Ira A. Fulton Schools of Engineering
ARIZONA STATE UNIVERSITY

CSE 446 / 598

Distributed Software Development

Tutorial

Develop BPEL Application Using JDeveloper

Oracle Software Download

- All related software can be downloaded from http://www.oracle.com/us/downloads/index.html
- Oracle JDveloper 11g (11.1.1.7.0) download address: http://www.oracle.com/technetwork/developer-tools/jdev/downloads/jdeveloper11117-1917330.html
- Oracle SOA Suite download address: http://www.oracle.com/technetwork/middleware/soasuite/downloads/index.html

About Oracle JDeveloper Installation

Prerequisites

- Require JDK 6u21 / 7u10 or higher. After installing JDK, make sure you set JAVA_HOME environment variable to the install location.
- Install **Oracle JDeveloper Studio Edition 11.1.1.17** (Note: the latest version is **JDeveloper 12c**, but this version **does not support SOA Suite development** yet.)
- Install SOA Extension for JDeveloper 11.1.1.7.0
After installing JDeveloper, you still need to install the SOA Suite extension by opening JDeveloper and navigating the menu bar to Help > Check for Updates to install "Oracle SOA Composite Editor". Or download from http://www.oracle.com/ocom/groups/public/@otn/documents/webcontent/156082.xml, then navigate the menu bar to Help > Check for Updates to install from local file.

Develop BPEL Application Using JDeveloper

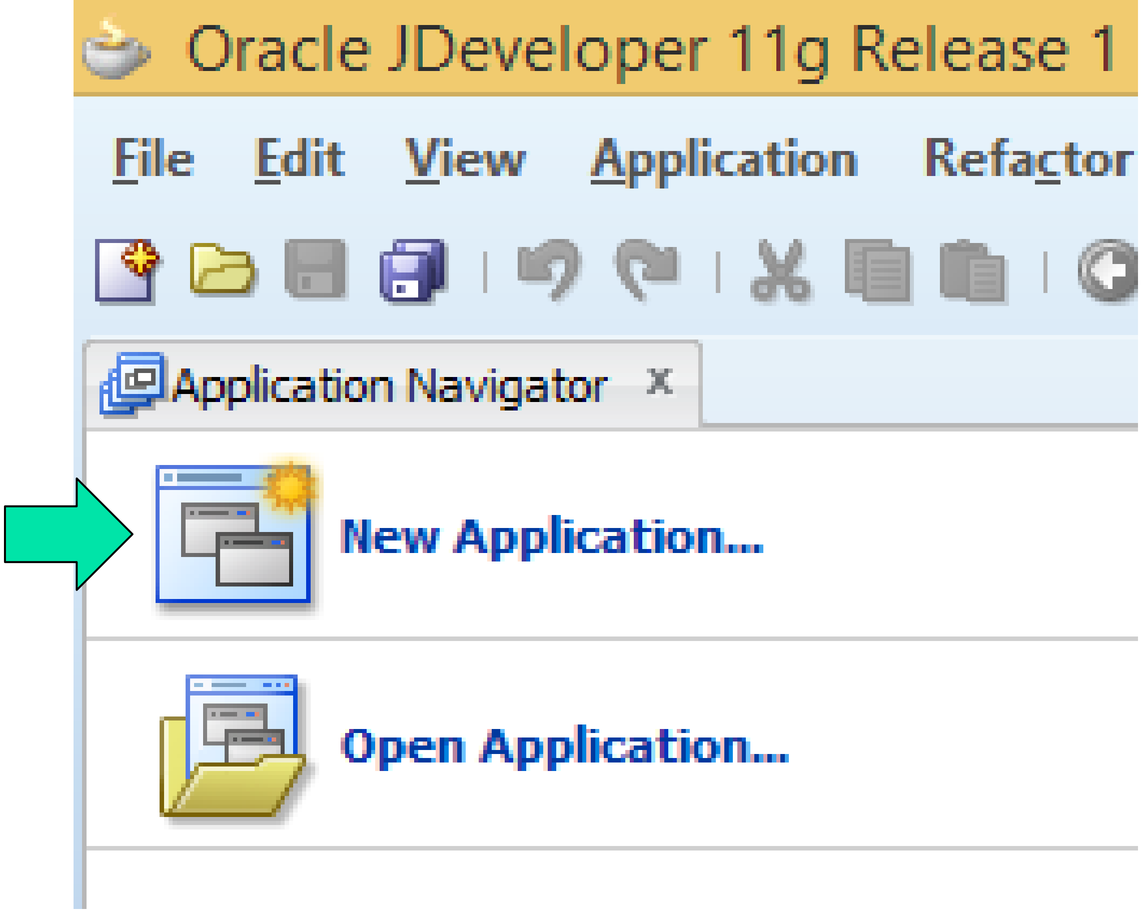
- Create HelloWorld Application
- Configure BPEL Process

Getting Started

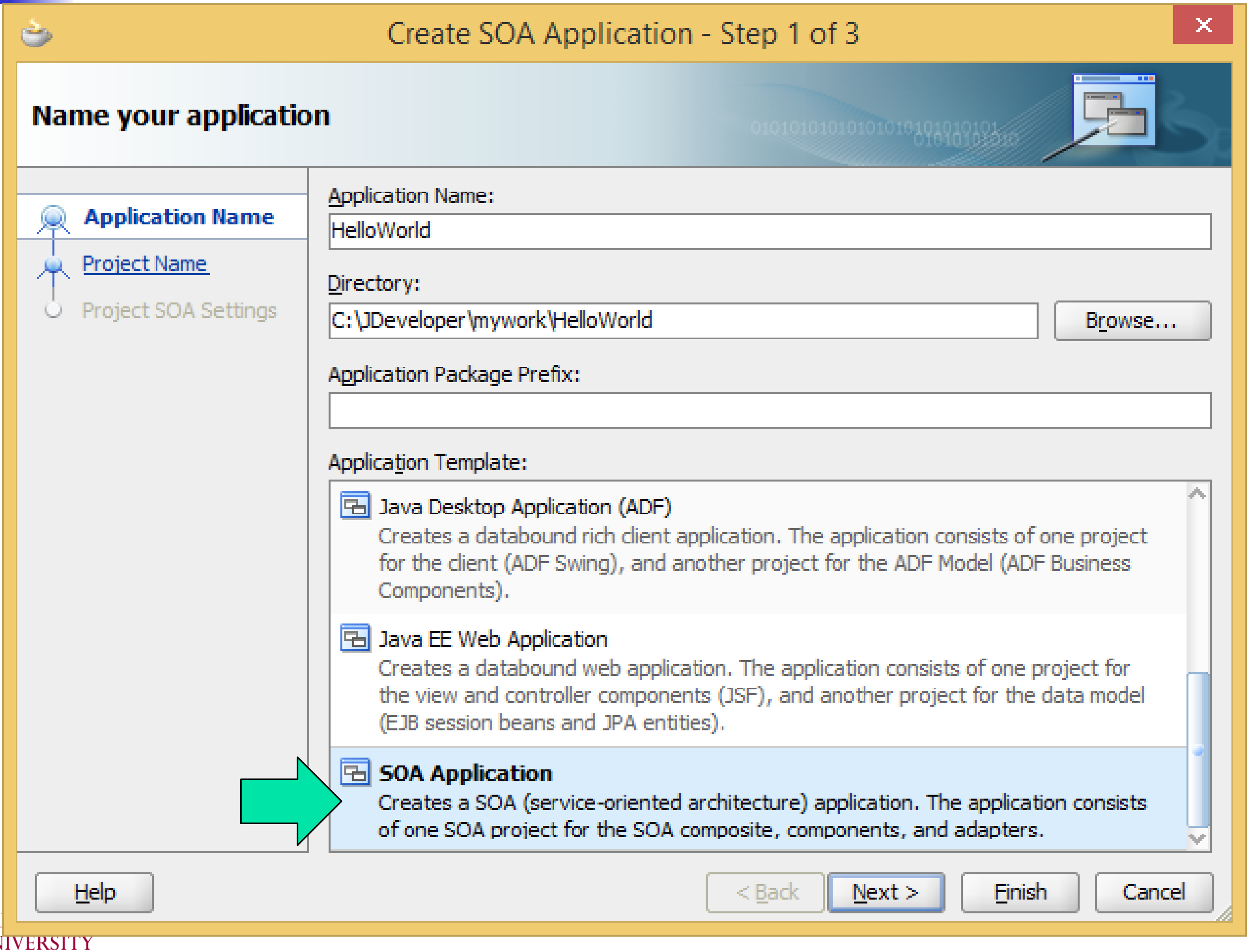
Create HelloWorld Application

- It is an SOA application composited with BPEL process.
- The service receives any input from client, then returns “HelloWorld”.

Create New Application


Oracle JDeveloper 11g Release 1
File
Edit
View
Application
Refactor
Application Navigator
New Application...
Open Application...

Create SOA Application



Create SOA Application - Step 1 of 3
Name your application
Application Name
Project Name
Project SOA Settings
Browse...
Help
< Back
Next >
Finish
Cancel

Application Name: HelloWorld

Directory: C:\JDeveloper\mywork\HelloWorld

Application Package Prefix:

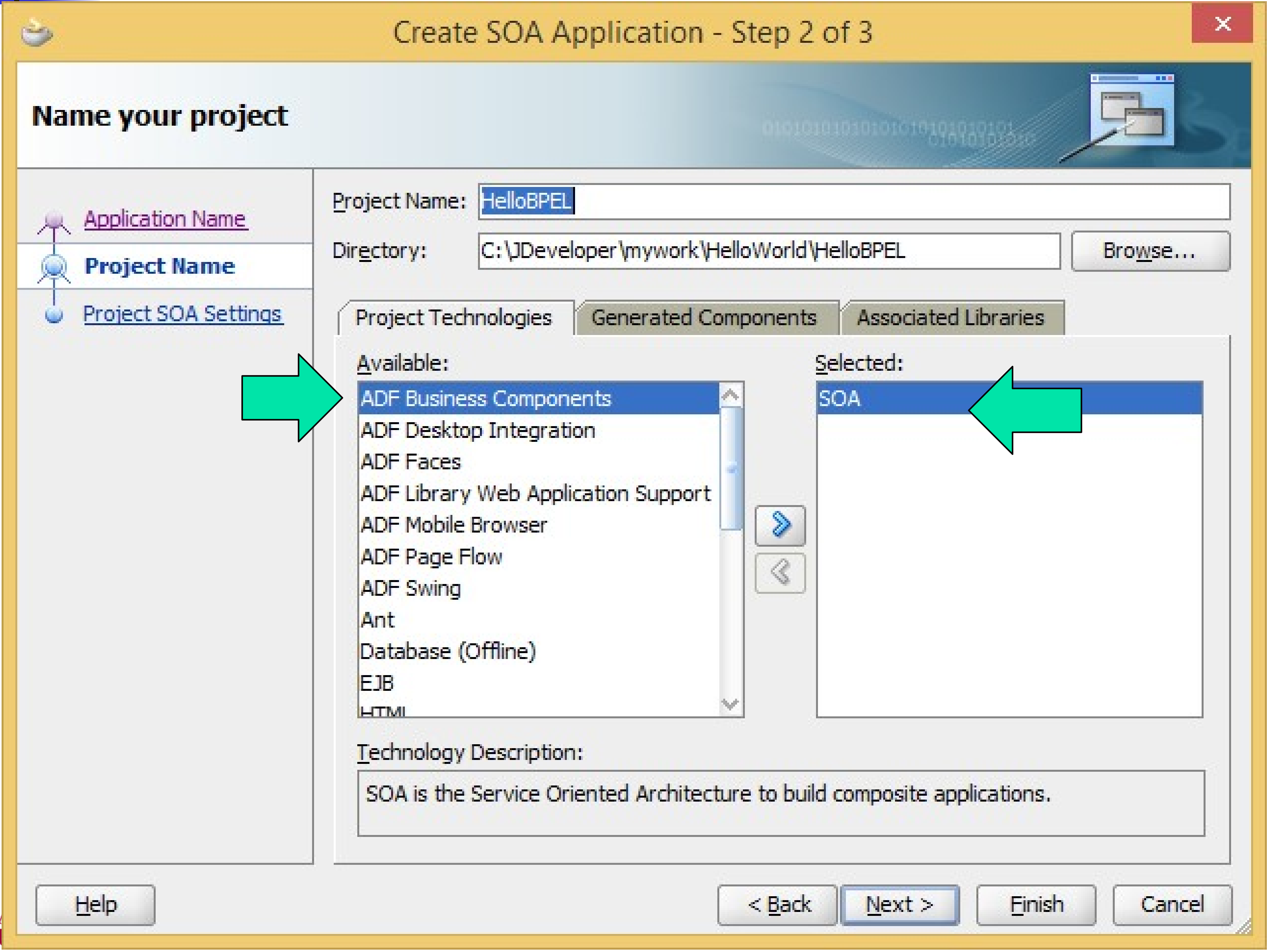
Application Template:

Java Desktop Application (ADF)
Creates a databound rich client application. The application consists of one project for the client (ADF Swing), and another project for the ADF Model (ADF Business Components).

Java EE Web Application
Creates a databound web application. The application consists of one project for the view and controller components (JSF), and another project for the data model (EJB session beans and JPA entities).

SOA Application
Creates a SOA (service-oriented architecture) application. The application consists of one SOA project for the SOA composite, components, and adapters.

Create SOA Project



Create SOA Application - Step 2 of 3

Name your project

Project Name: HelloBPEL

Directory: C:\JDeveloper\mywork\HelloWorld\HelloBPEL

Available:

- ADF Business Components
- ADF Desktop Integration
- ADF Faces
- ADF Library Web Application Support
- ADF Mobile Browser
- ADF Page Flow
- ADF Swing
- Ant
- Database (Offline)
- EJB
- HTML

Selected:

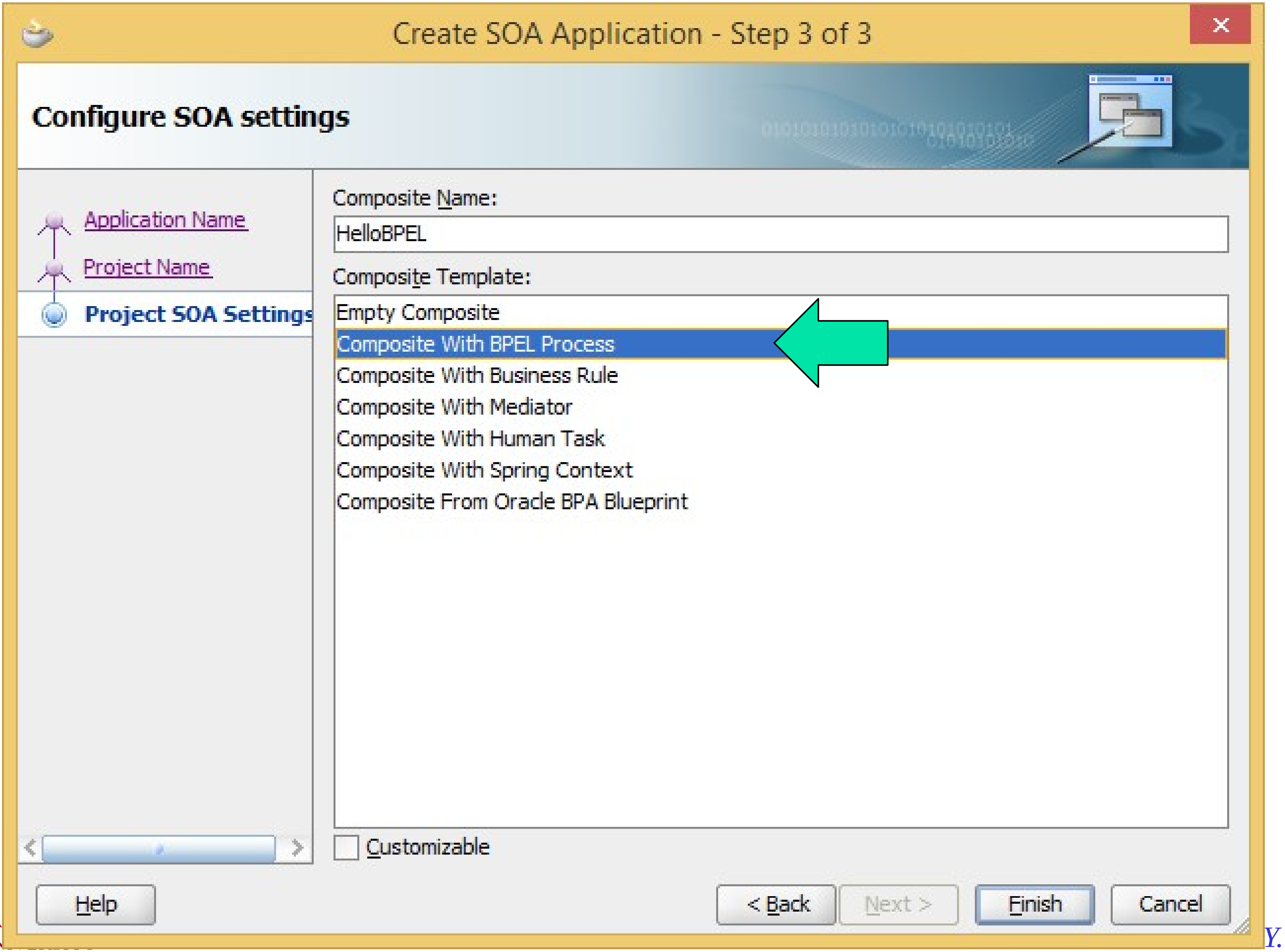
- SOA

Technology Description:

SOA is the Service Oriented Architecture to build composite applications.

Application Name
Project Name
Project SOA Settings
Browse...
Project Technologies
Generated Components
Associated Libraries
Help
< Back
Next >
Finish
Cancel

Create Composite with BPEL



Create SOA Application - Step 3 of 3

Configure SOA settings

Application Name
Project Name
Project SOA Settings

Composite Name: HelloBPEL

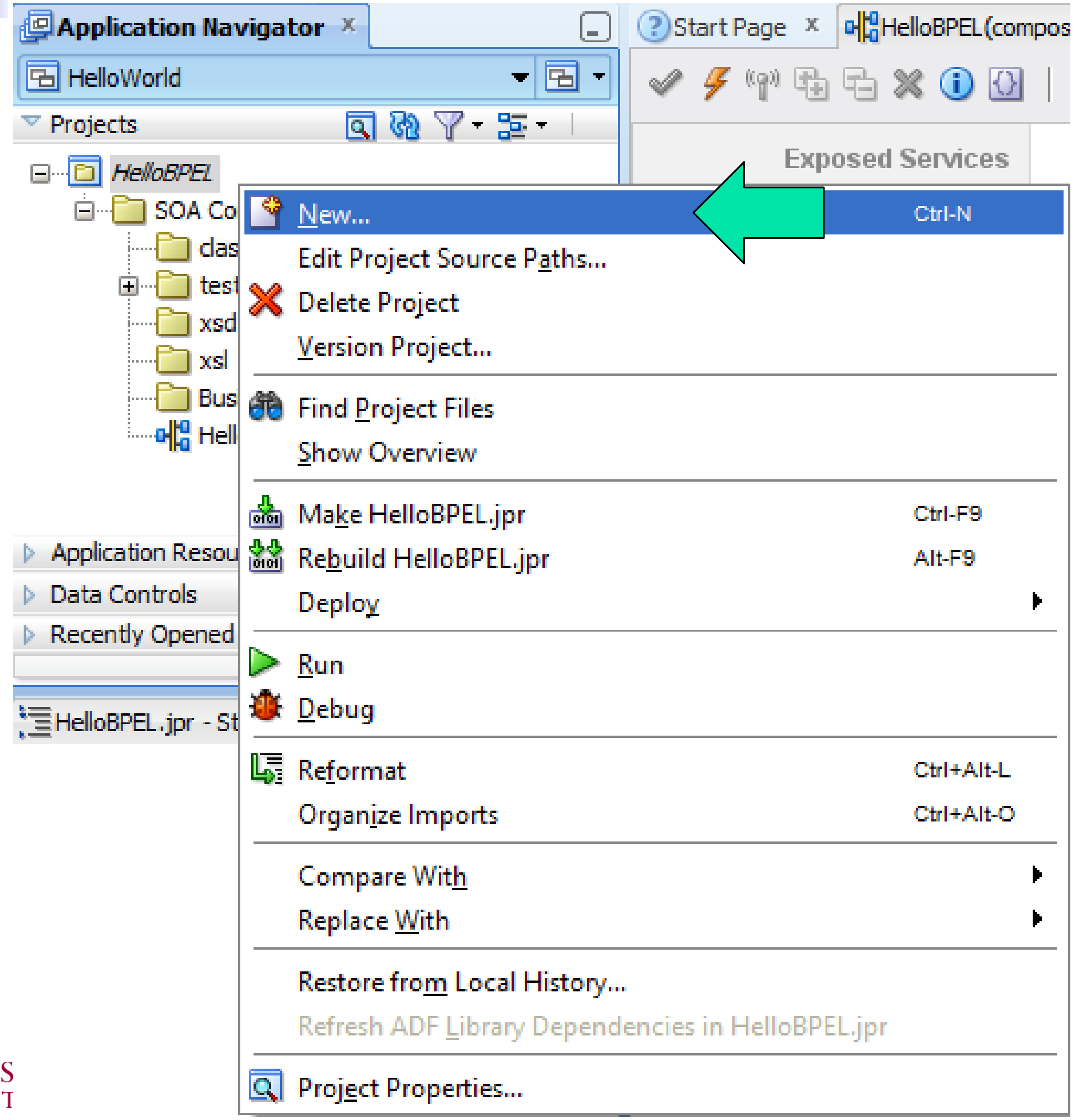
Composite Template:

- Empty Composite
- Composite With BPEL Process
- Composite With Business Rule
- Composite With Mediator
- Composite With Human Task
- Composite With Spring Context
- Composite From Oracle BPA Blueprint

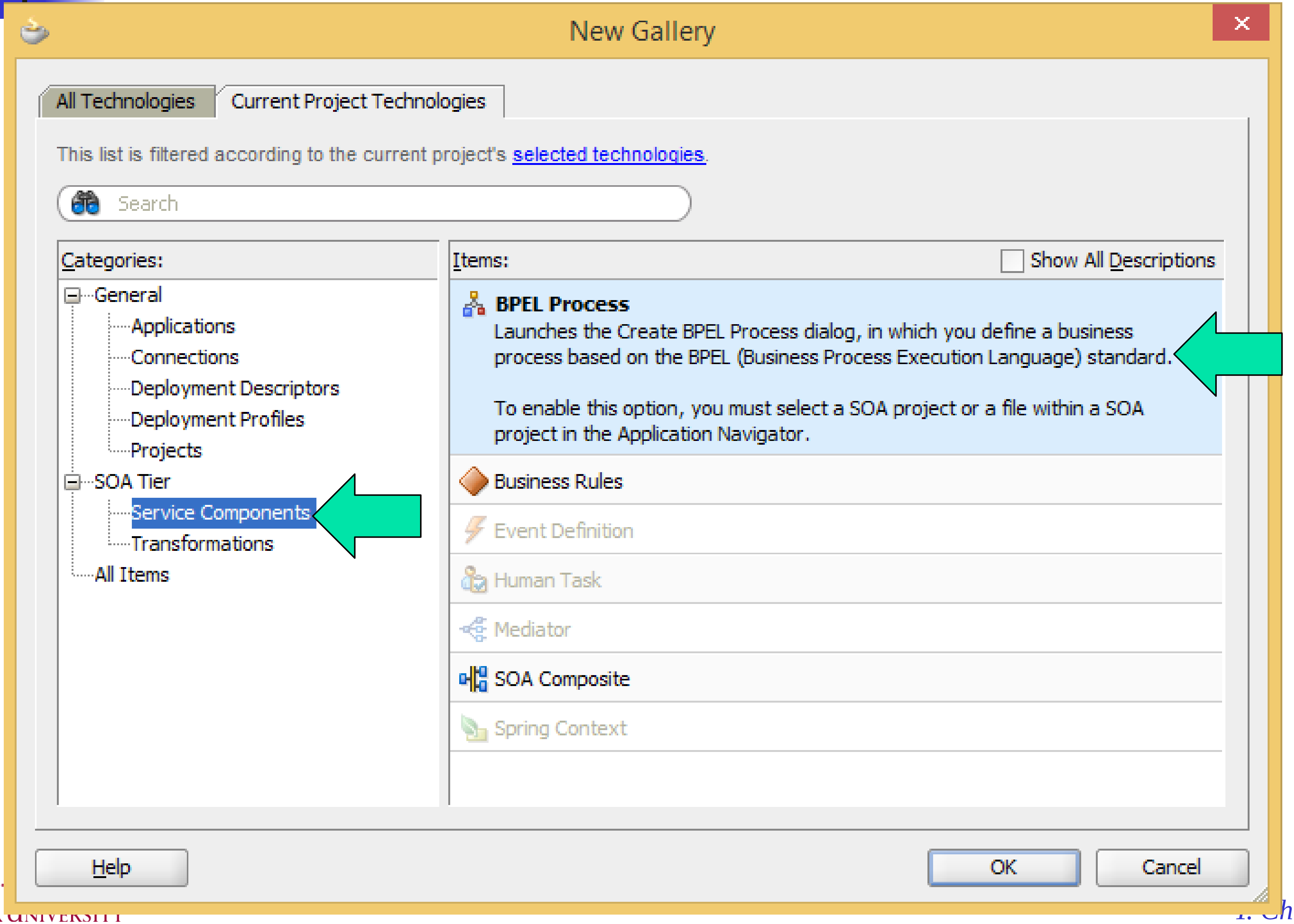
☐ Customizable

Help
< Back
Next >
Finish
Cancel

Create BPEL Process (1)


Application Navigator
HelloWorld
Projects
HelloBPEL
SOA Co
clas
test
xsd
xsl
Bus
Hell
Application Resou
Data Controls
Recently Opened
HelloBPEL.jpr - St
Start Page
HelloBPEL(compos
Exposed Services
New... Ctrl-N
Edit Project Source Paths...
Delete Project
Version Project...
Find Project Files
Show Overview
Make HelloBPEL.jpr Ctrl-F9
Rebuild HelloBPEL.jpr Alt-F9
Deploy
Run
Debug
Reformat Ctrl+Alt-L
Organize Imports Ctrl+Alt-O
Compare With
Replace With
Restore from Local History...
Refresh ADF Library Dependencies in HelloBPEL.jpr
Project Properties...

Create BPEL Process (2)



New Gallery

All Technologies | Current Project Technologies

This list is filtered according to the current project's selected technologies.

Search

Categories:
- General
  - Applications
  - Connections
  - Deployment Descriptors
  - Deployment Profiles
  - Projects
- SOA Tier
  - **Service Components**
  - Transformations
- All Items

Items: ☐ Show All Descriptions

BPEL Process
Launches the Create BPEL Process dialog, in which you define a business process based on the BPEL (Business Process Execution Language) standard.

To enable this option, you must select a SOA project or a file within a SOA project in the Application Navigator.

Business Rules

Event Definition

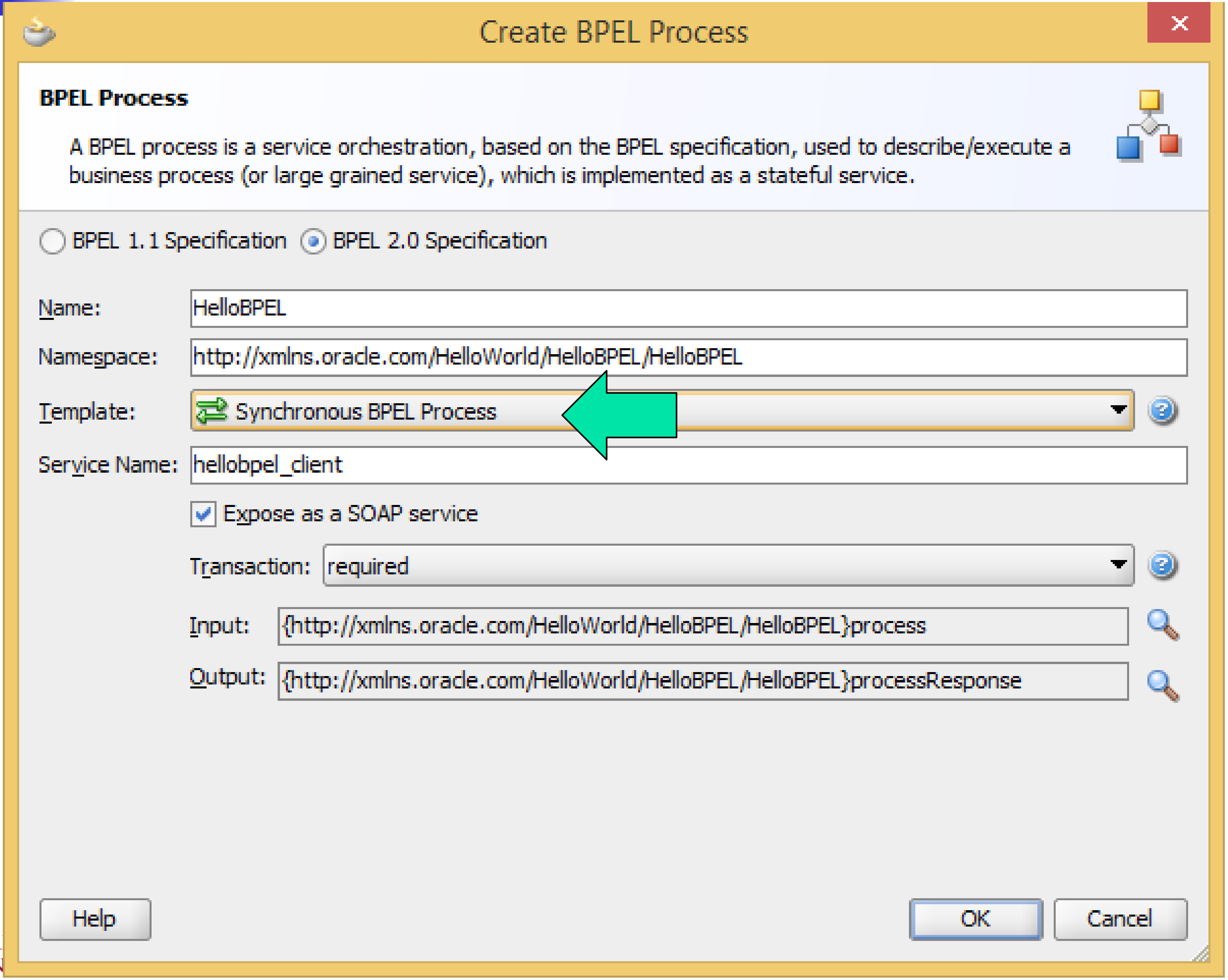
Human Task

Mediator

SOA Composite

Spring Context

Configure Create BPEL Process



BPEL Process

A BPEL process is a service orchestration, based on the BPEL specification, used to describe/execute a business process (or large grained service), which is implemented as a stateful service.

○ BPEL 1.1 Specification ● BPEL 2.0 Specification

Name: HelloBPEL

Namespace: http://xmlns.oracle.com/HelloWorld/HelloBPEL/HelloBPEL

Template: Synchronous BPEL Process

Service Name: hellobpel_client

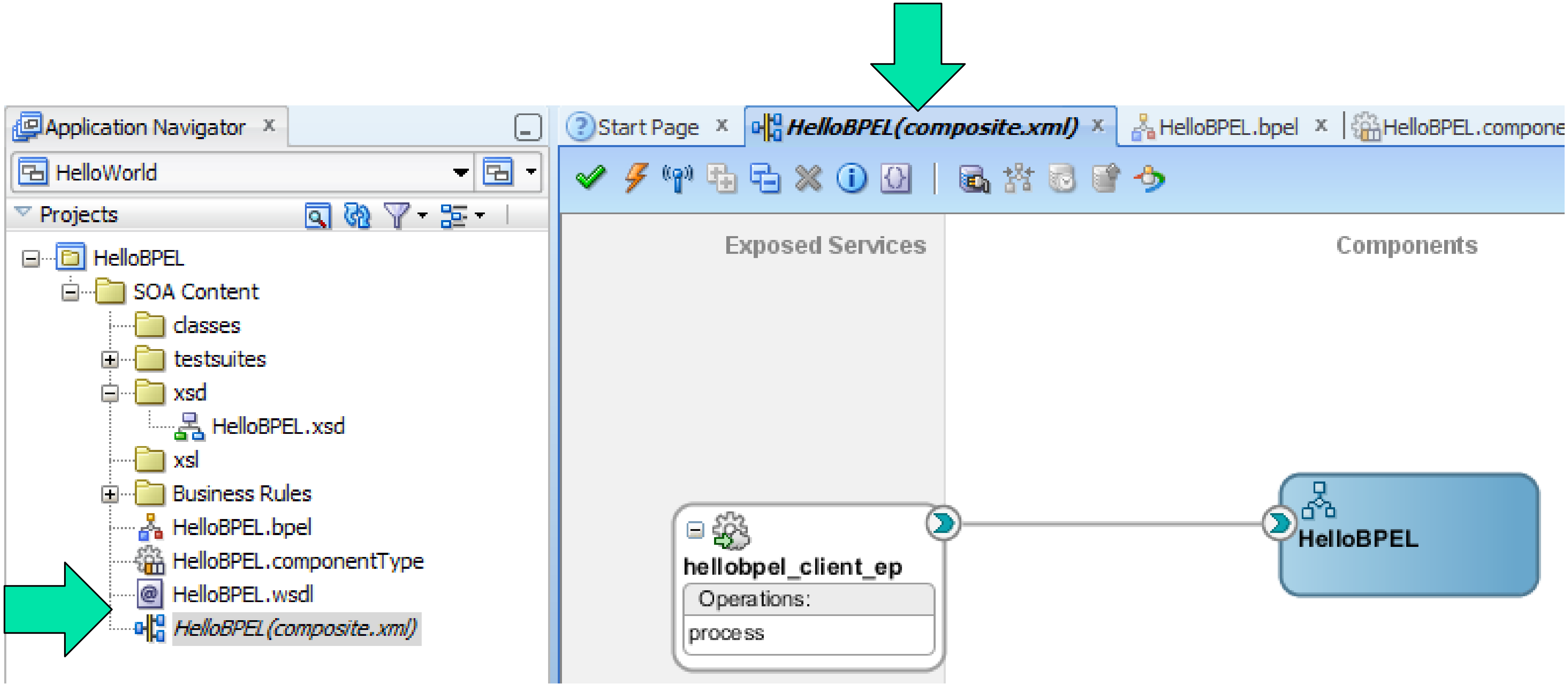
☑ Expose as a SOAP service

Transaction: required

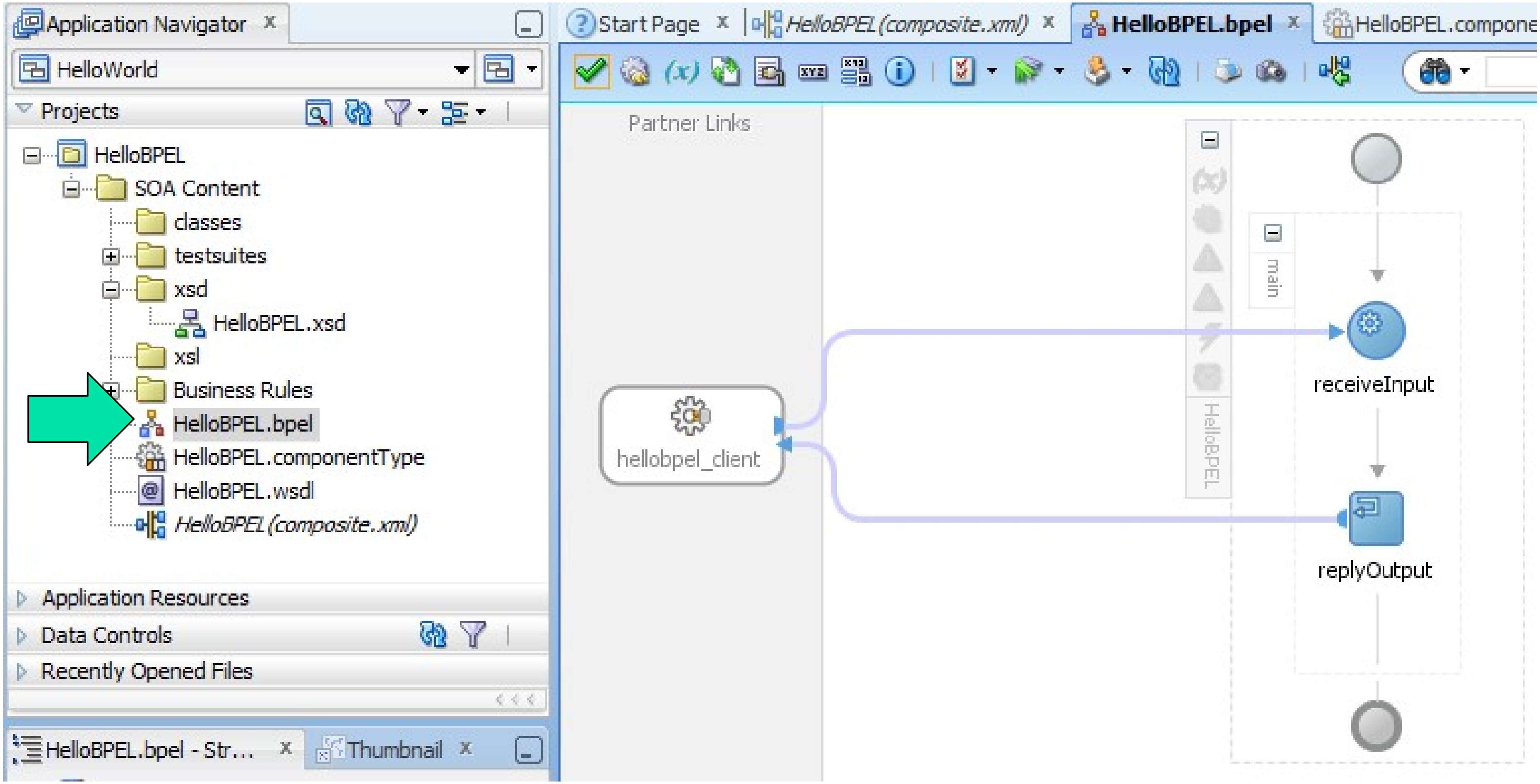
Input: {http://xmlns.oracle.com/HelloWorld/HelloBPEL/HelloBPEL}process

Output: {http://xmlns.oracle.com/HelloWorld/HelloBPEL/HelloBPEL}processResponse

Default Composite Designer (1)

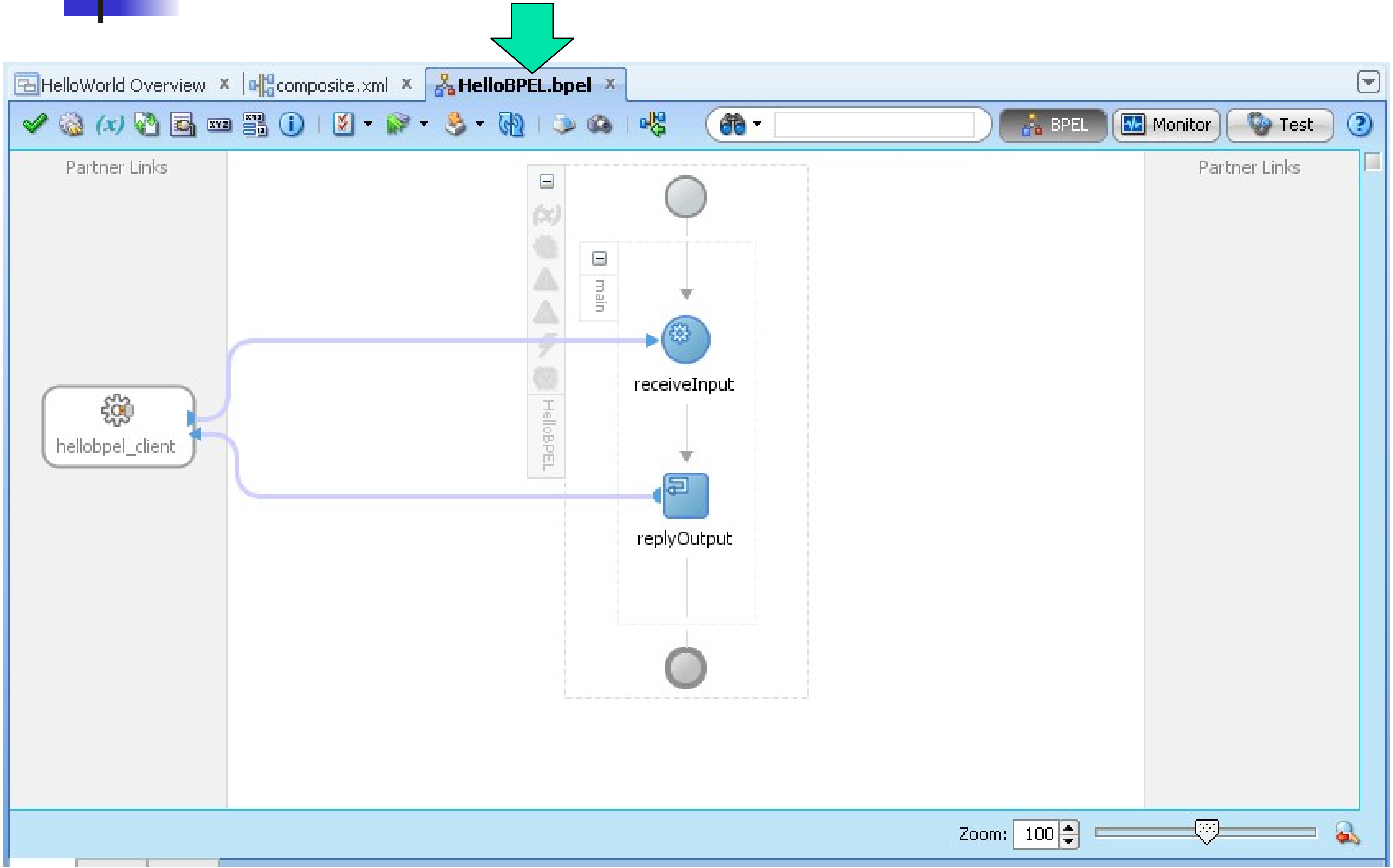

Application Navigator
HelloWorld
Projects
HelloBPEL
SOA Content
classes
testsuites
xsd
HelloBPEL.xsd
xsl
Business Rules
HelloBPEL.bpel
HelloBPEL.componentType
HelloBPEL.wsdl
HelloBPEL(composite.xml)
Start Page
HelloBPEL(composite.xml)
HelloBPEL.bpel
HelloBPEL.compone
Exposed Services
Components
hellobpel_client_ep
Operations:
process
HelloBPEL

Default Composite Designer (2)

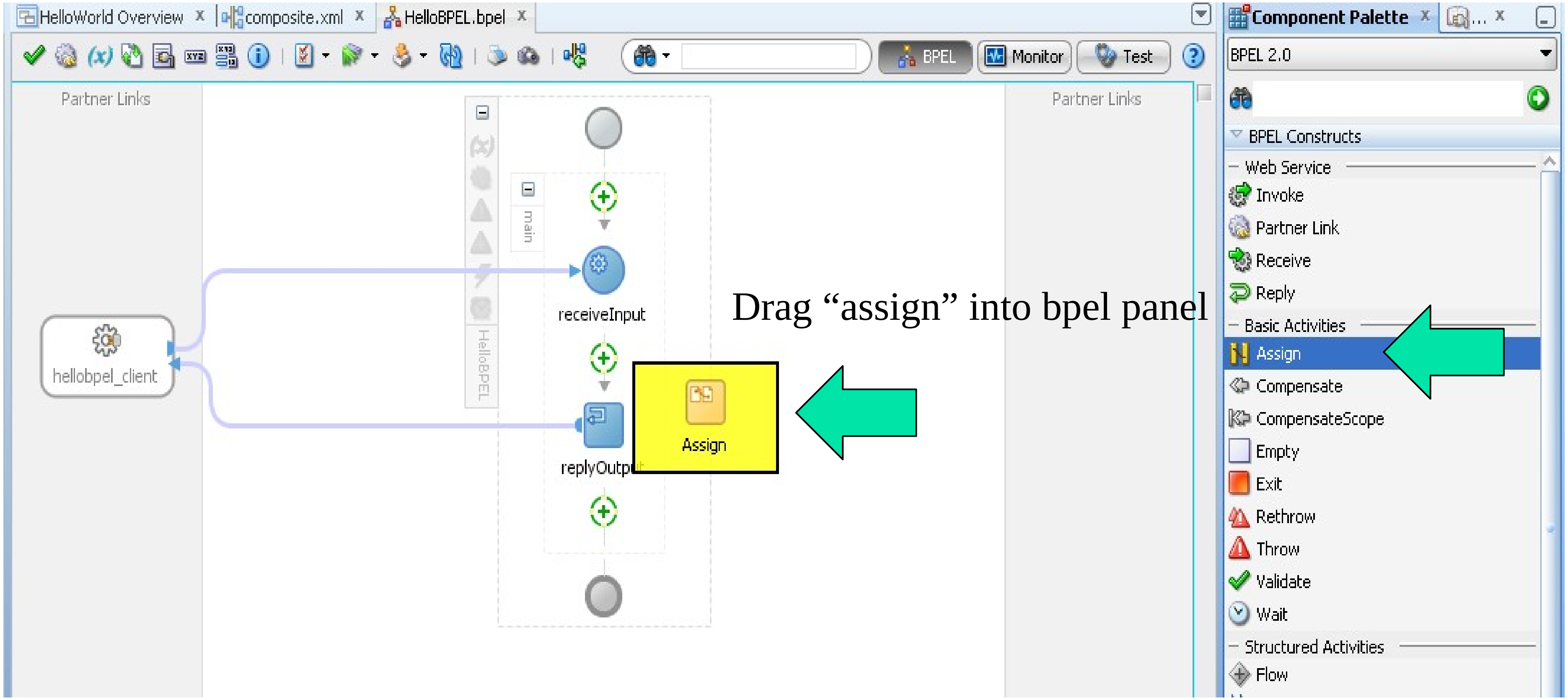

Application Navigator
HelloWorld
Projects
HelloBPEL
SOA Content
classes
testsuites
xsd
HelloBPEL.xsd
xsl
Business Rules
HelloBPEL.bpel
HelloBPEL.componentType
HelloBPEL.wsdl
HelloBPEL (composite.xml)
Application Resources
Data Controls
Recently Opened Files
HelloBPEL.bpel - Str...
Thumbnail
Start Page
HelloBPEL (composite.xml)
HelloBPEL.bpel
HelloBPEL.compone
Partner Links
hellobpel_client
main
HelloBPEL
receiveInput
replyOutput

Configure BPEL Process

Default BPEL Process After Creation

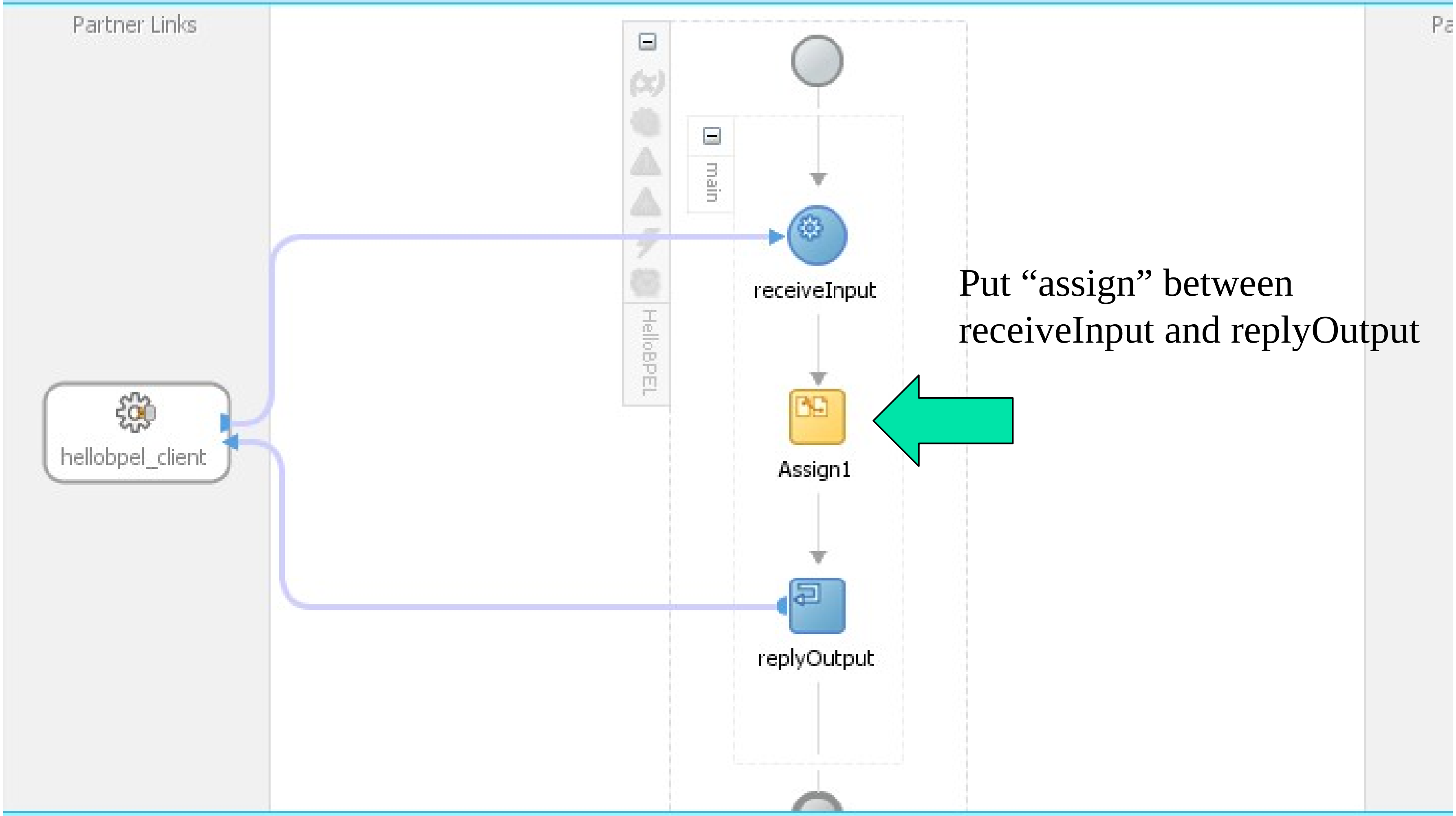

HelloWorld Overview
composite.xml
HelloBPEL.bpel
BPEL
Monitor
Test
Partner Links
Partner Links
main
HelloBPEL
receiveInput
replyOutput
hellobpel_client
Zoom: 100

Drag and Drop Assign Activity


HelloWorld Overview
composite.xml
HelloBPEL.bpel
BPEL
Monitor
Test
Partner Links
Partner Links
main
HelloBPEL
receiveInput
replyOutput
hellobpel_client
Assign
Component Palette
BPEL 2.0
BPEL Constructs
Web Service
Invoke
Partner Link
Receive
Reply
Basic Activities
Assign
Compensate
CompensateScope
Empty
Exit
Rethrow
Throw
Validate
Wait
Structured Activities
Flow

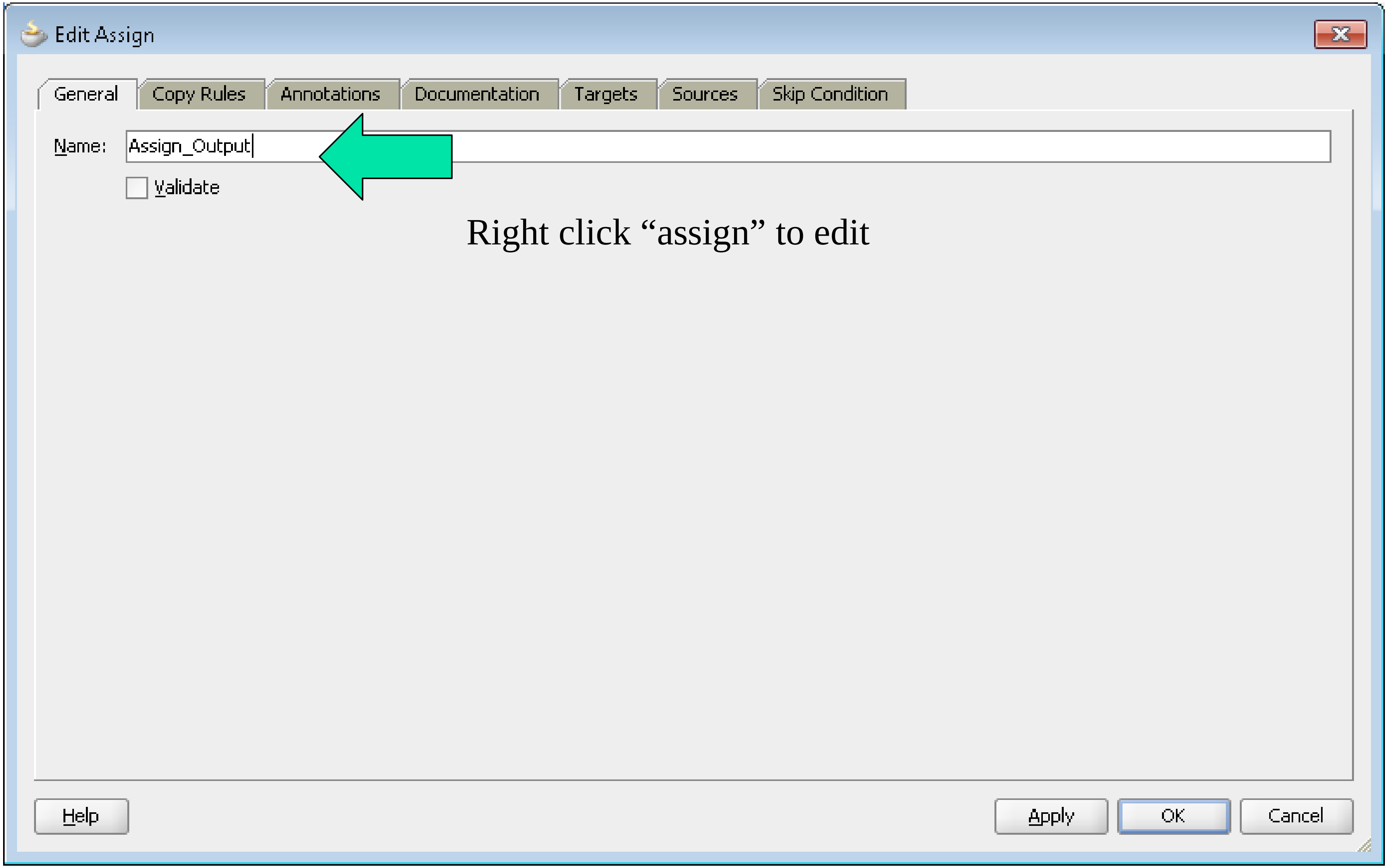
Drag “assign” into bpel panel

BPEL process after adding Assign Activity


Partner Links
Pa
HelloBPEL
main
hellobpel_client
receiveInput
Assign1
replyOutput

Put “assign” between receiveInput and replyOutput

Edit Assign Name



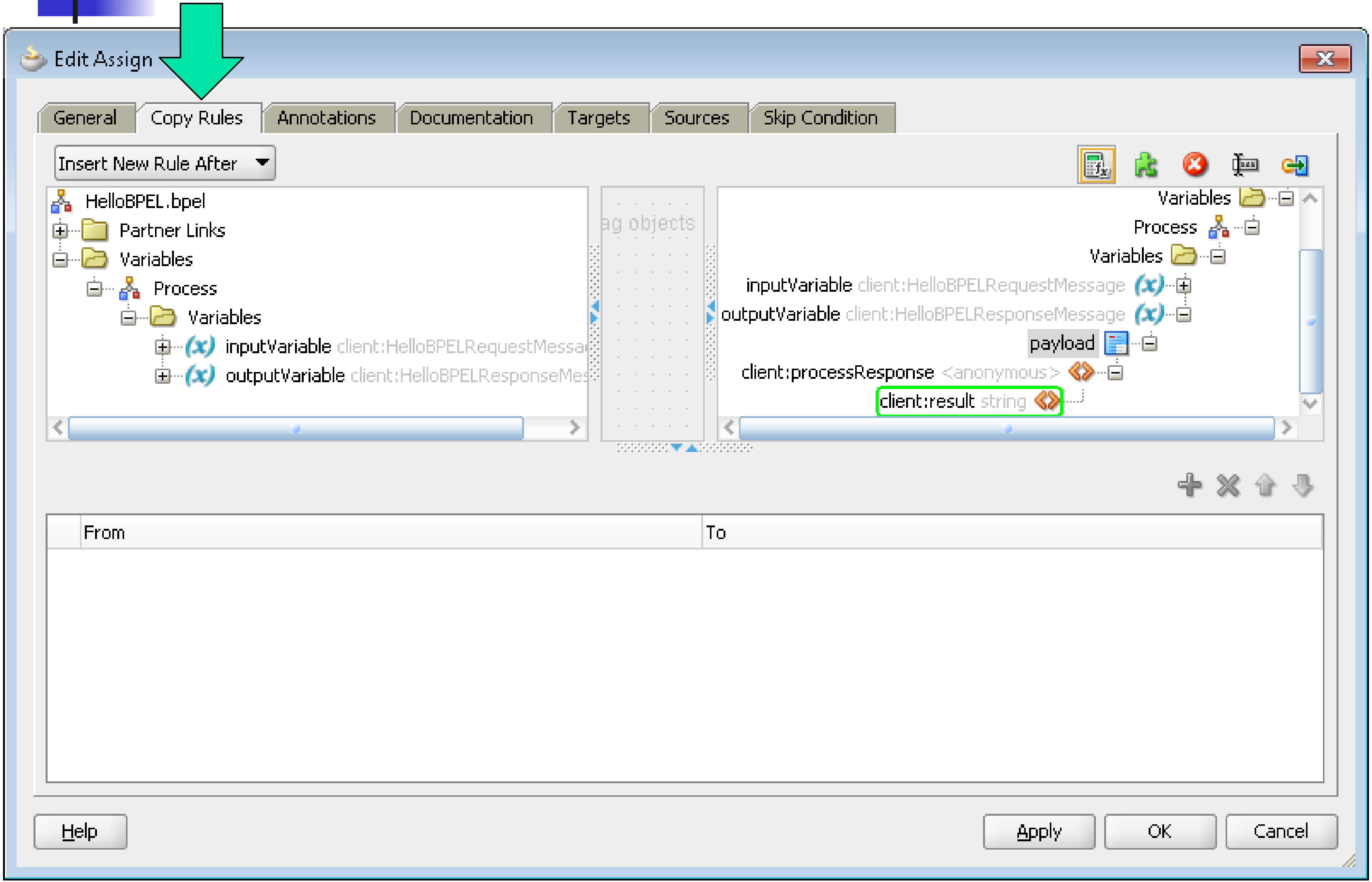
Edit Assign
General
Copy Rules
Annotations
Documentation
Targets
Sources
Skip Condition
Help
Apply
OK
Cancel

Name: Assign_Output

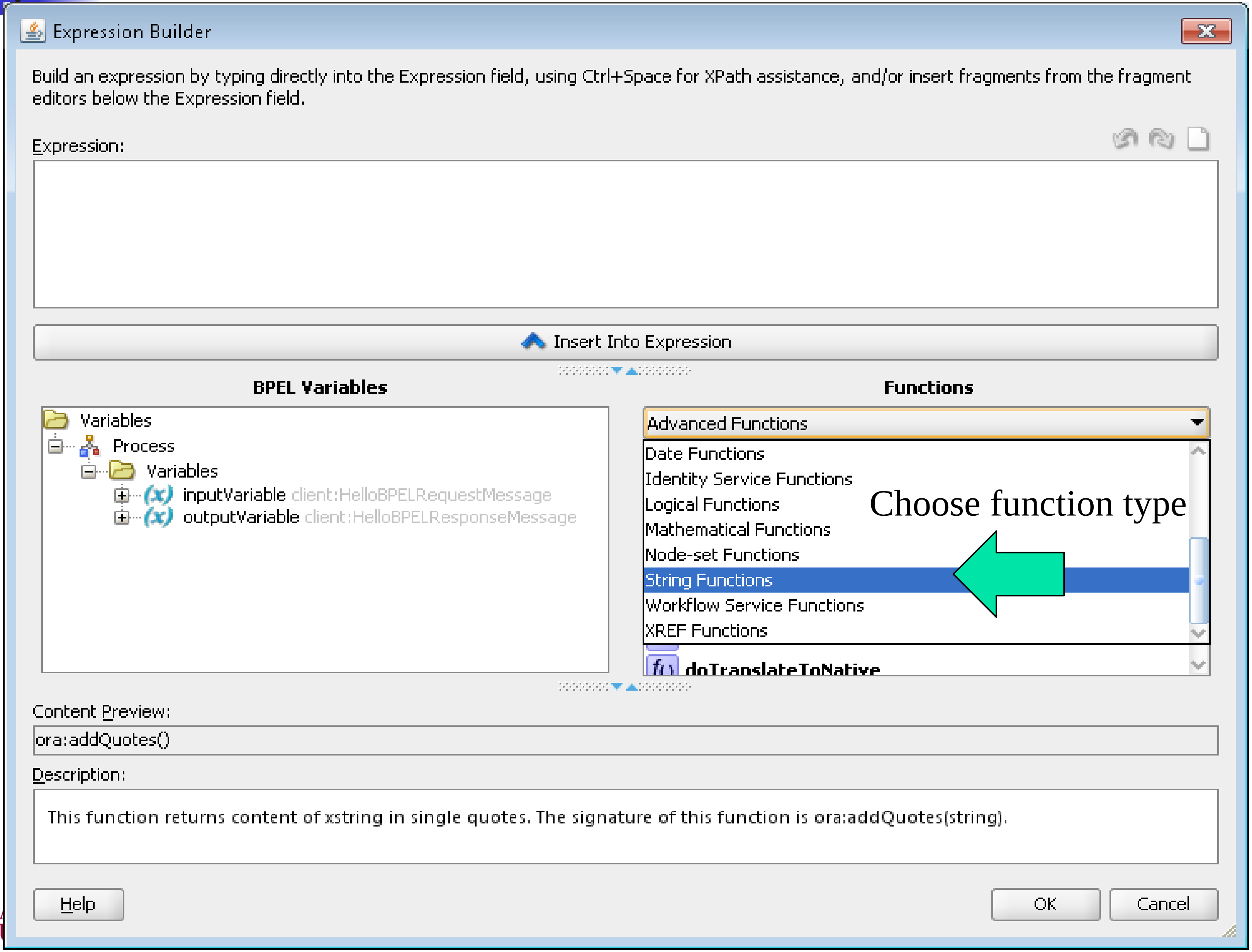
☐ Validate

Right click “assign” to edit

Drag and Drop Function onto Target Variable


Edit Assign
General
Copy Rules
Annotations
Documentation
Targets
Sources
Skip Condition
Insert New Rule After
HelloBPEL.bpel
Partner Links
Variables
Process
Variables
inputVariable client:HelloBPELRequestMessa
outputVariable client:HelloBPELResponseMes
ag objects
Variables
Process
Variables
inputVariable client:HelloBPELRequestMessage
outputVariable client:HelloBPELResponseMessage
payload
client:processResponse <anonymous>
client:result string
From
To
Help
Apply
OK
Cancel

Assign Expression Builder



Expression Builder

Build an expression by typing directly into the Expression field, using Ctrl+Space for XPath assistance, and/or insert fragments from the fragment editors below the Expression field.

Expression:
Insert Into Expression
BPEL Variables
Variables
Process
Variables
inputVariable client:HelloBPELRequestMessage
outputVariable client:HelloBPELResponseMessage
Functions
Advanced Functions
Date Functions
Identity Service Functions
Logical Functions
Mathematical Functions
Node-set Functions
String Functions
Workflow Service Functions
XREF Functions
doTranslateToNative

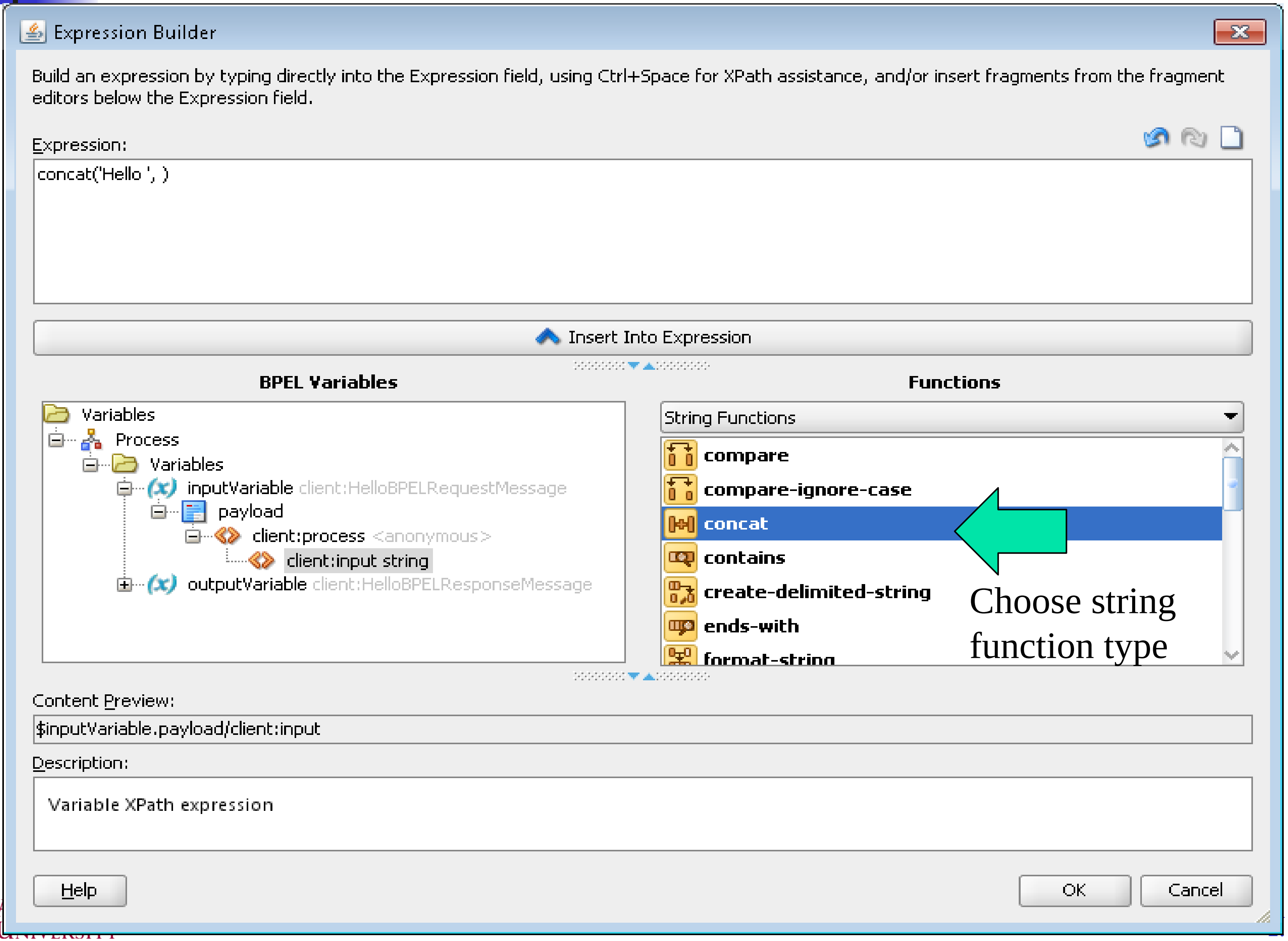
Choose function type

Content Preview: ora:addQuotes()

Description: This function returns content of xstring in single quotes. The signature of this function is ora:addQuotes(string).

Help
OK
Cancel

Add String Concat Function



Expression Builder

Build an expression by typing directly into the Expression field, using Ctrl+Space for XPath assistance, and/or insert fragments from the fragment editors below the Expression field.

Expression:

```
concat('Hello ', )
```

BPEL Variables

- Variables
  - Process
    - Variables
      - inputVariable client:HelloBPELRequestMessage
        - payload
          - client:process <anonymous>
            - client:input string
      - outputVariable client:HelloBPELResponseMessage

Functions

String Functions

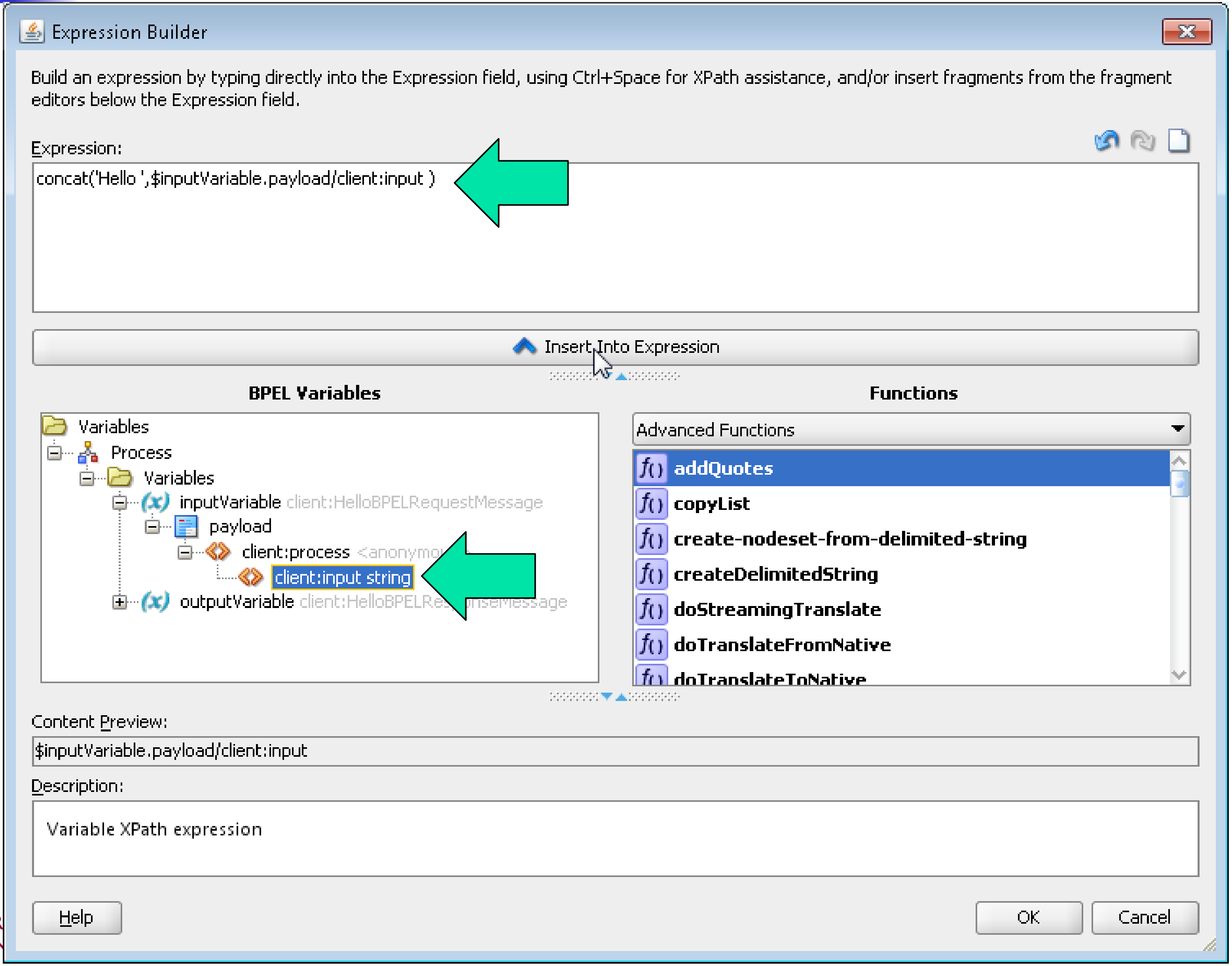
- compare
- compare-ignore-case
- concat
- contains
- create-delimited-string
- ends-with
- format-string

Choose string function type

Content Preview: $inputVariable.payload/client:input

Description: Variable XPath expression

Specify Concat of Hello and Input Value



Expression Builder

Build an expression by typing directly into the Expression field, using Ctrl+Space for XPath assistance, and/or insert fragments from the fragment editors below the Expression field.

Expression:

```
concat('Hello ',$inputVariable.payload/client:input )
```

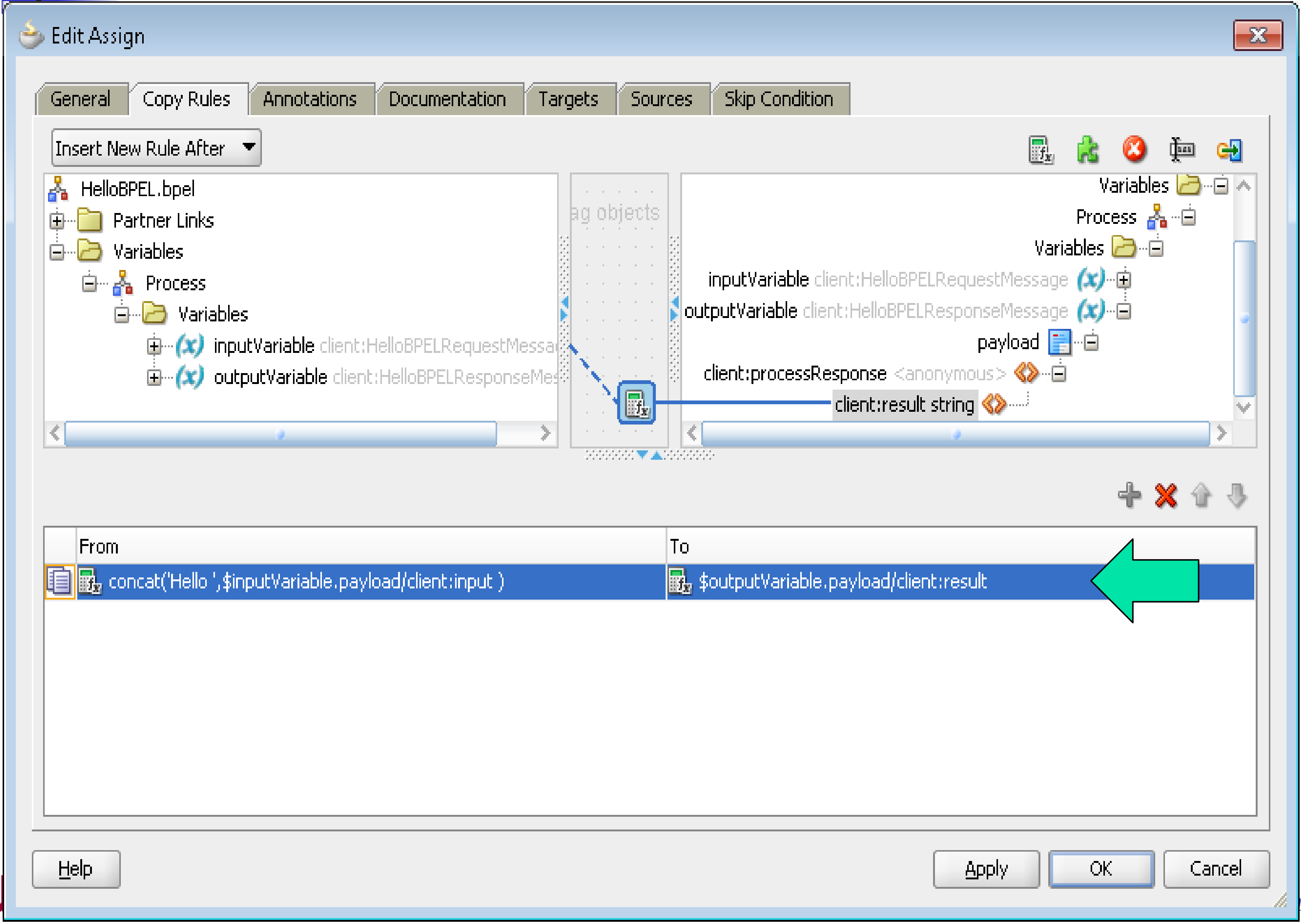
Insert Into Expression
BPEL Variables
Variables
Process
Variables
inputVariable client:HelloBPELRequestMessage
payload
client:process <anonymou
client:input string
outputVariable client:HelloBPELResponseMessage
Functions
Advanced Functions
addQuotes
copyList
create-nodeset-from-delimited-string
createDelimitedString
doStreamingTranslate
doTranslateFromNative
doTranslateToNative

Content Preview: $inputVariable.payload/client:input

Description: Variable XPath expression

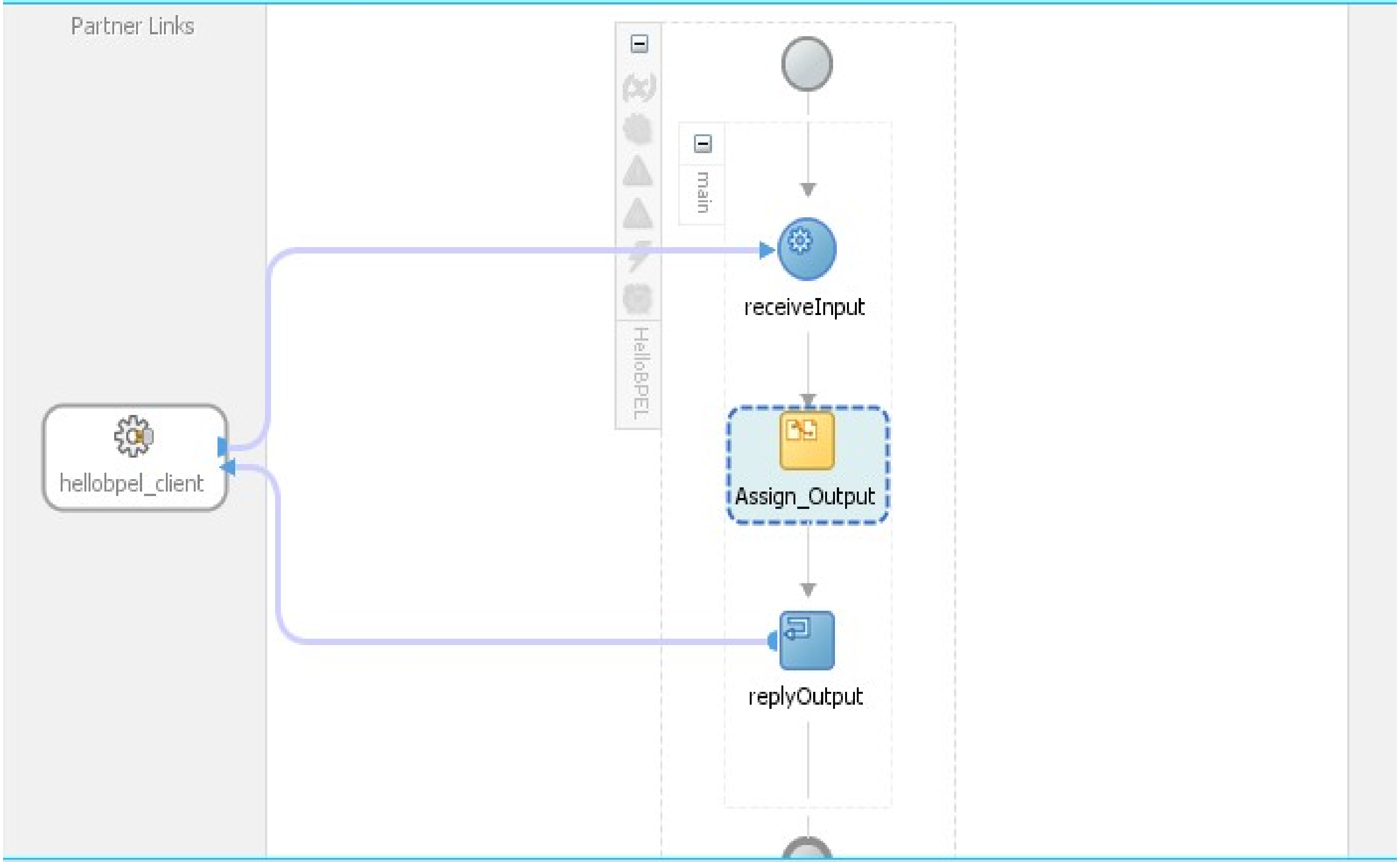
Help
OK
Cancel

Completed Assign Activity


Edit Assign
General
Copy Rules
Annotations
Documentation
Targets
Sources
Skip Condition
Insert New Rule After
HelloBPEL.bpel
Partner Links
Variables
Process
Variables
inputVariable client:HelloBPELRequestMessa
outputVariable client:HelloBPELResponseMes
ag objects
Variables
Process
Variables
inputVariable client:HelloBPELRequestMessage
outputVariable client:HelloBPELResponseMessage
payload
client:processResponse <anonymous>
client:result string
Help
Apply
OK
Cancel

From	To
concat('Hello ',$inputVariable.payload/client:input)	$outputVariable.payload/client:result

Completed Hello World Process


Partner Links
hellobpel_client
main
HelloBPEL
receiveInput
Assign_Output
replyOutput

SOA Suite and BPEL Process Manager

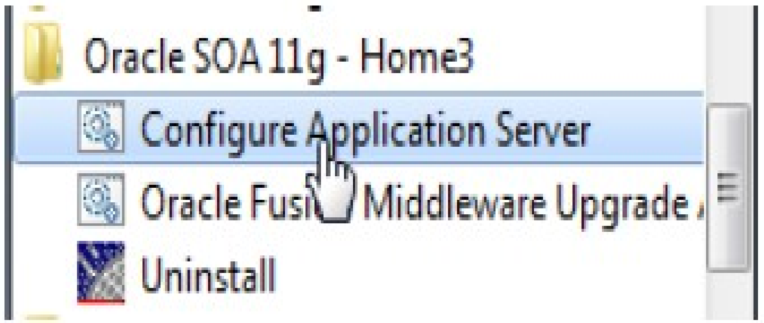
After you have developed your BPEL Process using JDeveloper, now you will use SOA Suite and BPEL Process Manager

Create a SOA Developer Domain

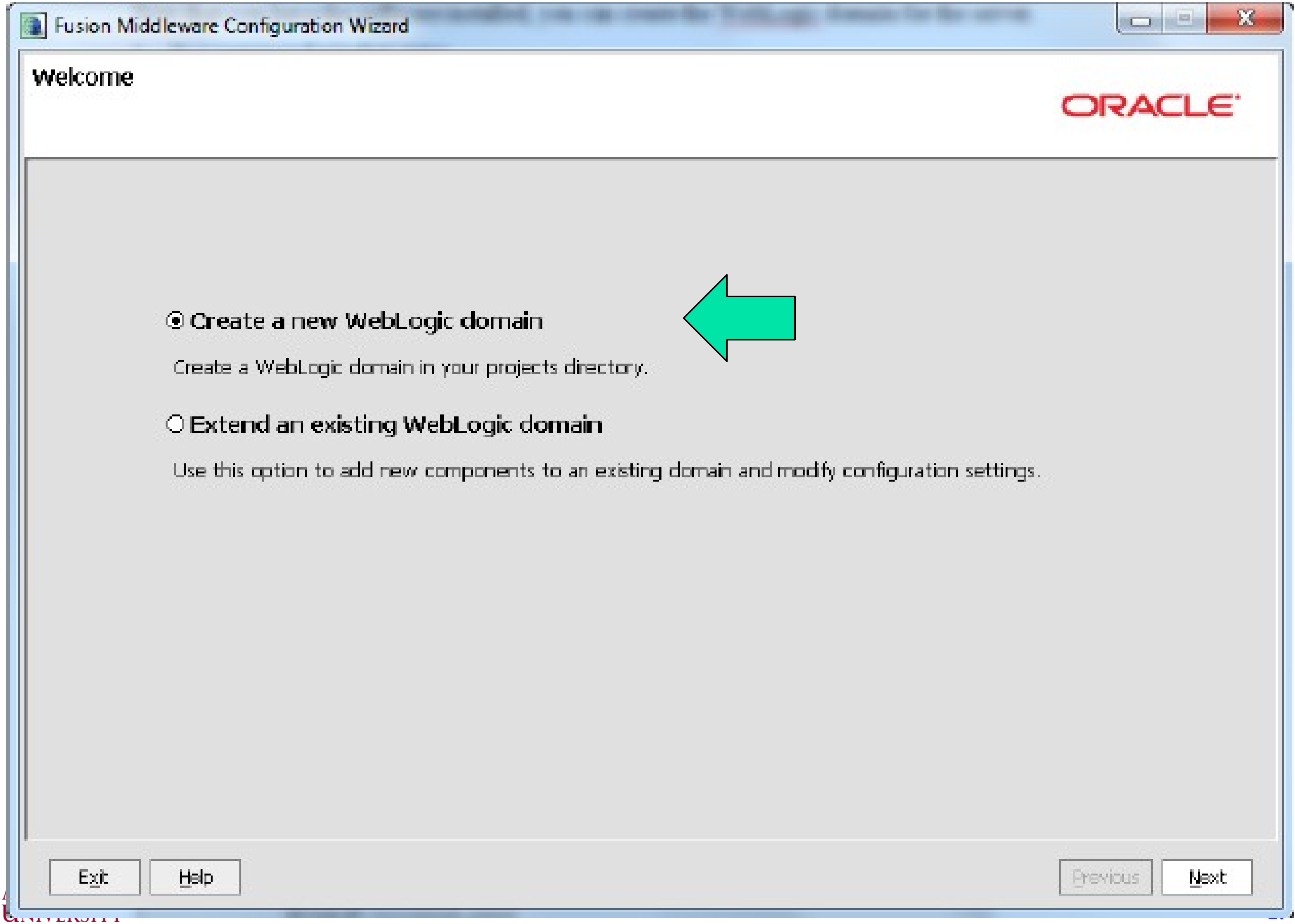
- The developer domain only includes one administration server for SOA/OSB and one managed server for BAM (if BAM is chosen).

Configure Application Server

- open the *Fusion Middleware Configuration Wizard* from the Start menu under: **Oracle SOA 11 g – Homex -> Configure Application Server**


Oracle SOA 11g - Home3
Configure Application Server
Oracle Fusi Middleware Upgrade
Uninstall

Create a New WebLogic Domain



Fusion Middleware Configuration Wizard
Welcome
ORACLE
Exit
Help
Previous
Next

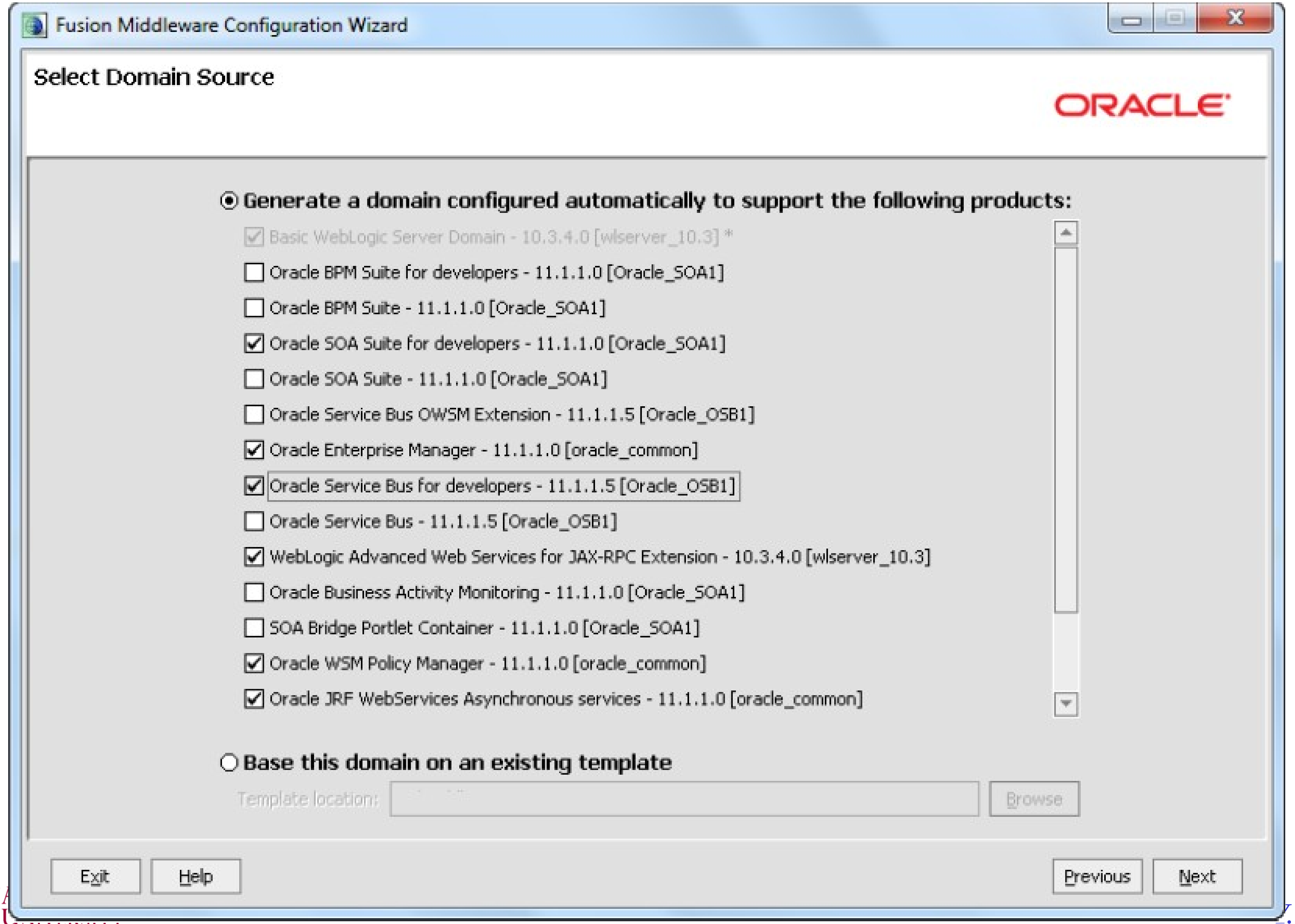
● Create a new WebLogic domain

Create a WebLogic domain in your projects directory.

○ Extend an existing WebLogic domain

Use this option to add new components to an existing domain and modify configuration settings.

Select Domain Source



Select Domain Source

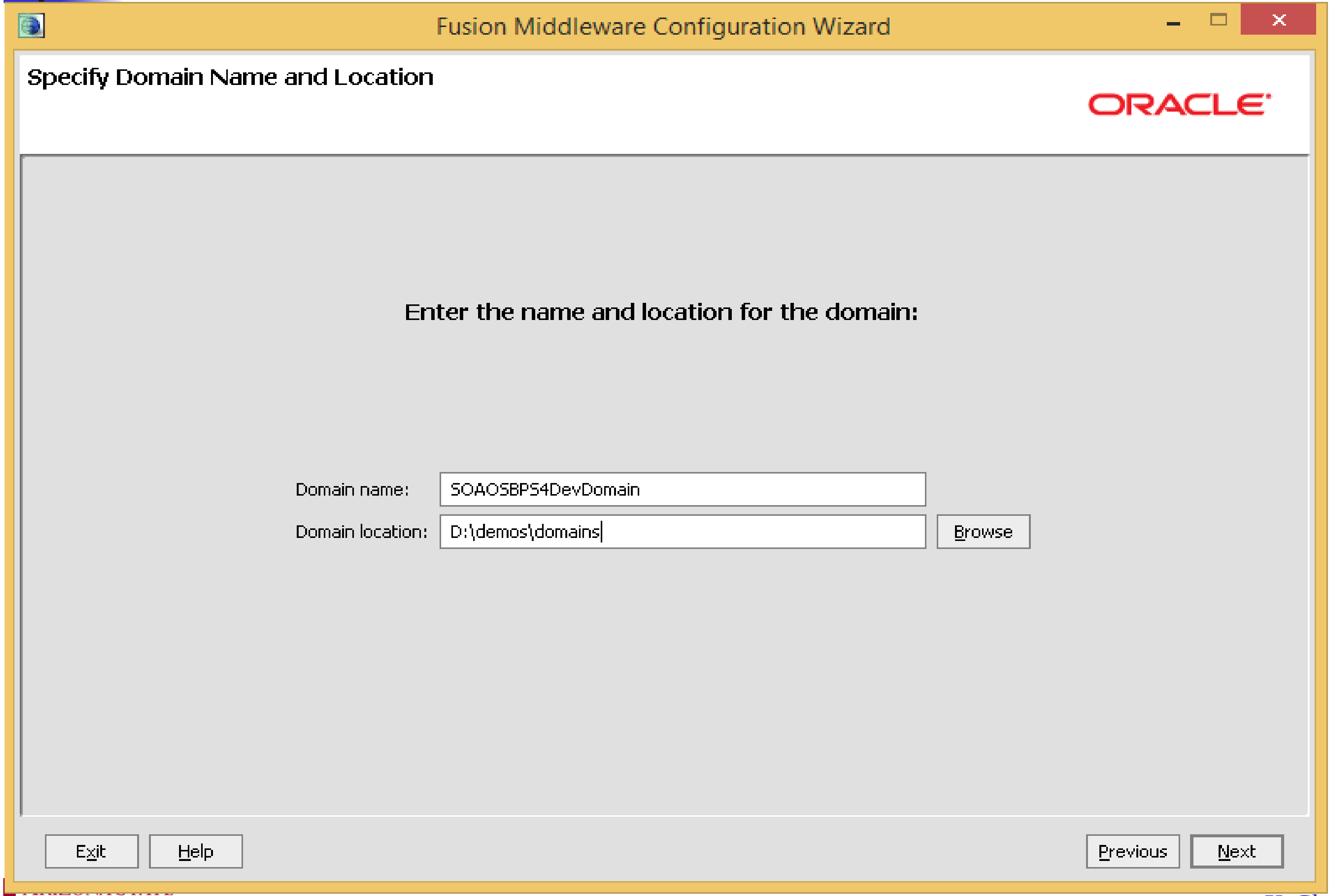
● Generate a domain configured automatically to support the following products:

- ☑ Basic WebLogic Server Domain - 10.3.4.0 [wlserver_10.3] *
- ☐ Oracle BPM Suite for developers - 11.1.1.0 [Oracle_SOA1]
- ☐ Oracle BPM Suite - 11.1.1.0 [Oracle_SOA1]
- ☑ Oracle SOA Suite for developers - 11.1.1.0 [Oracle_SOA1]
- ☐ Oracle SOA Suite - 11.1.1.0 [Oracle_SOA1]
- ☐ Oracle Service Bus OWSM Extension - 11.1.1.5 [Oracle_OSB1]
- ☑ Oracle Enterprise Manager - 11.1.1.0 [oracle_common]
- ☑ Oracle Service Bus for developers - 11.1.1.5 [Oracle_OSB1]
- ☐ Oracle Service Bus - 11.1.1.5 [Oracle_OSB1]
- ☑ WebLogic Advanced Web Services for JAX-RPC Extension - 10.3.4.0 [wlserver_10.3]
- ☐ Oracle Business Activity Monitoring - 11.1.1.0 [Oracle_SOA1]
- ☐ SOA Bridge Portlet Container - 11.1.1.0 [Oracle_SOA1]
- ☑ Oracle WSM Policy Manager - 11.1.1.0 [oracle_common]
- ☑ Oracle JRF WebServices Asynchronous services - 11.1.1.0 [oracle_common]

○ Base this domain on an existing template

Template location:

Specify Domain Name and Location


Fusion Middleware Configuration Wizard
ORACLE
Exit
Help
Previous
Next

Specify Domain Name and Location

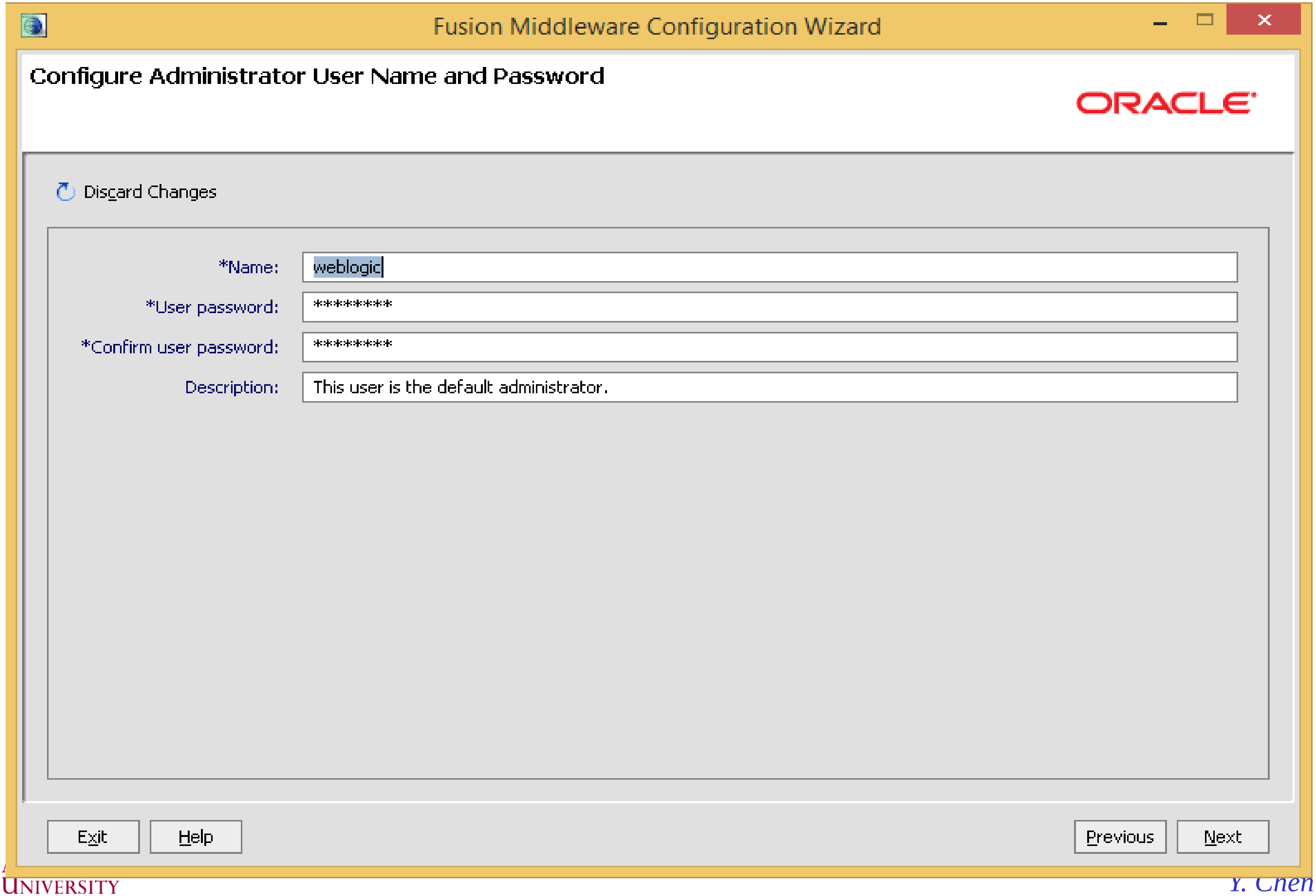
Enter the name and location for the domain:

Domain name: SOAOSBPS4DevDomain

Domain location: D:\demos\domains

Browse

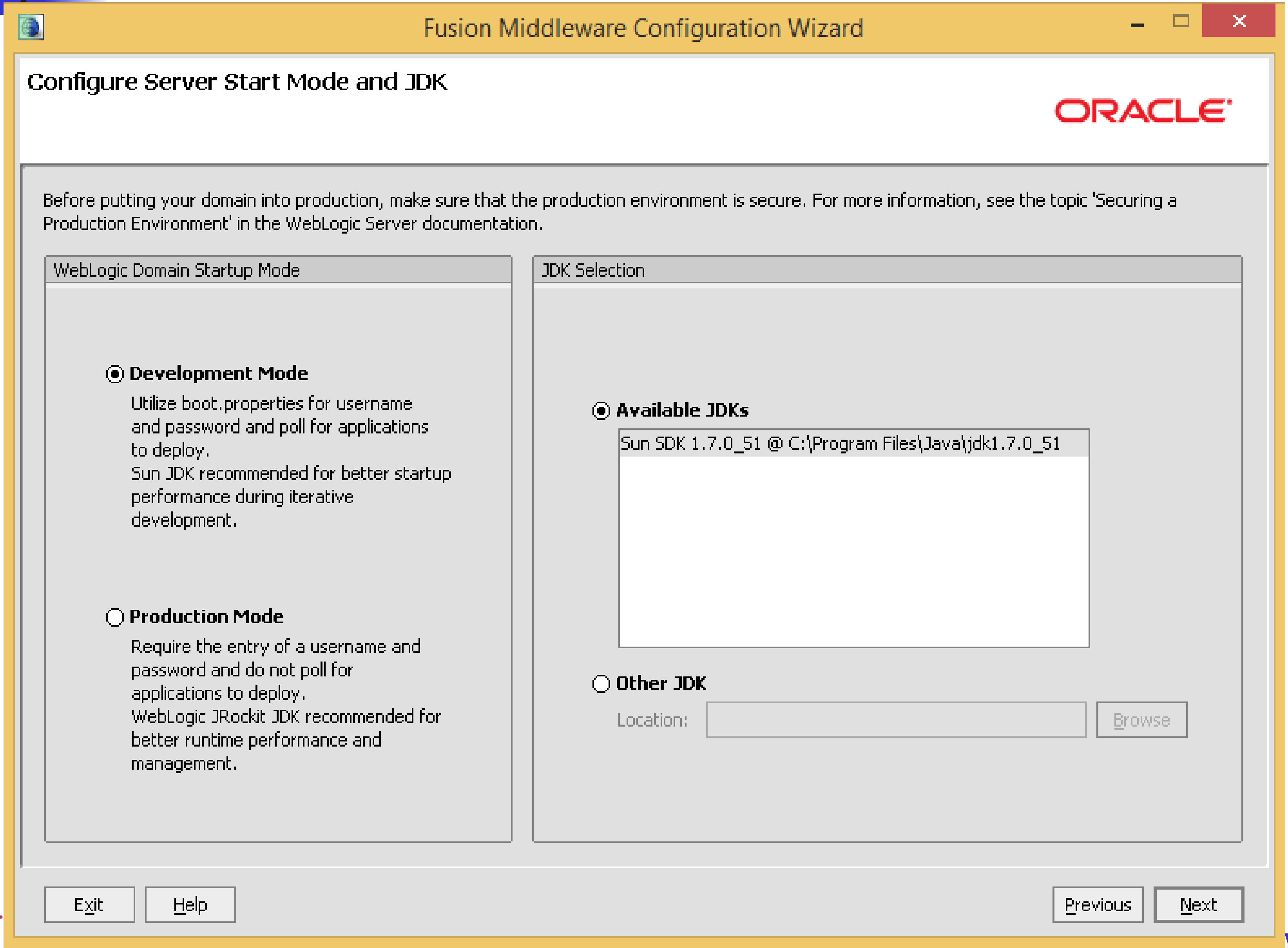
Configure Administrator


Fusion Middleware Configuration Wizard
ORACLE
Discard Changes
Exit
Help
Previous
Next

Configure Administrator User Name and Password

*Name: weblogic
*User password: *********
*Confirm user password: *********
Description: This user is the default administrator.

Configure Server



Configure Server Start Mode and JDK

Before putting your domain into production, make sure that the production environment is secure. For more information, see the topic 'Securing a Production Environment' in the WebLogic Server documentation.

WebLogic Domain Startup Mode

● **Development Mode**

Utilize boot.properties for username and password and poll for applications to deploy.
Sun JDK recommended for better startup performance during iterative development.

○ **Production Mode**

Require the entry of a username and password and do not poll for applications to deploy.
WebLogic JRockit JDK recommended for better runtime performance and management.

JDK Selection

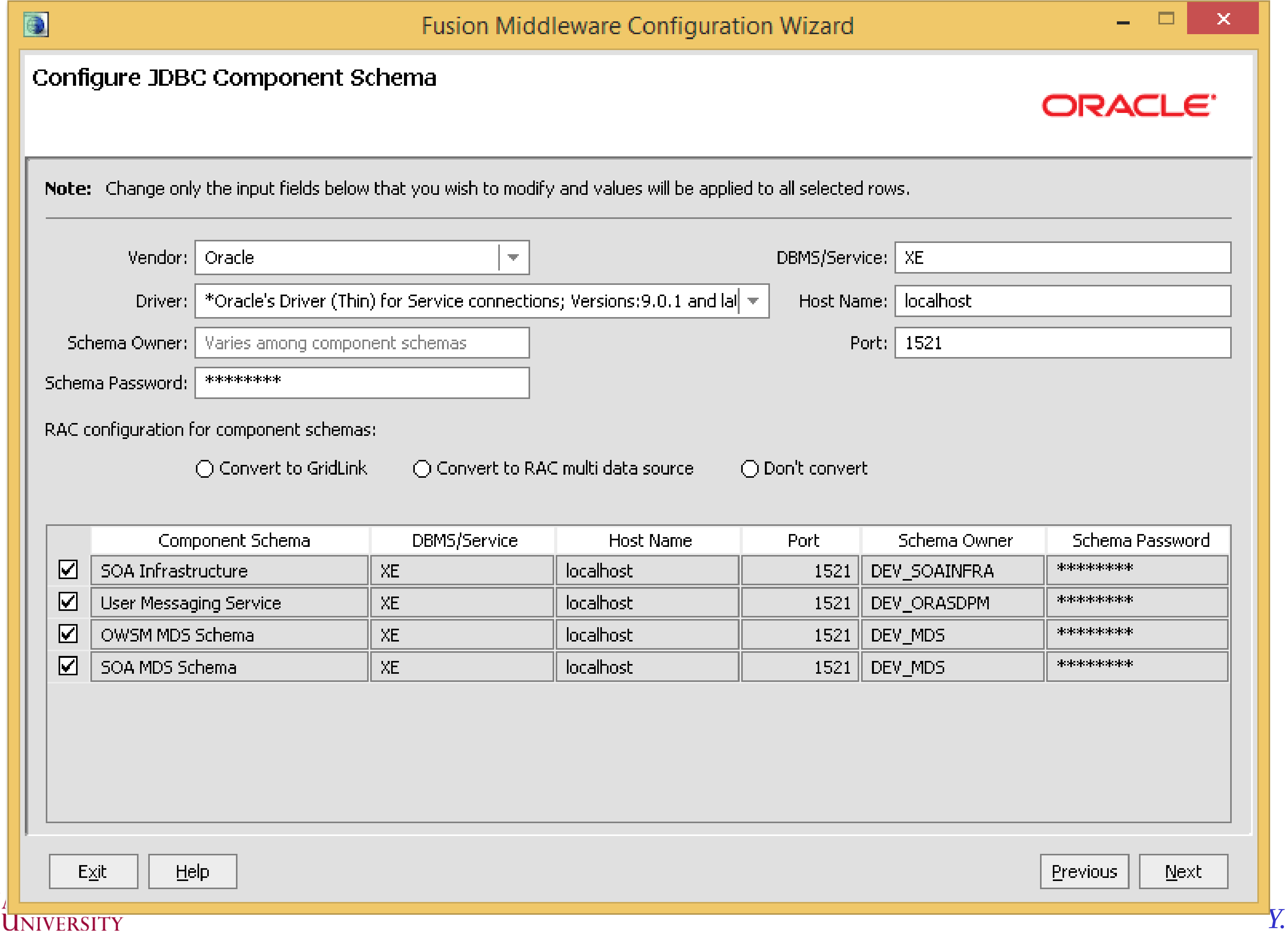
● **Available JDKs**

Sun SDK 1.7.0_51 @ C:\Program Files\Java\jdk1.7.0_51

○ **Other JDK**

Location:

Configure JDBC Component Schema



Configure JDBC Component Schema

Note: Change only the input fields below that you wish to modify and values will be applied to all selected rows.

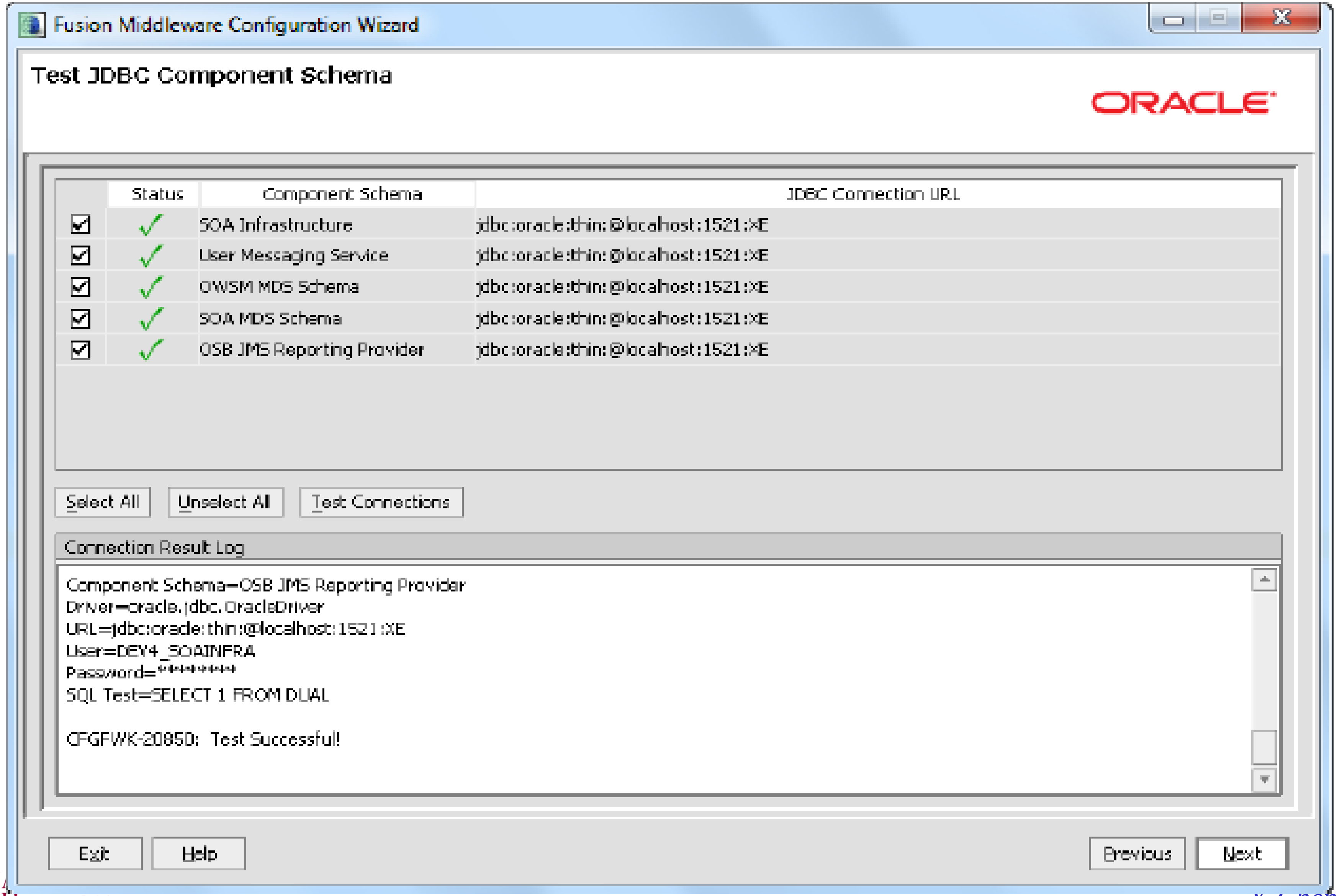
Vendor: Oracle
Driver: *Oracle's Driver (Thin) for Service connections; Versions:9.0.1 and lat
Schema Owner: Varies among component schemas
Schema Password: *********
DBMS/Service: XE
Host Name: localhost
Port: 1521

RAC configuration for component schemas:

○ Convert to GridLink ○ Convert to RAC multi data source ○ Don't convert

	Component Schema	DBMS/Service	Host Name	Port	Schema Owner	Schema Password
☑	SOA Infrastructure	XE	localhost	1521	DEV_SOAINFRA	*********
☑	User Messaging Service	XE	localhost	1521	DEV_ORASDPM	*********
☑	OWSM MDS Schema	XE	localhost	1521	DEV_MDS	*********
☑	SOA MDS Schema	XE	localhost	1521	DEV_MDS	*********

Test JDBC Component Schema



Fusion Middleware Configuration Wizard
Test JDBC Component Schema
ORACLE

	Status	Component Schema	JDBC Connection URL
☑	✓	SOA Infrastructure	jdbc:oracle:thin:@localhost:1521:XE
☑	✓	User Messaging Service	jdbc:oracle:thin:@localhost:1521:XE
☑	✓	OWSM MDS Schema	jdbc:oracle:thin:@localhost:1521:XE
☑	✓	SOA MDS Schema	jdbc:oracle:thin:@localhost:1521:XE
☑	✓	OSB JMS Reporting Provider	jdbc:oracle:thin:@localhost:1521:XE

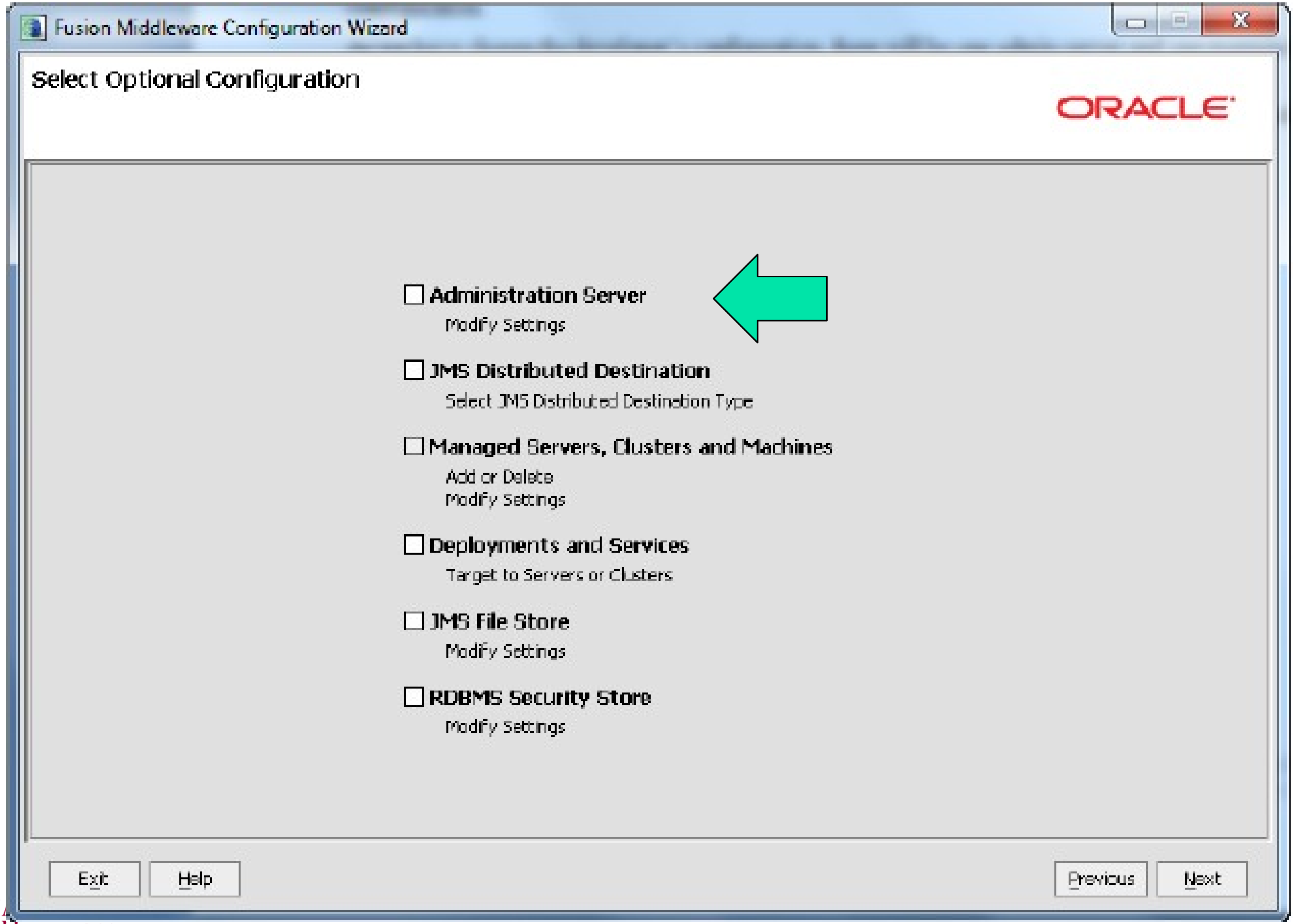
Select All
Unselect All
Test Connections
Connection Result Log

```
Component Schema=OSB JMS Reporting Provider
Driver=oracle.jdbc.OracleDriver
URL=jdbc:oracle:thin:@localhost:1521:XE
User=DEV4_SOAINFRA
Password=********
SQL Test=SELECT 1 FROM DUAL

CFGFWK-20850: Test Successful!
```

Exit
Help
Previous
Next

Select Optional Configuration



Fusion Middleware Configuration Wizard

Select Optional Configuration

ORACLE

☐ **Administration Server**
Modify Settings

☐ **JMS Distributed Destination**
Select JMS Distributed Destination Type

☐ **Managed Servers, Clusters and Machines**
Add or Delete
Modify Settings

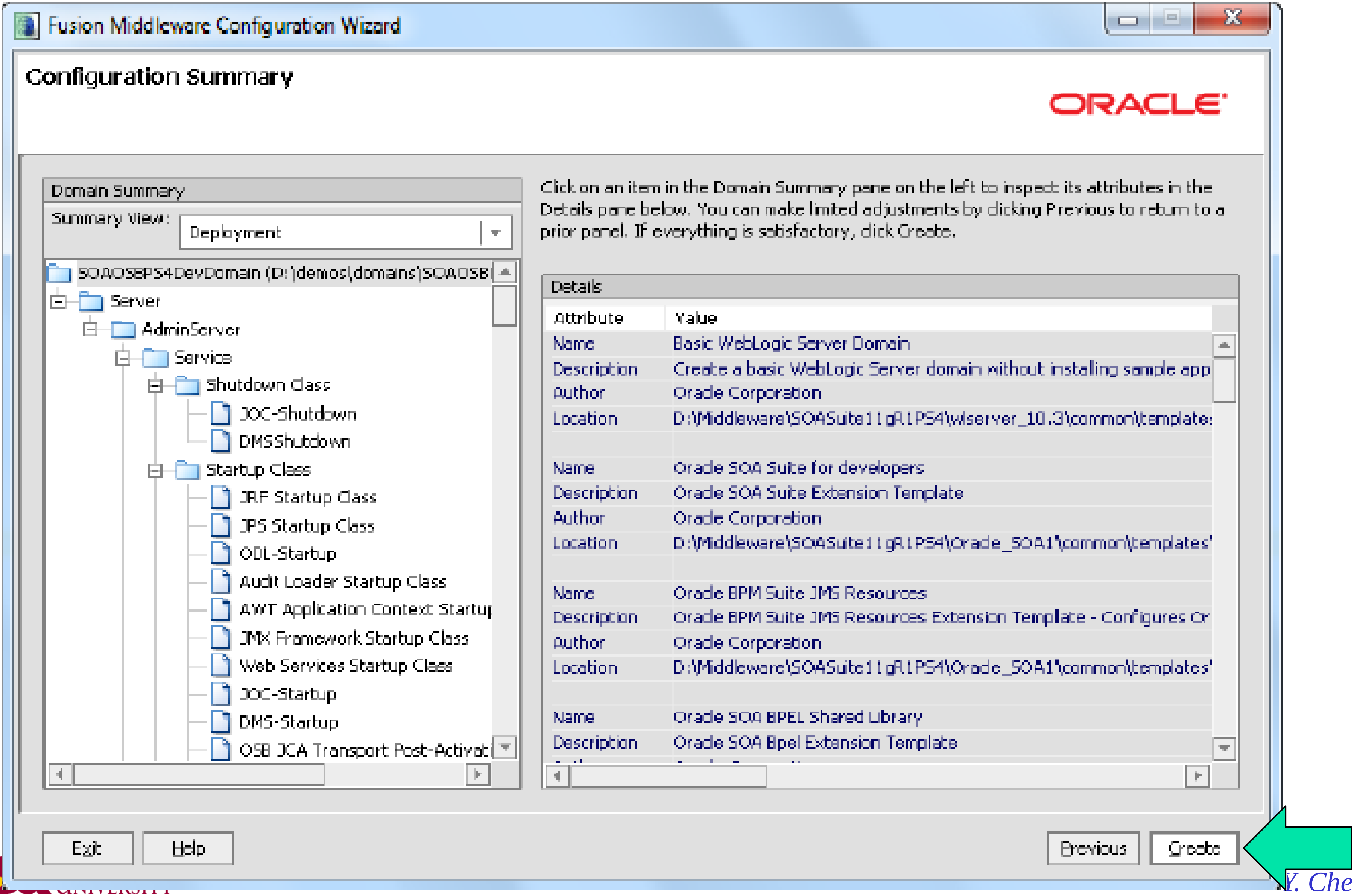
☐ **Deployments and Services**
Target to Servers or Clusters

☐ **JMS File Store**
Modify Settings

☐ **RDBMS Security Store**
Modify Settings

Exit
Help
Previous
Next

Configuration Summary



Fusion Middleware Configuration Wizard

Configuration Summary

Domain Summary

Summary View: Deployment

- SOAOSBPS4DevDomain (D:\demos\domains\SOAOSB
  - Server
    - AdminServer
      - Service
        - Shutdown Class
          - JOC-Shutdown
          - DMSShutdown
        - Startup Class
          - JRF Startup Class
          - JPS Startup Class
          - ODL-Startup
          - Audit Loader Startup Class
          - AWT Application Context Startup
          - JMX Framework Startup Class
          - Web Services Startup Class
          - JOC-Startup
          - DMS-Startup
          - OSB JCA Transport Post-Activati

Click on an item in the Domain Summary pane on the left to inspect its attributes in the Details pane below. You can make limited adjustments by clicking Previous to return to a prior panel. If everything is satisfactory, click Create.

Details

Attribute	Value
Name	Basic WebLogic Server Domain
Description	Create a basic WebLogic Server domain without installing sample app
Author	Oracle Corporation
Location	D:\Middleware\SOASuite11gR1PS4\wlserver_10.3\common\template:
Name	Oracle SOA Suite for developers
Description	Oracle SOA Suite Extension Template
Author	Oracle Corporation
Location	D:\Middleware\SOASuite11gR1PS4\Oracle_SOA1\common\templates'
Name	Oracle BPM Suite JMS Resources
Description	Oracle BPM Suite JMS Resources Extension Template - Configures Or
Author	Oracle Corporation
Location	D:\Middleware\SOASuite11gR1PS4\Oracle_SOA1\common\templates'
Name	Oracle SOA BPEL Shared Library
Description	Oracle SOA Bpel Extension Template

Configuring Oracle SOA Suite

Configuring Oracle SOA Suite may Fail After Installing Oracle WebLogic Server With IBM JDK7

After installing Oracle WebLogic Server Release 10.3 with IBM JDK7, configuring Oracle SOA Suite and Oracle Enterprise Content Management Suite might fail. This issue might also be seen when configuring Oracle Secure Backup and Oracle Web Center. The java core dump issue is noticed due to insufficient memory.

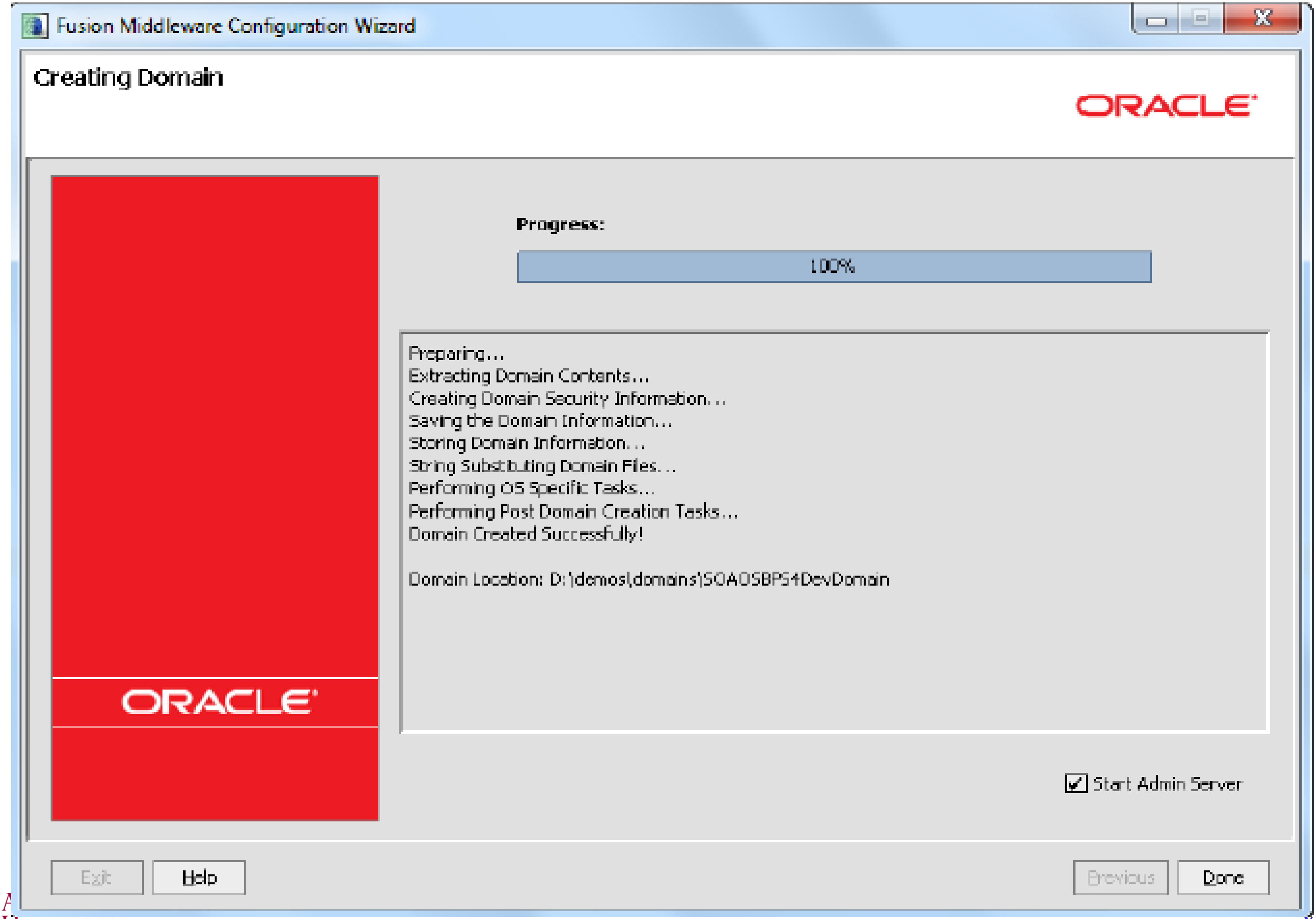
To work around this issue, perform the following steps:

1. Modify the commEnv.sh file located in the WLS_HOME/common/bin directory. Change the value for MEM_ARGS to: `IBM) JAVA_VM= MEM_ARGS=` *`"-Xms256m -Xmx1024m -Xiss512m -Xss1024m"`*
2. Export JAVA_HOME and JAVA_VENDOR before configuring Oracle SOA Suite and Oracle Enterprise Content Management Suite with the following values:
3. `export JAVA_HOME=IBM_JDK7_location export JAVA_VENDOR=IBM`
4. Reconfigure Oracle SOA Suite and Oracle Enterprise Content Management Suite

The questions about installation, patching, and configuration can be answered in the following link:

http://docs.oracle.com/cd/E29542_01/doc.1111/e14771/install.htm

Creating Domain


Fusion Middleware Configuration Wizard
Creating Domain
ORACLE
Progress:
100%
ORACLE
Exit
Help
Previous
Done

```
Preparing...
Extracting Domain Contents...
Creating Domain Security Information...
Saving the Domain Information...
Storing Domain Information...
String Substituting Domain Files...
Performing OS Specific Tasks...
Performing Post Domain Creation Tasks...
Domain Created Successfully!

Domain Location: D:\demos\domains\SOAOSBPS4DevDomain
```

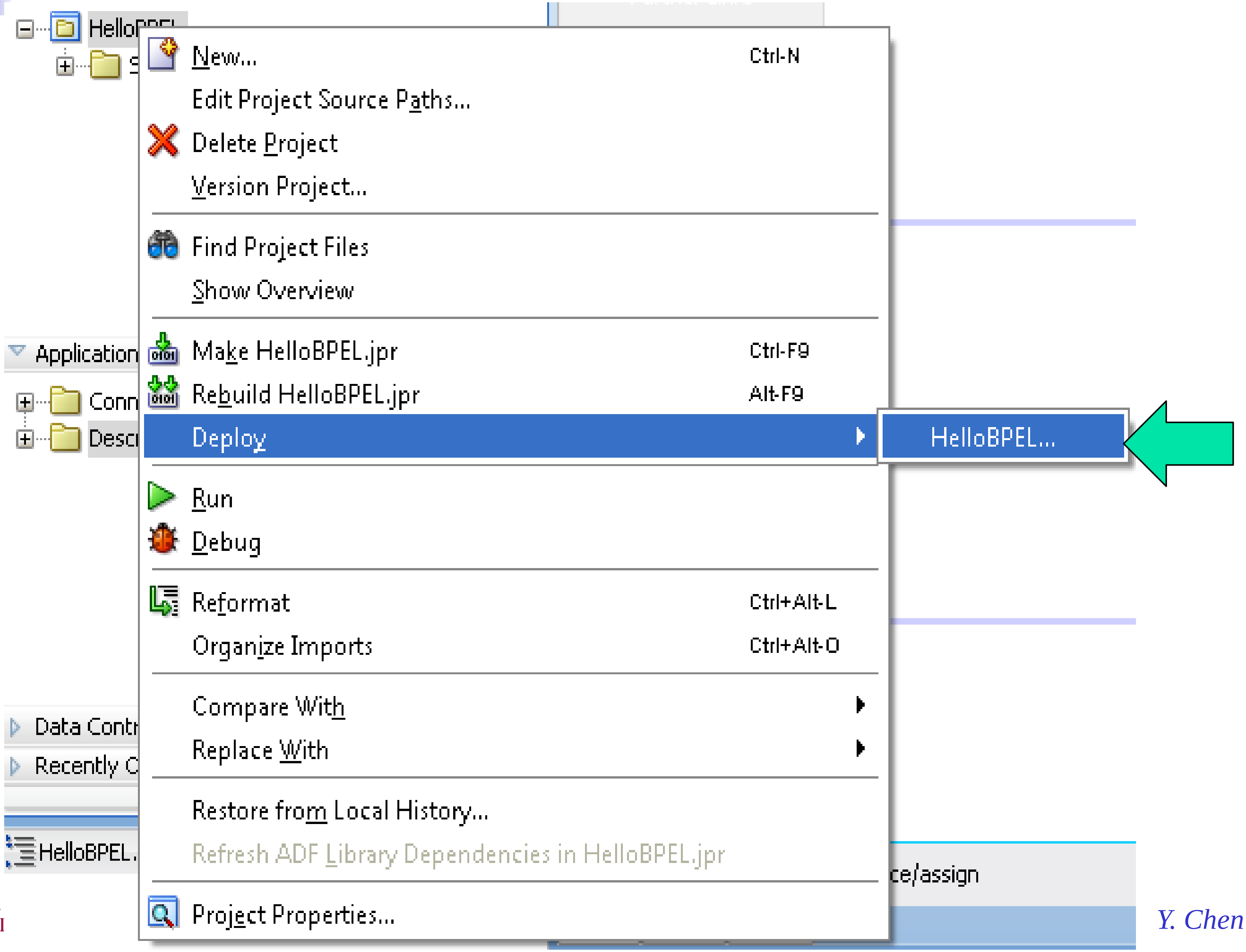
☑ Start Admin Server

Deploy and Execute HelloWorld BPEL App

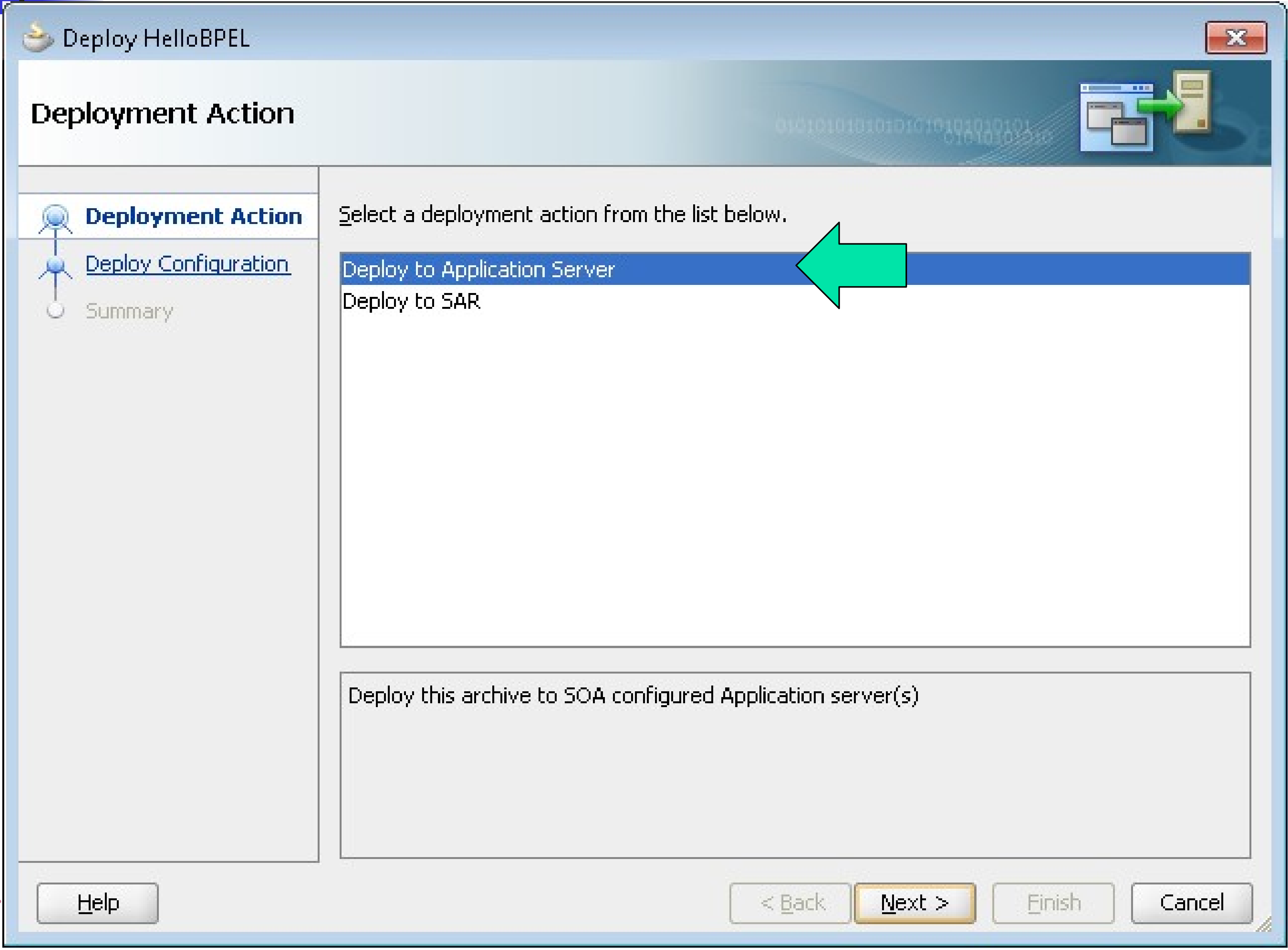
- Deploy BPEL Process
- Execute BPEL Process

Deploy BPEL Process

Right Click Project and Select Deploy


HelloBPEL
New... Ctrl-N
Edit Project Source Paths...
Delete Project
Version Project...
Find Project Files
Show Overview
Make HelloBPEL.jpr Ctrl-F9
Rebuild HelloBPEL.jpr Alt-F9
Deploy
HelloBPEL...
Run
Debug
Reformat Ctrl+Alt-L
Organize Imports Ctrl+Alt-O
Compare With
Replace With
Restore from Local History...
Refresh ADF Library Dependencies in HelloBPEL.jpr
Project Properties...
Application
Conn
Desc
Data Contr
Recently C
HelloBPEL.
ce/assign

Select Deploy to Application Server



Deploy HelloBPEL

Deployment Action

Deployment Action
Deploy Configuration
Summary

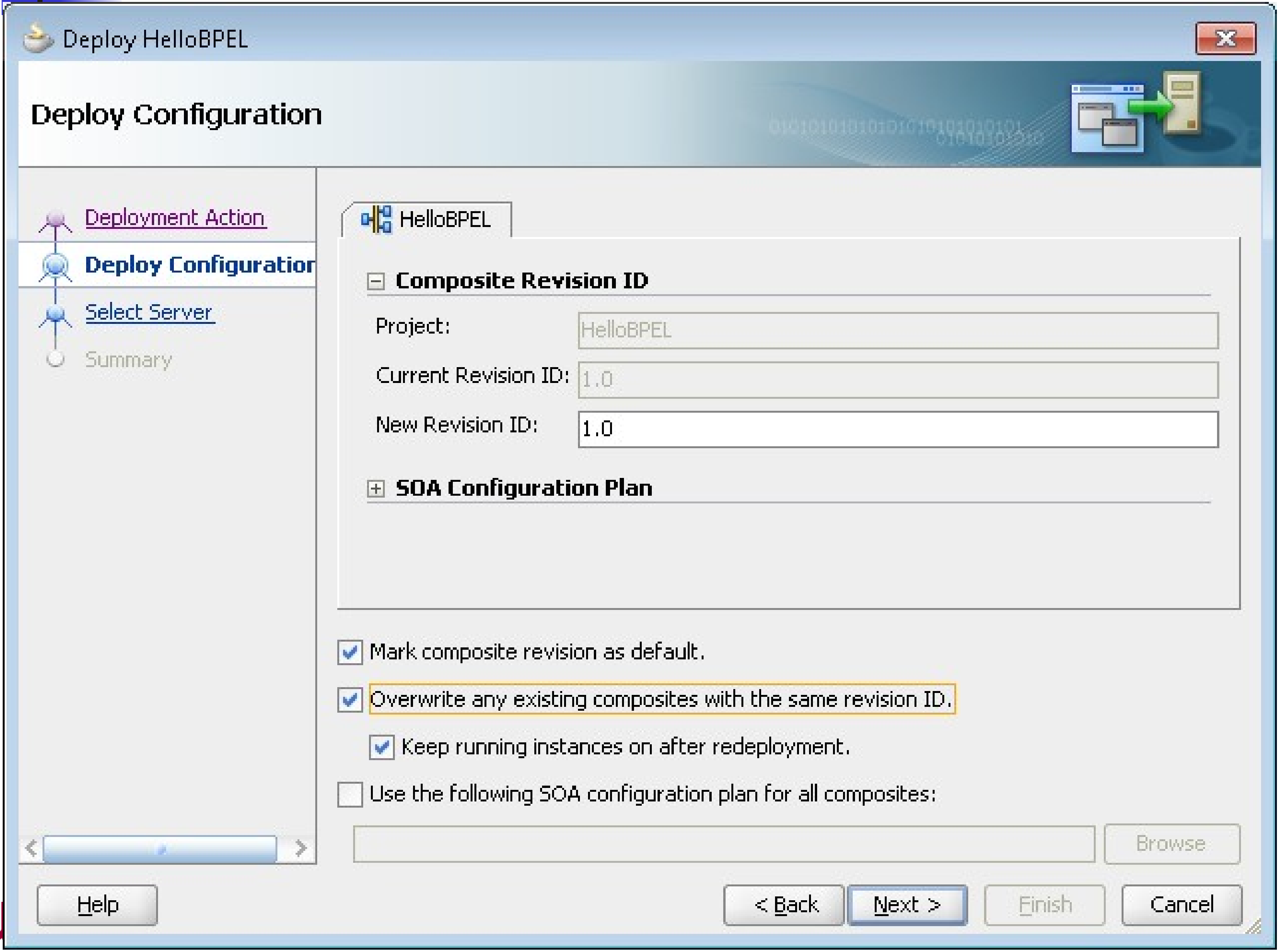
Select a deployment action from the list below.

- Deploy to Application Server
- Deploy to SAR

Deploy this archive to SOA configured Application server(s)

Help
< Back
Next >
Finish
Cancel

Specify Composite Deployment Options



Deploy HelloBPEL

Deploy Configuration

Deployment Action
Deploy Configuration
Select Server
Summary
HelloBPEL

Composite Revision ID

Project: HelloBPEL

Current Revision ID: 1.0

New Revision ID: 1.0

SOA Configuration Plan

☑ Mark composite revision as default.

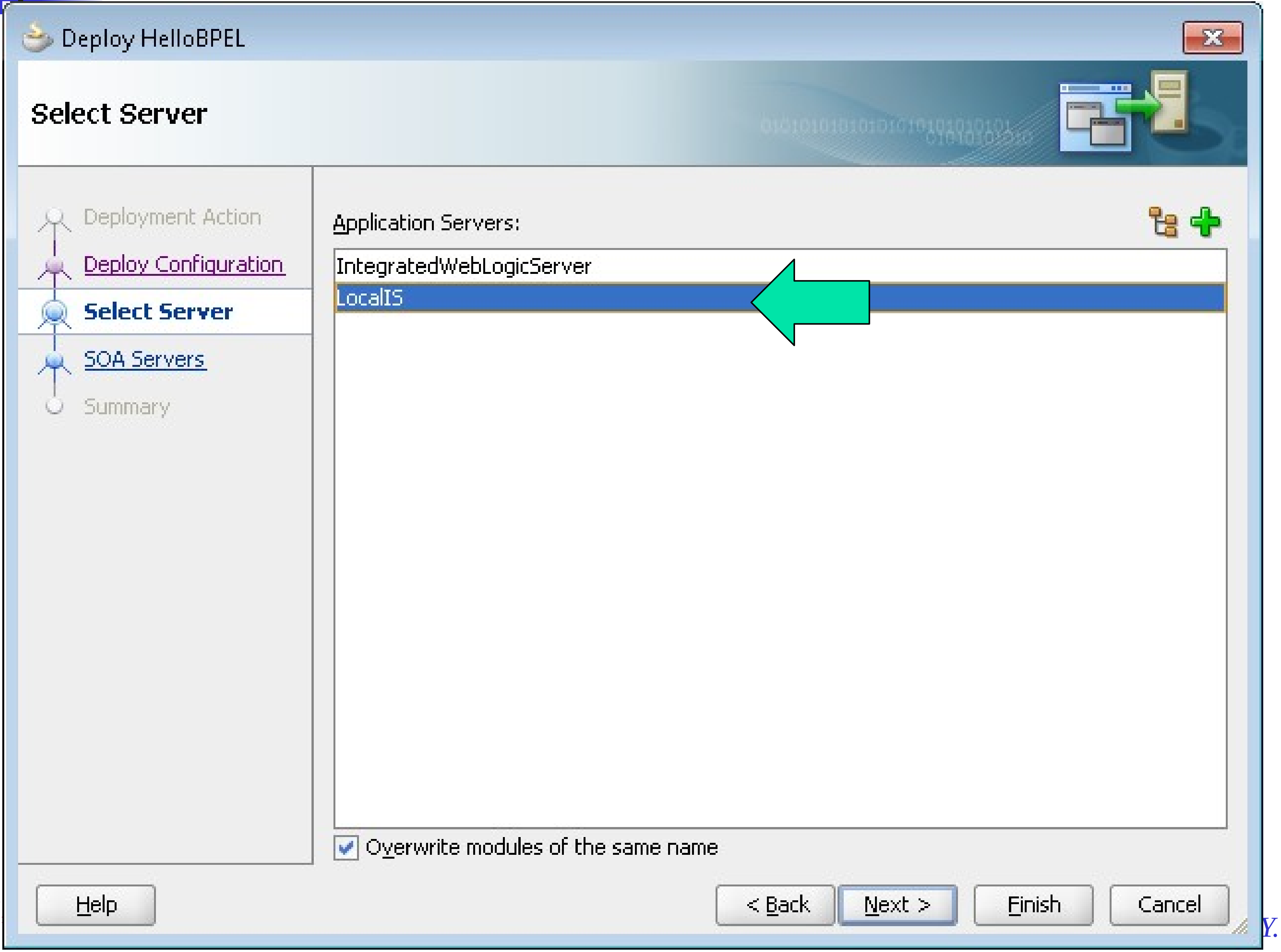
☑ Overwrite any existing composites with the same revision ID.

☑ Keep running instances on after redeployment.

☐ Use the following SOA configuration plan for all composites:

Browse
Help
< Back
Next >
Finish
Cancel

Select Application Server Connection



Deploy HelloBPEL

Select Server

Deployment Action
Deploy Configuration
Select Server
SOA Servers
Summary

Application Servers:

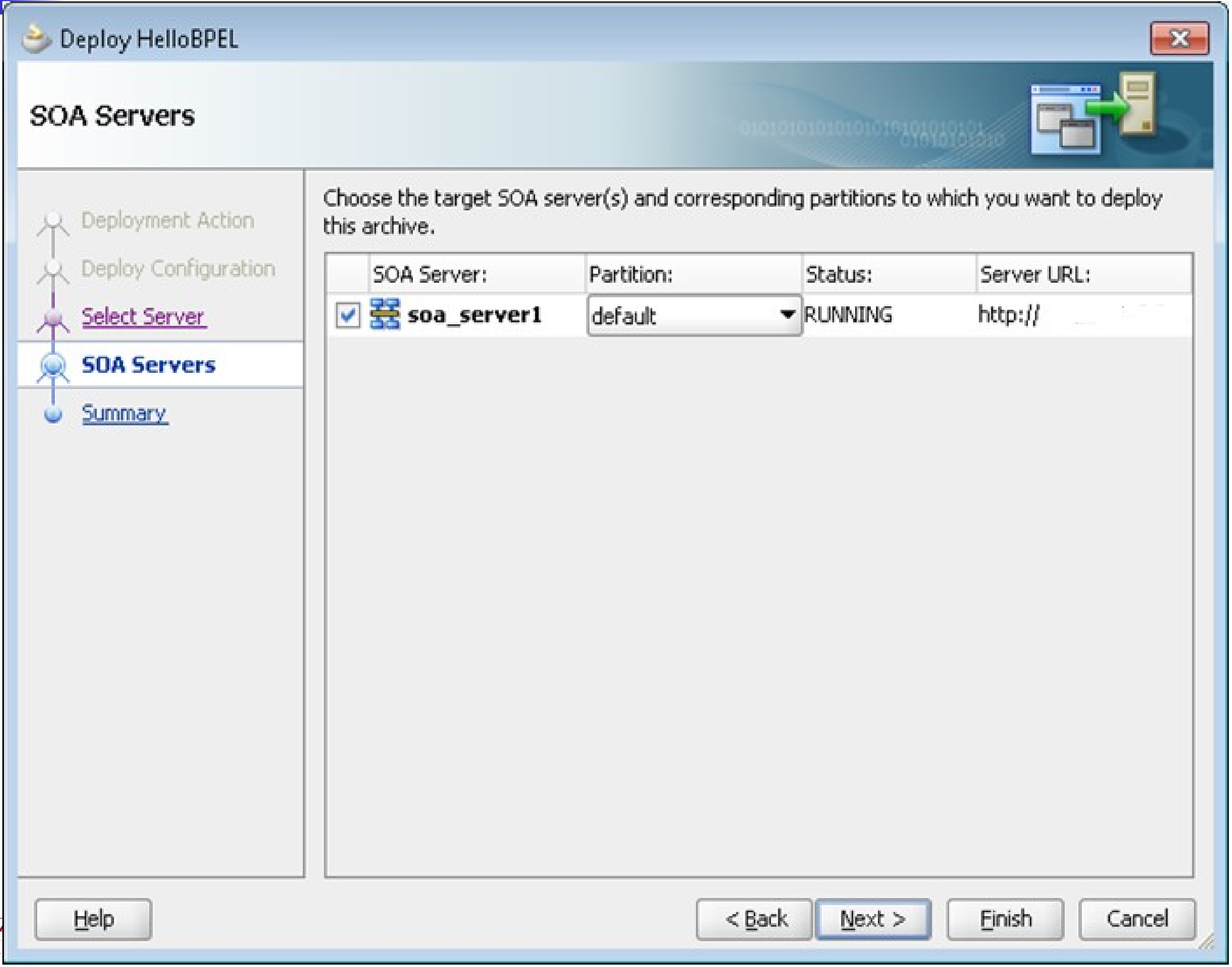
IntegratedWebLogicServer

LocalIS

☑ Overwrite modules of the same name

Help
< Back
Next >
Finish
Cancel

Specify the SOA Server and Partition Details

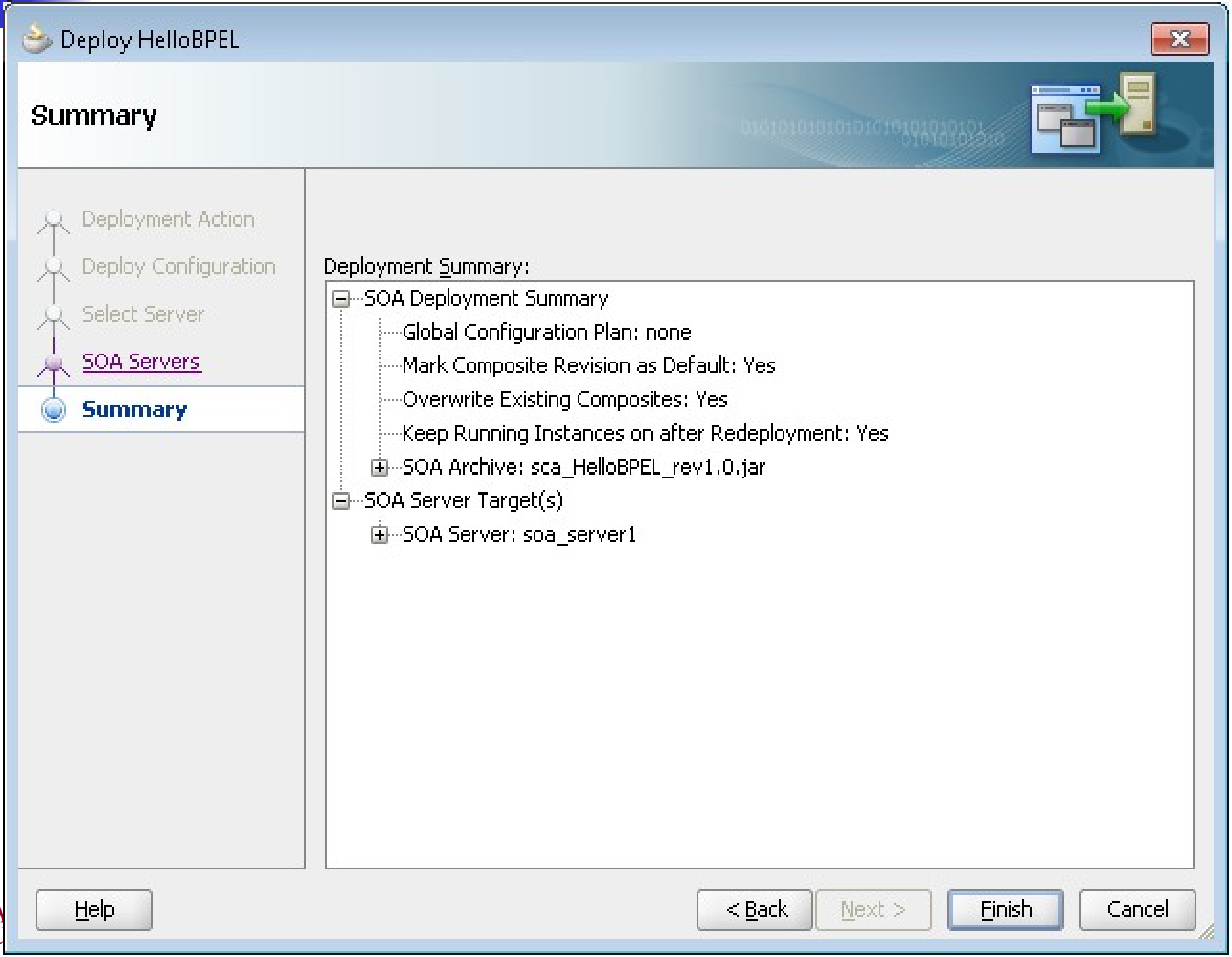


Deploy HelloBPEL
SOA Servers
Deployment Action
Deploy Configuration
Select Server
SOA Servers
Summary
Help
< Back
Next >
Finish
Cancel

Choose the target SOA server(s) and corresponding partitions to which you want to deploy this archive.

	SOA Server:	Partition:	Status:	Server URL:
☑	**soa_server1**	default	RUNNING	http://

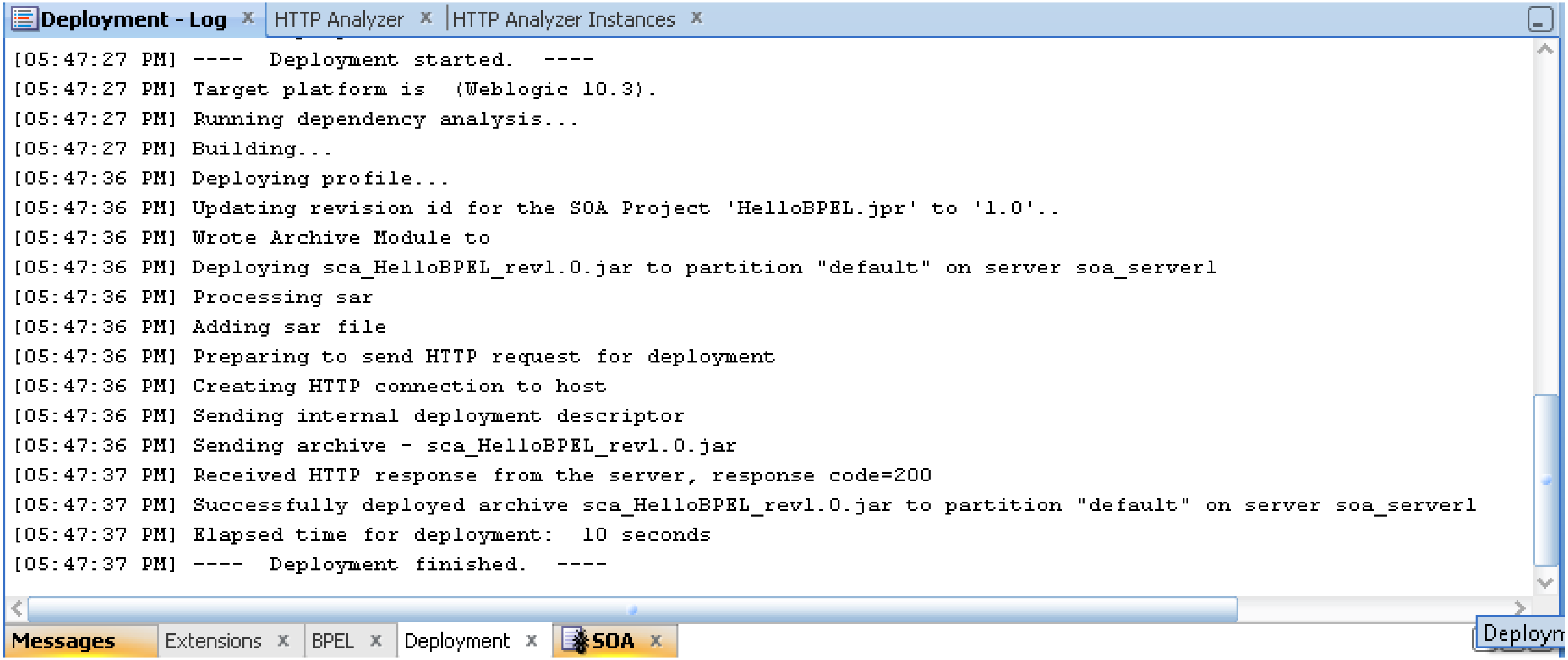
Verify the Details and Deploy


Deploy HelloBPEL
Summary
Deployment Action
Deploy Configuration
Select Server
SOA Servers
Summary
Help
< Back
Next >
Finish
Cancel

Deployment Summary:

- SOA Deployment Summary
  - Global Configuration Plan: none
  - Mark Composite Revision as Default: Yes
  - Overwrite Existing Composites: Yes
  - Keep Running Instances on after Redeployment: Yes
  - SOA Archive: sca_HelloBPEL_rev1.0.jar
- SOA Server Target(s)
  - SOA Server: soa_server1

Check the Deployment Logs for Errors

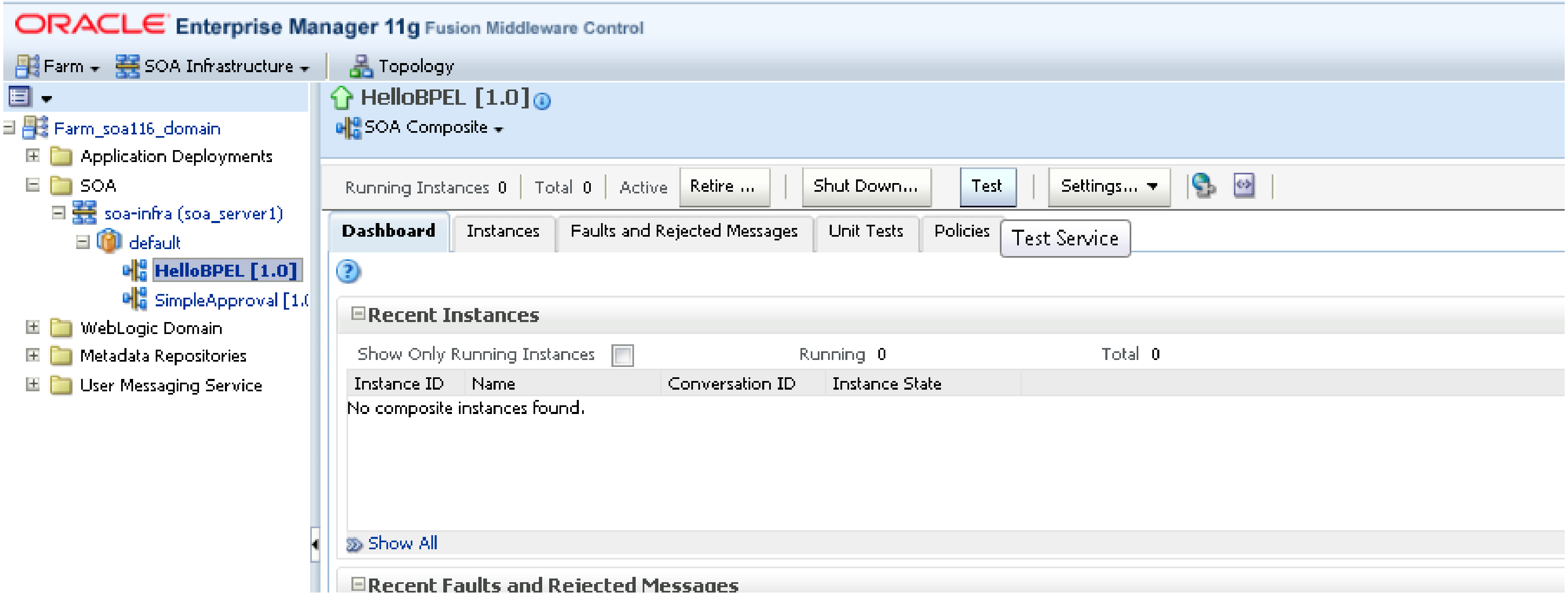


Deployment - Log
HTTP Analyzer
HTTP Analyzer Instances
Messages
Extensions
BPEL
Deployment
SOA
Deploym

```
[05:47:27 PM] ----  Deployment started.  ----
[05:47:27 PM] Target platform is  (Weblogic 10.3).
[05:47:27 PM] Running dependency analysis...
[05:47:27 PM] Building...
[05:47:36 PM] Deploying profile...
[05:47:36 PM] Updating revision id for the SOA Project 'HelloBPEL.jpr' to '1.0'..
[05:47:36 PM] Wrote Archive Module to
[05:47:36 PM] Deploying sca_HelloBPEL_rev1.0.jar to partition "default" on server soa_server1
[05:47:36 PM] Processing sar
[05:47:36 PM] Adding sar file
[05:47:36 PM] Preparing to send HTTP request for deployment
[05:47:36 PM] Creating HTTP connection to host
[05:47:36 PM] Sending internal deployment descriptor
[05:47:36 PM] Sending archive - sca_HelloBPEL_rev1.0.jar
[05:47:37 PM] Received HTTP response from the server, response code=200
[05:47:37 PM] Successfully deployed archive sca_HelloBPEL_rev1.0.jar to partition "default" on server soa_server1
[05:47:37 PM] Elapsed time for deployment:  10 seconds
[05:47:37 PM] ----  Deployment finished.  ----
```

Execute BPEL Process

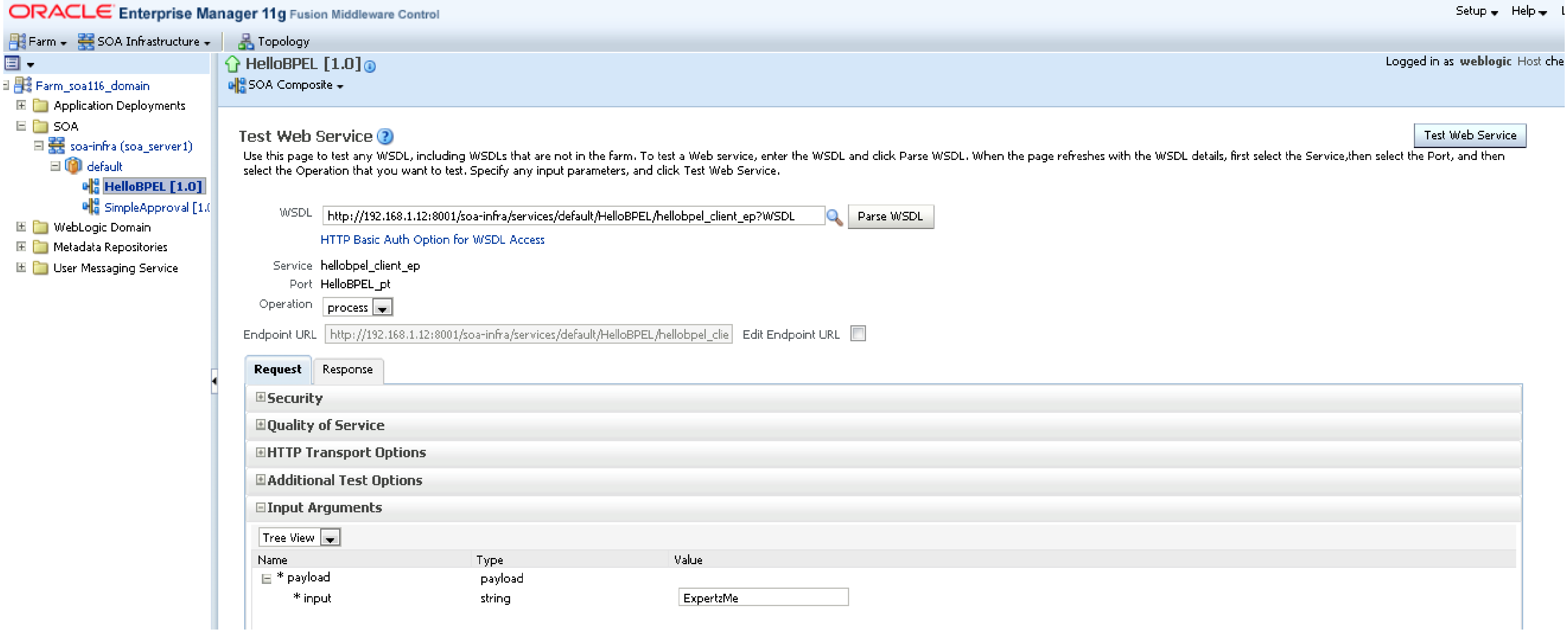
Login to Enterprise Manager and Select Composite Application for Testing


ORACLE Enterprise Manager 11g Fusion Middleware Control
Farm
SOA Infrastructure
Topology
Farm_soa116_domain
Application Deployments
SOA
soa-infra (soa_server1)
default
HelloBPEL [1.0]
SimpleApproval [1.(
WebLogic Domain
Metadata Repositories
User Messaging Service
HelloBPEL [1.0]
SOA Composite
Running Instances 0
Total 0
Active
Retire ...
Shut Down...
Test
Settings...
Dashboard
Instances
Faults and Rejected Messages
Unit Tests
Policies
Test Service
Recent Instances
Show Only Running Instances ☐
Running 0
Total 0
Show All
Recent Faults and Rejected Messages

Instance ID	Name	Conversation ID	Instance State

No composite instances found.

Test Service by Giving an Input Value


ORACLE Enterprise Manager 11g Fusion Middleware Control
Setup
Help
Farm
SOA Infrastructure
Topology
Farm_soa116_domain
Application Deployments
SOA
soa-infra (soa_server1)
default
HelloBPEL [1.0]
SimpleApproval [1.(
WebLogic Domain
Metadata Repositories
User Messaging Service
HelloBPEL [1.0]
SOA Composite
Logged in as weblogic Host che
Test Web Service
Parse WSDL
HTTP Basic Auth Option for WSDL Access
Edit Endpoint URL ☐
Request
Response
Security
Quality of Service
HTTP Transport Options
Additional Test Options
Input Arguments
Tree View

Test Web Service

Use this page to test any WSDL, including WSDLs that are not in the farm. To test a Web service, enter the WSDL and click Parse WSDL. When the page refreshes with the WSDL details, first select the Service,then select the Port, and then select the Operation that you want to test. Specify any input parameters, and click Test Web Service.

WSDL: http://192.168.1.12:8001/soa-infra/services/default/HelloBPEL/hellobpel_client_ep?WSDL

Service: hellobpel_client_ep

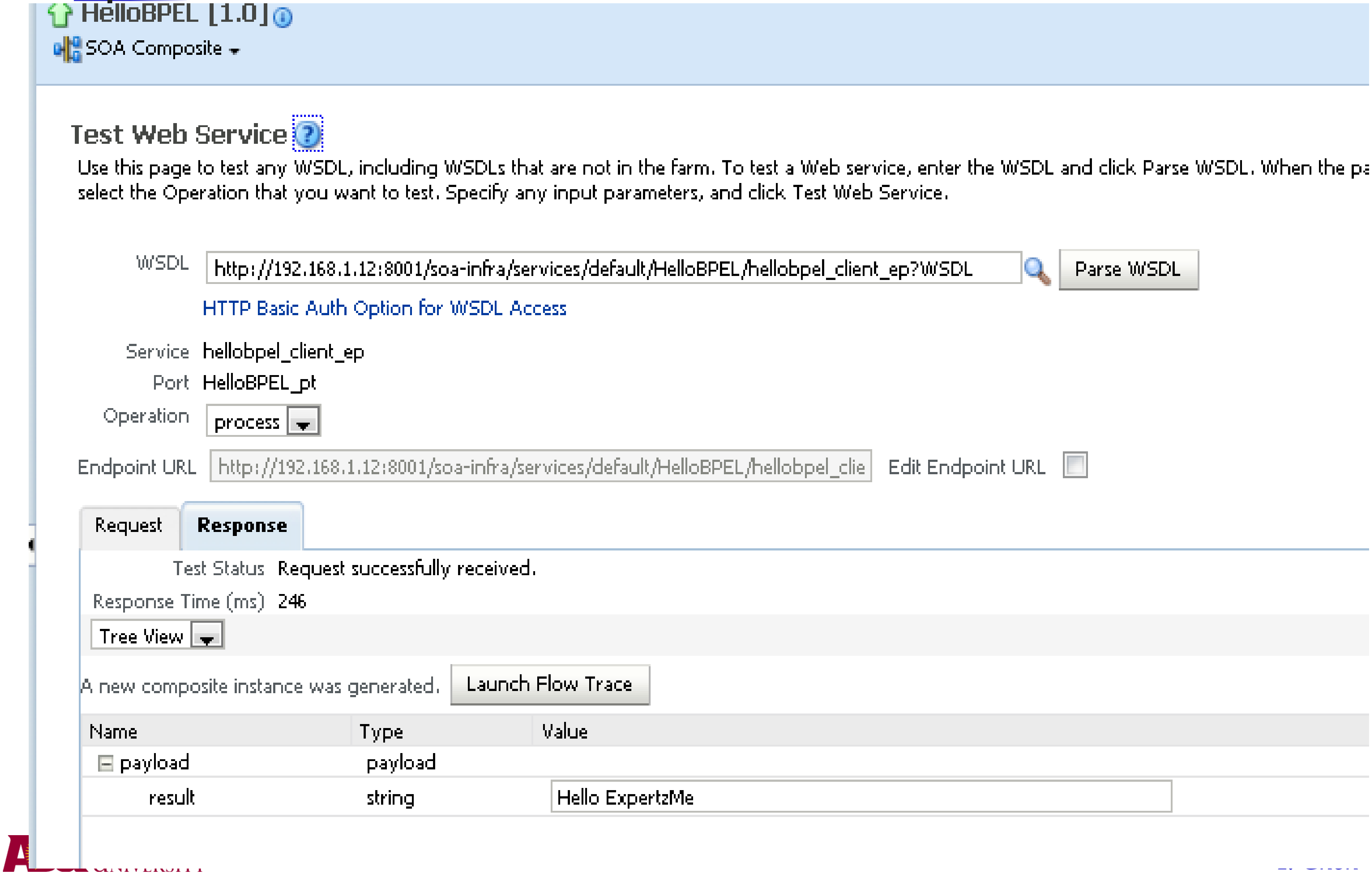
Port: HelloBPEL_pt

Operation: process

Endpoint URL: http://192.168.1.12:8001/soa-infra/services/default/HelloBPEL/hellobpel_clie

Name	Type	Value
* payload	payload	
* input	string	ExpertzMe

Check Out Synchronous Service Response



HelloBPEL [1.0]

SOA Composite

Test Web Service

Use this page to test any WSDL, including WSDLs that are not in the farm. To test a Web service, enter the WSDL and click Parse WSDL. When the pa
select the Operation that you want to test. Specify any input parameters, and click Test Web Service.

WSDL: http://192.168.1.12:8001/soa-infra/services/default/HelloBPEL/hellobpel_client_ep?WSDL

HTTP Basic Auth Option for WSDL Access

Service: hellobpel_client_ep

Port: HelloBPEL_pt

Operation: process

Endpoint URL: http://192.168.1.12:8001/soa-infra/services/default/HelloBPEL/hellobpel_clie

Edit Endpoint URL ☐

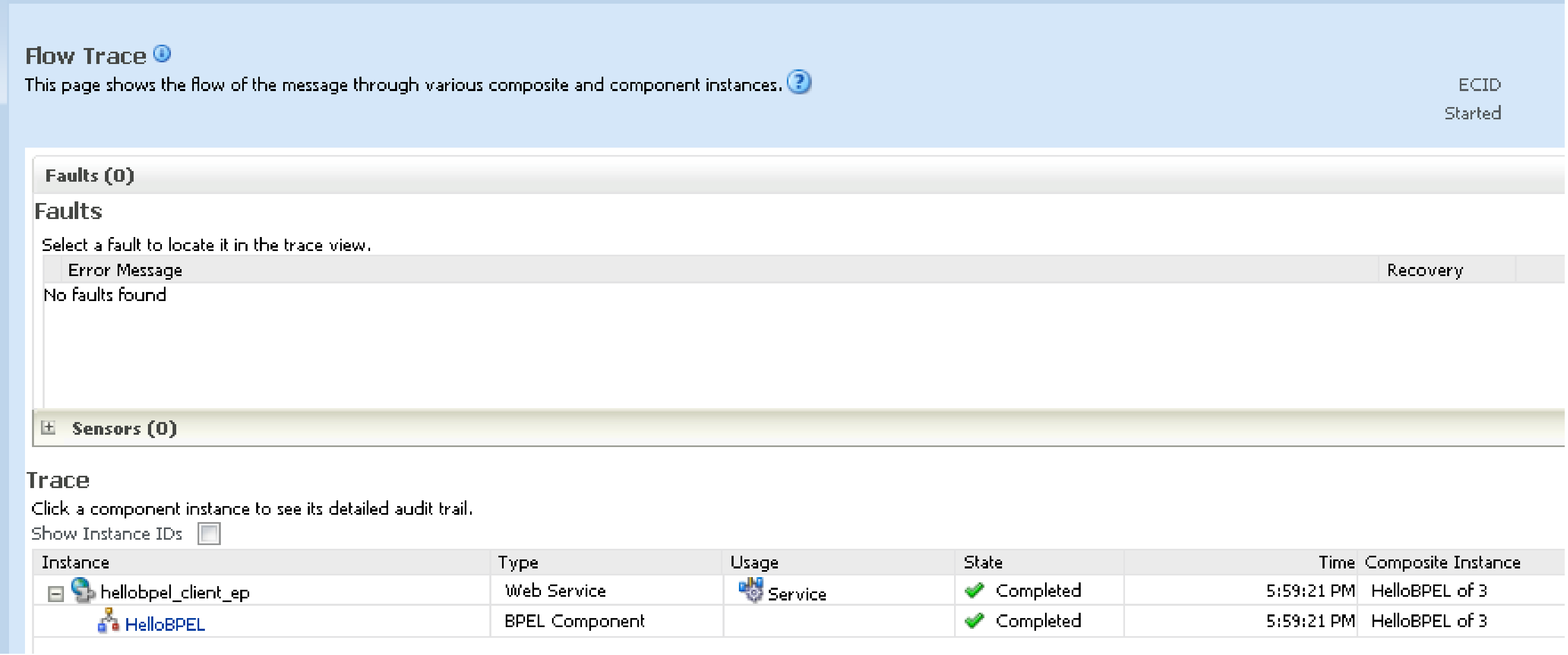
Test Status: Request successfully received.

Response Time (ms): 246

A new composite instance was generated.

Name	Type	Value
⊟ payload	payload	
result	string	Hello ExpertzMe

Observe Flow Trace of Execution



Flow Trace

This page shows the flow of the message through various composite and component instances.

ECID

Started

Faults (0)

Faults

Select a fault to locate it in the trace view.

Error Message	Recovery
No faults found	

Sensors (0)

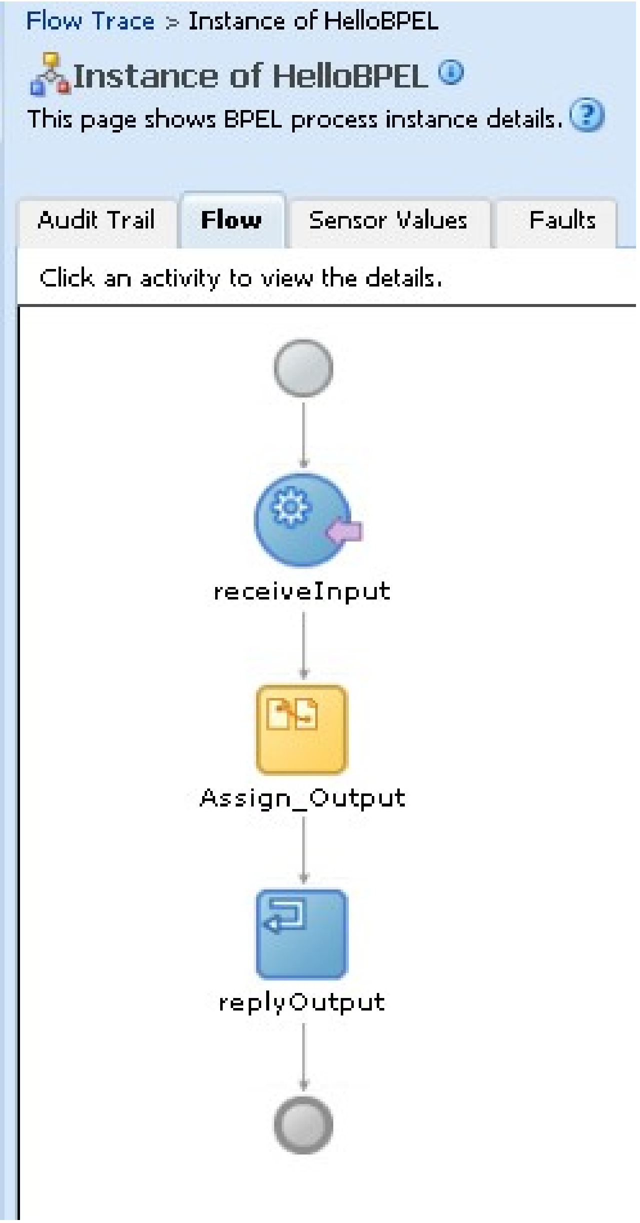
Trace

Click a component instance to see its detailed audit trail.

Show Instance IDs ☐

Instance	Type	Usage	State	Time	Composite Instance
hellobpel_client_ep	Web Service	Service	✓ Completed	5:59:21 PM	HelloBPEL of 3
HelloBPEL	BPEL Component		✓ Completed	5:59:21 PM	HelloBPEL of 3

Click on Flow Tab of BPEL Audit Trail to Observe the Audit Trail Visually



Flow Trace > Instance of HelloBPEL

Instance of HelloBPEL

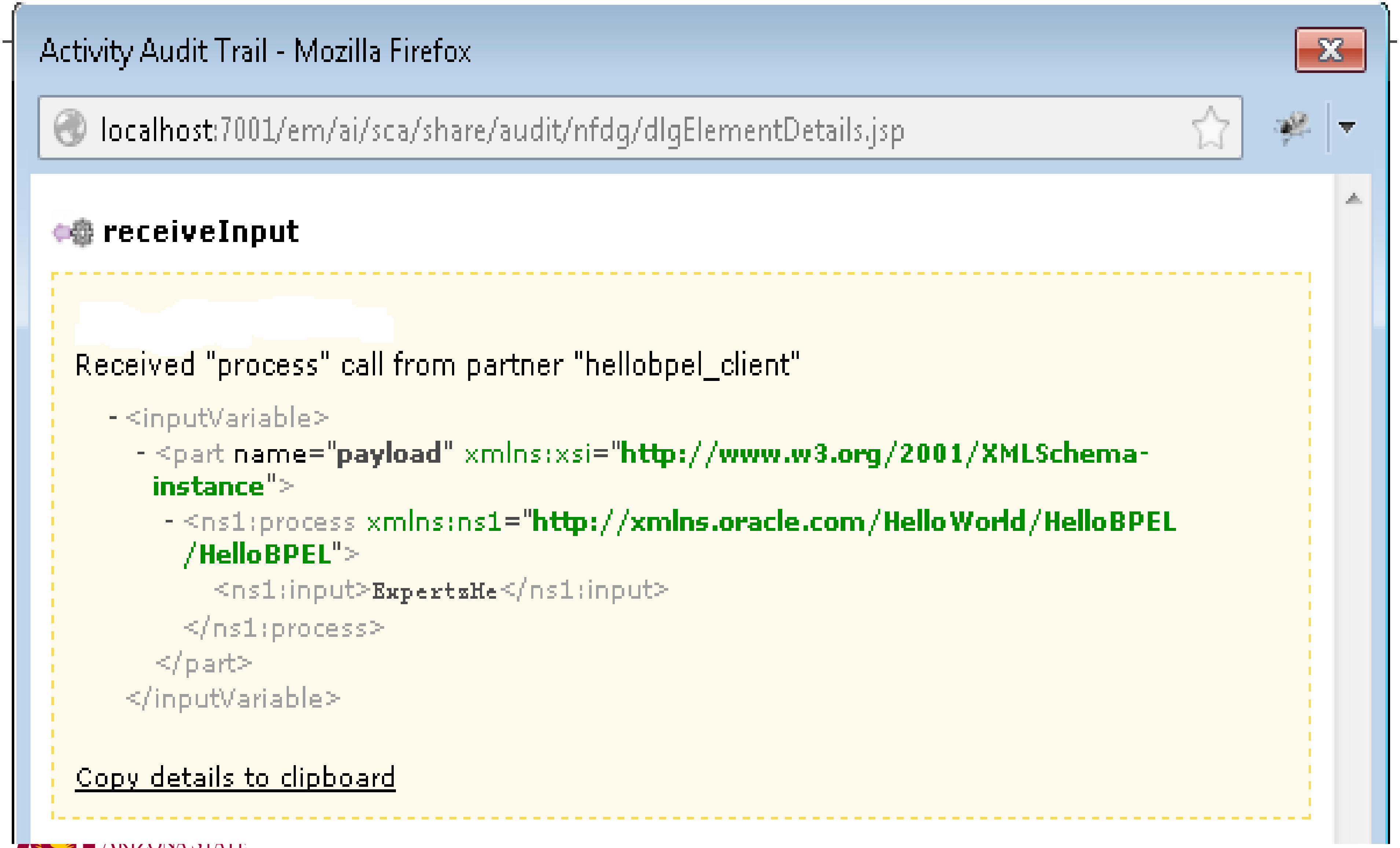
This page shows BPEL process instance details.

Audit Trail
Flow
Sensor Values
Faults

Click an activity to view the details.

receiveInput
Assign_Output
replyOutput

Checkout the Input Sent to the Process by Clicking on Receive Input Activity



Activity Audit Trail - Mozilla Firefox

localhost:7001/em/ai/sca/share/audit/nfdg/dlgElementDetails.jsp

receiveInput

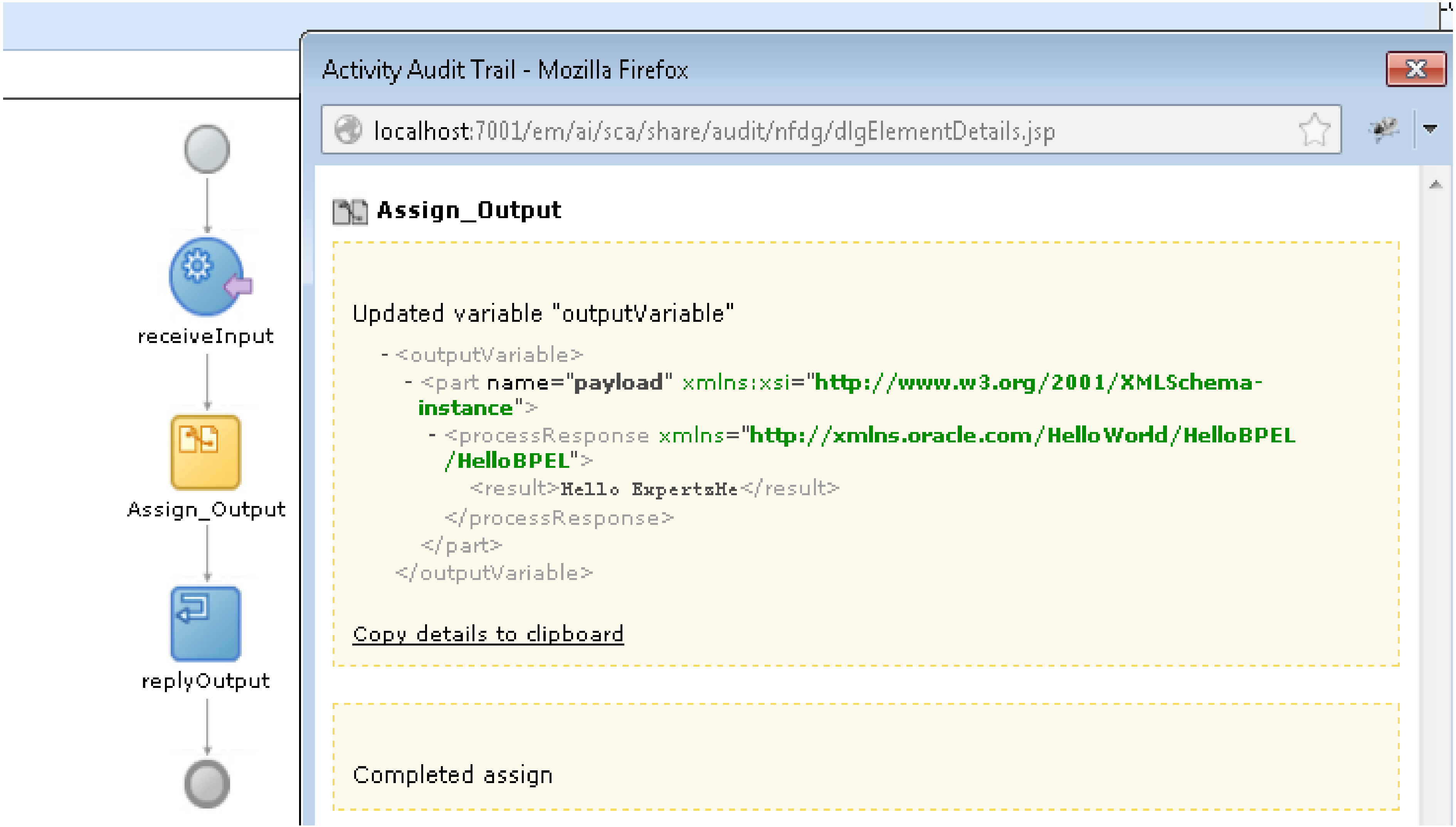
[redacted]

Received "process" call from partner "hellobpel_client"

```
- <inputVariable>
   - <part name="payload" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
     instance">
      - <ns1:process xmlns:ns1="http://xmlns.oracle.com/HelloWorld/HelloBPEL
        /HelloBPEL">
           <ns1:input>ExpertzHe</ns1:input>
        </ns1:process>
     </part>
  </inputVariable>
```

Copy details to clipboard

Check Out How the Assign Operation Updated Output Variable in the Process


receiveInput
Assign_Output
replyOutput
Activity Audit Trail - Mozilla Firefox
localhost:7001/em/ai/sca/share/audit/nfdg/dlgElementDetails.jsp

Assign_Output

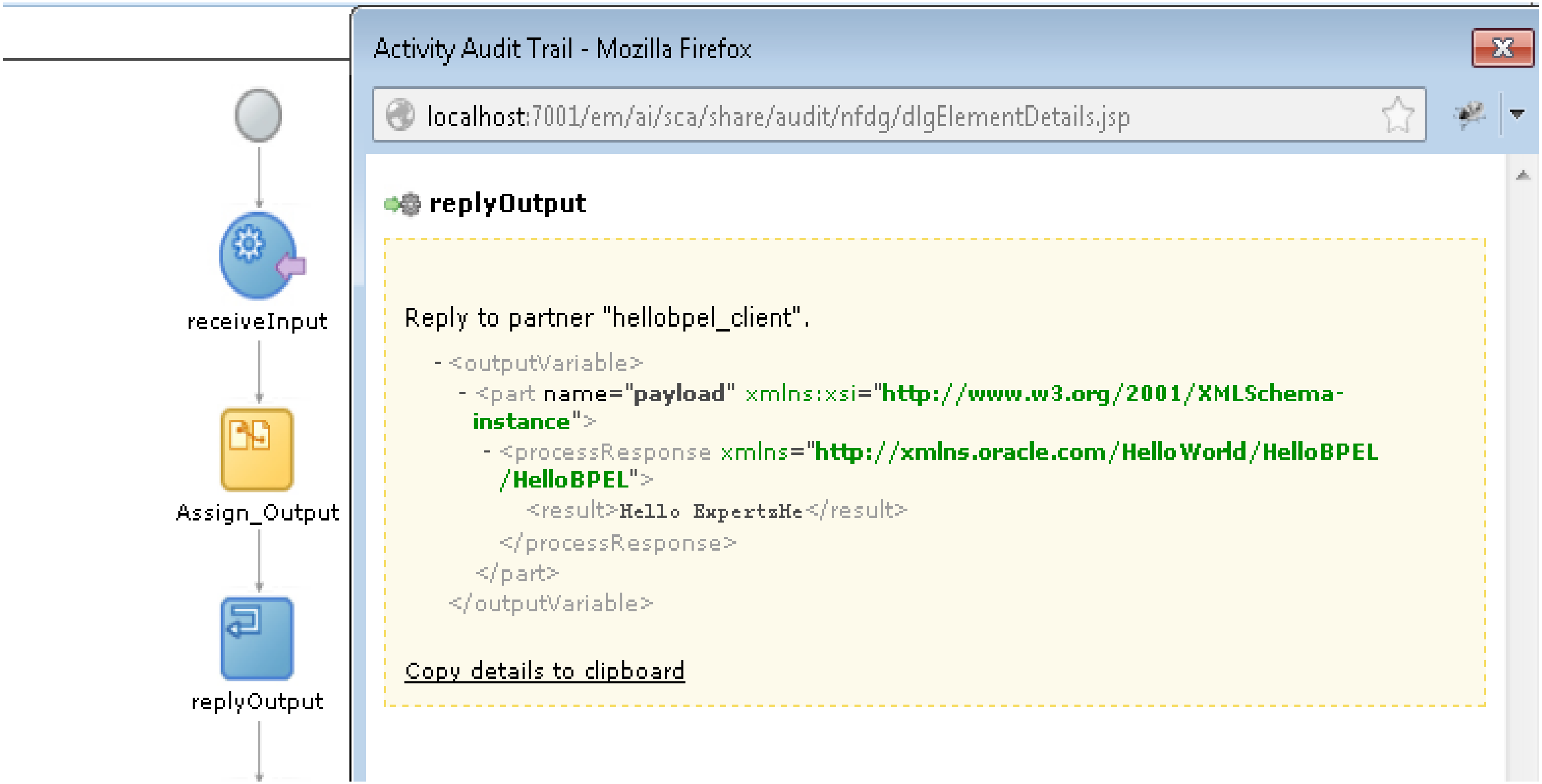
Updated variable "outputVariable"

```
- <outputVariable>
   - <part name="payload" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      - <processResponse xmlns="http://xmlns.oracle.com/HelloWorld/HelloBPEL/HelloBPEL">
           <result>Hello ExpertzHe</result>
        </processResponse>
     </part>
  </outputVariable>
```

Copy details to clipboard

Completed assign

Check Output Value Sent Back to the Caller


receiveInput
Assign_Output
replyOutput
Activity Audit Trail - Mozilla Firefox
localhost:7001/em/ai/sca/share/audit/nfdg/dlgElementDetails.jsp

replyOutput

Reply to partner "hellobpel_client".

```
- <outputVariable>
  - <part name="payload" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
    instance">
    - <processResponse xmlns="http://xmlns.oracle.com/HelloWorld/HelloBPEL
      /HelloBPEL">
        <result>Hello ExpertsHe</result>
      </processResponse>
    </part>
  </outputVariable>
```

Copy details to clipboard