SUN SEEBEYOND

eINSIGHT™ BUSINESS PROCESS MANAGER USER'S GUIDE

Release 5.1.1

Sun microsystems

Version 20060622110416

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Chapter 1

Introduction

This guide provides instructions and background information for all users of the Sun SeeBeyond eInsight™ Business Process Manager (eInsight) application. This chapter introduces you to this guide, its general purpose and scope, and its organization. It also provides sources of related documentation and information.

What's in This Chapter

1.1 What's New in This Release

Release 5.1.1 includes the following new features:

- Support for BEA WebLogic Application Server 9.1.
- Enhancements to eInsight's Graphic User Interface (GUI) in Enteprise Designer.
- Configuration options have been added to facilitate performance tuning and persistence optimization.

1.2 About This Document

This section includes the following information:

1.2.1 What's in This Document

This document includes the following information:

- **Chapter 1 "Introduction"** provides an overview of this document's purpose, contents, writing conventions, and supported documents.
- **Chapter 2 "Overview of eInsight Business Process Manager"** describes the Java Composite Application Platform Suite and how it works with eInsight.
- **Chapter 3 "Getting Started"** guides you through the installation of eInsight.
- **Chapter 4 "Modeling Business Processes"** describes Business Process elements and procedures related to building a Business Process model.
- **Chapter 5 "Configuring Business Process Models"** discusses configurations and options.
- **Chapter 6 "Persisting eInsight Data"** describes the procedures involved in setting up required database instances.
- **Chapter 7 "Incorporating User Activities into Business Processes"** describes the procedures involved in incorporating human workflows into Business Processes.
- **Chapter 8 "Catching Exceptions Within Business Processes"** explains the concept of exception handling and how to configure various methods of handling errors.
- **Chapter 9 "Deploying Business Processes"** discusses deployment of the Business Process model.
- **Chapter 10 "Using Enterprise Manager with eInsight"** introduces Enterprise Manager's Business Process Monitor and describes the procedures involved in monitoring Business Process Instances.
- **Chapter 11 "Debugging Business Processes"** introduces the eInsight Business Process Debugger and describes the procedures involved in debugging Business Processes.
- **Chapter 12 "Upgrading eInsight from Version 4.X"** gives an overview of the upgrade procedure for previous versions of eInsight as well as migration procedures for eInsight data.
- **Appendix A "eInsight Samples"** describes the sample projects that are bundled with eInsight and how to use them.
- **Appendix B "Payroll Processing Tutorial"** gives a step-by-step example of a simple implementation.
- **Appendix C "Audit Processing Tutorial"** gives a step-by-step example of a Task Assignment implementation.
- **Appendix D "Accessing Worklist Manager Data"** provides reference information for the Workflow Services API.
- **Appendix E "Accessing Business Process Instance Manager API Data"** provides reference information for the Business Process Instance Manager API.
- **Appendix F "Method Palette"** describes the methods available from the Business Rule Designer.

- The **"Glossary"** defines eInsight-specific terms.
- **"Index"**

1.2.2 Scope

This document covers all aspects of installing, configuring, and using eInsight to design and deploy eInsight Business Processes within the Java Composite Application Platform Suite. Some aspects of developing and deploying composite applications, such as the basics of installing Sun SeeBeyond eGate™ Integrator and creating projects, are not covered in this guide. See **"Related Documents" on page 19** for a list of supporting documents that cover basic and detailed information about Sun SeeBeyond eGate Integrator.

1.2.3 Intended Audience

This guide is intended for experienced computer users who have the responsibility of helping to set up and maintain a fully functioning Java Composite Application Platform Suite system. This person must also understand any operating systems on which the Java Composite Application Platform Suite will be installed (Windows and UNIX), and must be thoroughly familiar with Windows-style GUI operations.

1.2.4 Text Conventions

The following conventions are observed throughout this document.

Table 1 Text Conventions

Text Convention	Used For	Examples
Bold	Names of buttons, files, icons, parameters, variables, methods, menus, and objects	▪ Click **OK**. ▪ On the **File** menu, click **Exit**. ▪ Select the **eGate.sar** file.
`Monospaced`	Command line arguments, code samples; variables are shown in ***`bold italic`***	`java -jar` ***`filename`***`.jar`
Blue bold	Hypertext links within document	See **Text Conventions** on page 18
Blue underlined	Hypertext links for Web addresses (URLs) or email addresses	http://www.sun.com

1.2.5 Screenshots

Depending on what products you have installed, and how they are configured, the screenshots in this document may differ from what you see on your system.

1.3 Related Documents

The following documents provide additional information about the Java Composite Application Platform Suite:

- *Java Composite Application Platform Suite Primer*
- *Java Composite Application Platform Suite Installation Guide*
- *Sun SeeBeyond eGate Integrator User's Guide*
- *Sun SeeBeyond eGate Integrator System Administration Guide*

1.4 Sun Microsystems, Inc. Web Site

The Sun Microsystems web site is your best source for up-to-the-minute product news and technical support information. The site's URL is:

http://www.sun.com

1.5 Documentation Feedback

We appreciate your feedback. Please send any comments or suggestions regarding this document to:

CAPS_docsfeedback@sun.com

Chapter 2

Overview of eInsight Business Process Manager

This chapter provides an overview of the Java™ Composite Application Platform Suite and explains how eInsight interacts with the other suite components.

What's in This Chapter

2.1 The Java Composite Application Platform Suite

The Java Composite Application Platform Suite (Java CAPS) allows companies to assemble large-scale applications built on existing systems and infrastructure. Java CAPS is an application-level network that unifies connectivity among people, application systems, and devices in different locations and across organizations.

Business services facilitate the implementation of extended applications. Service-oriented architectures (SOA) clarify design and enable reuse by sharing logic and data among different client systems and users.

2.2 Summary of Features

eInsight provides your business with a powerful assortment of features:

- Maximizes Business Process efficiency by enabling Business Process owners to directly model, monitor, manage, analyze, and optimize Business Processes using an easy-to-use, drag and drop graphical user interface.
- Manages long-lived Business Processes and ensures process integrity, including the ability to compensate for failed processing steps.

- Abstracts the complexities of the technical integration using open standards for the graphical notation of a Business Process, elevating the business logic into the process layer to ensure a flexible, Business Process-driven implementation.
- Automates web services orchestration implementing BPEL4WS to assemble web services into larger composite application processes.
- Automatically provides all the interoperability benefits of web services standards without requiring developers to learn SOAP, WSDL, UDDI, and BPEL4WS.
- Guarantees process integrity and eliminates processing errors by ensuring that every step in the Business Process either completes successfully with full traceability and auditability or is handled by robust workflow and exception handling functionality.
- Accelerates decision making and human involvement through robust workflow support, including support for custom task assignment, user roles, and organizational hierarchies.

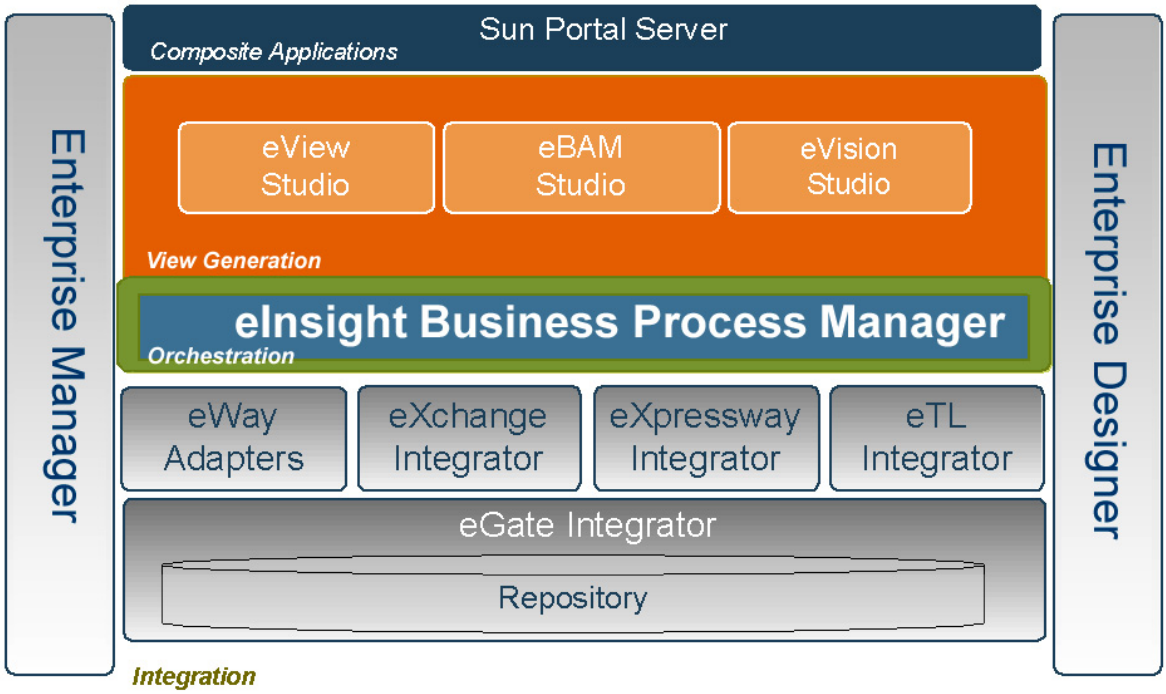
2.3 eInsight and Java CAPS

eInsight is a component of Java CAPS. eInsight delivers Business Process management features and functions to Java CAPS. *Business Process management* is a strategic orchestration of the movement of information and the flow of complex processes between participants (systems, users, and organizations) to accomplish larger business objectives.

2.3.1 Java CAPS Integration

eInsight is tightly integrated with Java CAPS and runs as a component within the Java CAPS environment. The following figure illustrates some of the eInsight and Java CAPS components that work together.

Figure 1 eInsight and Java CAPS



- The Business Process Designer runs as a component within **Enterprise Designer**.
- Business Process definitions, components, and deployment profiles are stored in the **Java CAPS Repository**.
- The eInsight Engine, which coordinates all Business Process related activity of a deployed project, runs within the **Java CAPS Integration Server.**
- Web-based Business Process monitoring is available throughout **Enterprise Manager**, which provides an interface to access current instance data.

2.3.2 Java CAPS Services

Java CAPS has a wide range of functions that it shares with all Java CAPS products. eInsight can leverage many platform-level services, such as:

- **Resource Management—**Java CAPS uses a distributed and open architecture that enables components to access system resources (memory and processing power) as needed, in conjunction with other components.
- **Security—**Java CAPS provides a security module to fulfill security needs such as authentication and authorization access to eInsight functions.
- **Repository storage and access—**The setup, component, and configuration information for the elements of a Project, including Business Process and related components, are stored in the Repository.
- **Deployment abilities—**Java CAPS provides deployment profiles that contain the information necessary to activate eInsight Project Business Processes and associated

components. When a deployment profile is activated, eInsight's active Business Processes are made available as web services.

- **Monitoring—**The Enterprise Manager lends web-based monitoring abilities to eInsight, allowing you to observe and correct Business Process activity.
- **Connectivity Mapping—**The Connectivity Map maintains the relationships between eInsight and other system components. The Connectivity Map specifies the topology of services that will be invoked, by doing the following.
  - Identifies the nature of services that are invoked
  - Depicts relationships between the components, including the publish/subscribe information for data routing
  - Defines the partners fulfilling the services that are invoked
- **Version Control—**This feature maintains a history of Business Process versions, through a check-in and check-out process.
- **Impact Analysis—**Impact Analysis allows you to view how changes to one component or Business Process will impact other components or Business Processes of a Project or all Projects in the Repository.
- **Import and Export of Business Process Models—**The ability to import and export Business Process models makes it possible to recreate the processes on other systems or to reuse processes that have common components.

2.4 eInsight Architecture

eInsight provides you with a clear view into the internal and external processes of an organization. These processes can be executed by either computer systems or employees.

eInsight speeds the design and deployment of Business Processes by providing an open process modeling environment using Business Process Modeling Notation (BPMN) for the graphical notation of a Business Process. eInsight automatically generates the code needed to implement the Business Process across all participating web services such as applications and business partners.

You drag and drop components into the process model and then specify the additional flow control and business rules that manage what services get called at what time. eInsight supports importing and exporting Business Process Execution Language for Web Services (BPEL4WS) to share processes with third-party tools.

The technologies that carry out eInsight's functions are entirely based on industry standards. eInsight's architecture uses the following standards.

- Business Process Modeling Notation (**BPMN**), from the Business Process Management Initiative (**BPMI**) standards body, provides a standard graphical view for Business Process Execution Language for Web Services (**BPEL4WS**).
- Web Services Business Process Execution Language (**BPEL4WS**) is the underlying code generated when creating a Business Process.

- Web Services Description Language (**WSDL**) is an XML-based language used to define web services and describe how to access them. All eInsight Business Processes are automatically described using generated WSDL.
- J2EE™ Connector Architecture (**JCA**) provides a mechanism to access external applications and data. The JCA engine is implemented as a standard JCA 1.5 module that plugs into the Java CAPS Integration Server.
- The eInsight Engine uses JCA and Java Enterprise Edition 1.4.

2.5 Process Overview

There are two phases of Business Process Management. The first phase, *design*, is described in the **"Design Phase Overview"**. The design phase begins before you start using eInsight and ends once the Business Process is deployed.

The second phase is called *runtime*, which is discussed in the section **"Runtime Phase Overview"**. Runtime refers to the tasks that you perform after the Business Process is deployed.

2.5.1 Business Process Modeling and Design

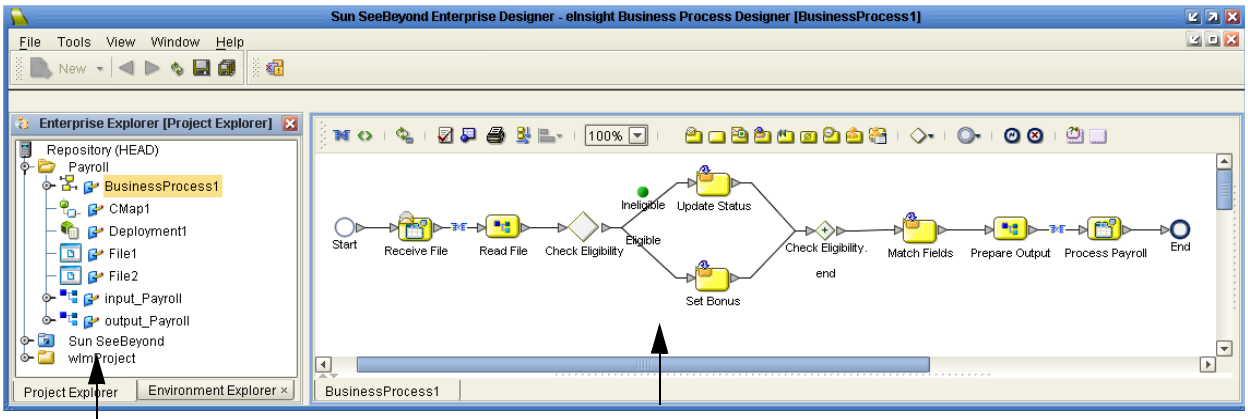
You can use eInsight to streamline operations by creating business logic that helps you reach outward to include customers and trading partners. Using eInsight to implement Business Process Management removes inefficiencies by orchestrating a unified work flow. This flow can include multiple systems/users, therefore extending to customers.

The eInsight graphical user interface (GUI) allows you to model the Business Processes that your department or even your entire company performs on a regular basis. The tools provided allow for various scenarios and events that may take place in your process.

2.5.2 Business Process Designer

The Business Process Designer serves as the front-end design tool used to create a visualization of your business workflow and increase understanding of the Business Processes involved. As the business user, you are able to integrate logic into the Business Process. When used with eInsight, the Enterprise Designer includes the following areas, as shown in Figure 2.

Figure 2 eInsight Business Process Designer



- **Project Explorer** - Displays a hierarchical representation of all the Business Process models and related Java CAPS components. This view shows what is currently displayed on the modeling canvas.
- **Business Process Designer** - Used to graphically create the Business Process model in the form of an activity diagram.

2.5.3 Design Phase Overview

The basic steps that you will perform to design a Business Process model are as follows:

1. Plan and design a model that represents a business process taking place in your company.
2. Set up a Project and related components necessary for your Business Process model.
3. Create the new Business Process model in the Business Process Designer, using activities, links, decision and exception handling logic, and any other modeling elements that express the actual Business Process.
4. Validate, generate, and save the Business Process code to the Java CAPS Repository server, where Business Process configuration and deployment information is stored.
5. Create a Connectivity Map to configure the relationship between your Java CAPS components.
6. Select or create an Environment where your Business Process will run.
7. Select or create a Deployment Profile, build the Project, start the Logical Host, and complete the deployment process. The eInsight Engine is now deployed to the Integration Server.

2.5.4 Advanced Design Phase Tasks

You can perform the following tasks in the design phase, based upon your configuration.

- Create human workflow tasks using an eVision interface and User Activity element. These custom web pages can be configured to interact with Business Processes or track and view system exceptions or employee assignments. Human workflow are the actual tasks and assignments that a person performs.
- eInsight supports the different ways an organization defines its company structure. You may define expression-based task assignments to users, groups, and/or roles.
- Configure and maintain persistence and recoverability functions. The instance data is stored in a database that you configured in the design phase. The eInsight Engine writes to this database at runtime.

2.5.5 Runtime Phase Overview

After you have completed all of the design phase tasks and your system is running, you can monitor and manage Business Process activity and the overall Project with the Enterprise Manager. These tasks are only available if you use a database.

eInsight Engine

The eInsight Engine provides process coordination that enables the execution of Business Processes, Activities, and Tasks. During the runtime phase, the eInsight Engine does the following:

- Receives messages that instantiate Business Process instances
- Writes monitoring, persistence, and recoverability data to a database (if available)

eInsight Database

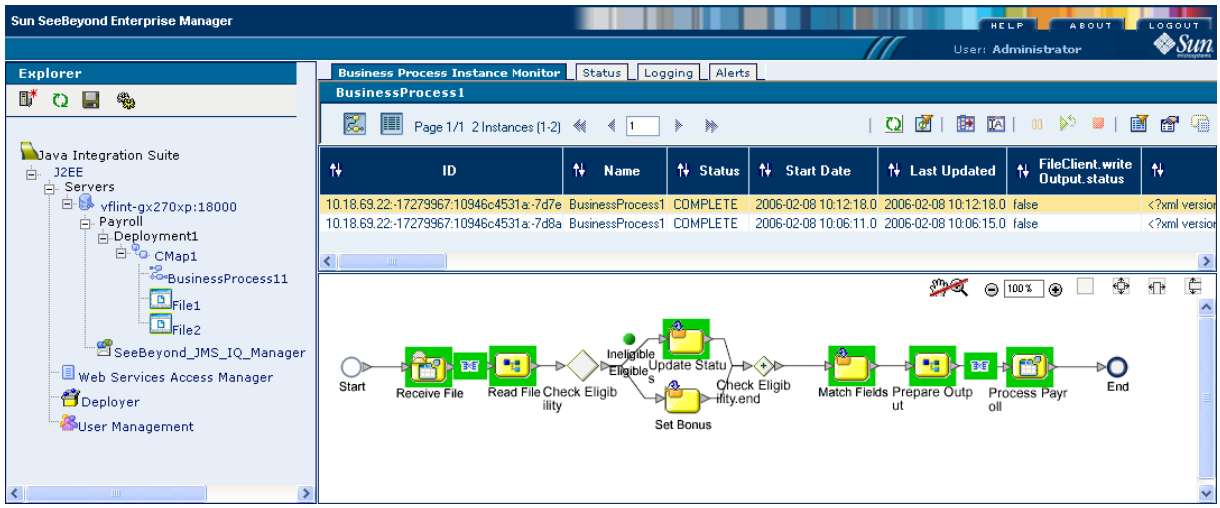
eInsight components connect to the optional database to provide:

- **Persistence** - The eInsight Engine writes instance data to a database to ensure that data is able to persist in the system.
- **Recoverability** - Using a database allows you to recover data from the last state of consistency.
- **Monitoring** - Instance data is written to a database and then read by the Enterprise Manager to provide current and historical system information.

2.5.6 Business Process Monitoring and Management

Once Business Processes are up and running, the Enterprise Manager provides visibility into the state of each Business Process Activity. This interface allows organizations to monitor and manage all aspects of the Business Process.

Figure 3 Business Process Monitor



The actions that you can perform on a Business Process from the Enterprise Manager are called *Business Process Management* tasks. Some actions that you can take from the Enterprise Manager include viewing and identifying errors originating from erroneous data. You can ensure that processes continue to run and work properly with these powerful monitoring tools.

Chapter 3

Getting Started

This chapter discusses the procedures for getting started with Sun SeeBeyond eInsight Business Process Manager. For upgrade information, see **"Upgrading eInsight Business Process Manager" on page 174**.

eInsight is one of several Java CAPS components that run as modules of Enterprise Designer. Before you can use Enterprise Designer's add-on modules, you must update Enterprise Designer to run them.

To update Enterprise Designer

1. Install the Enterprise Designer modules into a Java CAPS Repository.
2. Update Enterprise Designer with the components of the new module.
3. Restart and log into Enterprise Designer.

Note: *For detailed information about updating Enterprise Designer, see the Java Composite Application Platform Suite Installation Guide.*

What's in This Chapter

3.1 Supported Operating Systems

The **Readme.txt** file (located in the **Core Products** tab of the Java CAPS Installer's **Documentation** page) contains the most up-to-date operating system requirements for the supported platforms.

eInsight supports the following operating systems:

- Sun Solaris 10 (AMD Opteron)
- HP Tru64 V5.1A and V5.1B with required patches

- HP-UX 11.0 and 11i (11.11) on PA-RISC, and 11i v2.0 (11.23) on Itanium with required patches and parameter changes
- IBM AIX 5L, versions 5.2 and 5.3 with required Maintenance level patches
- Red Hat Enterprise Linux AS 2.1 (Intel x86) and AS 3 (Intel x86)
- Red Hat Enterprise Linux AS 3 (AMD Opteron)
- Windows 2000 SP3 and SP4, Windows XP SP1a and SP2, and Windows Server 2003 SP1
- on Itanium SP1
- on Itanium SP1

3.2 System Requirements

For detailed information about Java CAPS system requirements, see the *Java Composite Application Platform Suite Installation Guide*.

3.3 Database Support

The database installation is optional. The database is used to provide a runtime persistent store for recovery as well as a schema used for reporting and monitoring purposes.

eInsight supports the following database products:

- Oracle 8*i* (8.1.7), 9*i* (9.0.1, and 9.2) and 10*g*.

Note: *When creating an Oracle 8.1.7 database, the required minimum db_block_size for eInsight is 16KB.*

- Sybase 12.5
- MS SQL Server 2000
- IBM DB2 Universal Database 8.1

3.4 Installing eInsight from Removable Media

eInsight must be installed on a Windows system that is running the Enterprise Designer. For more information about the installation, see the *Java Composite Application Platform Suite Installation Guide*.

Note: *You may see different files in the products list, depending on what Java CAPS products you have purchased. See the Java Composite Application Platform Suite Installation Guide for details about uploading products to the Java CAPS Repository.*

Installing eInsight and its associated components involves three basic steps.

To install eInsight and its associated components

1. Select eInsight and its associated components.
2. Upload the selected components.
3. Install the selected components.

3.4.1 Before You Begin

eInsight installation is similar to other Java CAPS product installations. Before attempting to install eInsight, ensure that the following Java CAPS components are installed.

- Repository
- eGate.sar and eGateDocs.sar
- Logical Host
- Enterprise Manager and its SVG plug-in

Note: *For details about installing these Java CAPS components, see the Java Composite Application Platform Suite Installation Guide.*

These installation procedures assume that the following Java CAPS components are running and configured.

- Enterprise Designer
- A logical host domain

Note: *For details about downloading, starting, and configuring these Java CAPS components, see the Java Composite Application Platform Suite Installation Guide.*

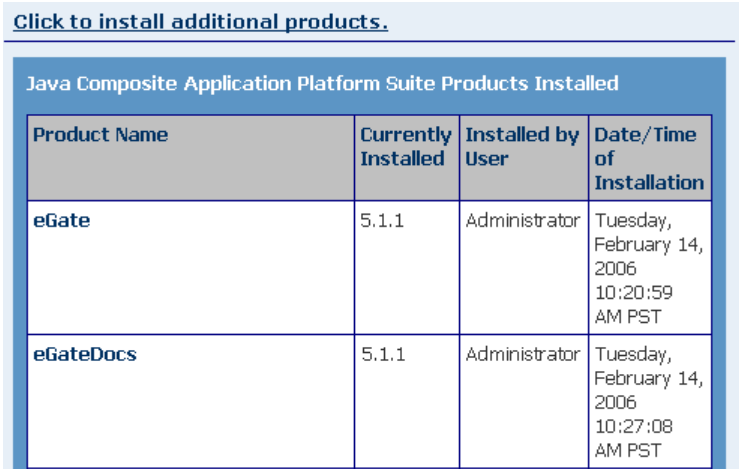
3.4.2 Selecting eInsight and its Associated Components

After you have completed your installation of eGate, return to the Sun Java CAPS Installer Administration tab.

Note: *For details about connecting to the Sun Java CAPS Installer, see the Java Composite Application Platform Suite Installation Guide.*

The Java CAPS Installer provides an installation wizard that guides you through the process of installing all available Java CAPS products. First, you must select eInsight and its associated components.

Figure 4 Sun Java CAPS Installer: Administration Tab



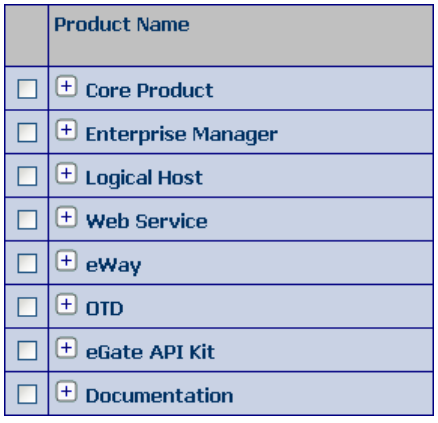
To select eInsight and its associated components

1 Select **Click to install additional products** to continue.

The **Select** page displays a list of the Java CAPS products available to upload by category. It is an extensive listing of all product components that are available to install, including all Logical Host and Enterprise Manager-specific selections.

- Use the "+" button to expand a category.
- Use the "-" button to contract a category.

Figure 5 Product Selection Panel



2 Expand **Core Products**.

3 Select the eInsight checkbox.

4 Contract **Core Products**.

5 Expand **eWay**.

6 Select the **File eWay** checkbox.

7 Contract **eWay**.

8 Expand **Documents**.

9 Select the **FileeWayDocs** and **eInsightDocs** checkboxes.

Figure 6 Selecting Files to Install

☐	DB2eWayDocs	5.1.1
☐	EmaileWayDocs	5.1.1
☑	FileeWayDocs	5.1.1
☐	HL7OTDLibraryDocs	5.1.1
☐	HL7eWayDocs	5.1.1

10 At the upper right of the product selection panel, click **Next**.

The **Upload** page appears.

3.4.3 Uploading the Selected Components

Once you have selected eInsight and all of its associated components, you must navigate to the **.sar** files that match all of the selected components.

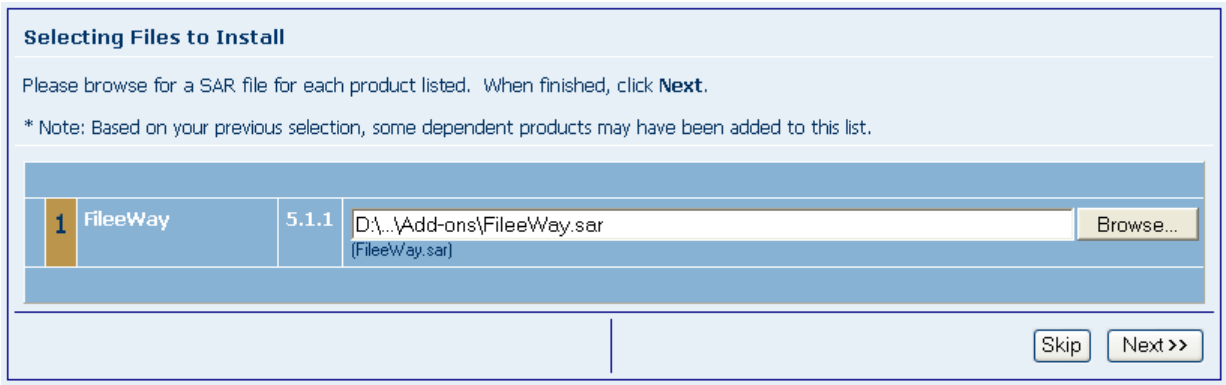
To upload the selected components

1 In the **Selecting Files to Install** panel, note the **.sar** file that the Installer is displaying (under the blank text field), and Click **Browse**.

2 Browse to that **.sar** file in the file system navigator.

3 Select the **.sar** file from the Products and Documentation directories of your CD, and click **Open**. The path to the **.sar** file appears in the text field.

Figure 7 Uploading FileeWay.sar



4 Click the **Next** button.

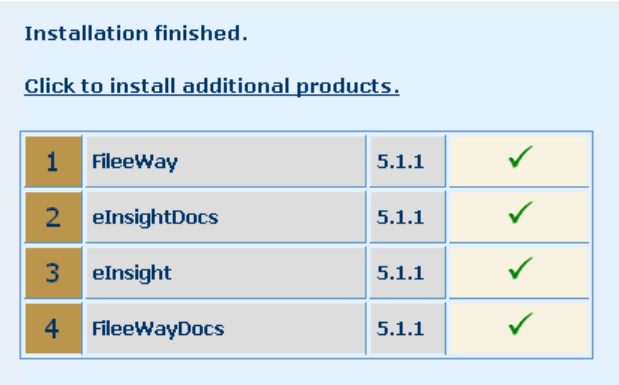
The **Install** page appears.

3.4.4 Installing the Selected Components

When the **Install** page appears, the Java CAPS Installer proceeds with the installation. The **Installation Status** panel provides a log of all installed components. The Java

CAPS Installer indicates a successful installation with a green check mark to the right of each installed component. An unsuccessful installation results in a red X.

Figure 8 Successful Installation



Note: *For detailed information about installing additional Java CAPS components and running Enterprise Designer, see the Java Composite Application Platform Suite Installation Guide.*

3.5 Running eInsight

In order to run eInsight, Enterprise Designer must be installed and configured. For detailed information about installing and configuring Enterprise Designer, see the *Java Composite Application Platform Suite Installation Guide*. Ensure that Enterprise Designer has been updated with all of the Java CAPS products that you have installed. Upon restart and login, you are ready to get started with eInsight.

3.6 Importing Legacy eInsight Projects

The following procedure provides the steps for importing legacy eInsight Projects from versions 5.0.4 and 5.0.5.

To import eInsight legacy Projects

1. Deactivate the running Business Process in 5.0.5 or 5.0.4.
2. Export the Project(s) and Environment containing the Business Process(es) and components and then import them to 5.1.x using the standard import process.
3. Generate and run the 5.1.x version of the persistence scripts to create the 5.1.x version of the database schema required for recovery.
4. Deactivate the running Business Process in 5.0.5 or 5.0.4.

5 Export the Project(s) and Environment containing the Business Process(es) and components and then import them to 5.1.x using the standard import process.

6 Generate and run the 5.1.x version of the persistence scripts to create the 5.1.x version of the database schema required for recovery.

7 Run upgrade scripts provided with eInsight 5.1.x that will move the instances from the 5.0.x database to the new 5.1.x database schema.

8 Build and deploy the upgraded Business Process-based application.

The in-flight instances will recover from the last point of persistence while the Business Process also handles all new Business Process instance instantiations. If you have modified settings for the eInsight engine, the 5.1.x settings will need to be modified again to match the settings from 5.0.x. All settings (including newly existing settings) will be set to 5.1.x default settings.

If the 5.0.x Business Process export package does not include the SVG image (or the correct image), you will need to check out the Business Process, move an object and save that Business Process to regenerate the SVG object. This issue will appear when attempting to monitor the Business Process – the state-coded activity diagram will not appear correctly or at all in Enterprise Manager. This is due to a bug in 5.0.x that allowed the SVG object to be deleted without being regenerated. This is not expected to affect a large number of Business Process upgrades. Any Business Process that contains a WSDL OTD may experience an issue after import when that Project is built again (codegen time).

To fix these issues

1 You will need to identify the object in the Project – this will be a WSDL OTD from 5.0.x that is converted to a WSDL object in 5.1.x.

2 This WSDL can be opened in the 5.1.x WSDL editor and validated – the issue with the WSDL will be identified at this time, and you will need to rectify the WSDL until it is validated in the WSDL editor.

3 You can then save that object and the valid WSDL object will now be used by the Business Process.

4 You can then successfully build the application.

WSDL OTDs are used when exposing or calling either web services or Sub-processes. Due to new support for faults that are experienced while executing BPEL, it is possible that some Business Processes will now expose runtime issues that in the past were ignored. BPEL faults allow errors in the runtime execution of the Business Process itself to be handled. In the past, some faults were ignored and the process continued without further issues. This will only appear when a process contains these previously ignored faults *and* contains a CatchAll exception handler that can catch that fault. You will likely want to rectify the source of the fault (such as mapping and datatype issues) and redeploy the Business Process.

Chapter 4

Modeling Business Processes

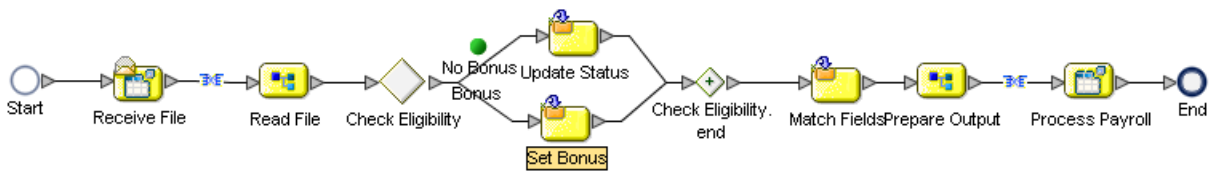
You can use eInsight to configure the components depicted by each Activity in your Business Process models. This chapter provides the background information you need to create and understand Business Process models.

What's in This Chapter

4.1 Building a Business Process Model

A *Business Process* is a collection of actions that take place in your company, revolving around a specific business practice. These processes can involve a variety of participants and may include internal and external computer systems or employees. In eInsight, you create a graphical representation of the Business Process called a *Business Process model*. Figure 9 shows a sample Business Process model.

Figure 9 Sample Business Process Model



4.1.1 Adding a Business Process to your Project

The first step in the process of developing a Business Process is to create a new Business Process within a Java CAPS project. After you have created and named a new Business Process within a project, you can then add modeling elements and other Java CAPS component operations to the Business Process's empty canvas and develop a logical process flow.

To add a Business Process to your project

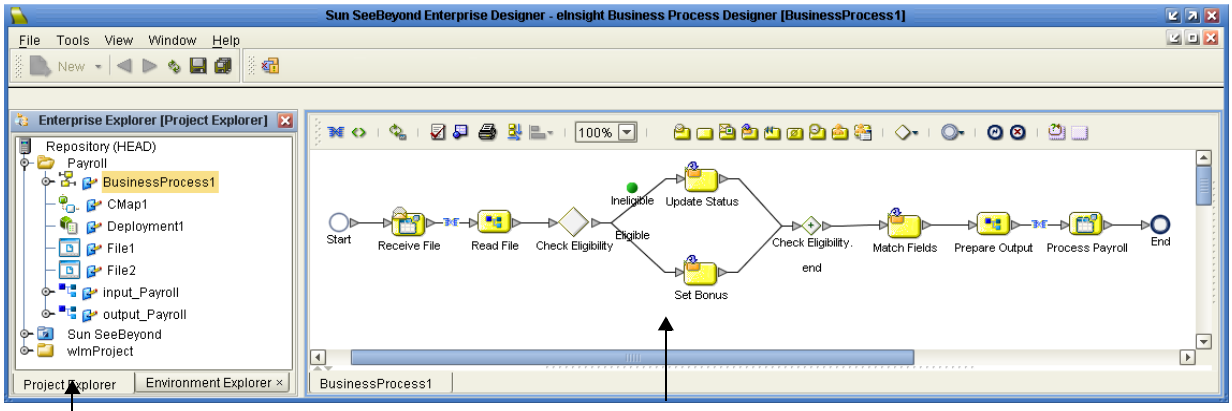
1. From the Project Explorer panel, right-click a **Project**.
2. Select **New** and **Business Process** from the context menu.
3. Enter a new name for your Business Process.

Note: *See the Sun SeeBeyond eGate Integrator User's Guide for more information about creating a new Project.*

4.1.2 Creating a Business Process Model

You create an eInsight Business Process model by dragging, dropping, and linking the available modeling elements in the Business Process Designer as shown in Figure 10.

Figure 10 Business Process Model



The Business Process Designer is the area in the Enterprise Designer where you view, create, and edit your Business Process models. eInsight provides the necessary tools for developing Business Process models such as graphic editing tools for adjusting, sizing, and aligning model components as well as a palette of modeling elements for developing the logical flow of information and tasks of the Business Process.

You can also drag and drop other Java CAPS component operations from the Project Explorer directly into the Business Process Designer. Java CAPS component operations include the following:

- File eWay: Read and Write operations
- Object Type Definition (OTD): Marshal and Unmarshal operations

- Java Collaboration Definition operations
- eVision Pages and PageFlows

By default, the **Start** and **End** activities appear on the blank Business Process Designer. There is only one starting point for any Business Process model. There can be multiple end points.

To create a Business Process model

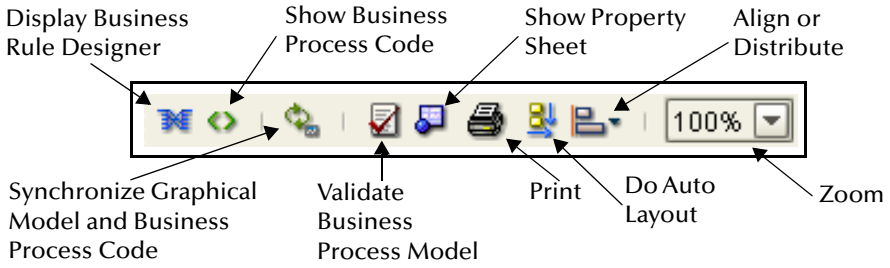
1. Drag the appropriate modeling elements into the Business Process Designer.
2. Draw links between the modeling elements to show the process flow.
3. Select **Save** to save your changes to the Java CAPS Repository.

   Saving also validates your Business Process and generates the code to run it.

4.2 Using the Business Process Designer

Using the Business Process Designer is very similar to any of the other Java Integration Suite interfaces. When you create a new Business Process, you see the Business Process Designer and the a new Business Process Designer toolbar appears as shown in Figure 11.

Figure 11 Business Process Designer Toolbar Options



- **Display Business Rule Designer**—Selecting this icon reveals the Business Rule Designer in the lower portion of the Business Process Designer.
- **Show Business Process Code**—You can toggle this icon to see and edit the corresponding Business Process Execution Language (BPEL) code.
- **Synchronize Graphical Model and Business Process Code**—This icon will update the Business Process code on demand. The Business Process code is also synchronized when the model is saved.
- **Validate Business Process Model**—Click this icon to check for any errors in your Business Process Model.
- **Show Property Sheet**—This icon shows the Property Sheet for the modeling element that is selected.
- **Print**—You can print the model from the toolbar. This options also allows you to control the scale of the printed model.

- **Do Auto Layout**—Click this icon to perform an automatic layout of your Business Process model. The Auto Layout feature provides several options for customizing the layout of your Business Process model.
- **Align or Distribute**—This icon displays several options for aligning and distributing your Business Process model elements.
- **Zoom**—Controls the view size of the model and is available from the toolbar.

As you begin to develop Business Processes with eInsight and become more comfortable with the tools and controls, you can optimize your development time by making use of eInsight's keyboard accelerators. These accelerators are indicated by underlined characters in each element of eInsight's interface.

4.3 Developing a Business Process

eInsight provides a palette of modeling elements to assist you in customizing your Business Process. The Business Process Designer is where the you create the Business Process flow. Like other objects, Business Processes appear in the Project Explorer.

Elements from the Project Explorer can either be dropped onto empty canvas or onto an Activity. Many elements provide custom settings so that you can model every detail of your process. Each Business Process model you create consists of some or all of the elements as described in the following sections:

- **Adding Activity Elements** on page 38
- **Adding Branching Activities** on page 41
- **Adding Intermediate Events** on page 41
- **Using Scope Elements** on page 42
- **Using While Elements** on page 43

4.3.1 Adding Activity Elements

There are several different kinds of activities you can include in a Business Process model. Table 2 shows examples of each of the different kinds of activities described below.

To add an Activity element

1. Click an **Activity** from the eInsight toolbar or the Project Explorer list, then drag and drop it where you want it.
2. Click the **Activity** name and begin typing to rename it from the default. The Activity name must contain at least one character (A-Z, a-z, or 0-9), it must start with a letter or an underscore (_) and it may contain spaces.

   The selected Activity appears on the modeling canvas.

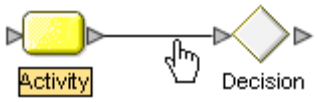
4.3.2 Linking Modeling Elements

eInsight supports orthogonal and diagonal link styles—this setting applies to all links in a model and is an automated application of the style.

To link a modeling element

1. Move your cursor over the connector portion of your modeling element.
2. Hold the cursor over the outside edge of the modeling element until it changes from the arrow pointer to a hand (see Figure 12).

Figure 12 Link Example



3. Drag a line from the first Activity to the connector of the second Activity, and then release the mouse.

To change link style

1. Right-click the Business Process.
2. From the context menu, select **Toggle Link Style**.

Figure 13 Orthogonal Link Style

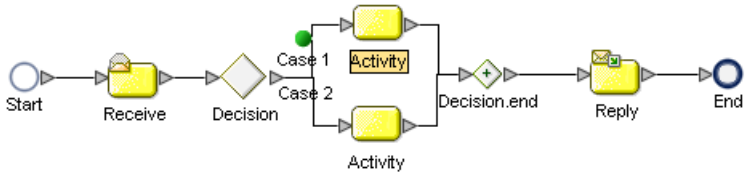


Table 2 Activity Elements

Button	Command	Function
	Start Node	The Start Node is a modeling element indicating the start of the process. This element appears in the Business Process Designer, by default, when you create a new Business Process model. A Start Node can only link to a **Receive Activity**.
	Link	Links indicate the flow of the Business Process by connecting activities together. eInsight ensures the model is being properly linked because it does not allow invalid links to connect. Links can also accept business rules. A link with a business rule is marked with a blue icon.

Table 2 Activity Elements

Button	Command	Function
	**End Node**	The modeling element indicating the completed state of a Business Process. This element appears in the Business Process Designer, by default, when you create a new Business Process model.
	**Receive Activity**	This Activity type is used to indicate the invocation of a Business Process or to wait for the arrival of an inbound message. The Receive Activity represents the actual method by which a Business Process is initiated.
	**Activity**	An Activity is a step in the Business Process in which eInsight invokes a web service or a Java CAPS component. Depending upon the configuration of the component, a response may or may not be required.
	**Reply Activity**	The Reply Activity allows a Business Process to respond to the external system or user that originally invoked the Business Process. The original receive at the beginning of the Business Process is paired with the Reply at the end of the process. In cases where a message must be sent back to the caller of the Business Process, the Reply uses information that correlates the message in the calling system. A Reply acts as the last step in a Business Process in which the Business Process is acting as a web service or sub-process. A Reply correlates the outbound message back to the calling process, for example, it can reply to an external system as a web service.
	**Business Rule Activity**	This Activity is used to map and manipulate data in the Business Rule Designer. You can also add a Business Rule to some links for the same purpose.
	**Compensate**	This element is used to invoke compensation on an inner scope that has already completed normally. This construct can be invoked only from within a fault handler or another compensation handler.
	**Empty Activity**	This Activity allows data to pass through without any changes.
	**Wait Activity**	The Wait Activity will delay the process for a set period of time.
	**User Activity**	This Activity is used to represent and configure a step in a Business Process that requires human intervention.
	**User Activity API**	This Activity is used to represent and configure a step in a Business Process that requires human intervention from an external application. When a Business Process Instance comes to a User Activity, it creates a Task and polls a table for the status of the Task. In order for the User Activity to complete, the user and/or the external application must update the status of the Task.

4.3.3 Adding Branching Activities

Branching activities are objects you add to your Business Process models to specify the logical flow of information. eInsight provides three different kinds of branching activities—Decisions, Event Based Decisions, and Flow.

To add a Branching Activity

1. Click the **Branching Activities** toolbar icon and select the type of Branching Activity you would like to add.
2. Click your choice and drag it from the menu to the Business Process Designer canvas.

   The selected Branching Activity appears on the modeling canvas.

Table 3 Branching Activities

Button	Command	Function
	**Decision**	A Decision allows one of several possible paths to execute, based on expression logic. This element is used to create complex expressions that determine the path of the Business Process. It also contains the expression and connection names. Decisions allow you to define expressions that are evaluated to determine the proper Business Process flow. Expressions are built using the Business Rule Designer interface and Business Process Attributes.
	**Event Based Decision**	Multiple inbound messages can be juxtaposed against one or more timeout conditions, to allow the type of message received to determine the appropriate Business Process path.
	**Flow**	Allows you to specify one or more Business Process paths to be performed concurrently.

4.3.4 Adding Intermediate Events

Intermediate events are those activities that can receive a Business Process. Some intermediate events handle exceptions that may occur during your Business Process or compensate for exceptions that occur.

To add an intermediate event

1. Click the **Intermediate event** toolbar icon and select the type of **Intermediate event** you would like to add.
2. Click your choice and drag it from the menu to the Business Process Designer canvas.

Table 4 Intermediate Events

Button	Command	Function
	**Timer Event**	A Timer Event is a logical time-based condition that is used in conjunction with an Event Based Decision. A Timer Event specifies either a duration-based or deadline-based condition that determines which branch a Business Process takes. A duration-based condition is satisfied after a specified elapsed time. A deadline-based condition is satisfied at a specified time point.
	**Message Event**	This is similar to a Receive Activity, but it occurs only in the middle of a process. Each of these elements can be a different message. This modeling element is used with Event Based decisions only.
	**Catch Named Exception**	Each automated system (backend system) or Web service can publish their possible error codes (for instance, fault 15 is “bad data”). Those codes can be mapped to exception handlers. Each exception handler is connected to the scope that surrounds one or more steps in a Business Process. The components within that scope will throw the exceptions when things go wrong and the exception handler will automatically initiate the appropriate process to handle the problem.
	**Catch All Exceptions**	This exception handler is configured to handle un-named exceptions that occur in a scope or across a Business Process.
	**Compensation Handler**	Used when something in a Business Process fails and requires a rollback of upstream activities (like money has to be returned to the customer account). On an automatic basis in the Business Process, upstream steps in the Business Process are notified that the failure has occurred and certain transactions need to be reversed, sometimes in a sequential order. The compensation handler allows you to design the process and circumstances in which the compensation takes place.
	**Throw**	This element exists in case you want to create an error along a certain Business Process path.
	**Terminate Process**	This element allows you to terminate an entire Business Process, before it reaches an end node.

4.3.5 Using Scope Elements

The behavior for one or more activities can be defined by a scope. A scope can provide exception handlers, event handlers and a compensation handler. The exception handlers for the scope can be used to catch the faults caused by the possible exception responses.

Table 5 Scope Element

Button	Command	Function
	**Scope**	The Scope element allows you to apply exception handling to a set of sequential or simultaneous steps in a Business Process.

4.3.6 Using While Elements

This modeling element makes it possible to have repeating or looping logic inside of a Business Process.

Table 6 While Element

Button	Command	Function
	**While**	This allows you to create a looping process within a Business Process (for instance, a negotiation process may take several weeks, but the manager wants to review the daily status). The loop continues until the negotiation is complete, and then the Business Process continues.

4.4 Validating a Business Process Model

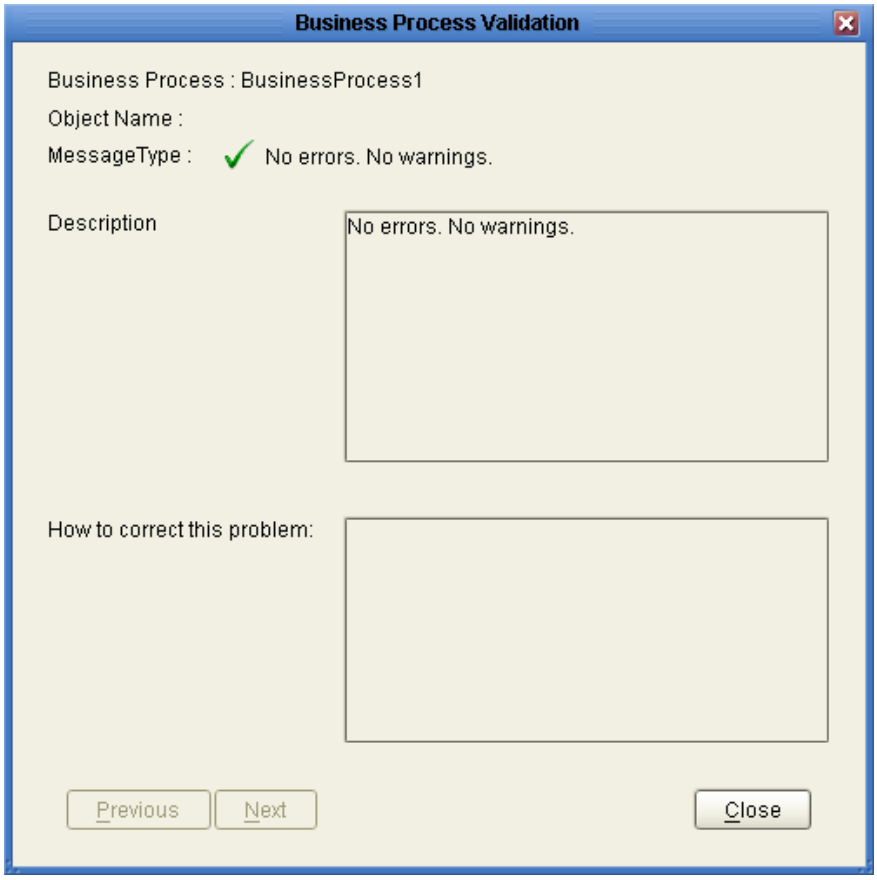
After creating a Business Process model, you can check to see if there are any errors or warnings. Errors appear for activities that are not connected or an incorrect number of output links from an Activity. Warnings appear when there is a problem, but it is not critical enough to stop the Business Process.

To check the Business Process for errors or warnings

On the toolbar, select **Validate Business Process Model.**

- If an error or warning is encountered, a message box displays more information about the error or warning.
- If there are multiple errors or warnings, an option to view the **Next** error displays for each additional error or warning.
- If there are no errors or warnings, a message appears stating so**,** as shown in **Figure 14.**

Figure 14 Validate Business Process Model



4.5 Saving a Business Process Model

Even if a Business Process model is not complete or contains errors, you can save it as a "work in progress" and return to it later.

To save a Business Process model

Do one of the following:

- Pull down the **File** menu and select **Save**
- Press **Ctrl+s** on the Keyboard
- On the toolbar, click **Save**.

4.6 Generating Custom Business Process Reports

In the Project Explorer, you can generate a custom HTML report of your Business Process model. Your report can be as detailed or as high-level as you want it to be. You

customize your report by specifying which Objects, Details, and Properties to include. The following procedure provides the steps for generating a customized Business Process report.

To generate a custom Business Process report

1. In the Project Explorer, right-click a Business Process and select **Generate Report**.

   The **Custom Documentation** dialog box appears.

2. In the **Report filename** field, enter a filepath and name for your report. To browse to a filepath, click the **Browse** button.
3. In the **Objects tab's Selected objects** panel, control-click any objects that you want to exclude from your report and click the **left** arrow.
4. Click the Details tab.
5. In the **Details tab's Selected details** panel, control-click any details that you want to exclude from your report and click the **left** arrow.
6. Click the Properties tab.
7. In the **Properties tab's Selected categories** panel, control-click any details that you want to exclude from your report and click the **left** arrow.
8. Click **OK**.

   eInsight generates your report, and it appears in your default web browser.

4.7 Toggling Between Modeling Element Link Styles

You can choose two different styles for the modeling element links of your Business Process:

- Direct Linking
- Indirect Linking

The default setting is Direct Linking. Direct Linking links modeling elements using the most direct line between two modeling elements, using diagonal lines when modeling elements are not precisely aligned. Indirect Linking links modeling elements using only horizontal and vertical lines with right angles.

To toggle between Business Process model Link Styles, in the Project Explorer, right-click a Business Process and select Toggle Link Style.

4.8 Automatically Arranging Modeling Elements

In order to save time and effort, you can automatically arrange the modeling elements on the Business Process Designer canvas. eInsight's Auto Layout feature provides several options for arranging modeling elements for clear display. The following procedure provides the steps for automatically arranging Business Process elements.

To automatically arrange modeling elements

1. In the eInsight toolbar, select the Auto Layout icon.

   The **Auto Layout** dialog box appears.

2. Choose a collection of options that best display your Business Process.
3. Click **OK**.

For details about the arrangement behavior of each option, see **"Auto Layout Options"** below. Default values are indicated with **bold** text.

4.8.1 Auto Layout Options

Table 7 Cycle Remove Options

Option	Description
Greedy	Algorithm for optimizing cycle removal
Depth First Search	Performs cycle removal by searching depth first

Table 8 Layering Options

Option	Description
Longest Path Sink	Performs element layering according to the longest path sink
Longest Path Source	Performs element layering according to the longest path source
Optimal Link Length	Algorithm for optimizing link length

Table 9 Initialize Options

Option	Description
Naive	Initializes layout without searching depth
Depth First Search Outward	Initializes layout by searching depth first outwardly
Depth First Search Inward	Initializes layout by searching depth first inwardly

Table 10 Crossing Reduction Options

Option	Description
Iterations	Click the up or down arrows to specify the number of iterations for crossing reduction
Aggressive	Check this box for aggressive crossing reduction

Table 11 Layout Options

Option	Description
layerSpacing	Click the up or down arrows to specify the number of pixels for layerSpacing
columnSpacing	Click the up or down arrows to specify the number pixels for columnSpacing
Left to Right	Performs a horizontal layout from left to right
Top to Bottom	Performs a vertical layout from top to bottom

4.9 Automatically Aligning and Distributing Modeling Elements

In order to neaten the display of your Business Process's modeling elements, you can automatically align and distribute Business Process modeling elements by selecting the **Align or Distribute** drop-down menu. The following procedure provides the steps for automatically aligning and distributing modeling elements on the eInsight Business Process Designer canvas.

To automatically align or distribute modeling elements

1. Click and drag over the portion of your Business Process model that you want to align or distribute.
2. In the eInsight toolbar, select the **Align or Distribute** drop-down menu.
3. Select the type of automatic alignment or distribution you want eInsight to execute.

Table 12 Align or Distribute Menu

Menu Item	Description
Align Left	Aligns elements vertically along their left edges
Align Center	Aligns elements vertically through their centers
Align Right	Aligns elements vertically along their right edges
Align Top	Aligns elements horizontally along their top edges
Align Middle	Aligns elements horizontally through their middles
Align Bottom	Aligns elements horizontally along their bottom edges
Distribute Horizontally	Distributes elements horizontally
Distribute Vertically	Distributes elements vertically

Chapter 5

Configuring Business Process Models

This chapter provides the background information you need to configure Business Process models.

Most of the advanced modeling elements and some of the basic modeling elements allow you to configure settings that customize your Business Processes.

What's in This Chapter

5.1 Configuring Modeling Elements

Some modeling elements have configuration options. This section describes those elements and how to configure each option.

5.1.1 Incorporating Business Rule Activities Into a Business Process

The Business Rule Activity is used to map and manipulate data in the Business Rule Designer. You can also add a Business Rule to some links for the same purpose.

Creating Business Rule Links

You can configure logic in a Business Rule Activity or add a Business Rule to a link.

To add a Business Rule Activity

1. From the Business Process toolbar, select and drag the Business Rule Activity to the Business Process Designer.
2. Click the **Display Business Rules** icon on the toolbar.

The **Business Rule Designer** appears in the lower part of the **Business Process Designer.**

To add a Business Rule to a link

1. Right-click a link that you have created.
2. Select **Add Business Rule**.
3. Click the **Display Business Rules** icon on the toolbar.

   The **Business Rule Designer** appears in the lower part of the **Business Process Designer**.

Configuring Business Rules

The Business Rule Designer allows you to configure relationships between Input and Output Attributes. Some attributes are automatically created for each Activity when you drag and drop a component on the Business Process Designer (as shown in Figure 15).

The Business Rule Designer appears when you click the **Display Business Rule Designer** icon (as shown in Figure 15). It is active when you:

- Add or select a link with a **Business Rule**.
- Add or select a **Business Rule Activity**.

Figure 15 Business Rule Designer

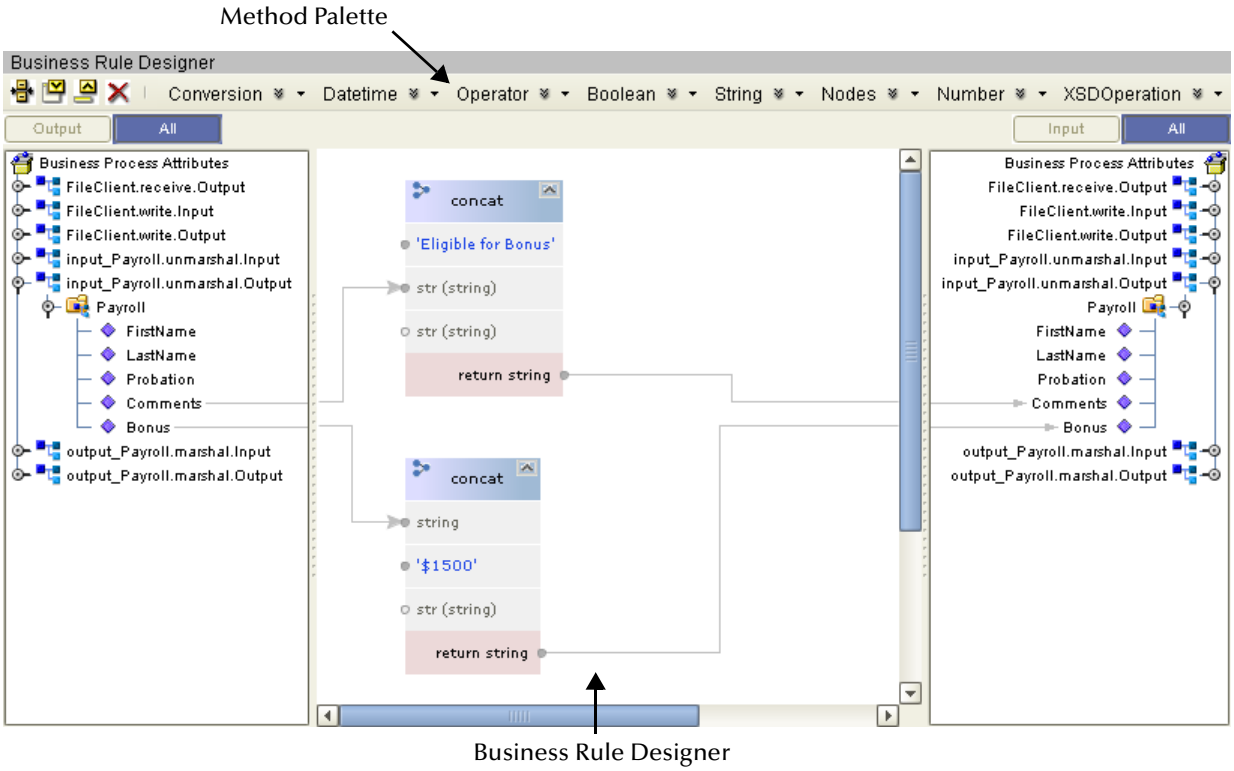
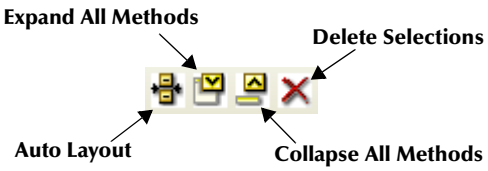


Figure 16 Business Rule Toolbar



To automatically arrange Business Rules

- At the left side of the Method Palette toolbar, select the Auto Layout icon.

To expand all Business Rule Methods

- At the left side of the Method Palette toolbar, select the Expand All Methods icon.

To collapse all Business Rule Methods

- At the left side of the Method Palette toolbar, select the Collapse All Methods icon.

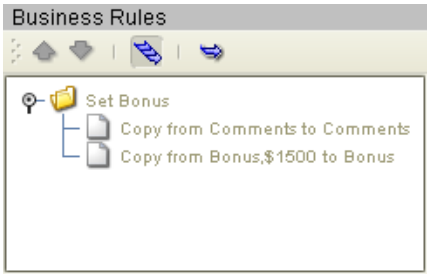
To delete Business Rule Methods

- At the left side of the Method Palette toolbar, select the Delete Selection icon.

Editing Business Rules

The Business Rules Editor provides an advanced view of the business rules for your Business Process (See Figure 17).

Figure 17 Business Rules Editor

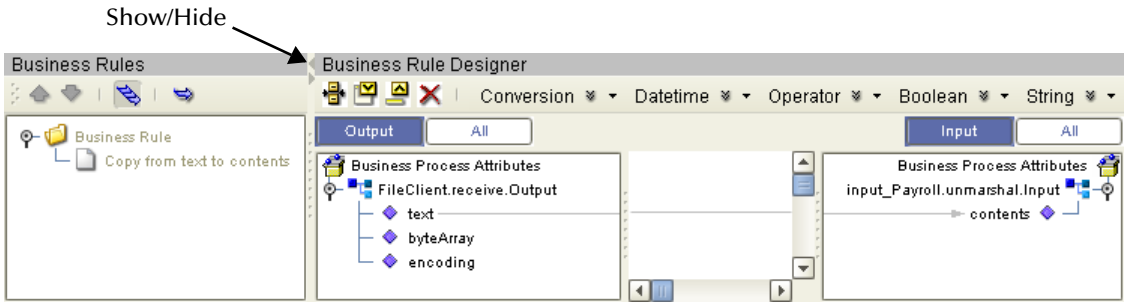


To Show/Hide the Business Rules Editor

From the Business Rule Designer view, you can access the Business Rules Editor.

1 Click the **top gray triangle** to the left of the Business Rule Designer title bar to show the Business Rules Editor (see Figure 18).

Figure 18 Show/Hide Business Rules Editor

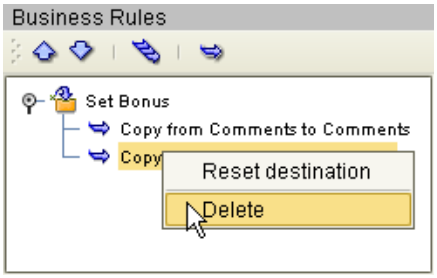


2 Click the **top gray triangle** to hide the Business Rules Editor.

To Remove a Rule

1 Right-click a rule, as shown in Figure 19.

Figure 19 Delete Rule



2 Select **Delete** to remove the rule.

5.1.2 Activating the Reset Destination Feature

Reset Destination resets a Business Process Attribute to an empty state before performing a mapping. Since this can create performance overhead, the default setting is off.

When a Business Process Attribute with repeating nodes is continually reused such as in a Loop Activity, it might be necessary to reset the Attribute value to an empty state.

When eInsight populates these nodes during the looping process, it overwrites the data in the Business Process Attribute. If the Attribute contains more information than will be overwritten, there is leftover data in the node. In this case, extraneous information appears that does not reflect the current intended value of the Attribute. In addition, it is important to activate the Reset Destination option on the first rule, to ensure that the first action in mapping process resets the Attribute to an empty state. The Reset Destination feature can be set in the Business Rules Editor.

To activate Reset Destination

1 From the Business Rules Editor, select the first Rule.

2 Right-click the first Rule and select **Reset Destination**.

The option now appears with a check to indicate that Reset Destination is activated for the selected rule.

The Reset Destination option is also useful when creating a Business Process that includes a User Activity inside of a While Loop. The purpose of the Reset Destination option is to create an output container.

5.1.3 Using the Method Palette

Use the Method Palette in the Business Rule Designer (as shown in Figure 15) to configure data passed between input and output nodes. You can drag and drop a method from the Method Palette to the Business Rule Designer and then configure the method.

See **"Method Palette" on page 201** for more information about each method available in the Method Palette.

5.2 Editing Business Process Properties

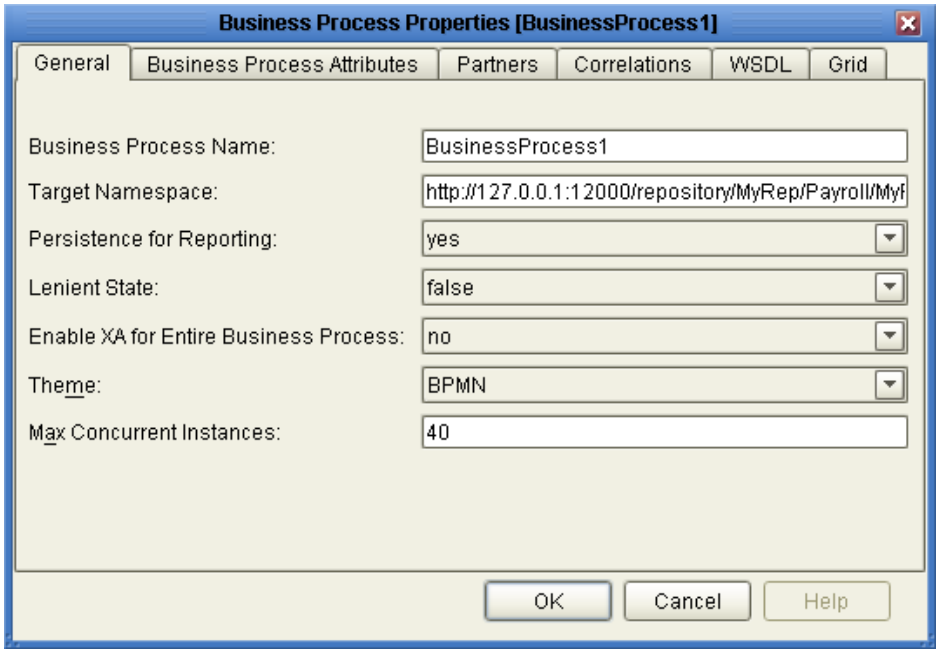
Each Business Process has a set of properties that you can change and create. These properties provide rapid creation and deletion of Business Process attributes. eInsight uses this information to automatically create the appropriate Business Process attributes and input/output structures, for use in the Business Rule Designer.

To edit Business Process Properties

1. Right-click the **Business Process** you want to edit.
2. Select **Properties**.

   The **Business Process Properties** dialog box appears as shown in Figure 20.

Figure 20 Business Process Properties: General Tab



5.2.1 Editing General Properties

The General Tab is the first tab you see when you begin to edit a Business Process property. You can change the Business Process name, edit the target namespace and select the Persistence State from this tab.

To edit General Business Process Properties

1 From the General tab, you can edit:

- **Business Process Name**—Change the default name.
- **Target Namespace**—address of the Business Process.
- **Persist for Reporting**—See **"Configuring Persistence for a Business Process" on page 102** for more information.
- **Lenient State**—The Lenient State property specifically applies to projects that are imported from Java CAPS 5.0.0, to Java CAPS 5.0.4, or Business Processes from other third-party vendors. These projects do not contain the updated optional node assignments and will throw an exception which kills the process instance. The values are:
  - **true**: Adds the attribute `sbynruntime:processLenient="true"` to the BPEL Process tag. This in turn causes any Copy/Write Activity that would throw an exception, to be skipped. A *false* is returned as an evaluation of the condition that has thrown a fault, overriding those settings you might have set for the switch block with the decision gate mapper.
  - **false**: No attribute is added. This is the default property. If you do not set this, any Lenient flag on the individual copy statement has the same effect.

- **Enable XA for Entire Business Process**—Enables XA functionality for the entire Business Process rather than at the Activity level. You can enable Activity level XA functionality in the Activity's Property Sheet.
- **Theme**—The default Theme is BPMN. Select Custom 1 for a different look.
- **Max Concurrent Instances**—Specifies the maximum number of instances for each Business Process in a Project that can be processed by the eInsight Engine at a given time. If the engine receives additional requests, then these requests are placed in a waiting state. As soon as any of the instances being processed is completed, one of the waiting requests is obtained for processing. A higher value for this property results in higher memory requirements. Memory requirements are also based on the type of Business Process. Assume that two Business Processes have the same value for this property. The Business Process that has more defined variables will require more memory. The suggested range is from 40 to 1000.

2 Click **OK** to Save your changes and exit the **Business Process Properties** dialog box.

5.2.2 Editing Business Process Attributes

Business Process Attributes are data values used by a Business Process. They make it possible to share data between activities in a Business Process as well as move data to and from the components that implement those activities. Complex structures such as OTDs and Collaborations are represented automatically in the Project Explorer and are available for use in your Business Process.

Some examples of Business Process Attributes are:

- customer names
- addresses
- order quantities
- item descriptions

Business Process Attributes are used to pass values between the Business Process and external sources. Business Process Attributes can also be assigned to specific activities. For example, the customer name is passed to an order process from the originating source. The customer name may be used by several of the activities in the Business Process and is included in the Business Process output.

eInsight can pass all or part of a complex structure or it can even assemble a composite input to a component or web service from multiple Business Process attributes.

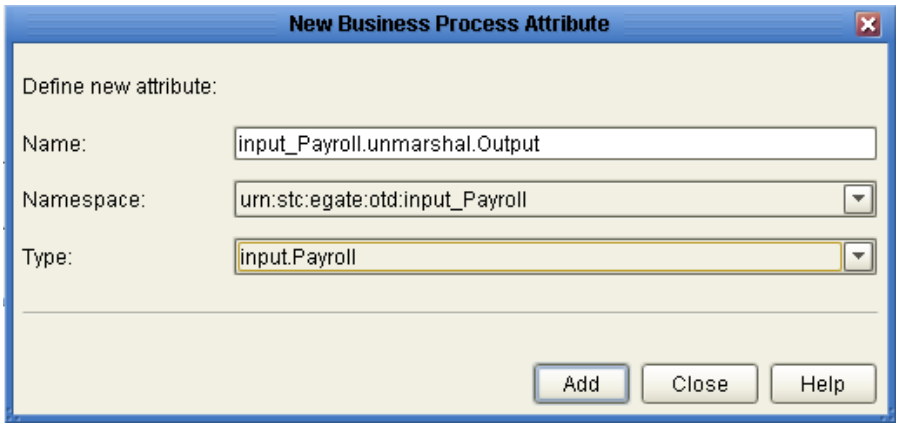
To create a new Business Process Attribute

1 Select the **Business Process Attributes** tab (see Figure 22).

2 Select **New** to add a **New Business Process Attribute**.

The **New Business Process Attribute** dialog box appears as in Figure 21.

Figure 21 New Business Process Attribute



3 From this dialog box, complete the following information:

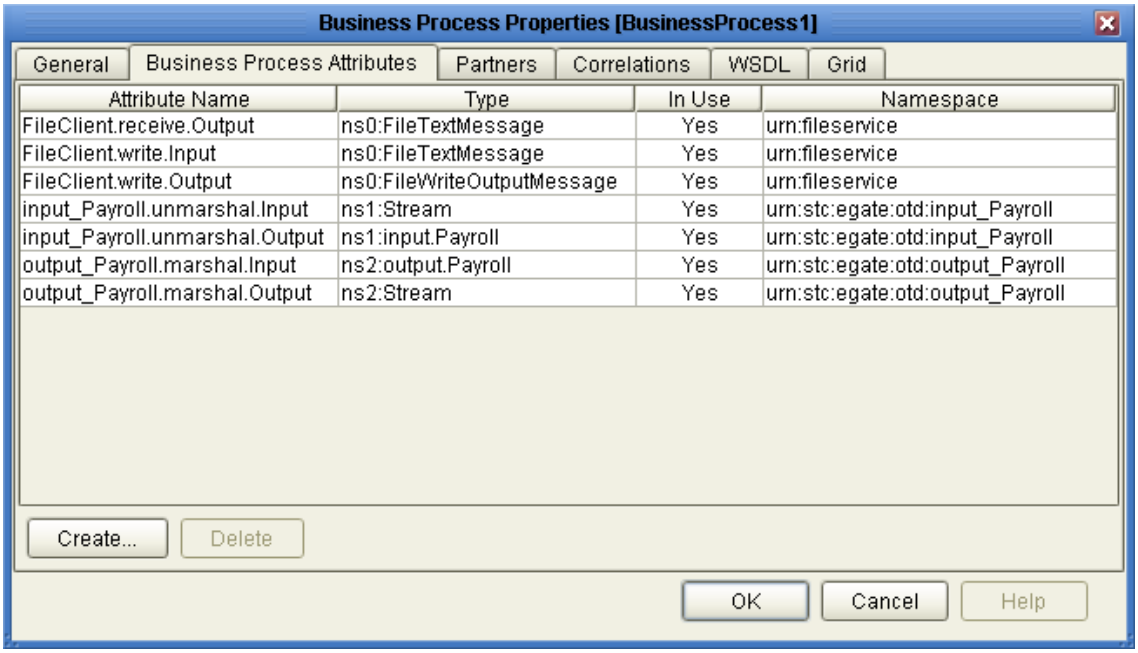
- Enter a Name for the attribute.
- Select or browse for an existing Namespace**.**
- Select an available Type for your attribute.

4 Click **Add** to Save the attribute or Close to return to the **Business Process Properties** dialog box.

To edit a Business Process Attribute

1 Select the **Business Process Attributes** tab (see Figure 22).

Figure 22 Business Process Properties: Business Process Attributes Tab



2 Select an existing attribute and:

- **Rename**: Select and double-click the attribute name to rename it.

Note: *Some attributes cannot be renamed.*

- **Delete**: Select **Delete** to remove the attribute.

3 Click **OK** to Save your changes and exit the **Business Process Properties** dialog box.

5.2.3 Editing Partners

The Partner is an abstracted identification for an external system that will appear in the **Binding** dialog box within the Connectivity Map Editor. Multiple activities can use the same external system – hence, multiple Activities may have the same Partner. By default, eInsight assigns this identification to speed up and automate the model development.

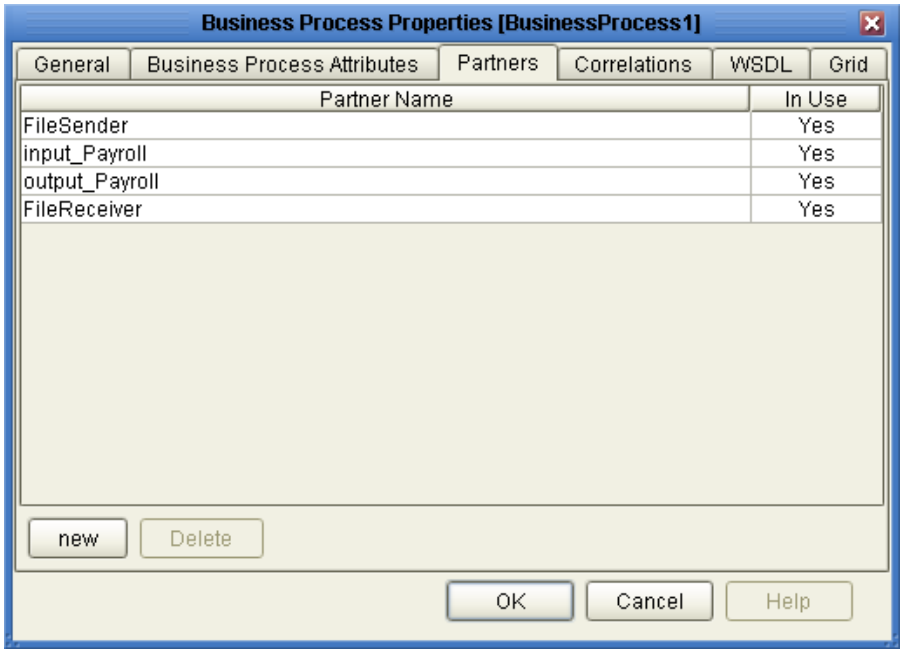
When creating a Business Process that will be used as a sub-process, you need to create a partner and associate it with the receive or receive/reply pair. See **"Incorporating Sub-processes Into Business Models" on page 67** for more information.

Creating New Partners

To create a New Partner

1 Select the **Partner** tab (see Figure 23).

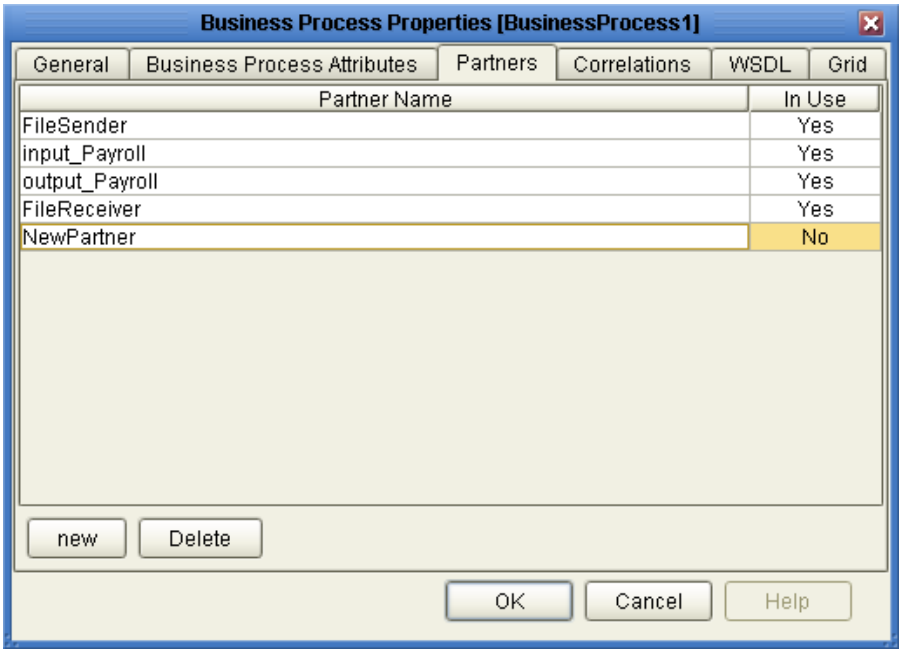
Figure 23 Business Process Properties: Partner Tab



2 Select **New** to add a **New Partner**.

The **New Partner** is added to the Partner list, as shown in Figure 24.

Figure 24 New Partner



3 Click the **Partner name** to rename the Partner.

Deleting Partners

To delete a Partner

You can only delete a Partner that is not in use.

1 Select the **Partner** tab (see Figure 23).

2 Select the Partner name that you want to remove.

3 Select **Delete** to remove the Partner.

The **New Partner** is removed from the Partner list.

Selecting a Partner for an Activity

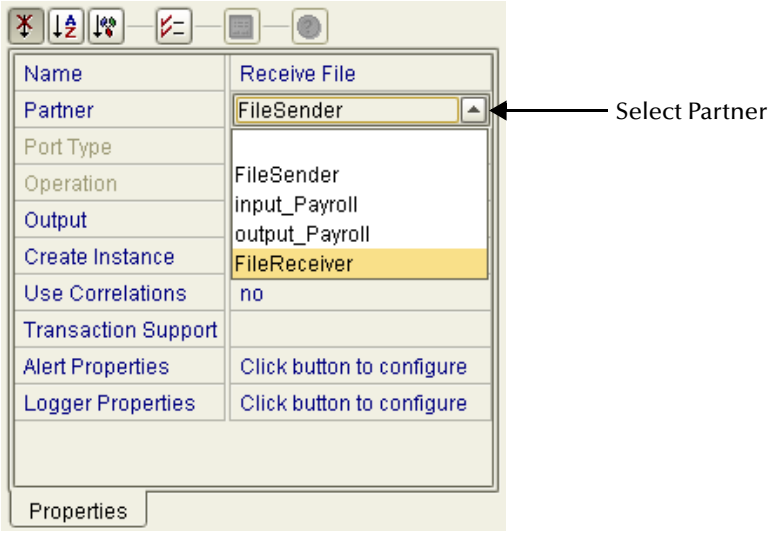
To select a Partner for an Activity

1 Select an Activity from the Business Process.

2 Click the **Show Property Sheet** icon from the eInsight toolbar.

The **Activity**'s property sheet appears, as shown in Figure 25.

Figure 25 Activity Properties



3 Click the **Partner** field and select or change the default Partner from the drop-down list.

Creating Unique Partner Names

If you are invoking multiple entities such as a web services, JMS messages, or connectors such as eWays, you must create unique Partner Names for those entities. This enables you to successfully associate those entities in your Deployment Profile and deploy your Project.

To create new Partners and Associate them successfully

1 Right-click your Business Process and select Properties.

2 Select the Partners tab.

3 Create a new Partner and provide a unique Provider Name.

4 In the Business Process, select the associated Business Process entity and click the Show Property Sheet button. In the Property Sheet's Partners drop-down list, select the newly created Partner.

5 In your Connectivity Map, rather than seeing only one Partner for multiple entities, you see a unique Partner for each entity. Create the necessary bindings.

5.2.4 Editing Message Correlations

eInsight provides the means for matching existing Business Process instances to messages that are arriving into a Business Process. *Correlation keys* are individual data values contained within both the incoming message and the eInsight engine. When arriving messages contain data that matches the configured correlation keys, unique Business Process instances then continue processing on to the next step of a given Business Process. The following procedures are involved in message correlation.

- Creating *correlation keys*

- Adding *correlation sets*
- Binding correlation sets to Activities
- Initializing correlation sets

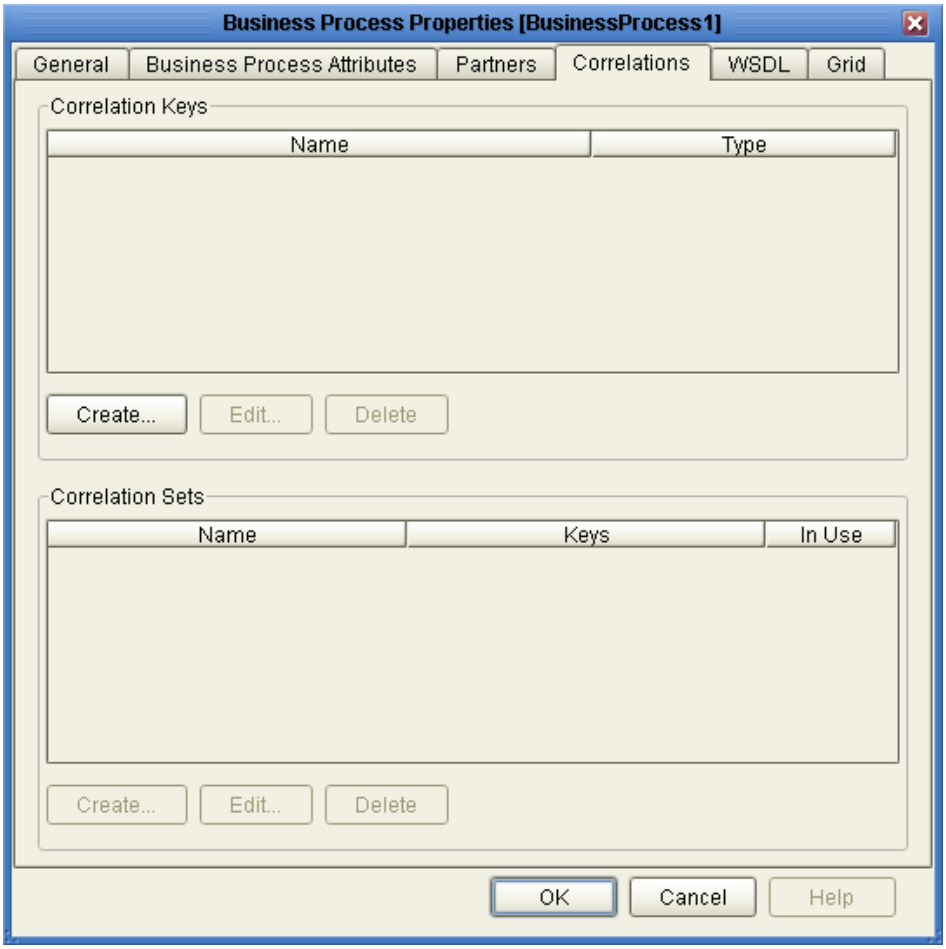
Creating Correlation Keys

A *correlation key* is a value that you can assign to a Business Process, like a Purchase Order number. The correlation key provides a way to associate and route information about specific Business Process instances. For asynchronous message exchange between components, you must implement correlation of the instance identification. An example of when you use asynchronous message exchanges is when you create a Receive Activity in the middle of a Business Process.

To create a Correlation Key

1 Select the **Correlations** tab (see Figure 26).

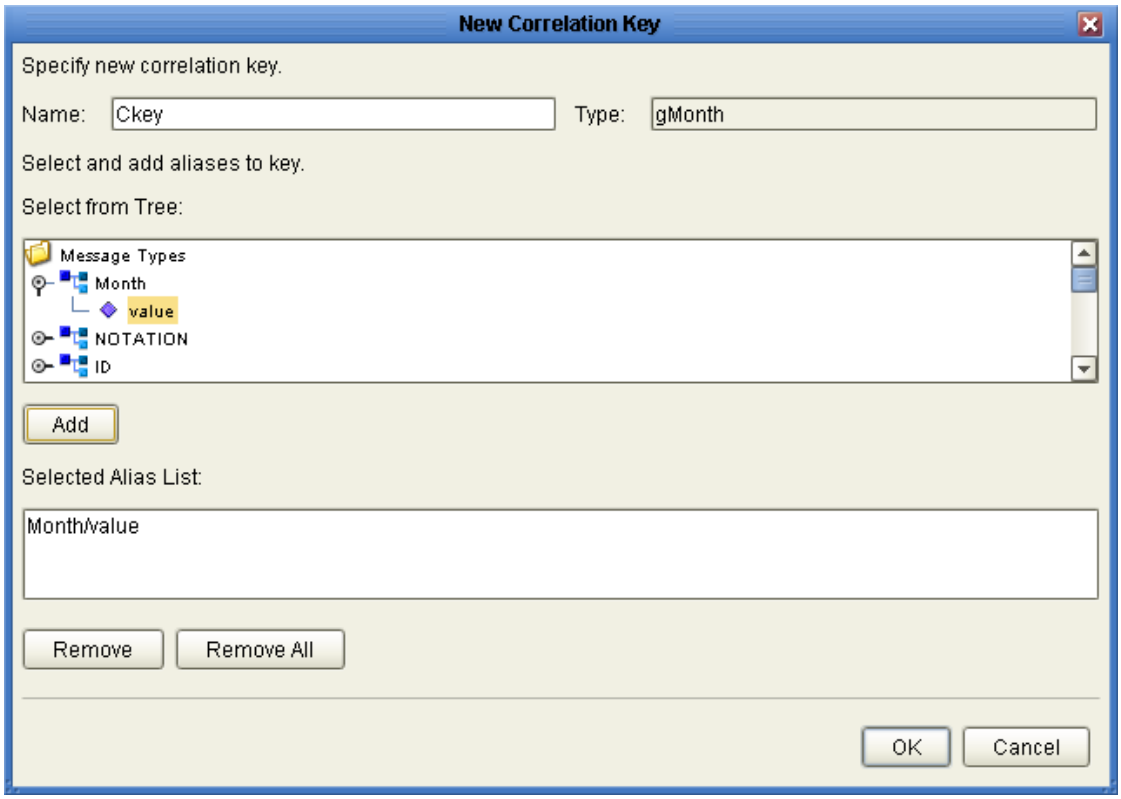
Figure 26 Business Process Properties: Correlations Tab



2 Select **Create** from the Correlation Keys section of the dialog box.

The **New Correlation Key** dialog box appears as shown in Figure 27.

Figure 27 New Correlation Key Dialog Box



3 From the **New Correlation Key** dialog box:

A Enter a **Name** (alias) for the Correlation Key

B Select a Message Type from the list to alias. Select one or more correlation keys that comprise a unique identifier for a step in a Business Process.

4 Click **Add** to save the new alias to the **Selected Alias List**

Click **OK** to save your changes and exit the **New Correlation Key** dialog box.

Adding Correlation Sets

Correlation sets are groups of properties shared by all messages in the group. A correlation set matches messages and conversations with a Business Process instance. For example, you may wish to assign a Purchase Order number and an invoice number to a transaction, so that all information about the purchase and payment are associated.

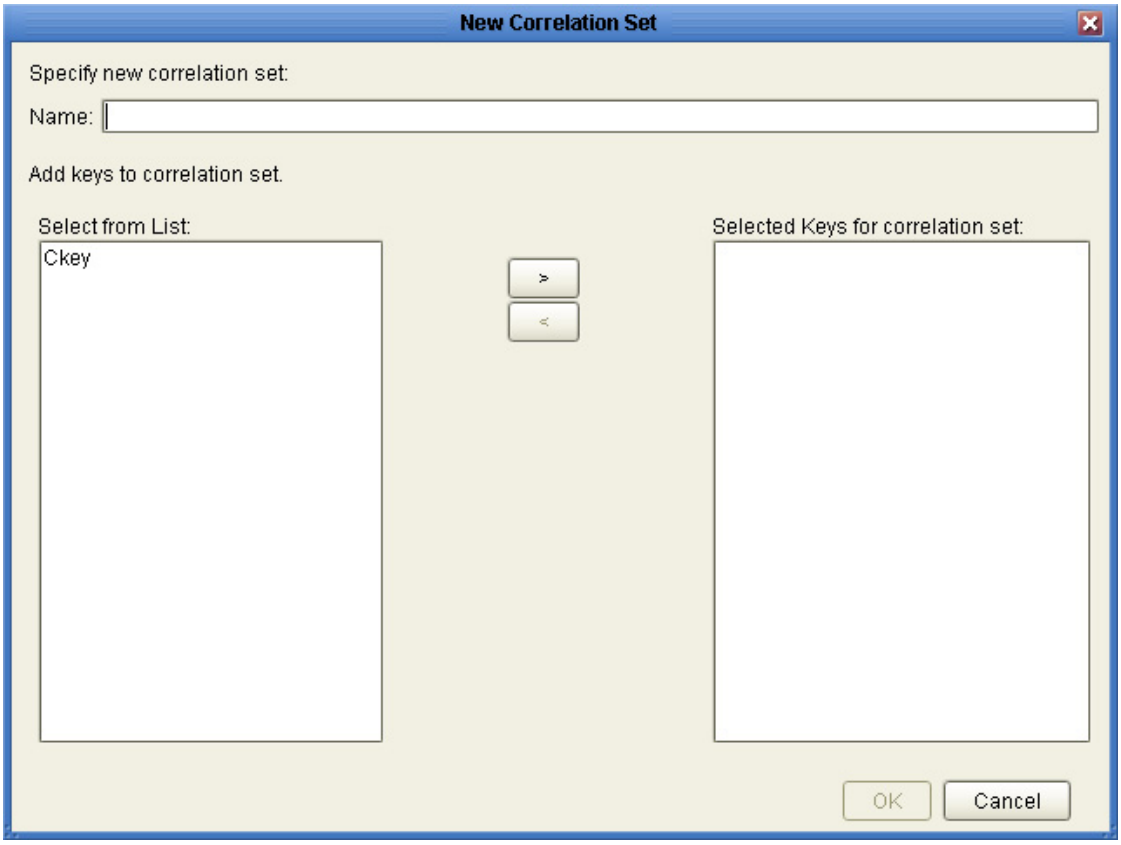
To add a Correlation Set

1 Select the **Correlations** tab (see Figure 26).

2 Select **Create** from the Correlation Set section of the dialog box.

The **New Correlation Set** dialog box appears as shown in Figure 28.

Figure 28 New Correlation Set Dialog Box



3 From the **New Correlation Set** dialog box:

A Enter a **Name** for the new Correlation Set.

B Select **Correlation Keys** from the list to add to the Correlation Set.

C Click the **arrow** button to move your selections to the Correlation Set.

4 Click **OK** to save your changes and exit.

Binding Correlation Sets to Receive Activities

When you use one or more correlation sets within a Business Process, you must first initialize the sets. If you choose to initialize a set within an Activity, you must either choose to use both Business Process Attributes or identify which Business Process Attribute to use.

To bind a Correlation Set to an Activity

1 Select an Activity.

2 Select **Show Property Sheet** from the toolbar.

3 In the **Use Correlations** field, select **Yes.**

Initializing Correlation Sets

Initialize the correlation set before it is used in the Receive. This ensures that the correlation set is created in memory before it is used.

Message Correlation Example

In this example, the Business Process expects to receive three course grades. The courses are Math, English, and Computer Science. Each message contains the course grade, the course type, and a Correlation ID to indicate where this message belongs.

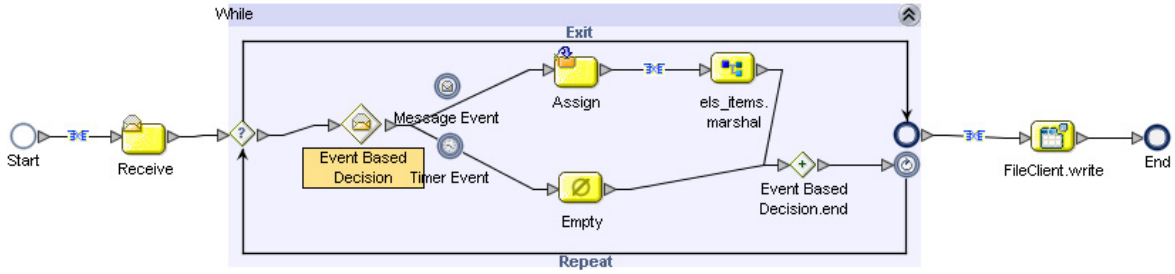
A new message arrives with a Correlation ID of 101. The first thing eInsight does is correlate that message to see if there is a match on the newly arrived message. Since this is the very first message, there is no match and a new instance is created. The second message has a Correlation ID equal to 101 and is forwarded to the same business instance as above. The third message has a Correlation ID of 102. Thus it is forwarded to a new business instance and so on.

This process can continue based on conditions set by the user. This is based on Count or time expiration. A sample Business Process is shown below for Message Correlation. The first Business Process uses a File eWay to read a DTD based message, unmarshal it and then invoke the second Business Process passing in the unmarshaled message.

Figure 29 Message Correlation: First Business Process

The second Business Process receives the unmarshaled message using Event Based Decision and Timer Events. The Event Based Decision and Timer Events are in a While loop. The While continues to loop until either a count has been reached or time has expired. When messages are received, they are stored in containers.

Figure 30 Message Correlation: Second Business Process



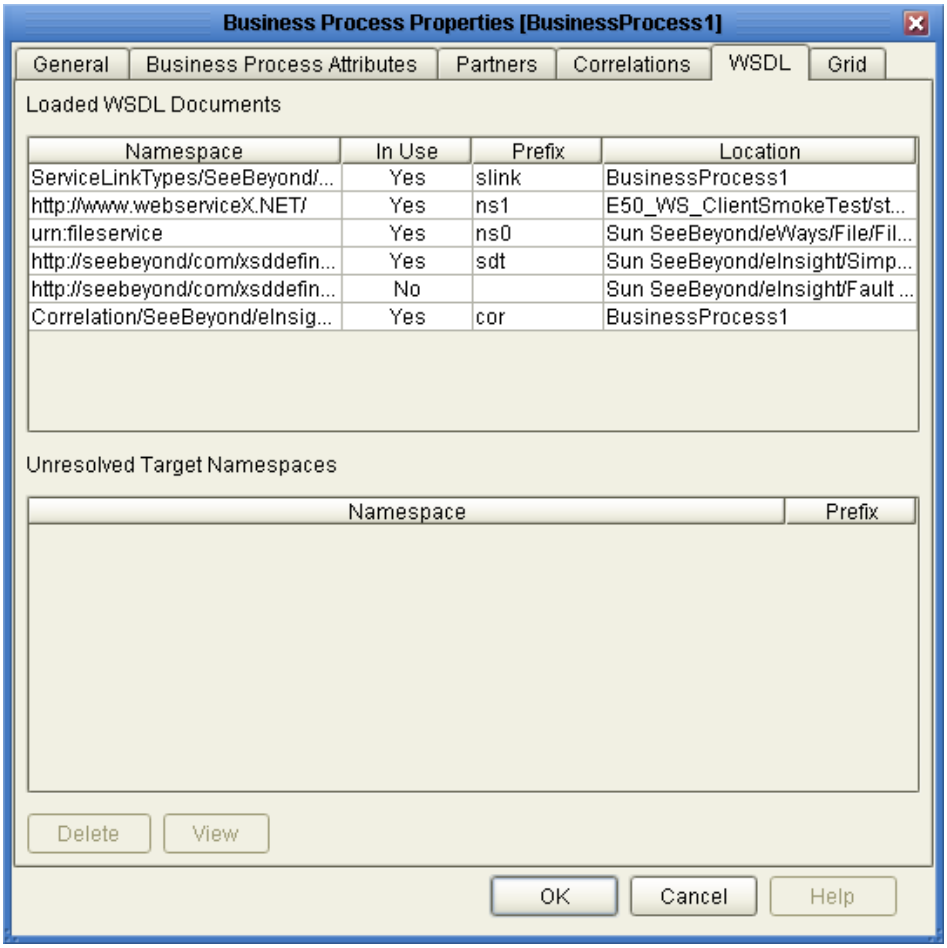
The Timer Event is used to set the expiration time. If time expires, then the loop condition is set to false to terminate the loop. If a message is received, then message counter is incremented and if the maximum number of messages have been received, then loop is terminated. At the end, the date is written to a file.

5.2.5 Viewing WSDL Files

WSDL files are used to invoke and operate web services. WSDL files can be used for web services on the Internet and/or to access and invoke remote applications and databases.

The WSDL tab is available from the **Business Process Properties** dialog box. This tab provides a listing of all loaded WSDL files, which represent predefined Business Process Attributes for use in your Business Process. For troubleshooting purposes, the WSDL tab provides a listing of all unresolved target namespaces. The WSDL tab also provides viewing access to all loaded WSDL files.

Figure 31 Business Process Properties: WSDL Tab



To view a WSDL file

1 Select the **WSDL** tab from the **Business Process Properties** dialog box.

2 Select a WSDL file from the list and click **View**.

3 The WSDL Viewer appears, as shown in Figure 32.

Figure 32 WSDL Viewer

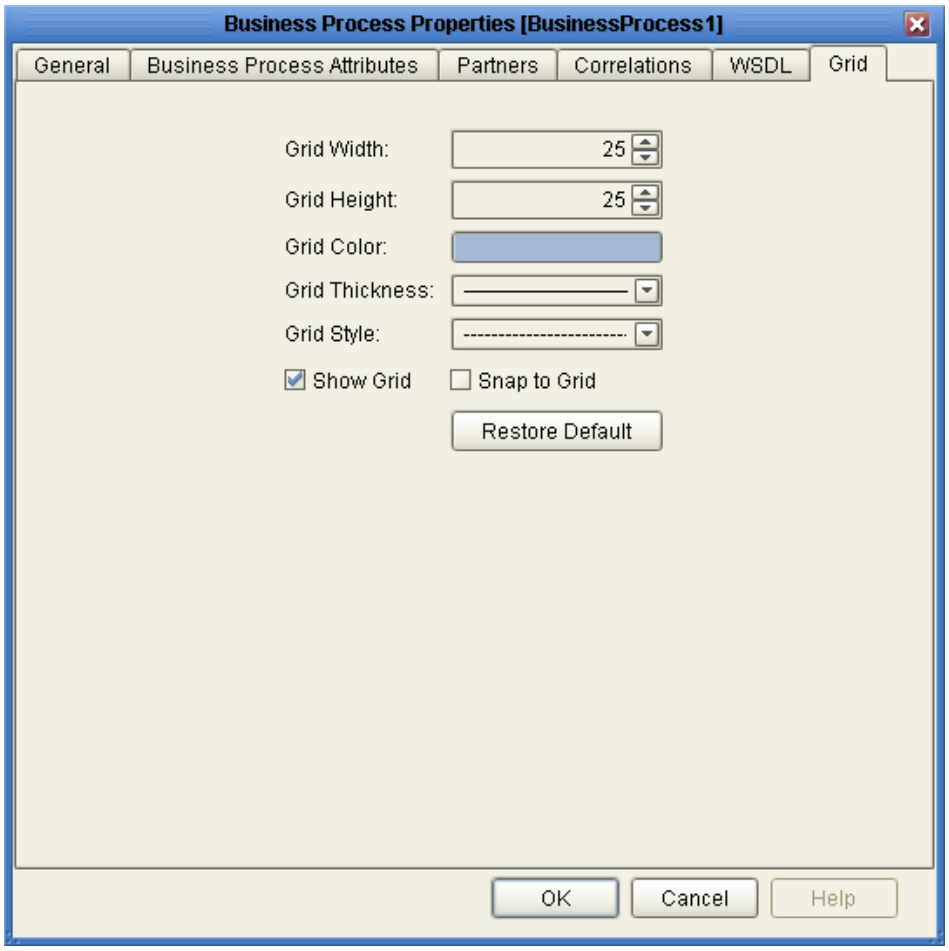
4 From the WSDL Viewer, you can copy and paste WSDL code to a text file.

You cannot edit code in the WSDL Viewer.

5.2.6 Editing Grid Properties

The Grid tab provides a collection of formatting attributes for the Business Process Designer.

Figure 33 Business Process Properties: Grid Tab



By selecting the Grid tab, you can format the following grid attributes.

- **Grid Width**—Distance from vertical line to vertical line in pixels.
- **Grid Height**—Distance from horizontal line to horizontal line in pixels.
- **Grid Color**—Produces a dialog box with three tabs for choosing the color of the grid lines:
  - **Swatches**—An array of colors from which to choose the grid color.
  - **HSB**—A color picker based on Hue, Saturation, and Brightness.
  - **RGB**—A color picker based on 256 brightness levels of Red, Green, and Blue.
- **Grid Thickness**—Three levels of grid line thickness are available:
  - Thin
  - Medium
  - Thick
- **Grid Style**—Three styles of grid line are available:
  - Solid

  - Dashed
  - Dotted
- **Show Grid Checkbox**—Turns the grid on or off.
- **Snap to Grid Checkbox**—Activates or deactivates *Snap to Grid*. When activated, this setting forces objects to gravitate toward the closest grid line.

5.3 Incorporating Sub-processes Into Business Models

Sub-processes are deployed Business Processes that can be invoked within the same Integration Server. When a Sub-process is dropped into a Business Process, the Business Rule Designer is used to configure the input and output attributes for the Sub-process.

Sub-processes are necessary when using the User Activity. See **To create the Sub-process** on page 181 for a detailed example of a Sub-process.

To create the Sub-process

1. Right-click the Repository and select **New Project**.
2. Name the Project.
3. Right-click the Project and select **New Web Service Definition** (WSD object).
4. Edit the WSDL.

   The WSDL functions as the interface to the Sub-process or, in the case of a User Activity, the Pageflow. For detailed information about using the Web Service Designer, see the *Sun SeeBeyond eGate Integrator User's Guide*.
5. Create a Business Process using a **Receive Activity** and link it to the **Start**.
6. Expand the WSD object:

   PortTypes>PortType
7. Select and drag an **Operation** onto the empty **Receive Activity**.

   The Receive Activity becomes an **implement Activity**, and a **Reply Activity** appears.
8. Add an empty **Activity** to the canvas between the **implement** and the **Reply Activities.**
9. Add links between the modeling elements in the Sub-process and add Assignments.
10. Click **Save All**.

To create the Main process

1. Create a Business Process using a **Receive Activity**, an empty **Activity**, and a **Reply Activity**.
2. Expand the **Sub-process** and drag the **Operation** onto the empty **Receive Activity**.

3 Add links between the modeling elements in the main process and add Assignments.

4 Click **Save All**.

Note: *If the Sub-process is to be invoked as a synchronous request/reply web service, the Receive and Reply must have the same partner, portType, and operation.*

Note: *See* **To create the Sub-process** *on page 181 for a detailed example of a sub-process.*

5.3.1 Using Repeating Nodes

For web services/components that contain repeating nodes, the Business Rule Designer displays repeating nodes within the input/output Attributes for each Activity. Repeating nodes contain the repeating icon. For direct node mapping, repeating nodes are used to dynamically populate 1-n values based on the runtime data.

Using Predicates With Repeating Node Values

The XPath predicate functionality allows you to isolate particular elements within repeating nodes at runtime. The predicate functionality allows you to design conditional mappings within a business rule when using Business Process Attributes that contain repeating values.

When assigning values in the Business Rule Designer, you can access the *predicate* feature by selecting repeating nodes or elements of a Business Process Attribute and selecting "New Predicate" from the right-click menu. You use the Predicate Editor to create the conditions. From the Business Rule Designer, you can then map the associated repeating node values (at that point, the condition is in effect for that mapping).

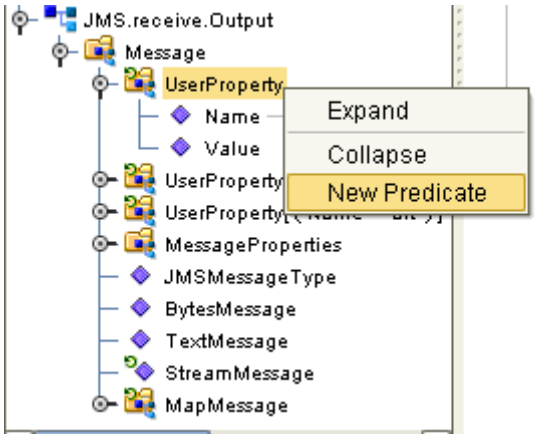
The existence of the condition will appear to the right of the repeating node or element for which the condition has been developed. At runtime, the design condition is used to select the correct element and performs the mapping, as designed.

To create a new predicate

1 From the Business Rule Designer, right-click a repeating node.

2 Select **New Predicate**, as in Figure 34.

Figure 34 New Predicate

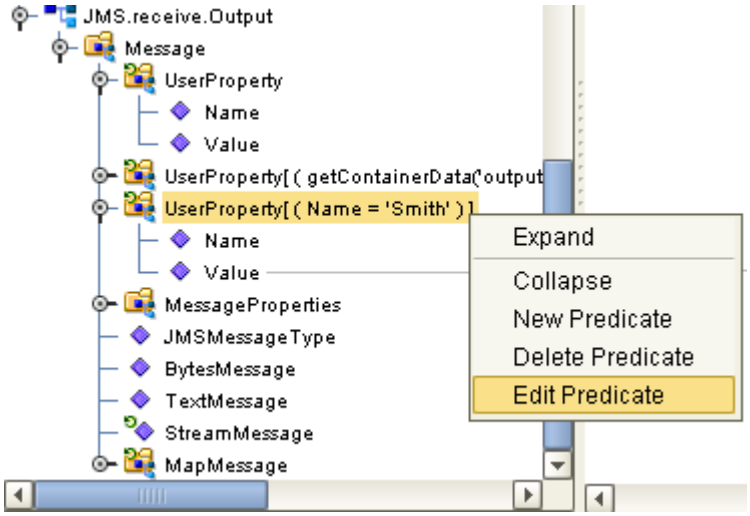


The Predicate Editor opens.

To edit a predicate

1 From the Business Rule Designer, right-click the existing predicate, as shown in Figure 35.

Figure 35 Edit Predicate



2 Select **Edit Predicate** from the menu.

The Predicate Editor opens.

To delete a predicate

1 From the Business Rule Designer, right-click the existing predicate.

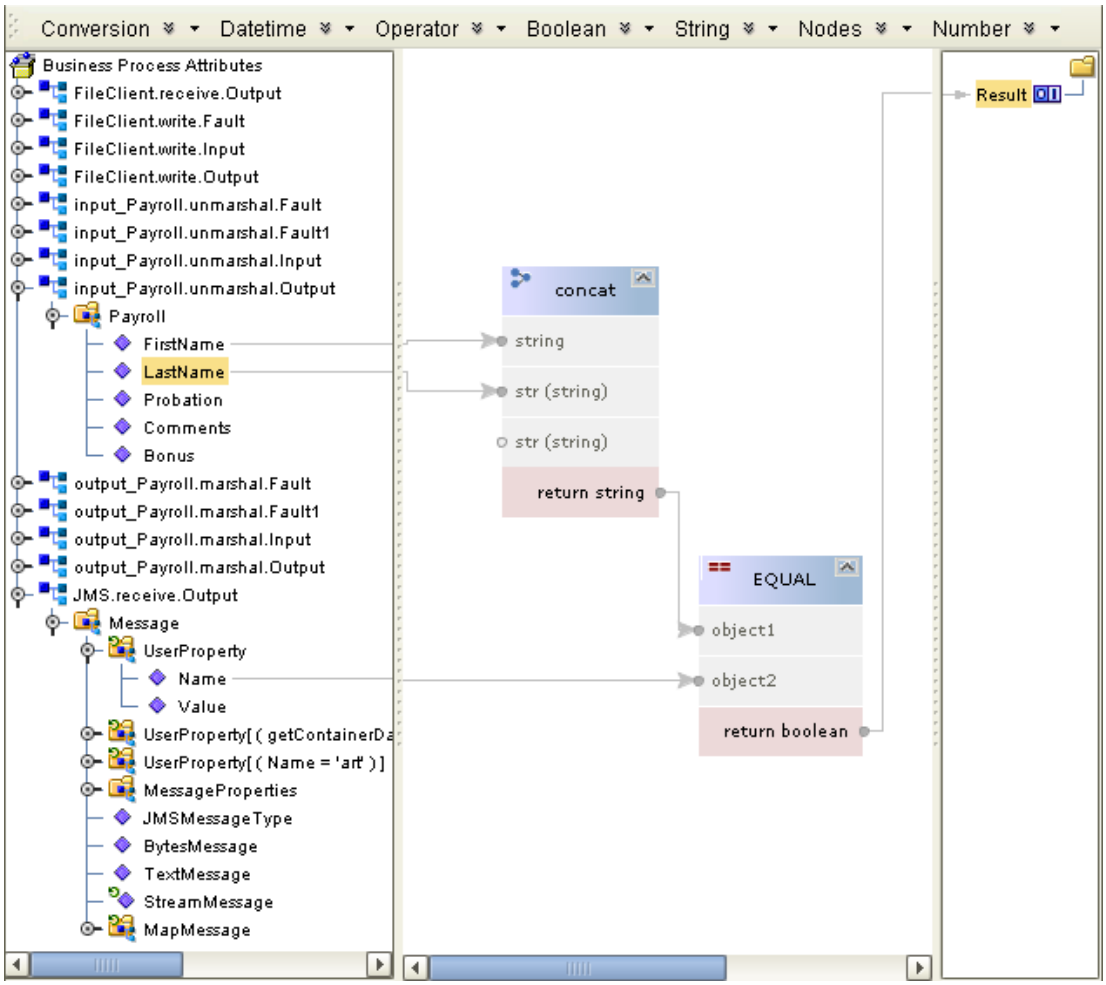
2 Select **Delete Predicate** from the menu.

The Predicate condition is removed.

Predicate Example

The most common use of the predicate functionality will be to create a condition using either runtime Business Process Attribute values or fixed values in an expression, and then create an appropriate mapping for when that condition is found to be true.

Figure 36 Predicate Editor



For instance, Figure 36 illustrates a condition in which the names in one Business Process Attribute must match the “name” in the JMS Message User Property. When the condition is found to be true, the appropriate mapping for “value” will then take place. In addition, only the appropriate value for “value” will be mapped from the series of name/value pairs.

5.4 Linking and Sequencing Business Process Events

Sometimes you want to impose conditions on a set of Events, process a group of Events together, or make a decision contingent upon the receipt or non-receipt of all Events of a certain type. By using eInsight’s Event Linking and Sequencing (ELS) capabilities,

you can sort Events into separate *Containers* and execute Business Rules on Containers of Events rather than on the individual Events. A container's Link Identifier (ID) differentiates Containers and links the Events identified with that Container.

As eInsight retrieves a Message or an Event, it correlates the received Message to a Business Process Instance. If eInsight finds a correlation match, it stores the Message or Event in the Container for that Business Process. Otherwise, it instantiates a new Business Process Instance.

For example, a Business Process handles HL7 Messages that have been broken up with a Continuation Pointer. The Business Process contains logic that detects this condition and defers processing the HL7 Message until it has been completely reassembled. The Container qualifies as "full" when all HL7 Messages for the same Continuation Pointer have been received.

An ELS Example

The eInsight Engine is invoked by Messages or Events sent to it via an eGate connector node such as an eWay or JMS. For example, a Business Process called CalculateGPA expects to receive 3 course grades before a student is qualified for advanced studies based on her grades. Her courses are Math, English, and Computer Science. Each message contains a course grade, a course type, and a Correlation ID to identify the Message's Container.

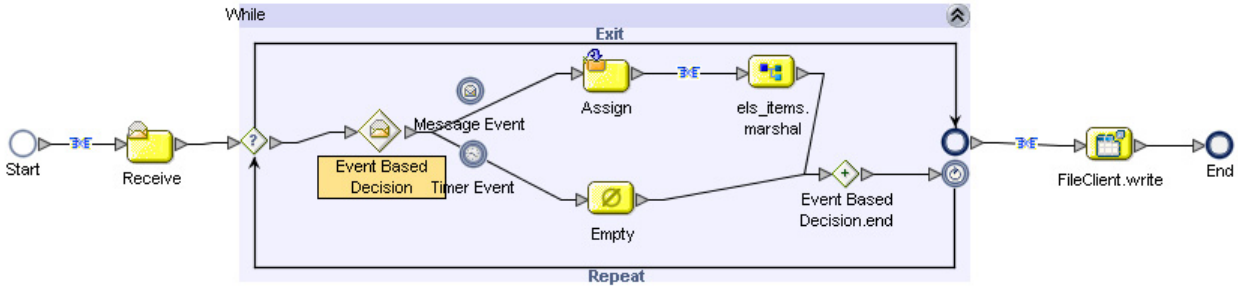
A new Event arrives with Link ID *101*. First, eInsight correlates the message for a match on the newly arrived Event. Since this is the first Event, there is no match. eInsight creates a new Business Process Instance for the new Event. A second Event arrives with Link ID *101*. eInsight correlates the message for a match, finds a match, and forwards the Message to the Container for Link ID 101. A third message arrives with Link ID *102*. Because there is no correlation match, eInsight creates a new Business Process Instance for the new Event. This continues until three grades are received for each course type, the GPA is calculated, and the qualification result is determined. If all of the expected grades do not arrive by the deadline, the student fails to qualify.

The following sample Business Process illustrates ELS. The main Business Process uses a File eWay to read a DTD-based Message, unmarshals it, and invokes a Sub-process. The Sub-process passes in the unmarshaled message.

Figure 37 ELS Main Business Process

The Sub-process receives the unmarshaled message using BPEL *Pick* and *OnMessage* commands. Pick and OnMessage are in a While Loop that terminates when either a count has been reached or time has expired. When a Message is received, it goes in the identified Container.

Figure 38 ELS Sub-process



The *OnAlarm* command is used to set the expiration time. If time expires, the loop condition is set to *False* to terminate the loop. If a Message is received, the Message Counter continues to be incremented, terminating when the maximum number of Messages has been received. Upon termination, the date is written to an output file.

5.5 Exposing a Business Process as a Web Service

You can expose a Business Process as a web service to any web service client. For an overview of creating a web service as well as the details of developing and running a Java CAPS project, see the *Sun SeeBeyond eGate Integrator User's Guide.* The following procedure outlines the high-level steps involved in exposing a simple Business Process as a web service. It uses a Web Service Definition (WSD) that you can import from your eInsight Samples. When you build this project, you publish the WSDL to the Java CAPS UDDI Registry Server. For details about installing and running the Java CAPS UDDI Registry Server, see the *Sun SeeBeyond eGate Integrator User's Guide*.

To expose a Business Process as a web service

1. Import a WSDL document for your Business Process.
2. Create the Business Process.
3. Add a UDDI External System to your Environment.
4. Add a web service server SOAP/HTTP Web Service External System to your Environment.
5. Create the Connectivity Map.
6. Create the Deployment Profile.
7. Build and Deploy the Project.

The remainder of this section explains in some detail what is involved in exposing a Business Process as a web service.

5.5.1 Importing a WSDL Document for Your Business Process

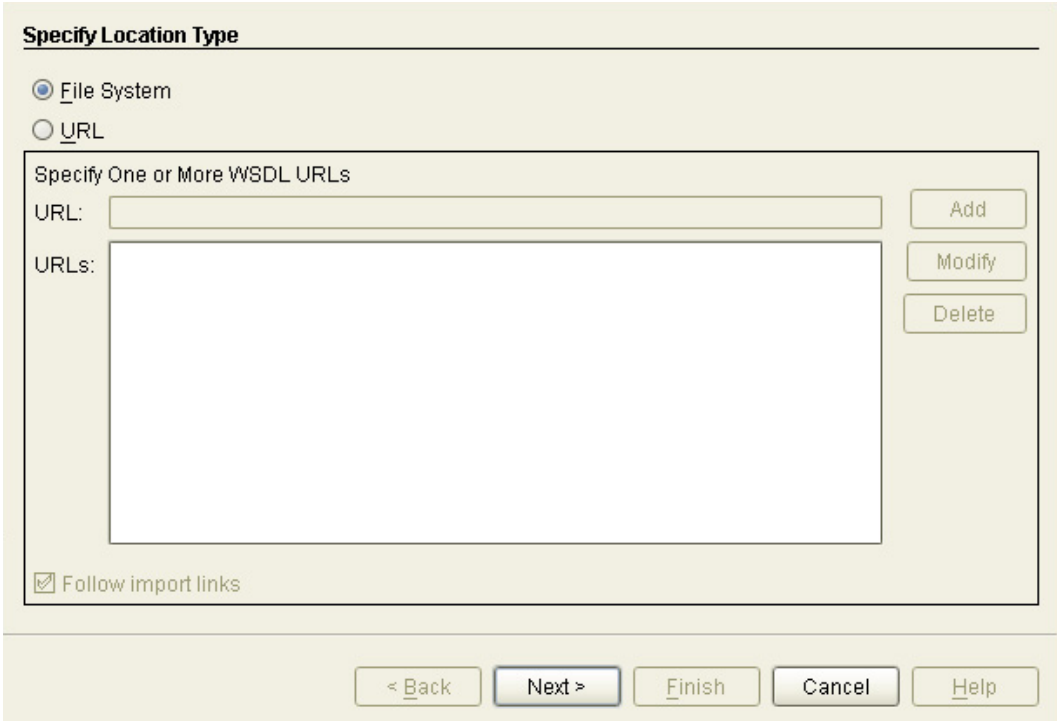
In order to expose your Business process as a web service, you must first define it as a web service. The following procedure provides the steps for importing a WSDL document from the eInsight Samples provided with your eInsight online documentation in the Java CAPS Installer. For details about downloading the Web Services Sample from the Java CAPS Installer, see **"Importing the Web Services Server/ Client Sample" on page 152**.

To import a WSDL document for your Business Process

1. In the Project Explorer create a new Project and name it **WSserver**.
2. Right-click the Project and from the **Import** context menu, select **Web Service Definition**.

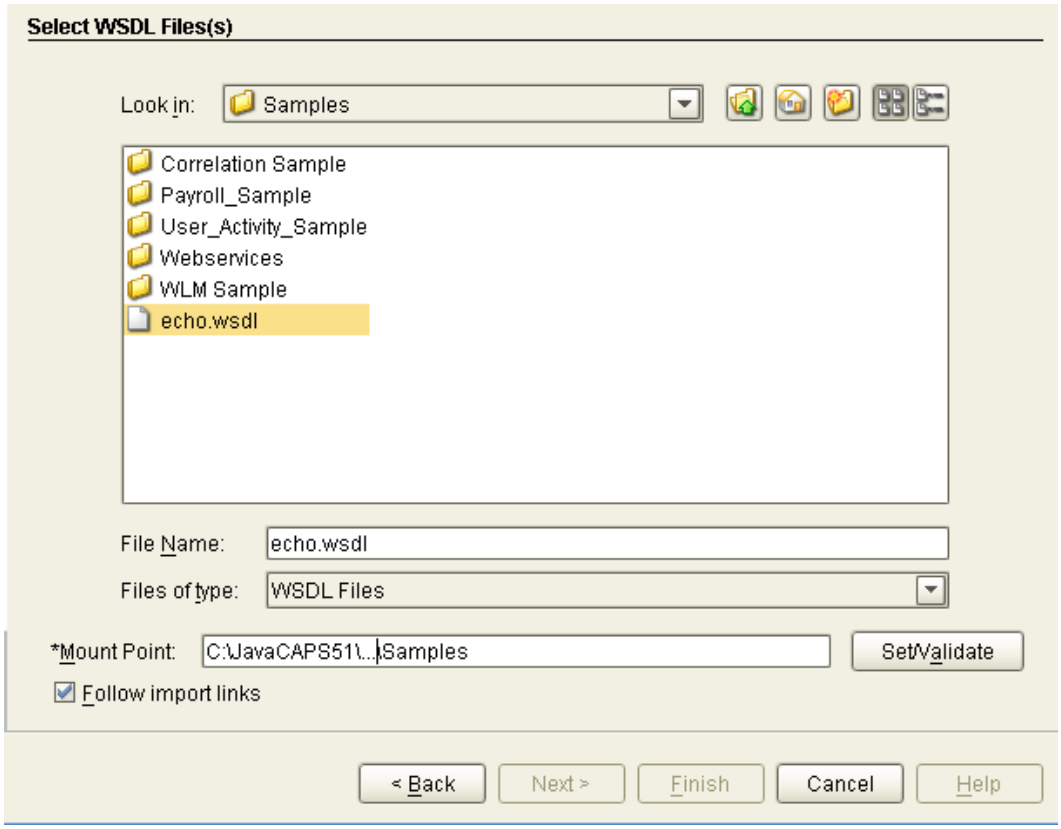
   The **Import WSDL(s)** dialog box appears.

Figure 39 Import WSDL(s) Wizard: Specify Location Type



3. Under **Specify Location Type**, select **File System** and click **Next**.
4. Navigate to your Web Services Sample directory and select the file **echo.wsdl**.

Figure 40 Import WSDL(s) Wizard: Select WSDL File(s)



5 Click **Next** and check the **Import Preview**.

6 Accept the defaults by clicking **Next** and check the **Project Explorer Preview**.

7 Click **Next**.

8 Click **Yes** to import the WSDL.

9 Click **Finish**.

5.5.2 Creating the Business Process

After you have imported your WSD object, you use the eInsight Business Rule Designer to assign the mappings between Business Process Activities. The following procedure provides the steps involved in creating a Business Process that incorporates *implement* and *Reply* Activities. For simplicity, this Business Process does not process the request.

To create the Business Process

1 In the Project Explorer, right-click your project and select **New Business Process**.

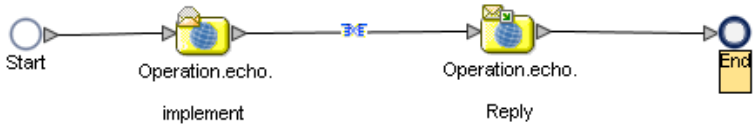
2 Name the Business Process.

3 In the Project Explorer, expand the **WSD object** to expose **PortTypes>PortType>Operation**.

4 Drag and drop the Operation object onto the eInsight canvas. This creates two Activities: *implement* and *Reply*.

5 Connect the two Activities. Figure 41 shows an example of this type of Business Process.

Figure 41 Business Process Exposed as a Web Service

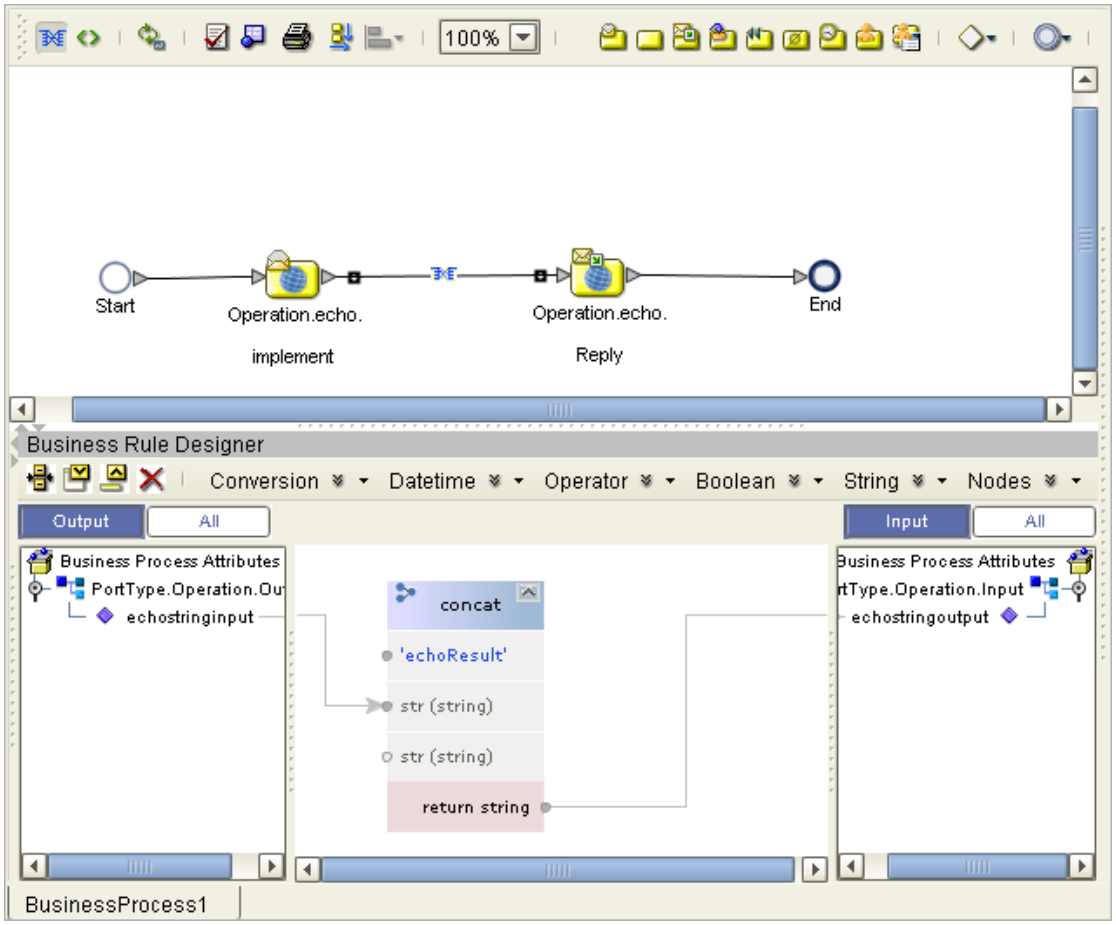


6 Using the Business Rule Designer, drag a **concat** method to the canvas.

7 Add a **literal** to the concat to serve as a result label: **echoResult:**

8 Add an Assignment between the **implement** Activity and the **Reply** Activity, using the concat to label the result, as in Figure 42.

Figure 42 Assignment Between a Receive and a Web Service Client



9 Click **Save All**.

5.5.3 Adding a UDDI External System to Your Environment

The following procedure provides the steps for adding a UDDI External System to your Environment.

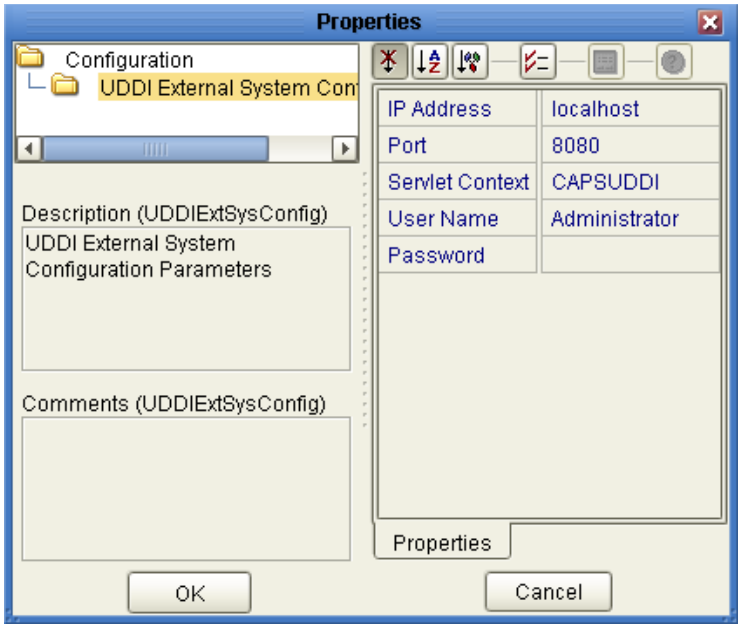
To add a UDDI External System to your Environment

1. Right-click your environment.
2. Select **New UDDI External System**.
3. Enter a name and click **OK**.

   The UDDI External System appears in the Environment tree.
4. Right-click the UDDI External System and select **Properties**.

   The **UDDI Properties** dialog box appears.

Figure 43 UDDI Properties Dialog Box



5. Add the Password. The default is **STC**.
6. Click **OK**.

5.5.4 Adding a SOAP/HTTP Web Service External System to Your Environment

The following procedure provides the steps for adding a SOAP/HTTP Web Service External System to your Environment.

To add a SOAP/HTTP Web Service External System to your Environment

1. Right-click your environment.
2. Select **New SOAP/HTTP Web Service External System**.

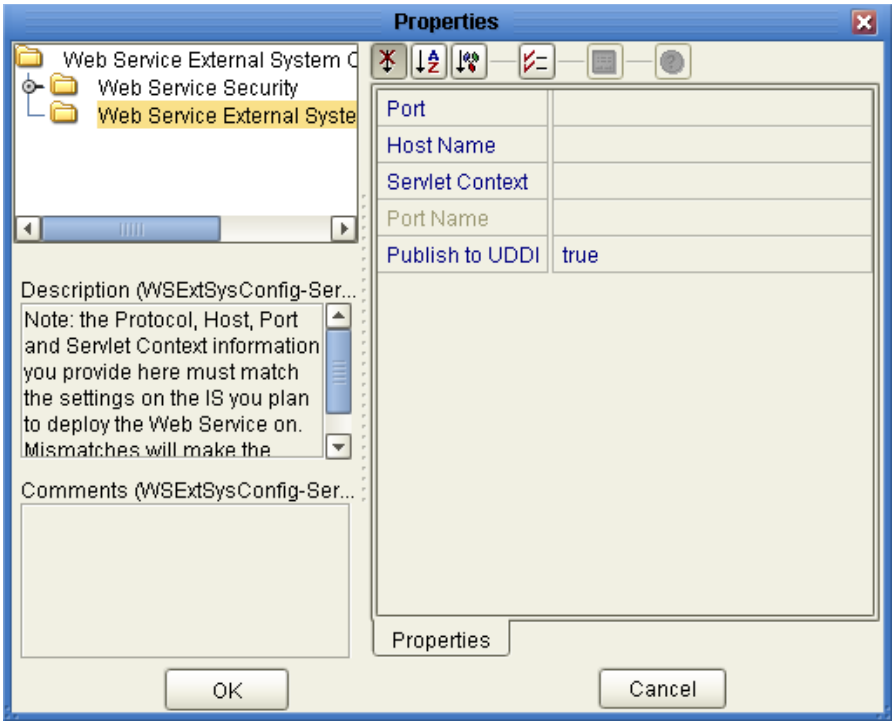
3 Enter a name and ensure that system type is **Server**.

4 Click **OK**.

5 Right-click the SOAP/HTTP Web Service External System and select **Properties**.

The **SOAP/HTTP Web Services External System** dialog box appears.

Figure 44 SOAP/HTTP Web Services External System Dialog Box



6 In the navigation tree, select **Web Service External System Configuration**.

7 Enter the following:

- Port: **18001**
- Host Name: **localhost**
- Servlet Context: **WSServer**

8 Click **OK**.

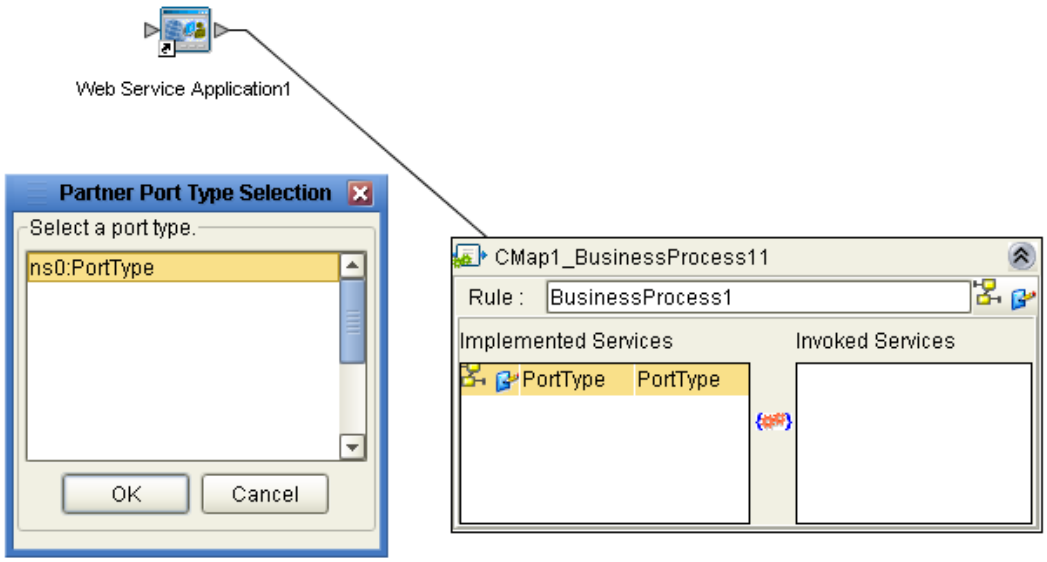
9 Click **Save All**.

5.5.5 Creating the Connectivity Map

After you have created your Business Process, create a Connectivity Map by dragging the Business Process into the Connectivity Map Editor and dragging a Web Service External Application from the Connectivity Map Editor toolbar to the canvas.

Expand the Business Process by double-clicking it and create a WSDL binding between Implemented Services and the Web Service External Application.

Figure 45 Connectivity Map: WSDL Binding



Click **OK** to accept the Partner Port type Selection and the WSDL binding. For details about creating Connectivity Maps, see the *Sun SeeBeyond eGate Integrator User's Guide.*

5.5.6 Deploying the Project

After you have created your project's Connectivity Map, created a Deployment Profile, and built your project, click **OK** to publish the WSDL of the web service to the UDDI Registry. After you have built your project, you are ready to deploy. For details about deploying Java CAPS projects and implementing web services with SSL, see the *Sun SeeBeyond eGate Integrator User's Guide.*

5.6 Invoking an External Web Service from a Business Process

You can develop a Business Process that invokes an external web service (as a web service client) and prompts the external web service for a reply. The following procedure provides the steps for developing a Business Process that takes a request from a web service client, invokes an external web service for the results, and returns the results to the web service client. It expands on the case covered in **"Exposing a Business Process as a Web Service" on page 72**.

To invoke an external web service from a Business Process

1. Import a WSDL document for your Business Process.
2. Create the Business Process.

3 Add a web service client SOAP/HTTP Web Service External System to your Environment.

4 Add a File External System to your Environment.

5 Create the Connectivity Map.

6 Create the Deployment Profile.

7 Build and Deploy the Project.

5.6.1 Importing a WSDL Document from the UDDI Registry

This case uses the same WSDL document from **"Exposing a Business Process as a Web Service" on page 72**. Previously, you exposed your Business Process as a web service. In doing so, you published its WSDL to your Java CAPS UDDI Registry. Rather than importing the WSDL from your eInsight Samples directory, you can import it directly from your UDDI Registry.

To import a WSDL document into your Business Process

1 Ensure that your UDDI Registry server is running.

2 To connect to your UDDI Registry, enter the following URL into your web browser:

```
http://localhost:8080/CAPSUDDI
```

The Java CAPS UDDI Registry appears.

Figure 46 Java CAPS UDDI Registry

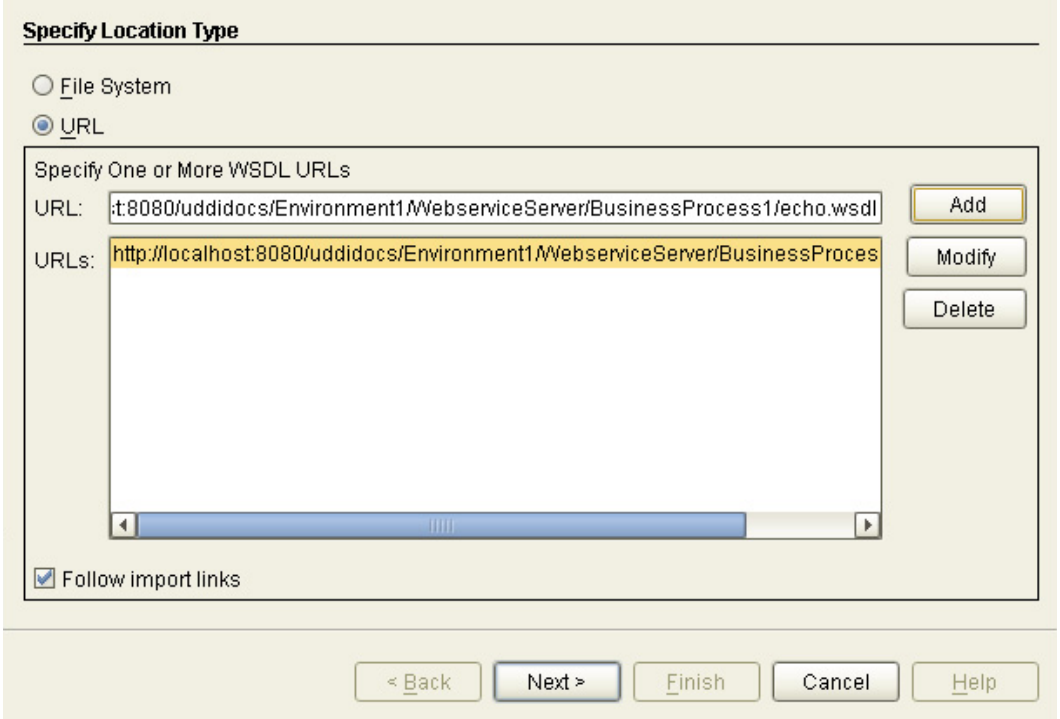
3 In the WSDL column, right-click any URL for **echo.wsdl** and select **copy shortcut**.

4 In Enterprise Designer's Project Explorer, create a new Project and name it **WSClient**.

5 Right-click the Project and from the **Import** context menu, select **Web Service Definition**.

The Import WSDL(s) wizard appears.

Figure 47 Import WSDL(s) Wizard: Specify Location Type



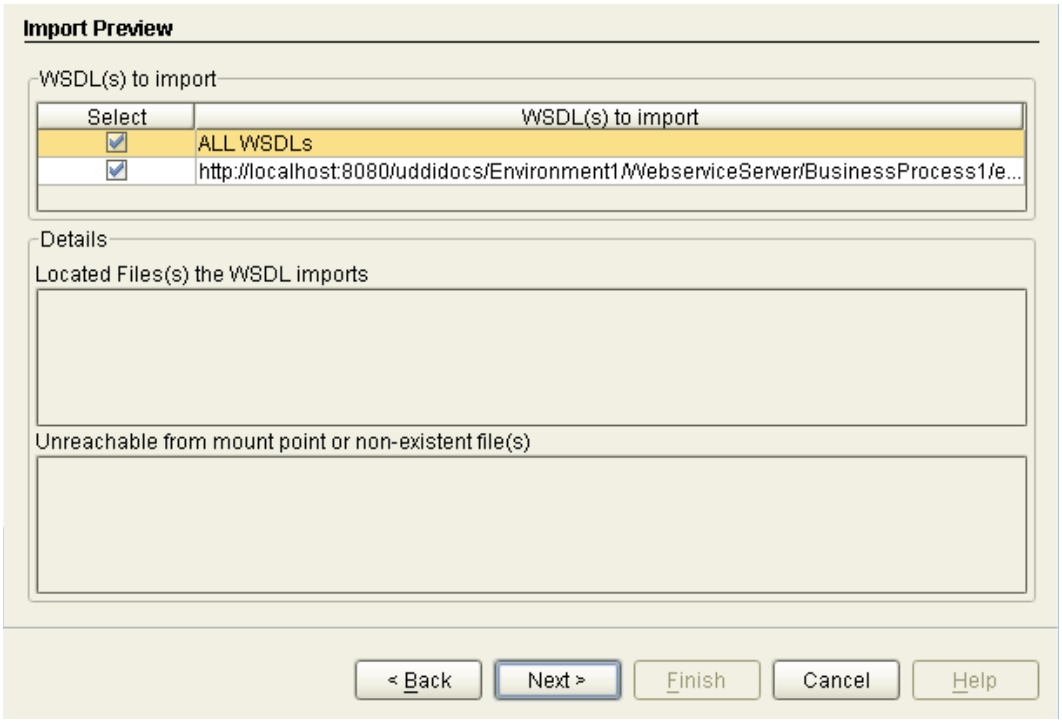
6 Under **Specify Location Type**, select **URL.**

7 Click the URL field and paste (Ctrl-V) the URL of **echo.wsdl**.

8 Click the **Add** button.

9 Click **Next** and check the **Import Preview**.

Figure 48 Import WSDL(s) Wizard: Import Preview



10 Accept the defaults by clicking **Next** and check the **Project Explorer Preview**.

11 Click **Next**.

12 Click **Yes** to import the WSDL.

13 Click **Finish**.

5.6.2 Creating the Business Process

The following procedure provides the steps for creating a Business Process that invokes an external web service. It incorporates Receive File, Invoke, and Write File Activities.

To create the Business Process

1 In the Project Explorer, right-click your project and select **New Business Process**.

2 Name the Business Process.

3 Expand the Sun SeeBeyond folder to expose the folders for the installed Enterprise Designer modules.

4 Expand **eWays>File>FileClient**.

5 Select and drag the **receive** and **write** objects onto the canvas.

6 In the Project Explorer, expand the **WSD object** to expose **PortTypes>PortType>Operation**.

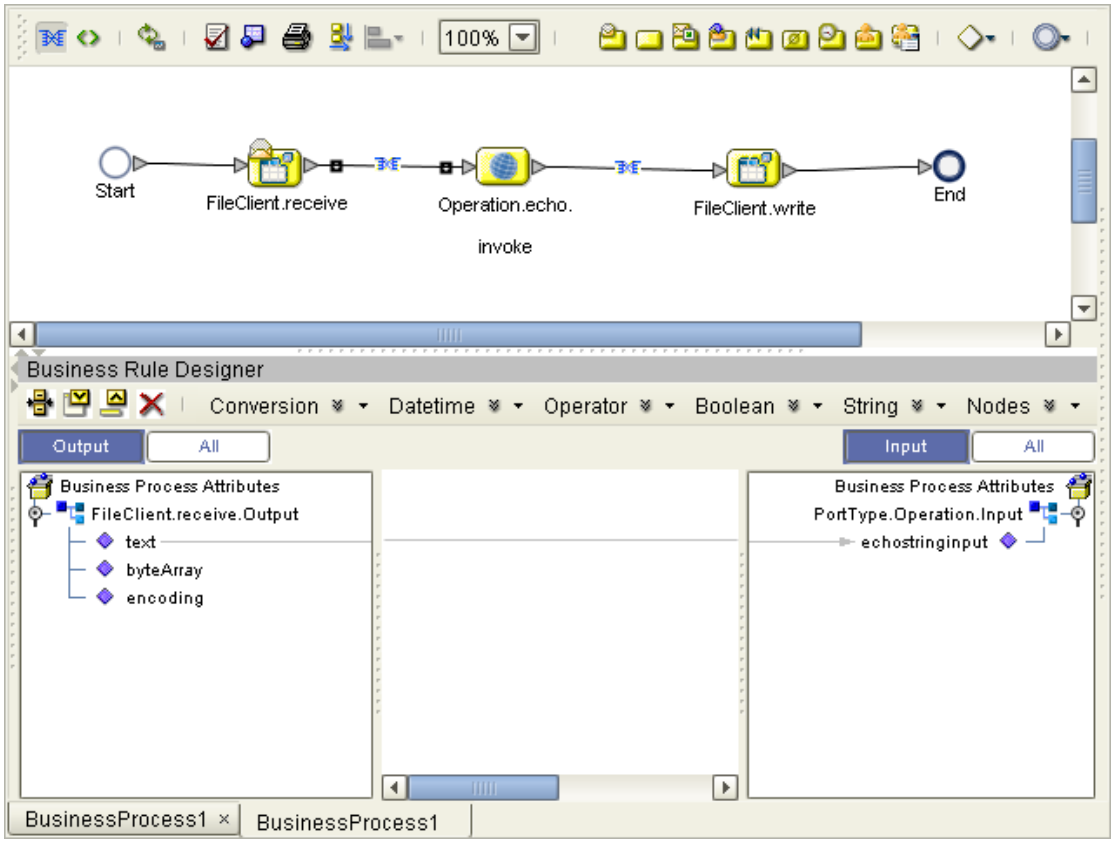
7 Drag and drop the **Operation** object onto the canvas. This creates an *invoke* Activity.

8 Connect all of the Activities. Figure 49 shows an example of this type of Business Process.

Figure 49 Business Process Invoking a Web Service

9 Add an Assignment between the receive Activity and the invoke Activity, as in Figure 50.

Figure 50 Assignments Between a Web Service Client and an External Web Service



10 Add an Assignment between the invoke Activity and the write Activity.

11 Click **Save All**.

5.6.3 Adding a SOAP/HTTP Web Service External System to Your Environment

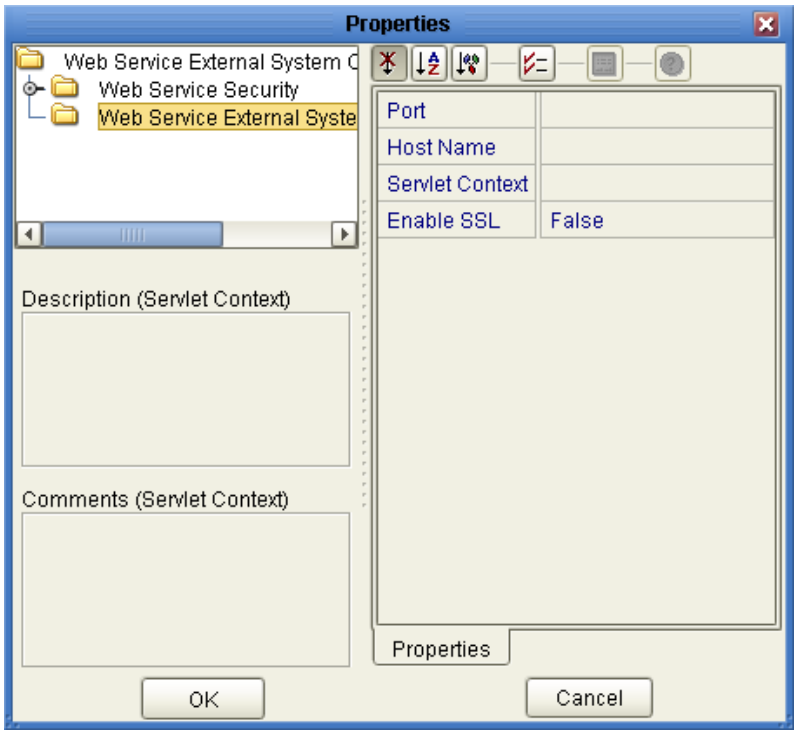
The following procedure provides the steps for adding a SOAP/HTTP Web Service External System to your Environment. You can use the same Environment you used for the exposed Web Service procedure.

To add a SOAP/HTTP Web Service External System to your Environment

1. Right-click your Environment.
2. Select **New SOAP/HTTP Web Service External System**.
3. Enter a name and ensure that system type is **Client**.
4. Click **OK**.
5. Right-click the SOAP/HTTP Web Service External System and select **Properties**.

   The **SOAP/HTTP Web Services External System** dialog box appears.

Figure 51 SOAP/HTTP Web Services External System Dialog Box



6. In the navigation tree, select **Web Service External System Configuration**.
7. Click **OK**.
8. Click **Save All**.

5.6.4 Adding a File External System to Your Environment

The following procedure provides the steps for adding a File External System to your Environment.

To add a File External System to your Environment

1. Right-click your Environment.
2. Select **New File External System**.
3. Enter a name such as ***File***.
4. Click **OK**.
5. Right-click the File External System and select **Properties**.
6. In the **Parameter Settings** for both **Inbound** and **Outbound File eWays**, specify the filepath where you want to pick up the **Input** file and drop off the **Output** file.
7. Click **OK**.
8. Click **Save All**.

5.6.5 Creating the Connectivity Map

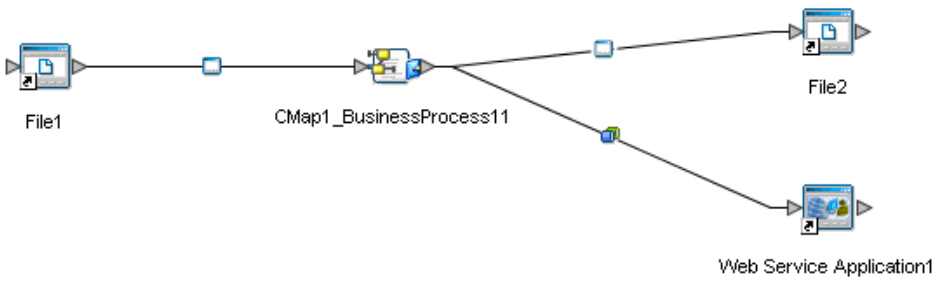
After you have created your Business Process, create a Connectivity Map. For details about creating Connectivity Maps, see the *Sun SeeBeyond eGate Integrator User's Guide*. The following procedure outlines the steps involved in creating a Connectivity Map for this type of Business Process as it might be used between two other web services applications.

To create the Connectivity Map

1. In the Project Explorer, right-click your project and select **New Connectivity Map**.
2. Name the Connectivity Map.
3. Drag and drop your new Business Process onto the eInsight **Connectivity Map Editor**.
4. Click the **Connectivity Map Generator**.

   eInsight automatically generates the Connectivity Map.

Figure 52 Connectivity Map of a Business Process Exposed as a Web Service



5 Double-click the highlighted bindings and insert the string ***echo*** in the input and output file names.

6 Click **Save All**.

7 Deploy and Run your project. For details about deploying and running projects, see the *Sun SeeBeyond eGate Integrator User's Guide.*

5.6.6 Deploying the Project

After you have created your project's Connectivity Map, created a Deployment Profile, and built your project, click **OK**. After you have built your project, you are ready to deploy. For details about deploying Java CAPS projects and implementing web services with SSL, see the *Sun SeeBeyond eGate Integrator User's Guide.*

5.7 Configuring Business Processes for XA Transactions

Distributed Transaction Processing (DTP), more commonly known as XA, is a proposed W3C standard for keeping multiple transaction system components secure during short-lived and long-lived distributed transactions. This helps to ensure the integrity of distributed transactions.

XA transactions fall into two broad categories: *short-lived* and *long-lived*. A short-lived XA transaction is simpler, quicker, and requires fewer system resources than a long-lived transaction, but it remains Atomic, Consistent, Isolated, and Durable (ACID) throughout the transaction. A long-lived XA transaction is generally more complex, more distributed, and longer-running. In eInsight, short-lived XA generally applies to a whole Business Process (Whole Business Process XA), and long-lived XA generally applies to an individual Business Process Activity (Activity-Level XA).

This section provides details and procedures for enabling XA support for Whole Business Process XA as well as Activity-Level XA using eInsight. For details about getting started using XA, see **http://www.w3.org**.

5.7.1 Enabling XA Support for a Whole Business Process

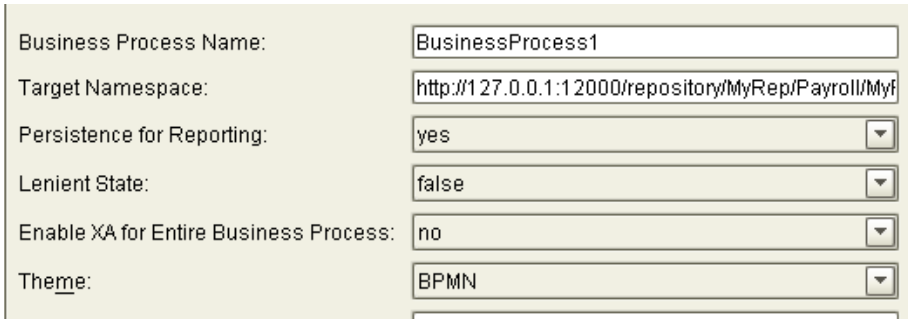
eInsight allows you to enable Whole Business Process XA for your Business Process in the **General** tab of the **Business Process Properties** dialog box. The following procedure provides the steps for enabling Whole Business Process XA.

To enable XA transactions for a Whole Business Process

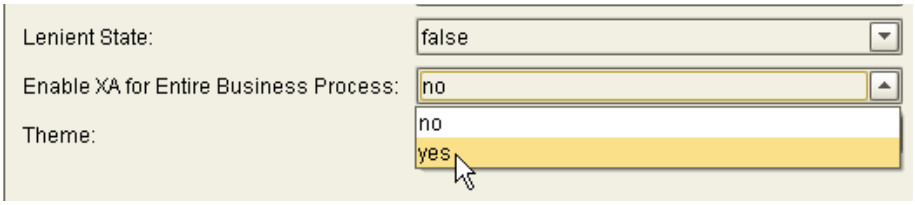
1 In the Project Explorer, right-click a Business Process and select **Properties**.

The **Business Properties** dialog box appears.

Figure 53 Business Properties Dialog Box: General Tab



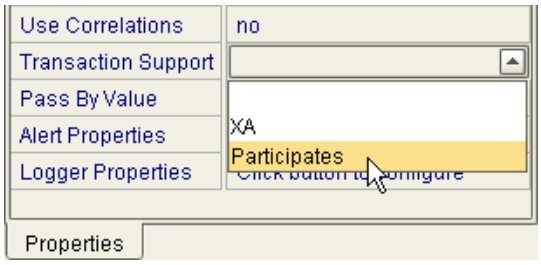
2 In the **General** tab's **Enable XA for Entire Business Process** drop-down list, select **yes**.



3 Click **OK**.

4 In the Business Process Designer toolbar, select the **Property Sheets** icon.

5 Select an **Invoke Activity**, and in its **Transaction Support** property's dropdown list, select **Participates**.



6 Set any other Invoke Activity's Transaction Support property to **Participates** as well.

Note: *If you do not need to use persistence for other Business Processes in your Project, you do not need to use persistence for Whole Business Process XA.*

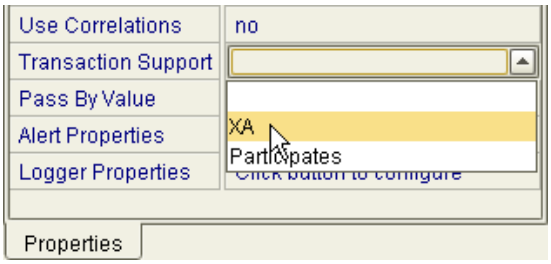
5.7.2 Enabling XA Support for an Individual Activity

eInsight allows you to enable Activity-Level XA for your Business Process Activities in the Property Sheet of any Receive Activity, Invoke Activity, or Pick Activity (OnMessage). The following procedure provides the steps for enabling Activity-Level XA.

Note: *In order to enable Activity-Level XA, you must deploy your Business Process using persistence. For detailed information about using persistence with eInsight, see* **Configuring Persistence for a Business Process** *on page 102.*

To enable an XA Transaction for an individual Activity

1. In the Business Process Designer toolbar, select the **Property Sheets** icon.
2. Select a **Receive Activity**, **Invoke Activity**, or **Pick Activity (On Message)**, and in its **Transaction Support** property's dropdown list, select **XA**.



3. One at a time, select each of the remaining Activities to be XA-enabled, and in each Activity's **Transaction Support** property's dropdownlist, select **XA**.

5.8 Importing Legacy eInsight Projects

When you import Legacy eInsight Projects, you might encounter BPEL validation failures due to more stringent validation rules in the current version of eInsight. In order to deploy and run your legacy Projects successfully, you need to verify that all bindings, assignments, conditions, and any other configurations are specified before attempting to validate the Project. You are likely to encounter these validation failures in Task Assignment Projects incorporating User Activities. For detailed information about configuring User Activities, see **Configuring User Activities** on page 106. For detailed information about upgrading legacy database data to the current version of eInsight, see **Upgrading Data from the eInsight/WLM Databases** on page 96.

Chapter 6

Persisting eInsight Data

eInsight contains database scripts to create the eInsight database schema. The database schema allows you to collect and persist data from your Business Process. Once the data is persisted, you can also use Enterprise Manager to monitor Business Processes. See **Database Support** on page 29 for information about supported databases.

This chapter provides a series of procedures for configuring the eInsight Engine and Database.

What's in This Chapter

6.1 Configuring the eInsight Engine

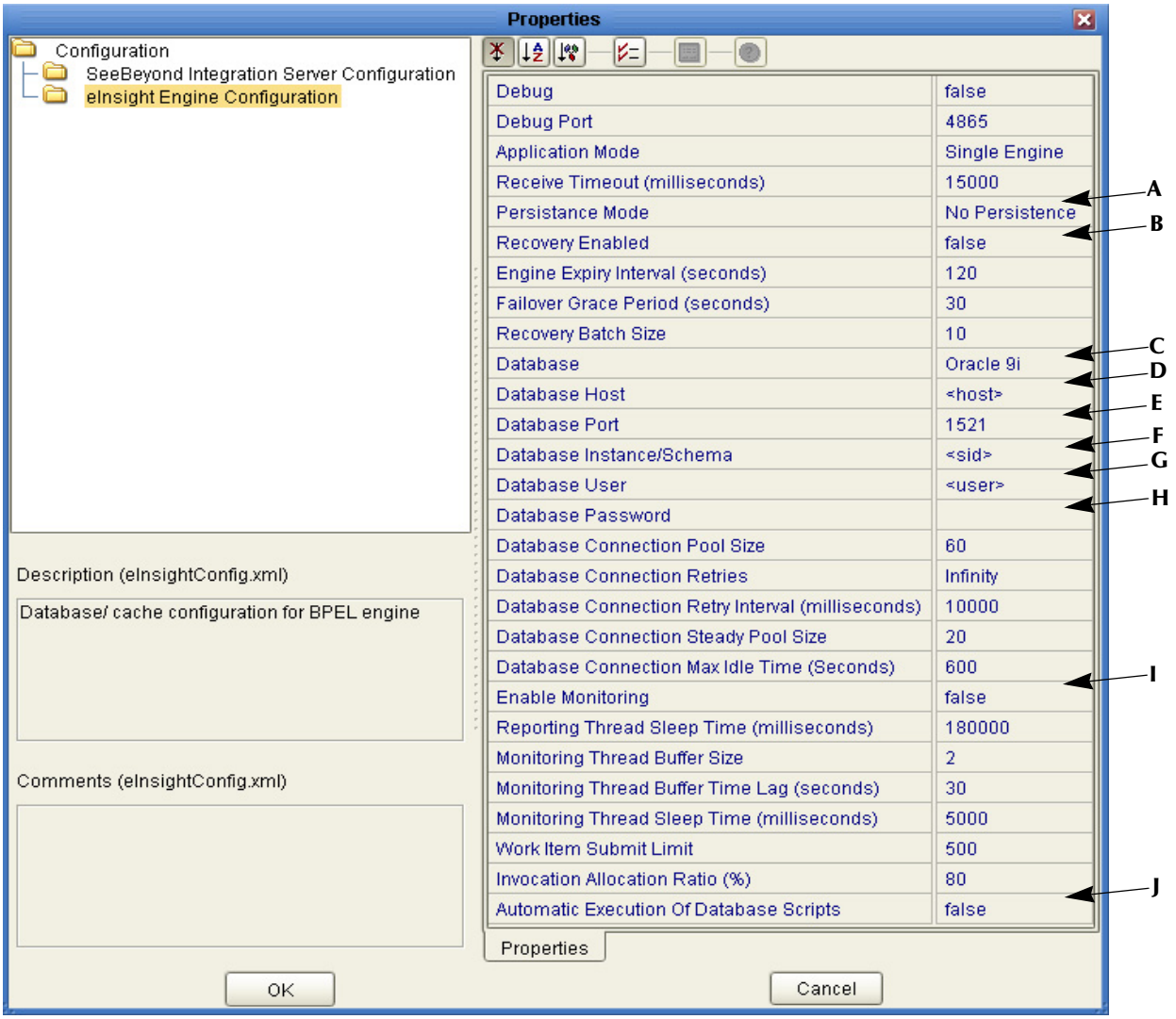
A basic Java CAPS deployment with eInsight Business Processes leverages the runtime monitoring and management features of Enterprise Manager. In order to monitor and manage your runtime deployments, eInsight requires a fully configured eInsight database. However, before you configure the eInsight database, you must first configure the eInsight Engine to connect to the eInsight database.

To configure the eInsight Engine

1. Right-click the **Integration Server** (IS) in your Environment from the Environment Explorer and open the tree structure that contains properties.
2. Navigate to, and select the eInsight **Engine**.

   The properties dialog box appears for the eInsight Engine, as shown in **Figure 54 on page 89**.

Figure 54 eInsight Engine Configuration



3 To enable persistence and recovery *without* load balancing and failover, configure the following:

A **Persistence Mode**—Select **Persist to Database - Single Engine (Recovery)**.

B **Recovery Enabled**—Select **true**.

4 To connect to the eInsight database, configure the following:

C **Database**—Select **Sybase 12.5**, **Oracle 8.1.7**, **Oracle 9*i*, Oracle 10*g*, DB2 8.1** or **SQL Server 2000**.

D **Database Host**—Enter the name of the machine where your database resides.

E **Database Port**—Enter the port number to connect to your database.

F **Database Instance/Schema**—Enter the database instance/schema or SID.

G **Database User**—Enter the User Name for your database.

H **Database Password**—Enter the password for your database user.

5 To enable monitoring with Enterprise Manager, configure the following:

I **Enable Monitoring**—Select **true.**

6 To enable the automatic execution of the database scripts, configure the following:

J **Automatic Execution of Database Scripts**—Select **true**.

Note: *Until you are ready to optimize your eInsight Engine for performance, scalability, and reliability, do not change the default settings for all other eInsight Engine configuration properties.*

7 Click **OK**.

6.2 Creating the eInsight Database

To create the runtime recoverability database schema, you can run a database script that is automatically installed with eInsight.

To configure a database connection

1 Expand the **Sun SeeBeyond** folder in the Project Explorer.

2 Expand the eInsight folder that is located under the Sun SeeBeyond folder.

3 Expand the **Run Database Scripts** folder.

4 Right-click the **Database Scripts** folder and choose Properties.

5 Enter your database configuration information.

Note: *If you are using a Sybase, DB2 or SQL Server database, you need to have your Database Administrator modify the scripts before you execute. Enter the database user and password that has privileges to your Sybase, DB2 or SQL Server database. See* **Viewing/Modifying Database Scripts** *on page 93* *for more information.*

6.2.1 Database Connection Information

Oracle

```
Database Type: oracle
Database DriverName:  oracle.jdbc.driver.OracleDriver
Database URL: jdbc:SeeBeyond:oracle://<host>:<port>;SID=<SID>
Database User ID: <userid>
Database Password: *****
```

Note: *To run the eInsight databse script for Oracle 8.1.7, you must either increase the default db_block_size from 8KB to 16KB or edit the database script to run successfully with the default db_block_size of 8KB. For detailed information about editing the database script to execute with Oracle 8.1.7, see* **Modifying the Database Script for Oracle 8.1.7** *on page 91*.

Sybase

```
Database Type: sybase
Database DriverName:  com.sybase.jdbc2.jdbc.SybDriver
Database URL: jdbc:SeeBeyond:sybase://<host>:<port>
Database User ID: <userid>
Database Password: *****
```

SQL Server

```
Database Type: sqlserver
Database DriverName: com.SeeBeyond.jdbc.sqlserver.SQLServerDriver
Database URL: jdbc:SeeBeyond:sqlserver://
<host>:<port>;DatabaseName=<dbname>
Database User ID: <userid>
Database Password: *****
```

DB2

```
Database Type: db2
Database DriverName: com.SeeBeyond.jdbc.db2.DB2Driver
Database URL: jdbc:SeeBeyond:db2://
<hostname>:<port>;DatabaseName=<SID>;collectionId=JDBCPKG;packageName
=JDBCPKG;embedded=true;createDefaultPackage=FALSE
Database User ID: <userid>
Database Password: *****
```

Using DB2 with eInsight

In order to persist and recover successfully using DB2, you must create a new User temporary tablespace. A User temporary tablespace gives eInsight space for declared temporary tables. Use the DB2 administrative tool to create a User temporary tablespace. For detailed information about creating a DB2 User temporary tablespace, see the DB2 documentation.

When you create a DB2 User temporary tablespace use the following parameters:

- Pagesize: 32KB
- Buffer Pool Size: 32KB
- System-managed space
- Average table size: 2GB to 20GB
- Prefetch size: 32KB
- Extent size: 32KB
- Overhead: 10.5 ms
- Transfer rate: 0.14 ms

Modifying the Database Script for Oracle 8.1.7

Before running the Oracle database script on Oracle 8.1.7, reduce the maximum key length for correlation keys from 4000 to 3166. The `correlationvalue` parameter belongs to the **.correlationengine** and **.correlationbpinstance** tables. The following code examples show the changes:

```
create table einsight51.correlationengine (
    correlationvalue varchar(3166) UNIQUE,
    applicationreference varchar(255),
    bpelid varchar(255),
    bpelversion varchar(20),
    engineid varchar(50),
    createdby varchar(255) ,
    createddate date ,
    updatedby varchar(255) ,
    updateddate date ,
    locale varchar(5) ,
    enabled varchar(1) default 'Y'
);


create table einsight51.correlationbpinstance (
    correlationvalue varchar(3166) UNIQUE,
    bpid varchar(50),
    createdby varchar(255) ,
    createddate date ,
    updatedby varchar(255) ,
    updateddate date ,
    locale varchar(5) ,
    enabled varchar(1) default 'Y'
);
```

For detailed information about modifying database scripts, see **"Viewing/Modifying Database Scripts" on page 93**.

6.2.2 Running the Database Scripts

The database user that executes these scripts must have permission to create/delete tables.

Creating the Database on DB2

Before running the script to install the eInsight database for DB2, ask your database administrator to review the script.

The database administrator must use the DBA or Sysadmin/DB2 user to create:

- A database instance on the server.
- A tablespace called **EINSIGHT51DB**.
- A 32k temporary tablespace.
- A new user that has privileges to create objects in the database such as tables, indexes, sequences objects, and so on.

To install and run a database script

1. Expand the **Sun SeeBeyond** folder in the Project Explorer.
2. Expand the eInsight folder that is located under the Sun SeeBeyond folder.
3. Expand the **Run Database Scripts** folder.
4. Select the appropriate database install file for Oracle, DB2, SQL Server or Sybase.

5 Right-click the file associated with the appropriate database (Oracle Install, SQL Server Install, DB2 Install or Sybase Install) and select **Run**.

To uninstall a database script

1 Expand the **Sun SeeBeyond** folder in the Project Explorer.

2 Expand the eInsight **folder** that is located under the **Sun SeeBeyond** folder.

3 Expand the **Run Database Scripts** folder.

4 Select the appropriate database file for Oracle, SQL Server, DB2 or Sybase.

5 Right-click the file associated with the appropriate database (Oracle Uninstall, SQL Server Uninstall, DB2 Uninstall or Sybase Uninstall) and select **Run**.

6.2.3 Viewing/Modifying Database Scripts

You may open the database scripts and view them within eInsight. You may also modify and run the modified scripts from eInsight. Consult your database administrator when making changes to the database scripts. You may wish to download the scripts and modify them outside of the product. See **"Downloading and Running Database Scripts"** for more information.

To view/modify a database script

1 Expand the **Sun SeeBeyond** folder in the Project Explorer.

2 Expand the eInsight folder that is located under the **Sun SeeBeyond** folder.

3 Expand the **Run Database Scripts** folder.

4 From the Run Database Scripts folder, select the script you will modify.

5 Right-click and select **Open** to view the script.

6 If you wish to make changes, the scripts are editable.

7 **Run** the script, see **"Running the Database Scripts"**.

8 **Save** or **Discard** your changes.

Note: *You are prompted to Save or Discard your changes when you close the script. To keep the original scripts, select Save; otherwise, discard the changes.*

To modify database field lengths

You may need to modify database scripts to accommodate larger field lengths in your tables. You may experience errors if your data exceeds the size allowed by the field.

1 Expand the **Sun SeeBeyond** folder in the Project Explorer.

2 Expand the eInsight folder that is located under the **Sun SeeBeyond** folder.

3 Expand the **Run Database Scripts** folder.

4 From the Run Database Scripts folder, select the script you will modify.

5 Right-click and select **Open** to view the script.

6 Find the appropriate field(s) and change the field length.

For example, from **varchar(255)** to **varchar(4000)**.

7 **Run** the script (see **"Running the Database Scripts"**) to make changes to the database.

8 **Save** or **Discard** your changes.

Note: *You are prompted to Save or Discard your changes when you close the script. To keep the original scripts, you may want to discard your changes, otherwise select* **Save**.

6.3 Downloading and Running Database Scripts

This is an alternative method to **"To run the Business Process Database Script" on page 103**. You may wish to download the database scripts and run them outside of the Java CAPS environment.

6.3.1 Downloading the Compressed Script Files

To create the runtime recoverability database schema, you can download a database script that is automatically installed with eInsight.

To download a compressed script file

1 Expand the **Sun SeeBeyond** folder in the **Project Explorer**.

2 Expand the eInsight **folder** that is located under the **Sun SeeBeyond** folder.

3 Expand the **Download Database Scripts** folder.

4 Select the appropriate database file: Oracle, SQLServer, DB2 or Sybase.

5 Right-click the file associated with the appropriate database (Oracle.zip, SQLServer.zip, DB2.zip or Sybase.zip) and select **Export**.

6 Unzip the database script to a local folder.

Included in the zipped file are:

- `install_db.bat` - This script will create the tablespace, users, tables, stored procedures, and any initial value.
- `uninstall_db.bat` - This script reverses what the install_db.bat script creates (drops tables and users, deletes stored procedures).
- `database specific sql scripts` - These scripts are called by the install_db.bat and uninstall_db.bat commands (such as, create_tables.sql, drop_tables.sql, etc.)
- A `Readme.txt` file with additional instructions, specific to your database application.

7 Follow the specific instructions in the Readme.txt file, for your database.

6.3.2 Executing Database Scripts

To execute a database script

1 Open a command window and navigate to the directory where script is located.

Important: *The database user that executes these scripts must have permission to create tables.*

2 Enter the following at the command prompt:

```
install_db <user> <password> <tns>
```

- <*user*> is the database username
- <*password*> is the database user password
- <*tns*> is the database or tns name

Note: *The default user and password created from these scripts is "einsight". You can modify the user, password, disk space allocated for tables, and user permissions. The table and column definitions should not be modified.*

6.3.3 Running Scripts for Purging and Archiving

The purge scripts delete older records (instances only) from the database tables, based on the specified number of days or by Business Process name. The archive scripts copy the history records, based on the specified number of days or by Business Process name, into tables ending with **_hist**. Only records with **COMPLETE** or **ERROR** or **TERMINATED** or **ERROR_ON_RECOVER** status are purged or archived.

Archiving/Purging by Retention Day(s)

install_{db}_purge_scripts.cmd—creates the stored procedures for purge and archive and creates the archive tables.

purge_{db}_bpi_days.cmd—purges the history data by specified number of days.

arch_{db}_bpi_days.cmd—archives the history data by specified number of days.

Note: *{db} is ora (for Oracle), ss (for SQLServer), syb (for Sybase).*

To execute the install script for Oracle

```
> install_ora_purge_scripts <user> <password> <tns>
```

To purge records older than 4 days (i.e. # of days to retain instances)

```
> purge_ora_bpi_days <user> <password> <tns> 4
```

To archive records older than 10 days (i.e. # of days to retain instances)

```
> arch_ora_bpi_days <user> <password> <tns> 10
```

Archiving/Purging by Business Process Name

install_{db}_purge_scripts.cmd—creates the stored procedures for purge and archive and creates the archive tables.

purge_{db}_bpi_by_bpname.cmd—purges the history data by specified Business Process name.

arch_{db}_bpi_by_bpname.cmd—archives the history data by specified Business Process name.

To execute install script for Oracle

```
> install_ora_purge_scripts <user> <password> <tns>
```

To purge records by Business Process name (i.e. 'BusinessProcess1')

```
> purge_ora_bpi_by_bpname <user> <password> <tns> 'BusinessProcess1'
```

To archive records by Business Process name (i.e. 'BusinessProcess1')

```
> arch_ora_bpi_by_bpname <user> <password> <tns> 'BusinessProcess1'
```

Note: *By default, the scripts contain statements for all supported databases. You must comment out or remove inapplicable database statements before executing the script.*

6.4 Upgrading Data from the eInsight/WLM Databases

eInsight Database Migration Tool (eDMT) upgrades legacy data from eInsight/WLM 5.0.5 database tables to eInsight/WLM 5.1.1 database tables. eDMT supports the following databases.

- Oracle 8*i* (8.1.7), 9*i* (9.0.1, and 9.2), and 10*g*.
- Sybase 12.5
- MS SQL Server 2000
- IBM DB2 Universal Database 8.1

Upgrading legacy eInsight/WLM database data with eDMT involves the following high-level steps.

- Installing eInsight Database Migration Tool
- Upgrading Legacy Projects to 5.1.1
- Configuring the eInsight/WLM migration properties
- Upgrading eInsight/WLM database data to 5.1.1

6.4.1 Installing eDMT

When you use Java CAPS Installer to upload eInsight to your Java CAPS Repository, eDMT appears in the Downloads page of the installer. Before upgrading your legacy eInsight database data to version 5.1.1, you must install eDMT to a local directory. For

detailed information about installing Java CAPS components, see the *Java Composite Application Platform Suite Installation Guide*.

To install eDMT

1. Connect to the Java CAPS Installer and log in.
2. Select the **Downloads** tab.

   The Downloads page appears.
3. From the Downloads list, select **eInsight Migration Tool**, and extract the contents of **eInsightMigration.zip** to the local Java CAPS directory such as **JavaCAPS51**.
4. Edit **run.bat** so that the `JDK_HOME` property points to your JDK installation (1.4 or higher). For example: `JDK_HOME = "C:\j2sdk1.4.2_06"`
5. Open a command prompt and navigate to the local Java CAPS directory. Specify the command line argument for your eInsight or WLM upgrade. The command syntax is:

   ```
   run [-eInsight migration.properties]
   [-wlm wlmMigration.properties] [-Action] Complete |
   GenerateFiles | UploadFiles
   ```

   For example: `C:\eInsightMigration> run.bat -eInsight migration.properties -Action Complete`

   For detailed information about eDMT's command syntax, see **Running eDMT** on page 100.

6.4.2 Upgrading Legacy Projects to 5.1.1

Before you can upgrade legacy eInsight/WLM data from the database tables, you need to upgrade all legacy Projects to Enterprise Designer 5.1.1. The following procedure provides the high-level steps involved in importing a legacy Project into Enterprise Designer 5.1.1. For detailed information about exporting legacy Projects and importing 5.1.1 Projects, see the *Java Composite Application Platform Suite Installation Guide*.

To upgrade all legacy Projects to Enterprise Designer 5.1.1

1. Launch Enterprise Designer 5.0.5 and undeploy all legacy Projects that you want to upgrade to 5.1.1.
2. Export the undeployed legacy Projects.
3. Launch Enterprise Designer 5.1.1.
4. Import the exported legacy Projects.
5. Modify the database scripts.
   A. Open the db2 install script.
   B. In the Create Table command, change the tablespace name from **einsightdb** to **einsight51db**.
   C. Right-click and save the script.
   D. In each database script, locate the following line:

```
insert into <user>.reportstablemetadata (bpelid, bpelversion,
reportstablename) values
```

E Change the first two values from literals to the following variables:

'$BPEL_ID$' and **'$BPEL_VERSION$'**

F As you modify each script, right-click and save it.

6 Copy the Project upgrade information file from your local temporary folder to your local Java CAPS directory. eDMT requires this file during the database table upgrade process.

7 Create deployment profiles for the imported Projects. The Projects are ready for deployment; however, do not deploy the Projects until after you have upgraded your eInsight database data.

6.4.3 Configuring the eInsight/WLM Migration Properties

Before you upgrade eInsight/WLM database data to 5.1.1, you must configure these two properties files:

- **migration.properties**
- **wlmmigration.properties**

Each properties file contains three sets of properties:

- Origin database properties
- Target database properties
- Common properties

Upgrading eInsight/WLM database data is a two-step process:

1 Generate upgrade files from the tables in the origin databases.

2 Upload the upgrade files to the tables in the target databases.

The properties in Table 13 pertain to the origin databases. eDMT uses these properties when it generates upgrade files from the tables in the origin databases.

Table 13 Origin Database Properties

Property	Description
MigratingFrom_Database	The type of origin database (Oracle, DB2, etc.).
MigratingFrom_User	The database user name. This is also the default schema where the tables are located.
MigratingFrom_Password	The database user password.
MigratingFrom_SchemaOrTableOwner	The schema or table owner of the database instance on which the tables are located.
MigratingFrom_DatabaseOrSID	The database or SID of the database instance on which the tables are located.
MigratingFrom_Port	The port number on which the database instance is listening, usually 1521.

Table 13 Origin Database Properties

Property	Description
MigratingFrom_Server	The machine name on which the database server is located
TempTableSuffix	A suffix that is applied while creating temporary tables in the default schema. The suffix must differ from that of any other table in the default schema.
BPELIDPairsFilePath	A file generated during the import of legacy Projects. This file is typically created in the temporary folder of the user who is logged in during the import of legacy Projects. The filepath of the property points to this file.

Note: **MS SQL Server Installations:** *When you create the eInsight database tables with the packaged default scripts, the owner of the database tables defaults to* **`dbo`**. *When the user creates the reporting tables, using the user* **`einsight`** *or* **`einsight51`** *(created earlier), the owner of the reporting tables defaults to* **`einsight`** *or* **`einsight51`**. *The migration tool uses the property* MigratingFrom_SchemaOrTableOwner *or* MigratingTo_SchemaOrTableOwner *to allow you to specify the owner of the database tables. Since this property is common for both the eInsight tables and the reporting tables, you should not specify a value here, but leave it blank. The* MigratingFrom_User/MigratingTo_User *that you use should be* **`einsight`** *or* **`einsight51`**.

The properties in Table 14 pertain to the target databases. eDMT uses these properties when it uploads the generated files to the tables in the target databases.

Table 14 Target Database Properties

Property	Description
MigratingTo_Database	The type of database to which you want to upgrade eInsight data (Oracle, DB2, etc.).
MigratingTo_User	The database user name. This is also the default schema where the tables are located.
MigratingTo_Password	The database user password.
MigratingTo_SchemaOrTableOwner	The schema or table owner of the database instance on which the tables are located.
MigratingTo_DatabaseOrSID	The database or SID of the database instance on which the tables are located.
MigratingTo_Port	The port number on which the database instance is listening.
MigratingTo_Server	The machine name on which the database server is located.

eDMT uses the properties in Table 15 when it generates files from the tables in the origin databases as well as when it uploads the generated files to the tables in the target databases.

Table 15 Common Properties

Property	Description
MigrationType	Specify the type of the migration. For example, if you are migrating from 5.0.5 to 5.1.1 specify 505To510.
WorkingFolder	Specify a filepath where the generated database files will reside.
LogFilePath	Specify a filepath where the logs will reside.
ColumnDelimiter	Specify a sequence of characters that does not appear in the origin databases. This sequence delimits the column values in the generated files. Do not use " or ^ in the delimiter.
RowDelimiter	Specify a sequence of characters that does not appear in the origin databases or the ColumnDelimiter property. This sequence delimits the row values in the generated files. Do not use " or ^ in the delimiter.
NullPlaceHolder	Specify a sequence of characters that does not appear in the origin databases, the ColumnDelimiter property, or the RowDelimiter property. This is used as a placeholder for null values in the generated files. Do not use " or ^ in the delimiter.

6.4.4 Upgrading eInsight/WLM database data to 5.1.1

The following procedure provides the steps for upgrading eInsight/WLM database data to 5.1.1. Upgrading eInsight/WLM database data is a two-step process.

To upgrade eInsight/WLM database data with eDMT

1 Generate the files from the tables in the 5.0.5 database

In this step, eDMT connects to the legacy database and exports the data into a set of files. eDMT places these files in a *Working Folder*.

2 Upload the files to the tables in the 5.1.1 database

In this step, eDMT uploads the previously generated files to the 5.1.1 database tables. eDMT takes the input files from the Working Folder.

Running eDMT

To run eDMT, you must specify the following:

A Which data you want to upgrade:

- eInsight data
- WLM data
- Both eInsight and WLM data

B Which type of upgrade you want to perform:

- Generate files
- Upload files
- Generate files, then upload files

Run eDMT by entering command line arguments from the command prompt. If you specify both eInsight and WLM database data in your command line argument, eDMT generates or uploads the upgrade files. If you specify neither the eInsight nor the WLM option, by default, eDMT generates or uploads the upgrade files for eInsight database data only. The command syntax is:

```
run [-eInsight migration.properties]
[-wlm wlmMigration.properties] [-Action] Complete |
GenerateFiles | UploadFiles
```

The following eDMT command line arguments outline a few upgrade scenarios.

- For an eInsight/WLM upgrade:

```
C:\eInsightMigration> run.bat -eInsight migration.properties
-wlm wlmMigration.properties -Action Complete
```

- For a WLM upgrade:

```
C:\eInsightMigration> run.bat -wlm wlmMigration.properties
-Action GenerateFiles
```

- For an eInsight upgrade:

  Either

```
C:\eInsightMigration> run.bat -eInsight migration.properties
-Action UploadFiles
```

  Or

```
C:\eInsightMigration> run.bat -Action UploadFiles
```

You can run each of the two high-level upgrade steps independently.

For example, to generate the upgrade files, enter the following command line argument:

```
C:\eInsightMigration> run.bat -Action GenerateFiles
```

To upload the generated files, enter the following command line argument:

```
C:\eInsightMigration> run.bat -Action UploadFiles
```

To run both the steps, enter the following command line argument:

C:\eInsightMigration> run.bat `-Action` Complete

Note: *If you use this option and high-level step 1 fails, eDMT does not execute high-level step 2.*

Caution: *If you have multiple separate, unrelated projects deployed and running on the same eInsight Engine/database schema, attempting to upgrade only one project results in an unsuccessful migration. See the following error message.*

```
com.stc.bpms.migration.util.MigrationUtility main
SEVERE: Migration was unsuccessful. Step 1 failed - could not
generate the migrated files.
com.stc.bpms.migration.framework.MigrationException
at
com.stc.bpms.migration.framework.MigrationManager.doMigration(Migr
ationManager.java:44)
at
com.stc.bpms.migration.util.MigrationUtility.main(MigrationUtility
.java:157)
Caused by: java.lang.Exception: Fatal error occured during
generating the migrated files.
at
com.stc.bpms.migration.impl.Migrator505To510.generateMigratedFiles
(Migrator505To510.java:151)
at
com.stc.bpms.migration.framework.MigrationManager.doMigration(Migr
ationManager.java:53)
```

6.5 Configuring Persistence for a Business Process

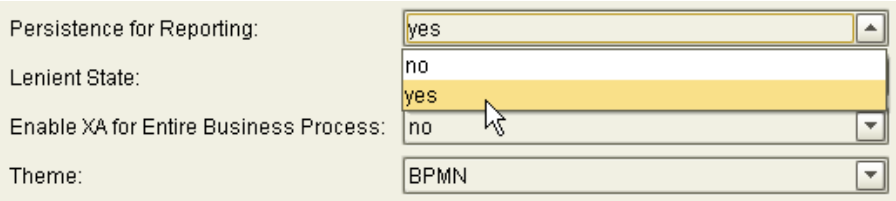
The following procedure provides the steps for configuring persistence for a Business Process.

To configure persistence for a Business Process

1. Right-click your **Business Process** and select **Properties**.
2. Select **yes** for the **Persistence for Reporting** option, as shown in Figure 55.

   You must set the persistence state for each Business Process. The default setting for this property is **no**.

Figure 55 Business Process Properties: Persistence for Reporting



3. Click the **Save All** toolbar icon.

   This creates a Database Install Script option under your Business Process.

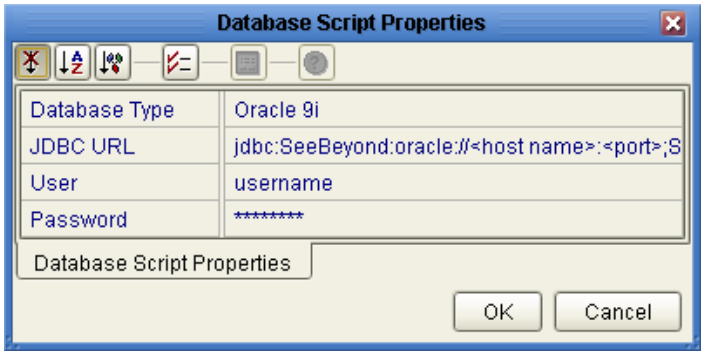
6.6 Configuring Database Connection Information

The following procedure provides the steps for configuring database connection information.

To configure database connection information

1. Right-click the **Database Install Script** under the Business Process and select **Properties**.

Figure 56 Database Script Properties



2. Enter the connection information for your database.

6.7 Running the Business Process Database Script

The following procedure provides the steps for running the Business Process Database Script.

To run the Business Process Database Script

1. From the Project Explorer, expand your Business Process.
2. Expand the **Database Scripts** folder.
3. From the Database Scripts folder, right-click the appropriate database and select **Run**.

The scripts complete the database creation process.

6.8 Running the Uninstall Script for a Business Process

The following procedure provides the steps for running the uninstall script for a Business Process.

To run the Uninstall Script for a Business Process

1. From the Project Explorer, expand your Business Process.

2 Under the Business Process, expand the **Database Scripts** folder.

3 Right-click the appropriate uninstall script and choose **Run**.

6.9 Running the Worklist Manager Database Scripts

The following procedure provides the steps for running the Worklist Manager Database Scripts.

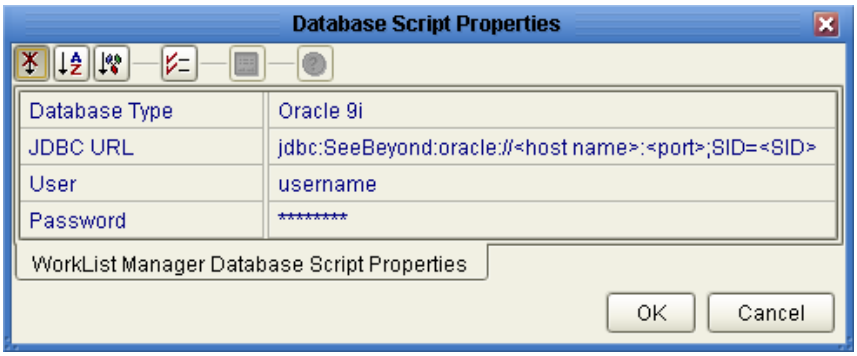
To run the Worklist Manager Database Scripts

1 From the Project Explorer, expand the **Sun SeeBeyond** folder, the eInsight **folder**, and the **WorkListViewer folder**.

2 Right-click the **Worklist Viewer** and select **Checkout**.

3 Expand the Worklist Viewer, right-click the **Database Scripts** folder and select **Properties**, as shown in Figure 57.

Figure 57 Worklist Viewer Database Properties



4 Configure the database properties to connect to your database.

Note: *The Oracle user must have DBA privileges to create the new wlm user*

5 Right-click the **Oracle Install Scripts** and select **Run**.

A View your database to verify that the tablespace `wlm_data` exists.

B View your database to verify that the user **wlm** is defined.

Chapter 7

Incorporating User Activities into Business Processes

This chapter covers the User Activity and its role in the Business Process workflow. The procedures and conceptual information in this chapter help to illustrate wide range of possibilities when User Activities are incorporated into Business Processes.

What's in This Chapter

7.1 Adding a User Activity Task to a Business Process

The User Activity is the primary component for incorporating *human workflows* into Business Processes. Human workflows make it possible to deploy complex Business Processes that include human interaction with and management of distributed information systems. eInsight supports the definition of organization hierarchies and user roles for task assignment. Tasks can be escalated and delegated by users from custom Worklists and Activity processing windows. With eVision and eInsight, you can develop human workflows that incorporate a customized user interface for each task. See **Audit Processing Tutorial** on page 176 for a complete task assignment example.

To add a User Activity task to a Business Process

1 Create the Business Process and add a User Activity.

2 Set up a repository of users, organizational structures and roles in LDAP. (See **LDAP and Organizational Roles** on page 110.)

3 Set up user assignments. See **To configure a Task Assignment** on page 117.

4 Use the Worklist Manager to **Managing Tasks** on page 118.

See **"Audit Processing Tutorial" on page 176** for an end to end User Activity exercise.

7.2 Configuring User Activities

This section provides an overview of how to configure the User Activity. This option uses OpenLDAP to determine who belongs to the organizational structure.

To configure a User Activity

1 Create a Business Process model, (see **"Building a Business Process Model" on page 35**).

2 Configure your database for persistence and run the Database Scripts, (see **"Persisting eInsight Data" on page 88**).

3 Add a User Activity as part of your business model. See **"To configure a User Activity" on page 106**.

4 Create an **eVision Studio PageFlow** (see the *Sun SeeBeyond eVision Studio User's Guide* for details).

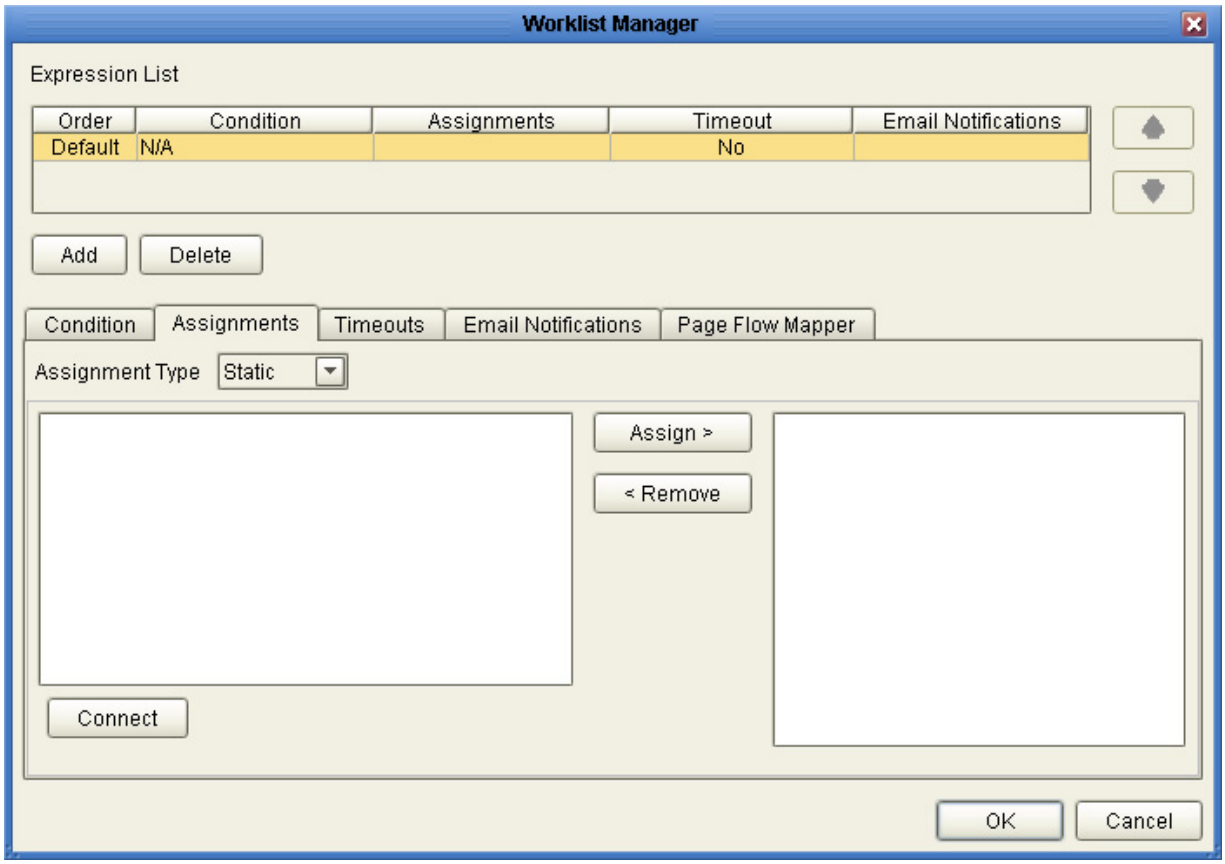
5 Drag the **eVision PageFlow** to the User Activity, see **"Creating the eVision Pages" on page 180**.

Figure 58 Configured User Activity

6 Add a Worklist Viewer to your Environment, see **"Creating a New Project and Environment" on page 178**.

7 Add Flex Attributes (optional). See **Customizing Flex Attribute Labels** on page 108 for details.

Figure 59 Worklist Manager Settings



8 Run Task Assignment, see **"Assigning Tasks" on page 117**.

7.3 Configuring User Activities Inside While Loops

When creating a Business Process that includes a User Activity inside of a While Loop (see **"Using While Elements" on page 43**), you must take a few extra steps. The following procedure provides the steps for configuring a User Activity inside of a While Loop.

To configure a User Activity inside of a While Loop

1 Configure the User Activity as described above (**"To configure a User Activity" on page 106**).

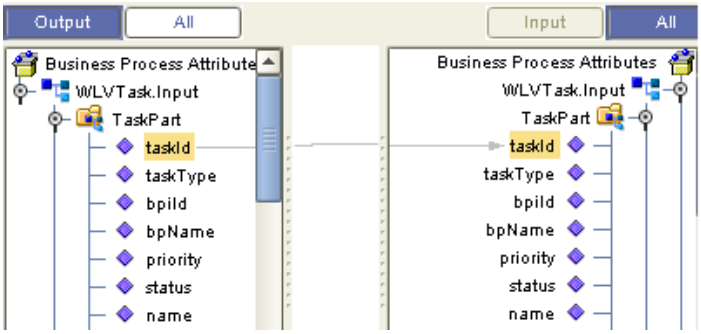
2 Add a business rule to the link leaving the User Activity.

3 Open the Business Rule Designer and expand the **WLVTask.Input** node.

4 Copy a Business Process attribute from the left panel to the right panel, as shown in Figure 60.

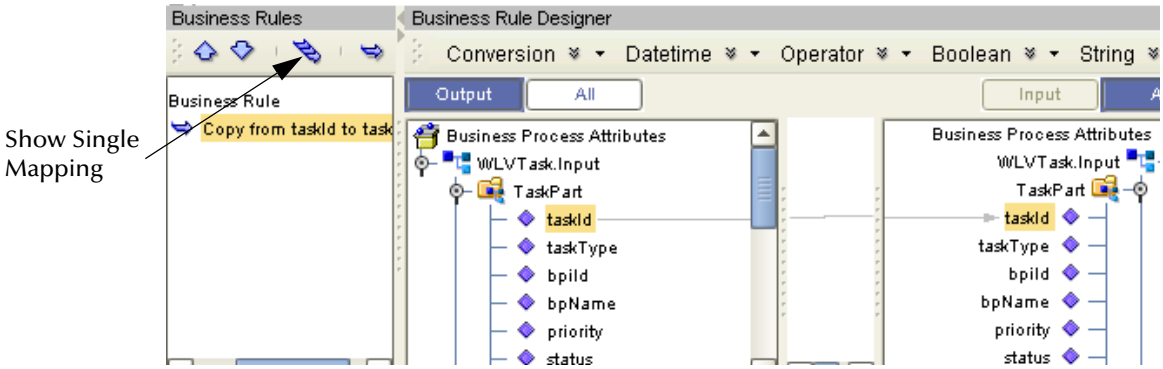
The purpose of this step is to create an output container.

Figure 60 Copy Business Process Attribute



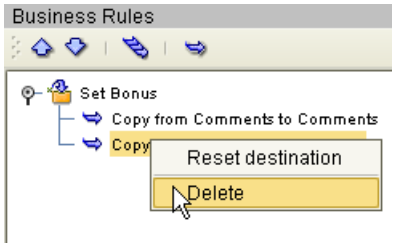
5 Open the Business Rules panel and click **Show Single Mapping**, as shown in Figure 61.

Figure 61 Business Rules



6 Right-click the **Copy** rule and select **Reset Destination**, as shown in Figure 62.

Figure 62 Reset Destination



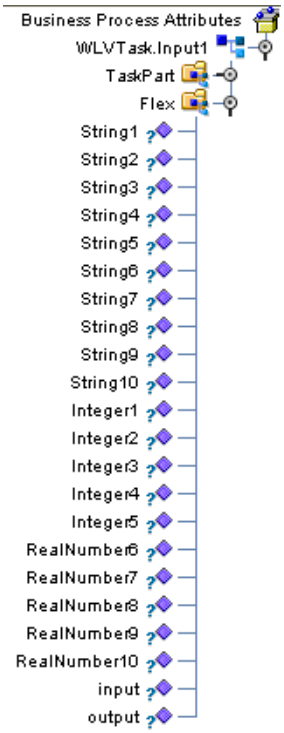
7 Save the Business Process.

7.4 Customizing Flex Attribute Labels

Flex attributes are customizable attributes that aid in Task Assignment. The attributes appear in the Business Rule Designer (as shown in **Figure 63 on page 109**) as well as in columns of the Worklist Manager.

You can map values to these attributes in the Business Rule Designer so that the values appear in the Worklist Manager. You can also label the attributes so that they are easy to identify in the Worklist Manager.

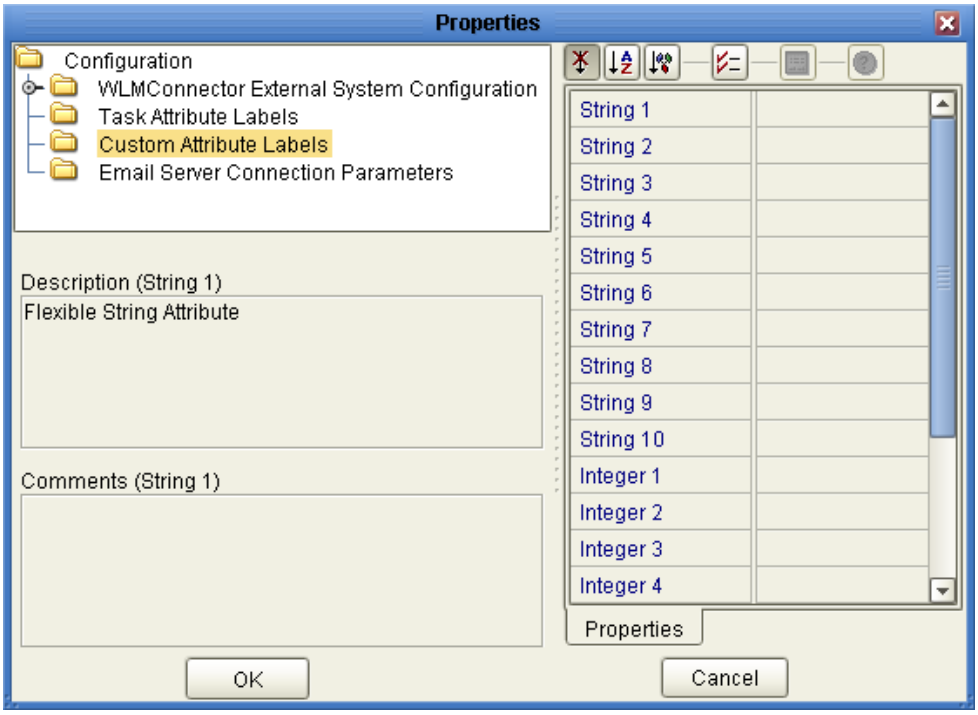
Figure 63 Flex Attributes in the Business Rule Designer



To customize Flex Attribute labels

1. From the Environment Explorer tab, right-click the **WLV** component and select **Properties**.
2. From the WLV Configuration options, select **Flex Attribute Labels**, as shown in **Figure 64 on page 110**.

Figure 64 Flex Attributes



3 Create labels for as many attributes as necessary.

4 Click **OK** to save changes.

7.5 LDAP and Organizational Roles

Organizational roles help define processes based on a person's position or title. By entering information about the structure of your organization, you can make processes easier to manage.

Support for LDAP means that you can use repositories of users, hierarchical organizational structures, and roles. An LDAP-based application can be used to populate the Worklist Manager with members of your organization and their organizational role. You assign rights based on organizational role assignments.

For example, you can permit managers to view their subordinate's Activity list (also called a Worklist) as well as their ability to reassign tasks in that list. As a manager, when you log into your Worklist, you see your tasks and the tasks of your direct reports.

Note: *For information about setting up your organization's information in LDAP, see your third party software vendor's user documentation.*

7.6 Configuring Your LDAP Server

This example uses the OpenLDAP application as the LDAP directory and MegaNova's database. You will need to follow the instructions for your LDAP application to add data to the LDAP database. You must create your own directory data and data file. You can use the names suggested in our example, or substitute your own. If your directory structure is not the same, the sample may not run as written.

To configure your LDAP server

1 Install an LDAP application.

For this example, OpenLDAP is used. At publication, this application is available from:

```
http://www.openldap.org
```

2 Install the binary file or compile your own. Install or uncompress it to:

```
c:\ldap
```

3 After installation, create a configuration file for your LDAP installation. See your LDAP documentation for details.

This configuration file is used in our sample:

Figure 65 Example: sldap.conf

```
include      c:/ldap/schema/core.schema
include      c:/ldap/schema/cosine.schema
include      c:/ldap/schema/inetorgperson.schema
include      c:/ldap/schema/stc.schema

pidfile      c:/ldap/slapd.pid
argsfile     c:/ldap/slapd.args

database     ldbm
suffix       "o=MegaNova,c=US"
rootdn       "cn=Manager,o=MegaNova,c=US"
rootpw       secret
directory    c:/ldap/MegaNovaDB
index        objectClass eq
```

4 Add the schema definition to your schema folder:

Example: `c:/ldap/schema/stc.schema`

```
# schema/stc.schema
#
# Auxiliary Object Class to be used with Person (or subtypes of it)
#
#  Roles allows a user to be cross functional
attributetype (1.3.6.1.4.1.1351.666.1.1
    NAME 'stcWFRole'
    DESC 'STC WorkFlow User Roles' SUP organizationalUnitName )

#  Group provide department level groupings
attributetype (1.3.6.1.4.1.1351.666.1.2
    NAME 'stcWFGroup'
    DESC 'STC WorkFlow User Group' SUP organizationalUnitName )
```

```
#  Manager shows hierarchy in the organization
attributetype (1.3.6.1.4.1.1351.666.1.3
    NAME 'stcWFManager'
    DESC 'STC WorkFlow User Manager'
    EQUALITY distinguishedNameMatch
    SYNTAX 1.3.6.1.4.1.1466.115.121.1.12 SINGLE-VALUE )

# stcWorkFlowPerson
# The stcWorkFlowPerson represents people who are associated with
an
# organization in both a department and a role.  It is an auxiliary
class
objectclass( 1.3.6.1.4.1.1351.666.1
    NAME 'stcWorkFlowPerson'
    DESC 'STC Work Flow Assignment Person'
    AUXILIARY
    MAY (
        stcWFRole $ stcWFGroup $ stcWFManager )
    )
```

5 Start the LDAP server from the command line.

Example: `c:\ldap> slapd.exe`

6 Create or add the sample data (.ldif file) to the LDAP server.

Example: `c:\ldap>  ldapmodify -a -v -D cn=Manager,o=MegaNova,c=US -h localhost -P 2 -x -w secret -f MegaNova.ldif`

You can manually modify the .ldif file or use an LDAP software utility, such as the OpenLDAP browser Softerra LDAP Browser from:

`http://www.softerra.com/products/products.php`

7.7 Configuring SSL

By default, communications between the Repository and the LDAP server are unencrypted.

To encrypt communications between the Repository and the LDAP server

1 Configure SSL on the LDAP server.

Ensure that the LDAP server is configured to use the Secure Sockets Layer (SSL). For detailed instructions, see the documentation provided with the LDAP server.

In preparation for the next step, export the LDAP server's certificate to a file.

2 Import the LDAP server's certificate.

You must add the LDAP server's certificate to the Repository's list of trusted certificates. The list is located in a file called **cacerts**.

In the following procedure, you use the **keytool** program. This program is included with the Repository (as well as the Java SDK).

To import the LDAP server's certificate

A Navigate to the *Java CAPS-root***repository\jre\1.4.2_04\bin** directory.

B Run the following command:

```
keytool -import -trustcacerts -alias alias
-file certificate_filename -keystore cacerts_filename
```

For the **-alias** option, you can assign any value.

For the **-file** option, specify the fully qualified name of the LDAP server's certificate. For example:

```
C:\mycertificate.cer
```

For the **-keystore** option, specify the fully qualified name of the **cacerts** file. The **cacerts** file is located in the *Java CAPS-root***repository\jre\1.4.2_04\lib\security** directory. For example:

```
C:\JavaCAPS51\repository\jre\1.4.2_04\lib\security\cacerts
```

C When prompted, enter the keystore password. The default password is **changeit**.

D When prompted to trust this certificate, enter **yes**.

The following message appears:

```
Certificate was added to keystore
```

3 Modify the LDAP server URL.

In the **<Realm>** element of the **server.xml** file, modify the URL of the LDAP server as follows:

- Set the protocol to **ldaps**.
- Set the port number to the port number that the LDAP server listens on for SSL requests. Typically, this number is 636.

For example:

```
<Realm className="org.apache.catalina.realm.JNDIRealm"
connectionURL="ldaps://myldapserver:636"
```

7.8 LDAP and UNIX Java CAPS Environments

If the Logical Host of your Java CAPS environment is running on a UNIX system, you must configure your LDAP Provider URL to connect to your LDAP server. The following is common for a Java CAPS environment.

- LogicalHost running on UNIX
- Java CAPS Repository running on Windows
- LDAP running on UNIX

In this environment, the LDAP Provider URL in the WLM property sheet must be set to an exact URL.

To set an LDAP Provider URL

1. From the Environment Explorer tab, right-click the **WLV** component and select **Properties**.
2. From the WLV Configuration options, select **WLM Connector External System**.
3. Enter the exact URL to your LDAP server in the LDAP Provider URL field.
4. Click **OK** to save changes.

7.9 Configuring a Sun Java System Directory Connection

The following procedure provides the steps for configuring a Sun Java System Directory connection.

To configure a Sun Java System Directory connection

1. From the Environment Explorer tab, right-click the **WLV** component and select **Properties**.
2. In the properties tree, expand **WLMConnector External System** in the tree and select **Sun Java System Directory Server/ADS**.

   Table 16 describes the properties that appear.

   The default values are intended to match the standard schema of Sun Java System Directory Server. If you have not changed the standard schema, then all you need to do is change **localhost** in the **Java Naming Provider URL** property and **caps** in the **Group ParentDN**, **Naming Security Principal**, **Roles ParentDN**, and **Users ParentDN** properties to match your environment. If you have changed the standard schema, check each property and if necessary, modify the default value.

Table 16 SunJavaSystemLdapConnection Properties

Property	Description
Group DN Attribute Name In Group	The name of the Distinguished Name attribute in group entries. The default value is **entrydn**.
Group Name Field In Group DN	The name of the group name field in group Distinguished Names. The default value is **cn**.
Group Of User Filter Under Groups ParentDN	The LDAP search filter used to retrieve all of a user's groups. This property follows the syntax supported by the **java.text.MessageFormat** class with **{1}** marking where the user's Distinguished Name should be inserted. The default value is **uniquemember={1}**.

Table 16 SunJavaSystemLdapConnection Properties

Property	Description
Group ParentDN	The parent Distinguished Name of the group entries. In other words, this property specifies the root entry of the Groups portion of the LDAP directory.
Java Naming Factory Initial	The fully qualified name of the factory class that creates the initial context. The initial context is the starting point for JNDI naming operations. The default value is **com.sun.jndi.ldap.LdapCtxFactory**.
Java Naming Provider URL	The URL of the JNDI service provider. The default value is **ldap://localhost:389**. Be sure to change **localhost** to an appropriate value for your environment.
Java Naming Security Authentication	The security level to use in JNDI naming operations.
Java Naming Security Credentials	The password of the naming security principal.
Java Naming Security Principal	The security principal used for connecting to the LDAP server.
Role Name Attribute Name In User	The name of the role name attribute in user entries. The default value is **nsroledn**.
Role Name Field In RoleDN	The name of the role name field in role Distinguished Names. The default value is **cn**.
Roles Parent DN	The parent Distinguished Name of the role entries. In other words, this property specifies the root entry of the Roles portion of the LDAP directory.
UserDN Attribute Name In User	The name of the Distinguished Name attribute in user entries. The default value is **entrydn**.
UserId Attribute Name In User	The name of the user ID attribute in user entries. The default value is **uid**.
Users ParentDN	The parent Distinguished Name of the user entries. In other words, this property specifies the root entry of the Users portion of the LDAP directory.

3 Click **OK** to close the **Properties** dialog box.

7.10 Configuring an Active Directory Connection

The following procedure provides the steps for configuring an Active Directory connection.

To configure an Active Directory connection

1. From the Environment Explorer tab, right-click the **WLV** component and select **Properties**.
2. In the properties tree, expand **WLMConnector External System** in the tree and select **Sun Java System Directory Server/ADS**.

   Table 17 describes the properties that appear.

   The default values are intended to match the standard schema of Active Directory Services. If you have not changed the standard schema, then all you need to do is change **localhost** in the **Java Naming Provider URL** property and **caps** in the **Group ParentDN**, **Naming Security Principal**, **Roles ParentDN**, and **Users ParentDN** properties to match your environment. If you have changed the standard schema, be sure to check each property and (if necessary) modify the default value.
3. Click **OK** to close the **Properties** dialog box.

Table 17 ActiveDirectoryConnection Properties

Property	Description
Group DN Attribute Name In Group	The name of the Distinguished Name attribute in group entries. The default value is **distinguishedName**.
Group Name Field In Group DN	The name of the group name field in group Distinguished Names. The default value is **cn**.
Group Of User Filter Under Groups ParentDN	The LDAP search filter used to retrieve all of a user's groups. This property follows the syntax supported by the **java.text.MessageFormat** class with **{1}** marking where the user's Distinguished Name should be inserted.
Group ParentDN	The parent Distinguished Name of the group entries. In other words, this property specifies the root entry of the Groups portion of the LDAP directory.
Java Naming Factory Initial	The fully qualified name of the factory class that creates the initial context. The initial context is the starting point for JNDI naming operations. The default value is **com.sun.jndi.ldap.LdapCtxFactory**.

Table 17 ActiveDirectoryConnection Properties

Property	Description
Java Naming Provider URL	The URL of the JNDI service provider. The default value is **ldap://localhost:389**. Be sure to change **localhost** to an appropriate value for your environment.
Java Naming Security Authentication	The security level to use in JNDI naming operations.
Java Naming Security Credentials	The password of the naming security principal.
Java Naming Security Principal	The security principal used for connecting to the LDAP server.
Role Name Attribute NameIn User	The LDAP search filter used to retrieve all of a user's roles. This property follows the syntax supported by the **java.text.MessageFormat** class with **{1}** marking where the user's Distinguished Name should be inserted.
Role Name Field In RoleDN	The name of the Distinguished Name attribute in role entries. The default value is **cn**.
Roles ParentDN	The parent Distinguished Name of the role entries. In other words, this property specifies the root entry of the Roles portion of the LDAP directory.
UserDN Attribute Name In User	The name of the Distinguished Name attribute in user entries. The default value is **distinguishedName**.
UserId Attribute Name In User	The name of the user ID (that is, the login ID) attribute in user entries. The default value is **sAMAccountName**.
Users ParentDN	The parent Distinguished Name of the user entries. In other words, this property specifies the root entry of the Users portion of the LDAP directory.

7.11 Assigning Tasks

Task assignment allows you to set up and view tasks, depending on your organizational role. With certain management level rights, you may assign a person who will receive a task, if the Activity fails. See **Audit Processing Tutorial** on page 176 for a complete Task Assignment example.

To configure a Task Assignment

1 Double-click the **User Activity**.

The **Worklist Manager** dialog appears.

2 Click **Search** to find an LDAP source.

The user list appears.

3 Click **OK** to return to the Worklist Manager dialog.

4 Navigate the Roles or Groups list to find your assignees.

5 Select individuals from the list and click **Assign**.

6 Select the **Condition** tab to enter an expression.

7 You can create expressions in the Business Rule environment to evaluate an Activity for user completion.

8 You may also:

- Add another rule by choosing Add.
- Delete an assignment from this page by selecting an expression and choosing Delete.

9 Click **OK** when you have completed the configuration.

7.11.1 Using the Worklist Manager

Login to the Worklist Manager to view your list of tasks. You will see your own tasks as well as any subordinates assigned to you (if applicable). You can manage your tasks and/or the tasks of your subordinates from this view. See **Audit Processing Tutorial** on page 176 for a complete Task Assignment example.

7.11.2 Managing Tasks

From the Worklist Manager, you can manage your tasks and/or the tasks of your subordinates. You can access the Worklist Manager with a web browser by entering:

`http://<hostname>:<port>/<wlm application name>`

- <***hostname***>: The system where your Repository is running.
- <***port***>: The port number to access your Repository.
- <***wlm application name***>: The configurable name of the WLM Application. Set this property in the WLM External Configuration properties.

Here is an explanation of the options you will see:

- **Checkout/Checkin** is necessary to ensure that more than one person is not working on the same task. This is the first thing you must do before you can make any changes to a task.
- **Escalate** sends the task to the user's manager.
- **History** provides a record of all past information about the task.
- **Reassign** allows you to pass a task to another team member. Click **Reassign** and select a name from the drop-down list. This option is available for manager's only.

- **Execute** opens the task so that you can perform the task.
- **Complete** commits the changes. You must select **Complete** before leaving the Worklist Manager or your changes will be lost.

See **Audit Processing Tutorial** on page 176 for a complete Task Assignment example.

Chapter 8

Catching Exceptions Within Business Processes

eInsight ensures the integrity of critical business transactions and long-lived processes as they flow between multiple applications and multiple enterprises via automated exception handling capabilities. Exceptions can be automatically handled so that every process either completes or is successfully backed out using compensating transactions to ensure consistent information flows between systems.

This chapter explains the concept of exception handling and how to configure various methods of handling errors.

What's in This Chapter

8.1 Scope and Process Level Exceptions

In eInsight, Exception Handling allows one or more components to throw an exception that is caught by eInsight within a Scope or at the process-level. Scope allows you to define a range for handling exceptions. The range of the Scope can span one or more Activities in the Business Process. When your exceptions handler is not attached to a Scope, the Exception Handling is at the process level.

You can configure eInsight to catch all exceptions or certain exceptions that you specify. The elements that you use to configure Exception Handling in your model are:

- Catch Named Exceptions
- Catch All Exceptions

8.1.1 Exception Handling Configuration

Exception handlers are configured to catch errors that are thrown by components and/or web services. These systems can be configured to publish one or more exceptions.

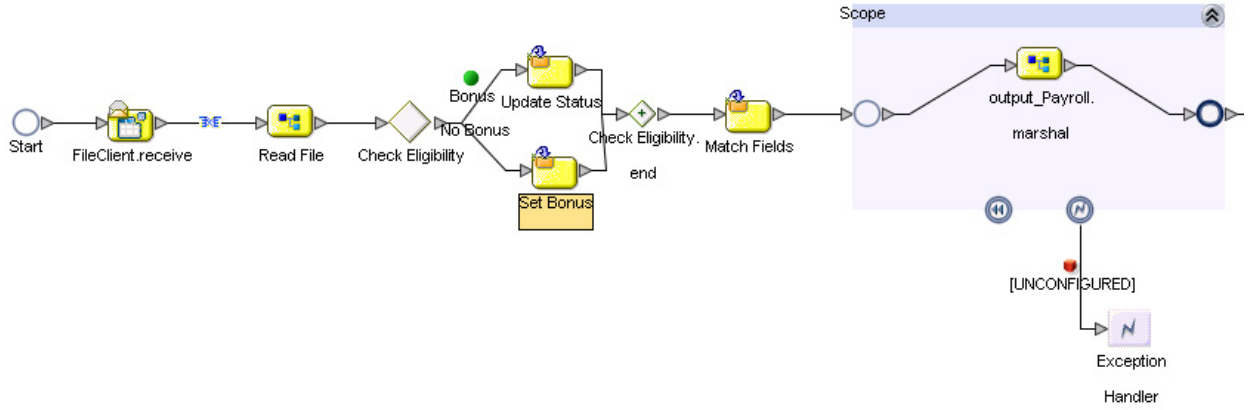
8.1.2 Catching a Named Exception

To catch a named exception, there must be a defined fault in the WSDL file for your Business Process. You can use defined faults or create a WSDL file that includes faults in eGate. For detailed information about editing WSDL in eGate, see the *Sun SeeBeyond eGate Integrator User's Guide.*

To add a Catch Named Exception

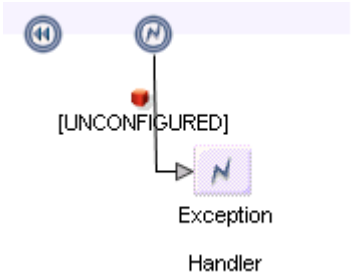
1. Drag a Scope element to the Business Process Designer.
2. Drag one or more activities into the Scope and connect the Scope to the rest of your Business Process, as shown in Figure 66.

Figure 66 Build an Exception Handler



3. Drag the **Catch Named Exception Activity** onto the Exception icon of the **Scope** for which the Exception Handler applies. See Figure 67.

Figure 67 Named Exception Handler



4. Select the **Exception Handler Activity** and then click the **Show/Hide Property Sheet** from the Business Process Designer toolbar.

   The property sheet appears on the right of your screen, as shown in Figure 68.

Figure 68 Named Exception Properties

Exception Name	ns2:MarshalException
Output	output_Payroll.marshal.Fault1
Alert Properties	Click button to configure
Logger Properties	Click button to configure

5 In the Exception Handler properties, double-click the empty fields to reveal a drop-down list and configure the following:

- The **Exception Name** – which is the runtime value for the exception that will be passed from the component to eInsight at runtime.
- The **Output** – which is the output Attribute that contains the runtime name of the thrown fault.

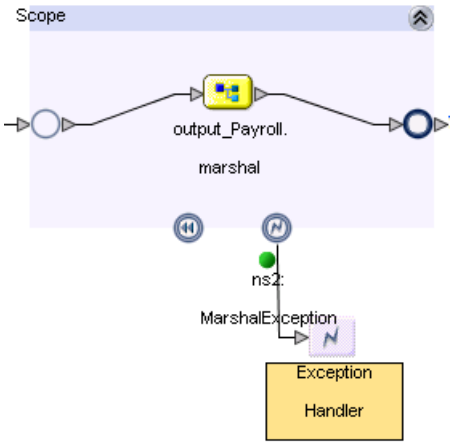
The fault name is auto-populated with values based on the components (and the associated WSDL files) in the Business Process Designer. If the drop-down lists are unpopulated, then there is no WSDL in use with defined exceptions. In this case, you must:

- Load a WSDL file with defined faults.
- Create a WSDL file with defined faults.

Note: *For detailed information about editing WSDL, see the Sun SeeBeyond eGate Integrator User's Guide.*

6 Close the Property Sheet by clicking the **Show/Hide Property Sheet** on the Business Process Designer toolbar.

Figure 69 Configured Exception



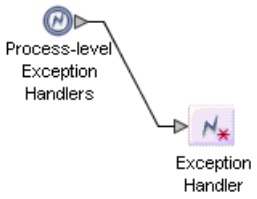
Once the Exception Handler is configured, the red icon will turn green and the Exception name appears on the link. See Figure 69 for an example of the configured Exception Handler.

8.1.3 Catching All Exceptions

To add a Catch All Exceptions

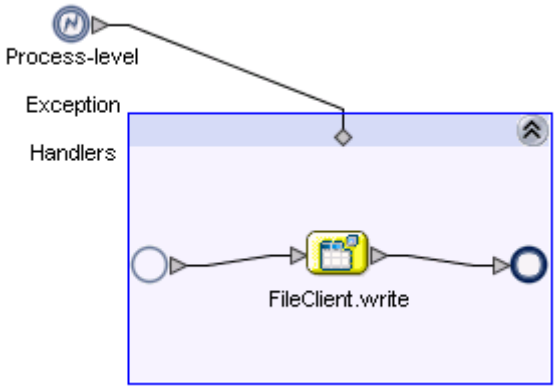
1 Drag the **Catch All Exceptions Activity** to a **Scope** in the Business Process Designer or onto the canvas, as shown in Figure 70. This will capture any and all exceptions that occur.

Figure 70 Catch All Exceptions (Process-Level)



2 Double-click the **Exception Activity** to configure the Exception Handler, as shown in Figure 70.

Figure 71 Configure Catch All Exceptions

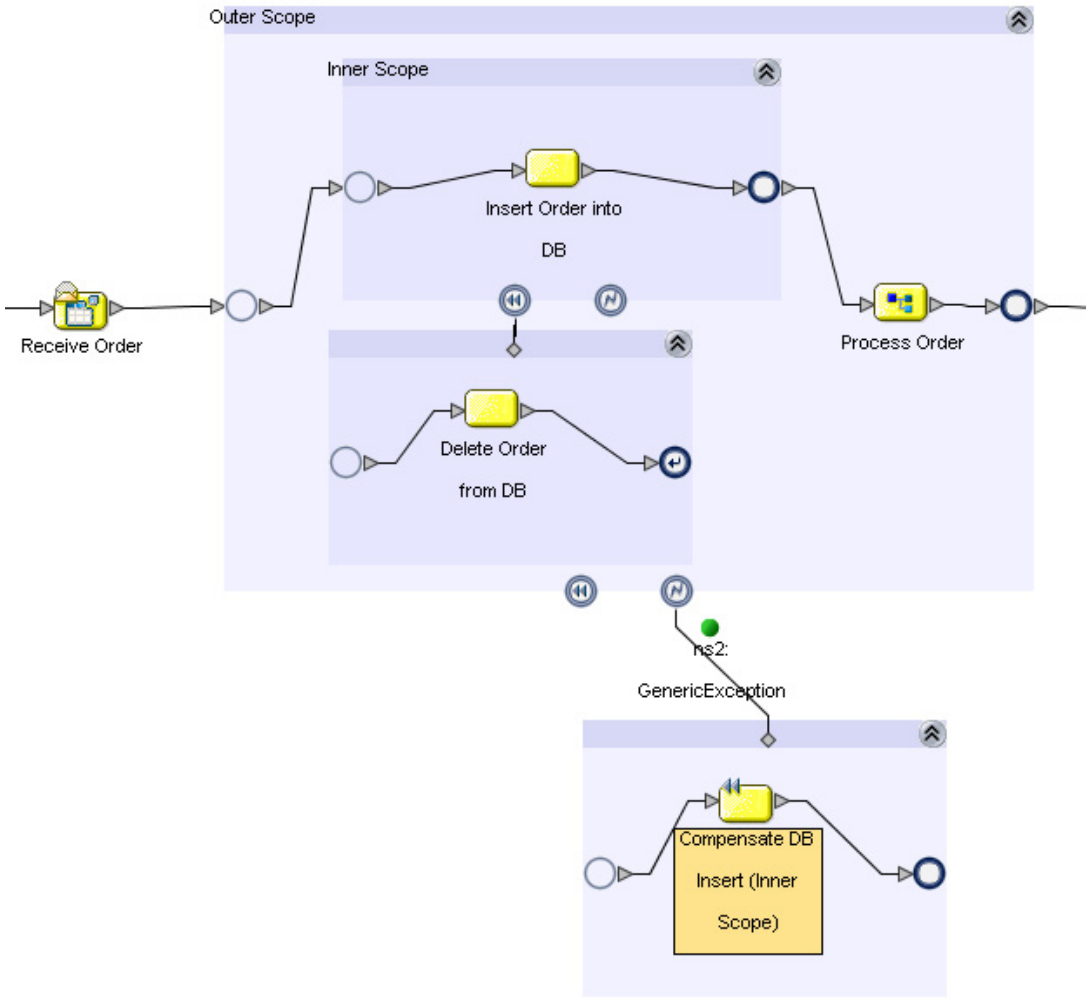


You can configure the Exception Handler to perform an action when an exception is encountered. In Figure 70, the Exception Handler has been configured to write the exception to a file.

8.2 Compensation Handling

Compensation Handlers allow you to define processes to compensate previously executed system interactions. This can be used in conjunction with Exception Handling logic when a compensating transaction needs to be invoked. The logic for compensating a transaction can be simple or complex, but either way, it will be defined as a Business Process within the Compensation Handler.

Figure 72 Example of Compensation Handling



Compensation you to create the process flow for executing complex compensations. Exception Handlers for parent scopes invoke the correct Compensation Handlers in the appropriate order.

8.2.1 Using the Compensation Activity

The Compensation Activity, which is modeled as a "Throw", is used in an Exception Handler. The Exception Handler initiates the compensation process. Compensation is always used with the Scope and Exception Handling elements. See Figure 72 for an example of a configured Compensation Handler. Refer to this figure when reviewing the following steps.

To add a Compensation Activity

1. Create a scope ("Outer Scope")
2. Create another scope inside of the Outer Scope ("Inner Scope")
3. Add a **Compensation Activity** to the Inner Scope

4 Add an **Exception Handler** to the Outer Scope

5 Add a **Throw** to the Exception Handler

6 Configure the **Exception**, see **Catching a Named Exception** on page 121.

7 Configure the properties of the Compensation Throw to call the name of the Inner Scope. See **Configuring the Compensation Activity** on page 125 for details.

Note: *Although it is not visible, the entire Business Process exists as a scope. This allows a user to create a single scope within a Business Process and design a compensation handler for that scope. In this case, the user will drop the exception handler at the Business Process level.*

8.2.2 Configuring the Compensation Activity

To configure the Compensation Activity

1 Select a Compensation Activity.

2 Click the **Show Property Sheet** toolbar button.

The Property Sheet for the Compensation Activity appears on the right.

Figure 73 Compensation Activity Properties

3 Enter the name of the Scope where the compensation takes place.

Chapter 9

Deploying Business Processes

This chapter covers the procedures involved in deploying Business Process models you have created within a Java CAPS project, including creating connectivity maps and deployment profiles.

What's in This Chapter

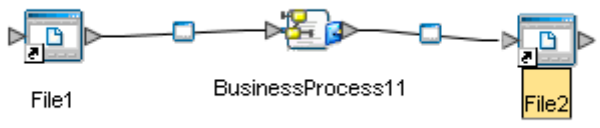
9.1 Creating Connectivity Maps

The Connectivity Map represents connection information in the Java Integration Suite. The flow is represented at a higher level than in the Business Process Model. eInsight also uses the information in the Connectivity Map to establish and maintain connections to systems for the correct step in a Business Process.

To create a Connectivity Map with a Business Process

1. Drag the desired Business Process from the Project Explorer to the Connectivity Map Editor.
2. Add the external systems and components to the Connectivity Map Editor, as shown in Figure 74.

Figure 74 Connectivity Map with Business Process

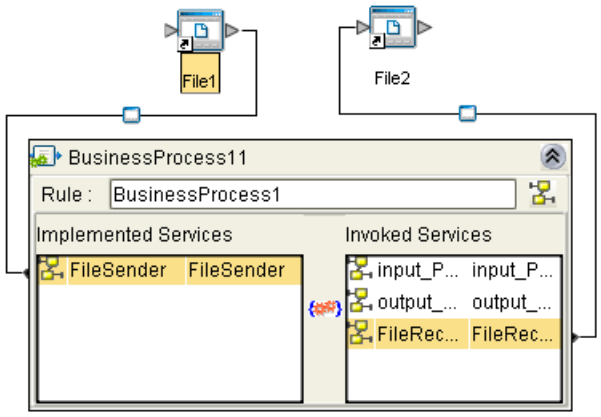


To connect Business Process Activities

1. Double-click the **Business Process** in the Connectivity Map to open the Binding Dialog.

2 Connect the Activities to the appropriate component, as shown in Figure 75.

Figure 75 Connectivity Map: Business Process Binding



- Receive Activities appear in the left panel.
- Invoke and Reply Activities appear in the right panel.

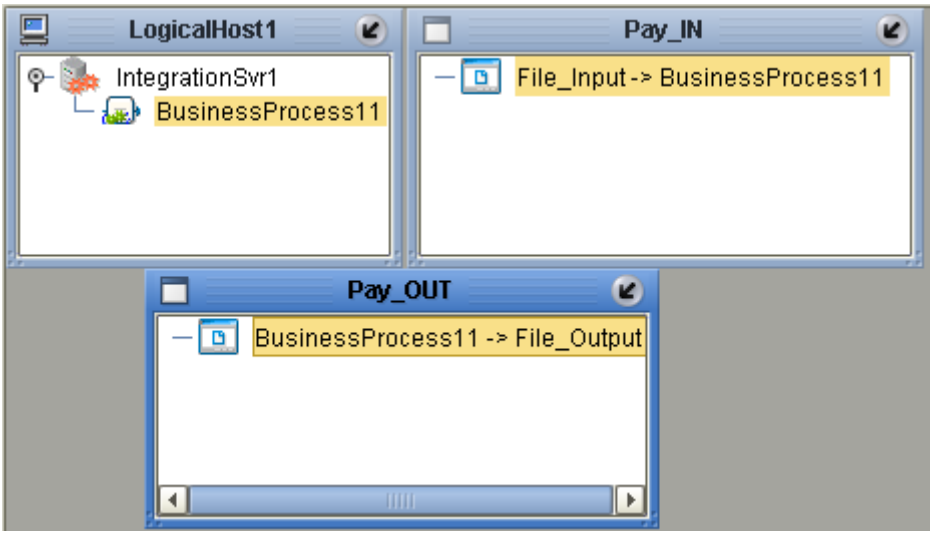
9.2 Starting the Logical Host

Before you create your Deployment Profile, start the Logical Host for your deployment. To start the Logical Host, from **<*C:\JavaCAPS51*>\logicalhost**, run **start_<*domainX*>.bat**. When the Logical Host is ready, you can create your Deployment Profile. For detailed information about starting the Logical Host, see the *Sun SeeBeyond eGate Integrator User's Guide.*

9.3 Deploying a Business Process

A Business Process is like any other Java CAPS Suite component. After creating your Environment, Logical Host and other necessary hosts, create a Deployment Profile.

Figure 76 Deployment Profile



The deployable components along with the Business Process from the Connectivity Map will appear in your Deployment Profile. Drag and drop the Business Process to the desired Integration Server. Activate your Deployment Profile to complete the deployment of the components to the target hosts. For more information about Deploying a Project, see the *Sun SeeBeyond eGate Integrator User's Guide*.

9.3.1 Configuring Load Balancing

When a Business Process needs to be scaled to meet heavier processing needs, you can distribute the Business Process across multiple engines to increase throughput. eInsight's load balancing algorithm automatically distributes processing across multiple engines; however, eInsight cannot load balance correlated messages.

To configure load balancing

1. Ensure that eInsight Persistence is enabled.
2. In the eInsight **Engine Properties**, set eInsight **Persistence** to **Multiple Engines**.
3. Configure all eInsight Engines to share the same database.

9.3.2 Configuring Failover

When your Business Process is configured for load balancing, eInsight's failover capabilities ensure throughput of running Business Process instances. When Business Process instances encounter an engine failure, eInsight load balances those instances across all available engines. As with load balancing, eInsight's failover capabilities are limited to non-correlated messages.

To configure failover

1. In the **eInsight Engine Properties**, set **Engine Expiry Interval (sec)** so that it registers itself as alive frequently enough to meet the demands of your system. Optimizing this property setting might require some testing. This property also

applies to the interval for the recovery of dangling instances. The default setting is 120.

2 In the **eInsight Engine Properties**, set **Failover Grace Period (sec)** for the optimal elapsed time period before moving running Business Process instances from an unavailable engine to an available engine. Optimizing this property setting might require some testing.

9.3.3 Tuning eInsight for Better Performance

The eInsight Engine provides a large array of parameters for performance tuning. For detailed information about optimizing the performance of your eInsight Engine, see the *Java Composite Application Platform Suite Deployment Guide*.

Chapter 10

Using Enterprise Manager with eInsight

Enterprise Manager allows you to identify problems with components or systems. From Enterprise Manager, you can double-click Business Process components to go directly to a problem.

From Enterprise Manager, you can:

- Filter the list of displayed instances to identify exceptions.
- Navigate to particular versions of a Business Process to monitor the progress of instances.
- Use a Web-based interface to securely access the monitoring environment over the internet.

What's in This Chapter

10.1 Monitoring Business Processes

After you have configured eInsight persistence, you can use Enterprise Manager to monitor your Business Process Instances. The procedures in this section help you to ensure that the Business Process appears in Enterprise Manager as expected.

Before you connect to Enterprise Manager, verify that the Adobe SVG Plug-in for Enterprise Manager is installed. For detailed information about installing the Adobe SVG Plug-in, see the *Java Composite Application Platform Suite Installation Guide*. Before you begin monitoring eInsight Business Processes, you must deploy and manage any necessary application servers in Enterprise Manager. For detailed information about using Enterprise Manager for deploying and managing application servers, see the *Sun SeeBeyond eGate Integrator System Administration Guide*.

From the Enterprise Manager's Business Process Instance Monitor tab, you can start, stop, and evaluate Business Process Instances. You can also refresh the Business Process Instance lists, change monitoring options, filter Business Process Instances, and view the Business Process Instances and their associated Business Process Instances in various ways.

10.2 Monitoring New Business Processes

The following procedure provides the steps for monitoring a Business Process in Enterprise Manager.

To monitor a new Business Process

1. Open and save each Business Process.

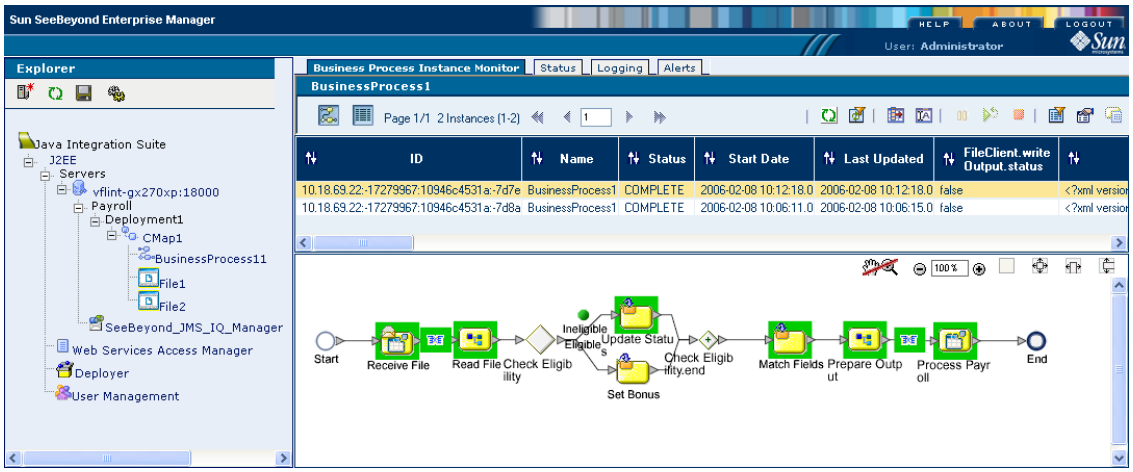
Note: *If a Business Process has User Activities or special OTDs, open and close each of them to ensure that they register with the monitor.*

2. Check in each Business Process.
3. Check out each Business Process.
4. Run the database scripts again for each Business Process.
5. Save each Business Process.
6. Activate the Deployment Profile, rebuild, and redeploy the Project.
7. In your web browser, connect to Enterprise Manager and log in.

Note: *For detailed information about logging into Enterprise Manager, see the Sun SeeBeyond eGate Integrator System Administration Guide.*

8. In the Enterprise Manager Explorer, navigate to the correct Server/Project/Deployment Profile/Connectivity Map, and click the Business Process name.
9. In the Business Process Instance Monitor tab, click the Show/Hide list of Business Process Instances button. This button is located next to the Show/Hide Business Process Model button at the upper left of the Business Process Instance Monitor panel.

Figure 77 Business Process Instance Monitor Tab



10.3 Monitoring Modified Business Processes

The following procedure provides the steps for monitoring a modified Business Process in Enterprise Manager.

To monitor a modified Business Process

1. If necessary, check out the Business Process.
2. Modify the Business Process as necessary.
3. Save all changes.
4. Check in the Business Process.
5. Check out the Business Process.
6. Run the database script again.
7. Activate the Deployment Profile, rebuild, and redeploy the Project.
8. In your web browser, connect to Enterprise Manager and log in.

Note: *For detailed information about logging into Enterprise Manager, see the Sun SeeBeyond eGate Integrator System Administration Guide.*

9. In the Enterprise Manager Explorer, navigate to the correct Server/Project/Deployment Profile/Connectivity Map, and click the Business Process name.
10. In the Business Process Instance Monitor tab, click the Show/Hide list of Business Process Instances button. This button is located next to the Show/Hide Business Process Model button at the upper left of the Business Process Instance Monitor panel.

10.4 Monitoring a Business Process in an Imported Project

The following procedure provides the steps for monitoring a Business Process in an imported Project.

To monitor a Business Process in an imported project

1. Import the project into Enterprise Designer.
2. Check out any Business Processes.
3. Open and save each Business Process.

Note: *If a Business Process has User Activities or special OTDs, open and close each of them to ensure that they register with the monitor.*

4. Check in each Business Process.
5. Check out each Business Process.
6. Run the database script again.
7. Activate the Deployment Profile, rebuild, and redeploy the Project.
8. In your web browser, connect to Enterprise Manager and log in.

Note: *For detailed information about logging into Enterprise Manager, see the Sun SeeBeyond eGate Integrator System Administration Guide.*

9. In the Enterprise Manager Explorer, navigate to the correct Server/Project/Deployment Profile/Connectivity Map, and click the Business Process name.
10. In the Business Process Instance Monitor tab, click the Show/Hide list of Business Process Instances button. This button is located next to the Show/Hide Business Process Model button at the upper left of the Business Process Instance Monitor panel.

10.5 Controlling and Evaluating Business Process Instances

The Business Process Instance Monitor tab provides a set of toolbars for viewing and evaluating Business Process Instances. Before you start monitoring Business Process Instances, be sure to acquaint yourself with these tools.

10.5.1 Displaying Instances and Lists

The buttons at the upper left of the Business Process Instance Monitor tab provide the graphic display of Business Process Instances as well as Business Process Instance Lists. The following table describes each button.

Table 18 Business Process Instance Monitor Tab: Display Buttons

	**Show Business Process Model** renders the image of a Business Process Instance in the **Details** window.
	**Hide Business Process Model** hides the rendered image of a Business Process Instance in the **Details** window.
	**Show List of Business Process Instances** displays the attributes of the current Business Process Instance in list format, and adds the tools described in the following table.
	**Hide List of Business Process Instances** hides the attributes of the current Business Process Instances, and removes the instance tools from the interface.

10.5.2 Controlling the Display of Business Process Instances

When Show Business Process Model is selected, you can manipulate the view of Business Processes using the buttons described in the following table. These buttons are located at the upper right of the Show Business Process Model panel.

Table 19 Toolbar: Show Business Process Model Button

	**Alert to Enable Monitoring** alerts you to enable monitoring in the eInsight Engine Configuration Properties in order to see Business Process Activity status and details in the eInsight Business Process Instance Monitor.
	**Enable Zoom and Pan** enables zooming and panning of the Business Process Instance view.
	**Disable Zoom and Pan** disables zooming and panning of the Business Process Instance view.
	**Zoom Out** zooms out to a lower percentage view of the Business Process Instance.
	**Zoom In** zooms in to a higher percentage view of the Business Process Instance.
	**100%** changes the percentage of the view to 100%.
	**Fit All** changes the percentage of the view so that the entire Business Process Instance fits in the Show Business Process Model panel.

Table 19 Toolbar: Show Business Process Model Button

	**Fit Width** changes the percentage of the view so that the width of the Business Process Instance fits in the Show Business Process Model panel.
	**Fit Height** changes the percentage of the view so that the height of the Business Process Instance fits in the Show Business Process Model panel.

10.5.3 Controlling the Display of Business Process Instance Data

When Show List of Business Process Instances is selected, you can manipulate the view of Business Process Instance data using the buttons described in the following table. These buttons are located at the upper right of the Show list of Business Process Instances panel.

Table 20 Toolbar: Show List of Business Process Instances Button

	**Refresh list of Business Process Instances** refreshes the entire Business Process Instance list.
	**Refresh Filtered list of Business Process Instances** refreshes a filtered list of Business Process Instances.
	**Choose Preferences** allows you to add, move, and sort the columns in the Business Process Instance.
	**Change Attribute Display Names** allows you to change the display name of all Business Process Instance attributes.
	**Suspend** suspends a Business Process Instance.
	**Start** starts a stopped Business Process Instance.
	**Stop** stops a Business Process Instance.
	**Filter Business Process Instances** allows you to set criteria to display a specific instance or group of Instances.
	**Business Process Instance Attributes** displays the XML content of each Business Process Instance attribute.

Table 20 Toolbar: Show List of Business Process Instances Button

	**Activity Details** displays a dialog box with the details of a selected Activity, including the following: ▪ Start Time ▪ End Time ▪ Status ▪ Message input/output (XML viewer) ▪ Exception content ▪ Each activity represents a step within the Business Process.
	**Go To Caller** takes you to calling Business Process Instance such as a parent Business Process.
	**Go To Callee** takes you to a called Business Process Instance such as a child Business Process.
	**Legend** displays a window with a legend of the colors used to show the status of a Business Process Instance. The Legend displays the following Business Process states: ▪ Completed ▪ In Progress ▪ Failed ▪ Unknown

10.5.4 Choosing Business Process Attributes to Display

In the list of Business Process Instances, you can make the following choices.

- Columns to show
- Columns to hide
- Column order
- Maximum rows per page
- Instance list refresh rate
- Total number of Business Process Instances allowed

The following procedure provides the steps for choosing Business Process attributes to display in the list of Business Process Instances.

To choose Business Process attributes to display

1. In the toolbar of the list of Business Process Instances, click the **Choose Preferences** button.

   The Choose Business Process Attributes to Display dialog box appears.

2. In the Chosen Columns list, select the columns that you want to hide from the list of Business Process Instances.
3. Click the leftward double arrow to move the selected columns to the Available Columns list.

4 In the Maximum Rows Per Page field, enter the number of rows you want to display on each page of the list of Business Process Instances. The default is 10.

5 In the Instance List Refresh Rate field, enter the number of seconds you want to pass between refreshes of the list of Business Process Instances. The default is 120.

6 In the Number of BP Instances field, enter the maximum number of Business Process Instances you want to monitor. The default is 500.

7 Click the Change Preferences button.

The dialog box closes.

10.5.5 Changing the Display Name of an Attribute

If you prefer to monitor Business Process Instance attributes using shortened names, you can change the display names of the attributes you want to include in the list of Business Process Instances. The following procedure provides the steps for changing the display names of Business Process Instance attributes.

To change the display name of an attribute

1 In the toolbar of the list of Business Process Instances, click the Change Attribute Display Names button.

The Change Attribute Display Name dialog box appears.

2 In an attribute display name field, edit the text of the attribute display name.

3 Continue editing these text fields as necessary.

4 Click the Submit button.

If you want to return the attribute display names to their default settings, click the Change Attribute Display Names button again and click the Reset button at the bottom of the dialog box.

10.5.6 Filtering Business Process Instances

You can filter the list of Business Process Instances in order to see only Business Process Instances that meet a specific set of criteria. The Filter Business Process Instance Dialog Box provides the following options.

- Business Process Instance Status
- Start date range
- Update date range
- Business Process attribute

To filter the list of Business Process Instances

1 In the toolbar of the list of Business Process Instances, click the Filter Business Process Instances button.

The Filter Business Process Instances dialog box appears.

2 In the Status drop-down list, select a Business Process status.

3 In the Time Stamp drop-down list, select a time stamp type.

4 For the From field, click the Select Date and/or Time button and select the date and time.

5 For the To field, click the Select Date and/or Time button and select the date and time.

6 In the Business Process Attribute drop-down list, select the attribute and filter criteria operator and text.

7 Click the Filter button.

10.5.7 Viewing the Content of a Business Process Instance Attribute

If you want to view the XML content of all Business Process Instance attributes, you can click the Business Process Instance Attributes button. A dialog box appears that lists each attribute and its XML content. You can also click the View XML button to see the XML in a structured XML viewer.

10.6 Monitoring Load-Balanced Business Process Instances

When you are monitoring load-balanced Business Process Instances in Recovery mode, single Business Process Instances appear to be mulitple Business Process Instances on multiple eInisght Engines. This is a normal result of load balancing a Business Process across multiple eInsight Engines.

10.7 Using Enterprise Manager's Administrative Tabs

In addition to monitoring Business Processes with Enterprise Manager, you can also check component status and manage application server logging and alerting. For detailed information about using Enterprise Manager's Status, Logging, and Alerts tabs, see the *Sun SeeBeyond eGate Integrator System Administration Guide*.

Chapter 11

Debugging Business Processes

The eInsight Business Process Debugger provides a debugging console and tool set for stepping through the BPEL code of your Business Process. Use the Debugger to uncover difficult-to-find errors that can prevent the successful execution of your Business Process.

What's in This Chapter

11.1 Enabling the Business Process Debugger

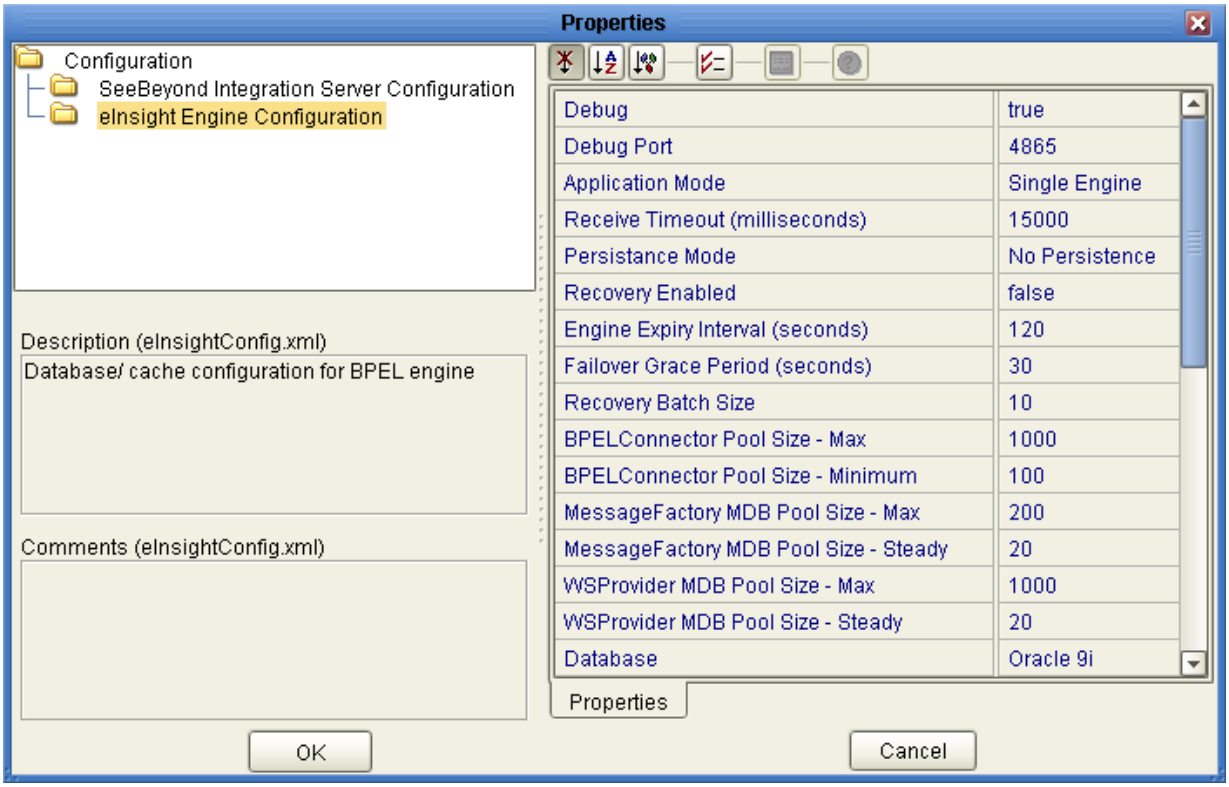
Before you can invoke the eInsight Business Process Debugger, you must enable the debug property in the eInsight Engine Configuration properties.

To enable the Business Process Debugger

1. In the Enterprise Explorer, select the Integration Server of the domain where you plan to deploy your Business Process.
2. Right-click the **Integration Server**.
3. On the context menu, select **Properties**.

   The **Properties** dialog box appears.

Figure 78 eInsight Engine Configuration Properties



4 In the **Properties** dialog box, navigate to **Configuration > eInsight Engine Configuration**.

5 Set the value for the Debug property to **True**.

6 Click **OK**.

11.2 Invoking the Business Process Debugger

After you have enabled debugging in the eInsight Engine Configuration Properties window and deployed your Business Process, you are ready to invoke the eInsight Business Process Debugger.

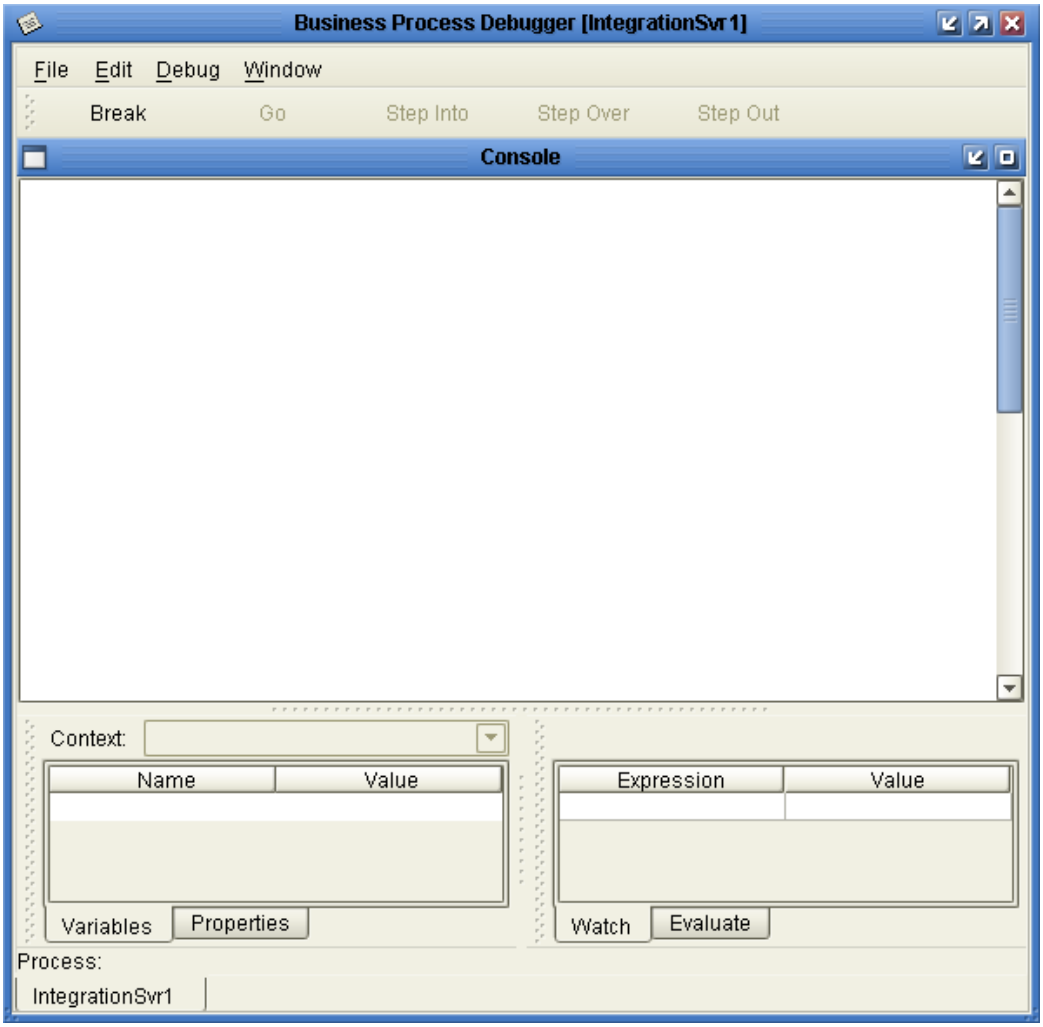
To invoke the Business Process Debugger

1 In the Enterprise Explorer, right-click your Project's **Integration Server**.

2 On the context menu, select **Business Process Debugger**.

The Business Process Debugger console appears.

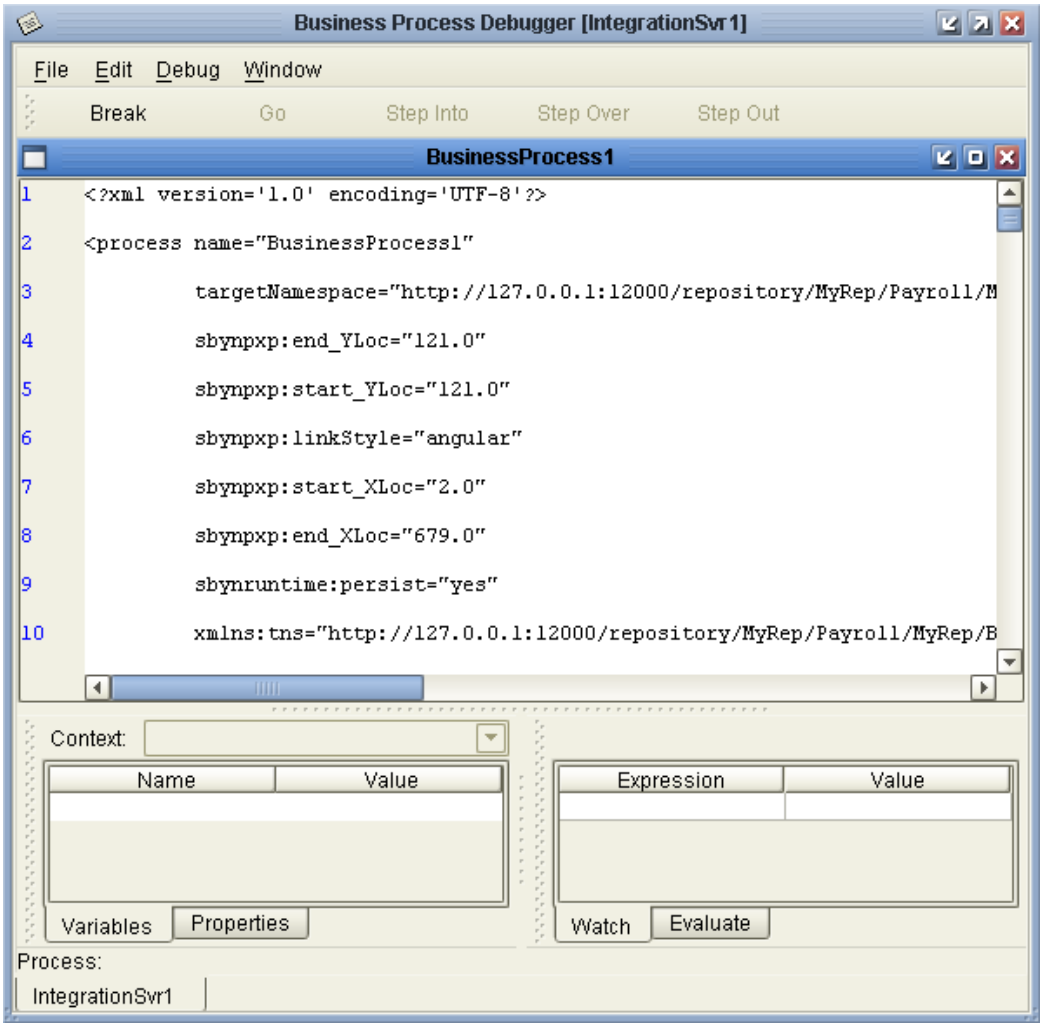
Figure 79 Debugger File Menu



3 Select **Attach** from the **File** menu.

The Business Process Debugger displays the BPEL code.

Figure 80 Business Process BPEL Code



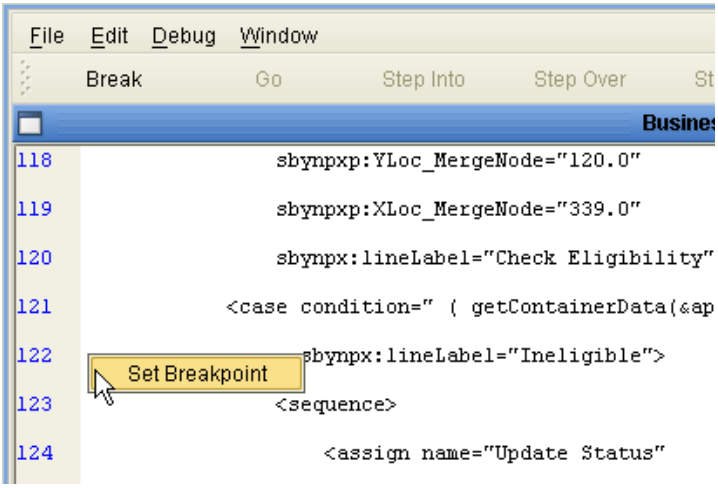
11.3 Setting Breakpoints

In order to **Break**, **Go**, **Step Into**, **Step Over**, and **Break on Faults** at lines of BPEL code as it executes, you can use the Debugger to set breakpoints.

To set a breakpoint

1 In the BPEL code console, right-click next to the line of code where you want to set the breakpoint.

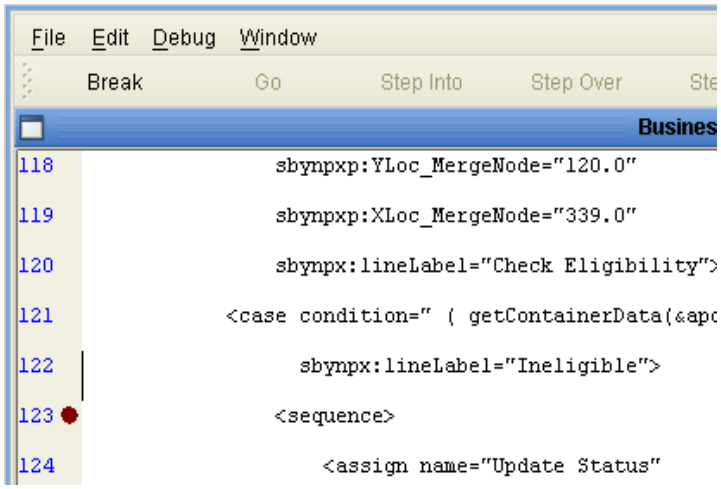
Figure 81 Set Breakpoint



2 On the context menu, select **Set Breakpoint**.

3 The Breakpoint Marker appears.

Figure 82 Breakpoint Marker



4 To examine the BPEL code, continue to set breakpoints at lines you want to examine.

11.4 Clearing Breakpoints

As you find BPEL code errors and correct them, you need to clear the breakpoints for those lines of code.

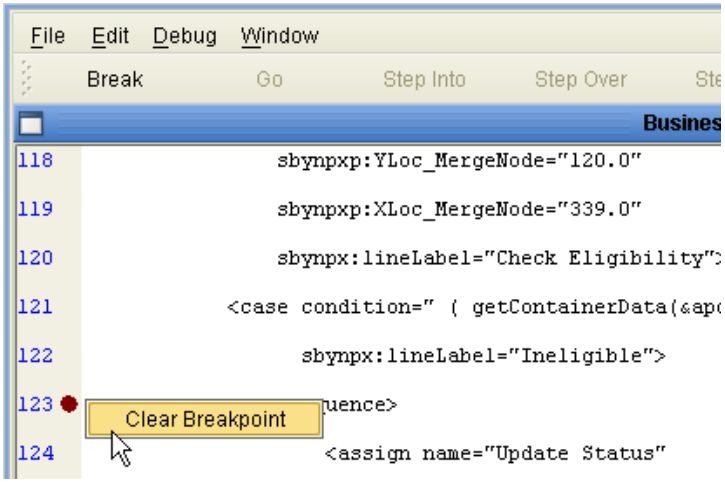
To clear a breakpoint

1 Click next to a breakpoint marker in the BPEL code.

2 Right-click the **BPEL code editor**.

3 On the context menu, select **Clear Breakpoint**.

Figure 83 Clear Breakpoint



11.5 Using the Debugging Options

As the BPEL code execution stops at the breakpoints, inspect the BPEL code for errors. To inspect the BPEL code, use the **Break**, **Go**, **Step Into**, **Step Over**, and **Break on Faults** options. You can use the options from the **Debug** menu or click them from the debugging console. Table 21 describes when to use the various debugging options.

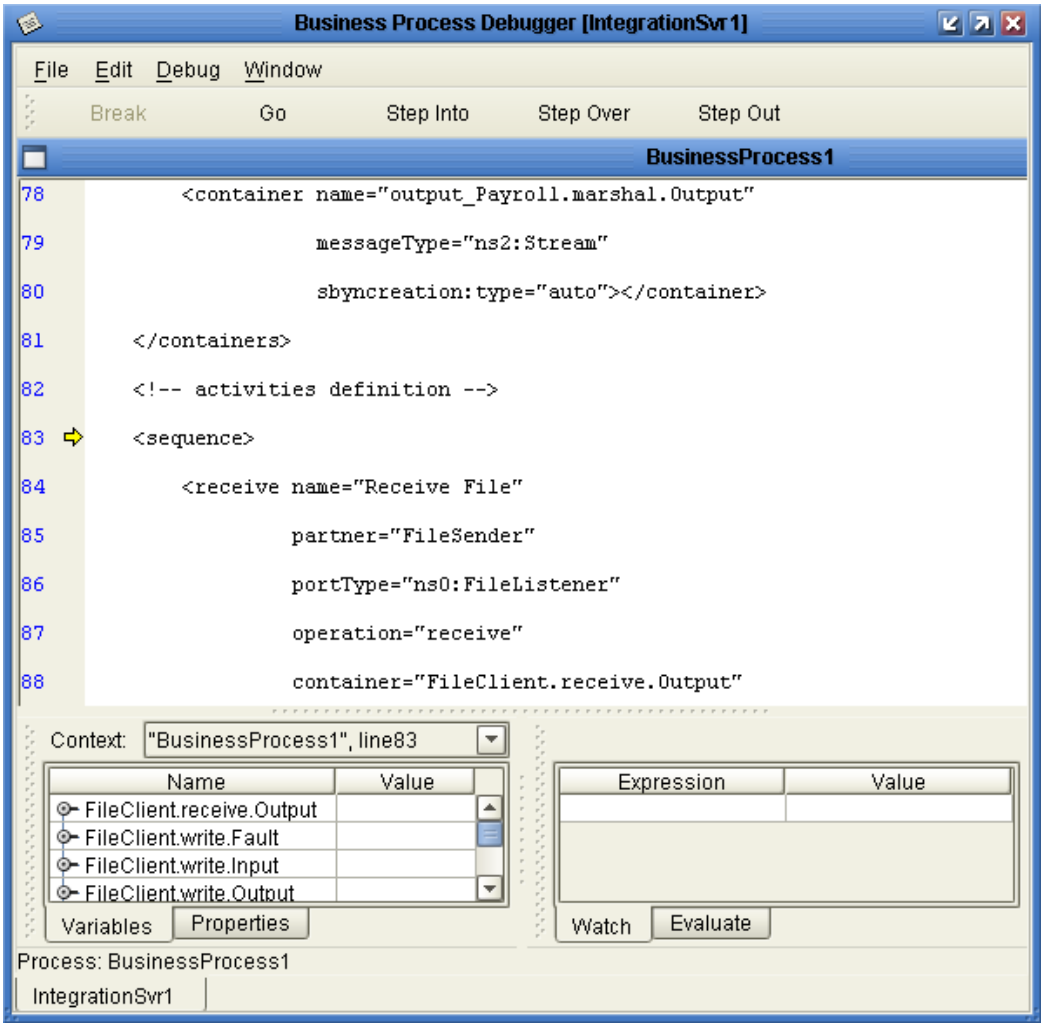
Table 21 Debugger Options

Debugger Option	When to Use it
Step Into	To lift the breakpoint and continue execution *including* the line of code at the breakpoint.
Step Over	To lift the breakpoint and continue execution *ignoring* the line of code at the breakpoint.
Step Out	To *terminate* the execution of code.
Break	To *pause* the execution of code.
Go	To execute the BPEL code *from the breakpoint*.
Break on Faults	To pause code execution *on faults*.

11.6 Inspecting the Variable Properties

You can inspect the variables in the Business Process by selecting the **Variables** tab and expanding the variable nodes. The **Properties** tab displays all variables of the executed source code.

Figure 84 The Variables Tab



11.7 Watching Variables for Evaluation

You can watch variables for evaluation by selecting the **Watch** tab. You can also evaluate variables by entering the code syntax preceded by the **%** (percent) character.

11.8 Toggling Between Debug Sessions

You can toggle between debug sessions by selecting the following options from the **Window** menu:

- **Cascade**
- **Tile**
- **Console**
- **Business Process**

Chapter 12

Upgrading eInsight from Version 4.X

This chapter provides the procedures involved in upgrading eInsight 4.X to eInsight 5.X.

What's in This Chapter

12.1 Overview

When considering an upgrade to eInsight 5.X, you should examine the number and complexity of your existing Business Process Models. If you have several complex Business Process Models in production, you may choose to integrate your current configuration with eInsight. This option allows you to leave your existing processes in place, while gaining the latest monitoring abilities and allowing you to create your new Business Process Models in eInsight.

12.1.1 Upgrading eInsight

The process of installing the Schema Runtime Environment (SRE) includes these high-level steps:

1. Install the eInsight Schema Run-time Environment.
2. Register Components with the Repository.
3. Connect Schema Components to Projects.
4. Connect Project Components to Schemas.
5. Monitor Components with the Enterprise Manager.

Note: *See the Sun SeeBeyond Java Composite Application Platform Suite Upgrade Guide for more information about upgrading your e*Gate Integrator 4.X installation.*

12.2 Integrating Existing Business Processes and Schemas

To integrate your existing e*Insight Business Processes and related Schemas, you will use the **Schema Runtime Environment** (SRE). Integrating your Business Processes and Schemas gives you the flexibility to use your existing implementation with the benefits of the new browser-based monitoring tools available in the Enterprise Manager.

12.2.1 Connecting with the Schema Runtime Environment

The SRE allows your systems to take advantage of Java CAPS tools by providing existing e*Insight Schemas the ability to interact directly with the Java CAPS JMS IQ Manager. eInsight 5.1.x Projects and e*Insight 4.5.x Schemas (running in the SRE) can publish and subscribe to each other's services. This inter-operability is established without rewriting existing Java and Monk Collaborations.

The SRE includes e*Gate and e*Insight GUIs and editors needed to maintain the upgraded components. See the *Sun SeeBeyond Java Composite Application Platform Suite Upgrade Guide* for a list of platforms supported by the Schema Runtime Environment.

Appendix A

eInsight Samples

This chapter guides you through importing and deploying the sample projects.

What's in This Appendix

A.1 Importing the End to End Sample

The End to End Sample is named **Payroll_Project.zip**. All eInsight samples and accompanying files reside in the **eInsight_Sample.zip** file, available from the Core Products tab of the Java CAPS Installer's Documentation page.

To download the End to End Sample

1. Open the Enterprise Manager and click the **Documentation** tab.
2. Select the **Core Products** tab.
3. Select **Sun SeeBeyond** eInsight **Business Process Manager** from the **Core Products** list.
4. Select the **Sample Projects** icon and open **eInsight_Sample.zip**.
5. Extract the contents of **eInsight_Sample.zip** to a new directory named **Samples**.
6. Go to the **Samples** directory and note that five zip files reside there.
7. Double-click **eInsight_Sample.zip** and extract the contents to a new subdirectory named **EndToEndSample**.

   eInsight_Sample.zip contains the **Payroll_Project.zip** file as well as:

   - **Eligible.xml**
   - **Ineligible.xml**
   - **Readme.txt**

To import the Sample Project

1. Right-click your **Repository** folder in the Project Explorer and select **Import**.

   The **Import Manager** dialog box appears.
2. Click **Browse** and find **Payroll_Project.zip**.
3. Select the file and click **Import**.
4. Close the **Import Manager** dialog box.

Once the import is complete, you can go directly to **"Deploying and Testing the Project" on page 153** to run your sample.

A.2 Importing the Correlation Sample

The eInsight Correlation Sample is named **CorrelationProject.zip**. All eInsight samples and accompanying files reside in the **eInsight_Sample.zip** file, available from the Core Products tab of the Java CAPS Installer's Documentation page.

To download the Correlation Sample

1. Open the Enterprise Manager and click the **Documentation** tab.
2. Select the **Core Products** tab.
3. Select **Sun SeeBeyond** eInsight **Business Process Manager** from the **Core Products** list.
4. Select the **Sample Projects** icon and open **eInsight_Sample.zip**.
5. Extract the contents of **eInsight_Sample.zip** to a new directory named **Samples**.
6. Go to the **Samples** directory and note that five zip files reside there.
7. Double-click **eInsight_Correlation_Sample.zip** and extract the contents to a new subdirectory named **CorrelationSample**.

   This compressed file contains the **CorrelationProject.zip** file as well as:

   - **input_corrReq-CPina.txt**
   - **input_corrReq-KComella.txt**
   - **input_corrRes-CPina.txt**
   - **input_corrRes-KComella.txt**
   - **output_corr1.dat**
   - **Readme.txt**

To import the Sample Project

1. Right-click your **Repository** folder in the Project Explorer and select **Import**.

   The **Import Manager** dialog box appears.
2. Click **Browse** and find **CorrelationProject.zip**.

3 Select the file and click **Import**.

4 Close the **Import Manager** dialog box.

Once the import is complete, continue to **"Deploying and Testing the Project" on page 153** to run your sample.

A.3 Importing the Worklist Manager Sample

The eInsight Worklist Manager Sample is named **wlmProject.zip**. All eInsight samples and accompanying files reside in the **eInsight_Sample.zip** file, available from the Core Products tab of the Java CAPS Installer's Documentation page.

To download the Worklist Manager Sample

1 Open the Enterprise Manager and click the **Documentation** tab.

2 Select the **Core Products** tab.

3 Select **Sun SeeBeyond** eInsight **Business Process Manager** from the **Core Products** list.

4 Select the **Sample Projects** icon and open **eInsight_Sample.zip**.

5 Extract the contents of **eInsight_Sample.zip** to a new directory named **Samples**.

6 Go to the **Samples** directory and note that five zip files reside there.

7 Double-click **eInsight_WLM_Sample.zip** and extract the contents to a new subdirectory named **WLMSample**.

This compressed file contains the **wlmProject.zip** file and **Readme.txt**.

To import the Sample Project

1 Right-click your **Repository** folder in the Project Explorer and select **Import**.

The **Import Manager** dialog box appears.

2 Click **Browse** and find **wlmProject.zip**.

3 Select the file and click **Import**.

4 Close the **Import Manager** dialog box.

Once the import is complete, you can go directly to **"Deploying and Testing the Project" on page 174** to run your sample.

A.4 Importing the User Activity Sample

The eInsight User Activity Sample is named **UserActivityProject.zip**. All eInsight samples and accompanying files reside in the **eInsight_Sample.zip** file, available from the Core Products tab of the Java CAPS Installer's Documentation page.

To download the User Activity Sample

1. Open the Enterprise Manager and click the **Documentation** tab.
2. Select the **Core Products** tab.
3. Select **Sun SeeBeyond** eInsight **Business Process Manager** from the **Core Products** list.
4. Select the **Sample Projects** icon and open **eInsight_Sample.zip**.
5. Extract the contents of **eInsight_Sample.zip** to a new directory named **Samples**.
6. Go to the **Samples** directory and note that five zip files reside there.
7. Double-click **eInsight_User_Activity_Sample.zip** and extract the contents to a new subdirectory named **UserActivitySample**.

   This compressed file contains the **UserActivityProject.zip** file as well as:

   - **input_ua1-KComella.txt**
   - **input_ua2-CPina.txt**
   - **output_ua1.dat**
   - **Readme.txt**

To import the Sample Project

1. Right-click your **Repository** folder in the Project Explorer and select **Import**.

   The **Import Manager** dialog box appears.
2. Click **Browse** and find **UserActivityProject.zip**.
3. Select the file and click **Import**.
4. Close the **Import Manager** dialog box.

Once the import is complete, continue to **"Deploying and Testing the Project" on page 153** to run your sample.

A.1 Importing the Web Services Server/Client Sample

The eInsight Web Services Server/Client Sample contains two projects: **webserviceserver.zip** and **webserviceclient.zip**. All eInsight samples and accompanying files reside in the **eInsight_Sample.zip** file, available from the Core Products tab of the Java CAPS Installer's Documentation page.

To download the Web Services Server/Client Sample

1. Open the Enterprise Manager and click the **Documentation** tab.
2. Select the **Core Products** tab.
3. Select **Sun SeeBeyond** eInsight **Business Process Manager** from the **Core Products** list.
4. Select the **Sample Projects** icon and open **eInsight_Sample.zip**.

5 Extract the contents of **eInsight_Sample.zip** to a new directory named **Samples**.

6 Go to the **Samples** directory and note that five zip files reside there.

7 Double-click **eInsight_WS_ServerClient_Sample.zip** and extract the contents to a new subdirectory named **WSServerClient**.

This compressed file contains **webserviceserver.zip** and **webserviceclient.zip** as well as **echo.wsdl**.

To import the Sample Project

1 Right-click your **Repository** folder in the Project Explorer and select **Import**.

The **Import Manager** dialog box appears.

2 Click **Browse** and find **webserviceserver.zip**.

3 Select the file and click **Import**.

4 Click **Browse** and find **webserviceclient.zip**.

5 Select the file and click **Import**.

6 Close the **Import Manager** dialog box.

Once the import is complete, you can go directly to **"Deploying and Testing the Project" on page 153** to run your sample.

A.2 Deploying and Testing the Project

To run your project, you must complete the following procedures.

- Starting the Logical Host
- Creating the Deployment Profile
- Checking the output

Note: *Check-out all components that are currently checked-in, so that you can make changes. Imported projects have several components checked-in by default.*

A.2.1 Starting the Logical Host

Before you create your Deployment Profile, start the Logical Host for your deployment. To start the Logical Host, from **<*C:\JavaCAPS51*>\logicalhost**, run **start_<*domainX*>.bat**. When the Logical Host is ready, you can create your Deployment Profile. For detailed information about starting the Logical Host, see the *Sun SeeBeyond eGate Integrator User's Guide.*

A.2.2 Creating the Deployment Profile

To create the Deployment Profile

1 Right-click your **Project** from the Project Explorer.

2 Select **New: Deployment Profile**.

The **Deployment Profile** is called **Deployment1** by default. For this example, the default is used.

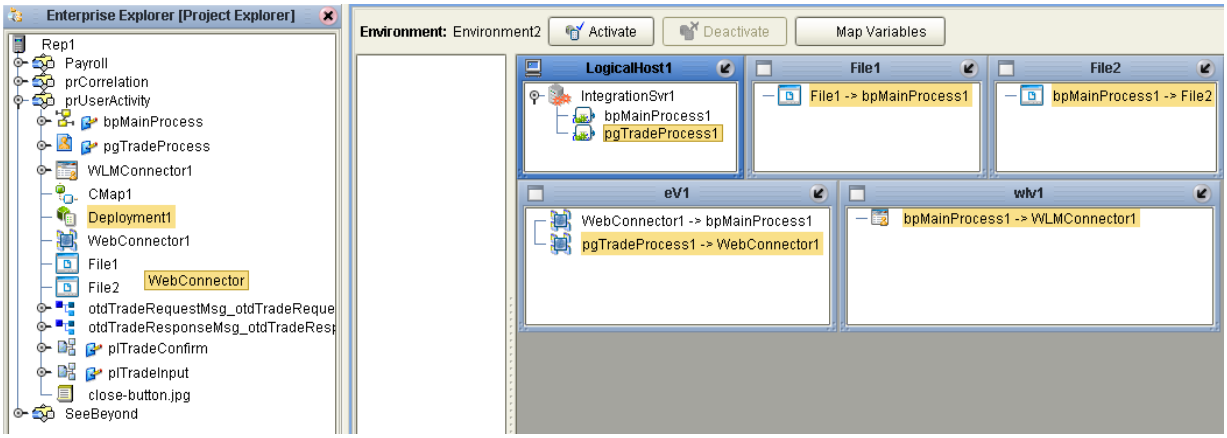
3 Map the Deployment by clicking **Automap**.

The **Automap** dialog box appears.

4 Click **OK**.

After eInsight maps your Deployment, your deployment looks like Figure 85.

Figure 85 User Activity Deployment Profile



5 Click the **Build** button, and when the Build is complete, click **OK**.

6 Click the **Deploy** button, and when the Deployment is complete, click **OK**. This can take a few minutes.

A.2.3 Checking the Output

After you have deployed your project, you must verify the output of your Business Process. If your deployment is successful, your output resides in the **output_ua1.dat** file in your **data** directory.

1 Navigate to **C:\data**.

In your **data** directory, you find the **output_ua1.dat** file.

2 Open the **output_ua1.dat** file and examine the content. Expect to see the following content.

```
<?xml version="1.0" encoding="UTF-8"?>
<otdTradeResponseMsg>
    <Trader>CPina</Trader>
    <Action>Sell</Action>
    <Quantity>2000</Quantity>
    <StockSymbol>SBYN</StockSymbol>
</otdTradeResponseMsg>
<?xml version="1.0" encoding="UTF-8"?>
<otdTradeResponseMsg>
    <Trader>KComella</Trader>
    <Action>Buy</Action>
```

```
        <Quantity>10</Quantity>
        <StockSymbol>EBAY</StockSymbol>
    </otdTradeResponseMsg>
```

Appendix B

Payroll Processing Tutorial

The two case studies in this chapter are designed to illustrate functionality, in addition to showing working examples of Business Process implementations.

What's in This Appendix

B.1 Case Study Overview

Implementing a Business Process is translating the vision of the business user into a functioning system. You implement a Business Process model by using modeling components. Business Process modeling components are mostly preconfigured but some may require modification.

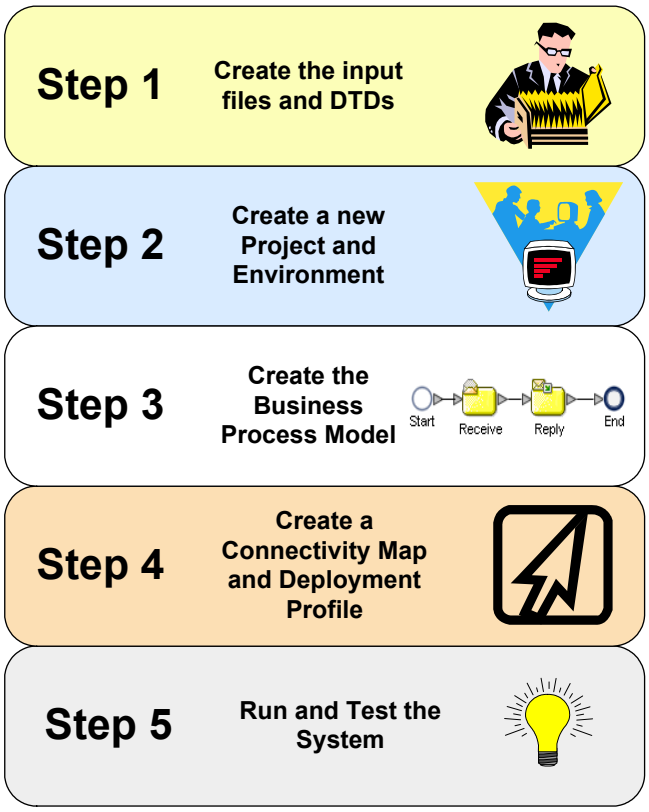
This chapter provides three ways to learn about implementing a project. Depending on your needs, you can:

- Create the end to end sample from scratch: **"Case Study: Payroll Processing" on page 158**
- Import the end to end sample and run it: **"Importing the End to End Sample" on page 149**
- Import and run a sample that demonstrates the correlation feature: **"Importing the Correlation Sample" on page 150**.

Each type of implementation involves a different approach, however, there are certain similarities. To give you an overview of the complete process, the following implementation road map contains high-level steps for this implementation. The road map is further refined and given more detail in the case study that immediately follows.

Figure 86, illustrates the major steps in the integration process for this implementation.

Figure 86 Integration Road Map



1 Create the Input Files and DTDs

The first step in this implementation requires that you create two input files for the system. In an actual implementation, your input files may come from an external system.

The first step also entails creating your Document Type Definition (DTD) files. The DTD file tells the system which elements it should expect from the input files and how to format the output data.

2 Create a New Project and Environment

In the second step of this implementation, you will create a new Project where your Business Process will reside and a new Environment for your Project.

3 Create the Business Process Model

In this step, you will create a new Business Process, add the modeling elements and link them together. You will also configure the modeling elements and links to process the data.

4 Create a Connectivity Map and Deployment Profile

When you create the Connectivity Map, you are making the connections between the system components and the external systems. You will also start the Logical Host and create a Deployment Profile.

5 Deploy and Test the System.

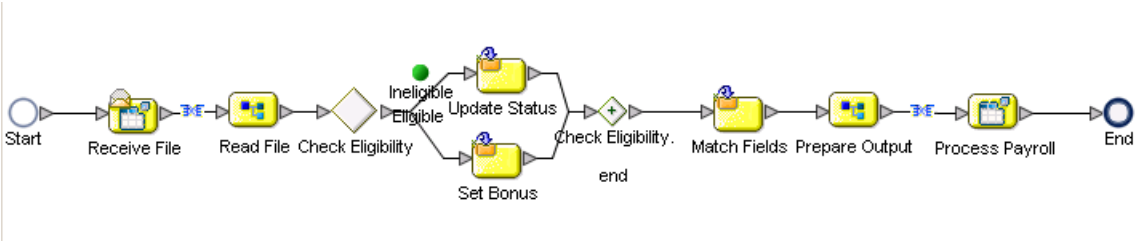
When you deploy your Project, the Logical Host picks up your Deployment Profile and executes your task assignment system. Once the system processes your input files, an output file is created. To verify that this implementation has completed properly, check the output file.

B.2 Case Study: Payroll Processing

This case study begins with a description of the scenario and then shows how to set it up. The case study discussed in this chapter illustrates a simplified implementation of payroll processing. In this case, eInsight receives payroll data as XML files.

Once eInsight has received the data, a check is made to see if the employee is eligible for a bonus, if they are, the bonus is set. Finally, the payroll is processed and a message added to the paystub, indicating whether a bonus was paid. Figure 87 shows the components involved in the Business Process implementation.

Figure 87 Business Process Model



1. The first File eWay picks up the input XML files containing the employee's information from a local folder on your computer. The payroll information is used to start a Business Process instance. eInsight retrieves the information and uses it to execute the decision logic.
2. eInsight uses the decision logic information it contains to check the employee's probation status and continues along one path or the other, depending on that status.The decision logic determines whether the employee is eligible for a bonus, and then moves forward to the next Activity in the Business Process based on the result.
3. If the employee is eligible for a bonus, the next Activity is **Set Bonus**; if the employee is not eligible, the next Activity is **Update Status**.
   - Let's assume the employee is not eligible for a bonus because they have been employed for less than three months. The Probation status is *Yes*, therefore eInsight proceeds to the corresponding Activity, **Update Status,** in the Business Process. Once the Comment and Bonus fields are updated, eInsight moves forward to the next Activity in the Business Process—**Match Fields**.
   - Otherwise, the employee is eligible for a bonus and eInsight uses the information to verify eligibility. When the **Set Bonus Activity** is finished, eInsight moves forward to the next Activity in the Business Process—**Match Fields**.

- The **Match Fields Activity** uses the Business Rule function to match the data fields in your input file to the data format of your output file.

4 eInsight then proceeds to the **Prepare Output Activity** and finally the **Process Payroll Activity**. **Process Payroll** is a File eWay that performs two functions: it sends a status report to the payroll system, and also writes the data to the output file.

5 eInsight has performed the final Activity in the Business Process and completes successfully.

B.2.1 Before You Begin

To complete this exercise, you need to have the following:

- Java CAPS 5.1.x products installed:
  - Sun SeeBeyond eGate Integrator
  - Sun SeeBeyond eInsight Business Process Manager
  - File eWay
- A directory on your local drive named **data**.

Creating the Input Files and DTDs

The sample system you are creating requires input information. For this exercise, you will create two input files: **Eligible.xml** and **Ineligible.xml**. These files are in an XML format. You do not need to have an XML editor to create these files. Any simple text editor will work.

The system you are creating also needs a structure for receiving information. That structure is described in the Document Type Definition (DTD) files.

Creating the Input XML Files

The XML files that you create here, contain the data that the system receives and changes to create your final output.

To create the Input files

1 Copy the following code sections each to separate text files:

- Eligible.xml

```
<?xml version="1.0" encoding="UTF-8"?>
     <Payroll>
          <FirstName>Vanessa</FirstName>
          <LastName>Smith</LastName>
    <Probation>No</Probation>
          <Comments></Comments>
          <Bonus></Bonus>
     </Payroll>
```

- **Ineligible.xml**

```
<?xml version="1.0" encoding="UTF-8"?>
     <Payroll>
```

```
        <FirstName>Tonya</FirstName>
        <LastName>Lee</LastName>
    <Probation>Yes</Probation>
        <Comments></Comments>
        <Bonus></Bonus>
 </Payroll>
```

2 Rename the files to **Eligible.xml** and **Ineligible.xml**.

3 Save the files to **C:\data**.

Creating Input and Output DTD Files

To create the Document Type Definitions

These files are later used to define the way data is mapped in the system.

1 Copy the following code sections each to separate text files:

- **Input.dtd**

```
<?xml version="1.0" encoding="UTF-8"?>
<!ELEMENT Payroll (FirstName, LastName, Probation, Comments, Bonus)>
<!ELEMENT FirstName (#PCDATA)>
<!ELEMENT LastName (#PCDATA)>
<!ELEMENT Probation (#PCDATA)>
<!ELEMENT Comments (#PCDATA)>
<!ELEMENT Bonus (#PCDATA)>
```

- **Output.dtd**

```
<?xml version="1.0" encoding="UTF-8"?>
<!ELEMENT Payroll (FName, LName, Message, BonusTotal)>
<!ELEMENT FName (#PCDATA)>
<!ELEMENT LName (#PCDATA)>
<!ELEMENT Message (#PCDATA)>
<!ELEMENT BonusTotal (#PCDATA)>
```

2 Rename the files to **Input.dtd** and **Output.dtd**.

3 Save the files to a local folder.

B.2.2 Creating a New Project and Environment

To create a new Project

1 Launch the Enterprise Designer.

2 Right-click your **Repository** and select **Project.**

A new Project appears in your Project Explorer tree structure.

3 Rename the Project to **Payroll**.

4 Click the **Save All** toolbar button to save your changes.

To add the Input and Output DTD files to your Project

1 Right-click your **Payroll Project** and select **New: Object Type Definition**.

The **New Object Type Definition Wizard** appears.

2 Select **DTD** from the choices given.

3 Click **Next** to continue.

4 Navigate to the local folder where your **Input.dtd** and **Output.dtd** files are located.

5 Select the **Input** and **Output** DTD files. (You can select multiple files using the CTRL key).

6 Click **Next** to continue.

The **Select Document Elements** dialog appears.

7 Select both **DTD files**.

8 Click **Next** to continue.

The **Select OTD** dialog appears.

9 Click **Finish** (do not change any of the default settings).

Creating a New Environment

To create a new Environment

1 Select the **Environment Explorer** tab from the Enterprise Designer.

2 Right-click your **Repository** and select **New Environment**.

3 Right-click your **Environment** and select **New Logical Host**.

4 Right-click your **Environment** and select **New File External System**.

The system prompts you to name the **File External System**.

5 Enter **Pay_IN** as the name of your **File External System**.

6 Select **Inbound File eWay** as the **External System Type**.

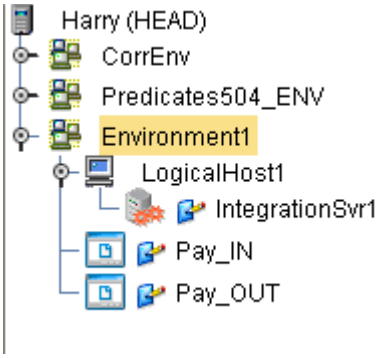
7 Repeat step 4 and name the **File External System**: **Pay_OUT**.

8 Select **Outbound File eWay** as the **External System Type**.

9 Right-click the **Logical Host** and select **New Java CAPS Integration Server**.

Your new Environment will look like Figure 88.

Figure 88 New Environment



B.2.3 Creating the Business Process Model

To create a new Business Process

1. Click the **Project Explorer** tab and right-click your **Payroll** project.
2. Select **New**: **Business Process**.

   A new Business Process appears in your directory tree under your Payroll project and a blank Business Process appears in the Business Process Designer (right panel).

Adding Modeling Elements to the Business Process Model

This section contains detailed instructions to build your model.

To add the File Receive Activity

This Activity uses an inbound **File eWay**.

1. Double-click the **Sun SeeBeyond Project** from the Project Explorer tree view.
2. Double-click **eWays** under the Sun SeeBeyond Project.
3. Double-click **File** under eWays.
4. Double-click **FileClient** under File.
5. Select and drag the **Receive Activity** from **FileClient** to the Business Process Designer.
6. Place the **Receive Activity** to the right of the **Start Activity**.

To add the Unmarshal Activity

This Activity unmarshals the input data.

1. Double-click your **Payroll** project from the Project Explorer tree view.
2. Expand the **Input_Payroll** DTD, located under your Project.
3. Select and drag the **Input_Payroll Unmarshal Activity**.
4. Place the Activity to the right of the **FileClient Receive Activity**.

To add the Decision Element

The decision element contains logic that determines what will happen to the incoming data. You will configure the logic in a later step.

1. Select **Branching Activities** from the **Business Process** toolbar.
2. Select **Decision** from the **Branching Activities** drop-down list.
3. Drag the **Decision** to the Business Process Designer.

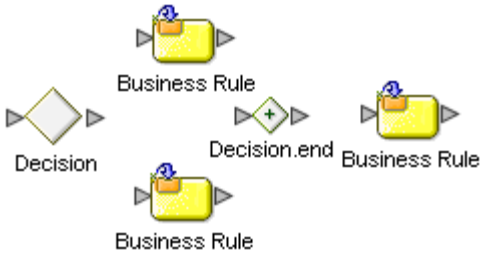
   The **Decision** element and **Decision.end** appear on the Business Process Designer canvas.
4. Place the Decision to the right of the **input _Payroll.unmarshal** Activity. Leave a space between the Decision and Decision.end.

To add the Business Rule Activities

The Business Rule Activities allow you to map and transform data. You will configure the Business Rule Activities later in this exercise.

1. Select the **Business Rule Activity** from the **Business Process** toolbar and drag the Activity to the Business Process Designer.
2. Repeat step 1 until you have three **Business Rule Activities** on your canvas.
3. Group the **Business Rule Activities** as shown in Figure 89.

Figure 89 Building the Model



To add the Marshal Activity

This Activity marshals the data and prepares it for output.

1. Double-click your **Payroll** project from the Project Explorer tree view.
2. Click the icon next to **output_Payroll DTD** to expand.
3. Select and drag the **output_Payroll DTD Marshal** operation to the Business Process Designer.
4. Place the Activity to the right of the last **Business Rule Activity**.

To add the File Write Activity

This Activity is an outbound **File eWay**.

1. Double-click the **Sun SeeBeyond Project** from the Project Explorer tree view.
2. Double-click **eWays** under the Sun SeeBeyond Project.
3. Double-click **File** under **eWays**.
4. Double-click **FileClient** under **File**.
5. Select and drag the **Write Activity** from **FileClient** to the Business Process Designer.
6. Place the **Write Activity** to the left of the **End** Activity.

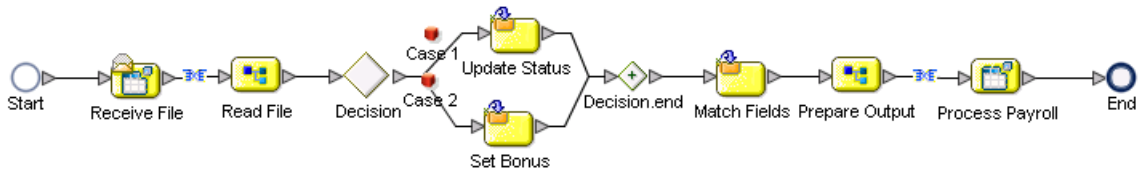
B.2.4 Configuring the Modeling Elements

To draw links to connect the model

1. Mouse over the **Start Activity** until a hand appears.
2. Click and drag to create a **Link** between the elements.

3 Repeat steps 1 and 2 to connect the entire model as shown in Figure 90

Figure 90 Linked Model



To rename Modeling Elements

You should rename the elements to represent the Activity's role in the Business Process. This makes it easier to understand the model.

1 From the Business Process Designer, click an element label (the name or title under the Activity).

A sunken box appears around the label.

2 Type to rename the element.

3 See Table 22 and rename each of the elements as described in steps 1 and 2.

Table 22 Rename Elements

Current Name	Rename to
FileClient.Receive	Receive File
input_Payroll.unmarshal	Read File
Decision	Check Eligibility
Case 1	Ineligible
Case 2	Eligible
Business Rule (upper)	Update Status
Business Rule (lower)	Set Bonus
Business Rule	Match Fields
output_Payroll.marshal	Prepare Output
FileClient.write	Process Payroll

Configuring the Business Rules

To add Business Rules to Links

There are two links in this exercise that use Business Rules applied to links, to move data through the Business Process model.

1 From the Business Process Designer, select the link between **Receive File** and **Read File**.

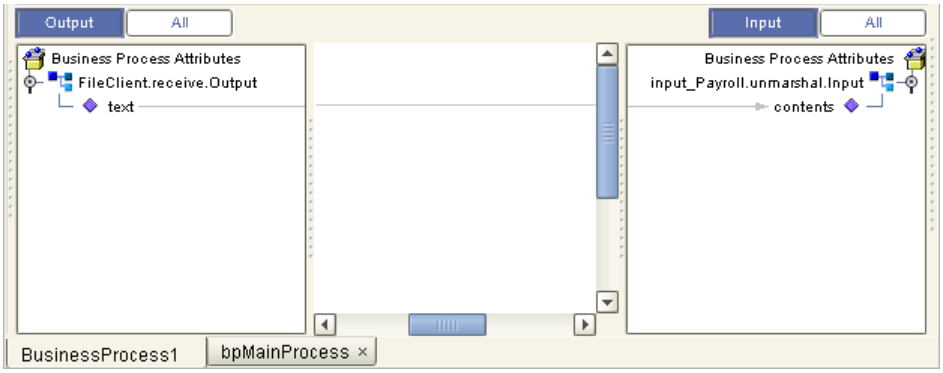
2 Right-click the link and select **Add Business Rule**.

3 Double-click the link with the new Business Rule icon or select the toolbar icon called **Display Business Rule Designer**.

The Business Rule Designer appears in the lower panel of the Business Process Designer.

4 Link the **text** node to the **contents** node, as shown in **Figure 91 on page 165**.

Figure 91 Add Business Rules to Links



5 Select the link between **Prepare Output** and **Process Payroll**.

6 Right-click the link and select **Add Business Rule**.

7 Double-click the link with the new Business Rule icon or select the toolbar icon called **Display Business Rule Designer**.

The Business Rule Designer appears in the lower panel of the Business Process Designer.

8 Link the **contents** node to the **text** node.

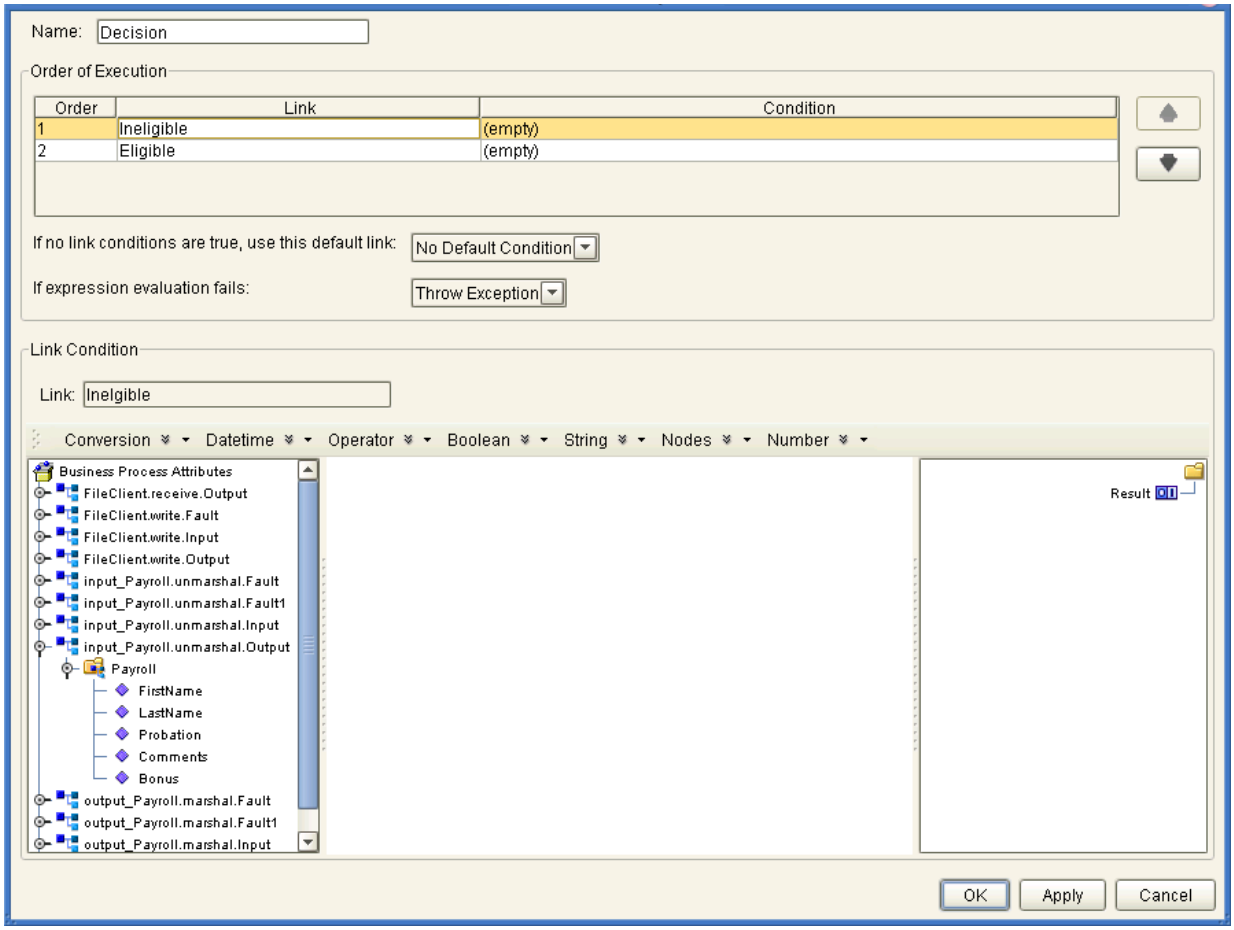
Configuring the Decision Logic

To configure the Decision Logic

1 Double-click the **Decision** element.

The **Decision Gate Properties** dialog appears, shown in Figure 92.

Figure 92 Decision Properties



To configure Case 1

2 Select the case: **Ineligible**.

3 Select the **String Literal** icon from the Method Palette and drag it to the Business Rule Designer.

The **Input** dialog appears.

4 Type **Yes** and click **OK**.

5 Select the **equal** method from the Method Palette and drag it to the Business Rule Designer.

6 In the **Link Condition** section, find the **input_Payroll.unmarshal.Output** node and expand it.

7 Expand the **Payroll** node and select **Probation**.

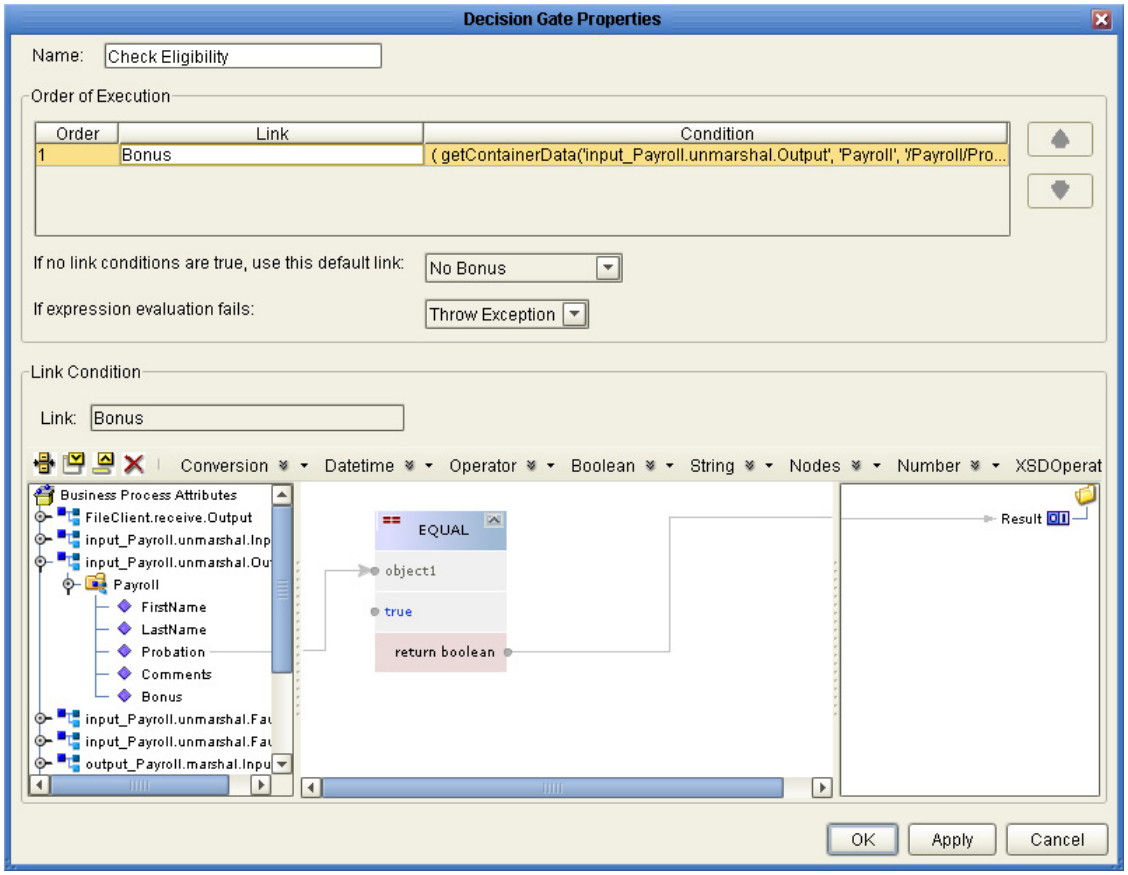
8 Drag a link from the **Probation** node and connect it the **equal** method box, where you see **Any 1**.

9 Drag a link from the **String Literal** method box to the **equal** method box where you see **Any 2**, and connect.

10 Drag a link from the **Return Boolean** section of the **equal** method box, to the **Result (boolean)** panel on the right.

Your **Decision** mapper should look like Figure 93 on page 167.

Figure 93 Completed Decision Gate Properties



To configure Case 2

1 Select the case: **Eligible**.

2 Locate the **Default Condition** drop-down list.

3 Select **Eligible** from the drop-down list.

4 Click **OK** to exit the **Decision Gate Properties** dialog.

Your Business Process model should look like Figure 87 on page 158.

B.2.5 Configuring the Business Rule Activities

Configuring the Update Status Activity

If an employee, in our example, is on Probation, the employee is ineligible for a bonus. In this case, the Activity will take the path of the **Update Status Activity**. The

Comments field is set to let the employee know that they are ineligible for a bonus and the **Bonus** field is set to **$0.00**.

To configure the Update Status Activity

1. Select the **Update Status Activity**.
2. Click the **Display Business Rule Designer** toolbar icon to see the Business Rule Designer.
3. Drag the **Concat** method onto the Business Rule Designer from the Method Palette.
4. Drag the **String Literal** method onto the Business Rule Designer from the Method Palette.

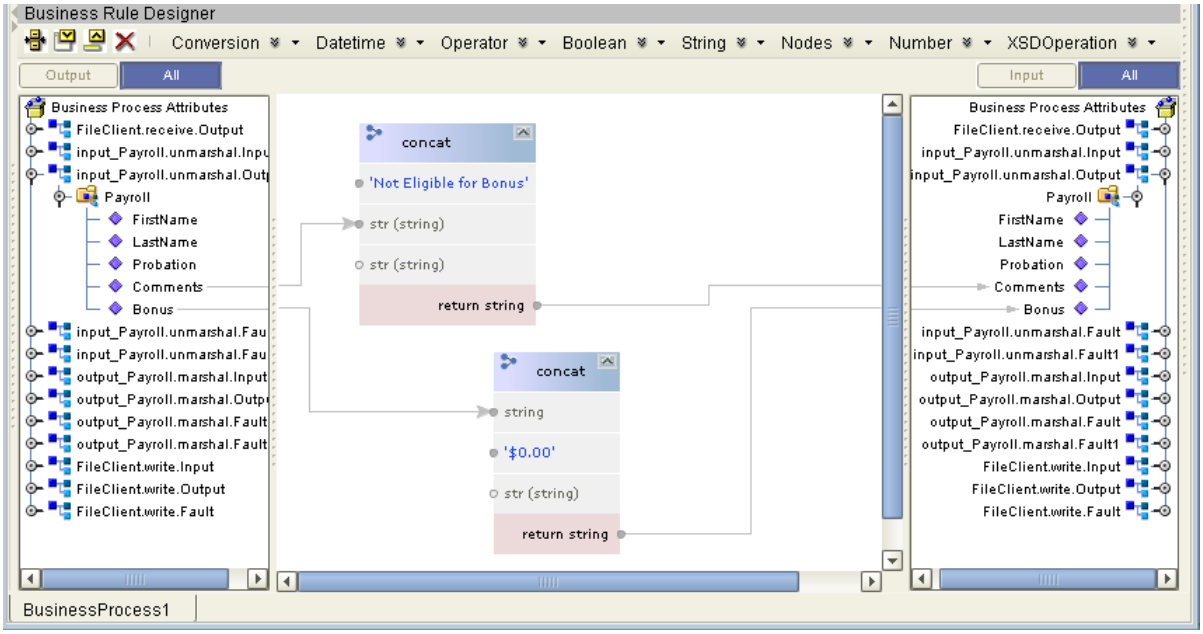
   The **Input** dialog appears.
5. Type **Not Eligible for Bonus**.
6. Link the **String Literal** method to **string1** on the **Concat** method
7. On the left panel, expand the **input_Payroll.unmarshal.Output** node and then expand the **Payroll** node.
8. Select **Comments** and drag a link to **string2** on the **Concat** method.
9. On the right panel, expand the **input_Payroll.unmarshal.Output** node and then expand the **Payroll** node.
10. Drag a link from **Return String** on the **Concat** method to **Comments** on the right panel.
11. Drag another **Concat** method onto the Business Rule Designer from the Method Palette.
12. Drag a **String Literal** method onto the Business Rule Designer from the Method Palette.

    The **Input** dialog appears.
13. Type **$0.00** to set the Bonus amount.
14. Link the **String Literal** method to **string1** on the **Concat** method
15. On the left panel, expand the **input_Payroll.unmarshal.Output** node and then expand the **Payroll** node.
16. Select **Bonus** and drag a link to **string2** on the **Concat** method.
17. On the right panel, expand the **input_Payroll.unmarshal.Output** node and then expand the **Payroll** node.

Drag a link from **Return String** on the **Concat** method to **Bonus** on the right panel.

When you are done, your screen should look like Figure 94.

Figure 94 Update Status Activity



Adding a Set Bonus Activity

The **Set Bonus Activity** sets the **Bonus** and **Comments** fields for employees that are eligible for a **Bonus**.

To add a Set Bonus Activity

1. Select the **Set Bonus Activity**.
2. Click the **Display Business Rule Designer** toolbar icon to see the Business Rule Designer.
3. Drag the **Concat** method onto the Business Rule Designer from the Method Palette.
4. Drag the **String Literal** method onto the Business Rule Designer from the Method Palette.

   The **Input** dialog appears.
5. Type **Eligible for Bonus**.
6. Link the **String Literal** method to **string1** on the Concat method
7. On the left panel, expand the **input_Payroll.unmarshal.Output** node and then expand the **Payroll** node.
8. Select **Comments** and drag a link to **string2** on the **Concat** Method.
9. On the right panel, expand the **input_Payroll.unmarshal.Output** node and then expand the **Payroll** node.
10. Drag a link from **Return String** on the **Concat** method to **Comments** on the right panel.

11 Drag another **Concat** method onto the Business Rule Designer from the Method Palette.

12 Drag a **String Literal** method onto the Business Rule Designer from the Method Palette.

The **Input** dialog appears.

13 Type **$1500** to set the bonus that all eligible employees will receive.

14 Link the **String Literal** method to **string1** on the **Concat** method

15 On the left panel, expand the **input_Payroll.unmarshal.Output** node and then expand the **Payroll** node.

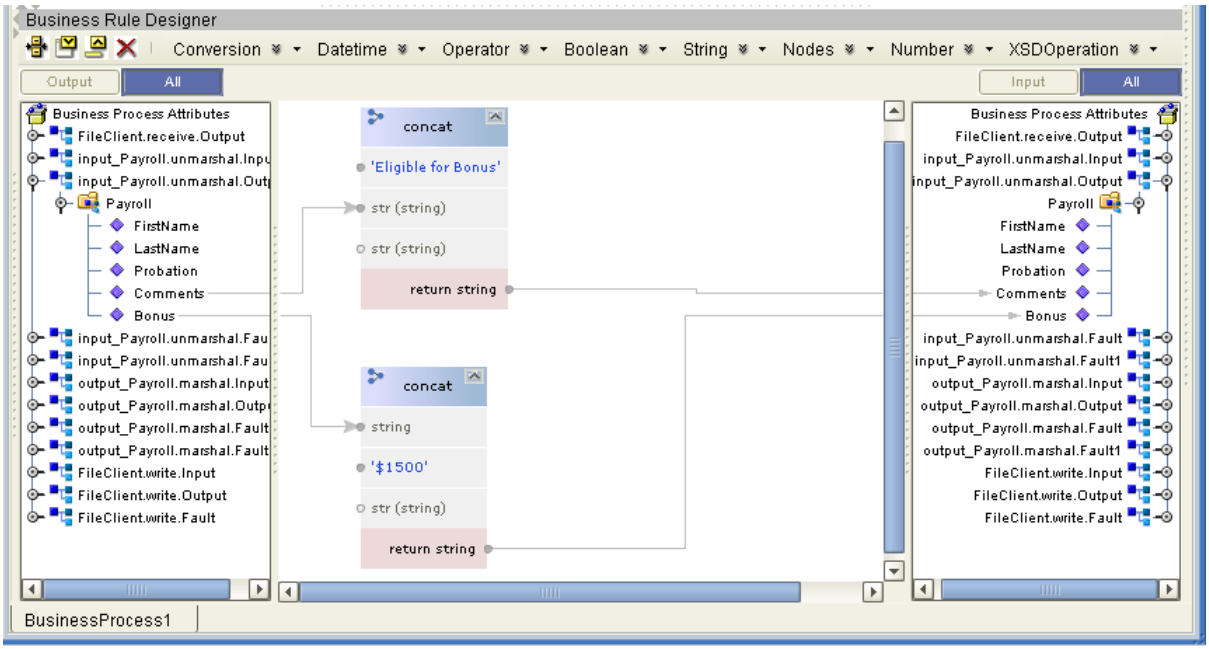
16 Select **Bonus** and drag a link to **string2** on the **Concat** Method.

17 On the right panel, expand the **input_Payroll.unmarshal.Output** node and then expand the **Payroll** node.

18 Drag a link from **Return String** on the **Concat** method to **Bonus** on the right panel.

When you are done, your screen should look like Figure 95.

Figure 95 Set Bonus Activity



Setting a Match Fields Activity

The Match Fields Activity maps the input data into the proper format for output.

To set a Match Fields Activity

1 Select the **Match Fields** Business Rule Activity.

2 On the left panel, expand the **input_Payroll.unmarshal.Output** node and then expand the **Payroll** node.

3 On the right panel, expand the **output_Payroll.marshal.Input** node and then expand the **Payroll** node.

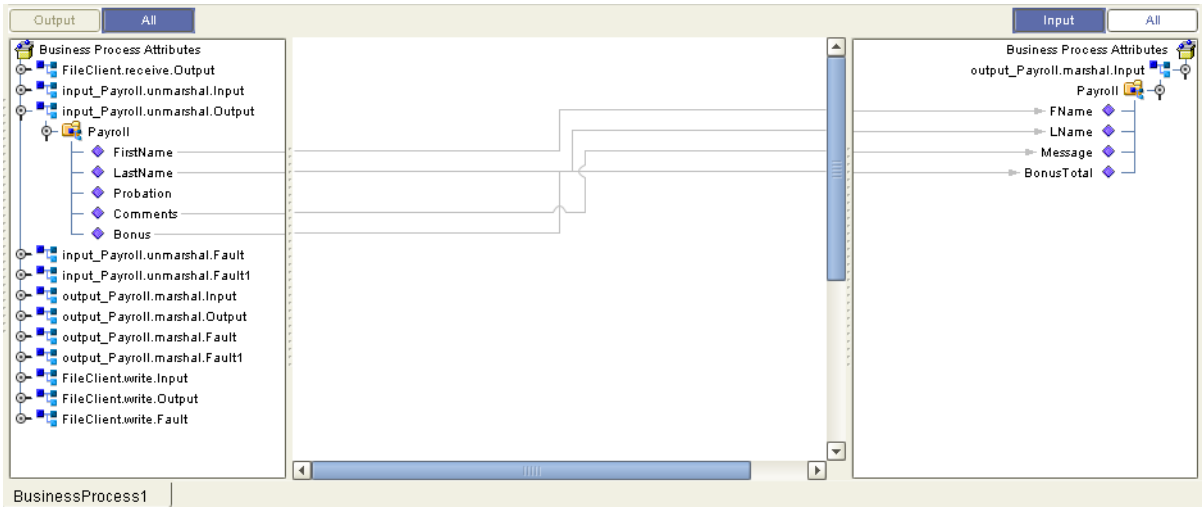
4 Draw a link between the following fields:

Table 23 Match Fields

From	To
FirstName	FName
LastName	LName
Comments	Message
Bonus	BonusTotal

Your screen will look like Figure 96, when you are finished.

Figure 96 Match Fields Activity



B.2.6 Creating the Connectivity Map

To create the Connectivity Map

1 Right-click your **Project** and select **New: Connectivity Map**.

A new node will appear under your Project. The default name is **CMap1**.

2 Select the **External Applications** toolbar icon and select **File External Applications**.

3 Drag the **File** icon to the Connectivity Map canvas.

4 Drag a second **File** icon to the canvas.

5 Select **BusinessProcess1** from the Project Explorer and drag it to the canvas.

6 Place the **Business Process** between the two **File** icons.

To configure the Business Process

1 Select your Business Process from the Project Explorer and drag it to the canvas.

2 Double-click the **Business Process**.

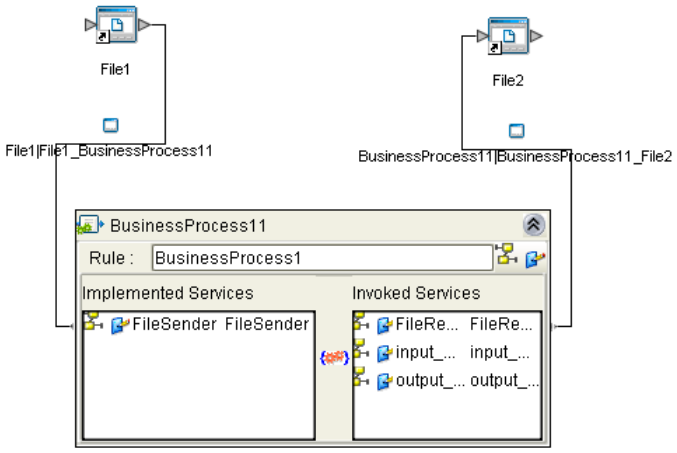
The **Business Process Service** dialog appears as shown in Figure 97.

3 Drag a link from the **File Sender** Service to the **File1** icon.

4 Drag a link from the **File Receiver** Service to **File2** icon.

5 Click the **Minimize** button on the **Business Process** dialog to close the dialog.

Figure 97 Configure Binding



Configuring the File Systems

To configure the Inbound File eWay

1 Double-click the link to **File_input** to configure it.

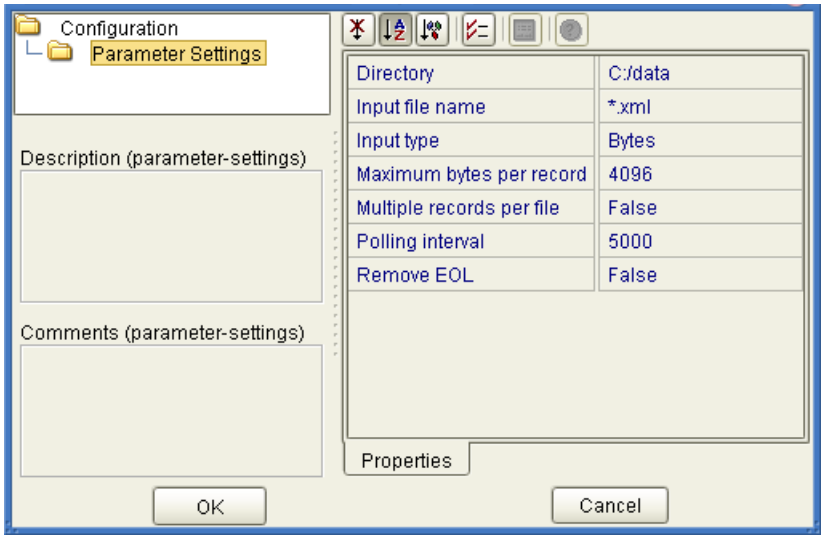
The **Templates** dialog appears.

2 Select **Inbound File eWay** and select **OK**.

The **Properties** dialog appears, as shown in **Figure 98 on page 173**.

3 Change the **Directory** to **C:\data**.

Figure 98 Inbound File eWay



4 Change **Input** file name to ***.xml**.

5 Click **OK** to save changes.

To configure the Outbound File eWay

1 Double-click the link **File_output** to configure it.

2 Connect File Receiver to **File_output**.

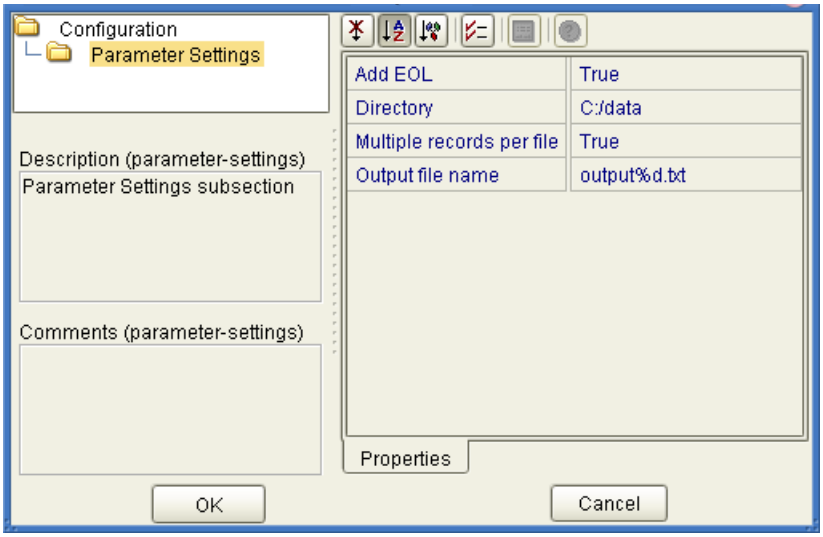
The **Templates** dialog appears.

3 Select **Outbound File eWay** and select **OK**.

The **Properties** dialog appears, as shown in **Figure 99 on page 173**.

4 Change the **Directory** to **C:\data**.

Figure 99 Outbound File eWay



5 Change the **Output** file name to **output%d.txt.**

6 Click **OK** to save changes.

B.3 Deploying and Testing the Project

The final steps necessary to run your sample include:

- Creating and Configuring the Deployment Profile.
- Starting the Logical Host.
- Checking your output.

Note: *If you have imported the Payroll Sample Project, start here and continue to the end of this section, to complete your set-up.*

B.3.1 Starting the Logical Host

Before you create your Deployment Profile, start the Logical Host for your deployment. To start the Logical Host, from **<*C:\JavaCAPS51*>\logicalhost**, run **start_<*domainX*>.bat**. When the Logical Host is ready, you can create your Deployment Profile. For detailed information about starting the Logical Host, see the *Sun SeeBeyond eGate Integrator User's Guide.*

B.3.2 Creating the Deployment Profile

To create the Deployment Profile

1 Right-click your **Project** from the Project Explorer.

2 Select **New: Deployment Profile**.

3 The **Create Deployment Profile** dialog appears.

4 The **Deployment Profile** is called **Deployment1** by default. You can accept the default name.

5 Select an Environment (Environment1).

B.3.3 Configuring the Deployment Profile

To configure the Deployment Profile

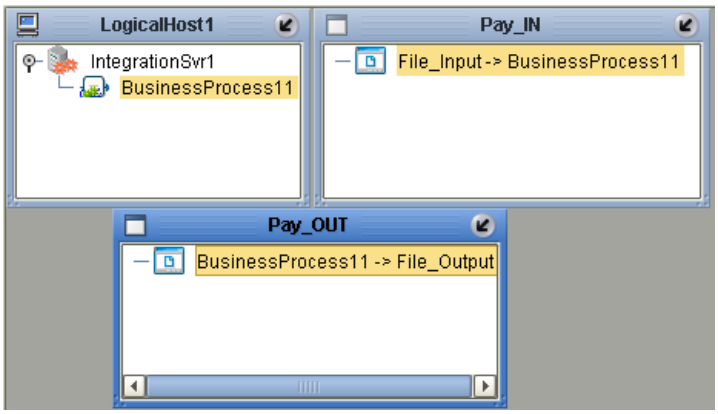
1 Drag **BusinessProcess11** from the middle panel to the **Integration Server (IntegrationSvr1)** located in the **LogicalHost** window.

2 Drag **File1 -> BusinessProcess11** from the middle panel to the **Pay_IN** window.

3 Drag **BusinessProcess11 -> File2** to the **Pay_OUT** window.

4 Click **Build**.

Figure 100 Deployment Profile



5 Click **Deploy**.

B.3.4 Checking the Output

To check the output

1 Navigate to **C:\data** and check for an **output.txt** file.

2 Open the **output.txt** file and examine the data. It will look like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<Payroll>
    <FName>Vanessa</FName>
    <LName>Smith</LName>
    <Message>Eligible for Bonus</Message>
    <BonusTotal>$1500</BonusTotal>
</Payroll>
<?xml version="1.0" encoding="UTF-8"?>
<Payroll>
    <FName>Tonya</FName>
    <LName>Lee</LName>
    <Message>Not Eligible for Bonus</Message>
    <BonusTotal>$0.00</BonusTotal>
</Payroll>
```

Appendix C

Audit Processing Tutorial

[Intro text here]

What's in This Appendix

C.1 Case Study Overview

Implementing a User Activity is the process of translating the vision of the business user into a functioning task assignment system. The User Activity must be configured but some may require modification.

1. Create the Input File.

   The first step in this implementation requires that you create the input file for the system. In an actual implementation, your input might come from an external system.

2. Create a New Project and Environment.

   In the second step of this implementation, you will create a new Project where your Business Process and eVision Pages will reside as well as a new Environment for your Project.

3. Create the eVision Pages and Business Process Models.

   In this step, you will create a new Business Process and a sub-process with a User Activity that links to the task management system. You will also create the eVision Pages that act as the user interface to the system.

4. Create a Connectivity Map and Deployment Profile.

   When you create the Connectivity Map, you are making the connections between the system components and the external systems. You will also start the Logical Host and create a Deployment Profile.

5. Deploy and Test the System.

   When you deploy your Project, the Logical Host picks up your Deployment Profile and executes your task assignment system. Once the system processes your input

files and entered data, an output file is created. To verify that this implementation has completed properly, check the output file.

C.2 Case Study: Audit Processing

The case study discussed in this tutorial illustrates a simplified implementation of an auditing system. In this case, eInsight receives data as a text file as well as user input from an eVision page.

Once the system receives the data, a task appears in the Worklist Manager for the assigned user(s). The user can either complete the task or escalate the task to a manager. If the user is a manager, she also has the option to reassign the task to a subordinate.

C.2.1 Before You Begin

To complete this exercise, you need to have the following:

- Java CAPS 5.1.x products installed:
  - Sun SeeBeyond eGate Integrator
  - Sun SeeBeyond eInsight Business Process Manager
  - eVision Studio
  - File eWay
- An Oracle database, having run database scripts for the Worklist Manager (see **Running the Worklist Manager Database Scripts** on page 104).
- A configured LDAP directory server (see **Configuring Your LDAP Server** on page 111). This example uses OpenLDAP and MegaNova.
- A directory on your local drive named **`data`**.

C.2.2 Creating the Input File

The sample system you are creating requires input information. For this exercise, you will create an input file: `input1.txt`. The file that you create here, contains the data that the system receives and changes to create your final output.

To create the Input File

1. Create a text file with your name, for example:
   - `input1.txt:`
   - `Mary Smith`
2. Save the file to `c:\data`.

C.2.3 Creating a New Project and Environment

To create a new Project

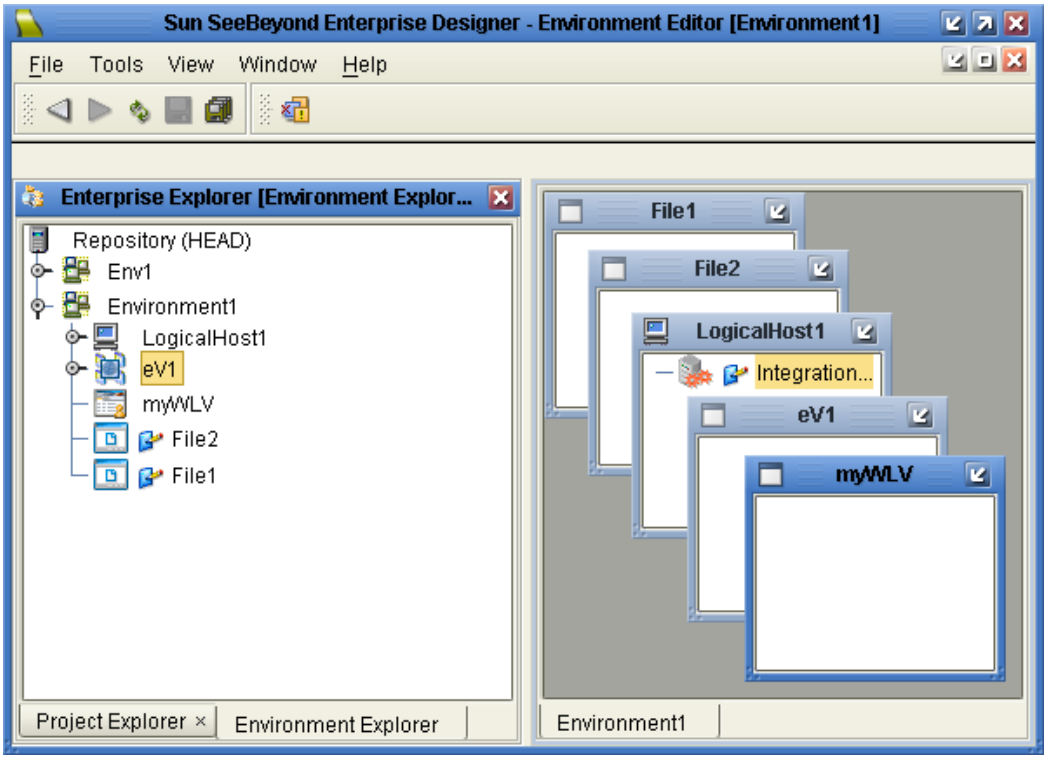
1. Launch the **Enterprise Designer**.
2. Right-click your **Repository** and select **New Project**.
3. A new Project appears in your Project Explorer tree structure.
4. Rename the Project to **wlmProject**.
5. Click the **Save All** toolbar button to save your changes.

To create a new Environment

1. Select the **Environment Explorer** tab from the Enterprise Designer.
2. Right-click your **Repository** and select **New Environment**.
3. Right-click your **Environment** and select **New Logical Host**.
4. Right-click your **Environment** and select **New File External System**.
5. The system prompts you to name the File External System.
6. Enter **File1** as the name of your File External System.
7. Select **Inbound File eWay** as the External System Type.
8. Repeat step 4 and name the File External System: `File2`.
9. Select **Outbound File eWay** as the External System Type.
10. Right-click **Logical Host** and select **New Java CAPS Integration Server**.
11. From the Environment Explorer create a **New Worklist Viewer** and name it **myWLV**.
12. Right-click the **myWLV** and select **Properties**.
13. Select the **WLM Connector External System Configuration** and configure the following options:
    A. Database Password: `wlm`
    B. Database URL: enter your settings
    C. Database User ID: `wlm`
    D. Set Database Type. See **"Database Connection Information" on page 90** for database configuration details.
14. Select **OK**.
15. Add an **eVision External System** and name it **eV1**.
16. Select **OK**.

    Your new Environment now looks like Figure 101.

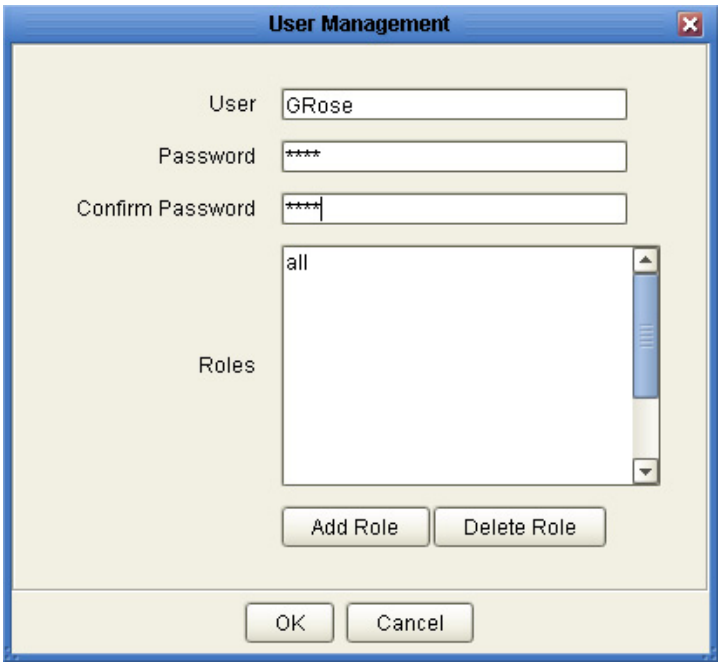
Figure 101 New Environment



To add the LDAP users to your environment

1. In the Project Explorer, right-click the **Repository** and select **User Management**.
2. Add the following users to the Worklist Manager:
   - GRose
   - CPina
   - KComella
3. Fill in the Password information and Add a Role for each user, as follows:
   - Password: `pass`
   - Role: `all`

Figure 102 User Management



In the LDAP hierarchy for this example, the order from manager to subordinate is:

- KComella - Senior Manager
  - CPina - Manager
    - GRose - User

C.2.4 Creating the eVision Pages

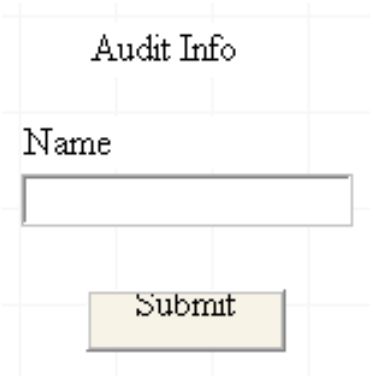
To create the eVision Pages

1. In the Project Explorer, right-click your Project (wlmProject) and select **New Page Layout**.

   The Page Layout wizard appears and prompts you to enter a layout name.

2. Enter **auditPage** and click **Next**.
3. Select **Page Type**.
   - A Select the **label** element from the **Page** tools and place it on the top center of the **eVision page**.
   - B Replace the default text with **Audit Info**.
   - C Select another label element and place it on the page, under **Audit Info**.
   - D Enter `Name` for the default text.
   - E Select a **textbox element** and place it on the **eVision page**, under the **Name** label.
   - F Place a **Submit Button** under the textbox.

Figure 103 auditPage Layout



4 Create a new **Blank Page** and name it **exitPage**.

A Select a **Link** element and place it near the top and center on the **eVision page**.

B Enter `Close Window` as the default text.

C Enter `javascript: void window.close()` in the property for **onClick**.

5 Close the properties page.

C.2.5 Creating the Business Process Models

This section contains detailed instructions to build your model.

To create the Sub-process

1 Click the **Project Explorer** tab and right-click your **wlmProject**.

2 Select **New Business Process**.

A new Business Process appears in the directory tree under your Project and a blank Business Process appears in the Business Process Designer (right panel).

3 Rename the **Business Process** to **subBusinessProcess**.

4 Right-click the **Business Process** and select **Properties**.

5 Click the **Business Process Attributes** tab.

6 Click **Create** to add a new **Business Process Attribute**.

A Name the new Business Process Attribute: `stringMessage`.

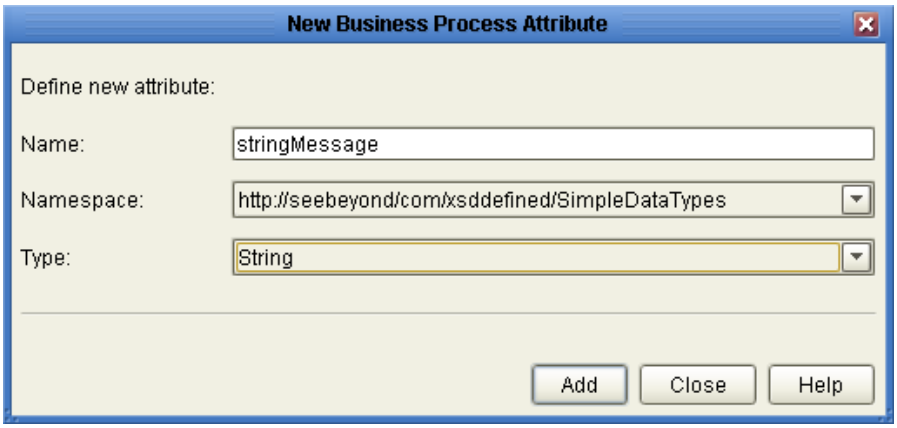
B Select **`SimpleDataTypes/SeeBeyond/eInsight/`** for the namespace

C Select **`String`** for the type, as shown in Figure 104.

7 Click **Add**, then **Close**.

8 Click **Apply**.

Figure 104 New Business Process Attribute



To create a Web Service Definition

1. Click the **Project Explorer** tab and right-click your **wlmProject**.
2. Select **New Web Service Definition**.

   A new Web Service Definition appears in the directory tree under your Project and a blank Web Service Definition appears in the Web Service Designer (right panel).
3. Rename the **Web Service Definition** to **IOWSDL**.

To configure the Input Message

1. In the Web Service Definition panel, expand **PortTypes** and **PortType** and select the **Operation** object.
2. In the toolbar, click the **Input Message** icon.
3. Click the **Message type** field and the **ellipsis**.

   The **Message** dialog box appears.
4. In the Name field, enter **IP_Message1**.
5. In the **Simple tab scroll list**, select **xsd:string**.
6. Click the **Add** button.
7. Click the **Apply** button.
8. Click **OK**.
9. In the Name field enter **IP_Message1**.

To configure the Output Message

1. Select the **Operation** object.
2. In the toolbar, click the **Output Message** icon.
3. Click the **Message type** field and click the **ellipsis**.

   The **Message** dialog box appears.
4. In the Name field, enter **OP_Message1**.

5 In the **Simple tab scroll list**, select **xsd:string**.

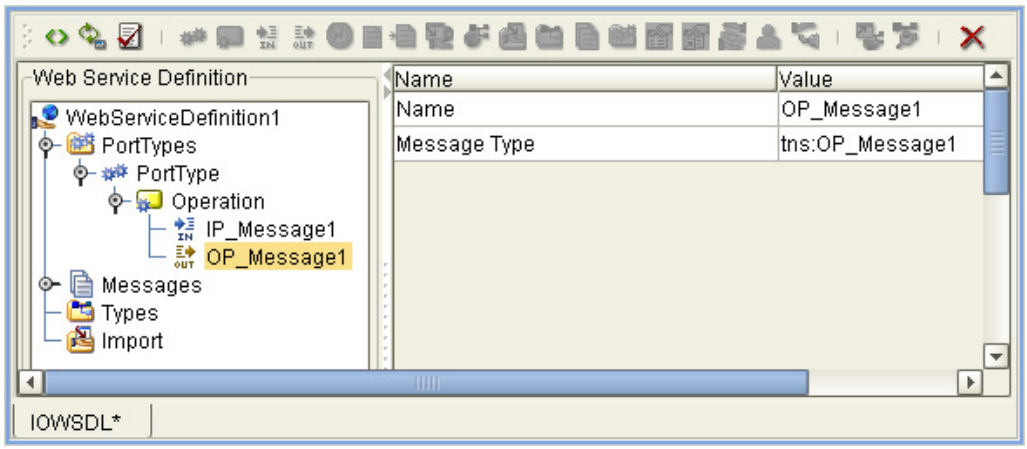
6 Click the **Add** button.

7 Click the **Apply** button.

8 Click **OK**.

9 In the Name field, enter **OP_Message1**.

Figure 105 New Web Service Definition



To create a Partner

1 Right-click **subBusinessProcess** and select **Properties**.

2 Select the **Partners** tab.

3 Create a new partner called **wlmpartner**.

4 Click **OK**.

To create the sub-process model

1 Select a **Receive Activity** from the eInsight toolbar and place it on the **Business Process Designer** (to the right of the **Start Activity**).

2 Select a **Reply Activity** from the eInsight toolbar and place it on the **Business Process Designer** (to the left of the **End Activity**).

3 Select the **Show** operation from the **auditPage** and place it on the **Business Process Designer**, between the **Receive** and **Reply Activities**.

4 Select the **Show** operation from the **exitPage** and place it on the **Business Process Designer**, to the right of the **auditPage**.

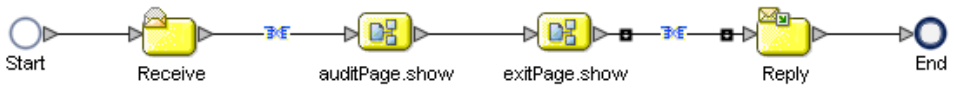
5 Link the activities:

A Move your mouse over the Start Activity until a hand appears.

B Click and drag a **Link** between the elements.

6 Repeat steps 5A and 5B to connect the entire model.

Figure 106 subBusiness Process

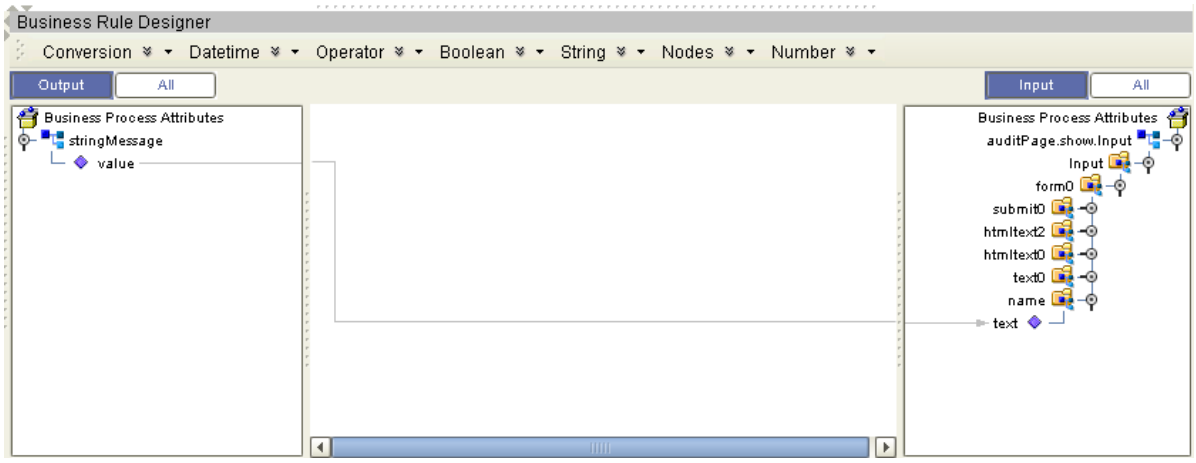


To add Business Rules to the Links

1. Right-click the link between the **Receive Activity** and the **auditPage** and select **Add a Business Rule**.
2. Click the **Display Business Rule Designer** button on the **Business Process Designer** toolbar.

   The Business Rule Designer appears in the lower half of the screen.
3. Map the **stringMessage** *value* node to the *text* node of the **Name** element in the input of the **auditPage**, as shown in Figure 107.

Figure 107 Add Business Rule to Link



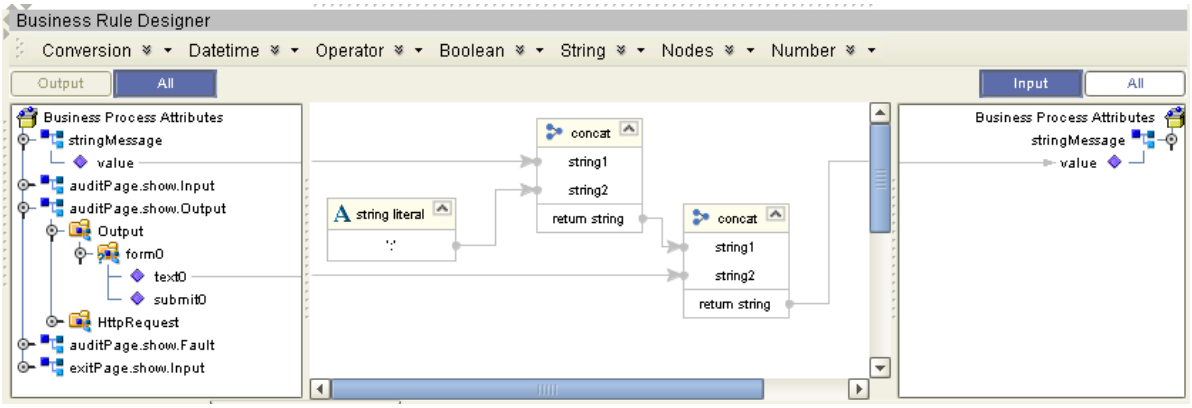
4. Right-click the link between the **exitPage** and the **Reply Activity** and select **Add a Business Rule**.
   A. Place a **Concat Method** on the **Business Rule Designer** from the Method Palette.
   B. Map a link from the left panel's **Receive Activity:stringMessage** to **String1** of the **Concat Method Box**.
   C. Place a **String Literal Method** on the **Business Rule Designer** and enter " : ".
   D. Map a link from the **String Literal** to **String2** of the **Concat** Method Box.
   E. Place another **Concat Method** on the **Business Rule Designer**.

F Map a link from the first **Concat** Method Box's **Return String** to **String1** of the second **Concat** Method Box.

G Map a link from the **text0** node under **auditPage.show.Output** to **String2** of the second **Concat Method Box**.

H Map a link from the **Return String** of the second **Concat Method Box** to the value node under **stringMessage**.

Figure 108 Add Business Rule to Second Link



To define the WSDL for the Receive and Reply Activities

1 Select the **Receive Activity** and then click **Property Sheet** from the eInsight toolbar.

A Select **wlmpartner** from the **Partner** field.

B Select **sbcUserDef:PortType1** for the Port Type.

C Select **Operation1** for the Operation.

D Select **stringMessage** for the Input and Output.

2 Repeat for the **Reply Activity**.

To create the parent Business Process

1 Right-click the **wlmProject** and select **New Business Process**.

2 Add a **File Receive Activity**:

A Double-click the **Sun SeeBeyond Project** from the Project Explorer tree view.

B Double-click **eWays** under the **Sun SeeBeyond Project**.

C Double-click **File** under **eWays**.

D Double-click **FileClient** under **File**.

E Select and drag the **Receive Activity** from **FileClient** to the **Business Process Designer**.

F Place the **Receive Activity** to the right of the **Start Activity**.

3 Add the **File Write Activity**:

A Double-click the **Sun SeeBeyond Project** from the Project Explorer tree view.

B Double-click **eWays** under the **Sun SeeBeyond Project**.

C Double-click **File** under **eWays**.

D Double-click **FileClient** under **File**.

E Select and drag the **Write Activity** from **FileClient** to the **Business Process Designer**.

F Place the **Write Activity** to the left of the **End Activity**.

4 Add a **User Activity**:

A Select the **User Activity** icon from the eInsight toolbar.

B Place the **User Activity** on the **Business Process Designer**, between the **File Receive** and **File Write Activities**.

5 Drag and drop the **SubBusiness Process Operation Node** (from the Project Explorer panel) onto the **User Activity**.

Figure 109 BusinessProcess1

To configure the modeling elements

1 Right-click the link between the **File Receive Activity** and the **User Activity** and select **Add a Business Rule**.

2 Map a link from the **File Receive** text node to the input of the **subBusiness Process** value node.

3 Right-click the link between the **User Activity** and the **File Write Activity** and select **Add a Business Rule**.

4 Map a link from the **output** value node of the **User Activity** to the **File Write** text node.

To configure the User Activity

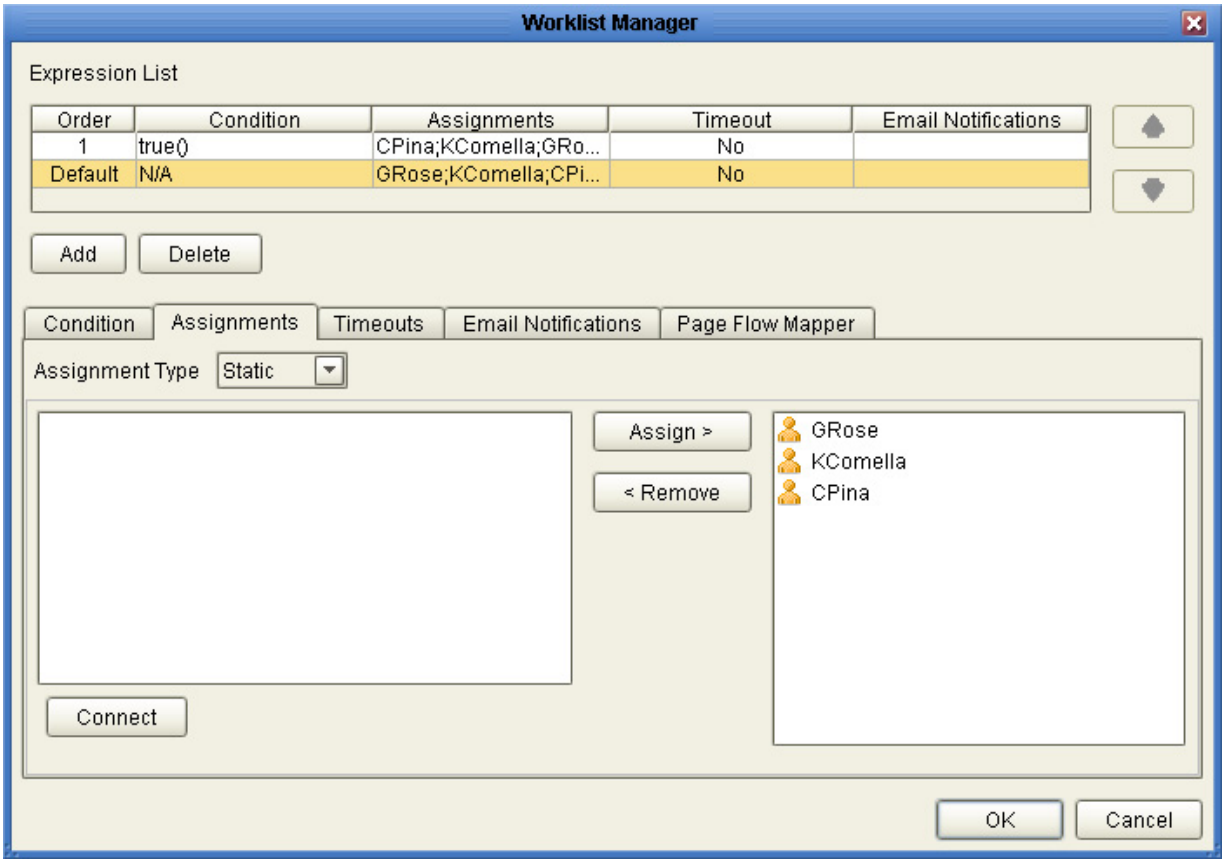
1 Right-click the **User Activity** and select **Edit Task Assignment Panel**.

The **User Activity** properties appear.

2 Click **Add** to create a new Case.

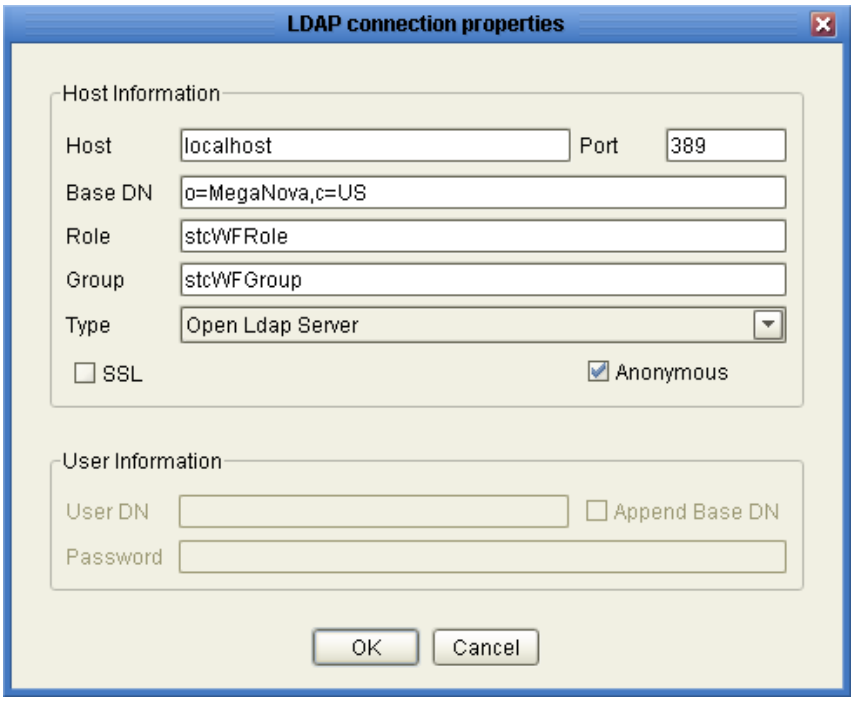
3 Click the **Assignments** tab, as shown in Figure 110.

Figure 110 User Activity Properties



4 Click the **Connect** button to access the **LDAP properties**, as shown in Figure 111.

Figure 111 Connect to LDAP

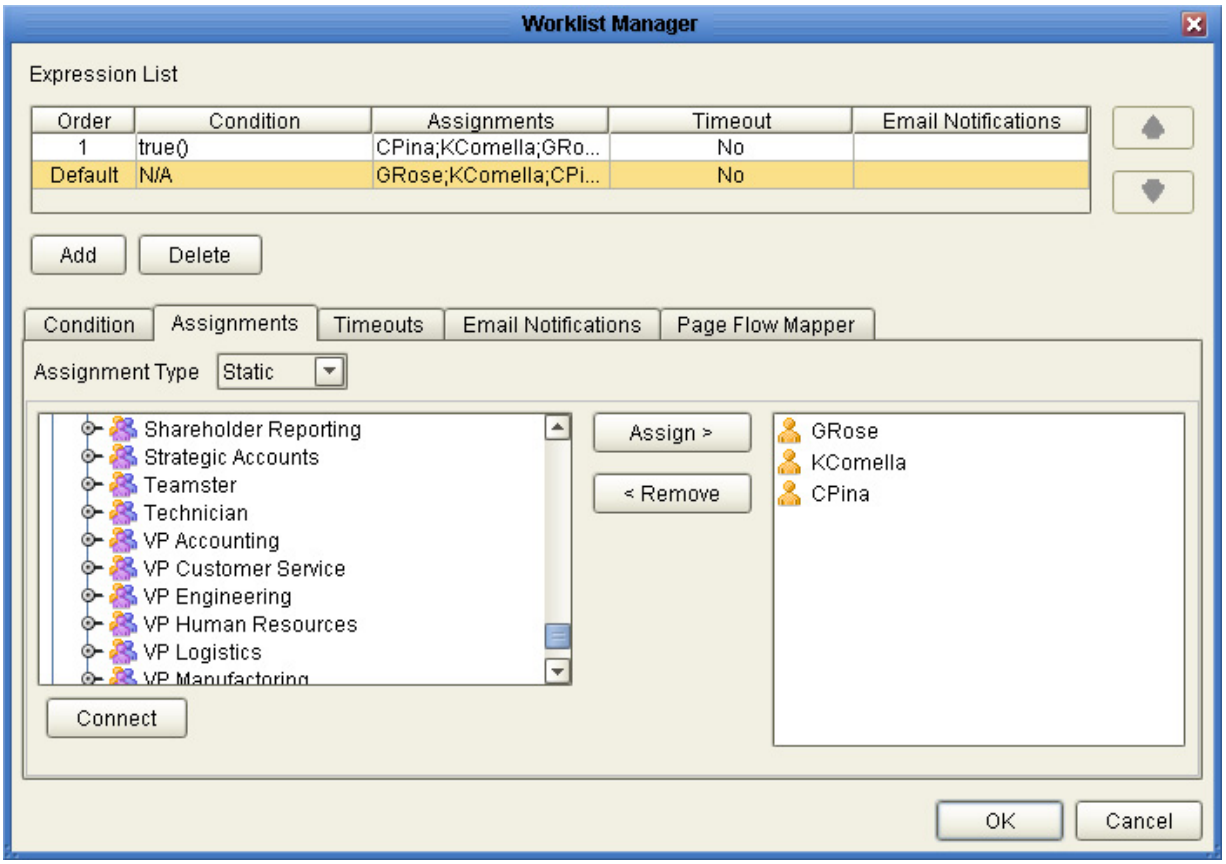


5 For this example, accept the default configuration and click **OK**.

6 From the User List, select the following users:

- **GRose**
- **CPina**
- **KComella**

Figure 112 Assign Users



7 Create a True condition for the first case.

Note: *Note this is a static configuration. Dynamic allows you to assign users during runtime.*

C.2.6 Creating and Configuring the Connectivity Map

To create the Connectivity Map

1 Right-click your Project and select **New: Connectivity Map**.

A new node will appear under your Project. The default name is CMap1.

2 Select the External Applications toolbar icon and select **File External Applications**.

3 Drag the File icon to the Connectivity Map canvas.

4 Drag a second File icon to the canvas.

5 Select **BusinessProcess1** from the Project Explorer and drag it to the canvas.

6 Select **subBusinessProcess** from the Project Explorer and drag it to the canvas.

7 Add a **WebConnector** and a **WLM Connector** to the Connectivity Map.

To configure the Connectivity Map elements

1 Double-click the **BusinessProcess11** and **SubBusinessProcess1**.

The **Business Process Service** dialog boxes appear.

A Drag a link from **File Sender Service** to the **File1** icon.

B Drag a link from the **File Receiver Service** to **File_output** icon.

C Drag a link from the **WSPProvider** to the **WebConnector**.

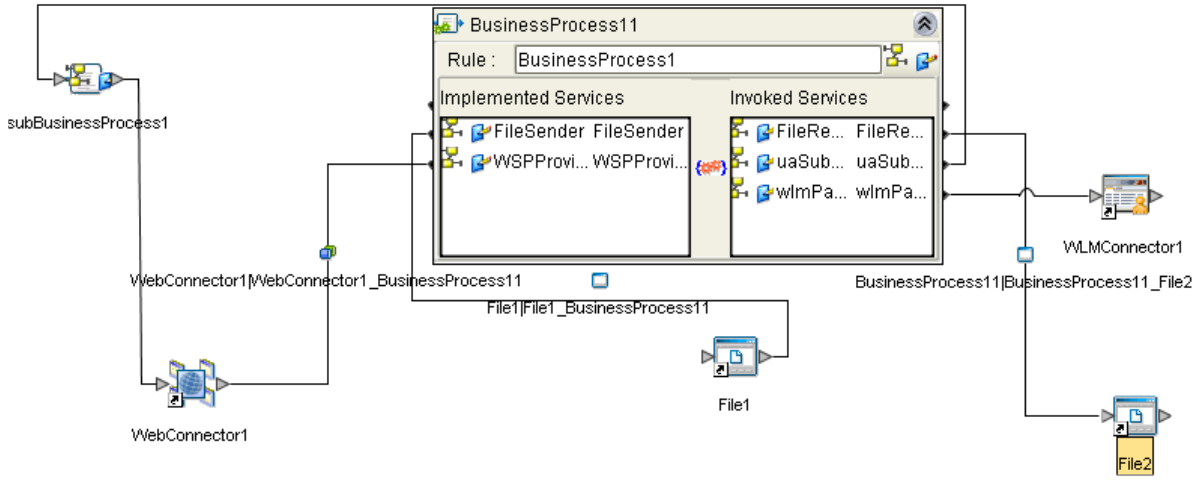
D Drag the **WLMPartner** to the **WLM Connector**.

E Drag the **UASubProcPartner** to the **WLMPartner** on the **SubProcess**.

F Drag **eVision_user** from **SubBusinessProcess1** to **WebConnector**.

2 Click the **minimize buttons** on the **Business Process dialog boxes** to close.

Figure 113 Completed Connectivity Map



C.2.7 Configuring the File Systems

To configure the Inbound File eWay

1 Double-click the link to **File1** to configure it.

The **Templates** dialog box appears.

2 Select **Inbound File eWay** and select **OK**.

The **Properties** dialog box appears.

3 Change the Directory to `C:\data`.

4 Change **Input** file name to `input*.txt`.

5 Click **OK** to save changes.

To configure the Outbound File eWay

1 Double-click the link **File2** to configure it.

The **Templates** dialog box appears.

2 Select **Outbound File eWay** and select **OK**.

The **Properties** dialog box appears.

3 Change the **Directory** to C:\data.

4 Change the **Output** file name to `output%d.txt`.

5 Click **OK** to save changes.

C.3 Deploying and Testing the Project

C.3.1 Starting the Logical Host

Before you create your Deployment Profile, start the Logical Host for your deployment. To start the Logical Host, from **<*C:\JavaCAPS51*>\logicalhost**, run **start_<*domainX*>.bat**. When the Logical Host is ready, you can create your Deployment Profile. For detailed information about starting the Logical Host, see the *Sun SeeBeyond eGate Integrator User's Guide.*

C.3.2 Creating and Configuring the Deployment Profile

To create the Deployment Profile

1 Right-click your **Project** from the Project Explorer.

2 Select **New: Deployment Profile**.

3 The **Create Deployment Profile** dialog box appears.

4 The **Deployment Profile** is called **Deployment1** by default. You can accept the default name.

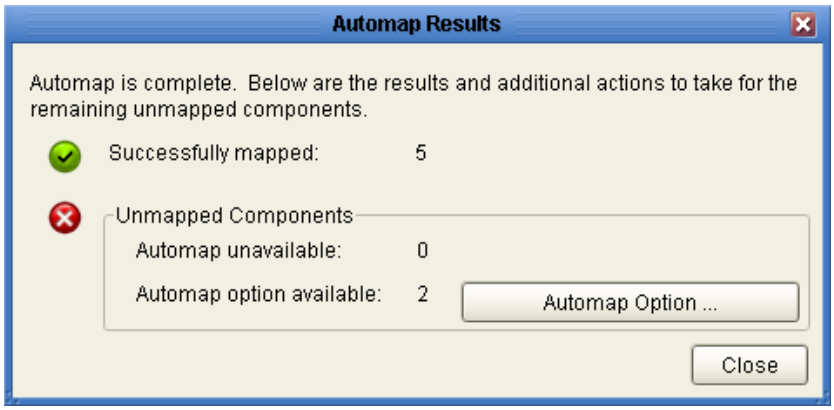
5 Select the Environment (Environment1) that you created previously.

To configure the Deployment Profile

1 In the Deployment Editor, click the Automap icon.

The **Automap Results** dialog box appears.

Figure 114 Automap Results Dialog Box

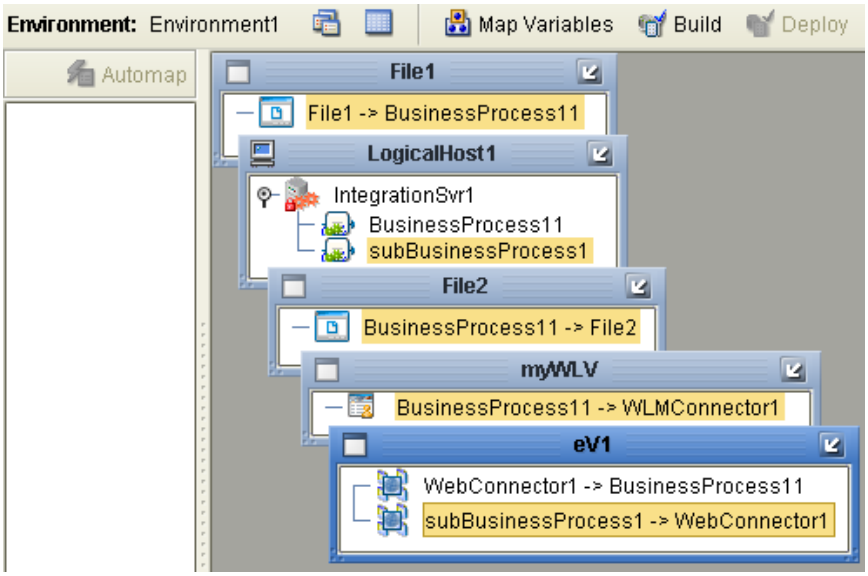


2 Click **Close** (do not let the Automapper map File1 and File2).

3 Drag **File1 -> BusinessProcess11** from the middle panel to the **File1** window.

4 Drag **BusinessProcess11 -> File2** to the **File2** window.

Figure 115 Worklist Manager Deployment Profile



5 Click **Build**.

Java CAPS builds the project.

6 Click **Deploy**.

Java CAPS deploys the project on Domain1.

C.3.3 Testing the Task Assignment System

To test the Task Assignment System

1 Connect to `http://localhost:18001/wlm` (This is the default for all WLMs).

2 Login as **GRose**.

Note: *Username: GRose, Password: pass.*

The task list is empty.

3 Copy your `input1.txt` file to `c:/data`.

4 Click **Refresh** in the **Worklist Manager**.

A new task appears.

5 Select the new task and click the **Checkout** button.

6 Click **Execute** to launch the task.

The **eVision auditPage** appears, with the name portion completed with the name in your file.

7 Enter an amount in the **Amount** text field.

The exit page appears.

8 Click **Close Window**.

You are back to the task view.

9 Click **Complete** from the task view.

The task disappears from your task list.

Testing Task Escalation

To test task escalation

1 Login as `CPina`.

2 Escalate the task.

3 Logout and login as `KComella`.

4 Allow `KComella` to complete the task.

Checking the Output

To check the output

1 Navigate to `C:\data` and check for an `output.txt` file.

2 If the file exists, open it and examine the data. It should look like this:

```
Mary Smith:10,000
```

Note: *Your input depends on the contents of your file and the entry you make in the Amount field.*

Appendix D

Accessing Worklist Manager Data

The Workflow Service (WFS) API facilitates access to WLM persistable data and its associated functionality so that you can develop a custom WLM client. WLM leverages organized information using Open LDAP, Active Directory Server, or Sun Java System Directory Server. WLM also leverages persisted data from Oracle, Sybase, SQL Server, or DB2 databases. WLM can also send email notifications. By providing the authentication and access information to these LDAPs, databases, and email servers, your custom WLM client can use WFS API to access WLM.

What's in This Appendix

D.1 Installing WFS API

WFS API is available with eInsight. The following procedure provides the steps for installing WFS API.

To install WFS API

1. From the Sun Java CAPS Installer, upload **eInsight.sar**.
2. From the **Downloads** tab, select **Workflow Service API** and extract the contents of **WorkflowService.zip** to a local directory such as **WorkflowServiceAPI**.
3. Open Readme.txt for detailed information about this release. Note that you have separate .jar files for Sun (JDK 1.4) and for WebLogic (JDK 1.5).
4. Use the online API documentation bundled with this API to supplement this appendix. All API calls are covered in this documentation.

D.2 Configuring WFS API

The following procedure provides the high-level steps for setting up WFS.

To set up WFS

1. Edit connection.properties.
2. Generate the Client Stubs.
3. Deploy WorkflowService.
4. Verify that LDAP is running.
5. Set up the database.

D.2.1 Editing Connection.Properties

WorkflowService.jar packages WLM functionality and APIs, database .jars, and **connection.properties**.

The file **connection.properties** possesses the required information about connecting and accessing the desired LDAP and database. This file needs to be modified to point to your database.

To modify connection.properties

1. Unjar **WorkflowService.jar** and edit **connection.properties**.
2. Jar **WorkflowService.jar**, which includes the modified **connection.properties**.

For example, to point to the Oracle database, **connection.properties** should include properties about either the connection pool or about the database. Add a connection pool to the application server and pass the resultant JNDI name to **connection.properties** for better performance.

Either of the following sets of properties need to be supplied:

```
#-----------------------------------------------------------
# Connection to DB: Recommended way: Create Connection pool
# in the application server and provide that JNDI name here
#-----------------------------------------------------------

#dbConnectionPoolRefName=jdbc/wlmDeployment1/DBConnectionPool
#dbType=oracle

#-----------------------------------------------------------
# Connection to DB: Alternate way
#-----------------------------------------------------------
daoAutoCommit=false
dbType=oracle
dbDriverName=com.SeeBeyond.eInsight.jdbc.oracle.OracleDriver
dbUrl=jdbc:SeeBeyond:oracle://<hostname>:<port>;SID=<SID>
userId=wlm51
password=wlm51
```

If you want email notification, supply the following:

```
#-------------------------------------------------
# Connection to EMail Server
#-------------------------------------------------
```

```
emailServer=
emailUser=
emailPassword=
```

To connect to Security Manager supply the following:,

```
# ------------------------------------------------
# Connection to Security Manager.
# ------------------------------------------------
securtiyManager=com.stc.bpms.wlm.security.OpenLdapSecurityManager
# securtiyManager=com.stc.bpms.wlm.security.EnvUserSecurityManager
# securtiyManager=com.stc.bpms.wlm.security.SunOneSecurityManager
#
securtiyManager=com.stc.bpms.wlm.security.ActiveDirectorySecurityMana
ger
```

To connect to the LDAP supply the following:

```
# ------------------------------------------------
# OpenLdap Connection Properties:  MegaNova schema
# ------------------------------------------------
ldap.Version=3
ldap.Context.INITIAL_CONTEXT_FACTORY=com.sun.jndi.ldap.LdapCtxFactory
ldap.Context.PROVIDER_URL=ldap://localhost:389

ldap.rootName=MegaNova
ldap.searchFilter=(o=MegaNova)
ldap.searchDN=ou=People,o=MegaNova,c=US
ldap.attribute.role=stcWFRole
ldap.attribute.manager=stcWFManager
ldap.attribute.group=stcWFGroup
ldap.attribute.email=mail
ldap.attribute.givenName=givenName
```

To connect to Sun Java System Directory Server, supply the following:

```
# ------------------------------------------------------------
# Sun Java System Directory Server / ADS Connection Properties
# ------------------------------------------------------------
#java.naming.provider.url=ldap://localhost:45504
#java.naming.factory.initial=com.sun.jndi.ldap.LdapCtxFactory
#java.naming.security.authentication=simple
#java.naming.security.principal=
#java.naming.security.credentials=
#UsersParentDN=
#UserDNAttributeNameInUser=
#UserIDAttributeNameInUser=uid
#RolesParentDN=
#RoleNameAttributeNameInUser=nsroledn
#RoleNameFieldInRoleDN=
#GroupsParentDN=
#GroupDNAttributeNameInGroup=
#GroupNameFieldInGroupDN=
#GroupsOfUserFilterUnderGroupsParentDN=
#ldap.attribute.manager=manager
#ldap.attribute.directReports=
#ldap.attribute.email=
#ldap.attribute.givenName=
```

D.2.2 Generating Client Stubs

Client Stubs are needed to access the WorkflowService EJB module and generate these stubs.

For example, if RTS is being used, issuing the following command generates the necessary client stubs:

```
C:\logicalhost\is\bin\isadmin get-client-stubs --user userName --
password password --appname WorkflowService c:\test\appclient
```

D.2.3 WFS Deployment

WorkflowService.jar needs to be deployed on the application server. This deployment depends on your application server.

If RTS is being used, **WorkflowService.jar** needs to be deployed under *EJB Modules.* The application name should be "WorkflowService".

D.3 Running LDAP

LDAP should be running in order to initialize and work with WFS APIs.

D.4 Setting Up Your Database

Run WLM scripts from eInsight to create the necessary tables that are used by WFS API. The WLM scripts are available in the Project Explorer at the following filepath:

```
//Sun SeeBeyond/eInsight/WorkListViewer/Database Scripts
```

Select the install script that corresponds to your database. You may want to change the script to suit your needs; for example, you could change the user name. After any changes, save the script and run the script to create the necessary database tables.

D.5 WFS Client

The WFS APIs work in conjunction with TaskFilter. TaskFilter is used to retrieve tasks based on selection criteria, and the APIs apply to those retrieved tasks.

For example, to set the status to "Completed" for all those tasks created between "1/1/2003' and '12/1/2003'.

1. Specify the selection criteria of the tasks.
2. Specify the attributes and their corresponding values.
3. Call the saveTasks API.

The code is similar to the following:

```
TaskFilter myFilter = new TaskFilter(new Timestamp("1/1/2003", new
TimeStamp("12/1/2003"));
Map myMap = new HashMap();
myMap.put("TASK_STATUS","Completed");
```

```
wfClient.saveTasks(myFilter);
```

The following subsections list the APIs for WFS and TaskFilter.

WLM ensures that the tasks are only visible to the user and all subordinates. Meaning, the user cannot retrieve/modify tasks that do not belong to the user and all subordinates.

D.5.1 Chained TaskFilters

TaskFilters can be chained with SQL AND/OR operations to either expand or narrow down the tasks. Here is how a chained filter is formed:

1. Formulate direct filters as earlier such as the following.

```
TaskFilter dateRangeFilter = new TaskFilter(Date1, Date2);
TaskFilter statusFilter = new
TaskFilter(TaskFilter.TaskFilterType_ByTaskStatus, “Completed”);
TaskFilter taskIdFilter = new
TaskFilter(TaskFilter.TaskFilterType_ByTaskIdList, listOfTaskIds);
```

2. The chained filter can be formulated by using addFilter call, which takes TaskFilter and join condition which should be either AND or OR:

```
TaskFilter chainFilter1 = new TaskFilter();
chainFilter1.addFilter(dateRangeFilter, "AND");
chainFilter1.addFilter(taskIdFilter, "AND");
chainFilter1.addFilter(statusFilter, "OR");
TaskFilter chainFilter2 = new TaskFilter();
chainFilter2.addFilter(dateRangeFilter, "OR");
chainFilter2.addFilter(taskIdFilter, "OR");
TaskFilter ComplexFilter = new TaskFilter();
ComplexFilter.addFilter(chainFilter1, "OR");
ComplexFilter.addFilter(chainFilter2, "AND");
```

The filters cannot be chained any deeper or any longer.

D.5.2 Creating WorkflowClient

Workflow Client should need to get WorkFlowService to make WFS API calls. The following code snippet provides an example of obtaining the WorkFlowServvice through WorkFlowServiceHome interface.

```
import com.stc.bpms.wlm.ejb.WorkflowService;
import javax.naming.Context;
import javax.naming.InitialContext;
import com.stc.bpms.wlm.ejb.WorkflowServiceHome;
import java.util.Properties;
import javax.rmi.PortableRemoteObject;
import java.rmi.RemoteException;

WorkflowService wfs;

WorkflowClient() {
     appServerHostName = "localhost";
    appServerPortNumber = "18002";
    serviceJndi = "ejb/WorkflowService";

        Properties env = new Properties();
                env.put(Context.INITIAL_CONTEXT_FACTORY,
"com.sun.jndi.cosnaming.CNCtxFactory");
```

```
                env.put(Context.PROVIDER_URL, "iiop://" +
appServerHostName + ":" + appServerPortNumber);
                Context ctx = new InitialContext(env);
                Object obj = ctx.lookup(serviceJndi);
                WorkflowServiceHome home = (WorkflowServiceHome)
PortableRemoteObject.narrow(obj, WorkflowServiceHome.class);
                wfs = home.create();
```

D.5.3 Running WorkFlow Client

This section provides an example of needed parameters for running WorkFlow Client.

Consider the following configuration parameters.

```
set configs=
-DWorkflowService_AppServerHostName=localhost
-DWorkflowService_AppServerPortNumber=18002
-DWorkflowService_AppServerUserName=username (AppServer
Administrator?)
-DWorkflowService_AppServerPassword=password
-DWorkflowService_JndiName=ejb/WorkflowService
The following arguments might be needed..
set args=%configs% -Xdebug
-Xrunjdwp:transport=dt_socket,address=7777,server=y,suspend=n
-Djava.security.auth.login.config=c:\yourDirctory\appclientlogin.conf
```

The following classpath might be needed:

```
set classpath=C:\appclient\WorkflowServiceClient.jar; C:\..
\apache\log4j.jar;C:\..\j2ee.jar;C:\..\logicalhost\is\lib\appserv-
rt.jar;C:\..\logicalhost\is\lib\appserv-admin.jar
```

Use the following command to run the client:

```
java %args% -classpath %classpath% clientMainJavaClassName
```

Appendix E

Accessing Business Process Instance Manager API Data

The Business Process Instance Manager API allows you to build custom applications that access data from the Business Process Instance Manager of Enterprise Manager. You can access complete online documentation to the Business Process Instance Manager API after you download bpJavaAPI.zip from the Java CAPS Installer's Download tab.

What's in This Appendix

E.1 Installing BPIM API

In the Downloads tab of Java CAPS Installer, select Business Process Instance Manager API from the Available Downloads list and extract the contents of bpJavaAPI.zip to your local Java CAPS directory. After you have unzipped the API, navigate to the Docs directory and open index.html. This launches the online documentation for the Business Process Instance Manager API. It contains a complete help system and index for guiding you through the development of your custom application for controlling Business Process Instances and accessing container data.

Appendix F

Method Palette

This appendix describes each method that appears in the Method Palette of the Business Rule Designer.

What's in This Appendix

F.1 Operators

Operators are the methods that allow you to manipulate data with standard mathematical operators.

Figure 116 Method Palette: Operator Tab

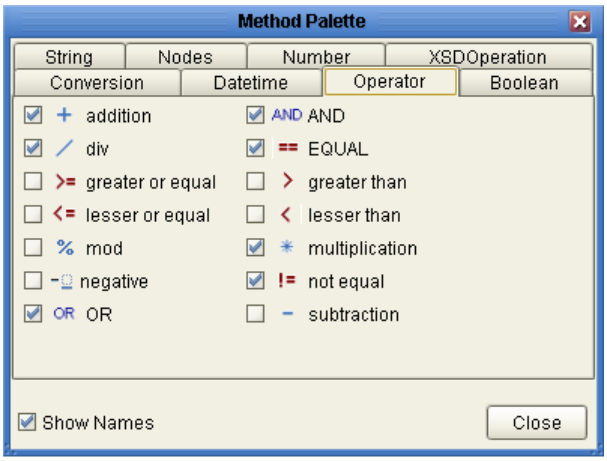


Table 24 Operator Methods

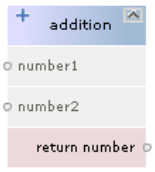
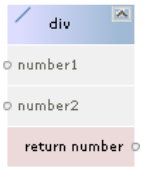
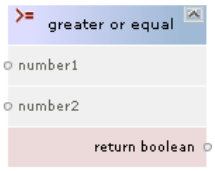
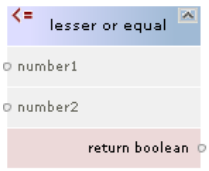
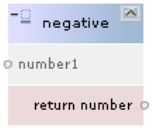
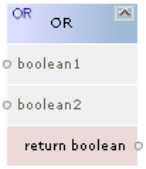
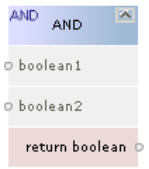
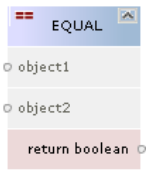
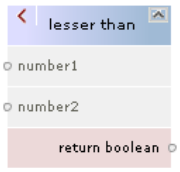
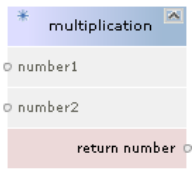
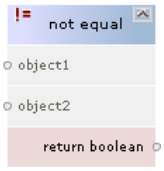
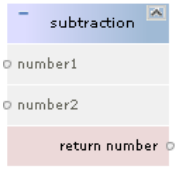
Symbol	Name	Function
	addition	Adds the value of *number1* to the value of *number2*, returns the sum.
	div	Divides the value of *number1* by the value of *number2*, returns the quotient.
	greater or equal	Returns Boolean true if *number1* is greater than or equal to *number2*; otherwise, returns Boolean false.
	lesser or equal	Returns Boolean true if *number1* is less than or equal to *number2*; otherwise, returns Boolean false.
	mod	Used to divide two numbers and return only the remainder.
	negative	Converts the input number to negative. Result is a negative number having the same absolute value as the input number.
	OR	Returns Boolean false if both *boolean1* and *boolean2* are false; otherwise, returns Boolean true.

Table 24 Operator Methods (Continued)

Symbol	Name	Function
	AND	Returns Boolean true if both *boolean1* and *boolean2* are true; otherwise, returns Boolean false.
	EQUAL	Returns Boolean true if *object1* is equal to *object2*; otherwise, returns Boolean false.
	greater than	Returns Boolean true if *number1* is greater than *number2*; otherwise, returns Boolean false.
	lesser than	Returns Boolean true if *number1* is less than *number2*; otherwise, returns Boolean false.
	multiplication	Multiplies the value of *number1* by the value of *number2*, returns the product.
	not equal	Returns Boolean true if *object1* is not equal to *object2*; otherwise, returns Boolean false.
	subtraction	Subtracts the numerical value of *number2* from the numerical value of *number1*, returns the difference.

F.2 String

The String methods allow you to manipulate string data.

Figure 117 Method Palette: String Tab

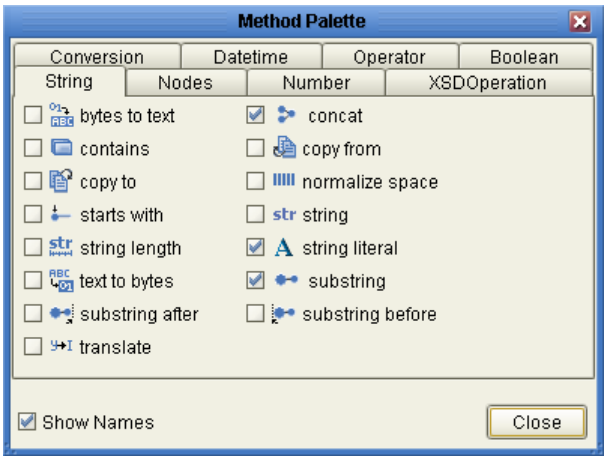


Table 25 String Methods

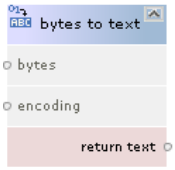
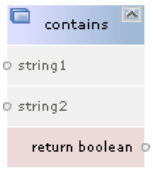
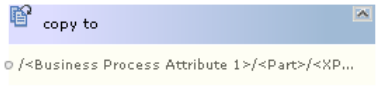
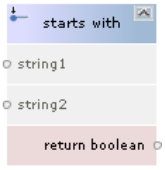
Symbol	Name	Function
	bytes to text	Decodes bytes into text using the specified encoding. If no encoding is specified, the platform's default encoding is used.
	contains	Returns true if the second string is contained within the first string, otherwise it returns false
	copy to	Allows you to type in the xpath expression for the destination of a copy operation. This is useful for entering xpath predicates. **Note:** This is for advanced users who are familiar with xpath and BPEL syntax.
	starts with	Returns true if the first string starts with the second string, otherwise it returns false

Table 25 String Methods (Continued)

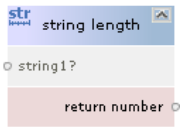
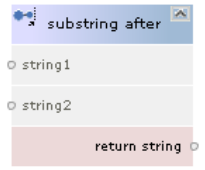
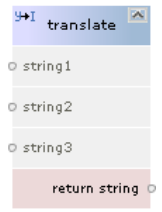
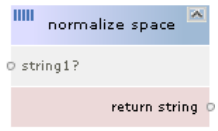
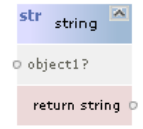
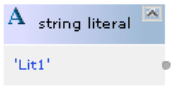
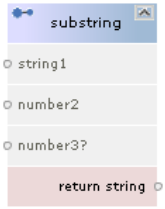
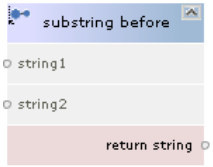
Symbol	Name	Function
	string length	Returns the number of characters in a string
	text to bytes	Encodes the input text into a sequence of bytes using the specified encoding. If no encoding is specified, the platform's default encoding is used
	substring after	Returns the part of the string in the string argument that occurs after the substring in the substring argument
	translate	Performs a character by character replacement. It looks in the value argument for characters contained in string1, and replaces each character for the one in the same position in the string2
	concat	Returns the concatenation of all its arguments **Note:** You can add mapping after mapping into the method. The method automatically adds an unmapped node as needed.
	copy from	Allows you to type in xpath expression for the source of a copy operation. This is useful for entering xpath predicates. **Note:** This is for advanced users who are familiar with xpath and BPEL syntax
	normalize space	Removes leading and trailing spaces from a string
	string	Converts the value argument to a string

Table 25 String Methods (Continued)

Symbol	Name	Function
	string literal	A sequence of characters of fixed length and content
	substring	Returns a part of the string in the string argument
	substring before	Returns the part of the string in the string argument that occurs before the substring in the substring argument.

F.3 Number

The Number methods allow you to work with number data.

Figure 118 Method Palette: Number Tab

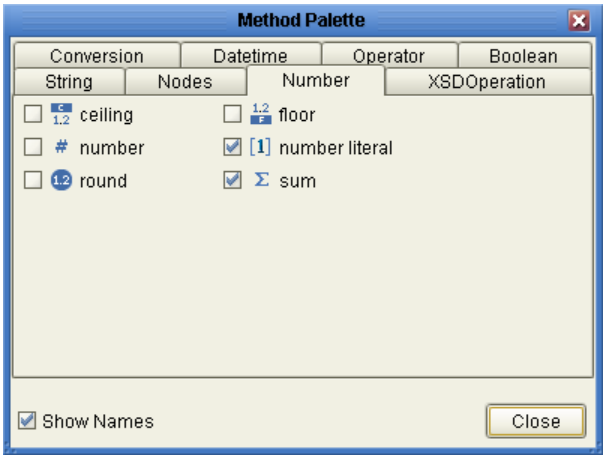
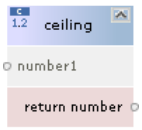
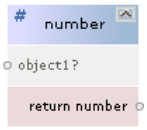
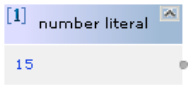
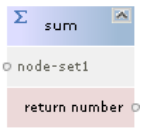


Table 26 Number Methods

Symbol	Name	Function
	ceiling	Returns the smallest integer that is not less than the number argument
	floor	Returns the largest integer that is not greater than the number argument
	number	Converts the value argument to a number
	number literal	A literal number string of fixed length and content
	round	Rounds the number argument to the nearest integer
	sum	Returns the total value of a set of numeric values in a node-set

F.4 Boolean

Boolean methods allow you to apply boolean logic to your data.

Figure 119 Method Palette: Boolean Tab

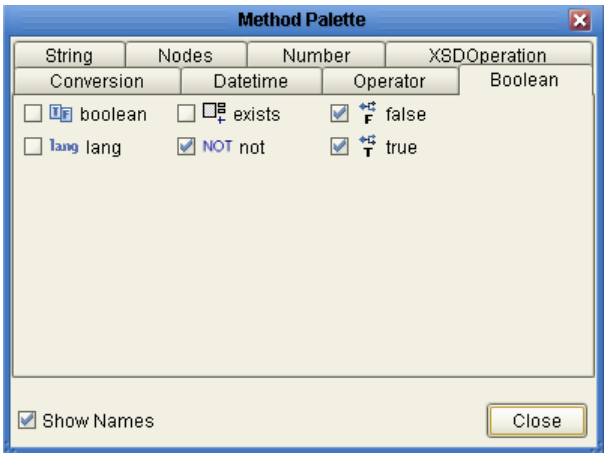


Table 27 Boolean Methods

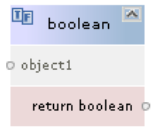
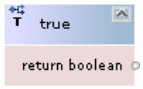
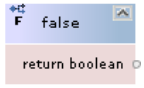
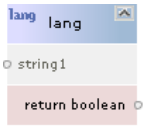
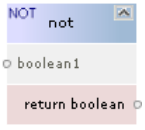
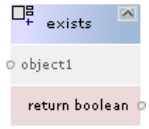
Symbol	Name	Function
	boolean	Converts the value argument to Boolean and returns true or false.
	true	Returns true
	false	Returns false
	lang	Returns true if the language argument matches the language of the xsl:lang element, otherwise it returns false.
	not	Returns true if the condition argument is false, and false is the condition argument is true.

Table 27 Boolean Methods (Continued)

Symbol	Name	Function
	exists	Checks to see if a value is present and returns a Boolean result.

F.5 Nodes

Node methods allow you to manipulate your data.

Figure 120 Method Palette: Nodes Tab

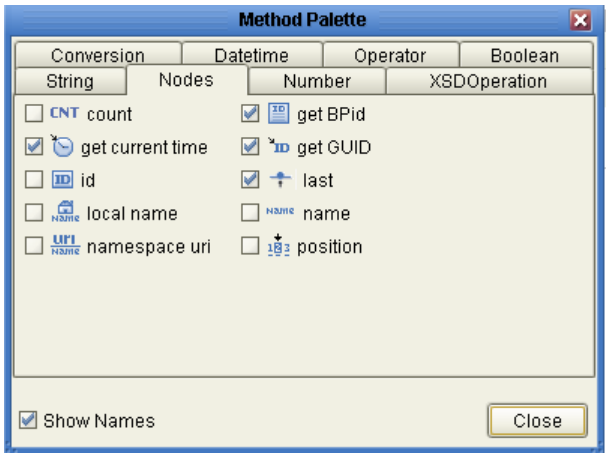


Table 28 Nodes Methods

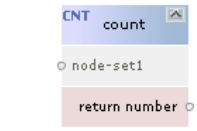
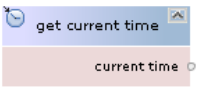
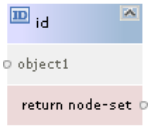
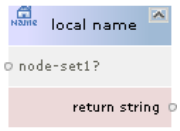
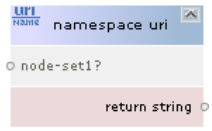
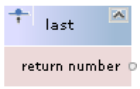
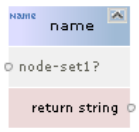
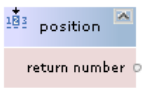
Symbol	Name	Function
	count	Returns the number of nodes in a node-set
	get current time	Gets the current time in ISO 8601 format (e.g. 2003-08-15T02:03:49.92Z).
	id	Selects elements by their unique ID

Table 28 Nodes Methods (Continued)

Symbol	Name	Function
	local name	Returns the local part of a node. A node usually consists of a prefix, a colon, followed by the local name
	namespace uri	Returns the namespace URI of a specified node
	get BPid	Gets the business process instance ID.
	get GUID	Gets a randomly generated globally unique ID.
	last	Returns the position number of the last node in the processed node list
	name	Returns the name of a node
	position	Returns the position in the node list of the node that is currently being processed

F.6 Datetime

Datetime methods allow you to manipulate date, time, and duration of data.

Figure 121 Method Palette: Datetime Tab

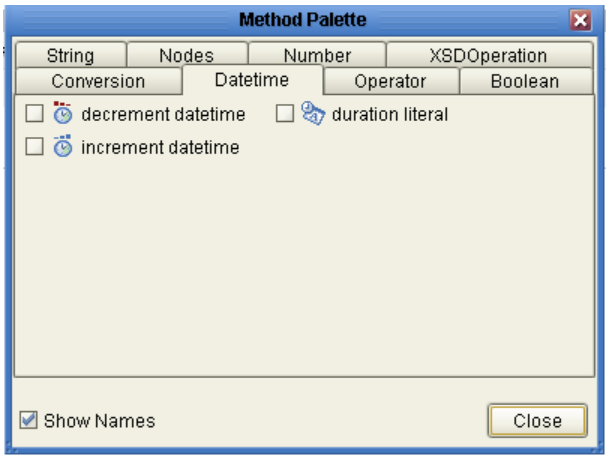
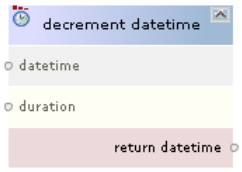
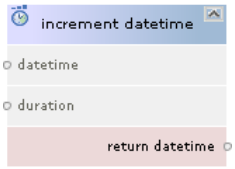
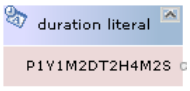


Table 29 Datetime Methods

Symbol	Name	Function
	decrement datetime	Dynamically decreases the date or time by a certain duration, such as days or hours.
	increment datetime	Dynamically increases the date or time by a certain duration, such as days or hours.
	duration literal	Allows you to set an actual date or time.

F.7 XSD Operation

The XSD Operation methods enable you to marshal and unmarshal messages.

Figure 122 Method Palette: XSDOperation Tab

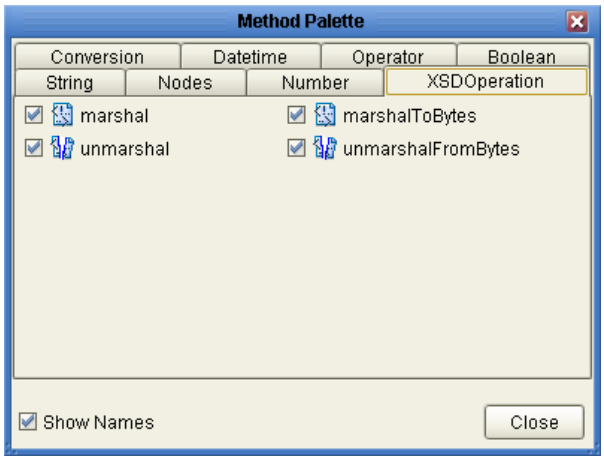
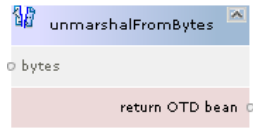


Table 30 XSDOperation Methods

Symbol	Name	Function
	marshal	Enables you to marshal messages. At runtime, the operator indicates that it needs to call the marshal function of the Object Type Definition (OTD).
	unmarshal	Enables you to unmarshal messages. At runtime, the operator indicates that it needs to call the unmarshal function of the OTD.
	marshalToBytes	Enables you to marshal an OTD bean into Bytes.
	unmarshalFromBytes	Enables you to unmarshal Bytes into an OTD bean.

F.8 Conversion

The Convert method allows you to make conversions from various data types.

Figure 123 Method Palette: Conversion Tab

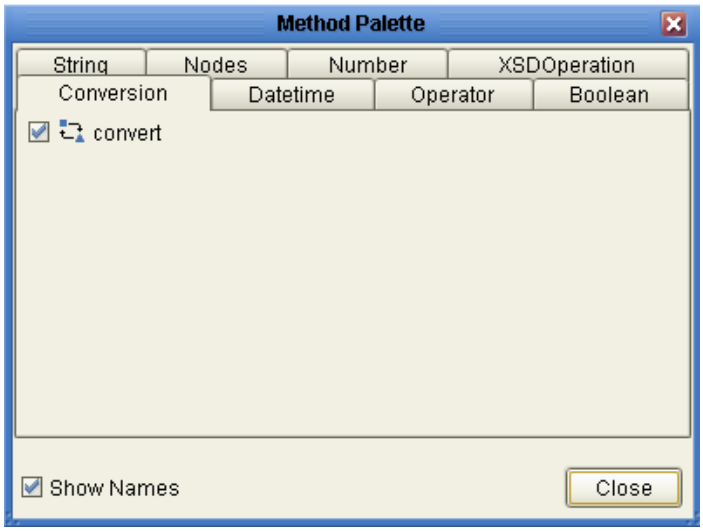
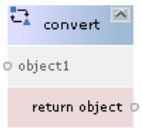


Table 31 Conversion Methods

Symbol	Name	Function
	convert	The convert function that takes in one input link and one output link. The convert function is limited to version 5.0.X Projects.

Glossary

Activity
An organizational unit for performing a specific function. An Activity defines a step of a particular Business Process.

Activity states
The stages that activities within the Business Process instance go through as the Business Process version is being run.

Business Process Attribute
Attributes pass user-defined control information (programming arguments) to and from the Sun SeeBeyond eInsight Business Process Manager and its activities.

Business Process
A Business Process is a collection of actions and messages, revolving around a specific business practice, that flow in a specific pattern to produce an end result.

Business Process Instance (BPI)
A unique instantiation of a Business Process.

Business Process model
The graphical representation of a Business Process.

Business Process version
A form or variant of the original Business Process model.

Collaboration
A component of an eWay that receives and processes Events and forwards the output to other eGate components.

Sun SeeBeyond eInsight Business Process Manager (eInsight)
The component within Java CAPS that facilitates the automation of the Business Process flow of business activities.

Decision
Controls the logical flow of data-based decisions in the Business Process model. A Decision outputs specific information when specified input conditions are met.

GUI
Graphical User Interface. A type of computer interface that enables the user to perform actions via the use of symbols, visual metaphors and pointing devices.

Business Process Designer
The Business Process Designer is the portion of the eInsight where you create the Business Process model, in the form of a flow chart.

security
Security is the ability to limit user access to specific items based on a predetermined profile of the user.

state
See *Activity states*

string
A sequence of text characters.

Sub-process
A sub-process is a Business Process which is called, or used by, another Business Process, as a sub-component.

tree view
The tree view displays a hierarchical representation of all the components, and their activities.

User Activity
Allows external applications to access attributes in the Business Process.

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