IBM BUSINESS PROCESS MANAGER 7.5.1 – LAB EXERCISE

Developing business processes with Advanced Integration Services, the Integration Developer's perspective

A bottom-up approach

What this exercise is about

IBM Business Process Manager Advanced (BPM) V7.5.1 is a single BPM solution that combines the best of breed human-centric and integration-centric capabilities into a unified platform.

When developing a business process that uses services to integrate functionality from other systems there are several different approaches that can be taken. With one approach, the integration developer creates the service interface and the service implementation, and makes them available to the process developer in a Toolkit. This *bottom up* approach works well when there is already a mature SOA architecture with reusable services.

Another approach is for the process developer to define the interface for the service to be called and the integration developer will then create the implementation based on the interface provided. This *top down* approach works well when the service does not already exist.

In this exercise you will learn how to use the *bottom up* approach for integrating *Advanced Integration Services* into your human centric business process.

Lab requirements

These products below are required for this exercise:

- IBM Business Process Manager V7.5.1 Server with IBM Process Center V7.5.1 stand alone profile
- IBM Process Designer V7.5.1
- IBM Integration Designer V7.5.1
- DB2 V9.7.200.358 or higher

Throughout the lab, references to these products drop the IBM prefix and the version, calling the Process Center, Process Designer and Integration Designer.

What you should be able to do

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

- As the integration developer using the Integration Designer
    - Create a Business Process Manager (BPM) Toolkit, using the Process Center perspective of the IBM Integration Designer
    - Associate SCA modules and libraries with the BPM Toolkit
    - Publish the BPM Toolkit containing SCA services to the Process Center server
    - Create a snapshot of the BPM Toolkit to make it available for inclusion into Process Applications and Toolkits.
- As the process developer using the Process Designer
    - Create a process application and simple business process that uses the *Advanced Integration Service*s provided by the BPM Toolkit which the integration developer published to the Process Center server
    - Correctly configure the activity in the process application that calls the advanced integration service
    - Correctly pass data between process activities
    - Test the process application using the Process Inspector.

Introduction

This lab exercise has two parts to it. As you work through the lab you will be switching roles from *integration developer* to *process developer*.

The business process used for this exercise models a customer service process which is supported by a set of services for integrating with an existing CRM system. The operations defined on the *AccountServicesInterface* are:

- createNewAccount
- deleteAccount
- accountStatus
- addAccountFeature
- getAccountInfo

As the *integration developer* you will start in the *Process Center* perspective of the Integration Designer and create a new BPM Toolkit called *Account Services*. You will then import the Account Services implementation and library and associate them to the Account Services toolkit. Next you will publish your work to the Process Center where the operations will be available to the *process developer* as *Advanced Integration Service*.

In the second part of the exercise you will assume the role of the *process developer* and using the Process Designer, create a business process flow using one of the *Advanced Integration Services* provided by the integration developer. Once the business process is completed, you will then test the flow and the invocation of the *Advanced Integration Service* using the Process Inspector.

Part 1: Integration Designer – Implementing the advanced integration service

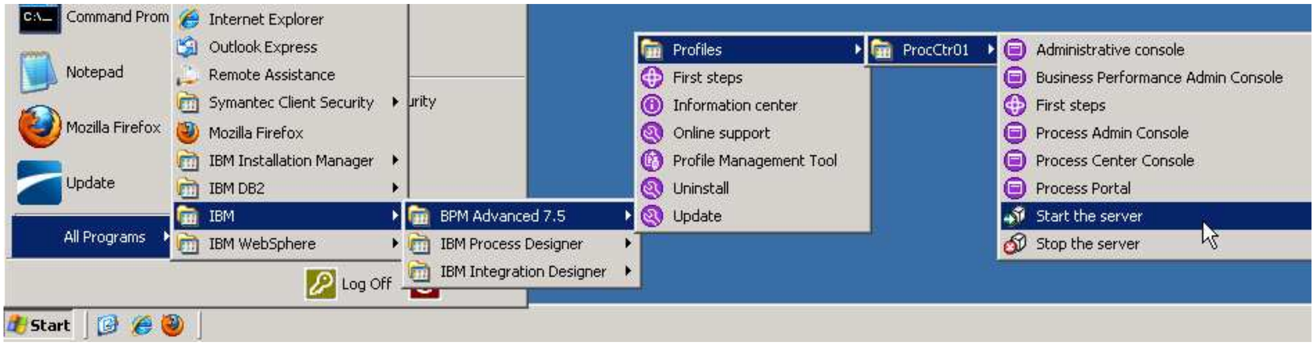
In this part of the lab exercise, you play the role of the integration developer and work within the IBM Integration Designer tool.

A basic outline of this part is:

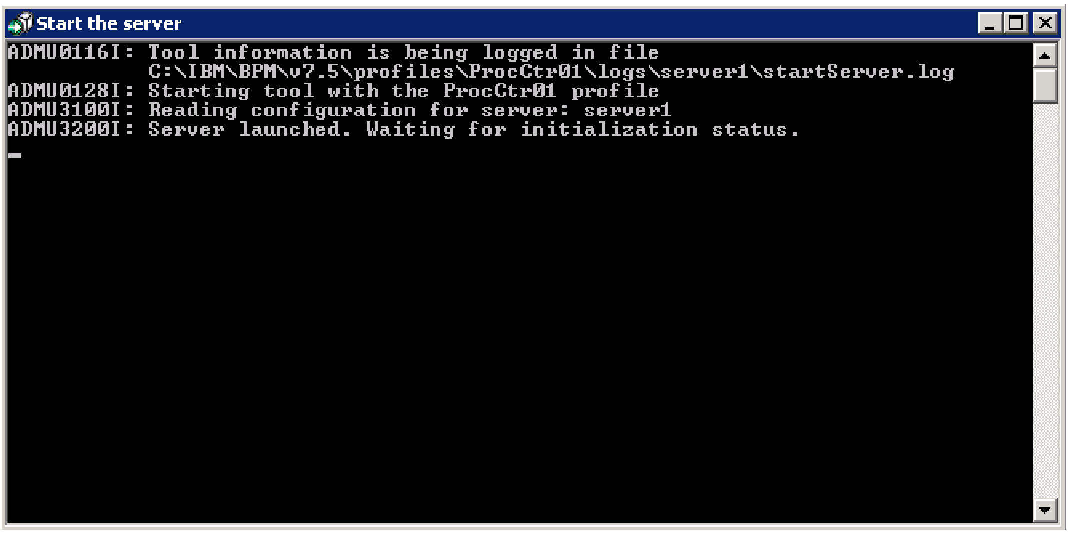
- Start the Process Center server and the Integration Designer development environment
- Create a new BPM Toolkit
- Import and inspect an SCA module from a project interchange file
- Associate the SCA module with the BPM Toolkit
- Publish the BPM Toolkit to the Process Center server
- Create a snapshot of the BPM Toolkit

____ 1. Start IBM Process Center

__ a. Select **Start → All Programs → IBM → BPM Advanced 7.5 → Profiles → ProcCtr01 → Start the Server**



__ b. Wait for the server to start, which can take a few minutes. While it is starting, you should see the following window:



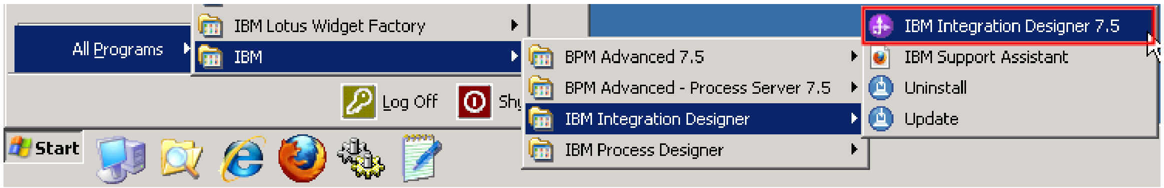
Start the server

```
ADMU0116I: Tool information is being logged in file
           C:\IBM\BPM\v7.5\profiles\ProcCtr01\logs\server1\startServer.log
ADMU0128I: Starting tool with the ProcCtr01 profile
ADMU3100I: Reading configuration for server: server1
ADMU3200I: Server launched. Waiting for initialization status.
```

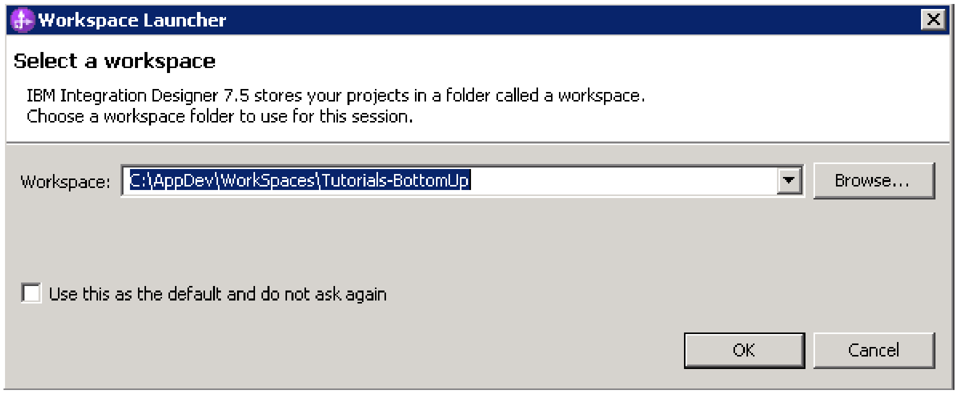
__ c. When the server startup completes, you will see some additional messages in the window and then it will then close automatically. When the window disappears, you are ready to continue.

____ 2. Start IBM Integration Designer

__ a. Start IBM Integration Designer in a new workspace by clicking on the IBM Integration Designer from the Windows *Start* menu.



__ b. In the Workspace Launcher dialog, enter **C:\AppDev\WorkSpaces\Tutorials-BottomUp** for the workspace location.



Workspace Launcher

Select a workspace

IBM Integration Designer 7.5 stores your projects in a folder called a workspace.
Choose a workspace folder to use for this session.

Workspace: C:\AppDev\WorkSpaces\Tutorials-BottomUp

□ Use this as the default and do not ask again

When opening with a new workspace, Integration Designer will initially open to the default Business Integration perspective but quickly switches to the Process Designer perspective in order to login to the Process Center. Logging into the Process Center first is important because you need to connect to the Process Center in order to have a target for where your work will be published. The Process Center server must be running to perform this step.

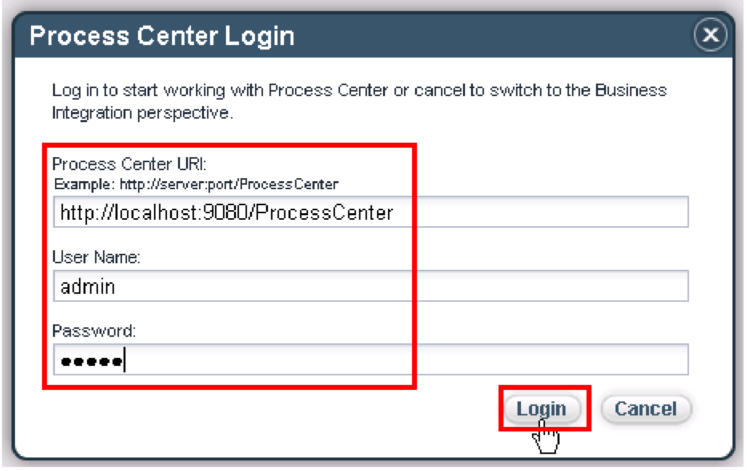
NOTE: You use Process Designer to develop process applications and toolkits, and Integration Designer to develop SCA services. The Process Center Perspective is the way for you to establish and maintain relationships between BPM Toolkits, process applications and SCA services. You can do things such as create a new process application or toolkit, associate SCA services with a process application or toolkit, import process application and toolkit artifacts into Integration Developer, publish process applications and toolkits to the Process Center, and so on.

NOTE: SCA services that are associated with a Process Center as part of a process application or toolkit are referred to as *Advanced Integration Services*.

NOTE: The user that will be publishing the Process Application or Toolkit that contains Advanced Integration Services must have either *Deployer* and or *Operator* administrative privileges in the WebSphere Process Server user registry. This is managed through the WebSphere Process Server administrative console.

__ c. **Type the following credentials** into the Process Center Connection Details prompt and **click Login** button:

Process Center URL:	http://localhost:9080/ProcessCenter	
User Name:	<your user id>	(default admin user is *admin*)
Password:	<your password>	(default admin password is *admin*)


Process Center Login

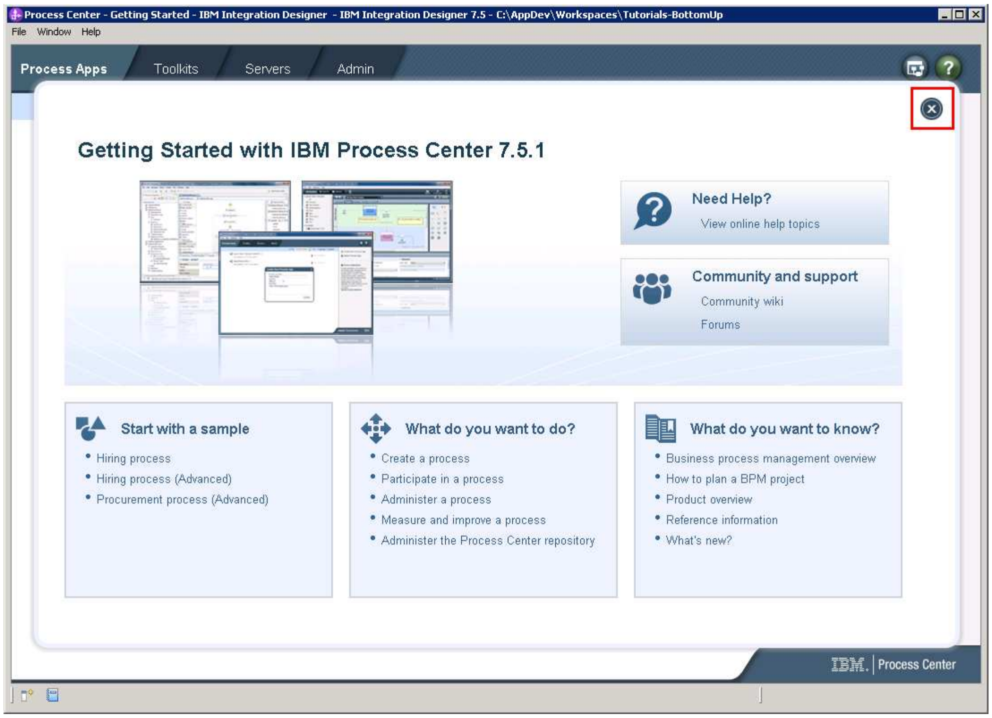
Log in to start working with Process Center or cancel to switch to the Business Integration perspective.

Process Center URI:
Example: http://server:port/ProcessCenter
http://localhost:9080/ProcessCenter

User Name:
admin

Password:
•••••

__ d. **Click the X on the welcome dialog** in the Process Center perspective to close the welcome dialog.

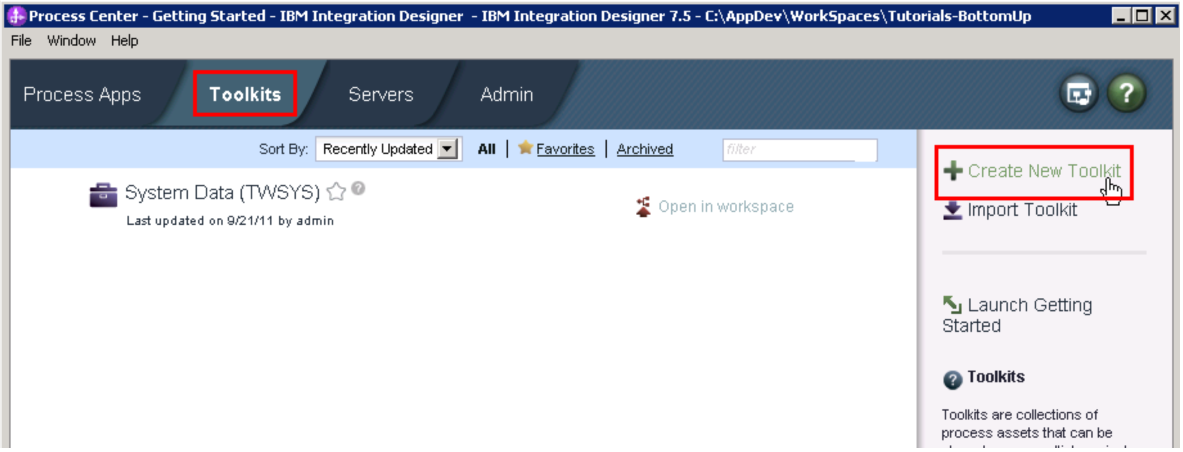

Process Center - Getting Started - IBM Integration Designer - IBM Integration Designer 7.5 - C:\AppDev\Workspaces\Tutorials-BottomUp
File Window Help
Process Apps
Toolkits
Servers
Admin
Getting Started with IBM Process Center 7.5.1
Need Help?
View online help topics
Community and support
Community wiki
Forums
Start with a sample
Hiring process
Hiring process (Advanced)
Procurement process (Advanced)
What do you want to do?
Create a process
Participate in a process
Administer a process
Measure and improve a process
Administer the Process Center repository
What do you want to know?
Business process management overview
How to plan a BPM project
Product overview
Reference information
What's new?
IBM. Process Center

NOTE: In the following steps, you create a new toolkit. In this scenario, the person in the integration developer role will make some existing SCA services available to the business process developer as a BPM toolkit. In this case, the BPM toolkit does not yet exist, so the integration developer is given the capability to create the toolkit with which to associate the SCA services. When the integration developer publishes the toolkit containing the SCA services to the Process Center, a person in the role of process developer will create a process application with a dependency on the toolkit. This dependency will provide access to the *Advanced Integration Service*, to the process application.

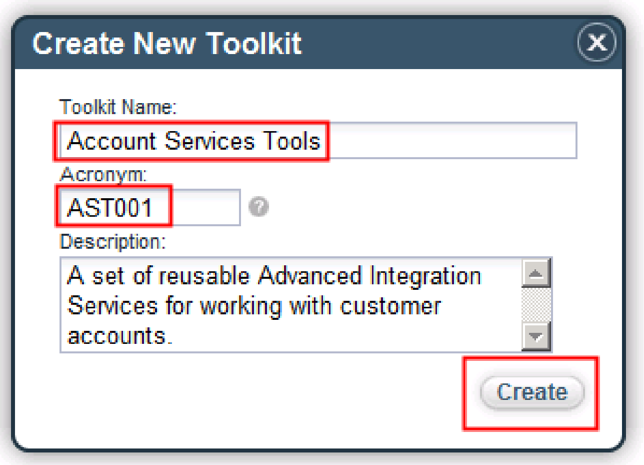
____ 3. The next step is to create a new Toolkit.

__ a. Select the Toolkits tab

__ b. In the upper right corner of the Process Center perspective, click on the **Create New Toolkit** link.


Process Center - Getting Started - IBM Integration Designer - IBM Integration Designer 7.5 - C:\AppDev\WorkSpaces\Tutorials-BottomUp
File Window Help
Process Apps
Toolkits
Servers
Admin
Sort By: Recently Updated
All | Favorites | Archived
filter
System Data (TWSYS)
Last updated on 9/21/11 by admin
Open in workspace
Create New Toolkit
Import Toolkit
Launch Getting Started
Toolkits
Toolkits are collections of process assets that can be

__ c. In the Create New Toolkit dialog, provide the name and acronym for the toolkit;
Toolkit Name -→ **Account Services Tools**
Acronym → **AST001**



Create New Toolkit

Toolkit Name: Account Services Tools

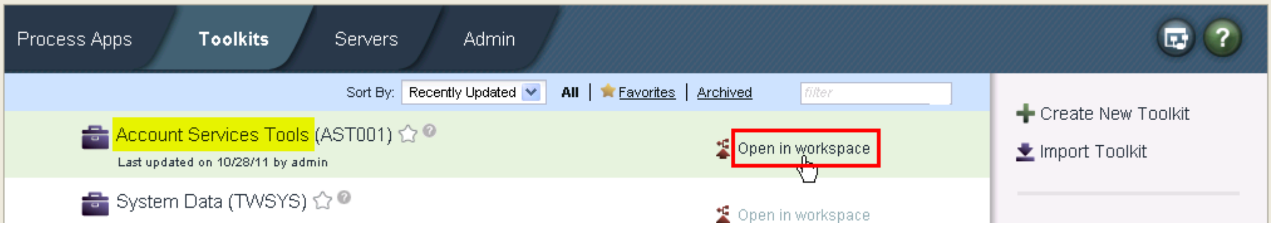
Acronym: AST001

Description: A set of reusable Advanced Integration Services for working with customer accounts.

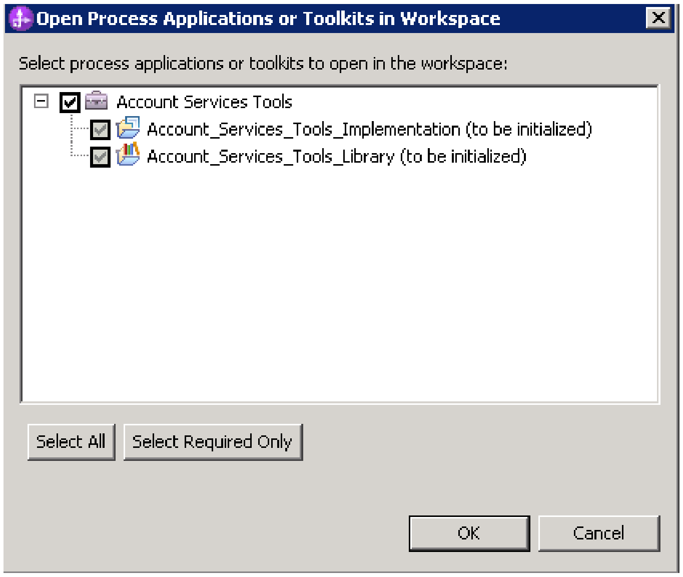
And click the **Create** button.

____ 4. You can see the Account Services Tools toolkit in the list of Toolkits. You are now ready to work with the SCA services and associate them with this toolkit.

__ a. Switch to the Business Integration perspective by clicking the "**Open in workspace**" link.



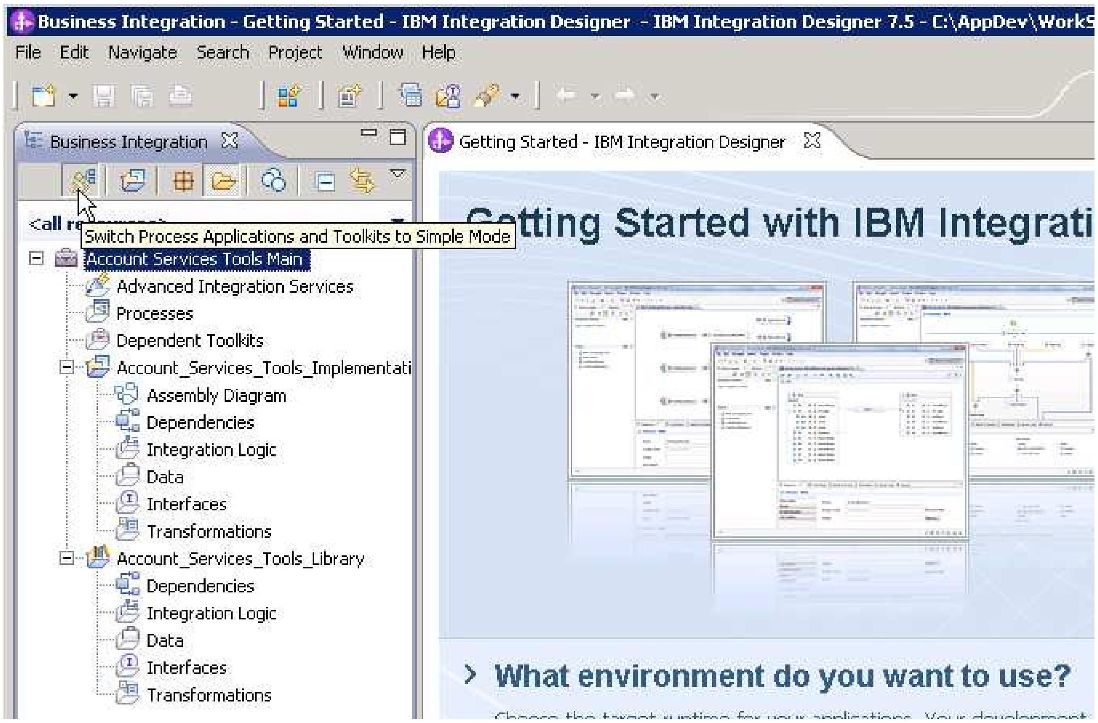
__ b. Accept the default implementation project and library.



Select process applications or toolkits to open in the workspace:

- ☑ Account Services Tools
  - ☑ Account_Services_Tools_Implementation (to be initialized)
  - ☑ Account_Services_Tools_Library (to be initialized)

__ c. You should now see the Business Integration perspective:

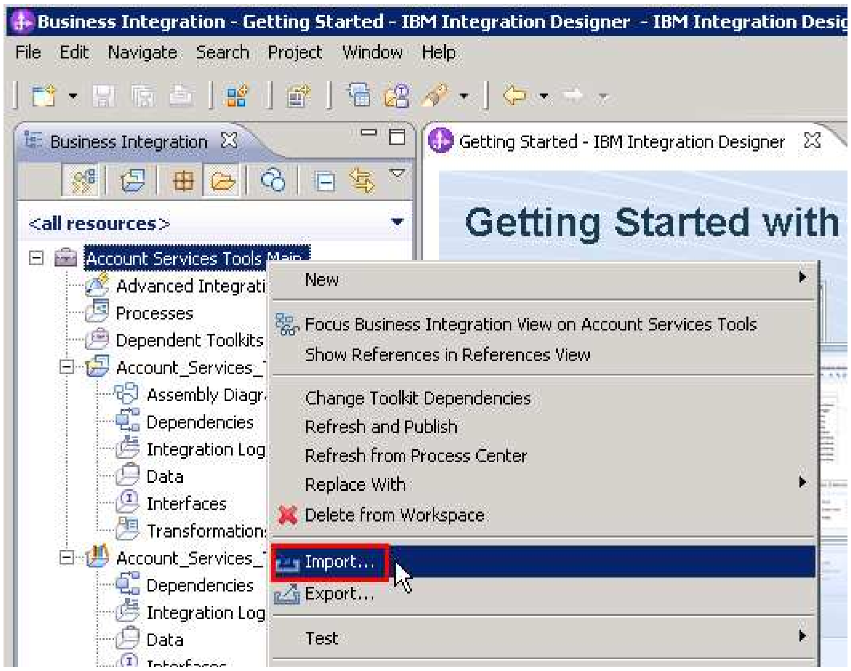

Business Integration - Getting Started - IBM Integration Designer - IBM Integration Designer 7.5 - C:\AppDev\WorkS
File Edit Navigate Search Project Window Help
Business Integration
Getting Started - IBM Integration Designer
Switch Process Applications and Toolkits to Simple Mode
<all re
Account Services Tools Main
Advanced Integration Services
Processes
Dependent Toolkits
Account_Services_Tools_Implementati
Assembly Diagram
Dependencies
Integration Logic
Data
Interfaces
Transformations
Account_Services_Tools_Library
Dependencies
Integration Logic
Data
Interfaces
Transformations
Getting Started with IBM Integrati
What environment do you want to use?

Expand the folder and it should look like this. If it does not, then you may need to toggle the Simple/Detailed mode button shown here.

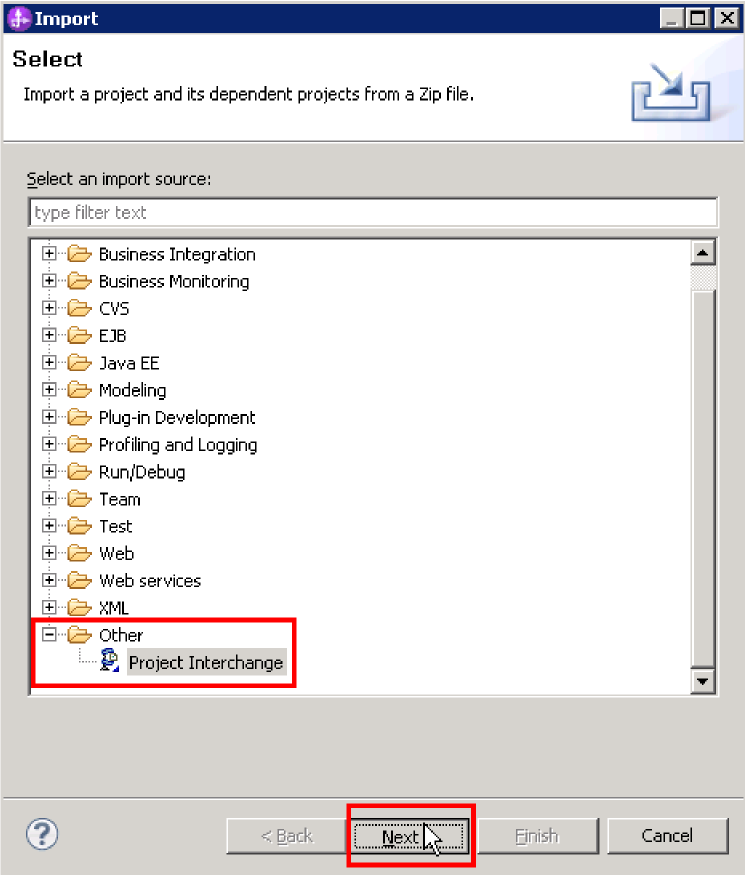
NOTE: In the following steps you import an existing SCA module and library from a project interchange file. Normally, in a bottom up scenario, the integration developer is iteratively developing and testing an SCA module before performing the integration steps with a process application. However, this lab is focusing on the integration aspects of a bottom up scenario and therefore it makes sense to use an existing SCA module rather than developing one as part of the lab.

____ 5. Import the Account Services implementation and library.

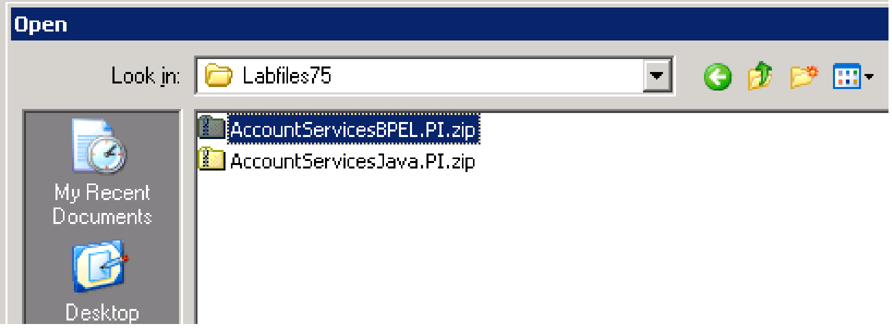
__ a. Initiate the import by selecting **Import** from the pop-up menu. (right-click)


Business Integration - Getting Started - IBM Integration Designer - IBM Integration Desig
File Edit Navigate Search Project Window Help
Business Integration
Getting Started - IBM Integration Designer
Getting Started with
<all resources>
Account Services Tools Main
Advanced Integrati
Processes
Dependent Toolkits
Account_Services_
Assembly Diagr
Dependencies
Integration Log
Data
Interfaces
Transformation:
Account_Services_
Dependencies
Integration Log
Data
New
Focus Business Integration View on Account Services Tools
Show References in References View
Change Toolkit Dependencies
Refresh and Publish
Refresh from Process Center
Replace With
Delete from Workspace
Import...
Export...
Test

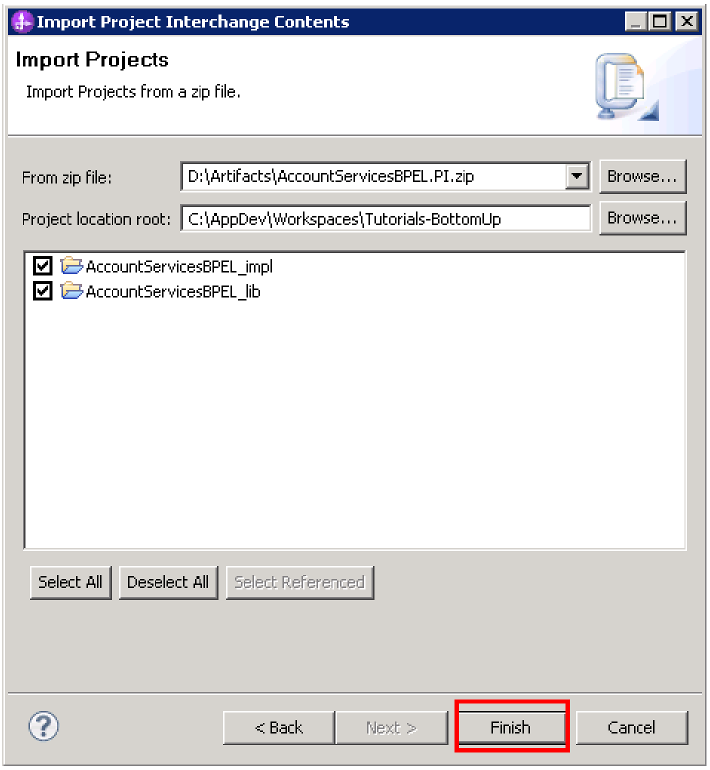
__ b. Select **Other → Project Interchange** and click **Next**.



__ c. In the Import Project Interchange Contents dialog, click the **Browse** button next to **"From zip file**" and navigate to **C:\Labfiles75\AccountServicesBPEL.PI.zip** and click **Open**.



__ d. Once you see the two modules to be imported (AccountServices_impl, AccountServices_lib), click **Finish**.


Import Project Interchange Contents

Import Projects

Import Projects from a zip file.

From zip file: D:\Artifacts\AccountServicesBPEL.PI.zip

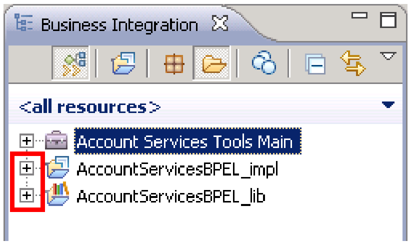
Project location root: C:\AppDev\Workspaces\Tutorials-BottomUp

☑ AccountServicesBPEL_impl

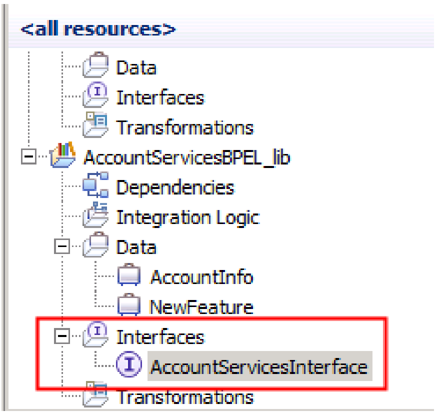
☑ AccountServicesBPEL_lib

____ 6. Inspect the contents of the projects that you have just imported.

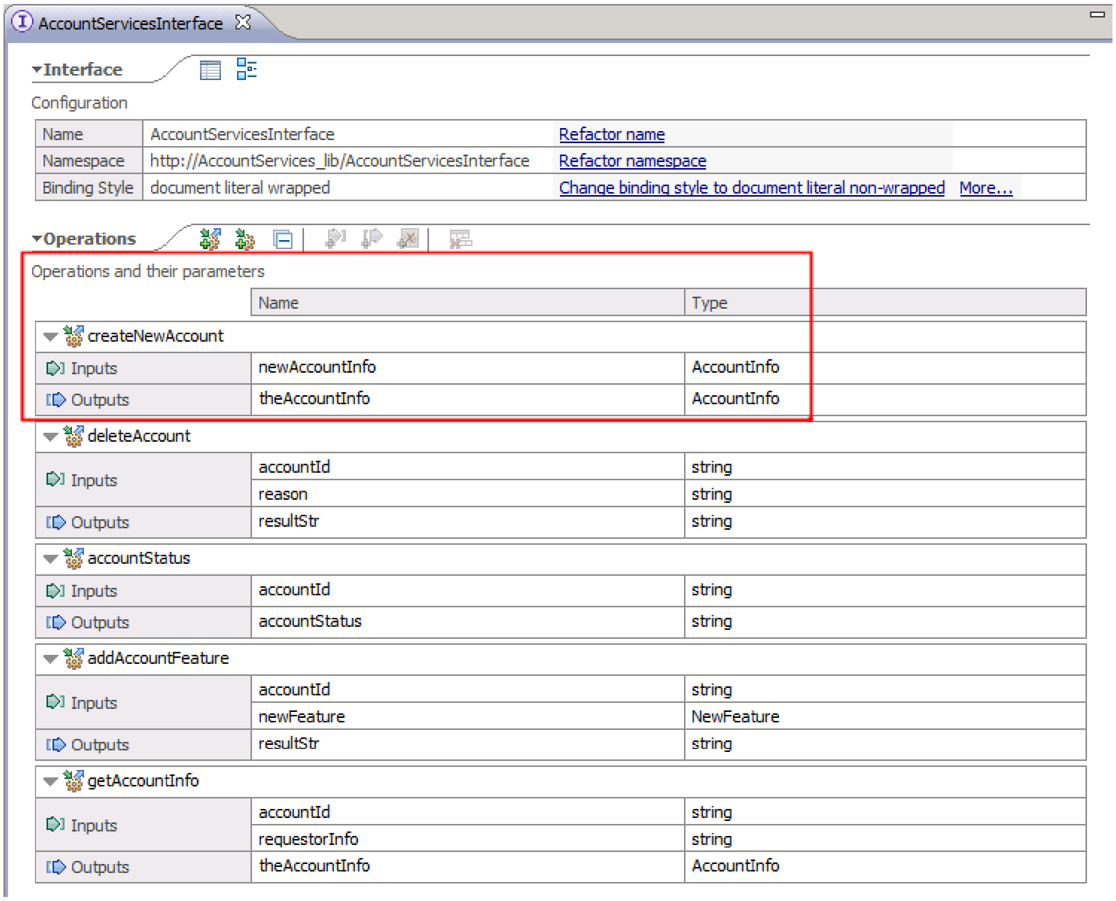
__ a. In the Business Integration view, click the + icons in the navigation tree to expand the contents of the projects



__ b. Under **AccountServicesBPEL_lib → Interfaces…** double-click **AccountServicesInterfaces**



__ c. Notice that all the operations are defined here in a single interface. You will be using the createNewAccount operation for this exercise. The *AccountInfo* business object is used for both the input and the output.



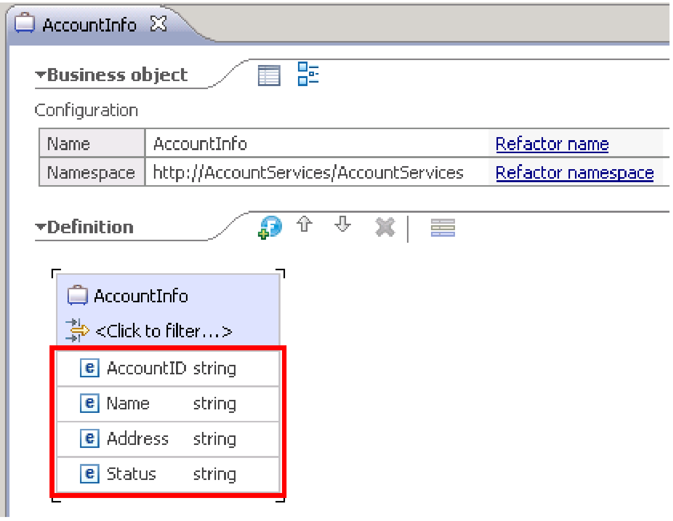
Configuration

Name	AccountServicesInterface	Refactor name
Namespace	http://AccountServices_lib/AccountServicesInterface	Refactor namespace
Binding Style	document literal wrapped	Change binding style to document literal non-wrapped More...

Operations and their parameters

	Name	Type
createNewAccount		
Inputs	newAccountInfo	AccountInfo
Outputs	theAccountInfo	AccountInfo
deleteAccount		
Inputs	accountId	string
	reason	string
Outputs	resultStr	string
accountStatus		
Inputs	accountId	string
Outputs	accountStatus	string
addAccountFeature		
Inputs	accountId	string
	newFeature	NewFeature
Outputs	resultStr	string
getAccountInfo		
Inputs	accountId	string
	requestorInfo	string
Outputs	theAccountInfo	AccountInfo

__ d. Likewise, under **AccountServicesBPEL_lib → Data,** double-click **AccountInfo.** Examine the business object definition of AccountInfo, which defines the data to be passed in and out of the createNewAccount method.



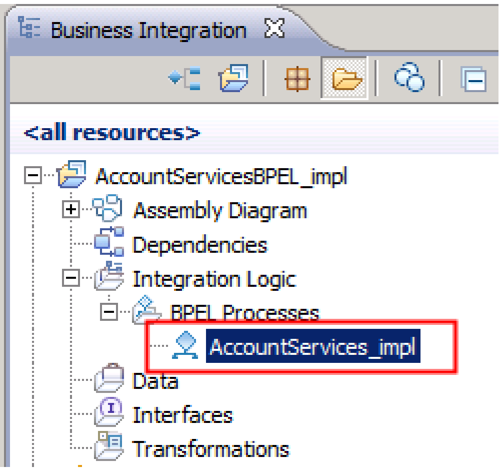
Configuration

Name	AccountInfo	Refactor name
Namespace	http://AccountServices/AccountServices	Refactor namespace

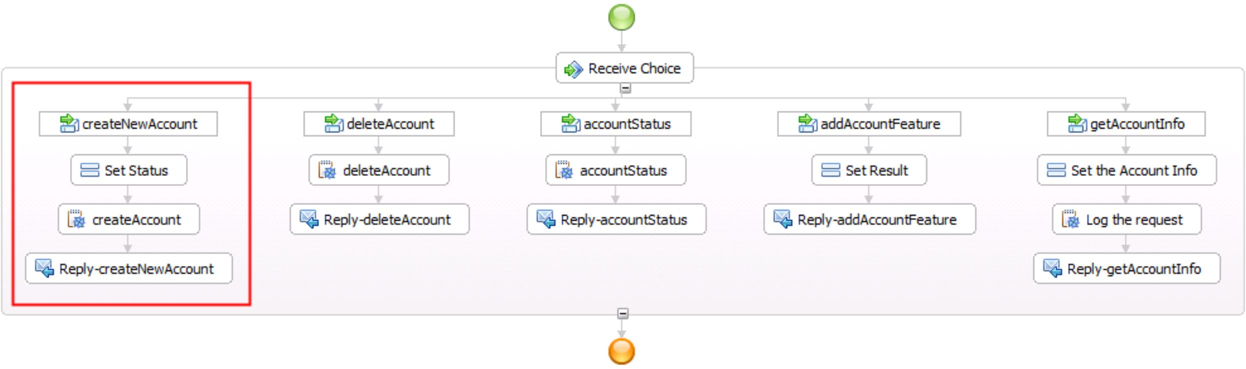
AccountID	string
Name	string
Address	string
Status	string

NOTE: There are other aspects of the projects that you could inspect; however understanding the createNewAccount method and AccountInfo business object is sufficient for what is needed to understand this lab exercise. If you want, you can examine some additional aspects of the projects, such as the assembly diagram, the interface, and other method definitions.

____ 7. Next , take a look at the **AccountServicesBPEL_impl → Integration Logic → BPEL Processes → AccountServices_impl**

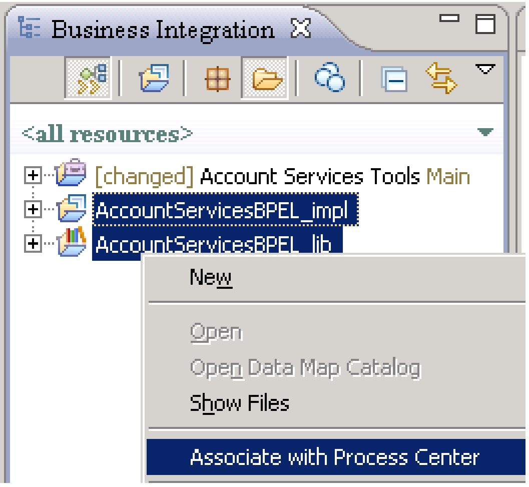


____ 8. Inspecting the BPEL you will see that there is a Receive Choice that will route the business process based on the operation being called. In the case of the *createNewAccount*, the status is updated and some messages are logged to the System Out log using the createAccount snippet.

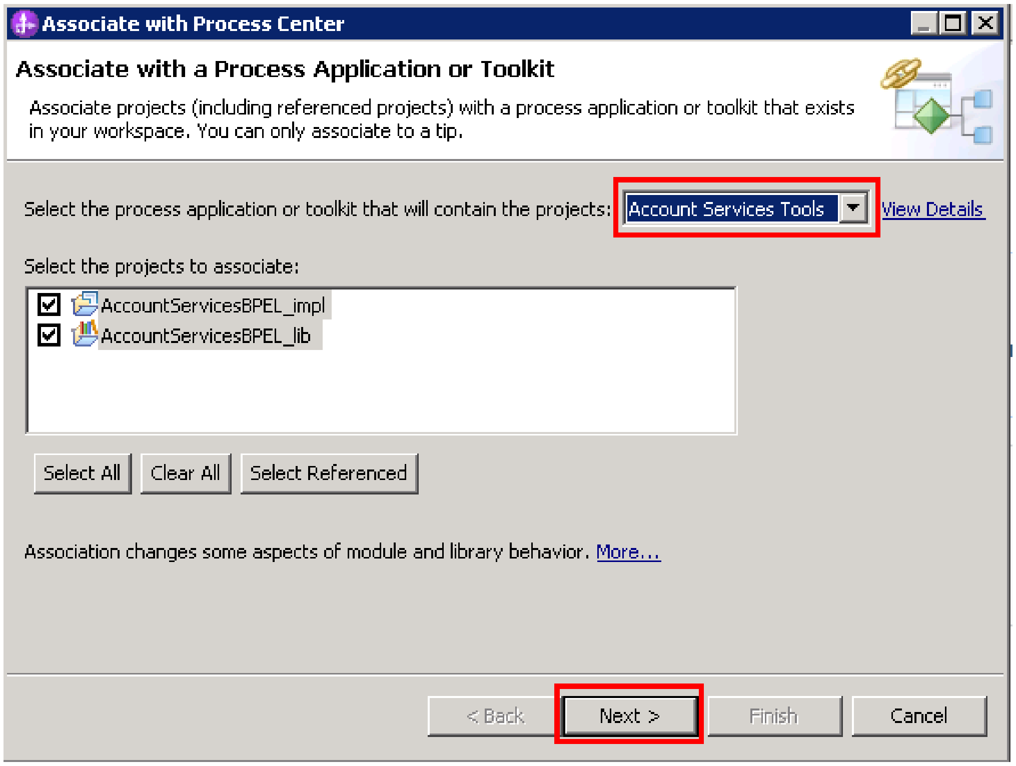


____ 9. In this step you associate the AccountServices_impl and AccountServices_lib with the Account Services Tools toolkit you previously created. Once associated with the toolkit, the SCA service operations will be referred to as *Advanced Integration Services*.

__ a. In the business integration perspective, highlight both the AccountServices_impl and AccountServices_lib. Right-click the blue highlighted area and select **Associate with Process Center**



__ b. In the drop-down box, select **Account Services Tools** toolkit and click **Next.**



Associate with a Process Application or Toolkit

Associate projects (including referenced projects) with a process application or toolkit that exists in your workspace. You can only associate to a tip.

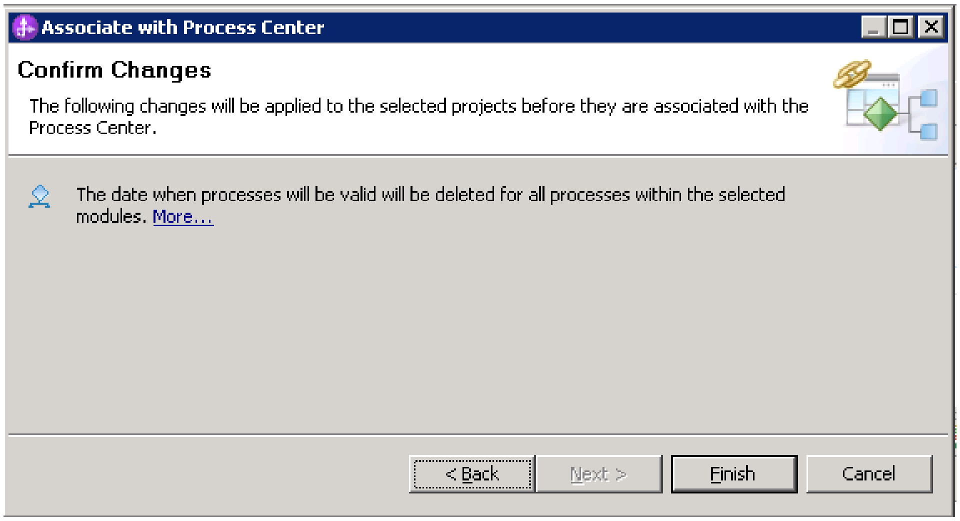
Select the process application or toolkit that will contain the projects: Account Services Tools

Select the projects to associate:

☑ AccountServicesBPEL_impl
☑ AccountServicesBPEL_lib

Association changes some aspects of module and library behavior. More...

__ c. Click **Finish** on the Confirm Changes dialog



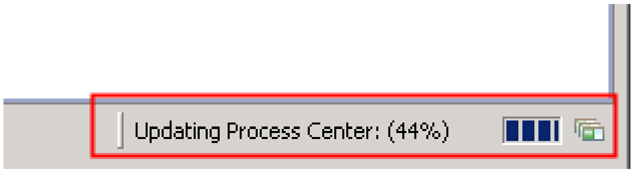
Associate with Process Center

Confirm Changes

The following changes will be applied to the selected projects before they are associated with the Process Center.

The date when processes will be valid will be deleted for all processes within the selected modules. More...

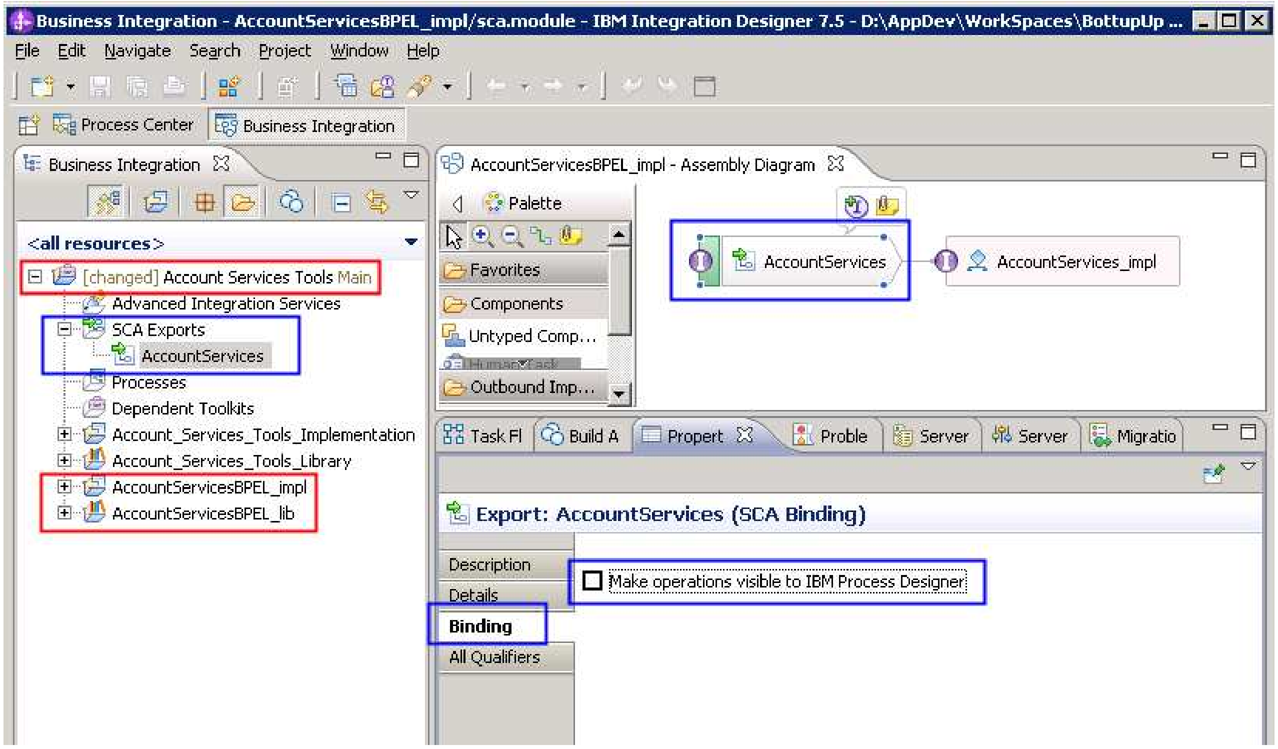
____ 10. Watch the status at the bottom right.



Updating Process Center: (44%)

____ 11. Once the association is complete, inspect the changes that have occurred. In the Business Integration view, notice that the **Account Services Tools** toolkit has been added to the workspace and that both the **AccountServicesBPEL_impl** and **AccountServicesBPEL_lib** have been moved into it.

Also notice the SCA Export that was created. Double click the SCA Export and then in the properties, select bindings for the export.

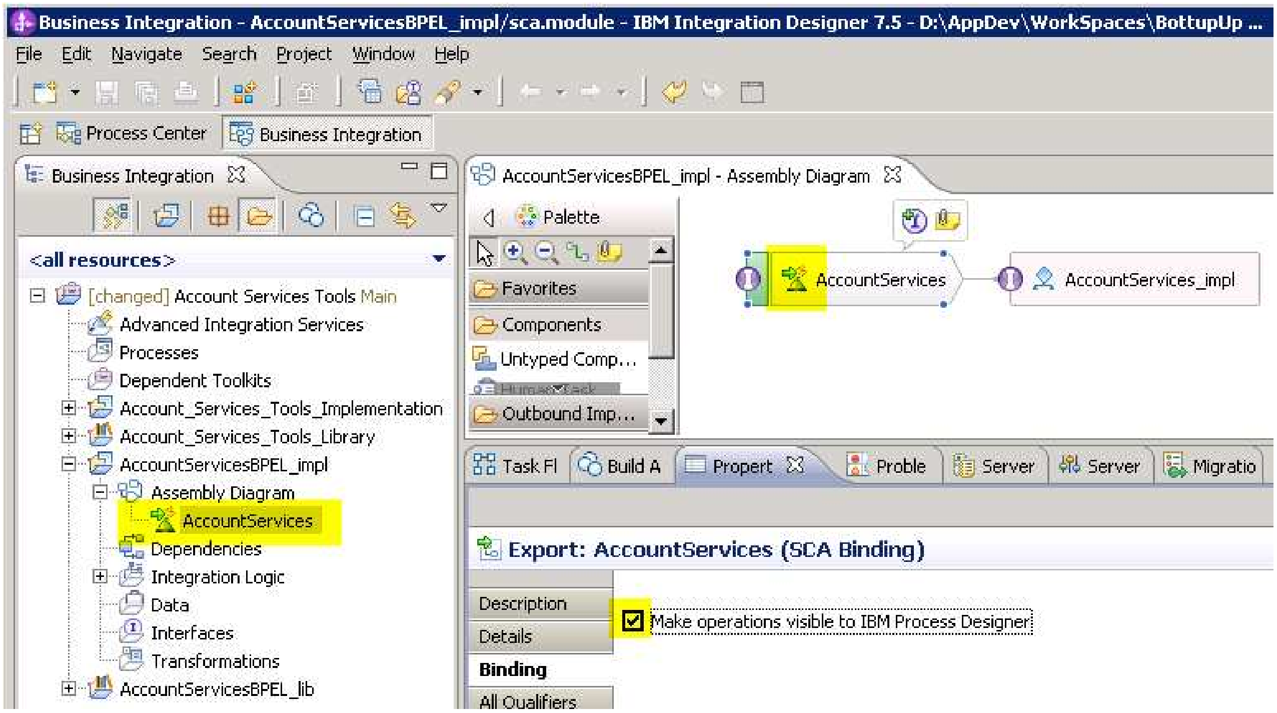

Business Integration - AccountServicesBPEL_impl/sca.module - IBM Integration Designer 7.5 - D:\AppDev\WorkSpaces\BottupUp ...
File Edit Navigate Search Project Window Help
Process Center
Business Integration
Business Integration
<all resources>
[changed] Account Services Tools Main
Advanced Integration Services
SCA Exports
AccountServices
Processes
Dependent Toolkits
Account_Services_Tools_Implementation
Account_Services_Tools_Library
AccountServicesBPEL_impl
AccountServicesBPEL_lib
AccountServicesBPEL_impl - Assembly Diagram
Palette
Favorites
Components
Untyped Comp...
Outbound Imp...
AccountServices
AccountServices_impl
Task Fl
Build A
Propert
Proble
Server
Server
Migratio
Export: AccountServices (SCA Binding)
Description
Details
Binding
All Qualifiers

□ Make operations visible to IBM Process Designer

By default the "**Make operations visible to IBM Process Center**" attribute is not set. This attribute must be set. If it is not set, then when you get to the Process Center, you will wonder where your services are.

Set the attribute and save the Assembly Diagram.

____ 12. Notice the changes. There is a new icon for the export and the SCA Export is no longer in the folder.



Export: AccountServices (SCA Binding)

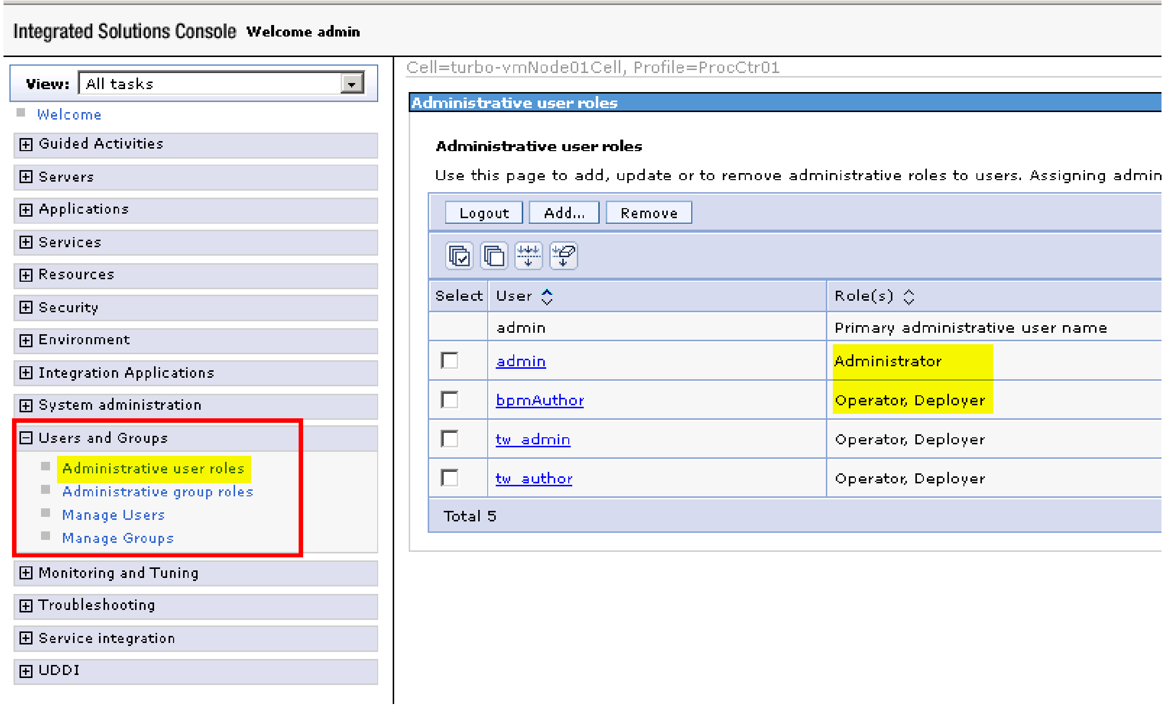
Binding: ☑ Make operations visible to IBM Process Designer

____ 13. Publish the **Account Services Tools Main** to the Process center.

Before publishing a toolkit or process application that contains SCA components to the Process Center, the user doing the publish operation must have either *Deployer* and or *Operator* administrative privileges in the WebSphere Process Server user registry. This is managed through the WebSphere Process Server administrative console.

__ a. Users (not groups) that are defined in the Process Server administrative console are reflected into the WebSphere Process Server user registry.

__ b. If you are using admin or your default admin uid (with Administrator role), you will be OK.



Cell=turbo-vmNode01Cell, Profile=ProcCtr01

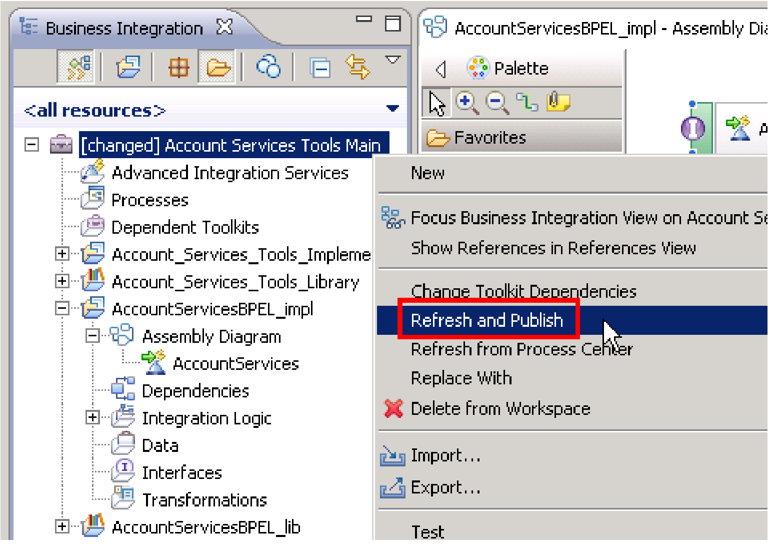
Administrative user roles

Administrative user roles

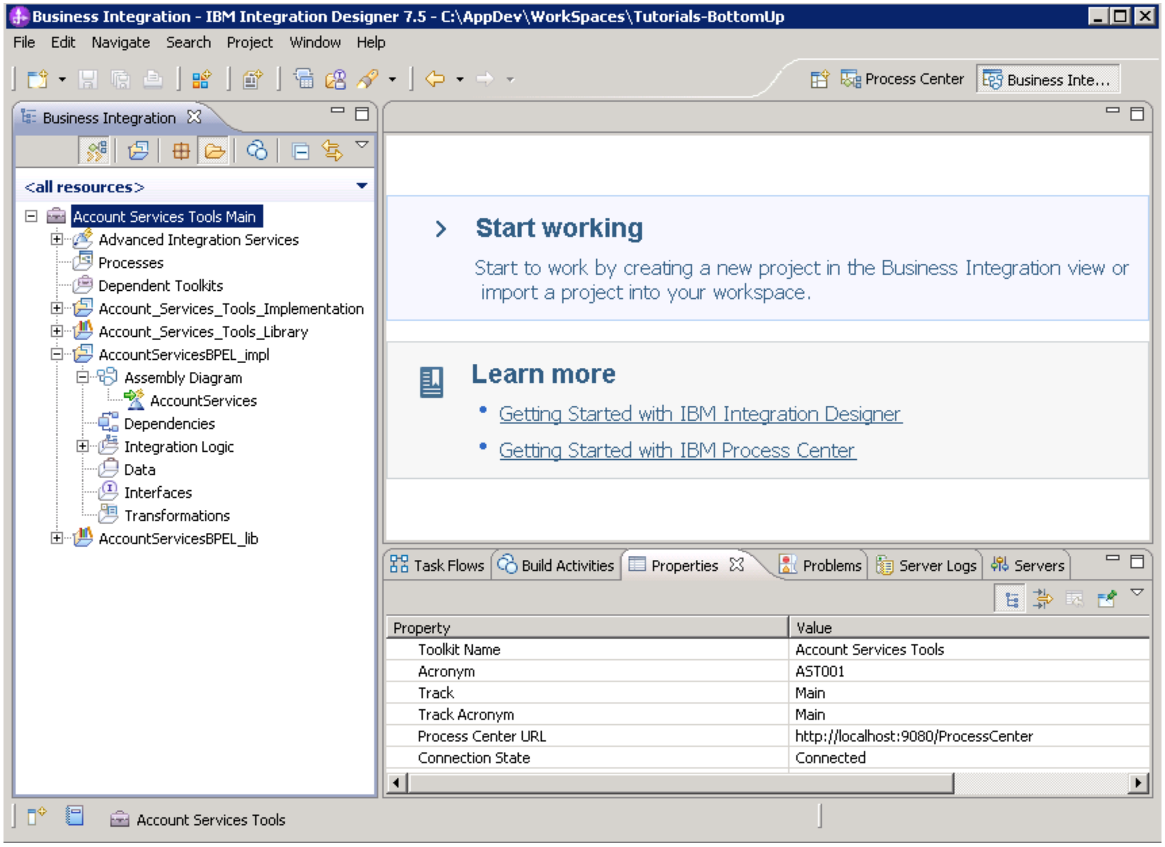
Use this page to add, update or to remove administrative roles to users. Assigning admin

Select	User	Role(s)
	admin	Primary administrative user name
□	admin	Administrator
□	bpmAuthor	Operator, Deployer
□	tw_admin	Operator, Deployer
□	tw_author	Operator, Deployer
Total 5		

__ c. Right-click **Account Services Tools** and select *Refresh and Publish*


Business Integration
<all resources>
[changed] Account Services Tools Main
Advanced Integration Services
Processes
Dependent Toolkits
Account_Services_Tools_Impleme
Account_Services_Tools_Library
AccountServicesBPEL_impl
Assembly Diagram
AccountServices
Dependencies
Integration Logic
Data
Interfaces
Transformations
AccountServicesBPEL_lib
AccountServicesBPEL_impl - Assembly Dia
Palette
Favorites
New
Focus Business Integration View on Account Se
Show References in References View
Change Toolkit Dependencies
Refresh and Publish
Refresh from Process Center
Replace With
Delete from Workspace
Import...
Export...
Test

__ d. The **Account Services Tools** toolkit has now been published to the Process Center, including the code imported from the project interchange file. The SCA artifacts are also deployed to the Process Center server at this time. Notice that the [changed] indicator on the left of the toolkit name is gone. This indicates that the contents of the integration designer workspace are synchronized with the Process Center repository.



Start working

Start to work by creating a new project in the Business Integration view or import a project into your workspace.

Learn more

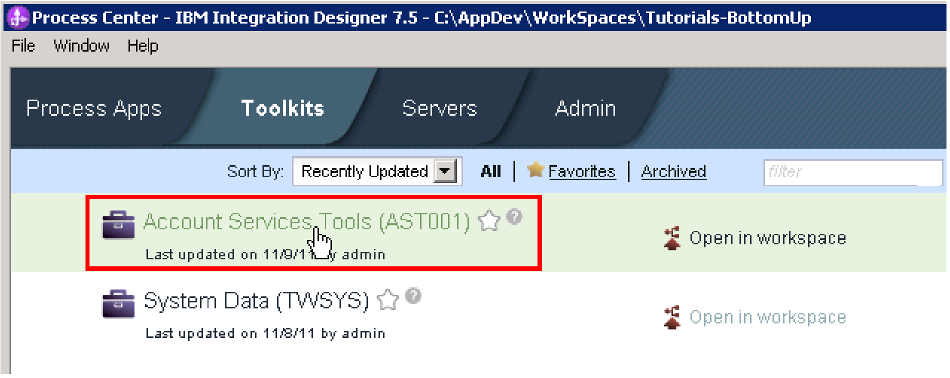
- Getting Started with IBM Integration Designer
- Getting Started with IBM Process Center

Property	Value
Toolkit Name	Account Services Tools
Acronym	AST001
Track	Main
Track Acronym	Main
Process Center URL	http://localhost:9080/ProcessCenter
Connection State	Connected

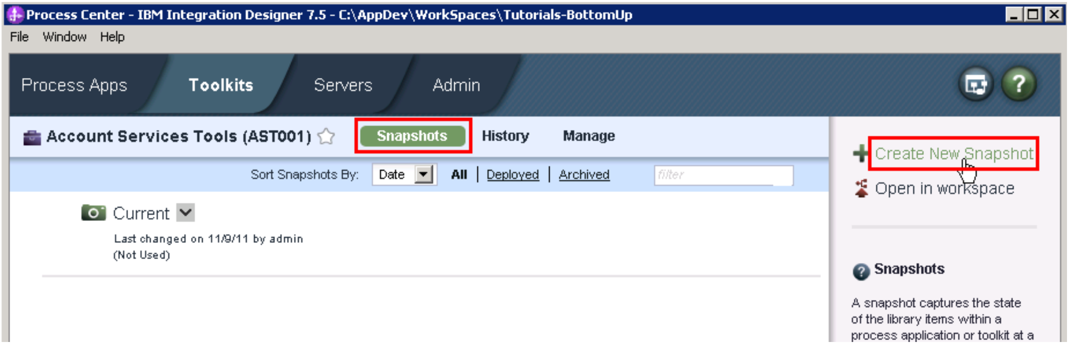
__ e. Before handing the toolkit over to the business process developer there is one last step you need to do. Assuming that the services that you are providing have been thoroughly tested and that you are the person responsible for their integrity and reliability, you will need to create a snapshot of the toolkit. This will lock the version down so that no one will be able to make changes to the services without creating a new version. This step is required for the toolkit to be used by process applications or other toolkits.

1) Still in the Integration Designer, switch to the Process Center perspective and select the Toolkits tab

2) Select the Account Services Tools toolkit


Process Center - IBM Integration Designer 7.5 - C:\AppDev\WorkSpaces\Tutorials-BottomUp
File Window Help
Process Apps
Toolkits
Servers
Admin
Sort By: Recently Updated
All
Favorites
Archived
filter
Account Services Tools (AST001)
Last updated on 11/9/11 by admin
Open in workspace
System Data (TWSYS)
Last updated on 11/8/11 by admin
Open in workspace

3) Select the snapshots tab and select Create New Snapshot (on the right)



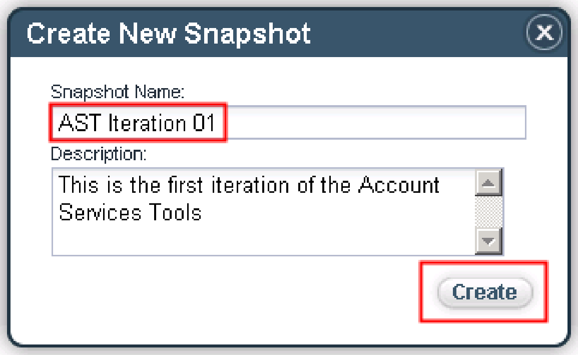
Process Center - IBM Integration Designer 7.5 - C:\AppDev\WorkSpaces\Tutorials-BottomUp

Account Services Tools (AST001)

Current
Last changed on 11/9/11 by admin
(Not Used)

A snapshot captures the state of the library items within a process application or toolkit at a

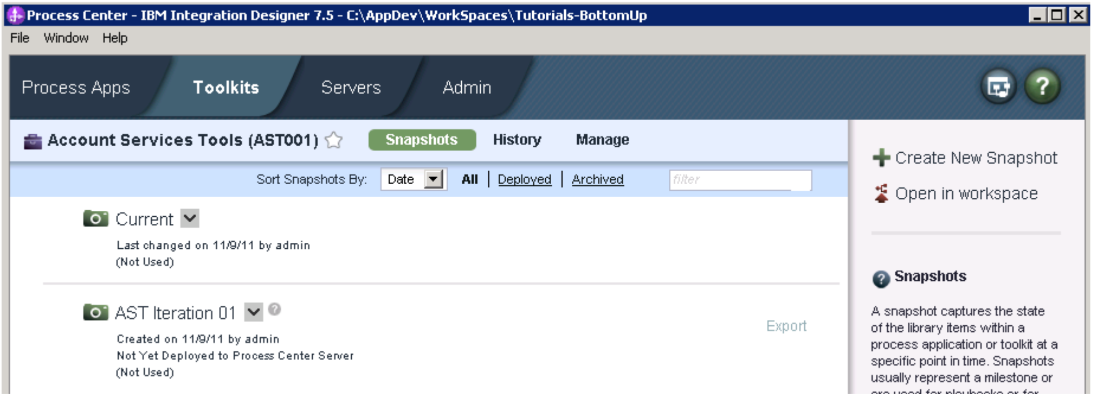
4) Provide a name, a unique acronym and a description.



Snapshot Name: AST Iteration 01

Description: This is the first iteration of the Account Services Tools

5) The toolkit is now ready to share with the process developers.



Process Center - IBM Integration Designer 7.5 - C:\AppDev\WorkSpaces\Tutorials-BottomUp

Account Services Tools (AST001)

Current
Last changed on 11/9/11 by admin
(Not Used)

AST Iteration 01
Created on 11/9/11 by admin
Not Yet Deployed to Process Center Server
(Not Used)

A snapshot captures the state of the library items within a process application or toolkit at a specific point in time. Snapshots usually represent a milestone or

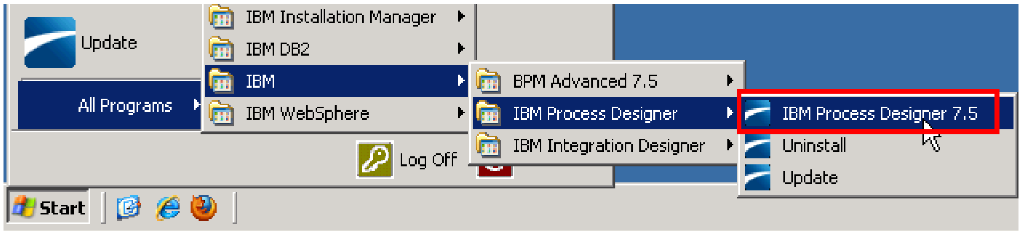
Part 2: Process Designer – Implementing and testing the process application

In this part of the lab exercise, you play the role of the process developer and work within the IBM Process Designer tool. A basic outline of this part is:

- Create and open the CustomerServices application in the Process Designer
- Inspect the contents published from Integration Designer.
- Create a new business process definition in the CustomerServices process application
- Define data variables and activities for the process
- Define the activity flow sequence and add variable initialization for the process
- Test the process application using the Inspector

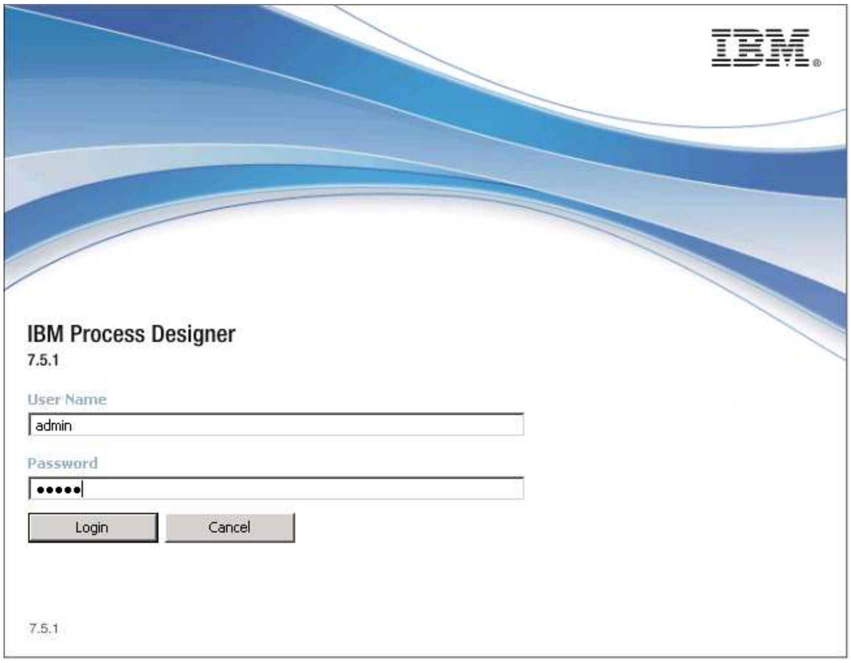
____ 1. Start the Process Designer.

__ a. Start Process Designer by using the Windows *Start* Menu.



__ b. Enter the credentials

User Name: <**your user id**> (default admin user is *admin*)
Password: <**your password**> (default admin password is *admin*)
and then click the **Login** button.


IBM Process Designer
7.5.1

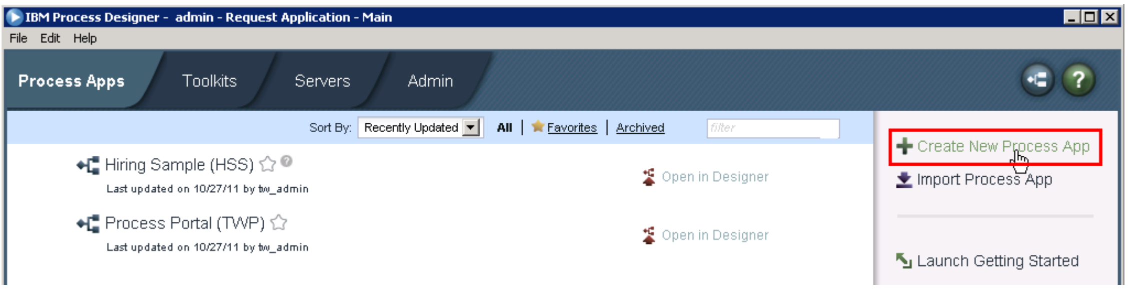
User Name
admin

Password
•••••

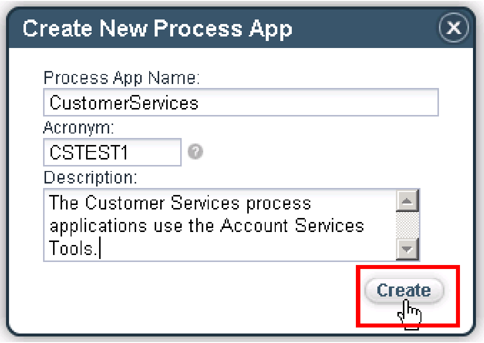
__ c. If this is the first time you launch the Process Designer, you may see a **SSL SIGNER EXCHANGE PROMPT** dialog pops up. This message occurs when the WebSphere Application Server SSL configuration has changed and the client does not trust the new or changed SSL certificate.
Just click **y** to add singer to the trust store.

__ d. If you are presented with Getting Started screen, you can close it.

____ 2. Create the **CustomerServices** process application.



__ a. Provide the name, unique acronym, and description.



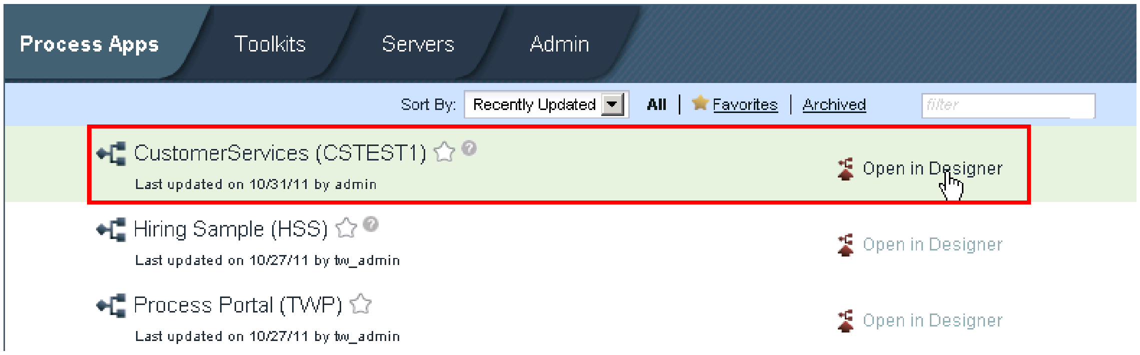
Process App Name: CustomerServices

Acronym: CSTEST1

Description: The Customer Services process applications use the Account Services Tools.

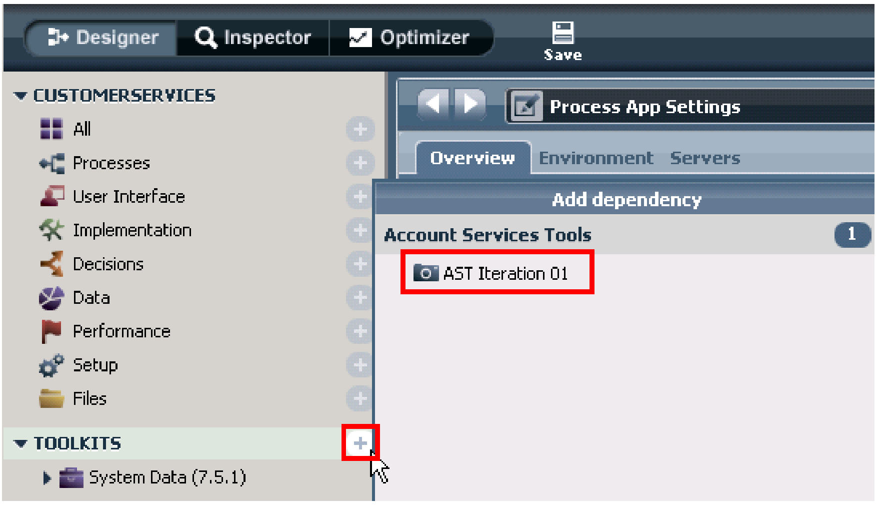
____ 3. Open the CustomerServices process application in the Process Designer.

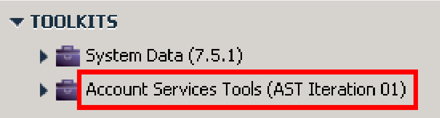
__ a. Click the **Open in Designer** link corresponding to the **CustomerServices** application.



____ 4. Set the dependency between the **CustomerServices** process application and the **Account Services Tools** toolkit.

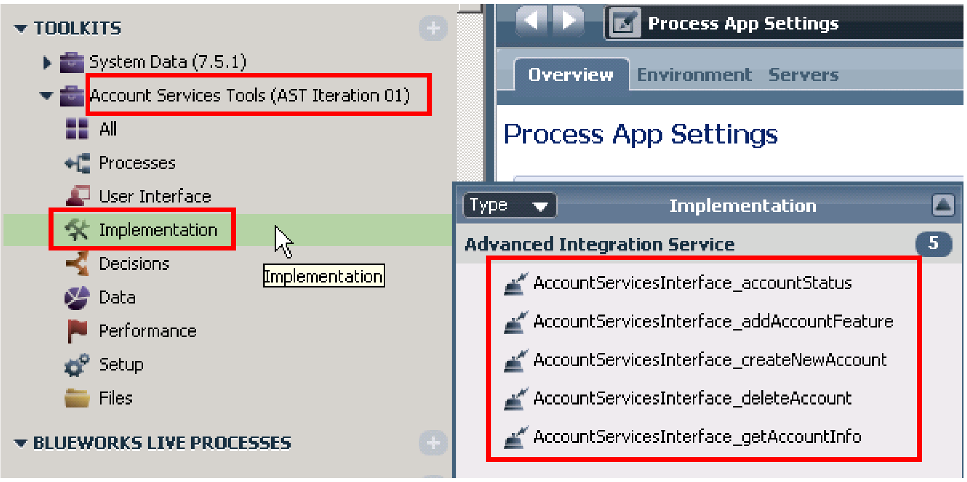
__ a. Setting the dependency will make the Data (Business Objects) and Advanced Integration Services available to the **CustomerServices** process application.



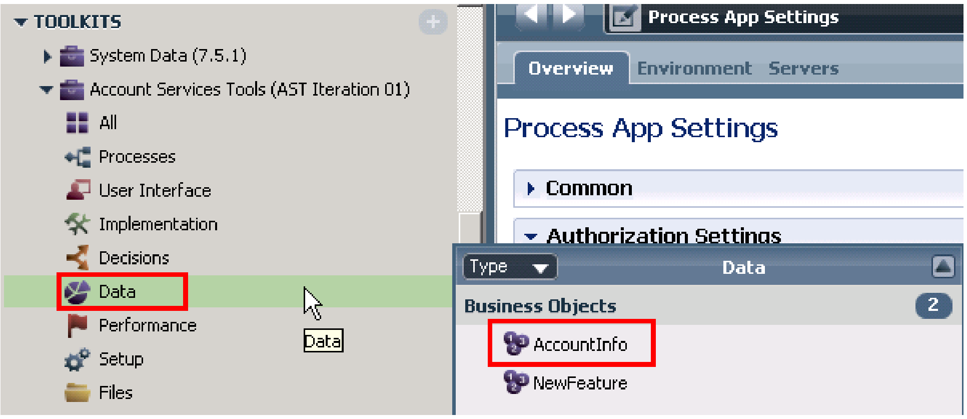


____ 5. Now you will examine the artifacts in the toolkit that were created from the SCA service that was associated with this toolkit in the Integration Designer.

__ a. In the library of the **Designer** view, in the **Toolkits** section, click the **Implementation** category**.** It shows a list of the *Advanced Integration Services* that are part of the toolkit. There is one service for each method on the AccountServices interface of the SCA module.


TOOLKITS
System Data (7.5.1)
Account Services Tools (AST Iteration 01)
All
Processes
User Interface
Implementation
Decisions
Data
Performance
Setup
Files
Implementation
BLUEWORKS LIVE PROCESSES
Process App Settings
Overview
Environment
Servers
Process App Settings
Type
Implementation
Advanced Integration Service
5
AccountServicesInterface_accountStatus
AccountServicesInterface_addAccountFeature
AccountServicesInterface_createNewAccount
AccountServicesInterface_deleteAccount
AccountServicesInterface_getAccountInfo

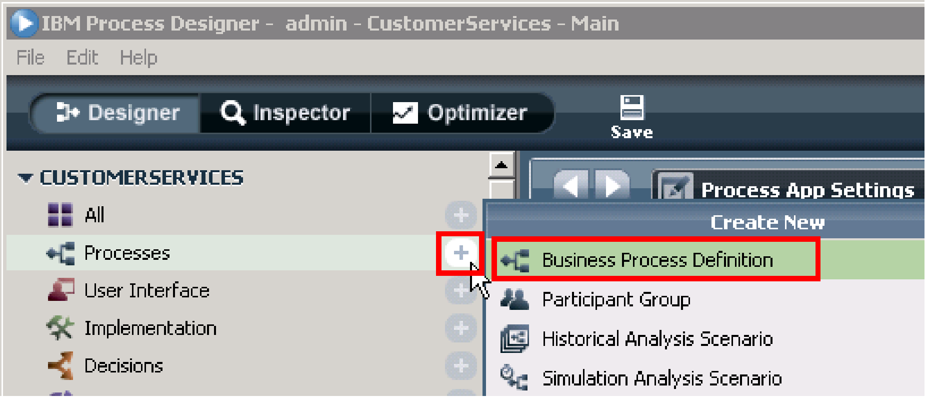
__ b. Click the **Data** category to see a list of the Business Objects from the SCA module.



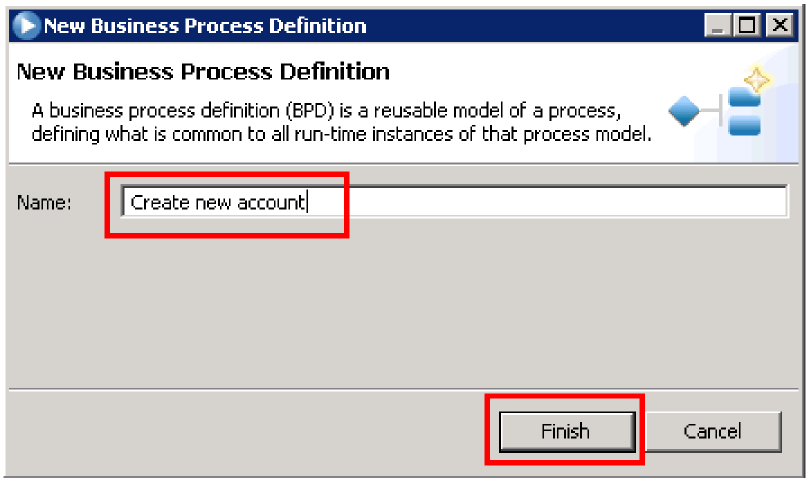
__ c. If you click the **Processes** category you will see that there are no processes defined yet. The process application at this point only contains the artifacts required to interface with the advanced integration services. It is up to the process developer to implement the processes.

____ 6. Create a new business process definition (BPD) in the process application

__ a. In the library of the **Designer** view, click the + to the right of **Processes** to get the Create New menu and then select **Business Process Definition**.



__ b. Name the business process "**Create new account**" and click **Finish.**

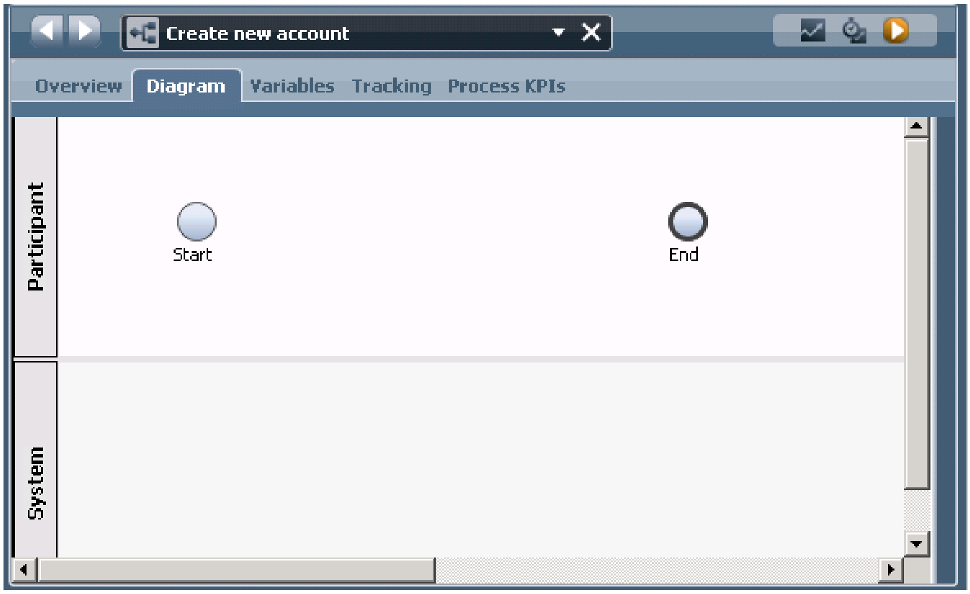


New Business Process Definition

A business process definition (BPD) is a reusable model of a process, defining what is common to all run-time instances of that process model.

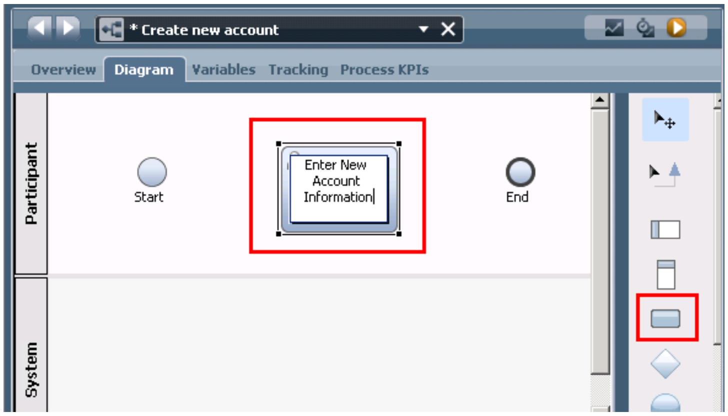
Name: Create new account

__ c. The new process diagram is shown. It has **Start** and **End** events in the **Participant** lane.



____ 7. Next, you will add the activities that make up the business process.

__ a. The palette on the right side of the window contains icons representing various elements of the process. **Drag and drop** the activity icon to the **Participant** lane to add a new activity to the business process, and then name it **Enter New Account Information.**

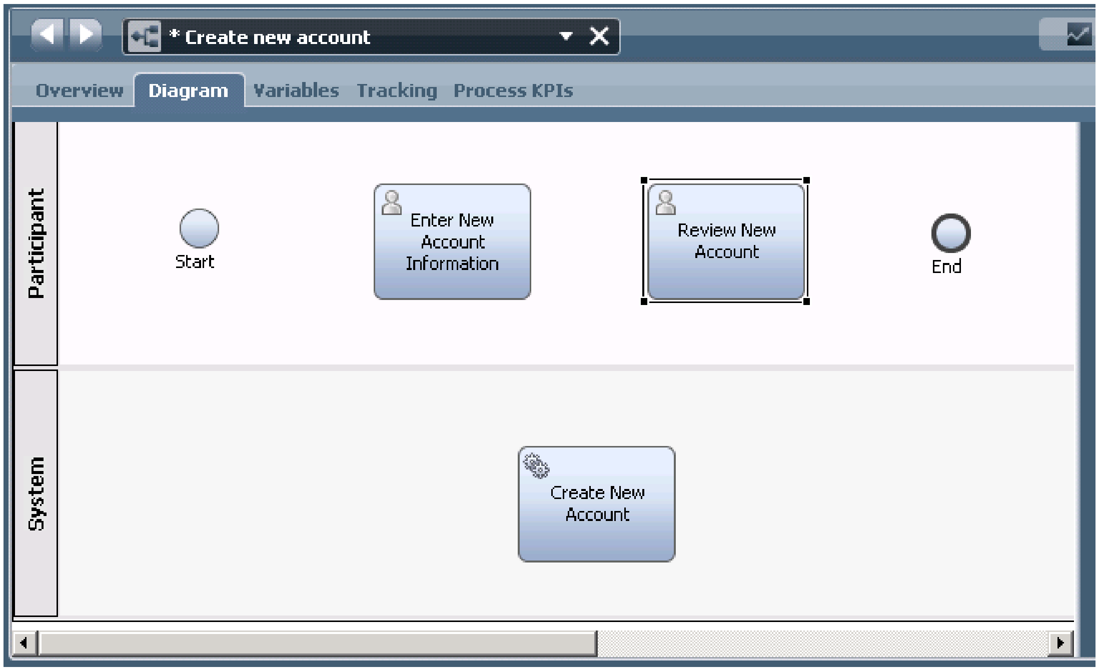


____ 8. In a similar way, add two more activities to the business process.

__ a. Add an activity to the **System** lane and name it **Create New Account**.

__ b. Add another activity to the **Participant** lane and name it **Review New Account.**

__ c. Your business process should now look similar to what is in this screen capture.

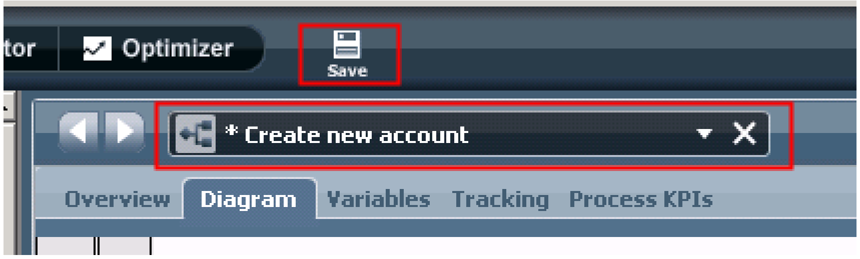


NOTE: The Create New Account activity is the one that will be used to call the advanced integration service defined in Integration Designer. Activities that are invoked without human interaction, such as services or Advanced Integration Services is normally placed in the System lane of a process diagram.

____ 9. Save the process.

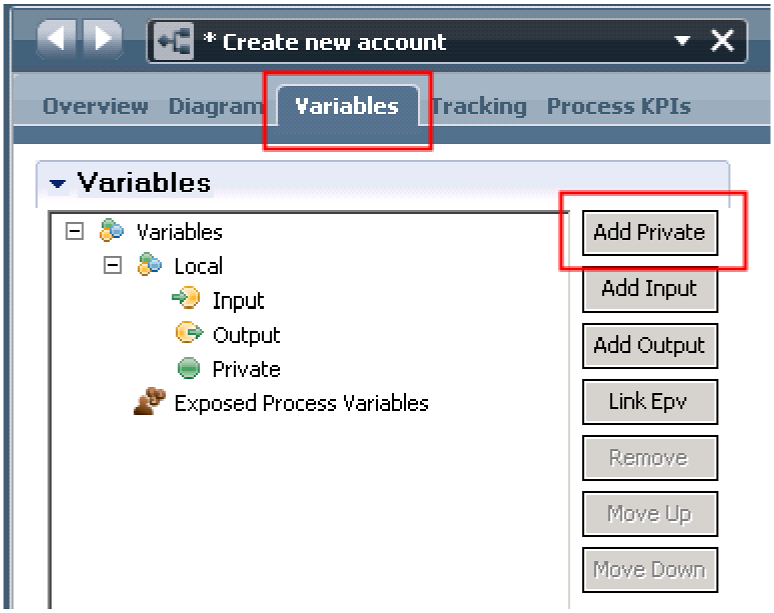
__ a. Notice that the process name is prefixed with an asterisk, ***Create new account**. The asterisk indicates that the editor contains unsaved changes.

__ b. Save the process by clicking on the **Save** icon above the process name.



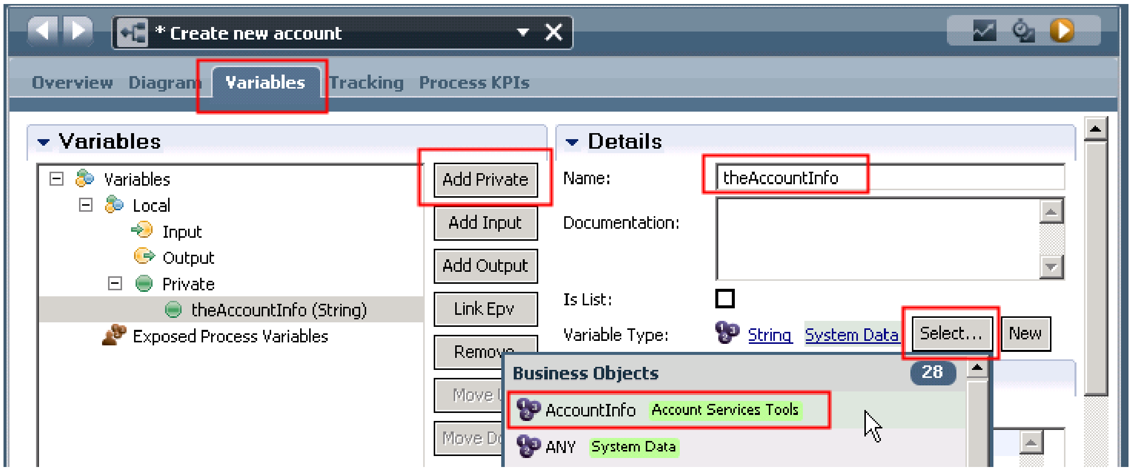
____ 10. Add an AccountInfo type variable to the process. Variables that are defined here are scoped to the entire process, and therefore can be made available to activities and serve as a way to pass data between activities. Your business process does not have any input and output data, and therefore the variable can be defined as private. The AccountInfo type was created based on the AccountInfo business object definition from the SCA module. In this simple process, it is the only variable that is needed.

__ a. Click on the **Variables** tab and then click **Add Private** to create a new variable.



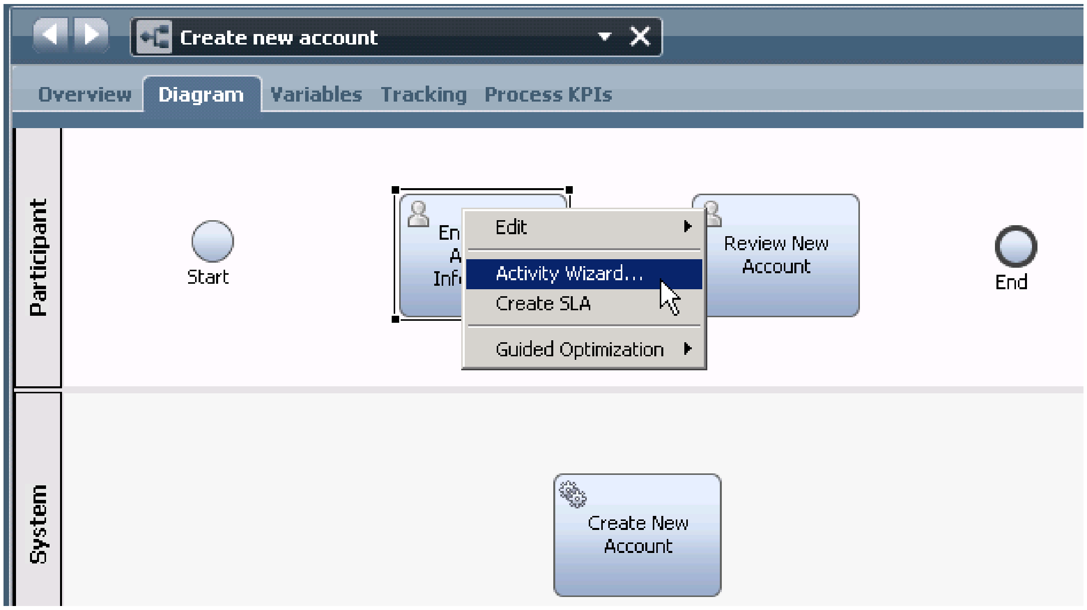
__ b. **Name** the variable **theAccountInfo**.

__ c. Set the **Variable Type** by clicking on the **Select** button and choosing **AccountInfo** from the list. Notice that the AccountInfo data is qualified with the name of the *Account Services Tools* toolkit that is coming from.

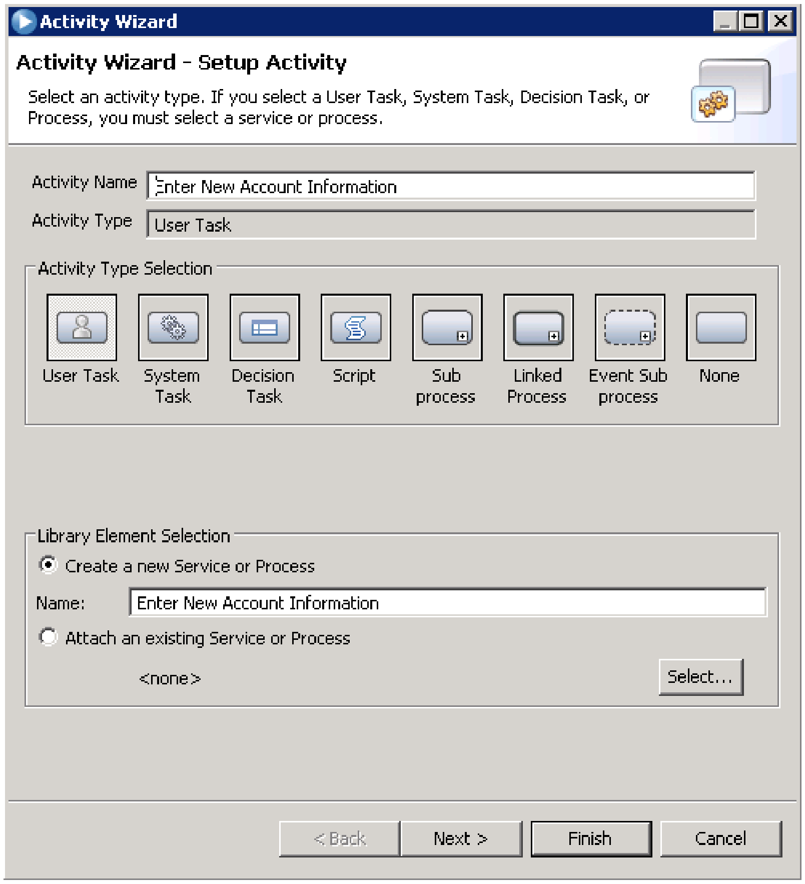


____ 11. Define the human service for the **Enter New Account Information** activity

__ a. Go back to the **Diagram** tab, right click the **Enter New Account Information** activity and select **Activity Wizard**



__ b. Use the default values in the first screen of the Activity Wizard and click **Next**



Activity Wizard

Activity Wizard - Setup Activity

Select an activity type. If you select a User Task, System Task, Decision Task, or Process, you must select a service or process.

Activity Name: Enter New Account Information

Activity Type: User Task

Activity Type Selection

Library Element Selection

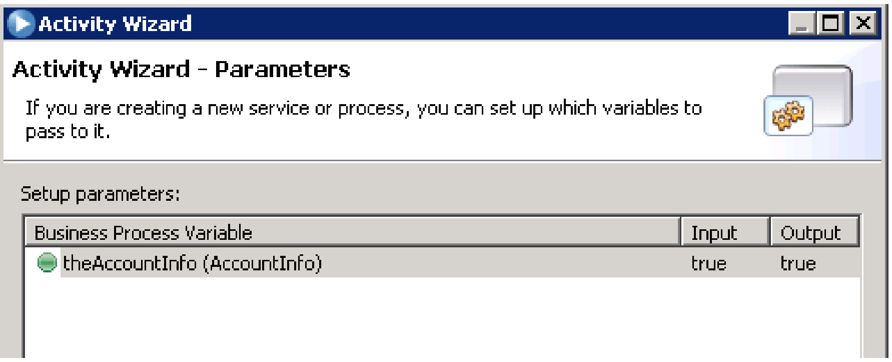
● Create a new Service or Process

Name: Enter New Account Information

○ Attach an existing Service or Process

<none>

__ c. This next panel in the Activity Wizard is where you define which variables from the process application are to be input and output parameters of the activity. In this case there is only one variable at the process application level, **theAccountInfo**, so it is the only one listed.



Activity Wizard

Activity Wizard - Parameters

If you are creating a new service or process, you can set up which variables to pass to it.

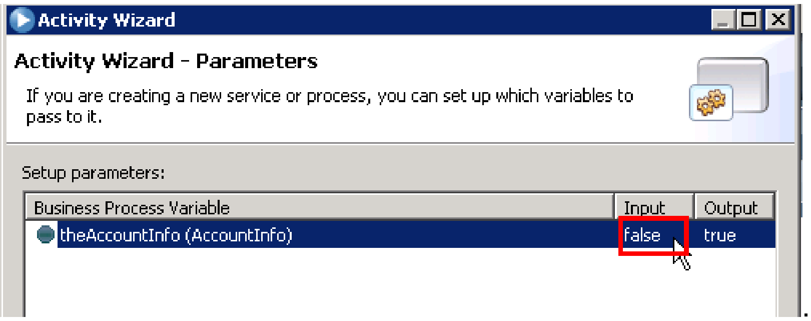
Setup parameters:

Business Process Variable	Input	Output
theAccountInfo (AccountInfo)	true	true

NOTE: What this does is specify that this activity will have a local variable named theAccountInfo of type AccountInfo. Although the variable name is the same as the one you previously defined for the process application, this is in fact a different instance of the variable that is scoped just to this activity. Notice that this screen capture shows **true** for **Input** and **Output**. What this does is create an input and output data mapping for this variable. It is through this data mapping that the values in the process application scoped theAccountInfo variable are passed into and out of the activity scoped theAccountInfo variable. It is possible to have different variable names at each scope, but when the wizard is used to define the implementation of the activity it generates locally scoped variables using the same names.

Since this is the first activity in the process application and the process application is not passed any input data, there is no need for an input data mapping to the activity. However, this activity will initialize the local theAccountInfo variable, so there needs to be an output mapping to pass it back up to the process application scope.

1) In the Setup parameters panel, click **true** below **Input**, which toggles it to **false**


Activity Wizard

Activity Wizard - Parameters

If you are creating a new service or process, you can set up which variables to pass to it.

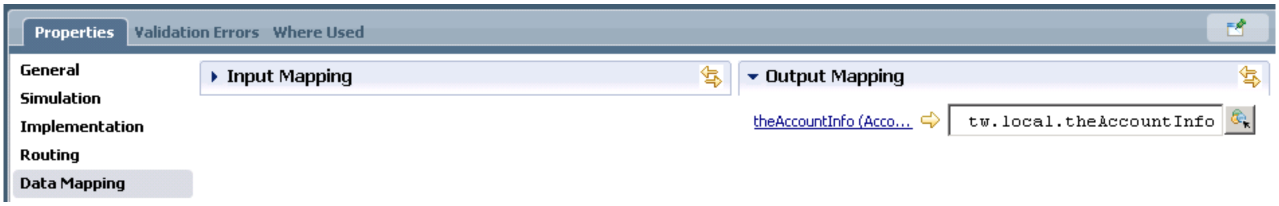
Setup parameters:

Business Process Variable	Input	Output
theAccountInfo (AccountInfo)	false	true

.

__ d. Click **Finish** at the bottom of the window to complete the wizard.

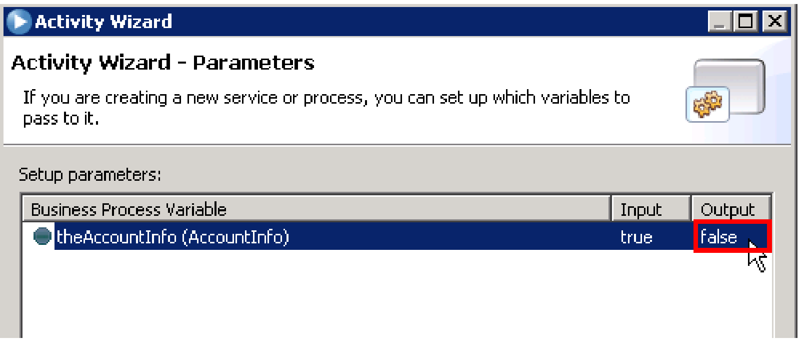
__ e. In the Properties view, select the **Data Mapping** tab. The output of **Enter New Account Information** activity is automatically mapped with the process local variable **theAccountInfo**.



theAccountInfo (Acco... ⇨ tw.local.theAccountInfo

____ 12. In a similar manner, define the human service for the **Review New Account** activity.

__ a. Launching the **Activity Wizard** from the activity pop-up menu.
__ b. Accept the defaults on the first panel and click Next.
__ c. On the second panel define the input and output parameters. However, this activity is the last activity in the process application, so the input parameter should be mapped but the output parameter does not need to be mapped. Toggle it to false.



Activity Wizard

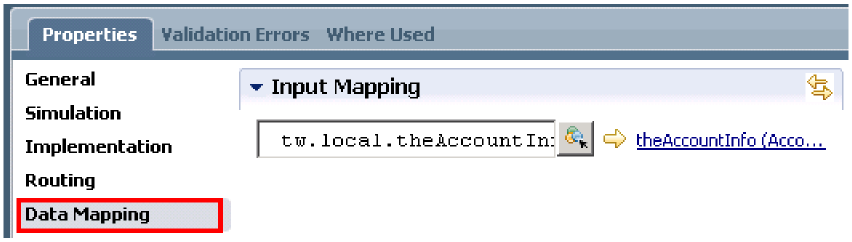
Activity Wizard - Parameters

If you are creating a new service or process, you can set up which variables to pass to it.

Setup parameters:

Business Process Variable	Input	Output
theAccountInfo (AccountInfo)	true	false

__ d. In the **Properties** view under **Data Mapping** tab, check the mapping which should automatically have the **theAccountInfo** for the **input**.



Input Mapping

tw.local.theAccountIn: → theAccountInfo (Acco…

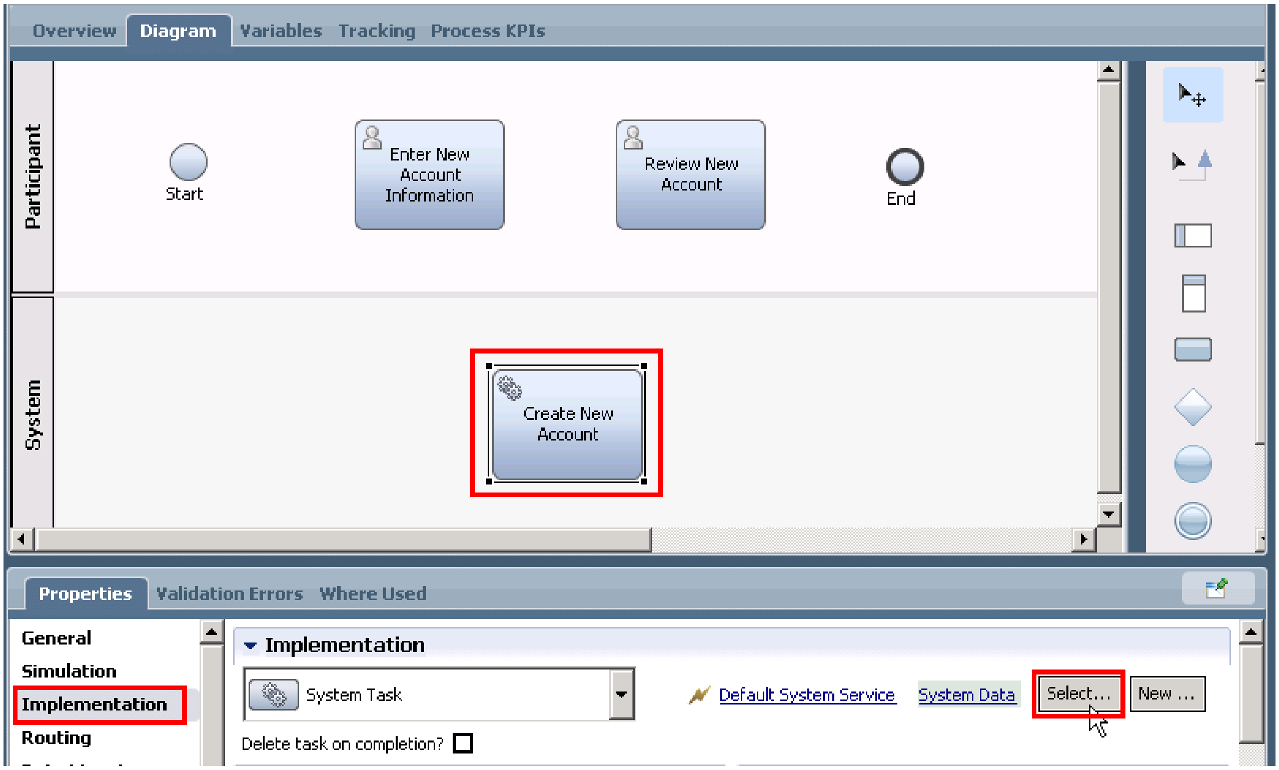
____ 13. Define the implementation of the **Create New Account** activity. This activity performs the call to the advanced integration service. *Advanced Integration Services* is normally in a system lane and of type *automated*.

__ a. Click the **Create New Account** activity in the process diagram.

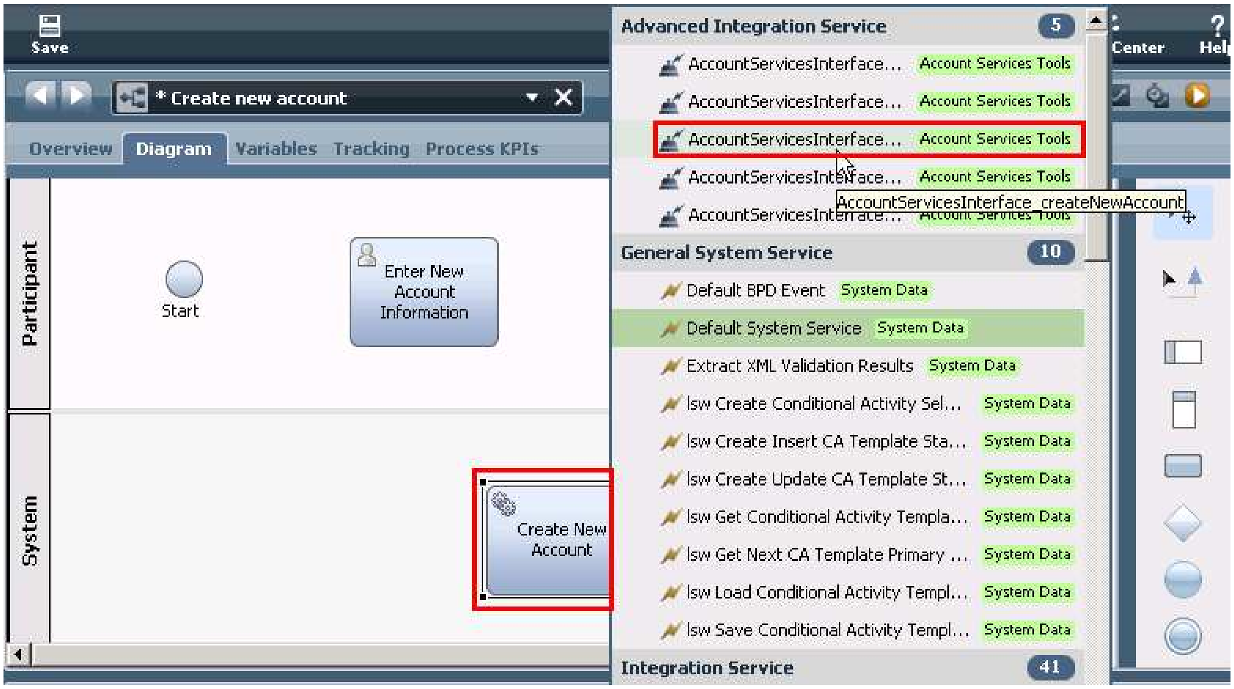
__ b. In the **Properties** view,

1) click the **Implementation** tab

2) click **Select**

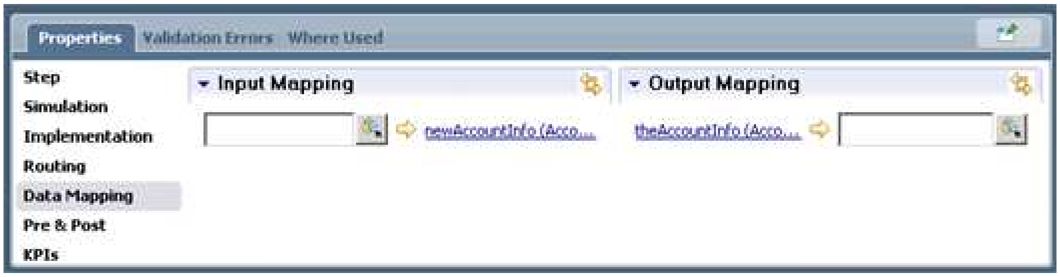


__ c. Scroll and select **AccountServiceInterface_createNewAccount** from the Advanced Integration Service section. Hover over the selections to get the full text. Note the toolkit name

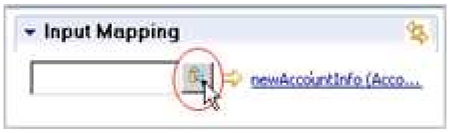

Save
Center
Help
* Create new account
Overview
Diagram
Variables
Tracking
Process KPIs
Participant
System
Start
Enter New Account Information
Create New Account
Advanced Integration Service 5
AccountServicesInterface... Account Services Tools
AccountServicesInterface... Account Services Tools
AccountServicesInterface... Account Services Tools
AccountServicesInterface... Account Services Tools
AccountServicesInterface... Account Services Tools
AccountServicesInterface_createNewAccount
General System Service 10
Default BPD Event System Data
Default System Service System Data
Extract XML Validation Results System Data
lsw Create Conditional Activity Sel... System Data
lsw Create Insert CA Template Sta... System Data
lsw Create Update CA Template St... System Data
lsw Get Conditional Activity Templa... System Data
lsw Get Next CA Template Primary ... System Data
lsw Load Conditional Activity Templ... System Data
lsw Save Conditional Activity Templ... System Data
Integration Service 41

__ d. The data mapping of the input and output parameters needs to be done now. For this activity, **theAccountInfo** needs to be mapped for both **input** and **output**.

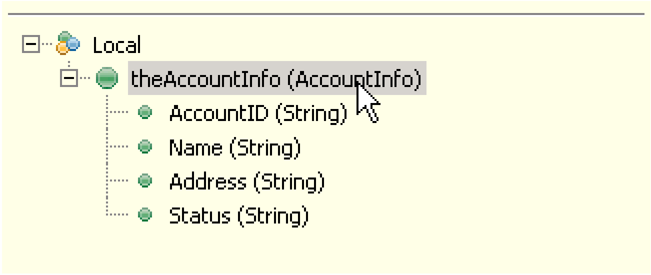
1) In the Properties view, click the **Data Mapping** tab



2) Under **Input Mapping**, click the button next to the input field.

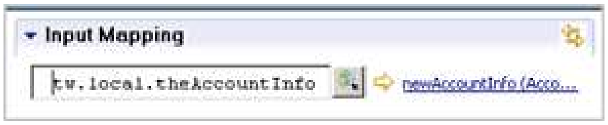


3) A selection dialog is displayed that shows the local variables scoped to the process application. Select **theAccountInfo** by doubling clicking.



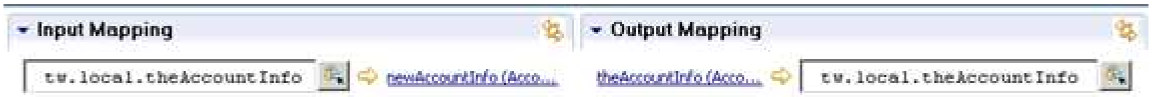
Local
theAccountInfo (AccountInfo)
AccountID (String)
Name (String)
Address (String)
Status (String)

4) The result is the mapping of **theAccountInfo** variable scoped to the process application into the **theAccountInfo** input parameter of the activity.



Input Mapping
tw.local.theAccountInfo → newAccountInfo (Acco...

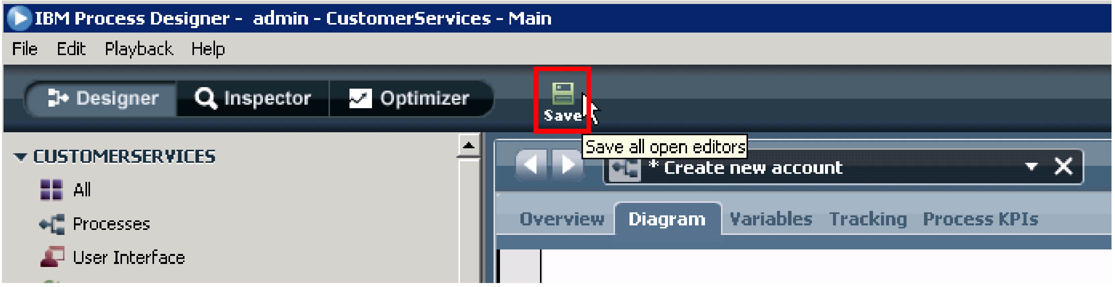
5) In a similar manner, map **theAccountInfo** in the **Output Mapping**.



Input Mapping
tw.local.theAccountInfo → newAccountInfo (Acco...

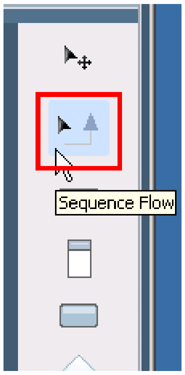
Output Mapping
theAccountInfo (Acco... → tw.local.theAccountInfo

____ 14. Save all the changes made to the process by hitting the **Save** button.


IBM Process Designer - admin - CustomerServices - Main

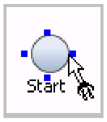
____ 15. Wire the activities in the process, establishing the sequence of execution.

__ a. Select the **Sequence Flow** icon from the palette.

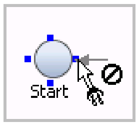


__ b. Wire the **Start** activity to the **Enter New Account Information** activity. For this first wire, the Process Designer steps for wiring are explained.

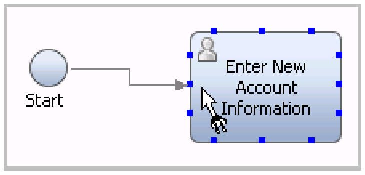
1) Using the **Sequence Flow pointer**, **hover** over the **Start** activity. This causes the wiring connection points to be shown.



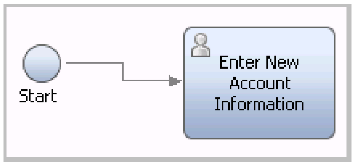
2) Place the pointer directly over one of the **connection points** and click to select it as the source point for the wire.



3) Drag the wire to the target activity and place the pointer directly over one of the connection points displayed.



4) With the **pointer directly over one of the connection points**, you must then **click** to establish the wire. If you did it correctly, the result should look like this:



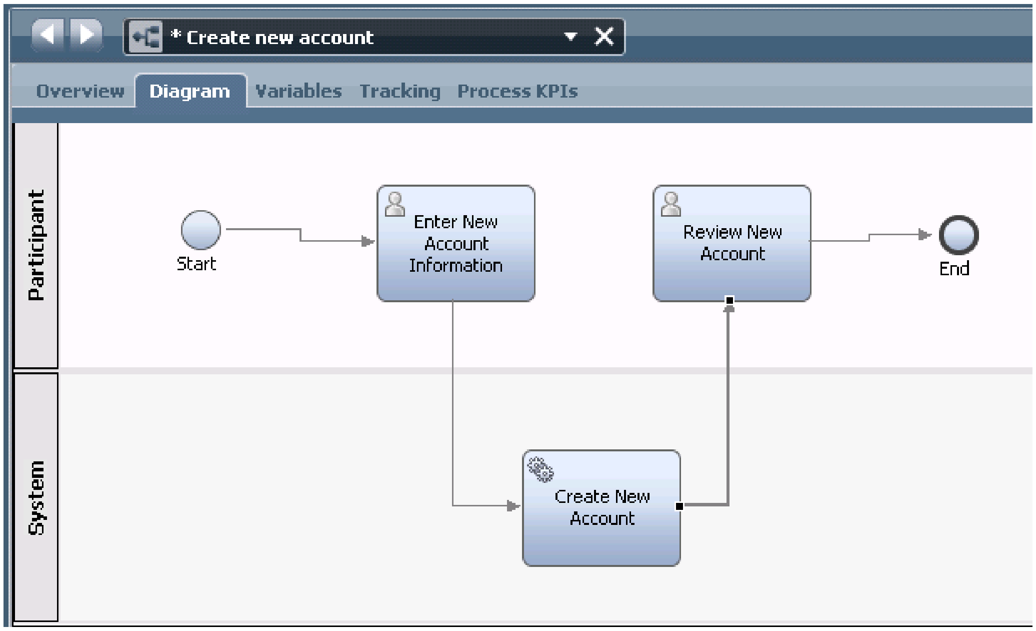
__ c. Continue, using the same technique, and add these wires to the diagram:

1) Wire **Enter New Account Information** to **Create New Account**

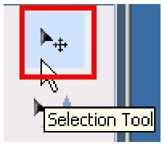
2) Wire **Create New Account** to **Review New Account**

3) Wire **Review New Account** to **End**

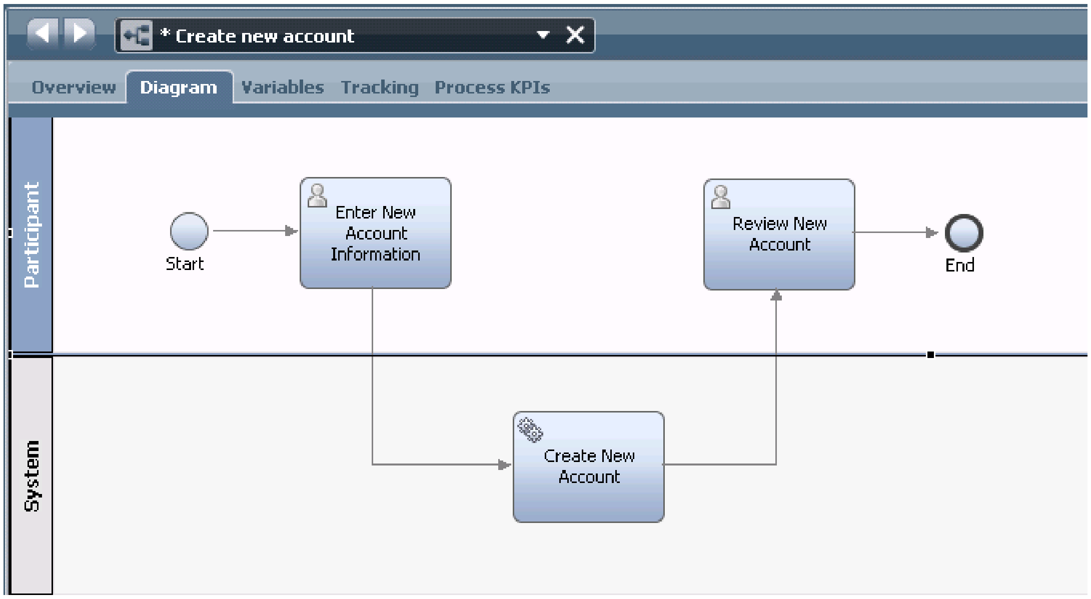
4) Your resulting process diagram should look similar to this (it will vary depending upon the specific connection points you selected on each activity)



__ d. You are done with the wiring. Go back to the palette to choose the **Selection tool** or press **Esc key** to activate the Selection tool.



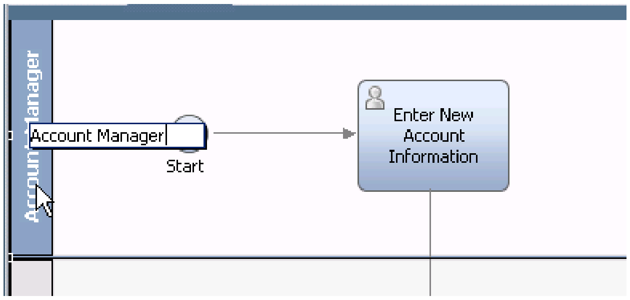
__ e. Now that you are done wiring, you might want to move some of the activities to make the diagram prettier and easier to follow the flow.



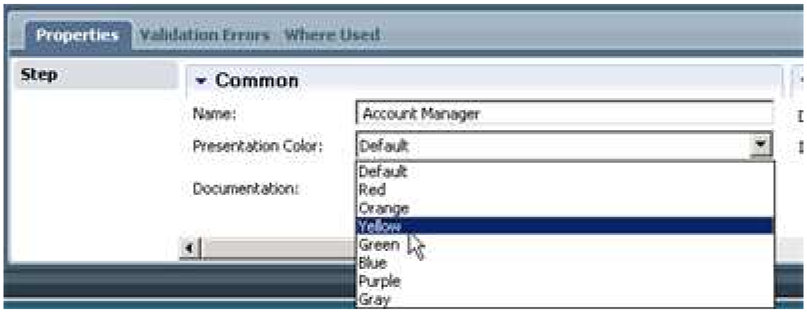
____ 16. It is best to provide meaningful names for the swim lanes in the process diagram. You can also add color to the swim lanes to more easily distinguish between activities performed by different roles.

__ a. Change the name of the **Participant** lane to **Account Manager**, indicating the role of the person who will perform these activities in the business process. Also, change the color to yellow.

1) Select the **Participant** label on the left of the swim lane, and directly type in name **Account Manager.**



2) In the Properties view, change the presentation color to **yellow** using the drop down box.

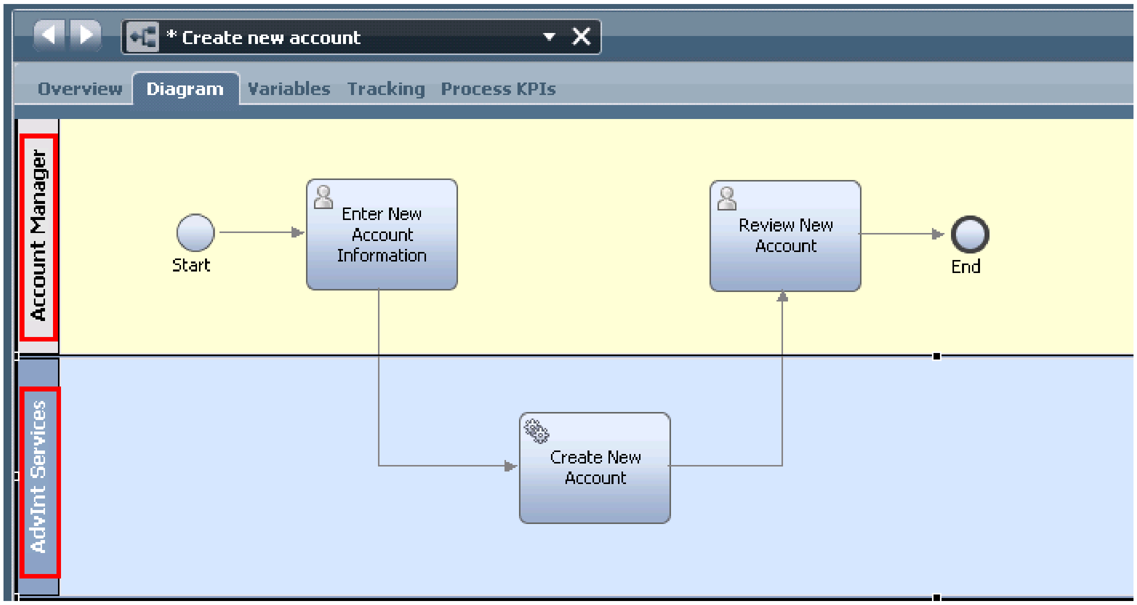


Name: Account Manager

Presentation Color: Default

__ b. In a similar manner, change the name of the **System** swim lane to **AdvInt Services** and the color to **blue**.

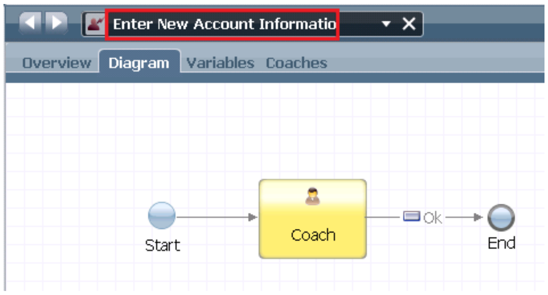
__ c. The result would look something like this:



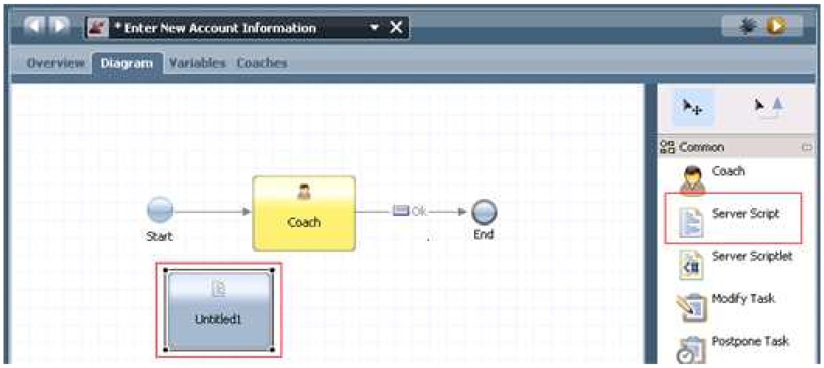
____ 17. Before testing the application, the variable **theAccountInfo** needs to be initialized with some default values. This will be done in the first activity of the process application.

> NOTE: Variables might need to be initialized to default values based on the logic of your process application. There are two kinds of variables that need to be considered, simple types such as strings or integers and complex types that are defined as business objects. The initialization requirements for these are different.
> **Simple types**: Only need to be initialized if there is a dependency in the process logic on the variable containing a value. If not, the variable does not need to be initialized.
> **Complex types**: Always need to be created. So a variable for a complex type must be assigned a new object of that type. Simple types within the complex type do not need to be initialized as described in the rule for simple types.

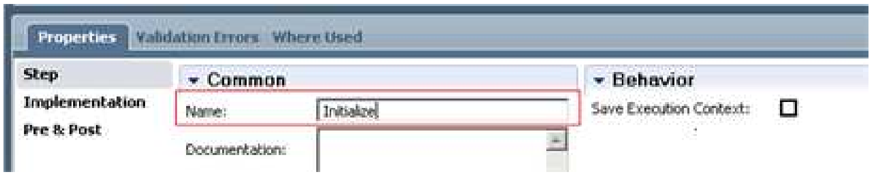
__ a. Double click the **Enter New Account Information** activity in the process diagram to open the human service implementation.



__ b. Drag and drop a **Server Script** activity to the flow. Do this by clicking on the **Server Script** in the palette and dropping it onto the canvas.



__ c. In the **Properties** view, rename the server script to **Initialize.**



Name: Initialize

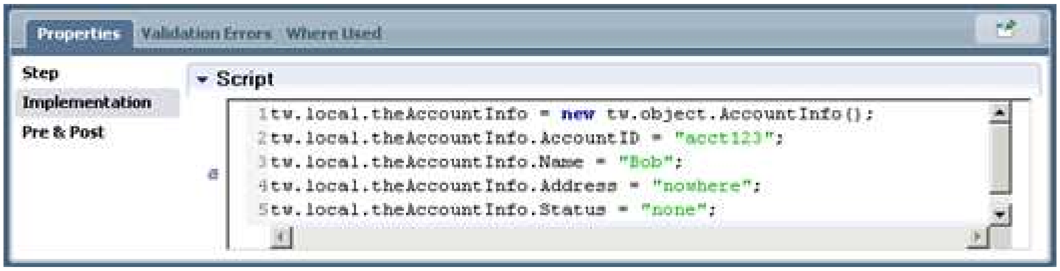
Save Execution Context: □

__ d. In the **Properties** view, click on the **Implementation** tab and add the following script:

```
tw.local.theAccountInfo = new tw.object.AccountInfo();
tw.local.theAccountInfo.AccountID = "acct123";
tw.local.theAccountInfo.Name = "Bob";
tw.local.theAccountInfo.Address = "nowhere";
tw.local.theAccountInfo.Status = "none";
```

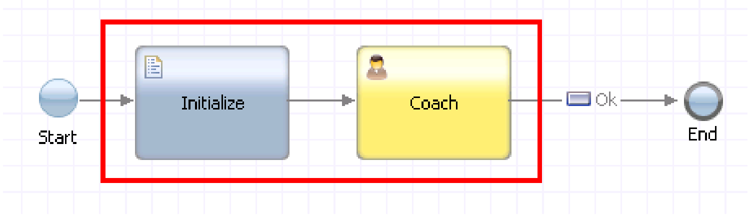
Alternatively, you can open the **Snippets and things.rtf** file under downloaded lab artifacts directory, and copy the snippet under Bottom-Up Scenario.

The result should look like this:



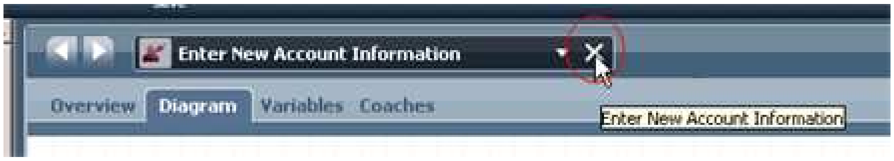
```
tw.local.theAccountInfo = new tw.object.AccountInfo();
tw.local.theAccountInfo.AccountID = "acct123";
tw.local.theAccountInfo.Name = "Bob";
tw.local.theAccountInfo.Address = "nowhere";
tw.local.theAccountInfo.Status = "none";
```

__ e. Using the same wiring technique as previous taught, wire the **Initialize** server script between the **Start** and the **Coach**. You need to obtain the S**equence Flow** pointer from the palette to do this. The result should look like this



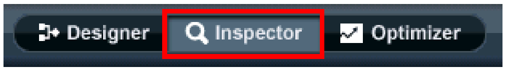
__ f. Save the changes to **Enter New Account Information** using the **Save** button.

__ g. Close the editor for **Enter New Account Information**, returning to the **CustomerServices** Process. You close the editor by clicking on the **X** that is on the right side of the title.



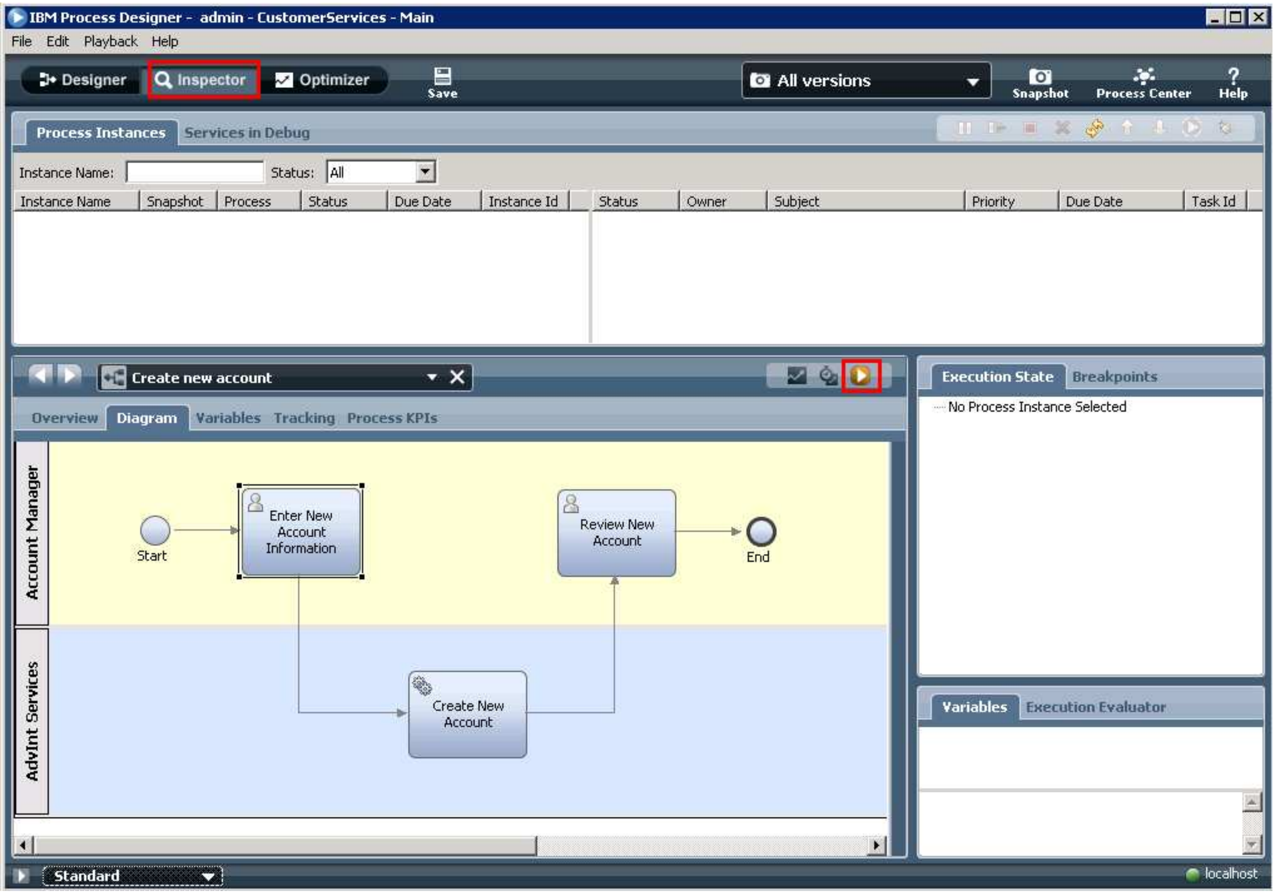
____ 18. Switch to the **Inspector** view

__ a. In the Process Designer, switch to the **Inspector** perspective by clicking on the Inspector link at the top of the window.

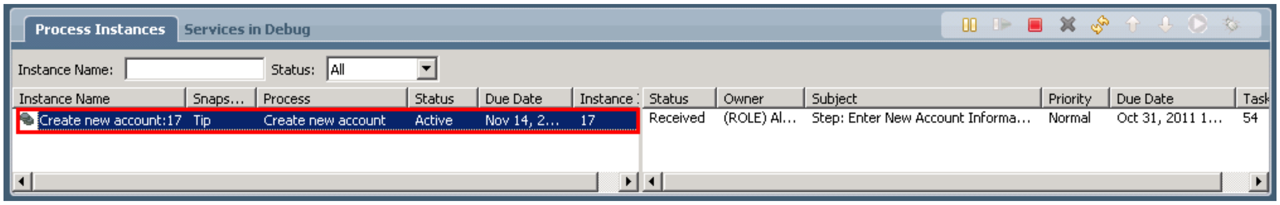


____ 19. Start a new process instance.

__ a. To start the instance, click the **Run Process** icon in the upper right of the panel for **Create new account** process



__ b. In the Process Instances panel, in the left pane, you can see the active instance of the **Create new account** BPD.

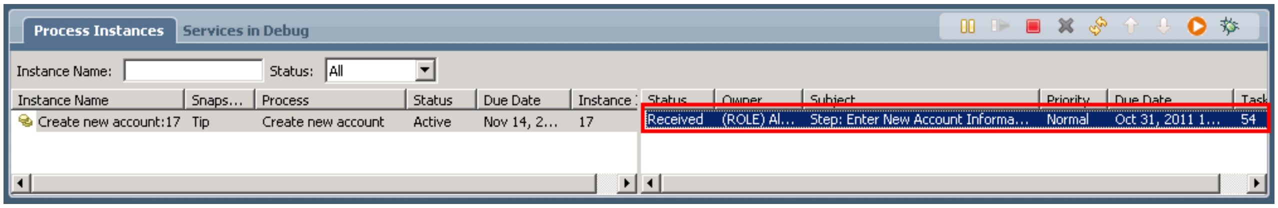


Instance Name: Status: All

Instance Name	Snaps...	Process	Status	Due Date	Instance
Create new account:17	Tip	Create new account	Active	Nov 14, 2...	17

Status	Owner	Subject	Priority	Due Date	Task
Received	(ROLE) Al...	Step: Enter New Account Informa...	Normal	Oct 31, 2011 1...	54

__ c. In the right pane, you can see where in the process this instance currently is. Notice that it says **Received** for the task **Enter New Account Information**.

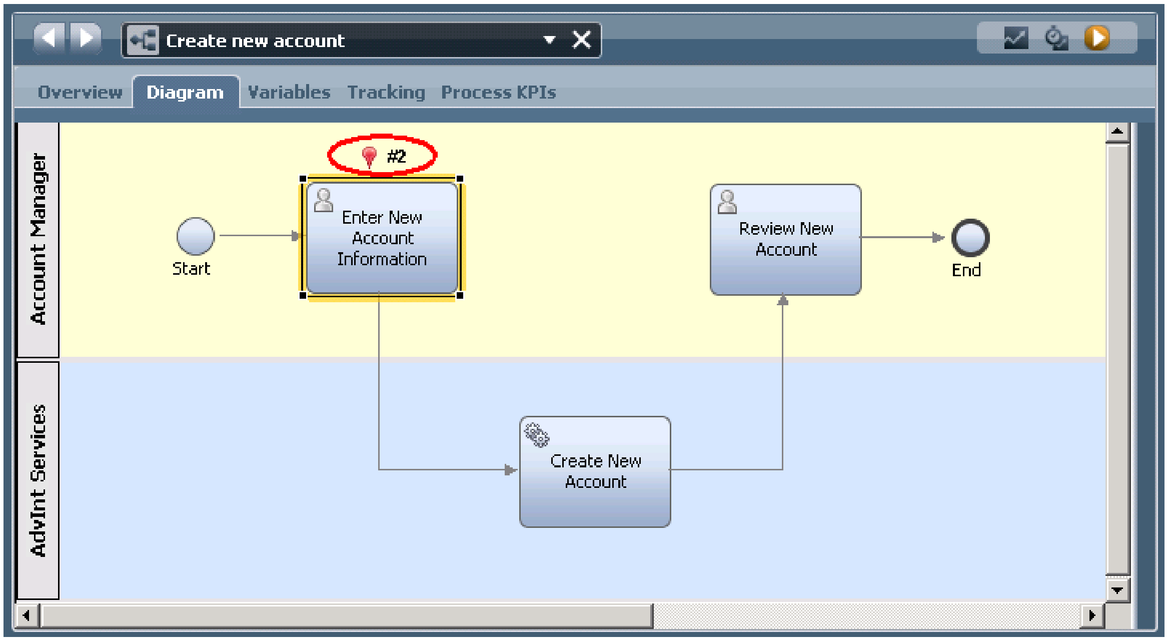


Instance Name: Status: All

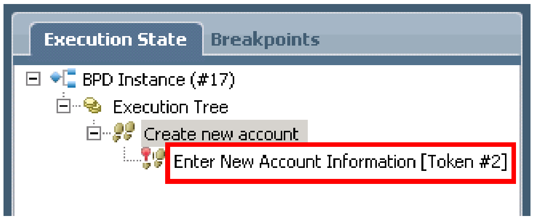
Instance Name	Snaps...	Process	Status	Due Date	Instance
Create new account:17	Tip	Create new account	Active	Nov 14, 2...	17

Status	Owner	Subject	Priority	Due Date	Task
Received	(ROLE) Al...	Step: Enter New Account Informa...	Normal	Oct 31, 2011 1...	54

__ d. In the process diagram, you can see an **indicator** on the diagram, also showing that the instance is currently at the **Enter New Account Information** activity.



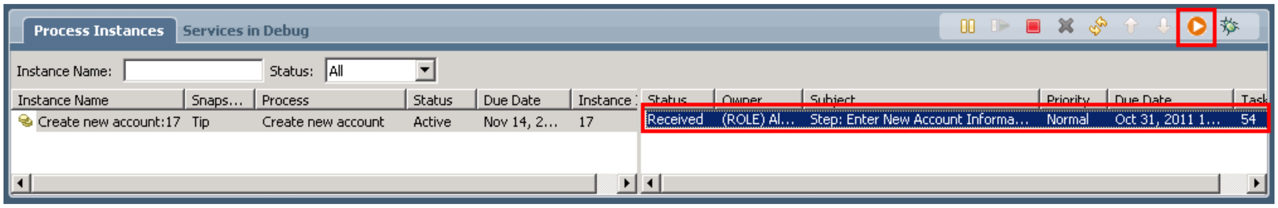
__ e. In the **Execution State**, you can also see that the instance is at the **Enter New Account Information** activity.



BPD Instance (#17)
Execution Tree
Create new account
Enter New Account Information [Token #2]

____ 20. Run the **Enter New Account Information** activity.

__ a. In the Process Instances right panel, select the **Received** status representing the task **Enter New Account Information** and then hit the **Runs the selected task** icon at the upper right hand corner.

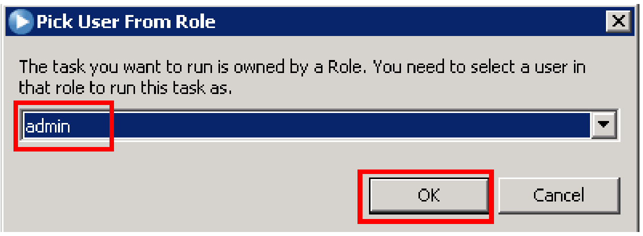


Instance Name: Status: All

Instance Name	Snaps...	Process	Status	Due Date	Instance
Create new account:17	Tip	Create new account	Active	Nov 14, 2...	17

Status	Owner	Subject	Priority	Due Date	Task
Received	(ROLE) Al...	Step: Enter New Account Informa...	Normal	Oct 31, 2011 1...	54

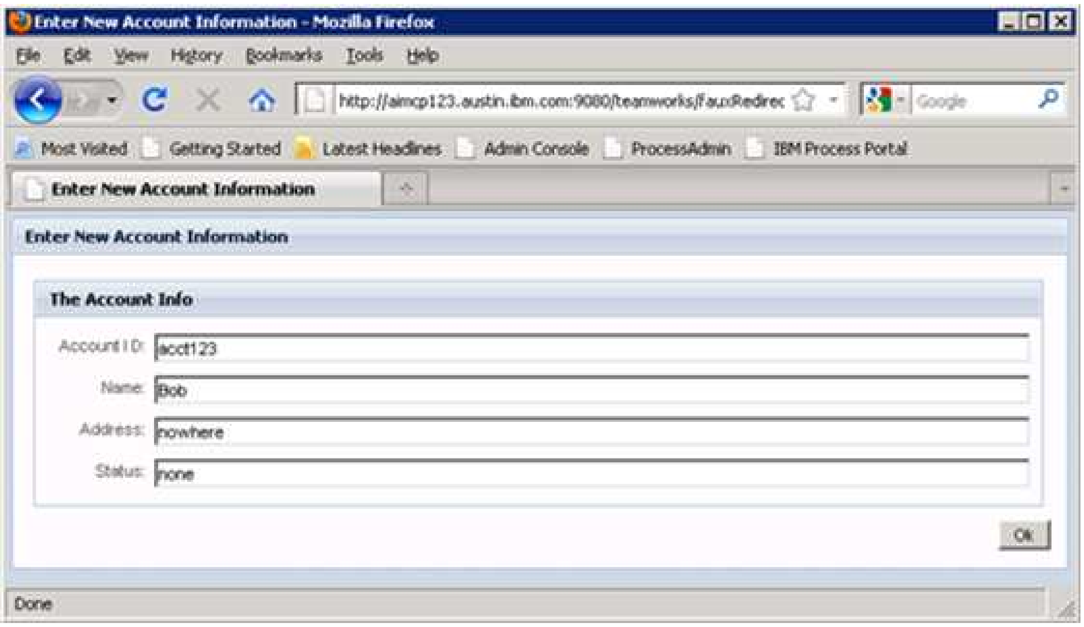
__ b. The **Pick User From Role** dialog is displayed. You are able to select a user from the drop down box. Since you are running as admin, just press OK.



The task you want to run is owned by a Role. You need to select a user in that role to run this task as.

admin

__ c. A browser window automatically opens with the coach for the **Enter New Account Information** activity. It contains the default values that were initialized in the activity.



Enter New Account Information

The Account Info

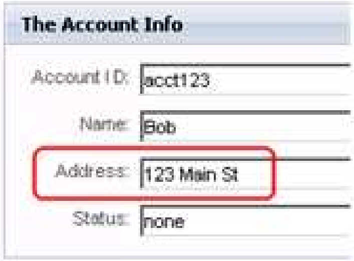
Account ID: acct123

Name: Bob

Address: nowhere

Status: none

__ d. Update the Address field to **123 Main St**



The Account Info

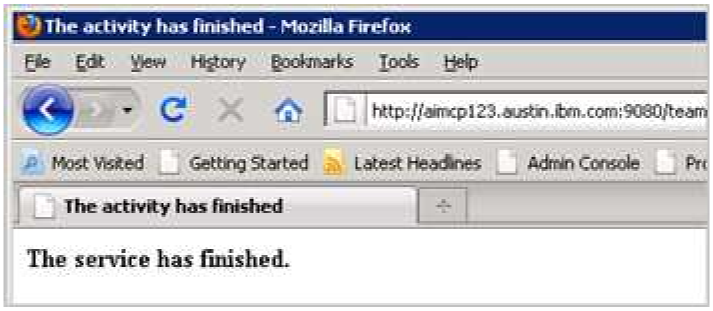
Account I D: acct123

Name: Bob

Address: 123 Main St

Status: none

__ e. Hit the **Ok** button to complete the dialog. You will see **The service has finished.** in the browser.

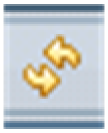


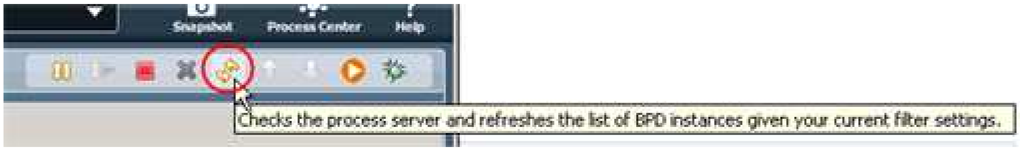
The activity has finished - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://aimcp123.austin.ibm.com:9080/team
Most Visited Getting Started Latest Headlines Admin Console Pr
The activity has finished

The service has finished.

____ 21. Examine the current state of the process instance. There are several things to note.

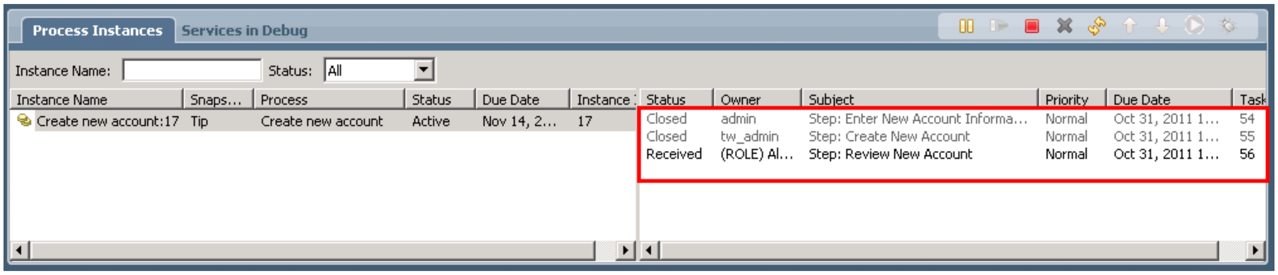
__ a. Go back to the Process Designer. You might notice that it is in the same state as it was before you ran the **Enter New Account Information** activity. This is because the Inspector does not always reflect the current start of process instances. To update the Inspector to the current state, you need to hit the **Refresh** button. There may be a little delay in executing the *Create New Account* automatic service. If you do not move to the next activity, wait a few seconds and try the refresh again.





Checks the process server and refreshes the list of BPD instances given your current filter settings.

__ b. You can now see that the **Enter New Account Information** task and Create New Account task are in **Closed** status. And that the **Review New Account** task is in **Received** status. This can be seen in the Process Instances right panel.



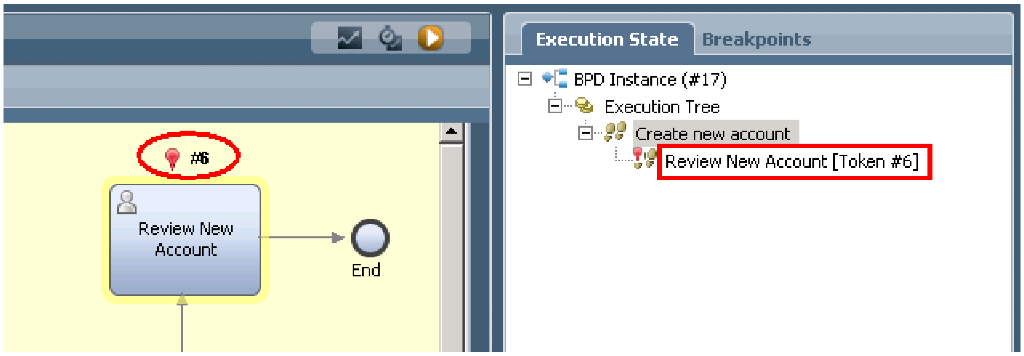
Instance Name: Status: All

Instance Name	Snaps...	Process	Status	Due Date	Instance
Create new account:17	Tip	Create new account	Active	Nov 14, 2...	17

Status	Owner	Subject	Priority	Due Date	Task
Closed	admin	Step: Enter New Account Informa...	Normal	Oct 31, 2011 1...	54
Closed	tw_admin	Step: Create New Account	Normal	Oct 31, 2011 1...	55
Received	(ROLE) Al...	Step: Review New Account	Normal	Oct 31, 2011 1...	56

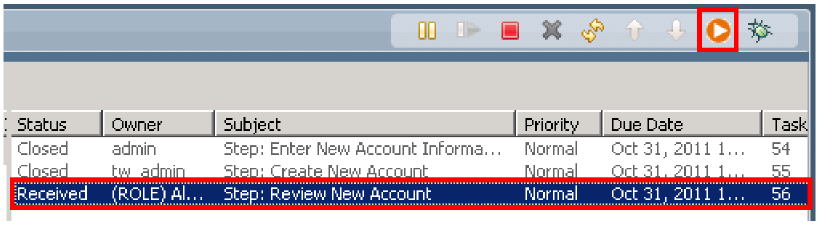
Notice that the implementation of the Create New Account activity is configured as a call to the advanced integration service **AccountServicesInterface_createNewAccount.** Because it is an automated service the inspector runs it without stopping.

__ c. Also look at the **indicator** in the **process diagram** and the state shown in the **Execution State** panel.



____ 22. Run the Enter New Account Information activity.

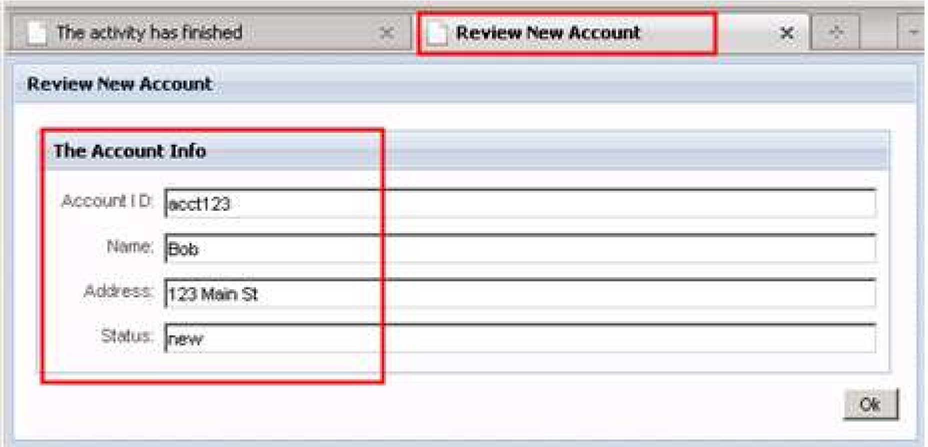
__ a. In the Process Instances right panel, select the **Received** status representing the task **Review New Account** and then hit the **Runs the selected task** icon



Status	Owner	Subject	Priority	Due Date	Task
Closed	admin	Step: Enter New Account Informa...	Normal	Oct 31, 2011 1...	54
Closed	tw_admin	Step: Create New Account	Normal	Oct 31, 2011 1...	55
Received	(ROLE) Al...	Step: Review New Account	Normal	Oct 31, 2011 1...	56

__ b. In the **Pick User From Role** dialog, select the **admin** and hit **OK**.

__ c. A second browser window opens automatically, displaying values corresponding to **Review New Account** activity.



Review New Account

The Account Info

Account I D:	acct123
Name:	Bob
Address:	123 Main St
Status:	new

__ d. Notice the values displayed.

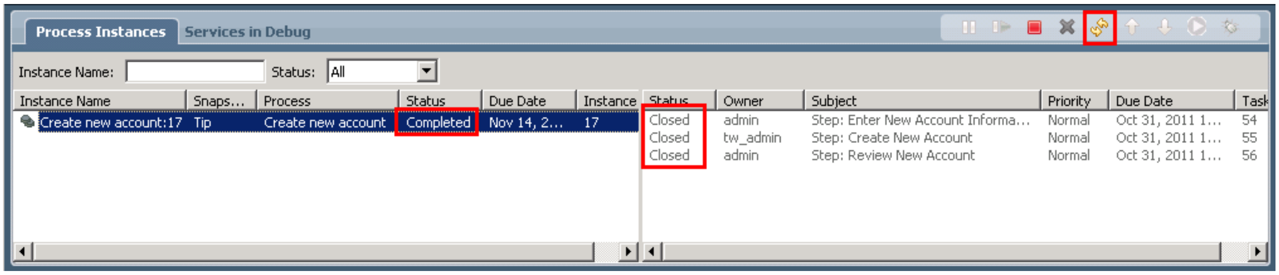
1) **Account ID** and **Name** were not changed during the process and therefore retain the values they were initialized to.

2) The **Address** was updated to **123 Main St** by the Enter New Account Information human service when you entered the value in the browser dialog.

3) The **Status** was updated to **new** by the Create New Account advanced integration service.

__ e. Click the OK button to complete the dialog.

____ 23. Go back to the Process Designer window and click the **Refresh** button again. You will notice that the process has completed successfully.



Instance Name: Status: All

Instance Name	Snaps…	Process	Status	Due Date	Instance
Create new account:17	Tip	Create new account	Completed	Nov 14, 2…	17

Status	Owner	Subject	Priority	Due Date	Task
Closed	admin	Step: Enter New Account Informa…	Normal	Oct 31, 2011 1…	54
Closed	tw_admin	Step: Create New Account	Normal	Oct 31, 2011 1…	55
Closed	admin	Step: Review New Account	Normal	Oct 31, 2011 1…	56

You have now finished the Bottom Up Approach scenario.

What you did in this lab exercise

In this exercise you…

- In the Integration Designer
    - Created a toolkit in the Process Center perspective
    - Brought the toolkit into your Integration Designer workspace
    - Imported an existing SCA service implementation and library
    - Associated the SCA modules to the toolkit and published it to the *Process Center* repository
- In the Process Designer
    - Created a business process application that uses the toolkit created in part 1
    - Created a business process flow in the CustomerServices process application that was has a dependency on the toolkit created by the *integration developer.*
        - That used the createNewAccount *Advanced Integration Service*.
    - Tested the business process flow and the service invocation using the *Process Inspector.*