Oracle® Fusion Middleware

Supplemental Instructions for Running Fusion Order Demo for Oracle SOA Suite

11*g* Release 1 (11.1.1.7.0)

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This tutorial assumes you have installed, configured, and deployed Fusion Order Demo, as specified in Chapter 3 of the *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*. Specifically, this tutorial complements Section 3.6, "Running Fusion Order Demo." You can find the *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* on Oracle Technology Network:

http://www.oracle.com/pls/as111170/lookup?id=SOASE

Running Fusion Order Demo

You begin the ordering process in the Store Front UI, where a user shops for and orders products. When an order is submitted, the Application Development Framework Business Component writes the order to the database and raises a NewOrderSubmitted business event using the Events Delivery Network (EDN). The OrderPendingEvent mediator subscribes to this event, and initiates the main BPEL process, OrderProcessor, to process the order.

Task 1: Place Two Orders in the Store Front

In this task, place two orders, one for under $2000 and the other for over $2000. By placing these orders, you can see how orders totalling more than $2000 require human approval.

To place orders:

1. Access the Store Front from the following URL:

   http://*hostname*:*port*/StoreFrontModule/faces/home.jspx

   where *hostname* is the DNS name or IP address of the Oracle WebLogic Server for Oracle SOA Suite and *port* is the address of the port, for example, port 8001, on which the Store Front module is deployed.

   You begin the order process by browsing the product catalog. When you click **Add** next to a product, the site updates the shopping cart region to display the item.

2. Place an order for under $2000:

   a. Click **Add** under **Tre 650 Phone/PDA** for $299.99.

   b. Click **Add** under **Bluetooth Phone Headset** for $49.99.

   Figure 1 shows the cart summary with the two products added. The summary displays a subtotal purchase total of $349.98 for the two items that appear in the cart.

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Figure 1   Shopping Part Summary

c.   Click the **Checkout** link (Figure 2), located in the middle of the menu bar.

*Figure 2   Checkout Link*

A login dialog is displayed (Figure 3).

Figure 3   Log In Dialog
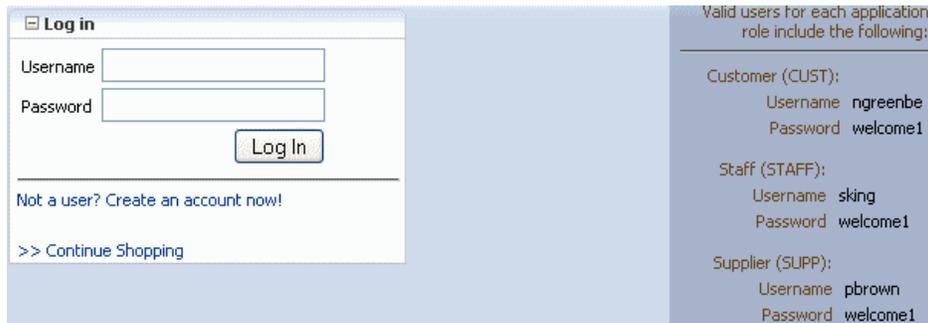
d.   Enter `ngreenbe` and `welcome1` in the **Username** and **Password** fields, respectively.

e.   Click **Log In**.

The Shipping Details page is displayed (Figure 4).

Figure 4   Shipping Details Page

f.   In the **Order Information #***order_id* section, take note of the order ID, as you need it for a later task. In this example, the order ID is **1347**.

g.   In the **Shipping Information** section, take note of the following default settings:

- 100 N Peach St Philadelphia PA 19139 US

- 4111111111111111 VISA

h.   In the **Order Summary** section, take note of the order total, which is **$345.11**, and click **Submit Order** to complete the first order.

The Invoice Details page is displayed (Figure 5).

Figure 5   Invoice Details Page

3. Click the **Exit and Continue Shopping** link, located in the menu bar, to return to the home page (Figure 6).

Figure 6   Exit and Continue Shopping Link

4. Place an order for over $2000:

a. Click **Add** under **20-Inch iMac** for $2,499.99.

The **Shopping Cart Summary** section displays a subtotal purchase total of **$2,499.99** for the two items that appear in the cart.

b. Click the **Checkout** link.

The Shipping Details page is displayed.

c. In the **Order Information #***order_id* section, take note of the order ID, as you need it for a later task. In this example, the order ID is 1348.

d. In the **Shipping Information** section, modify the default address to 2100 S Casino Dr. Laughlin NV 89029 US.

If you decide to modify the other options, note the following about the credit card you select from the **Payment Option Code** list:

- If the selected credit card is not AMEX, VISA, MSTR, or DINC, the OrderProcessor process faults with an invalid credit card type. For example, if you place an order with 123456765432 Western States Bank, the order faults.

- If the selected credit card starts with 0, 1, 2, or 3, the OrderProcessor process returns the status specified in Table 1. For example, selecting 378282246310005 AMEX triggers a fraud alert.

Table 1   Invalid Credit Card Number

Credit Card Starting Number	Status
0	INVALID
1	DENIED
2	STOLEN
3	FRAUD ALERT

Later, after you have completed the procedures in this tutorial, you can select an invalid credit card to see the faults in the OrderProcessor process.

e. In the **Order Summary** section, take note of the order total, which is $2,507.49, and click **Submit Order** to complete the second order.

The Invoice Details page is displayed (Figure 7).

Figure 7 Invoice Details Page

5. Click the **Logout** link, located in the right-hand-side of the menu bar, to log
   `ngreenbe` out of the session (Figure 8).

Figure 8 Logout Link

Task 2: Start Fusion Middleware Control to Monitor Orders

To start Fusion Middleware Control to monitor orders:

1. Use Mozilla FireFox, version 2.0 or higher, or Internet Explorer, version 7.0 or
   higher, to access the following URL:

   `http://hostname:port/em`

   where `hostname` is the host name and `port` is the port of Fusion Middleware
   Control for the Oracle SOA Suite installation.

   The login dialog appears.

2. Enter `weblogic/password` and click **Login**.

   where:

   ■   `weblogic` is the Fusion Middleware Control administrator user name

   ■   `password` is the password you provided for the `weblogic` administrator
       during installation

3. From the navigation pane, expand **SOA** > **soa-infra** > **soaFusionOrderDemo** to
   see the deployed applications (Figure 9):

Figure 9   SOA Menu
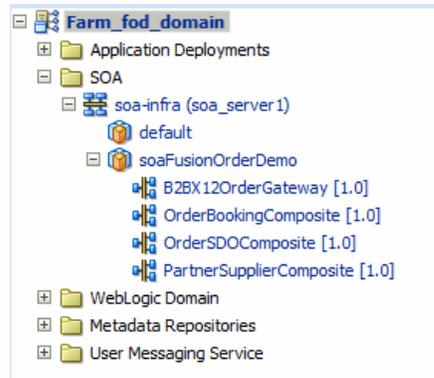
OrderBookingComposite and PartnerSupplierComposite are the two main composites in the WebLogic Fusion Order Demo application.

4. Click the **OrderBookingComposite** composite.

    The home page for the SOA composite application is displayed (Figure 10). The upper part of the page displays details about recent SOA composite application instances, recent faults, and rejected messages. The topmost two instances in the **Recent Instances** table represent the instances of the SOA composite application you created when you placed the two orders in "Task 1: Place Two Orders in the Store Front" earlier.

Figure 10   Recent Instances Section
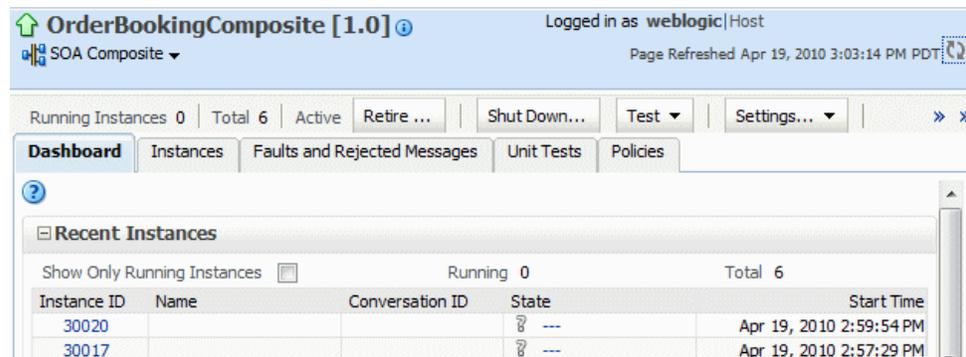
Task 3: Monitor the First Order

You now monitor the first order sent from the Store Front module to the **OrderBookingComposite** composite from Fusion Middleware Control. You submitted this order as Nancy Greenberg for $345.11.

To monitor the first order:

1. In the **Recent Instances** section, click the second instance, representing the first order for $345.11. Note the instance number. In this example, the instance number is **30017**.

    The Flow Trace page is displayed.

    The **Faults** table displays details about faults occurring in the services, service components, and references that comprise SOA composite applications. If you

select an invalid credit card type or number, then the **Faults** section displays those faults.

The **Sensors** table (Figure 11) displays details about composite sensors included in the service and reference binding components of the SOA composite application. It displays the following sensors:

- The **CreditCardAuthResultSensor** sensor tracks whether or not the **CreditCardAuthorization** service in the **OrderBookingComposite** composite approves the credit card. The value is **APPROVED**.

- The **FulfillmentBatchInsert** sensor tracks the ID of the purchase order to fulfillment. The value is the value of the order ID returned in Step 2 in "Task 1: Place Two Orders in the Store Front" earlier. In this example, the value is **1347**.

Figure 11   Sensors Table

The **Trace** table (Figure 12) shows the sequence of the message flow through the services, service components, and references that comprise the SOA composite application. Because the **OrderPendingEvent** mediator receives the order and routes the input order ID to the **OrderProcessor** BPEL process, the instance is listed as **OrderPendingEvent**.

Figure 12   Trace Section for the First Order

Notice how all the service components have a status of **Completed** for the first order.

2. Click the **OrderProcessor** BPEL process service component in the **Instance** column to see how the first order was processed.

The **Audit Trail** tab of the Instance of OrderProcessor window (Figure 13) displays execution details about the activities in the BPEL process.

Figure 13   Activity Trail Tab
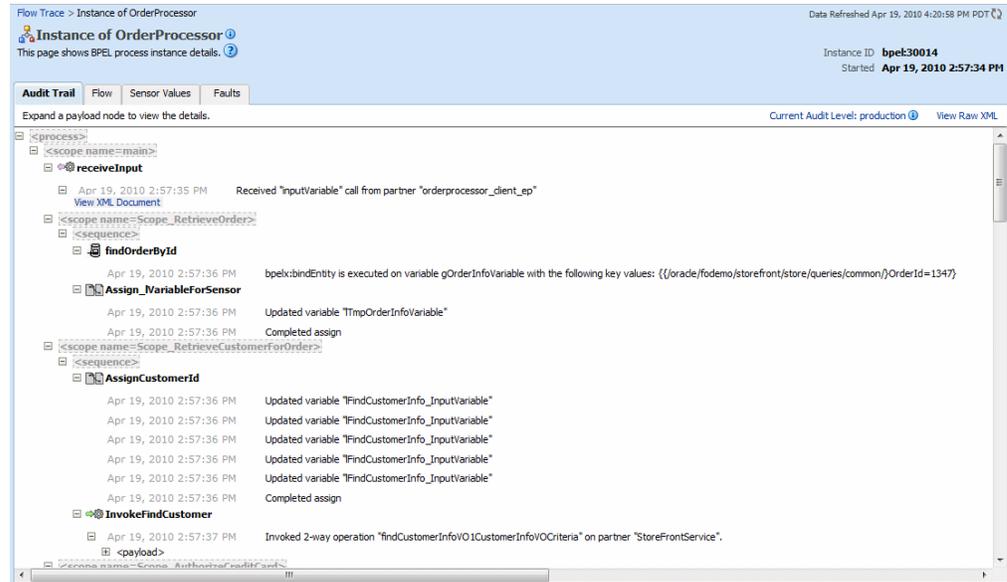
3. Click the **Flow** tab to see a visual representation of the instance.

A visual representation of the BPEL process activities appears (Figure 14). The icons in the flow are referred to as activities. You can click them to view their details.

Figure 14   Flow Tab with BPEL Process Activities
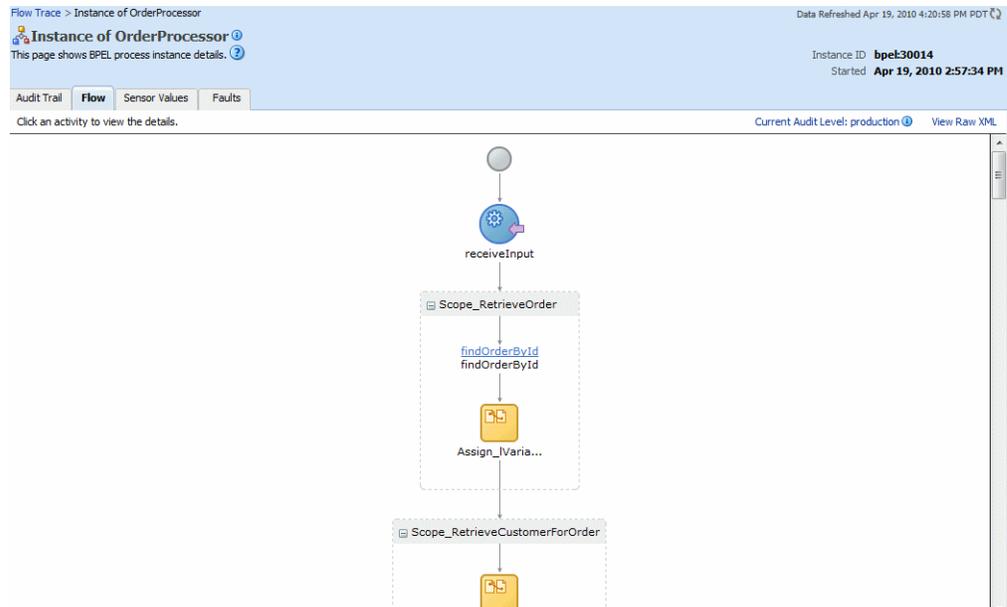
4. Click the first activity, the blue, circle receive activity labeled **receiveInput** (Figure 15).

Figure 15   receiveInput Activity
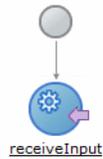
The Activity Audit Trail dialog displays the XML input to this BPEL process instance (Figure 16). If you click the **View xml document** link, it shows the order ID (**orderID**) you were given when you placed the order through the Store Front module. In this example, the order ID is **1347**.

Figure 16   receiveInput in Activity Audit Trail Dialog

```
−<client:process>
    <client:orderId>1347</client:orderId>
  </client:process>
```

5. Click **X** to dismiss the XML output.

6. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

7. Scroll further in the process to the **Scope_RetrieveOrder** activity and click **findOrderByID** to view the order ID as input to variable **gOrderInfoVariable**:

    ```
    bpelx:bindEntity is executed on variable gOrderInfoVariable with the following
    key values:
    {{/oracle/fodemo/storefront/store/queries/common/}OrderId=1347}
    ```

8. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

9. Scroll to the **Scope_RetrieveCustomerForOrder** scope and click the **InvokeFindCustomer** activity to see the **StoreFrontService** service being invoked and returning the customer information. Note the following in the Activity Audit Trail dialog:

    ■ **lFindCustomerInfo_InputVariable** represents the input variable to the **StoreFrontService** service. The **CustId** parameter represents the ID of customer ngreenbe. In this example, the ID is **108**.

    ■ **gCustomerInfoVariable** represents the output from the **StoreFrontService** service, which returns the customer information back to the BPEL process (Figure 17).

Figure 17   InvokeFindCustomer Activity in Activity Audit Trail Dialog

10. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

11. Scroll to the **Scope_AuthorizeCreditCard** scope and click
    InvokeCheckCreditCard to see the **CreditCardAuthorization** service being
    invoked and returning the status of the credit card.

    Note the following in the Activity Audit Trail dialog:

    ■   **lCreditInput** represents the input variable to the
        CreditCardAuthorizationService service. Parameters **CCType**, **CCNumber**,
        and **PurchaseAmount** represent the input credit card type, number, and order
        total. These values are set as follows:

        ```
        <CCType>VISA</CCType>
        <CCNumber>41111111111111111</CCNumber>
        <PurchaseAmount>345.11</PurchaseAmount>
        ```

    ■   **lCreditCardOuput** shows that the service returned a status of **APPROVED**.
        Therefore, the **OrderProcessor** BPEL process continues.

12. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

13. Scroll to the **Scope_CheckApprovalLimit** scope and click the **Invoke** link under
    BusinessRule_ApprovalRequired to see the **RequiresApprovalRule** business
    rule being invoked.

    Note the following in the Activity Audit Trail dialog (Figure 18):

    ■   **dsIn** represents the input variable sent to the business rule. The **approve**
        parameter shows the invocation of the business rules engine at run time. The

price parameter shows the order total was $345.11. The business rules engine requires this input to determine whether human approval is required.

- **dsOut** shows the output from the business rule. The **approvalRequired** parameter has a value of **false**. Because this order is under $2,000, no human approval is required. Therefore, the return value is set to **false**.

Figure 18   Invoke Activity for BusinessRuleApprovalRequired Scope in Activity Audit Trail Dialog

14. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

15. In the **Scope_RetrieveQuotes** scope, perform the following:

   a. Click the **Invoke_PartnerSupplier** link to see the order information being sent to the **PartnerSupplierMediator** mediator (Figure 19). The **PartnerSupplierMediator** mediator routes the order information to the **ExternalPartnerSupplier** BPEL process, located in the **PartnerSupplierComposite** composite.

Figure 19 Invoke_PartnerSupplierActivity in Activity Audit Trail Dialog

b. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

c. Click the **Invoke_InternalWarehouse** link to see the order being sent to the **InternalWarehouseService** BPEL process through the **lInternalWarehouseInputVariable** variable (Figure 20):

Figure 20 Invoke_InternalWarehouse in Activity Audit Trail Dialog

d. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

16. In the **Scope_SelectPreferredSupplier** scope, click the **Invoke** link under **BusinessRule_SelectPreferredSupplier** to see the **EvaluatePreferredSupplierRule** business rule being invoked.

Note the following in the Activity Audit Trail dialog:

- **dsIn** represents the input variable sent to the business rule. The **warehouse**, **deliveryDate**, and **orderTotal** parameter values provide the input to the business rule. The business rules engine uses this input to pick the supplier with the lowest shipping price to fulfill the order.

The input data for the two warehouse suppliers displays in Example 1.

Example 1   Input Data for Quotes from the Warehouses

```
<ns1:warehouse>PartnerWarehouse</ns1:warehouse>
<ns1:deliveryDate>2010-04-19</ns1:deliveryDate>
<ns1:orderTotal>345.11</ns1:orderTotal>

...
<warehouse>InternalWarehouse</warehouse>
<deliveryDate>2010-04-19</deliveryDate>
<orderTotal>1000</orderTotal>
```

The **InternalWarehouse** supplier returns a static value of $1,000 for all orders.

■ **dsOut** shows the output from the business rule (Example 2). The **warehouse** parameter value shows the selected warehouse supplier. The **PartnerWarehouse** supplier was selected because it provided a lower quote.

Example 2   Output Data for Quotes from Warehouses

```
<warehouse>PartnerWarehouse</warehouse>
<ns1:deliveryDate>2010-04-19</ns1:deliveryDate>
<ns1:orderTotal>345.11</ns1:orderTotal>
```

17. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

18. In the **Scope_FulfillOrder** scope, click the **Invoke_FulfillOrder** link to see the order information being sent to the **FulfillOrder** mediator (Figure 21). The **FulfillOrder** mediator stores the order in a temporary queue and routes the order to USPS for shipment.

Figure 21   Invoke_FulfillOrder Activity in Activity Audit Trail Dialog

19. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

20. Scroll to the **Scope_NotifyCustomerOfCompletion** scope and click the **InvokeNotificationService** link to see the **NotificationService** service being used to send an e-mail notification to Nancy Greenberg.

21. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

22. Click the **Sensors** tab to view the sensors for the BPEL process.

23. In the Instance of OrderProcessor window, click **X** or **Close** to dismiss the window.

Task 4: View the Second Order in Fusion Middleware Control

You now monitor the second order you submitted for $2,507.49 as Nancy Greenberg. This order is processed differently than the first order, because the order amount is for more than $2,000. Therefore, it requires human approval. To monitor the second order with Fusion Middleware Control, approve the order with Oracle BPM Worklist, and see the order completed in Fusion Middleware Control.

To view the second order in Fusion Middleware Control:

1. In the **Recent Instances** section, click the first instance, representing the second order for $2,507.49. Note the instance number. In this example, the instance number is **30020**.

The Flow Trace page is displayed.

The **Sensors** table (Figure 22) displays the following sensors:

- The **CreditCardAuthResultSensor** sensor tracks whether or not the **CreditCardAuthorization** service in the **OrderBookingComposite** composite approves the credit card. For this order, the value is **APPROVED**.

- The **AssignedUserForApprovalSensor** sensor sends the assignee to approve the order for the instance **30020**. Because this order was over $2,000, it requires human approval. The assignee information is sent to the Oracle BAM Server. If you click the **View XML** link, you can see the assignee is user **jstein**.

Figure 22   Sensors Table

Composite Instance	Sensor Name	Value	Location	Action
30020	AssignedUserForApprovalSensor	View XML…	BAM_ProcessTimeDO_ECID	writetoBAM
30020	CreditCardAuthResultSensor	APPROVED	CreditCardAuthorizationServic	AuthorizeCredit

The **Trace** table (Figure 23) shows the sequence of the message flow through the order.

Figure 23   Trace Table for the Second Order

Trace
Click a component instance to see its detailed audit trail.
Show Instance IDs ☐

Instance	Type	Usage	State
☐ 🏷 NewOrderSubmitted	Event		✔ Completed
☐ OrderPendingEvent	Mediator Component		Running
☐ OrderProcessor	BPEL Component		Running
StoreFrontService	Web Service	📲 Reference	✔ Completed
StoreFrontService	Web Service	📲 Reference	✔ Completed
CreditCardAuthorizationService	Web Service	📲 Reference	✔ Completed
RequiresApprovalRule	Decision Service Component		✔ Completed
☐ ApprovalHumanTask	Human Workflow Component		Running
☐ OrderApprovalTaskAssignedMediator	Mediator Component		✔ Completed
BAM_ProcessTimeDO_ECID	JCA Adapter	📲 Reference	✔ Completed

Unlike the first order, notice in the **Trace** table how the service components are not all complete and the process is stopped at the **ApprovalHumanTask** component.

2. Click the **OrderProcessor** BPEL process service component in the **Instance** column to see how the first order was processed.

3. In the Instance of OrderProcessor window, click the **Flow** tab to see a visual representation of the instance.

4. Click the **receiveInput** activity to see the order ID you placed.

    The Activity Audit Trail dialog displays the XML input to this BPEL process instance. If you click the **View xml document** link, it shows the order ID (**orderID**) you were given when you placed the order through the Store Front module. In this example, the order ID is **1348**.

5. Click **X** to dismiss the XML output.

6. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

7. Scroll to the **Scope_CheckApprovalLimit** scope and click the **Invoke** link under **BusinessRule_ApprovalRequired** to see the **RequiresApprovalRule** business rule being invoked.

   Note the following in the Activity Audit Trail dialog (Figure 24):

    ■ **dsIn** represents the input variable sent to the business rule. The **approve** parameter shows the invocation of the business rules engine at run time. The **price** parameter shows the order total was $2,507.49.

    ■ **dsOut** shows the output from the business rule. The **approvalRequired** parameter has a value of **true**. Because this order is over $2,000, human approval is required. Therefore, the return value is set to **true**.

Figure 24 Invoke Activity for BusinessRuleApprovalRequired Scope in Activity Audit
Trail Dialog

8. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

9. Click the **Collapse** icon (**-**) icon on **BusinessRule_ApprovalRequired** to collapse it.

10. Scroll toward the bottom of the **Scope_CheckApprovalLimit** scope to see that the **ApprovalHumanTask** human task was initiated after the business rule (Figure 25). The switch under the business rule is like an `if-then-else`, `case`, or `switch` statement in other programming languages. In this case, if approval is required, this switch submits data to the **ApprovalHumanTask** human task.

Figure 25   Scope_CheckApprovalLimit in Flow Trace
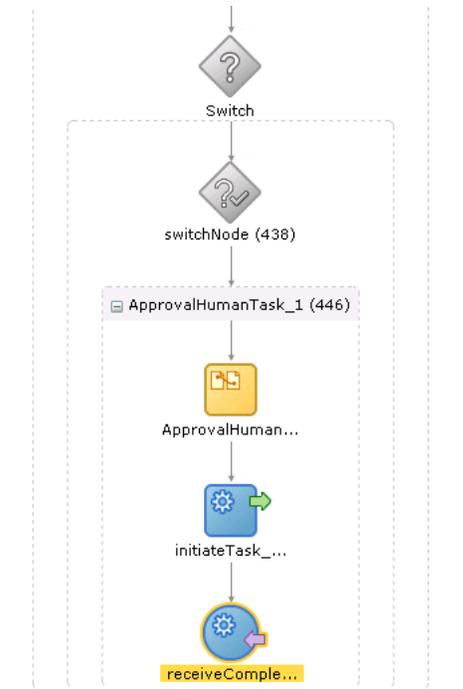
11. Click the **initiateTask_ApprovalHumanTask_1** activity.

12. In the Activity Audit Trail dialog, scroll to the **initiateTaskResponseMessages** variable to see the **assigneeUsers** parameter. This parameter specifies that the human task has been assigned to user `jstein`, as shown in Example 3.

Example 3   assigneeUser Parameter

```
<assigneeUsers>
    <id>jstein</id>
    <displayName>John Steinbeck</displayName>
    <type>user</type>
</assigneeUsers>
```

13. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

14. Click the **receiveCompletedTask_ApprovalHumanTask_1** activity to see that the human task is awaiting approval (Figure 26).

Figure 26   receiveCompletedTask_ApprovalHumanTask_1 Activity in Activity Audit Trail Dialog

15. Click **X** or **Close** to dismiss the Activity Audit Trail dialog, but do not close the Instance of OrderProcessor window, as you need it to view order processing as it completes.

Task 5: Use Oracle BPM Worklist to Approve the Order

### To use Oracle BPM Worklist to approve the order:

1. Use Internet Explorer 7 or Mozilla Firefox 2.0.0.2 to access the following URL:

```
http://hostname:port/integration/worklistapp/faces/home.jspx
```

where `hostname` is the DNS name or IP address of the Oracle WebLogic Server for Oracle SOA Suite and `port` is the address of the port on which the managed server for the Oracle WebLogic Server is listening for requests (`8001` by default).

The login dialog appears.

2. Enter `jstein` in the **Username** field and `welcome1` in the **Password** field, and click **Login**.

3. The **Inbox** shows the order number is awaiting approval. Figure 27 shows order **1348**.

Figure 27   BPM Worklist: Inbox
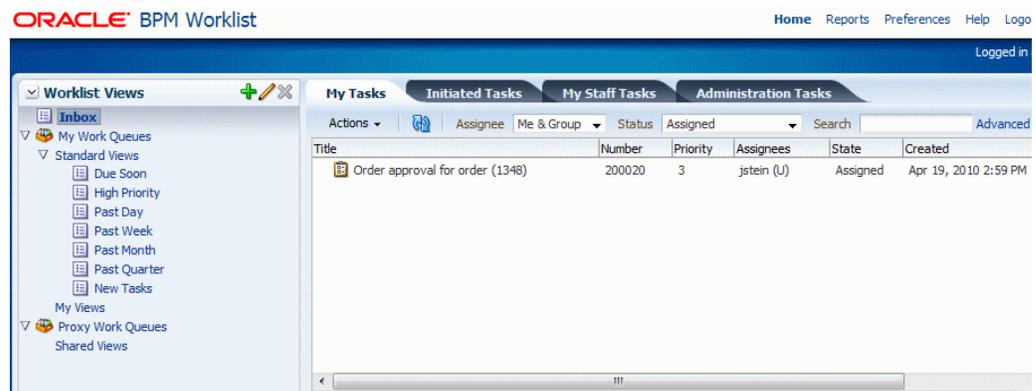
4. Select the order from the table and view the order details in the lower portion of the page (Figure 28).

Figure 28   BPM Worklist: Order Details
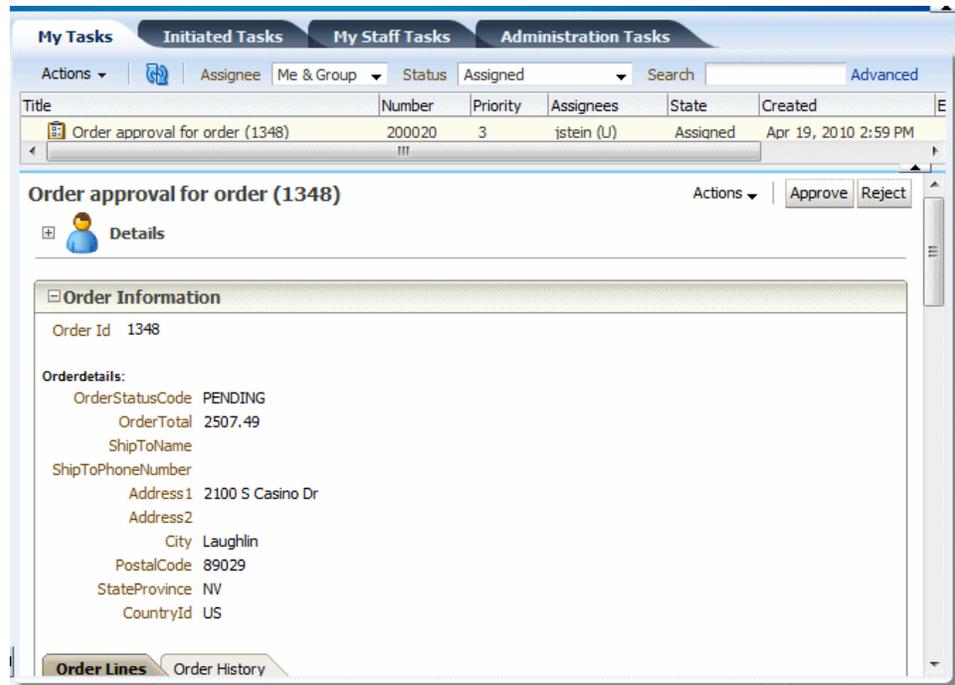
5.   Approve the order. From the **Actions** menu, select **Approve** (Figure 29).

Figure 29   BPM Worklist: Actions Menu
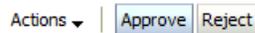
The **My Tasks** tab updates so that no worklist tasks are currently assigned to `jstein`.

With the order approval completed, the processing for the order is now complete.

Task 6: View the Approval in Fusion Middleware Control

**To verify the order completed processing with Fusion Middleware Control:**

1.   Return to the Instance of OrderProcessor window, and click the **Refresh** icon, located in the top right corner (Figure 30).

Figure 30   Refresh Icon

2.   Scroll toward the bottom of the **Scope_CheckApprovalLimit** scope to see the **ApprovalHumanTask** human task (Figure 31).

Figure 31   ApprovalHumanTask
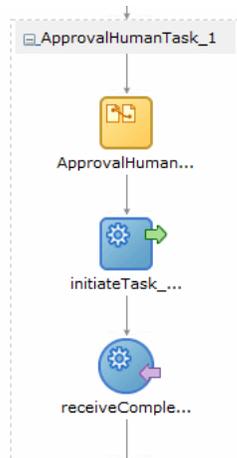
3. Click the **receiveCompletedTask_ApprovalHumanTask_1** activity to see the human task (Figure 32).

Figure 32   receiveCompletedTask_ApprovalHumanTask_1

4. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

5. In the **Scope_SelectPreferredSupplier** scope, click the **Invoke** link under **BusinessRule_SelectPreferredSupplier** to see the **EvaluatePreferredSupplierRule** business rule being invoked.

   Note the following in the Activity Audit Trail dialog:

   ■ **dsIn** represents the input variable sent to the business rule. The **warehouse**, **deliveryDate**, and **orderTotal** parameter values provide the input to the business rule. The business rules engine uses this input to pick the supplier with the lowest shipping price to fulfill the order.

   Example 4 shows the returned input data for the two warehouse suppliers:

Example 4   Data from Warehouses

```
<ns1:warehouse>PartnerWarehouse</warehouse>
<ns1:deliveryDate>2010-04-19</deliveryDate>
<ns1:orderTotal>2499.99</orderTotal>
...
```

```
<warehouse>InternalWarehouse</warehouse>
<deliveryDate>2010-04-19</deliveryDate>
<orderTotal>1000</orderTotal>
```

- **dsOut** shows the output from the business rule. The **warehouse** parameter value shows the selected warehouse supplier. The **InternalWarehouse** supplier was selected because it provided a lower quote.

6. Click **X** or **Close** to dismiss the Activity Audit Trail dialog.

7. In the Instance of OrderProcessor window, click the **Flow Trace** bread crumb to return to the main Flow Trace window.

   Notice in the **Trace** section how the service components in the **OrderBookingComposite** composite are now all complete (Figure 33).

Figure 33   Trace Section

8. Click on any additional service components to view the audit trail. For example, if you want to view audit trail information for how a mediator transforms data, click **PartnerSupplierMediator** or **FulfillOrder**.

9. Close the Flow Trace window.

Documentation Accessibility

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