SUN SEEBEYOND

eWAY™ ADAPTER FOR VSAM USER'S GUIDE

Release 5.1.1

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Contents

Chapter 1

Introducing the VSAM eWay

Welcome to the *Sun SeeBeyond eWay™ Adapter for VSAM User's Guide*. This document includes information about installing, configuring, and using the Sun Java Composite Application Platform Suite VSAM eWay™ Adapter, referred to as the VSAM eWay throughout this guide.

This chapter provides a brief overview of operations, components, general features, and system requirements of the VSAM eWay.

What's in This Chapter

1.1 About VSAM

Virtual Storage Access Method (VSAM) is one of several access methods that defines the technique by which data is stored and retrieved. It is a GET/PUT interface used to transfer data from a direct-access storage device (DASD) to an application program. VSAM does not support data stored on tape.

VSAM stores data as a collection of data sets. IBM uses a collection of three data-set organizations—sequential, indexed, and direct-access, together with the access methods and utilities used on mainframe operating systems.

VSAM data sets must be cataloged in an integrated catalog facility (ICF) structure. Records are arranged by an index key or by relative-byte addressing. VSAM uses direct or sequential processing of fixed and variable-length records stored on a DASD.

VSAM also provides the following features:

- Allows you to organize and access data (record management).

- Maintains information about this data, which is stored or referenced in a catalog (catalog management).
- Supports Entry-sequenced Data Set (ESDS) and Key-sequenced Data Set (KSDS) files.

The VSAM eWay allows you to utilize and extend all of these features. For more information on VSAM, see IBM's Web site.

1.2 About the VSAM eWay

The VSAM eWay enables eGate™ Integrator to exchange data with external IBM VSAM mainframe file systems. This eWay is similar to other database eWays, such as IAM, ADABAS, and IDMS. The eWay uses its own properties settings and eGate components to enable VSAM data integration.

1.2.1 eWay Operation

This eWay enables eGate to communicate with VSAM files on a mainframe host system via TCP/IP. The eWay utilizes an IBM WebSphere Information Integrator Classic Federatione component that allows you to view and access VSAM in the same way as any standard relational database system.

For details on operating and using eGate and its user interface, the Enterprise Designer, see the *Sun SeeBeyond eGate™ Integrator User's Guide.*

1.3 What's New in This Release

The VSAM eWay includes the following changes and new features:

- Version Control: An enhanced version control system allows you to effectively manage changes to the eWay components.
- Multiple Drag-and-Drop Component Mapping from the Deployment Editor: The Deployment Editor now allows you to select multiple components from the Editor's component pane, and drop them into your Environment component.
- Support for Runtime LDAP Configuration: eWay configuration properties now support LDAP key values.
- Connection Retry Support: Allows you to specify the number of attempts to reconnect, and the interval between retry attempts, in the event of a connection failure.
- Relaunchable OTD Support: An OTD can be rebuilt and saved (under the same name) then relaunched back to the same Java Collaboration or BPEL. This allows you to change the metadata in an OTD without having to completely recreate the business logic from scratch.

- Editable OTD Support: An existing OTD can be edited and saved using the OTD Wizard. This allows you to make minor changes to an OTD without having to completely recreate the OTD from scratch. The OTD is then rebuilt, saved, and then relaunched back to the same Java Collaboration or BPEL.
- Connectivity Map Generator: Generates and links your Project's Connectivity Map components using a Collaboration or Business Process.

Many of these features are documented further in the *Sun SeeBeyond eGate™ Integrator User's Guide* or the *Sun SeeBeyond eGate™ Integrator System Administration Guide*.

1.4 About This Document

This document includes the following chapters:

- **Chapter 1 "Introducing the VSAM eWay":** Provides an overview description of the product as well as high-level information about this document.
- **Chapter 2 "Installing the VSAM eWay"**: Describes the system requirements and provides instructions for installing the VSAM eWay.
- **Chapter 3 "Setting Properties of the VSAM eWay"**: Provides instructions for configuring the eWay to communicate with your legacy systems.
- **Chapter 4 "Using the VSAM eWay Database Wizard"**: Provides information for creating Object Type Definitions to be used with the VSAM eWay.
- **Chapter 5 "Using VSAM OTDs"**: Describes operations you can perform using VSAM Object Type Definitions (OTDs) in eGate.
- **Chapter 6 "Using VSAM Operations"**: Provides instructions on using VSAM database eWay operations in BPEL and JCD.
- **Chapter 7 "Implementing the VSAM eWay Sample Projects"**: Provides instructions for installing and running the sample Projects.

VSAM eWay Javadoc

A VSAM eWay Javadoc is also provided that documents the Java methods available with the VSAM eWay. The Javadoc is uploaded with the eWay's documentation file (**VSAMeWayDocs.sar**) and downloaded from the **Documentation** tab of the Sun Java Composite Application Platform Suite Installer. To access the full Javadoc, extract the Javadoc to an easily accessible folder, and double-click the **index.html** file.

1.4.1 Scope

This user's guide provides a description of the VSAM eWay Adapter. It includes directions for installing the eWay, configuring the eWay properties, and implementing the eWay's sample Projects. This document is also intended as a reference guide, listing available properties, functions, and considerations. For a reference of available VSAM eWay Java methods, see the associated Javadoc.

1.4.2 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.

1.4.3 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 10
Blue underlined	Hypertext links for Web addresses (URLs) or email addresses	http://www.sun.com

1.5 Related Documents

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

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

1.6 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

1.7 Documentation Feedback

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

CAPS_docsfeedback@sun.com

Chapter 2

Installing the VSAM eWay

This chapter explains how to install the VSAM eWay.

What's in This Chapter

2.1 Installing the VSAM eWay

The Java Composite Application Platform Suite Installer, referred to throughout this guide as the Suite Installer, is a web-based application that is used to select and upload core products, composite applications, and add-on files (eWays) during the installation process. The following section describes how to install the components required for this eWay.

Refer to the readme for the latest information on:

- Supported Operating Systems
- System Requirements
- External System Requirements

The VSAM eWay Readme is uploaded with the eWay's documentation file (**VSAMeWayDocs.sar**) and can be accessed from the **Documentation** tab of the Sun Java Composite Application Platform Suite Installer. Refer to the VSAM eWay Readme for the latest requirements before installing the VSAM eWay.

Note: *When the Repository is running on a UNIX operating system, the eWays are loaded from the Sun Java Composite Application Platform Suite Installer running on a Windows platform connected to the Repository server using Internet Explorer.*

2.1.1 Installing the VSAM eWay on an eGate supported system

Follow the directions for installing the Sun Java Composite Application Platform Suite in the *Sun Java Composite Application Platform Suite Installation Guide.* After you have installed Core Products, do the following:

1. From the Sun Java Composite Application Platform Suite Installer's **Select Sun Java Composite Application Suite Products to Install** table (Administration tab), click the **Click to install additional products** link.
2. Expand the **eWay** option.
3. Select the products for your Sun Java Composite Application Platform Suite and include the following:
   - **File eWay** (the File eWay is used by most sample Projects)
   - **VSAMeWay**

   To upload the VSAM eWay User's Guide, Help file, Javadoc, Readme, and sample Projects, expand the **Documentation** option and select **VSAMeWayDocs**.
4. Once you have selected all of your products, click **Next** in the top-right or bottom-right corner of the **Select Sun Java Composite Application Platform Suite Products to Install** box.
5. From the **Selecting Files to Install** box, locate and select your first product's SAR file. ONce you have selected the SAR file, click **Next**. Your next selected product appears. Follow this procedure for each of your selected products. The **Installation Status** window appears and installation begins after the last SAR file has been selected.
6. Once your product's installation is finished, continue installing the Sun Java Composite Application Platform Suite as instructed in the *Sun Java Composite Application Platform Suite Installation Guide*.

Adding the eWay to an Existing Sun Java Composite Application Platform Suite Installation

If you are adding the eWay to an existing Sun Java Composite Application Platform Suite installation, do the following:

1. Complete steps 1 through 4 above.
2. Once your product's installation is complete, open the Enterprise Designer and select **Update Center** from the Tools menu. The **Update Center Wizard** appears.
3. For Step 1 of the wizard, simply click **Next**.
4. For Step 2 of the wizard, click the **Add All** button to move all installable files to the **Include in Install** field, then click **Next**.
5. For Step 3 of the wizard, wait for the modules to download, then click **Next**.
6. The wizard's Step 4 window displays the installed modules. Review the installed modules and click **Finish.**

7 When prompted, restart the IDE (Integrated Development Environment) to complete the installation.

Copying JAR files to the eDesigner Library

The VSAM eWay SAR file no longer includes the WebSphere Information Integrator Classic Federation JDBC Driver for VSAM databases. You are required to copy the product's JDBC JAR file (`cacjdbc30.jar`) to the following location prior to running a VSAM project:

```
<JavaCAPS51>\edesigner\lib\ext
```

where *<JavaCAPS51>* is the directory where the Sun Java Composite Application Platform Suite is installed.

Note: *If eDesigner is running, it must be restarted to pickup the new JAR file.*

Installing Third-Party Products

In order to run the VSAM eWay you must also install the IBM WebSphere Information Integrator Classic Federation. The product is no longer shipped with the VSAM eWay. For complete details on how to install the Classic Federation, see the *IBM WebSphere Information Integrator Installation Guide for Classic Federation and Classic Event.*

Important: *When you install the Classic Federation, be sure to configure the properties for VSAM. See the appropriate Federation documentation for details.*

After Installation

Once you install the eWay, it must then be incorporated into a Project before it can perform its intended functions. See the *eGate Integrator User's Guide* for more information on incorporating the eWay into an eGate Project.

2.1.2 Extracting the Sample Projects and Javadocs

The VSAM eWay includes sample Projects and Javadocs. The sample Projects are designed to provide you with a basic understanding of how certain database operations are performed using the eWay, while Javadocs provide a list of classes and methods exposed in the eWay.

Steps to extract the Javadoc include:

1 Click the **Documentation** tab of the Sun Java Composite Application Platform Suite Installer, then click the Add-ons tab.

2 Click the **VSAM eWay Adapter** link. Documentation for the VSAM eWay appears in the right pane.

3 Click the icon next to **Javadoc** and extract the ZIP file.

4 Open the index.html file to view the Javadoc.

Steps to extract the Sample Projects include:

1. Click the **Documentation** tab of the Sun Java Composite Application Platform Suite Installer, then click the Add-ons tab.
2. Click the **VSAM eWay Adapter** link. Documentation for the VSAM eWay appears in the right pane.
3. Click the icon next to **Sample Projects** and extract the ZIP file. Note that the **VSAM_eWay_Sample.zip** file contains two additional ZIP files for each sample Project.

   Refer to **"Importing a Sample Project" on page 65** for instructions on importing the sample Project into your repository via the Enterprise Designer.

2.2 ICAN 5.0 Project Migration Procedures

This section describes how to transfer your current ICAN 5.0.x Projects to the Sun Java Composite Application Platform Suite 5.1.1. To migrate your ICAN 5.0.x Projects to the Sun Java Composite Application Platform Suite 5.1.1, do the following:

Export the Project

1. Before you export your Projects, save your current ICAN 5.0.x Projects to your Repository.
2. From the Project Explorer, right-click your Project and select **Export** from the shortcut menu. Th**e** Export Manager appears.
3. Select the Project that you want to export in the left pane of the Export Manager and move it to the Selected Projects field by clicking the **Add to Select Items** (arrow) button, or click **All** to include all of your Projects.
4. In the same manner, select the Environment that you want to export in the left pane of the Export Manager and move it to the Selected Environments field by clicking the **Add to Select Items** (arrow) button, or click **All** to include all of your Environments.
5. Browse to select a destination for your Project ZIP file and enter a name for your Project in the **ZIP file** field.
6. Click **Export** to create the Project ZIP file in the selected destination.

Install Java CAPS 5.1.1

1. Install **Java CAPS 5.1.1**, including all eWays, libraries, and other components used by your ICAN 5.0 Projects.
2. Start the Java CAPS 5.1.1 Enterprise Designer.

Import the Project

1. From the Java CAPS 5.1.1 Enterprise Designer's Project Explorer tree, right-click the Repository and select **Import Project** from the shortcut menu. The Import Manager appears.

2. Browse to and select your exported Project file.
3. Click **Import**. A warning message, **"Missing APIs from Target Repository**," may appear at this time. This occurs because various product APIs were installed on the ICAN 5.0 Repository when the Project was created, that are not installed on the Java CAPS 5.1.1 Repository. These APIs may or may not apply to your Projects. You can ignore this message if you have already installed all of the components that correspond to your Projects. Click **Continue** to resume the Project import.
4. Close the Import Manager after the Project is successfully imported.

Deploy the Project

1. A new Deployment Profile must be created for each of your imported Projects. When a Project is exported, the Project's components are automatically *"checked in"* to Version Control to write-protected each component. These protected components appear in the Explorer tree with a red padlock in the bottom-left corner of each icon. Before you can deploy the imported Project, the Project's components must first be *"checked out"* of Version Control from both the Project Explorer and the Environment Explorer. To *"check out"* all of the Project's components, do the following:

   A. From the Project Explorer, right-click the Project and select **Version Control > Check Out** from the shortcut menu. The Version Control - Check Out dialog box appears.

   B. Select **Recurse Project** to specify all components, and click **OK**.

   C. Select the Environment Explorer tab, and from the Environment Explorer, right-click the Project's Environment and select **Version Control > Check Out** from the shortcut menu.

   D. Select **Recurse Environment** to specify all components, and click **OK**.

2. If your imported Project includes File eWays, these must be reconfigured in your Environment prior to deploying the Project.

   To reconfigure your File eWays, do the following:

   A. From the Environment Explorer tree, right-click the File External System, and select **Properties** from the shortcut menu. The Properties Editor appears.

   B. Set the inbound and outbound directory values, and click **OK**. The File External System can now accommodate both inbound and outbound eWays.

3. Deploy your Projects.

Note: *Only projects developed on ICAN 5.0.2 and later can be imported and migrated successfully into the Sun Java Composite Application Platform Suite.*

2.3 Installing Enterprise Manager eWay Plug-Ins

The **Sun SeeBeyond Enterprise Manager** is a Web-based interface you use to monitor and manage your Sun Java Composite Application Platform Suite applications. The

Enterprise Manager requires an eWay specific “plug-in” for each eWay you install. These plug-ins enable the Enterprise Manager to target specific alert codes for each eWay type, as well as start and stop the inbound eWays.

The *Sun Java Composite Application Platform Suite Installation Guide* describes how to install Enterprise Manager. The *Sun SeeBeyond eGate Integrator System Administration Guide* describes how to monitor servers, Services, logs, and alerts using the Enterprise Manager and the command-line client.

The **eWay Enterprise Manager Plug-ins** are available from the **List of Components to Download** under the Sun Java Composite Application Platform Suite Installer’s **Downloads** tab.

There are two ways to add eWay Enterprise Manager plug-ins:

- From the **Sun SeeBeyond Enterprise Manager**
- From the **Sun Java Composite Application Platform Suite Installer**

To add plug-ins from the Enterprise Manager

1. From the **Enterprise Manager**’s Explorer toolbar, click **configuration**.
2. Click the **Web Applications Manager** tab, go to the **Auto-Install from Repository** sub-tab, and connect to your Repository.
3. Select the application plug-ins you require, and click **Install**. The application plug-ins are installed and deployed.

To add plug-ins from the Sun Java Composite Application Platform Suite Installer

1. From the **Sun Java Composite Application Platform Suite Installer**’s **Downloads** tab**,** select the Plug-Ins you require and save them to a temporary directory.
2. From the **Enterprise Manager**’s Explorer toolbar, click **configuration**.
3. Click the **Web Applications Manager** tab and go to the **Manage Applications** sub-tab.
4. Browse for and select the WAR file for the application plug-in that you downloaded, and click **Deploy**. The plug-ins is installed and deployed.

2.3.1 Viewing Alert Codes

You can view and delete alerts using the Enterprise Manager. An alert is triggered when a specified condition occurs in a Project component. The purpose of the alert is to warn the administrator or user that a condition has occurred.

To View the eWay Alert Codes

1. Add the eWay Enterprise Manager plug-in for this eWay.
2. From the **Enterprise Manager**’s Explorer toolbar, click **configuration**.
3. Click the **Web Applications Manager** tab and go to the **Manage Alert Codes** sub-tab. Your installed eWay alert codes display under the **Results** section. If your eWay alert codes are not displayed under **Results**, do the following:

A From the **Install New Alert Codes** section, browse to and select the eWay alert properties file for the application plug-in that you added. The alert properties files are located in the **alertcodes** folder of your Sun Java Composite Application Platform Suite installation directory.

B Click **Deploy**. The available alert codes for your application are displayed under **Results**. A listing of the eWay's available alert codes is displayed in Table 2.

Table 2 Alert Codes for the VSAM eWay

Alert Code\Description	Description Details	User Actions
DBCOMMON-CONNECT-FAILED000001=Failed to connect to database {0} on host {1}. Reason: The Pooled connection could not be allocated: [{2}]	Occurs during the initial database connection establishment.	▪ Database is down; start your database. ▪ External configuration information is invalid. You may need to verify the following: ♦ Server name ♦ Database name ♦ User ♦ Password ♦ Port
DBCOMMON-CONNECT-FAILED000002=Operation failed because of a database connection error. Reason: [{0}]	Occurs while retrieving a connection from the database or the connection pool.	▪ Verify that the database has not terminated with unexpected errors.
DBCOMMON-CONNECT-FAILED000005=Connection handle not usable. Reason:[{0}]	The connection in the pool is stale and is not usable.	▪ Probably a database restart occurred causing the connection to be stale, retry the operation after the database is up.
DBCOMMON-XARESOURCE-FAILED000001=Unable to get XAResource for the database. Reason: [{0}]	Could not obtain XAResource for the connection.	▪ Check if the database supports XA and has been configured for Distributed Transaction Support.
DBCOMMON-XACONNECT-FAILED000001=Failed to connect to database {0} on host {1}. The XA connection could not be allocated: Reason [{2}]	Occurs during the initial database connection establishment.	▪ Check if the database is configured for XA and if the database is running. ▪ External configuration information is invalid. You may need to verify the following: ♦ Server name ♦ Database name ♦ User ♦ Password ♦ Port
DBCOMMON-XASTART-FAILED000001=Unable to perform XAStart for the connection. Reason: [{0}]	A connection error has occurred which caused XASTART to fail.	▪ Check if the database is running, and there are no network issues.

Alert Code\Description	Description Details	User Actions
DBCOMMON-XAEND-FAILED000001=XAEnd failed. Reason: [{0}]	Error occurred during commit on XA connection.	▪ Look for the detailed error mentioned in the alert for the appropriate action.
DBCOMMON-CANNOT-GET-ISOLATION-LEVEL=Unable to get isolationLevel for the transaction. Reason: [{0}]	Could not read transaction isolation information of the connection.	▪ Transaction isolation is one of the following constants: ♦ Connection.TRANSACTION_READ_UNCOMMITTED ♦ Connection.TRANSACTION_READ_COMMITTED ♦ Connection.TRANSACTION_REPEATABLE_READ ♦ Connection.TRANSACTION_SERIALIZABLE ♦ Connection.TRANSACTION_NONE ***Note:*** Confirm with the vendor that the getIsolation() method of the connection is implemented correctly.

For information on Managing and Monitoring alert codes and logs, as well as how to view the alert generated by the project component during runtime, see the *Sun SeeBeyond eGate™ Integrator System Administration Guide*.

Note: *An alert code is a warning that an error has occurred. It is not a diagnostic. The user actions noted above are just some possible corrective measures you may take. Refer to the log files for more information. For information on Managing and Monitoring alert codes and logs, see the Sun SeeBeyond eGate Integrator System Administration Guide.*

Chapter 3

Setting Properties of the VSAM eWay

This chapter explains how to set the properties of the VSAM eWay.

What's in This Chapter

3.1 Creating and Configuring a VSAM eWay

All eWays contain a unique set of default configuration parameters. After the eWays are established and a VSAM External System is created in the Project's Environment, the eWay parameters are modified for your specific system. The VSAM eWay configuration parameters are modified from two locations:

- **Connectivity Map**: These parameters most commonly apply to a specific component eWay, and may vary from other eWays (of the same type) in the Project.
- **Environment Explorer** : These parameters are commonly global, applying to all eWays (of the same type) in the Project. The saved properties are shared by all eWays in the VSAM External System window.
- **Collaboration or Business Process**: VSAM eWay properties may also be set from your Collaboration or Business Process, in which case the settings will override the corresponding properties in the eWay's Connectivity Map configuration. Any properties that are not overridden retain their configured default settings.

3.2 Configuring the eWay Connectivity Map Properties

When you connect an External Application to a Collaboration, Enterprise Designer automatically assigns the appropriate eWay to the link. Each eWay is supplied with a list of eWay connections (transaction support levels) from which to choose.

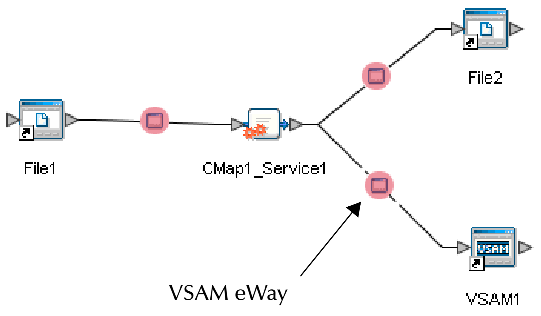
Transaction support levels provided by the VSAM eWay include:

- VSAM CP eWay
- Outbound VSAM non-Transactional eWay

To configure the eWay properties:

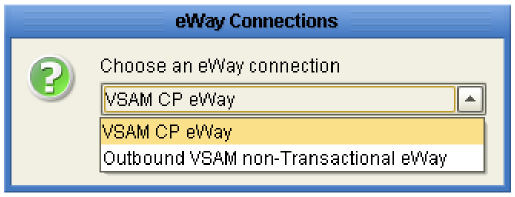
1. On the Enterprise Designer's Connectivity Map, double-click the VSAM eWay icon. The eWay Connections window appears.

Figure 1 Connectivity Map with Components



2. Select a parameter from the list and click **OK**.

Figure 2 Template window



Choose an eWay connection

VSAM CP eWay

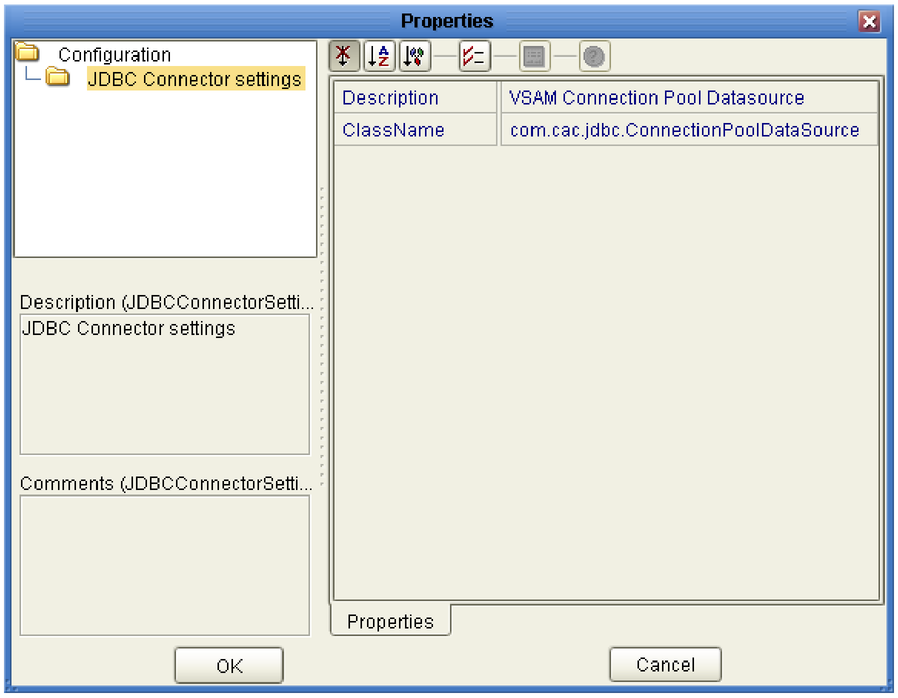
VSAM CP eWay
Outbound VSAM non-Transactional eWay

The choices to make are as follows:

- **VSAM CP eWay:** Also referred to as LocalTransaction, this support level is opposite to NoTransaction, and this means that the transaction, when The Properties window opens, displaying the default properties for the eWay.
- **Outbound VSAM non-Transactional eWay:** Also referred to as NoTransaction, this support level indicates that the Collaboration does not support transactions. This means that when a transaction aborts, there is no ability to roll back any changes to the previous update.

3. The Properties window opens, displaying the default properties for the eWay.

Figure 3 Outbound eWay Properties



Description (JDBCConnectorSetti...
JDBC Connector settings

Comments (JDBCConnectorSetti...

Description	VSAM Connection Pool Datasource
ClassName	com.cac.jdbc.ConnectionPoolDataSource

3.2.1 Transaction Support Levels Between Different Versions

The types of transaction support levels used in Java CAPS 5.1.0 may be different from the support levels used in Java CAPS 5.1.1. Projects that are imported from a Java CAPS 5.1.0 version can potentially display different results, depending on whether the 5.1.0 Java Collaboration Definition (JCD) included multiple (insert/ update/delete) operations. This only affects non-XA transactions. Example:

In 5.1.0, five new records are to be inserted into a table. If the last record fails to insert (such as when a duplicate key exists), all previous records will have been inserted. This is the behavior of NoTransaction support.

In 5.1.1, five new records are to be inserted into a table. If one of the records fails to insert (such as when a duplicate key exists), the other four records will not be inserted. This is the behavior of the LocalTransaction.

In order to achieve the same result as in 5.1.0 versions, you can choose the method below:

A In the Connectivity Map, delete the link to the database external application, then reconnect the link and select NoTransaction.

B Fill in the NoTransaction property for the database external system under the Environment.

C Rebuild the Project.

If you want 5.1.1 behavior for a LocalTransaction, then set your eWay connection to be Outbound VSAM non-Transactional eWay (NoTransaction).

3.3 Configuring the eWay Environment Properties

The eWay Environment Configuration properties contain parameters that define how the eWay connects to and interacts with other eGate components within the Environment. When you create a new VSAM External System, you may configure the type of External System required.

Available External System properties include:

- Inbound VSAM eWay
- (Outbound) VSAM CP eWay
- Outbound VSAM non-Transactional eWay

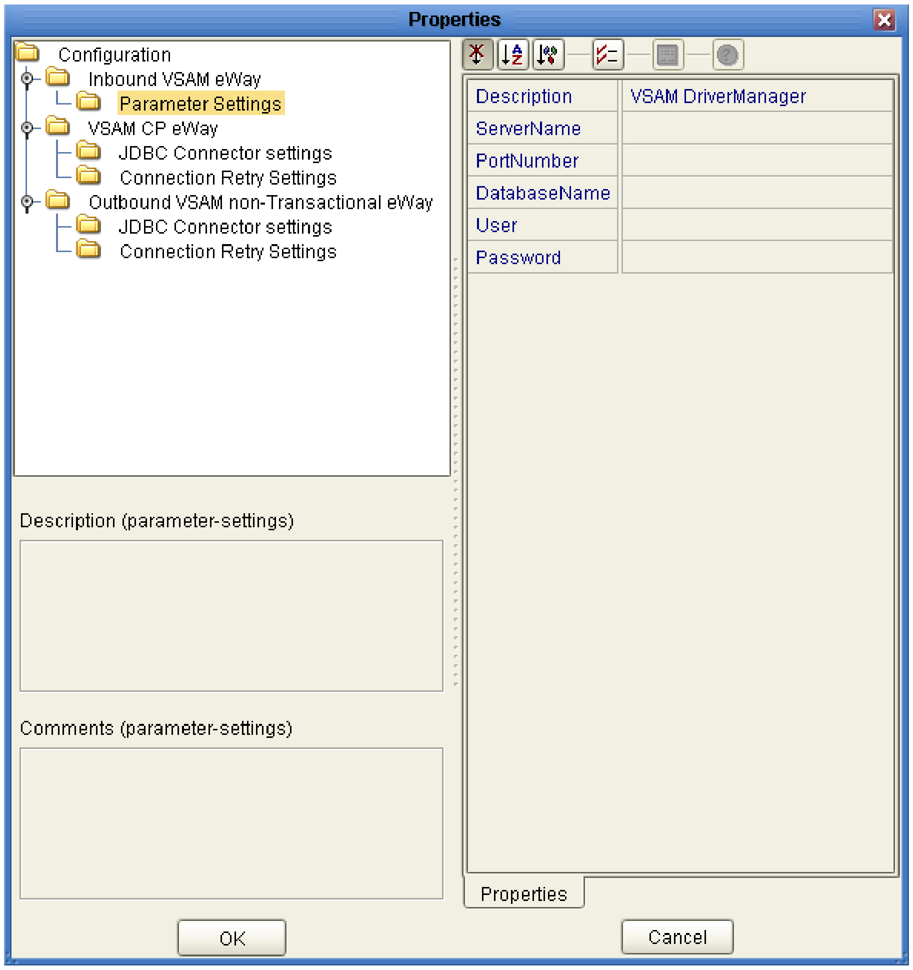
To Configure the Environment Properties:

1. In Enterprise Explorer, click the Environment Explorer tab.
2. Expand the Environment created for the VSAM Project and locate the VSAM External System.

Note: *For more information on creating an Environment, see the "Sun SeeBeyond eGate Integrator Tutorial".*

3. Right-click the External System created for the VSAM Project and select Properties from the list box. The Environment Configuration Properties window appears.

Figure 4 VSAM eWay Environment Configuration



Properties
Configuration
Inbound VSAM eWay
Parameter Settings
VSAM CP eWay
JDBC Connector settings
Connection Retry Settings
Outbound VSAM non-Transactional eWay
JDBC Connector settings
Connection Retry Settings
Description (parameter-settings)
Comments (parameter-settings)
Properties
OK
Cancel

Description	VSAM DriverManager
ServerName	
PortNumber	
DatabaseName	
User	
Password	

4 Click on any folder to display the default configuration properties for that section.

5 Click on any property field to make it editable.

After modifying the configuration properties, click **OK** to save the changes.

3.4 eWay Connectivity Map Properties

The eWay Connectivity Map consists of the following properties categories.

- **Outbound eWay**
    - **Connectivity Map (Outbound) CP eWay Properties** on page 25
- **Outbound non-Transactional eWay**
    - **Connectivity Map Outbound non-Transactional eWay Properties** on page 25

3.4.1 Connectivity Map (Outbound) CP eWay Properties

The Outbound eWay Properties include outbound parameters used by the external database.

Table 3 Outbound eWay—JDBC Connector Settings

Name	Description	Required Value
Description	VSAM Connection Pool Datasource.	A valid string.
ClassName	Displays the Java class in the JDBC driver that is used to implement the ConnectionPoolDataSource interface.	A valid class name. The default is: **com.cac.jdbc.ConnectionPoolDataSource** ***Note:*** Do not change this value.

3.4.2 Connectivity Map Outbound non-Transactional eWay Properties

You can create VSAM databases with or without logging enabled. If logging is disabled, then Non-Transactional mode must be used. Because data logs are not retained during Non-Transactional execution of SQL calls, data recovery is not possible during accidental or unscheduled shut-down of the database server.

Disabled logging also prevents transactions—enclosed in BEGIN-Tran and END-Tran statements—from occurring. This means that Non-Transactional mode cannot be used in XA (two-phase commit) transactions.

The Outbound non-Transactional eWay Properties listed in Table 4 include inbound parameters used by the external database.

Table 4 Outbound VSAM non-Transactional eWay Connectivity Map Properties

Name	Description	Required Value
Description	Enter a description for the database.	A valid string. The default is VSAM non-Transactional Connection Pool Datasource.
ClassName	Specifies the Java class in the JDBC driver that is used to implement the non-Transactional ConnectionPoolDataSource interface.	A valid class name. The default is com.cac.jdbc.ConnectionPoolDataSource

3.5 eWay Environment Properties

eWay External System properties must be configured from within the Environment. Until you have successfully configured all eWays for your Java CAPS project, your project cannot be properly executed or deployed. The following list identifies the VSAM eWay properties. There are two Environment Configuration categories that the VSAM eWay implements.

Property Categories Configured in the Logical Host Environment

- **Inbound VSAM eWay Properties** on page 26
- **(Outbound) VSAM CP eWay Properties** on page 26
- **Outbound VSAM non-Transactional eWay Properties** on page 30

3.5.1 Inbound VSAM eWay Properties

Before deploying your eWay, you will need to set the Environment properties. The Inbound VSAM eWay includes the following configuration section:

- Parameter Settings

Details for the Inbound VSAM eWay Parameter Settings are listed in Table 5.

Table 5 Inbound VSAM eWay—Parameter Settings

Name	Description	Required Value
Description	The description of the database.	A valid string.
ServerName	This setting specifies the host name of the external database server.	Any valid string.
PortNumber	Specifies the I/O port number on which the server is listening for connection requests.	A valid port number.
DatabaseName	Specifies the name of the database instance. This parameter is configured in conjuction with the Data Catalogue name you created in WebSphere Classic Federation's Data Mapper.	Any valid string.
User	Specifies the user name the eWay uses to connect to the database.	Any valid string.
Password	Specifies the password used to access the database.	Any valid string.

3.5.2 (Outbound) VSAM CP eWay Properties

The (Outbound) VSAM CP eWay includes the following configuration sections:

- JDBC Connector Settings
- Connection Retry Settings

JDBC Connector Settings

Details for the VSAM CP eWay JDBC Connector Settings used by the external database are detailed in Table 6.

Table 6 VSAM CP eWay—JDBC Connector Settings

Name	Description	Required Value
Description	The description of the database.	A valid string. The configured default is **VSAM Connection Pool Datasource**.
ServerName	This setting specifies the host name of the external database server.	Any valid string.
PortNumber	Specifies the I/O port number on which the server is listening for connection requests.	A valid port number.
DatabaseName	Specifies the name of the database instance.	Any valid string.
User	Specifies the user name the eWay uses to connect to the database.	Any valid string.
Password	Specifies the password used to access the database.	Any valid string.

Table 6 VSAM CP eWay—JDBC Connector Settings (Continued)

Name	Description	Required Value
DriverProperties	The Connection Pool DataSource implementation may need to execute additional methods to assure a successful run. The additional methods will need to be identified in the Driver Properties. You must ensure that the driver is installed on both the Logical Host machine and the Enterprise Designer machine.	The delimiter set by the user. For more information, see the **Delimiter** property below. Valid delimiters are: **"<method-name-1>#<param-1>#<param-2>#.........<param-n>##<method-name-2>#<param-1>#<param-2>#........<param-n>##......##".** For example: to execute the method setSpyAttributes, give the method a String for the URL "setSpyAttribute#<url>##". ***Note:*** The setSpyAttributes (for Data Direct drivers) that are contained in the following examples (between the last set of double octothorps [##] within each example), are used for debugging purposes and need not be used on every occasion. Optional—if you are using Spy Log: **"setURL#jdbc:Seebeyond:VSAM://<server>:4100;DatabaseName=<database>##setSpyAttributes#log=(file)c:/temp/spy.log;logTName=yes##"**
Delimiter	This is the delimiter character to be used in the DriverProperties prompt.	The default is **#**. See the DriverProperties property above for more information on how the default value is used.

Table 6 VSAM CP eWay—JDBC Connector Settings (Continued)

Name	Description	Required Value
MinPoolSize	Specifies the minimum number of physical connections the pool should keep available at all times. **0** (zero) indicates that there should be no physical connections in the pool and the new connections should be created as needed. If the pool size is too small, you may experience a longer connection time due to the existing number of physical connections. A connection that stays in the pool allows transactions to use it via a logical connection (which is faster).	A valid numeric value. The default is **0**.
MaxPoolSize	Specifies the maximum number of physical connections the pool should keep available at all times. 0 (zero) indicates that there is no maximum. If the pool size is too big, you may end up with too many connections with the database. The pool size depends on the transaction volume and response time.	A valid numeric value. The default is **10**.
MaxIdleTime	Specifies the maximum number of seconds that a physical connection may remain unused before it is closed. 0 (zero) indicates that there is no limit.	A valid numeric value. The default is **0**.

Connection Retry Settings

Details for the VSAM CP eWay Connection Retry Settings used by the external database are detailed in Table 7.

Table 7 VSAM CP eWay—Connection Retry Settings

Name	Description	Required Value
ConnectionRetries	Specifies the number of retries to establish a connection upon failure to acquire one.	A valid numeric value. The default is **0**.

Table 7 VSAM CP eWay—Connection Retry Settings (Continued)

Name	Description	Required Value
ConnectionRetryInterval	Specifies the milliseconds of pause before each attempt to reaccess the database. This setting is used in conjunction with the 'Connection Retries' setting. For example: In the event that the eWay cannot connect to the Database, the eWay will try to reconnect to the database 10 times in 5 seconds apart when the Connection Retries is 10 and the Connection Retry Interval is 5000.	A valid numeric value. The default is **1000**.

3.5.3 Outbound VSAM non-Transactional eWay Properties

The (Outbound) VSAM non-Transactional eWay includes the following configuration sections:

- JDBC Connector Settings
- Connection Retry Settings

JDBC Connector Settings

Details for the VSAM non-Transactional eWay JDBC Connector Settings used by the external database are detailed in Table 8.

Table 8 VSAM non-Transactional eWay—JDBC Connector Settings

Name	Description	Required Value
Description	The description of the database.	A valid string. The configured default is **VSAM non-Transactional Connection Pool Datasource**.
ServerName	This setting specifies the host name of the external database server.	Any valid string.
PortNumber	Specifies the I/O port number on which the server is listening for connection requests.	A valid port number.
DatabaseName	Specifies the name of the database instance.	Any valid string.
User	Specifies the user name the eWay uses to connect to the database.	Any valid string.
Password	Specifies the password used to access the database.	Any valid string.

Table 8 VSAM non-Transactional eWay—JDBC Connector Settings (Continued)

Name	Description	Required Value
DriverProperties	The Connection Pool DataSource implementation may need to execute additional methods to assure a successful run. The additional methods will need to be identified in the Driver Properties. You must ensure that the driver is installed on both the Logical Host machine and the Enterprise Designer machine.	The delimiter set by the user. For more information, see the **Delimiter** property below. Valid delimiters are: **"<method-name-1>#<param-1>#<param-2>#.........<param-n>##<method-name-2>#<param-1>#<param-2>#........<param-n>##......##".** For example: to execute the method setSpyAttributes, give the method a String for the URL "setSpyAttribute#<url>##". ***Note:*** The setSpyAttributes (for Data Direct drivers) that are contained in the following examples (between the last set of double octothorps [##] within each example), are used for debugging purposes and need not be used on every occasion. Optional—if you are using Spy Log: **"setURL#jdbc:Seebeyond:VSAM://<server>:4100;DatabaseName=<database>##setSpyAttributes#log=(file)c:/temp/spy.log;logTName=yes##"**
Delimiter	This is the delimiter character to be used in the DriverProperties prompt.	The default is **#**. See the DriverProperties property above for more information on how the default value is used.

Table 8 VSAM non-Transactional eWay—JDBC Connector Settings (Continued)

Name	Description	Required Value
MinPoolSize	Specifies the minimum number of physical connections the pool should keep available at all times. **0** (zero) indicates that there should be no physical connections in the pool and the new connections should be created as needed. If the pool size is too small, you may experience a longer connection time due to the existing number of physical connections. A connection that stays in the pool allows transactions to use it via a logical connection (which is faster).	A valid numeric value. The default is **0**.
MaxPoolSize	Specifies the maximum number of physical connections the pool should keep available at all times. 0 (zero) indicates that there is no maximum. If the pool size is too big, you may end up with too many connections with the database. The pool size depends on the transaction volume and response time.	A valid numeric value. The default is **10**.
MaxIdleTime	Specifies the maximum number of seconds that a physical connection may remain unused before it is closed. 0 (zero) indicates that there is no limit.	A valid numeric value. The default is **0**.

Connection Retry Settings

Details for the VSAM non-Transactional eWay Connection Retry Settings used by the external database are detailed in Table 9.

Table 9 VSAM non-Transactional eWay—Connection Retry Settings

Name	Description	Required Value
ConnectionRetries	Specifies the number of retries to establish a connection upon failure to acquire one.	A valid numeric value. The default is **0**.

Table 9 VSAM non-Transactional eWay—Connection Retry Settings (Continued)

Name	Description	Required Value
ConnectionRetryInterval	Specifies the milliseconds of pause before each attempt to reaccess the database. This setting is used in conjunction with the 'Connection Retries' setting. For example: In the event that the eWay cannot connect to the Database, the eWay will try to reconnect to the database 10 times in 5 seconds apart when the Connection Retries is 10 and the Connection Retry Interval is 5000.	A valid numeric value. The default is **1000**.

Chapter 4

Using the VSAM eWay Database Wizard

This chapter describes how to use the VSAM eWay Database wizard to build Object Type Definitions (OTDs).

What's in This Chapter

4.1 About the Database OTD Wizard

The Database OTD Wizard generates OTDs by connecting to external data sources and creating corresponding Object Type Definitions. The OTD Wizard can create OTDs based on any combination of Tables, Stored Procedures, or Prepared Statements.

Field nodes are added to the OTD based on the Tables in the external data source. Java method and parameter nodes are added to provide the appropriate JDBC functionality. For more information about the Java methods, refer to your JDBC developer's reference.

The OTD Wizard allows the addition and removal of columns/nodes in an OTD. Nodes with the same name and type as existing nodes are allowed by the Wizard, but should not be created, and will result in generic code generation errors upon activation of the OTD.

Note: *Database OTDs are not messagable. For more information on messagable OTDs, see the eGate Integrator User's Guide.*

4.2 Creating a New VSAM OTD

The following steps are required to create a new OTD for the VSAM adapter.

- **Select Wizard Type** on page 35
- **Connect To Database** on page 35

- **Select Database Objects** on page 36
- **Select Tables/Views/Aliases** on page 37
- **Add Prepared Statement** on page 41
- **Specify the OTD Name** on page 44
- **Review Selections** on page 45

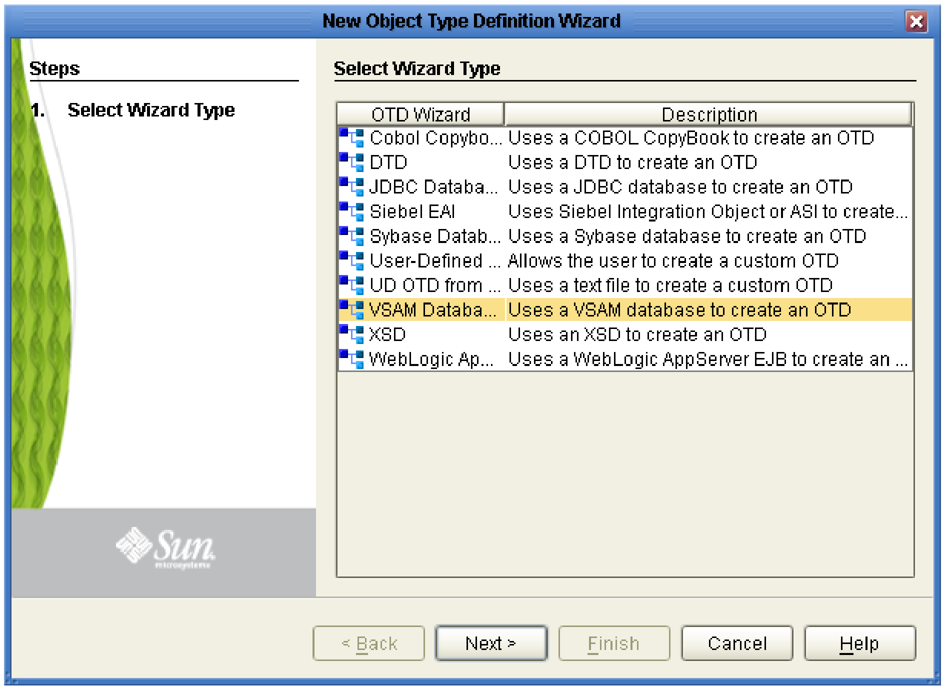
4.2.1 Select Wizard Type

Select the type of wizard required to build an OTD in the New Object Type Definition Wizard.

Steps Required to Select the VSAM Database OTD Wizard Include:

1. On the Project Explorer tree, right click the Project and select **New > Object Type Definition** from the shortcut menu. The **Select Wizard Type** page appears, displaying the available **OTD** wizards.
2. From the New Object Type Definition Wizard window, select the **VSAM Database** and click **Next**. See Figure 5.

Figure 5 OTD Wizard Selection



OTD Wizard	Description
Cobol Copybo...	Uses a COBOL CopyBook to create an OTD
DTD	Uses a DTD to create an OTD
JDBC Databa...	Uses a JDBC database to create an OTD
Siebel EAI	Uses Siebel Integration Object or ASI to create...
Sybase Datab...	Uses a Sybase database to create an OTD
User-Defined ...	Allows the user to create a custom OTD
UD OTD from ...	Uses a text file to create a custom OTD
VSAM Databa...	Uses a VSAM database to create an OTD
XSD	Uses an XSD to create an OTD
WebLogic Ap...	Uses a WebLogic AppServer EJB to create an ...

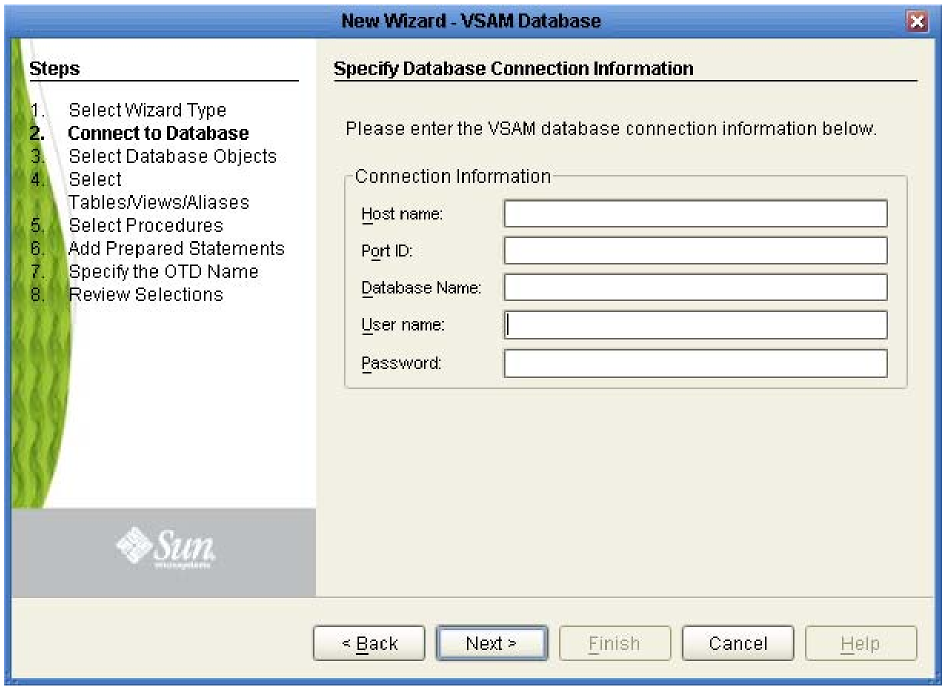
4.2.2 Connect To Database

Enter the VSAM database connection information in the Connection Information frame.

Required Database Connection Fields include:

- Host name – the database service host name.
- Port ID – the database service connection port ID/number.
- Database name – the name of the VSAM database.
- User name – a valid VSAM database username.
- Password – a password for the user name noted above.

Figure 6 Database Connection Information



Specify Database Connection Information

Please enter the VSAM database connection information below.

Connection Information

Host name:	
Port ID:	
Database Name:	
User name:	
Password:	

4.2.3 Select Database Objects

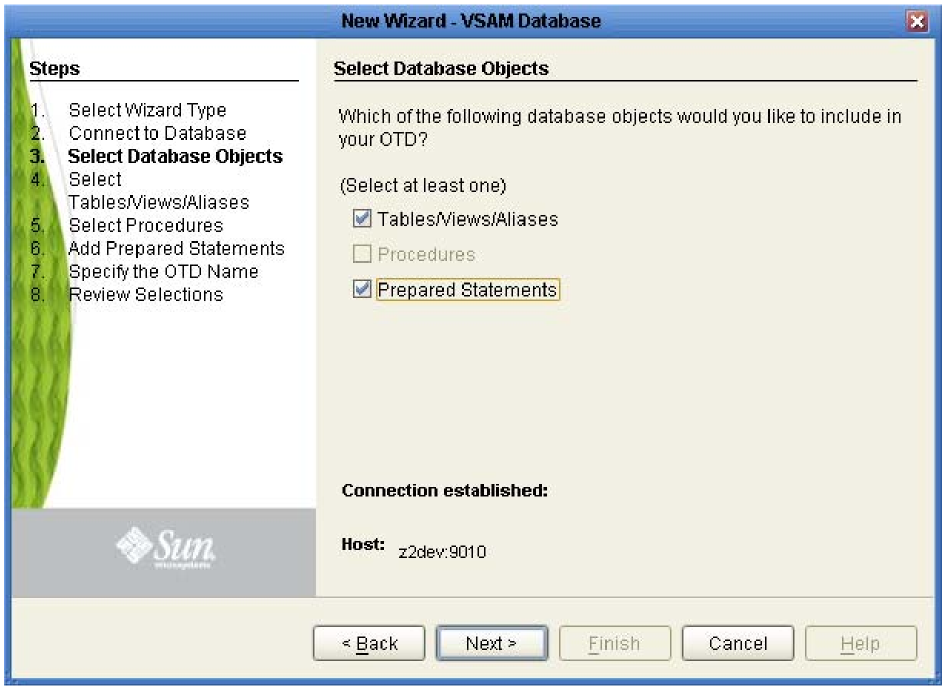
Select the type of VSAM database objects you want included in the OTD.

Steps Required to Select Database Objects Include:

1. When selecting Database Objects, you can select any combination of **Tables**, **Views**, or **Prepared Statements** you would like to include in the OTD file. Click **Next** to continue. See Figure 7.

Note: *Views are read-only and are for informational purposes only.*

Figure 7 Select Database Objects



Select Database Objects

Which of the following database objects would you like to include in your OTD?

(Select at least one)

- [x] Tables/Views/Aliases
- [ ] Procedures
- [x] Prepared Statements

Connection established:

Host: z2dev:9010

4.2.4 Select Tables/Views/Aliases

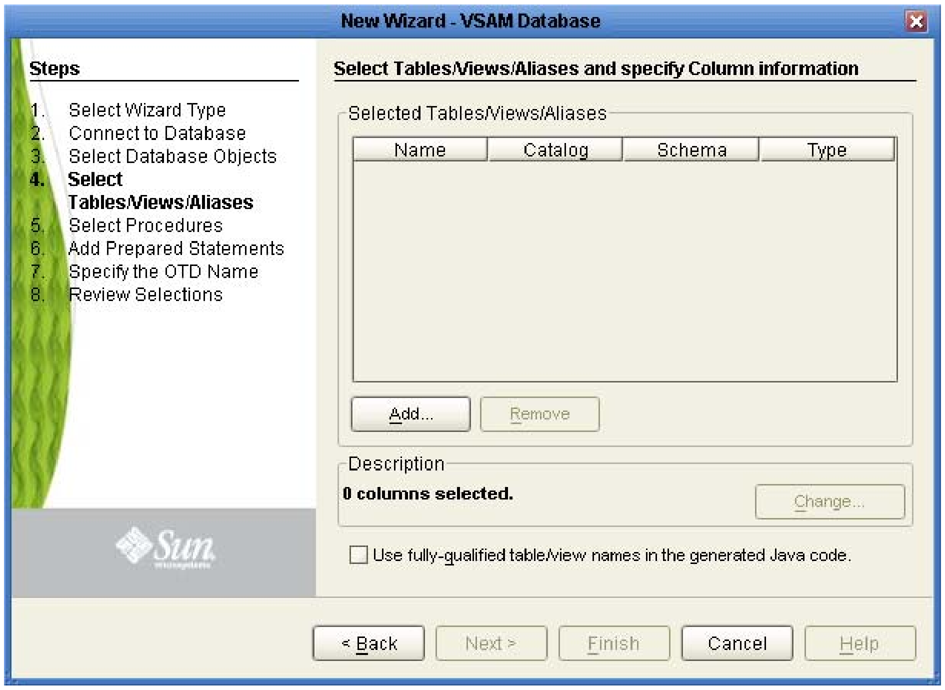
Select the types of tables or views required in the OTD.

Note: *Aliases are not supported in the current release of the VSAM eWay.*

Steps Required to Select Table and Views Include:

1. In the **Select Tables/Views/Aliases** window, click **Add**. See Figure 8.

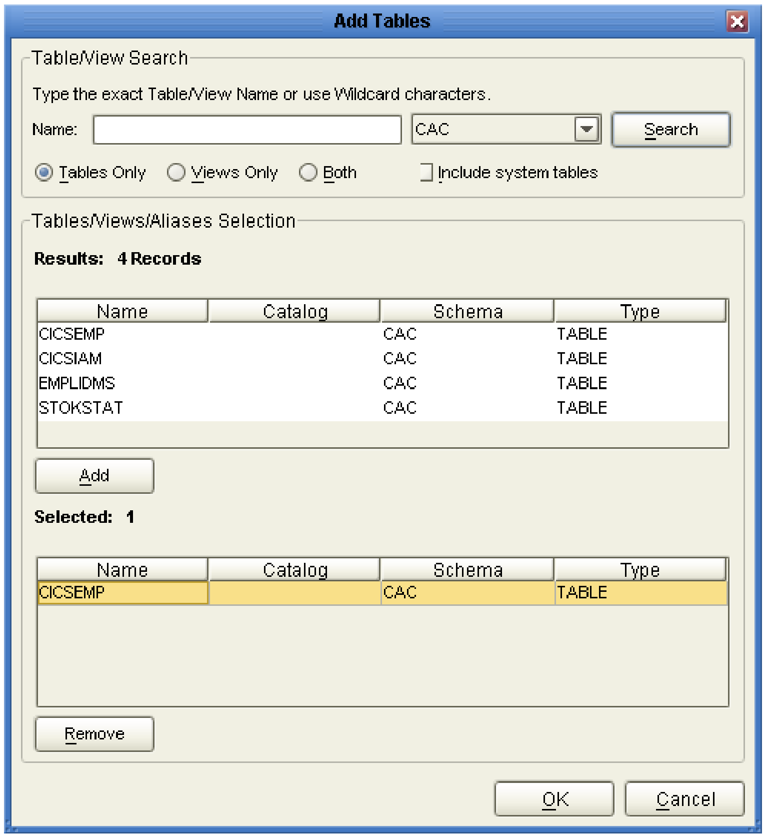
Figure 8 Select Tables/Views/Aliases


New Wizard - VSAM Database
Steps
1. Select Wizard Type
2. Connect to Database
3. Select Database Objects
4. Select Tables/Views/Aliases
5. Select Procedures
6. Add Prepared Statements
7. Specify the OTD Name
8. Review Selections
Select Tables/Views/Aliases and specify Column information
Selected Tables/Views/Aliases
Name
Catalog
Schema
Type
Add...
Remove
Description
0 columns selected.
Change...
Use fully-qualified table/view names in the generated Java code.
< Back
Next >
Finish
Cancel
Help

2 In the **Add Tables** window, select if your selection criteria will include table data, view only data, both, and/or system tables.

3 From the **Table/View Name** drop down list, select the location of your database table and click **Search**. See Figure 9.

Figure 9 Database Wizard - All Schemes



Results: 4 Records

Name	Catalog	Schema	Type
CICSEMP		CAC	TABLE
CICSIAM		CAC	TABLE
EMPLIDMS		CAC	TABLE
STOKSTAT		CAC	TABLE

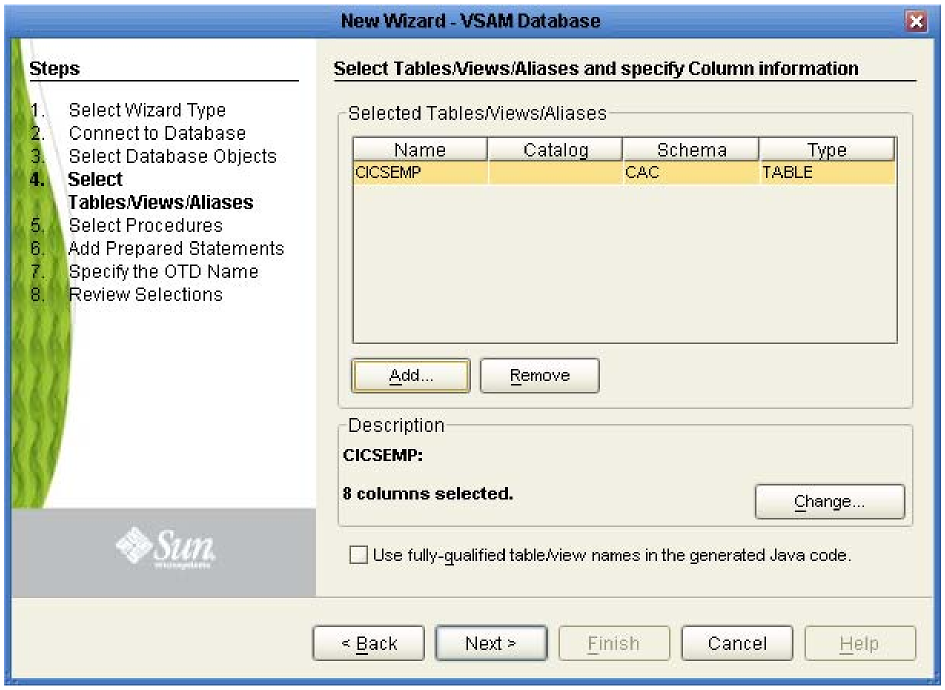
Selected: 1

Name	Catalog	Schema	Type
CICSEMP		CAC	TABLE

4 Select the table of choice and click **OK**.

The table selected is added to the **Selected Tables/Views/Aliases** section. See Figure 10.

Figure 10 Selected Tables/Views/Aliases window with a table selected


New Wizard - VSAM Database
Steps
1. Select Wizard Type
2. Connect to Database
3. Select Database Objects
4. Select Tables/Views/Aliases
5. Select Procedures
6. Add Prepared Statements
7. Specify the OTD Name
8. Review Selections
Select Tables/Views/Aliases and specify Column information
Selected Tables/Views/Aliases
Add...
Remove
Description
Change...
< Back
Next >
Finish
Cancel
Help

Name	Catalog	Schema	Type
CICSEMP		CAC	TABLE

CICSEMP:

8 columns selected.

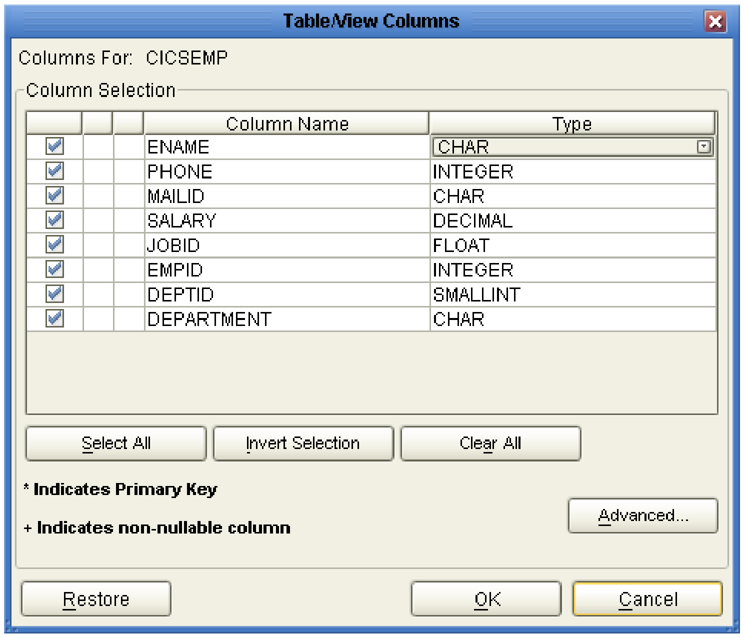
☐ Use fully-qualified table/view names in the generated Java code.

5 In the **Selected Tables/Views/Aliases** section, review the table(s) you have selected. To make changes to the selected Table or View, click Change. If you do not wish to make any additional changes, click **Next** to continue.

6 In the **Table/View Columns** window, you can select or deselect your table columns. You can also change the data type for each table by highlighting the data type and selecting a different one from the drop down list. If you would like to change any of the tables columns, click **Change**. See Figure 11.

The data type is usually listed as **Other** when the driver cannot detect the data type. In these situations we recommend changing the data type to one that is more appropriate for the type of column data.

Figure 11 Table/View Columns



Columns For: CICSEMP

Column Selection

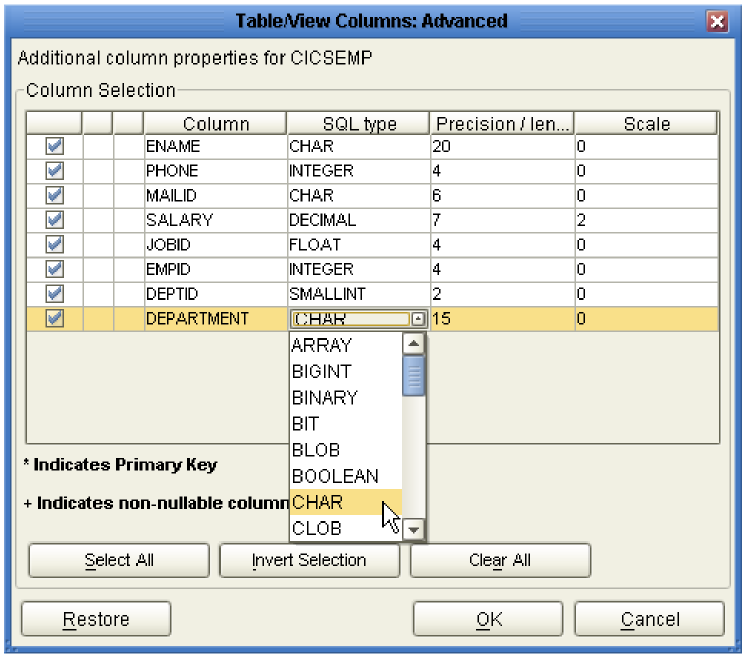
			Column Name	Type
✓			ENAME	CHAR
✓			PHONE	INTEGER
✓			MAILID	CHAR
✓			SALARY	DECIMAL
✓			JOBID	FLOAT
✓			EMPID	INTEGER
✓			DEPTID	SMALLINT
✓			DEPARTMENT	CHAR

* Indicates Primary Key

+ Indicates non-nullable column

7 Click **Advanced** to change the data type, percision/length, or scale. Once you have finished your table choices, click **OK**. In general, you will not need to make any changes. See Figure 12.

Figure 12 Table/View Columns — Advanced



Additional column properties for CICSEMP

Column Selection

			Column	SQL type	Precision / len...	Scale
✓			ENAME	CHAR	20	0
✓			PHONE	INTEGER	4	0
✓			MAILID	CHAR	6	0
✓			SALARY	DECIMAL	7	2
✓			JOBID	FLOAT	4	0
✓			EMPID	INTEGER	4	0
✓			DEPTID	SMALLINT	2	0
✓			DEPARTMENT	CHAR	15	0

* Indicates Primary Key

+ Indicates non-nullable column

4.2.5 Add Prepared Statement

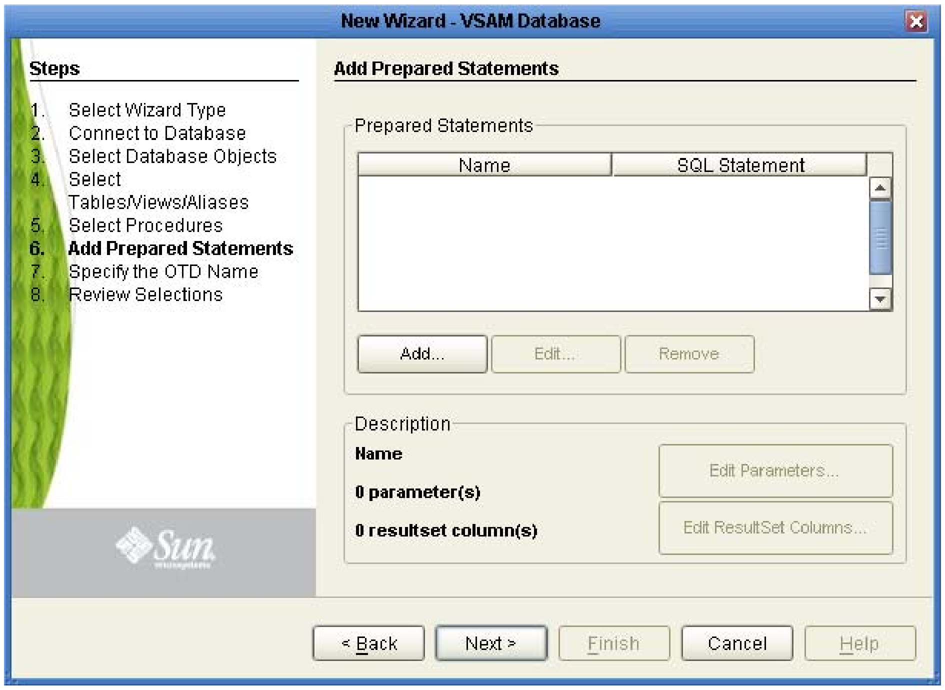
Add a Prepared Statement object to your OTD.

Steps Required to Add Prepared Statements Include:

Note: *When using a Prepared Statement, the 'ResultsAvailable()' method will always return true. Although this method is available, you should not use it with a 'while' loop. Doing so would result in an infinite loop at runtime and will stop all of the system's CPU. If it is used, it should only be used with the 'if' statement.*

1 On the **Add Prepared Statements** window, click **Add**.

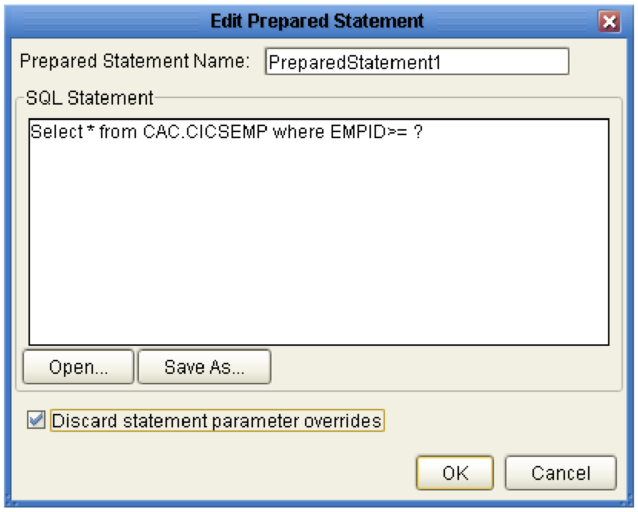
Figure 13 Prepared Statement



2 Enter the name of a Prepared Statement or create a SQL statement by clicking in the SQL Statement window. If you are not logging into the VSAM database with the default user name, you must enter the Table schema name in the SQL Prepared Statement. When finished creating the statement, click **Save As** giving the statement a name.

This name will appear as a node in the OTD. Click **OK**. See Figure 14.

Figure 14 Prepared SQL Statement



Prepared Statement Name: PreparedStatement1

SQL Statement

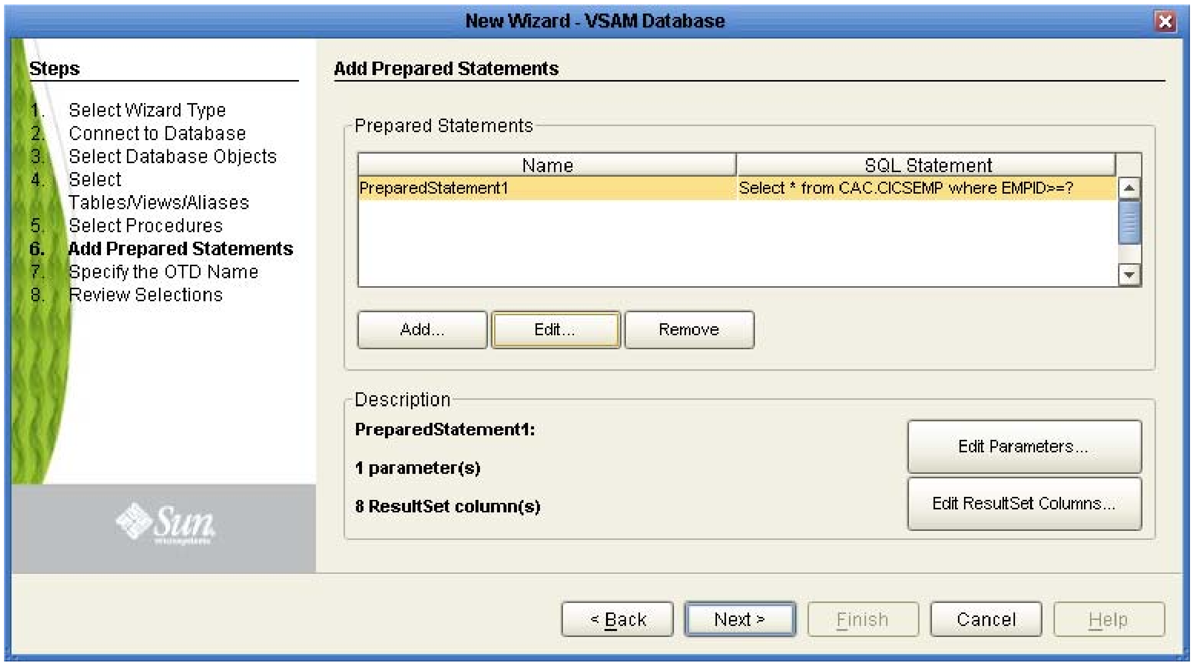
Select * from CAC.CICSEMP where EMPID>= ?

☑ Discard statement parameter overrides

3 On the **Add Prepared Statement** window, the name you assigned to the Prepared Statement appears. To edit the parameters, click **Edit Parameters**. You can change the datatype by clicking in the **Type** field and selecting a different type from the list.

4 Click **Add** if you want to add additional parameters to the Statement or highlight a row and click **Remove** to remove it. Click **OK**. Figure 15.

Figure 15 Edit the Prepared Statement Parameters



Add Prepared Statements

Prepared Statements

Name	SQL Statement
PreparedStatement1	Select * from CAC.CICSEMP where EMPID>=?

Description

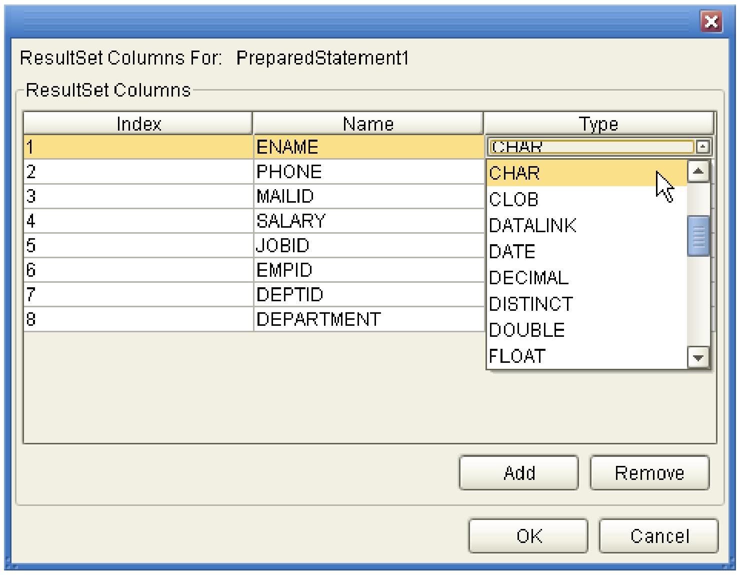
PreparedStatement1:

1 parameter(s)

8 ResultSet column(s)

5 To edit Resultset Columns, click **Edit Resultset Columns**. The ResultSet Columns window appears. See Figure 16.

Figure 16 ResultSet Columns


ResultSet Columns For: PreparedStatement1

ResultSet Columns

Index	Name	Type
1	ENAME	CHAR
2	PHONE	
3	MAILID	
4	SALARY	
5	JOBID	
6	EMPID	
7	DEPTID	
8	DEPARTMENT	

6 Click Add to add a new ResultSet column. Both the Name and Type are editable.

7 Click OK to return to the Add Prepared Statements window.

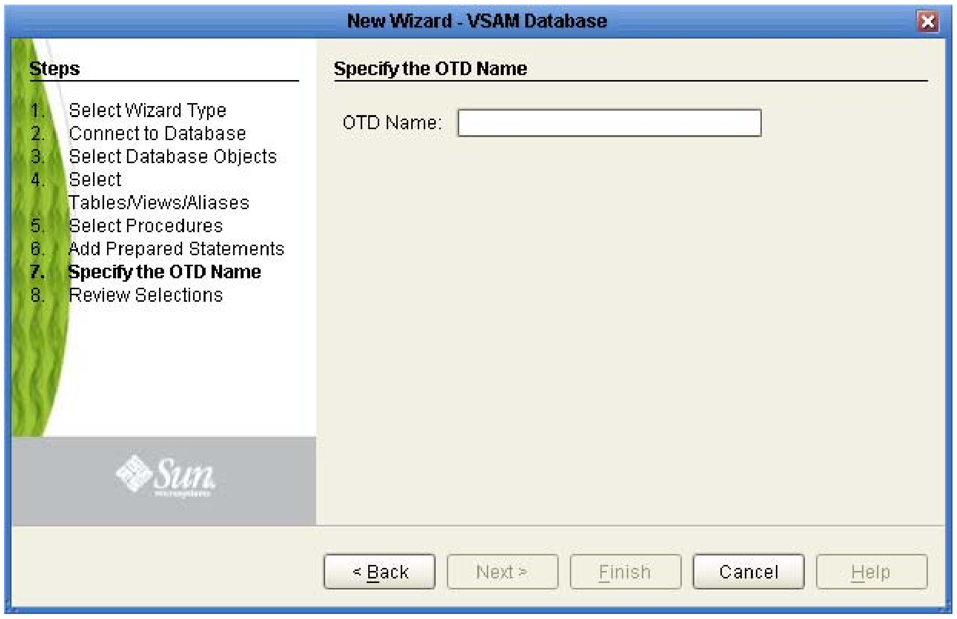
4.2.6 Specify the OTD Name

Specify the name that your OTD will display in the Enterprise Designer Project Explorer.

Steps Required to Specify the OTD Name:

1 Enter a name for the OTD. The OTD contains the selected tables and the package name of the generated classes. See Figure 17.

Figure 17 Naming an OTD



2 Click **Next**.

4.2.7 Review Selections

Review the selections made for the new OTD.

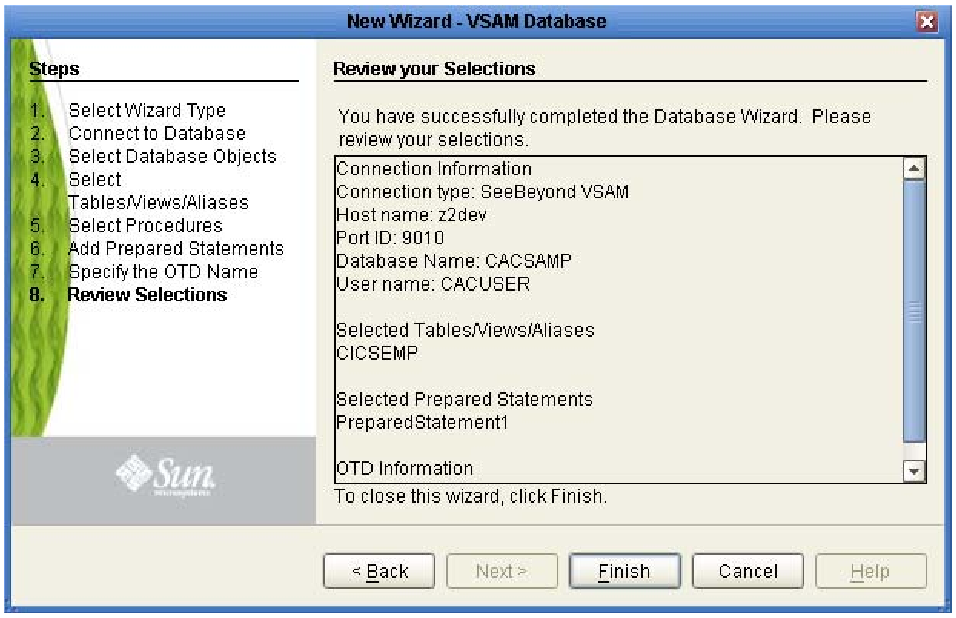
Steps Required to Review Your OTD Selections:

1 View the summary of the OTD. If you find you have made a mistake, click **Back** and correct the information.

2 If you are satisfied with the OTD information, click **Finish** to begin generating the OTD. See Figure 18.

The resulting **OTD** appears on the Enterprise Designer's Project Explorer.

Figure 18 Database Wizard - Summary



You have successfully completed the Database Wizard. Please review your selections.

Connection Information
Connection type: SeeBeyond VSAM
Host name: z2dev
Port ID: 9010
Database Name: CACSAMP
User name: CACUSER

Selected Tables/Views/Aliases
CICSEMP

Selected Prepared Statements
PreparedStatement1

OTD Information

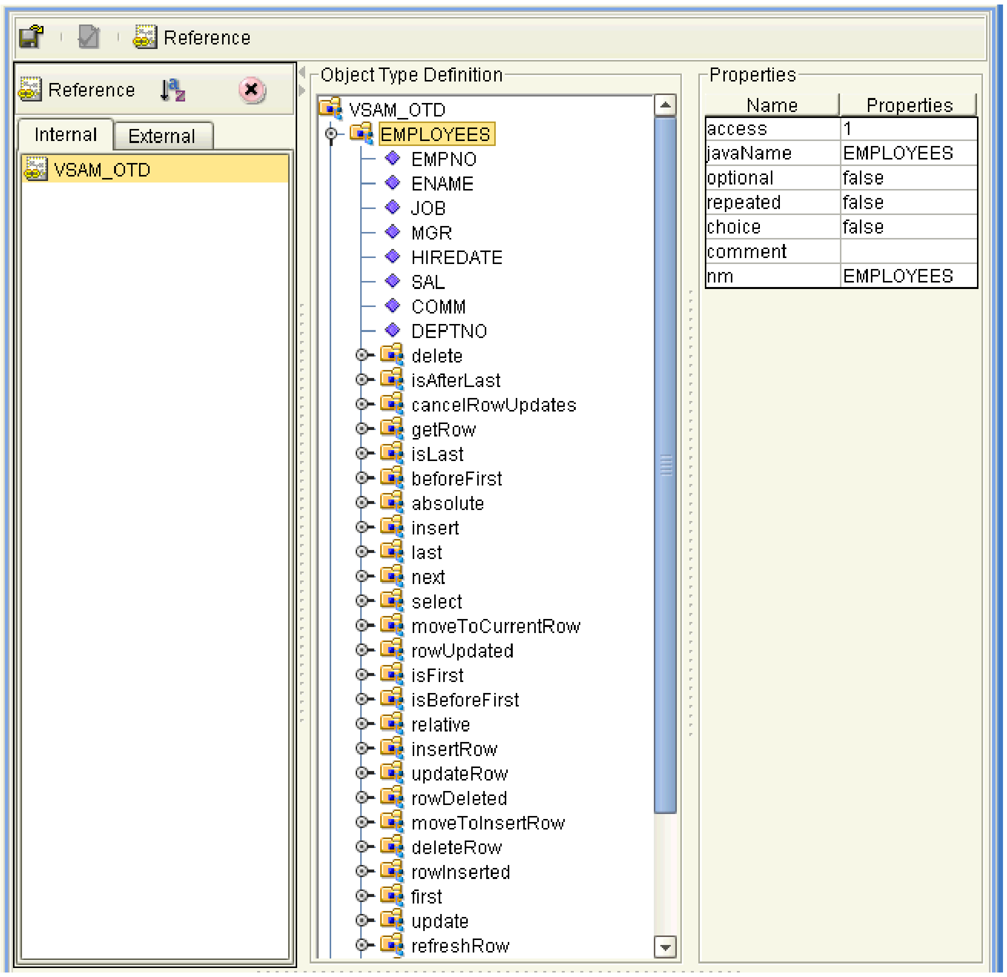
To close this wizard, click Finish.

4.3 Resulting OTD

The resulting VSAM OTD appears on the Enterprise Designer's canvas, in the OTD Editor window. See Figure 19.

In the example, a node in the OTD has been expanded, allowing you to view some of its structure.

Figure 19 OTD Editor in Enterprise Designer



Name	Properties
access	1
javaName	EMPLOYEES
optional	false
repeated	false
choice	false
comment	
nm	EMPLOYEES

4.4 Steps to Edit an Existing VSAM OTD

You can edit any database OTD you create directly from the Enterprise Designer Project Explorer.

Steps to Edit the OTD from the Enterprise Designer Include:

1. Unlock the OTD. To do this, right-click the OTD in the Project Explorer and select **Version Control** > **Check Out** from the menu.

   The Version Control - Check Out window appears.

2. Select the OTD you want to check out, then click **Check Out**.

3. From the Project Explorer, right-click the OTD again and select **Edit** from the menu.

   The VSAMDatabase Connection Information wizard appears.

4. Enter the connection information as described in **"Connect To Database" on page 35**, and click **Next**.

5 Step through each of the wizard steps and click **Finish** to save your changes.

Note: *You must verify during project activation or at runtime that no errors are generated after editing an OTD. Errors could occur if you delete a database object such as a table or column that is included in a Collaboration.*

Chapter 5

Using VSAM OTDs

This chapter describes operations you can perform using VSAM Object Type Definitions (OTDs) in eGate.

What's in This Chapter

5.1 Overview

This section explains the types of VSAM OTDs used with the eWay within the Collaboration Editor (Java), including the OTD's methods.

You can use VSAM OTD methods with:

- Tables (table OTD)
- Views (view OTD)
- Prepared statements (prepared statement OTD)

Views are read-only and for informational purposes only. Use the OTD wizard (see **Chapter 4**) to create the VSAM Database OTDs.

User-defined OTD

You can use the OTD wizard to create an eGate User-defined OTD. See the *eGate Integrator User's Guide* for a complete explanation of how to create a User-defined OTD.

5.2 Using Tables

A table OTD represents a database table. It consists of fields and methods. Fields correspond to the columns of a table, while methods are the operations that you can apply to the OTD. This setup allows you to perform select, update, insert, and delete SQL operations in a table.

5.2.1 Using the select Method

The **select** method returns result sets according to a group of predefined defaults. However, you can change these defaults, if desired. In using the **select** method, you can specify the following types of result sets:

- TYPE_FORWARD_ONLY
- TYPE_SCROLL_INSENSITIVE
- TYPE_SCROLL_SENSITIVE

You can also specify the following result sets with a type of concurrency:

- CONCUR_READ_ONLY
- CONCUR_UPDATABLE

To perform an update, insert or delete operation, the type of the result set returned by the **select** method must be CONCUR_UPDATABLE.

Instead of specifying the type of result set and concurrency in the **select** method, you can also use the following methods:

- **setConcurrencytoUpdatable**
- **setConcurrentlytoReadOnly**
- **setScrollTypetoForwardOnly**
- **setScrollTypetoScrollSensitive**
- **setScrollTypetoInsensitive**

Note: *Because of driver limitations, before you can do any modifications (insert, update, or delete) to a table, the table must be under CICS control on the mainframe.*

To call a method in the Collaboration Editor (Java)

1. Open the eGate Enterprise Designer's Collaboration Editor (Java) for the desired Collaboration Definition.
2. In the editor, navigate to the Business Rules Designer.
3. Right-click on the desired node (right or left pane) where you want to call the method.

   A pop-up **Method** selection menu appears, showing the methods available for the node.
4. Select the desired method.

   A **Method** box appears in the center pane of the Business Rules Designer. This box represents the chosen method.

Note: *Using the* **commit** *method is optional for all update operations because the Collaboration automatically commits the current transaction when it is done.*

5.2.2 Select Operations

To perform a select operation on a table

1. From the Collaboration Editor (Java), call the **select** method with the **where** clause specified, if necessary.

   The text from the **Text** node instructs the Business Process exactly which data needs to be selected. For example, the content of the input text could be **EMPID>100**.

2. Loop through the result set using the **next** method.
3. For each loop, process the return record.

5.2.3 Insert Operations

To perform an insert operation on a table

1. From the Collaboration Editor (Java), call the **insert** method.
2. Set the fields of the table OTD where you want to do the insertion and insert the row using a **Literal**.

   If you want to update multiple columns, you can repeat the **Copy** rule, as desired.

3. Activate the insertion by calling the **insertRow** method.

   For multiple insert operations, you can use a **while** rule.

5.2.4 Update Operations

To perform an update operation on a table

1. From the Collaboration Editor (Java), call the **update** method with the **where** clause specified, if necessary.

   In this case, a **Literal** is used instead of the text node. Either way of specifying the **where** clause is acceptable.

2. Call the **next** method.
3. Update the row by calling **updateRow**.

   To update more than one column, you can repeat the **Copy** rule, as desired.

5.2.5 Delete Operations

To perform a delete operation on a table

- From the Collaboration Editor (Java), call the **delete** method with the **where** clause specified, if necessary.

5.3 Using Views

Views are used to look at data from selected columns within selected tables. View OTDs are read-only.

For select operations, see **"Select Operations" on page 51**.

5.4 Using Prepared Statements

You can perform table operations with prepared statements with the same method nodes you use for the regular table operations, that is, select, update, insert, and delete SQL operations.

Prepared statements allow you to create any valid SQL statements that comply with ANSI standards. Using this feature, you can execute **select** statements such as **joins** and **union**, **insert**, **update** and **delete** operations. You can also include database operations such as **to_date**, to manipulate input or output values. Parameter markers are also supported.

Any prepared statement you create shows up in the Collaboration Editor (Java) on the OTD where it was created, as a node with the name you assigned to it. You can implement the statement by dragging its node onto the method box for the action (the desired select, update, insert, or delete operation) in which you want the statement to be used.

Note: *When using a Prepared Statement, the **ResultsAvailable()** method will always return true. Although this method is available, you should not use it with a 'while' loop. Doing so would result in an infinite loop at runtime and will stop all of the system's CPU. If it is used, it should only be used with the 'if' statement.*

To use a prepared statement in a Collaboration (Java)

1. Using the Enterprise Designer and VSAM OTD wizard, create an OTD that contains a prepared statement. See **"Add Prepared Statement" on page 41** for details.
2. Create the desired Collaboration Definition (Java) using this OTD.

   The Collaboration Editor (Java) displays the OTD with a **Prepared Statement** node. In the OTD structure, you can see both the input parameter and the result set represented as nodes.
3. You can assign a **Literal** value or the input from another OTD to the parameter.
4. To run the prepared statement, select the **executeQuery** method from the **Prepared Statement** node.
5. To view the result set after the query is finished, create a **while** rule. For the condition, create a **next** method from the result set node (**$Statement1Results** in the example). You can continue creating your business logic by adding more Business Rules, if desired.

Chapter 6

Using VSAM Operations

The database operations used in the VSAM eWay are used to access the VSAM database. Database operations are either accessed through Activities in BPEL, or through methods called from a JCD Collaboration.

What's in This Chapter

6.1 VSAM eWay Database Operations (BPEL)

The VSAM eWay uses a number operations to query the VSAM database. Within a BPEL business process, the VSAM eWay uses BPEL Activities to perform basic outbound database operations, including:

- Insert
- Update
- Delete
- SelectOne
- SelectMultiple
- SelectAll

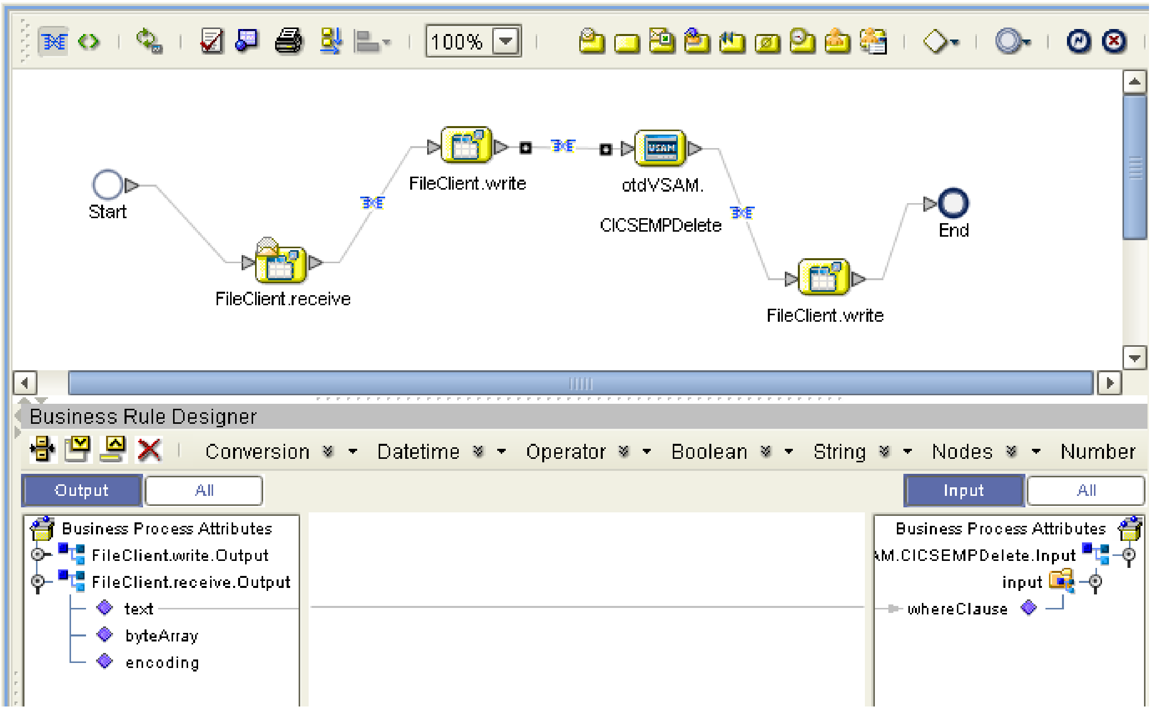
In addition to these outbound operations, the VSAM eWay also employs the inbound Activity **ReceiveOne** within a Prepared Statement OTD.

6.1.1 Activity Input and Output

The Sun SeeBeyond Enterprise Designer – Business Rules Designer includes Input and Output columns to map and transform data between Activities displayed on the Business Process Canvas.

Figure 20 displays the business rules between the **FileClient.write** and **otdVSAM.CICSEMPDelete** Activities. In this example, the **whereClause** appears on the Input side.

Figure 20 Input and Output Between Activities



The following table lists the expected Input and Output of each database operation Activity.

Table 10 VSAM Operations

eInsight Operation	Activity Input	Activity Output
SelectAll	where() clause (optional)	Returns all rows that fit the condition of the where() clause.
SelectMultiple	number of rows where() clause (optional)	Returns the number of rows specified that fit the condition of the where() clause, and the number of rows to be returned. For example: If the number of rows that meet the condition are 5 and the number of available rows are 10, then only 5 rows will be returned. Alternately, if the number of rows that meet the condition are 20, but if the number of available rows are 10, then only 10 rows are returned.

Table 10 VSAM Operations (Continued)

eInsight Operation	Activity Input	Activity Output
SelectOne	where() clause (optional)	Returns the first row that fits the condition of the where() clause.
Insert	definition of new item to be inserted	Returns status.
Update	where() clause	Returns status.
Delete	where() clause	Returns status.

6.2 VSAM eWay Database Operations (JCD)

The same database operations are also used in the JCD, but appear as methods to call from the Collaboration.

Tables and Views are manipulated through OTDs. Methods to call include:

- insert()
- insertRow()
- update(*String sWhere*)
- updateRow()
- delete(*String sWhere*)
- deleteRow()
- select(*String where*)

Note: *Refer to the Javadoc for a full description of methods included in the VSAM eWay.*

6.2.1 The Table

A table OTD represents a database table. It consists of fields and methods. Fields correspond to the columns of a table while methods are the operations that you can apply to the OTD. This allows you to perform query, update, insert, and delete SQL operations in a table. The ability to update via a resultset is called "Updatable Resultset", which is a feature supported by this eWay.

By default, the Table OTD has UpdatableConcurrency and ScrollTypeForwardOnly. Normally you do not have to change the default setting.

The type of result returned by the select() method can be specified using:

- SetConcurrencytoUpdatable
- SetConcurrencytoReadOnly
- SetScrollTypetoForwardOnly

- SetScrollTypetoScrollSensitive
- SetScrollTypetoInsensitive

The Query (Select) Operation

To perform a query operation on a table:

1. Execute the **select()** method with the “**where**” clause specified if necessary.
2. Loop through the ResultSet using the **next()** method.
3. Process the return record within a **while()** loop.

For example:

```
package prjVSAM_JCDjcdALL;

public class jcdTableSelect
{

    public com.stc.codegen.logger.Logger logger;

    public com.stc.codegen.alerter.Alerter alerter;

    public com.stc.codegen.util.CollaborationContext collabContext;

    public com.stc.codegen.util.TypeConverter typeConverter;

    public void receive( 
com.stc.connector.appconn.file.FileTextMessage input, 
otdVSAM.OtdVSAMOTD otdVSAM_1, dtd.otdOutputDTD_1935483687.Emp 
otdOutputDTD_Emp_1, com.stc.connector.appconn.file.FileApplication 
FileClient_1 )
        throws Throwable
    {
       FileClient_1.setText( "Selecting record(s) from CICSEMP table 
via table select .." );
        FileClient_1.write();
        otdVSAM_1.getCICSEMP().select( input.getText() );
        while (otdVSAM_1.getCICSEMP().next()) {
            otdOutputDTD_Emp_1.setENAME( 
otdVSAM_1.getCICSEMP().getENAME() );
            otdOutputDTD_Emp_1.setPHONE( typeConverter.intToString( 
otdVSAM_1.getCICSEMP().getPHONE(), "#", false, "" ) );
            otdOutputDTD_Emp_1.setMAILID( 
otdVSAM_1.getCICSEMP().getMAILID() );
            otdOutputDTD_Emp_1.setSALARY( 
otdVSAM_1.getCICSEMP().getSALARY().toString() );
          otdOutputDTD_Emp_1.setJOBID( typeConverter.doubleToString( 
otdVSAM_1.getCICSEMP().getJOBID(), "#.000000;-#.000000", false, "" )
);
            otdOutputDTD_Emp_1.setEMPID( typeConverter.intToString( 
otdVSAM_1.getCICSEMP().getEMPID(), "#", false, "" ) );
          otdOutputDTD_Emp_1.setDEPTID( typeConverter.shortToString( 
otdVSAM_1.getCICSEMP().getDEPTID(), "#", false, "" ) );
            otdOutputDTD_Emp_1.setDEPARTMENT( 
otdVSAM_1.getCICSEMP().getDEPARTMENT() );
          FileClient_1.setText( otdOutputDTD_Emp_1.marshalToString() 
);
            FileClient_1.write();
        }
        FileClient_1.setText( "Done table select." );
        FileClient_1.write();
        }

    }
```

The Insert Operation

To perform an insert operation on a table:

1. Execute the **insert()** method. Assign a field.
2. Insert the row by calling **insertRow()**

   This example inserts an employee record:

```
package prjVSAM_JCDjcdALL;

public class jcdInsert
{

    public com.stc.codegen.logger.Logger logger;

    public com.stc.codegen.alerter.Alerter alerter;

    public com.stc.codegen.util.CollaborationContext collabContext;

    public com.stc.codegen.util.TypeConverter typeConverter;

    public void receive( 
com.stc.connector.appconn.file.FileTextMessage input, 
dtd.otdInputDTD_622919076.Emp otdInputDTD_Emp_1, otdVSAM.OtdVSAMOTD 
otdVSAM_1, com.stc.connector.appconn.file.FileApplication 
FileClient_1 )
        throws Throwable
    {
        FileClient_1.setText( "Inserting records into CICSEMP table 
.." );
        FileClient_1.write();
        otdInputDTD_Emp_1.unmarshalFromString( input.getText() );
        otdVSAM_1.getCICSEMP().insert();
        for (int i1 = 0; i1 < otdInputDTD_Emp_1.countX_sequence_A(); 
i1 += 1) {
            otdVSAM_1.getCICSEMP().setENAME( 
otdInputDTD_Emp_1.getX_sequence_A( i1 ).getENAME() );
            otdVSAM_1.getCICSEMP().setPHONE( 
typeConverter.stringToInt( otdInputDTD_Emp_1.getX_sequence_A( i1 
).getPHONE(), "#", false, 0 ) );
            otdVSAM_1.getCICSEMP().setMAILID( 
otdInputDTD_Emp_1.getX_sequence_A( i1 ).getMAILID() );
            otdVSAM_1.getCICSEMP().setSALARY( new 
java.math.BigDecimal( otdInputDTD_Emp_1.getX_sequence_A( i1 
).getSALARY() ) );
            otdVSAM_1.getCICSEMP().setJOBID( 
typeConverter.stringToDouble( otdInputDTD_Emp_1.getX_sequence_A( i1 
).getJOBID(), "#.000000;-#.000000", false, 0 ) );
            otdVSAM_1.getCICSEMP().setEMPID( 
typeConverter.stringToInt( otdInputDTD_Emp_1.getX_sequence_A( i1 
).getEMPID(), "#", false, 0 ) );
            otdVSAM_1.getCICSEMP().setDEPTID( 
typeConverter.stringToShort( otdInputDTD_Emp_1.getX_sequence_A( i1 
).getDEPTID(), "#", false, 0 ) );
            otdVSAM_1.getCICSEMP().setDEPARTMENT( 
otdInputDTD_Emp_1.getX_sequence_A( i1 ).getDEPARTMENT() );
            otdVSAM_1.getCICSEMP().insertRow();
        }
```

```
            FileClient_1.setText( "Done Insert." );
            FileClient_1.write();
        }
    }
```

The Update Operation

To perform an update operation on a table:

1. Execute the **update()** method.
2. Using a while loop together with **next()**, move to the row that you want to update.
3. Assign updating value(s) to the fields of the table OTD
4. Update the row by calling **updateRow()**.

```
package prjVSAM_JCDjcdALL;

public class jcdUpdate
{

    public com.stc.codegen.logger.Logger logger;

    public com.stc.codegen.alerter.Alerter alerter;

    public com.stc.codegen.util.CollaborationContext collabContext;

    public com.stc.codegen.util.TypeConverter typeConverter;

    public void receive( 
com.stc.connector.appconn.file.FileTextMessage input, 
otdVSAM.OtdVSAMOTD otdVSAM_1, dtd.otdOutputDTD_1935483687.Emp 
otdOutputDTD_Emp_1, com.stc.connector.appconn.file.FileApplication 
FileClient_1 )
        throws Throwable
    {
        FileClient_1.setText( "Update the Department .. " );
        FileClient_1.write();
        otdVSAM_1.getCICSEMP().update( input.getText() );
        while (otdVSAM_1.getCICSEMP().next()) {
            otdVSAM_1.getCICSEMP().setDEPARTMENT( "QAQAQA" );
            otdVSAM_1.getCICSEMP().updateRow();
        }
        FileClient_1.setText( "Done Update." );
        FileClient_1.write();
    }

}
```

The Delete Operation

To perform a delete operation on a table:

1. Execute the **delete()** method.

   In this example DELETE an employee.

```
package prjVSAM_JCDjcdALL;

public class jcdDelete
{
    public com.stc.codegen.logger.Logger logger;

    public com.stc.codegen.alerter.Alerter alerter;

    public com.stc.codegen.util.CollaborationContext collabContext;

    public com.stc.codegen.util.TypeConverter typeConverter;

    public void receive(
com.stc.connector.appconn.file.FileTextMessage input,
otdVSAM.OtdVSAMOTD otdVSAM_1, dtd.otdOutputDTD_1935483687.Emp
otdOutputDTD_Emp_1, com.stc.connector.appconn.file.FileApplication
FileClient_1 )
        throws Throwable
    {
        FileClient_1.setText( "Delete record .." );
        FileClient_1.write();
        otdVSAM_1.getCICSEMP().delete( input.getText() );
        FileClient_1.setText( "Done delete." );
        FileClient_1.write();
    }

}
```

6.2.2 Prepared Statement

A Prepared Statement OTD represents a SQL statement that has been compiled. Fields in the OTD correspond to the input values that users need to provide.

Prepared statements can be used to perform insert, update, delete and query operations. A prepared statement uses a question mark (?) as a place holder for input. For example:

```
insert into EMP_TAB(Age, Name, Dept No) value(?, ?, ?)
```

To execute a prepared statement, set the input parameters and call **executeUpdate()** and specify the input values if any.

```
getPrepStatement().getPreparedStatementTest().setAge(23);
getPrepStatement().getPreparedStatementTest().setName(‘Peter Pan’);
getPrepStatement().getPreparedStatementTest().setDeptNo(6);
getPrepStatement().getPreparedStatementTest().executeUpdate();
```

6.2.3 Batch Operations

To achieve better performance, consider using a bulk insert if you have to insert many records. This is the “Add Batch” capability. The only modification required is to include the **addBatch()** method for each SQL operation and then the **executeBatch()** call to submit the batch to the database server. Batch operations apply only to Prepared Statements.

```
getPrepStatement().getPreparedStatementTest().setAge(23);
getPrepStatement().getPreparedStatementTest().setName(‘Peter Pan’);
getPrepStatement().getPreparedStatementTest().setDeptNo(6);
getPrepStatement().getPreparedStatementTest().addBatch();

getPrepStatement().getPreparedStatementTest().setAge(45);
getPrepStatement().getPreparedStatementTest().setName(‘Harrison
Ford’);
getPrepStatement().getPreparedStatementTest().setDeptNo(7);
getPrepStatement().getPreparedStatementTest().addBatch();
getPrepStatement().getPreparedStatementTest().executeBatch();
```

Chapter 7

Implementing the VSAM eWay Sample Projects

This chapter provides an introduction to the VSAM eWay components, and information on how these components are created and implemented in a Sun Java Composite Application Platform Suite Project. Sample Projects are designed to provide an overview of the basic functionality of the VSAM eWay by identifying how information is passed between eGate and supported external databases.

It is assumed that you understand the basics of creating a Project using the Enterprise Designer. For more information on creating an eGate Project, see the *eGate Tutorial* and the *eGate Integrator User's Guide*.

What's in This Chapter

7.1 About the VSAM eWay Sample Projects

The VSAM eWay **VSAM_eWay_Sample.zip** file contains two sample Projects that provide basic instruction on using VSAM operations in the Java Collaboration Definition (JCD), or the Business Process Execution Language (BPEL) Projects.

- **prjVSAM_JCD:** demonstrates how to select, insert, update, and delete data from a VSAM database using JCDs.
- **prjVSAM_BPEL:** demonstrates how to select, insert, update, and delete data from a VSAM database using a BPEL business process.

Both the **prjVSAM_JCD** and **prjVSAM_BPEL** sample Projects demonstrate how to:

- Select employee records from the database using a prepared statement.
- Select employee records from the CICSEMP table.

- Insert employee records data into the CICSEMP table.
- Update an employee record in the CICSEMP table.
- Delete an employee record from the CICSEMP table.

In addition to sample Projects, the **VSAM510_SAMPLE_projects.zip** file also includes six sample input trigger files and ten sample output files (five per sample).

Sample input files include:

- TriggerDelete.in.~in
- TriggerInsert.in.~in (for JCE projects only)
- TriggerBpInsert.in.~in (for BPEL projects only)
- TriggerPsSelect.in.~in
- TriggerTableSelect.in.~in
- TriggerUpdate.in.~in

Sample output JCD files include:

- JCD_Delete_output0.dat
- JCD_Insert_output0.dat
- JCD_PsSelect_output0.dat
- JCD_TableSelect_output0.dat
- JCD_Update_output0.dat

Sample output BPEL files include:

- BPEL_Delete_output0.dat
- BPEL_Insert_output0.dat
- BPEL_PsSelect_output0.dat
- BPEL_TableSelect_output0.dat
- BPEL_Update_output0.dat

7.1.1 Operations Used in the VSAM Sample Projects

The following database operations are used in both BPEL and JCD sample Projects:

- Insert
- Update
- Delete
- Select (BPEL “SelectAll” Activity)

Assigning Operations in JCD

Database operations are listed as methods in the JCD. Perform the following steps to access these methods:

1. Create a Collaboration that contains a database OTD created from the VSAM database.
2. Right-click the OTD listed in your Collaboration and then select **Select Method to Call** from the shortcut menu.
3. Browse to and select a method to call.

Assigning Operations in BPEL

You can associate an eInsight Business Process Activity with the eWay, both during the system design phase and during run time. To make this association:

1. Select the desired **receive** or **write** operation under the eWay in the Enterprise Explorer.
2. Drag the operation onto the eInsight Business Process canvas.

   The operation automatically changes to an Activity with an icon identifying the component that is the basis for the Activity.

At run time, the eInsight engine invokes each step in the order that you defined in the Business Process. Using the engine's Web Services interface, the Activity in turn invokes the eWay. You can open a file specified in the eWay and view its contents before and after the Business Process is executed.

Note: *Inbound database eWays are only supported within BPEL Collaborations.*

7.1.2 About the eInsight Engine and eGate Components

You can deploy an eGate component as an Activity in an eInsight Business Process. Once you have associated the desired component with an Activity, the eInsight engine can invoke it using a Web Services interface.

Examples of eGate components that can interface with eInsight in this way are:

- Object Type Definitions (OTDs)
- An eWay
- Collaborations

Using the eGate Enterprise Designer and eInsight, you can add an Activity to a Business Process, then associate that Activity with an eGate component, for example, an eWay. When eInsight run the Business Process, it automatically invokes that component via its Web Services interface.

7.2 Running the Sample Projects

The following steps are required to run the sample projects that are contained in the **VSAMeWayDocs.sar** file.

1. Run the SQL script.

   This creates the tables and records required by the sample Project.

2. Import the sample Projects.
3. Build, deploy, and run the sample Projects.

   You must do the following before you can run an imported sample Project:

   - Create an Environment
   - Configure the eWays
   - Create a Deployment Profile
   - Create and start a domain
   - Deploy the Project

4. Check the output.

7.3 Running the SQL Script

The data used for both the **JCD** and **BPEL** sample Projects are contained within a table called **CICSEMP**. You create this table by using the SQL statement **VSAM_sample_script.sql**, that is included in the sample Project. Note that you must use a database tool to run the script.

Following is the SQL statement designed for the sample Projects.

```
drop table CICSEMP
go
create table CICSEMP (
   ENAME CHAR(20),
   PHONE INTEGER(4),
   MAILID CHAR(6),
   SALARY DECIMAL(7,2),
   JOBID FLOAT(4),
   EMPID INTEGER(4),
   DEPTID SMALLINT(2),
   DEPARTMENT CHAR(15))
go
```

The sample Projects provided with the VSAM eWay use input files to pass predefined data or conditions into the Collaboration or BPEL business process, which then transforms the database contents, and delivers the result set.

7.4 Importing a Sample Project

Sample eWay Projects are included as part of the installation CD-ROM package. To import a sample eWay Project to the Enterprise Designer do the following:

1. Extract the samples from the Sun Java Composite Application Platform Suite Installer to a local file.

   Sample files are uploaded with the eWay's documentation SAR file, and then downloaded from the Installer's **Documentation** tab. The **VSAM_eWay_Sample.zip** file contains the various sample Project ZIP files.

Note: *Make sure you save all unsaved work before importing a Project.*

2. From the Enterprise Designer's Project Explorer pane, right-click the Repository and select **Import Project** from the shortcut menu. The **Import Manager** appears.
3. Browse to the directory that contains the sample Project ZIP file. Select the sample file and click **Import**.
4. Click **Close** after successfully importing the sample Project.

7.5 Building and Deploying the prjVSAM_BPEL Sample Project

The following provides step-by-step instructions for manually creating the **prjVSAM_BPEL** sample Project.

Steps required to create the sample project include:

- **Creating a Project** on page 66
- **Creating the OTDs** on page 66
- **Creating the Business Process** on page 67
- **Creating the Connectivity Map** on page 83
- **Creating an Environment** on page 85
- **Configuring the eWays** on page 86
- **Creating the Deployment Profile** on page 89
- **Creating and Starting the Domain** on page 90
- **Building and Deploying the Project** on page 91
- **Running the Sample Project** on page 91

7.5.1 Creating a Project

The first step is to create a new Project in the Enterprise Designer.

1. Start the Enterprise Designer.
2. From the Project Explorer tree, right-click the Repository and select **New Project**. A new Project (**Project1**) appears on the Project Explorer tree.
3. Right-click **Project1** and select rename from the shortcut menu. Rename the Project (for this sample, **prjVSAM_BPEL**).

7.5.2 Creating the OTDs

The sample Project requires three OTDs to interact with the VSAM eWay. These OTDs include:

- VSAM Database OTD
- Inbound DTD OTD
- Outbound DTD OTD

Steps required to create a VSAM Database OTD include:

1. Right-click your new Project in the Enterprise Designer's Project Explorer, and select **New** > **Object Type Definition**.

   The New Object Type Definition Wizard window appears.
2. Select the **VSAM Database OTD Wizard** from the list of OTD Wizards and click **Next**.
3. Enter the connection information for the VSAM database. Connection fields include:
   - Host name:
   - Port ID:
   - Database Name:
   - User name:
   - Password:
4. Click **Next**, and select the types of database object you want to include in the sample Project. For this example, select the following:
   - Tables/Views/Aliases
   - Prepared Statements
5. Click **Add** to select tables from the VSAM database. The **Add Tables** window appears.
6. Search for or type in the name of the database. In this example we use the **CICSEMP** table. Click **Select** when the database appears in the Results selection frame. Click **OK** to close the Add Tables window
7. Click **Next** the Add Prepared Statements Wizard appears.

8 Click **Add**, the Add Prepared Statement window appears. Enter the following:

- Prepared Statement Name: Select_ps
- SQL Statement:

```
select * from CICSEMP where EMPID > ? order by EMPID
```

Note: *In our example, the SQL statement includes the* **?** *placeholder for input. This placeholder represents the value for the Where Clause.*

9 Click the **OK** button to close the Prepared Statement window, and then click **Next** on the Prepared Statements Wizard window.

10 Enter an OTD name. In this example, we use **otdVSAM**.

11 Click **Next** and review your settings, then click **Finish** to create the OTD.

Steps required to create inbound and outbound DTD OTDs:

1 Right-click your new Project in the Enterprise Designer's Project Explorer, and select **New** > **Object Type Definition**.

The New Object Type Definition Wizard window appears.

2 Select **DTD** from the list of OTD Wizards and click **Next**.

3 Browse to and then select a DTD file. For our example, select one of the following DTD files from the sample Project, and then click **Next**.

- otdInputDTD.dtd
- otdOutputDTD.dtd

4 The file you select appears in the Select Document Elements window. Click **Next**.

5 Click **Finish** to complete the DTD based OTD. Repeat this process again to create the second DTD file.

7.5.3 Creating the Business Process

Steps required to create the Business Process include:

- Creating the business process flow
- Configuring the modeling elements

Creating the Business Process Flow

The business process flow contains all the BPEL elements that make up a business process.

Steps to create a business process flow include:

1 Right-click your new Project in the Enterprise Designer's Project Explorer, and select **New** > **Business Process** from the shortcut menu. The eInsight Business Process Designer appears and **BusinessProcess1** is added to the Project Explorer tree. Rename **BusinessProcess1** to **bpInsert**.

2 Create four additional business processes and rename them as follows:

- bpUpdate
- bpDelete
- bpPsSelect
- bpTableSelect

3 Add the following activities to the Business Process Designer canvas.

Table 11 Business Process Activities

Business Process	Activity
bpInsert	FileClient.Receive FileClient.Write otdVSAM.CICSEMPInsert (inside a Scope) otdInputDTD_Emp.unmarshal FileClient.Write
bpUpdate	FileClient.receive FileClient.write otdVSAM.CICSEMPUpdate FileClient.write
bpDelete	FileClient.receive FileClient.write otdVSAM.CICSEMPDelete FileClient.write
bpPsSelect	FileClient.receive FileClient.write otdVSAM.Select_psPSSelectAll Decision FileClient.write (inside a Scope renamed “No records”) otdInputDTD_DBemployees.marshal (inside a Scope renamed “Records found”) FileClient.write (inside a Scope renamed “Records found”) FileClient.write
bpTableSelect	FileClient.receive FileClient.write otdVSAM.CICSEMPSelectAll otdInputDTD_Emp.marshal FileClient.write FileClient.write

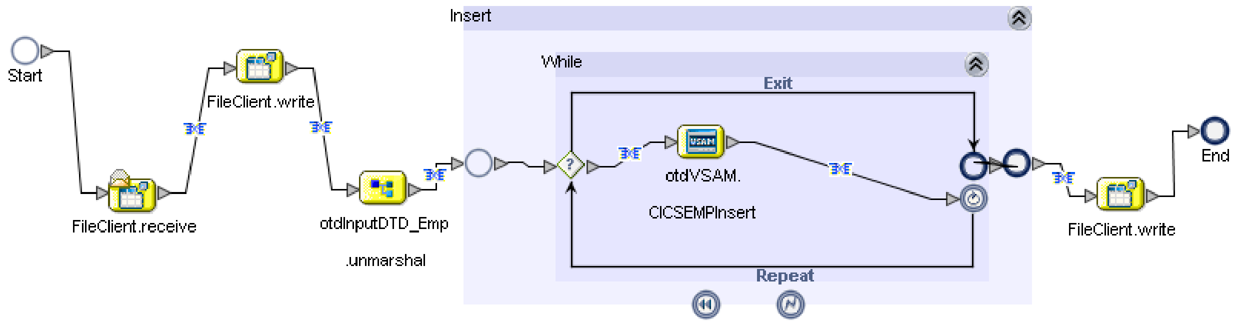
Configuring the bpInsert Modeling Elements

Business Rules, created between the Business Process Activities, allow you to configure the relationships between the input and output Attributes of the Activities using the Business Process Designer’s Business Rule Designer.

Once you have connected the modeling elements together, begin adding the business processes necessary to facilitate the Insert operation. See Figure 21 for an illustration of how all the modeling elements appear when connected.

Note: *Review the eInsight Business Process Manager User's Guide for a more detailed description of the steps required to connect and add business rules to a modeling elements in a business process.*

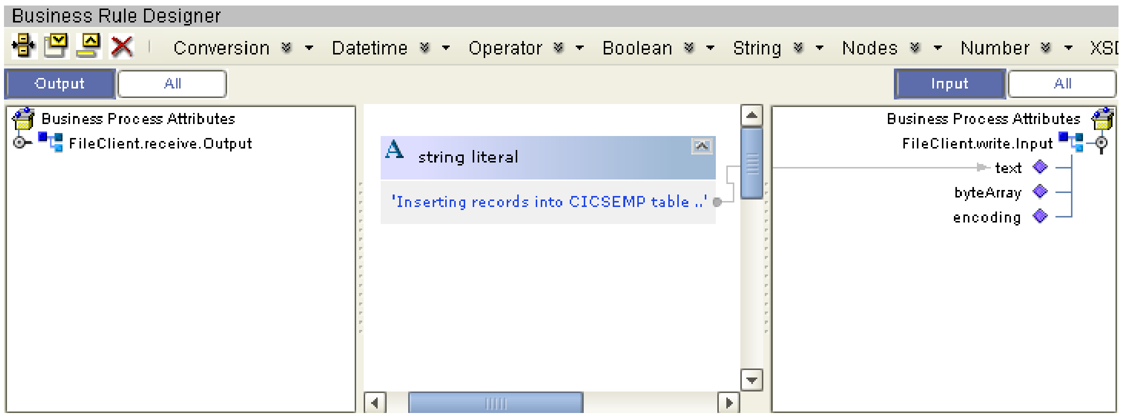
Figure 21 bpInsert Business Process



Steps required to configure the bpInsert business process:

1. Configure the business rule between **FileClient.receive** and **FileClient.write** Activities, as seen in Figure 22.

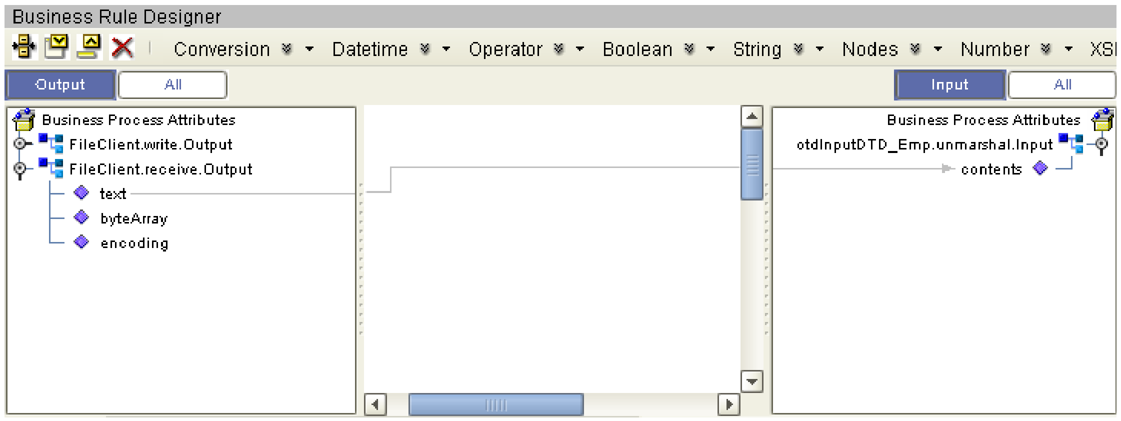
Figure 22 bpInsert Business Rule # 1



'Inserting records into CICSEMP table ..'

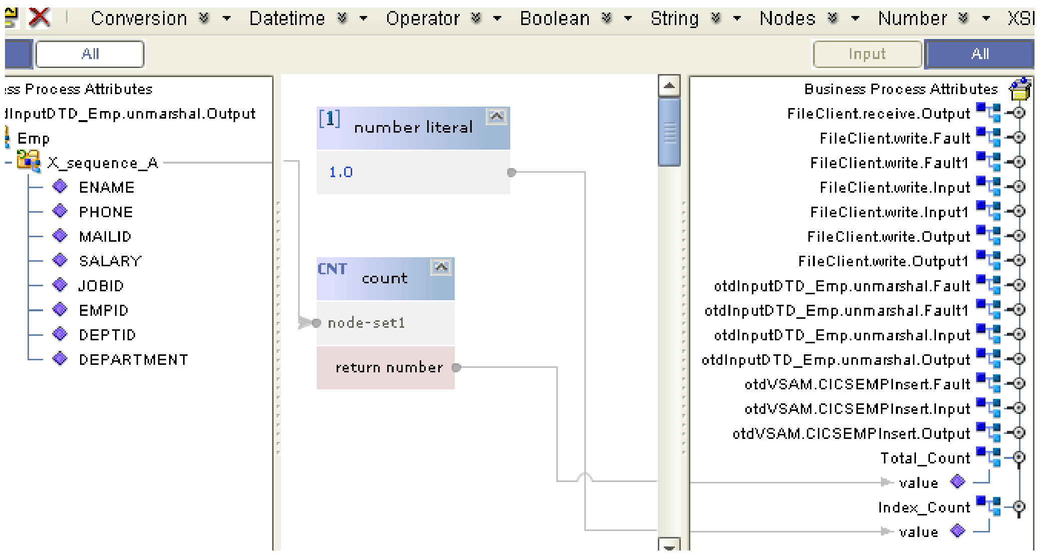
2. Configure the business rule between the **FileClient.write** Activity and **otdInputDTD_Emp.unmarshal** Activity, as seen in Figure 23.

Figure 23 bpInsert Business Rule # 2



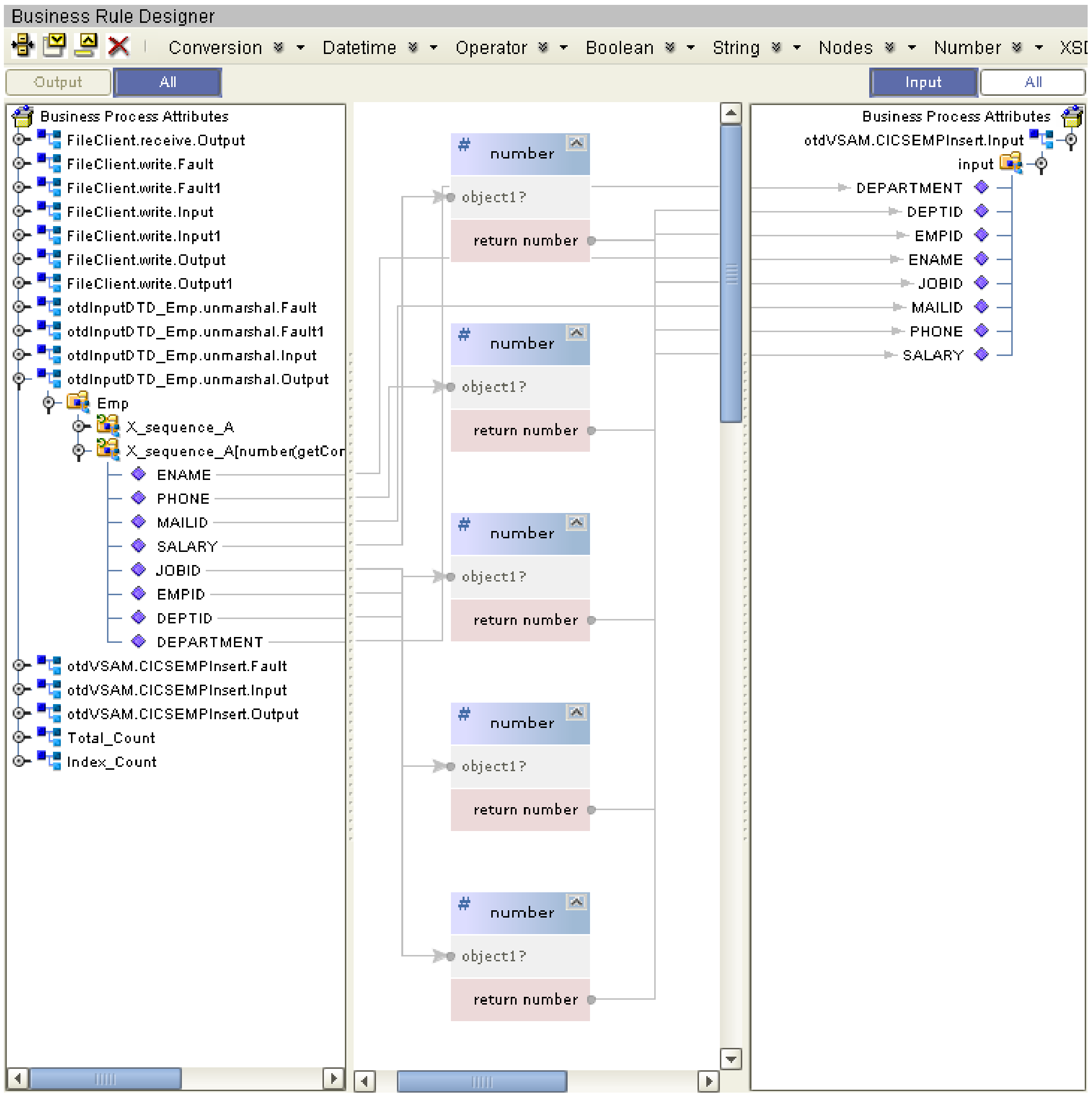
3 Configure the business rule between **otdInputDTD_Emp.unmarshal** Activity and the **Insert** (Scope element), as seen in Figure 24.

Figure 24 bpInsert Business Rule # 3



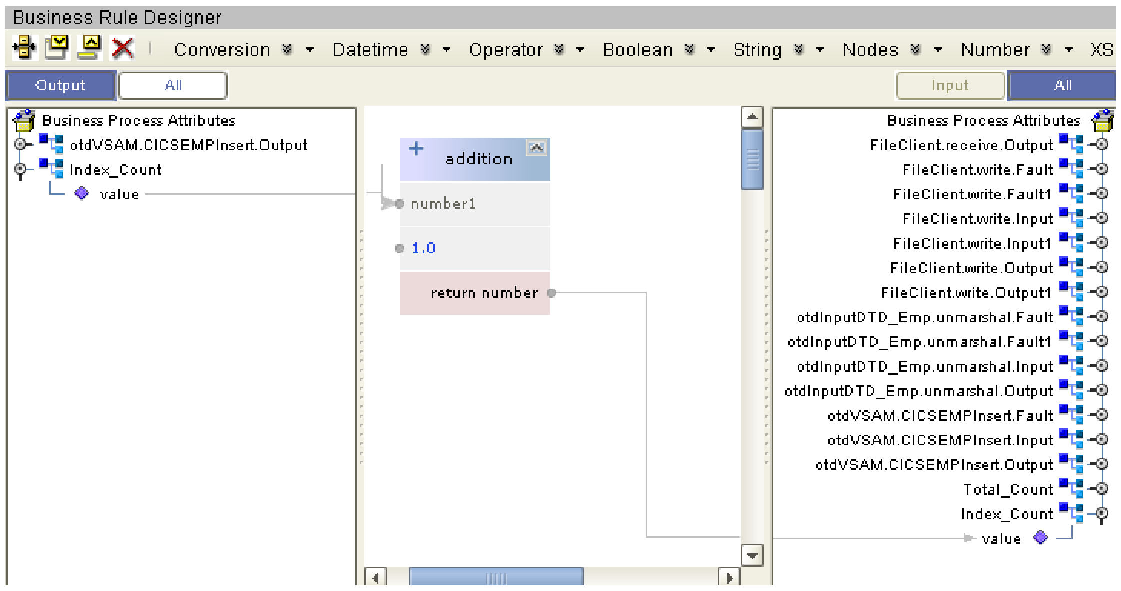
4 Configure the business rule in the **While** statement that connects to the **otdVSAM.CICSEMPInsert** Activity, as seen in Figure 25.

Figure 25 bpInsert Business Rule # 4



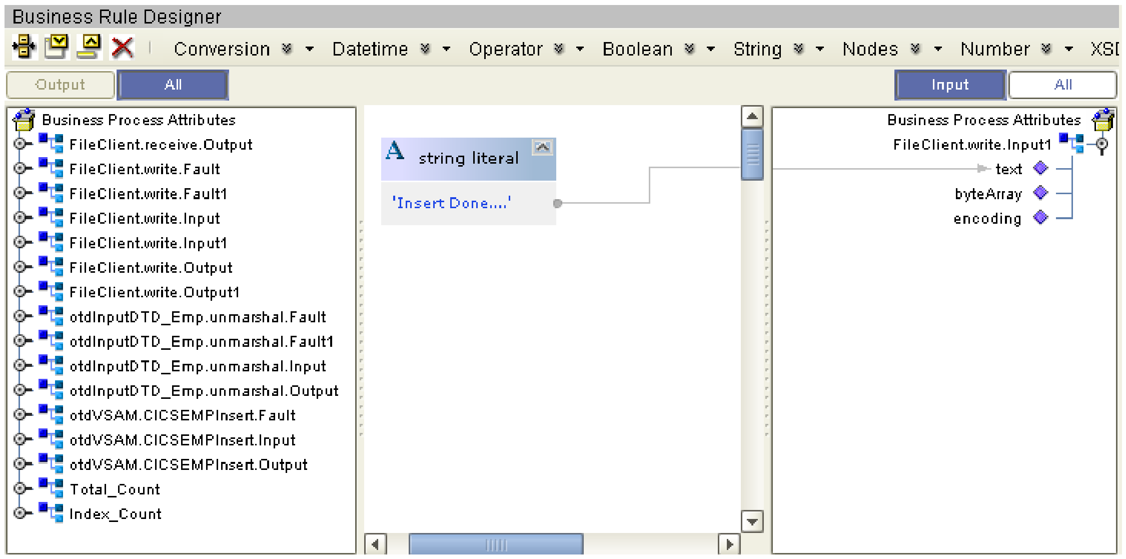
5 Configure the business rule in the **While** statement that connects from the **otdVSAM.CICSEMPInsert** Activity, as seen in Figure 26.

Figure 26 bpInsert Business Rule # 5


Business Rule Designer
Conversion
Datetime
Operator
Boolean
String
Nodes
Number
XS
Output
All
Input
All
Business Process Attributes
otdVSAM.CICSEMPInsert.Output
Index_Count
value
addition
number1
1.0
return number
Business Process Attributes
FileClient.receive.Output
FileClient.write.Fault
FileClient.write.Fault1
FileClient.write.Input
FileClient.write.Input1
FileClient.write.Output
FileClient.write.Output1
otdInputDTD_Emp.unmarshal.Fault
otdInputDTD_Emp.unmarshal.Fault1
otdInputDTD_Emp.unmarshal.Input
otdInputDTD_Emp.unmarshal.Output
otdVSAM.CICSEMPInsert.Fault
otdVSAM.CICSEMPInsert.Input
otdVSAM.CICSEMPInsert.Output
Total_Count
Index_Count
value

6 Configure the business rule from the **Insert** (Scope element) to the **FileClient.write** Activity, as seen in Figure 27.

Figure 27 bpInsert Business Rule # 6



Configuring the bpUpdate Modeling Elements

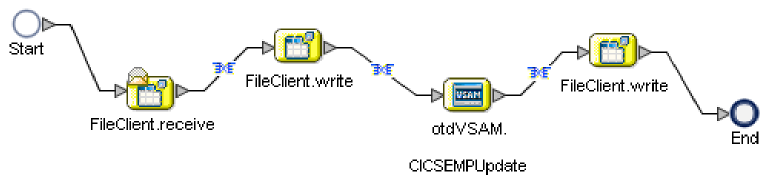
The bpUpdate business process describes how to update a record in the VSAM database using the Business Process Designer.

Once you have connected the modeling elements together, begin adding the business processes necessary to facilitate the Update operation. Figure 28 illustrates how all the modeling elements appear when connected.

Note: *The where clause in the business rule reads the trigger value as a placeholder for input. This permits you to modify the query to select a specific record. Also note that all records are selected from the database when the TriggerUpdate.in file is empty.*

Note: *Review the eInsight Business Process Manager User's Guide for a more detailed description of the steps required to connect and add business rules to a modeling elements in a business process.*

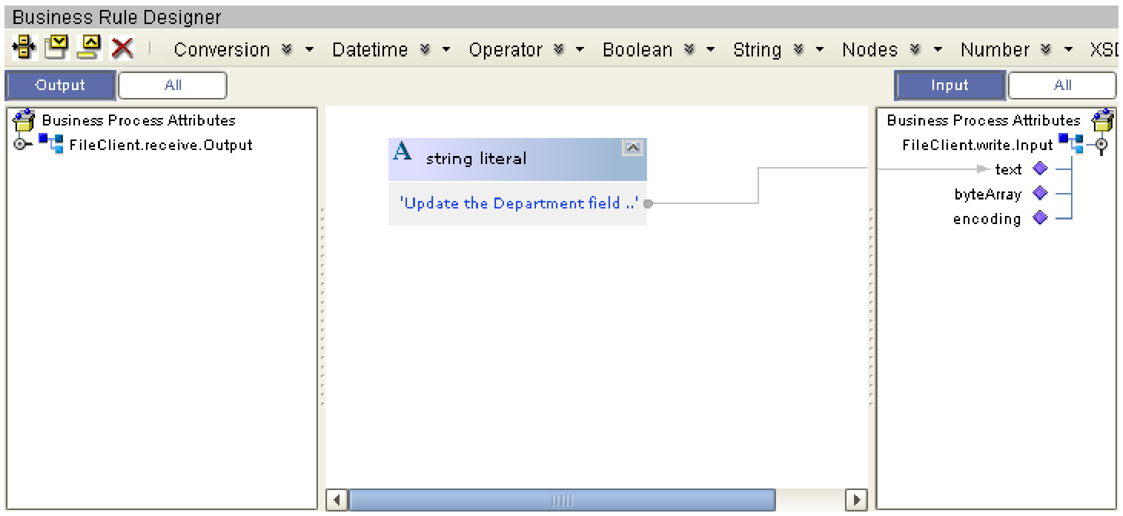
Figure 28 bpUpdate Business Process



Steps required to configure the bpUpdate business process:

1. Configure the business rule between **FileClient.receive** and **FileCleint.write** Activities, as seen in Figure 29.

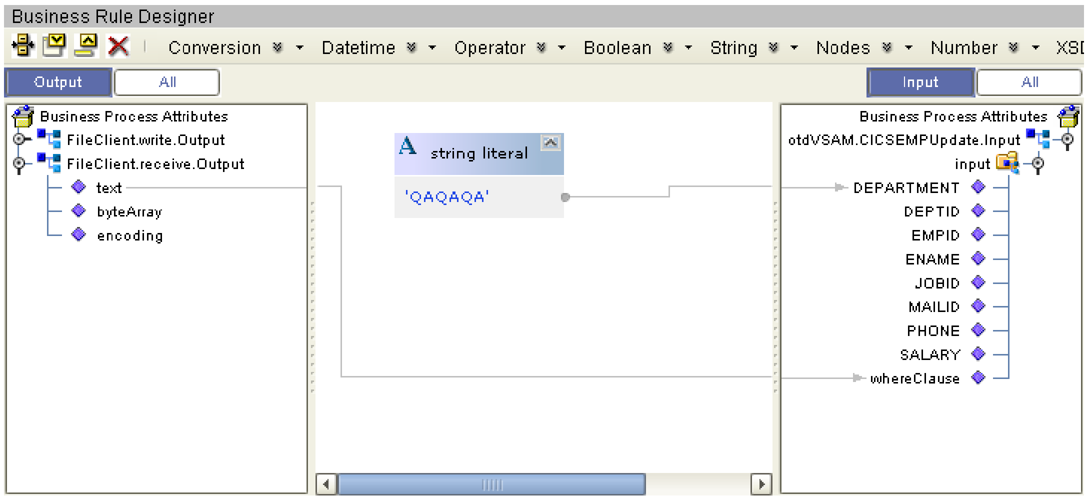
Figure 29 bpUpdate Business Rule # 1



'Update the Department field ..'

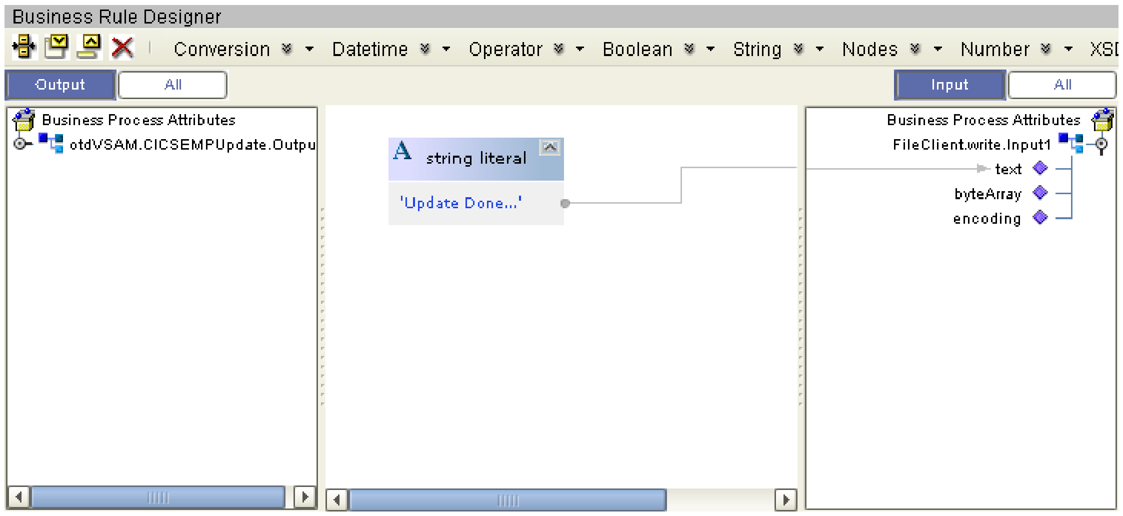
2. Configure the business rule between the **FileClient.write** Activity and **otdVSAM.CICSEMPUpdate** Activity, as seen in Figure 30.

Figure 30 bpUpdate Business Rule # 2



3 Configure the business rule between the **otdVSAM.CICSEMPUpdate** Activity and the **FileClient.write** Activity, as seen in Figure 31.

Figure 31 bpUpdate Business Rule # 3



Configuring the bpDelete Modeling Elements

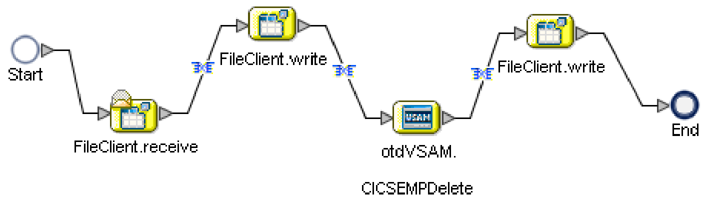
The bpDelete business process describes how to delete a record in the VSAM database using the Business Process Designer.

Once you have connected the modeling elements together, begin adding the business processes necessary to facilitate the Delete operation. See Figure 32 for an illustration of how all the modeling elements appear when connected.

Note: *The where clause in the business rule reads the trigger value as a placeholder for input. This permits you to modify the query to select a specific record. Also note that all records are selected from the database when the TriggerDelete.in file is empty.*

Note: *Review the eInsight Business Process Manager User's Guide for a more detailed description of the steps required to connect and add business rules to a modeling elements in a business process.*

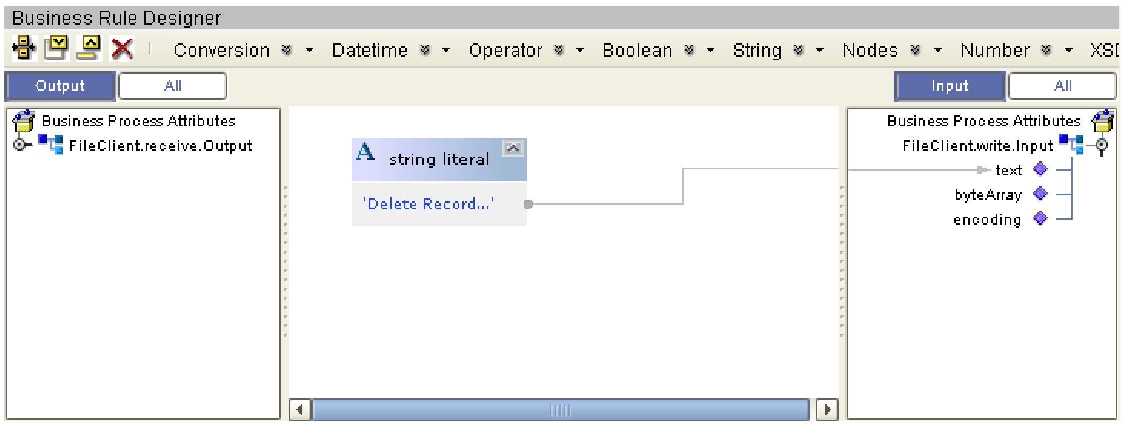
Figure 32 bpDelete Business Process



Steps required to configure the bpDelete business process:

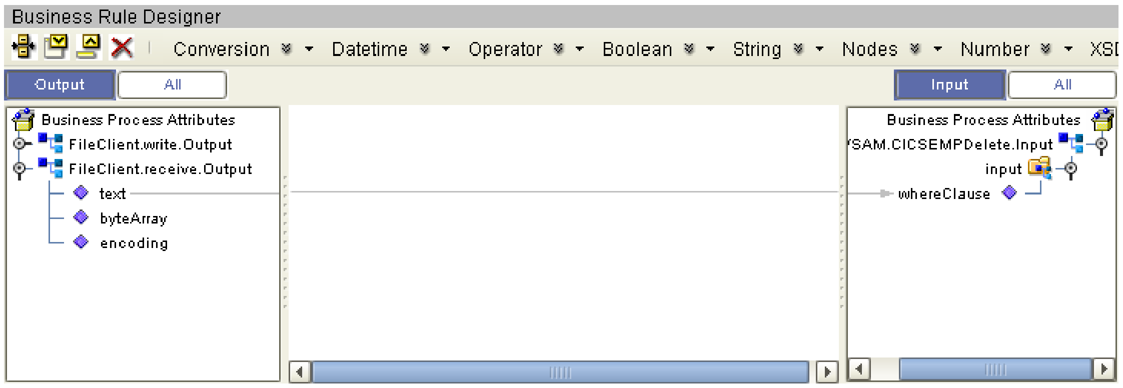
1. Configure the business rule between **FileClient.receive** and **FileCleint.write** Activities, as seen in Figure 33.

Figure 33 bpDelete Business Rule # 1



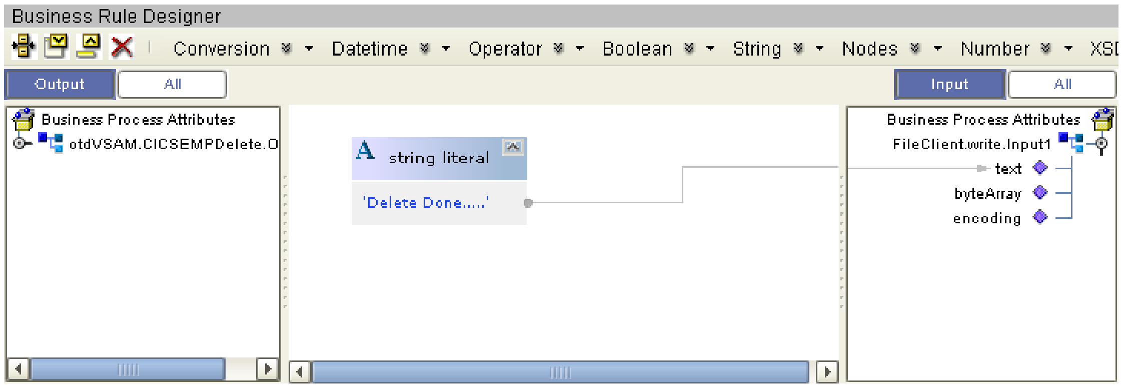
2. Configure the business rule between the **FileClient.write** Activity and **otdVSAM.CICSEMPDelete** Activity, as seen in Figure 34.

Figure 34 bpDelete Business Rule # 2



3 Configure the business rule between the **otdVSAM.CICSEMPDelete** Activity and the **FileClient.write** Activity, as seen in Figure 35.

Figure 35 bpDelete Business Rule # 3



Configuring the bpTableSelect Modeling Elements

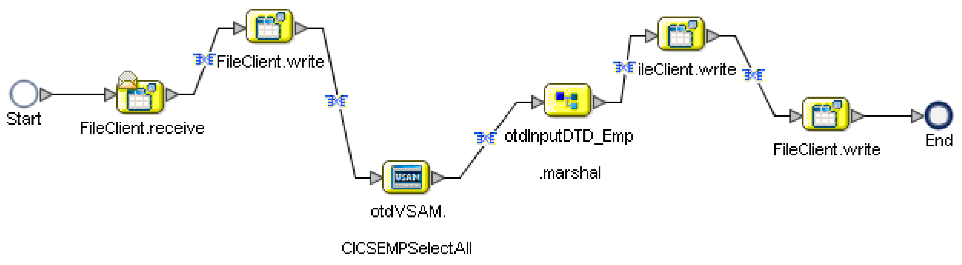
The bpTableSelect business process is describes how to select all records the VSAM database using the Business Process Designer.

Once you have connected the modeling elements together, begin adding the business processes necessary to facilitate the SelectAll operation. See Figure 36 for an illustration of how all the modeling elements appear when connected.

Note: *The where clause in the business rule reads the trigger value as a placeholder for input. This permits you to modify the query to select a specific record. Also note that all records are selected from the database when the TriggerTableSelect.in file is empty.*

Note: *Review the eInsight Business Process Manager User's Guide for a more detailed description of the steps required to connect and add business rules to a modeling elements in a business process.*

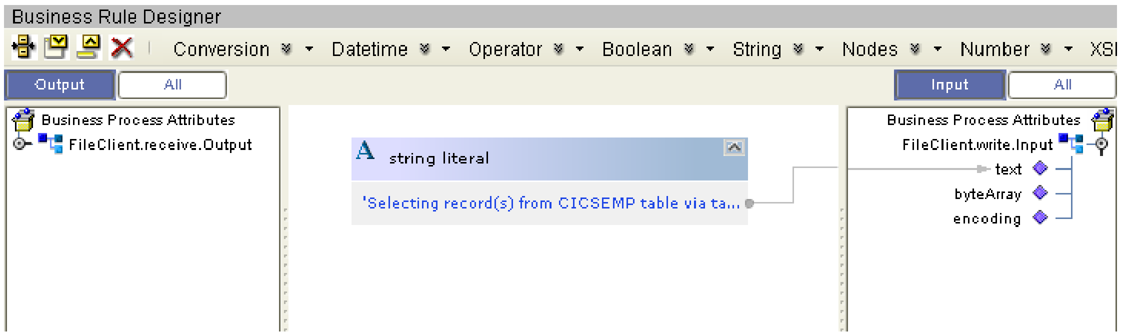
Figure 36 bpTableSelect Business Process



Steps required to configure the bpTableSelect business process:

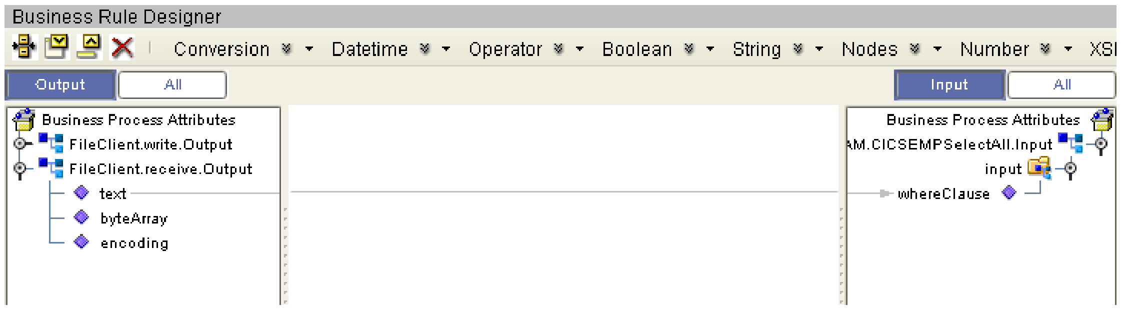
1 Configure the business rule between **FileClient.receive** and **FileClient.write** Activities, as seen in Figure 37.

Figure 37 bpTableSelect Business Rule # 1



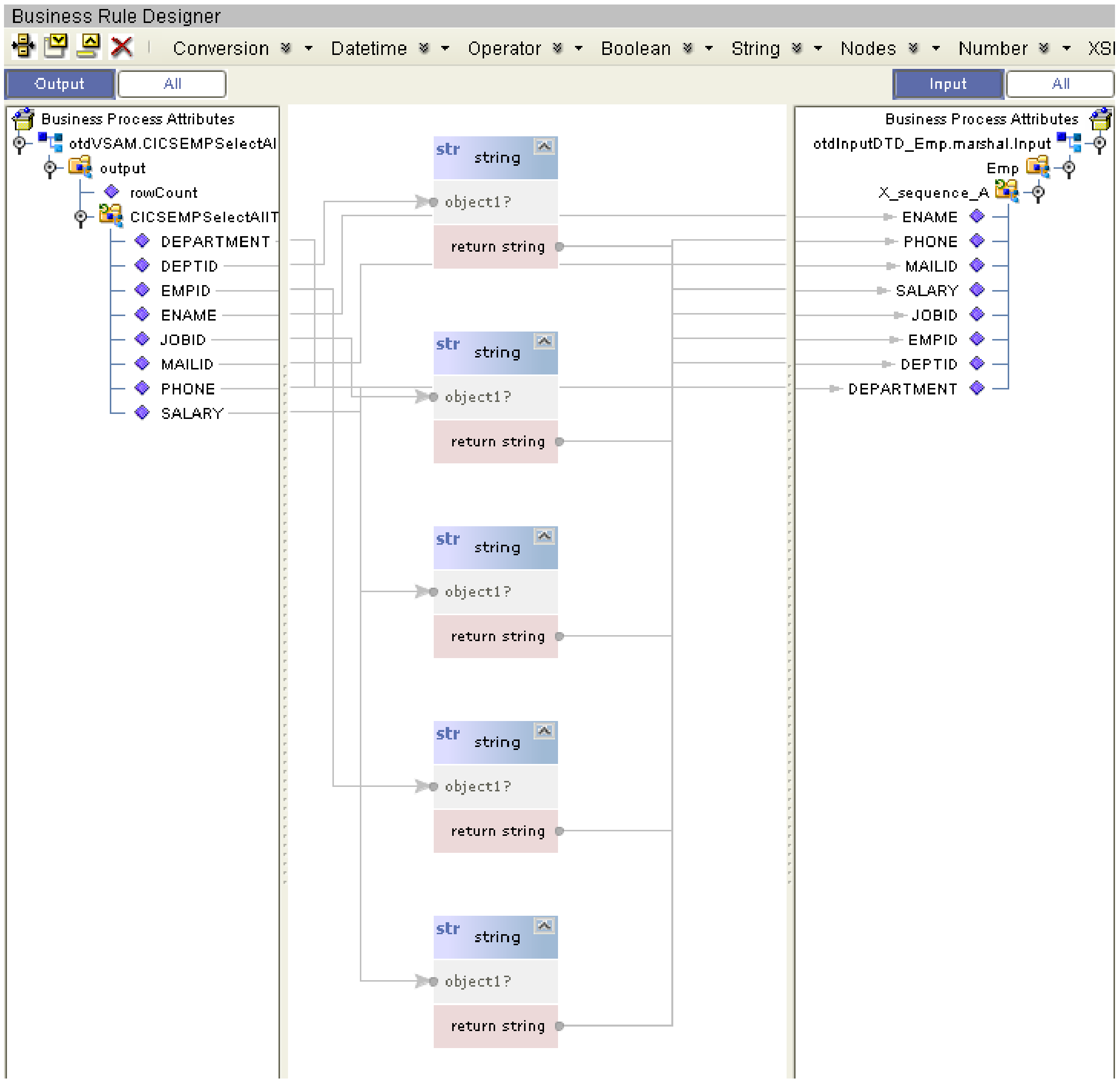
2 Configure the business rule between the **FileClient.write** Activity and **otdVSAM.CICSEMPSelectAll** Activity as seen in Figure 38.

Figure 38 bpTableSelect Business Rule # 2



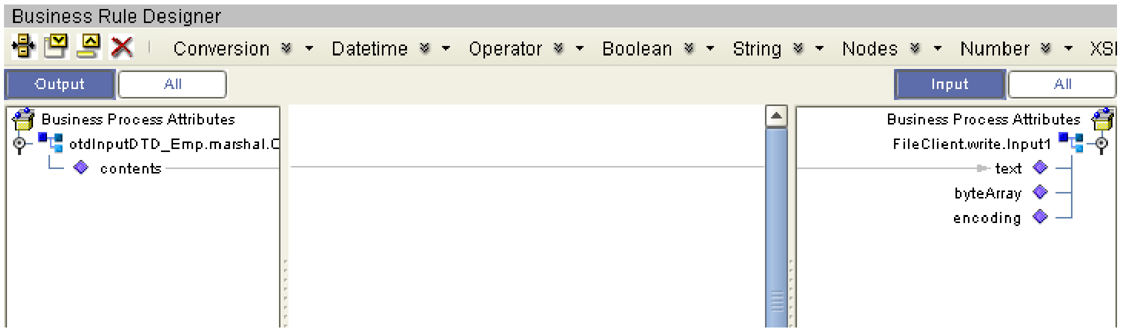
3 Configure the business rule between the **otdVSAM.CICSEMPSelectAll** Activity and the **otdInputDTD_Emp.marshal** Activity as seen in Figure 39.

Figure 39 bpSelectTable Business Rule # 3



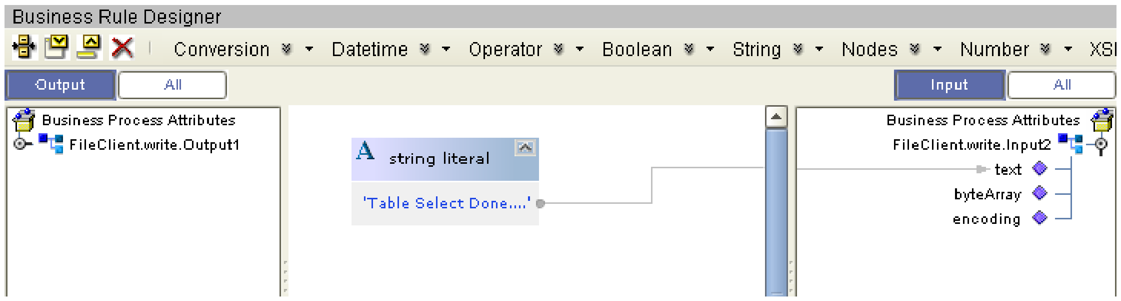
4 Configure the business rule between the **otdInputDTD_Emp.marshal** Activity and the **FileClient.write** Activity as seen in Figure 40.

Figure 40 bpTableSelect Business Rule # 4



5 Configure the business rule between the **FileClient.write** Activity and the **FileClient.write** Activity as seen in Figure 41.

Figure 41 bpTableSelect Business Rule # 5



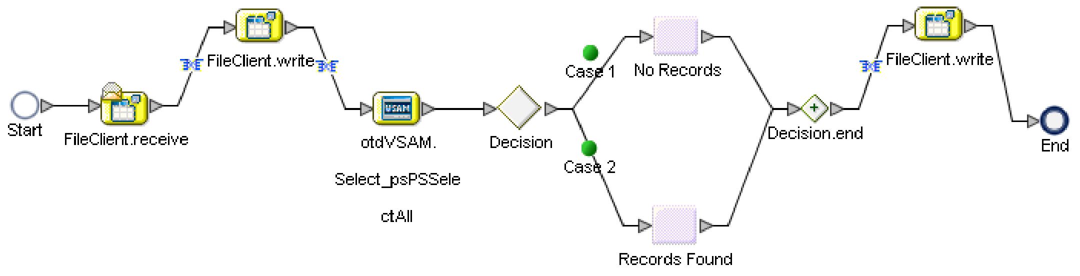
Configuring the bpPsSelect Modeling Elements

The bpPsSelect business process describes how to use a Prepared Statement query to select all records in the VSAM database via the Business Process Designer.

Once you have connected the modeling elements together, begin adding the business processes necessary to facilitate the SelectAll operation. See Figure 42 for an illustration of how all the modeling elements appear when connected.

Note: *Review the eInsight Business Process Manager User's Guide for a more detailed description of the steps required to connect and add business rules to a modeling elements in a business process.*

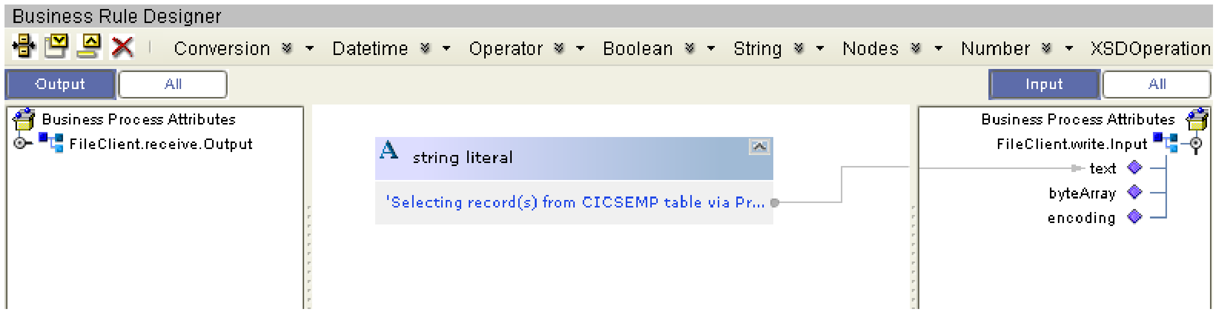
Figure 42 bpPsSelect Business Process



Steps required to configure the bpPsSelect business process:

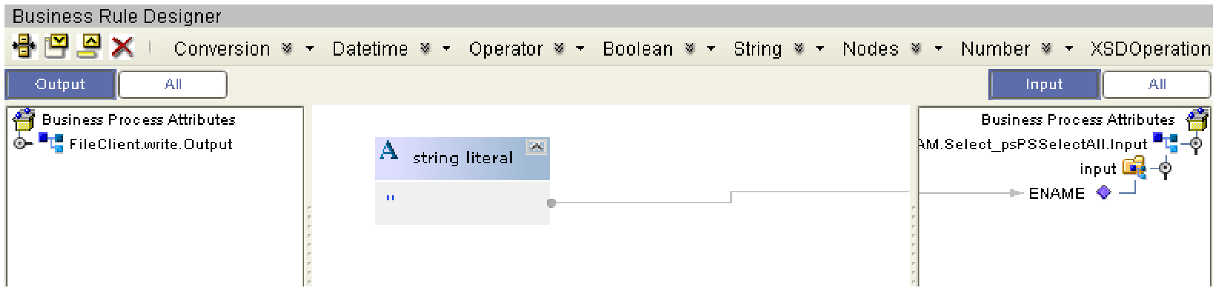
1 Configure the business rule between **FileClient.receive** and **FileCleint.write** Activities as seen in Figure 43.

Figure 43 bpPsSelect Business Rule # 1



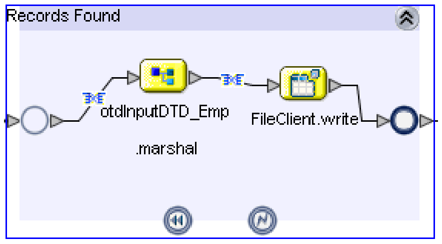
2 Configure the business rule between **FileClient.write** Activity and **otdVSAM.Select_psPSSelectAll** Activity as seen in Figure 44.

Figure 44 bpPsSelect Business Rule # 2



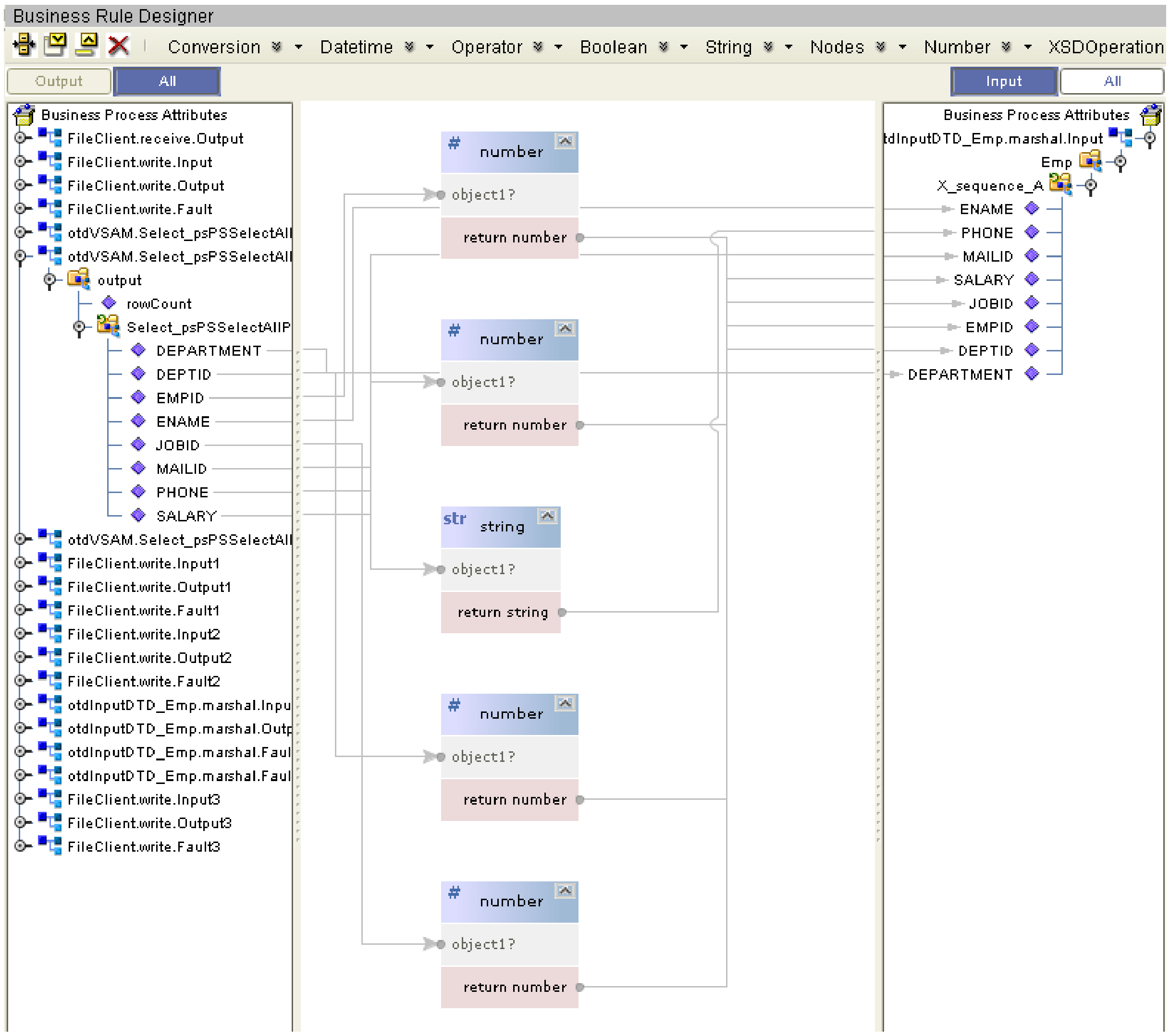
3 Configure **Case 1** of the Decision branching activity. This requires adding business rules between the **otdInputDTD_Emp.marshal** and the **FileClient.write** Activities within the Scope element.

Figure 45 Activities within Case 1 Scope



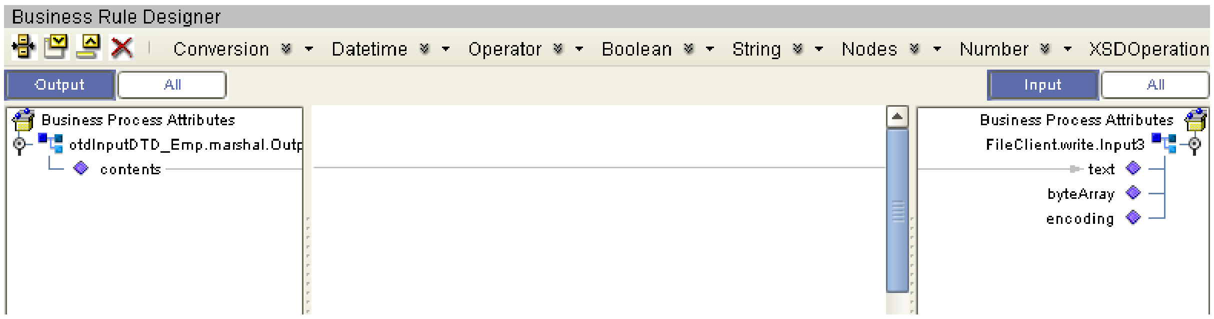
4 Configure the business rule between the start of the Scope element in **Case 1** and the **otdInputDTD_Emp.marshal** Activity, as seen in Figure 46.

Figure 46 Case 1 Scope Business Rule # 3



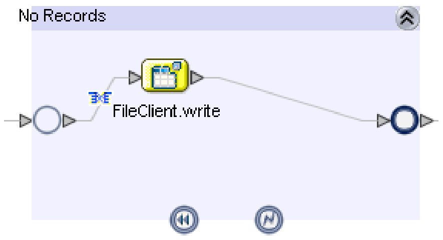
5 Configure the business rule between **otdInputDTD_Emp.marshal** Activity and **FileClient.write** Activity in the Scope element, as seen in Figure 47.

Figure 47 Case 1 Scope Business Rule # 4



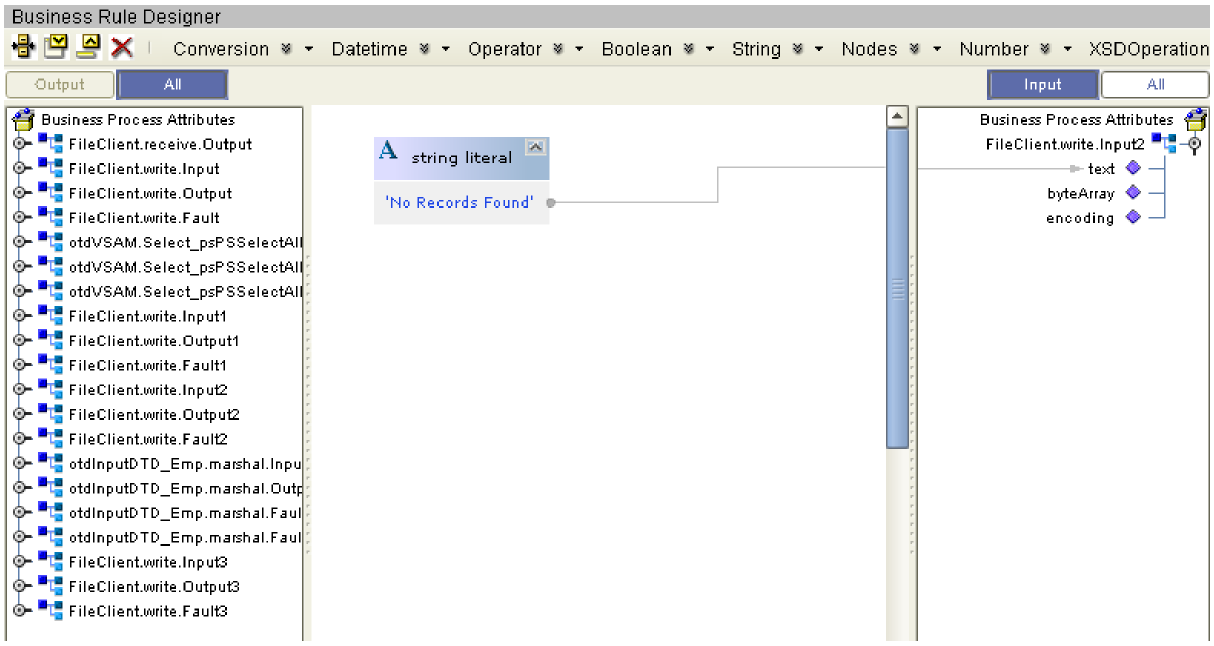
6 Configure Case 2 of the Decision branching activity. This requires adding business rules between the **otdInputDTD_Emp.marshal** and the **FileClient.write** Activities within the Scope element.

Figure 48 Activities within Case 2 Scope



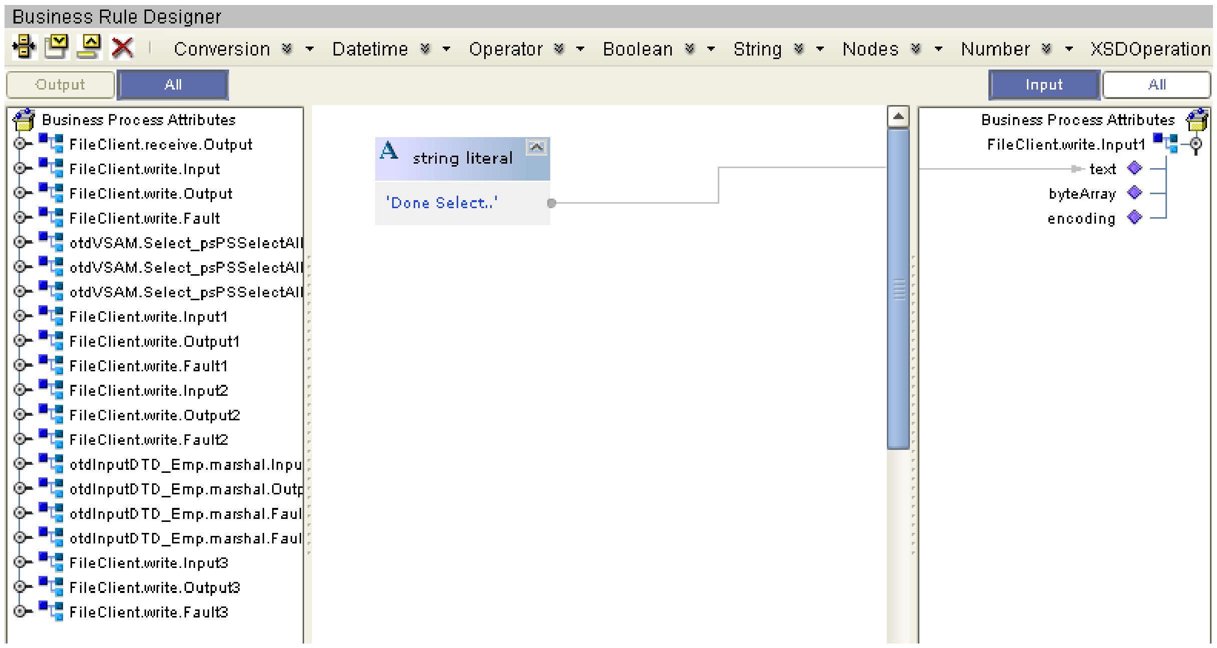
7 Configure the business rule between the start of the Scope element in **Case 2** and the **FileClient.Write** Activity, as seen in Figure 49.

Figure 49 Case 2 Scope Business Rule # 5



8 Configure the business rule between the **Decision.end** Element and the **FileClient.write** Activity, as seen in Figure 50.

Figure 50 bpSelectTable Business Rule # 6



7.5.4 Creating the Connectivity Map

The Connectivity Map provides a canvas for assembling and configuring a Project's components.

Steps required to create the Connectivity Map:

1. From the Project Explorer tree, right-click the new **prjVSAM_BPEL** Project and select **New > Connectivity Map** from the shortcut menu.
2. The New Connectivity Map appears, and a node for the Connectivity Map is added under the Project on the Project Explorer tree labeled **CMap1**.

   Create four additional Connectivity Maps—**CMap2**, **CMap3**. **CMap4**, and **CMap5**—and rename them as follows:

   - cmDelete
   - cmInsert
   - cmPsSelect
   - cmTableSelect
   - cmUpdate

The icons in the toolbar represent the available components used to populate the Connectivity Map canvas.

Populating the Connectivity Map

Add the Project components to the Connectivity Map by dragging the icons from the toolbar to the canvas.

Each Connectivity Map in the **prjVSAM_BPEL** sample Project requires the following components:

- File External Application (2)
- VSAM External Application
- Business Process

Any eWay added to the Connectivity Map is associated with an External System. To establish a connection to VSAM, first select VSAM as an External System to use in your Connectivity Map.

To Select a VSAM External System

1. Click the **External Application** icon on the Connectivity Map toolbar.
2. Select the external systems necessary to create your Project (for this sample, **VSAM** and **File**). Icons representing the selected external systems are added to the Connectivity Map toolbar.
3. Rename the following components and then save changes to the Repository:
    - File1 to FileClientIN
    - File2 to FileClientOUT
    - VSAM1 to eaVSAMOUT

To Select a VSAM Business Process

1. Drag a business process from the Enterprise Explorer Project Explorer onto the corresponding Connectivity Map. For example, drag the **bpDelete** business process onto the **cmDelete** Connectivity Map.
2. Save your changes to the Repository

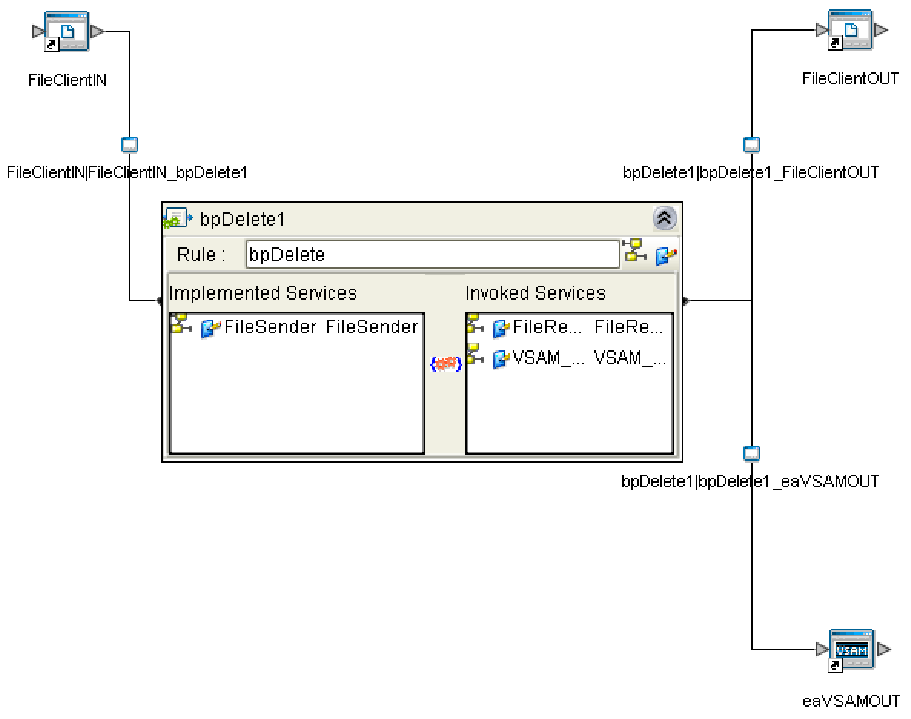
Binding the eWay Components

The final step in creating a Connectivity Map is binding the eWay components together.

Steps required to bind eWay components together:

1. Open one of the Connectivity Maps and double-click a Business Process, for example the **bpDelete** Business Process in the **cmDelete** Connectivity Map. The **bpDelete** Binding dialog box appears.
2. From the **bpDelete** Binding dialog box, map **FileSender** (under Implemented Services) to the **FileClientIN** (File) External Application. To do this, click on **FileSender** in the **bpDelete** Binding dialog box, and drag the cursor to the **FileClientIN** External Application in the Connectivity Map. A link is now visible between **FileClientIN** and **bpDelete**.
3. From the **bpDelete** Binding dialog box, map **VSAM_otdVSAM** (under Invoked Services) to the **eaVSAMOUT** External Application.
4. From the **bpDelete** Binding dialog box, map **FileReceiver** to the **FileClientOUT** External Application, as seen in Figure 51.

Figure 51 Connectivity Map - Associating (Binding) the Project's Components



5 Minimize the **bpDelete** Binding dialog box by clicking the chevrons in the upper-right corner.

6 Save your current changes to the Repository, and then repeat this process for each of the other Connectivity Maps.

7.5.5 Creating an Environment

Environments include the external systems, Logical Hosts, Integration Servers and message servers used by a Project and contain the configuration information for these components. Environments are created using the Enterprise Designer's Environment Editor.

Steps required to create an Environment:

1 From the Enterprise Designer's Enterprise Explorer, click the **Environment Explorer** tab.

2 Right-click the Repository and select **New Environment**. A new Environment is added to the Environment Explorer tree.

3 Rename the new Environment to **envVSAMProj**.

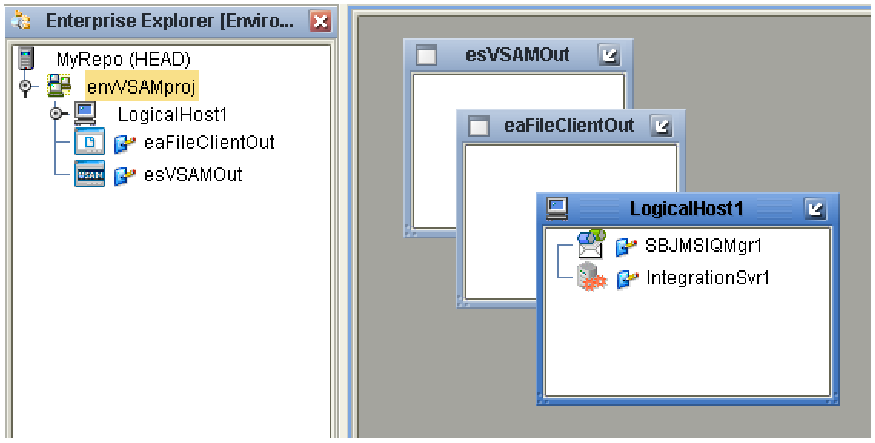
4 Right-click **envVSAMProj** and select **New > VSAM External System**. Name the External System **esVSAM**. Click **OK**. **esVSAM** is added to the Environment Editor.

5 Right-click **envVSAMProj** and select **New > File External System**. Name the External System **esFileClient**. Click **OK**. **esFileClient** is added to the Environment Editor.

6 Right-click **envVSAMProj** and select **New > Logical Host**. The **LogicalHost1** box is added to the Environment, and **LogicalHost1** is added to the Environment Editor tree.

7 Right-click **LogicalHost1** and select **New > Sun SeeBeyond Integration Server**. A new Integration Server (**IntegrationSvr1**) is added to the Environment Explorer tree under **LogicalHost1** (see Figure 52).

Figure 52 Environment Editor - envVSAMProj



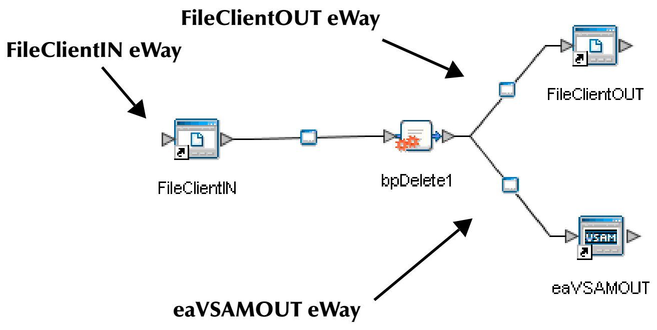
8 Save your current changes to the Repository.

7.5.6 Configuring the eWays

eWays facilitate communication and movement of data between the external applications and the eGate system. Each Connectivity Map in the The **prjVSAM_BPEL** sample Project use three eWays that are represented as a nodes between the External Applications and the Business Process, as seen in Figure 53.

You must configure eWay properties in both the Connectivity Map and the Environment Explorer.

Figure 53 eWays in the cmDelete Connectivity Map



Configuring the eWay Properties

Steps required to configure the eWay properties:

1 Double-click the **FileClientIN** eWay on each of the Connectivity Maps and modify the properties for your system, as seen in Table 12. Click **OK** to close the Properties Editor.

Table 12 FileClientIN eWay Property Settings

Connectivity Map	Property Name	Required Values
cmDelete	Input file name	TriggerDelete.in
cmInsert	Input file name	TriggerBpInsert.in
cmPsSelect	Input file name	TriggerPsSelect.in
cmTableSelect	Input file name	TriggerTableSelect.in
cmUpdate	Input file name	TriggerUpdate.in

2 Double-click the **FileClientOUT** eWay on each of the Connectivity Maps and modify the properties for your system, as seen in Table 13. Click **OK** to close the Properties Editor.

Table 13 FileClientOUT eWay Property Settings

Connectivity Map	Property Name	Required Values
cmDelete	Output file name	BPEL_Delete_output%d.dat
cmInsert	Output file name	BPEL_Insert_output%d.dat
cmPsSelect	Output file name	BPEL_PsSelect_output%d.dat
cmTableSelect	Output file name	BPEL_TableSelect_output%d.dat
cmUpdate	Output file name	BPEL_Update_output%d.dat

Configuring the Environment Explorer Properties

Steps required to configure the Environment Explorer properties:

1. From the **Environment Explorer** tree, right-click the VSAM External System (**esVSAM** in this sample), and select **Properties**. The Properties Editor opens to the VSAM eWay Environment configuration.
2. Modify the VSAM eWay Environment configuration properties for your system (see **Inbound VSAM eWay Properties** on page 26 and **(Outbound) VSAM CP eWay Properties** on page 26), and click **OK**.
3. From the **Environment Explorer** tree, right-click the File External System (**esFileClient** in this sample), and select **Properties**. The Properties Editor opens to the File eWay Environment configuration.
4. Modify the File eWay Environment configuration properties for your system, as seen in Table 14, and click **OK**.

Table 14 File eWay Environment Properties

Section	Property Name	Required Values
Configuration > Inbound File eWay > Parameter Settings	Directory	Enter the directory that contains the input files (trigger files included in the sample Project). Trigger files include: ▪ TriggerBpInsert.in.~in ▪ TriggerDelete.in.~in ▪ TriggerPsSelect.in.~in ▪ TriggerTableSelect.in.~in ▪ TriggerUpdate.in.~in
Configuration > Outbound File eWay > Parameter Settings	Directory	Enter the directory where output files are written. In this sample Project, the output files include: ▪ BPEL_Delete_output0.dat ▪ BPEL_Insert_output0.dat ▪ BPEL_PsSelect_output0.dat ▪ BPEL_TableSelect_output0.d at ▪ BPEL_Update_output0.dat

Configuring the Integration Server

You must set your SeeBeyond Integration Server Password property before deploying your Project.

1. From the Environment Explorer, right-click **IntegrationSvr1** under your **Logical Host**, and select **Properties** from the shortcut menu. The Integration Server Properties Editor appears.
2. Click the **Password** property field under **Sun SeeBeyond Integration Server Configuration**. An ellipsis appears in the property field.
3. Click the ellipsis. The **Password Settings** dialog box appears.
4. Enter **STC** as the **Specific Value** and as the **Confirm Password**, and click **OK**.
5. Click **OK** to accept the new property and close the Properties Editor.

For more information on deploying a Project see the *Sun SeeBeyond Java™ Composite Application Platform Suite Deployment Guide*.

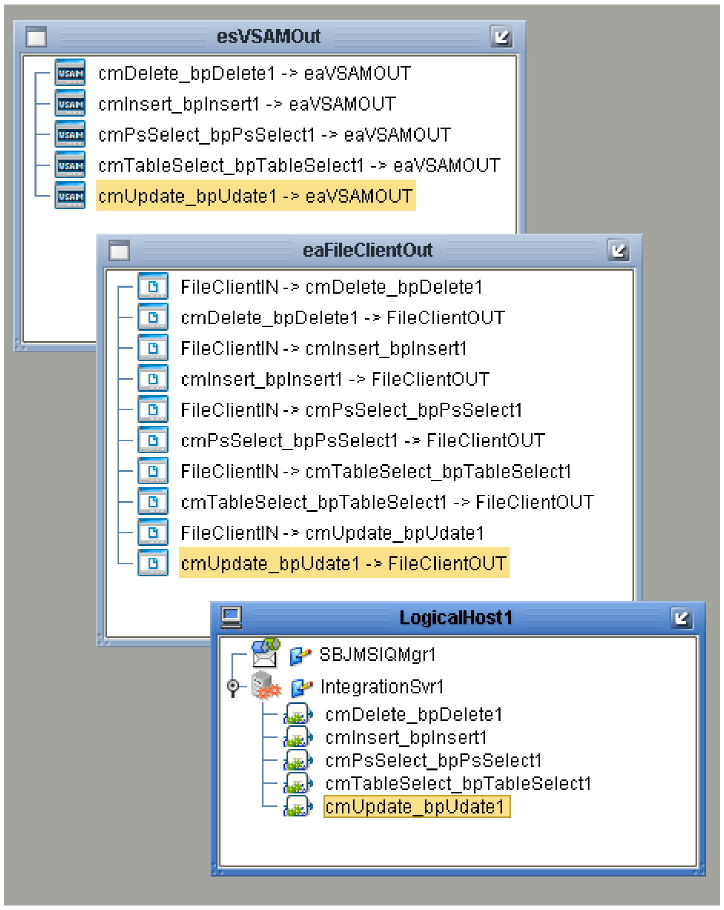
7.5.7 Creating the Deployment Profile

A Deployment Profile is used to assign services and message destinations to the Integration Server and message server. Deployment profiles are created using the Deployment Editor.

Steps required to create the Deployment Profile:

1. From the Enterprise Explorer's Project Explorer, right-click the **prjVSAM_BPEL** Project and select **New** > **Deployment Profile**.
2. Enter a name for the Deployment Profile (for this sample **dpVSAM_BPEL**). Select **envVSAMProj** as the Environment and click **OK**.
3. From the Deployment Editor toolbar, click the **Automap** icon. The Project's components are automatically mapped to their system windows, as seen in Figure 54.

Figure 54 Deployment Profile


esVSAMOut
cmDelete_bpDelete1 -> eaVSAMOUT
cmInsert_bpInsert1 -> eaVSAMOUT
cmPsSelect_bpPsSelect1 -> eaVSAMOUT
cmTableSelect_bpTableSelect1 -> eaVSAMOUT
cmUpdate_bpUdate1 -> eaVSAMOUT
eaFileClientOut
FileClientIN -> cmDelete_bpDelete1
cmDelete_bpDelete1 -> FileClientOUT
FileClientIN -> cmInsert_bpInsert1
cmInsert_bpInsert1 -> FileClientOUT
FileClientIN -> cmPsSelect_bpPsSelect1
cmPsSelect_bpPsSelect1 -> FileClientOUT
FileClientIN -> cmTableSelect_bpTableSelect1
cmTableSelect_bpTableSelect1 -> FileClientOUT
FileClientIN -> cmUpdate_bpUdate1
cmUpdate_bpUdate1 -> FileClientOUT
LogicalHost1
SBJMSIQMgr1
IntegrationSvr1
cmDelete_bpDelete1
cmInsert_bpInsert1
cmPsSelect_bpPsSelect1
cmTableSelect_bpTableSelect1
cmUpdate_bpUdate1

7.5.8 Creating and Starting the Domain

To build and deploy your Project, you must first create a domain. A domain is an instance of a Logical Host. After the domain is created, the Project is built and then deployed.

Note: *You are only required to create a domain once when you install the Sun Java Composite Application Platform Suite*

Steps required to create and start the domain:

1. Navigate to your **<JavaCAPS51>\logicalhost** directory (where <JavaCAPS51> is the location of your Sun Java Composite Application Platform Suite installation).
2. Double-click the **domainmgr.bat** file. The **Domain Manager** appears.
3. If you have already created a domain, select your domain in the Domain Manager and click the **Start an Existing Domain** button. Once your domain is started, a green check mark indicates that the domain is running.
4. If there are no existing domains, a dialog box indicates that you can create a domain now. Click **Yes**. The **Create Domain** dialog box appears.

5 Make any necessary changes to the **Create Domain** dialog box and click **Create**. The new domain is added to the Domain Manager. Select the domain and click the **Start an Existing Domain** button. Once your domain is started, a green check mark indicates that the domain is running.

Note: *For more information about creating and managing domains see the eGate Integrator System Administration Guide.*

7.5.9 Building and Deploying the Project

The Build process compiles and validates the Project's Java files and creates the Project EAR file.

Build the Project

1 From the Deployment Editor toolbar, click the **Build** icon.

2 If there are any validation errors, a **Validation Errors** pane will appear at the bottom of the Deployment Editor and displays information regarding the errors. Make any necessary corrections and click **Build** again.

3 After the Build has succeeded you are ready to deploy your Project.

Deploy the Project

1 From the Deployment Editor toolbar, click the **Deploy** icon. Click **Yes** when the **Deploy** prompt appears.

2 A message appears when the project is successfully deployed. You can now test your sample.

7.5.10 Running the Sample Project

Additional steps are required to run the deployed sample Project.

Steps required to run the sample Project:

1 Rename one of the trigger files included in the sample Project from **<filename>.in.~in** to **<filename>.in** to run the corresponding operation.

The File eWay polls the directory every five seconds for the input file name (as defined in the Inbound File eWay Properties window). The Business Process then transforms the data, and the File eWay sends the output to an Output file name (as defined in the outbound File eWay Properties window).

The Where Clause defined in the business rule recognizes the trigger as a placeholder for input, allowing a set condition, such as EMPID = 100, to determine the type of output data.

You can modify the following input files to view different output.

- TriggerTableSelect.in
- TriggerDelete.in
- TriggerUpdate.in

Having no content in these files causes the operation to read all records.

2 Verify the output data by viewing the sample output files. See **"About the VSAM eWay Sample Projects" on page 61** for more details on the types of output files used in this sample Project. The output files may change depending on the number of times you execute the sample Project, the input file, and also the content of your database table.

7.6 Building and Deploying the prjVSAM_JCD Sample Project

The following provides step-by-step instructions for manually creating the prjVSAM_JCD sample Project.

Steps required to create the sample project include:

- **Creating a Project** on page 92
- **Creating the OTDs** on page 92
- **Creating a Connectivity Map** on page 94
- **Creating the Collaboration Definitions (Java)** on page 95
- **Create the Collaboration Business Rules** on page 98
- **Binding the eWay Components** on page 105
- **Creating an Environment** on page 106
- **Configuring the eWays** on page 107
- **Creating the Deployment Profile** on page 110
- **Creating and Starting the Domain** on page 111
- **Building and Deploying the Project** on page 112
- **Running the Sample** on page 112

7.6.1 Creating a Project

The first step is to create a new Project in the Enterprise Designer.

1 Start the Enterprise Designer.

2 From the Project Explorer tree, right-click the Repository and select **New Project**. A new Project (**Project1**) appears on the Project Explorer tree.

3 Click twice on **Project1** and rename the Project (for this sample, **prjVSAM_JCD**).

7.6.2 Creating the OTDs

The sample Project requires three OTDs to interact with the VSAM eWay. These OTDs include:

- VSAM Database OTD
- Inbound DTD OTD
- Outbound DTD OTD

Steps required to create a VSAM Database OTD:

1. Right-click your new Project in the Enterprise Designer's Project Explorer, and select **New** > **Object Type Definition**.

   The New Object Type Definition Wizard window appears.

2. Select the **VSAM Database OTD Wizard** from the list of OTD Wizards and click **Next**.

3. Enter the connection information for the VSAM database. Connection fields include:

   - Host name:
   - Port ID:
   - Database Name:
   - User name:
   - Password:

4. Click **Next**, and select the types of database object you want to include in the sample Project. For our example, select the following:

   - Tables/Views/Aliases
   - Prepared Statements

5. Click **Add** to select tables from the VSAM database. The **Add Tables** window appears.

6. Search for or Type in the name of the database. In this example we use the **CICSEMP** table. Click **Select** when the database appears in the Results selection frame. Click **OK** to close the Add Tables window

7. Click **Next** the Add Prepared Statements Wizard appears.

8. Click **Add**, the Add Prepared Statement window appears. Enter the following:

   - Prepared Statement Name: Select_ps
   - SQL Statement:

   ```
   select * from CICSEMP where EMPID > ? order by EMPID
   ```

Note: *In this example, the SQL statement includes the* **?** *placeholder for input. This placeholder represents the Where Clause.*

9. Click the **OK** button to close the Prepared Statement window, and then click **Next** on the Prepared Statements Wizard window.

10. Enter an OTD name. In this example, use **otdVSAM**.

11. Click **Next** and review your settings, then click **Finish** to create the OTD.

Steps required to create inbound and outbound DTD OTDs include:

1. Right-click your new Project in the Enterprise Designer's Project Explorer, and select **New** > **Object Type Definition**.

   The New Object Type Definition Wizard window appears.
2. Select **DTD** from the list of OTD Wizards and click **Next**.
3. Browse to and then select a DTD file. For this example, select one of the following DTD files from the sample Project, and then click **Next**.
   - otdInputDTD.dtd
   - otdOutputDTD.dtd
4. The file you select appears in the Select Document Elements window. Click **Next**.
5. Click **Finish** to complete the DTD based OTD. Repeat this process again to create the second DTD file.

7.6.3 Creating a Connectivity Map

The Connectivity Map provides a canvas for assembling and configuring a Project's components.

Steps required to create a new Connectivity Map:

1. From the Project Explorer tree, right-click the new **prjVSAM_JCD** Project and select **New > Connectivity Map** from the shortcut menu.
2. The New Connectivity Map appears and a node for the Connectivity Map is added under the Project, on the Project Explorer tree labeled **CMap1**.

   Create four additional Connectivity Maps—**CMap2**, **CMap3**. **CMap4**, and **CMap5**— and rename them as follows:
   - cmDelete
   - cmInsert
   - cmPsSelect
   - cmTableSelect
   - cmUpdate

The icons in the toolbar represent the available components used to populate the Connectivity Map canvas.

Populating the Connectivity Map

Add the Project components to the Connectivity Map by dragging the icons from the toolbar to the canvas.

Each Connectivity Map in the **prjVSAM_JCD** sample Project requires the following components:

- File External Application (2)

- VSAM External Application
- Service

Any eWay added to the Connectivity Map is associated with an External System. To establish a connection to VSAM, first select VSAM as an External System to use in your Connectivity Map.

Steps required to select a VSAM External System:

1. Click the **External Application** icon on the Connectivity Map toolbar.
2. Select the external systems necessary to create your Project (for this sample, **VSAM** and **File**). Icons representing the selected external systems are added to the Connectivity Map toolbar.
3. Rename the following components and then save changes to the Repository:
   - File1 to FileClientIN
   - File2 to FileClientOUT
   - VSAM1 to eaVSAMOUT
4. Rename each Connectivity Map Service to match the intended operation, as for example:
   - jcdDelete
   - jcdInsert
   - jcdPsSelect
   - jcdTableSelect
   - jcdUpdate

7.6.4 Creating the Collaboration Definitions (Java)

The next step is to create Collaborations using the **Collaboration Definition Wizard (Java)**. Since the sample Project includes five database operations, you must create five separate Collaboration Definitions (Java), or JCDs. Once you create the Collaboration Definitions, you can write the Business Rules of the Collaborations using the Collaboration Editor.

JCDs required for the **prjVSAM_JCD** sample include:

- jcdDelete
- jcdInsert
- jcdPsSelect
- jcdTableSelect
- jcdUpdate

jcdDelete Collaboration

Steps required to create the jcdDelete Collaboration:

1. From the Project Explorer, right-click the sample Project and select **New** > **Collaboration Definition (Java)** from the shortcut menu. The **Collaboration Definition Wizard (Java)** appears.
2. Enter a Collaboration Definition name (for this sample **jcdDelete**) and click **Next**.
3. For Step 2 of the wizard, from the Web Services Interfaces selection window, double-click **Sun SeeBeyond** > **eWays** > **File** > **FileClient** > **receive**. The File Name field now displays **receive.** Click **Next**.
4. For Step 3 of the wizard, from the Select OTDs selection window, double-click **prjVSAM_JCD** > **otdALL** > **otdVSAM**. The **otdVSAM** OTD is added to the Selected OTDs field.
5. Click the **Up One Level** button twice to return to the Repository. Double-click **Sun SeeBeyond** > **eWays** > **File** > **FileClient**. The **Selected OTDs** field now lists the **FileClient** OTD.
6. Click **Finish**. The Collaboration Editor with the new **jcdDelete** Collaboration appears in the right pane of the Enterprise Designer.

jcdInsert Collaboration

Steps required to create the jcdInsert Collaboration:

1. From the Project Explorer, right-click the sample Project and select **New** > **Collaboration Definition (Java)** from the shortcut menu. The **Collaboration Definition Wizard (Java)** appears.
2. Enter a Collaboration Definition name (for this sample **jcdInsert**) and click **Next**.
3. For Step 2 of the wizard, from the Web Services Interfaces selection window, double-click **Sun SeeBeyond** > **eWays** > **File** > **FileClient** > **receive**. The File Name field now displays **receive.** Click **Next**.
4. For Step 3 of the wizard, from the Select OTDs selection window, double-click **prjVSAM_JCD** > **otdALL** > **otdVSAM**. The **otdVSAM** OTD is added to the Selected OTDs field.
5. In the same window, double-click **otdInputDTD_CICSEMP**. The **otdInputDTD_CICSEMP** OTD is added to the Selected OTDs field.

Note: *The otdOutputDTD_CICSEMP OTD is created from the otdInputDTD.dtd that is included in the Sample Project.*

6. Click the **Up One Level** button twice to return to the Repository. Double-click **Sun SeeBeyond** > **eWays** > **File** > **FileClient**. The **Selected OTDs** field now lists the **FileClient** OTD.
7. Click **Finish**. The Collaboration Editor with the new **jcdInsert** Collaboration appears in the right pane of the Enterprise Designer.

jcdPsSelect Collaboration

Steps required to create the jcdPsSelect Collaboration:

1. From the Project Explorer, right-click the sample Project and select **New** > **Collaboration Definition (Java)** from the shortcut menu. The **Collaboration Definition Wizard (Java)** appears.
2. Enter a Collaboration Definition name (for this sample **jcdPsSelect**) and click **Next**.
3. For Step 2 of the wizard, from the Web Services Interfaces selection window, double-click **Sun SeeBeyond** > **eWays** > **File** > **FileClient** > **receive**. The File Name field now displays **receive.** Click **Next**.
4. For Step 3 of the wizard, from the Select OTDs selection window, double-click **prjVSAM_JCD** > **otdALL** > **otdVSAM**. The **otdVSAM** OTD is added to the Selected OTDs field.
5. In the same window, double-click **otdOutputDTD_CICSEMP**. The **otdOutputDTD_CICSEMP** OTD is added to the Selected OTDs field.

   Note that the otdOutputDTD_CICSEMP OTD is created from the otdOutputDTD.dtd that is included in the Sample Project.
6. Click the **Up One Level** button twice to return to the Repository. Double-click **Sun SeeBeyond** > **eWays** > **File** > **FileClient**. The **Selected OTDs** field now lists the **FileClient** OTD.
7. Click **Finish**. The Collaboration Editor with the new **jcdPsSelect** Collaboration appears in the right pane of the Enterprise Designer.

jcdTableSelect Collaboration

Steps required to create the jcdTableSelect Collaboration:

1. From the Project Explorer, right-click the sample Project and select **New** > **Collaboration Definition (Java)** from the shortcut menu. The **Collaboration Definition Wizard (Java)** appears.
2. Enter a Collaboration Definition name (for this sample **jcdTableSelect**) and click **Next**.
3. For Step 2 or the wizard, from the Web Services Interfaces selection window, double-click **Sun SeeBeyond** > **eWays** > **File** > **FileClient** > **receive**. The File Name field now displays **receive.** Click **Next**.
4. For Step 3 of the wizard, from the Select OTDs selection window, double-click **prjVSAM_JCD** > **otdALL** > **otdVSAM**. The **otdVSAM** OTD is added to the Selected OTDs field.
5. In the same window, double-click **otdOutputDTD_CICSEMP**. The **otdOutputDTD_CICSEMP** OTD is added to the Selected OTDs field.

Note: *The otdOutputDTD_CICSEMP OTD is created from the otdOutputDTD.dtd that is included in the Sample Project.*

6 Click the **Up One Level** button twice to return to the Repository. Double-click **Sun SeeBeyond** > **eWays** > **File** > **FileClient**. The **Selected OTDs** field now lists the **FileClient** OTD.

7 Click **Finish**. The Collaboration Editor with the new **jcdTableSelect** Collaboration appears in the right pane of the Enterprise Designer.

jcdUpdate Collaboration

Steps required to create the jcdUpdate Collaboration:

1 From the Project Explorer, right-click the sample Project and select **New** > **Collaboration Definition (Java)** from the shortcut menu. The **Collaboration Definition Wizard (Java)** appears.

2 Enter a Collaboration Definition name (for this sample **jcdUpdate**) and click **Next**.

3 For Step 2 of the wizard, from the Web Services Interfaces selection window, double-click **Sun SeeBeyond** > **eWays** > **File** > **FileClient** > **receive**. The File Name field now displays **receive.** Click **Next**.

4 For Step 3 of the wizard, from the Select OTDs selection window, double-click **prjVSAM_JCD > otdALL > otdVSAM**. The **otdVSAM** OTD is added to the Selected OTDs field.

5 Click the **Up One Level** button twice to return to the Repository. Double-click **Sun SeeBeyond** > **eWays** > **File** > **FileClient**. The **Selected OTDs** field now lists the **FileClient** OTD.

6 Click **Finish**. The Collaboration Editor with the new **jcdUpdate** Collaboration appears in the right pane of the Enterprise Designer.

7.6.5 Create the Collaboration Business Rules

The next step in the sample is to create the Business Rules of the Collaboration using the Collaboration Editor.

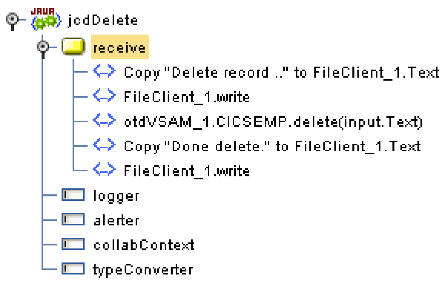
Creating the jcdDelete Business Rules

The **jcdDelete** Collaboration implements the Input Web Service Operation to read the **TriggerDelete.in** file and then delete a record under a specific criteria. The Collaboration also writes a message to **JCD_Delete_output0.dat** to confirm a deleted record.

Note: *The where clause in the business rule reads the trigger value as a placeholder for input. This permits you to modify the query to select a specific record. Also note that all records are deleted from the database when the TriggerDelete.in file is empty.*

The **jcdDelete** Collaboration contains the Business Rules displayed in Figure 55.

Figure 55 jcdDelete Business Rules



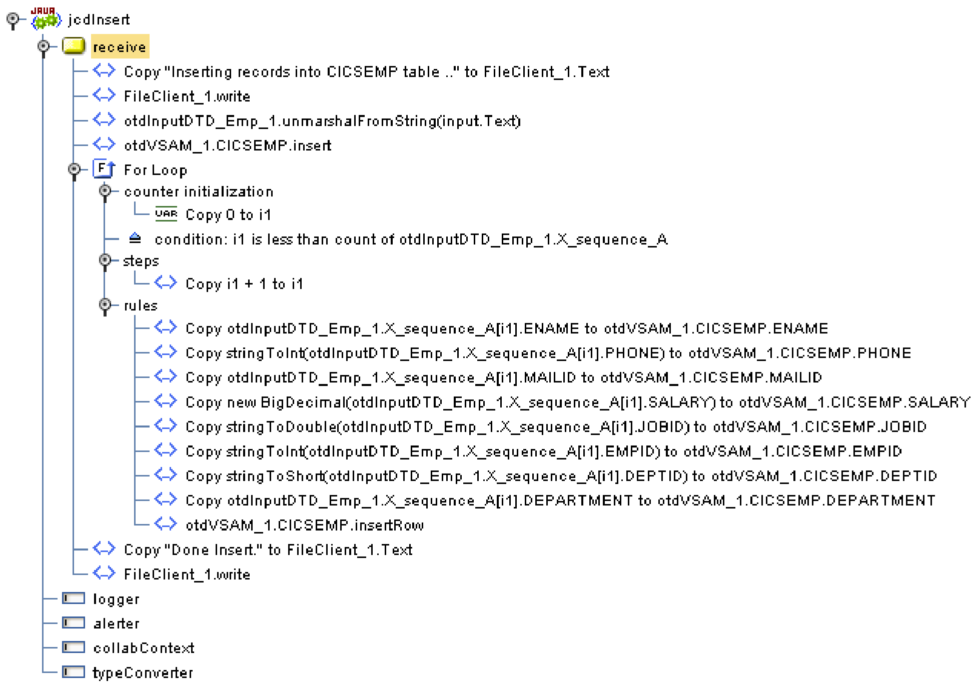
```
jcdDelete
  receive
    Copy "Delete record .." to FileClient_1.Text
    FileClient_1.write
    otdVSAM_1.CICSEMP.delete(input.Text)
    Copy "Done delete." to FileClient_1.Text
    FileClient_1.write
  logger
  alerter
  collabContext
  typeConverter
```

Creating the jcdInsert Business Rules

The **jcdInsert** Collaboration implements the Input Web Service Operation to read the **TriggerInsert.in**. file. It then unmarshals data from the input data into the **otdInputDTD_CICSEMP** OTD, calls the **otdVSAM** OTD, and inserts records into the database via a For Loop. The Collaboration also writes a message to **JCD_Insert_output0.dat** to confirm an inserted record.

The **jcdInsert** Collaboration contains the Business Rules displayed in Figure 56.

Figure 56 jcdInsert Business Rules



```
jcdInsert
  receive
    Copy "Inserting records into CICSEMP table .." to FileClient_1.Text
    FileClient_1.write
    otdInputDTD_Emp_1.unmarshalFromString(input.Text)
    otdVSAM_1.CICSEMP.insert
    For Loop
      counter initialization
        Copy 0 to i1
      condition: i1 is less than count of otdInputDTD_Emp_1.X_sequence_A
      steps
        Copy i1 + 1 to i1
      rules
        Copy otdInputDTD_Emp_1.X_sequence_A[i1].ENAME to otdVSAM_1.CICSEMP.ENAME
        Copy stringToInt(otdInputDTD_Emp_1.X_sequence_A[i1].PHONE) to otdVSAM_1.CICSEMP.PHONE
        Copy otdInputDTD_Emp_1.X_sequence_A[i1].MAILID to otdVSAM_1.CICSEMP.MAILID
        Copy new BigDecimal(otdInputDTD_Emp_1.X_sequence_A[i1].SALARY) to otdVSAM_1.CICSEMP.SALARY
        Copy stringToDouble(otdInputDTD_Emp_1.X_sequence_A[i1].JOBID) to otdVSAM_1.CICSEMP.JOBID
        Copy stringToInt(otdInputDTD_Emp_1.X_sequence_A[i1].EMPID) to otdVSAM_1.CICSEMP.EMPID
        Copy stringToShort(otdInputDTD_Emp_1.X_sequence_A[i1].DEPTID) to otdVSAM_1.CICSEMP.DEPTID
        Copy otdInputDTD_Emp_1.X_sequence_A[i1].DEPARTMENT to otdVSAM_1.CICSEMP.DEPARTMENT
        otdVSAM_1.CICSEMP.insertRow
    Copy "Done Insert." to FileClient_1.Text
    FileClient_1.write
  logger
  alerter
  collabContext
  typeConverter
```

Sample code from the jcdInsert Includes:

```
package prjVSAM_JCDjcdALL;
public class jcdInsert
{
    public com.stc.codegen.logger.Logger logger;
    public com.stc.codegen.alerter.Alerter alerter;
    public com.stc.codegen.util.CollaborationContext collabContext;
    public com.stc.codegen.util.TypeConverter typeConverter;

public void receive( com.stc.connector.appconn.file.FileTextMessage
input, dtd.otdInputDTD_622919076.Emp otdInputDTD_Emp_1,
otdVSAM.OtdVSAMOTD otdVSAM_1,
com.stc.connector.appconn.file.FileApplication FileClient_1 )
        throws Throwable
    {
```

\\ Writes out a message stating records are being inserted.

```
    FileClient_1.setText( "Inserting records into CICSEMP table .."
);
        FileClient_1.write();
```

\\ Unmarshals data from the input XML data into the otdInputDTD_DBEmployees OTD.

```
        otdInputDTD_Emp_1.unmarshalFromString( input.getText() );
```

\\ Calls the otdVSAM OTD, and inserts multiple records into the database via a For Loop. The first insert() method opens the table result set for insert operations, while the insertRow() method inserts records into the table result set.

```
        otdVSAM_1.getCICSEMP().insert();
        for (int i1 = 0; i1 < otdInputDTD_Emp_1.countX_sequence_A();
i1 += 1) {
            otdVSAM_1.getCICSEMP().setENAME(
otdInputDTD_Emp_1.getX_sequence_A( i1 ).getENAME() );
            otdVSAM_1.getCICSEMP().setPHONE(
typeConverter.stringToInt( otdInputDTD_Emp_1.getX_sequence_A( i1
).getPHONE(), "#", false, 0 ) );
            otdVSAM_1.getCICSEMP().setMAILID(
otdInputDTD_Emp_1.getX_sequence_A( i1 ).getMAILID() );
            otdVSAM_1.getCICSEMP().setSALARY( new
java.math.BigDecimal( otdInputDTD_Emp_1.getX_sequence_A( i1
).getSALARY() ) );
            otdVSAM_1.getCICSEMP().setJOBID(
typeConverter.stringToDouble( otdInputDTD_Emp_1.getX_sequence_A( i1
).getJOBID(), "#.000000;-#.000000", false, 0 ) );
            otdVSAM_1.getCICSEMP().setEMPID(
typeConverter.stringToInt( otdInputDTD_Emp_1.getX_sequence_A( i1
).getEMPID(), "#", false, 0 ) );
            otdVSAM_1.getCICSEMP().setDEPTID(
typeConverter.stringToShort( otdInputDTD_Emp_1.getX_sequence_A( i1
).getDEPTID(), "#", false, 0 ) );
            otdVSAM_1.getCICSEMP().setDEPARTMENT(
otdInputDTD_Emp_1.getX_sequence_A( i1 ).getDEPARTMENT() );
            otdVSAM_1.getCICSEMP().insertRow();
```

\\ Writes a message to confirm an inserted records.

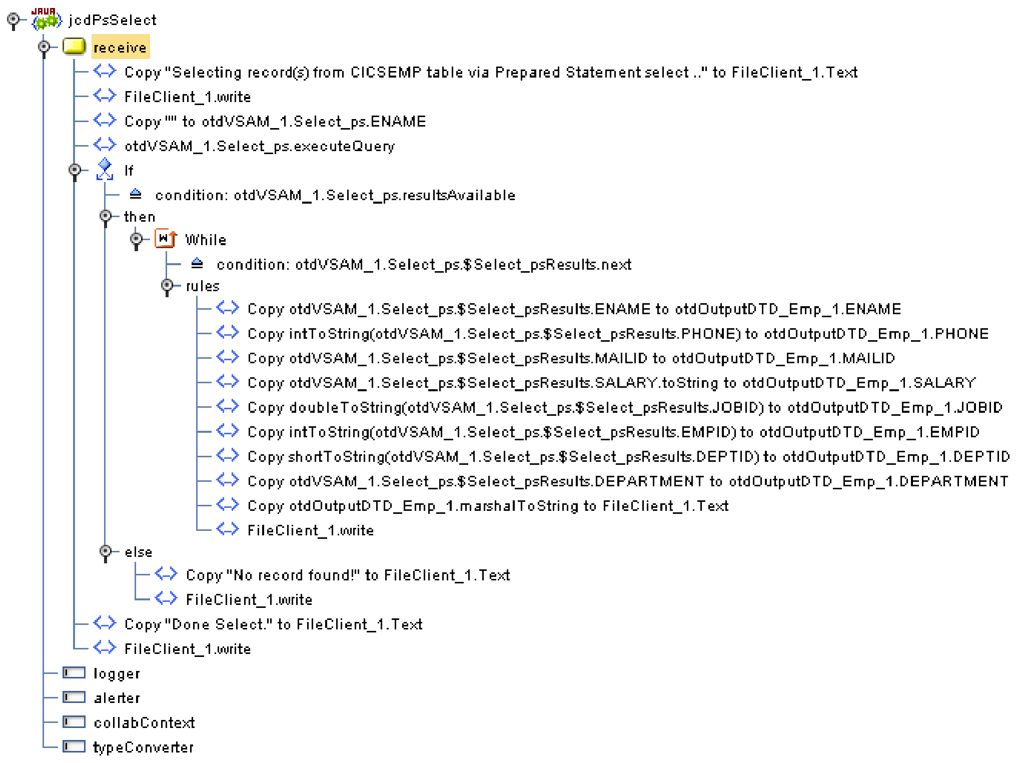
```
        }
        FileClient_1.setText( "Done Insert." );
        FileClient_1.write();
    }
}
```

Creating the jcdPsSelect Business Rules

The **jcdPsSelect** Collaboration implements the Input Web Service Operation to read the **TriggerPsSelect.in** file. It then copies the database resultset (as noted in the prepared statement query) into the **otdInputDTD_CICSEMP** OTD and selects all available records from the database. The Collaboration also writes a message to **JCD_PsSelect_output0.dat** to confirm when records are selected, or when no records are available.

The **jcdPsSelect** Collaboration contains the Business Rules displayed in Figure 57.

Figure 57 jcdPsSelect



```
jcdPsSelect
  receive
    Copy "Selecting record(s) from CICSEMP table via Prepared Statement select .." to FileClient_1.Text
    FileClient_1.write
    Copy "" to otdVSAM_1.Select_ps.ENAME
    otdVSAM_1.Select_ps.executeQuery
    If
      condition: otdVSAM_1.Select_ps.resultsAvailable
      then
        While
          condition: otdVSAM_1.Select_ps.$Select_psResults.next
          rules
            Copy otdVSAM_1.Select_ps.$Select_psResults.ENAME to otdOutputDTD_Emp_1.ENAME
            Copy intToString(otdVSAM_1.Select_ps.$Select_psResults.PHONE) to otdOutputDTD_Emp_1.PHONE
            Copy otdVSAM_1.Select_ps.$Select_psResults.MAILID to otdOutputDTD_Emp_1.MAILID
            Copy otdVSAM_1.Select_ps.$Select_psResults.SALARY.toString to otdOutputDTD_Emp_1.SALARY
            Copy doubleToString(otdVSAM_1.Select_ps.$Select_psResults.JOBID) to otdOutputDTD_Emp_1.JOBID
            Copy intToString(otdVSAM_1.Select_ps.$Select_psResults.EMPID) to otdOutputDTD_Emp_1.EMPID
            Copy shortToString(otdVSAM_1.Select_ps.$Select_psResults.DEPTID) to otdOutputDTD_Emp_1.DEPTID
            Copy otdVSAM_1.Select_ps.$Select_psResults.DEPARTMENT to otdOutputDTD_Emp_1.DEPARTMENT
            Copy otdOutputDTD_Emp_1.marshalToString to FileClient_1.Text
            FileClient_1.write
      else
        Copy "No record found!" to FileClient_1.Text
        FileClient_1.write
    Copy "Done Select." to FileClient_1.Text
    FileClient_1.write
  logger
  alerter
  collabContext
  typeConverter
```

Sample code from the jcdPsSelect Includes:

```
package prjVSAM_JCDjcdALL;

public class jcdPsSelect
{

    public com.stc.codegen.logger.Logger logger;
    public com.stc.codegen.alerter.Alerter alerter;
    public com.stc.codegen.util.CollaborationContext collabContext;
    public com.stc.codegen.util.TypeConverter typeConverter;
    public void receive(

com.stc.connector.appconn.file.FileTextMessage input,
otdVSAM.OtdVSAMOTD otdVSAM_1, dtd.otdOutputDTD_1935483687.Emp
otdOutputDTD_Emp_1, com.stc.connector.appconn.file.FileApplication
FileClient_1 )
        throws Throwable
    {

\\ Writes out a message stating records are being selected
```

```
        FileClient_1.setText( "Selecting record(s) from CICSEMP table
via Prepared Statement select .." );
```

\\ Copies the database resultset into the otdInputDTD_DBEmployee OTD and selects all available records from the database. The executeQuery() method executes the prepared statement query, while the resultsAvailable() method ensures all rows are retrieved in the while loop.

```
         FileClient_1.write();
        otdVSAM_1.getSelect_ps().setENAME( "" );
        otdVSAM_1.getSelect_ps().executeQuery();
        if (otdVSAM_1.getSelect_ps().resultsAvailable()) {
            while
(otdVSAM_1.getSelect_ps().get$Select_psResults().next()) {
                otdOutputDTD_Emp_1.setENAME(
otdVSAM_1.getSelect_ps().get$Select_psResults().getENAME() );
                otdOutputDTD_Emp_1.setPHONE(
typeConverter.intToString(
otdVSAM_1.getSelect_ps().get$Select_psResults().getPHONE(), "#",
false, "" ) );
                otdOutputDTD_Emp_1.setMAILID(
otdVSAM_1.getSelect_ps().get$Select_psResults().getMAILID() );
                otdOutputDTD_Emp_1.setSALARY(
otdVSAM_1.getSelect_ps().get$Select_psResults().getSALARY().toString(
) );
                otdOutputDTD_Emp_1.setJOBID(
typeConverter.doubleToString(
otdVSAM_1.getSelect_ps().get$Select_psResults().getJOBID(),
"#.000000;-#.000000", false, "" ) );
                otdOutputDTD_Emp_1.setEMPID(
typeConverter.intToString(
otdVSAM_1.getSelect_ps().get$Select_psResults().getEMPID(), "#",
false, "" ) );
                otdOutputDTD_Emp_1.setDEPTID(
typeConverter.shortToString(
otdVSAM_1.getSelect_ps().get$Select_psResults().getDEPTID(), "#",
false, "" ) );
                otdOutputDTD_Emp_1.setDEPARTMENT(
otdVSAM_1.getSelect_ps().get$Select_psResults().getDEPARTMENT() );
                FileClient_1.setText(
otdOutputDTD_Emp_1.marshalToString() );
                FileClient_1.write();
            }
        } else {
            FileClient_1.setText( "No record found!" );
            FileClient_1.write();
        }
```

\\ Writes a message to JCD_PsSelect_output0.dat to confirm when records are selected, or when no records are available.

```
        FileClient_1.setText( "Done Select." );
        FileClient_1.write();
    }
}
```

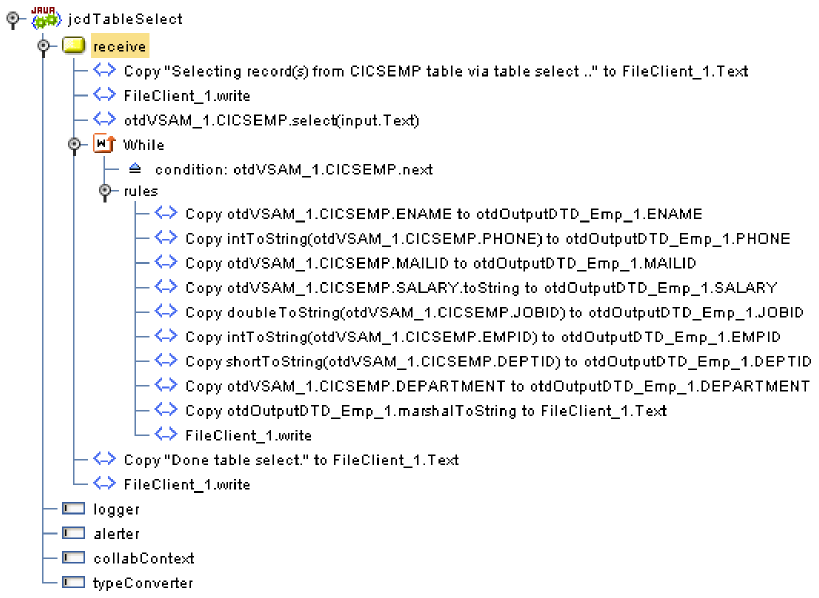
Creating the jcdTableSelect Business Rules

The **jcdTableSelect** Collaboration implements the Input Web Service Operation to read the **TriggerTableSelect.in** file. It then copies the database resultset into the **otdInputDTD_CICSEMP** OTD and selects all available records from the database that meet the criteria **EMPID=49**. The Collaboration also writes a message to **JCD_TableSelect_output0.dat** to confirm when records are selected, or when no records are available.

Note: *The where clause in the business rule reads the trigger value as a placeholder for input. This permits you to modify the query to select a specific record. Also note that all records are selected from the database when the TriggerTableSelect.in file is empty.*

The **jcdTableSelect** Collaboration contains the Business Rules displayed in Figure 58.

Figure 58 jcdTableSelect



```
jcdTableSelect
  receive
    Copy "Selecting record(s) from CICSEMP table via table select .." to FileClient_1.Text
    FileClient_1.write
    otdVSAM_1.CICSEMP.select(input.Text)
    While
      condition: otdVSAM_1.CICSEMP.next
      rules
        Copy otdVSAM_1.CICSEMP.ENAME to otdOutputDTD_Emp_1.ENAME
        Copy intToString(otdVSAM_1.CICSEMP.PHONE) to otdOutputDTD_Emp_1.PHONE
        Copy otdVSAM_1.CICSEMP.MAILID to otdOutputDTD_Emp_1.MAILID
        Copy otdVSAM_1.CICSEMP.SALARY.toString to otdOutputDTD_Emp_1.SALARY
        Copy doubleToString(otdVSAM_1.CICSEMP.JOBID) to otdOutputDTD_Emp_1.JOBID
        Copy intToString(otdVSAM_1.CICSEMP.EMPID) to otdOutputDTD_Emp_1.EMPID
        Copy shortToString(otdVSAM_1.CICSEMP.DEPTID) to otdOutputDTD_Emp_1.DEPTID
        Copy otdVSAM_1.CICSEMP.DEPARTMENT to otdOutputDTD_Emp_1.DEPARTMENT
        Copy otdOutputDTD_Emp_1.marshalToString to FileClient_1.Text
        FileClient_1.write
    Copy "Done table select." to FileClient_1.Text
    FileClient_1.write
  logger
  alerter
  collabContext
  typeConverter
```

Sample code from the jcdTableSelect Includes:

```
package prjVSAM_JCDjcdALL;

public class jcdTableSelect
{

    public com.stc.codegen.logger.Logger logger;
    public com.stc.codegen.alerter.Alerter alerter;
    public com.stc.codegen.util.CollaborationContext collabContext;
    public com.stc.codegen.util.TypeConverter typeConverter;

public void receive( com.stc.connector.appconn.file.FileTextMessage
input, otdVSAM.OtdVSAMOTD otdVSAM_1, dtd.otdOutputDTD_1935483687.Emp
otdOutputDTD_Emp_1, com.stc.connector.appconn.file.FileApplication
FileClient_1 )
        throws Throwable
    {

\\ Writes out a message stating records are being selected.

       FileClient_1.setText( "Selecting record(s) from CICSEMP table
via table select .." );
        FileClient_1.write();
\\ Copies the database resultset into the otdInputDTD_CICSEMP (XML
OTD) and selects all available records from the database that meet the
criteria EMPID=49. Checking the next() method ensures all rows are
retrieved in the while loop.

        otdVSAM_1.getCICSEMP().select( input.getText() );
        while (otdVSAM_1.getCICSEMP().next()) {
            otdOutputDTD_Emp_1.setENAME(
otdVSAM_1.getCICSEMP().getENAME() );
            otdOutputDTD_Emp_1.setPHONE( typeConverter.intToString(
otdVSAM_1.getCICSEMP().getPHONE(), "#", false, "" ) );
            otdOutputDTD_Emp_1.setMAILID(
otdVSAM_1.getCICSEMP().getMAILID() );
            otdOutputDTD_Emp_1.setSALARY(
otdVSAM_1.getCICSEMP().getSALARY().toString() );
          otdOutputDTD_Emp_1.setJOBID( typeConverter.doubleToString(
otdVSAM_1.getCICSEMP().getJOBID(), "#.000000;-#.000000", false, "" )
);
            otdOutputDTD_Emp_1.setEMPID( typeConverter.intToString(
otdVSAM_1.getCICSEMP().getEMPID(), "#", false, "" ) );
          otdOutputDTD_Emp_1.setDEPTID( typeConverter.shortToString(
otdVSAM_1.getCICSEMP().getDEPTID(), "#", false, "" ) );
            otdOutputDTD_Emp_1.setDEPARTMENT(
otdVSAM_1.getCICSEMP().getDEPARTMENT() );

\\ marshals XML data from the output data into the
otdOutputDTD_CICSEMP_1.marshallToString() method.

          FileClient_1.setText( otdOutputDTD_Emp_1.marshalToString()
);
            FileClient_1.write();
        }

\\ Writes a message to confirm when records are selected, or when no
records are available.

        FileClient_1.setText( "Done table select." );
        FileClient_1.write();
    }
}
```

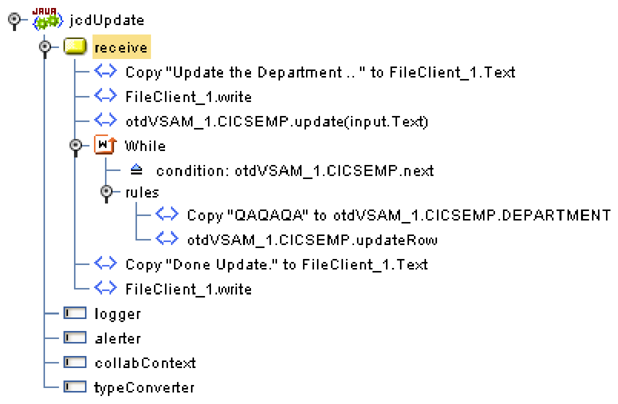
Creating the jcdUpdate Business Rules

The **jcdUpdate** Collaboration implements the Input Web Service Operation to read the **TriggerUpdate.in**. file and then update arecord under a specific criteria. The Collaboration also writes a message to **JCD_Update_output0.dat** to confirm an updated record.

Note: *The where clause in the business rule reads the trigger value as a placeholder for input. This permits you to modify the query to select a specific record. Also note that all records are selected from the database when the TriggerUpdate.in file is empty.*

The **jcdUpdate** Collaboration contains the Business Rules displayed in Figure 59.

Figure 59 jcdUpdate



```
jcdUpdate
  receive
    Copy "Update the Department .. " to FileClient_1.Text
    FileClient_1.write
    otdVSAM_1.CICSEMP.update(input.Text)
    While
      condition: otdVSAM_1.CICSEMP.next
      rules
        Copy "QAQAQA" to otdVSAM_1.CICSEMP.DEPARTMENT
        otdVSAM_1.CICSEMP.updateRow
    Copy "Done Update." to FileClient_1.Text
    FileClient_1.write
  logger
  alerter
  collabContext
  typeConverter
```

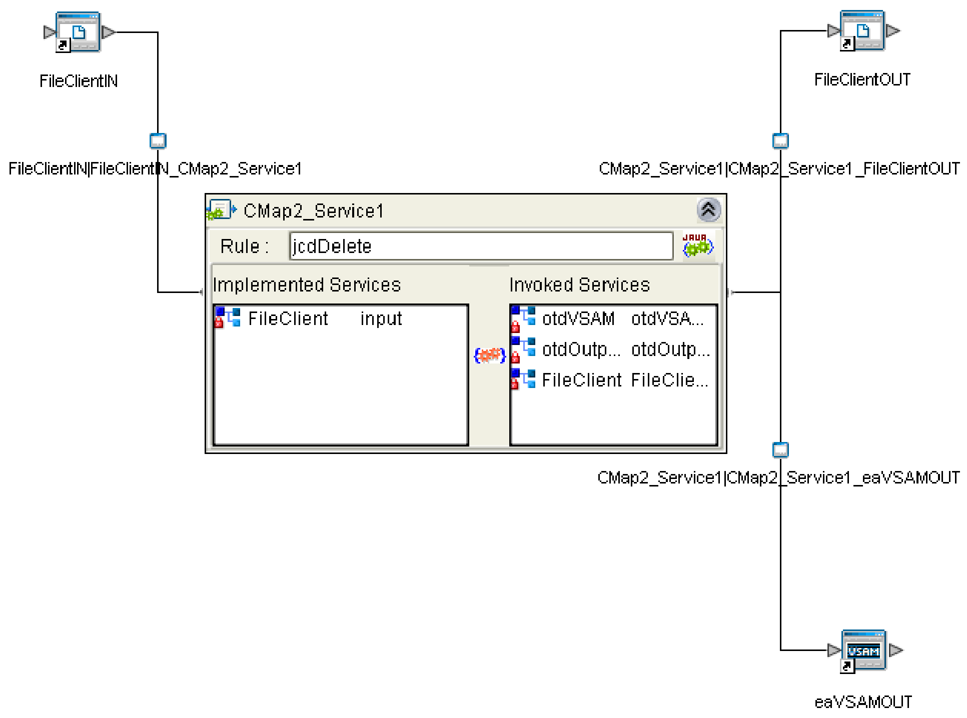
7.6.6 Binding the eWay Components

The final step in creating a Connectivity Map is binding the eWay components together.

Steps required to bind eWay components together:

1. Double-click a Connectivity Map—in this example **cmDelete**—in the Project Explorer tree. The **cmDelete** Connectivity Map appears in the Enterprise Designers canvas.
2. Drag and drop the **jcdDelete** Collaboration from the Project Explorer to the **jcdDelete** Service. The Service icon “gears” change from red to green.
3. Double-click the **jcdDelete** Service. The **jcdDelete** Binding dialog box appears.
4. Map the input **FileClient** (under Implemented Services) to the **FileClientIN** (File) External Application. To do this, click on **FileSender** in the **jcdDelete** Binding dialog box, and drag the cursor to the **FileClientIN** External Application in the Connectivity Map. A link is now visible between **FileClientIN** and **jcdDelete**.
5. From the **bpDelete** Binding dialog box, map **otdVSAM_1** (under Invoked Services) to the **eaVSAMOUT** External Application.
6. From the **jcdDelete** Binding dialog box, map **FileClient_1** to the **FileClientOUT** External Application, as seen in Figure 60.

Figure 60 Connectivity Map - Associating (Binding) the Project's Components



7 Minimize the **jcdDelete** Binding dialog box by clicking the chevrons in the upper-right corner.

8 Save your current changes to the Repository, and then repeat this process for each of the other Connectivity Maps.

7.6.7 Creating an Environment

Environments include the external systems, Logical Hosts, Integration Servers and message servers used by a Project and contain the configuration information for these components. Environments are created using the Enterprise Designer's Environment Editor.

Steps required to create an Environment:

1 From the Enterprise Designer's Enterprise Explorer, click the **Environment Explorer** tab.

2 Right-click the Repository and select **New Environment**. A new Environment is added to the Environment Explorer tree.

3 Rename the new Environment to **envVSAMProj**.

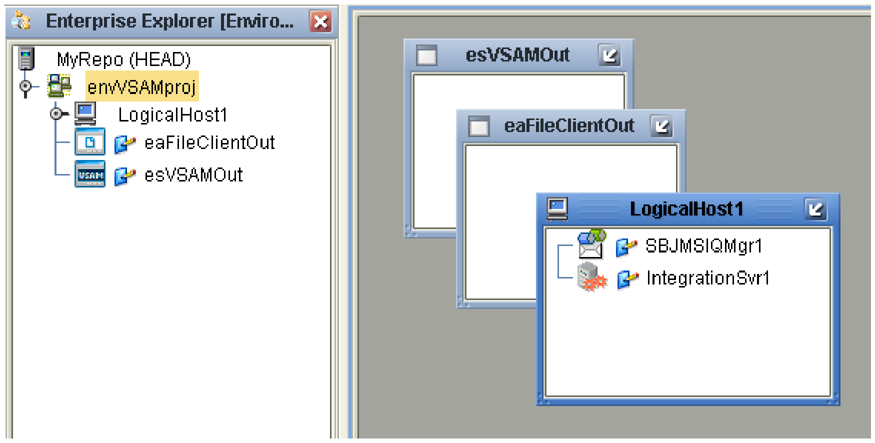
4 Right-click **envVSAMProj** and select **New > VSAM External System**. Name the External System **esVSAM.** Click **OK**. **esVSAM** is added to the Environment Editor.

5 Right-click **envVSAMProj** and select **New > File External System**. Name the External System **esFileClient**. Click **OK**. **esFileClient** is added to the Environment Editor.

6 Right-click **envVSAMProj** and select **New > Logical Host**. The **LogicalHost1** box is added to the Environment and **LogicalHost1** is added to the Environment Editor tree.

7 Right-click **LogicalHost1** and select **New > Sun SeeBeyond Integration Server**. A new Integration Server (**IntegrationSvr1**) is added to the Environment Explorer tree under **LogicalHost1** (see Figure 61).

Figure 61 Environment Editor - envVSAMProj



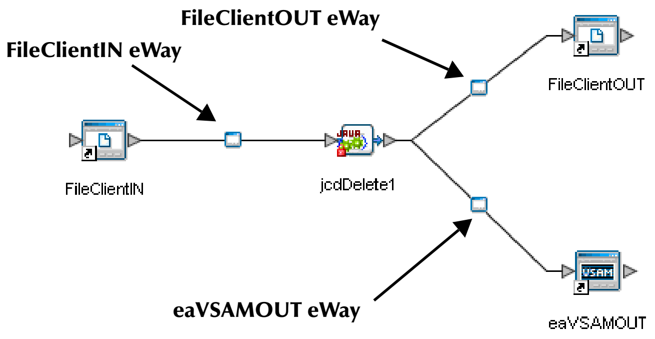
8 Save your current changes to the Repository.

7.6.8 Configuring the eWays

eWays facilitate communication and movement of data between the external applications and the eGate system. Each Connectivity Map in the The **prjVSAM_JCD** sample Project use three eWays that are represented as a nodes between the External Applications and the Business Process, as seen in Figure 62.

You must configure eWay properties in both the Connectivity Map and the Environment Explorer.

Figure 62 eWays in the cmDelete Connectivity Map



Configuring the eWay Properties

Steps required to configure the eWay properties:

1 Double-click the **FileClientIN** eWay on each of the Connectivity Maps and modify the properties for your system, as seen in Table 15. Click **OK** to close the Properties Editor.

Table 15 FileClientIN eWay Property Settings

Connectivity Map	Property Name	Required Values
cmDelete	Input file name	TriggerDelete.in
cmInsert	Input file name	TriggerInsert.in
cmPsSelect	Input file name	TriggerPsSelect.in
cmTableSelect	Input file name	TriggerTableSelect.in
cmUpdate	Input file name	TriggerUpdate.in

2 Double-click the **FileClientOUT** eWay on each of the Connectivity Maps and modify the properties for your system, as seen in Table 16. Click **OK** to close the Properties Editor.

Table 16 FileClientOUT eWay Property Settings

Connectivity Map	Property Name	Required Values
cmDelete	Output file name	JCD_Delete_output%d.dat
cmInsert	Output file name	JCD_Insert_output%d.dat
cmPsSelect	Output file name	JCD_PsSelect_output%d.dat
cmTableSelect	Output file name	JCD_TableSelect_output%d.dat
cmUpdate	Output file name	JCD_Update_output%d.dat

Configuring the Environment Explorer Properties

Steps required to configure the Environment Explorer properties:

1. From the **Environment Explorer** tree, right-click the VSAM External System (**esVSAM** in this sample), and select **Properties**. The Properties Editor opens to the VSAM eWay Environment configuration.
2. Modify the VSAM eWay Environment configuration properties for your system (see **Inbound VSAM eWay Properties** on page 26 and **(Outbound) VSAM CP eWay Properties** on page 26), and click **OK**.
3. From the **Environment Explorer** tree, right-click the File External System (**esFileClient** in this sample), and select **Properties**. The Properties Editor opens to the File eWay Environment configuration.
4. Modify the File eWay Environment configuration properties for your system, as seen in Table 17, and click **OK**.

Table 17 File eWay Environment Properties

Section	Property Name	Required Values
Configuration > Inbound File eWay > Parameter Settings	Directory	Enter the directory that contains the input files (trigger files included in the sample Project). Trigger files include: ▪ TriggerBpInsert.in.~in ▪ TriggerDelete.in.~in ▪ TriggerPsSelect.in.~in ▪ TriggerTableSelect.in.~in ▪ TriggerUpdate.in.~in
Configuration > Outbound File eWay > Parameter Settings	Directory	Enter the directory where output files are written. In this sample Project, the output files include: ▪ BPEL_Delete_output0.dat ▪ BPEL_Insert_output0.dat ▪ BPEL_PsSelect_output0.dat ▪ BPEL_TableSelect_output0.d at ▪ BPEL_Update_output0.dat

Configuring the Integration Server

You must set your SeeBeyond Integration Server Password property before deploying your Project.

1. From the Environment Explorer, right-click **IntegrationSvr1** under your **Logical Host**, and select **Properties** from the shortcut menu. The Integration Server Properties Editor appears.
2. Click the **Password** property field under **Sun SeeBeyond Integration Server Configuration**. An ellipsis appears in the property field.
3. Click the ellipsis. The **Password Settings** dialog box appears.
4. Enter **STC** as the **Specific Value** and as the **Confirm Password**, and click **OK**.
5. Click **OK** to accept the new property and close the Properties Editor.

For more information on deploying a Project see the *Sun SeeBeyond Java™ Composite Application Platform Suite Deployment Guide*.

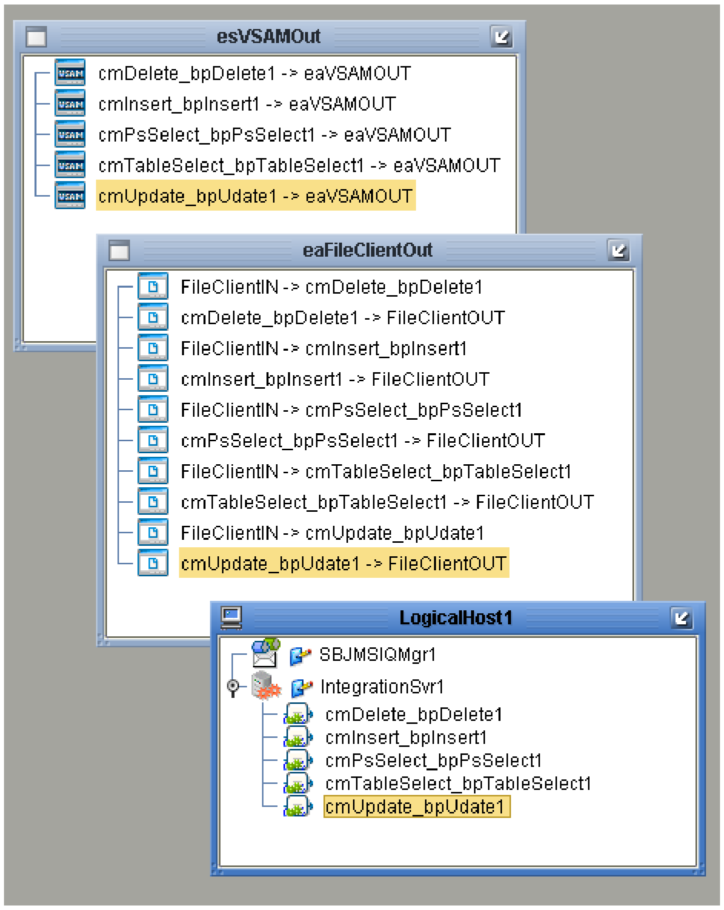
7.6.9 Creating the Deployment Profile

A Deployment Profile is used to assign services and message destinations to the Integration Server and message server. Deployment profiles are created using the Deployment Editor.

Steps required to create the Deployment Profile:

1. From the Enterprise Explorer's Project Explorer, right-click the **prjVSAM_JCD** Project and select **New** > **Deployment Profile**.
2. Enter a name for the Deployment Profile (for this sample **dpVSAM_JCD**). Select **envVSAMProj** as the Environment and click **OK**.
3. From the Deployment Editor toolbar, click the **Automap** icon. The Project's components are automatically mapped to their system windows, as seen in Figure 63.

Figure 63 Deployment Profile


esVSAMOut
cmDelete_bpDelete1 -> eaVSAMOUT
cmInsert_bpInsert1 -> eaVSAMOUT
cmPsSelect_bpPsSelect1 -> eaVSAMOUT
cmTableSelect_bpTableSelect1 -> eaVSAMOUT
cmUpdate_bpUdate1 -> eaVSAMOUT
eaFileClientOut
FileClientIN -> cmDelete_bpDelete1
cmDelete_bpDelete1 -> FileClientOUT
FileClientIN -> cmInsert_bpInsert1
cmInsert_bpInsert1 -> FileClientOUT
FileClientIN -> cmPsSelect_bpPsSelect1
cmPsSelect_bpPsSelect1 -> FileClientOUT
FileClientIN -> cmTableSelect_bpTableSelect1
cmTableSelect_bpTableSelect1 -> FileClientOUT
FileClientIN -> cmUpdate_bpUdate1
cmUpdate_bpUdate1 -> FileClientOUT
LogicalHost1
SBJMSIQMgr1
IntegrationSvr1
cmDelete_bpDelete1
cmInsert_bpInsert1
cmPsSelect_bpPsSelect1
cmTableSelect_bpTableSelect1
cmUpdate_bpUdate1

7.6.10 Creating and Starting the Domain

To build and deploy your Project, you must first create a domain. A domain is an instance of a Logical Host. After the domain is created, the Project is built and then deployed.

Note: *You are only required to create a domain once when you install the Sun Java Composite Application Platform Suite.*

Steps required to create and start the domain:

1. Navigate to your **<JavaCAPS51>\logicalhost** directory (where <JavaCAPS51> is the location of your Sun Java Composite Application Platform Suite installation).
2. Double-click the **domainmgr.bat** file. The **Domain Manager** appears.
3. If you have already created a domain, select your domain in the Domain Manager and click the **Start an Existing Domain** button. Once your domain is started, a green check mark indicates that the domain is running.
4. If there are no existing domains, a dialog box indicates that you can create a domain now. Click **Yes**. The **Create Domain** dialog box appears.

5 Make any necessary changes to the **Create Domain** dialog box and click **Create**. The new domain is added to the Domain Manager. Select the domain and click the **Start an Existing Domain** button. Once your domain is started, a green check mark indicates that the domain is running.

For more information about creating and managing domains see the *eGate Integrator System Administration Guide*.

7.6.11 Building and Deploying the Project

The Build process compiles and validates the Project's Java files and creates the Project EAR file.

Build the Project

1 From the Deployment Editor toolbar, click the **Build** icon.

2 If there are any validation errors, a **Validation Errors** pane will appear at the bottom of the Deployment Editor and displays information regarding the errors. Make any necessary corrections and click **Build** again.

3 After the Build has succeeded you are ready to deploy your Project.

Deploy the Project

1 From the Deployment Editor toolbar, click the **Deploy** icon. Click **Yes** when the **Deploy** prompt appears.

2 A message appears when the project is successfully deployed. You can now test your sample.

7.6.12 Running the Sample

Additional steps are required to run the deployed sample Project.

Steps required to run the sample Project:

1 Rename one of the trigger files included in the sample Project from **<filename>.in.~in** to **<filename>.in** to run the corresponding operation.

The File eWay polls the directory every five seconds for the input file name (as defined in the Inbound File eWay Properties window). The JCD then transforms the data, and the File eWay sends the output to an Output file name (as defined in the outbound File eWay Properties window).

The Where Clause defined in the business rule recognizes the trigger as a placeholder for input, allowing a set condition, such as EMPID = 100, to determine the type of output data.

You can modify the following input files to view different output.

- TriggerTableSelect.in
- TriggerDelete.in
- TriggerUpdate.in

Having no content in these files causes the operation to read all records.

2 Verify the output data by viewing the sample output files. See **About the VSAM eWay Sample Projects** on page 61 for more details on the types of output files used in this sample Project. The output files may change depending on the number of times you execute the sample Project, the input file, and also the content of your database table.

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