Integration Guide | PUBLIC
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South Korea Electronic Invoicing: Setting Up SAP Integration Suite (SAP S/4HANA Cloud) - Cloud Foundry environment

THE BEST RUN

Content

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2 Introduction

You use SAP Integration Suite to establish the communication with your service provider and transfer to them the electronic tax invoices in XML format you have created using the SAP Document and Reporting Compliance solution. This document describes the setup steps that you must perform in your SAP S/4HANA Cloud tenant and SAP Integration Suite tenant so that the integration between the systems works.

The setup steps are typically done by an SAP Integration Suite consulting team, which is responsible for configuring the connection with SAP Integration Suite. This team may be also responsible for maintaining the integration content and certificates/credentials on the SAP Integration Suite tenant.

> ⓘ Note
>
> Although the service name **SAP Integration Suite** is used in the guide title and throughout the guide, this guide **also applies to SAP Cloud Integration running in the Cloud Foundry environment**. If you were onboarded before July 2020, the service you use is SAP Cloud Integration. The initial setup steps for the two services are different, while the integration flow settings and configuration steps in your back-end system are the same. See the **Set Up Your Tenants** section for their respective initial setup steps.

> ⓘ Note
>
> This document describes functionality that is provided by the Integration Package itself, that is, by the artifacts that are deployed in the SAP Integration Suite tenant. It may happen, however, that in the SAP S/4HANA Cloud tenant the access to such functionality is only partially implemented. Additionally, it may also happen that the tax authority servers do not provide all services that are described in this document. Please refer to SAP S/4HANA Cloud documentation and to the relevant tax authority information, respectively.

3 Prerequisites

3.1 Register with a Service Provider

Register with a service provider to use their APIs to communicate with the National Tax Service.

For example, if your service provider is SmartBill, register on their website at https://www.smartbill.co.kr/ .

3.2 Configure the Creation of Electronic Tax Invoices in XML Format

Ensure that you have configured the creation of electronic tax invoices in XML format in your test and productive SAP S/4HANA Cloud tenants.

Documentation

To find documentation about the required configuration steps and business processes, follow the steps below:

1. Go to SAP Help Portal at https://help.sap.com.
2. Search with the keyword **SAP S/4HANA Cloud**.
3. From the suggested products, select **SAP S/4HANA Cloud**.
4. On the top right corner of the browser window, select your product version.
5. In the *Product Assistance* section, select a language.
6. From the navigation pane on the left, select *Country/Region-Specific Functions* > *South Korea* > *General Functions* > *Document and Reporting Compliance*.

3.3 Set Up Your Tenants

You have set up your tenant as follows:

- 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.

- If you have subscribed to Integration Suite, perform all the initial setup steps described in Initial Setup.

> ⓘ Note
>
> The SAP Document and Reporting Compliance solution requires the **Cloud Integration capability**. You need to activate this capability in the step **Provisioning the Capabilities**.

4 Configuration Steps in SAP Integration Suite

Required steps in SAP Integration Suite.

4.1 Deploy Security Credentials

When attempting to communicate with your service provider, you go through an authentication step in which your service provider asks for some security credentials. You must configure these security credentials in your SAP Integration Suite tenant.

Required Security Credentials

The required security credentials are as follows:

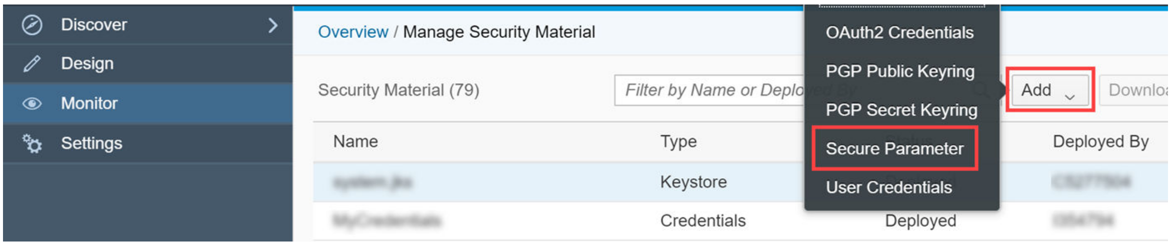
Name	Description
`edoc_kr_smartbill_token_<tax id>`	This credential is an authentication token provided by your service provider. It's used in calling all service provider APIs. `<tax id>` is your VAT registration number issued by the National Tax Service (NTS), which consists of 10 digits.
`edoc_kr_smartbill_AESkey`	This credential is a symmetric AES key issued by your service provider.
`edoc_kr_smartbill_certpassword_<tax id>`	This credential is the password of your public certificate. SAP Integration Suite encrypts the password with the symmetric AES key using AES/CBC/PKCS5Padding. The encrypted password is used in calling some service provider APIs. `<tax id>` is your VAT registration number issued by the National Tax Service (NTS), which consists of 10 digits.

Procedure

To configure the above credentials, follow the steps below:

1. Log into your SAP Integration Suite tenant.

2. Go to *Monitor* (Operations view) and open the *Security Material* app.
3. Click *Add* on the top right corner of the browser window. Select *Secure Parameter*.



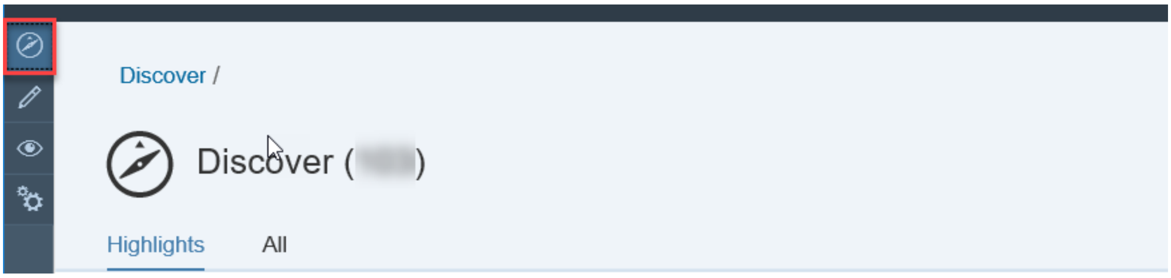
An *Add Secure Parameter* dialog box appears.

4. Enter **`edoc_kr_smartbill_token_<tax id>`** in the *Name* field. Remember to replace `<tax id>` with your VAT registration number.
5. Enter the value of the credential in the *Secure Parameter* field and repeat it in the *Repeat Secure Parameter* field.
6. Choose *Deploy*.
7. Configure `edoc_kr_smartbill_AESkey` and `edoc_kr_smartbill_certpassword` in the same way.

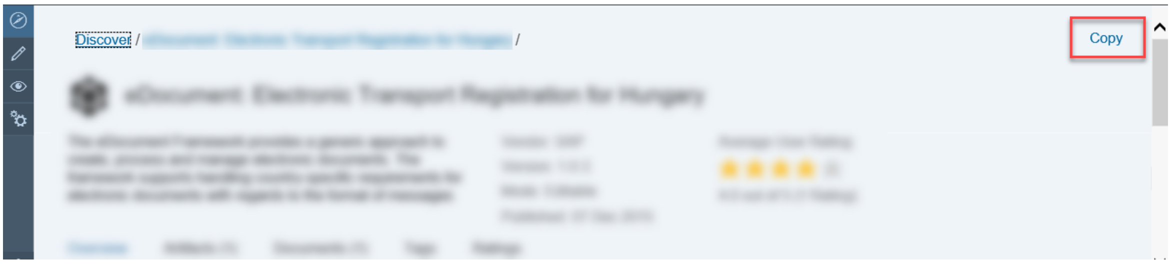
4.2 Copy Published Package

Procedure

1. In the *Discover* section of your tenant, select the package *SAP Document and Reporting Compliance: Electronic Invoicing for South Korea*.



2. Select the package and choose *Copy*.



4.3 Deploy Integration Flows

Required steps for configuring the integration flows.

Context

The integration flows that you should deploy depend on your role (supplier or customer). See the following table for details:

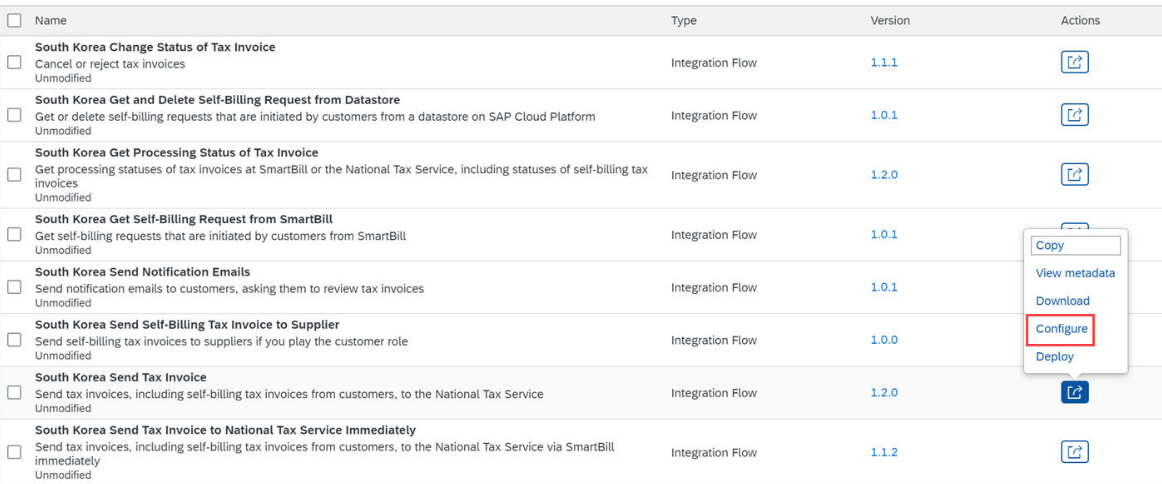
Integration Flow	Role Using This Integration Flow	Functions
South Korea Send Tax Invoice	Supplier	• Send tax invoices that you issue to your customers to the National Tax Service (NTS) • Send self-billing tax invoices that your customers create to the NTS
South Korea Send Self-Billing Tax Invoice to Supplier	Customer	Send self-billing tax invoices that you create as a customer to your suppliers

Integration Flow	Role Using This Integration Flow	Functions
South Korea Get Processing Status of Tax Invoice	Supplier, Customer	• Get processing statuses of tax invoices that you issue to your customers • Get processing statuses of self-billing tax invoices that your customers create • Get processing statuses of self-billing tax invoices that you create as a customer
South Korea Change Status of Tax Invoice	Supplier, Customer	• Cancel tax invoices that you issue to your customers • Cancel or reject self-billing tax invoices that your customers create • Cancel self-billing tax invoices that you create as a customer
South Korea Send Notification Emails	Supplier	• Send notification emails to customers, asking them to review tax invoices that you issue to them • Send notification emails to customers, asking them to review self-billing tax invoices that you return to them, which have updated transfer dates
South Korea Send Tax Invoice to National Tax Service Immediately	Supplier	• Send tax invoices that you issue to customers to the NTS immediately in emergencies For example, the deadline for tax invoice reporting is just around the corner. • Send self-billing tax invoices that your customers create to the NTS immediately in emergencies
South Korea Get Self-Billing Request from SmartBill	Supplier	Get self-billing requests from your service provider
South Korea Get and Delete Self-Billing Request from Datastore	Supplier	• Read self-billing requests from datastores on SAP Integration Suite • Delete self-billing requests from datastores on SAP Integration Suite For more information about the logic of this integration flow, see Logic of the "South Korea Get and Delete Self-Billing Request from Datastore" Integration Flow [page 17].

Integration Flow	Role Using This Integration Flow	Functions
South Korea Get Supplier Tax Invoice from SmartBill	Customer	Get supplier tax invoices from SmartBill through the Open Scrap Service.
South Korea Get and Delete Supplier Tax Invoice from Datastore	Customer	• Get supplier tax invoices from a datastore on SAP Integration Suite • Delete supplier tax invoices from a datastore on SAP Integration Suite **Note** The logic of this integration flow is the same as that of the integration flow *South Korea Get and Delete Self-Billing Request from Datastore*.

Procedure

1. Open the integration package that you copied.
2. Select the *Artifacts* tab.
3. Select an integration flow. Choose the *Actions* icon and then *Configure*.



4. Configure the parameters of the integration flow.
5. Choose *Deploy*.
6. Configure the other integration flows that you want to use.

   For information on how to configure the parameters of each integration flow, see Parameter Information [page 12].

4.3.1 Parameter Information

Learn how you should configure the parameters of each integration flow.

The following table explains the parameters for each integration flow:

Integration Flow	Parameter	Explanation
All integration flows except the following: • *South Korea Get and Delete Self-Billing Request from Datastore* • *South Korea Get and Delete Supplier Tax Invoice from Datastore*	*Enable Attachments* (*More* tab → *All Parameters* type)	This parameter enables or disables the attachments function for message processing logs. To enable it, set this parameter to **X**. To disable it, set this parameter to blank. → Recommendation Since the attachments function is very resource intensive, we suggest that you disable it if it's not very necessary.
	Service URL (*More* tab → *All Parameters* type)	This parameter refers to the URL of a specific service from your service provider.
South Korea Get and Delete Self-Billing Request from Datastore *South Korea Get and Delete Supplier Tax Invoice from Datastore*	*Enable Attachments (Get Requests)*, *Enable Attachments (Delete Requests)* (*More* tab → *All Parameters* type)	The *Enable Attachments (Get Requests)* parameter enables or disables the attachments function for the message processing logs about getting requests from a datastore. To enable it, set this parameter to **X**. To disable it, set this parameter to blank. The *Enable Attachments (Delete Requests)* parameter enables or disables the attachments function for the message processing logs about deleting requests from a datastore. To enable it, set this parameter to **X**. To disable it, set this parameter to blank.

Integration Flow	Parameter	Explanation
South Korea Get Self-Billing Request from SmartBill	*From Date*, *To Date*, *Period*, and *Registry* (*More* tab → *All Parameters* type)	These parameters are used as criteria for selecting and getting self-billing requests from your service provider. The combination of the *From Date*, *To Date*, and *Period* parameters determines the final date parameter (`SearchFromDate` and `SearchToDate`) of the HTTP request that gets self-billing requests from your service provider. The *From Date*, *To Date*, and *Period* parameters all refer to document creation date. The *From Date* and *To Date* parameters take higher priority over the *Period* parameter. If the value of the *Period* parameter isn't equal to the total number of days indicated by *From Date* and *To Date*, the system uses the latter as the date search criterion. For more details about how the system determines the date period, see the table **Determination Rules for Date Parameters** below. In the *Registry* parameter, you enter the VAT registration numbers of the companies for which you want to pull self-billing requests. You must separate VAT registration numbers with commas (for example, **`1000000000,2000000000`**).

Integration Flow	Parameter	Explanation
South Korea Get Supplier Tax Invoice from SmartBill	*SearchDate*, *From Date*, *To Date*, *Period*, *SearchComRegNoSet*, and *SendComRegNo* (*More* tab → *All Parameters* type)	These parameters are used as criteria for selecting and getting supplier tax invoices from your service provider. The *SearchDate* parameter defines the type of date used as the date criterion. There are three possible values, as follows: • `W`: document creation date • `I`: document issue date, which is the date when a document is signed with an electronic certificate • `S`: document transfer date, which is the date when a document is sent to the NTS The combination of the *From Date*, *To Date*, and *Period* parameters determines the final date parameter (`SearchFromDate` and `SearchToDate`) of the HTTP request that gets supplier tax invoices from your service provider. The *From Date* and *To Date* parameters take higher priority over the *Period* parameter. If the value of the *Period* parameter isn't equal to the total number of days indicated by *From Date* and *To Date*, the system uses the latter as the date search criterion. For more details about how the system determines the date period, see the table **Determination Rules for Date Parameters** below. In the *SendComRegNo* parameter, you enter the VAT registration number that you have registered with your service provider. This VAT registration number has the authorization to look up supplier tax invoices. In the *SearchComRegNoSet* parameter, you enter the VAT registration numbers of the companies for which you want to pull supplier tax invoices. You must separate VAT registration

Integration Flow	Parameter	Explanation
		numbers with commas (for example, `1000000000,2000000000`).
South Korea Get Self-Billing Request from SmartBill *South Korea Get Supplier Tax Invoice from SmartBill*	Parameters on the *Timer* tab	These parameters enable you to schedule an integration flow to run regularly.

The following table describes the rules for determining the date criterion used in selecting and getting self-billing requests and supplier tax invoice requests:

Determination Rules for Date Parameters

From Date (Parameter of Integration Flow)	To Date (Parameter of Integration Flow)	Period (Parameter of Integration Flow)	SearchFromDate (Parameter of HTTP Request)	SearchToDate (Parameter of HTTP Request)	Example
Empty	Empty	Empty	**For Self-Billing Requests**: Today - 6 **For Supplier Tax Invoices**: Today - 29	Today	**For Self-Billing Requests**: • **Today**: 2021-09-01 • **Date Period Used**: 2021-08-26 to 2021-09-01 **For Supplier Tax Invoices**: • **Today**: 2021-09-01 • **Date Period Used**: 2021-08-03 to 2021-09-01
Empty	Empty	Not Empty	Today - Period + 1	Today	**Today**: 2021-09-01 **Period**: 14 **Date Period Used**: 2021-08-19 to 2021-09-01

From Date (Parameter of Integration Flow)	To Date (Parameter of Integration Flow)	Period (Parameter of Integration Flow)	SearchFromDate (Parameter of HTTP Request)	SearchToDate (Parameter of HTTP Request)	Example
Not Empty	Empty	Not Empty	From Date	From Date + Period - 1	**From Date**: 2021-09-01 **Period**: 14 **Date Period Used**: 2021-09-01 to 2021-09-14
Not Empty	Empty	Empty	From Date	**For Self-Billing Requests**: From Date + 6 **For Supplier Tax Invoices**: From Date + 29	**For Self-Billing Requests**: • **From Date**: 2021-09-01 • **Date Period Used**: 2021-09-01 to 2021-09-07 **For Supplier Tax Invoices**: • **From Date**: 2021-09-01 • **Date Period Used**: 2021-09-01 to 2021-09-30
Empty	Not Empty	Not Empty	To Date - Period + 1	To Date	**To Date**: 2021-09-01 **Period**: 14 **Date Period Used**: 2021-08-19 to 2021-09-01

From Date (Parameter of Integration Flow)	To Date (Parameter of Integration Flow)	Period (Parameter of Integration Flow)	SearchFromDate (Parameter of HTTP Request)	SearchToDate (Parameter of HTTP Request)	Example
Empty	Not Empty	Empty	**For Self-Billing Requests**: To Date - 6 **For Supplier Tax Invoices**: To Date - 29	To Date	**For Self-Billing Requests**: • **To Date**: 2021-09-01 • **Date Period Used**: 2021-08-26 to 2021-09-01 **For Supplier Tax Invoices**: • **To Date**: 2021-09-01 • **Date Period Used**: 2021-08-03 to 2021-09-01
Not Empty	Not Empty	Empty or Not Empty	From Date	To Date	**From Date**: 2021-09-01 **To Date**: 2021-09-26 **Period**: 14 **Date Period Used**: 2021-09-01 to 2021-09-26

4.3.2 Logic of the "South Korea Get and Delete Self-Billing Request from Datastore" Integration Flow

> ⓘ Note
>
> The integration flow *South Korea Get and Delete Supplier Tax Invoice from Datastore* also uses the logic described in this document.

The process flow of pulling and deleting self-billing requests from datastores is as follows:

1. You trigger the pulling of self-billing requests from datastores from your SAP S/4HANA Cloud tenant, using the *Process eDocument Inbound Messages* app. You specify a message type, a company code, and a maximum number of requests to pull.
2. Based on the company code, the *South Korea Get and Delete Self-Billing Request from Datastore* integration flow gets the VAT registration numbers associated with the company code.

3. Based on these VAT registration numbers, the integration flow identifies the target datastores.
4. From the identified target datastores, the integration flow pulls the self-billing requests that are sent to suppliers with these VAT registration numbers.
   The number of requests pulled from each datastore doesn't exceed the maximum number that you specified in the *Process eDocument Inbound Messages* app. The requests in a datastore are sorted by conversion ID in an ascending order. If the number of requests in a datastore exceeds the maximum number allowed, the integration flow pulls the maximum number of requests allowed that are at the top of the list.
5. To save datastore space, once completing pulling the requests to SAP S/4HANA Cloud, the integration flow deletes the requests from the datastores.
6. When the integration flow *South Korea Get Self-Billing Request from SmartBill* runs, the requests deleted from the datastores in step 5 may be still pending processing. This integration flow pulls the requests that were deleted before but are still pending processing to the datastores again.
7. To save datastore space, the integration flow *South Korea Get and Delete Self-Billing Request from Datastore* deletes these requests from the datastores again.

Example

You have the following data:

VAT Registration Number Associated with Company Code	Maximum Number of Requests to Pull	Number of Data Records in Datastore
VAT registration number 1: 1000000000	50	Datastore 1 for VAT registration number 1: 10 records
VAT registration number 2: 2000000000	50	Datastore 2 for VAT registration number 2: 80 records
VAT registration number 3: 3000000000	50	Datastore 3 for VAT registration number 3: no records

The integration flow tries pulling 50 requests from the three datastores, respectively. In the end, the integration flow pulls all the 10 records from datastore 1 and the first 50 records from datastore 2. In total, it pulls 60 records from the datastores. Once finishing the pulling task, the integration flow deletes the 60 records from the datastores.

When the integration flow *South Korea Get Self-Billing Request from SmartBill* runs, 10 records of the 60 are still pending processing. This integration flow pulls these 10 records to the datastores again. Later, the *South Korea Get and Delete Self-Billing Request from Datastore* integration flow deletes these 10 records from the datastores again.

5 Configuration Steps in SAP S/4HANA Cloud

Required steps on your SAP S/4HANA Cloud tenant.

5.1 Create Communication Configurations

Create the required communication configurations on your SAP S/4HANA Cloud tenant.

Prerequisites

You have a business role that contains the *Communication Management* (`SAP_BCR_CORE_COM`) business catalog.

Context

Your SAP Integration Suite tenant acts as a bridge between your SAP S/4HANA Cloud tenant and your service provider. SAP S/4HANA Cloud sends tax invoice XML files to SAP Integration Suite. Then SAP Integration Suite forwards XML files to your service provider. SAP Integration Suite also forwards validation statuses of XML files back to SAP S/4HANA Cloud.

To set up the communication between SAP S/4HANA Cloud and SAP Integration Suite, do the following:

- Create a communication system that represents your SAP Integration Suite tenant
- Create a communication arrangement that describes the communication between your SAP S/4HANA Cloud tenant and SAP Integration Suite tenant

> Note
>
> Communication systems and communication arrangements are not transportable. Configure them in both your quality and production systems.

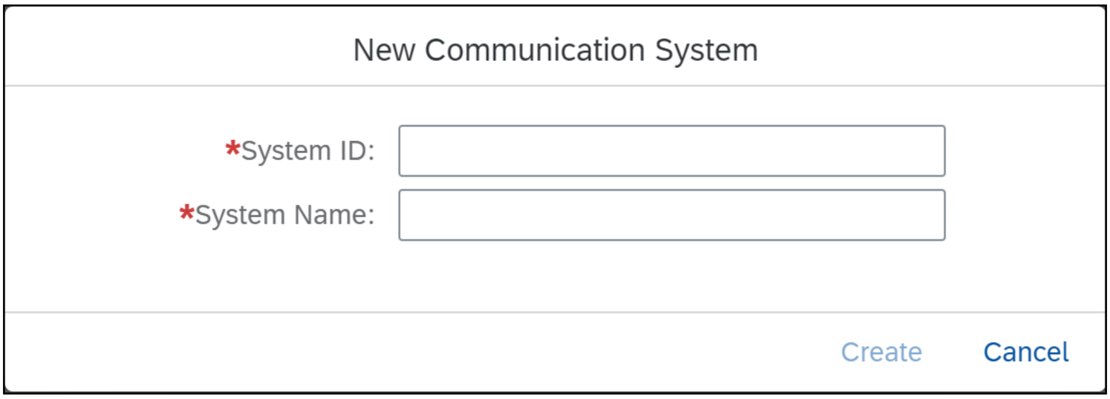
Procedure

1. Log into SAP Fiori launchpad.

2. Open the *Communication Systems* app. Choose *New* at the bottom right corner of the browser window.

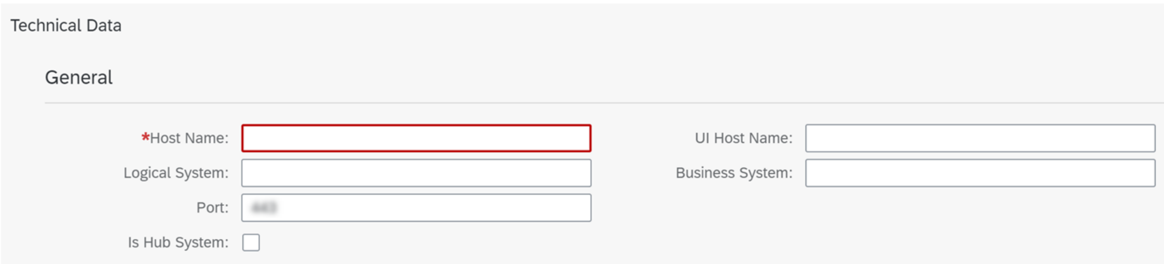
   A *New Communication System* dialog box appears.
3. Create a system ID and give it a descriptive name.

   For example, if the host name of your SAP Integration Suite tenant is `v1234.cfapps.sap.hana.ondemand.com`, use `EDOC_V1234` as the system ID.

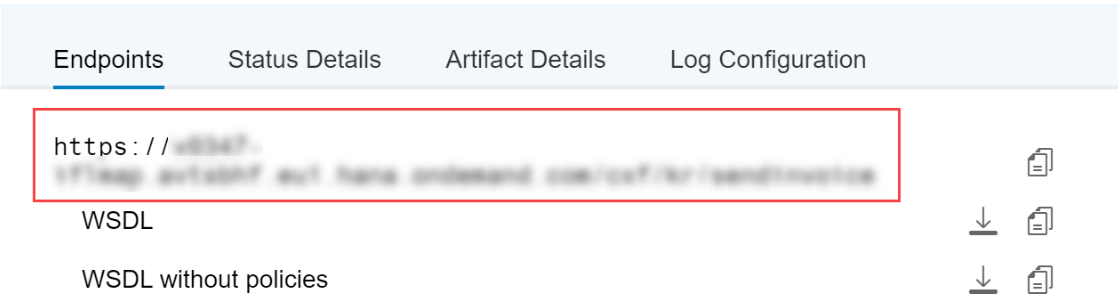


4. Choose *Create*.

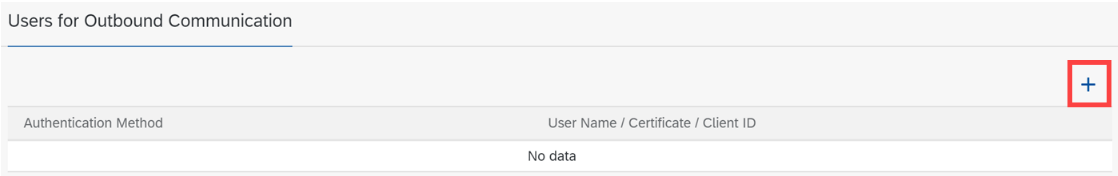
   An editing screen for the communication system appears.
5. In the *Technical Data* section, enter the host name and HTTPS port of the integration flow that you want to communicate with.



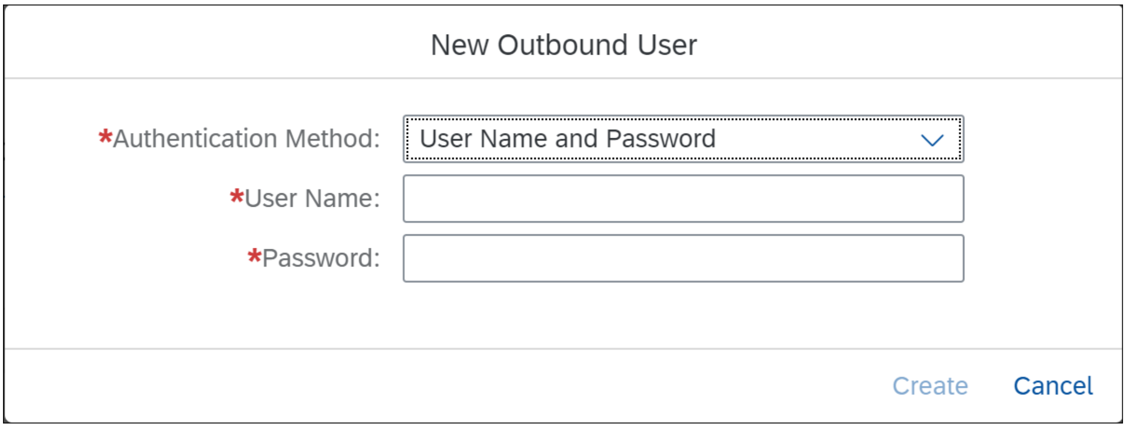
   You can find the host name of an integration flow, as follows:
   1. From the menu on the left, choose *Monitor*.
   2. Select *Manage Integration Content* (All).
   3. Search for the integration flow.
   4. Find the host name from the *Endpoints* tab.
      The composition of an endpoint URL is **https://**`<host name>`**/**`<path>`.



6. In the *User for Outbound Communication* section, configure an outbound user, as follows:
    a. Choose + (Add).



    A *New Outbound User* dialog box appears.

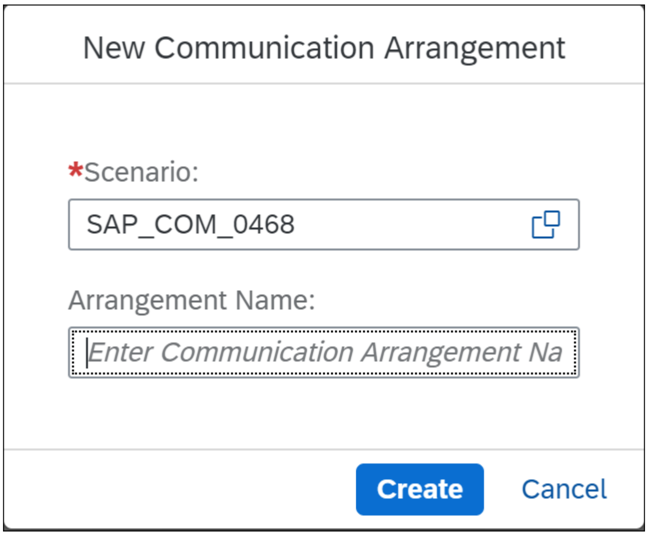


    b. Select the *User Name and Password* authentication method.
    c. Enter the value of your `clientid` in the *User Name* field, and the value of your `clientsecret` in the *Password* field. You create these values for your service instance in SAP Integration Suite. For more information, see Creating Service Instances.
    d. Choose *Create*.
7. Save the communication system.

    Don't exit SAP Fiori launchpad.
8. Open the *Communication Arrangements* app. Choose *New* at the bottom right corner of the browser window.

    A *New Communication Arrangement* dialog box appears.
9. Enter scenario **`SAP_COM_0468`** and an arrangement name.

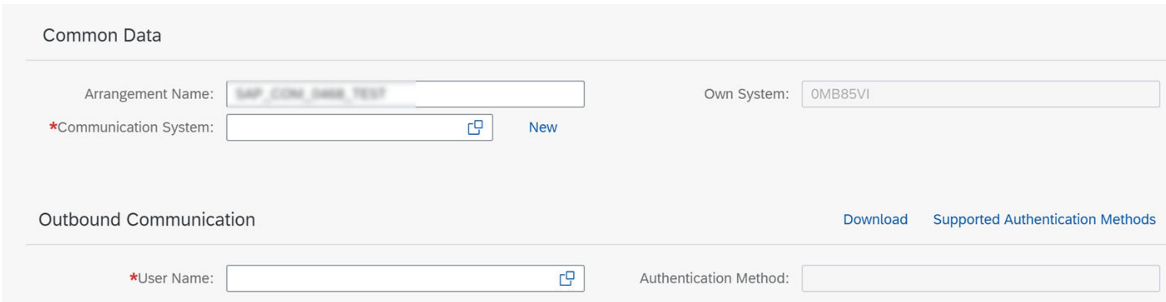
    For example, if the host name of your SAP Integration Suite tenant is `v1234.cfapps.sap.hana.ondemand.com`, use `SAP_COM_0468_V1234` as the communication arrangement name.



10. Choose *Create*.

    An editing screen for the communication arrangement appears.
11. In the *Communication System* field, enter the communication system that you created earlier.

    In the *Outbound Communication* section, the system displays the outbound user that you defined when creating the communication system automatically.



12. In the *Outbound Services* section, activate the necessary outbound services. To activate an outbound service, select the *Active* checkbox and enter the path for the related integration flow.
    The outbound services that you should activate depend on your role. Check the following table for details:

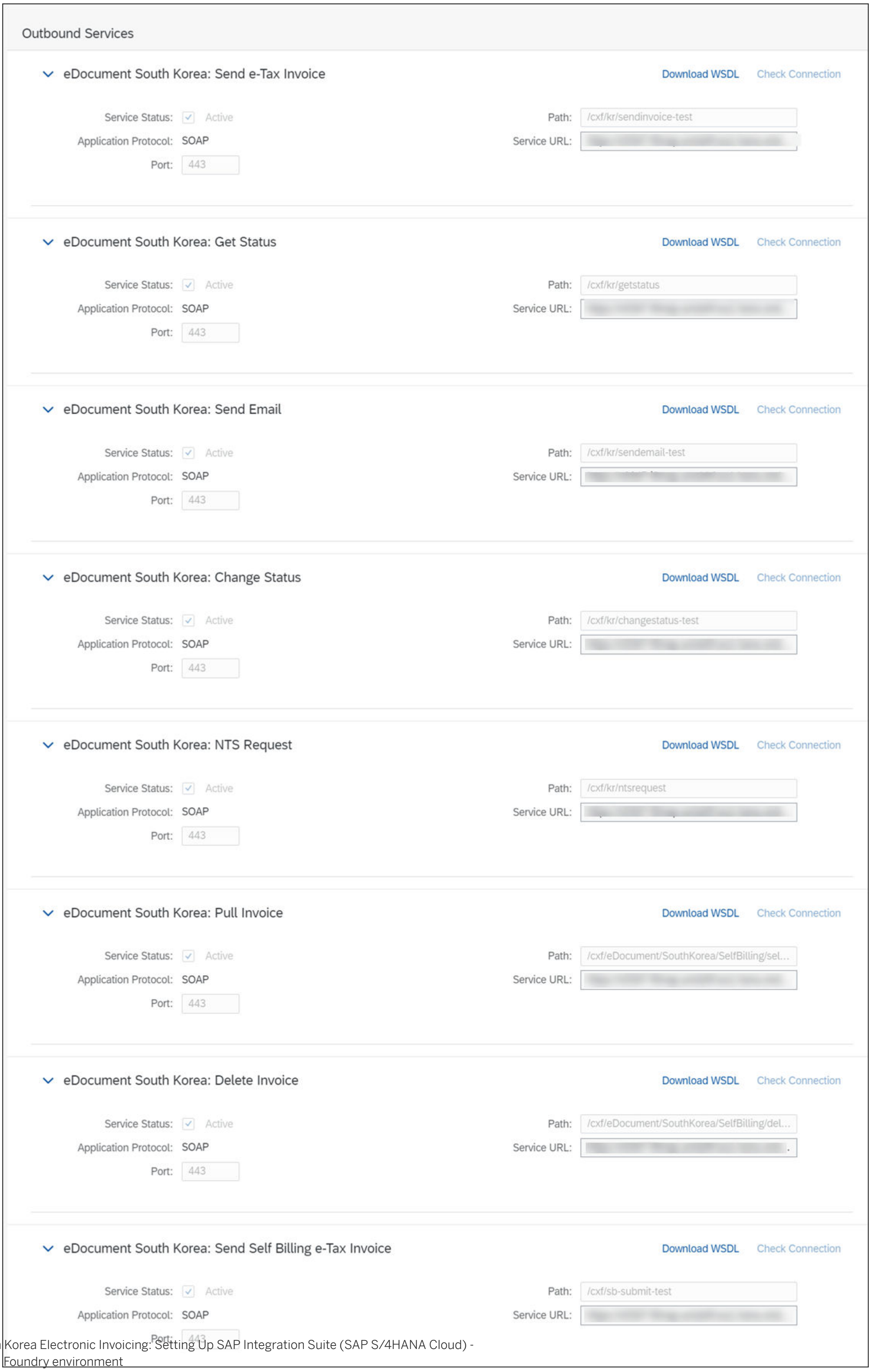
Outbound Service	Role	Functions	Path
eDocument South Korea: Send e-Tax Invoice	Supplier	Send tax invoices that you issue to your customers to the National Tax Service (NTS)	`/cxf/kr/sendinvoice`
eDocument South Korea: Send Self-Billing e-Tax Invoice	Supplier	Send self-billing tax invoices that your customers create to the NTS	`/cxf/kr/sb/sendinvoice`
eDocument South Korea: Send e-Tax Invoice for Purchaser	Customer	Send self-billing tax invoices that you create as a customer to your suppliers	`/cxf/kr/sb/purchaser/sendinvoice`

Outbound Service	Role	Functions	Path
eDocument South Korea: Get Status	Supplier, Customer	• Get processing statuses of tax invoices that you issue to your customers • Get processing statuses of self-billing tax invoices that your customers create • Get processing statuses of self-billing tax invoices that you create as a customer	`/cxf/kr/getstatus`
eDocument South Korea: Send Email	Supplier	• Send notification emails to customers, asking them to review tax invoices that you issue to them • Send notification emails to customers, asking them to review self-billing tax invoices that you return to them	`/cxf/kr/sendemail`
eDocument South Korea: Change Status	Supplier, Customer	• Cancel tax invoices that you issue to customers • Cancel or reject self-billing tax invoices that your customers create • Cancel self-billing tax invoices that you create as a customer	`/cxf/kr/changestatus`
eDocument South Korea: NTS Request	Supplier	• Send tax invoices that you issue to customers to the NTS immediately in emergencies (for example, when the deadline for tax invoice reporting is just around the corner) • Send self-billing tax invoices that your customers create to the NTS immediately in emergencies	`/cxf/kr/ntsrequest`
eDocument South Korea: Pull Invoice	Supplier	Pull self-billing requests from a datastore on SAP Integration Suite	`/cxf/kr/sb/pullrequest`

Outbound Service	Role	Functions	Path
eDocument South Korea: Delete Invoice	Supplier	Delete self-billing requests from a datastore on SAP Integration Suite	`/cxf/kr/sb/deleterequest`
eDocument South Korea: AP Pull Invoice	Customer	Get supplier tax invoices from datastores on SAP Integration Suite	`/cxf/kr/ap/pullrequest`
eDocument South Korea: AP Delete Invoice	Customer	Delete supplier tax invoices from datastores on SAP Integration Suite	`/cxf/kr/ap/deleterequest`

Once you enter a path, the system generates a complete service URL in the *Service URL* field automatically.

The following is a snippet of the *Outbound Services* section:



13. Save your communication arrangement.

6 Test the Integration

Test the communication between SAP S/4HANA Cloud, SAP Integration Suite, your service provider, and the National Tax Service (NTS) using your test tenants.

The Configure the Creation of Electronic Tax Invoices in XML Format [page 5] topic of this guide describes how to find the documentation about the required configurations and business processes. To test the integration, perform the procedures described in the following topics in this documentation:

- Creating and Sending a Tax Invoice in XML Format
- Canceling a Tax Invoice in XML Format
- Approving or Rejecting a Customer-Issued Tax Invoice as a Supplier

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