Buddhika Krishantha
June 21, 2017 2 minute read

SAP RFC Function Module as REST GET service

4 1 8,718

Hi All,

This is my first blog.

This is a step by step example of how to consume RFC function module as REST Service using GET operation.

System: **SAP PI 7.4**

This example will follow this workflow:

3rd Party System <-> PI RESTAdapter (*JSON*) <-> PI Mapping (*XML*) <-> PI RFC Adapter(*XML*) <-> SAP R3

Bussiness Case Description

A 3rd party system consumes a REST service which published in SAP PI to get the company name and the city.

Scenario – We are going to pass Company Code(BUKRS) as a parameter (GET operation) and get the Company Name and City as output.

Import the Function Module to ESB.

Structure | WSDL

☐ Sensitive Data

Display Message Type Request 🗒

🔄 | Search [_____] [Go]

Name	Category	Type	Context Object	Description
▼ ZGET_HOTEL_DTLS	Element			
BUKRS	Element	xsd:string		Company Code

Structure | WSDL

☐ Sensitive Data

Display Message Type Response🗒

🔄 | Search [_____] [Go]   Settings...

Name	Category	Type	Occurrence	Default	Details	Description
▼ ZGET_HOTEL_D	Element					
BUTXT	Element	xsd:string	0..1		maxLength="25"	Name of Company C
ORT01	Element	xsd:string	0..1		maxLength="25"	City

I used external definitions as data types.

Category [xsd 🗒] Messages [From All Available Global Elements 🗒]
File * [MainSchema.xsd]
Source [_____]

Imported Document | Messages | WSDL | External References

🔄 | Search [_____] [Go]

Name	Category	Type	Occurrence	Default	Details	Description
▼ ZGET_HOTEL_DTLS	Message					
▼ ZGET_HOTEL_DTLS	Element		1			
BUKRS	Element	xsd:string	1		maxLength="4"	Company Code

Category [xsd 🗒] Messages [From All Available Global Elements 🗒]
File * [MainSchema.xsd]
Source [_____]

Imported Document | Messages | WSDL | External References

🔄 | Search [_____] [Go]

Name	Category	Type	Occurrence	Default	Details	Description
▼ ZGET_HOTEL_DTLS.Response	Message					
▼ ZGET_HOTEL_DTLS.Response	Element		1			
BUTXT	Element	xsd:string	0..1		maxLength="25"	Name of Company C
ORT01	Element	xsd:string	0..1		maxLength="25"	City

Create Service Interface. Use External Definitions for the Request and Response.

Create Message Mapping for Request and Response.In Request Mapping Add Custom Function.
I have added function named **getBUKRS** with two parameters which named **namespace** and **attribute**.
Added following code into the function body.(This function is usnig for extract the parameter from the URL)

```
        Map<String, Object> all = container.getInputHeader().getAll();
        DynamicConfiguration dynConf =
(DynamicConfiguration)all.get(StreamTransformationConstants.DYNAMIC_CONFIGURATION);
        DynamicConfigurationKey key = DynamicConfigurationKey.create(namespace, attribute);
        return dynConf.get(key);
```
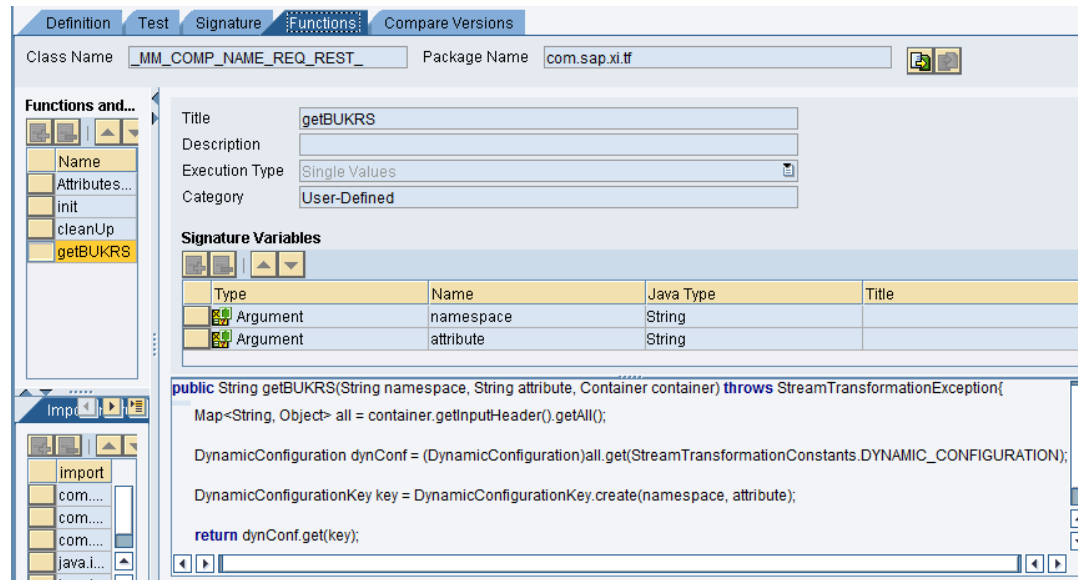
Map Request as following. Pass http://sap.com/xi/XI/System/REST and "**id**" for the constants.
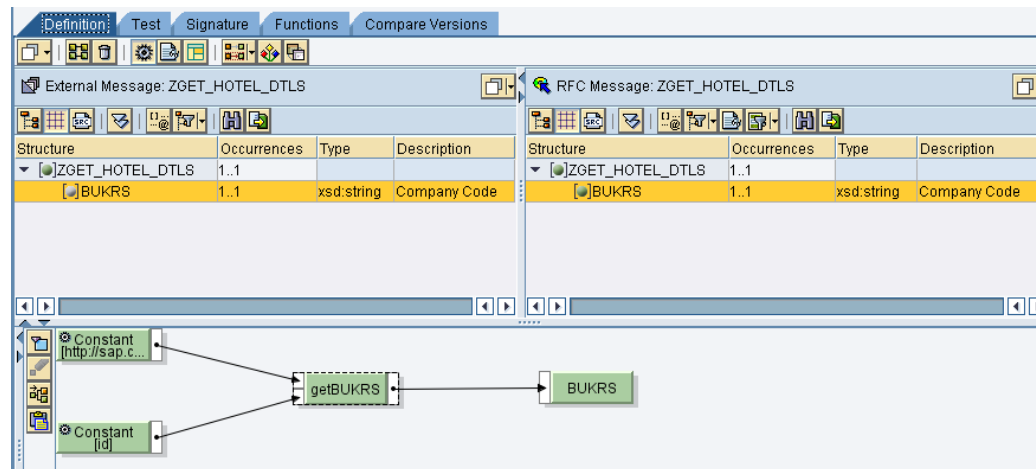
Map the response.
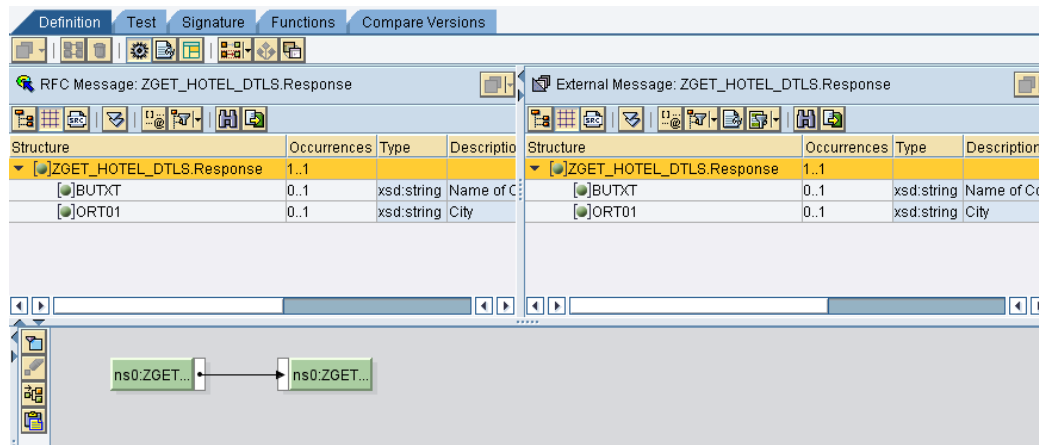
Create Output Mapping.

Go to Integration Builder and create **receiver** and **sender** communication channels.

Receiver-

Parameters	Identifiers	Module

| Adapter Type * | RFC | http://sap.com/xi/XI/System | SAP BASIS 7.40 |

○ Sender ● Receiver

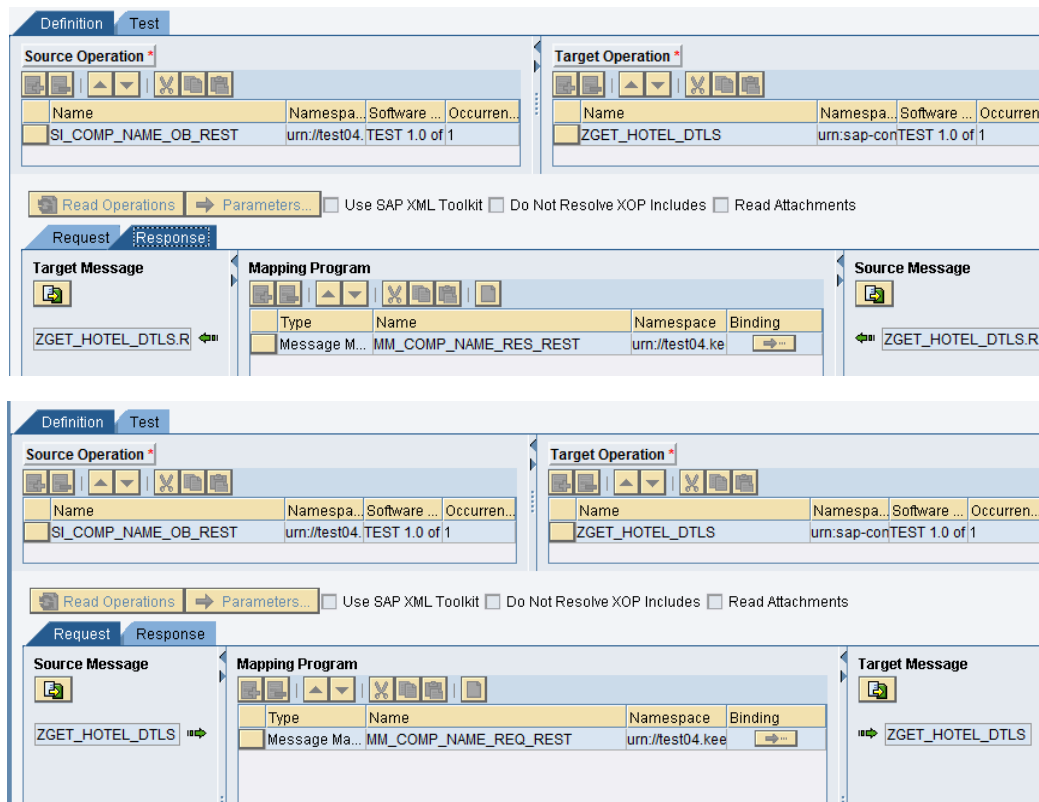| Transport Protocol * | RFC |
| Message Protocol * | RFC (RFC XML) |
| Adapter Engine * | Central Adapter Engine |

Target	Advanced

RFC Client Parameter

| RFC Server Type | SAP System |

☐ Load Balancing

Sender-

General	Channel Selection	REST Resources	REST Operation	Operation Determination	Error Handling

Input Message Format

| Data Format | JSON |
| Character Set | HTTP Content-Type Header |

☑ Convert to XML

☑ Add Wrapper Element

| Element Name * | ZGET_HOTEL_DTLS |
| Element Namespace * | urn:sap-com:document:sap:rfc:functions |

☐ Escape invalid name start character (for example, "64x64" -> <__64x64>)

☐ Mangle invalid name characters (for example, "start&&stop" -> <start__u0026stop>)

Quality of Service

| Quality of Service | Best Effort |

Output Message Format

| Data Format | JSON |

☐ Strip Operation from Message (Outer Element)

| Character Set | Request Message Character Set |

☑ Convert XML Payload to JSON

☐ Strip Outer Element

☐ Remove escaped name start character

☐ Remove mangling of invalid name characters

General	Channel Selection	REST Resources	REST Operation	Operation Determination	Error Handling

Channel Selection

☑ Specify Endpoint

| Endpoint * | /test4/RESTs |

☐ Limit to JSON Element

☐ Limit to XPath Element

☑ Limit to HTTP Operation

| HTTP Operation * | GET |

| General | Channel Selection | REST Resources | REST Operation | Operation Determination | Error Handling |

URL Pattern

| URL Pattern | Custom Pattern |
| Pattern * | /{BUKRS} |

XI Dynamic Attribute

Dynamic Attribute	REST ID (id)
Value Source	URL Pattern Element
Pattern Element *	BUKRS
☐ Optional	

XI Dynamic Attribute

| Dynamic Attribute | --- Unused --- |

| General | Channel Selection | REST Resources | REST Operation | Operation Determination | Error Handling |

Operation Attribute Source (operation)

| Value Source | Manual Value |
| Static Value | GET |

| General | Channel Selection | REST Resources | REST Operation | Operation Determination | Error Handling |

XI Message Type (Interface Operation)

Variable	Expression	Operation	Namespace	QOS (Enable on Genera...
{operation}	GET	ZGET_HOTEL_DTLS	urn:sap-com:document:...	

Create Integrated Configuration.

| Inbound Processing | Receiver | Receiver Interfaces | Outbound Processing | Assigned Users | Advanced Settings |

Configuration for Interface SI_COMP_NAME_OB_REST

Communication Channel *	CC_COMP_NAME_REST		
Adapter Type	REST	http://sap.com/xi/XI/System	SAP BASIS 7.40
Adapter Engine	Central Adapter Engine		
Software Component Version of Sender Interface	TEST 1.0 of keells.com		
Virus Scan	Use Global Configuration		
Schema Validation	◉ No Validation ○ Validation by Adapter		

Principal Propagation Properties

☐ Propagate Principal

| Inbound Processing | Receiver | Receiver Interfaces | Outbound Processing | Assigned Users | Advanced Settings |

Type of Receiver Determination ◉ Standard ○ Extended

◉ Operation-Specific ○ Not Operation-Specific

Operation
SI_COMP_NAME_OB_REST

Configured Receivers

Search [   ] [Go]

Rule	Condition	Communication Party	Communication Compor
Local Rule			BS_DEV500

| Inbound Processing | Receiver | Receiver Interfaces | Outbound Processing | Assigned Users | Advanced Settings |

Receiver

	Type	Communication Party	Communication Component
	Communication Component		BS_DEV500

Operation

SI_COMP_NAME_OB_REST

Receiver Interfaces *

☐ Maintain Order at Runtime

Condition	Operation M...	Name *	Namespace	Software C...	Multiplicity	Parameters
	OM_COMP_N.	ZGET_HOTEL	urn:sap-com:c	TEST 1.0 of...	1	☐

| Inbound Processing | Receiver | Receiver Interfaces | Outbound Processing | Assigned Users | Advanced Settings |

Configuration for Interface ZGET_HOTEL_DTLS | urn:sap-com:document:sap:rfc:functions | TEST 1.0 of keells.com

Communication Channel *	CC_COMP_NAME_RECIVER		
Adapter Type	RFC	http://sap.com/xi/XI/System	SAP BASIS 7.40
Adapter Engine	Central Adapter Engine		
Software Component Version of Receiver Interface	TEST 1.0 of keells.com		
Virus Scan	Use Global Configuration		
Schema Validation	◉ No Validation ○ Validation by Adapter		

Header Mapping

☐ Sender Communication Party

☐ Sender Communication Component

☐ Receiver Communication Party

☐ Receiver Communication Component

Principal Propagation Properties

☐ Propagate Principal

Test using SOAP UI.

Method	Endpoint	Resource	Parameters
GET	▬▬▬▬	/RESTAdapter/test4/RESTs/BUKRS=3000	

Request / Raw

Name	Value	Style	Level
BUKRS	3000	PLAIN	RESOURCE

XML / JSON / HTML / Raw

```json
1 {"ZGET_HOTEL_DTLS.Response": {
2     "BUTXT": "Asian Hotels & Properties",
3     "ORT01": "Colombo 3"
4 }}
```

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By Former MemberJun 02, 2006
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| Structure | WSDL |

☐ Sensitive Data

Display Message Type | Request 📄 |

	Search		Go

	Name	Category	Type	Context Object	Description
	▼ ZGET_HOTEL_DTLS	Element			
	BUKRS	Element	xsd:string		Company Code

| Structure | WSDL |

☐ Sensitive Data

Display Message Type | Response📄 |

	Search		Go					Settings...

	Name	Category	Type	Occurrence	Default	Details	Description
	▼ ZGET_HOTEL_D	Element					
	BUTXT	Element	xsd:string	0..1		maxLength="25"	Name of Company C
	ORT01	Element	xsd:string	0..1		maxLength="25"	City

Category | xsd 📄 | Messages | From All Available Global Elements 📄 |

File * | MainSchema.xsd | 📄

Source | |

| Imported Document | Messages | WSDL | External References |

	Search		Go

Name	Category	Type	Occurrence	Default	Details	Description
▼ ZGET_HOTEL_DTLS	Message					
▼ ZGET_HOTEL_DTLS	Element		1			
BUKRS	Element	xsd:string	1		maxLength="4"	Company Code

Category   [xsd ▤]   Messages   [From All Available Global Elements   ▤]

File *   [MainSchema.xsd   ▣]

Source   [   ]

| **Imported Document** | **Messages** | **WSDL** | **External References** |

🔄 | Search [   ] [Go]

Name	Category	Type	Occurrence	Default	Details	Description
▼ ZGET_HOTEL_DTLS.Response	Message					
▼ ZGET_HOTEL_DTLS.Response	Element		1			
BUTXT	Element	xsd:string	0..1		maxLength="25"	Name of Company C
ORT01	Element	xsd:string	0..1		maxLength="25"	City

| **Definition** | **WSDL** | **Matching Service Interfaces** | **Classifications** |

Attributes

Category   [Outbound   ▤]

Interface Pattern [Stateless   ▤]

Security Profile [Low   ▤]

☐ Event interface   ☐ Sensitive Data

Operations

[🗔][🗕] | [▲][▼] | [🗔] | [👥]

Operation
SI_COMP_NAME_OB_REST

Operation SI_COMP_NAME_OB_REST

Description   [   ]

Release State [Not Released   ▤]

Attributes

Operation Pattern [Normal Operation   ▤]

Mode   [Synchronous   ▤]

Messages

[🗔][🗕] | [▲][▼] | [✂][📋][📋] | [➡ Context Objects]

	Role	Type	Name	Namespace	
▢	**Request** *	External Message	ZGET_HOTEL_DTLS	urn:sap-com:document:sap	▢
▢	**Response** *	External Message	ZGET_HOTEL_DTLS.Resp	urn:sap-com:document:sap	▲
▢	**Fault**	Fault Message Type			▼

| Definition | Test | Signature | Functions | Compare Versions |

Class Name `_MM_COMP_NAME_REQ_REST_`   Package Name `com.sap.xi.tf`

Functions and...

- Name
  - Attributes...
  - init
  - cleanUp
  - getBUKRS

Title   getBUKRS
Description
Execution Type   Single Values
Category   User-Defined

Signature Variables

	Type	Name	Java Type	Title
	Argument	namespace	String	
	Argument	attribute	String	

```
public String getBUKRS(String namespace, String attribute, Container container) throws StreamTransformationException{

    Map<String, Object> all = container.getInputHeader().getAll();

    DynamicConfiguration dynConf = (DynamicConfiguration)all.get(StreamTransformationConstants.DYNAMIC_CONFIGURATION);

    DynamicConfigurationKey key = DynamicConfigurationKey.create(namespace, attribute);

    return dynConf.get(key);
```

Impo

- import
  - com....
  - com....
  - com....
  - java.i...

Definition	Test	Signature	Functions	Compare Versions

RFC Message: ZGET_HOTEL_DTLS.Response

External Message: ZGET_HOTEL_DTLS.Response

Structure	Occurrences	Type	Description	Structure	Occurrences	Type	Description
▼ [●]ZGET_HOTEL_DTLS.Response	1..1			▼ [●]ZGET_HOTEL_DTLS.Response	1..1		
[●]BUTXT	0..1	xsd:string	Name of C	[●]BUTXT	0..1	xsd:string	Name of Cor
[●]ORT01	0..1	xsd:string	City	[●]ORT01	0..1	xsd:string	City

ns0:ZGET... → ns0:ZGET...

Definition	Test

Source Operation *

	Name	Namespa..	Software ...	Occurren...
	SI_COMP_NAME_OB_REST	urn://test04.	TEST 1.0 of	1

Target Operation *

	Name	Namespa..	Software ...	Occurren...
	ZGET_HOTEL_DTLS		urn:sap-con	TEST 1.0 of	1

[Read Operations] → [Parameters...] ☐ Use SAP XML Toolkit ☐ Do Not Resolve XOP Includes ☐ Read Attachments

Request	Response

Target Message

ZGET_HOTEL_DTLS.R ⇐

Mapping Program

	Type	Name	Namespace	Binding
	Message M...	MM_COMP_NAME_RES_REST	urn://test04.ke	→...

Source Message

⇐ ZGET_HOTEL_DTLS.R

Definition | **Test**

Source Operation *

Name	Namespa...	Software ...	Occurren...
SI_COMP_NAME_OB_REST	urn://test04.	TEST 1.0 of	1

Target Operation *

Name	Namespa...	Software ...	Occurren...
ZGET_HOTEL_DTLS	urn:sap-con	TEST 1.0 of	1

Read Operations | Parameters... | ☐ Use SAP XML Toolkit ☐ Do Not Resolve XOP Includes ☐ Read Attachments

Request | **Response**

Source Message

ZGET_HOTEL_DTLS ➡

Mapping Program

Type	Name	Namespace	Binding
Message Ma...	MM_COMP_NAME_REQ_REST	urn://test04.kee	➡...

Target Message

➡ ZGET_HOTEL_DTLS

Parameters | **Identifiers** | **Module**

Adapter Type *	RFC	http://sap.com/xi/XI/System	SAP BASIS 7.40

○ Sender ● Receiver

Transport Protocol *	RFC
Message Protocol *	RFC (RFC XML)
Adapter Engine *	Central Adapter Engine

Target | **Advanced**

RFC Client Parameter

RFC Server Type	SAP System	🗎

☐ Load Balancing

| General | Channel Selection | REST Resources | REST Operation | Operation Determination | Error Handling |

Input Message Format

Data Format   JSON

Character Set   HTTP Content-Type Header

☑ Convert to XML

☑ Add Wrapper Element

Element Name *   ZGET_HOTEL_DTLS

Element Namespace *   urn:sap-com:document:sap:rfc:functions

☐ Escape invalid name start character (for example, "64x64" -> <__64x64>)

☐ Mangle invalid name characters (for example, "start&&stop" -> <start__u0026stop>)

Quality of Service

Quality of Service   Best Effort

Output Message Format

Data Format   JSON

☐ Strip Operation from Message (Outer Element)

Character Set   Request Message Character Set

☑ Convert XML Payload to JSON

☐ Strip Outer Element

☐ Remove escaped name start character

☐ Remove mangling of invalid name characters

| General | Channel Selection | REST Resources | REST Operation | Operation Determination | Error Handling |

Channel Selection

☑ Specify Endpoint

Endpoint *   /test4/RESTs

☐ Limit to JSON Element

☐ Limit to XPath Element

☑ Limit to HTTP Operation

HTTP Operation *   GET

| General | Channel Selection | REST Resources | REST Operation | Operation Determination | Error Handling |

URL Pattern

URL Pattern   Custom Pattern

Pattern *   /{BUKRS}

XI Dynamic Attribute

Dynamic Attribute   REST ID (id)

Value Source   URL Pattern Element

Pattern Element *   BUKRS

☐ Optional

XI Dynamic Attribute

Dynamic Attribute   --- Unused ---

| General | Channel Selection | REST Resources | REST Operation | Operation Determination | Error Handling |

Operation Attribute Source (operation)

Value Source   Manual Value

Static Value   GET

| General | Channel Selection | REST Resources | REST Operation | Operation Determination | Error Handling |

XI Message Type (Interface Operation)

Variable	Expression	Operation	Namespace	QOS (Enable on Genera...
{operation}	GET	ZGET_HOTEL_DTLS	urn:sap-com:document:...	

| Inbound Processing | Receiver | Receiver Interfaces | Outbound Processing | Assigned Users | Advanced Settings |

Configuration for Interface SI_COMP_NAME_OB_REST

Communication Channel *	CC_COMP_NAME_REST		
Adapter Type	REST	http://sap.com/xi/XI/System	SAP BASIS 7.40
Adapter Engine	Central Adapter Engine		
Software Component Version of Sender Interface	TEST 1.0 of keells.com		
Virus Scan	Use Global Configuration		
Schema Validation	◉ No Validation ○ Validation by Adapter		

Principal Propagation Properties

☐ Propagate Principal

| Inbound Processing | Receiver | Receiver Interfaces | Outbound Processing | Assigned Users | Advanced Settings |

Type of Receiver Determination ◉ Standard ○ Extended

◉ Operation-Specific ○ Not Operation-Specific

Operation
SI_COMP_NAME_OB_REST

Configured Receivers

Search [   ] Go

Rule	Condition	Communication Party	Communication Compor
Local Rule			BS_DEV500

| Inbound Processing | Receiver | Receiver Interfaces | Outbound Processing | Assigned Users | Advanced Settings |

Receiver

	Type	Communication Party	Communication Component
	Communication Component		BS_DEV500

Operation
SI_COMP_NAME_OB_REST

Receiver Interfaces *

☐ Maintain Order at Runtime

Condition	Operation M...	Name *	Namespace	Software C...	Multiplicity	Parameters
	OM_COMP_N.	ZGET_HOTEL	urn:sap-com:c	TEST 1.0 of...	1	☐

| Inbound Processing | Receiver | Receiver Interfaces | Outbound Processing | Assigned Users | Advanced Settings |

Configuration for Interface ZGET_HOTEL_DTLS | urn:sap-com:document:sap:rfc:functions | TEST 1.0 of keells.com

Communication Channel *	CC_COMP_NAME_RECIVER		
Adapter Type	RFC	http://sap.com/xi/XI/System	SAP BASIS 7.40
Adapter Engine	Central Adapter Engine		
Software Component Version of Receiver Interface	TEST 1.0 of keells.com		
Virus Scan	Use Global Configuration		
Schema Validation	◉ No Validation ○ Validation by Adapter		

Header Mapping

☐ Sender Communication Party

☐ Sender Communication Component

☐ Receiver Communication Party

☐ Receiver Communication Component

Principal Propagation Properties

☐ Propagate Principal

4 Comments

You must be Logged on to comment or reply to a post.

Former Member

December 21, 2017 at 10:13 am

Hi experts!!

I have a similar case, I am trying to consume RFC function module as REST Service but using a POST operation. I think I am not able to construct the request

message in JSON, I am getting the following Error message in SOAPUI:

"InterfaceDetermination did not yield any actual interface"

Can someone help?

Thank you,

Like 0

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Michael Sargent

July 22, 2020 at 11:33 pm

A bit late, but maybe useful to others searching. This is possible. see https://sapintegrationhub.blogspot.com/2019/08/end-end-scenario-with-rest-sender.html

Like 0

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Glen Anthony

August 2, 2020 at 3:25 pm

Hi,

Does anyone know how to do the above where the RFC has 4 import parameters? There are many examples of where the RFC has 1 import parameter, but none

where the RFC has more than 1 import parameter!

Like 0

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Buddhika Krishantha

Blog Post Author

August 4, 2020 at 9:47 am

it is possible. Below is a external definition of multiple import parameters. May be I can help you, If you are more specific on your problem,

Category	xsd	Messages	From All Available Global Elements	

File * MainSchema - Copy.xsd

Source

Imported Document	Messages	WSDL	External References

Search [   ] Go

Name	Category	Type	Occurrence	Default	Details
▼ ZBAPI_SALESORDER_CREATE_V2	Message				
▼ ZBAPI_SALESORDER_CREATE_V2	Element		1		
BEHAVE_WHEN_ERROR	Element	xsd:string	0..1		maxLength="1"
BINARY_RELATIONSHIPTYPE	Element	xsd:string	0..1		maxLength="4"
CONVERT	Element	xsd:string	0..1		maxLength="1"
INT_NUMBER_ASSIGNMENT	Element	xsd:string	0..1		maxLength="1"
▶ LOGIC_SWITCH	Element	BAPISDLS	0..1		
▶ ORDER_HEADER_IN	Element	BAPISDHD1	1		
▶ ORDER_HEADER_INX	Element	BAPISDHD1X	0..1		
SALESDOCUMENTIN	Element	xsd:string	0..1		maxLength="10"
▶ SENDER	Element	BAPI_SENDER	0..1		
TESTRUN	Element	xsd:string	0..1		maxLength="1"
▶ EXTENSIONIN	Element		0..1		
▶ NFMETALLITMS	Element		0..1		
▶ ORDER_CCARD	Element		0..1		

Like 0

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/

Category xsd   Messages From All Available Global Elements

File *   MainSchema - Copy.xsd

Source

Imported Document | **Messages** | **WSDL** | **External References**

Search   Go

Name	Category	Type	Occurrence	Default	Details
▼ ZBAPI_SALESORDER_CREATE_V2	Message				
▼ ZBAPI_SALESORDER_CREATE_V2	Element		1		
BEHAVE_WHEN_ERROR	Element	xsd:string	0..1		maxLength="1"
BINARY_RELATIONSHIPTYPE	Element	xsd:string	0..1		maxLength="4"
CONVERT	Element	xsd:string	0..1		maxLength="1"
INT_NUMBER_ASSIGNMENT	Element	xsd:string	0..1		maxLength="1"
▶ LOGIC_SWITCH	Element	BAPISDLS	0..1		
▶ ORDER_HEADER_IN	Element	BAPISDHD1	1		
▶ ORDER_HEADER_INX	Element	BAPISDHD1X	0..1		
SALESDOCUMENTIN	Element	xsd:string	0..1		maxLength="10"
▶ SENDER	Element	BAPI_SENDER	0..1		
TESTRUN	Element	xsd:string	0..1		maxLength="1"
▶ EXTENSIONIN	Element		0..1		
▶ NFMETALLITMS	Element		0..1		
▶ ORDER_CCARD	Element		0..1		

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