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SAP Solution for eInvoice India - Integration of SAP ERP or SAP S/4HANA with GST Suvidha Provider: Cloud Foundry



Typographic Conventions

Type Style	Description
<i>Example</i>	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Textual cross-references to other documents.
Example	Emphasized words or expressions.
EXAMPLE	Technical names of system objects. These include report names, program names, transaction codes, table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE.
Example	Output on the screen. This includes file and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
Example	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
<Example>	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
EXAMPLE	Keys on the keyboard, for example, F2 or ENTER.

Document History

Version	Date	Change
1.0	2020-06-12	First release of the GSP Integration Guide
1.1	2020-08-26	Screen shots updated in section 4.4 'Adapt and Deploy SAP Integration Flow'
1.2	2021-03-24	Updated the complete document to reflect the latest SAP Branding changes for SAP Business Technology Platform(BTP), SAP Integration Suite and Integration Flow. Updated Section 3 'Pre-requisites' with the Initial setup link for Integration Suite option. Updated Section 4.2 'Deploy IRP User Credentials per GSTIN' Updated Section 4.5.1 'Adapt and Deploy GSP Integration Template' with details on new field userGSTIN_publicAPI and sample URL configuration in step 6 - Configure. Created section 4.6 'Basic Authentication Settings'

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1 Glossary

The table below lists the terms and abbreviations used throughout this document:

Term	Description
GST	Goods and Services Tax
GSP	GST Suvidha Provider
GSTIN	Goods and Services Taxpayer Identification Number
IRN	Invoice Reference Number
IRP	Invoice Registration Portal
CF	Cloud Foundry
SAP BTP	SAP Business Technology Platform
NIC	National Informatics Centre
B2B	Business to Business

2 Introduction

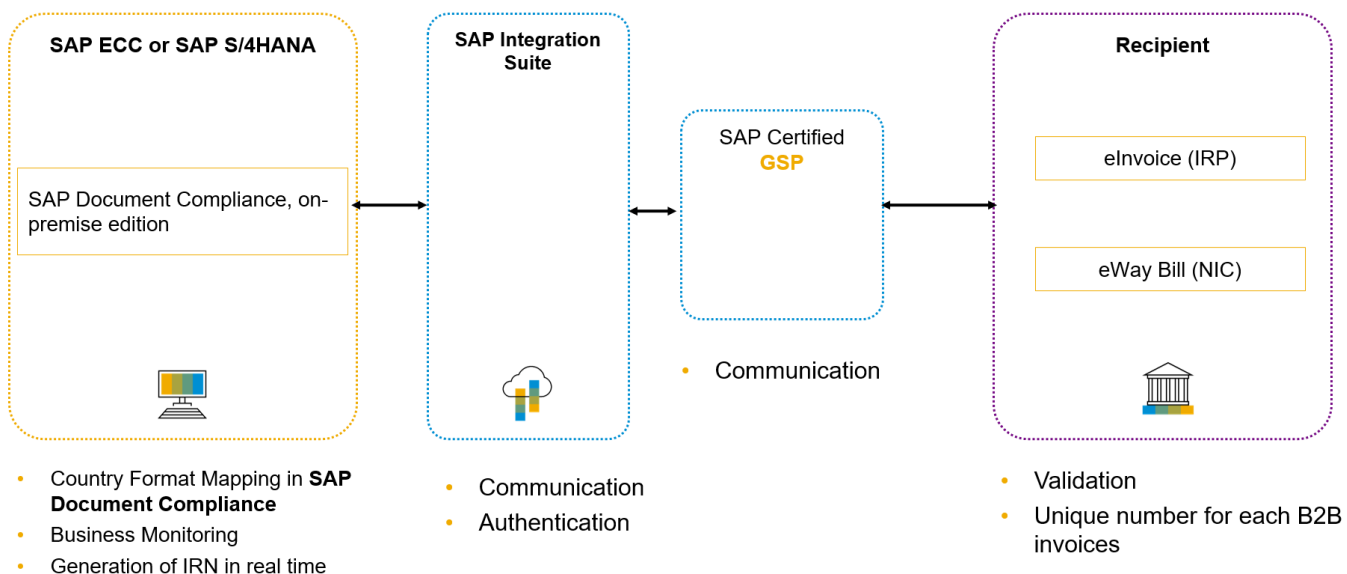
Using the SAP solution for eInvoice India, you can generate Invoice Reference Number (IRN) as per the legal compliance in India.

The eInvoice solution requires the integration between SAP ERP or SAP S/4HANA and GST Suvidha Provider (GSP). The following documentation describes the steps to adapt and deploy SAP Integration Flow to establish communication between SAP ERP or SAP S/4HANA and GSP(s).

Note

* If you are using SAP certified GSP, you get the GSP specific pre-built integration flow and the documentation to implement the integration flow from your respective GSP(s). We recommend that you use the document provided by your GSP to implement the integration flows. To view the list of SAP certified GSPs use the SAP Note [2889709](#).

* If you are using non-SAP certified GSP, use this document to adapt the [GSP Integration Template](#) as per your company needs.



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 Cloud Foundry environment.

3 Prerequisites

Before you start with the activities described in this document, ensure that the following prerequisites are met.

1. You have installed in the test and productive systems all necessary SAP Notes for the eInvoice Solution. Refer note : [2884058](#)
2. If you have subscribed to Process Integration, perform all the initial setup steps described in [Initial Setup of SAP Cloud Integration in Cloud Foundry Environment](#) .
3. If you have subscribed to Integration Suite, perform all the initial setup steps described in [Initial Setup of SAP Integration Suite](#).
4. After completing the 'Provisioning the Tenant' step, you have created your own tenant URL. This is the URL (referred as WEB UI URL) needed to complete the steps described in the Configuration Steps section of this guide.
5. You have received the following information from your *GST Suvidha Provider (GSP)*:
 - o GSP Integration Manual
 - o Certificates for SSL handshake

4 Configuration Steps in SAP Integration Suite

Perform the following steps:

1. [Import SSL Certificates from GSP to SAP Integration Suite Tenant](#)
2. [Deploy IRP User Credentials per GSTIN](#)
3. [Deploy IRP Public Key Certificate](#)
4. [Adapt and Deploy SAP Integration Flow](#)
5. [Basic Authentication Settings](#)
6. [Client Certificate-based Authentication Settings](#)

Note:

The SSL certificate upload, setting-up of user credentials, IRP Public Key Certificate Upload and authentication setup are all required to be done only during the initial set up of the eInvoice Integration scenario. Subsequently, if there is an updated version of integration flow delivered, it is required to repeat only Step 4. However, in case there is a change in certificate from GSP or IRP, then step 1 or step 3 needs to be done accordingly.

4.1 Import SSL Certificates from GSP to SAP Integration Suite Tenant

To set up an SSL connection between the SAP Integration Suite Tenant and GST Suvidha Provider (GSP), you must import the required security certificates into SAP Integration Suite Tenant Keystore.

Note

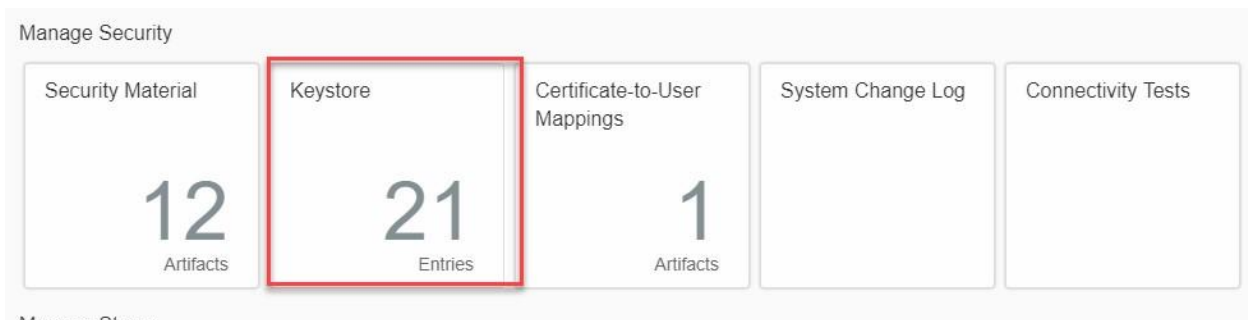
You receive these certificates from your GSP.

Procedure

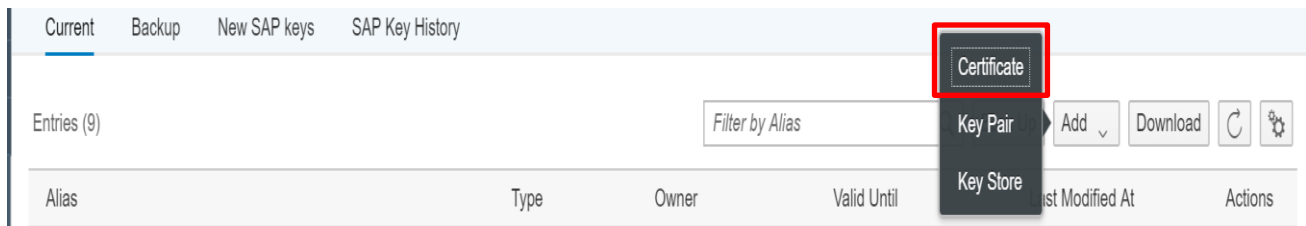
1. Access the SAP Integration Tenant.
After Provisioning the tenant as described in the Initial Tenant Setup, the URL will be created.
Use this URL to go to the Web UI of the tenant.
2. To logon, enter your S user.
If you get *HTTP Status 403* error, then send a mail to service@sap.com.
3. After successful login, from the menu in the upper left corner, choose *Monitor*.



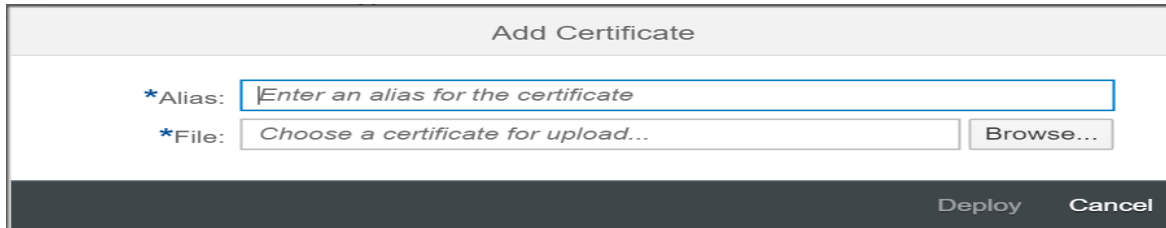
4. Choose *Manage Security* and then *Keystore*.



5. Click Add > **Certificate** > Add Certificate



6. Enter an alias to identify the certificate. Browse the GSP SSL certificate from local desktop and then Deploy.



Note

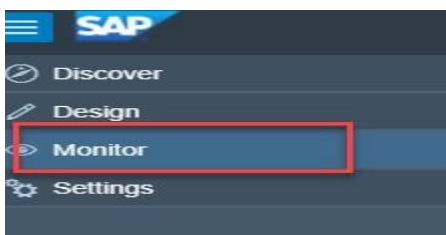
To perform the above operation, you need to be a tenant administrator with role **AuthGroup.Administrator**. The certificate should be in Base-64 encoded X.509(.CER) format. Refer [here](#).

6. Check the connectivity with GSP.

You can perform the Connectivity test with the GSP by using the feature TLS Connectivity Test as mentioned [here](#).

1. Run connectivity test using the *Monitor-> Manage Security- >Connectivity Tests*.
2. Enter the GSP Base URL without http(s). Enter port.
3. Click **Send**

On successful connection, system displays successful response message.



Manage Security

Security Material 3 Artifacts	Keystore 20 Entries	Certificate-to-User Mappings 0 Artifacts	Connectivity Tests
--	----------------------------------	---	--------------------

Manage Stores

Discover Design Monitor Settings

Overview / Test Connectivity

TLS SSH SMTP IMAP POP3

Request

*Host *the GSP hostname without https (e.g: myserver.api.mygsp.in)*

*Port

Authenticate with Client Certificate

Validate Server Certificate

Send

Response

Successfully reached host at myserver.api.mygsp.in:443

Client Certificate Used No

4.2 Deploy IRP User Credentials per GSTIN

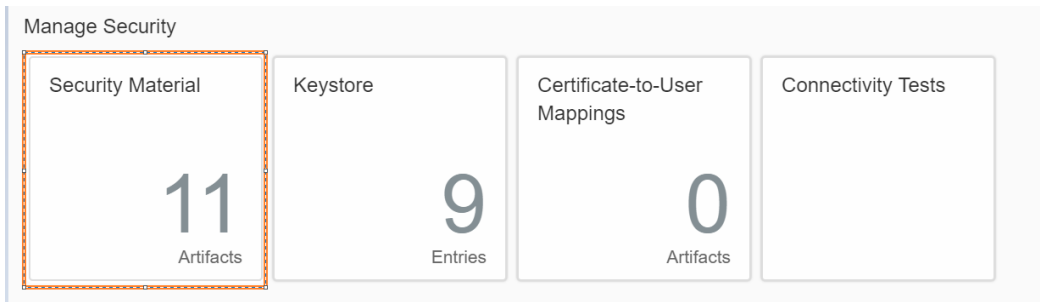
Add IRP User Credentials entries per GSTIN to the User Credentials Service of SAP Integration Suite tenant by following the process mentioned [here](#)

Note

To perform above operation, you need to be a tenant administrator with role **AuthGroup.Administrator**. Refer [GSP Registration on IRP Portal](#) for details.

To add IRP User Credentials per GSTIN to SAP Integration Suite:

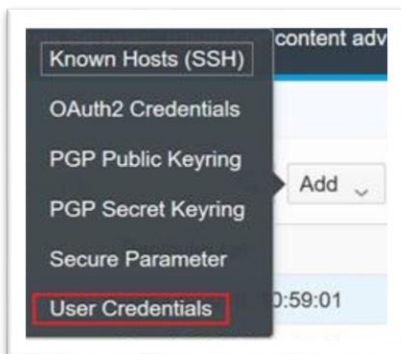
1. Go to Security material. Navigate to Monitor > Manage Security > Security Material.



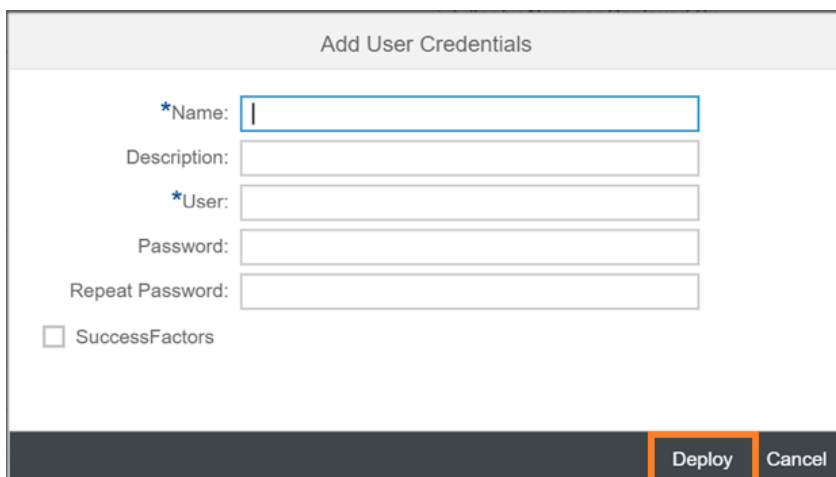
2. Add a new user credential.



3. Click User Credentials



4. Add and Deploy the user credentials



The screenshot shows the 'Add User Credentials' form. It contains the following fields: '*Name:' (text input), 'Description:' (text input), '*User:' (text input), 'Password:' (text input), 'Repeat Password:' (text input), and a checkbox for 'SuccessFactors'. At the bottom right, there are 'Deploy' and 'Cancel' buttons, with 'Deploy' highlighted by a red box.

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**' (Ex : 27AAAPI3182M002_einv).

The suffix (_einv) is case sensitive.

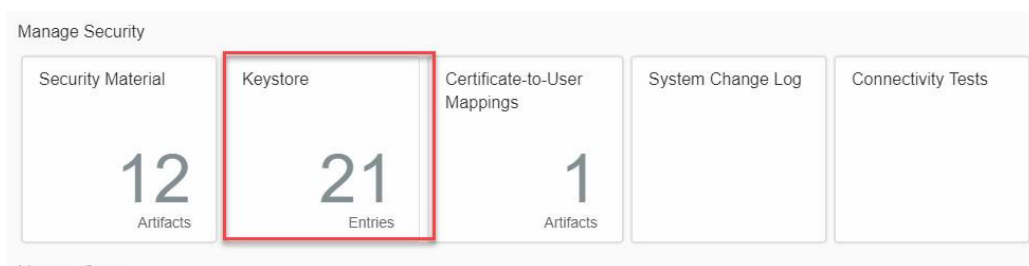
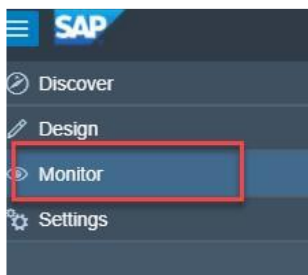
Name	GSTIN of the business place to which the user belongs / GSTIN of the business place with suffix '_einv'.
Description	Any relevant text (optional)
User	API User ID created in IRP portal (production) or received from GSP (pre-production)
Password/ Repeat password	Password

4.3 Deploy IRP Public Key Certificate

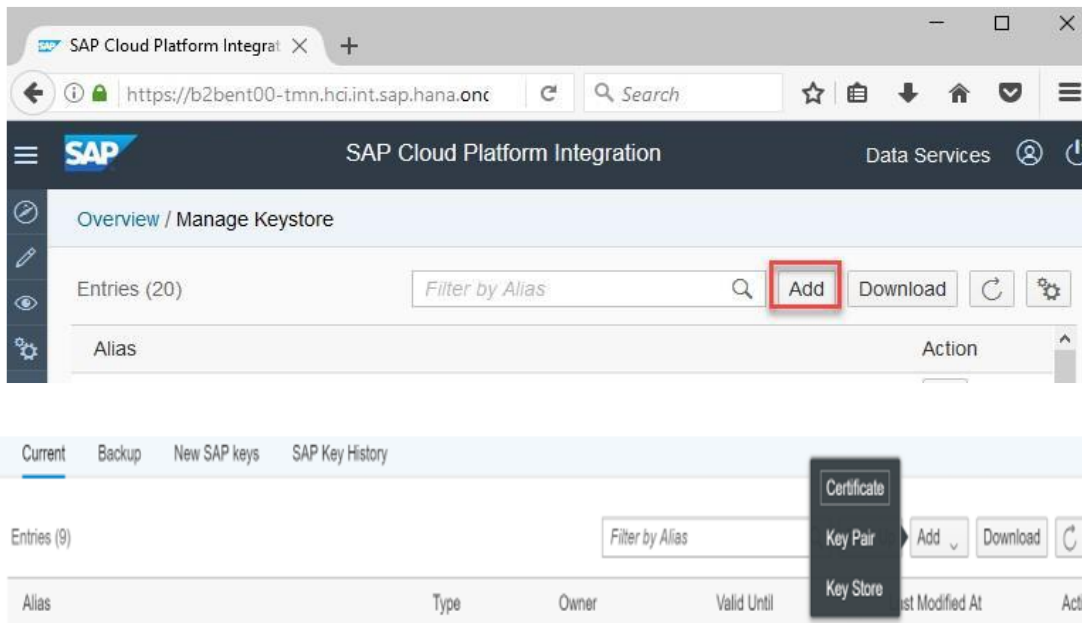
You need to add the IRP Public Key Certificate. You get this certificate from your GSP.

Follow the below steps to add the IRP Public Key Certificate to the SAP Integration Suite KeyStore.

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



2. Click Add > **Certificate > Add Certificate**



3. Enter an alias(**irpcert**) to identify the certificate. Browse the IRP Public Key Certificate from local desktop.

The screenshot shows the 'Add Certificate' dialog box. The 'Alias' field contains the text 'Enter an alias for the certificate' and the 'File' field contains the text 'Choose a certificate for upload...'. The 'Deploy' button is highlighted.

4. Click **Deploy**

Note

To perform the above operation, you need to be a tenant administrator with role **AuthGroup.Administrator**. The certificate should be in Base-64 encoded X.509(.CER) format. For more information, see [here](#).

4.4 Adapt and Deploy SAP Integration Flow

Use the following steps to adapt the integration flows as per your company needs.

1. Logon to SAP Integration Suite through your S user.
If you get *HTTP Status 403* error, then send a mail to service@sap.com.
2. After successful login, from the menu in the upper left corner, choose *Discover. Click All*.
3. In the subsequent screen, search for *ERP Integration with GST Suvidha Provider for India e-Invoice* catalog package .
The system displays the *ERP Integration with GST Suvidha Provider for India e-Invoice* catalog package.
4. Click *Copy*.
The system copies the package content to the tenant account.
5. From the menu in the upper left corner, choose *Click to work with content packages*.
The system displays the Design screen.
6. Click on the package *ERP Integration with GST Suvidha Provider for India e-Invoice* and in the subsequent screen choose ARTIFACTS.
The system displays different integration flows. *The ERP Integration with GST Suvidha Provider for India e-Invoice* content catalog package contains the following integration flows.

Integration flow Name in Web UI	Description
GSP Integration Template	Template Integration Flow to be adapted to specific GSP
Router Integration Template	Routes eInvoice request from SAP ERP or SAP S/4HANA to specific GSP Integration Flow

7. Select the GSP Integration Template Integration Flow and adapt it. You adapt the template to use it for your GSP. For more information, see [Adapt and Deploy GSP Integration Template Integration Flow](#)
8. Deploy the updated GSP Integration Template Integration Flow
9. Deploy Router Integration Flow

Result

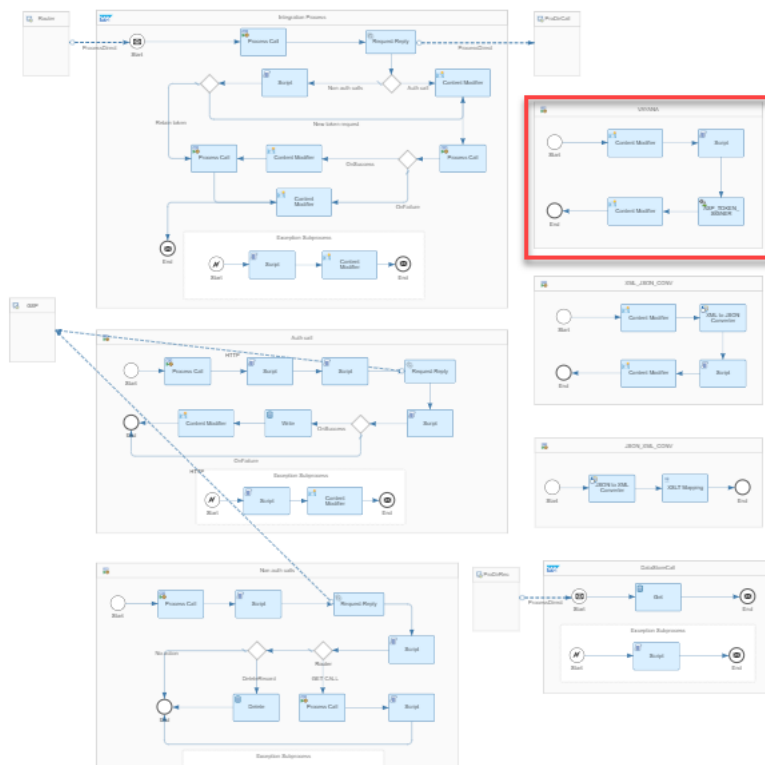
You have established the connection between *SAP ERP or SAP S/4HANA and your GST Suvidha Provider (GSP)*.

4.4.1 Adapt and Deploy GSP Integration Template

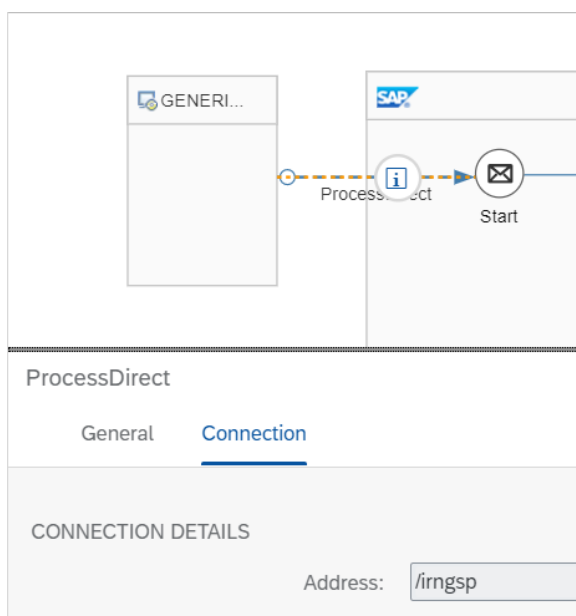
This template enables you to adapt the integration flow to specific GSP.

Following are the steps to adapt the GSP Integration Template Integration Flow

1. From the menu in the upper left corner, choose **Click to work with content packages**.
The system displays the Design screen.
2. Select the GSP Integration Template Integration Flow.
The system displays the integration flow screen.
3. Click **Edit** and adapt the GSP specific authentication for the highlighted sections as shown in the below diagram.



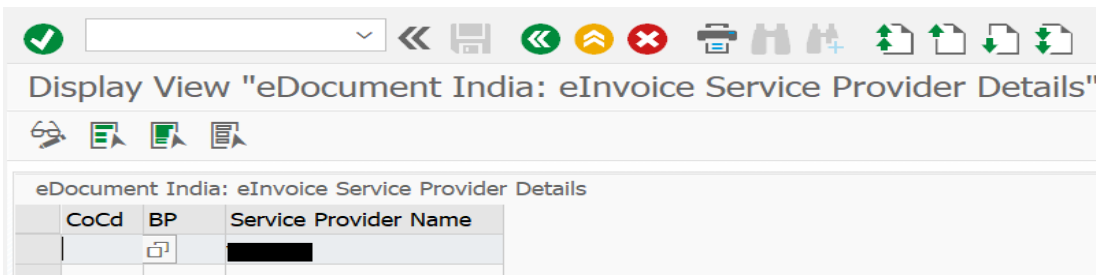
4. Click on the Process Direct as shown below.



- Choose the connection tab. In the Address field replace the system populated GSP name with your company specific GSP name. Note that you should use the same GSP name as in the above screen in EDOINEINVGSPV view in SAP ERP or SAP S/4 HANA.

Note:

The value is case sensitive.



- Click **Configure**.

Choose the tab More and modify the parameters as shown below

Type:	All Parameters
invoice_auth_path:	<authentication_path_shared_by_gsp>
invoice_base_url:	<base_url_shared_by_gsp>
invoice_cancelEWB_path:	<cancelEWB_path_shared_by_gsp>
invoice_cancelIRN_path:	<cancelIRN_path_shared_by_gsp>
invoice_generateEWB_path:	<generateEWB_path_shared_by_gsp>
invoice_generateIRN_path:	<generateIRN_path_shared_by_gsp>
invoice_getEWBfromIRN_path:	<getEWBfromIRN_path_shared_by_gsp>
invoice_getGSTIN_path:	<getGSTIN_path_shared_by_gsp>
invoice_getIRNByDoc_path:	<getIRNByDoc_path_shared_by_gsp>
invoice_getIRNDetails_path:	<getIRNDetails_path_shared_by_gsp>
invoice_syncGSTIN_path:	<syncGSTIN_path_shared_by_gsp>
gsp_client-secret:	<clientSecret_shared_by_gsp>
gsp_clientid:	<clientId_shared_by_gsp>
irp_pk_alias:	ispcert
irp_token_expiry:	300
userGSTIN_publicAPI:	<GSTIN for syncGSTIN and getGSTIN API calls>

Note:

- In field irppkalias, you enter the alias(**irpcert**) of IRP Public Key Certificate.
You have already deployed IRP Public Key Certificate in KeyStore as described in section [Deploy IRP Public Key Certificate](#)
- 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.
- You receive details about other fields from your GSP.
- Sample URLs as received from GSP:
 - Authenticate IRN : <https://example.examplegsp.com/eivital/v1.03/auth>
 - Generate IRN : <https://example.examplegsp.com/eicore/v1.03/Invoice>
 - Cancel IRN : <https://example.examplegsp.com/eicore/v1.03/Invoice/Cancel>
 - Generate eWayBill from IRN : <https://example.examplegsp.com/eiewb/v1.03/ewaybill>
 - Cancel eWayBill : <https://example.examplegsp.com/ewaybillapi/v1.03/ewayapi>
 - Get eWayBill Details By IRN : https://example.examplegsp.com/eiewb/v1.03/ewaybill/irn/<irn_no>
 - Get IRN Details: https://example.examplegsp.com/eicore/v1.03/Invoice/irn/<irn_no>
 - Get IRN Details by Document Details: <https://example.examplegsp.com/eicore/v1.03/Invoice/irnbydocdetails>

- Get GSTIN Details : <https://example.examplegsp.com/eivital/v1.03/Master/gstin/<gstin>>
- Sync GSTIN Details : <https://example.examplegsp.com/eivital/v1.03/Master/syncgstin/<gstin>>

Sample Integration Flow Configuration based on above URL details:

```
einvoice_base_url = https://example.examplegsp.com
einvoice_auth_path = /eivital/v1.03/auth
einvoice_generateIRN_path = /eicore/v1.03/Invoice
einvoice_cancelIRN_path = /eicore/v1.03/Invoice/Cancel
einvoice_generateEWB_path = /eiewb/v1.03/ewaybill
einvoice_cancelEWB_path = /ewaybillapi/v1.03/ewayapi
einvoice_getEWBfromIrn_path=/eiewb/v1.03/ewaybill/irn/
einvoice_getIRNDetails_path = /eicore/v1.03/Invoice/irn/
einvoice_getIRNByDoc_path = /eicore/v1.03/Invoice/irnbydocdetails
einvoice_getGSTIN_path = /eivital/v1.03/Master/gstin/
einvoice_syncGSTIN_path = /eivital/v1.03/Master/syncgstin/
```

7. Save your changes.
8. Click **Deploy** to deploy the modified integration flow.

4.4.2 Deploy Router Integration Template

This integration flow routes eInvoice request from SAP ERP or SAP S/4HANA to specific GSP Integration Flow.

1. Select the Router Integration Template Integration Flow.
2. Click **Deploy** to deploy the integration flow.

Note

After the deployment, check if the integration flow is in **Started** state. You can check this in the Web UI by choosing *Monitor->Manage Integration Content*.

After successful deployment, the endpoint URL is *https://<Tenant Runtime URL>/cxf/indiaeinvoiceedoc*
This URL needs to be maintained in the SOAManager configuration.

Configuration: Consumer Proxy 'CO_EDO_IN_EINV_TRANS', Logical Port 'EDOC_IN_EINV_PORT'

Save Edit Ping Web Service

Consumer Security Messaging **Transport Settings** Message Attachments Identifiable Business Context Operation Settings Administrative Information

URL Access Path

URL URL components

* URL:

Logon Language:

Proxy

Name of Proxy Host:

Port Number of Proxy Host:

User Name for Proxy Access:

Password of Proxy User:

Transport Binding

Make Local Call:

* Transport Binding Type:

Maximum Wait for WS Consumer:

4.5 Basic Authentication Settings

To setup basic authentication, create service instance and service key as described in the link below.

<https://help.sap.com/viewer/368c481cd6954bd5d0435479fd4eaf/Cloud/en-US/647eeb3eca5d4c299009cacd1332247e.html>

Note:

If the service instance and service key is already created as a part of initial setup, this step is not required.

4.6 Client Certificate-based Authentication Settings

For client certificate-based authentication and authorization in SAP Integration Suite Tenant in Cloud Foundry (CF), the private key pair provisioned with the tenant (alias `sap_cloudintegrationcertificate`) needs to be available in the Keystore (this certificate exists in the tenant by default) and the client certificate used for the inbound call to SAP Integration Suite needs to be maintained in the service key.

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

Self-signed certificates cannot be used.

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

<https://help.sap.com/viewer/368c481cd6954bdfa5d0435479fd4eaf/Cloud/en-US/4509f605e83c4c939a91b81eb3a6cdea.html>

Details on setting up client certificate-based authentication in Cloud Foundry is as follows:

1. Download the client certificate corresponding to SSL client SSL standard PSE from `strust`.
2. When creating the service instance in CF, to enable client-certificate based authentication, specify `client_x509` as the grant type.

```
{
  "roles": ["ESBMessaging.send"],
  "grant-types": ["client_x509"]
}
```

More details on creating service instances in Cloud Foundry can be found in the SAP online documentation at [Creating a Service Instance in the Cloud Foundry Environment](#).

3. When creating the service key, provide a Name and in the Configuration Parameters, add the encoded client certificate (from step 1) in the following JSON format:

```
{
  "x.509": "-----BEGIN CERTIFICATE-----MIIHyDCCBrCgAwIB[... ]CAq8Tn7kSFDmVnrXe6v8hcQ=-----END CERTIFICATE-----"
}
```

Note that the client certificate is a PEM-encoded X.509 certificate. Remove all line breaks, otherwise the user interface will not accept the entry.

More details on defining service keys in the Cloud Foundry environment can be found at [Defining a Service Key for the Instance in the Cloud Foundry Environment](#).

5 Appendix

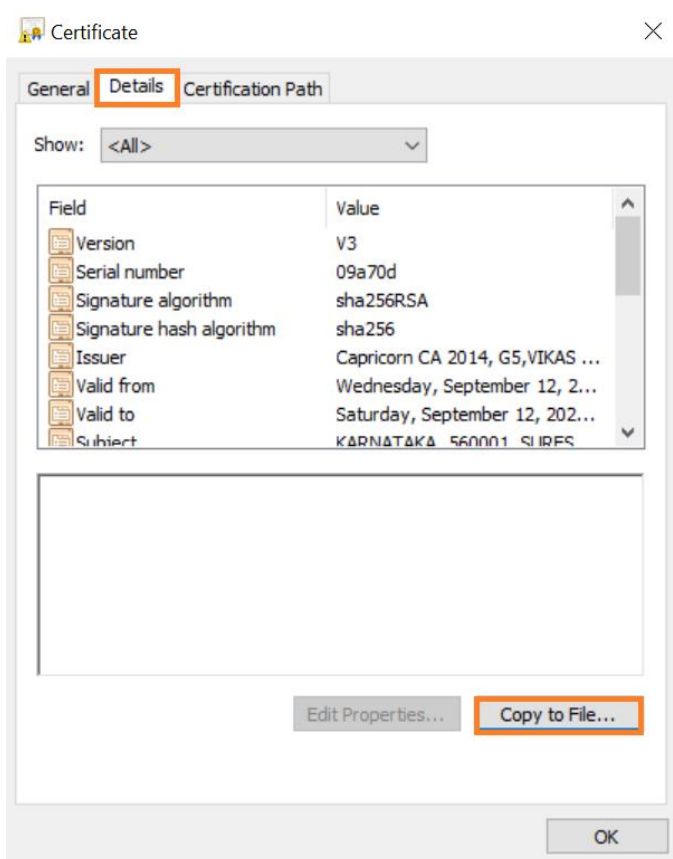
5.1 GSP Registration on IRP Portal

To access eInvoice APIs through GSPs, IRP expects taxpayers to register API Credentials per GSTIN for the specific GSP in the IRP portal.

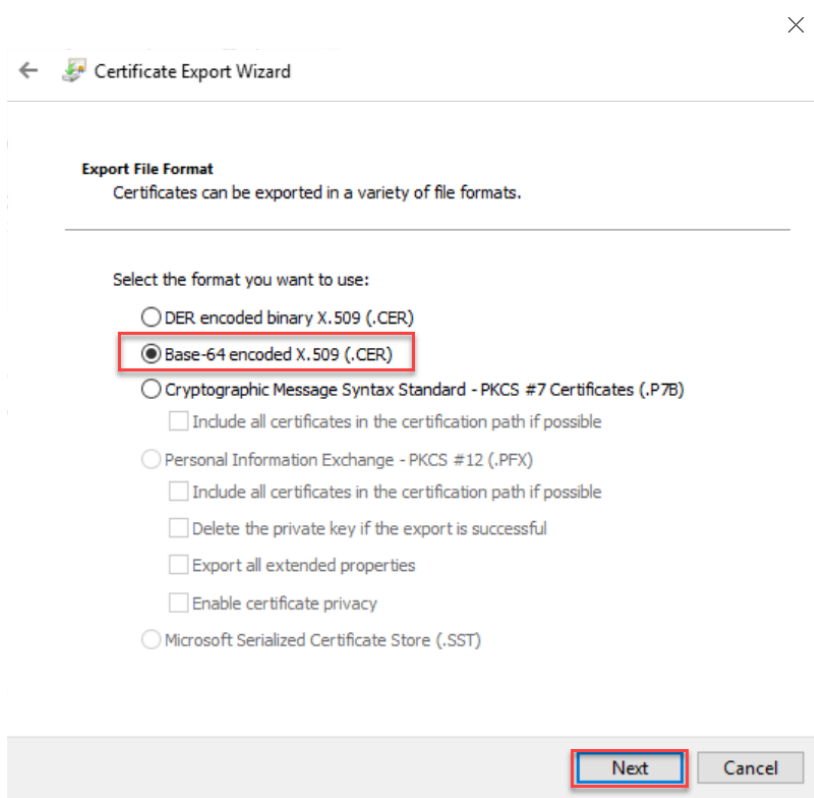
1. For taxpayers already accessing E-way Bill production system via API.
The same Client Id and Client Secret, and Username and Password used for E-way Bill can be used for e-invoice APIs.
2. For taxpayers not accessing E-way Bill System via API:
 - o Pre-requisite is to register GSTIN in eInvoice system
 - o Login using registered credentials to get the API username and passwordNote: If pre-requisite is already done, then you can proceed with the login.

5.2 Exporting Certificate as Base-64 encoded X.509(.CER) format.

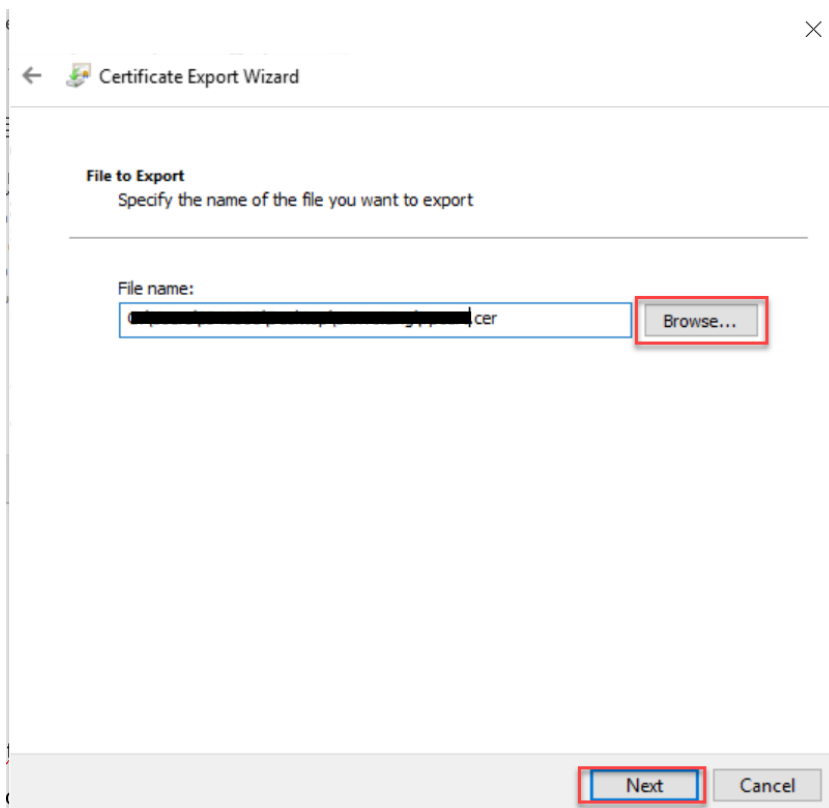
1. Double click the certificate. Goto Details -> Copy to File
A new window opens. Click **Next**.



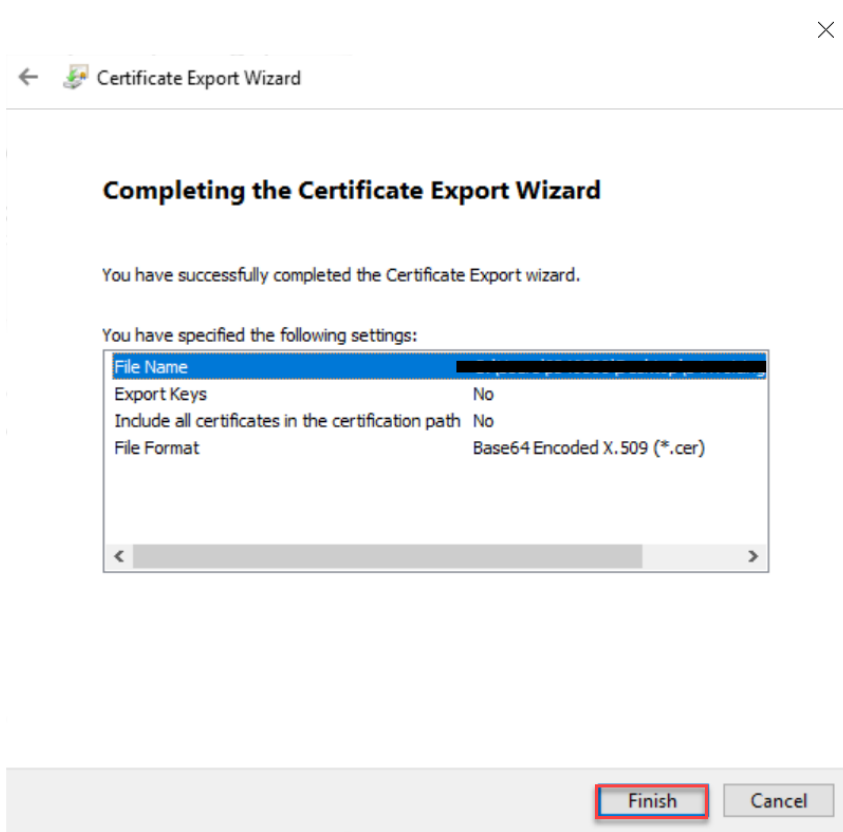
2. Select Base-64 encoded X.509(.CER) and click **Next**



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.



5.3 Useful Links:

- SAP Integration Suite:
https://help.sap.com/viewer/product/CLOUD_INTEGRATION/Cloud/en-US
- SAP Integration Suite - Overview of Authorization Groups:
<https://help.sap.com/viewer/368c481cd6954bd5d0435479fd4eaf/Cloud/en-US/4b4ba1c553474259b5be661f4ef0702c.html>
- SAP Integration Suite – User Credentials:
<https://help.sap.com/viewer/368c481cd6954bd5d0435479fd4eaf/Cloud/en-US/6912d63bbbc64aee8bbd4ff10314c60c.html>
- SAP Integration Suite – Importing a Keystore:
<https://help.sap.com/viewer/368c481cd6954bd5d0435479fd4eaf/Cloud/en-US/0db193a325a94675928e717c9310734a.html>
- SAP Integration Suite – Importing a Certificate:
<https://help.sap.com/viewer/368c481cd6954bd5d0435479fd4eaf/Cloud/en-US/03cf78a217574e7abd75bfba990c085.html>

www.sap.com/contactsap

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