SeeBeyond ICAN Suite

eTL Integrator User's Guide

Release 5.0.1

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Chapter 1

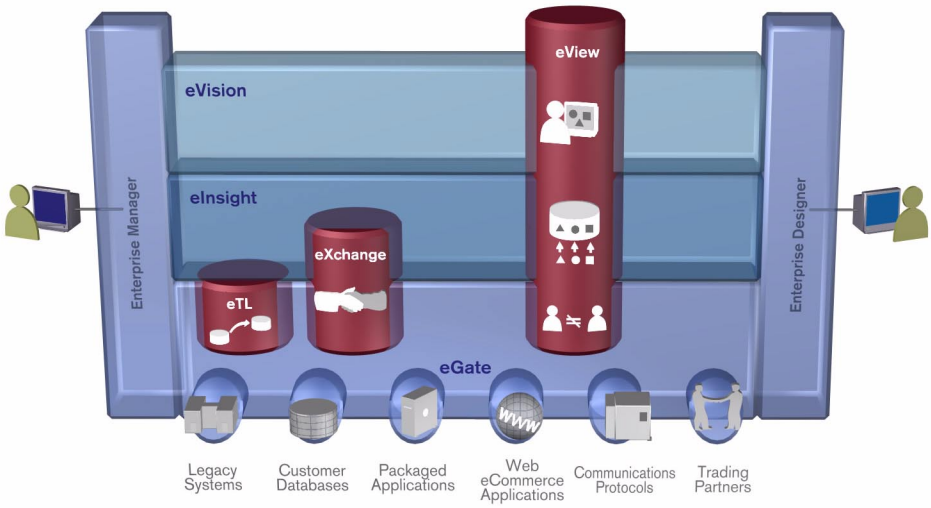
System Description

SeeBeyond's eTL Integrator technology is optimized for very large record sets and build data scenarios that are fully integrated with the SeeBeyond ICAN suite (Integrated Composite Application Network Suite) to unify the domains of eAI (eBusiness and Application Integration) and ETL. An eTL Collaboration can be integrated into the enterprise business process or used as a standalone ETL process.

1.1 Introduction

Extraction Transform and Load (ETL) is a data integration technology that extracts data from several heterogeneous data sources, transforms the data, then loads the data in a uniform format into a target data source.

Figure 1 eTL and the ICAN Product Suite



1.1.1. The eTL Integrator Product Description

SeeBeyond's eTL Integrator technology is optimized for very large record sets and build data scenarios that are fully integrated with the SeeBeyond ICAN suite

(Integrated Composite Application Network Suite) to unify the domains of eAI (eBusiness and Application Integration), and Enterprise Information Integration (EII). With these unified domains you can build unprecedented solutions using both message based processing (eGate) and dataset based processing (eTL) technologies.

The eTL Integrator product provides excellent performance at runtime for high volume extraction and load of tabular data sets. The eTL Integrator can be integrated into the enterprise business processes or used as a standalone product.

The eTL Integrator product can be used to acquire a temporary subset of data for reports or other purposes, or acquire a more permanent data set for the population of a data mart or data warehouse. The product may also be used for conversion of one database type to another or for the migration of data from one database or platform to another.

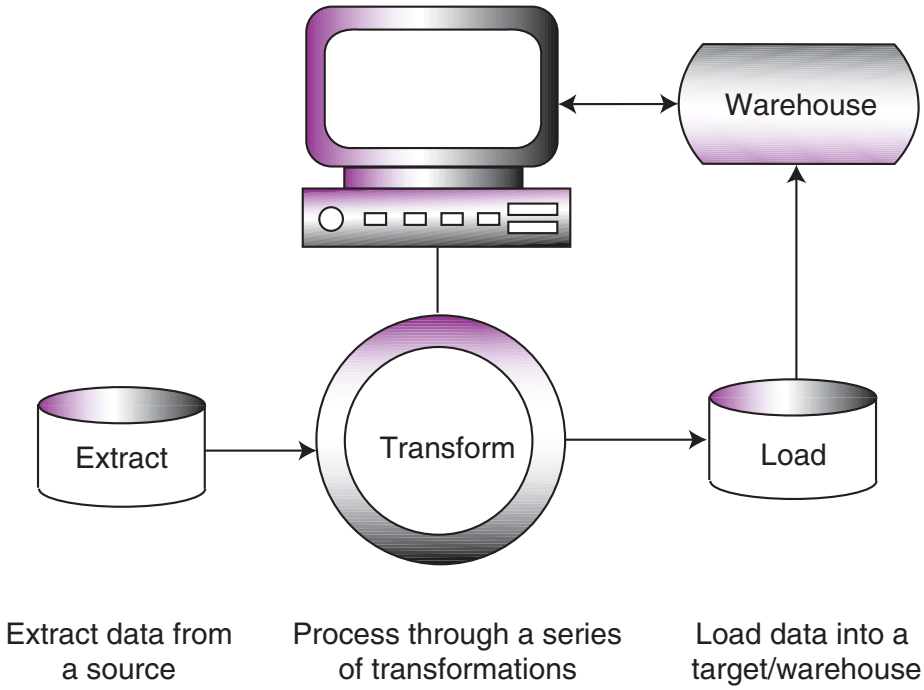
1.1.2. The ETL Process

In an ETL process, data is extracted from data sources. The data is then transformed (or processed), using rules, algorithms, concatenations, or filters, into a desired state suitable for loading into a database or data warehouse. See the following Figure 2.

In managing databases, extract, transform, load (ETL) refers to three separate functions combined into a single programming tool.

1. First, the extract function reads data from a specified source database and extracts a desired subset of data.
2. Next, the transform function works with the acquired data – using rules or lookup tables, or creating combinations with other data – to convert it to the desired state.
3. Finally, the load function is used to write the resulting data to a target database, which may or may not have previously existed.

Figure 2 The ETL Process



1.2 eTL Supporting Features

eTL Integrator is compatible with the following systems and platforms:

- Oracle, SQL Server versions 2000, 8.1.7 or newer, and 9i, and tabular formatted flat files
- Multiple sources and multiple destinations
- Standard eGate platform support

Built in Integration Capability

eTL Integrator enables seamless filtering and data transformation.

- Merge/upsert (updates or inserts as appropriate)
- Drag and drop GUI design features (create joins across disparate data sources)
- Validate Collaborations before performing the ETL processes (ICAN Suite provides versioning and history)

Design Tools

User friendly, state-of-the-art, design tools reduce development time and cost.

The eTL Integrator Collaboration editor has two key characteristics that maximize productivity and ease of use:

1. GUI based Collaboration editor employs drag and drop design features
   - User friendly Wizards (easy OTD creation)
   - Graphical operators (dragged from a toolbar)
   - Graphical tools (create underlying SQL)
2. Tight integration among ICAN Suite business data systems
   - Web Services interface
   - Seamless integration with the ICAN Suite

Development Tools

Development is simplified with GUI based development tools that are appropriate for SQL Collaborations. Graphical drag and drop modeling tools enable SQL operations in various categories:

- Number
- Comparison
- Boolean
- SQL Specific
- String

Transformation Capability

eTL Integrator provides all of the common operations in the following areas:

- SQL operators
- Mathematical operators
- String manipulations
- Source date format must match the target date format (Date format conversions - later release)
- Conditional data transformations

Architecture

Robust business application integration throughout the ICAN Suite makes eTL a more versatile and powerful tool.

- A deployed **eTL** engine runs as a JCA compliant (J2EE) resource adapter inside the SeeBeyond Integration server.
- The business rules defined by the **eTL** Collaboration definition are stored in the SeeBeyond Repository.
- At deployment time, the business rules are used to generate the appropriate platform specific SQL.
- **eTL Integrator** leverages OTDs defined in the Enterprise Designer so you don't have to create OTDs specifically for an eTL Collaboration.

Key Operations and Functionality

An extensive array of operators, filtering, and data manipulation tools offer unlimited data design capability.

- Join
  - Auto-detect primary key relationships between tables, as indicated in OTDs
  - Between tables from disparate data sources that have no relationship
  - Supports inner, left, right, and full outer joins
- Lookups
  - Extensive list of operators allows you to create lookups as part of the eTL process, using joins across tables
- Merge
  - Automatic update if row exists
  - Automatic insert if row doesn't exist
- Test data and test runs
- Runtime variables (configured by the user)

1.3 Supporting Documents

The following SeeBeyond documents provide additional information about eGate Integrator:

- *eGate Integrator Installation Guide*
- *eGate Integrator Release Notes*
- *eGate Integrator User's Guide*
- *Message Server Reference Guide*
- *eGate Tutorial*
- *SeeBeyond ICAN Suite Deployment Guide*
- *SeeBeyond ICAN Suite Primer*

See the *SeeBeyond ICAN Suite Primer* for a complete list of eGate Integrator documentation. You can also refer to the appropriate Windows or UNIX documents, if necessary.

1.4 Writing Conventions

The following writing conventions are observed throughout this document.

Table 1 Writing Conventions

Text	Convention	Example
Button, file, icon, parameter, variable, method, menu, and object names.	**Bold** text	▪ Click **OK** to save and close. ▪ From the **File** menu, select **Exit**. ▪ Select the **logicalhost.exe** file. ▪ Enter the **timeout** value. ▪ Use the **getClassName()** method. ▪ Configure the **Inbound** File eWay.
Command line arguments and code samples	`Fixed` font. Variables are shown in ***`bold italic`***.	`bootstrap -p` ***`password`***
Hypertext links	**Blue** text	For more information, see **"Writing Conventions" on page 10**.

Additional Conventions

Windows Systems

For the purposes of this guide, references to "Windows" will apply to Microsoft Windows Server 2003, Windows XP, and Windows 2000.

Path Name Separator

This guide uses the backslash ("\") as the separator within path names. If you are working on a UNIX system, please make the appropriate substitutions.

1.5 Installing eTL

During the eGate Integrator installation process, the Enterprise Manager, a web-based application, is used to select and upload products from the eGate installation CD-ROM to the Repository.

When the Repository is running on a UNIX operating system, eGate and eTL are installed using the Enterprise Manager from a computer running Windows, connected to the Repository server.

1.5.1. Installing eTL on an eGate Supported System

eTL is installed during the installation of the eGate Integrator. The eGate installation process includes the following operations:

- Install the eGate Repository
- Upload products to the Repository
- Download components (such as the SeeBeyond Enterprise Designer and Logical Host)

Follow the instructions for installing the eGate Integrator in the *SeeBeyond ICAN Suite Installation Guide*, and include the following steps:

1. During the procedures for uploading files to the eGate Repository using the Enterprise Manager, after uploading the **eGate.sar** file, select and upload the following files:
   - **eTL.sar**
   - **StcdbFramework.sar**
   - **eTLDocs.sar** (to download the eTL Integrator User's Guide)
2. Continue installing the eGate Integrator as instructed in the *SeeBeyond ICAN Suite Installation Guide*

1.6 The SeeBeyond Web Site

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

http://www.seebeyond.com

Chapter 2

Interface to the eGate Enterprise Designer

The Enterprise Designer is the graphical user interface (GUI) used to design and implement ICAN 5.0 projects. This chapter overviews the features and interface of the Enterprise Designer window.

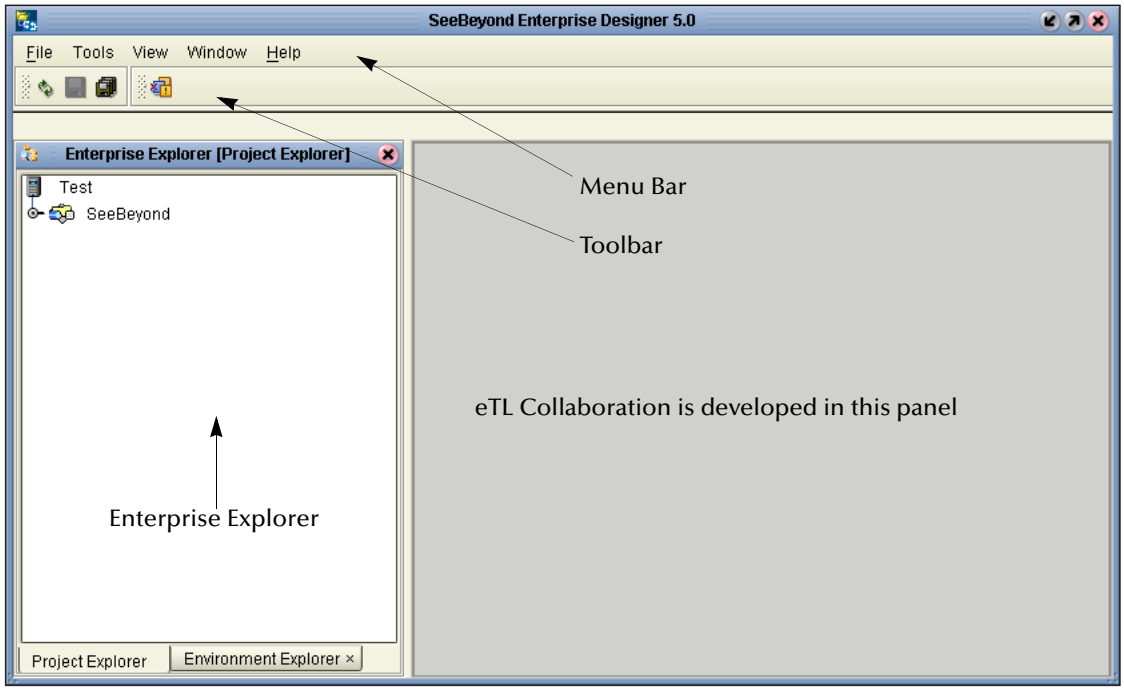
This chapter includes

- **"Enterprise Designer Components" on page 12**
- **"Menu Bar" on page 13**
- **"Enterprise Explorer" on page 14**
- **"Project Editor" on page 14**

2.1 Enterprise Designer Components

The Enterprise Designer is used to create and configure the components of an eGate Project. Each component of this interface is identified in Figure 3.

Figure 3 SeeBeyond Enterprise Designer Window



Note: *This chapter provides a high-level overview of the Enterprise Designer GUI. Refer to the eGate Integrator User's Guide for a more detailed description of the menu bar, toolbar, Enterprise Explorer, and Enterprise Designer.*

2.2 Menu Bar

The menu bar shown below in Figure 4 provides access to a series of menu commands used to build and manage a Project. eTL specific tools are explained later in this document.

Figure 4 Enterprise Designer Menu Bar

File Tools View Window Help

The function of each menu is briefly described below:

- **File**—Lists options for import, export, save, save all, and exit.
- **Tools**—Lists options for Impact Analyzer and Update Center.
- **View**—Lists options to view the Environment Explorer and Project Explorer.
- **Window**—Lists options for the various window displays, cascade, tile, etc.
- **Help**—online help for all installed modules

2.3 Enterprise Explorer

The Enterprise Explorer organizes all of the components of a Project into a series of folders and contains the following two tabs:

- **Project Explorer**—Logical configurations designed to help solve a business problem. This branch includes all the components of an Enterprise Designer Project, including, Collaborations, Connectivity Maps, Services, Object Type Definitions (OTD), and Deployment Profiles.
- **Environment Explorer**—Collections of logical hosts and external systems capable of hosting eGate components and information about external systems, which may be involved with an eGate configuration.

2.4 Project Editor

The Project Editor contains the "nuts-and-bolts" of a Project. This part of the Enterprise Designer is empty when you start a new Project. However, as you work through the tutorial, the Project Editor quickly fills with components and graphical structures representing the various stages of the Project. The types of windows in the Project Editor area include:

- **Connectivity Map**—Contains business logic components, such as Services, Topics, queues, and eWays, that you include in the structure of a Project.
- **OTD Editor**—Edits and tests the OTDs (Object Type Definitions)
- **eTL Editor**—Create eTL Collaborations
- **Deployment Profile Editor**—Edits the deployment profile

2.4.1. Creating Database OTDs

In addition to DTD and XSLT based flat files, the ICAN suite also supports tabular data sets in flat files. You can now build OTDs for any kind of structured data, including spreadsheets. Flat file OTDs can also be used throughout the ICAN suite.

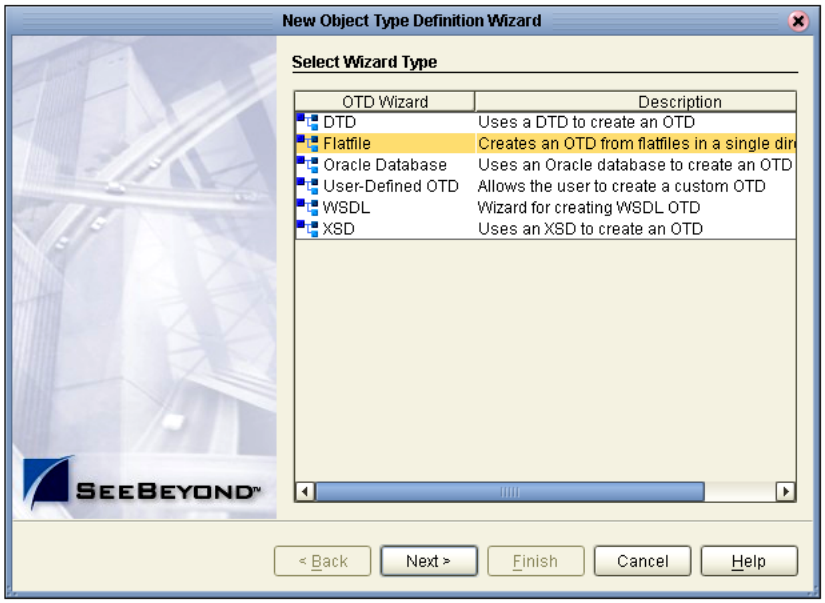
Note: *Refer to Chapter 7 of the User Guide for information about collaboration definitions and using the OTD Wizard.)*

Creating a flat file OTD

Open the eGate Enterprise Designer.

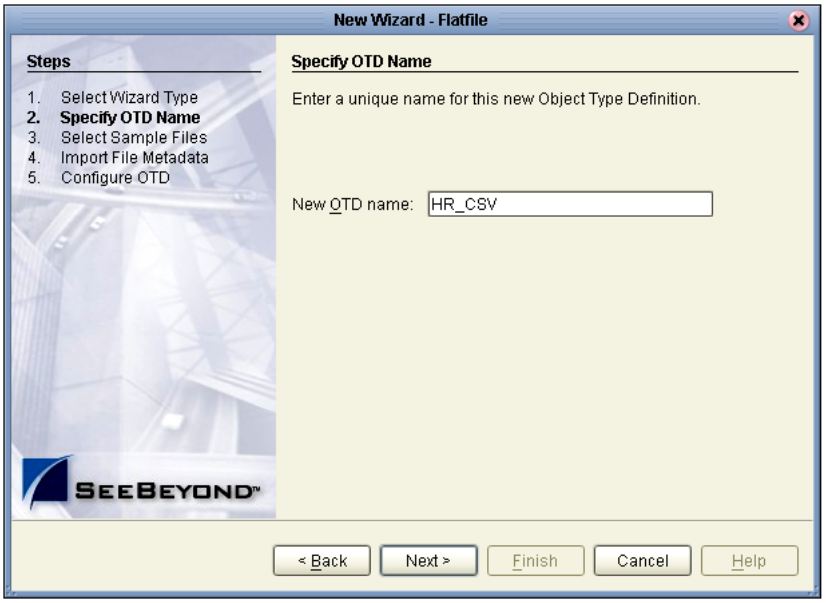
1. Right-click on your Project and select **Object Type Definition**.
2. Select **flat file** from the list of OTD Wizards and click **Next**.

Figure 5 Select OTD Wizard Type



The Specify OTD Name window appears. See Figure 6 below.

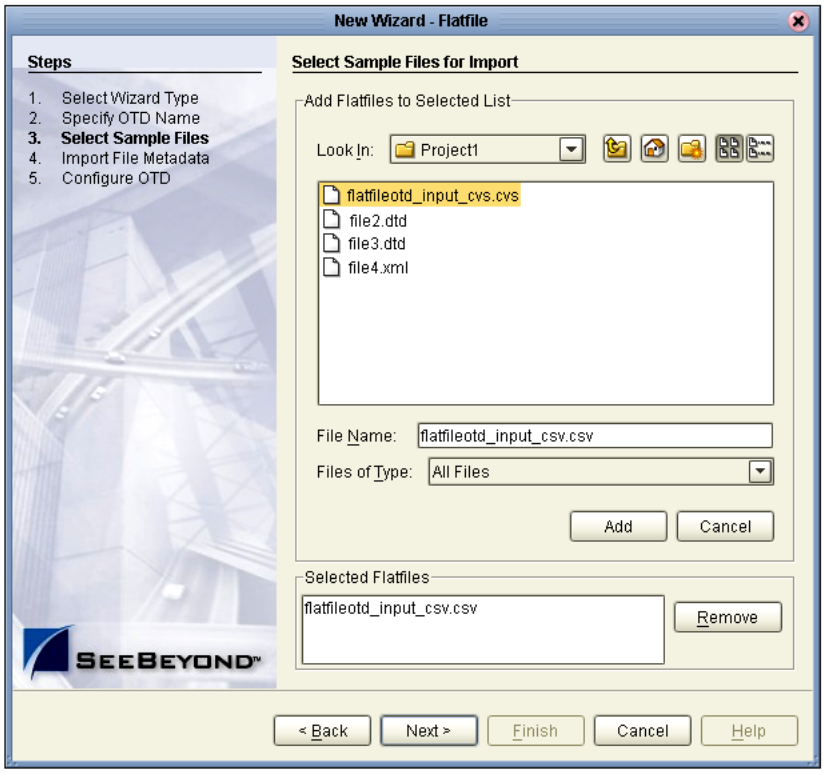
Figure 6 Specify OTD Name



3 Type a name for your flat file OTD and click **Next**.

The Select Sample Files for Import window appears.

Figure 7 Select Sample Files for Import



In Figure 7 above you can browse to find a file on your computer or on the network.

4 Click the drop-down arrow to navigate to the file you want to select.

5 Click the **Add** button to select the file.

The selected file(s) appears in the Selected flat files list.

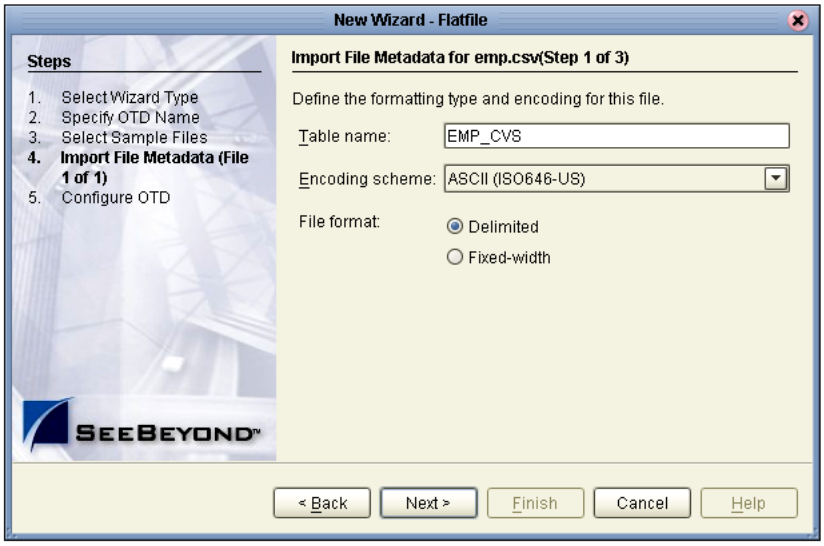
Note: *The file must reside on your computer or on a networked file system which you have permission to access.*

You can select one or more flat files, similar to the way you can include multiple tables in a database OTD. Later in this process, the system automatically inspects each file to assess its structure and read sample data.

2.4.2. Importing Metadata Information for flat files

This section describes methods used to supply metadata for parsing selected flat files.

Figure 8 Encoding Scheme and File Format



1 Enter a Table name and select an encoding scheme. The default encoding is ASCII.

2 Select a File format, **Delimited** or **Fixed-width**.

There are five criteria and delimiters used to instruct the system how to parse your selected flat file. The following are valid for delimited only:

- Default SQL Type
- Record Delimiter
- Field Delimiter
- Text Qualifier
- First line contains field names?

In our sample we are configuring the delimited format, Figure 11. The following two figures show examples of fixed width formats:

Figure 9 Fixed Width Parse Properties, Character length

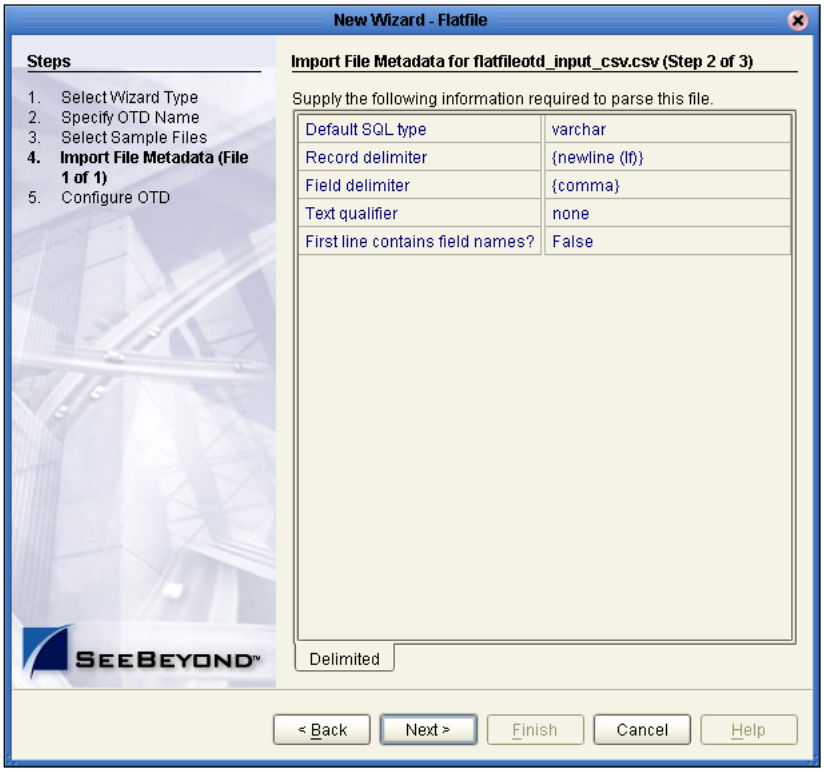
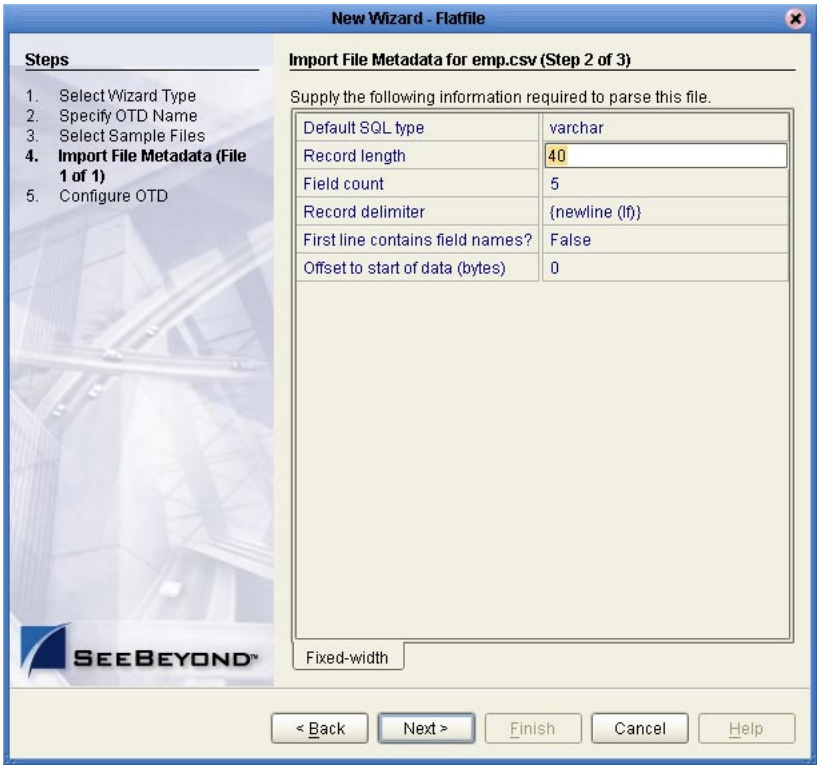


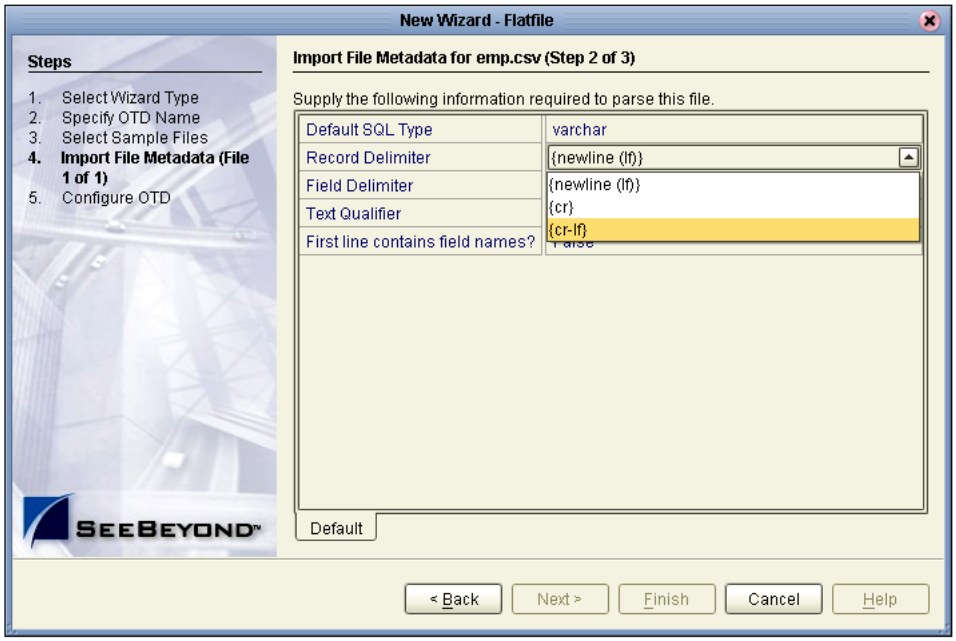
Figure 10 Fixed Width Parse Properties, fixed length



The following examples illustrate the use of each of these tools.

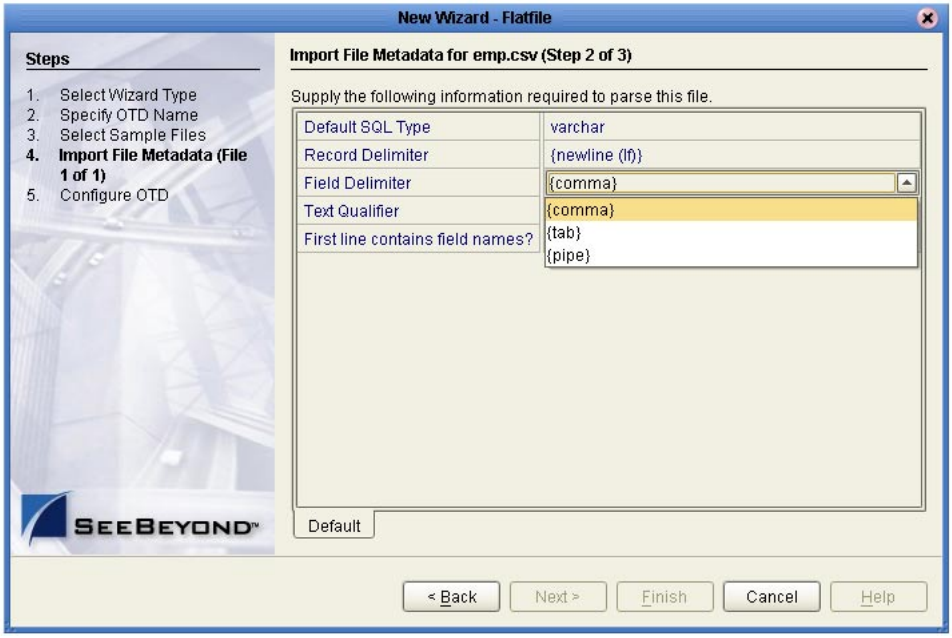
The default SQL type, Figure 9 above, is used for all elements in the flat file OTD structure unless a different type is specified by the end user in a subsequent panel.

Figure 11 Specify Record Delimiter



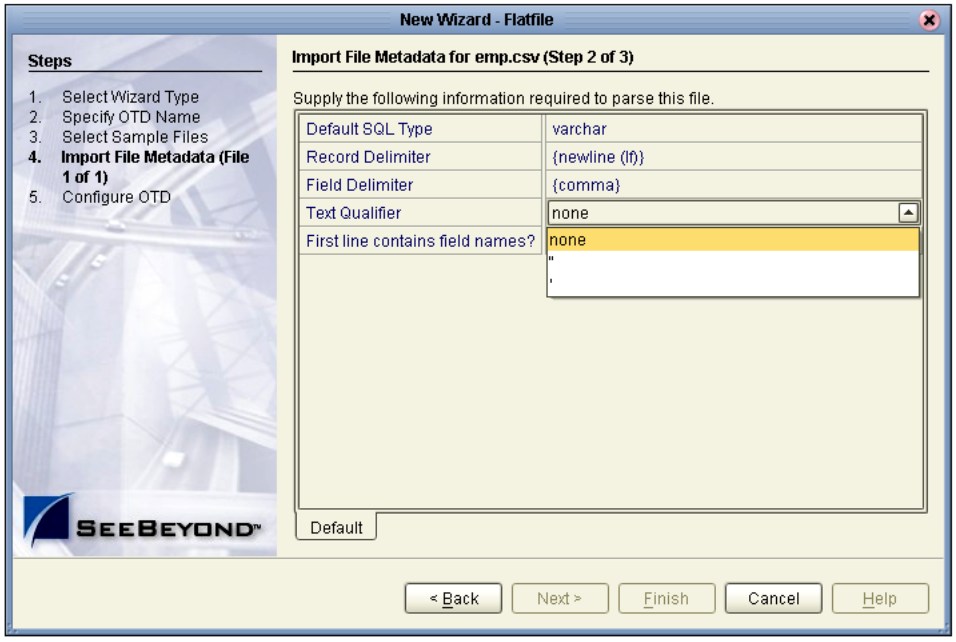
The Record Delimiter, Figure 11 above, allows you to specify how the various records in the flat file are physically separated from each other.

Figure 12 Specify Field Delimiter



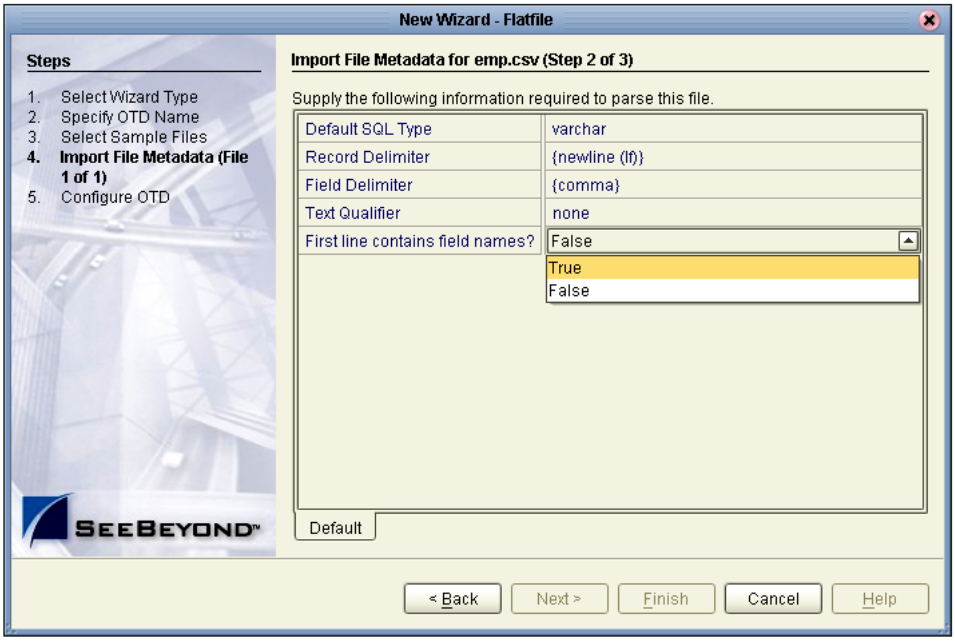
The Field Delimiter, Figure 12 above, specifies how the various elements (fields) in the flat file records are physically separated from each other. The following field delimiters are supported: comma, tab, and pipe (|).

Figure 13 Specify Text Qualifier



The Text Qualifier, Figure 13 above, explicitly specifies how eGate Integrator detects text fields. You can select double quote (“), single quote (‘), or none.

Figure 14 First Line Contains



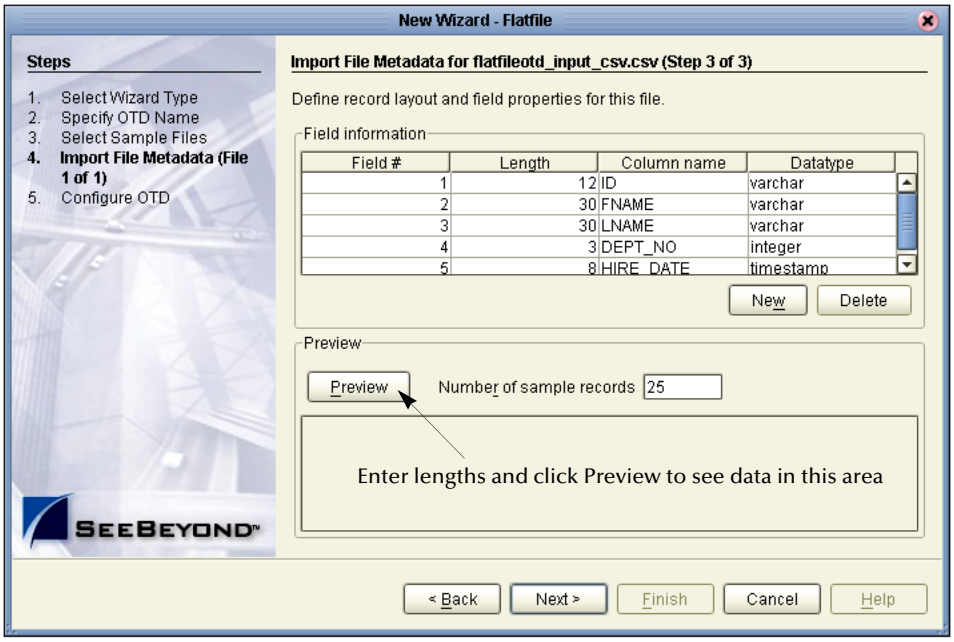
The "First line contains..." offers a True or False selection. See Figure 14 above. You can specify whether the selected flat file includes the names of its fields in its header row.

- True - the names specified in the header row are used as element names of the new OTD.
- False - the eTL Integrator dynamically assigns initial names to the new OTD elements, which can be changed in the next panel.

Suggested OTD Record Structure

After the parsing specifications have been set, you are ready to define the record layout and field properties for your file. The system displays a suggested OTD record, but you can change the various field properties, including name, length, and data type.

Figure 15 Define Record Layout and OTD Fields

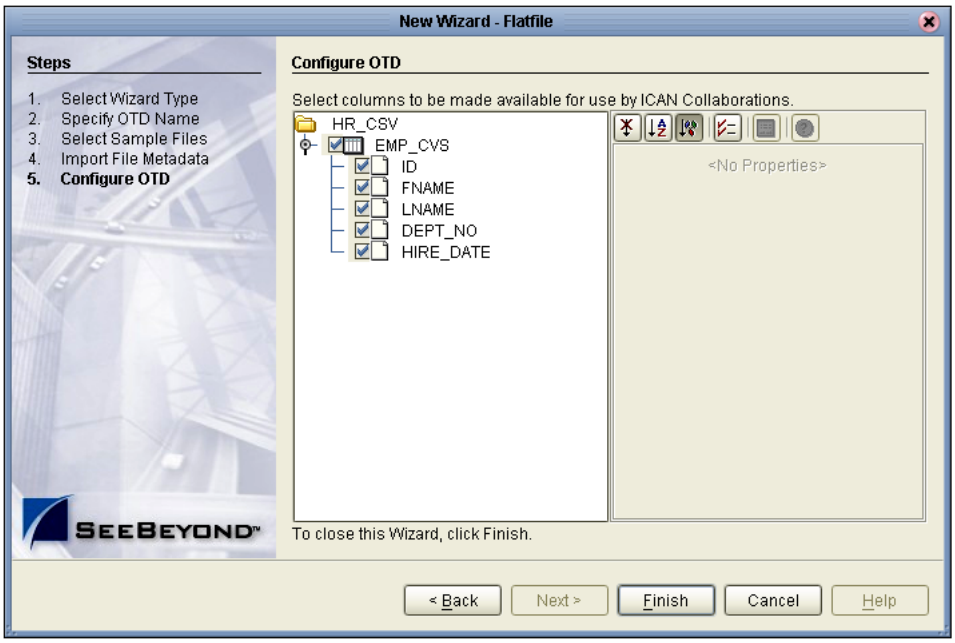


The suggested OTD record properties are displayed, based on your file structure and your previous selections. In the previous Figure 15, the fields **Length**, **Column name** and **Datatype** are editable.

1 Click to highlight the field you want to edit.

2 Double-click to begin editing.

Figure 16 Select columns for ICAN Collaborations

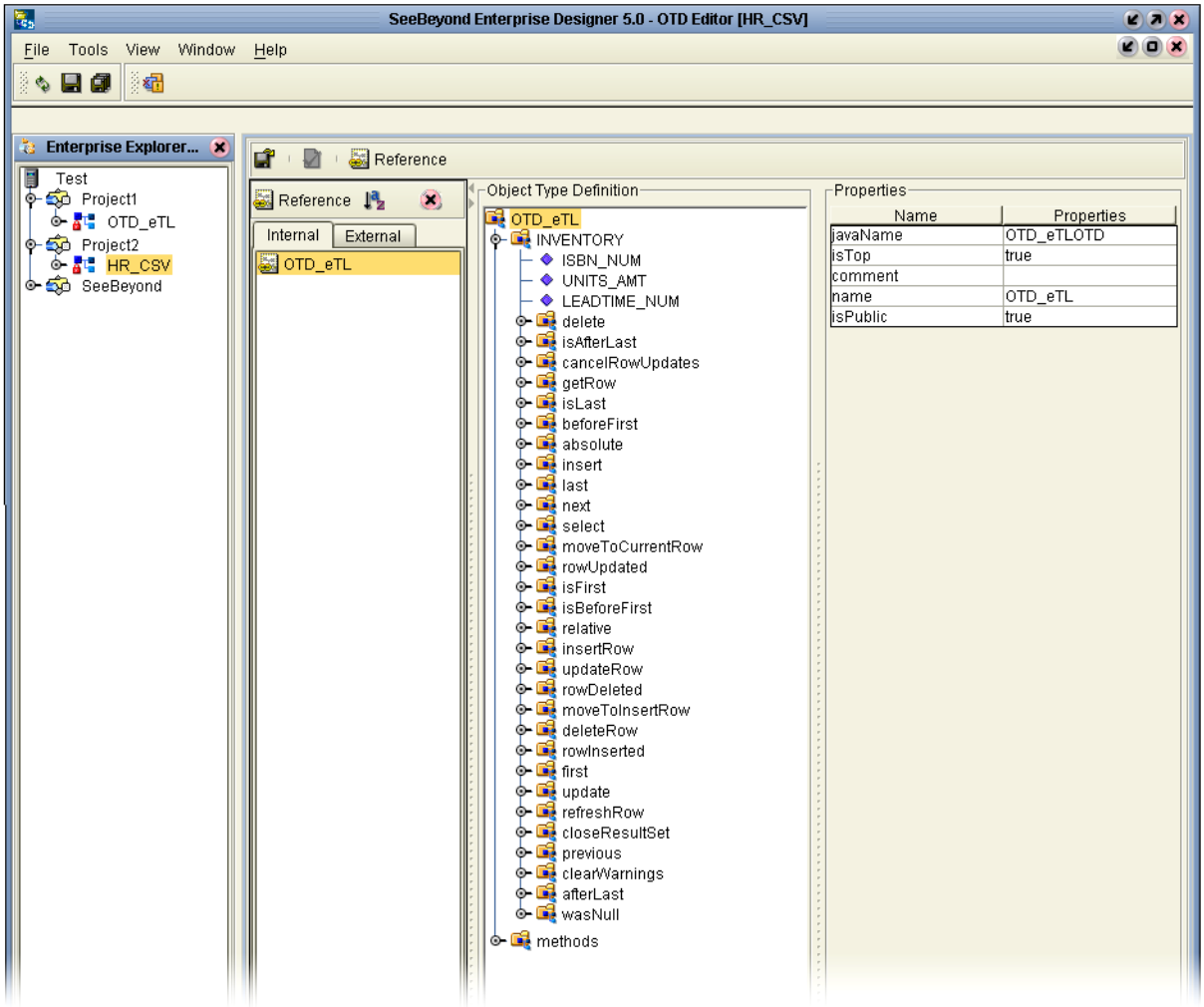


In this final step of the OTD Wizard process, you can select which elements of the new flat file OTD will be made available for use by ICAN Collaborations. See Figure 16 above.

1 Click Finish to create the new flat file OTD in the ICAN repository.

The new flat file OTD displays.

Figure 17 Verify New Flat File OTD



Chapter 3

Creating a Simple Project

The following scenario guides you through the development of a simple project.

3.1 Sample Scenario "Tutorial"

To do this tutorial you must have three sample tables: Inventory table, Input Orders table and Exceptional Orders table.

Business Problem Scenario

Assume you manage a book exchange and you maintain an Inventory database and a Book Order database. You want to fill orders that come in, but first you must check inventory to make sure that you have enough product (books) on hand. When you can't immediately fill the orders because inventory is too low, you want to create an Exception report. You call this report "Exceptional Orders" (orders where the quantity ordered exceeds the inventory on hand).

The load orders activity executes an eTL Collaboration that has two input data sources:

Input tables

The following two tables are joined:

1. Customer Order Table: a database staging table of orders
2. Inventory Table: a database table representing the inventory tables for all available products

Target table

The target, Exceptional table, is the extracted compilation of orders that couldn't be filled because of insufficient inventory.

1. Exceptional table: a database table with the exception orders. (Since you don't have the inventory to fill these orders, they will drop ship (ship directly) from the publisher).

The eTL logic reads all orders from the staging table and inserts some into the Exceptional order table. Depending on the inventory information, individual orders go into specific tables. The eTL Collaboration looks at each entry in the orders table and compares the ordered quantity against current inventory. If the requested quantity exceeds the inventory, the order is entered into the Exceptional order "drop ship" table.

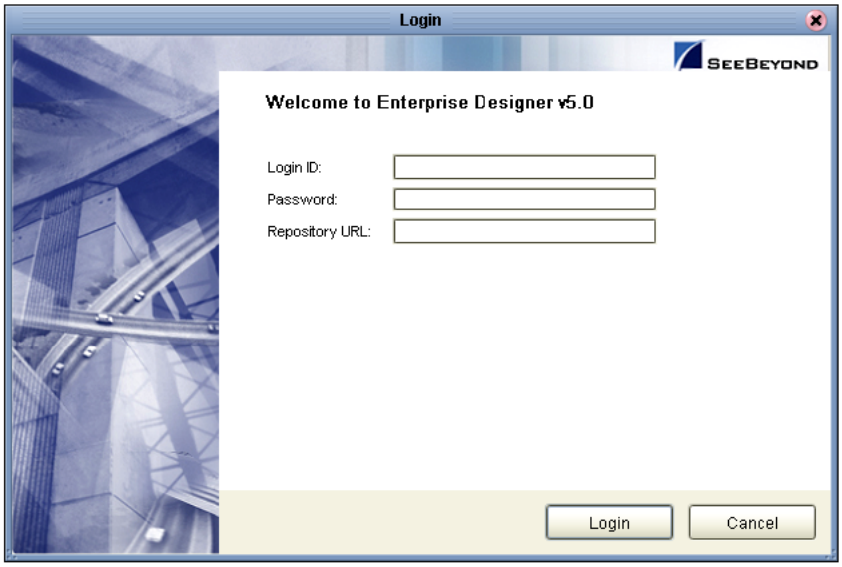
Begin by creating a Project in the Enterprise Designer.

3.2 Starting the Enterprise Designer

1 Start the Enterprise Designer by executing runed.bat in your eGate folder (c:\eGate50\edesigner\bin), or use your enterprises' start up procedure.

The Enterprise Designer Login dialog box appears.

Figure 18 Enterprise Designer Login



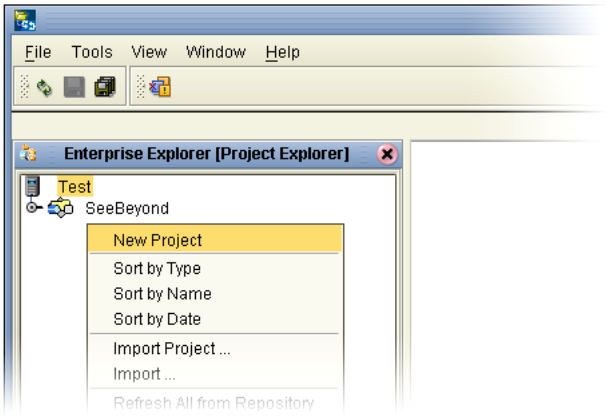
2 Type your **Username** and **Password** and then click **Login** to start the Enterprise Designer.

3.2.1. Create and Name a Project

Start a New Project

1 In the Enterprise Explorer pane of the enterprise Designer, right-click the Repository name (computer icon) and then click **New Project**.

Figure 19 Create a Project



2 Type **Project_eTL** as the name for your project and press **Enter**.

The **Project_eTL** structure appears in the Explorer pane on the left side of the window.

3.2.2. Create a New Object Type Definition

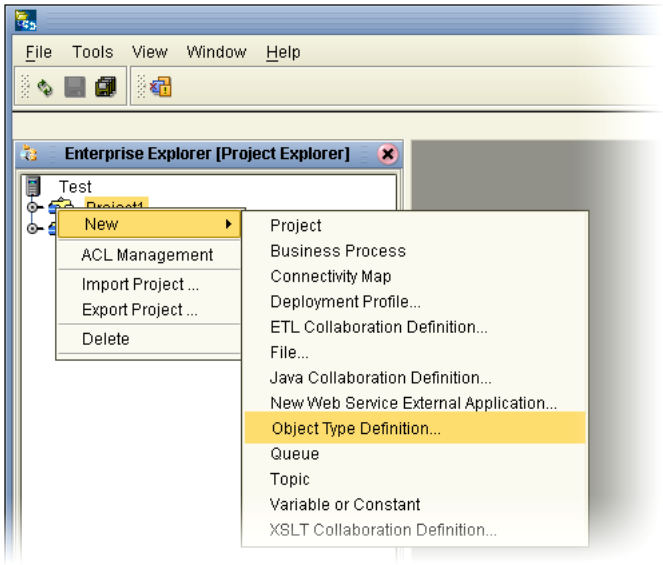
Define OTDs

Create definitions for database tables.

1 Right-click **Project_eTL**.

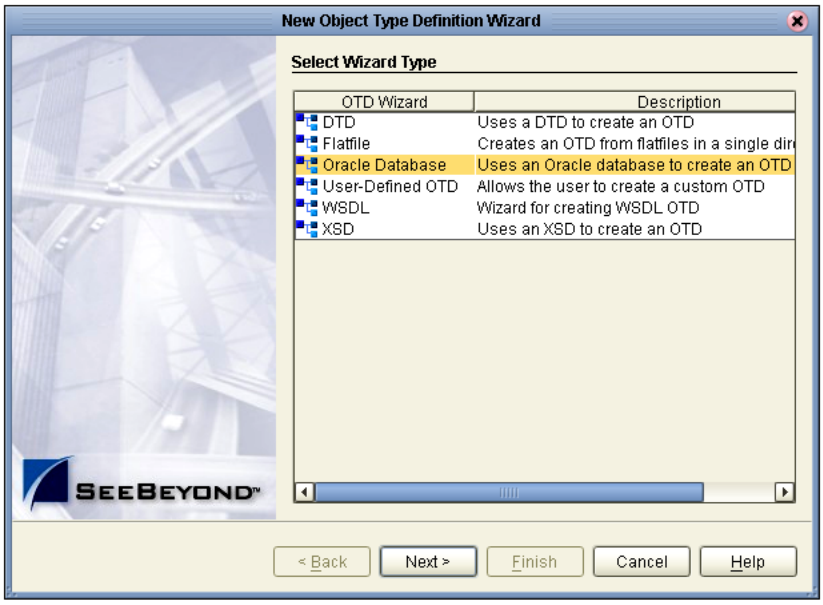
2 Click **New Object Type Definition**.

Figure 20 New Object Type Definition



The **New Object Type Definition Wizard** appears, displaying a list of tools to create OTDs.

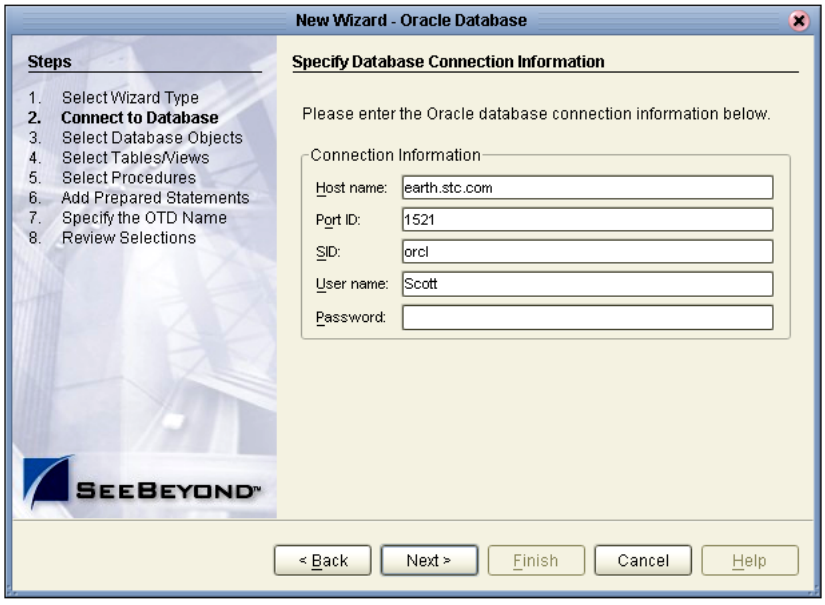
Figure 21 Select Wizard Type



3 Highlight **Oracle Database** and click **Next**.

The **Connect to Database** screen appears, allowing you to type connection information.

Figure 22 Database Connection Information



Note: *The Port_ID is not the eGate port but rather is the database port number.*

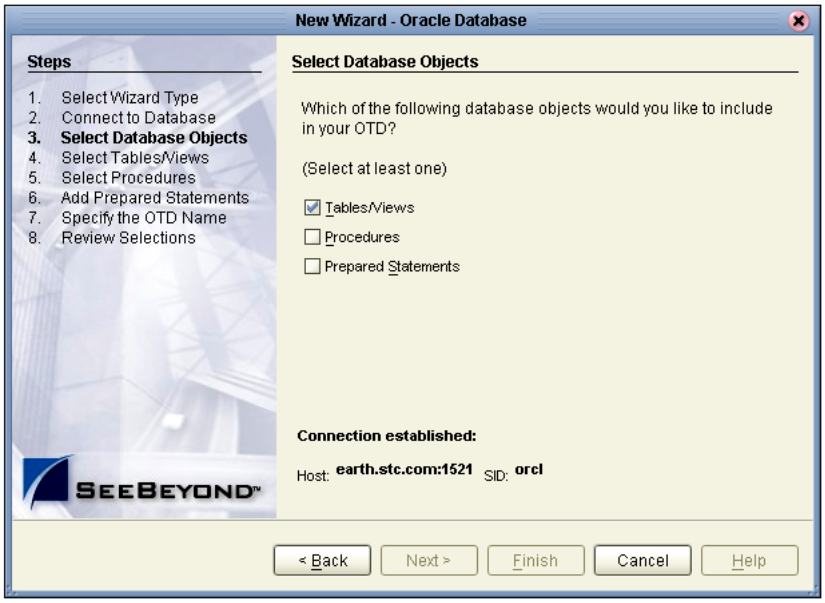
4 Type connection information and click **Next**.

3.2.3. Select Database Objects

Select Tables and Table Views

In the following steps select database objects and table views to use in your project.

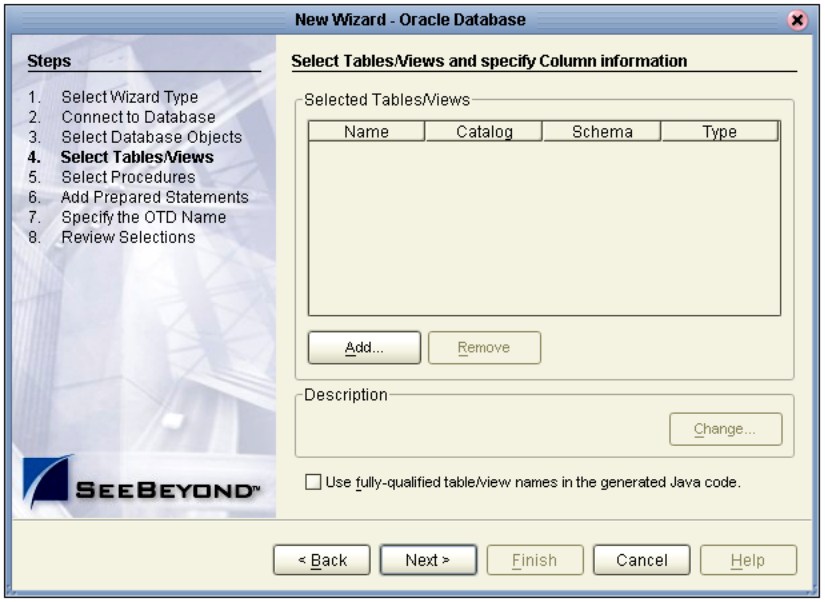
Figure 23 Select Database Objects



1 Check the Tables/Views box and click Next.

The **Select Tables/Views** window appears.

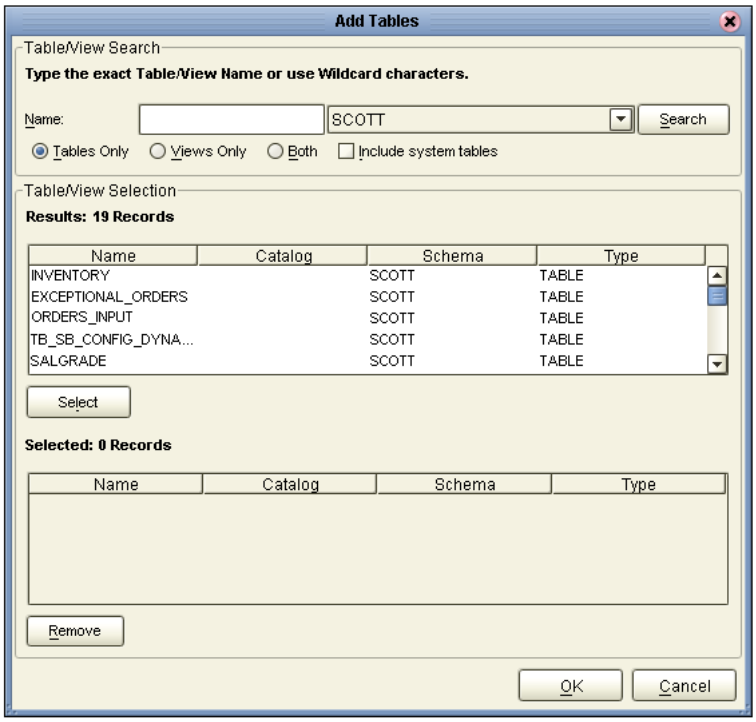
Figure 24 Select Tables/Views



2 Click the **Add** button.

The **Add Tables** window appears.

Figure 25 Add Tables



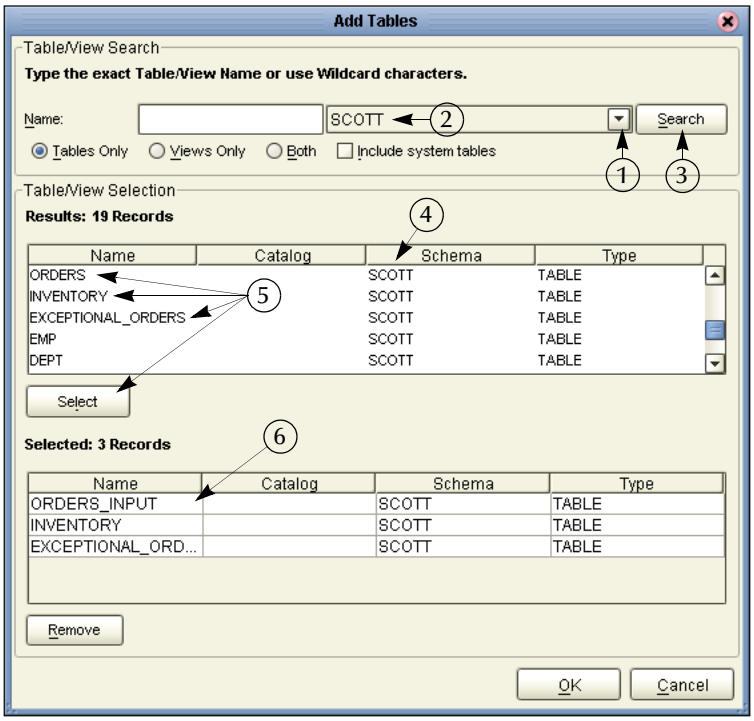
3 Click the **drop_down arrow** (number 1 in the following Figure 26).

4 Select **Scott** from the list (number 2 in the following Figure 26).

5 Click the **Search** button (number 3 in the following Figure 26).

A list of Scott's tables appears in the **Table/view Selection** list (number 4 in the following Figure 26).

Figure 26 Select Tables Using Search Tools



6 Select the following tables (number 5 in the previous Figure 26):

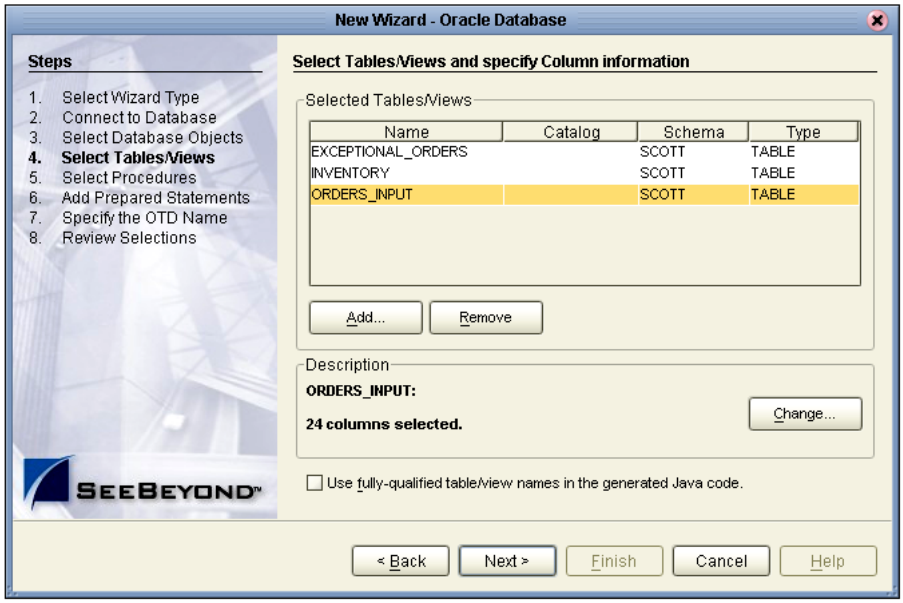
- Orders_Input
- Inventory
- Exceptional_orders

7 After each selection click the **Select** button. (This takes a minute before the table name appears in the name list below.)

8 After you have finished your selections, and they appear in the list (number 6 in the previous Figure 26), click the **OK** button.

The **Selected Tables** window appears.

Figure 27 Selected Tables

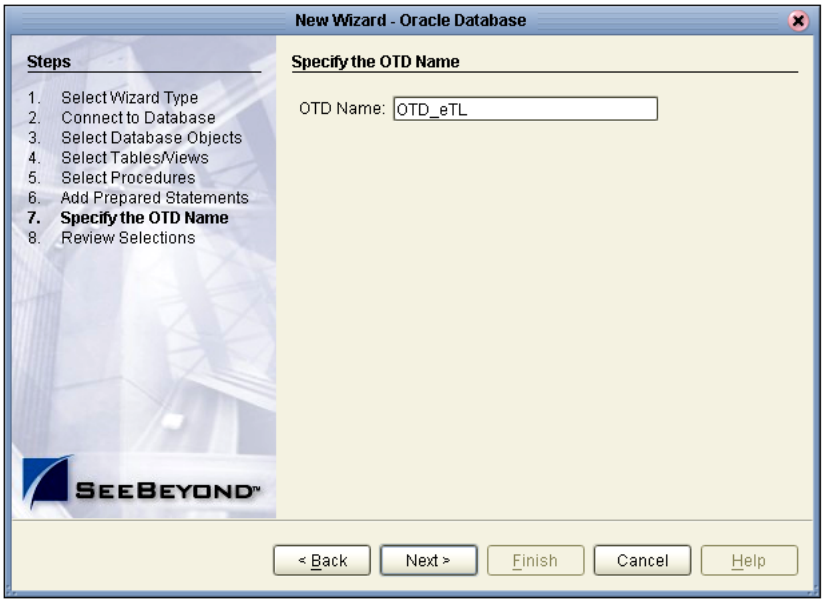


9 Click the **Next** button.

Specify OTD

Specify the OTD name.

Figure 28 Specify OTD Names

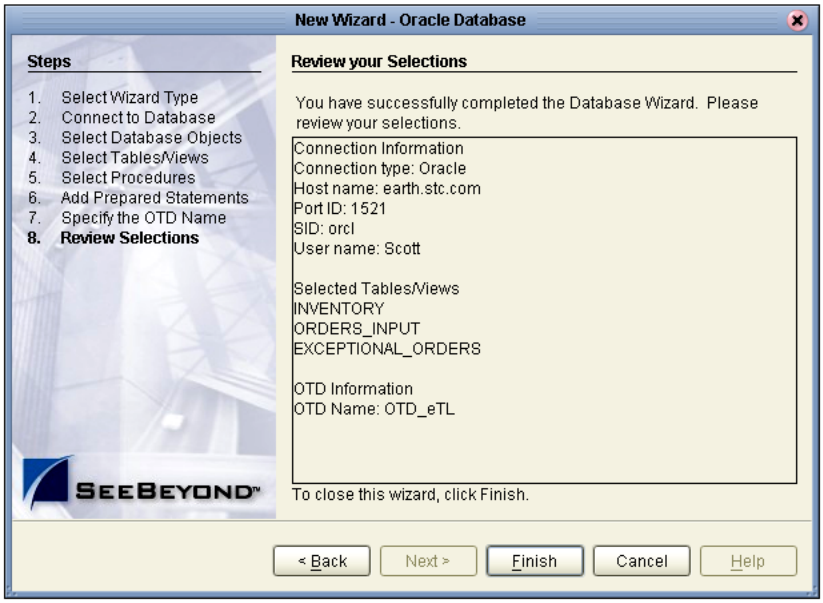


1 Type **OTD_eTL** to specify the OTD name.

2 Click **Next**.

The Review Selections window appears.

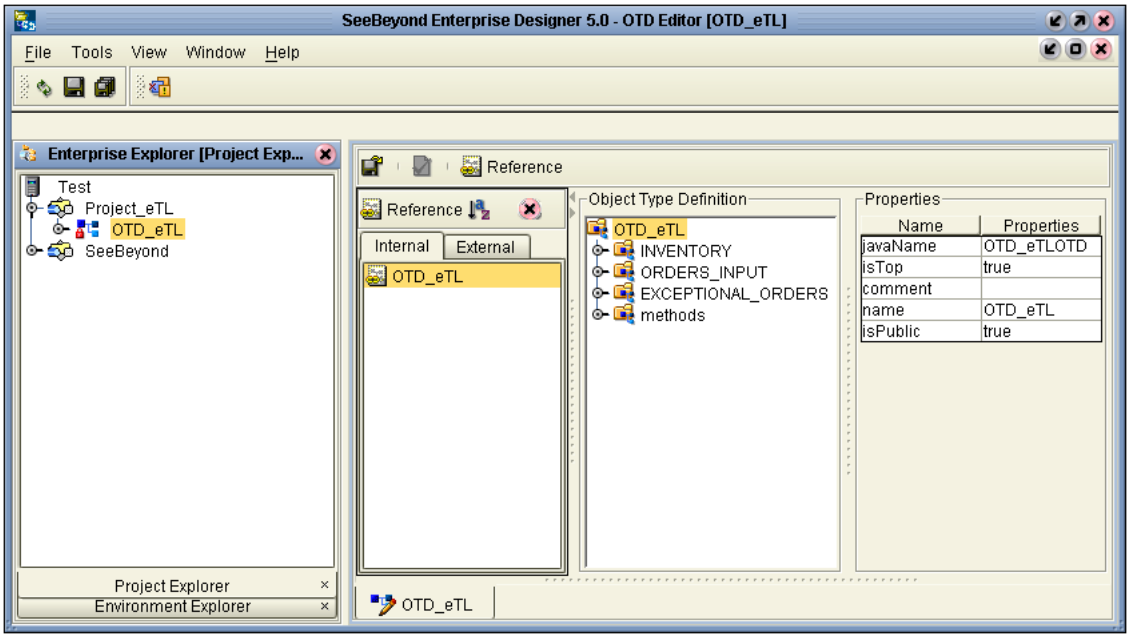
Figure 29 Review Selections



3 Click **Finish**.

The the wizard closes and the Enterprise Designer window reappears.

Figure 30 Enterprise Designer



3.2.4. Use Enterprise Designer to configure eTL Collaborations

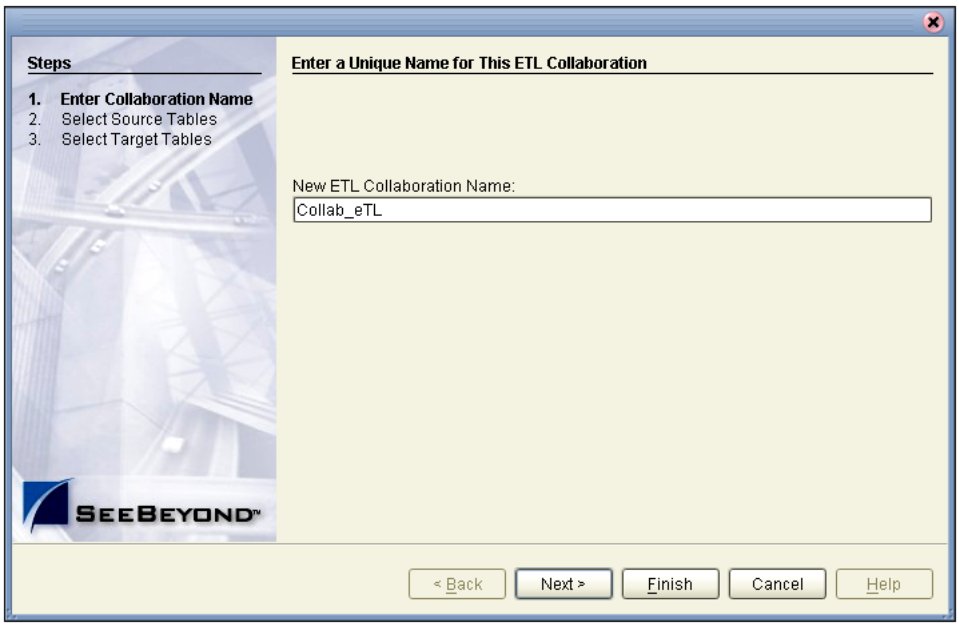
Configure eTL Collaborations and Select Tables

Configure your Collaborations for source and target tables.

1 Right-click **Project_eTL**.

2 Select **New eTL Collaboration**.

Figure 31 eTL Collaboration



3 Type **Collab_eTL**.

4 Click the **Next** button to select source tables (or click Finish to create a Collaboration with no source or target tables initially appearing on the designer pane).

Select Source Tables

You can select tables in a multiple table OTD.

1 Highlight your **OTD**.

2 Click the **right-arrow** button to move the OTD to **Selected_OTDs**.

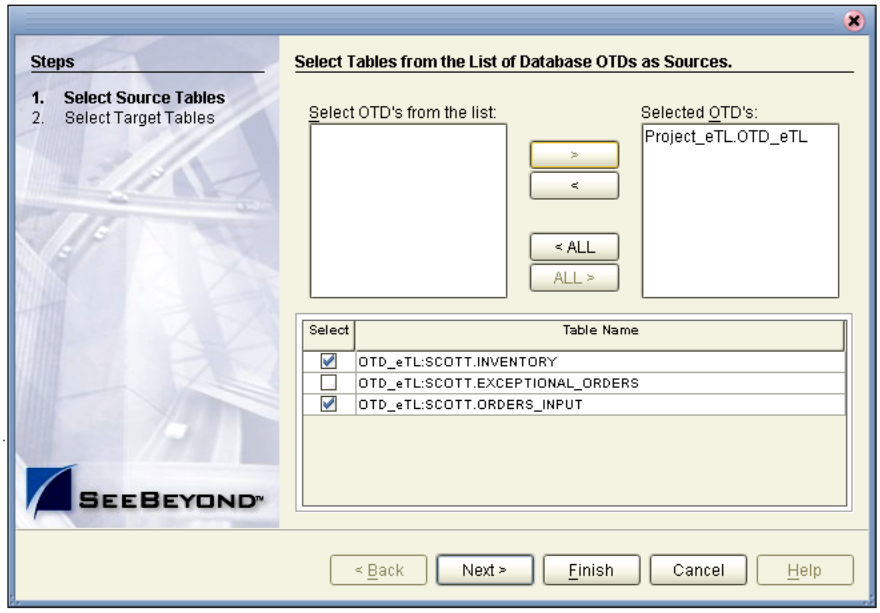
3 Click the checkbox next to each item to be used as a source tables:

A Inventory

B Orders

See the following Figure 32.

Figure 32 Select Source Tables - Check Boxes



4 Click **Next**.

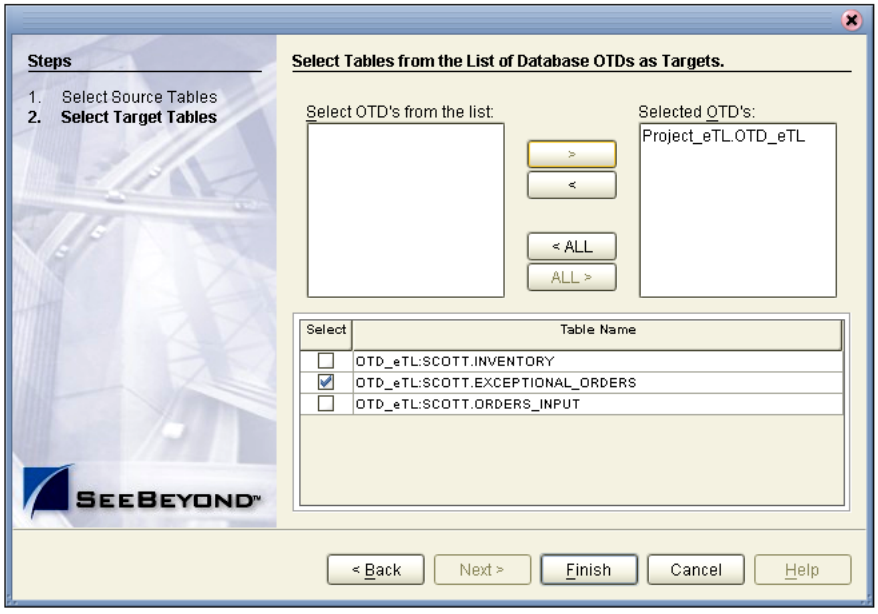
The wizard refreshes. You can now select target table(s).

Select Target Tables

1 Repeat the steps (above) that you used to select source tables.

This time select a target table.

Figure 33 Select Target Tables - Check Boxes



2 Check the box **Exceptional_Orders** (from the list in Figure 33).

3 Click the **Finish** button.

Your selected tables appear in the Enterprise Designer.

3.2.5. Optional Method for Selecting Tables

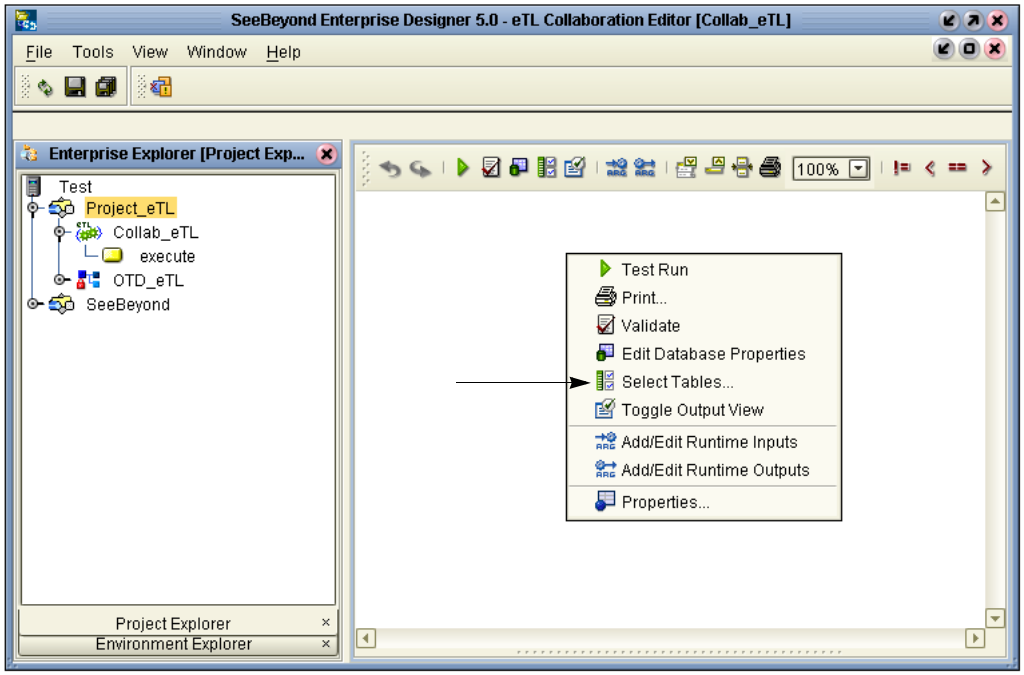
You may also select tables from an empty editor pane in your **eTL Collaboration Editor** window.

The Pop-up Dialog Box

1 Right-click in the empty editor pane.

A selection pop-up dialog box appears in the pane. See the following Figure 34.

Figure 34 Options Pop-up Dialog Box



2 Click Select Tables... from the options.

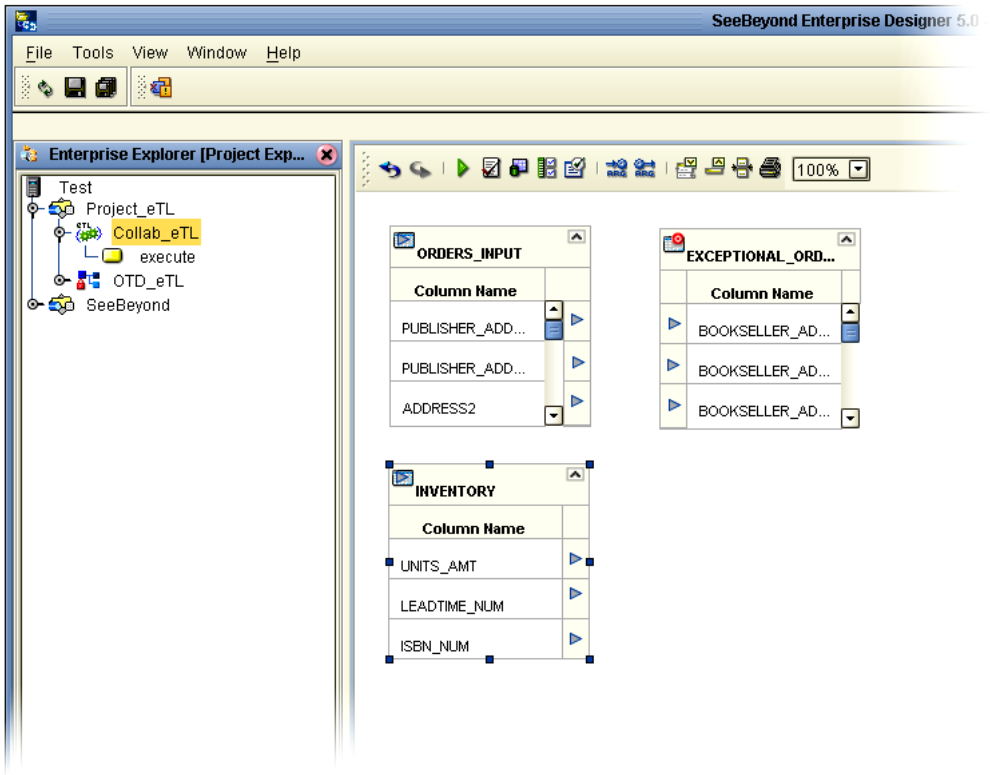
3.3 Mapping Tables

Use the graphical user interface to map tables and apply business rules. The following scenario produces information (extracted from tables) to help solve the "exception orders" business problem.

3.3.1. Map Tables and Apply Business Rules

As you map source-to-target relationships the business rules are automatically coded and applied to perform the data transformations. You can interact directly with this SQL code at anytime.

Figure 35 Expand the Table Views



Note: *Click the graphic "handles" and expand the view of the tables as needed.*

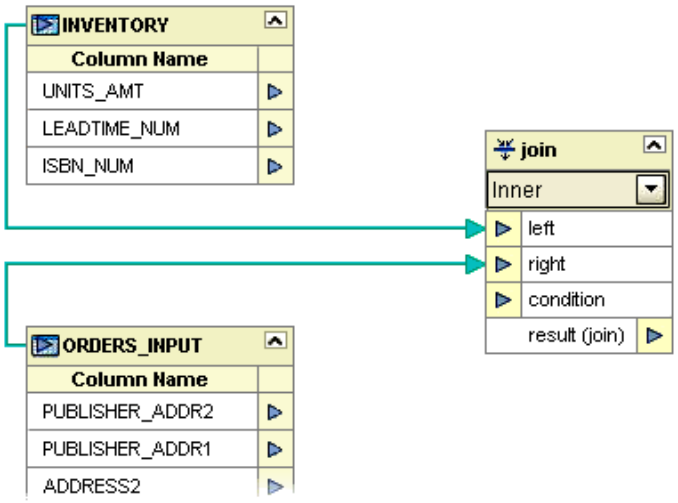
Place a Join Operator on the eTL Canvas

In steps 1 through 3 define a "join" relationship (see the following Figure 36). Place a Join operator on the Enterprise Designer window.

1. Click the 'Join' icon and drag the join operator to the designer pane.
2. Select the **Inventory table** and connect it to the 'left' property of the join operator.

3 Select the **Orders_Input** table and connect it to the 'right' property of the join operator.

Figure 36 Join Inventory and Orders_Input



In steps 4 through 6 join the tables based on the primary key, **ISBN_NUM** in the Inventory table and **ITEM_CD** in the Orders input table, which also contains the ISBN number (a unique identifier for books).

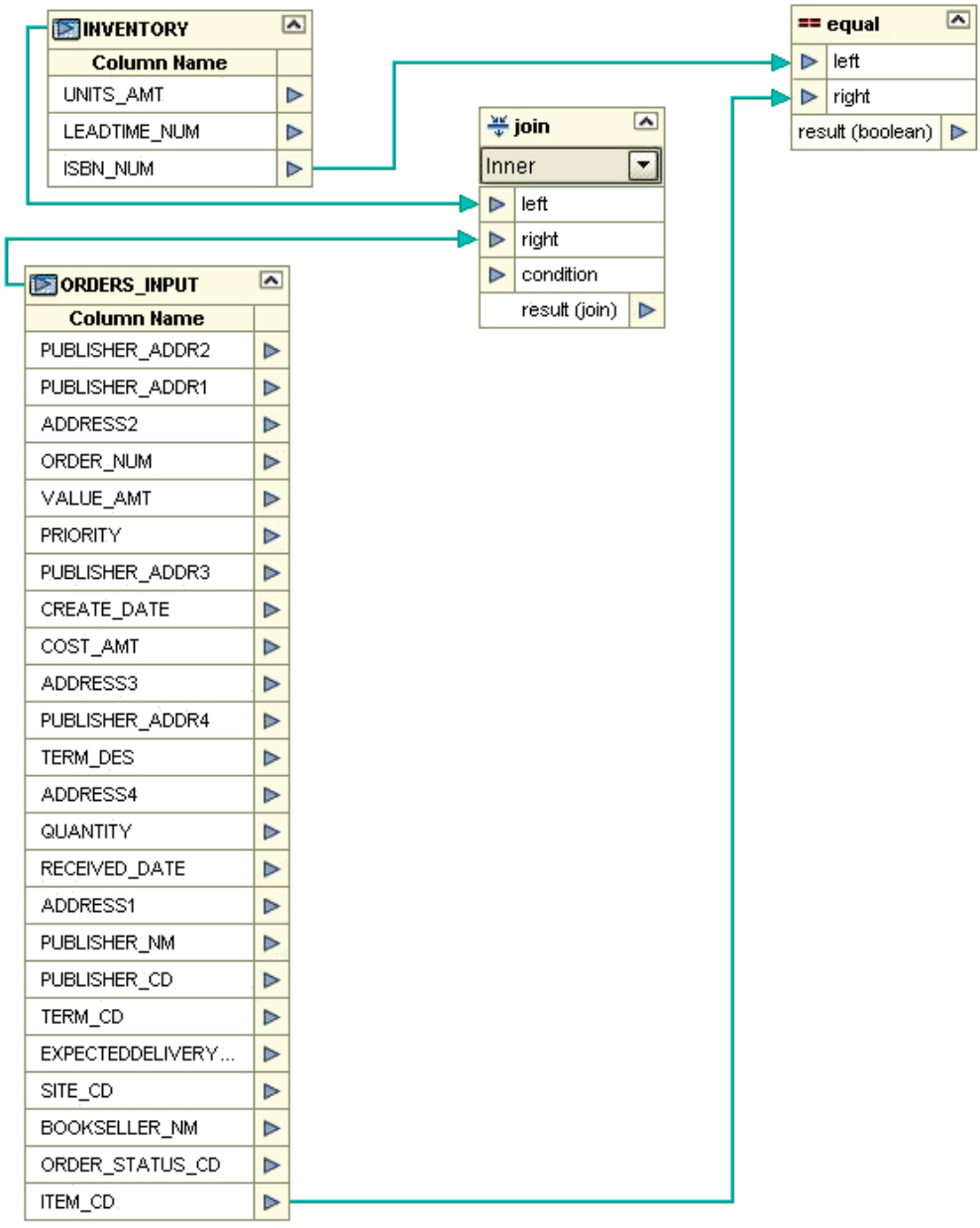
4 Place a new 'equal' operator on the designer pane.

5 Select the **Inventory.ISBN_num** and connect it to the 'left' property of the 'equal' operator.

6 Select the column **Orders_input.item_CD** and connect it to the 'right' property of the 'equal' property of the 'equal' operator.

Note: *As you continue through these steps which offer a conceptual and visual overview of eTL, keep in mind that you may also use powerful condition builders. Refer to the section* **"Conditional Extractions" on page 45**.

Figure 37 Equal Operator



The previous Figure 37 shows the completed join operation, graphically. In steps 7 through 13 filter query results using operators. The system automatically generates SQL "where" clauses.

7 Place a new 'greater than' operator on the designer pane.

8 Select column **Orders_input.quantity** and connect it to the 'left' property of the 'greater than' operator.

9 Select column **Inventory.units_amt** and connect it to the 'right' property of the 'greater than' operator.

10 Place a new ‘and’ operator on the eTL designer pane.

Figure 38 Inventory and Orders_Input Map

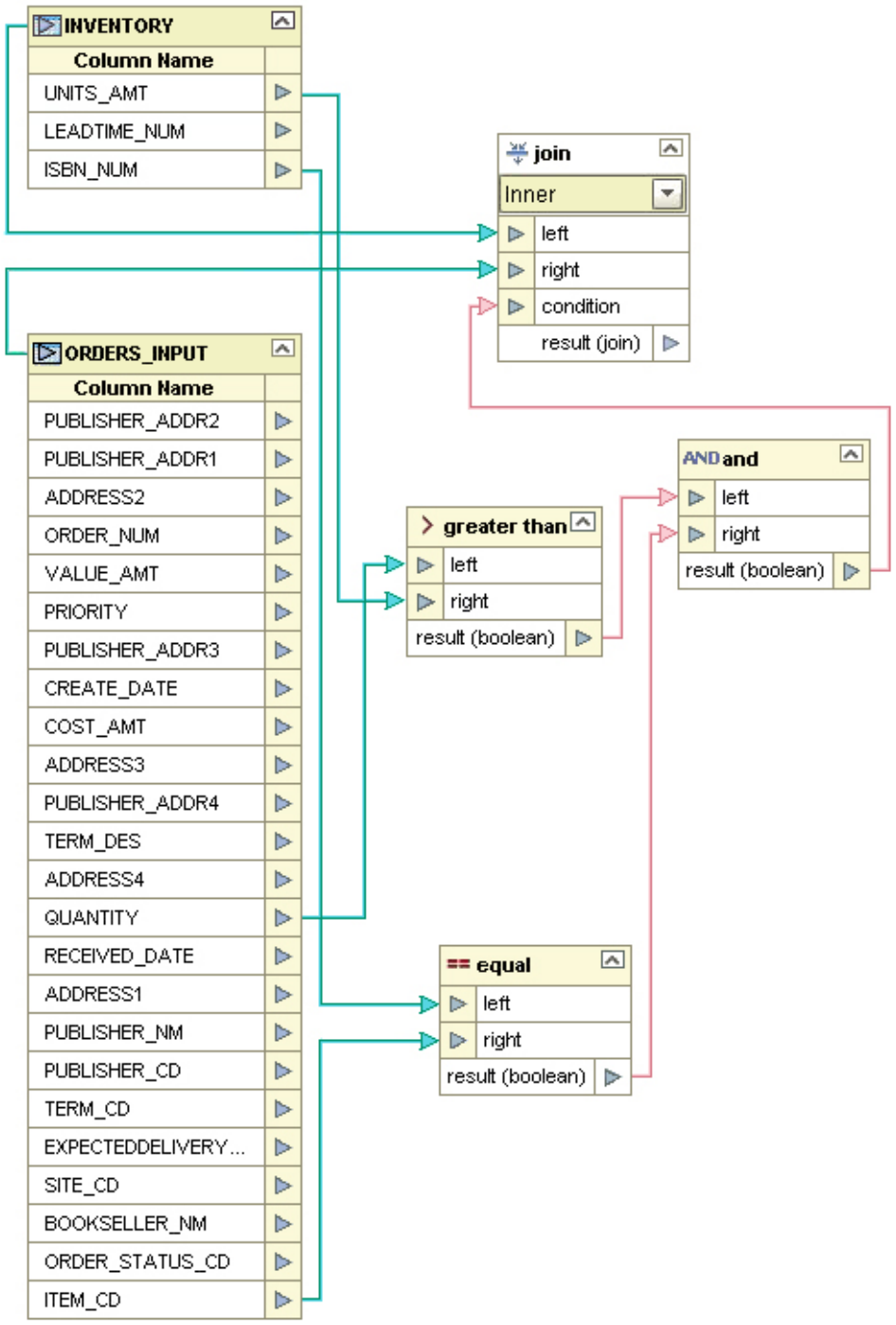


Figure 38 above shows the operators that filter results to join (select) rows where the ordered amount (**QUANTITY**) exceeds the inventory quantity on hand (**UNITS_AMT**). Steps 11 through 13 complete this operation.

11 Select the 'result' property of the 'greater than' operator and connect it to the 'left' property of the 'and' operator.

12 Select the 'result' property of the 'equal' operator and connect it to the 'right' property of the 'and' operator.

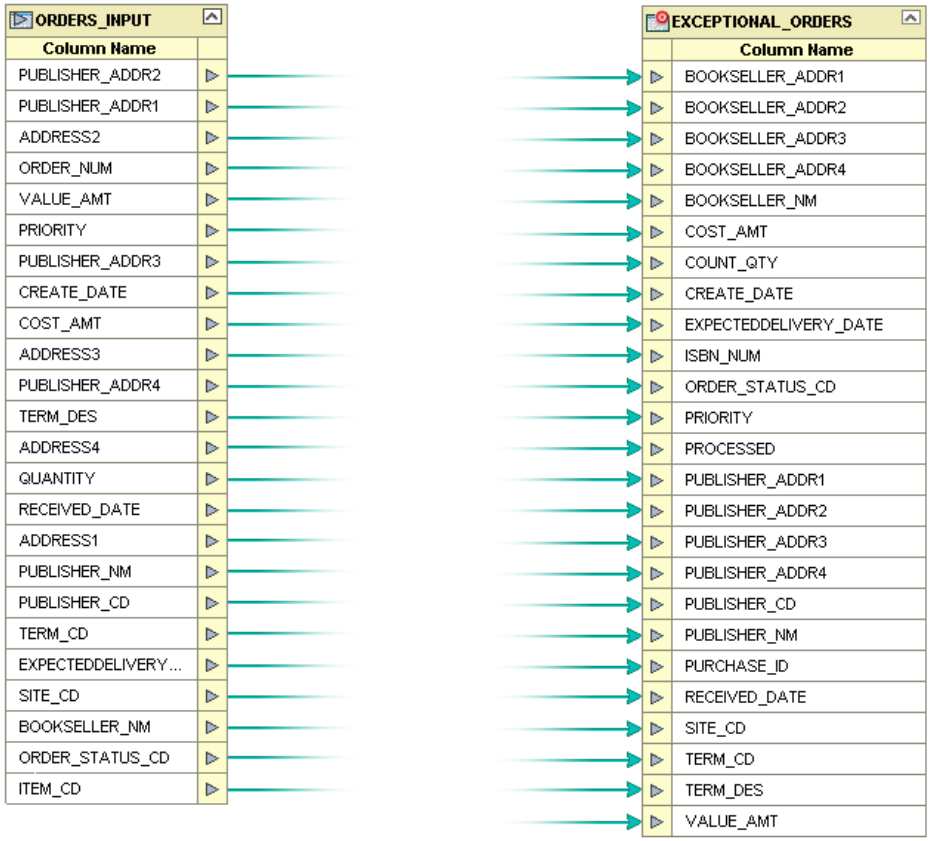
13 Select the 'result property of the 'and' operator and connect it to the 'condition' property of the 'join' operator.

Map Target Table Columns

1 Map the input table to the target table. Map (connect) all the fields whose data you want to see in the target table.

Note: *You can load the target table or truncate the table as often as you wish, using different selection criteria if you wish.*

Figure 39 Map Source to Target

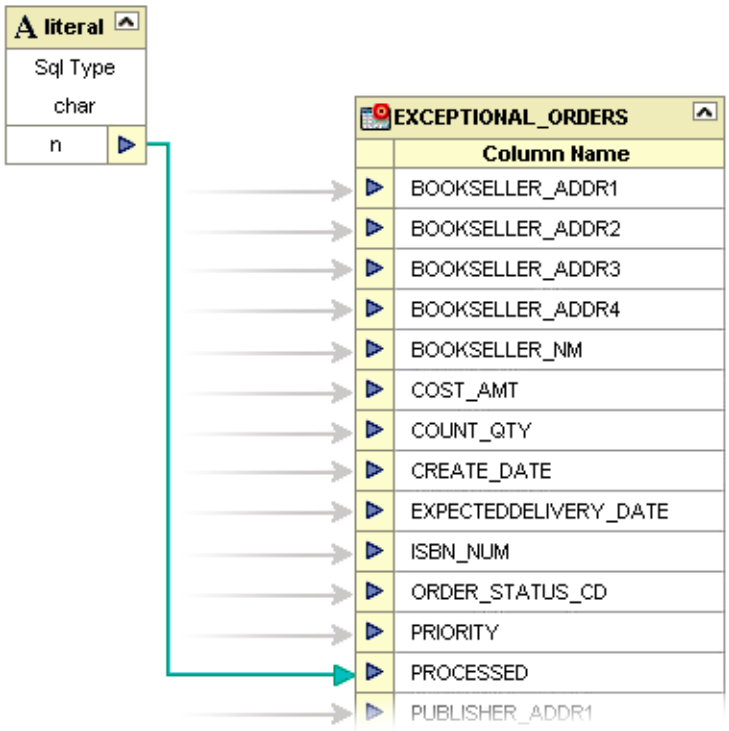


Perform steps 2 through 4 to place a literal 'n' in the **PROCESSED** field of the target table to indicate that the order was not processed.

2 Place a new 'literal' operator on the eTL designer pane (click the icon and drag).

3 Enter value 'n' into the 'literal' operator.

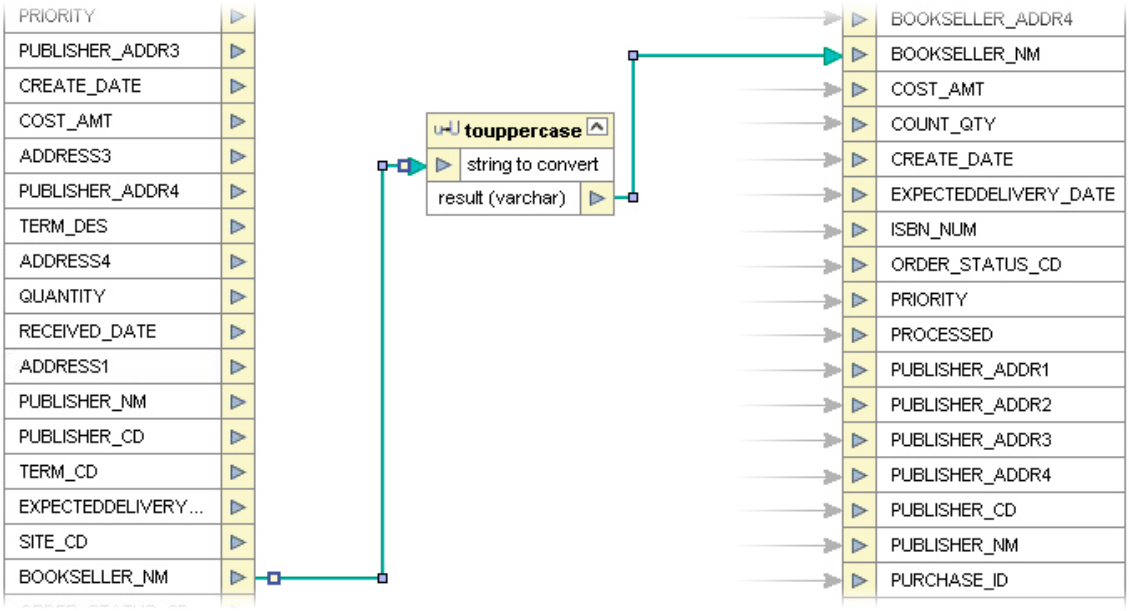
Figure 40 Literal Operator



4 Connect the 'n' of the 'literal' object to the **Exceptional_orders.processed** column.

5 Place a new 'touppercase' operator on the eTL designer pane.

Figure 41 touppercase Operator



6 Select **Orders_input.bookseller_nm** and connect it to the 'string to convert' property of the 'touppercase' operator.

7 Connect the 'result' property of the 'touppercase' operator to the **Exceptional_orders. bookseller_nm** column.

3.4 Using Runtime Filters

The eTL tools explained in this section offer various ways to extract and filter data, either input or output. Runtime arguments are only used with eInsight.

3.4.1. Configuring Inserts and Updates

Users can configure the runtime load process to determine whether to insert or update based on a condition. Conditions can use data in a source table as well as data from within a runtime input argument.

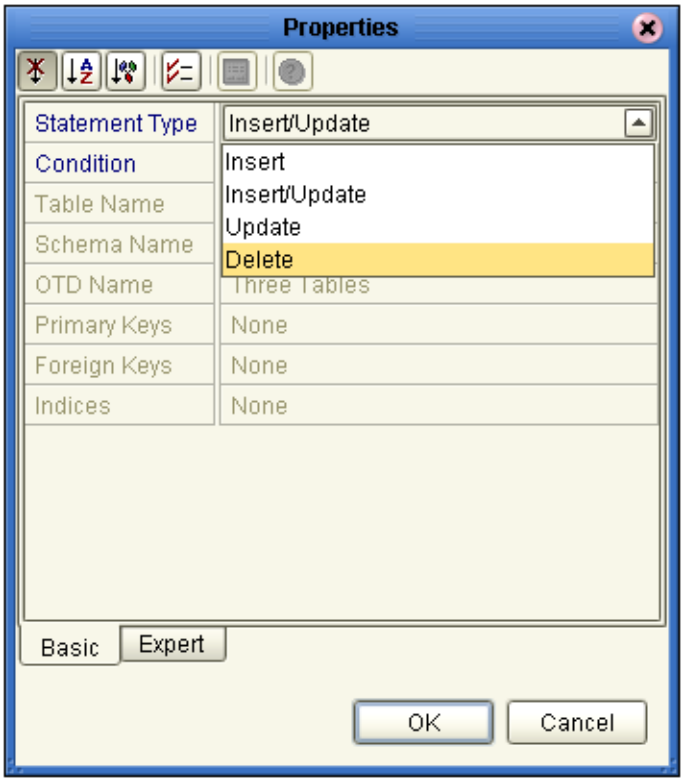
1 Right-click on the target table.

2 Click on Properties.

3 Click inside the Insert/Update field.

4 Click the drop-down arrow.

Figure 42 Insert/Update Properties



- Select **Insert** (default) to always add new rows.
- Select **Insert/Update** to update an existing row or add a new row, depending on the evaluation of a condition.
- Select **Update** to update only existing rows.
- Select **Delete** to delete rows.

3.4.2. Input and Output Runtime Arguments

Use "runtime argument" operators to add input and/or output variables (business process attributes) to the collaboration.

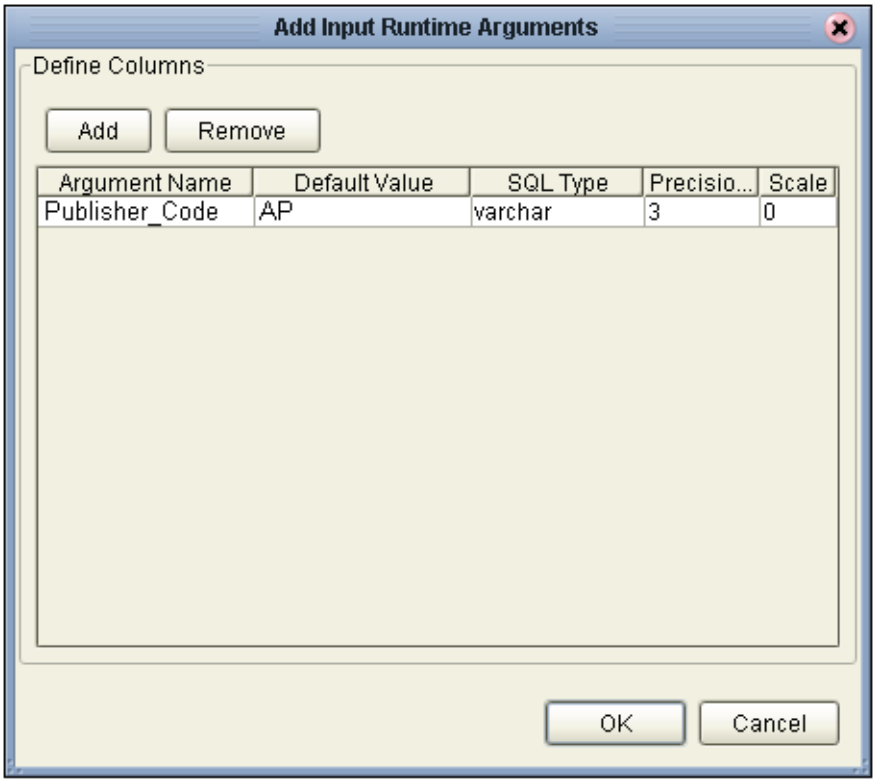
Set Runtime Input Argument

You can use runtime arguments to select and filter data. In the following example enter the variable 'AP' to select the **PUBLISHER_CD** (Publisher code) Adamson Publishing.

1 Click the **Add/Edit Runtime Inputs** button.

The Add Input Runtime Arguments window appears.

Figure 43 Add Input Runtime Arguments



2 Name the argument **Publisher_Code**.

3 Enter **AP** as the default value.

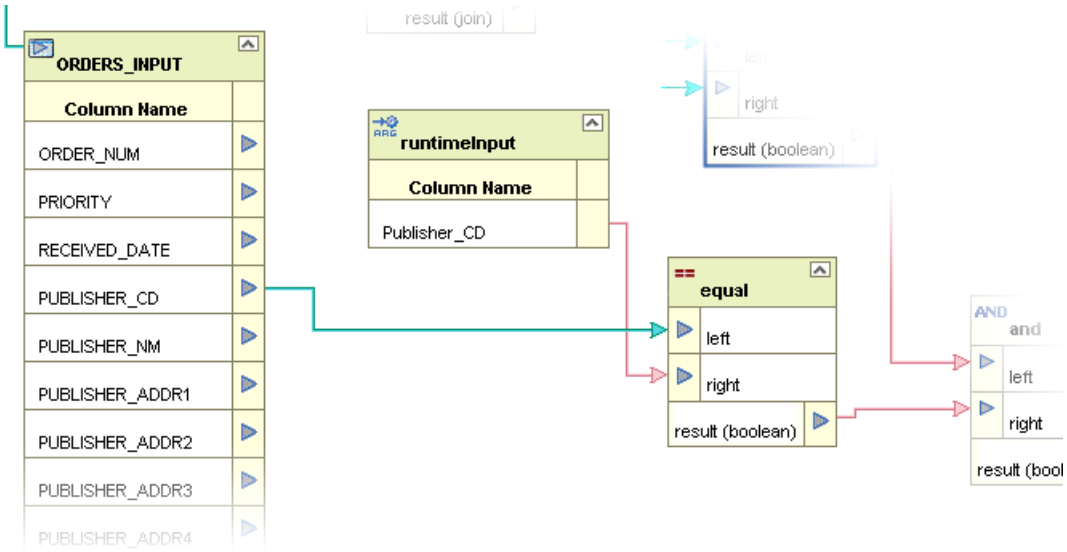
4 Select **Varchar**.

5 Type 3 in the **Precision** field.

6 Click **OK**.

Refer to the following Figure 44.

Figure 44 Map Runtime Input Argument



7 The runtime argument variable which is 'AP' is compared to the Publisher code (**PUBLISHER_CD**). When the condition is true the next operator is evaluated. (In this scenario the next condition is 'and' (followed by 'equal') to verify that **INVENTORY.ISBN_NUM** = **ORDERS_INPUT.ITEM_CD**.)

The runtime argument (filter) shown Figure 43 and Figure 44 would be used to capture only records for 'AP' Adamson Publishing.

Set Runtime Output Argument

Runtime output arguments are used for counts, status and timestamps.

3.4.3. Conditional Extractions

The eTL Condition Builder is another powerful tool for filtering and selecting data for extraction.

Source Table Extractions

Setting a condition with Condition Builder to filter a source table is called an "extraction condition." Setting a condition with Condition Builder to filter a target table is called a "condition." The following steps demonstrate a source table, extraction condition:

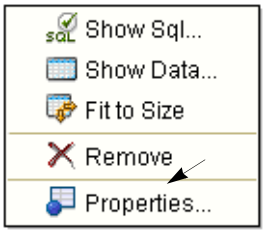
Right click the source table to display the pop up dialog box. To configure an extraction condition, start with Properties.

Select orders with an input value that is greater than $1000

If you wanted to select input orders with a value greater than $1000, you could use a conditional extraction as shown in the following steps.

1 Right click the graphical representation of the **ORDERS_INPUT** table.

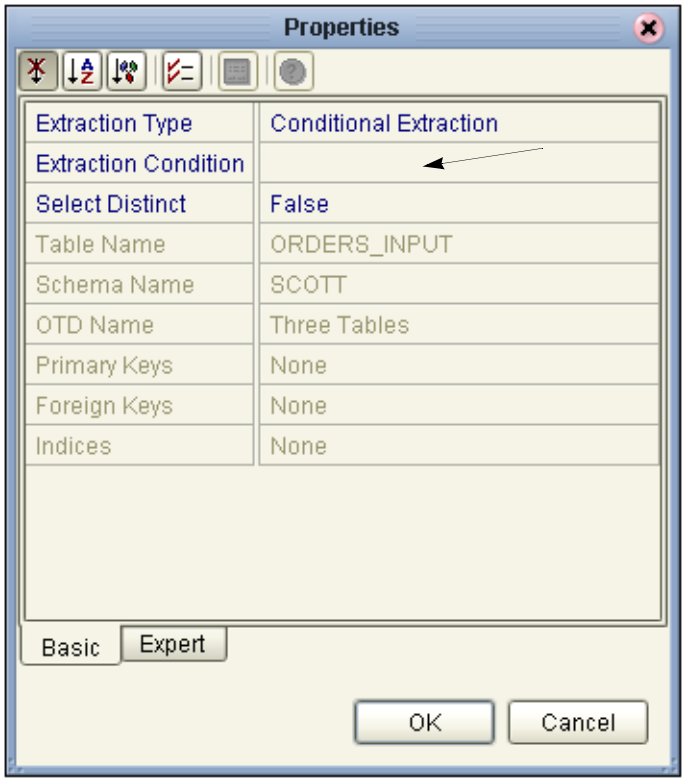
Figure 45 Right-Click Pop up



2 Click **Properties**.

The Properties dialog box appears.

Figure 46 Properties

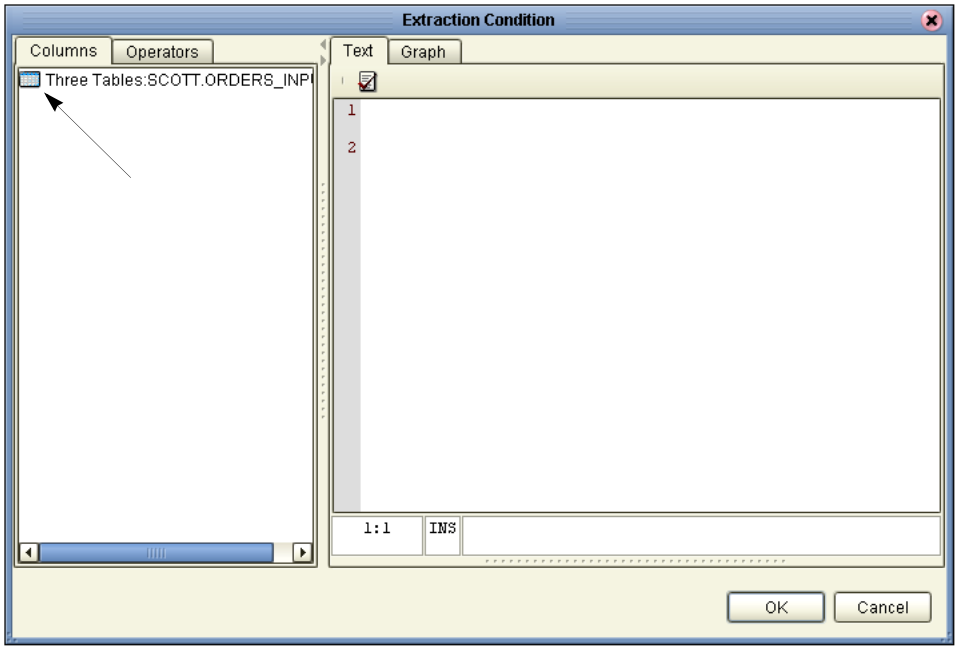


3 Click inside the Extraction Condition field (which is blank).

4 Click on the ellipsis (...)

The Extraction Condition window appears.

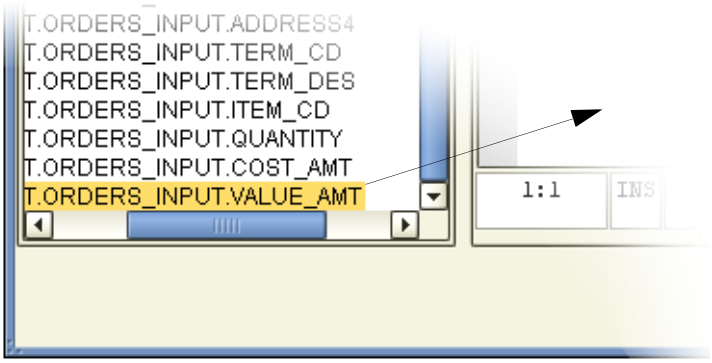
Figure 47



5 Double-click the table icon in the left pane.

An expanded view of the table appears, showing the fields.

Figure 48 Select Field in Table



6 Click the **VALUE_AMT** field to select, then drag the field to the right pane.

SQL is automatically generated based on your actions, or you can type SQL statements directly.

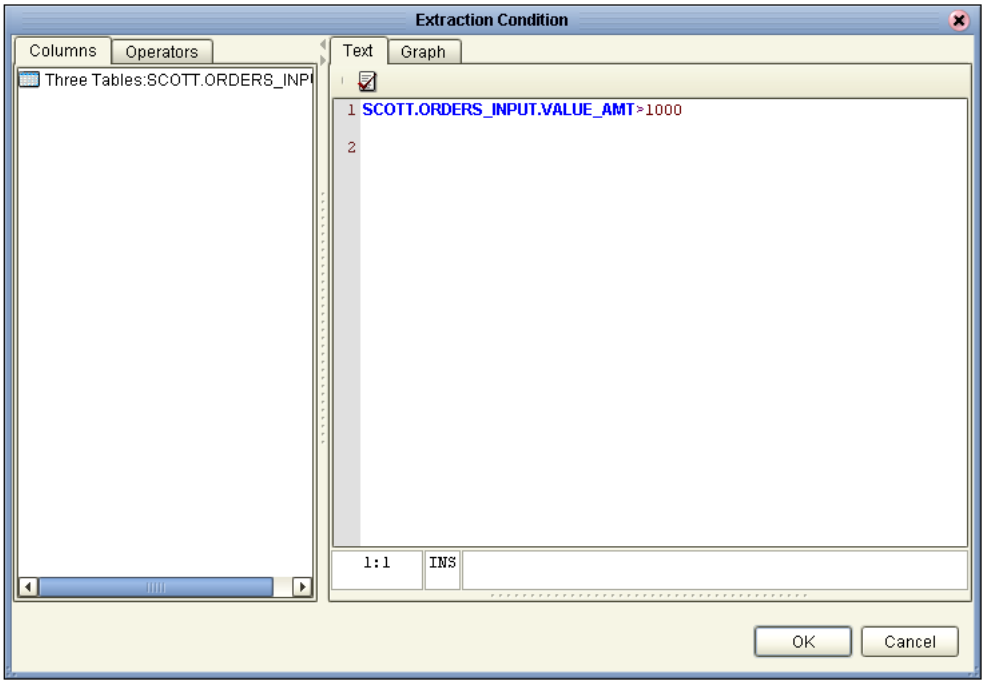
7 Click the **Operators** tab, and from the list double-click **Comparison**.

8 Drag the 'greater than' operator to the right pane (or type in the greater than symbol).

9 Type 1000 for the comparison amount.

Refer to the following Figure 49.

Figure 49 Extraction Condition SQL



10 Click **OK** to close the Extraction Condition window.

11 Click **OK** to close the Properties window.

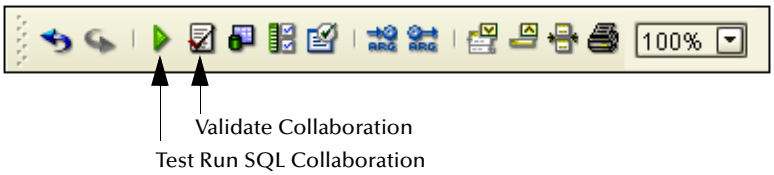
You can edit the Extraction Condition at any time. Start by right-clicking on the table. You can validate the condition, and you can build a condition graphically.

3.5 Validating and Testing

You can validate your Collaboration, and you can execute a test. When you execute a test, after validating the Collaboration, you can check the log, the SQL and the actual data.

3.5.1. Validate Collaboration

Figure 50 Menu Icons



1 Click the **Validate** button to validate the Collaboration.

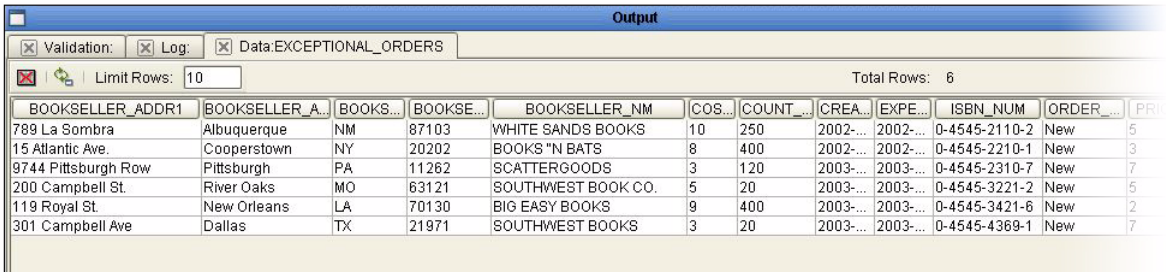
2 Click the **Save** button.

3.5.2. Execute a Test Run

1 Click the **Test Run** button to execute the Collaboration.

2 Right-click **Exceptional_orders** table and select **Show data**.

Figure 51 Show Data



BOOKSELLER_ADDR1	BOOKSELLER_A...	BOOKS...	BOOKSE...	BOOKSELLER_NM	COS...	COUNT_...	CREA...	EXPE...	ISBN_NUM	ORDER_...	PR...
789 La Sombra	Albuquerque	NM	87103	WHITE SANDS BOOKS	10	250	2002-...	2002-...	0-4545-2110-2	New	5
15 Atlantic Ave.	Cooperstown	NY	20202	BOOKS "N BATS	8	400	2002-...	2002-...	0-4545-2210-1	New	3
9744 Pittsburgh Row	Pittsburgh	PA	11262	SCATTERGOODS	3	120	2003-...	2003-...	0-4545-2310-7	New	7
200 Campbell St.	River Oaks	MO	63121	SOUTHWEST BOOK CO.	5	20	2003-...	2003-...	0-4545-3221-2	New	5
119 Royal St.	New Orleans	LA	70130	BIG EASY BOOKS	9	400	2003-...	2003-...	0-4545-3421-6	New	2
301 Campbell Ave	Dallas	TX	21971	SOUTHWEST BOOKS	3	20	2003-...	2003-...	0-4545-4369-1	New	7

Note: sample only - may not match the previous scenario.

View the output data in the lower window. Check the database table **Exceptional_orders** to verify that the 'literal' has changed (use Show Data).

3.6 Using eTL With eInsight

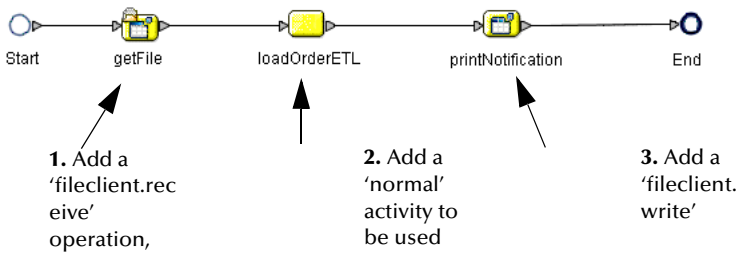
The eTL Integrator produces Collaborations that can be run as "stand alone" or scheduled and used within an eInsight business process. Like other Collaborations in the ICAN suite, eTL Integrator has implemented a Web Services framework to expose its operations and expected inputs/outputs.

Create a Basic eInsight Process

In the following scenario, assume that the 'exceptional orders' table has been successfully populated through a previous collaboration.

1 Create a basic eInsight process.

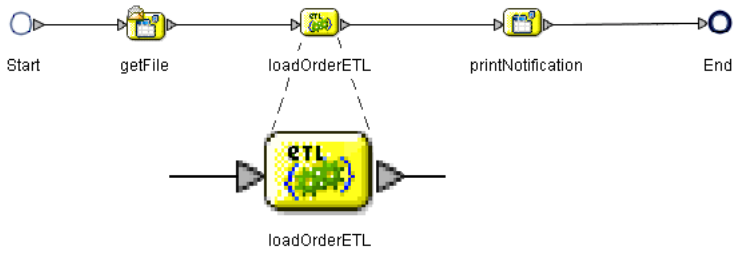
Figure 52 Basic Process



2 Add normal activity to the eInsight business process and rename it 'LoadOrderETL.'

3 In the Project Explorer pane of the Enterprise Designer, select the 'execute' action of the eTL Collaboration that needs to be included into the eInsight business process and drag it on top of the 'loadOrderETL' process activity.

Figure 53 eTL Collaboration in eInsight



Note: *The 'loadOrderETL' icon (inFigure 52) is replaced by the eTL Collaboration icon (Figure 53).*

Note: *You can drag and drop the execute object from the Project Explorer.*

4 Double-click the 'loadOrderETL' icon to open the actual eTL Collaboration.

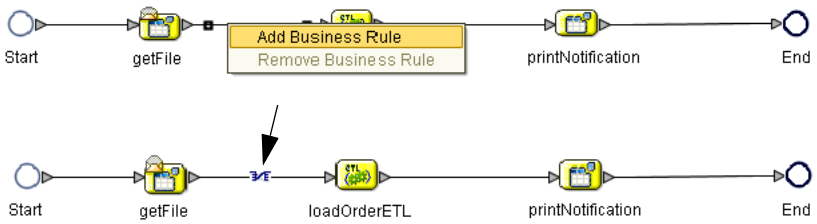
This allows you to view and modify the Collaboration.

Define Business Rule so eTL can Receive its Input

Map the business rule to enable eTL to receive input from a previous activity; in this scenario the 'getFile' activity.

1 Define inbound mapping for the eTL Collaboration.

Figure 54 Map First Business Rule



2 Right-click the connection between 'getFile' and 'loadOrderETL' and select the 'Add Business Rule' option.

The business rule, represented by the Mapping symbol (referred to as 'M' in eInsight) appears.

3 Click the ‘M’ icon in the eInsight toolbar to invoke the Transformation Designer.

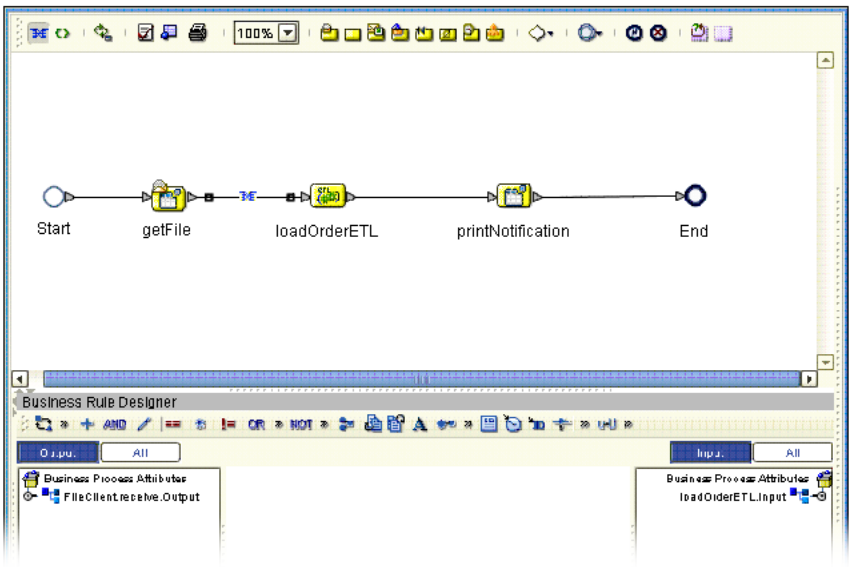
Define Inbound Mapping for the eTL

1 Select the newly created business rule, (the ‘M’ of the ‘getFile’ ‘LoadOrderETL’ connection).

2 Select the ‘M’ icon of the eInsight toolbar.

The Transformation Designer appears.

Figure 55 Define Inbound Mapping

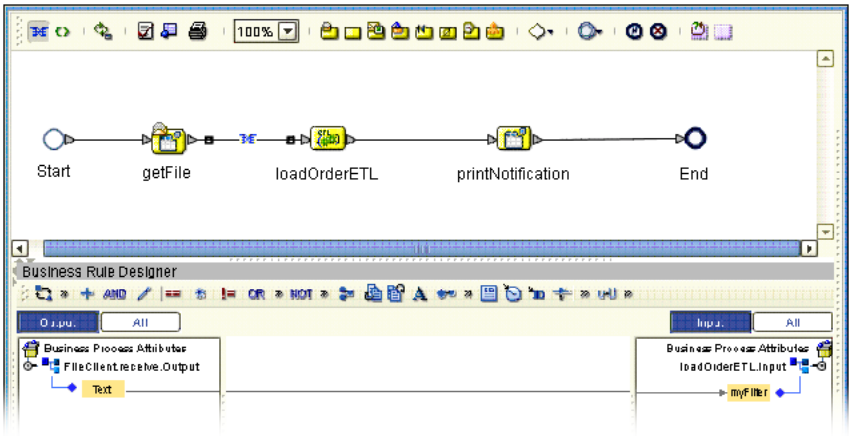


3 Expand the ‘FileClient’ operator in the left pane of the Transformation Designer.

4 Expand the ‘loadOrderETL’ operator in the right pane of the Transformation Designer.

5 Connect ‘text’ data in the left pane to ‘myFilter’ data in the right pane. See the following Figure 56.

Figure 56 Define Mapping - Connect Text



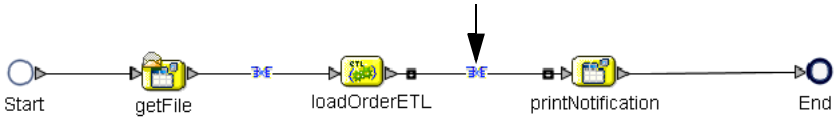
The eTL Collaboration's parameter ('myFilter' data element) is now supplied by the contents of the 'read' file. This embeds the eTL Collaboration into the business process.

Define Outbound Mapping for the eTL

Define a business rule (mapping) to make it possible for the eTL Collaboration to convey its output to a subsequent activity, in this case to 'printNotification.'

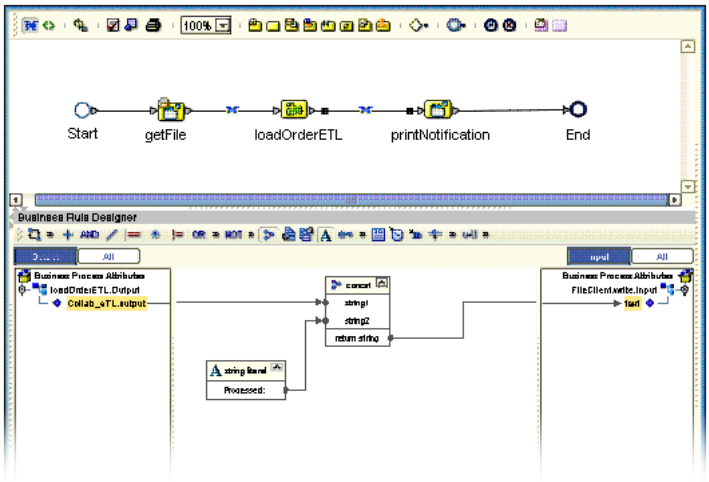
1 Right-click the connection between 'loadOrderETL' and 'printNotification,' and select the 'Add Business Rule' option. See Figure 57 below.

Figure 57 Add Outbound Business Rule



Map the business rules as shown in the following Figure 58.

Figure 58 Outbound Mapping



2 Expand the 'loadOrderETL' view in the left pane.

3 Expand the 'printNotification" view in the right pane.

4 Place a new string literal in the Business Rules Designer window.

5 Enter 'Processed' as a literal value and click OK.

6 Place a new 'concat' operator in the Business Rules Designer window.

7 Connect the output data element in the left pane to the 'string1' property of the new concat operator.

8 Connect the string literal operator to the 'string2' property of the concat operator.

9 Connect the 'return' property of the concat operator to the text element in the right pane.

Complete the eInsight Business Process

1 Click the 'Validate' option in the eInsight toolbar.

2 Click the 'Synchronize' option in the eInsight toolbar.

3 Click the 'Show Business' option in the eInsight toolbar to show the generated BPEL source code.

The business process exposes itself as a Web Service. You now have embedded your eTL Collaboration into a business process that can be invoked as a Web Service.

Chapter 4

Deployment

After a Project has been completed it must be deployed. This section explains that process.

4.1 Creating a Deployment Profile

Before you can map components, you must first create a Deployment Profile. This also involves creating an Environment. See *eGate Tutorial*.

4.1.1. New Deployment Profile

A Deployment Profile contains information about how Project components deploy in an Environment, and it also maps components to the Environment.

1. Click the Project Explorer tab to return to the Project Explorer pane of your Project.
2. Right-click **Project1**, and then click **New Deployment Profile**.

After creating your deployment profile, drag and drop components into the server dialog boxes.

Drag and Drop Collaborations

1. Drag-and-drop your Collaborations into your Integration Server.
2. Drag-and-drop your topics into your Message Server.
3. Drag-and-drop your external files into your External File Servers.
4. After populating your Environment with all the available components, there are no components listed in the middle pane. All your components reside in the servers.

4.1.2. Deploy your Project

When you activate a Project, a deployment file is created that will later be picked up by the Logical Host. The Project you created with Enterprise Designer is "code generated" into a package that is passed to the Repository. The Logical Host picks up this package from the Repository.

If you want to do a "hot deploy," which means that the Logical Host picks up the current package in real time, you could click **YES** in the Activate Dialog box when prompted "Do you wish to apply Logical host(s) immediately?" (See below).

Activate Environment

1 Click the **Activate** button. The Activation in Progress message appears.

Activating the Deployment Profile may take a few minutes.

Run the Bootstrap and Management Agent

The Bootstrap process executes your and begins the process of polling your input data. The Bootstrap process is performed from a command prompt. Bootstrap picks up the deployment profile the first time it runs; after that you would redeploy.

The Bootstrap command is case sensitive on Windows.

4.1.3. Run the Bootstrap

The Bootstrap process executes your **Project1** and begins the process of polling your input data. The Bootstrap process is performed from a command prompt. Bootstrap will pick up the deployment profile the first time it runs; after that you would redeploy.

Run the bootstrap.bat file

You can edit the configuration file: ***Logical-host.properties*** located in the folder `Logicalhost\bootstrap\config.` After you have configured this file you can run the bootstrap. You can also enter the commands in a **cmd** shell as explained in the following steps.

1 Open a Windows command prompt as shown in the following. (Click **Start**; click **Run;** type **cmd**.)

2 Navigate to where you installed the logicalhost; for example, **eGate50\logicalhost\bootstrap\bin**, then type the following command:

```
CD \eGate50\logicalhost\bootstrap\bin
```

3 To start the Bootstrap process, type the following command:

```
bootstrap -e environment_name -l logicalhost_name
-r repository_URL -i username -p password
```

environment_name is the name of your environment (for example, *TutorialTest*),

logicalhost_name is the name of your Logical Host (for example, *LogicalHost1*),

repository_URL is the full URL of your Repository including the Repository name (for example, *http://labserver:9000/Test*),

username is your user name, and

password is your password.

4 Press **Enter**.

The Bootstrap process takes a few minutes to execute. The Management Agent starts the components in the Project.

4.1.4. Verify the Output Data

When you click **OK** to apply your activation to the logical host(s), the Management Agent runs for a few minutes and creates your output.

4.2 Deployment Profile for eTL

This section summarizes how to create and activate the Deployment Profile. Before you can create the profile, you must create an Environment. Many of the steps in this section are summarized. For a complete, simplified, end-to-end example of project development and deployment, refer to the *eGate Tutorial*.

Create an Environment and Logical Host

An Environment is a collection of physical resources and their configurations that are used to host Project components. An Environment contains logical hosts and external systems.

eTL Collaborations are either executed as 'stand-alone or they are 'invoked' by an eInsight business process.

The following two scenarios help explain the process.

4.2.1. Scenario 1

Deploy a Stand-alone Process

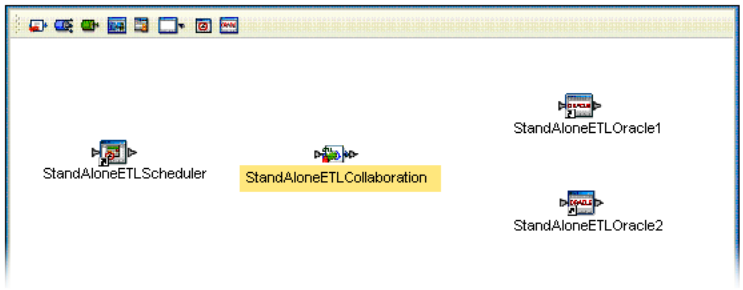
This is a continuation of **"Using eTL With eInsight" on page 49**.

The following examples were created with an Oracle database.

1. Create a new Connectivity Map in Enterprise Designer.
2. Add two Oracle external application icons.

   This implements the database logic as defined in the eTL Collaboration.

Figure 59 Create Connectivity Map

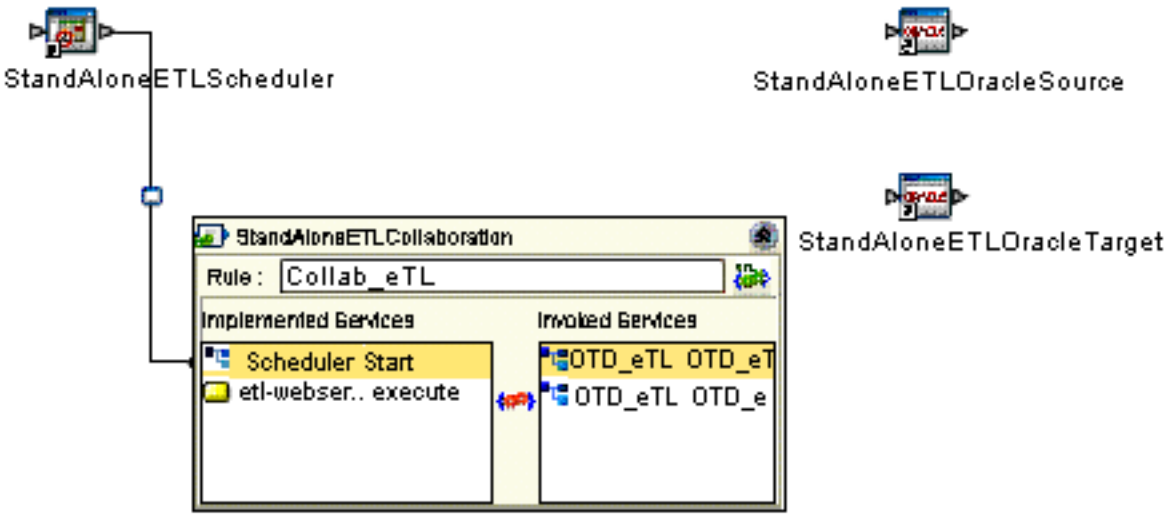


3. Add one Service icon.
4. From the Project Explorer, drag the eTL Collaboration into the second service icon.
5. Add a Scheduler icon.

Define the eTL Scheduler

1. Double-click the eTL Collaboration Service icon.

Figure 60 Define eTL Scheduler

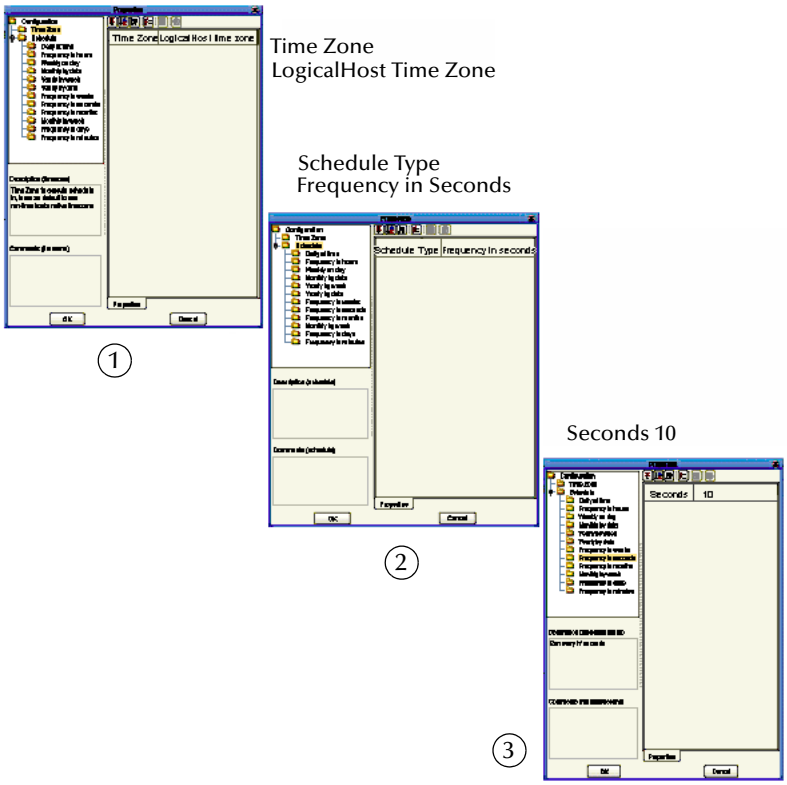


2 Connect the Scheduler Service from the left pane of the eTL Collaboration to the Scheduler icon.

3 Double-click the new connection (line).

Its property sheet displays. There are many options available; this scenario covers only a few.

Figure 61 Define Schedule Criteria



4 Select a timezone, where the LogicalHost resides, from the dropdown list. (See graphic 1).

5 Select a schedule type (interval type). For example, Daily at time, Frequency in seconds, or Frequency in hours. (See graphic 2.)

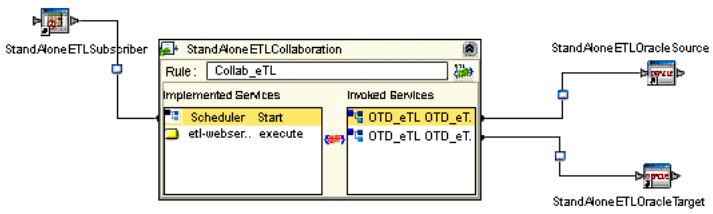
6 Select an interval value such as, midnight, Monday 8 AM PST, every hour or every 10 seconds. (See graphic 3.)

Connect Source and Target

Resume mapping the Connectivity map.

1 Double-click the eTL Collaboration Service icon, if not already open.

Figure 62 Connect Source and Target



2 Connect the source Oracle OTD Service to the source external Oracle system icon.

3 Connect the target Oracle OTD Service to the target external Oracle system icon.

4 Double-click the connection between the source Oracle OTD Service and the source external Oracle system icon.

The connection's property sheet displays.

5 Select the Outbound Oracle eWay option (because this is an outbound operation for the eTL Collaboration).

6 Click the OK button.

7 Double-click the connection between the target Oracle OTD Service and the target external Oracle system icon.

The connection's property sheet displays.

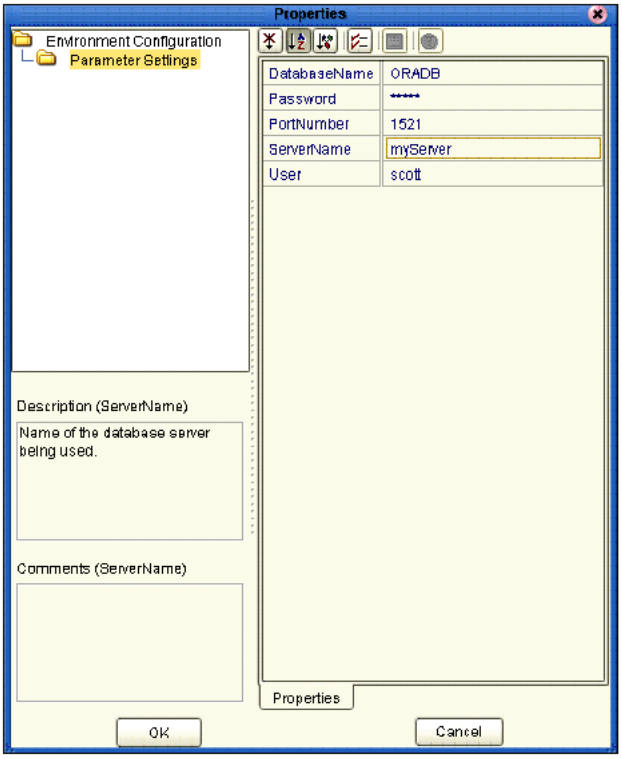
8 Select the Outbound Oracle eWay option.

9 Click the OK button.

The connection property sheet is displayed.

Note: *The environment properties of the source database are determined at the time the solution is activated via a deployment profile; therefore, you don't have to specify the actual database name here.*

Figure 63 Properties



10 Define the Oracle external system if not already done.

Create an Environment

This involves the following steps:

1. Switch to the Environment Explorer view and create a new environment.
2. Select the Oracle External system.
3. Enter the property values.

Note: *The Oracle External system is used in the Deployment profile.*

Create a Deployment Profile for Scenario 1

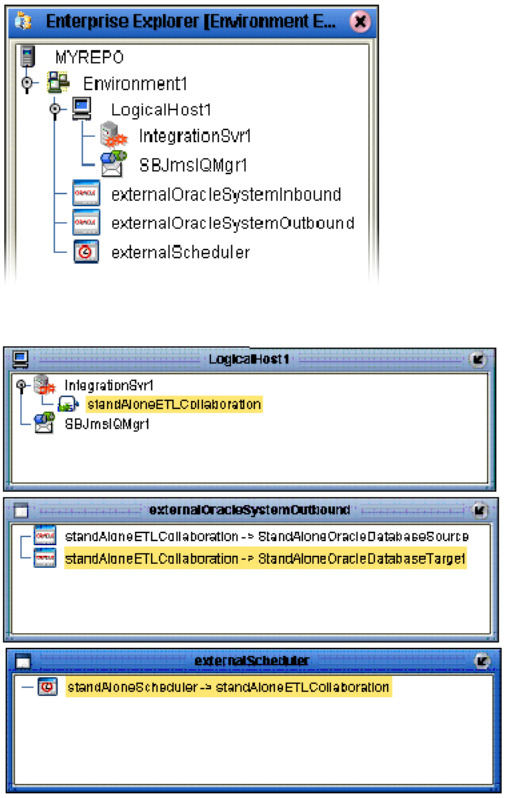
Prerequisites:

- Create an environment
- Create at least one logical host
- Create at least one Integration server within the logical host
- Create at least one Oracle external system

1. From the Project Explorer of the Enterprise Designer, create a new deployment profile.
2. Drag the eTL Collaboration Service to an Integration server.
3. Drag the Oracle Services to an external Oracle system.

   See the following Figure 64.

Figure 64 Environment - Deployment Profile



4 Start your logical host, if not already running.

5 Activate your deployment.

6 Verify the results.

4.2.2. Scenario 2

Deploy as an Invoked Service

The example illustrated in this section explains how to invoke a service from an eInsight business process.

The following examples were created with an Oracle database.

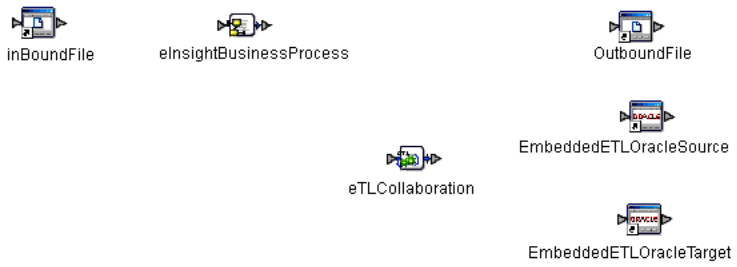
1 Create a new Connectivity Map in Enterprise Designer.

2 Add two external application icons (inbound and outbound).

3 Add two Oracle external application icons.

This implements the database logic as defined in the eTL Collaboration.

Figure 65 Connectivity Map for an Invoked Service

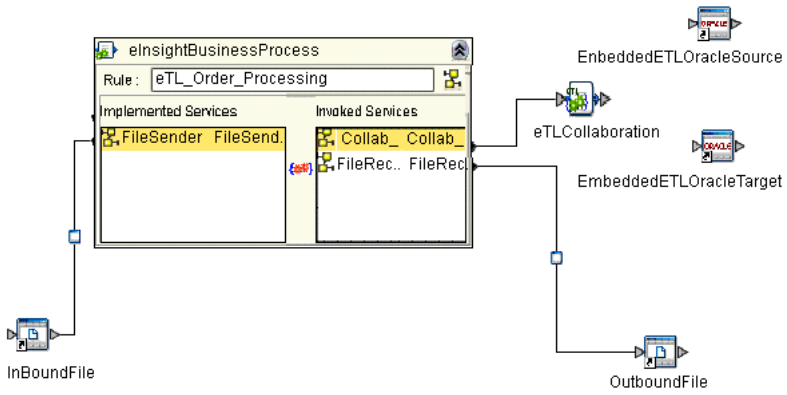


4 Add two Service icons.

5 From the Project Explorer of the Enterprise Designer, drag the eTL business processes into the first Service icon.

6 From the Project Explorer of the Enterprise Designer, drag the eTL Collaboration into the second Service icon.

Figure 66 Connect Inbound and Outbound Services



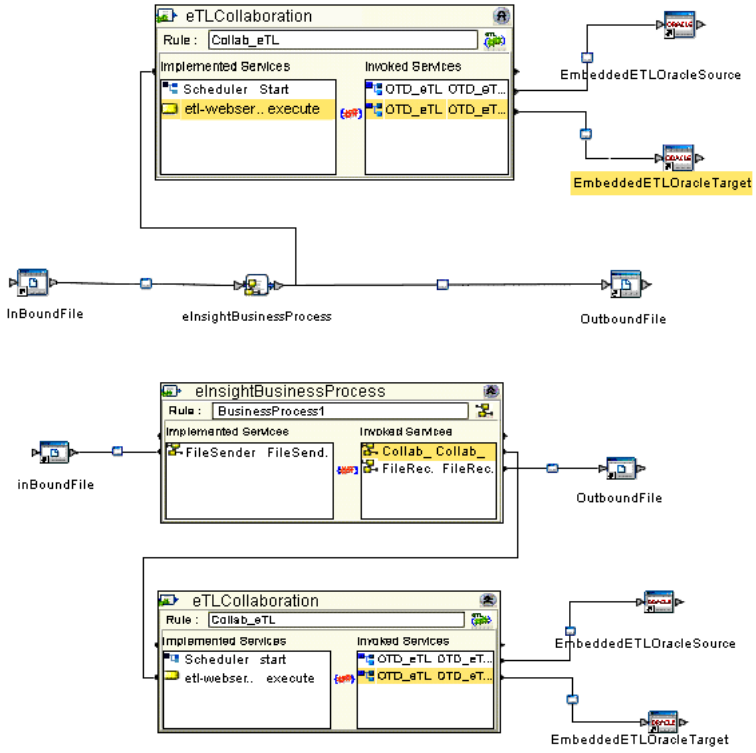
Double-click the eInsight business process Service icon.

7 Connect the implemented Service, in the left pane, File Sender, to the inBoundFile icon.

8 Connect the eTL Collaboration invoked Service to the eTL Collaboration icon.

9 Connect the outbound file Service to the OutboundFile icon.

Figure 67 Connect to External Services



10 Connect the Oracle source OTD to the Oracle source external system.

11 Connect the Oracle source OTD to the Oracle target external system.

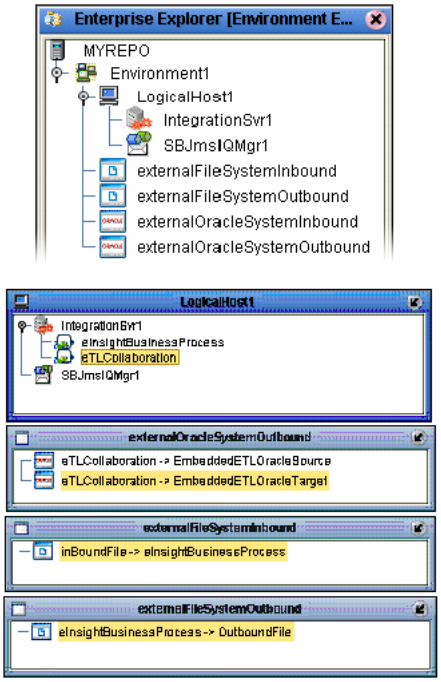
Create a Deployment Profile for Scenario 2

Prerequisites:

- Create an Environment
- Create at least one logical host
- Create at least one Integration server within the logical host
- Create at least one Oracle external system
- Create at least one File external system

1 From the Project Explorer of the Enterprise Designer, create a new Deployment Profile.

Figure 68 Environment Servers



2 Drag the eInsight business process Service into the Integration server.

3 Drag the eTL Collaboration Service to an Integration server of a logical host.

4 Drag the Oracle Services to an external Oracle system.

5 Drag the (flat) file (read and write) Services to an external file system.

6 Start your logical host, if not already running.

7 Activate your deployment.

8 Verify the results.

Glossary

BI
Business integration (also Business Intelligence).

Collaboration
See **"Service"** and **"Collaboration Definition"**.

Collaboration Definition
The encoding of business rules, in Java or XSLT format. Typically, the encoding consists of operations on OTDs (see **"OTD" on page 68**). Several Collaborations can have the same Collaboration Definition.

Connection
Consists of the configuration information that enables an eWay to connect to an external system.

Connectivity Map
Contains business logic and routing information about the data transmission. A Connectivity Map usually includes one or more Collaborations, Passthrough Collaborations, topics, queues, and eWays. A Connectivity Map is created under a Project. A Project may have multiple Connectivity Maps.

Constants
A name or value pair that is visible across a Project.

CRM
Customer Relations Management

Data Cleansing
Data must be cleansed of errors in structure and content before it is useful in data warehousing and integration; this means transforming data for accurate and effective use in a database or data management system by cleansing "dirty" or redundant data.

Data Dictionary
Defines the organization of a database and lists all files in the database, the number of records in each file, and the names and types of each field. The data dictionary is often hidden from end users. Although the dictionary doesn't contain actual data, it does contain essential information for managing the database.

Data Integrity
Refers to the accuracy and validity of data. Data integrity can be compromised in many ways, including human error through data entry, or through faulty logic in programming. Computer viruses, software bugs and many other factors can also compromise data integrity.

Data Mapping
In relational databases (RDBMSs) data mapping is the relationship and data flow between source and target objects. Mapping involves structuring the relationship between source and target objects.

Data Mart
A smaller, focused, database designed to help managers make business decisions. (A data warehouse is a larger, enterprise, database(s).)

Data Mining
Used to synthesize or isolate unique data patterns to predict future behaviors or to filter data to select patterns that help discover previously unknown relationships among data. Commonly used by marketers who acquire and distill consumer information.

Data Transformation
Data transformation is necessary after extracting data from legacy data formats, or any format that requires cleansing. Data is transformed for efficient use for Business-to-Business Enterprise Data Integration.

Data Warehouse
A copy or view of enterprise transaction data (sometimes non-transaction data) that is used for reporting. The data is often summarized and always structured for queries and analysis.

Deployment Profile
Contains the information about how the Project components will be deployed in an Environment. A Project can have multiple Deployment Profiles, but only one Deployment Profile can be activated for a Project in any one Environment.

Derived Collaboration
Collaboration that inherits operations from another, according to standard object-oriented practice.

Dimension Table
Dimension tables describe the business entities of an enterprise; also called lookup or reference tables.

Dirty Data
Dirty data contains, but is not limited to, incorrect data including spelling errors, punctuation errors, incorrect data referencing, incomplete, inconsistent, outdated, and redundant data.

Drill Down
To move from summary to more detailed data by "drilling down" to get it. In database terminology this might mean starting with a general category and drilling down to a specific field in a record.

eGate System
See **"Project"**.

Environment
A collection of physical resources and their configurations that are used to host Project components. An Environment contains logical hosts and external systems.

EPR
Enterprise Resource Management

ETL
Extract, Transform, Load. Extract is the process of reading data from a source database and extracting the desired subset of data. Transform is the process of converting the extracted data from its previous form into the desired form. Load is the process of writing the data into a larger database.

eWay
A link between a Collaboration and an external connection including the message server connection (topic or queue) or external application.

External Application
A logical representation in an eGate Project of an external application.

External System
A representation in an eGate Project of an external application system.

Extraction
Data are extracted from a source using software tools. This first step in ETL initially "gets" the data.

Fact Table
A fact table typically contains two types of columns: those containing facts and those that contain foreign keys to dimension tables. Fact tables contain detail facts and/or summary facts.

ICAN Suite
The SeeBeyond Integrated Composite Application Network Suite.

Integration Server
J2EE software platform that houses the business logic container used to run Collaborations and JCA connectors (eWays). Provides transaction services, persistence, and external connectivity.

JMS IQ Manager
JMS-compliant, guaranteed delivery store, forwarding, and queueing service.

Join
Matches records, which are joined by a common field, in two tables in a relational database. Often part of a Select query.

Link
The JMS Connection between a Collaboration and a topic or queue in a JMS-compliant message server.

Linked Message Destination
A reference to a Message Destination defined in another Connectivity Map.

Logical Host
An instance of the eGate runtime Environment that is installed on a machine. A Logical Host contains the software and other installed components that are required at runtime, such as application and message servers.

Management Agent
Uses J2EE technology to manage and monitor an eGate 5.0 deployment that may contain other application servers in addition to the SeeBeyond Integration Server. Defines management interfaces and services designed for distributed environments, focusing on providing functionality for managing networks, systems, and applications.

Message Destination
A general term for a topic or queue. Two or more Projects can share a message destination that has the same name and is deployed on the same message server. A single Project may also have a single message destination referenced in multiple Connectivity Maps.

Metadata
"Data about data." Metadata describes "how," "when," and "who" about structure and format, of a particular set of data. ETL tools are used to generate and maintain a central metadata repository.

Non-normalized Data
Non-normalized data cannot be cross-referenced accurately, if at all, and causes manageability issues. Non-normalized data may be converted to normalized data.

Normalized Data
Normalization is a common database design process used to remove redundant or incorrect organization and data. The design and normalization of the database will create a maintainable data set that can be cross-referenced.

Normalized data is not only easier to analyze but also easier to expand. Normalization involves removing redundancy and correcting incorrect data structure and organization.

OLAP
Online analytical processing.

OTD
An acronym for Object Type Definition. OTDs contain the data structure and rules that define an object. An OTD is used in Java Collaboration Definitions for creating data transformations and interfacing with external systems.

Project
Contains a collection of logical components, configurations, and files that are used to solve business problems. A Project organizes the files and packages and maintains the settings that comprise an eGate system in SeeBeyond's Enterprise Designer.

Query

A request for information from a database. There are three query methods:

Choose – With this easy-to-use method, the database system presents a list of parameters from which you can choose. This method is not as flexible as other methods.

Query by example (QBE) – With this method, the system lets you specify fields and values to define a query.

Query language – With this method, you have the flexibility and power to make requests for information in the form of a stylized query using a query language. This is the most complex and powerful method.

Queue

A JMS queue is a shareable object that conforms to the *point-to-point* (p2p, or PTP) messaging domain, where one sender delivers a message to exactly one receiver. When the SeeBeyond JMS IQ Manager sends a message to a queue, it ensures it is received once and only once, even though there may be many receivers "listening" to the queue. This is equivalent to the subscriber pooling in other queue implementations. You can reference a queue that exists in another Connectivity Map or Project.

Raw Data

Data that has not been turned into "information," through processing. Although factual and "real," raw data is unorganized.

Relational Database (RDBMS)

Short for Relational Database Management System, most often referred to as RDBMS. Data is stored in related tables. Relational databases can be viewed in many different ways.

In this system a single database can be spread across several tables. (RDBMS differs from flat-file databases where each database is self-contained as a single file or table.)

Repository

Stores and manages the setup, component, and configuration information for eGate Projects. The Repository also provides monitoring services for Projects, which include version control and impact analysis.

Schema Runtime Environment

An add-on in eGate 5.0 that provides the upgrade path for e*Gate 4.x users to upgrade to eGate 5.0. Also known as the SRE.

Service

Contains the information about executing a set of business rules. These business rules can be defined in a Java Collaboration Definition, XSLT Collaboration Definition, Business Process, eTL Definition, or other service. A Service also contains binding information for connecting to JMS Topics, Queues, eWays, and other services.

Staging Data
Data that is to be processed before entering the warehouse.

Subproject
An independent Project that is included as part of another Project and listed on the Enterprise Explorer tree beneath the main Project icon.

Table
Refers to data arranged in rows and columns, like a spreadsheet. In relational database management systems, all information is stored in tables.

Topic
A JMS topic is a shareable object that conforms to the *publish-and-subscribe* (pub/sub) messaging domain, where one publisher broadcasts messages to potentially many subscribers. When the SeeBeyond JMS IQ Manager publishes a message on a topic, it ensures that all subscribers receive the message.

Transformation
Data that are extracted from databases are transformed into a desired form, using various tools that cleanse, merge, purge, aggregate, calculate, audit, remove redundancy, standardize, etc.

XSLT

An acronym for Extensible Stylesheet Language Transformations. A file format used in eGate to generate Collaboration Definitions.

Warehouse
See **"Data Warehouse"**.

e*Gate 4.x Terms in eGate 5.0

Table 2 provides definitions for the terms that are new with eGate release 5.0, as well as equivalent terms from eGate release 4.x.

Table 2 eGate 5.0 Terms

5.0 Term	4.x Equivalent Term
Collaboration	Collaboration
Collaboration Definition	Collaboration Definition
Connection	eWay Connection
Connectivity Map	Closest: Network View of an entire Schema
Deploy	Run the Control Broker
Deployment	<none>
Deployment Profile	Closest: Schema
Enterprise Designer	Enterprise Manager
Enterprise Manager	Enterprise Monitor
Environment	Schema (except only includes physical information, not business logic)
eWay	eWay Connection eWay
eWay Configuration	eWay Connection Configuration
External Application	eWay Connection
External System	eWay Connection
JMS Connection	eWay Connection
Integration Server	<none>
Link	JMS eWay Connection
Linked Message Destination	<none>
Logical Host	Participating Host
Message Destination	Topic or queue
Message Server	JMS IQ Manager
Object Type Definition (OTD)	Event Type Definition (ETD)
Process Manager	Control Broker
Project	Schema (except not including physical layer)
Queue	JMS queue
Repository	Registry
Subproject	Schema

Table 2 eGate 5.0 Terms (Continued)

5.0 Term	4.x Equivalent Term
Topic	JMS topic
XSLT	<none>

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