Cross-component trace lab

What this exercise is about

The objective of this lab is to provide you with an understanding of the IBM WebSphere Process Server new feature called Cross-Component Trace. In this lab you will deploy the WebSphere Integration Developer sample Loan Application. Then WebSphere Integration Developer test environment will be enabled to use cross-component trace. The trace and log files produced from cross-component trace will be used to correlate the SCA components interaction as it executes.

This lab is provided **AS-IS**, with no formal IBM support.

Lab requirements

List of system and software required for the student to complete the lab.

- WebSphere Integration Developer version 6.2

- The Test Client must be installed in WebSphere Integration Developer.

What you should be able to do

At the end of this lab you should be able to:

- Configure WebSphere Test Environment or Process Server to enable Cross Component trace.

- Interpret the information from the trace.

Introduction

Cross-component tracing allows you to identify trace.log data that is associated with WebSphere Process Server and WebSphere Enterprise Service Bus modules and components. The trace.log data can include error and event information, such as corrupted data or runtime exceptions, captured during Service Component Architecture (SCA) processing. The input and output data passing between WebSphere Process Server or WebSphere Enterprise Service Bus components can also be captured and used for problem determination using WebSphere Integration Developer.

Part 1: Cross-component trace features

Cross component trace (XCT) provides the following features:

- XCT maps Systemout.log and Trace.log records back to the SCA programming model.

- Supports all SCA call patterns:

    ► Async one way

    ► Sync

    ► Async with call back

    ► Async with defered response

- Works with BOs or simple data types as parameters.

- Supports Network Deployments

    ► Load files from each server

    ► May load only some of the files from all the servers

- Supports BPEL Micro flows (short running, asnync)

- Can use WebSphere Integration Developer test client trace from log record data

Cross component trace options provide you with the following:

- Enable:

    ► Captures the SCA call chain for all SCA calling types.

    ► Call chains start when there is an SCA call.

    ► Call chains do not include non-SCA bindings such as JMS, HTTP, Web services. The call chains will continue for work done after those imports are called.

    ► Log records not included in an SCA call chain are grouped into default chains and can still be displayed.

- Enable with data capture:

    ► Same as Enable, but SCA input, output, and failure data is captured as well.

    ► Captured data is saved in the Logs\xct directory as serialized XML of the SCA Message.

    ► Removal of the captured data is up to you when it is no longer needed.

    ► Captured data can be displayed in the WebSphere Integration Developer test client and used to rerun all or parts of the call chain.

- The Disable and Delete options are describe in the WebSphere Process Server 6.2 information center.

- XCT analyzes local or remote logs. XCT defaults to server console of the running WebSphere Test Environment (WTE). WebSphere Process Server and optionally WebSphere Enterprise Service Bus servers come as default WTEs.
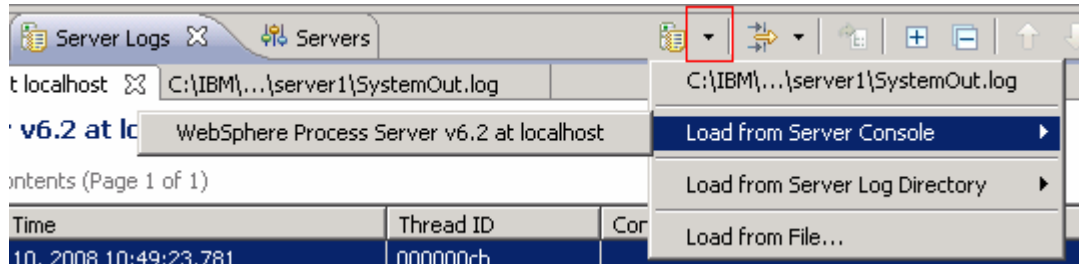
- There are several different filters that allow you specified views of the data.
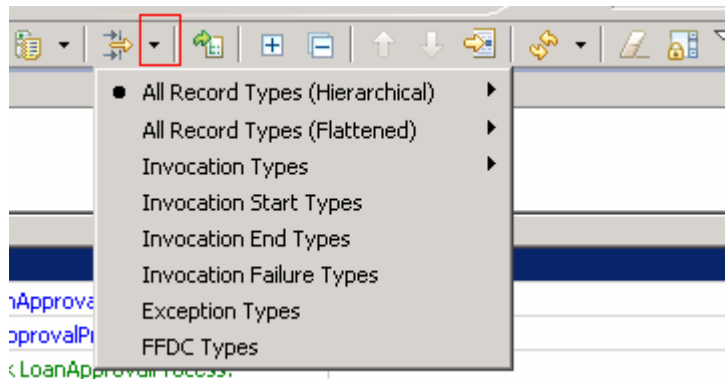
- The information is refreshed at assorted rates. The default is for the view to be updated every five seconds.
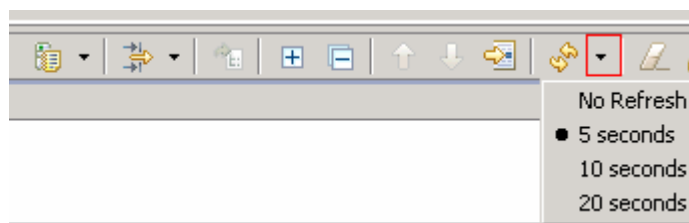

- The tool are has expand/collapse and page up/down buttons to navigate large traces.
  Note: Remember to use the up and down arrow buttons to flip pages.

- To sort the log entries click the table headings inside the Server Log View or use the icon in red below and chose Sort by Column.

Cross-component trace lab
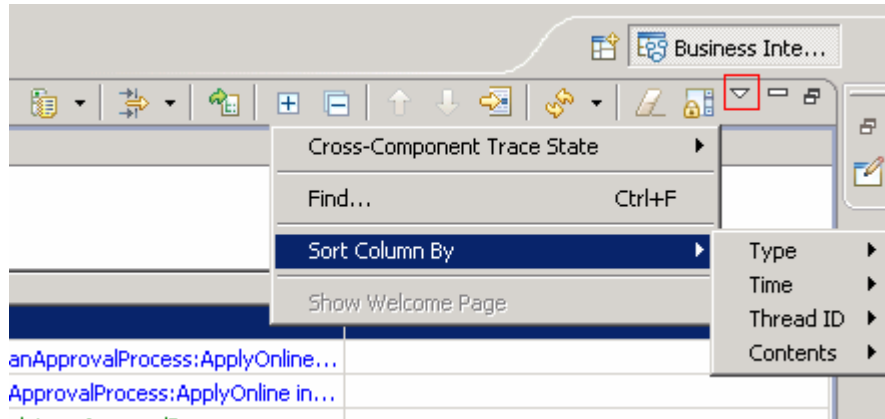
- The XCT find feature will search all content, even content hidden in the log entry properties.
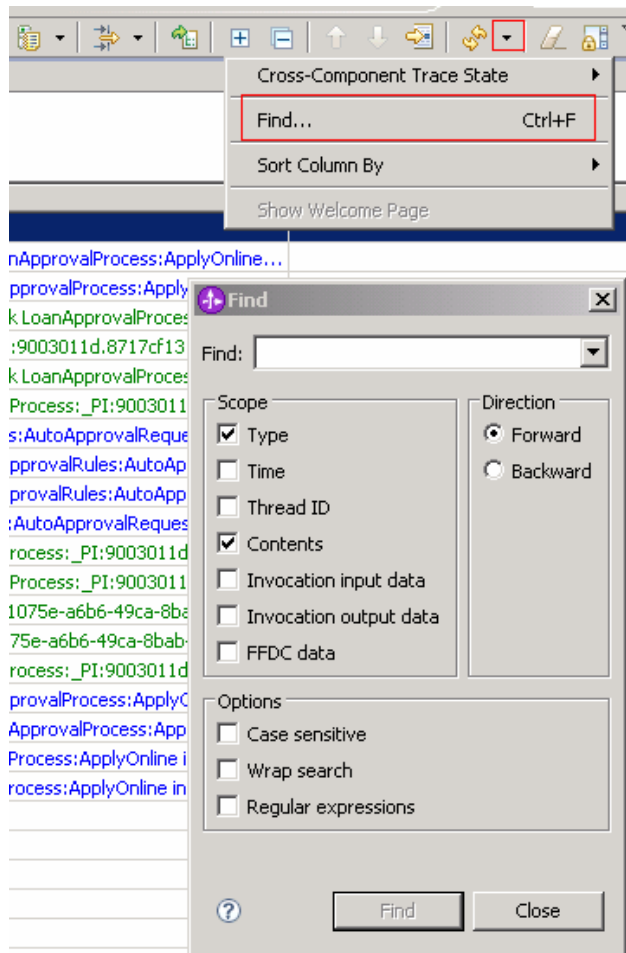
- To access log entry properties, either double click any entry in the Server Log view or right click any entry in the Server Log View and chose Properties. The properties for that event are shown. A new feature in 6.2 is the "raw" option. The XCT tag will be present in the raw data if the entry was generated by Cross-Component Trace.

Cross-component trace lab
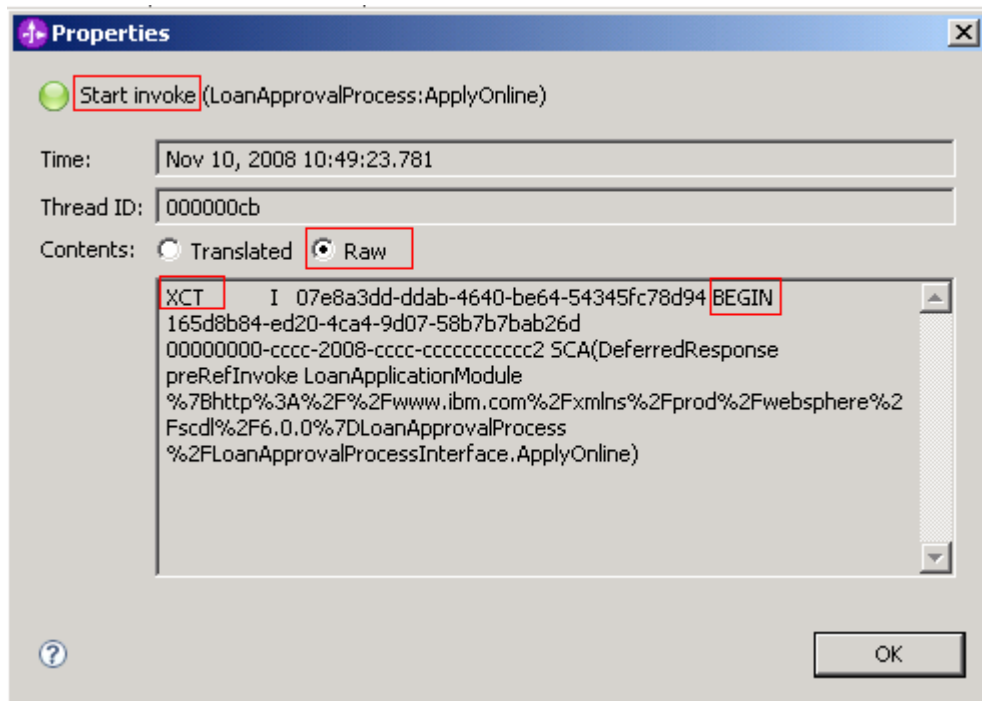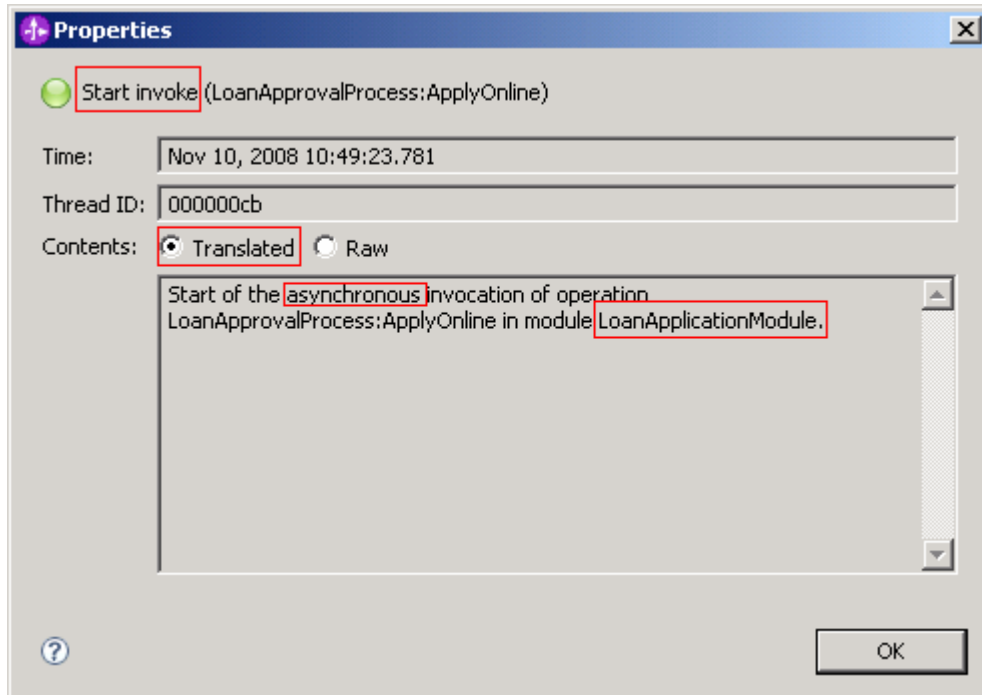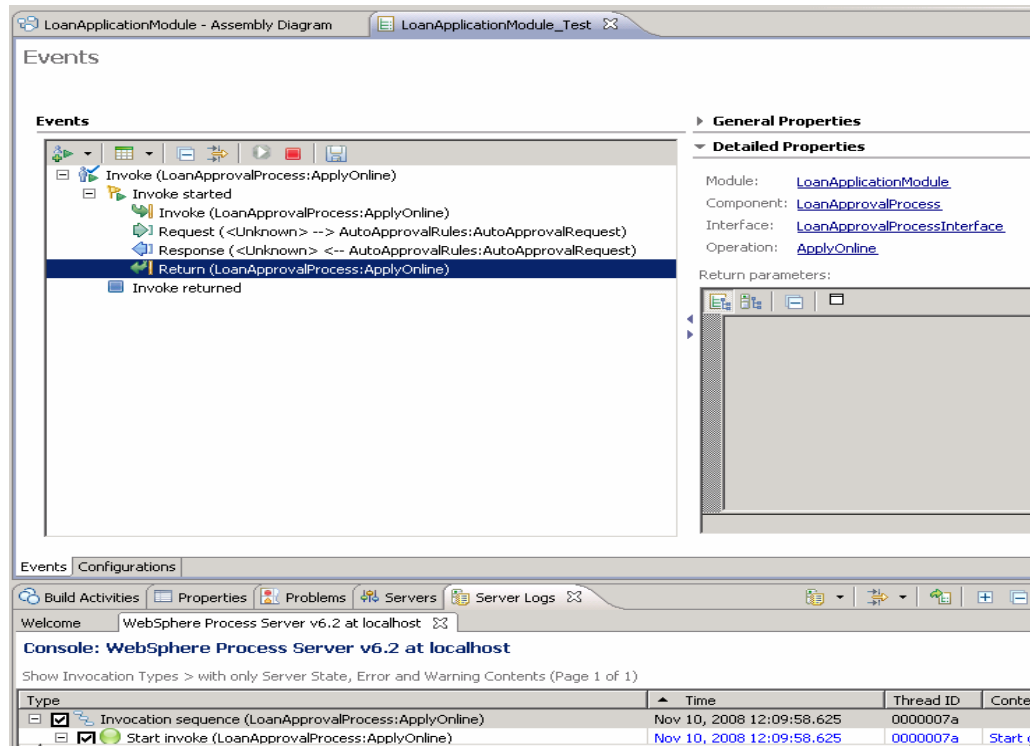
- The bottom of the XCT screen is a status bar. The status bar shows refresh rate, server status, and if cross-component trace is enabled

Refresh rate: 5 seconds	Server started	Cross-component trace enabled

- By selecting a check box next to an event you are interested in further testing, you can create a replay scenario in the Test Client.

Cross-component trace lab
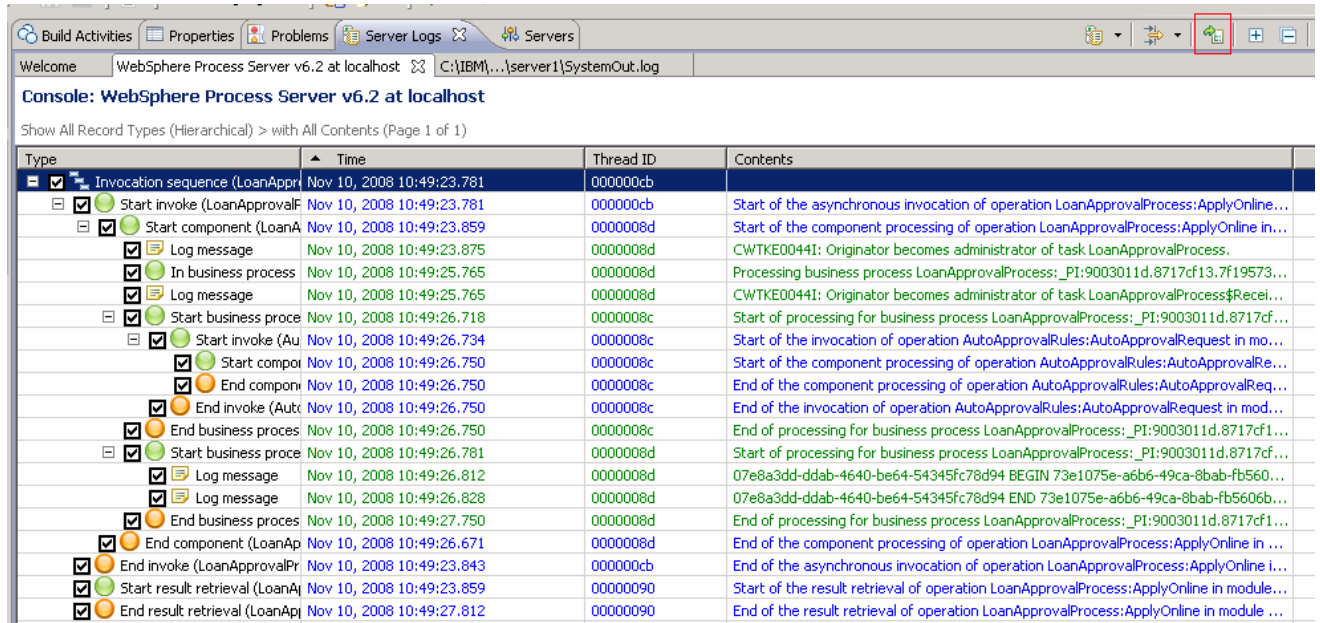
▪ Once you click you will see the Server Log View populate the Test Client (or ITC – Integrated Test Client) with the selected scenario to make it re-runnable:

Cross-component trace lab

Part 2: Preparation for cross-component trace lab

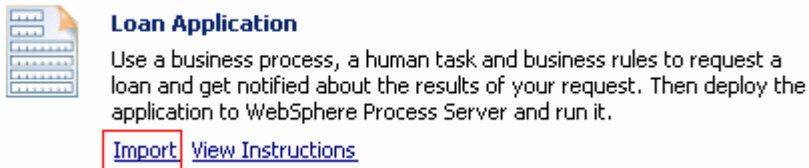____ 1. Start WebSphere Integration Developer with a new workspace to hold the work you will do in this lab.

     __ a. Select **Start > All Programs > IBM WebSphere Integration Developer > IBM WebSphere Integration Developer V6.2 > WebSphere Integration Developer V6.2**

     __ b. From the Workspace Launcher window, enter **C:\Labfiles62\WID\XCT\workspace** for the Workspace field
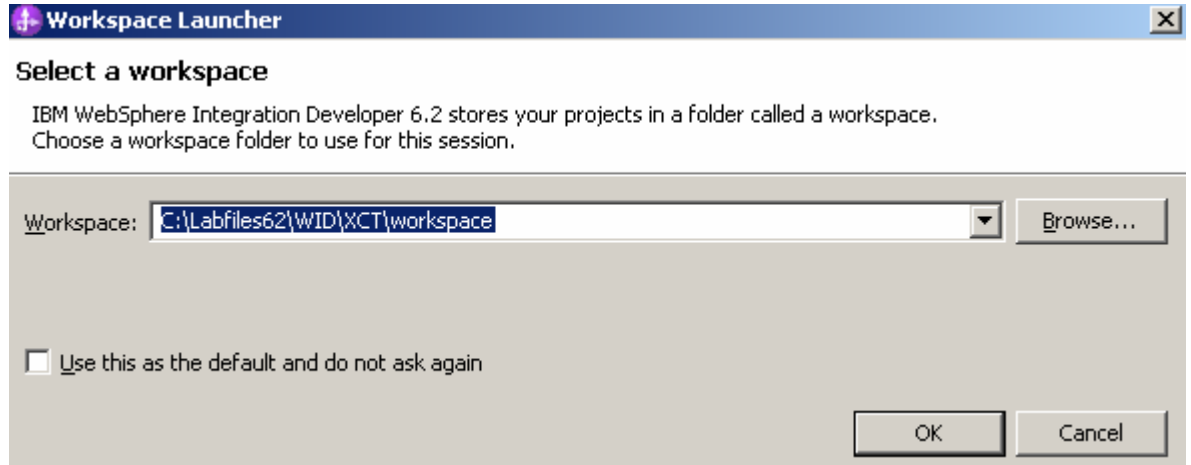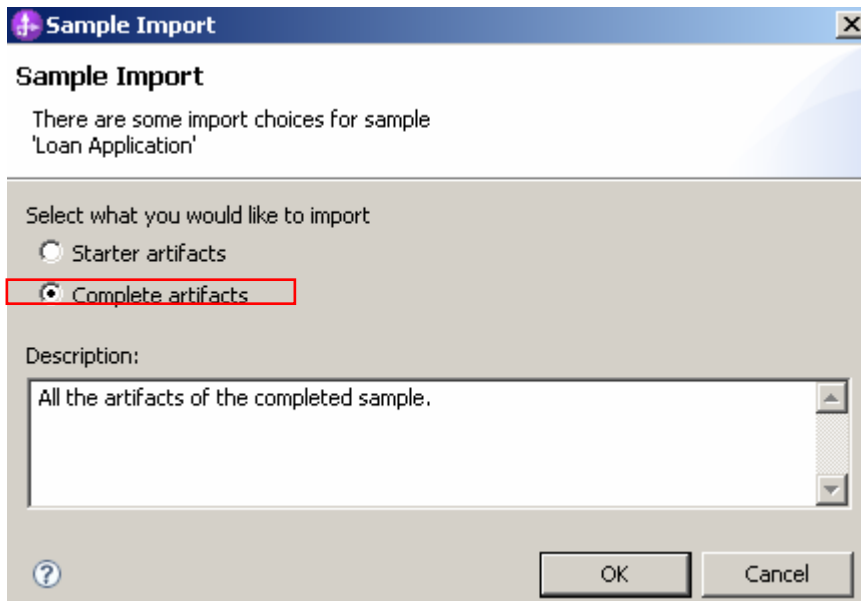

____ 2. Click Samples and Tutorials

__ a. Click Loan Import.

Loan Application

Use a business process, a human task and business rules to request a loan and get notified about the results of your request. Then deploy the application to WebSphere Process Server and run it.
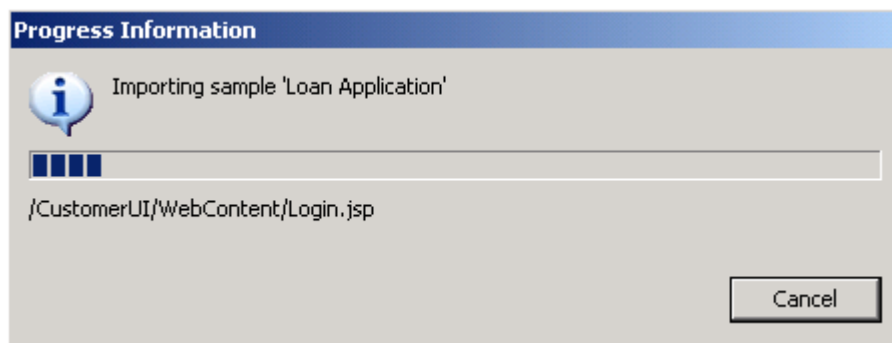
Import View Instructions

NOTE: If you are un-familiar wilt the Loan Application Sample explore View Instructions

__ b. You will be prompted to import only Starter artifacts or Complete artifacts. Select Complete artifacts and click OK.

Sample Import

There are some import choices for sample 'Loan Application'

Select what you would like to import

○ Starter artifacts

◉ Complete artifacts

Description:

All the artifacts of the completed sample.

OK   Cancel

__ c. The sample will start to load:

Progress Information

Importing sample 'Loan Application'

/CustomerUI/WebContent/Login.jsp

Cancel

__ d. You can close or minimize the Loan Application Web Page that opens while the application is loading.
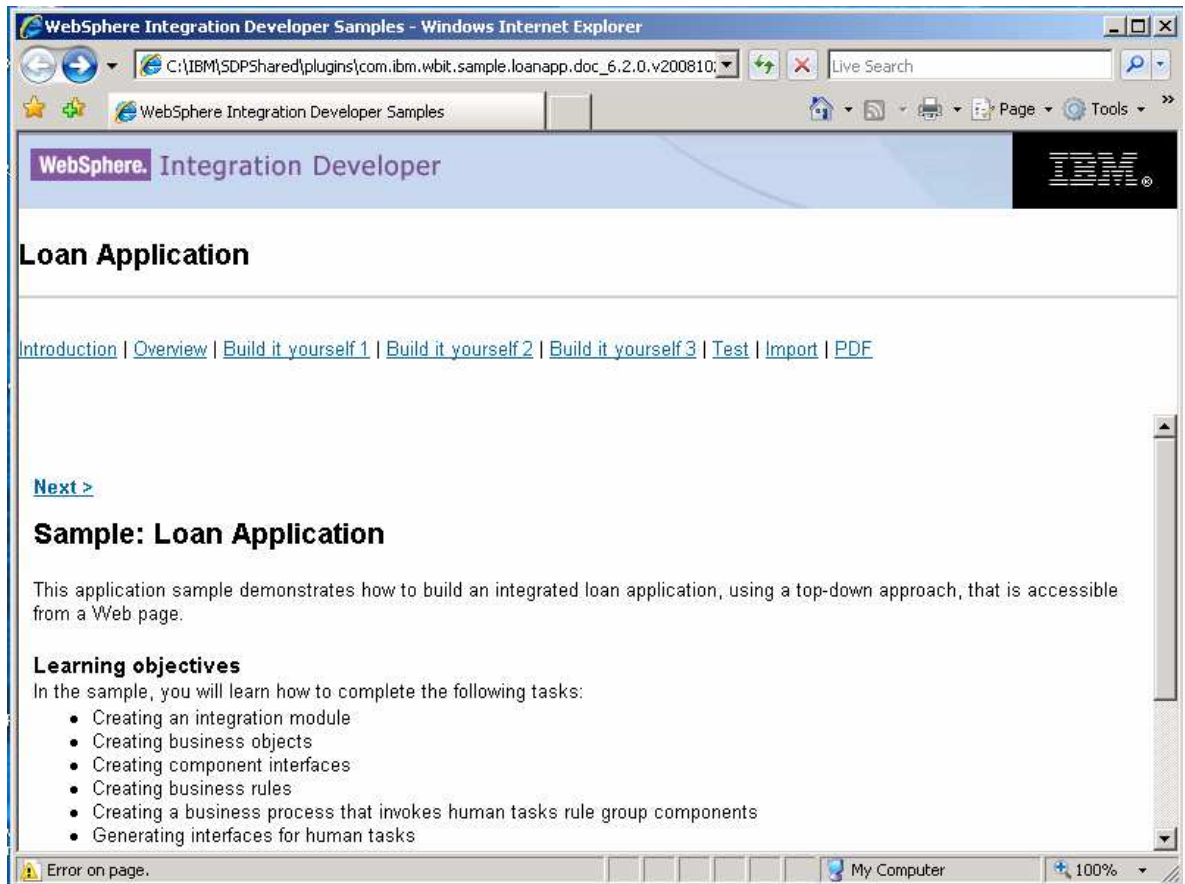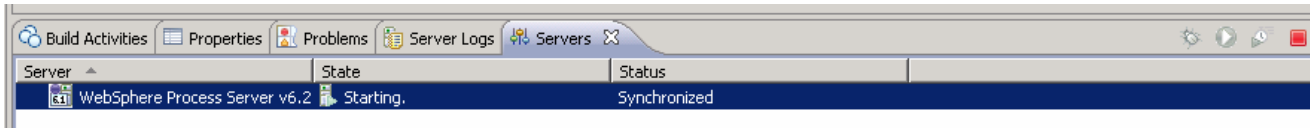
____ 3. Click the white X on the Welcome View tab ![Welcome tab] to close the Welcome page.

____ 4. Click the white X on the Samples and Tutorials View tab ![Samples and Tutorials tab] to close the Samples and Tutorial page.
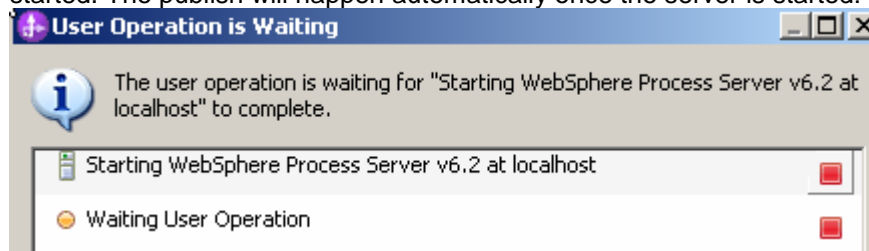
Part 3: Enable cross-component trace

____ 5.   Start the built-in WebSphere Process Server by clicking on [▶] in the Servers View. The Server Logs view will take focus by default.
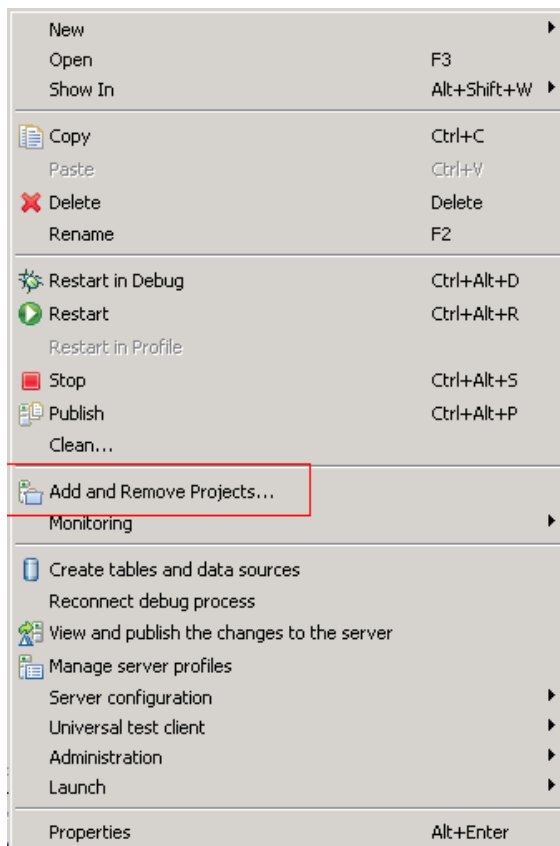

__ a. Once the server is started, select the Servers View again and right click the WebSphere Process Server.
Note: If you try this step before the server starts, you will be prompted to wait until the server is started. The publish will happen automatically once the server is started:

__ b. Select Add and Remove Projects …

__ c. Click Add All
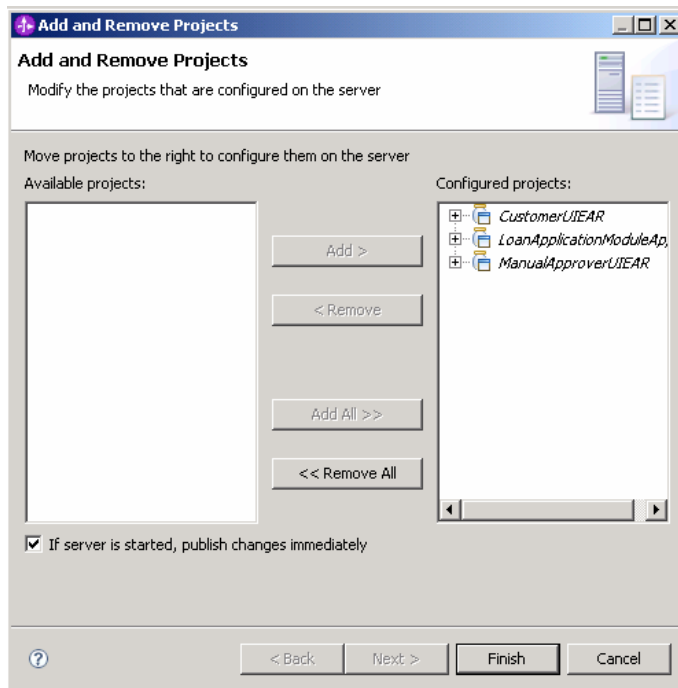
__ d. Click Finish
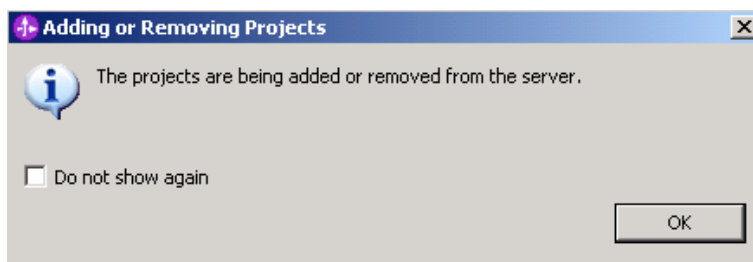
__ e. Click OK

__ f. Wait for publishing to complete. Server status will read "Synchronized".
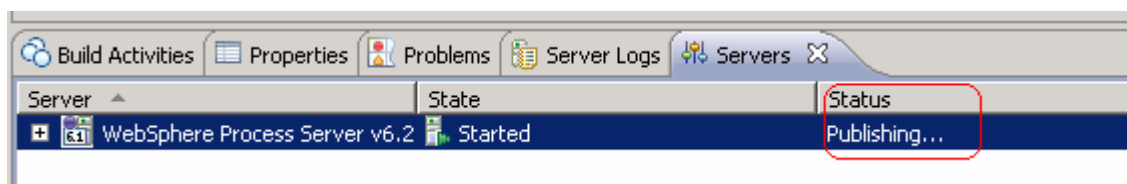
____ 6.   Enable Cross-Component Trace by first switching over to the Server Logs view (shown below).
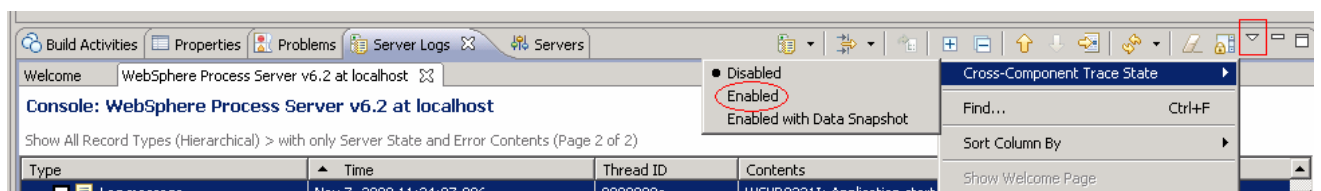
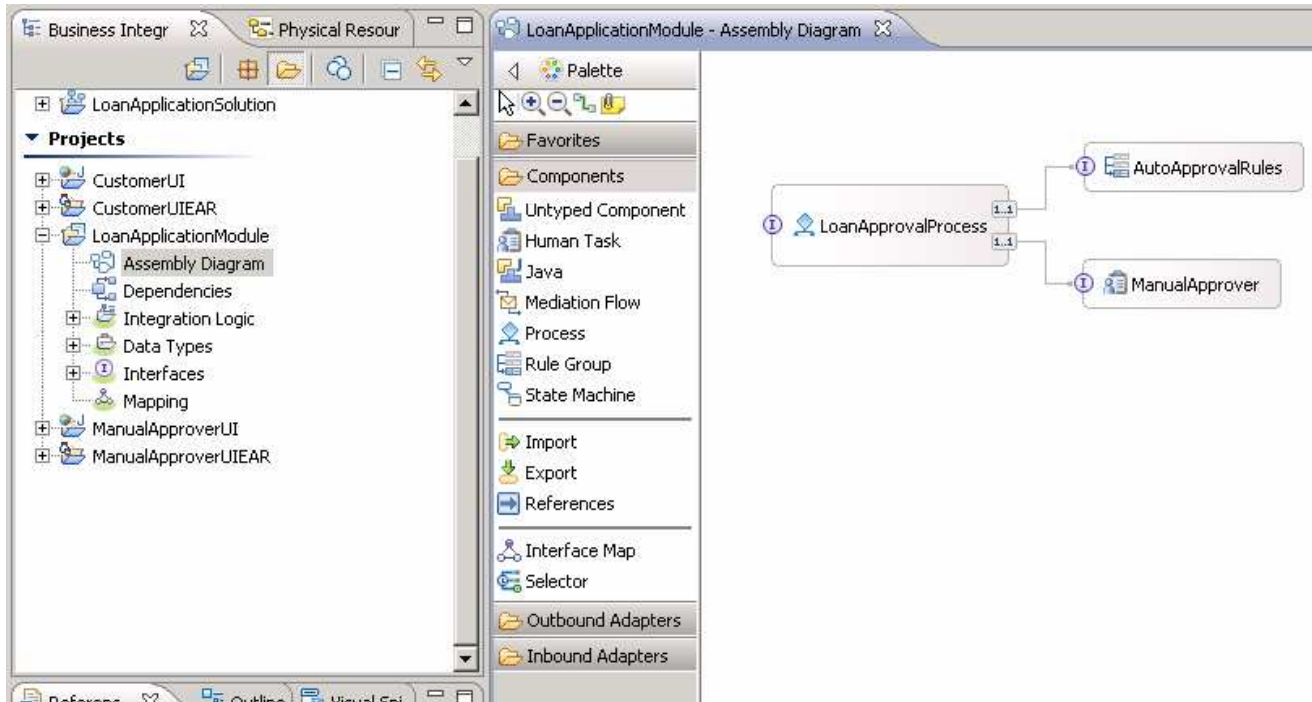__ a. Access Cross Component Trace by clicking the white triangle icon in the toolbar

__ b. Then click Enabled in the menu

Cross-component trace lab

Part 4: Testing the loan application

____ 1. In the Business Integration View, click the + sign next to LoanApplicationModule and double click Assembly Diagram. This will open it up in the Assembly Editor.

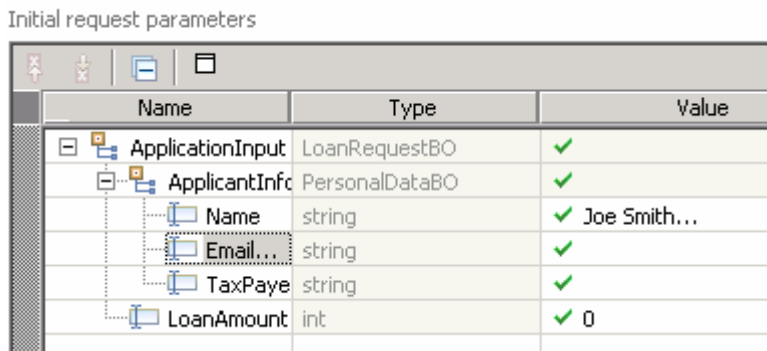____ 2.   Right Click LoanApprovalProcess in the Assembly Editor and choose Test Component at the bottom of the pop-up menu.
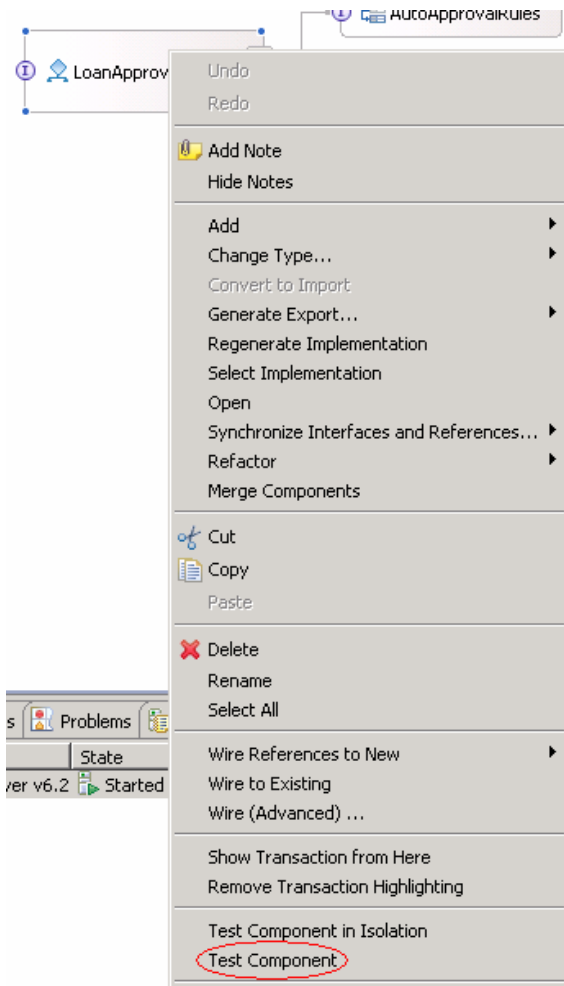
____ 3.   Fill-in the test values for Scenario 1 (outlined below).
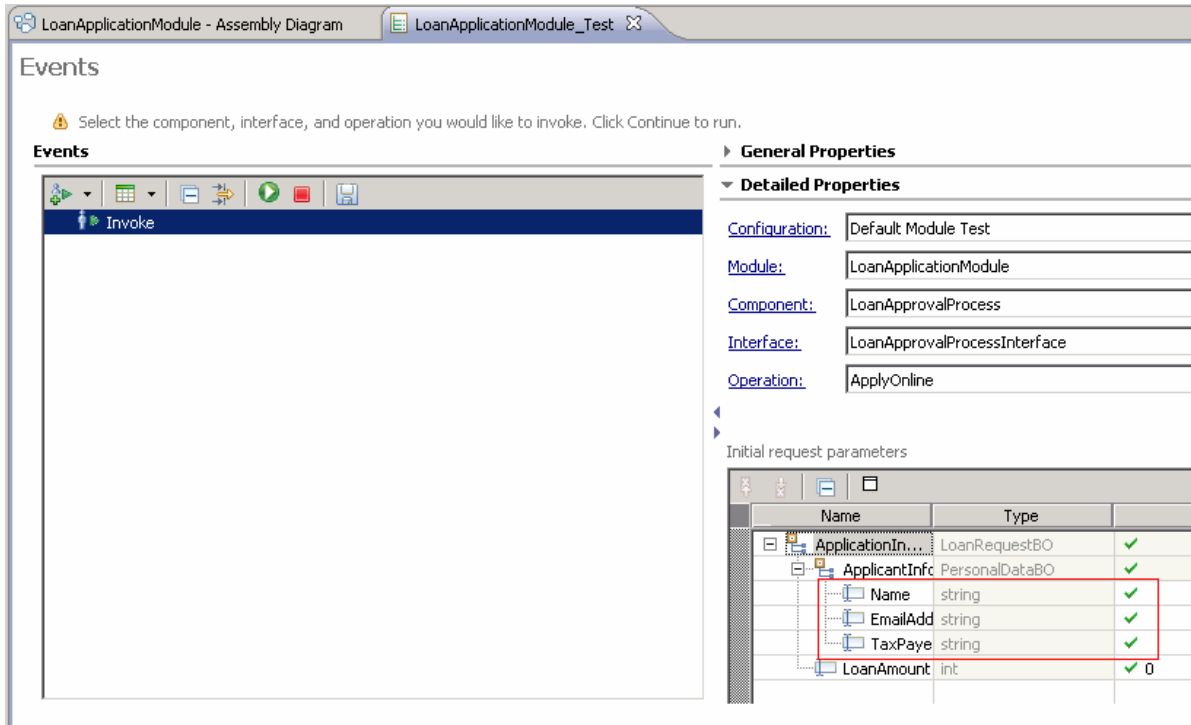
__ a. Double Click ✔ to the right of Name and enter **Joe Smith**.
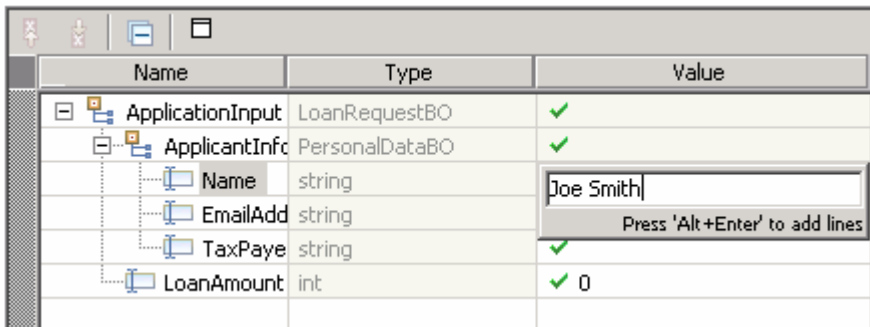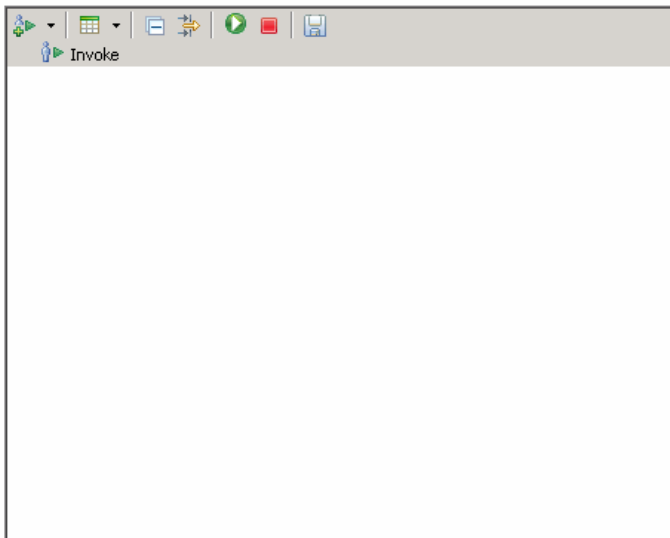

__ b. Then click out side out of the entry box.

__ c. Double Click ✔ to the right of Email and enter **JoeSmith@Acme.com**.

__ d. Then click out side out of the entry box.

__ e. Double Click ✔ to the right of TaxPrayerId and enter **123451**.

__ f. Then click out side out of the entry box.

__ g. Double Click ✔ to the right of LoanAmount and enter **40000.**

Initial request parameters

Name	Type	Value
☐ 🔲 ApplicationInput	LoanRequestBO	✔
☐ 🔲 ApplicantInf	PersonalDataBO	✔
🔲 Name	string	✔ Joe Smith...
🔲 EmailAdd	string	✔ JoeSmith@Acme.com
🔲 TaxPaye	string	✔ 123451
🔲 LoanAmount	int	✔ 40000

_____ 4.   Start the Testing.

Events

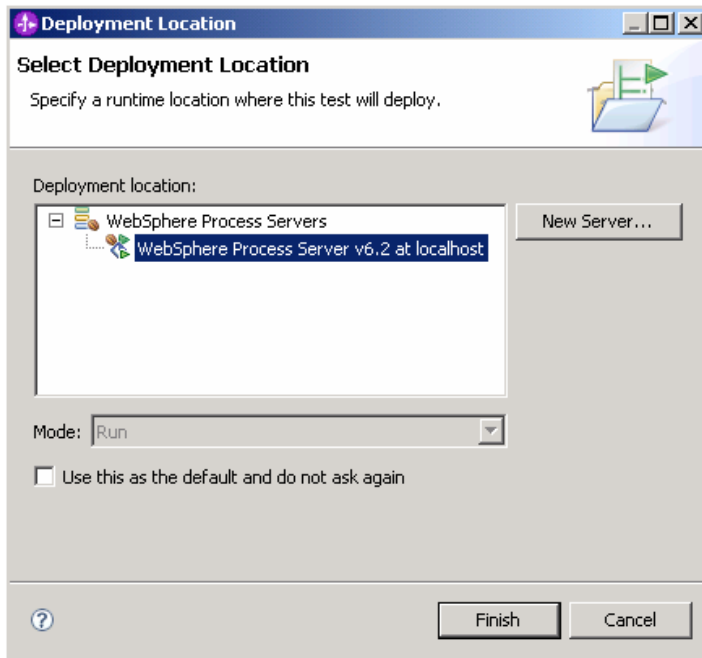▷ Invoke

▶ **General Properties**

▼ **Detailed Properties**

Configuration: Default Module Test

Module: LoanApplicationModule

Component: LoanApprovalProcess

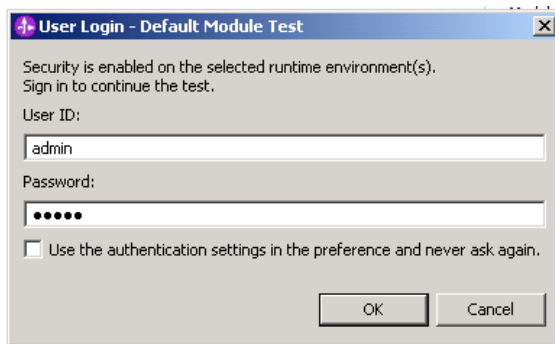Interface: LoanApprovalProcessInterface

Operation: ApplyOnline

Initial request parameters

Name	Type	Value
☐ 🔲 ApplicationInput	LoanRequestBO	✔
☐ 🔲 ApplicantInf	PersonalDataBO	✔
🔲 Name	string	✔ Joe Smith...
🔲 EmailAdd	string	✔ JoeSmith@Acme.com
🔲 TaxPaye	string	✔ 123451
🔲 LoanAmount	int	✔ 40000

__ a. Press **Continue** button in test client editor.

__ b. Click **Finish.**

__ c. Enter admin/admin (default security settings) and click OK.

__ d. Given the test was for $40,000, nothing greater that $50,000, the response from the bank should be "Your application has been approved":
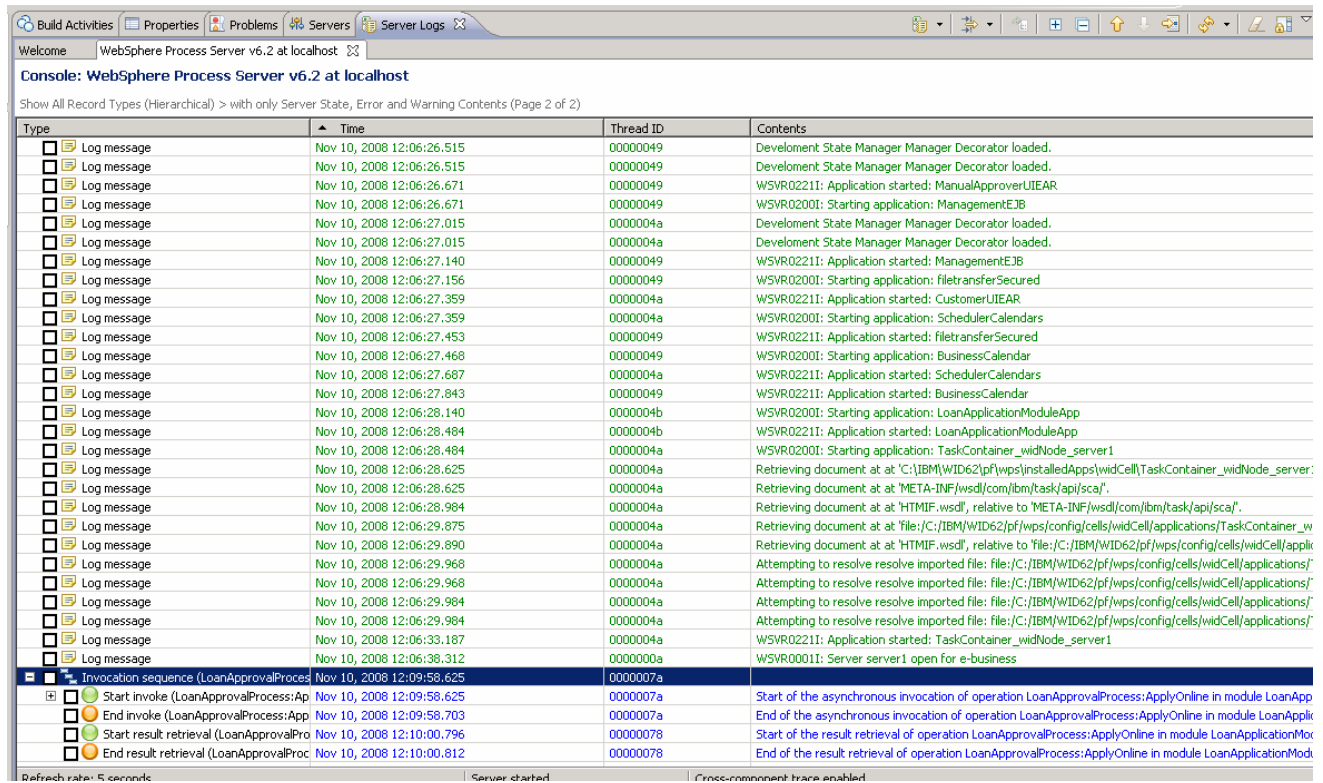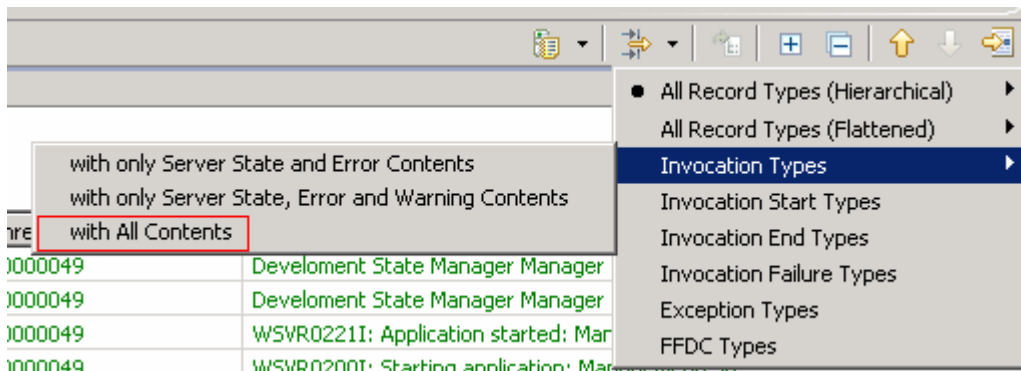
__ e. Maximize Server Logs View by double clicking on the Server Logs View tab.

__ f. Set Server Log view filter to Invocation Types > with All Contents.

__ g. Now expand the entry.

Type	Time	Thread ID	Contents
Invocation sequence (LoanApprovalProcess:ApplyOnline)	Nov 10, 2008 12:09:58.625	0000007a	
Start invoke (LoanApprovalProcess:ApplyOnline)	Nov 10, 2008 12:09:58.625	0000007a	Start of the asynchronous invocation of operation LoanApprovalProcess:A
Start component (LoanApprovalProcess:ApplyOnline)	Nov 10, 2008 12:09:58.703	0000007c	Start of the component processing of operation LoanApprovalProcess:App
Start business process (LoanApprovalProcess)	Nov 10, 2008 12:09:59.515	0000007c	Start of processing for business process LoanApprovalProcess:_PI:90030
Start invoke (AutoApprovalRules:AutoApprovalRequest)	Nov 10, 2008 12:09:59.578	0000007c	Start of the invocation of operation AutoApprovalRules:AutoApprovalReq
Start component (AutoApprovalRules:AutoApprovalRequest)	Nov 10, 2008 12:09:59.578	0000007c	Start of the component processing of operation AutoApprovalRules:AutoA
End component (AutoApprovalRules:AutoApprovalRequest)	Nov 10, 2008 12:09:59.578	0000007c	End of the component processing of operation AutoApprovalRules:AutoAp
End invoke (AutoApprovalRules:AutoApprovalRequest)	Nov 10, 2008 12:09:59.578	0000007c	End of the invocation of operation AutoApprovalRules:AutoApprovalRequ
End business process (LoanApprovalProcess)	Nov 10, 2008 12:09:59.593	0000007c	End of processing for business process LoanApprovalProcess:_PI:900301
Start business process (LoanApprovalProcess)	Nov 10, 2008 12:09:59.703	0000007c	Start of processing for business process LoanApprovalProcess:_PI:90030
End business process (LoanApprovalProcess)	Nov 10, 2008 12:09:59.875	0000007c	End of processing for business process LoanApprovalProcess:_PI:900301
End component (LoanApprovalProcess:ApplyOnline)	Nov 10, 2008 12:09:59.468	0000007c	End of the component processing of operation LoanApprovalProcess:Appl
End invoke (LoanApprovalProcess:ApplyOnline)	Nov 10, 2008 12:09:58.703	0000007a	End of the asynchronous invocation of operation LoanApprovalProcess:Ap
Start result retrieval (LoanApprovalProcess:ApplyOnline)	Nov 10, 2008 12:10:00.796	00000078	Start of the result retrieval of operation LoanApprovalProcess:ApplyOnline
End result retrieval (LoanApprovalProcess:ApplyOnline)	Nov 10, 2008 12:10:00.812	00000078	End of the result retrieval of operation LoanApprovalProcess:ApplyOnline

__ h. In this view you can correlate Start and End of the call sequence. Notice XCT shows that the invoke was an asynchronous type. You can view this by double clicking the invoke even to see the properties.

____ 5.   Fill-in the Test values Scenario 2.

__ a. Click the re-run button .

__ b. Double Click to the right of Name and enter **Joe Smith**.

__ c. Then click out side out of the entry box.

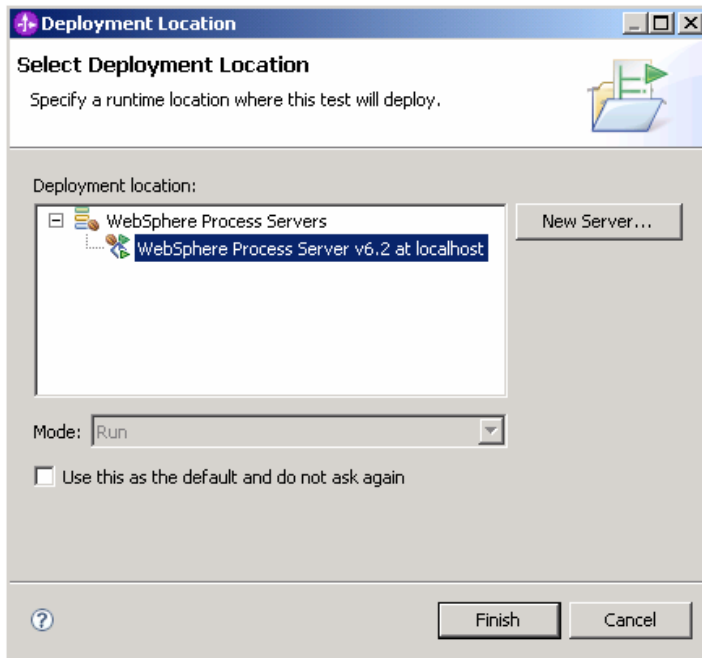__ d. Double Click to the right of Email and enter **JoeSmith@Acme.com**.

__ e. Then click out side out of the entry box.

__ f. Double Click to the right of TaxPrayerId and enter **123451**.

__ g. Then click out side out of the entry box.

__ h. Double Click to the right of LoanAmount and enter **50001**. Notice this is above 50,000 and will call the human task to verify the amount.

__ i. Press **Continue**

__ j. Click **Finish.**

__ k. The partial results are:

Note: The entire business process did not run (that is, no "invoke returned" at bottom of test client). You will need to open the Business Process Choreographer Explorer (BPC Explorer) in order to claim the human task that was created by the business process and therefore finish the business process.

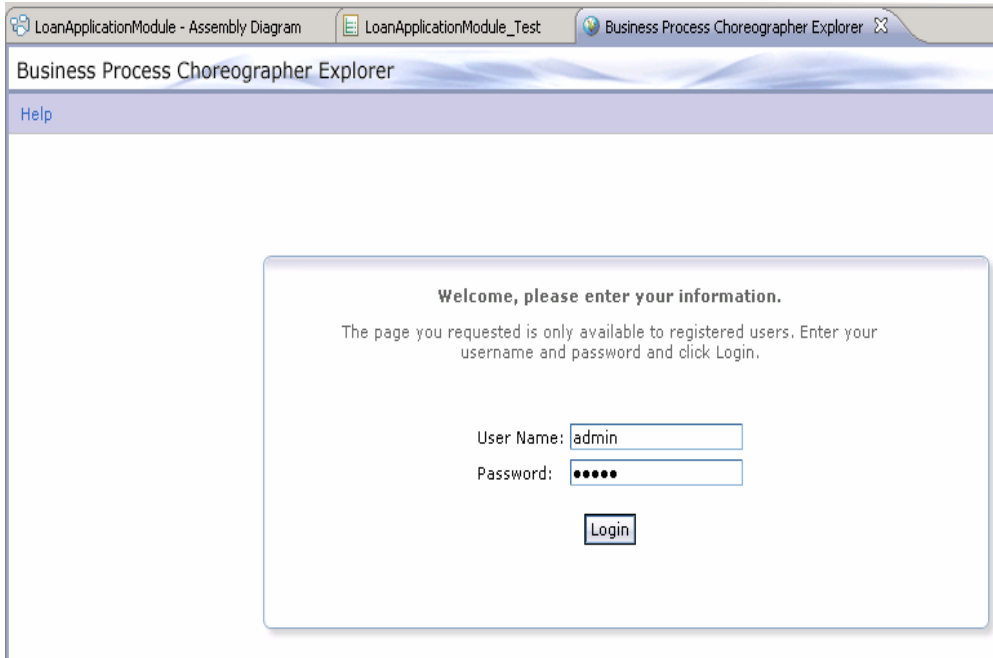____ 6. Start The Business Process Choreographer Explorer
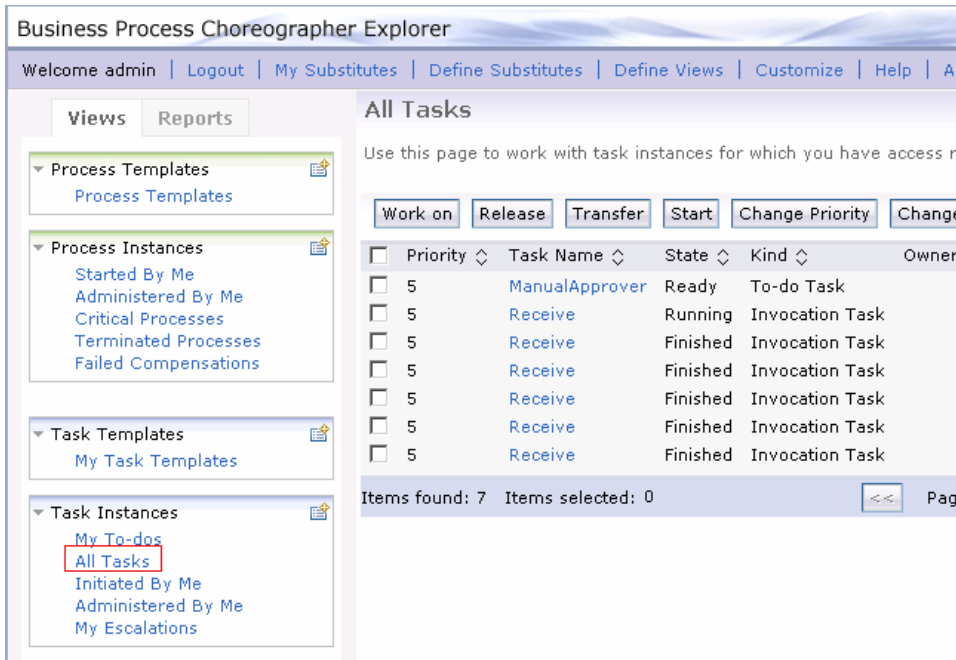
__ a. In the Servers View, right click the WebSphere Process Server test server.

__ b. Select on **Launch -> Business Process Choreographer Explorer**

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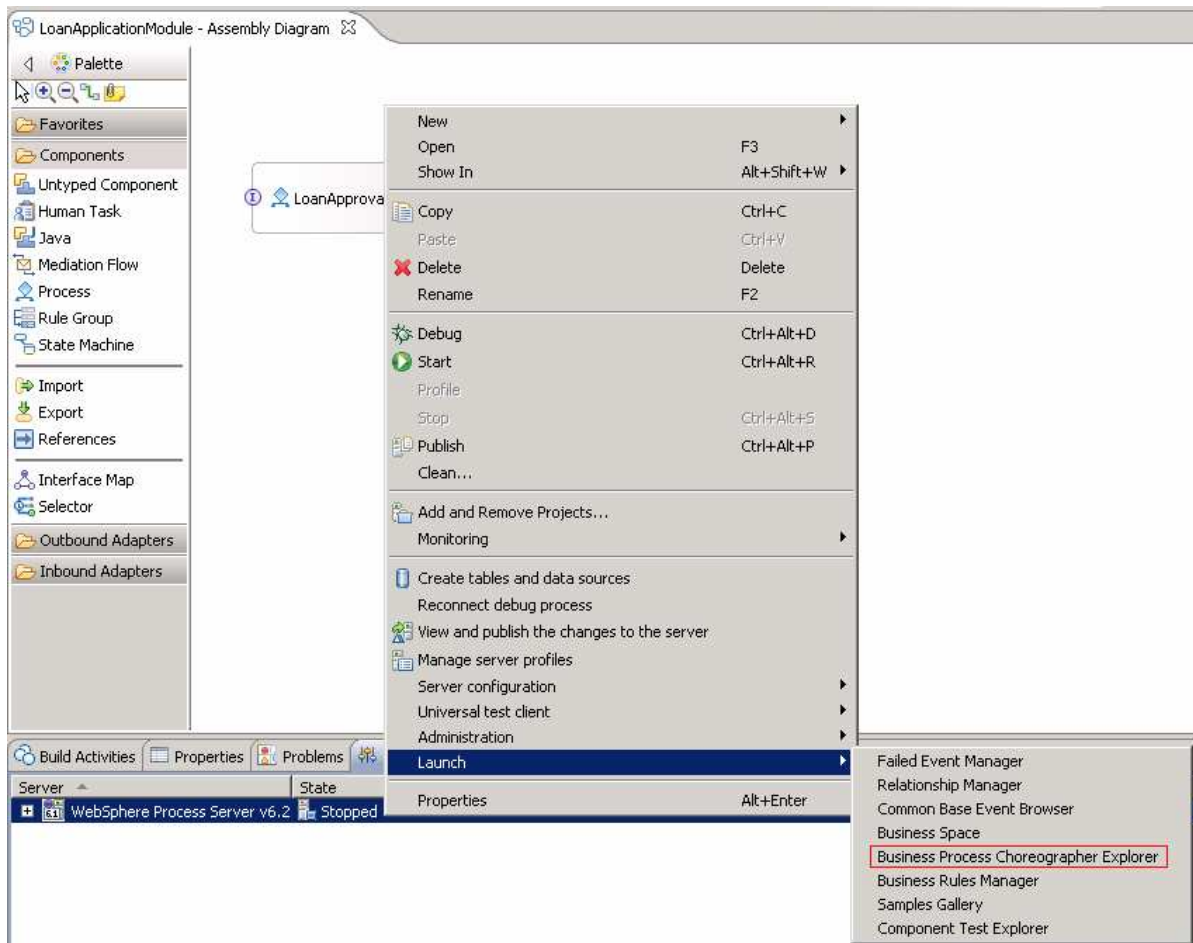
__ c. Log-in. Default is admin/admin.

__ d. Show all of the human tasks available to your ID by clicking on All Tasks.

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__ e. Click the Check Box on ManualApprover then Click the **Work on** button.
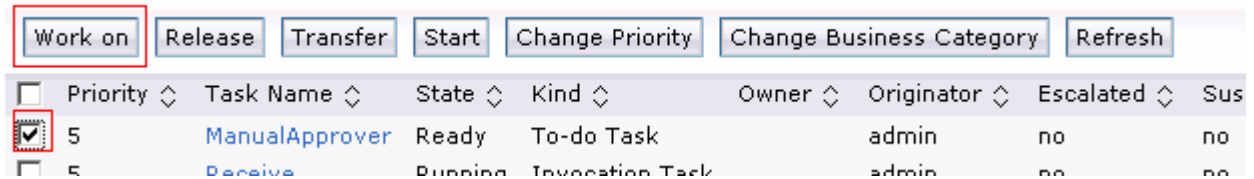
__ f. Click Complete button.

__ g. Go to the Server Logs view and maximize the view by double clicking on the tab.

__ h. Now expand the entry.

Break in the log!

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Start result retrieval (LoanApprovalProcess:ApplyOnline)	Nov 10, 2008 12:51:31.515	00000079	Start of the result retrieval of operation Lc
Result retrieval failed (LoanApprovalProcess:ApplyOnline)	Nov 10, 2008 12:51:36.531	00000079	A failure occurred during the result retrieva
Start result retrieval (LoanApprovalProcess:ApplyOnline)	Nov 10, 2008 12:51:47.296	00000077	Start of the result retrieval of operation Lc
End result retrieval (LoanApprovalProcess:ApplyOnline)	Nov 10, 2008 12:51:47.343	00000077	End of the result retrieval of operation Loa
Start submit callback (ManualApprover:ManualApprovalRequest)	Nov 10, 2008 12:51:44.671	00000077	07e8a3dd-ddab-4640-be64-54345fc78d94
End submit callback (ManualApprover:ManualApprovalRequest)	Nov 10, 2008 12:51:44.687	00000077	07e8a3dd-ddab-4640-be64-54345fc78d94
Start callback (ManualApprover:ManualApprovalRequest)	Nov 10, 2008 12:51:44.765	0000007c	07e8a3dd-ddab-4640-be64-54345fc78d94
End callback (ManualApprover:ManualApprovalRequest)	Nov 10, 2008 12:51:46.843	0000007c	07e8a3dd-ddab-4640-be64-54345fc78d94

Note: The retrieval failed will occur until the Human Task is complete. The Human Task is completed in the prior step.
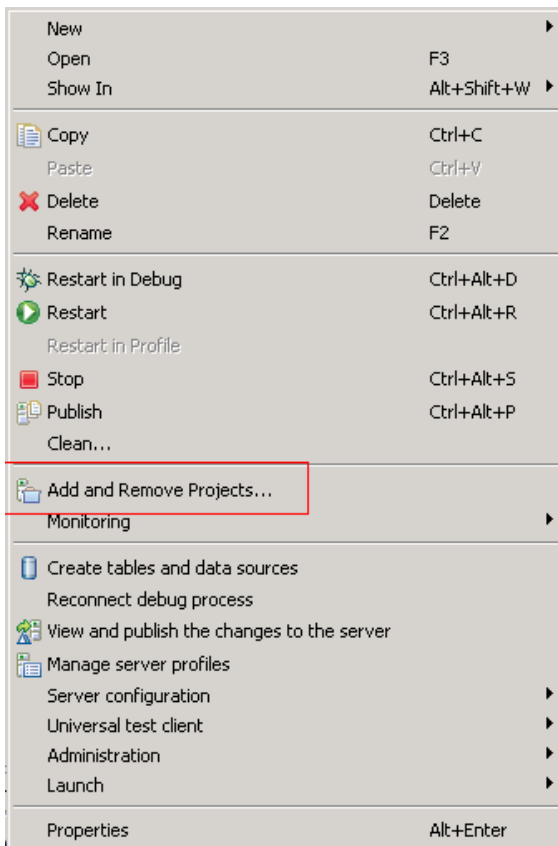
___ i. Close the Business Process Choreographer Explorer.

_____ 7.   Fill-in the Test values Scenario 3.

___ a. First you need to break the Application so you can see an error. You are going to change the application, so first you are going to remove the project from the server.

___ b. Right click the server

___ c. Select Add and Remove Projects …

|	
New	▶
Open	F3
Show In	Alt+Shift+W ▶
📄 Copy	Ctrl+C
Paste	Ctrl+V
❌ Delete	Delete
Rename	F2
🔆 Restart in Debug	Ctrl+Alt+D
▶ Restart	Ctrl+Alt+R
Restart in Profile	
⬛ Stop	Ctrl+Alt+S
🔛 Publish	Ctrl+Alt+P
Clean…	
🗂 Add and Remove Projects…	
Monitoring	▶
🗄 Create tables and data sources	
Reconnect debug process	
🗄 View and publish the changes to the server	
🗄 Manage server profiles	
Server configuration	▶
Universal test client	▶
Administration	▶
Launch	▶
Properties	Alt+Enter

___ d. Click Remove All

___ e. Click Finish

___ f. Click Ok.

___ g. Open Loan ApplicationModule in the Assemble Editor.

__ h. Delete the link between LoanApprovalProcess and AutoApprovalRules.
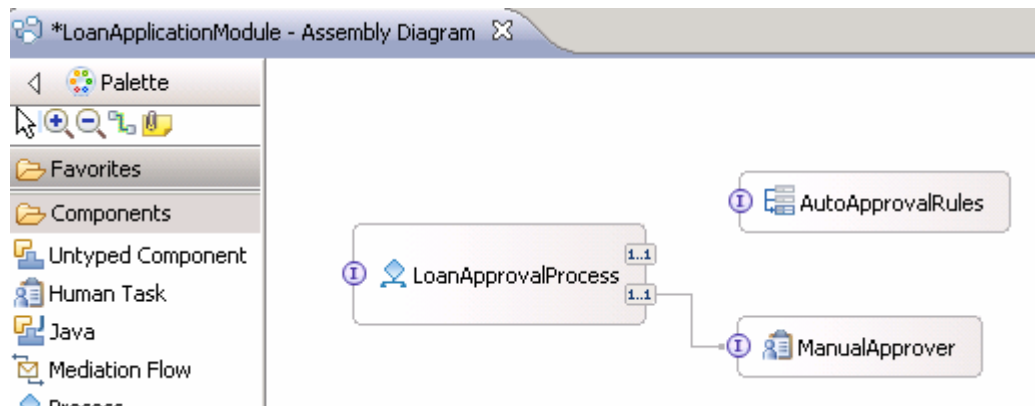
__ i. Save your changes.

__ j. Right Click the Server in the Servers View.

__ k. Select Add and Remove Projects …

__ l. Click Add All

__ m. Click Finish

__ n. Click Ok.

__ o. In the test client editor, click the re-run button.

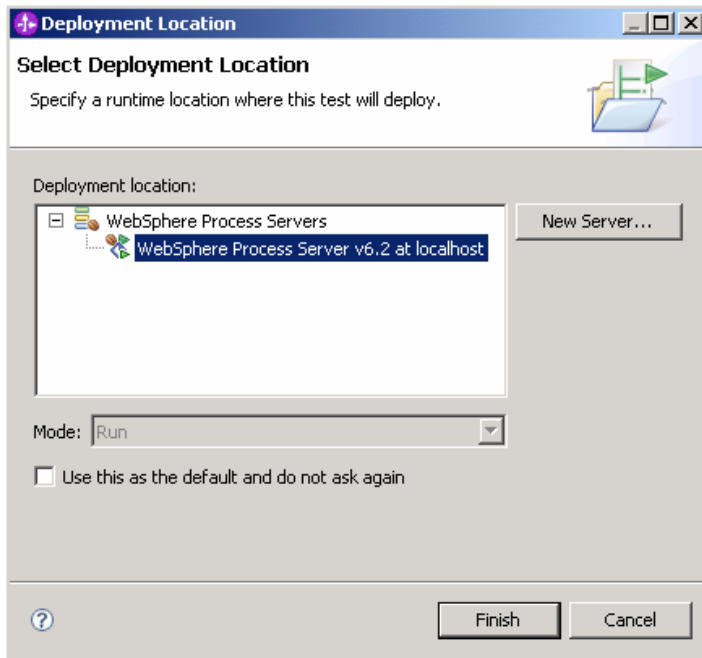__ p. Double Click ✓ to the right of Name and enter **Joe Smith**.

__ q. Then click out side out of the entry box.

__ r. Double Click ✓ to the right of Email and enter **JoeSmith@Acme.com**.

__ s. Then click out side out of the entry box.

__ t. Double Click ✓ to the right of TaxPrayerId and enter **123451**.

__ u. Then click out side out of the entry box.

__ v. Double Click ✓ to the right of LoanAmount and enter **40000.**

__ w. Press **Continue**

__ x. Click **Finish.**

__ y. Results:

Note: The retrieval failed will occur repeatedly because the Auto Approve Rules component is not connected to the loan approval process. The big difference between this failure and the Human Task is that once the Human Task is Complete the retrieval failed stops.

Properties

🔴 Result retrieval failed (LoanApprovalProcess:ApplyOnline)

Time: Nov 10, 2008 13:18:23.750

Thread ID: 00000078

Contents: ⦿ Translated ◯ Raw

A failure occurred during the result retrieval of operation
LoanApprovalProcess:ApplyOnline in module LoanApplicationModule.

OK

Properties

🔴 Result retrieval failed (LoanApprovalProcess:ApplyOnline)

Time: Nov 10, 2008 13:18:23.750

Thread ID: 00000078

Contents: ◯ Translated ⦿ Raw

```
XCT     I  07e8a3dd-ddab-4640-be64-54345fc78d94 END
0eca8738-055d-4d0f-baae-34b67f6b888a
00000000-cccc-2008-cccc-cccccccccc2 SCA(DeferredResponse
failedResultRetrieve LoanApplicationModule
%7Bhttp%3A%2F%2Fwww.ibm.com%2Fxmlns%2Fprod%2Fwebsphere%2
Fscdl%2F6.0.0%7DLoanApprovalProcess
%2FLoanApprovalProcessInterface.ApplyOnline Assoc(Ticket
_8QkHMK9TEd2cq7viSSSTJQ))
```

OK

__ z. As an Option: Change another part of the Loan Approval Process and see how your change
propagates itself in XCT?

____ 8. Clean up the test server.

__ a. Right Click the Server in the Servers View.
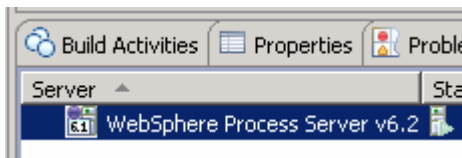
__ b. Select Add and Remove Projects …

__ c. Click Remove All

__ d. Click Finish

__ e. Click Ok.

_____ 9.   Stop test server.

__ a. Select the Server

__ b. Click .

__ c. You are ready to move on to the next lab.

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