Lab: Creating a Custom Connector

Training Objective

Create a custom connector for a specific requirement that cannot be addressed via any of the existing connectors that can be downloaded from the connector store.

High Level Steps

- Download and install Apache Maven.
- Create the Maven project template.
- Add and configure files in the /src/main/resources directory.
- Build the connector.
- Upload the connector to the Micro Integrator.
- Test the connector.

Detailed Instructions

Creating a New Connector

You can write a new connector for a specific requirement that cannot be addressed via any of the existing connectors that can be downloaded from the connector store.

Follow the steps given below to write a new connector to integrate with the **Google Books** service. You can then use the connector inside a mediation sequence to connect with Google Books and get information.

Writing a new connector

Follow the steps given below to write the new connector.

Prerequisites

Download and install Apache Maven.

Step 1: Creating the Maven project template

We will use the maven archetype to generate the Maven project template and sample connector code.

1. Open a terminal, navigate to the directory on your machine where you want the new connector to be created, and run the following command:

```
mvn org.apache.maven.plugins:maven-archetype-plugin:2.4:generate -
DarchetypeGroupId=org.wso2.carbon.extension.archetype -
DarchetypeArtifactId=org.wso2.carbon.extension.esb.connector-archetype -
```

```
DarchetypeVersion=2.0.4 -DgroupId=org.wso2.carbon.esb.connector -
DartifactId=org.wso2.carbon.esb.connector.googlebooks -Dversion=1.0.0 -
DarchetypeRepository=http://maven.wso2.org/nexus/content/repositories/wso2-
public/
```

2. When prompted, enter a name for the connector. For example, **googleBooks**.

3. When prompted for confirmation, enter **y**.

The `org.wso2.carbon.esb.connector.googlebooks` directory is now created with a directory structure consisting of a `pom.xml` file, `src`tree, and `repository` tree.

Step 2: Adding the new connector resources

Now, let's configure files in the `org.wso2.carbon.esb.connector.googlebooks/src/main/resources` directory:

1. Create a directory named **googlebooks_volume** in the `/src/main/resources` directory.
2. Create a file named `listVolume.xml` with the following content in the **googlebooks_volume** directory:
```
<template name="listVolume" xmlns="http://ws.apache.org/ns/synapse">
<parameter name="searchQuery" description="Full-text search query string."
/>
    <sequence>
      <property name="uri.var.searchQuery" expression="$func:searchQuery"
/>
        <call>
            <endpoint>
                <http method="get" uri-
template="https://www.googleapis.com/books/v1/volumes?q={uri.var.searchQuer
y}" />
            </endpoint>
        </call>
    </sequence>
</template>
```
3. Create a file named `component.xml` in the **googlebooks_volume** directory and add the following content:
```
<?xml version="1.0" encoding="UTF-8"?>
<component name="googlebooks_volume" type="synapse/template">
    <subComponents>
        <component name="listVolume">
            <file>listVolume.xml</file>
            <description>Lists volumes that satisfy the given
query.</description>
        </component>
    </subComponents>
</component>
```
4. Edit the `connector.xml` file in the `src/main/resources` directory and replace the contents with the following dependency:
```
<?xml version="1.0" encoding="UTF-8"?>
<connector>
    <component name="googleBooks" package="org.wso2.carbon.connector" >
      <dependency component="googlebooks_volume"/>
        <description>wso2 sample connector library</description>
    </component>
</connector>
```
5. Create a folder named **icon** in the `/src/main/resources` directory and add two icons.

   Tip

You can download icons from the following location: icons

You are now ready to build the connector.

Step 3: Building the connector

Open a terminal, navigate to the `org.wso2.carbon.esb.connector.googlebooks` directory and execute the following maven command:

```
mvn clean install
```

This builds the connector and generates a ZIP file named `googleBooks-connector-1.0.0.zip` in the `target` directory.

Using the new connector

Now, let's look at how you can use the new connector in a mediation sequence.

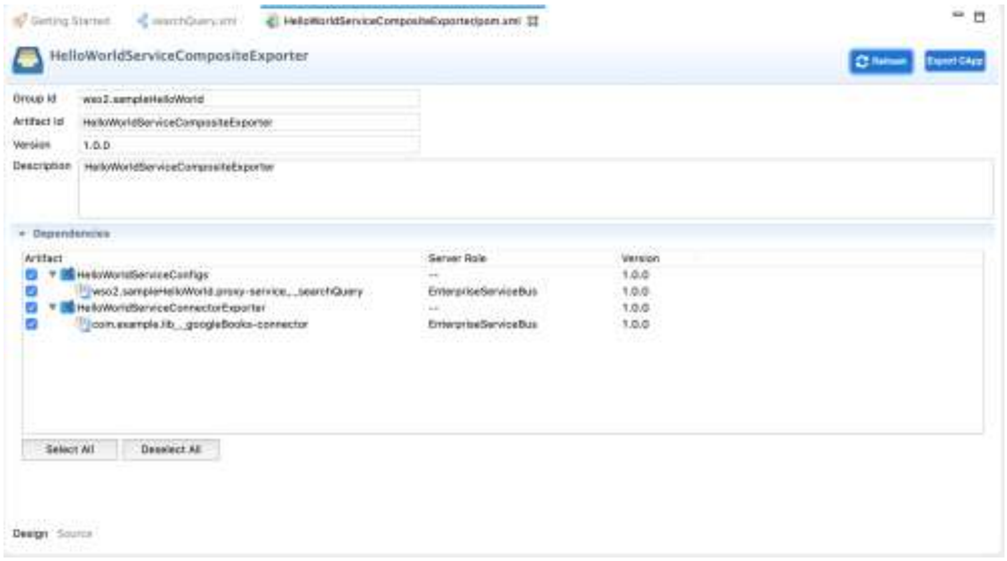
Step 1: Adding the connector to your mediation sequence

1. Set up WSO2 Integration Studio.
2. Create an ESB Config project and import the connector to your project.

   Tip

   Be sure to select the new `googleBooks-connector-1.0.0.zip` file from your `org.wso2.carbon.esb.connector.googlebooks/target` directory.

3. Create a custom proxy service named **googlebooks_listVolume**. In the **Design View**, you will note that the new connector is added to the tool palette.



Group Id: wso2.sampleHelloWorld
Artifact Id: HelloWorldServiceCompositeExporter
Version: 1.0.0
Description: HelloWorldServiceCompositeExporter

Artifact	Server Role	Version
✓ HelloWorldServiceConfigs	--	1.0.0
✓ wso2.sampleHelloWorld.proxy-service_._searchQuery	EnterpriseServiceBus	1.0.0
✓ HelloWorldServiceConnectorExporter	--	1.0.0
✓ com.example.lib_._googleBooks-connector	EnterpriseServiceBus	1.0.0

4. Now, update the proxy service as shown below. You will be defining a mediation logic using the **Property** mediator, the new **googleBooks** connector, and the **Respond** mediator:

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<proxy xmlns="http://ws.apache.org/ns/synapse"
       name="googlebooks_listVolume"
       transports="https,http"
       statistics="disable"
       trace="disable"
       startOnLoad="true">
   <target>
      <inSequence>
         <property name="searchQuery" expression="json-
eval($.searchQuery)"/>
         <googleBooks.listVolume>
            <searchQuery>{$ctx:searchQuery}</searchQuery>
         </googleBooks.listVolume>
         <respond/>
      </inSequence>
   </target>
   <description/>
</proxy>
```

Step 2: Packaging all the artifacts

You need to package the new connector file and the proxy service separately.

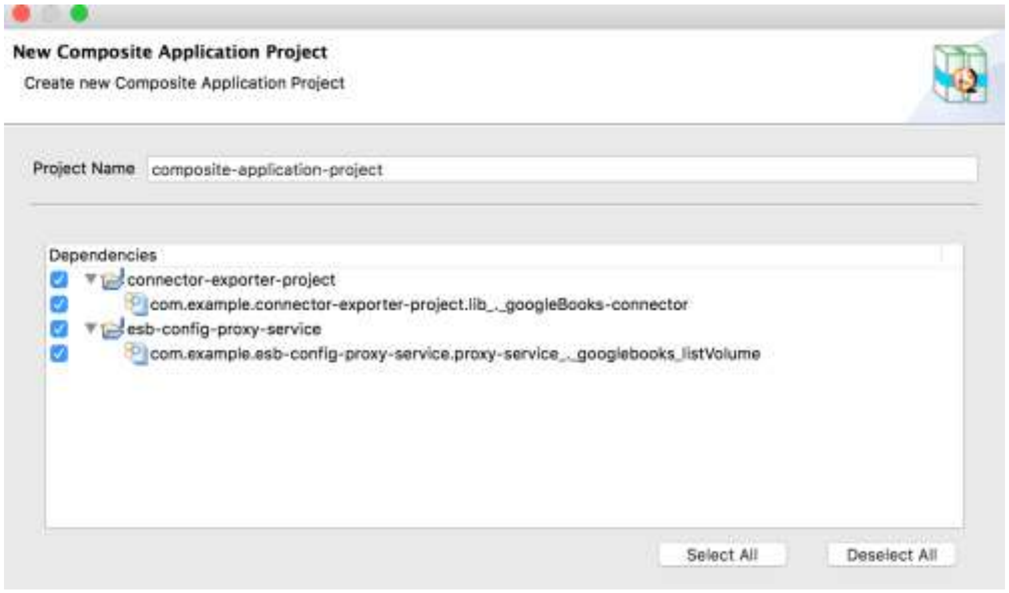
1. Create a **Connector Exporter project** and add the connector.

   See the instructions on packaging a new connector file.

2. Create a new **Composite Application project** and add the proxy service as well as the connector as dependencies.

   Tip

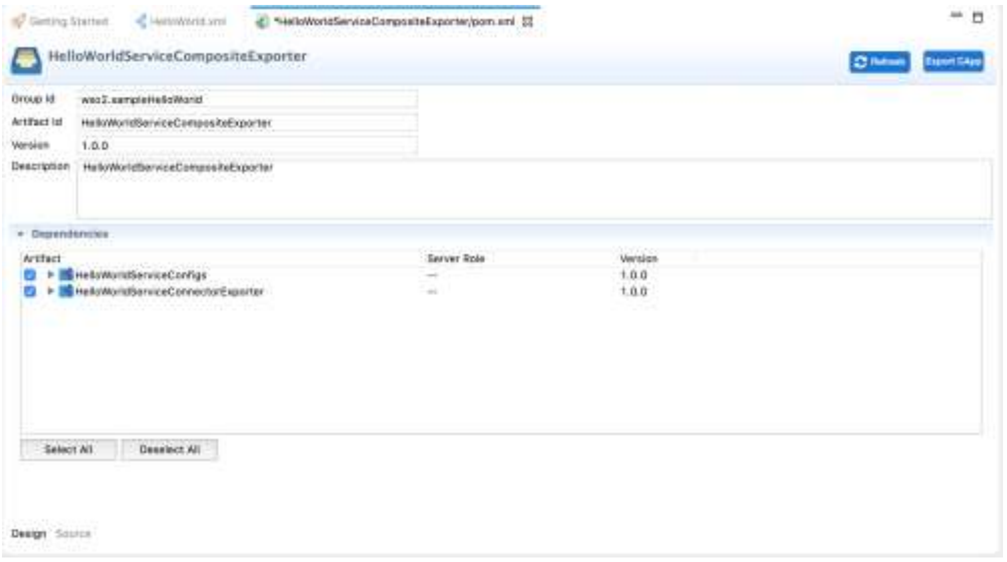
   Note that you need to add both the **Connector Exporter project** as well as the **ESB Config project** as dependencies because the connector is referred from the proxy service.

   
   New Composite Application Project
   Create new Composite Application Project
   Project Name: composite-application-project
   Dependencies
   - [✓] connector-exporter-project
     - [✓] com.example.connector-exporter-project.lib_._googleBooks-connector
   - [✓] esb-config-proxy-service
     - [✓] com.example.esb-config-proxy-service.proxy-service_._googlebooks_listVolume

   See the instructions on packaging ESB artifacts.

Step 3: Deploying the artifacts

1. Open the POM file for the composite application project and ensure that the **Connector Exporter** project as well as the **ESB Config** project are selected as dependencies.



Group Id: wso2.sampleHelloWorld
Artifact Id: HelloWorldServiceCompositeExporter
Version: 1.0.0
Description: HelloWorldServiceCompositeExporter

Artifact	Server Role	Version
✓ HelloWorldServiceConfigs	--	1.0.0
✓ HelloWorldServiceConnectorExporter	--	1.0.0

2. Right-click the Composite Application project and click **Export Project Artifacts and Run**.

The embedded Micro Integrator will now start and deploy the artifacts.

Step 4: Testing the connector

Post a request to the proxy service using Curl as shown below.

```
curl -v -X POST -d "{"searchQuery":"rabbit"}" -H "Content-Type:
application/json"  http://localhost:8290/services/googlebooks_listVolume
```

This performs a search and displays a list of volumes that meet the specified search criteria.