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SAP CPI TUTORIAL

Integration Framework Headers with HTTPS adapter



September 21, 2020 Sudarshan Patwardhan

SAP

Integration Framework Headers with HTTPS Adapter

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INTRODUCTION

Various Headers and Exchange Properties are Provided by the Integration Framework that can be utilized while building the integration flow in SAP CPI.

This article is intended to demonstrate leveraging the Integration Framework Headers associated with HTTPS sender Adapter.

Consider the below URL as an example.

https://abcd.it-cpitrial-rt.cfapps.us10.hana.ondemand.com/http/IF_Headers?q=London,uk&appid=1

The respective Integration Framework headers associated with HTTPS sender Adapter will be as below.

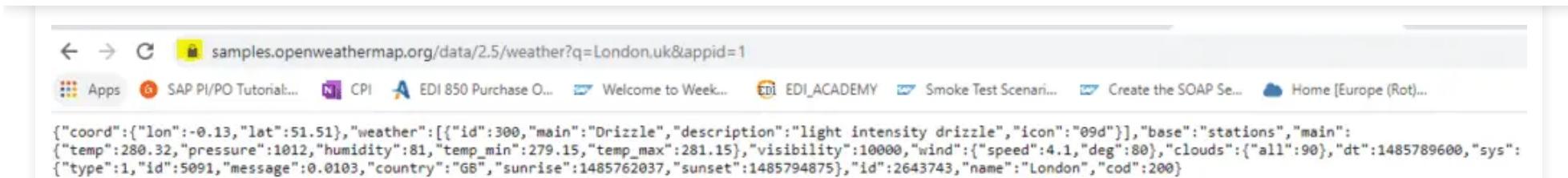
CamelHttpMethod	Refers to the Method of Incoming request (GET, POST, DELETE etc)
CamelHttpQuery	Refers to the query string that is contained in the request URL .(q=London,uk&appid=1)
CamelHttpResponseCode	The response from an HTTP call (200 : If successful, 401/404 : If error when used with Exception Subprocess)
CamelHttpUrl	The Request URL without query string. (https://abcd.it-cpitrial-rt.cfapps.us10.hana.ondemand.com/http/IF_Headers)
CamelServletContextPath	The Address given in the channel. (/IF_Headers)

Let's look a demo to understand how to use these Headers.

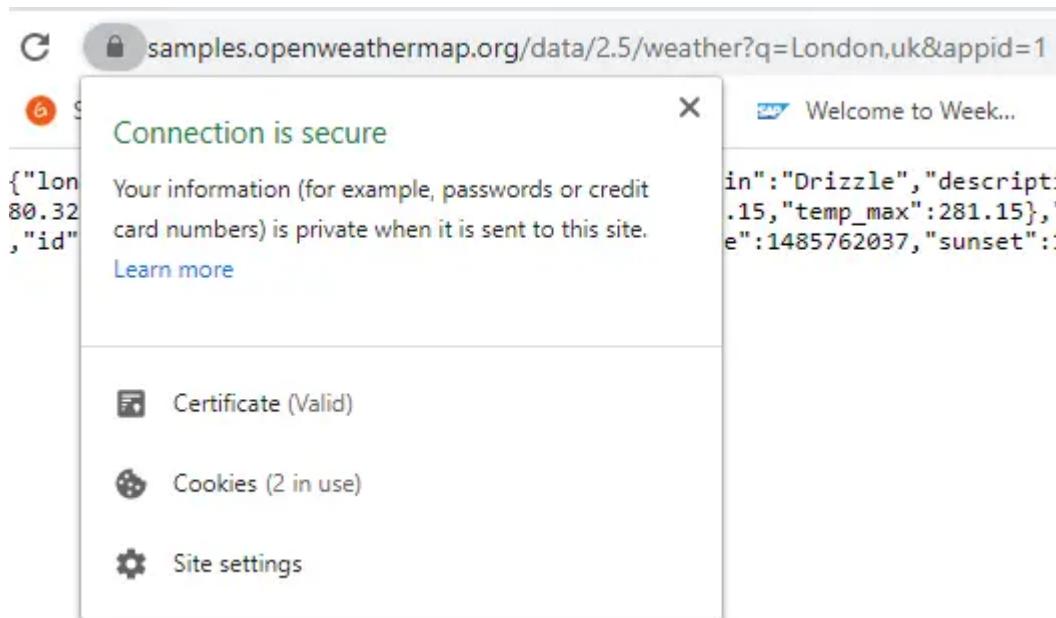
I have considered a sample open weather URL to fetch details.

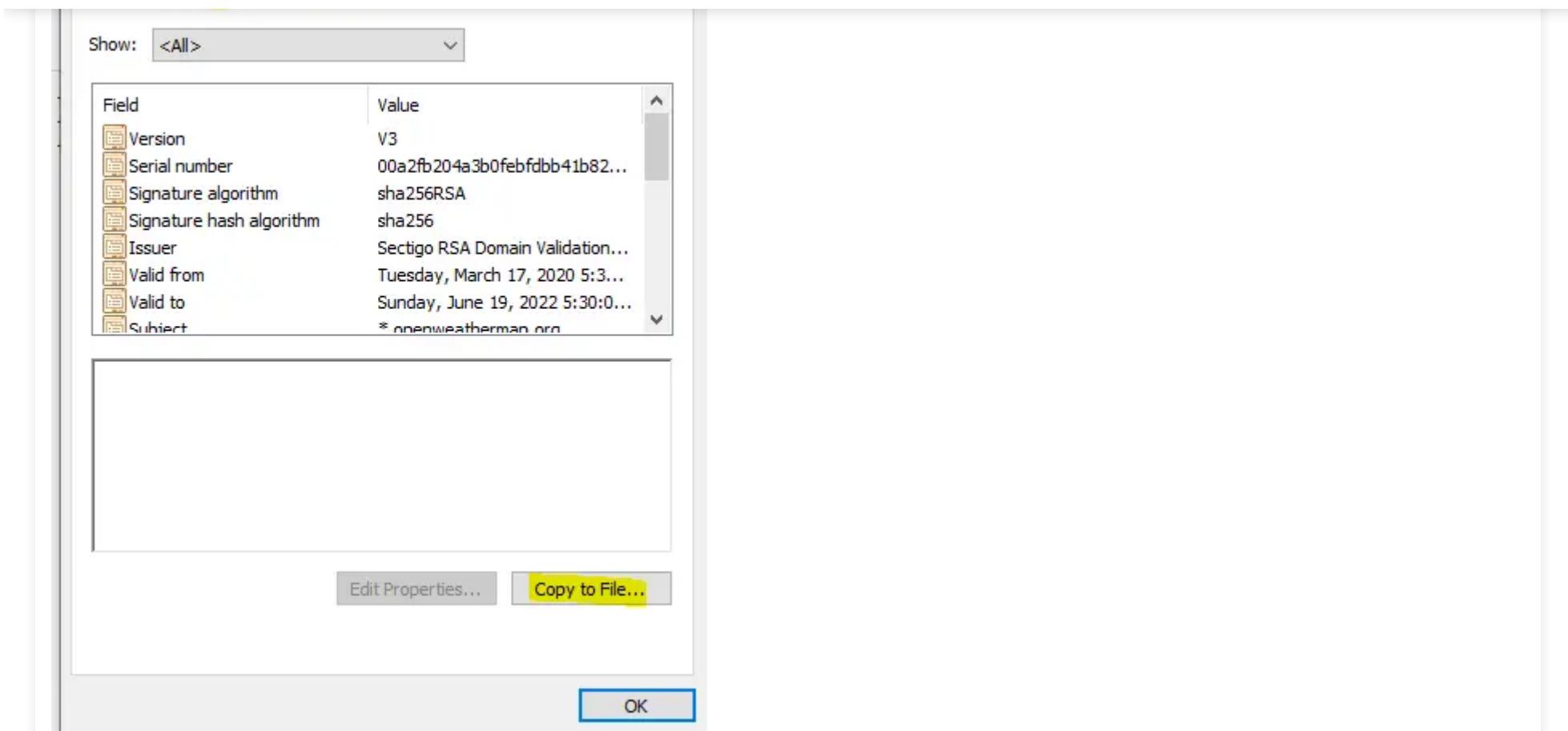
ADDING CERTIFICATE TO THE KEYSTORE

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```
{"coord":{"lon":-0.13,"lat":51.51}, "weather":[{"id":300,"main":"Drizzle","description":"light intensity drizzle","icon":"09d"}], "base":"stations", "main": {"temp":280.32,"pressure":1012,"humidity":81,"temp_min":279.15,"temp_max":281.15}, "visibility":10000, "wind": {"speed":4.1,"deg":80}, "clouds": {"all":90}, "dt":1485789600, "sys": {"type":1,"id":5091,"message":0.0103,"country":"GB"}, "sunrise":1485762037, "sunset":1485794875}, "id":2643743, "name": "London", "cod": 200}
```

Step 2 : Click on Certificates (Valid)**Step 3 : Under Details tab, Click on Copy to File.**

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Step 4 : In the Certificate Export Wizard, Click on **Next**

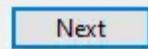
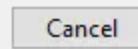
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Welcome to the Certificate Export Wizard

This wizard helps you copy certificates, certificate trust lists and certificate revocation lists from a certificate store to your disk.

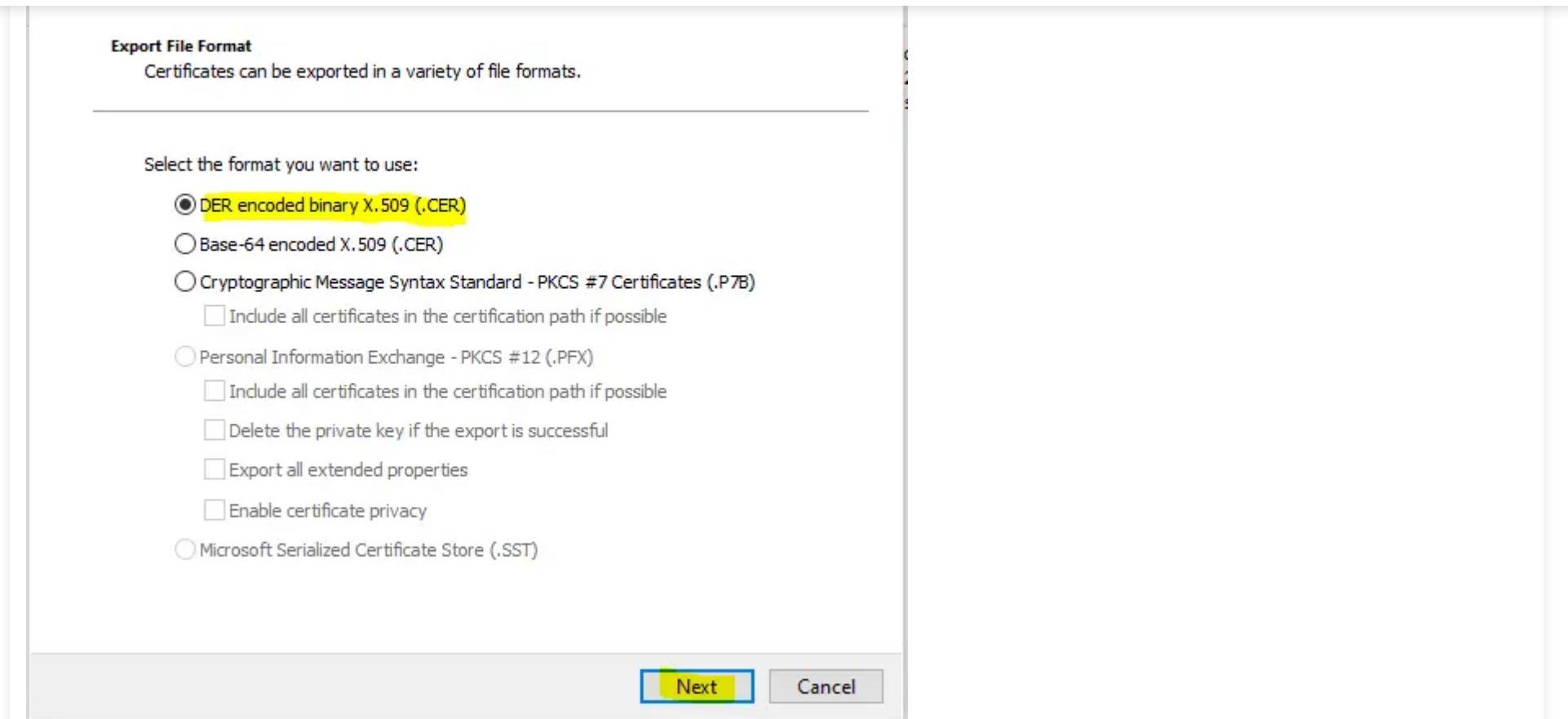
A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.

To continue, click Next.

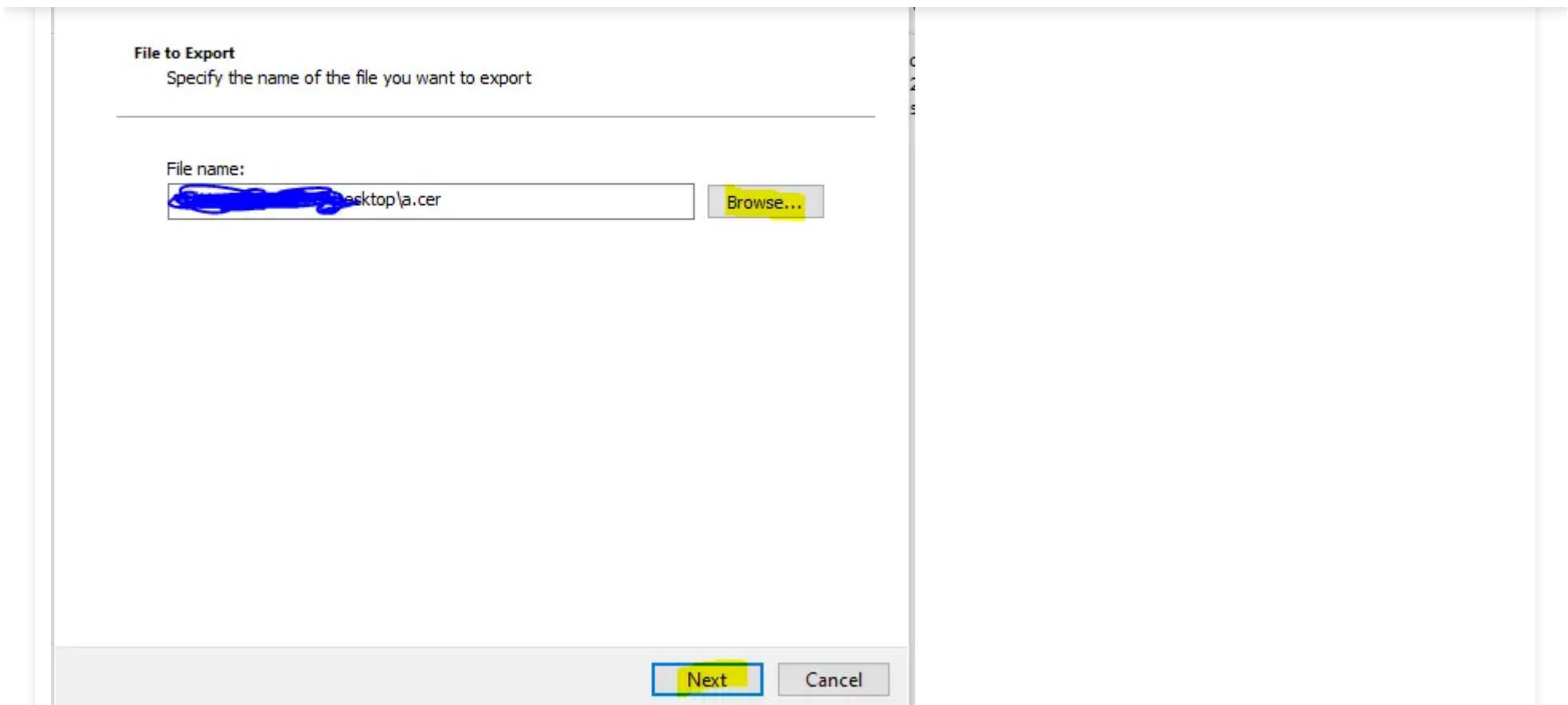
 Next Cancel

Step 5 : In the next window, Choose **DER encoded binary X.509 (.CER)** radio button. Click on **Next**.

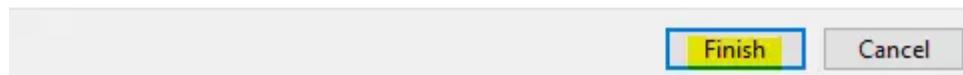
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Step 6 : Browse/Enter a path to save the Certificate and Click on **Next**.

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Step 7 : Click on **Finish**.

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Step 8 : In Overview window, Under **Manage Security**, Click on **Keystore**.

The screenshot shows the 'Manage Security' section of the Integration Framework Overview. On the left, there are three icons: a pencil, an eye, and a gear. Below them are three buttons: 'All', 'Started', and 'Error'. A yellow box highlights the 'Manage Security' link. Below this, there are five cards:

Category	Value
Security Material	0
Keystore	6
Access Policies	0
User Roles	0
Connectivity Tests	0

Below each card, it says 'Artifacts' or 'Entries'.

Step 9 : Click on **Add → Certificate**.



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The screenshot shows a list of entries with the following columns: Alias, Type, Valid Until, and Actions. A specific entry labeled 'Key Pair' is highlighted. The 'Actions' column contains buttons for Add, Back Up, Download, and other options.

Step 10 : In the Pop up, Give any **Alias** name of your choice and **Browse** the certificate that you have already downloaded. Click on **Add**.

The dialog box is titled 'Add Certificate'. It contains two input fields: 'Alias:' with the value 'Certificate' and 'File:' with the value 'Certificate.cer'. Next to the 'File:' field is a 'Browse...' button. At the bottom are 'Add' and 'Cancel' buttons.

Step 11 : At times you might have to manually Confirm the Certificate. Click on **Confirm**.

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Could not establish trust to the certificates in the keystore.
You may confirm that you trust the certificate 'certificate' by checking the fingerprint.

Certificate Details

Owner: Tenant Administrator

Key Type: RSA

Key Size: 2048

Signature Algorithm: SHA256withRSA

Subject DN: CN=*.openweathermap.org

Issuer DN: CN=Sectigo RSA Domain Validation Secure Server CA,O=Sectigo Limited,L=Salford,ST=Greater Manchester,C=GB

Serial Number: 0xA2FB204A3B0FEBFDDB41B822D602258C

Version: 3

Valid From: Mar 17, 2020, 05:30:00

Valid Until: Jun 19, 2022, 05:30:00

Fingerprints

SHA-1:

EE:AA:58:6D:4F:1F:42:F4:18:5B:7F:B0:F2:0A:4C:DD:97:47:7D:99

SHA-256:

51:EC:81:C0:AC:E1:DF:FD:11:EC:63:14:69:CB:3D:A2:7E:A7:9F:E1:59:23:C2:5F:3A:50:A7:F8:64:2B:2B:79

SHA-512:

D0:0D:67:6F:C8:D0:56:D7:D0:82:D8:22:26:7A:DE:C1:83:1B:E8:BE:8F:00:04:E5:82:17:C4:0A:93:C8:CC:59:
E2:A8:78:7E:79:92:A4:21:66:2F:70:E8:96:B2:13:33:56:66:C7:C9:EA:3E:3B:4F:75:83:02:B3:3E:8D:E7:07

Step 12 : Now you can see that the required certificate is added to the tenant.

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Alias	Type	Valid Until	Last Modified At	Actions
certificate	Certificate	Jun 19, 2022, 05:30:00	Sep 17, 2020, 15:40:02	

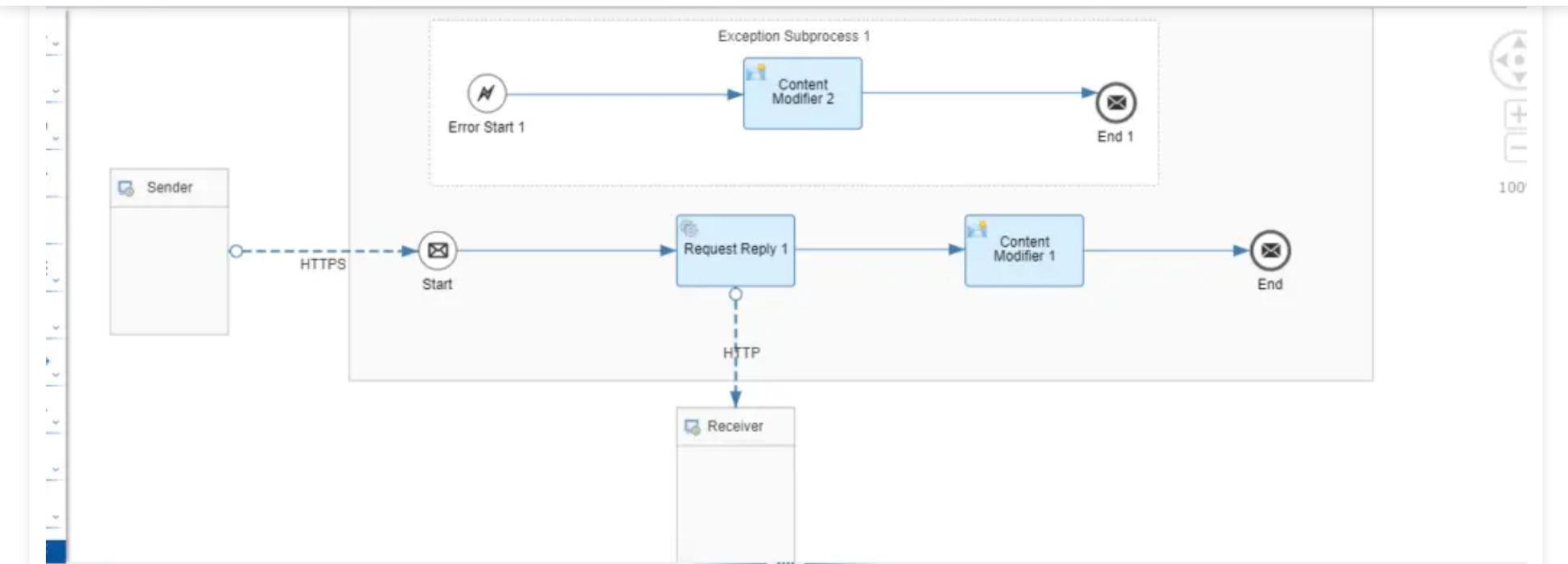
Subject DN: CN=*.openweathermap.org
Issuer DN: CN=Sectigo RSA Domain Validation Secure Server CA, O=Sectigo Limited, L=Salford, ST=Greater Manchester, C=GB

CREATING ARTIFACT

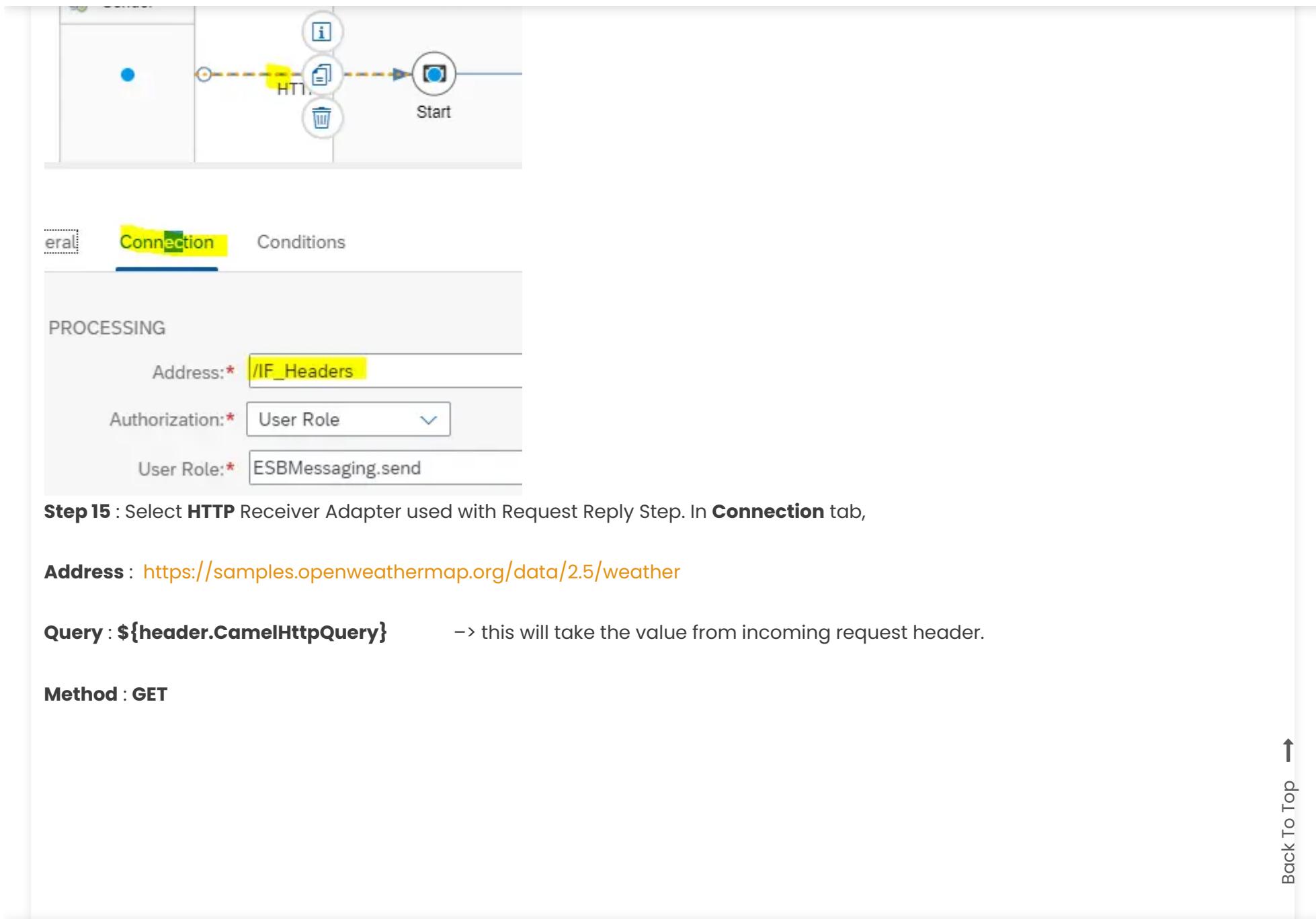
Step 13 : Create a simple **Artifact** as show below.

Sender Adapter will be **HTTPS**. A **request Reply** Step to connect with external sample weather URL. **Content Modifier** to Collect all the above mentioned headers.

An **Exception Subprocess** is used to handle exception when the HTTP address from Request Reply is not reachable. The **Content Modifier** inside the Exception Subprocess will serve exactly the same purpose as other Content Modifier used.

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Step 14 : Select the **HTTPS** Sender Adapter and in **Connection** tab ,Give Relative **address** to generate Endpoint for the Flow. (**/IF_Headers**).

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The screenshot shows a process flow diagram and its configuration details:

Process Flow Diagram:

```
graph LR; Start((Start)) --> HTTP[HTTP Receiver]; HTTP --> End((End))
```

Configuration Details (Connection Tab):

- Address:** /IF_Headers
- Authorization:** User Role
- User Role:** ESBMessaging.send

Step 15 : Select **HTTP Receiver Adapter** used with Request Reply Step. In **Connection** tab,

Address : <https://samples.openweathermap.org/data/2.5/weather>

Query : \${header.CamelHttpQuery} → this will take the value from incoming request header.

Method : GET

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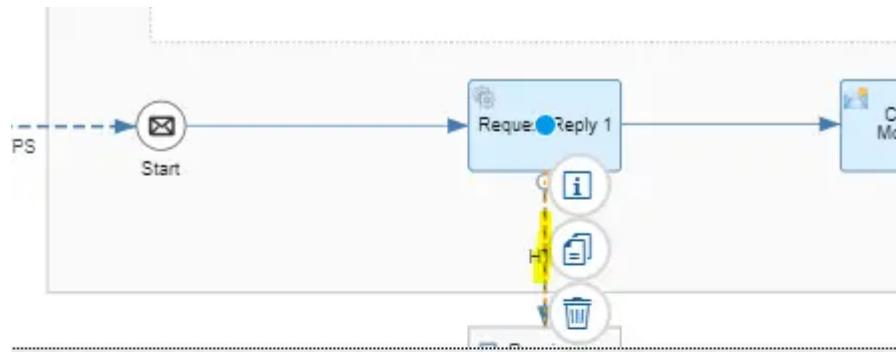
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OPEN



Connection

TAILS

Address: *

Query:

Proxy Type:

Method:

Send Body:

Step 16 : Select the **Content Modifier**. In **Message Body** tab, type as below to capture all the Framework headers.

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```
METHOD : ${header.CamelHttpMethod}

QUERY : ${header.CamelHttpQuery}

RESPONSECODE : ${header.CamelHttpResponseCode}

URL : ${header.CamelHttpUrl}

CONTEXTPATH : ${header.CamelServletContextPath}

BODY : ${in.body}

</Result>
```

 Menu


fier

[Message Header](#) [Exchange Property](#) **[Message Body](#)**
Type: **Expression** ▾

Body:

```

<Result>
METHOD : ${header.CamelHttpMethod}
QUERY : ${header.CamelHttpQuery}
RESPONSECODE : ${header.CamelHttpResponseCode}
URL : ${header.CamelHttpUrl}
CONTEXTPATH : ${header.CamelServletContextPath}
BODY : ${in.body}
</Result>
  
```

Step 17 : Select **Content Modifier** inside the **Exception Subprocess**. In **Message Body** tab, type as below.

<Result1>

METHOD : \${header.CamelHttpMethod}

QUERY : \${header.CamelHttpQuery}

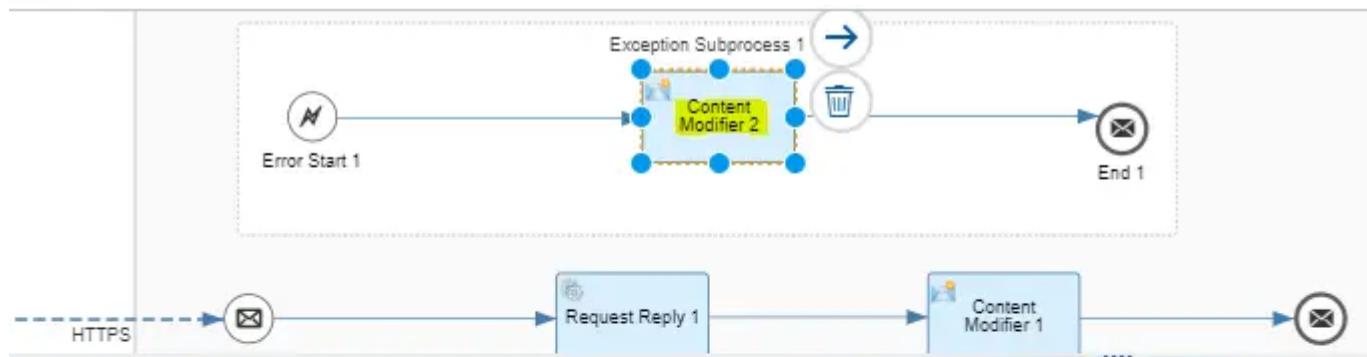
RESPONSECODE : \${header.CamelHttpResponseCode}

URL : \${header.CamelHttpUrl}

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BODY : \${in.body}

</Result1>



ifier

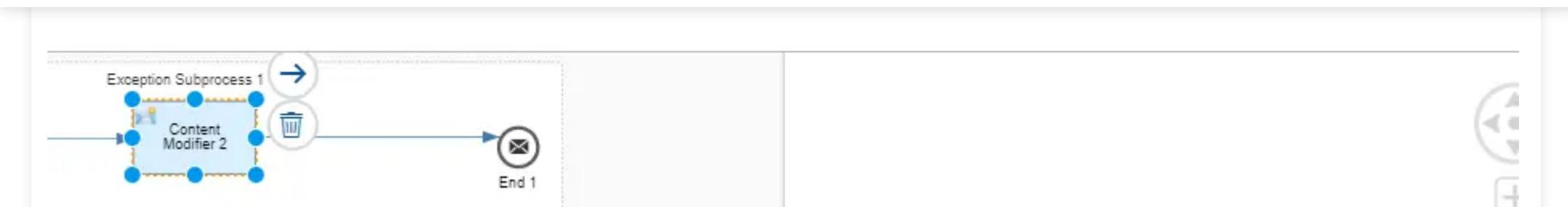
Message Header Exchange Property **Message Body**

Type: EXPRESSION

Body:

```
<Result1>
METHOD : ${header.CamelHttpMethod}
QUERY : ${header.CamelHttpQuery}
RESPONSECODE : ${header.CamelHttpResponseCode}
URL : ${header.CamelHttpUrl}
CONTEXTPATH : ${header.CamelServletContextPath}
BODY : ${in.body}
</Result1>
```

Step 18 : Save and Deploy.

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Step 19 : Make sure that the Flow is **started**. Click on the highlighted **Copy** button under **Endpoints** to copy the Endpoint.

Overview / Manage Integration Content

Integration Content (1)		Filter by Name or ID			
Name	Status				
IF_Headers	Started	Deployed On: Sep 17, 2020, 14:30:18 ID: IF_Headers Package: Trial1 Deployed By: sudpat123123@gmail.com Version: 1.0.0			
Integration Flow		Endpoints Status Details Artifact Details Log Configuration			

[https://\[REDACTED\].it-cpitrial-rt.cfapps.us10.hana.ondemand.com/http/IF_Headers](https://[REDACTED].it-cpitrial-rt.cfapps.us10.hana.ondemand.com/http/IF_Headers) 

TESTING THE ARTIFACT

Step 20 : Open **Postman** app.

Keep the request in **GET** mode.

Paste the Endpoint copied in **Step 19** in to **URL tab**.

In **Authorization** tab, Choose **TYPE : Basic Auth**

Username : Client ID

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Client ID and Client Secret you will get when you create Process Integration Runtime instance during tenant setup. (Refer Step 14 of [this post](#))

Untitled Request

BUILD

The screenshot shows the Postman interface with the following details:

- Method:** GET
- URL:** https://[REDACTED].it-cpitrial-rt.cfapps.us10.hana.ondemand.com/http/IF_Headers
- Authorization Type:** BasicAuth (highlighted in yellow)
- Warning:** Heads up! These parameters hold sensitive data. To keep this data secure while working in a collaborative environment, we recommend using variables. [Learn more about variables](#)
- Username:** [REDACTED] (highlighted in yellow)
- Password:** [REDACTED] (highlighted in yellow)
- Show Password:**

Step 21 : Under **Params** tab, insert two **Keys** and **Values** corresponding to the query.

KEY	VALUE
q	London,uk
appid	1

Now you can observe the endpoint URL automatically changes to accommodate the query parameters in it.

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KEY	VALUE	DESCRIPTION
<input checked="" type="checkbox"/> q	London,uk	
<input checked="" type="checkbox"/> appid	1	
Key	Value	Description

Step 22 : Under **Body** tab, Choose **None** radio button as we are not sending any input data to the flow. Click on **SEND**.

GET https://REDACTED/apitrial-rt.cfapps.us10.hana.ondemand.com/http/IF_Headers?q=London,uk&appid=1

Send Save

Params	Authorization	Headers (9)	Body	Pre-request Script	Tests	Settings	Cookie
<input checked="" type="radio"/> none	<input type="radio"/> form-data	<input type="radio"/> x-www-form-urlencoded	<input type="radio"/> raw	<input type="radio"/> binary	<input type="radio"/> GraphQL		

This request does not have a body.

Step 23 : You will get back the following response. Verify whether you are getting values as explained in the introduction.

Note that the **RESPONSE CODE** is **200** which means the **URL was reached Successfully**. And the Information returned from the URL is Displayed under **BODY**.

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KEY	VALUE	DESCRIPTION
<input checked="" type="checkbox"/> q	London,uk	
<input checked="" type="checkbox"/> appid	1	

Body Cookies (2) Headers (22) Test Results

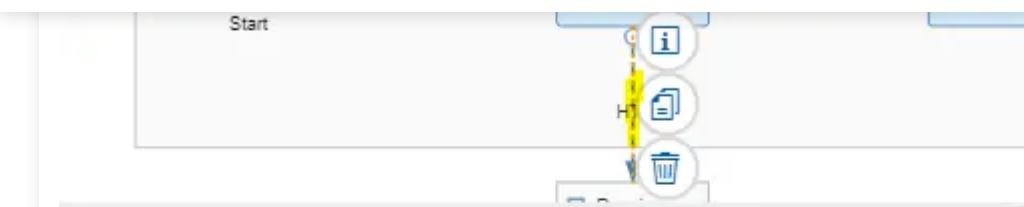
Pretty Raw Preview Visualize JSON 

```

1 <Result>
2 METHOD : GET
3 QUERY : q=London,uk&appid=1
4 RESPONSECODE : 200
5 URL : http://52c8cftrial.it-cpitrial-rt.cfapps.us10.hana.ondemand.com/http/IF_Headers
6 CONTEXTPATH : /IF_Headers
7 BODY : {
8   "coord": {
9     "lon": -0.13,
10    "lat": 51.51
11  },
12  "weather": [

```

Step 24: Go back to the **Artifact**. Click on **HTTP** Receiver adapter connected from Request Reply to the Receiver. In **Connection** tab, Change the address to <https://samples.openweathermap.org/data/2.5/wea> so that the end point is incomplete , not reachable and the flow throws exception.

 Menu**Connection****DETAILS**Address: *

Query: \${header.CamelHttpQuery}

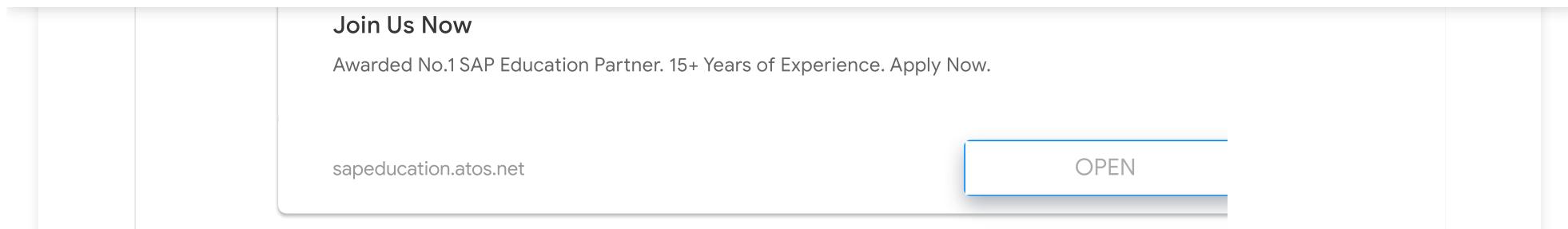
Proxy Type: Internet

Method: GET

Send Body: **Step 25 : Save and Deploy.**[Save](#) [Save as version](#) [Deploy](#) [Cancel](#) [Delete](#)**Step 26 :** Make sure that the Flow is **started** again.

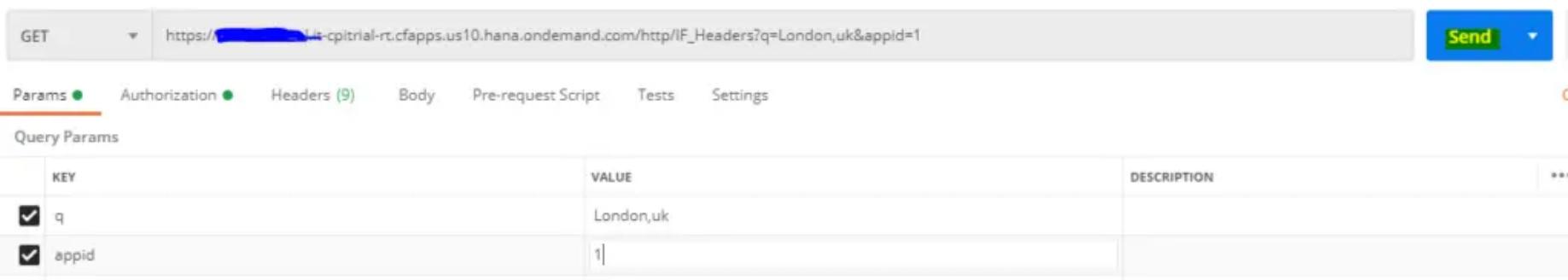
Name	Status	IF_Headers		
IF_Headers	Started	Deployed On:	Sep 17, 2020, 15:52:38	ID: IF_Headers Package: Trial1
Integration Flow		Deployed By:	sudpat123123@gmail.com	Version: 1.0.0

Step 27 : Go back to **POSTMAN**. The previous settings will still be available. Click on **SEND**.

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Untitled Request

BUILD



The screenshot shows the Postman interface for an 'Untitled Request'. The request is a 'GET' to the URL [https://\[REDACTED\].cfapps.us10.hana.ondemand.com/http/IF_Headers?q=London,uk&appid=1](https://[REDACTED].cfapps.us10.hana.ondemand.com/http/IF_Headers?q=London,uk&appid=1). The 'Params' tab is selected, showing two query parameters: 'q' with value 'London,uk' and 'appid' with value '1'. The 'Send' button is visible at the top right.

Step 28 : You will get the below response.

Note that the **RESPONSE CODE** now is **404** which indicates that the **URL is not reachable** and so the BODY will be blank as nothing is returned from the fault URL.

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	KEY	VALUE	DESCRIPTION
<input checked="" type="checkbox"/>	q	London,uk	
<input checked="" type="checkbox"/>	appid	1	
	Key	Value	Description

Body Cookies (2) Headers (18) Test Results Status: 404 Not

Pretty Raw Preview Visualize HTML ▾

```

1 <Result1>
2   METHOD : GET
3   QUERY : q=London,uk&appid=1
4   RESPONSECODE :404
5   URL : http://[REDACTED].it-cpitrial-rt.cfapps.us10.hana.ondemand.com/http/IF_Headers
6   CONTEXTPATH : /IF_Headers
7   BODY :
8 </Result1>
```

You can further decide where to route the message based on Response code as per your needs.

FINAL VERDICT :

In conclusion, I hope you enjoyed reading this article on "**Integration Framework Headers with HTTPS Adapter**", If yes, then don't forget to spread a word about it. Do send the feedback and to know more about it. Signing off sudarshan@recodehive.com

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