

A Sybase<sup>®</sup> Business Process Automation  
Example:  
Workers' Compensation Claims  
Auto Adjudication Process

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## **Background**

This paper is based upon a proof of concept performed for a specific customer. I have tried to make the descriptions as generic and non-technical as possible. My goal is to give a complete and fairly in-depth explanation of how to use Sybase products in an end-to-end solution for a particular business process.

I tried to keep the paper under 20 pages, by keeping the description of each aspect of the solution brief yet complete. This also attempts to emphasize to the reader that each part of the solution can stand alone as a solution to the kind of integration or business-process automation issue that any company may have when trying to automate these types of processes.

Too often in today's brief meetings and presentations, we have to use vague terms like "lower cost of ownership" or "faster time to deployment" because we do not have the time to expand fully upon these ideas. In this paper I have tried to provide enough details about configuring each piece of the solution to allow the reader to understand the incredible speed and ease with which one can put together a complete end-to-end solution using these Sybase products.

The paper begins with an overview of the business problem and the Sybase solution. The rest of the document shows how easy it is to assemble the solution using Sybase products.

## ***Workers' Compensation Insurance Auto Adjudication: Business Problem Statement***

A Workers' Compensation Center (WCC) would like to streamline its business processes by making these changes:

### *Automate low risk claims adjudication*

- Many claims involve less complex injuries with a lower level of risk, both from a legal and financial standpoint. Today, WCC Claims staff must perform this work, consuming resources that could be better used for more value-added activities like direct customer interaction. An example of this is the first intended application, which involves automating the initial claim adjudication workflow.
- In the proposed auto-adjudication application, a “triage” rule set will filter out claims of higher complexity and send them on to the appropriate personnel for manual processing. Low risk claims are not filtered out and are systematically reviewed against a set of rules defined by the WCC; claims passing those rules will be processed automatically by the application.

### *Implement a Triage business process to separate high risk from low risk*

Basic steps involved in such a process are:

- Run through a set of rules to determine the level of risk,
- Request more information for incomplete claims,
- Route high risk claims to the appropriate people, and
- Route low risk claims to the auto adjudication business process.

### *Implement an Auto adjudication business process to automatically process low-risk claims*

Basic steps involved in such a process are:

- Run claims through sets of WCC business rules, and
- Execute appropriate existing claims application business logic to automatically adjudicate the claim.

## ***The Sybase WCC Business Rules Engine Solution***

A combination of Sybase Business Process Automation and Adapter products will enable the WCC to quickly automate internal business processes like the WCC initial claim

adjudication workflow. Using these Sybase products, the WCC can accomplish this without any coding, giving WCC a flexible standards-based solution with a low cost of ownership. The solution gives WCC the ability to successfully adapt to change, and eliminate the need to re-engineer access to legacy data and applications.

The Sybase Integration Orchestrator product allows WCC to meet their business rule engine requirements such as:

- Defining and managing a set of business rules,
- Allowing non-technical personnel control of the solution,
- Processing the rules against data made available to the engine,
- Providing output in the form of decisions based on rule processing, and
- Auditing and improving the rule set through statistical tools.

Sybase Integration Orchestrator provides a complete Business Process Engine that also allows WCC to design and automate a complete business process using these business rules as well as data transformations, data access services, business logic access services, and auditing services. All this can be accomplished with the Integration Orchestrator GUI using wizards and standard business process notations.

Sybase offers two other products to help WCC achieve a faster time to deployment and a lower cost of ownership in their business process automation:

- An OS390 Adapter product that allows WCC to access all of their existing claims application's OS390 Business Logic resources from the Sybase Integration Orchestrator without the need to recode the existing application. This includes OS390 business logic in CICS transactions, IMS transactions or business logic that is only accessible through 3270 screens. It also provides native access of OS390 data sources such as DB2 databases, VSAM files, IMS databases or any source accessible through DLI. This product comes with a set of services that allow WCC to accomplish this without coding.
- The RepConnector product, capable of monitoring the claims application's OS390 DB2 database and automatically publishing certain events based on defined subscriptions. This allows WCC to automatically capture business events such as WCC claims, and publish those events to the Sybase Integration Orchestrator to initiate the business process that includes the WCC business rules. This product is configured entirely with a set of administrative GUIs that require no coding, and can capture events from Oracle, Microsoft, IBM UDB, Informix and Sybase databases.

With this combination of Sybase products, WCC users will be able to quickly automate their internal business processes such as the WCC initial claim adjudication workflow. For this workflow, WCC can automatically capture claims as they are entered into the DB2 based claims system and publish them immediately to the Business Process Engine. The engine can then

1. Apply the appropriate WCC business rules to "triage" the claims and email claims of higher complexity to the appropriate personnel for manual processing, and

2. Systematically review the lower risk claims against a set of rules defined by WCC; claims passing those rules will be processed automatically by the business process.

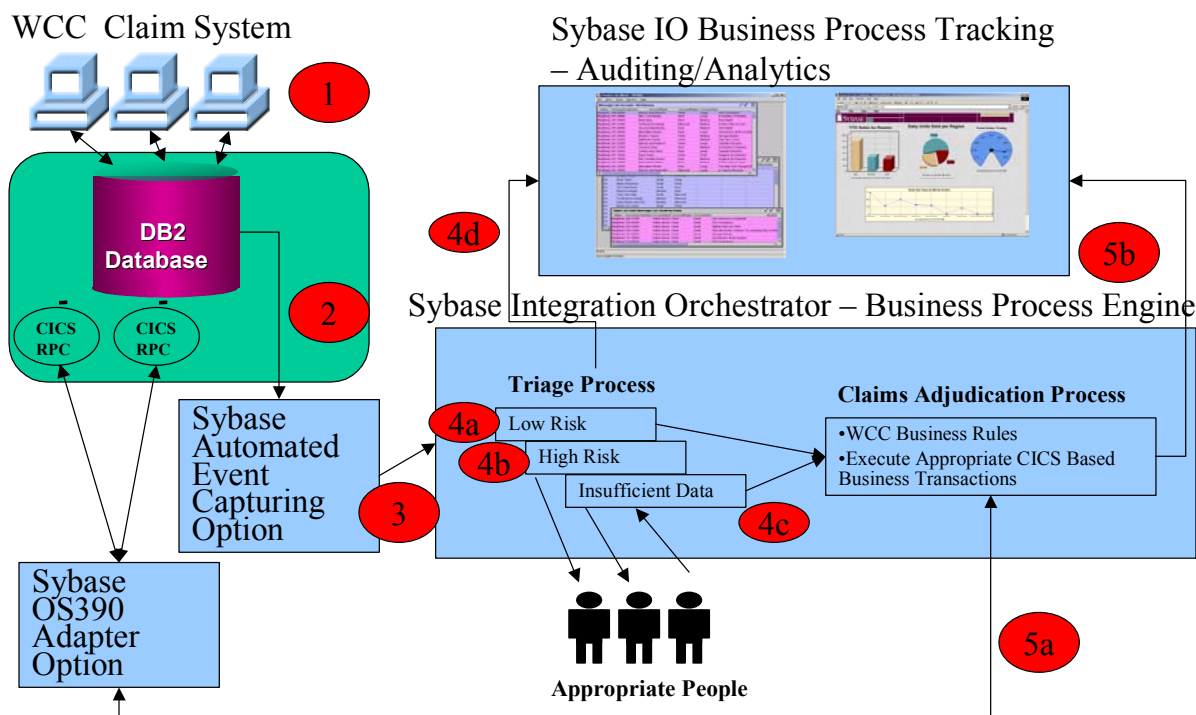
Using the Sybase OS390 adapter, the business process can execute the appropriate CICS-based Claim System's business logic to automatically process the claim. If there is insufficient data in the claim, it can be e-mailed to the appropriate personnel for research. That particular instance or claim of the business process will remain active until the data is provided. Internal timers can also be set in the business process to automatically escalate or terminate the business process based on WCC policies.

## How the Sybase WCC Solution Works

The following flowchart demonstrates the Sybase WCC solution:

# WCC Solution Overview

## WCC Claim Adjudication Scenario



Key steps are as follows:

- 1) WCC personnel enter the WCC claim into the claim system.
- 2) The Sybase Automated Event Capturing Option monitors the DB2 transaction log for specific published events, and captures the insertion of a new claim.

- 3) The Event Capturing Option publish-and-subscribe engine then converts the DB2 transaction into an XML document and delivers it to the Business Process Engine.
- 4) This new claim event generates a new instance of the Triage business process. Using the WCC defined rules, the Triage business process:
  - a. Determines this claim is “Low Risk” and sends it to the automated Claims Adjudication business process, or
  - b. Determines this claim is “High Risk” and sends it to the appropriate people for manual processing, or
  - c. Determines this claim has “Insufficient Data” and sends it to the appropriate people to rectify. The business process then waits for the replies and once the data is complete, it can determine if this is a high- or low-risk claim and route appropriately. The business process can also be configured with timers to escalate this claim based on WCC policies.
  - d. Finally, the Triage business process can send audit records and analytic data to the Sybase Business Process Tracking system. This data can include WCC defined state information such as “High Risk”, “Low Risk” and “Insufficient Data” or any fields defined within the business process, or any fields from the actual data. The tracking system automatically aggregates this data into business events, such as a claim, or into types of claims. The Business Process Tracking system can automatically generate business analytic dashboards with reports, charts, graphs, gauges, and so on.
- 5) This triaged low risk claim event generates a new instance of the Claims Adjudication business process, which
  - a. Uses the WCC defined rules to process the claim. The business process can query any WCC system for additional information that it may need to process the claim. These queries can use standard Web Services or standard database JDBC to access the additional WCC systems. Using the Sybase OS390 adapter, the Claims Adjudication business process can also execute the appropriate CICS RPCs to complete WCC Claim system adjudication. This adapter is only necessary if the existing CICS RPCs are not accessible through a standard Web Service, JDBC, or a message-based interface.
  - b. Sends audit records and analytic data to the Sybase Business Process Tracking system, as described in step 4d above.

## ***Technical Overview of the Sybase WCC Solution***

The following sections contain an implementation example using the architecture discussed above and describe the configuration steps needed to implement a business process using Sybase products.

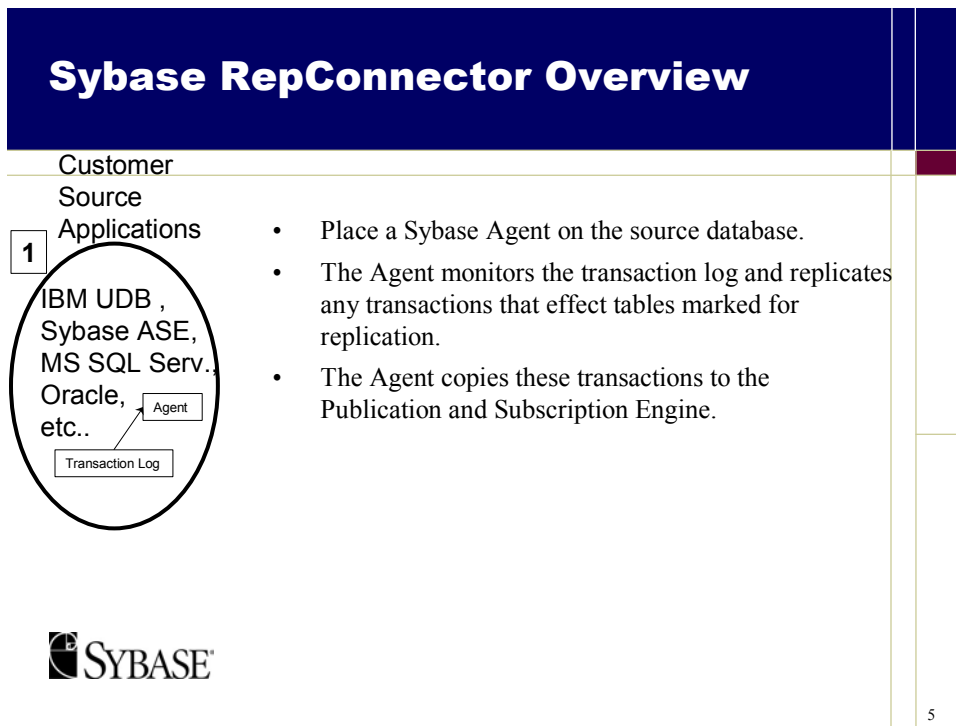
The three steps that we will discuss are:

- 1) Capturing new claims as they are entered into the claims application's DB2 database,
- 2) Defining and deploying a business process using the WCC business rules to triage and automatically adjudicate these new claims, and
- 3) Accessing the CICS RPC business logic to automatically process the low-risk claims.

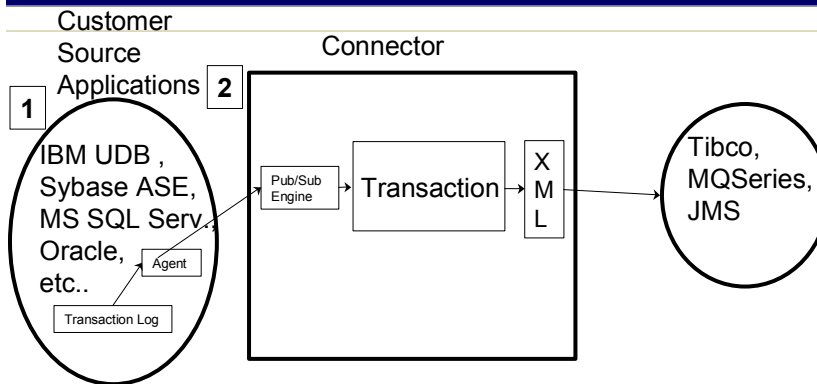
## Step 1: Capture the New Claim Business Event

The Sybase Automated Event Capturing Option uses the Sybase RepConnector product. Without the need for any coding, Sybase RepConnector allows customers to immediately publish events, from any application running on any major database, in an XML format to any major messaging system, such as IBM MQ Series, Tibco, or any JMS-enabled messaging. Major supported databases include ASE, Oracle, MS SQL Server, IBM UDB, IBM OS/390 UDB, and Informix. This product includes the Sybase EAServer JMS messaging system.

Here is a graphic overview of the Sybase RepConnector:



# Sybase RepConnector Overview



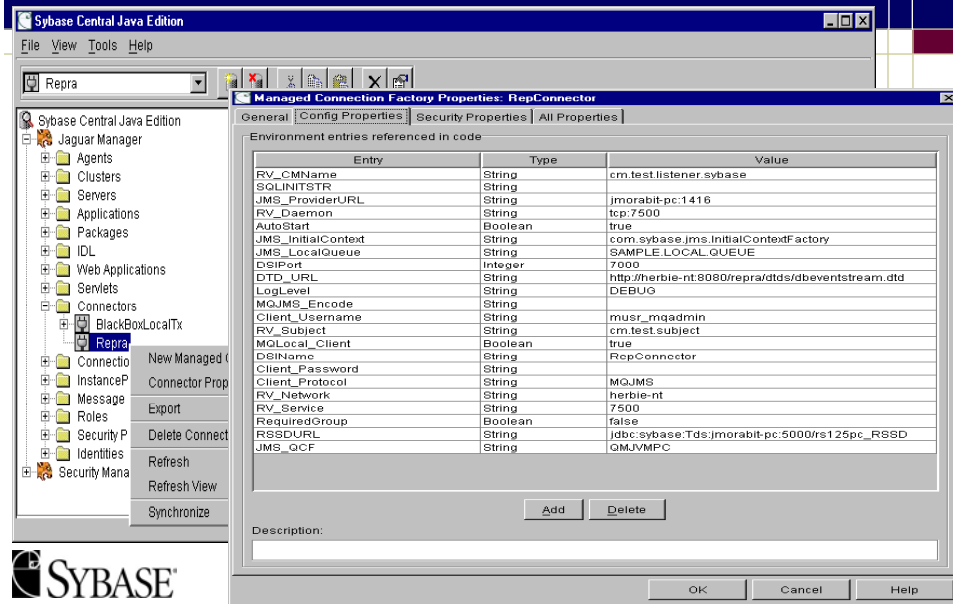
- The Connector can subscribe to any of the transactions that have been replicated.
- The subscription definition is GUI based and very SQL like, e.g. the Connector can subscribe to data where “State = Illinois”.
- The Connector converts the transactions to an XML document and publishes them to the message system.

To configure the Sybase RepConnector to capture events from the WCC DB2 Claims table, we need to create an instance of the Connector, and to publish that information by creating a replication definition. We then need to subscribe to that information and pass it to the message queue. See the steps below.

Create an instance of the RepConnector and configure the appropriate messaging system and message queue to publish the XML claims

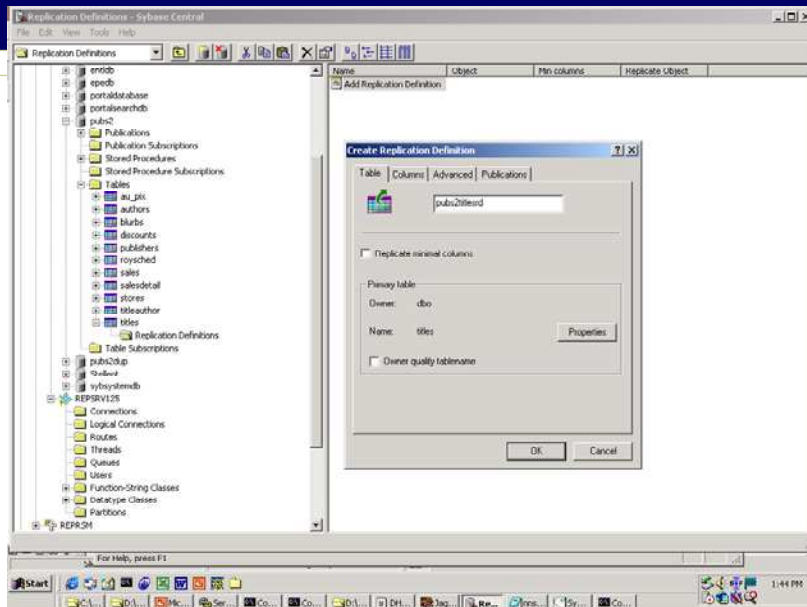


# Sybase RepConnector Overview



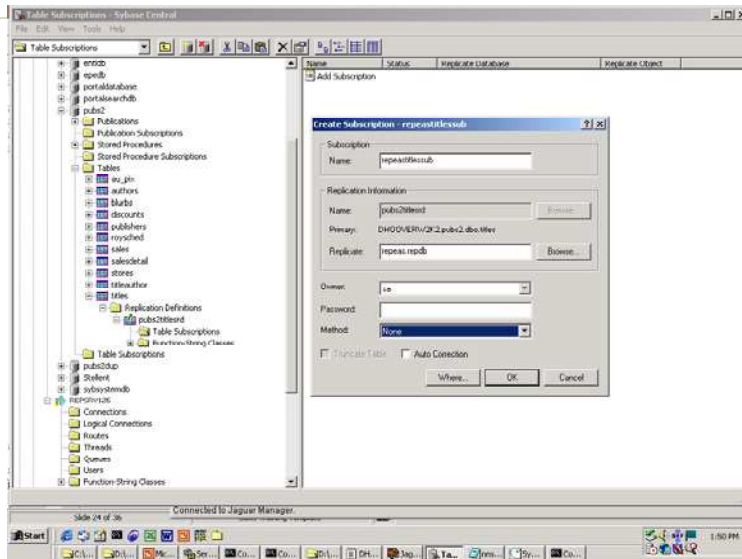
*Create a replication definition to publish new claims*

# Create Replication Definition



*Subscribe to the new claims publication and send them to the Integration Orchestrator*

## Create Subscription



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## Step 2: Design and Deploy the business process and business rules

The Sybase Integration Orchestrator allows WCC to meet their Business Rule Engine requirements like:

- Defining and managing a set of business rules,
- Allowing non-technical personnel control,
- Processing the rules against data made available to the engine,
- Providing output in the form of decisions based on rule processing, and
- Auditing and improving the rule set with statistical tools.

The Sybase Integration Orchestrator product accomplishes this by providing a complete Business Process Engine that allows WCC to design and automate a business process using these business rules as well as data transformations, data access services, business logic access services, and auditing services. You can accomplish all these tasks with the Integration Orchestrator GUI using wizards and standard business process notations.

With Sybase Integration Orchestrator, WCC business processes can be completely automated, and will contain the needed services and business rules. Services are used to get data into the business process and to execute actions based on the decisions made by the business rules. In this section we will see how to create services to get data into the business process engine. We will also create business rules and execute them against the

inputted data. Finally, we will create services to execute the existing Claims Application's business logic to complete the automated adjudication.

The injury claims scenario we will use for this demonstration is extremely simple and is only meant to show the steps required to implement WCC business rules using the Sybase Integration Orchestrator Business Process Engine. We will accept as input a simple WCC claim using a claim document, which contains only six fields:

- Claim Number,
- First Name,
- Last Name,
- Phone Number,
- Type Of Injury, and
- The Amount of the Claim.

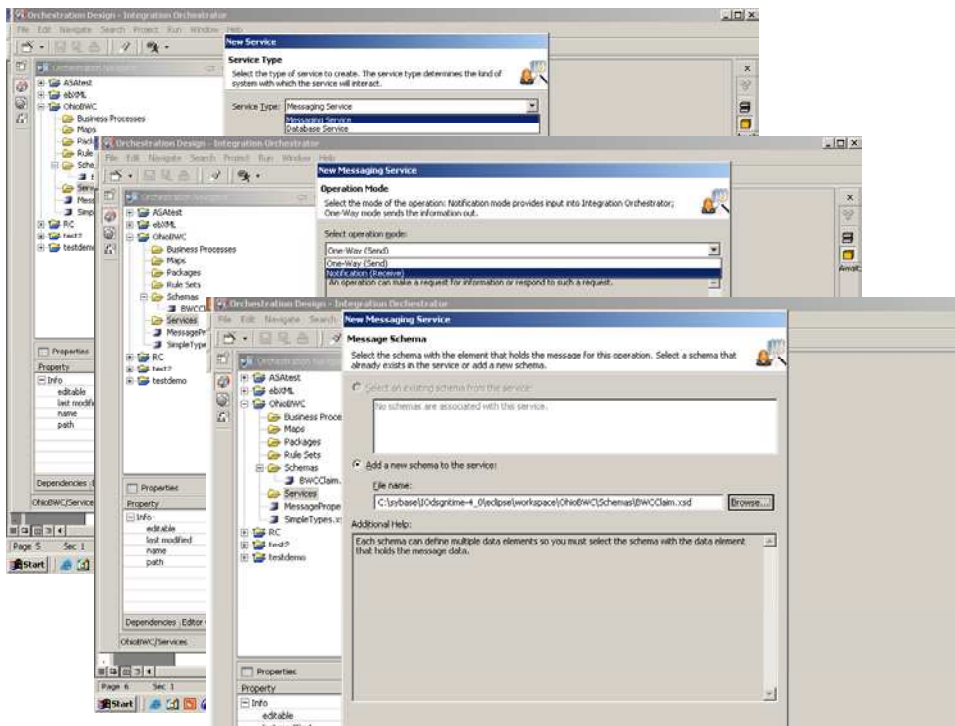
The type of injuries will be a hurt ankle or a loss limb. A hurt ankle will be automated and a loss limb will require manual processing.

## Creating Services

In the Sybase Integration Orchestrator data is sent to and from business process through services. Execution of the existing claims application's business logic and interrogation of other WCC applications is also accomplished through services. The simplest services to configure with Sybase Integration Orchestrator are those that access messages, web services, databases or files. To demonstrate our scenario, we will use a message service to retrieve a new claim XML message into the business process and use web services to execute decisions based on the WCC business rules.

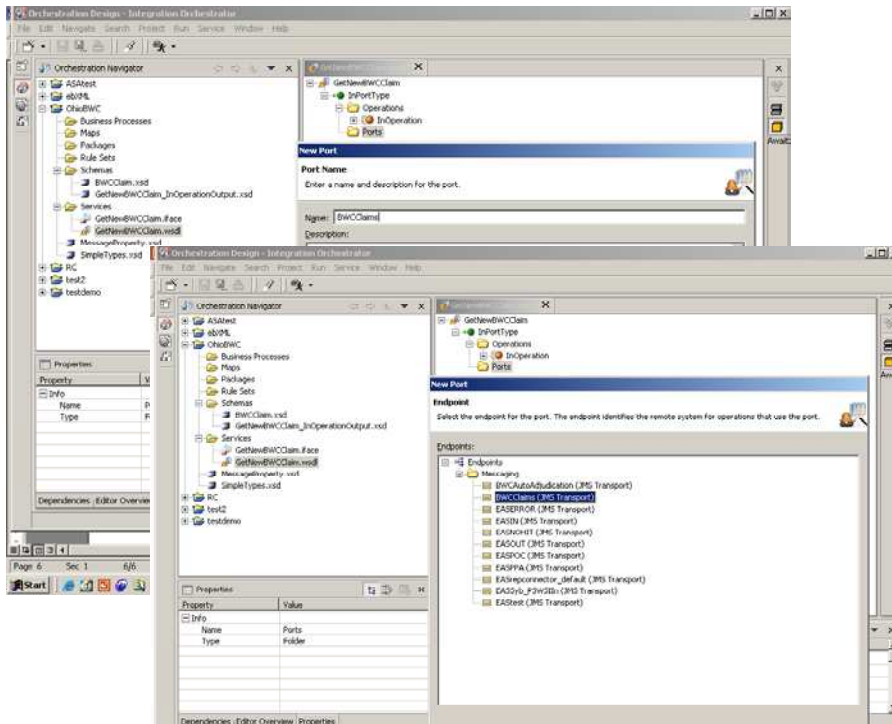
The input messages consist of new claims captured by Sybase Automated Event Capturing. The web services executed based on the decisions of the WCC business rules will be the existing claims application's CICS business logic exposed as web services by the Sybase OS390 adapter service.

*Creating the message service to capture the new claim and initiate the Triage business process*



When creating a message service for Integration Orchestrator we need to tell it that this is a message service (as opposed to a database or web service). We also need to specify whether this service is getting a message or putting a message, and the format of the message. To create this **GetWCCClaim** message service in Integration Orchestrator, we run the create new service wizard and choose: Message Service, Notification (Receive), and WCCClaim.xsd, which is the XML definition of a new WCC Claim.

*Assigning a physical message queue to the **GetWCCClaim** service*



Before the business process is deployed to a runtime server, an administrator must add a port to the **GetWCCClaim** message service. This assigns the physical queue name to the service.

### Creating the web service to execute the V3 business logic

We simply import the web services definition (WSDL) file exported from the Sybase OS390 Adapter. This WSDL defines the existing claims application's business logic exposed as a web service. Integration Orchestrator automatically creates the service that executes a web service by importing this WSDL file. Integration Orchestrator can import WSDL files from a file or from a UDDI repository.

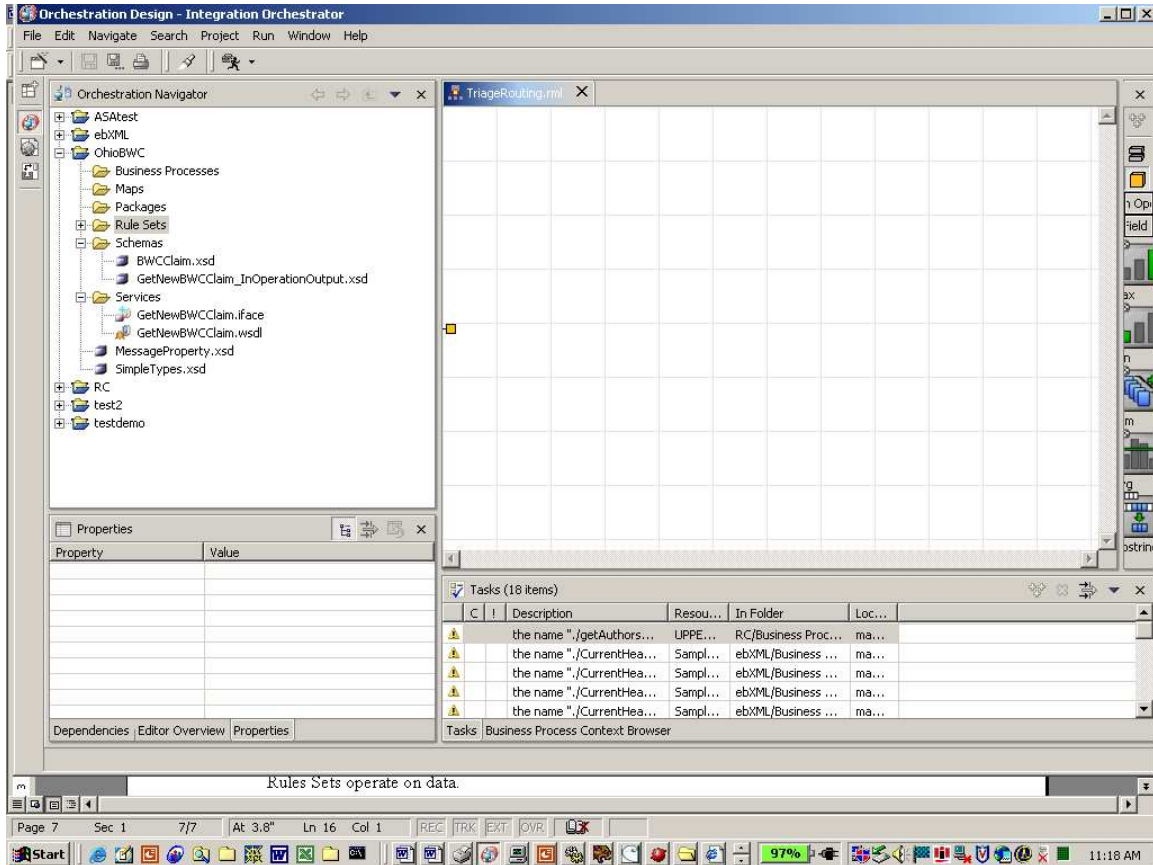
## Creating Business Rules

### Create a Triage WCC Business Rule to route hurt ankles for automatic adjudication and to route loss limbs to manual processing

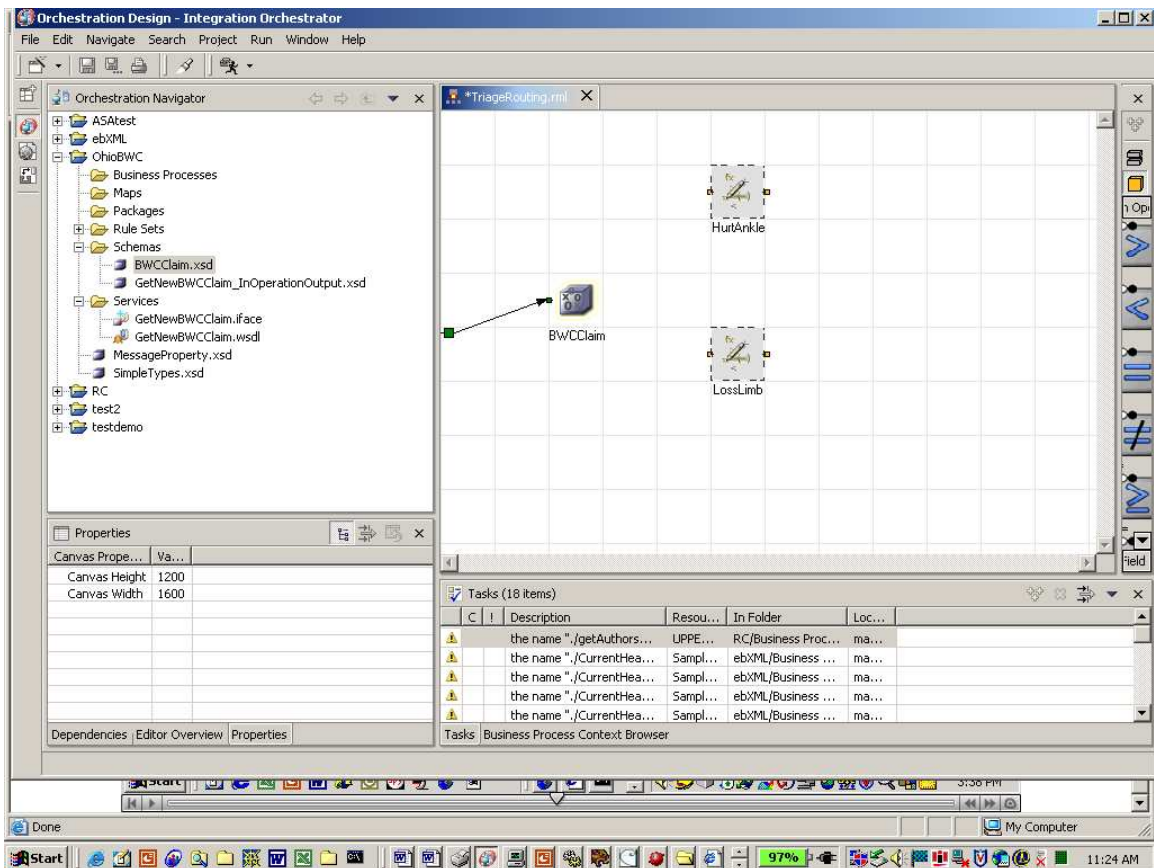
Sybase Integration Orchestrator supports three types of rules: single rules, multiple rules and rule sets. Rule sets are reusable rules. You can create a rule set for use in multiple business processes. Rule sets use the Sybase Rules Engine (formerly New Era of Networks), which is deployed at many top Wall Street companies running thousands of rules across millions of transactions. Two reasons why WCC will want to use rule sets instead of single or multiple rules are:

- 1) They create a global rule that can be used in multiple business processes, and
- 2) WCC has a large number of rules that need to be quickly evaluated together.

We need to create the Triage rule set to route hurt ankles to be automatically adjudicated and to route loss limbs to manual processing. We use the **create new rule set** wizard to create an empty rule set which we will name “TriageRouting”:

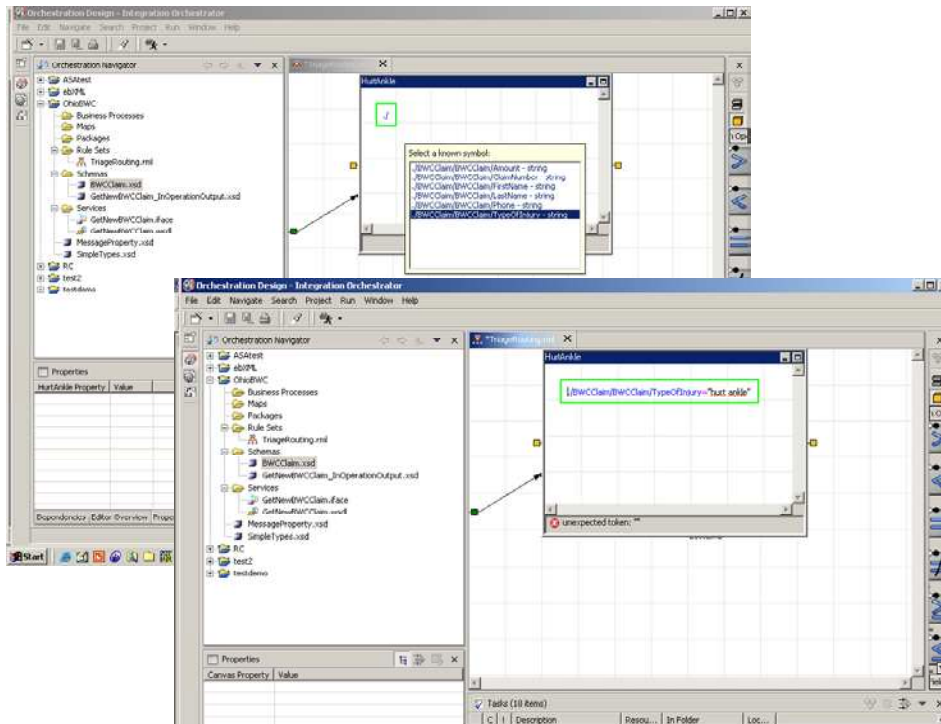


Since rule sets operate on data, we need to supply the TriageRouting rule set with the business document that defines a new WCC Claim. To do this, we drag and drop WCCClaim.xsd from the schemas folder on the left. Next, right click on the canvas and add two blank rules called HurtAnkle and LossLimb:



We then add the WCC business logic to each of these rules by double-clicking on the rule, selecting a field from the document and adding business logic such as "hurt ankle". This will result in a rule like this for HurtAnkle:  
`./WCCclaim/WCCclaim/TypeOfInjury="hurt ankle"`. We will do the same for the LossLimb rule to result in this: `./WCCclaim/WCCclaim/TypeOfInjury="loss limb"`:





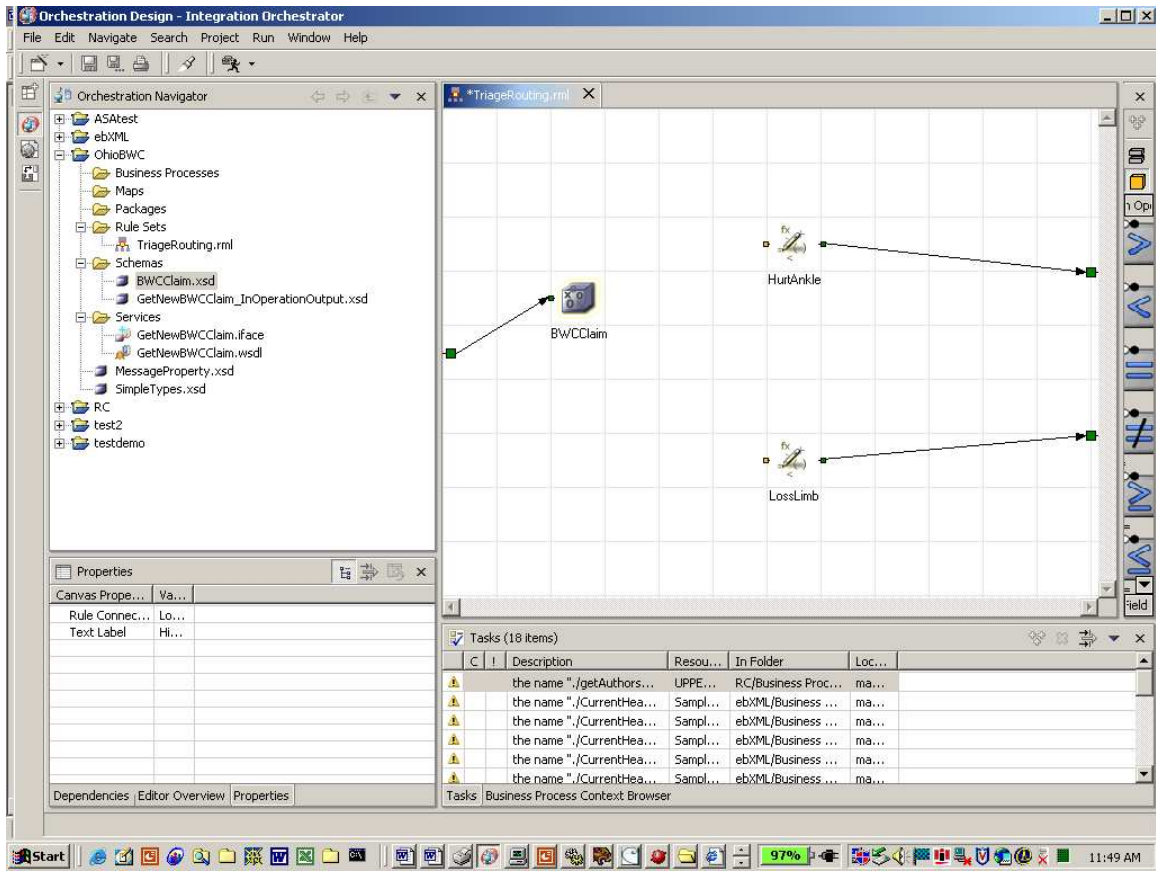
Now we need to add nodes to which the rules connect. The rule will execute the activities attached to its node if the rule or any rules attached to this node evaluates to true.

*Note:*

We do not add activities to the rule at this time. We do this when we drop the rule into a business process, since different business processes may have different activities that fire as a result of the rule evaluation.

We right-click on the canvas and add two nodes: Low Risk and High Risk. We then attach the HurtAnkle rule to the LowRisk node and the LossLimb rule to the HighRisk node:





The TriageRouting Rule Set is now ready to deploy in a business process. It expects the business process to pass it a WCC Claim document, and will route the business process workflow to the low-risk or high-risk node or no rules hit node (not shown) and thus execute the appropriate activities.

## Creating and Deploying the Triage Business Process

In this section we put it all together to create and deploy the Triage business process using:

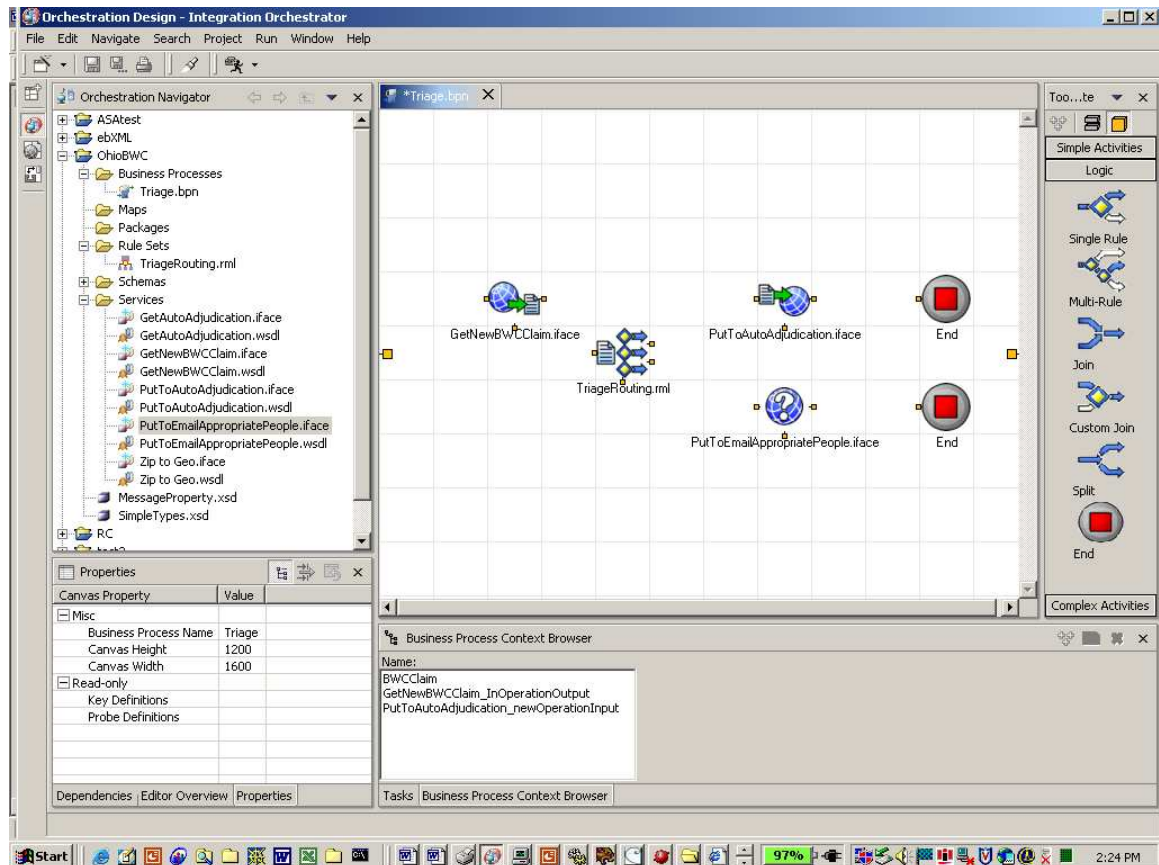
- the **GetNewWCCClaim** service,
- the TriageRouting rule,
- a **PutToEmailAppropriatePeople** service that will email the manual processing requests to the appropriate people, and
- a **PutAutoToAutoAdjudication** service that will send the request to the AutoAdjudication business process.

The essential steps are:

1. Create the business process using the services and rules.
2. Connect the services and rules.
3. Create a deployable package of business processes.
4. Deploy the package to a runtime server.

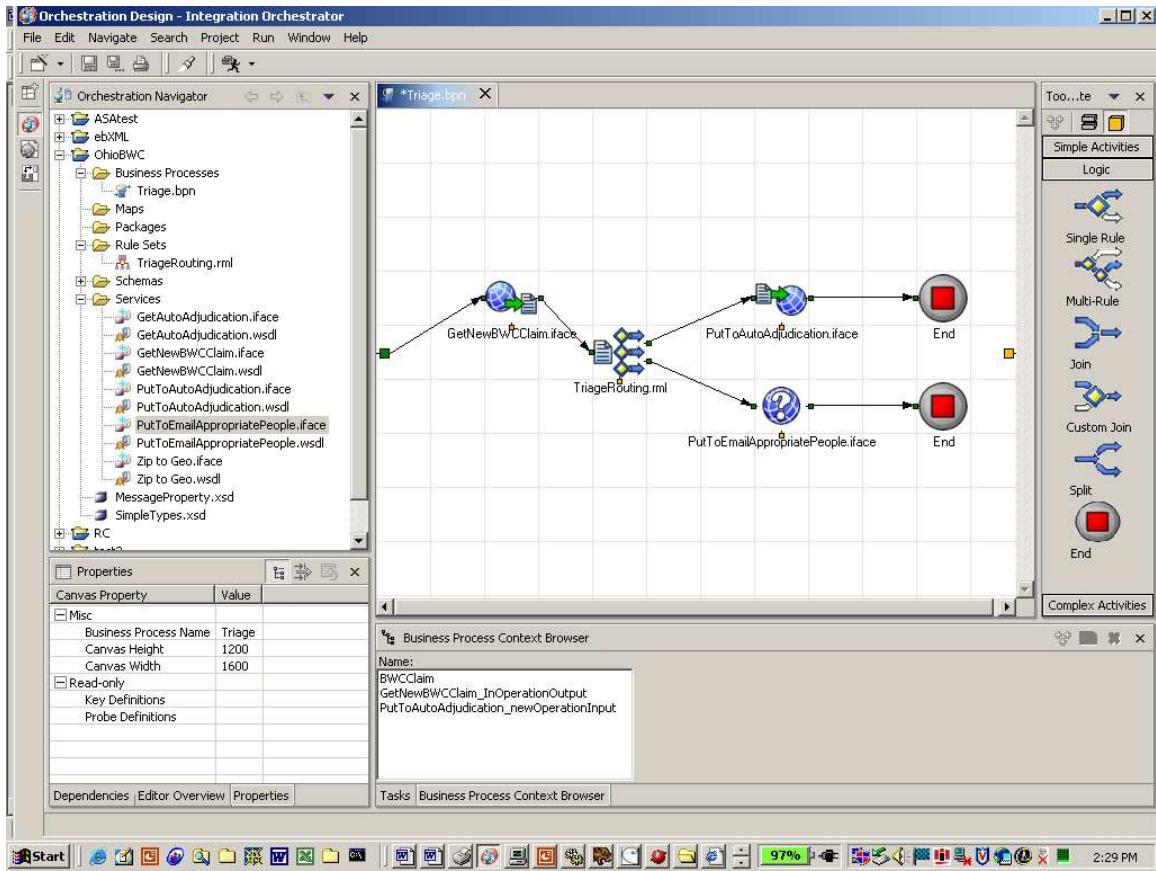
## Create the business process using the rules and services

We use the create new business process wizard to create a new business process called “Triage” and then drag and drop the **GetNewWCCClaim** service, the TriageRouting rule, the **PutToEmailAppropriatePeople** service and the **PutAutoToAutoAdjudication** service from the folders on the left onto the new business process. We will also add End process points from the logic folder on the right:



## Connect the Services and Rules

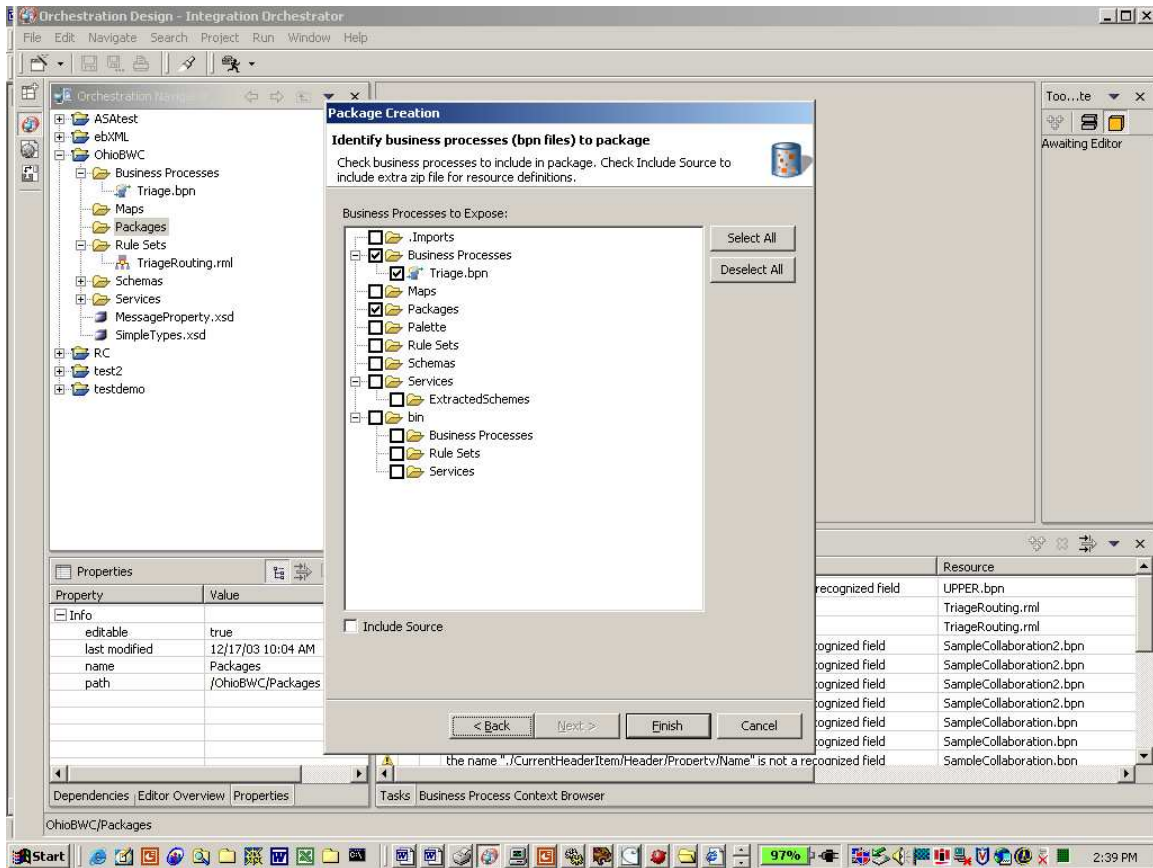
To define the Triage business process workflow, we simply connect the services and rules by clicking on the first and connecting it to the next, and so on. Notice that we connected the low risk node from the TriageRouting business rule to the **PutToAutoadjudication** service and we connected the high-risk node from the TriageRouting business rule to the **PutToEmailAppropriatePeople** service:



After defining the Claim Number as the key to this process and declaring that the **GetNewWCClaim** service initializes this process, the Triage business process is ready to deploy.

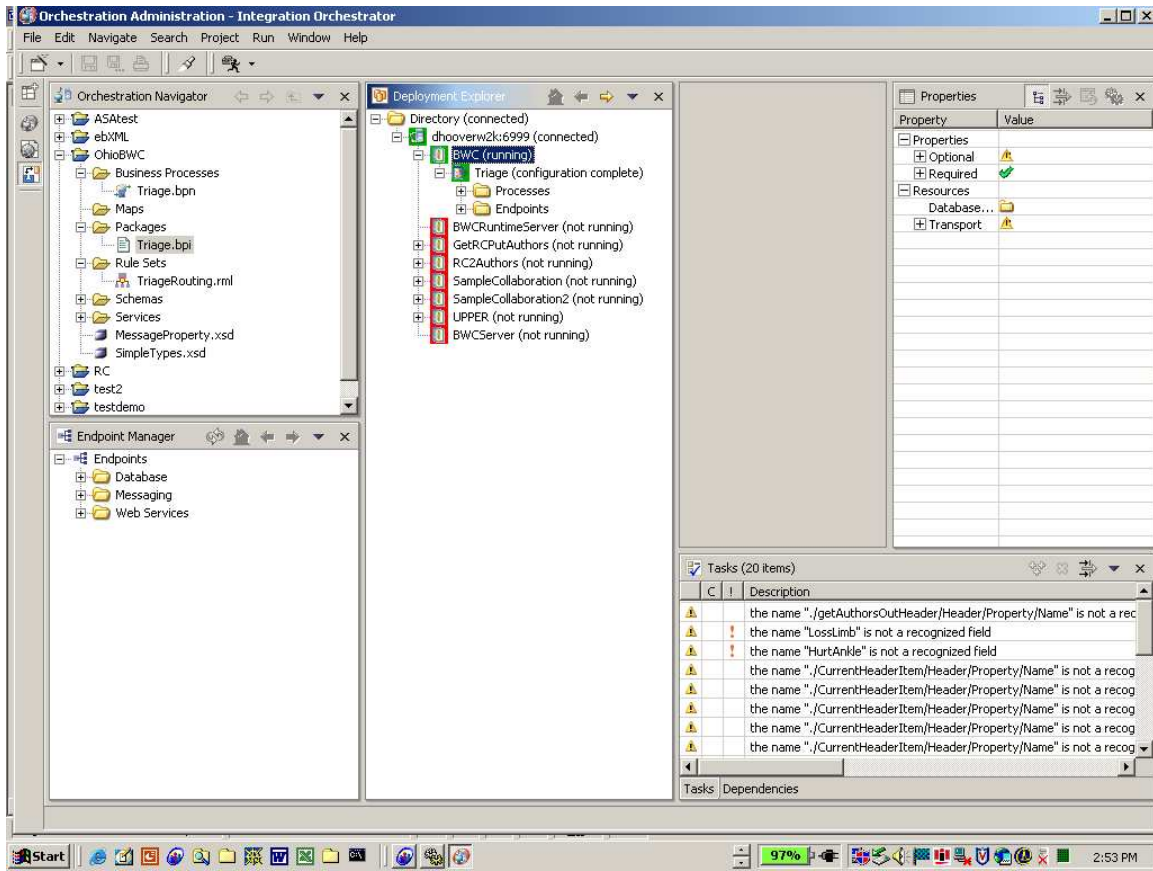
Create a deployable package of business processes

Using the Integration Orchestrator create package wizard, we package the Triage business process and all its services and schemes into a deployable *bpn* package:



### Deploy the package to a runtime server

Finally, using the Integration Orchestrator's administrative perspective, we simply drag and drop the packaged process onto a runtime server, do any necessary last minute configurations and run the process:



At this point the new WCC Triage business process is up and running. Any new claims entered into the claims application's DB2 Claims database are automatically captured and sent to the WCC Triage business process. The WCC Triage business process will evaluate the TriageRouting rules against the data in the new claim and either route that claim to the AutoAdjudication business process (if it is a low-risk claim), or e-mail the new claim to the appropriate people for manual processing.

### Step 3: Access the Existing V3 Business Logic

The Sybase OS390 adapter can enable access to any of the OS390 CICS transactions (Claims Application's RPC Business Logic) through the OS390 Adapter Web Services interface, or the OS390 Adapter MQ Series interface or using the OS390 JDBC interface. For the WCC scenario that is demonstrated here, we are using the OS390 Adapter Web Services interface.

The OS390 Adapter Web Services interface is capable of accessing any CICS RPC through a single generic web service interface. Here is the sample SOAP request to the OS390 Adapter Web Service interface:

```

<?xml version="1.0" encoding="UTF-8" ?>
<soap:Envelope
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<soap:Header></soap:Header>
<soap:Body>
  <m:_method_
soap:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:m="http://default">
    <_parameter_ >_value_</_parameter_>
  </m:_method_>
</soap:Body>
</soap:Envelope>

```

You would replace `_method_` with the name of the OS390 RPC, `_parameter_` with the parameter names, and `_value_` with each parameter's value. This will execute the OS390 RPC and return an XML result set.

## **Summary**

This white paper showed how a typical business process can be automated using products from the Sybase suite of Integration and Business Process products. This process was automated quickly and easily without the need to write any code. This provides customers with a very flexible and complete end-to-end solution that can be easily managed and modified. Further, since this solution was put together with products based on open standards, not point products for specific applications, the same products can be used to integrate and automate any other applications or a business unit's processes. These other projects would have the same benefits of faster-time- to-deployment and lower-cost-of-ownership as seen in this particular solution.

Many companies have experienced a very rapid ROI from these types of solutions since they dramatically lower the cost of processing of claims, orders, and other business processes to which they are applied.