



OpenESB Standalone Edition V3.0

Hello World

Doc: 770-001: OpenESB Standalone Enterprise Edition Installation

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Abstract:

This document provides a short guide to create a simple “Hello world” application with OpenESB Standalone Edition V3.0. You will learn how to install shared libraries, components and deploy composite applications, connect OE Studio and OE Instance, create BPEL and a composite application project. Then you will understand how to deploy and test your project.

Status:

This Document is in a beta state

ABOUT PYMMA CONSULTING

Pymma Services is a technical architect bureau founded in 1999 and headquartered in London, United Kingdom . It provides expertise in service oriented integration systems design and implementation. Leader of OpenESB project, Pymma is recognised as one of the main actors in the integration landscape. It deeply invests in open source projects such as Drools rules engine. Pymma is a European company based in London with regional offices in France, Belgium and Canada. (contact@pymma.com or visit our website on www.pymma.com)

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1 Introduction

When we start learning about a product, it is customary to start with a 'hello word exercise'. Through this simple exercise easily understood by anyone, we develop a first application, and get our first thrill and enjoyment by getting Hello + Name.

We go a bit further in this tutorial by explaining how to install OpenESB shared libraries and components and how to connect OpenESB Studio with an OpenESB instance. At the end of this tutorial you will be able to deploy and test your application without leaving OE-Studio.

OpenESB Standalone Edition (OE SE) offers the lightest and most efficient service oriented integration tools on the market. Powerful, prompt, scalable with a very low memory footprint, OE SE is perfect for virtualisation and cloud deployment.

1.1 Before starting

We suppose you have already installed OpenESB on your machine. If not have a look at our document: **770-001-OE SE Installation Guide**.

1.2 What you will learn in this document

This tutorial agenda is:

- Install OE shared libraries and components
- Connect OE-Studio with an OE-Instance
- Create a BPEL project
- Create a composite application project
- Deploy a project

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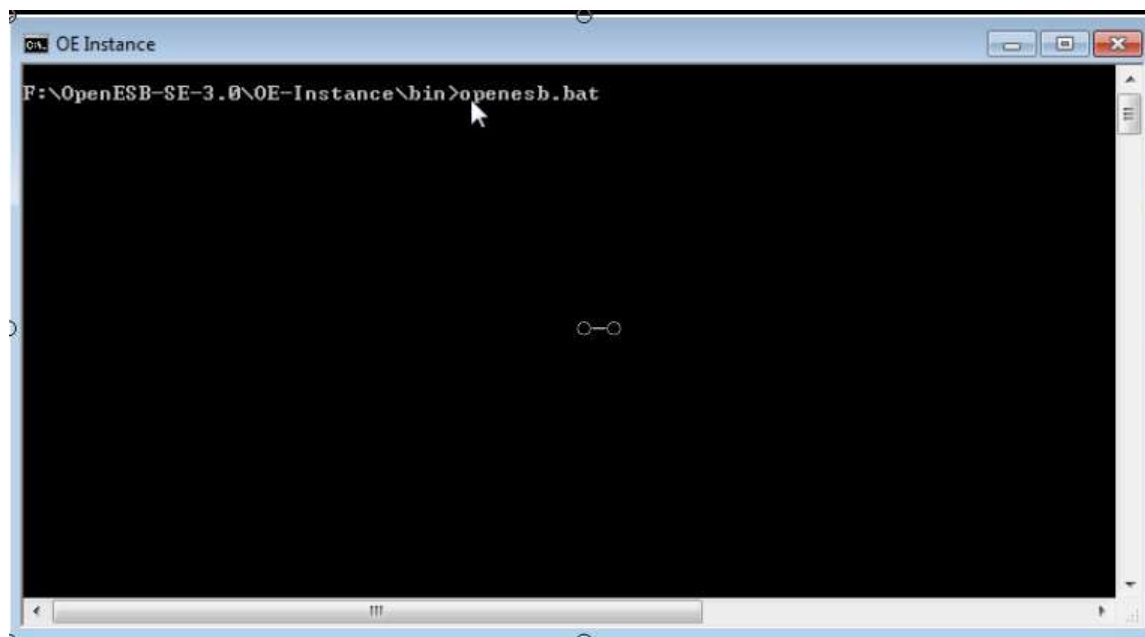
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- Test a project

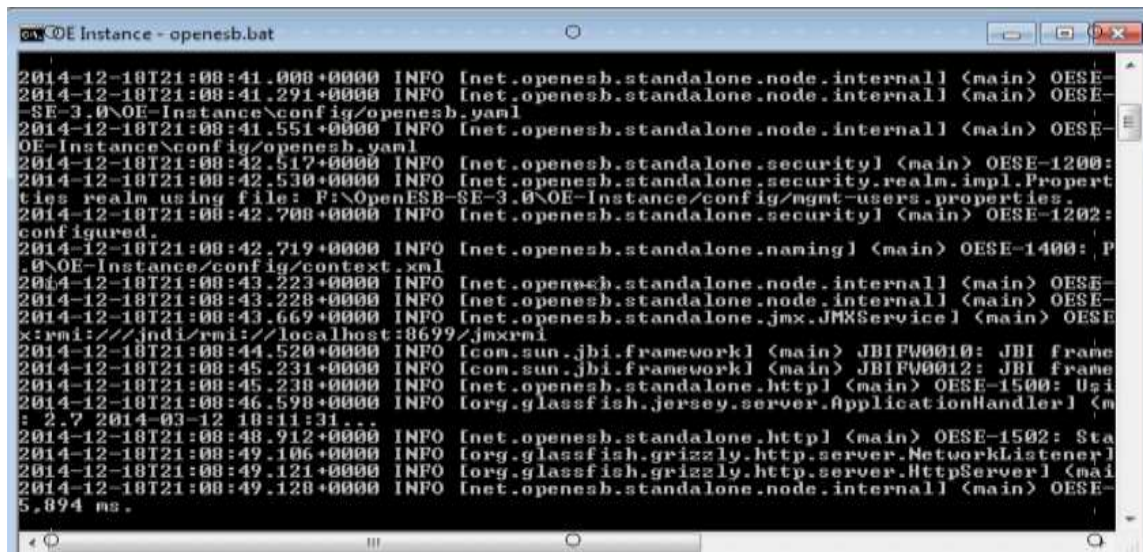
As much as possible we try to be clear and concise in our tutorial. Feel free to contact us to give us your feedback (contact@pymma.com).

2 Start OpenESB instance

First Open a console and go to the directory ...\\OpenESB-SE-3.0\\OE-Instance\\bin and run “openesb.bat” on Windows and “openesb.sh” on Linux or UNIX.



After a few seconds, OpenESB Instance is ready to run.



```
2014-12-18T21:08:41.000+0000 INFO Inet.openesb.standalone.node.internal <main> OESE-
2014-12-18T21:08:41.291+0000 INFO Inet.openesb.standalone.node.internal <main> OESE-
SE-3.0\OE-Instance\config\openesb.yaml
2014-12-18T21:08:41.551+0000 INFO Inet.openesb.standalone.node.internal <main> OESE-
OE-Instance\config\openesb.yaml
2014-12-18T21:08:42.517+0000 INFO Inet.openesb.standalone.security <main> OESE-1200:
2014-12-18T21:08:42.530+0000 INFO Inet.openesb.standalone.security.realm.impl.Properties
realm using file: F:\OpenESB-SE-3.0\OE-Instance\config\mgmt-users.properties.
2014-12-18T21:08:42.700+0000 INFO Inet.openesb.standalone.security <main> OESE-1202:
configured.
2014-12-18T21:08:42.719+0000 INFO Inet.openesb.standalone.naming <main> OESE-1400: P
1.0\OE-Instance\config\context.xml
2014-12-18T21:08:43.223+0000 INFO Inet.openesb.standalone.node.internal <main> OESE-
2014-12-18T21:08:43.228+0000 INFO Inet.openesb.standalone.node.internal <main> OESE-
2014-12-18T21:08:43.669+0000 INFO Inet.openesb.standalone.jmx.JMXService <main> OESE-
x:.rmi:///jndi/rmi://localhost:8699/jmxrmi
2014-12-18T21:08:44.520+0000 INFO Icon.sun.jbi.framework <main> JBIFW0010: JBI frame
2014-12-18T21:08:45.231+0000 INFO Icon.sun.jbi.framework <main> JBIFW0012: JBI frame
2014-12-18T21:08:45.238+0000 INFO Inet.openesb.standalone.http <main> OESE-1500: Usi
2014-12-18T21:08:46.598+0000 INFO org.glassfish.jersey.server.ApplicationHandler <m
: 2.7 2014-03-12 18:11:31...
2014-12-18T21:08:48.912+0000 INFO Inet.openesb.standalone.http <main> OESE-1502: Sta
org.glassfish.grizzly.http.server.NetworkListener
2014-12-18T21:08:49.106+0000 INFO org.glassfish.grizzly.http.server.HttpServer <mai
2014-12-18T21:08:49.121+0000 INFO Inet.openesb.standalone.node.internal <main> OESE-
5,894 ms.
```

Open a browser (Firefox, Chrome or Else) and type the address: <http://localhost:4848/webui>.

OpenESB web admin console allows you to install shared libraries and components and deploy your project. It provides monitoring facilities as well.

Before starting you have to enter a login and password. Default values are “admin” and “admin”.

Login

 admin



Login ➔

Then the web admin console opens.



The screenshot shows the OpenESB Web Console interface. The top navigation bar includes the OpenESB logo and a user profile dropdown for 'admin'. The left sidebar contains a menu with 'Dashboard' (selected), 'Instance', 'Service Assemblies', 'Components', 'Shared Libraries', and 'Endpoints'. The main content area is titled 'OpenESB Web Console' and indicates the user is running on instance 'server (2.4.0.)'. It features three main sections: 'Overview' with system details (PID: 8216@Pyyma7H510, Host: localhost, JVM: Java HotSpot(TM) 64-Bit Server VM (24.51-b03), Java version: 1.7.0_51, vendor: Oracle Corporation, Java Home: F:\jdk\jdk1.7.0_51_64\jre), 'Memory' usage (Total: 5% (203M / 3.940M), Heap: 4% (148M / 3.803M), Non-Heap: 41% (55M / 136M)), and three summary cards for 'Service Assemblies' (1), 'Components' (2), and 'Shared Libraries' (2), each with a 'VIEW MORE' link.

OpenESB is now ready to run.

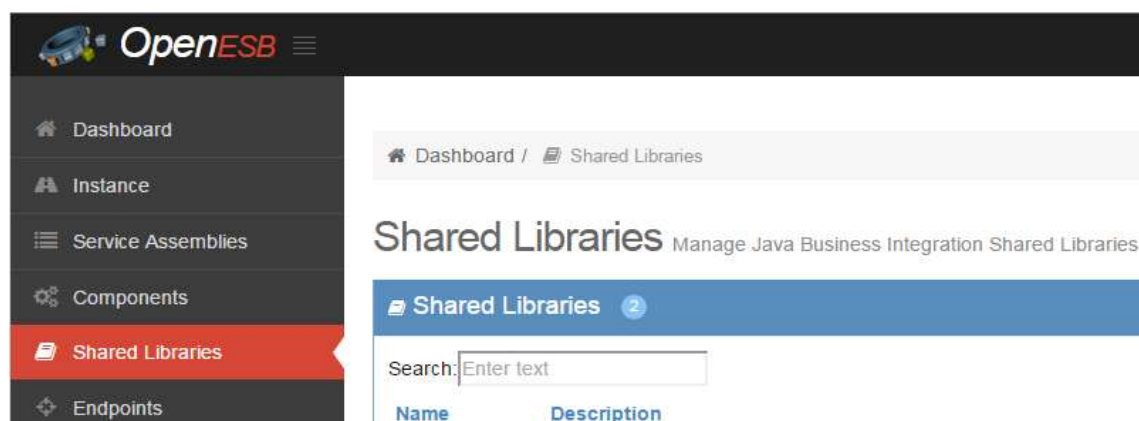
3 Install OE shared libraries and component

OpenESB standalone installation comes without components; it is up to you to install the shared libraries and components to run your applications. This installation is much lighter and takes up less memory.

Shared libraries are jar files shared by components in OpenESB. There are three shared libraries in OpenESB: **wsdlsl.jar**, **wsdlexlib.jar** and **encoderlib.jar**. The purpose of each library is beyond the scope of this tutorial.

wsdlsl.jar is already installed by default with an OE Instance. So you don't have to install it, let's install the two other ones.

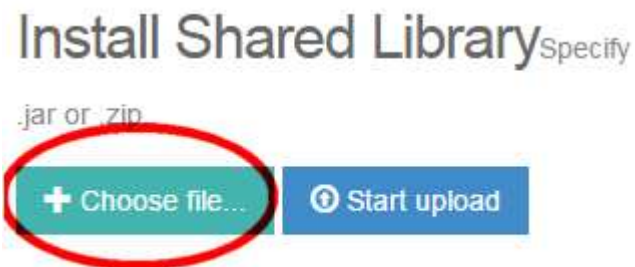
Select “**Shared Libraries**” in the main menu.



Click on the Install button on the left of the console.

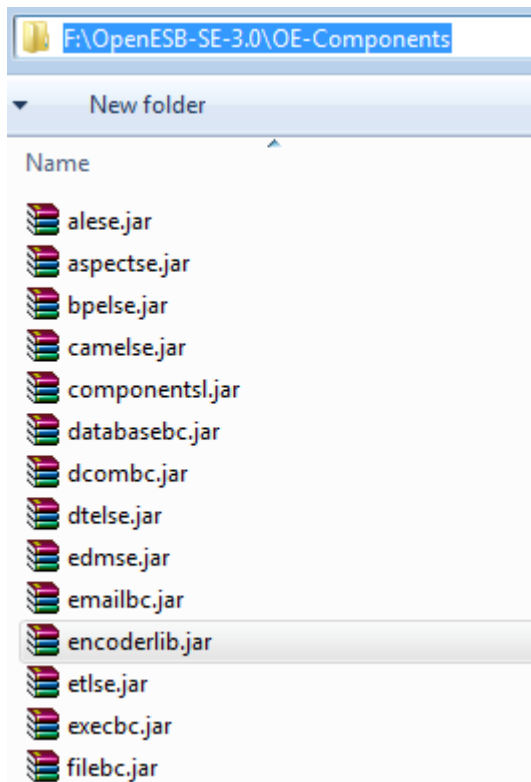


Click on the button “Choose file”



Where are the components located? Shared libraries and components are located in .../OpenESB-SE-3.0/components.

Go to this directory and select the file “**encoderlib.jar**”.



Then select the button **“Start Upload”**.

Install Shared Library Specify the location

.jar or .zip.





encoderlib.jar	3.33 MB
----------------	---------

After a few seconds the library opens.

Redo the same process with **wsdl-ext-lib.jar**. You must get almost the same screen.

Shared Libraries Manage Java Business Integration Shared Libraries.

Shared Libraries 2			+ Install
Search: <input type="text" value="Enter text"/>			
Name	Description	Version	
sun-encoder-library	JBI shared library for encoders. Encoders supported: customencoder-1.0 hl7encoder-1.0 cocoencoder-1.0	2.3.2-SNAPSHOT	
sun-wsdl-ext-library	A collection of wsdl utilities for JBI components.	2.3.2-SNAPSHOT	

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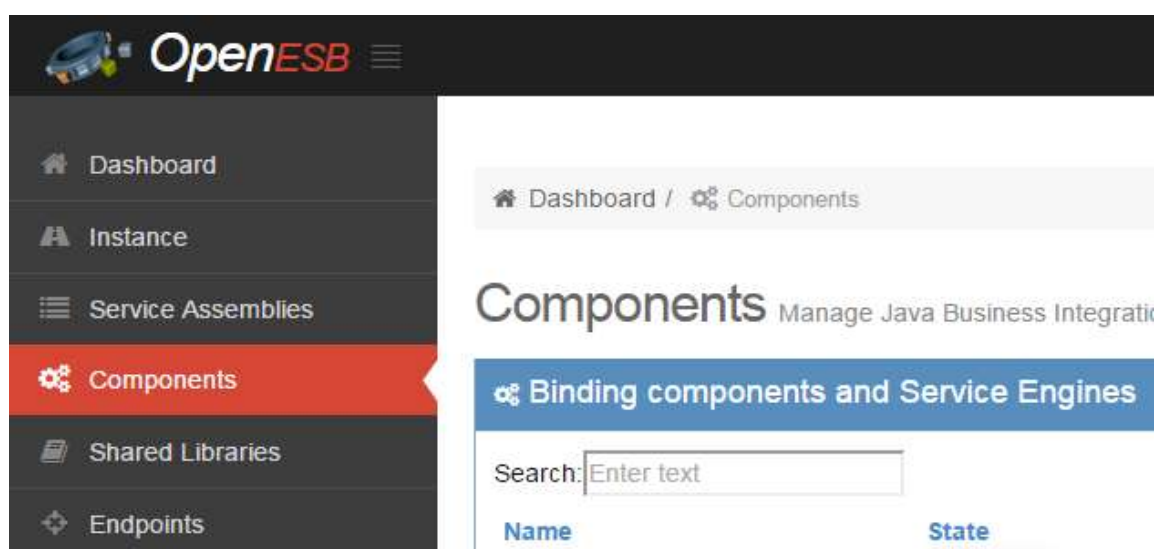
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Once the shared libraries are installed we can install the components.

4 Install the components

Shared libraries and components installations are similar. Nevertheless, component installation requires an additional step. By default, an OE component is installed in the state shutdown; to run it must be set up in the state Start. For more information on component life cycles please read JBI specifications. For this tutorial, we will install the HTTP and BPEL components:

On the main menu, click on Components.



Click on the Install button on the left of the console.

Components Manage Java Business Integration Binding Components and Service Engines.

 Binding components and Service Engines 2

+ Install

Search:

Name	State	Version	Build Number
------	-------	---------	--------------

Click on the button “Choose file”

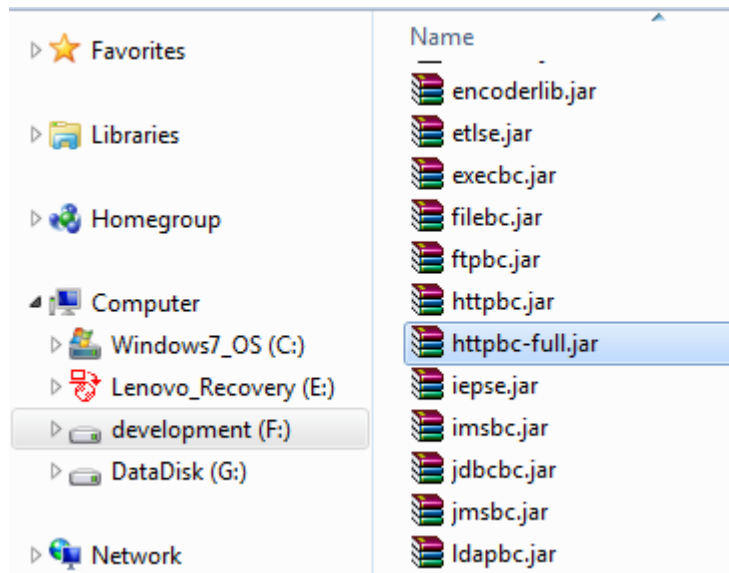
Install Component Specify

.jar or .zip.

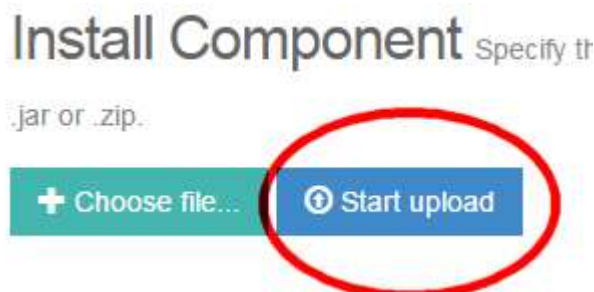
+ Choose file...

Start upload

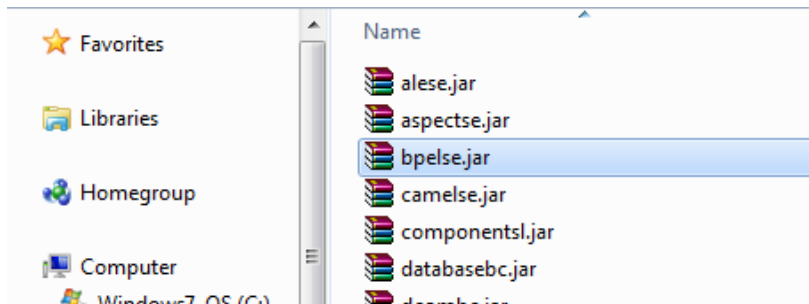
Select the component HTTP-Full.jar.



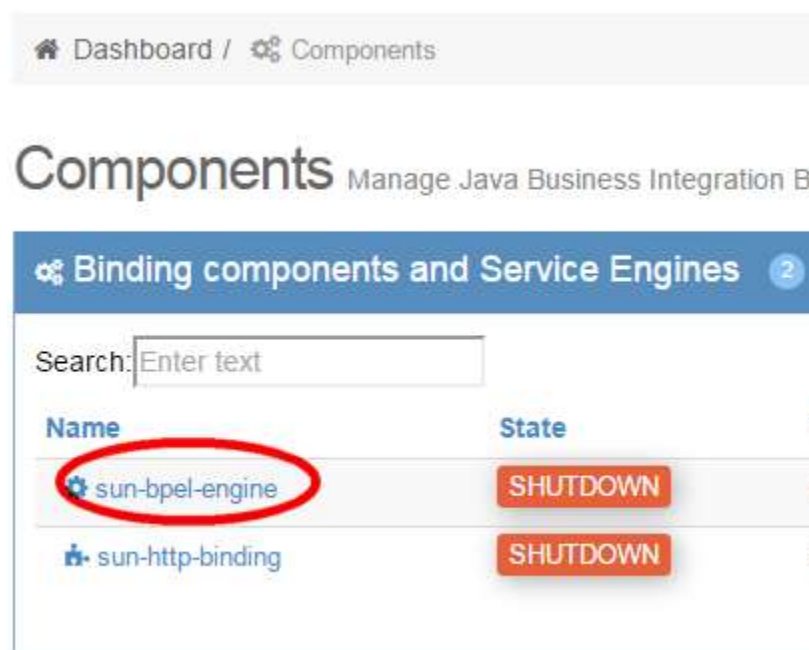
Http jar is a legacy component and should not be used with the OpenESB standalone edition. Then install the component.



Follow the same process to install the component bpelse.jar.



When a component is uploaded its state is set up to **“Shutdown”**. A component must be in the start state to process new message.



Click on the component name, select the general tab and select **“Start”**

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Dashboard / Components / sun-bpel-engine

sun-bpel-engine SHUTDOWN

General Configuration Application Configurations Application Variables Descriptor Loggers

Shared Libraries Monitoring

Binding Component General Properties

View the details for this Java Business Integration Binding Component.

Description

Name: sun-bpel-engine
Type: SERVICE_ENGINE
Description: WS-BPEL 2.0 compliant JBI Service Engine
Version: 2.3.2-SNAPSHOT
Build Number: 803

Operation

State: SHUTDOWN

Actions: Start Stop Shutdown

After a few seconds, the component starts. Start BPEL and HTTP components to continue the tutorial.

Dashboard / Components





Components

Manage Java Business Integration Binding Components and Service Engines.

Binding components and Service Engines 2

+ Install

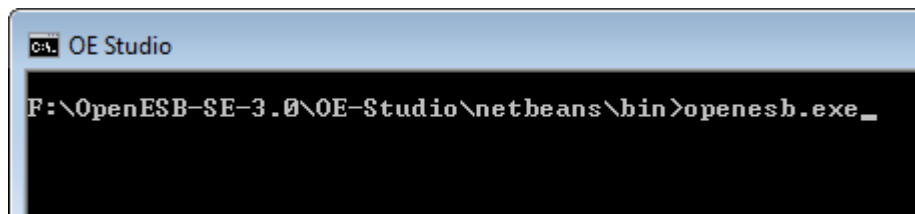
Search:

Name	State	Version	Build Number	
 sun-bpel-engine	STARTED	2.3.2-SNAPSHOT	803	
 sun-http-binding	STARTED	2.3.2-SNAPSHOT	803	

Shared libraries and components are installed. You are able now to develop and deploy your application.

5 Connect OE-Studio with an OE-Instance

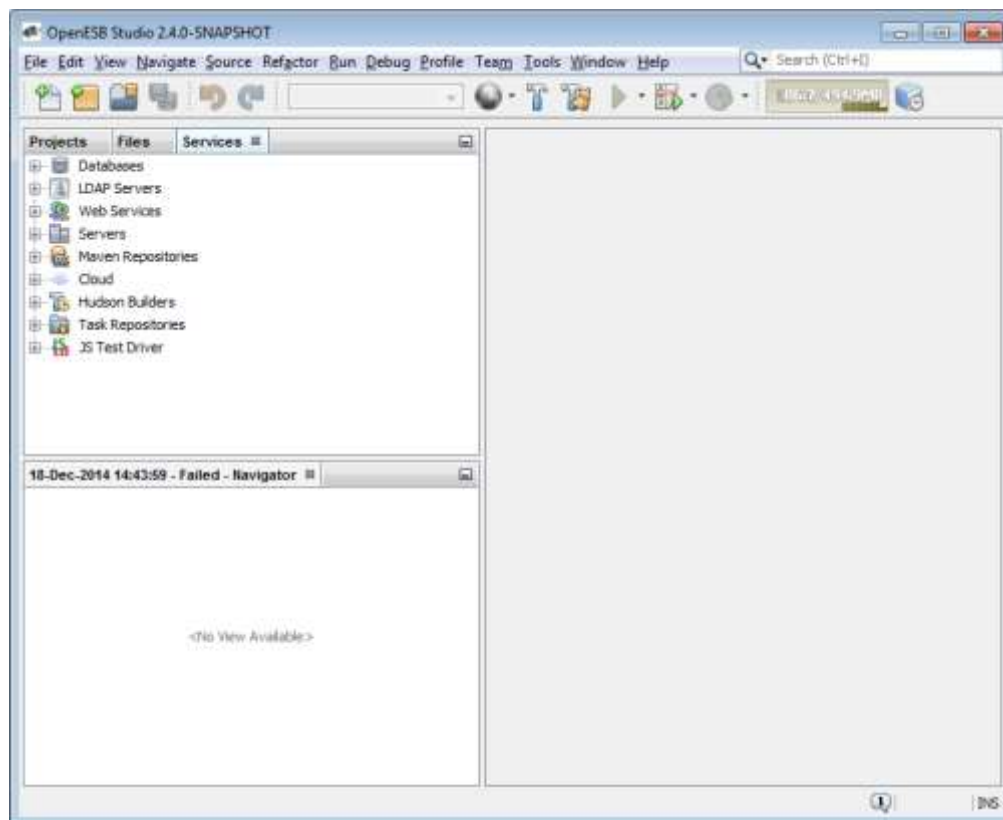
In this chapter, we will connect OpenESB studio and the OpenESB instance we started in the previous chapter. First open a new console and go to the repository .../OpenESB-SE-3.0/OE-Studio/NetBeans/bin. Run `openesb.exe` for Windows or `openesb` for Linux.



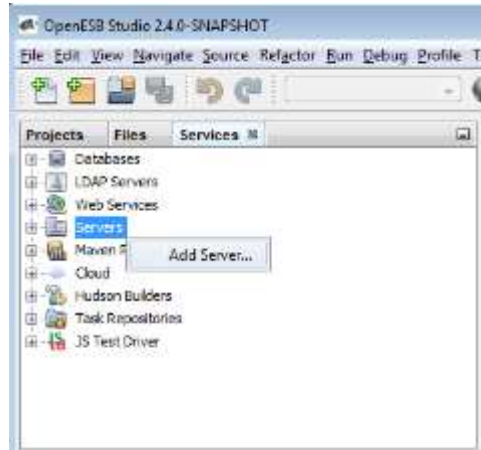
The OpenESB studio logo appears.



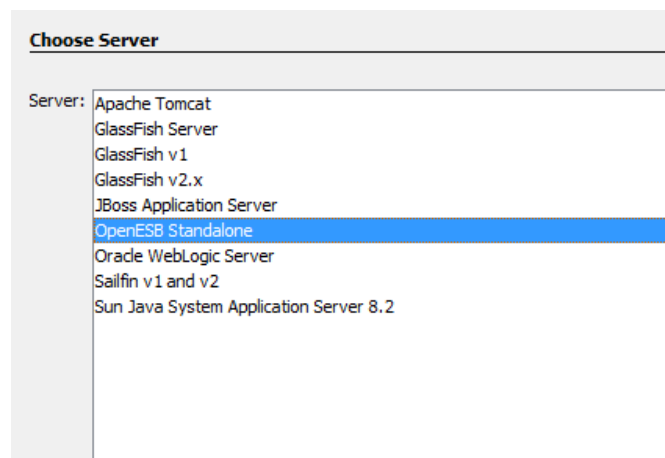
After a few moments the OpenESB studio opens.



Select the node Server, right click and select Add Server.



Select the server OpenESB standalone.

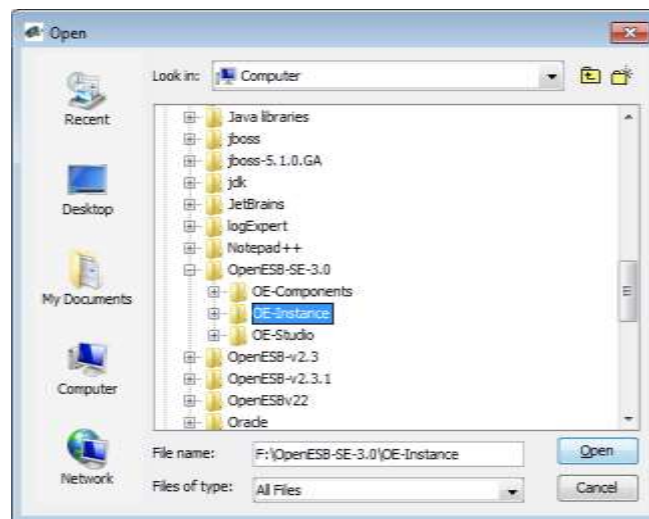


Then click on the NEXT button.



In the OpenESB Studio V3.0, the Installation screen has two fields both entitled, “OpenESB Location”. The first one is used for local installations. The second one is dedicated to remote installations planned in the next OE-Studio versions.

OpenESB location is **.../OpenESB-SE-3.0/OE-Instance**. Leave the second field as it is. It should be **localhost**.



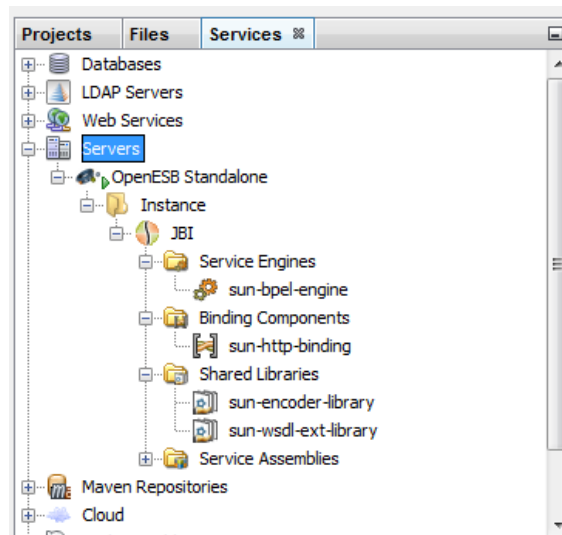
Installation Details

Specify the OpenESB Standalone details.

OpenESB Location: F:\OpenESB-SE-3.0\OE-Instance

OpenESB Location: localhost

Click on the Finish button.

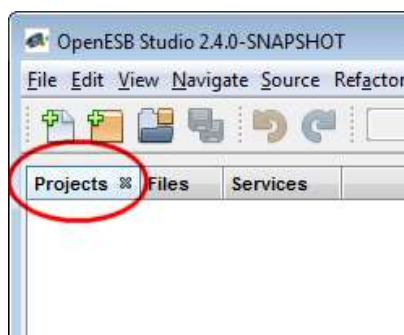


Expand the node "Servers". You could notice that the OpenESB Studio is well connected with our OE Instance.

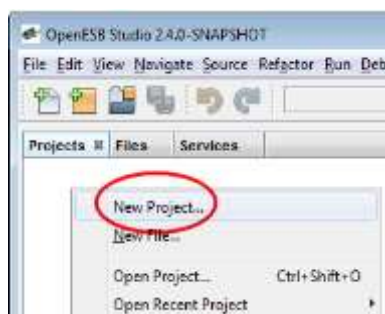
6 Create a BPEL project

In this paragraph, we will create the “Hello World” Services. To do it we have to open the BPEL editor.

Select the tab project.



Right click on the project windows and select New Project.

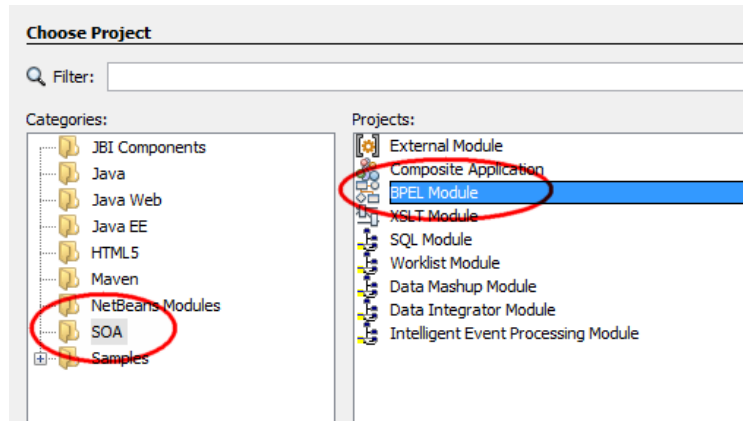


Chose the category SOA and then choose the BPEL Module.

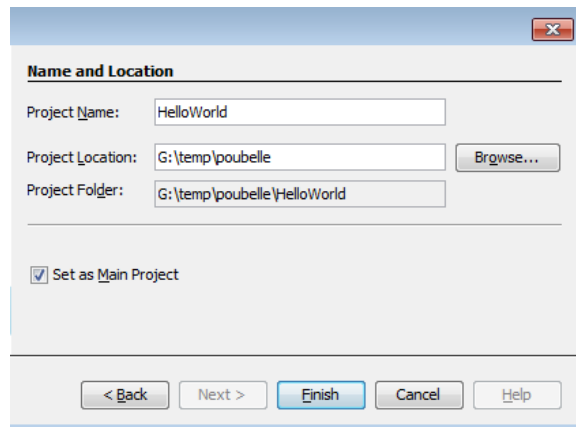
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Click on Next.



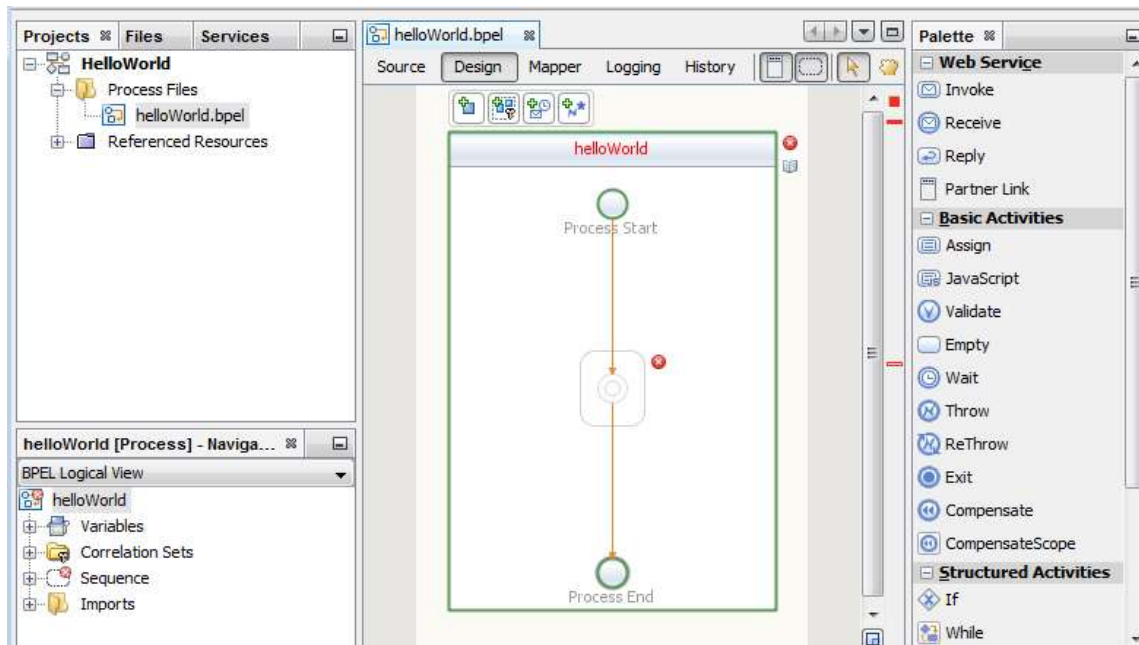
Enter the project Name and then click on Finish.

After a while, the OE-Studio screen appears as follows.

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As part of the OpenESB process, before working on the orchestration, we have to define the contract of our hello world service (a WSDL). The contract defines the operation(s) and the parameter of our services. For Hello world service, the input will be a String (ex: Pymma) and the output a String as well (ex: Hello Pymma).

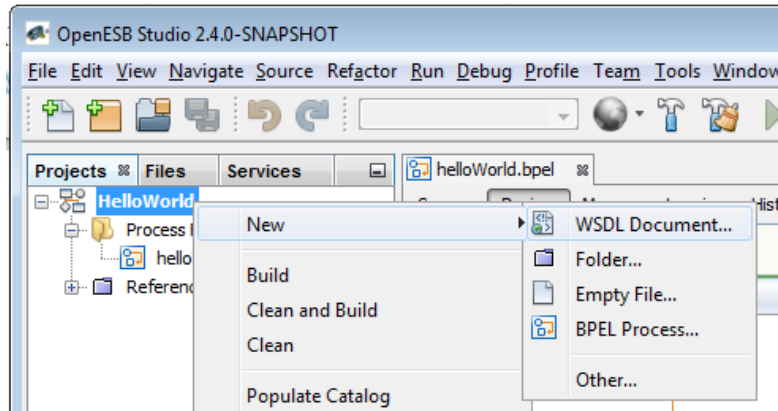
6.1 Create a WSDL

Right click on the project node HelloWorld and select New→ WSDL.

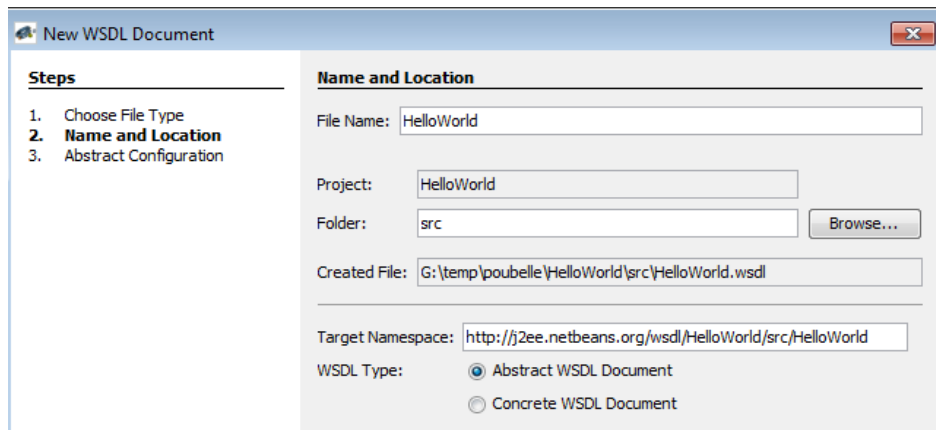
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The WSDL wizard opens.



Type HelloWorld as File Name and let the WSDL Type as Abstract. Then click on **NEXT**.

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Note that Input and output element are Strings by default. Keep the default field values and click on the **Finish** button.

New WSDL Document

Steps

1. Choose File Type
2. Name and Location
3. **Abstract Configuration**

Abstract Configuration

Port Type Name: HelloWorldPortType

Operation Name: HelloWorldOperation

Operation Type: Request-Response Operation

Input:

Message Part Name	Element Or Type
part1	xsd:string

Output:

Message Part Name	Element Or Type
part1	xsd:string

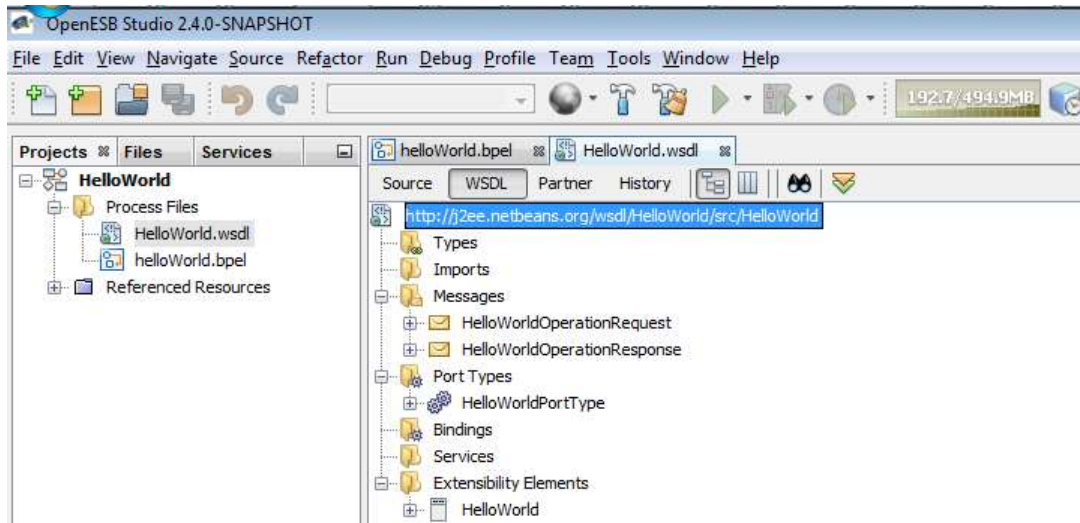
Fault:

Message Part Name	Element Or Type
-------------------	-----------------

☒ Generate partnerlinktype automatically.

< Back Next > **Finish** Cancel Help

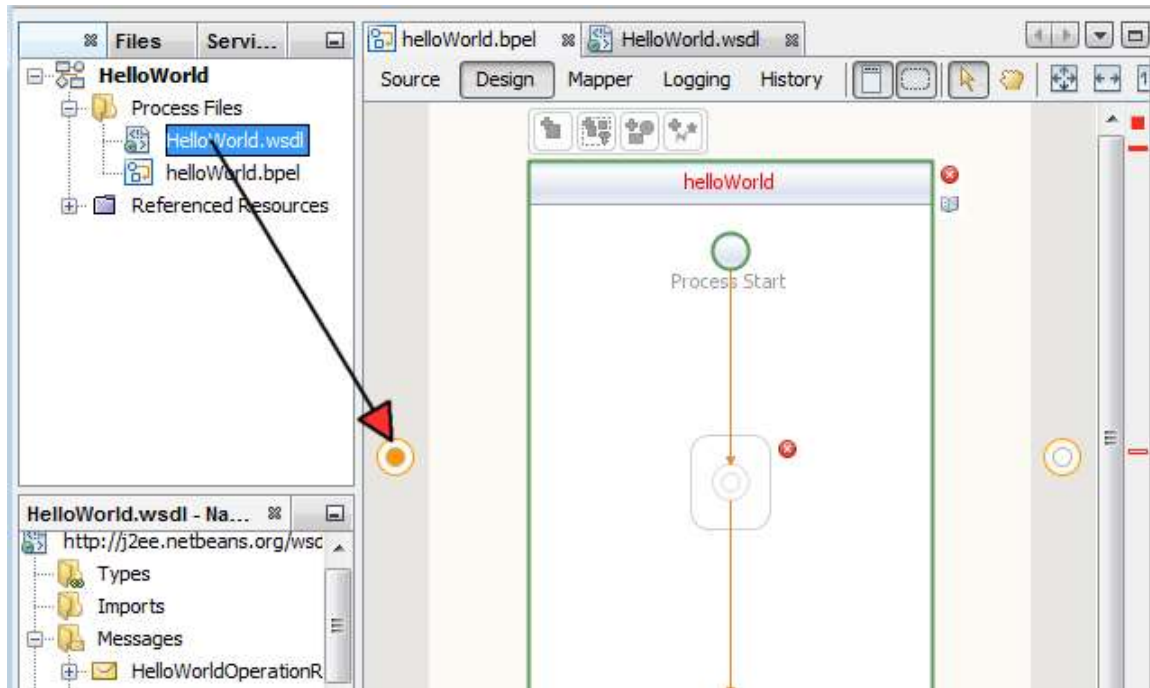
The HelloWorld wsdl file has been added to your project.



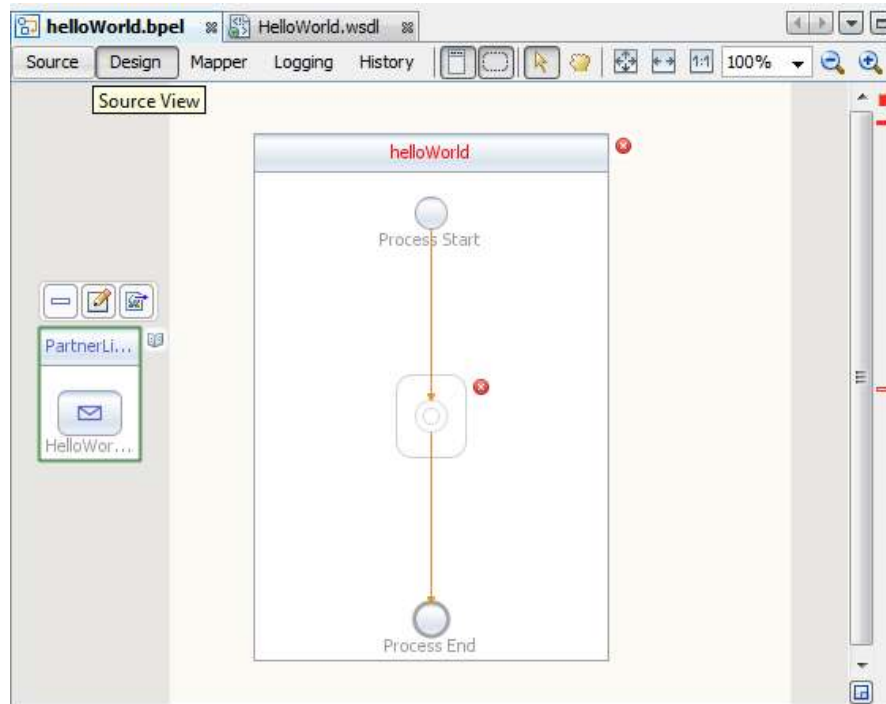
6.2 Create a BPEL

Click back on the tab `helloWorld.bpel`. Select `HelloWorld.wsdl` and drag it onto the grey left strip of the BPEL editor.

When you position the mouse cursor in the grey left strip an orange circle appears. Drop the wsdl there.

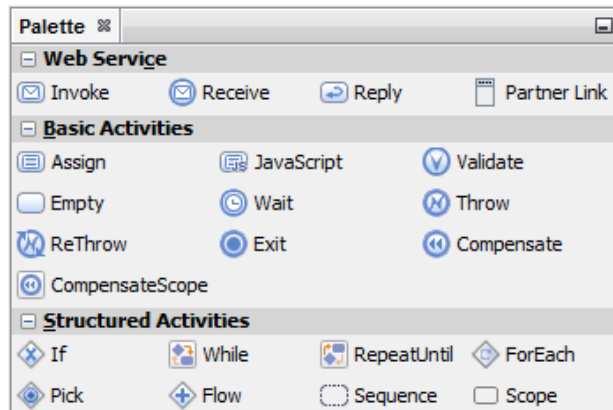


After dropping the WSDL on the orange circle, a PartnerLink appears in the BPEL Editor.



6.2.1 Add BPEL activity

On the right side of OE-Studio, you can see the BPEL palette.

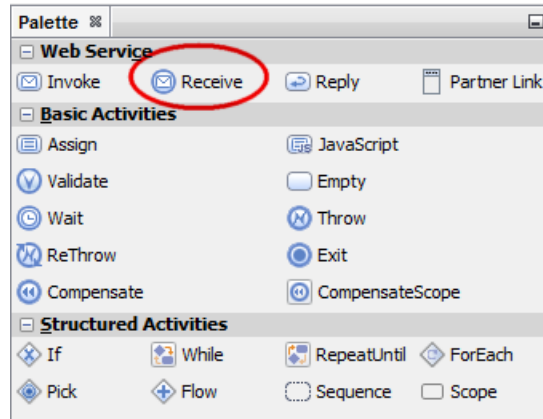


For this document, we will use 3 BPEL activities:

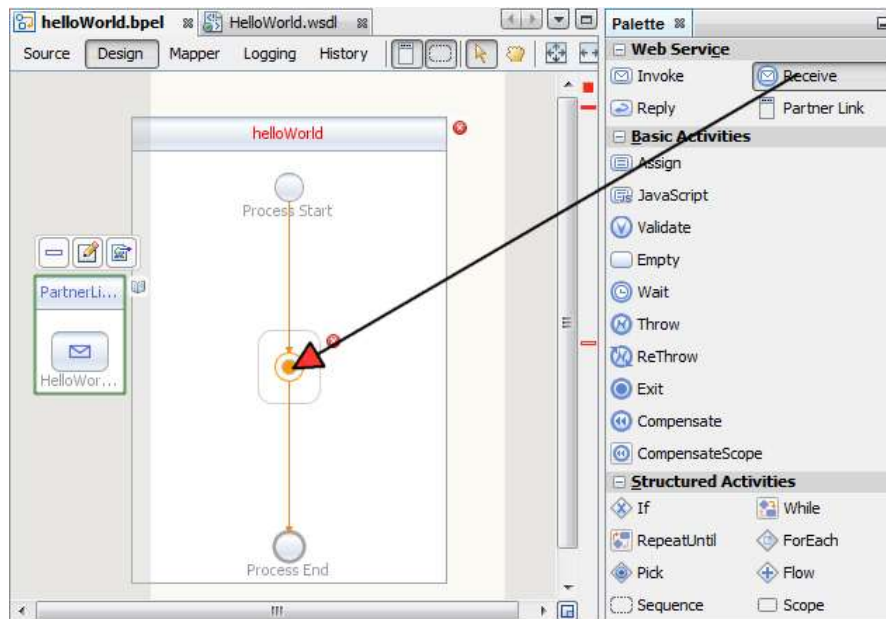
- Receive: used to receive the message
- Assign: map the input variable to the output variable
- Reply: return the message.

Then drag and drop the activities to design the process.

Select the Receive activity in the BPEL palette.



Drag the activity to the centre of the BPEL Editor.



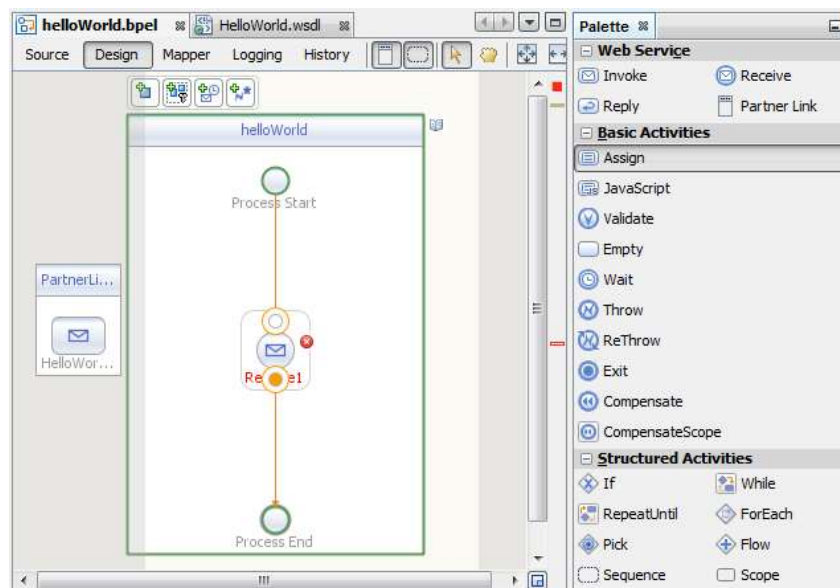
Drop the activity on the Orange circle and the Received activity appears in the BPEL Editor.

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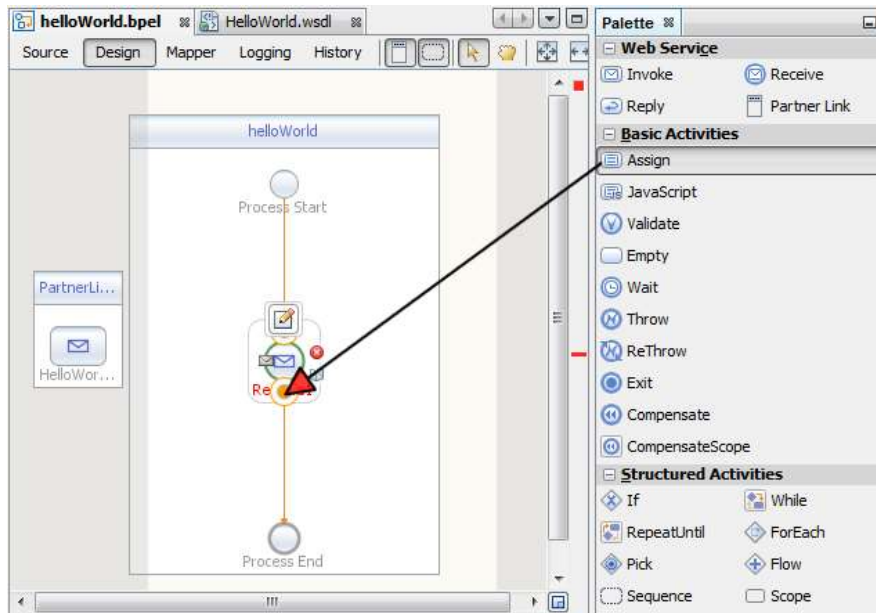
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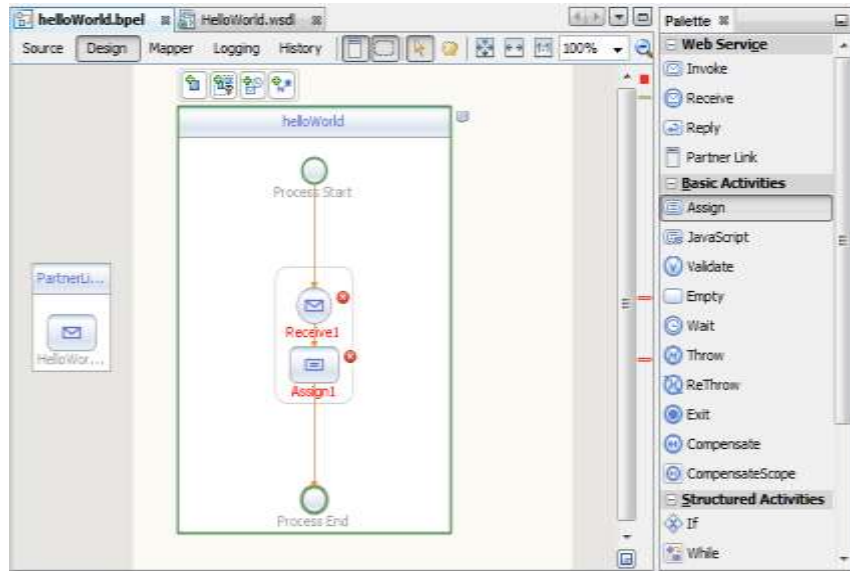
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Follow the same steps to the Assign activity.

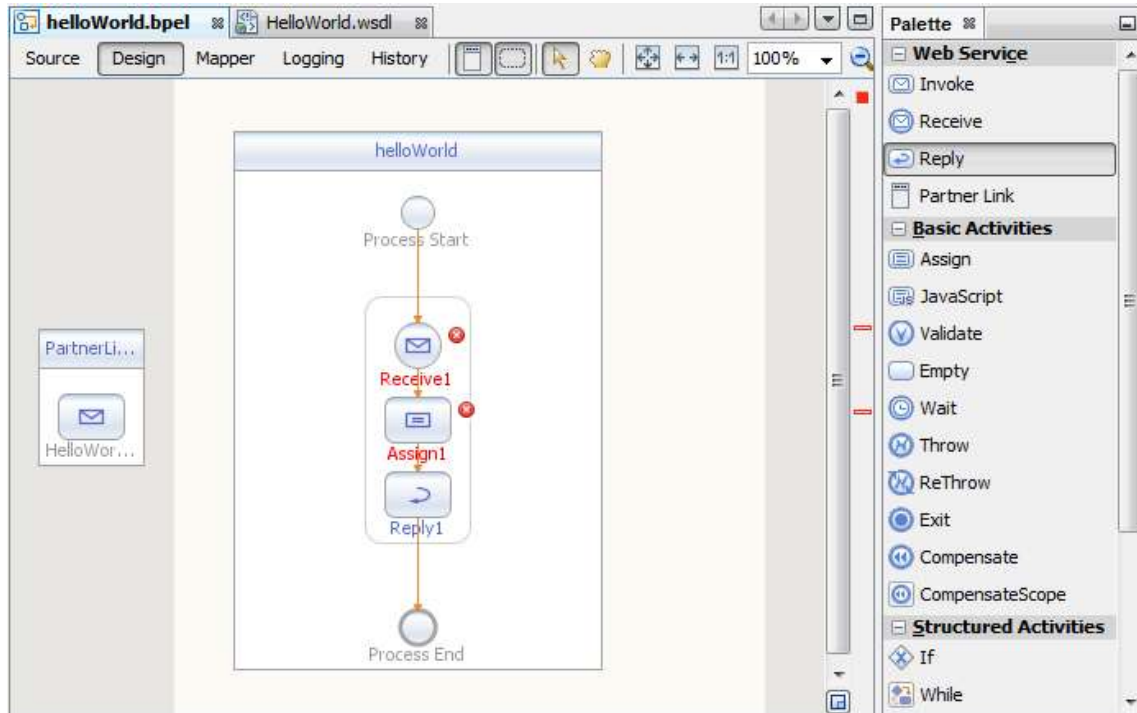


Drag and Drop the Assign icon on the Orange beneath the Receive activity.





Do the same with the Reply icon.

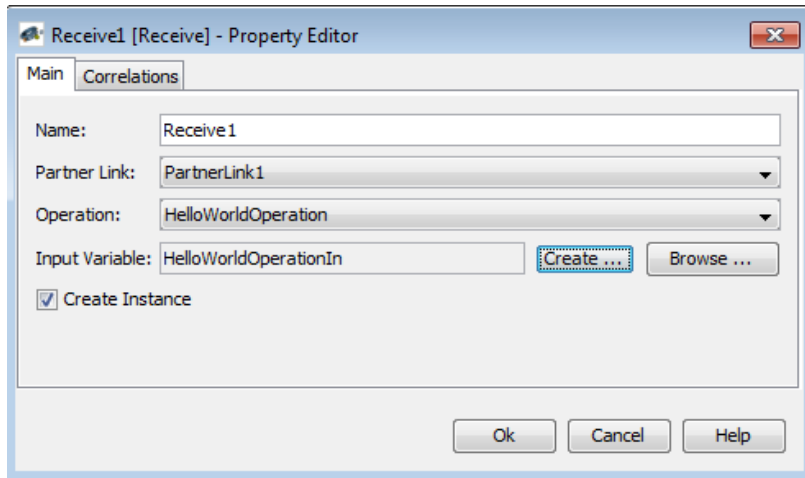


6.2.2 Link the activities with the PartnerLink(s)

Click on the Receive icon, a small box appears. Click on the small box to the Activity properties.



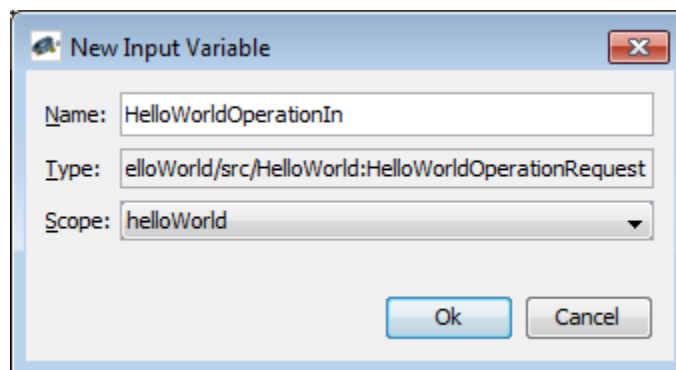
edit



Partner Link: Select PartnerLink1

Operation: Select HelloWorldOperation

Input Variable: Click on Create button.



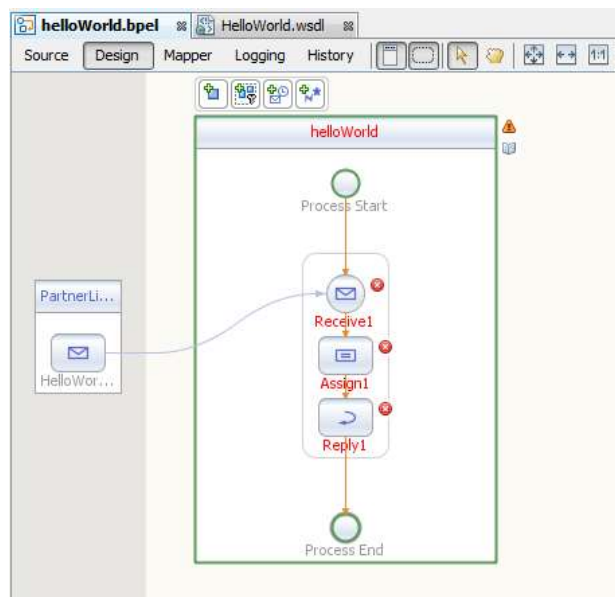
Keep the values by default. Then click on OK.

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Click OK to validate the properties.

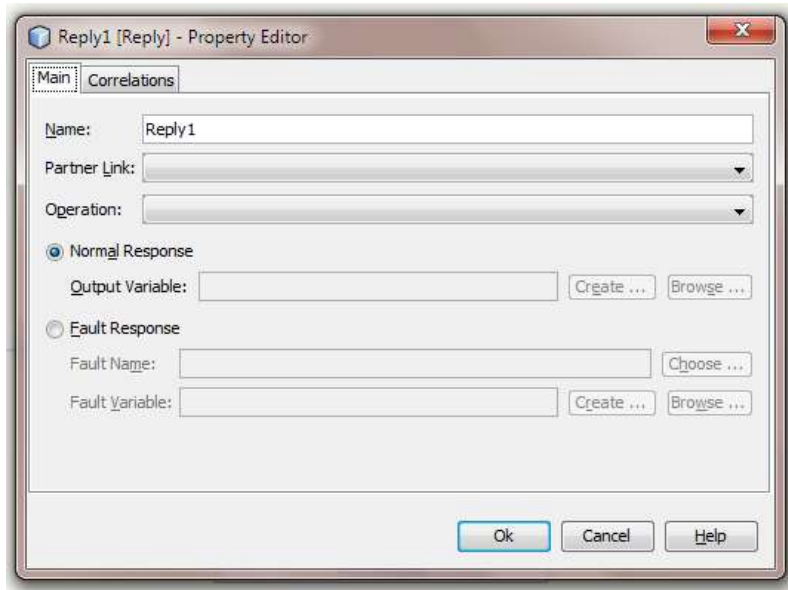


A link has been created between PartnerLink1 and the Receive activity.

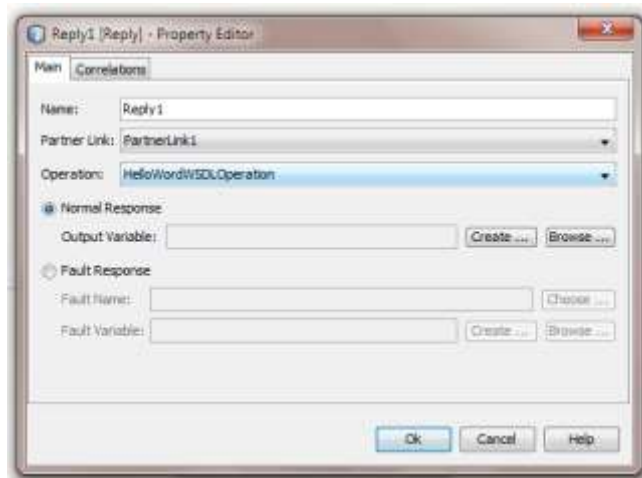
Click on the Reply1 activity then click on the properties box.

Do the same process with Reply. Double click on Reply1.





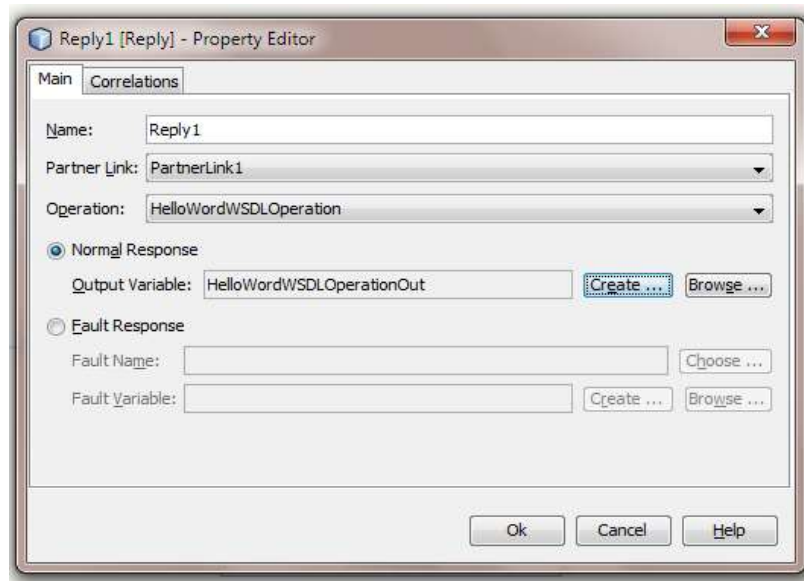
The pop-up Reply-Property Editor opens. Select the default values for “Partner Link” and “Operation” and set this Reply activity as follows.



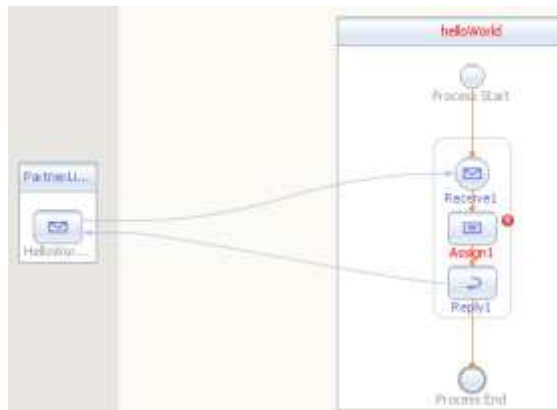
Click on Create.



Keep the default values and click on OK.



The Receive activity is now set up. Click on OK.



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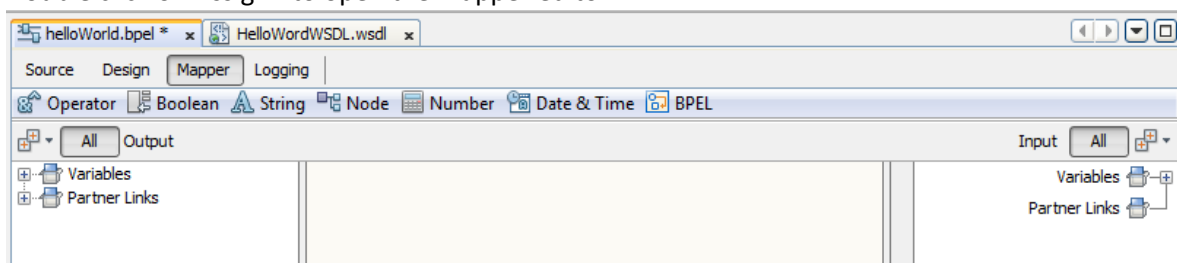
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The set-up creates a link between the partner link and the activity Reply. This means that when a message is sent to Reply1 activity, it is also forwarded to Partner link.

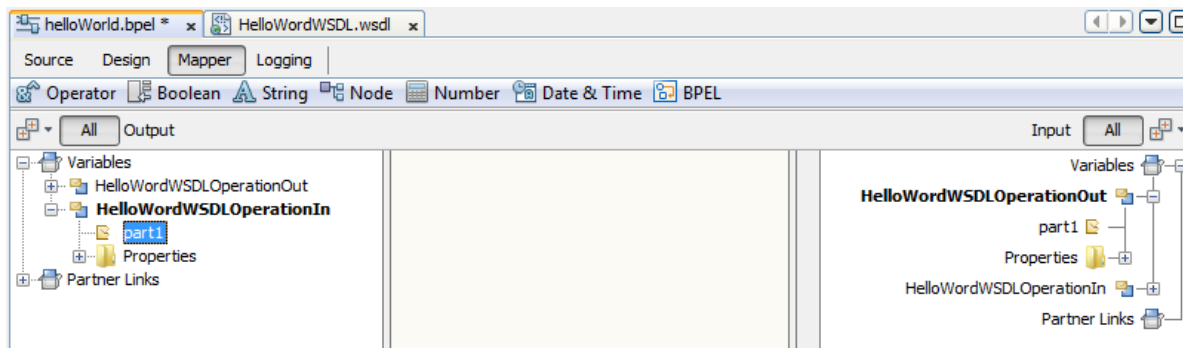
6.2.3 Setup Assign activity

Assign is the activity that maps the input messages to output messages. This is the place where we concatenate “Hello”+ the input name.

Double click on Assign1 to open the mapper editor.



Expand the variable nodes on both sides.

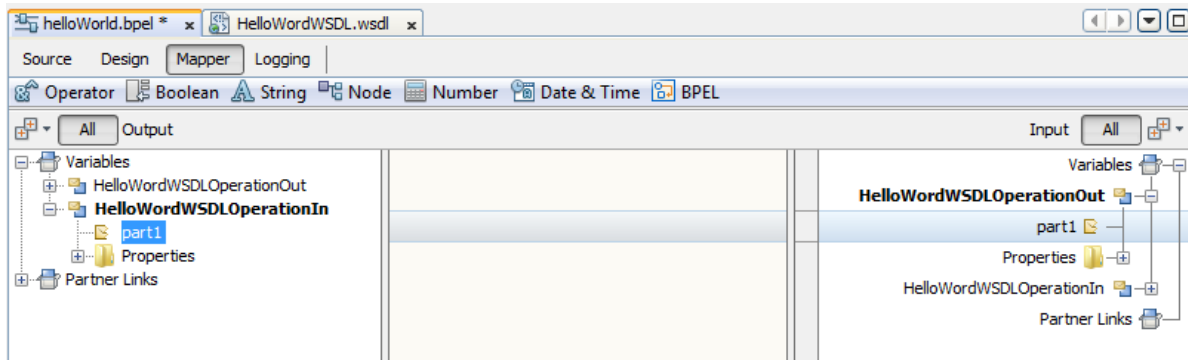


Click on HelloWorldWSDLOperationOut→part1. A blue lane appears at the part1 level.

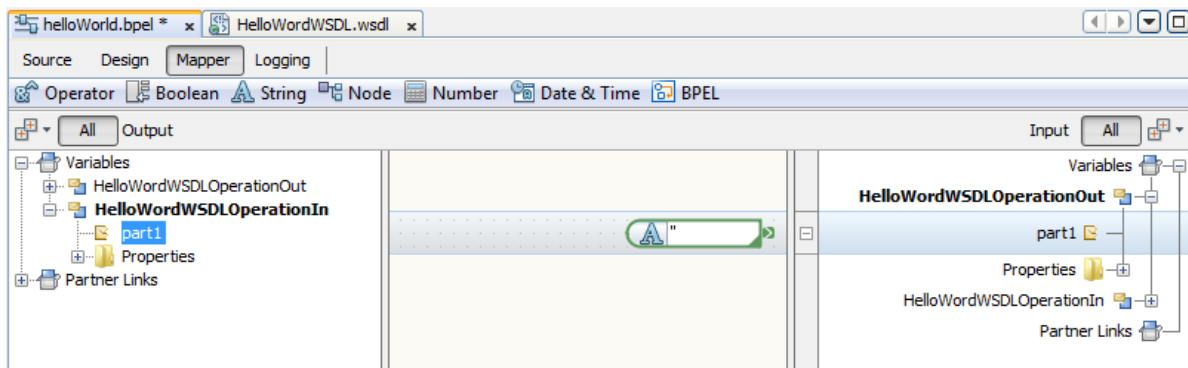
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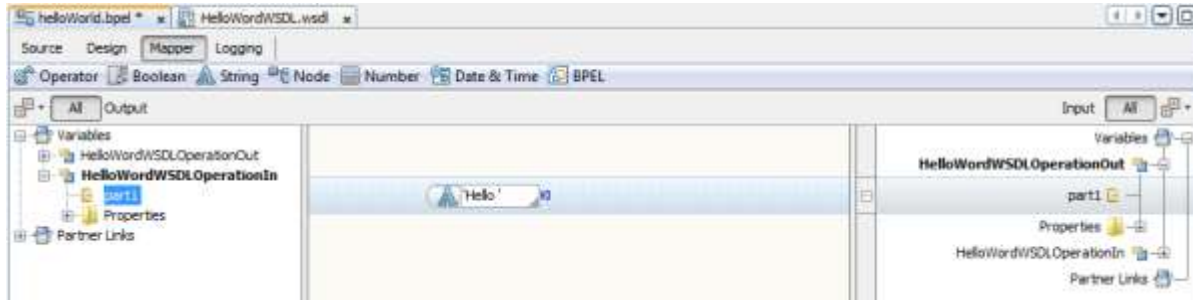
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Select the Icon “String” on the mapper editor top menu and select the item “String Literal”.



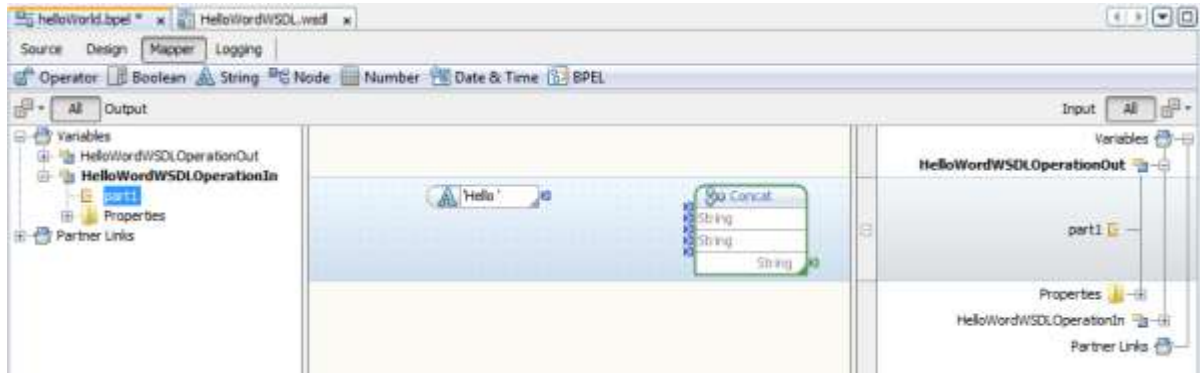
A new icon appears on the blue lane. It is the place to store “Hello”. Double click on the icon and type “Hello” (without “ but with a space after Hello).



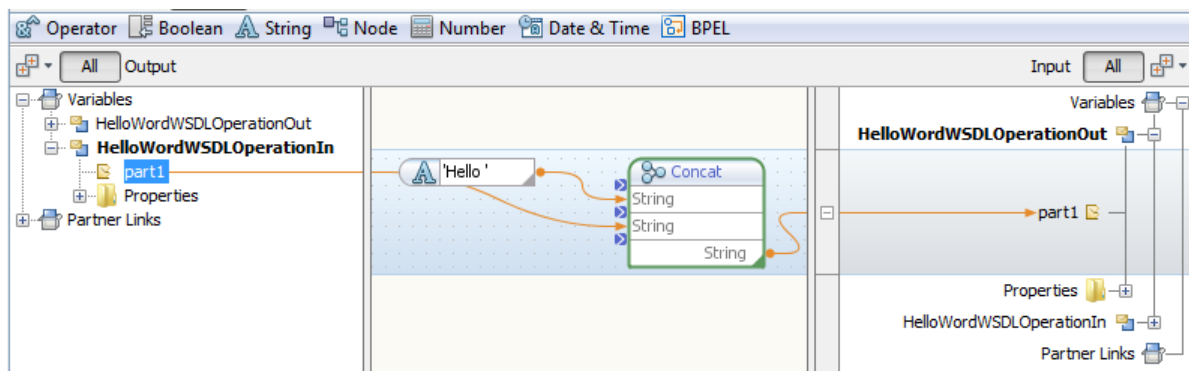
Select the Icon “String’ on the mapper editor top menu and select the item “Concat”.



A Concat icon is added in the blue lane next to “Hello”.



Drag and Drop then link the element as shown below.



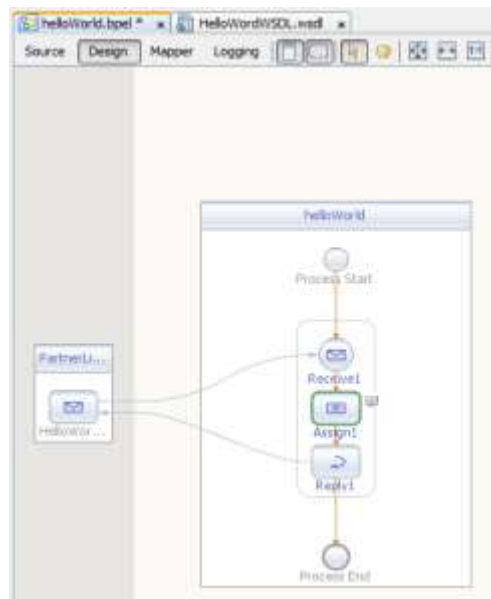
- 1-Link Hello to Concat input.
- 2-Link HelloWorldWSDL:OperationIn→part1 to another Concat input.
- 3-Link Concat output to HelloWorldWSDL:OperationOut→part1.

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Concat = concatenates Hello + the name found in the input message and put the result into the output message.



Click on design to come back to the BPEL editor. Note that the red signs are not present anymore; it indicates your BPEL is valid without error.

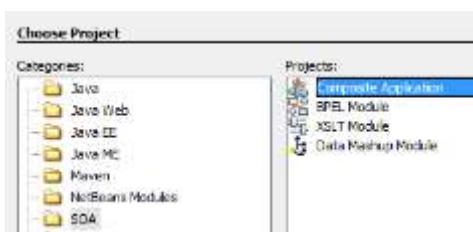
Save your BPEL. Click on  icon or type ctrl-shift-S, then close the BPEL editor.

7 Create a Composite Application

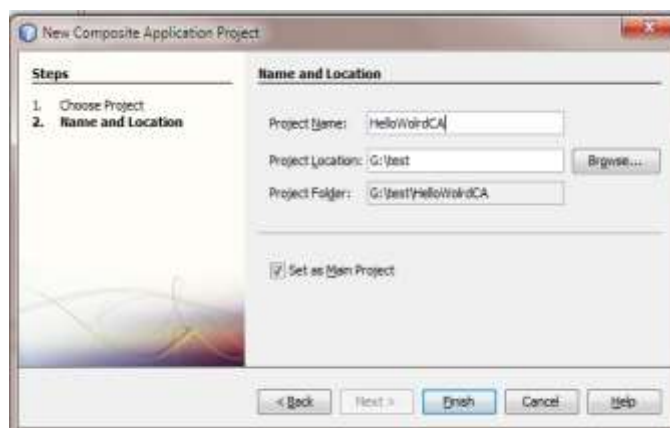
To deploy an application with OpenESB you have to create a composite application. A composite application is the deployable entity for OpenESB.

Right click on the project tab and select “New project “.

Select the SOA Category and the Composite Application project.

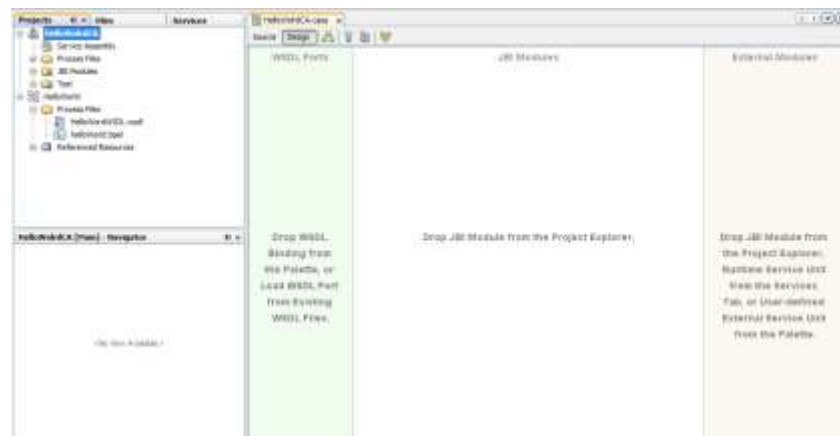


Click on Next and set the project name.



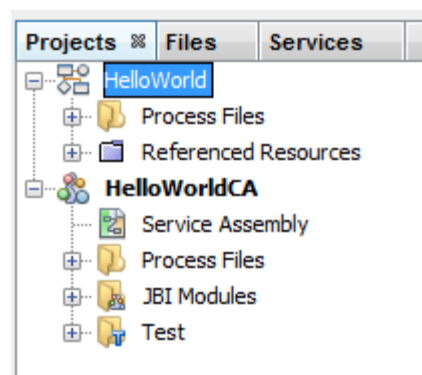
Click on Finish

After a while, HelloWorldCA project is added into the Project tab, and the Composite Application Editor opens.



7.1 Add the BPEL Module in a composite application

Select HelloWorldCA project.




Drag it and drop it in the JBI Module Lane, in the Composite Application editor.

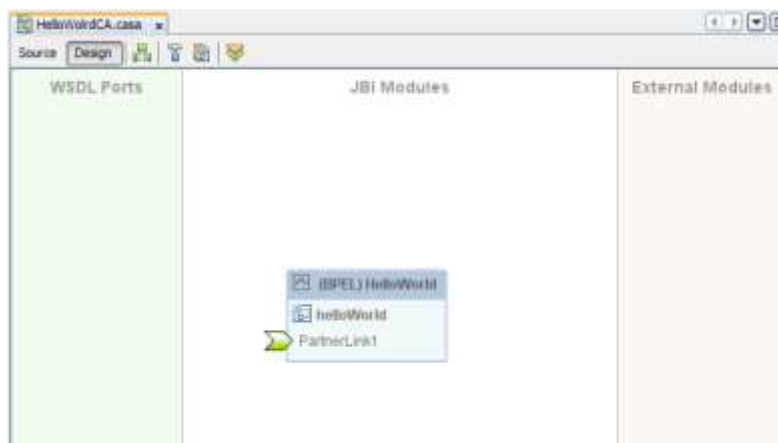
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Click on the build button  represented by a hammer.



Composite Editor introspects Hello Word project and find out the partner links associated with the project.

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7.2 Add a Binding Component

Our project is ready to be deployed but we have to precise how the project will receive the messages. To send messages to the BPEL module, we use a SOAP protocol. You have to define a SOAP port where the message will be sent.

On the right part of the screen, in the palette, select the icon SOAP (not SOAP12).

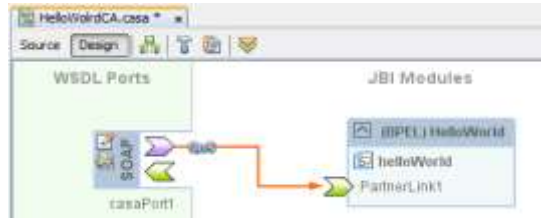


Drag the icon and drop it on the WSDL Ports lane in the Composite application editor.



A SOAP icon appears on the WSDL Ports Lane.

With a simple drag and drop Link SOAP and BPEL.

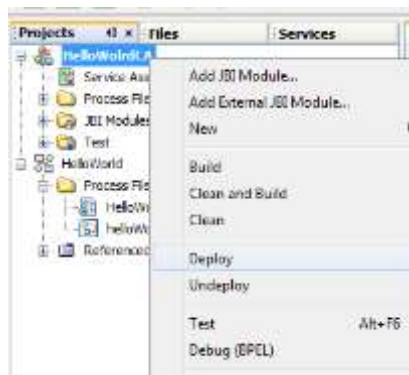


Save the project: Type Ctrl-shift-S.

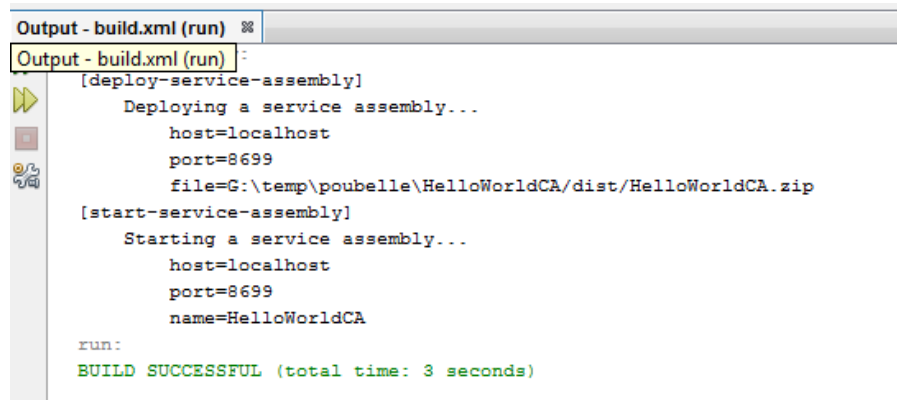
8 Deployment

8.1 Deploy the composite application

Go back to the Projects tab. Select HelloWorldCA. Click right and select “Deploy”.



After a few seconds, at the bottom of your screen, in the build.xml tab in the output window, check if the build is successful.

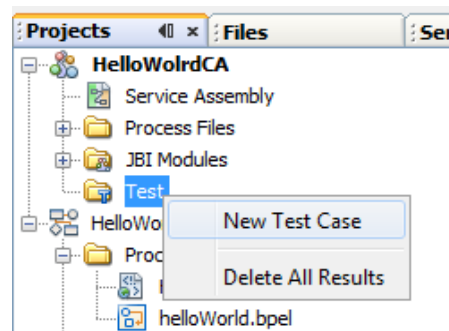


```
Output - build.xml (run) %  
Output - build.xml (run) :  
[deploy-service-assembly]  
    Deploying a service assembly...  
        host=localhost  
        port=8699  
        file=G:\temp\poubelle\HelloWorldCA\dist\HelloWorldCA.zip  
[start-service-assembly]  
    Starting a service assembly...  
        host=localhost  
        port=8699  
        name=HelloWorldCA  
run:  
BUILD SUCCESSFUL (total time: 3 seconds)
```

Your hello World application is now deployed.

9 Test the application.

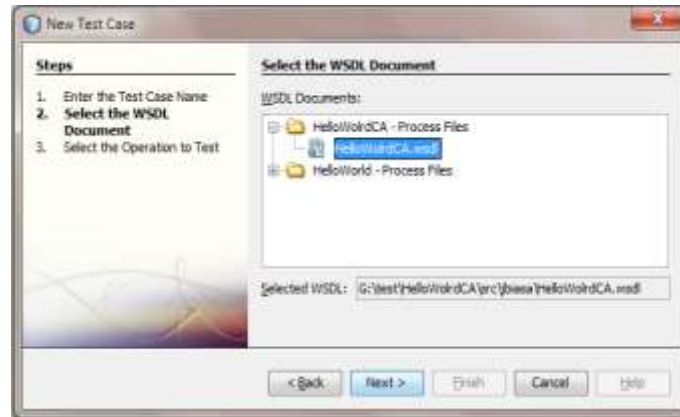
Now let's test the application. The OpenESB has a simple test generator. It allows you to test any SOAP port in your applications. Select the node "Test" in the HelloWorldCA project. Right click and select "New Test case".



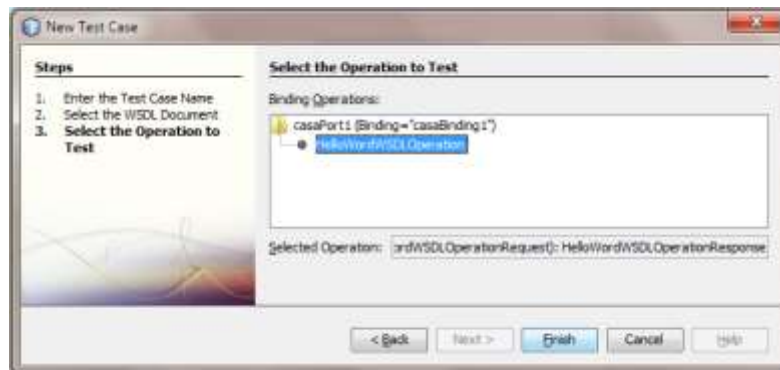
Give a name to the test case and click Next.



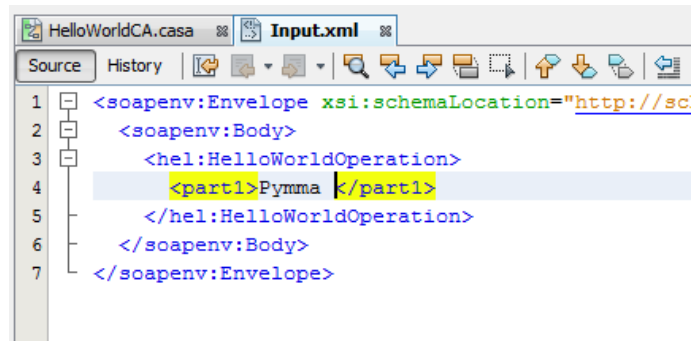
Select the HelloWorldCA and click Next.



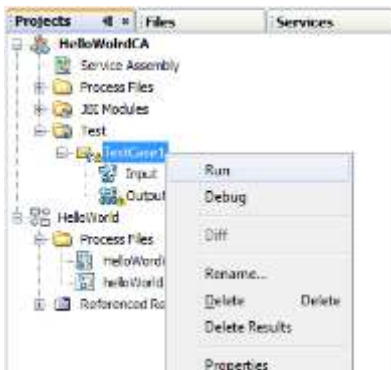
Select the HelloWorldWSDLOperation and click Finish.



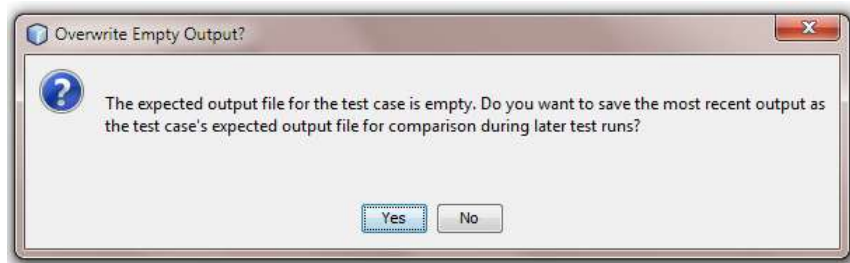
The XML Editor opens. Type your name in the Part1 (Ex: Pymma).



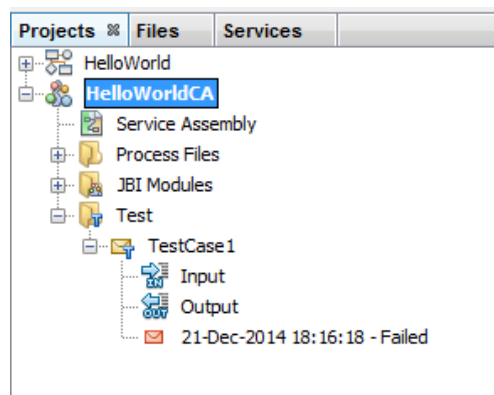
Save the XML document: Ctrl-Shift-S. The new test case “TestCase1” appears in the hierarchy. Run TestCase1.

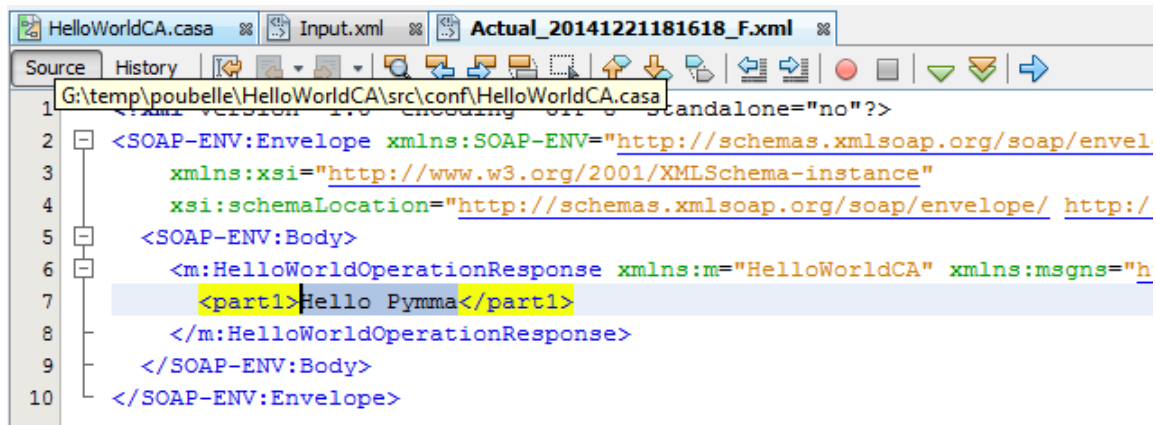


After a while the following pop-up appears.



Double click on the output and ignore the message saying Failed that opens afterwards.





```
1 <?xml version="1.0" encoding="UTF-8" standalone="no"?>
2 <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
3   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
4   xsi:schemaLocation="http://schemas.xmlsoap.org/soap/envelope/ http://
5 <SOAP-ENV:Body>
6   <m:HelloWorldOperationResponse xmlns:m="HelloWorldCA" xmlns:msgns="h
7     <part1>Hello Pymma</part1>
8   </m:HelloWorldOperationResponse>
9 </SOAP-ENV:Body>
10 </SOAP-ENV:Envelope>
```

The unit test failed because we did not set up an output for the test. Do the test again and you won't get an error.

Congratulation!!! It works. You're the best ;-).

10 Next steps

The next step will be to install the OpenESB components and Libraries on your instance then create and deploy your project with the OpenESB Studio.

We advise you to read our documents: **770-003 OE Web admin console** and the administrative guide: **770-004 OE Admin Guide**.

11 Help and support

11.1 From the community

You can find all our OpenESB documentations on the OpenESB official web site:
www.open-esb.net.

If you have any questions or would like to share your feedback, use the OpenESB forum at:
<http://openesb-community-forum.794670.n2.nabble.com>

Feel free to notify us with a bug or suggest how to improve our services on :
<https://openesb.atlassian.net/secure/Dashboard.jspa>

11.2 From Pymma

Pymma is deeply involved in the community and offers services and consulting on OpenESB. Pymma has professional services that can assist you from the development of your SOA design, implementation and ongoing management. All of our skills and background are based on our extensive first-hand experience and industry-leading methods.

Pymma releases an OpenESB Enterprise Edition with many additional enterprise features and a professional support.

In addition to OpenESB development, Pymma designed a new Service-Oriented development process named Rebecca to help business, architect and development team during the design and the implementation of their service oriented projects with OpenESB or any other service oriented development tool.

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Feel free to contact us by email at contact@pymma.com for any further information on our OpenESB Services.

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