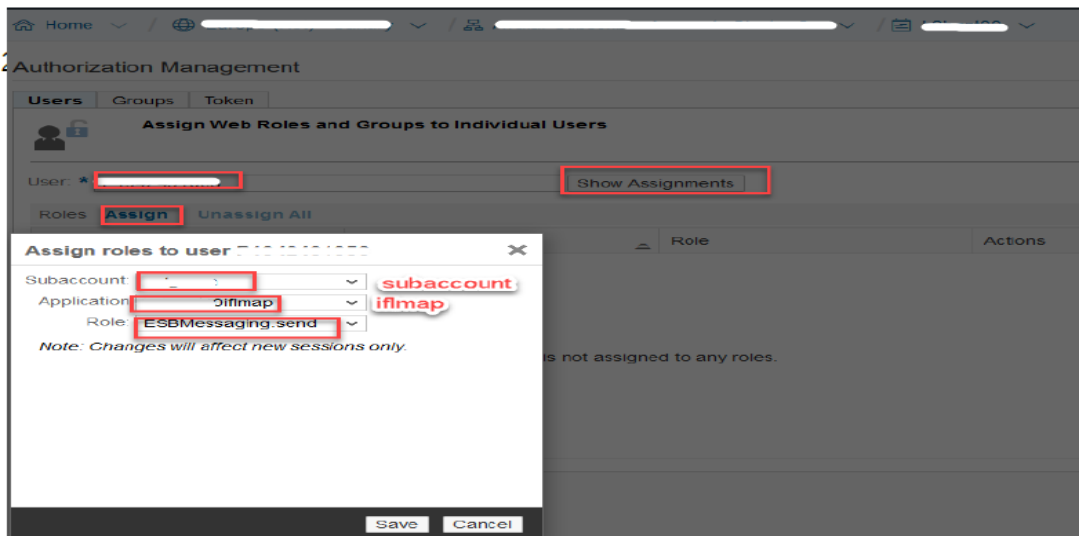
The authorization group `AuthGroup.Administrator` is designed for the administrator at customer side who administers a (customer-specific) tenant management node.

For more details refer [here](#).

## 5.4 Creating a Service User in SAP Cloud Integration

To create a Service User in Cloud Integration, follow the steps:

1. Register a new user at <https://account.hana.ondemand.com/#/home/welcome>.
2. Assign the `ESBMessaging.Send` role to the user.





## 6 Useful links:

| Area   | Link  |
|--|---|
| SAP Cloud Integration                                    | <a href="https://help.sap.com/viewer/product/CLOUD_INTEGRATION/Cloud/en-US">https://help.sap.com/viewer/product/CLOUD_INTEGRATION/Cloud/en-US</a>   |
| SAP Cloud Integration – overview of authorization groups | <a href="https://help.sap.com/viewer/368c481cd6954bdfa5d0435479fd4eaf/Cloud/en-US/2937e5ca6ef448cfb21451a2461cc2a6.html">https://help.sap.com/viewer/368c481cd6954bdfa5d0435479fd4eaf/Cloud/en-US/2937e5ca6ef448cfb21451a2461cc2a6.html</a> |
| SAP Cloud Integration – user credentials                 | <a href="https://help.sap.com/viewer/368c481cd6954bdfa5d0435479fd4eaf/Cloud/en-US/6912d63bbbc64aee8bbd4ff10314c60c.html">https://help.sap.com/viewer/368c481cd6954bdfa5d0435479fd4eaf/Cloud/en-US/6912d63bbbc64aee8bbd4ff10314c60c.html</a> |
| SAP Cloud Integration – Importing a keystore             | <a href="https://help.sap.com/viewer/368c481cd6954bdfa5d0435479fd4eaf/Cloud/en-US/0db193a325a94675928e717c9310734a.html">https://help.sap.com/viewer/368c481cd6954bdfa5d0435479fd4eaf/Cloud/en-US/0db193a325a94675928e717c9310734a.html</a> |
| SAP Cloud Integration – Importing a certificate          | <a href="https://help.sap.com/viewer/368c481cd6954bdfa5d0435479fd4eaf/Cloud/en-US/03cf78a217574e7abd75bfba990c085.html">https://help.sap.com/viewer/368c481cd6954bdfa5d0435479fd4eaf/Cloud/en-US/03cf78a217574e7abd75bfba990c085.html</a>   |