SUN SEEBEYOND

eINDEX™ SINGLE PATIENT VIEW USER'S GUIDE

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Contents

Chapter 9

Chapter 10

Chapter 11

Appendix A

Appendix B

Appendix C

Appendix D

List of Figures

Chapter 1

Introduction

This chapter provides an overview of this guide and the conventions used throughout, as well as a list of supporting documents and information about using this guide.

What's in This Chapter

1.1 About eIndex Single Patient View

The Sun SeeBeyond eIndex™ Single Patient View (eIndex SPV) provides a flexible framework to design and configure an enterprise-wide person master index that creates a single view of person information. eIndex SPV maintains the most current information about the people who participate throughout your organization and links information from different locations and computer systems. eIndex SPV provides accurate identification of patients throughout your healthcare enterprise, and cross-references a patient's local IDs using an enterprise-wide unique identification number (EUID). eIndex SPV also ensures accurate patient data by identifying potential duplicate records and providing the ability to merge or resolve duplicate records. All patient information is centralized in one shared index, enabling eIndex SPV to integrate data throughout the enterprise while allowing local systems to continue operating independently.

1.2 eIndex Single Patient View Features

eIndex SPV provides features and functions that allow you to customize the data structure, database, and logic of the master person index. eIndex SPV provides the following features:

- **Rapid Development** - eIndex SPV allows for rapid and intuitive development of a master person index, providing a predefined template that can easily be configured for your use.
- **Automated Component Generation** - eIndex SPV can regenerate scripts that create the appropriate database schemas and an eGate Object Type Definition (OTD) based on the changes you make to the object structure.
- **Configurable Survivor Calculator** - eIndex SPV provides predefined strategies for determining which field values to populate in the single best record (SBR). You can define different survivor rules for each field and you can create a custom survivor strategy to implement in the master index.
- **Flexible Architecture** - eIndex SPV provides a flexible platform that allows you to customize the object structure so you can design an application that specifically meets your processing needs.
- **Configurable Matching Algorithm** - eIndex SPV provides standard support for the Sun SeeBeyond Match Engine (SBME) and also provides the ability to plug in a custom matching algorithm of your choice.
- **Custom Java API** - eIndex SPV generates a Java API that is customized to the object structure you define. You can call the methods in this API in the Collaborations and Business Processes that define the transformation rules for data processed by the master index.
- **Standard Reports** - eIndex SPV provides a set of standard reports that can be run from a command line or from the EDM. The reports help you monitor the state of the data stored in the master index and help you identify configuration changes that might be required. You can also create custom reports using any ODBC-compliant reporting tool, SQL, or Java.

1.3 What's New in This Release

This release provides general maintenance fixes for eIndex SPV. For complete information about the changes included in this release, see the *Sun SeeBeyond eIndex Single Patient View Release Notes*.

1.4 About This Document

This guide provides comprehensive information on installing and working with eIndex SPV. This guide explains how to install and customize the components of eIndex SPV, including eGate Project files, the master index database, the runtime environment, and the Enterprise Data Manager (EDM). It also includes information about the architecture and components of eIndex SPV. This guide is intended to be used with the *Sun SeeBeyond eView Studio Configuration Guide*, *Sun SeeBeyond eView Studio Reference Guide*, and *Implementing the Sun SeeBeyond Match Engine with eView Studio*.

1.4.1 What's in This Document

This guide is divided into the chapters and appendixes that cover the topics shown below. The chapters are presented in the order in which you would normally perform the steps to create an eIndex SPV application.

- Chapter 1 **"Introduction"** gives a general preview of this document—its purpose, scope, and organization—and provides sources of additional information.
- Chapter 2 **"eIndex Single Patient View Overview"** provides information about the architecture of eIndex SPV and the runtime environment, and describes how the runtime environment is created.
- Chapter 3 **"Installation"** gives instructions for installing the eIndex SPV files and setting up the environment for eIndex SPV and the runtime environment.
- Chapter 4 **"Configuring eIndex SPV"** gives a summary of the configuration files in the eIndex SPV Project, and provides information about the XML Editor.
- Chapter 5 **"Creating Custom Plug-ins"** describes how to implement custom processing code in the master index.
- Chapter 6 **"Building the Application"** explains how to generate the eIndex SPV application to update the application files with your customizations.
- Chapter 7 **"Creating the Database"** describes how to design, install, and configure the Oracle database for the master index.
- Chapter 8 **"Defining Connectivity Components"** describes how to work with the connectivity components of the eIndex SPV Project to share and process data through the eIndex SPV system.
- Chapter 9 **"Defining the Environment"** describes how to set up the physical environment of the master index.
- Chapter 10 **"Deploying the Project"** explains how to create and deploy the Deployment Profile for the master index.
- Chapter 11 **"Maintenance Tasks"** provides information on backing up the master index and using the monitor to view logs and alerts.
- Appendix A **"Field Notations"** describes the different notations used in the configuration files to define different fields in the messages being processed and stored.

- **Appendix B** **"The Data Structure"** describes the structure of the default Object Type Definition and the database.
- **Appendix C"Standardization and Matching for eIndex SPV"** describes the default fields and database columns that store the standardized versions of patient data.
- **Appendix D** **"Initial Load Tips"** provides guidelines to help the initial process of loading date run smoothly.

1.4.2 Scope

This guide provides step-by-step instructions for installing eIndex SPV and customizing the components. It includes navigational information, functional instructions, and background information where required. This guide does not include information or instructions on using the EDM or eGate Integrator. These topics are covered in the appropriate user guide (for more information, see **"Related Documents" on page 16**).

1.4.3 Intended Audience

Any user who installs any component of eIndex SPV, or customizes any of the components, should read this guide. A thorough knowledge of eIndex SPV is not needed to understand this guide. It is presumed that the reader of this guide is familiar with the eGate environment and GUIs, eGate projects, Oracle database administration, and the operating system(s) on which eGate and the index database run. Readers who will configure the master index should also be familiar with XML documents, the SQL scripting language, and Java. The intended reader must have a good working knowledge of his or her company's current business processes and information system (IS) setup.

1.4.4 Text Conventions

The following conventions are observed throughout this document.

Table 1 Text Conventions

Text Convention	Used For	Examples
Bold	Names of buttons, files, icons, parameters, variables, methods, menus, and objects	- Click **OK**. - On the **File** menu, click **Exit**. - Select the **eGate.sar** file.
`Monospaced`	Command line arguments, code samples; variables are shown in ***bold italic***	`java -jar` ***filename***`.jar`
Blue bold	Hypertext links within document	See **Text Conventions** on page 15
Blue underlined	Hypertext links for Web addresses (URLs) or email addresses	http://www.sun.com

1.4.5 Screenshots

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

1.5 Related Documents

Sun has developed a suite of user's guides and related publications that are distributed in an electronic library. The following documents might provide information useful in creating your customized index. In addition, complete documentation of the Java API is provided in Javadoc format.

- *Sun SeeBeyond eIndex SPV Enterprise Data Manager User's Guide*
- *Sun SeeBeyond eView Studio Configuration Guide*
- *Sun SeeBeyond eView Studio Reference Guide*
- *Sun SeeBeyond eView Studio Reporting Guide*
- *Implementing the Sun SeeBeyond Match Engine with eView Studio*
- *Sun SeeBeyond eGate Integrator User's Guide*
- *Sun SeeBeyond eGate Integrator System Administration Guide*
- *Sun SeeBeyond eInsight Business Process Manager User's 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

eIndex Single Patient View Overview

This chapter provides an overview of eIndex SPV and how it works with other Java™ CAPS components. It includes information about the eGate Repository, the eIndex SPV Project components, and the runtime components.

What's in This Chapter

2.1 About eIndex Single Patient View

In today's healthcare environment, vital patient data is generated and stored in several systems throughout an organization. Each of these systems typically assigns its own, independent local identifiers, making it difficult to share information between systems and departments. It is also difficult to create a comprehensive, reliable view of each patient across a healthcare enterprise.

Patient information should flow seamlessly and rapidly between internal systems and departments throughout the entire healthcare network, and each department should have access to the most current and reliable patient data. As organizations grow, merge, and form affiliations, sharing data between different information systems becomes a complicated task. eIndex SPV can help you manage this task and ensure that the data you have is the most current and accurate information available.

The topics below provide information about eIndex SPV and how it provides a solution for sharing and cleansing data.

- **The eIndex SPV Solution** on page 18
- **Configurability** on page 18
- **Standardization and Matching Logic** on page 19
- **Data Maintenance** on page 19

- **HIPAA** on page 20

2.1.1 The eIndex SPV Solution

eIndex SPV is an enterprise-wide master patient index (EMPI) built on the eView Studio platform. It provides a comprehensive, reliable view of patient information by uniquely identifying patients throughout a healthcare enterprise and maintaining the most current information about those patients. With eIndex SPV, it is possible to create a single source of patient information that synchronizes with your existing systems.

eIndex SPV cross-references data from all connected systems and automates record matching across disparate systems, simplifying the process of sharing data between departments and facilities. eIndex SPV is highly flexible and customizable, and you can configure the master index as needed to meet your data processing needs. The master index uniquely identifies each patient record throughout an organization to ensure that the most current and accurate data is available.

eIndex SPV provides an automatic, common identification process regardless of the system from which data originates. Records from various locations are cross-referenced using an enterprise-wide unique identifier assigned by eIndex SPV, allowing the master index to use the local identifiers generated by your internal systems to create an index of patient records. In addition, eIndex SPV employs configurable probabilistic matching technology, which uses a matching algorithm to formulate an effective statistical measure of how closely records match based on the data fields you specify. Using this matching logic, eIndex SPV consistently and precisely identifies patient records, flagging potentially duplicate records and automatically joining records that are considered a match. In this way, eIndex SPV provides continuous data cleansing as records are processed.

eIndex SPV centralizes the information about the patients that participate within your organization. Maintaining a centralized database for multiple systems enables eIndex SPV to integrate data throughout the enterprise while allowing your existing systems to continue to operate independently. The database, which is accessible throughout the enterprise, stores copies of local system records and their associated single best records (SBRs), which represent the most accurate and complete data for each patient. To facilitate up-to-date records in each system, you can configure eIndex SPV to generate a message to a JMS Topic each time a record is updated, added, merged, or unmerged in the master index. Using eGate™ Integrator, this information is available to those systems that are able to accept incoming messages.

2.1.2 Configurability

eIndex SPV provides a predefined data structure based on standard healthcare data requirements that can be used as is or can be easily customized if needed (see **Appendix B** **“The Data Structure”** for a description of the default data structure). Before deploying eIndex SPV, you define the components and processing capabilities of the system to suit your requirements. The matching and standardization rules, survivorship rules, queries, Enterprise Data Manager (EDM) appearance, and field validation rules can all be used as is or can be configured to better meet the needs of your organization. In essence, you control the data structure and the logic that determines how data is updated, standardized, weighted, and matched.

The data structure and processing logic is stored in a set of XML configuration files that are predefined but theta can customize. These files are defined within the context of an eGate Project and are modified using the XML editor provided in Enterprise Designer. The configuration files are described in detail in the *Sun SeeBeyond eView Studio Configuration Guide*.

2.1.3 Standardization and Matching Logic

Sharing data requires overcoming data quality problems such as name and address changes, transpositions, and phonetically similar names to be able to uniquely identify the same patient across multiple systems. eIndex SPV uses the Sun SeeBeyond Match Engine (SBME), a proprietary algorithm for probabilistic matching of patient records and data standardization. As records are processed through eIndex SPV, the standardization engine normalizes and phonetically encodes specified data and the match engine identifies records that potentially represent or do represent the same patient. The match engine uses user-defined logic, including configurable matching thresholds, comparison functions, data fields, and so on.

Matching Weight Determination

When comparing two records to determine the likelihood of a match, the match engine compares the match fields you specify between the records to determine a matching weight for each match field based on the reliability of the field and the comparison function used. The sum of the weights of the match fields is the total matching weight between the two records. The logic used by the standardization and match engines is highly customizable to provide the most reliable matching for the type of data you store.

Alias Processing

eIndex SPV provides alias name processing in the form of custom plug-ins to help find or match patient records in cases where the patient’s name has changed or a nickname is used. In the default configuration, a name is added to a patient’s alias list when a maiden name is added or updated and when a patient’s first, last, or middle name is modified. Searches can be performed against a patient’s primary and alias names, providing broad search capabilities and improving the chance of finding a match.

2.1.4 Data Maintenance

The Enterprise Data Manager (EDM) is the web-based user interface for eIndex SPV. The EDM supports all the necessary features for maintaining data records. It allows you to add new records; view, update, deactivate, or reactivate existing records; and compare records for similarities and differences. From the EDM, you can perform searches using a variety of criteria and search types for a specific patient or a set of patients. For certain searches, the results are assigned a matching weight that indicates the probability of a match.

One of the most important features of eIndex SPV is its ability to match records and identify possible duplicates. eIndex SPV also provides the functionality to correct any duplication. Potential duplicate records are easily corrected by either merging the records in question or marking the records as “resolved”. If you find two records to represent the same person, you should merge the records (at either the enterprise record or system record level). At the enterprise record level, you can determine which record to retain as the active record. At the system level, you can determine which record to retain and which information from each record to preserve in the resulting record.

Finally, eIndex SPV provides standard reports that provide information about the current state of the data in the master index, helping you monitor stored data and determine how that data needs to be updated. Report information also helps verify that the matching logic and weight thresholds are defined correctly. Standard reports are available through a command line or the EDM. You can also create custom reports using any ODBC-compliant reporting tool, SQL, or Java.

2.1.5 HIPAA

eIndex SPV provides full audit capabilities in support of the Health Insurance Portability and Accountability Act (HIPAA) mandates. Transaction histories are stored in the database to track every change to every record and provide before and after images as well as who made the changes and when. In addition, the audit log maintains a record of each time patient data is accessed or viewed in the master index database, including who accessed the data and when. The audit log and transaction history can both be viewed on the EDM.

2.2 eIndex SPV and the Sun Java Composite Application Platform Suite

eIndex SPV is tightly integrated within the Sun Java Composite Application Platform Suite (Java CAPS), and can leverage the features of other Java CAPS components.

eView Studio

eIndex SPV is a master patient index built using the eView Studio platform. eIndex SPV provides all of the flexibility and configuration options of an eView Studio master index, and utilizes the same matching and standardization capabilities. In addition, custom plug-ins were created for eIndex SPV to meet requirements specific to a healthcare organization.

eGate Integrator

eIndex SPV leverages the eGate™ Integrator by providing identification and cross-referencing capabilities for the data shared throughout the eGate system. Relying on the eGate Integrator, eIndex SPV provides the power and flexibility to identify, route, and transform data to and from any system or application throughout your healthcare enterprise. Custom Object Type Definition (OTD) methods generated for eIndex SPV provide access to the master index through Java Collaborations. eIndex SPV can accept incoming transactions and distribute updates to external systems, providing seamless integration with external systems.

eInsight Business Process Manager

eInsight™ Business Process Manager (BPM) is a component within Java CAPS that facilitates the automation of the flow of business activities. eInsight BPM functions include business process model design, monitoring, and execution as well as the ability to analyze how data messages flow from activity to activity and from page to page. You can include custom Java methods from the eIndex SPV Project in Business Processes for eInsight BPM, enabling access to the eIndex SPV database through eInsight BPM. eIndex SPV includes a sample Project that processes data in the same manner as the Java Collaboration, but uses a Business Process instead.

2.3 eIndex SPV Repository Components

eIndex SPV has two types of components: Repository and runtime. The Repository components work within Enterprise Designer and are used during the design and configuration phases to create and customize the master patient index and to define connectivity between external systems and eIndex SPV. The primary Repository components fall into three categories.

- **Editors** - eIndex SPV utilizes the eView Studio XML, text, and Java source editors to customize the files in the eIndex SPV Project. For more information about the editors you can use, see chapter 2 of the *Sun SeeBeyond eView Studio User's Guide*, which also provides information about saving and validating files.
- **Project Components** - eIndex SPV is implemented within a Project in Enterprise Designer. The Project includes files that are specific to the eIndex SPV application as well as standard eGate connectivity, business rule, and deployment components (see **Project Components** on page 21).
- **Environment Components** - The components define the configuration of the physical environment, such as the Logical Host, application or integration servers, message servers, and external systems (see **Environment Components** on page 23).

2.3.1 Project Components

The eIndex SPV Project includes a set of configuration files, database files, and custom plug-ins that you modify to customize your master index implementation. It includes additional components that are automatically updated when you generate the Project, including a method Object Type Definition (OTD), an outbound OTD, eInsight Business Process methods, database scripts, and application **.jar** files. To complete the Project, you create a Connectivity Map and Deployment Profile. Additional eGate components can be added to the client Projects that share data with eIndex SPV, including Services, Collaborations, OTDs, Web Connectors, eWays, JMS Queues, JMS Topics, Business Processes, and so on.

The primary components of an eIndex SPV Project are described below.

Configuration Files

These files the configuration of the runtime environment, such as the object structure, how matching is performed, how the SBR is created, and so on. These files are described in detail in the *Sun SeeBeyond eView Studio Configuration Guide*.

Database Scripts

These scripts contain the SQL statement used to create the database and the required start-up data. The standard eView Studio database scripts are described in chapter 2 of the *Sun SeeBeyond eView Studio User's Guide*. In addition to the standard scripts, eIndex SPV provides the following database scripts to create or drop indexes and to create start-up data for user codes.

- **Create User Indexes** - Defines indexes against the fields that are defined for the blocking query in the Candidate Select file. You can define additional indexes if needed.
- **Create User Code Data** - Provides a sample script for adding data to the sbyn_user_code table.
- **Drop User Indexes** - Used primarily in testing, when you need to drop existing indexes, or for loading large batches of data, when indexes can slow down the process. This script removes all indexes defined in the **Create User Indexes** script.

Custom Plug-ins

Custom plug-ins allow you to incorporate custom logic into eIndex SPV by creating user-defined Java classes. Several custom plug-ins are already provided with eIndex SPV that automatically create aliases for person names when certain updates are made to a record. For example, if the first, last, middle, or maiden name is changed during a transaction, the previous name is added as an alias.

Match Engine Configuration Files

The files define characteristics of the standardization and matching processes. For more information, see *Implementing the Sun SeeBeyond Match Engine with eView Studio*.

Object Type Definition (OTD)

The OTD is used for distributing information that has been added or updated in eIndex SPV to external systems. It includes the objects and fields defined in the Object Definition file plus additional SBR information (such as the create date and create user) and additional system object information (such as the local ID and system code). The default OTD is described in **Appendix B "The Data Structure"**.

Dynamic Java Methods

These methods are used in Collaborations and Business Processes to process data through the master index. The names, parameter types, and return types of these methods vary based on whether you modify the object structure in the Object Definition file. These methods are described in the *Sun SeeBeyond eView Studio Reference Guide*.

Connectivity Components

These components define the flow of data from external systems to eIndex SPV and back to external systems. These components also define the business logic that determines how data is mapped and shared throughout the system. The default server Project Connectivity Map only consists of three components: the web application service, the application service, and an Oracle eWay for defining the database connection pool (the Oracle eWay is required if eIndex SPV runs on the Sun SeeBeyond Integration Server). You can also include a JMS Topic for broadcasting messages.

For client Projects, you can use connectivity components from the eIndex SPV server Project and any standard eGate connectivity components, such as OTDs, Services, Collaborations, Business Processes, queues, topics, and eWays.

Deployment Profile

The Deployment Profile defines information about the production environment, including information about the assignment of Services and message destinations to application or integration servers and JMS IQ Managers within the eIndex SPV system. Each eIndex SPV Project must have at least one Deployment Profile, and can have several, depending on the Project requirements and the number of Environments used.

2.3.2 Environment Components

The eIndex SPV Environments define the deployment environment of the runtime components, including the Logical Host and application or integration server. For client Projects referencing the eIndex SPV Project, an Environment might also include a JMS IQ Manager, constants, Web Connectors, and External Systems. Each Environment represents a unit of software that implements eIndex SPV. You must define and configure at least one Environment for eIndex SPV before you can deploy the application. The application or integration server hosting eIndex SPV is configured within the Environment in Enterprise Designer.

For more information about Environments, see the *Sun SeeBeyond eGate Integrator User's Guide*.

2.4 Runtime Environment Components

Regardless of how you define the data structure and configure the runtime environment for eIndex SPV, the final product provides a customized master patient index. The runtime environment includes all of the components you create for eIndex SPV connectivity as well as the web-based EDM, which allows you to manually monitor and maintain patient data.

As with other master indexes built on the eView Studio platform, the eIndex SPV runtime environment is made up of several components that work together to form a complete indexing system. The runtime environment includes the following primary components:

- Matching Service

- eView Manager Service
- Query Builders
- Query Manager
- Update Manager
- Object Persistence Service (OPS)
- Database
- Enterprise Data Manager

In addition, eIndex SPV uses the connectivity components defined in the eIndex SPV server and client Projects to route data between external systems and the eIndex SPV database. The eGate Repository stores information about the configuration and structure of the runtime environment. Because eIndex SPV is deployed within eGate, it can be implemented in a distributed environment.

For more information about the functions, features, and components of the eIndex runtime environment, see chapter 2 of the *Sun SeeBeyond eView Studio User's Guide*.

2.5 Enterprise Records

An *enterprise record* is identified by an EUID assigned by eIndex SPV and includes all components of a record that represents one patient. The structure of the data is defined in the Object Definition file. The default structure is described in **Appendix B** **"The Data Structure"**.

eIndex SPV stores two different types of records in each enterprise record: system records and a single best record (SBR). A system record contains a patient's information as it appears in an incoming message from an external system. An enterprise record's SBR stores data from a combination of external systems and it represents the most reliable and current information contained in all system records for a patient. An enterprise record consists of one or more system records and one SBR.

2.5.1 System Records

The structure of a system record is different from the SBR in that each system record contains a system and local ID pair. The remaining information contained in the system records of an enterprise record is used to determine the best data for the corresponding SBR. If an enterprise record only contains one system record, the SBR is identical to that system record (less the system and local ID information). However, if the enterprise record contains multiple system records, the SBR might be identical to one system record but will more likely include a combination of information from all system records.

2.5.2 The Single Best Record

The SBR for a patient is created from the most reliable information contained in each system record representing that patient. The information used from each external system to populate the SBR is determined by the survivor calculator, which is configured in the Best Record file. This data is determined to be the most reliable information from all system records in the enterprise record. The survivor calculator can consider factors such as the relative reliability of an external system, how recent the data is, and whether the SBR contains any "locked" field values. You define the rules that select a field value to be persisted in the SBR.

2.5.3 Objects in an Enterprise Record

In eIndex SPV, each system record and SBR in an enterprise record typically contain a set of objects that store different types of information about a patient. A record contains one parent object and typically contains several child objects, but it can have no child objects at all. A record can have only one instance of the parent object, but can have multiple instances of each type of child object. For example, in the default configuration, the parent object (Person) contains demographic data. A record can only contain one patient name and social security number (stored in the Person object), but the record could have multiple addresses, telephone numbers, and aliases, which are defined in different child objects (*address*, *phone*, and *alias* objects respectively). A record can have multiple instances of each child object, such as a home and a billing address.

2.5.4 Identification Codes

Another key component of an enterprise record is the identification codes used to identify and cross-reference each patient. Each patient profile in the master index is assigned an enterprise-wide unique identification number (EUID) in addition to the local IDs assigned by the individual systems in the network. Each patient has one unique identification number throughout your organization, and a unique identification number within each system with which they are registered. Patients might also have several auxiliary IDs. An auxiliary ID is an identification code that does not necessarily uniquely identify a single patient within the database, but might identify a group of patients. For example, if a family shares the same account or insurance policy, every family member would have the same identification code for that account or policy.

2.6 Process Overview

eIndex SPV makes the process of implementing a master patient index simple by providing a default object structure and configuration based on standard healthcare data and processing requirements. It also provides the ability to customize the default configuration as needed to fine-tune the index to match your specific needs.

The process of creating the runtime environment begins with a thorough analysis of the data you plan to store in the database and to share among the systems connected to eIndex SPV. Once your analysis is complete, you can customize the Project as needed. For more information about how the runtime components of the master index are created, see chapter 2 of the *Sun SeeBeyond eView Studio User's Guide*.

The following steps outline the steps required to build the runtime environment using the eIndex SPV Project components.

1. Perform a thorough analysis of the data you plan to store in the database.
2. Customize the object structure (optional), operating environment, and certain runtime characteristics (**Chapter 4 "Configuring eIndex SPV"**).

Note: *If you customize the Object Definition file, you might also need to make corresponding changes to the other configuration files. For example, if you add a new field to the Object Definition file that you want to include in queries and matching, you need to make the corresponding changes to the Candidate Select, Match Field, and Best Record files.*

3. *Optional:* Define and build custom plug-ins, and specify the plug-ins in the appropriate configuration file (**Chapter 5 "Creating Custom Plug-ins"**).
4. Generate the master index (**Chapter 6 "Building the Application"**).
5. Create the database (**Chapter 7 "Creating the Database"**).
   - Customize the scripts by defining system information, processing codes, and drop-down menu values.
   - Create the database and any necessary indexes.
6. Create Connectivity Maps (**Chapter 8 "Defining Connectivity Components"**).
   - Create and define the components in the Connectivity Maps, such as Services, Collaborations, and External Applications.
   - Configure the Connectivity Maps.
7. Define the physical Environment (**Chapter 9 "Defining the Environment"**).
8. Create the Deployment Profile, enable the Project, and configure security (**Chapter 10 "Deploying the Project"**).

Chapter 3

Installation

eIndex Single Patient View is uploaded to the eGate Repository and is then installed in Enterprise Designer. This chapter provides instructions on installing eIndex SPV once the eGate environment is in place.

What's in This Chapter

3.1 Installation Overview

In order to work with eIndex SPV, you only need to perform the eIndex SPV installation described in this chapter. To work with the eIndex SPV master index, a second component, an Oracle database, must be installed.

3.1.1 eIndex SPV Installation

eIndex SPV is installed by uploading the eIndex SPV files to the eGate Repository using Enterprise Manager, and then installing the software in Enterprise Designer. eIndex SPV must be uploaded via an active eGate Repository, and the software must be installed using a computer with an existing Enterprise Designer. You must have access to a web browser for the initial upload. When you install the eIndex SPV application, you can also install the reports, documentation, and Javadocs.

Before installing eIndex SPV, make sure you have installed your eGate environment, including the Repository, monitors, Logical Host, Enterprise Designer, and integration or application server. eIndex SPV can run on the Sun SeeBeyond Integration Server 5.1.0 or Sun Java System Application Server 8.1.

3.1.2 Database Installation

All of the eIndex SPV components are stored in the eGate Repository; the only external component is the master index database. The database does not need to be installed in order to use the eIndex SPV tools, but it must be installed as a part of the master index implementation. For optimal performance, the database should be installed on its own server. The master index database can be installed on Oracle 9*i* or 10*g* and can run on any operating system platform supported by Oracle 9*i* or 10*g*.

If you are running the Sun Java System Application Server, the database connection pool can be configured either through the application server or through the Oracle eWay. If you are running the Sun SeeBeyond Integration Server, the connection pool must be configured through an Oracle eWay. The Oracle eWay supports both thin client connectivity and OCI client connectivity.

To install the database, create a standard Oracle instance, using the sizing and distribution requirements obtained from the data analysis. Several SQL scripts are included in the eIndex SPV Project. Running these scripts against the database creates the tables and inserts startup data. For complete instructions on installing the database, see Chapter 7 **"Creating the Database"**.

3.2 About the Installation

The eIndex SPV installation is a multi-stage process that includes the following:

1. Uploading eIndex SPV into the Repository.
2. Downloading reports and the Enterprise Manager Monitor plug-in.
3. Uploading the documentation and sample files.
4. Installing eIndex SPV in Enterprise Designer.

3.3 Supported Operating Systems

This section lists the supported operating system requirements for each platform. The eIndex SPV **Readme.txt** file (located in the **eIndexDocs.sar** file) contains the most up-to-date information for the supported platforms. eIndex Single Patient View is available on the following operating systems.

- Sun Solaris 8, 9, and 10 with required patches (SPARC)
- Sun Solaris 10 (AMD Opteron)
- HP Tru64 V5.1A with patch 5 and V5.1B with required patches
- HP-UX 11.0 and 11i (11.11) on PA-RISC, and 11i v2.0 (11.23) on Itanium with required patches and parameter changes
- IBM AIX 5L, versions 5.2 and 5.3 with required maintenance level patches

- Microsoft Windows 2000 SP3 and SP4, Windows XP SP1a and SP2, and Windows Server 2003 SP1
- Red Hat Enterprise Linux AS 2.1 and AS 3 (Intel x86)
- Red Hat Enterprise Linux AS 3 and AS 4 (AMD Opteron)
- SUSE Linux Enterprise Server 8 and 9 (Intel x86)

3.4 System Requirements

eIndex SPV is installed within the Java Composite Application Platform Suite environment. For system requirement information for the suite environment, see the *Java Composite Application Platform Suite Installation Guide*, which also contains information about resource considerations. The Java CAPS **Readme.txt** file contains the most up-to-date operating system requirements for the supported platforms. Both files are located in the Root directory of the Repository installation CD-ROM.

In addition to the operating system requirements listed above, you must have the Java 2 Platform, Standard Edition (J2SE™ Platform) installed on the machine from which you will run the eIndex SPV reports. The eIndex SPV **Readme.txt** file (located in the **eIndexDocs.sar** file) contains the most up-to-date information for the system requirements.

3.4.1 Database Requirements

Requirements for the master index database are included in **Chapter 7 "Creating the Database"**. The client workstations accessing the EDM require Internet Explorer 6.0 with SP1. If you will connect to the database using the Oracle eWay, you must install the Oracle eWay. To use the OCI driver with the Oracle eWay, you need to install the Oracle client on the Logical Host. Because the OCI driver supports both the most current Oracle database and any previous versions, Sun recommends that you use the most current version of the OCI driver. This assures compatibility between the various versions of any Oracle databases you have.

3.5 Software Requirements

eIndex SPV can be installed after you have done the following:

- Installed the Repository.
- Installed Enterprise Manager, including these files:

  A **eGate.sar**.

  B **eView.sar**

  C **FileeWay.sar**

  D **OracleeWay.sar**

E **eInsight.sar** (only if you want to install the eInsight sample Project for eIndex SPV or will use eIndex SPV functions in an eInsight Business Process)

3.5.1 Before Installing eIndex SPV

Before you install eIndex SPV, you must do the following:

1. Select the Window(s) computers that will host eIndex SPV. This must be a computer running Enterprise Designer, which only runs on Windows systems.
2. Determine the add-on applications, if any, you need.
3. Make sure eView Studio is installed; otherwise the eIndex SPV projects will not appear.
4. Make sure the File eWay is installed. eIndex SPV relies on this eWay in order to create the start-up Project.
5. Determine whether you want to install the eIndex SPV client Project for eInsight BPM. If so, you must have eInsight BPM installed before installing eIndex SPV.
6. Determine whether to connect to the database using the application server or the Oracle eWay and whether to connect through a thin or thick client.
7. Make sure you have the appropriate administrator permissions to install eIndex SPV in Enterprise Designer and to update Enterprise Designer through the Update Center.
8. Before you begin the installation, exit all Windows applications.
9. If you are reinstalling eIndex SPV, determine whether you want to reinstall the eIndex SPV Projects or retain the Projects you already have installed. To install the updated Projects, you must delete the existing eIndex SPV Projects. If you have customized your existing Projects and want to use them in the new environment, back them up by exporting them before installing eIndex SPV and then reimport them. Make sure to regenerate the application and then rebuild and redeploy all related Projects.

3.6 Installing eIndex SPV

To install eIndex SPV, you must complete the following tasks:

- **Uploading eIndex SPV Components to the Repository** on page 30
- **Downloading eIndex SPV Components from the Repository** on page 34
- **Installing eIndex SPV in Enterprise Designer** on page 36

3.6.1 Uploading eIndex SPV Components to the Repository

The first step to install eIndex SPV is uploading the files into the eGate Repository. These files are in the form of an archive file that contains all the actual components of the eIndex SPV package. Make sure you have installed all the necessary Java Composite Application Platform Suite components before beginning.

The following steps are performed using the Java Composite Application Platform Suite Installer, which serves as an update and management center. Additionally, system administrators use the installer to upload components to the Repository server.

To upload eIndex SPV components

1 Make sure the eGate Repository is started. (Run **startserver.bat** in the Repository home directory if it is not started.)

2 Start your web browser.

3 In the **Address** line, type **http://<*hostname*>:<*port_number*>**
where:

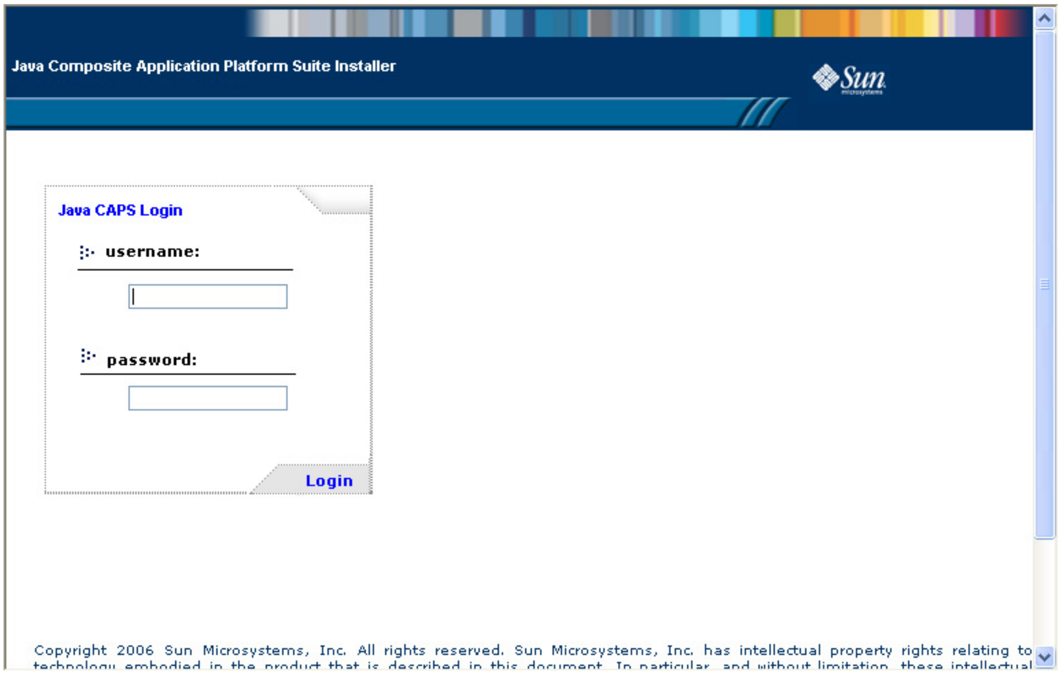
<***hostname***> is the TCP/IP host name of the server where you installed the Repository—not the name of the Repository itself.

<port_number> is the port number you gave during the installation of the Repository.

When ready, press **Enter**.

The **Login** window of the Suite Installer appears (see Figure 1).

Figure 1 Java CAPS Login Page



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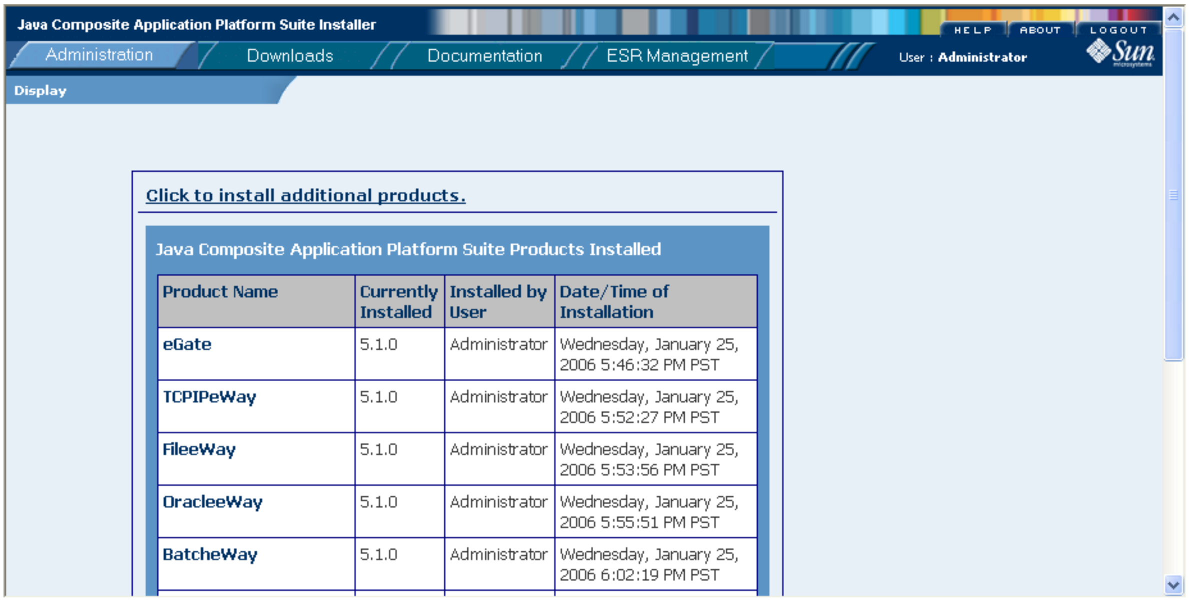
4 Enter your **username** and **password**.

5 When ready, click **Login**.

The **Administration** page of Enterprise Manager appears (see Figure 2).

Figure 2 Administration Page



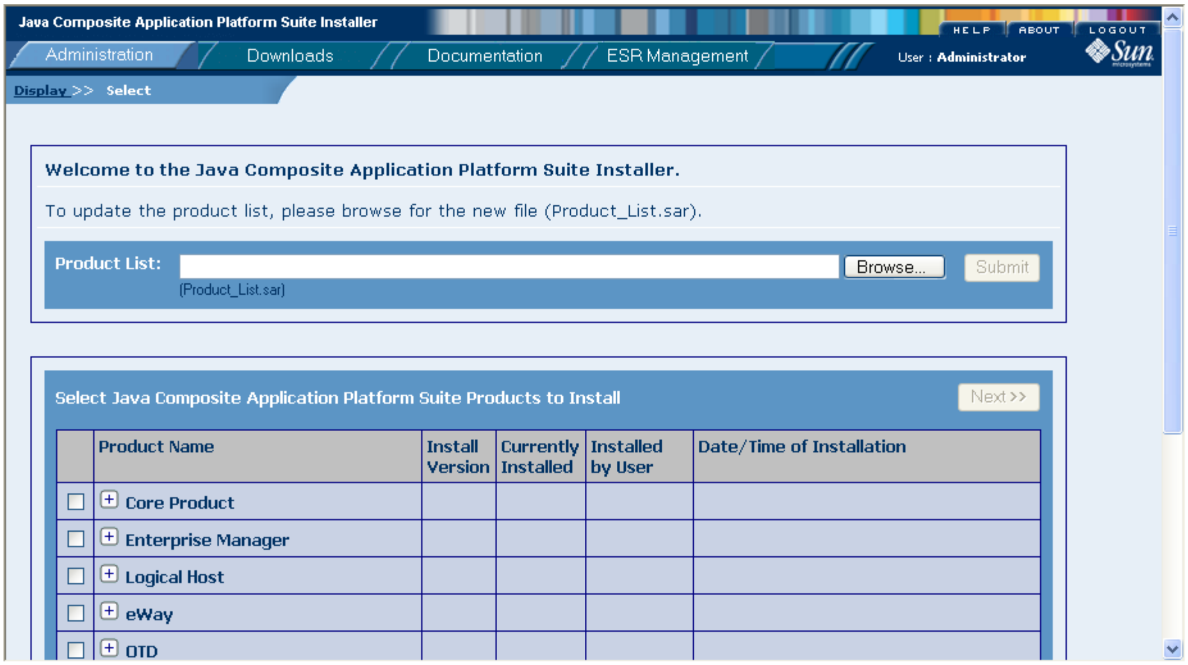
Click to install additional products.

Java Composite Application Platform Suite Products Installed

Product Name	Currently Installed	Installed by User	Date/Time of Installation
eGate	5.1.0	Administrator	Wednesday, January 25, 2006 5:46:32 PM PST
TCPIPeWay	5.1.0	Administrator	Wednesday, January 25, 2006 5:52:27 PM PST
FileeWay	5.1.0	Administrator	Wednesday, January 25, 2006 5:53:56 PM PST
OracleeWay	5.1.0	Administrator	Wednesday, January 25, 2006 5:55:51 PM PST
BatcheWay	5.1.0	Administrator	Wednesday, January 25, 2006 6:02:19 PM PST

6 On the **Administration** page, click the link labeled **Click to install more products**. A list of products you can install appears (see Figure 3).

Figure 3 List of Products to Install



Welcome to the Java Composite Application Platform Suite Installer.

To update the product list, please browse for the new file (Product_List.sar).

Product List: (Product_List.sar)

Select Java Composite Application Platform Suite Products to Install

	Product Name	Install Version	Currently Installed	Installed by User	Date/Time of Installation
□	⊞ Core Product				
□	⊞ Enterprise Manager				
□	⊞ Logical Host				
□	⊞ eWay				
□	⊞ OTD				

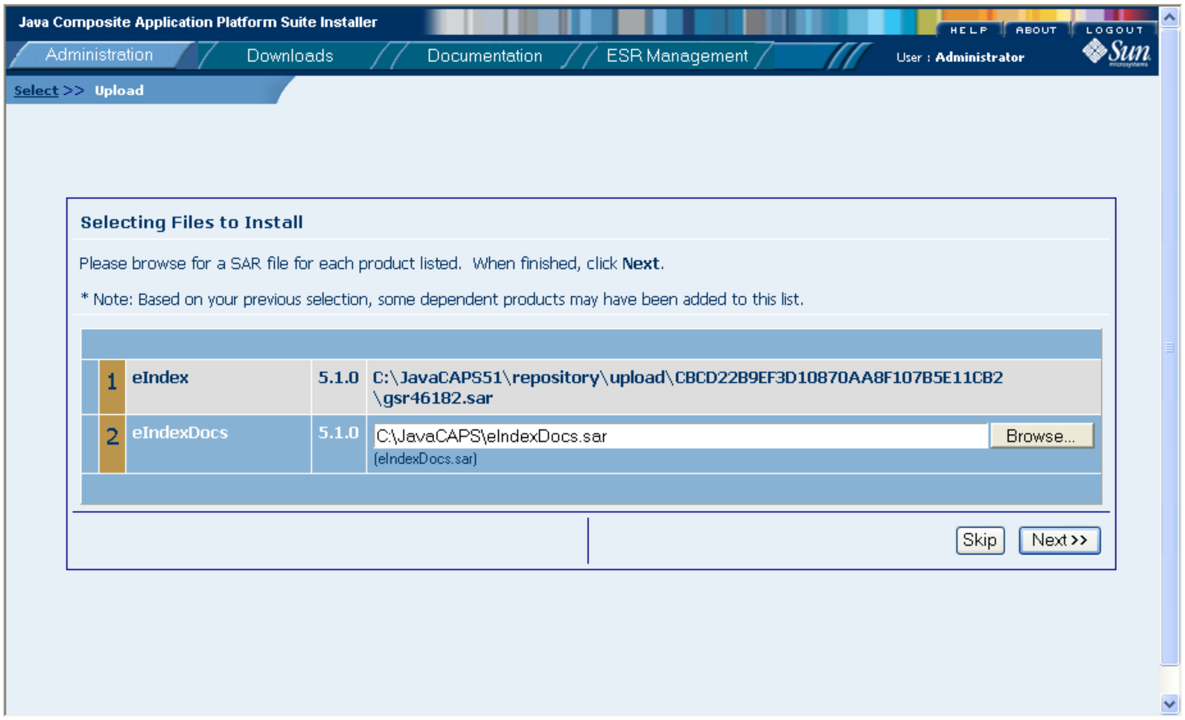
7 In the product list, expand Core Products, and then select the check box next to eIndex.

8 In the product list, expand Documentation, and then select the check box next to eIndexDocs.

9 Click **Next** (in the bottom right section of the page).

The **Upload** page appears.

Figure 4 Selecting Files to Install



Selecting Files to Install

Please browse for a SAR file for each product listed. When finished, click **Next**.

* Note: Based on your previous selection, some dependent products may have been added to this list.

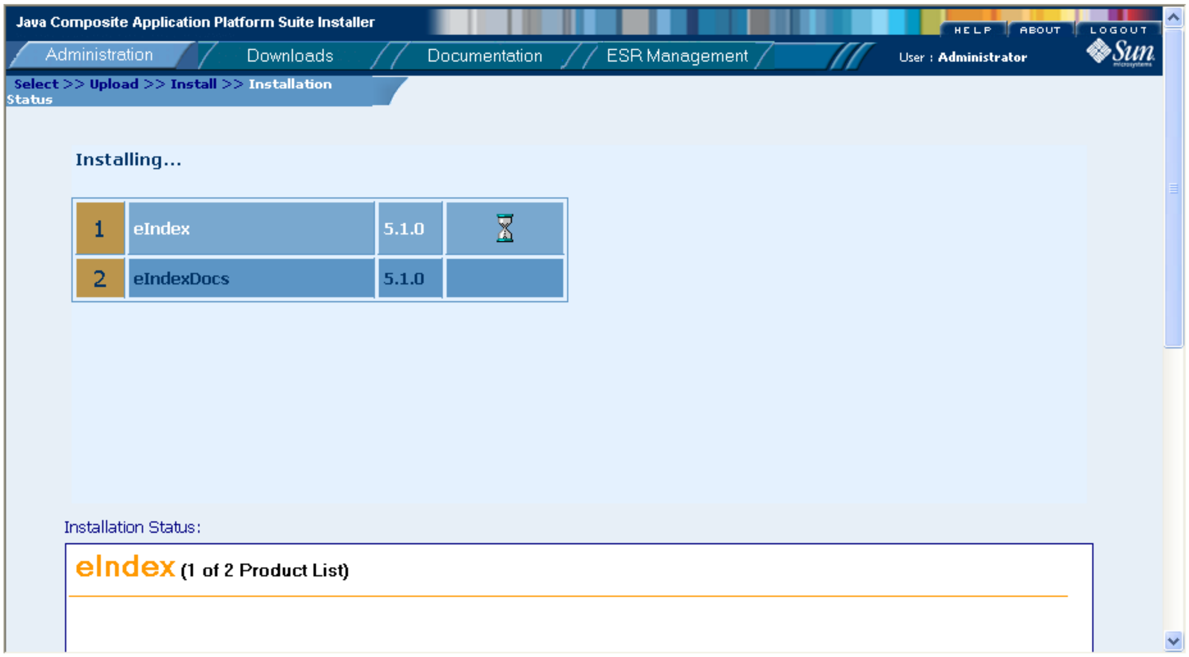
1	eIndex	5.1.0	C:\JavaCAPS51\repository\upload\CBCD22B9EF3D10870AA8F107B5E11CB2 \gsr46182.sar
2	eIndexDocs	5.1.0	C:\JavaCAPS\eIndexDocs.sar (eIndexDocs.sar)

10 On the **Upload** page, browse for the requested file (either **eIndex SPVDocs.sar** or **eIndex SPV.sar**), and then click **Next**.

11 Repeat step 11 for the next requested file, and then click **Next**.

After the last file is uploaded, the **Installation** page appears and the installer begins to install the selected products (see Figure 5).

Figure 5 Installation Page


Java Composite Application Platform Suite Installer
HELP
ABOUT
LOGOUT
Administration
Downloads
Documentation
ESR Management
User : Administrator
Sun
Select >> Upload >> Install >> Installation Status

Installing...

1	eIndex	5.1.0	⌛
2	eIndexDocs	5.1.0	

Installation Status:

eIndex (1 of 2 Product List)

12 Do one of the following:

To download additional components of eIndex SPV using the installer, continue to the following set of procedures, **"Downloading eIndex SPV Components from the Repository" on page 34**.

To complete the eIndex SPV installation in Enterprise Designer, skip to **"Installing eIndex SPV in Enterprise Designer" on page 36**.

3.6.2 Downloading eIndex SPV Components from the Repository

Once eIndex SPV is installed to the Repository, you can download and access eIndex SPV components, such as the Enterprise Manager Monitor plug-in for and eIndex SPV, reports, and documentation. The following steps are performed using the Suite Installer.

- **Installing the eView Enterprise Manager Plug-in** on page 34
- **Downloading eIndex SPV Reports** on page 35
- **Accessing the eIndex SPV Documentation** on page 35

Before performing any of these steps, make sure eIndex SPV is installed as described in **"Uploading eIndex SPV Components to the Repository" on page 30**.

Installing the eView Enterprise Manager Plug-in

The Enterprise Manager Monitor is a web-based interface you use to manage applications. The Monitor requires the plug-in specific to eIndex SPV to monitor and manage eIndex SPV applications (eIndex SPV uses the same plug-in as eView Studio).

The plug-in enables the Monitor to target specific alert codes for eIndex SPV and is available from the Enterprise Manager.

To download the eView Enterprise Manager Plug-in

1 Start the Enterprise Manager.

2 From the toolbar of the Enterprise Manager Monitor, select **Configuration**.

The User Preferences page appears.

3 Click the **Web Applications Manager** tab in the upper right section of the page.

The Deploy New Management Application page appears.

4 Click the **Auto-Install from Repository** tab.

5 Enter the Repository logon information, and then click **Connect**.

6 In the **Management Applications available for installation from the Repository** list, select the check box next to eView Enterprise Manager Plug-in.

7 Click **Install**.

In the Results list, verify that the eView Enterprise Manager Plug-in was installed properly.

For more information about configuring and using the Enterprise Manager Monitor, see the *Sun SeeBeyond eGate Integrator System Administration Guide*.

Downloading eIndex SPV Reports

Once eIndex SPV is uploaded to the Repository, you can download command line reports to run against the database. This is optional, and all reports available from the command line are also available through eIndex SPV’s web-based GUI, the Enterprise Data Manager (EDM).

To download eIndex SPV reports

1 On the Suite Installer, click the **Downloads** tab.

2 Click **eView Reports**.

3 A dialog appears prompting you to open the file to disk or save it to your computer. Extract the files to the directory where you want to store the reports (the machine on which you store the reports must have network access to the application or integration server).

Accessing the eIndex SPV Documentation

When you uploaded the **eIndex SPVDocs.sar** file in previous steps, links to the documentation components of eIndex SPV were created on the **Documentation** tab of the installer. Perform any of the following steps to access the documentation files.

- **To access the documentation files** on page 35
- **To download the Javadoc files** on page 36

To access the documentation files

1. On the Suite Installer, click the **Documentation** tab.
2. In the frame on the left side of the page, select the Composite Applications tab.
3. Click **eIndex Single Patient View**.
4. To view a document in Acrobat Reader, select any document title from the frame on the right side of the page.
5. To view documents in HTML format:
   - Select the icon next to **HTML Help** in the frame on the right side of the page. The eIndex SPV Help window appears.
   - Select a book or topic to view from the contents in the left side of the page.

Note: *You can view a summary of a document by clicking the information symbol to the left of the document name.*

To download the Javadoc files

1. On the Suite Installer, click the **Documentation** tab.
2. Click **eIndex Single Patient View**.
3. In the frame on the right side of the page, scroll to, and then click, **Download Javadoc**.
4. A dialog appears prompting you to open the file or save it to your computer. Extract the files to the directory where you want to store the files.
5. To access the documents, navigate to the directory where you extracted to files and then to **\eIndex SPV_Javadoc\html**.
6. Double-click **index.html**. This page provides links to all Javadoc pages.

3.6.3 Installing eIndex SPV in Enterprise Designer

The final step in installing eIndex SPV is updating Enterprise Designer with the eIndex SPV files. Enterprise Designer must be installed on the machine on which you are installing eIndex SPV. This step is performed using the Update Center, which is a tool in Enterprise Designer that allows you to install add-on modules into Enterprise Designer.

Note: *The eIndex SPV Projects might be visible on the Enterprise Designer before you perform these steps. If they are not, you can click **Refresh All from Repository** to view the Projects. However, you cannot work with the Project files until you perform the following steps.*

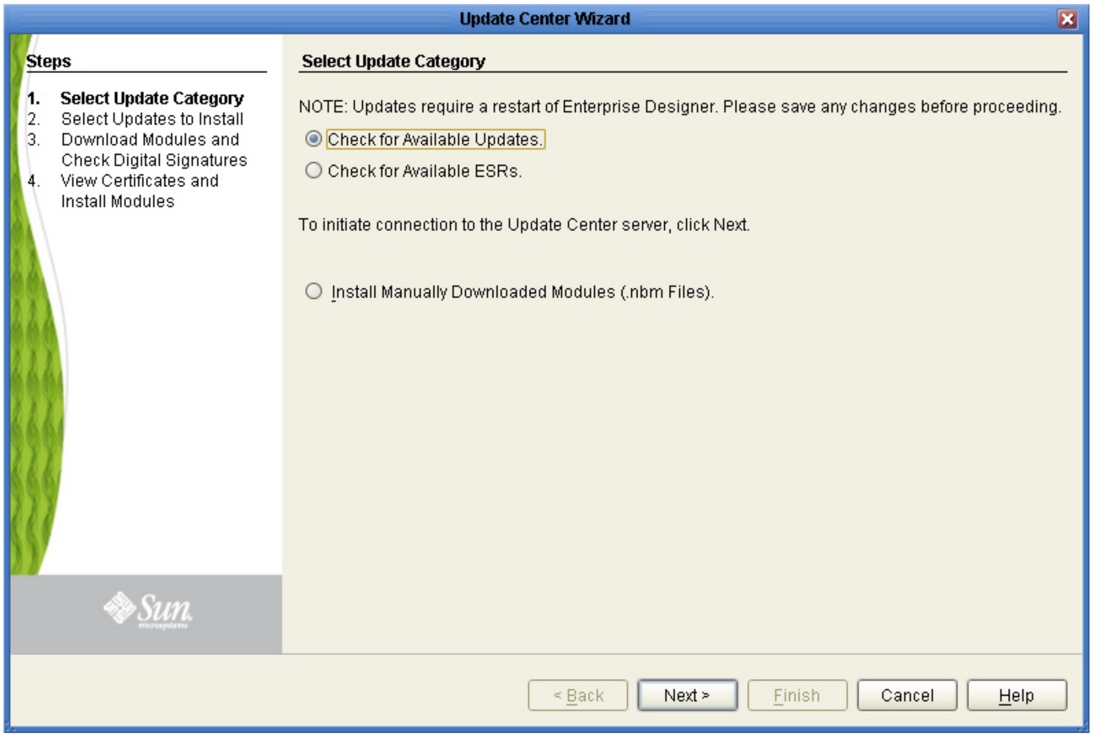
To install eIndex SPV in Enterprise Designer

1. Navigate to ***<c:\JavaCAPS51>*\edesigner\bin** and double-click **runed.bat**. The Enterprise Designer GUI opens.

2 Select the **Tools** menu and then click **Update Center**.

The **Update Center Wizard** appears (see Figure 6).

Figure 6 Update Center wizard - Select Update Category



Update Center Wizard

Steps

1. **Select Update Category**
2. Select Updates to Install
3. Download Modules and Check Digital Signatures
4. View Certificates and Install Modules

Select Update Category

NOTE: Updates require a restart of Enterprise Designer. Please save any changes before proceeding.

● Check for Available Updates.

○ Check for Available ESRs.

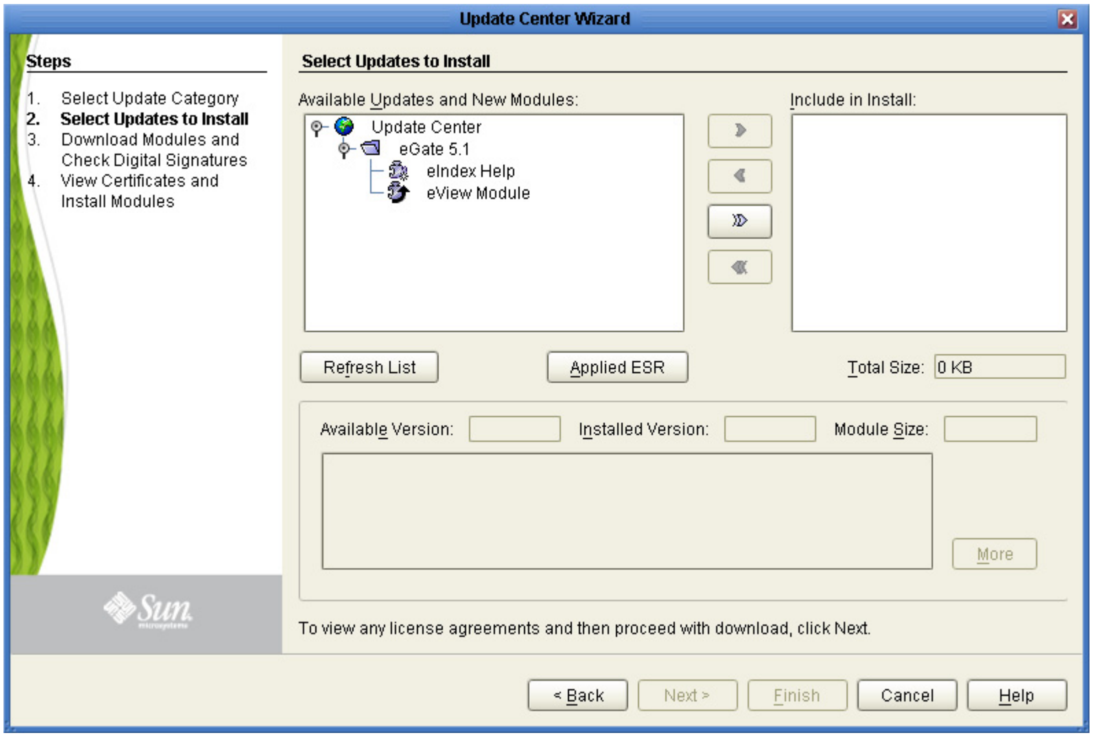
To initiate connection to the Update Center server, click Next.

○ Install Manually Downloaded Modules (.nbm Files).

3 On the Select Update Category window, select **Check for Available Updates**, and then click **Next**.

The **Select Modules to Install** window appears (see Figure 7).

Figure 7 Update Center Wizard - Select Modules to Install


Update Center Wizard
Steps
1. Select Update Category
2. Select Updates to Install
3. Download Modules and Check Digital Signatures
4. View Certificates and Install Modules
Select Updates to Install
Available Updates and New Modules:
Update Center
eGate 5.1
eIndex Help
eView Module
Include in Install:
Refresh List
Applied ESR
Total Size:
0 KB
Available Version:
Installed Version:
Module Size:
More
To view any license agreements and then proceed with download, click Next.
< Back
Next >
Finish
Cancel
Help
Sun microsystems

4 Do one of the following:

- Move all items in the **Available Updates and New Modules** box at once by clicking the **Add All** button (the double-arrow button between the two panes).
- In the **Available Updates and New Modules** box, select **eIndex Help**, and then click the **Add** button (single-arrow button at the top).

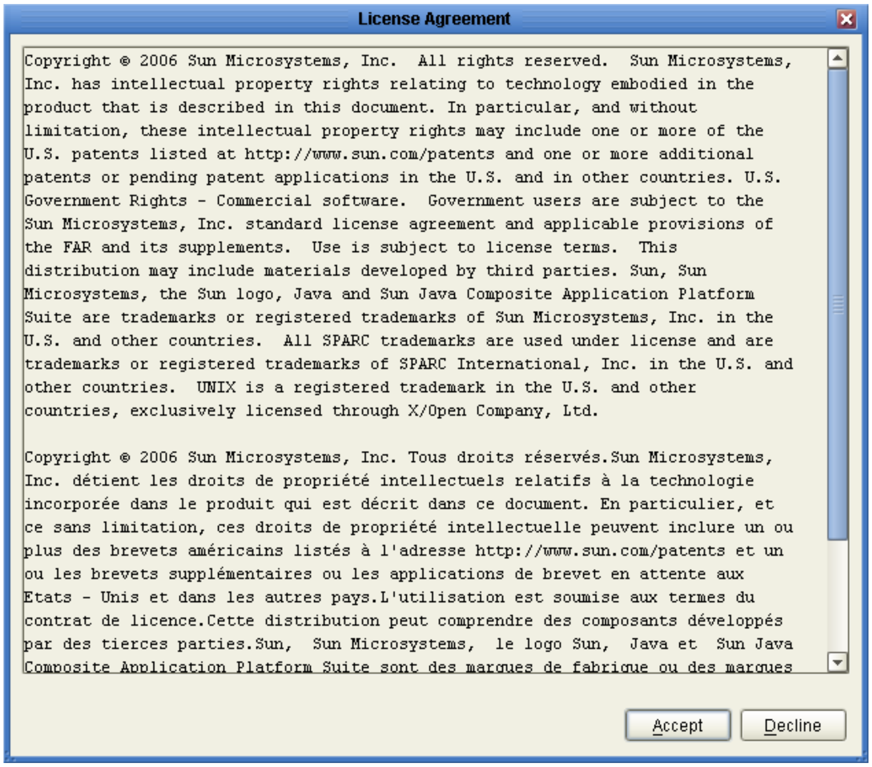
Note: To select each eIndex SPV module, hold down the ***Control*** *key and click each module.*

The eIndex SPV files move to the **Include in Install** list.

5 Click **Next**.

The License Agreement window appears (see Figure 8).

Figure 8 Update Center Wizard - License Agreement



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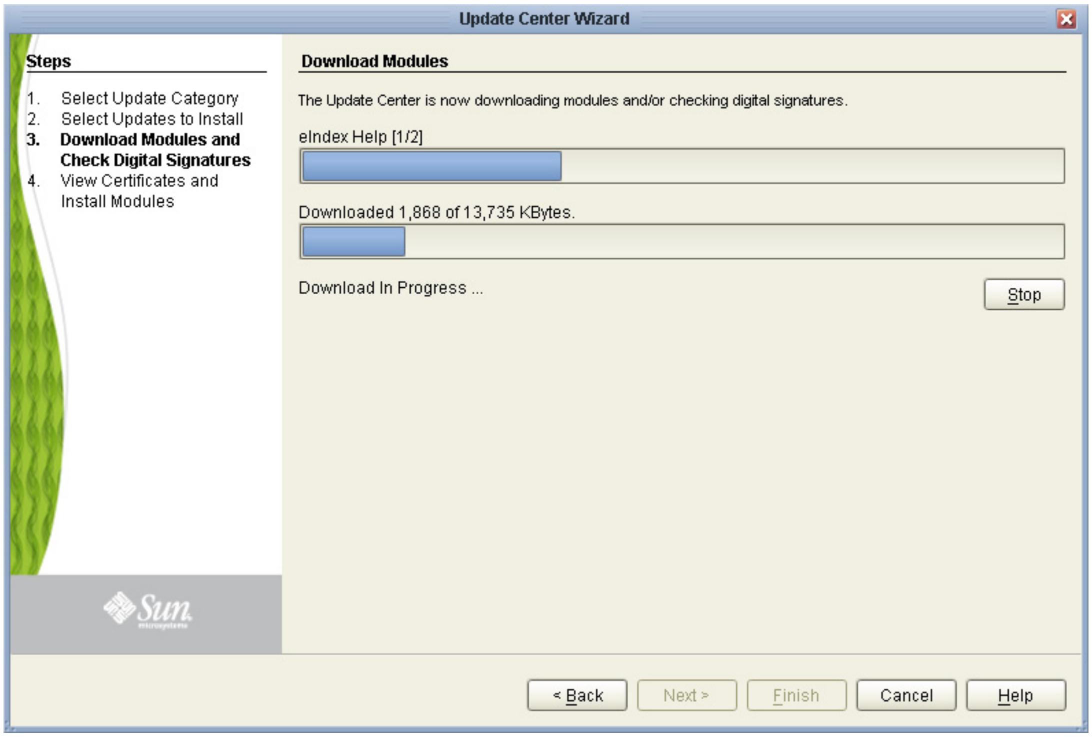
6 On the **License Agreement** window, click **Accept**. The **Download Modules** page appears (see Figure 9).

Figure 9 Update Center Wizard - Download Modules



Update Center Wizard
Steps
1. Select Update Category
2. Select Updates to Install
3. Download Modules and Check Digital Signatures
4. View Certificates and Install Modules
Download Modules

The Update Center is now downloading modules and/or checking digital signatures.

eIndex Help [1/2]

Downloaded 1,868 of 13,735 KBytes.

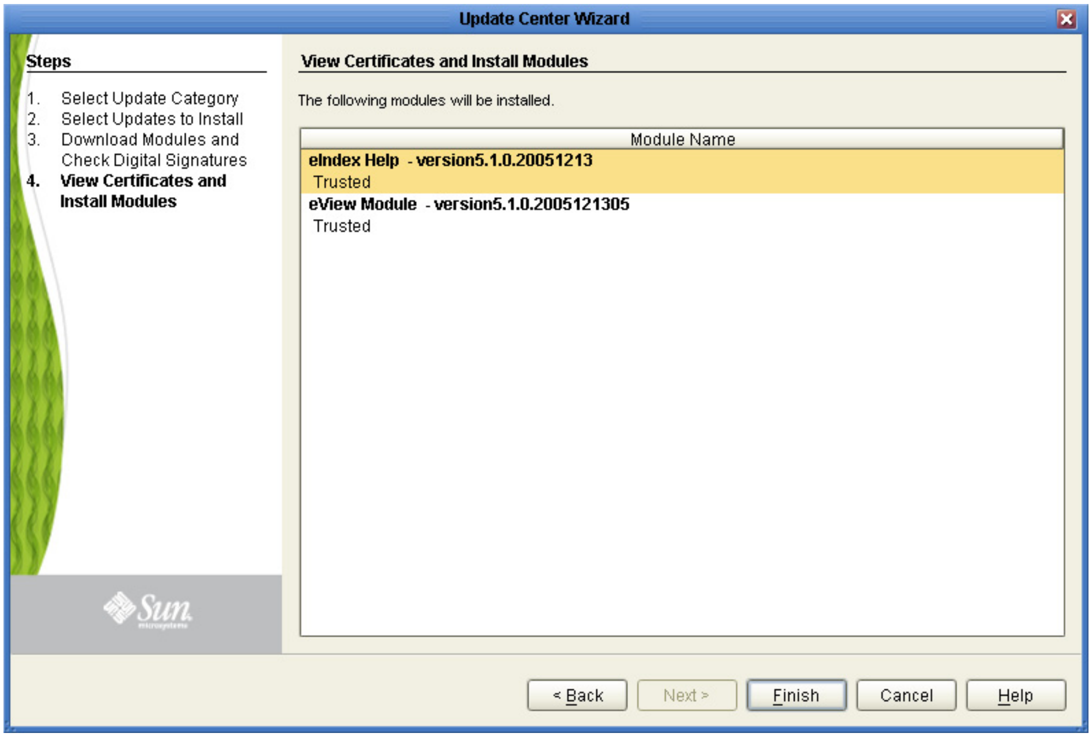
Download In Progress ...

Stop
< Back
Next >
Finish
Cancel
Help

7 After the progress bar reaches 100 percent, click **Next**.

The **View Certificates and Install Modules** page appears (see Figure 10).

Figure 10 Update Center Wizard - View Certificates and Install Modules



Update Center Wizard

Steps

1. Select Update Category
2. Select Updates to Install
3. Download Modules and Check Digital Signatures
4. **View Certificates and Install Modules**

View Certificates and Install Modules

The following modules will be installed.

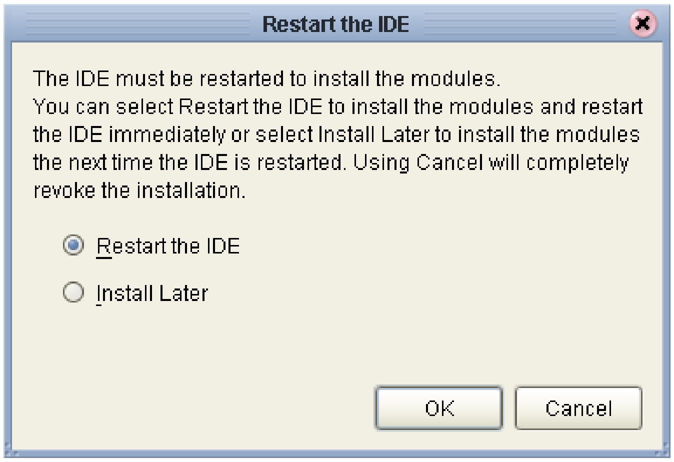
Module Name
eIndex Help - version5.1.0.20051213 Trusted
eView Module - version5.1.0.2005121305 Trusted

8 Click **Finish**.

The **Restart the IDE** dialog box appears (see Figure 11).

9 The modules that were installed must be reloaded for eIndex SPV to function properly. To restart the IDE and install the module, click **OK**.

Figure 11 Update Center Wizard - Restart the IDE



Restart the IDE

The IDE must be restarted to install the modules.
You can select Restart the IDE to install the modules and restart the IDE immediately or select Install Later to install the modules the next time the IDE is restarted. Using Cancel will completely revoke the installation.

● Restart the IDE

○ Install Later

10 When Enterprise Designer is restarted, the eIndex SPV client and server Projects appear in the Project Explorer.

Important: *Before you can use any pre-existing eIndex SPV Projects, you must regenerate the application and then rebuild and redeploy both the server and client Projects.*

3.7 Final Steps

If you are using the Oracle eWay to connect to the database with a thin client, you do not need to perform any additional steps. If you are using the OCI driver with the Oracle eWay or if you are connecting to the database through the Sun Java System Application Server, you must make the Oracle drivers accessible.

For the Oracle eWay

If you are using the OCI driver with the Oracle eWay, you need to copy the OCI driver from the Oracle client to the Logical Host. The Oracle eWay will not recognize the database if these steps are not performed.

Important: *A domain must be created for eIndex SPV before performing these steps.*

To provide access to the Oracle thick client for IS implementations

1. Install the Oracle client on the Logical Host machine.
2. Copy **ojdbc14.jar** from <Oracle>\jdbc\lib to <logicalhost>\is\domains\<domain>\lib, where <Oracle> is the Oracle home directory, <logicalhost> is the Logical Host home directory, and <domain> is the name of the domain hosting the eIndex SPV application.
3. Start the domain (or restart it if it is already running).
4. Repeat steps 2 and 3 for each domain that requires access to the Oracle thick client.

For the Sun Java System Application Server

If you are defining database connectivity through the Sun Java System Application Server, you must install the Oracle client on the application server and then copy the **ojdbc14.jar** file to the **\lib** directory in the application server home directory.

See the *Sun Java System Application Server Enterprise Edition 8.1 2005Q2 Developer's Guide* for information on installing and implementing Oracle drivers and setting up the environment.

3.8 Upgrading eIndex Single Patient Identifier

Because eIndex SPV is based on the eView Studio platform, you follow the same steps to upgrade eIndex SPV Projects as any standard eView Studio Project. For information and instructions, see the *Sun SeeBeyond eView Studio Upgrade Guide*.

Chapter 4

Configuring eIndex SPV

Several files are included in the eIndex SPV Project that configure the structure and processing logic of the master index. You can customize these files as needed for your implementation. This chapter provides an overview of the configuration files. For detailed information about the structure of these files and how to modify them, see the *Sun SeeBeyond eView Studio* Configuration Guide.

What's in This Chapter

4.1 Configurable Options

eIndex SPV provides a very flexible framework for creating a master index that is customized for your requirements. This section describes the configurable components of the master index, which includes the following.

4.1.1 Object Definition

By customizing the Object Definition file, you can configure the structure of the data stored in the master index. This file contains the configuration of all objects in the master index and their relationships to one another. It also defines the fields contained in each object as well as certain attributes of each field, such as length, data type, whether it is required, whether it is a unique key, and so on. This file contains one parent object; all other objects must be child objects to that parent object. The object structure you define in the Object Definition file determines the structure of the database tables that will store object data and the structure of the method OTD in the eIndex SPV Project.

4.1.2 Enterprise Data Manager

The appearance of the EDM is defined in the Enterprise Data Manager file. You can customize this file by defining each field that appears on the EDM along with the properties of each field, such as the field type and length, field labels, format masks, and so on. You can also define the order in which objects and fields appear on the EDM pages, available search types and criteria, search results fields, reports, and so on.

4.1.3 Query Definitions

The queries used in the master index are all defined in the Candidate Select file. You can customize this file by configuring the types of queries used by the master index, including those that are performed from the EDM and those that are used during the match process. You can define both phonetic and alphanumeric searches for the EDM. By default, these are called basic searches. You can also define blocking queries, which define groups of criteria fields, for the match process (this type of search can be used in place of the phonetic search in the EDM as well).

4.1.4 Standardization and Matching Rules

The fields that are standardized or used for matching are configured in two files: Threshold and Match Field. In the Match Field file, you specify the match and standardization engines to use and configure information about the standardization and match process. This includes defining fields to be reformatted, normalized, or converted to their phonetic version; defining the data string to be passed to the match engine; and specifying a blocking query for matching. In the Threshold file, you define certain match parameters that define weight thresholds, how assumed matches are processed, and how potential duplicates are processed.

4.1.5 Survivor Calculator

The logic that determines the data to include in each object's SBR is defined in the Best Record file. You can configure this file by defining the formulas used by the survivor calculator to determine which fields from each system contain the most reliable data. The survivor calculator uses these formulas to generate the SBR for a given object. Survivor logic is defined in the **SurvivorHelperConfig** and **WeightedCalculator** sections of the Best Record file.

The SBR is defined by a mapping of fields from external system objects. Since there might be many external systems, you can optionally specify a strategy to select the SBR field from the list of external values. You can also specify any additional fields that might be required by the selection strategy to determine which external system contains the best data, such as the object's update date and time.

4.1.6 Update Policies

You can create Java classes that define special processing to perform against a record when the record is created, updated, merged, or unmerged. These classes must be created in the Custom Plug-ins module and can be specified for each transaction type in the Best Record file.

4.1.7 Field Validations

By default, the Field Validation file defines validations for the local identifiers assigned by each external system. You can create custom rules to validate field values before they are saved to the master index database.

4.1.8 Enterprise-wide Unique Identifiers

The configuration of the EUIDs assigned by the master index is defined in the Threshold file. You can specify an EUID length, whether a checksum value is used for additional verification, and a "chunk size" (the number of EUIDs to be sent to the EUID generator at one time). Specifying a chunk size allows the EUID generator to obtain a block of EUIDs from the sbyn_seq_table database table so it does not need to query the table each time it generates a new EUID.

4.2 About the eIndex SPV Configuration Files

The files that configure the components of the master index define characteristics of the application, such as how data is processed, queried, and matched. These files configure the runtime components of the master index.

The configuration files include the following:

- **Object Definition File** on page 46
- **Candidate Select File** on page 46
- **Match Field File** on page 46
- **Threshold File** on page 47
- **Best Record File** on page 47
- **Field Validation File** on page 48
- **Security File** on page 48
- **Enterprise Data Manager File** on page 48

These files can only be modified in the XML Editor provided with eIndex SPV. This editor is described in the *Sun SeeBeyond eView Studio Configuration Guide*.

4.2.1 Object Definition File

The Object Definition file defines each object in the master index and their relationships to one another. It also defines the fields contained in each object, as well as certain properties of each field, such as length, data type, whether it is required, whether it is a unique key, and so on. This file contains one parent object; all other objects must be child objects to that parent object. The object structure defined in the Object Definition file determines the structure of the database tables that will store object data, the structure of the Java API, and the structure of the OTD generated for the Project. eIndex SPV provides a predefined Person object structure based on the data required in a healthcare environment.

4.2.2 Candidate Select File

This file configures the Query Builder component of the master index and defines the queries available for the master index. In this file, you define the types of queries that can be performed from the EDM and the queries that are used during the match process. You can define both phonetic and alphanumeric searches for the EDM. By default, these are called basic queries. You can also define blocking queries, which define blocks of criteria fields for the match process.When performing a blocking query, the master index queries the database using the criteria defined in each block, one at a time. After completing a query on the criteria defined in one block, it performs another pass using the next block of defined criteria.

In the default configuration, the EDM uses basic queries to perform alphanumeric and exact searches and uses blocking queries for phonetic searches and for match processing. One blocking query ("BLOCKER-SEARCH") is defined for match processing queries (from both the EDM and external systems) and one blocking query ("BLOCKER-SEARCH2") is defined for phonetic searches from the EDM. Both queries include alias names in the query blocks to enable extensive searching. You can remove the alias entries if you do not want the alias tables searched during the execution of a blocking query.

The queries defined in the default configuration file are based on standard criteria for searching and matching on patient data. The default data blocks defined for the blocking query used for match processing include:

- Social Security Number
- Phonetic first name, date of birth, and gender
- Phonetic first and last names
- Phonetic last name and phonetic mother's maiden name
- Phonetic alias first and last names

4.2.3 Match Field File

This file configures the Matching Service by defining standardization and matching fields for the master index. It also specifies the match and standardization engines to use and the query process for matching. Standardization includes defining fields to be reformatted, normalized, or converted to their phonetic version. For matching, you must also define the data string to be passed to the match engine. The rules you define for standardization and matching are dependent on the match engine in use. *Implementing the Sun SeeBeyond Match Engine with eView Studio* describes the rules for the SBME.

By default, person and alias names are defined for normalization and phonetic encoding, and all other name fields are defined for phonetic encoding. Street addresses are defined for parsing, normalization, and phonetic encoding. The default match string fields include standardized first name, standardized last name, Social Security Number, date of birth, and gender.

4.2.4 Threshold File

This file configures the eIndex Manager Service and defines attributes of the match process. This file specifies the match and duplicate thresholds and defines certain system parameters, such as how to process records above the match threshold, how to manage same system matches, update modes, and whether merged records can be updated. This file also specifies which query in the Query Builder to use for matching queries.

The Threshold file configures the EUIDs assigned by the master index by defining an EUID length, whether a checksum value is used for additional verification, and a “chunk size” (the number of EUIDs to be sent to the EUID generator at one time). Specifying a chunk size allows the EUID generator to obtain a block of EUIDs from the sbyn_seq_table database table, so it does not need to query the table each time it generates a new EUID.

4.2.5 Best Record File

This file defines the logic that determines what data to include in each object’s single best record (SBR). The Best Record file allows you to define formulas for determining which data should be considered the most reliable and how updates to the SBR will be handled. The survivor calculator uses these formulas to generate the SBR for each enterprise object. This logic is defined in the **SurvivorHelperConfig** and **WeightedCalculator** sections of the Best Record file. This file also allows you to specify custom update procedures created using the Custom Plug-in feature.

The survivor strategies and update policies defined in the default configuration file are based on standard criteria for searching and matching on patient data. Custom plug-ins are predefined for each update policy type and the Best Record file is configured to use these predefined policies by default.

The default Best Record file only defines the last modified date as criteria for the survivor calculation, but the file also provides examples of other types of calculations in commented text. The first set of commented lines defines a specific strategy for the “SSN” field. In this sample, if the SBYN system supplies an SSN field value, that value is used in the SBR; if the SSN field value was most recently modified in a different system and there is no value from the SBYN system, the most recently modified value is used.

```
<candidate-field name="Person.SSN">
   <parameter>
```

```
            <quality>SourceSystem</quality>
            <preference>SBYN</preference>
            <utility>100.0</utility>
         </parameter>
         <parameter>
            <quality>MostRecentModified</quality>
            <utility>75.0</utility>
         </parameter>
      </candidate-field>
```

An additional sample is provided for the default parameters of the weighted calculator, giving the SBYN system a high preference for all fields in the SBR.

4.2.6 Field Validation File

By default, the Field Validation file specifies a Java class that defines certain validations for the local identifiers assigned by each external system. You can create Java classes that define custom rules to validate field values before they are saved to the database and then specify those classes in this file.

4.2.7 Security File

This file is a placeholder to be used in future versions.

4.2.8 Enterprise Data Manager File

The appearance of the EDM is defined in the Enterprise Data Manager file. This file defines each field that appears on the EDM along with the properties of each field, such as the field type and length, field labels, format masks, and so on. It also defines the order in which objects and fields appear on the EDM pages.

This file defines several additional attributes of the EDM, such as the types of searches available, whether wildcard characters can be used, the criteria for the searches, the results fields that appear, and whether an audit log is maintained of each instance data is accessed through the EDM (an audit log is especially useful in healthcare implementations, where privacy of information is mandated).

Finally, this file defines certain implementation information, such as the report generator, code lookup classes, debugging options, security details, masking field values, and the JNDI names for the report generator, master controller, and user code validation services.

eIndex SPV provides a default class for masking the data in certain fields from specific users. This class is defined as a custom plug-in and is named **VIPObjectSensitivePlugIn** (in the com.stc.eindex.security package). The class is specified in this file in the **object-sensitive-plug-in-class** element.

4.3 Modifying the eIndex SPV Configuration Files

You might need to modify the configuration files after you review them. Make sure that when you modify the configuration files, you use the **Check Out** and **Check In** commands to maintain version control. If you open and modify a file without first checking the file out, a warning appears when you try to save the file. This warning lets you save and check out the file in one step. Also, be sure to verify that the modifications are valid by verifying the XML syntax and using Enterprise Designer's validation function to validate the file against the schema. After modifying each file, save the changes to the Repository.

There are a few restraints on modifying these files. In addition to the general rules listed below, the match engine you choose might place other requirements on customizations. Be sure to review *Implementing the Sun SeeBeyond Match Engine with eView Studio* before modifying the Match Field file.

- All fields specified in any of the configuration files must be included in the Object Definition file.
- If you add fields to the object structure, make sure you add them to the survivor calculator in the Best Record file.
- If you define additional fields for normalization, parsing, or phonetic encoding, make sure to add the normalized, parsed, and phonetic fields to the Object Definition file and, optionally, the blocking query.
- After modifying any of the configuration files, you must regenerate the eIndex SPV application and redeploy the eIndex SPV Project. You must also refresh any Collaborations in client Projects that reference the eIndex SPV server Project.

4.4 Match Engine Configuration Files

Several match engine configuration files are included in the Project tree. You can customize matching logic and standardization information for the match engine by modifying these files. eIndex SPV provides a text editor for this purpose. For information about the structure of these files and how they can be modified, see *Implementing the Sun SeeBeyond Match Engine with eView Studio*.

Chapter 5

Creating Custom Plug-ins

eIndex SPV provides the ability to create custom update procedures to be performed on a record during and after standard eIndex SPV processing. These procedures are defined as Java classes in the Custom Plug-ins module.

This chapter describes the default plug-ins provided with eIndex SPV, how to create custom procedures, and how to configure eIndex SPV to use the custom procedures.

What's in This Chapter

5.1 Custom Processing

You can add custom processing tothe master indexusing the Custom Plug-ins module of an eIndex SPV Project. Plug-ins can be used to customize field validations, update policies, match processing logic, and record retrieval, as well as create custom components for the master index, such as a custom phonetic encoders, block pickers, or query builders. eIndex SPV includes several predefined custom plug-ins to generate and process alias names and to mask field values.

The following sections describe custom plug-ins that define custom processing. These are explained more fully in the *Sun SeeBeyond eView Studio Configuration Guide*.

- **Update Policies** on page 50
- **Field Validations** on page 52
- **Field Masking** on page 53
- **Match Processing Logic** on page 53

5.1.1 Update Policies

For the primary transactions performed by the master index you can define additional custom processing to perform against the record that results from a transaction. The policies you define are invoked by the Update Manager and are applied to the resulting records after they are processed by the survivor calculator. The modifications made to a record by an update policy determine how the record is stored in the database. Using the Custom Plug-ins function, you can create additional Java classes to support the update policies you define.

eIndex SPV provides default custom plug-ins for each update policy to generate alias names when a patient's first, last, middle, or maiden names are modified. You can view and edit the Java code for each custom plug-in by expanding the Custom Plug-ins folder of the eIndex SPV Project, right-clicking the file to view, and then selecting **Open**. Additional alias plug-ins are provided and are called by the custom update policies to process alias names after a transaction occurs.

Update policies are specified in the **UpdatePolicy** section of the Best Record file, and there are several different types. Each policy modifies an enterprise object (class **com.stc.eindex.objects.EnterpriseObject**) and must implement **com.stc.eindex.update.UpdatePolicy**, which contains one method, **applyUpdatePolicy**. The syntax is as follows:

```
public EnterpriseObject applyUpdatePolicy(EnterpriseObject before,
EnterpriseObject after)
```

This method throws two exceptions: **com.stc.eindex.master.UserException** and **com.stc.eindex.objects.exception.ObjectException**.

Enterprise Merge Policy

The enterprise merge policy defines additional processing to perform after two enterprise objects are merged. The processing defined in this policy acts against the surviving record of the merge. In the **EnterpriseMergePolicy** element in the Best Record file, enter the fully qualified name of this custom plug-in. The name of the default merge policy, **com.stc.eindex.update.impl.EnterpriseMergePolicy**, is already entered.

Enterprise Unmerge Policy

The enterprise unmerge policy defines additional processing to perform after an unmerge transaction occurs. The processing defined in this policy acts against the surviving record of the merge transaction that was unmerged. In the **EnterpriseUnmergePolicy** element of the Best Record file, enter the fully qualified name of this custom plug-in. The name of the default unmerge policy, **com.stc.eindex.update.impl.EnterpriseUnmergePolicy**, is already entered.

Enterprise Update Policy

The enterprise update policy defines additional processing to perform after a record is updated. In the **EnterpriseUpdatePolicy** element of the Best Record file, enter the fully qualified name of this custom plug-in. The name of the default update policy, **com.stc.eindex.update.impl.EnterpriseUpdatePolicy**, is already entered.

Enterprise Create Policy

The enterprise create policy defines additional processing to perform after a new record is inserted into the master index database. In the **EnterpriseCreatePolicy** element of the Best Record file, enter the fully qualified name of this custom plug-in. The name of the default create policy, **com.stc.eindex.update.impl.EnterpriseCreatePolicy**, is already entered.

System Merge Policy

The system merge policy defines additional processing to perform after two system objects are merged. The processing defined in this file acts against the surviving enterprise record of the merge (and not the system record). In the **SystemMergePolicy** element of the Best Record file, enter the fully qualified name of this custom plug-in. The name of the default merge policy, **com.stc.eindex.update.impl.SystemMergePolicy**, is already entered.

System Unmerge Policy

The system unmerge policy defines additional processing to perform after system objects are unmerged. The processing defined in this file acts against the surviving enterprise record of the system merge transaction that was unmerged. In the **SystemUnmergePolicy** element in the Best Record file, enter the fully qualified name of this custom plug-in. The name of the default merge policy, **com.stc.eindex.update.impl.SystemUnmergePolicy**, is already entered.

Undo Assumed Match Policy

The undo assumed match policy defines additional processing to perform after an assumed match transaction is reversed. In the **UndoAssumeMatchPolicy** element in the Best Record file, enter the fully qualified name of this custom plug-in.

5.1.2 Field Validations

You can define validations to be performed against certain fields before information is entered into the master index database. Once you create the custom plug-ins containing the validation logic, enter the name of the plug-in in the Field Validation file. Follow these guidelines when implementing custom field validators.

- The custom validation classes must implement **com.stc.eindex.objects.validation.ObjectValidator**.
- The exception thrown is **com.stc.eindex.objects.validation.exception.ValidationException**.

One default field validator, **validate-local-id**, is provided to validate system and local ID fields before processing data into the database. This is described in the *Sun SeeBeyond eView Studio Configuration Guide*.

5.1.3 Field Masking

There might be instances where you want to mask certain data in records from general users of the Enterprise Data Manager and only allow access by administrators. To do this, you can create a custom plug-in that displays asterisks (or other symbol) in place of the fields values on the EDM. Once you define the custom plug-in, specify the name of the custom plug-in Java class in the object-sensitive-plug-in-class element of the Enterprise Data Manager configuration file (see chapter 9 of the *Sun SeeBeyond eView Studio Configuration Guide*).

eIndex provides a default custom plug-in that defines field masking. The class is **com.stc.eindex.security.VIPObjectSensitivePlugIn**, which is specified in the **object-sensitive-plug-in-class** of the Enterprise Data Manager file. This class contains logic that checks the value of the VIP Flag field. If the value is “V” (VIP) or “E” (Employee), the values are masked by a series of Xs for any field for which the **is-sensitive** element is set to **true** in the first section of the Enterprise Data Manager file.

5.1.4 Match Processing Logic

You can implement custom plug-ins that customize the way the execute match methods process data into the master index.

Execute Match Methods

Match processing is performed by calling one of the following “execute match” functions from the MasterController class.

- executeMatch
- executeMatchUpdate
- executeMatchDupRecalc
- executeMatchUpdateDupRecalc
- executeMatchGui (this method is only called by the EDM)

These classes contain standard logic for processing records through the master index database, weighting incoming records against existing records, and then using those weights to determine whether to insert a new record or update an existing record. In addition to configuring the match processing logic in the Threshold file, you can customize certain aspects of the processing logic using custom plug-ins that contain functions found in the **ExecuteMatchLogics** class.

Custom Logic Methods

There are five decision branches where custom logic can be inserted. At specific points in match processing, the execute match method looks for the value of the methods listed below. For more information about the methods, see the Javadocs provided with eIndex SPV. (The methods are contained in the **ExecuteMatchLogics** class in the package **com.stc.eindex.master.**) For information about where the decision points are reached in the processing logic and how the change the logic, see Appendix A of the

Sun SeeBeyond eView Studio Reference Guide. The following methods specify the custom logic.

- **bypassMatching** - indicates whether to perform the match process on incoming records or to bypass the match process
- **disallowAdd** - indicates whether an incoming message can be inserted as a new record
- **disallowUpdate** - indicates whether an incoming record can update an existing record
- **rejectAssumedMatch** - indicates whether to accept or reject an assumed match of two records
- **rejectUpdate** - indicates whether to accept or reject an update to an existing record

Custom Logic Plug-in Requirements

The custom plug-ins you create to define custom execute match logic must inherit the **ExecuteProcessingLogic** class. In addition, the following classes must be imported into the custom plug-in.

- com.stc.eindex.objects.SystemObject;
- com.stc.eindex.objects.EnterpriseObject;
- com.stc.eindex.objects.exception.ObjectException;
- com.stc.eindex.master.ExecuteMatchLogics;
- com.stc.eindex.master.CustomizationException;

Threshold File Customization

If you create a custom plug-in that defines custom processing logic for the execute match methods, you must specify those custom plug-ins in the Threshold file of the eIndex SPV Project. If you create a plug-in for customizing logic in the execute match methods used by Collaborations or Business Processes, specify the name of that class in the logic-class element. If you create a plug-in for the EDM, specify the name of that class in the logic-class-gui element. For example:

```
<logic-class>com.stc.eindex.user.CustomCollaboration</logic-class>
<logic-class-gui>com.stc.eindex.user.CustomEDM</logic-class-gui>
```

For more information about the Threshold file, see the *Sun SeeBeyond eView Studio Configuration Guide*.

5.2 Custom Components

eIndex SPV provides a flexible framework, allowing you to create custom Java classes to plug in to most eIndex SPV components. This section provides a brief list and descriptions of some components for which you can create custom classes.

5.2.1 Survivor Calculator

The survivor calculator determines which field values from the various system records will populate the SBR for the enterprise record. You can create a custom survivor calculator class that selects the surviving field values. Your custom class must implement the survivor calculator interface. Call **selectField** in **com.stc.eindex.survivor.SurvivorStrategyInterface** to return the SBR value for each field. For more information about the classes and methods to use, see the Javadocs provided with eIndex SPV. The primary classes are contained in the **com.stc.eindex.survivor** package.

5.2.2 Query Builder

The query builder defines the different types of queries that can be used in the master index. You can implement custom queries using custom plug-ins. To create a new query builder, you must define a class that extends the base abstract **com.stc.eindex.querybuilder.QueryBuilder** and then specify that class in a **query-builder** element in the Candidate Select file. The exception thrown is **com.stc.eindex.querybuilder.QueryBuilderException**. The following methods must be implemented. For more information about query-related Java classes, see the Javadocs provided with eIndex SPV.

- **init** - This method receives the XML elements after the **config** element so the query builder can read its custom configuration.
- **getApplicableQueryIds** - This method returns an array of string IDs indicating the query objects that can be generated given the available criteria. For example, in the blocking configuration, the unique ID of each block definition is the string that is returned by **getApplicableQueryIds**.
- **buildQueryObject** - This method constructs the query object based on one of the applicable query IDs provided as an input argument.

5.2.3 Block Picker

The block picker chooses the block definition to use for the next matching pass. You can create a custom block picker class to select query blocks in a customized manner. Specify the fully qualified name of this custom plug-in for the **block-picker** element of the Match Field file. Follow these guidelines when implementing a custom block picker.

- Implement the **com.stc.eindex.matching.BlockPicker** interface to select the blocks in the desired order.
- If none of the remaining blocks should be executed, throw a **NoBlockApplicableException** from the **pickBlock** method.

5.2.4 Pass Controller

The matching process can be executed in multiple stages. After a block is evaluated, the pass controller determines whether the results found are sufficient or if matching should continue by performing another match pass. Specify the name of the custom Pass Controller in the **pass-controller** element of the Match Field file. Follow these guidelines when implementing a custom pass controller.

- Implement the **com.stc.eindex.matching.PassController** interface to evaluate whether to do another pass or not.
- Return **true** from **evalAnotherPass** to specify that an additional pass be performed; return **false** to specify that no additional passes are performed.

5.2.5 Match Engine

You can define classes to connect to a custom match engine instead of the SBME. Specify the names of the custom classes you create in the **matcher-api** and **matcher-config** elements of the Match Field file. Follow these guidelines when implementing custom match engine classes.

- Implement the **com.stc.eindex.matching.MatcherAPI** interface to communicate with the match engine.
- Implement the **com.stc.eindex.matching.MatchEngineConfiguration** interface to retrieve any configuration values the match engine requires for initialization.

5.2.6 Standardization Engine

You can define classes to connect to a custom standardization engine instead of the SBME. Specify the names of the custom classes you create in the **standardizer-api** and **standardizer-config** elements of the Match Field file. Follow these guidelines when implementing custom standardization engine classes.

- Implement the **com.stc.eindex.matching.StandardizerAPI** interface to communicate with the standardization engine.
- Implement the **com.stc.eindex.matching.StandardizerEngineConfiguration** interface to retrieve any configuration values the standardization engine requires for initialization.

5.2.7 Phonetic Encoders

The master index supports several phonetic encoders, and you can define custom classes to implement additional phonetic encoders if needed. Specify the names of the custom classes you create in the **encoder-implementation-class** element of the Match

Field file. When creating a custom phonetic encoder class, implement the **com.stc.eindex.phonetic.PhoneticEncoder** interface.

5.3 Custom Plug-in Exception Processing

If a custom plug-in throws an exception of the class **ObjectException** or **SystemObjectException**, multiple stack traces are logged in the server log file, which can make operational management tasks more difficult. For cases where you do not want stack traces to be logged, configure your custom plug-ins to throw exceptions of the class **UserException** or one of its derived classes (**DataModifiedException** or **ValidationException**). This is useful for user errors on the Enterprise Data Manager (EDM). When one of these exceptions is thrown, no stack trace is entered in the log file but an error message still appears on the EDM.

For more information about these exception classes, see the Javadoc provided with eIndex SPV.

5.4 Implementing Custom Plug-ins

eIndex SPV provides a simple method of incorporating custom Java code into an eIndex SPV application via the **Custom Plug-ins** module.

Creating Custom Plug-ins

Custom plug-ins contain Java code that you create to tailor how messages are processed in the eIndex SPV system. You can create as many plug-ins as you need to carry out the custom processes.

To create custom plug-ins

1. In the eIndex SPV Project, click the **Custom Plug-ins** folder and then right-click.
2. Select **New** from the context menu that appears.
3. Enter the name of the custom plug-in and then click **OK**.

   The custom plug-in file appears in the Java Source Editor with the first line already entered (“**package com.stc.eindex.user;**”).
4. Create the custom processing rules using Java code.
5. Close and save the file.
6. Repeat these steps for each plug-in you need to create.
7. Build the custom plug-ins, as described under **“Building Custom Plug-ins”**.
8. Specify the name of the custom plug-in in the appropriate eIndex SPV configuration file.

Note: *Custom plug-ins are created in the* ***com.stc.eindex.user*** *package, and the name you specify for the plug-in is the name of the Java class created for the plug-in. When you specify the custom plug-in in the configuration files, use the fully qualified class name. For example, if you create a custom plug-in named "MergePolicy", the value to enter for the class in the Best Record file is "****com.stc.eindex.user.MergePolicy****".*

Building Custom Plug-ins

In order for the custom plug-ins you create to become a part of the eIndex SPV application, you must build the plug-ins. This compiles the Java code and incorporates it into the application files. Compiling errors for custom plug-ins are not written to a log. An error message trace appears on a console window alerting you to the errors that occurred.

To build custom plug-ins

1. In the eIndex SPV Project, click the **Custom Plug-ins** folder and then right-click.
2. Select **Build** from the context menu that appears.

Important: *If you modify a custom plug-in file after it has been checked in, be sure to check the file out before making any changes; otherwise, any changes will be lost when you try to save the file. Be sure to rebuild the plug-in after you save the changes and regenerate the application to incorporate the changes. Regenerating also rebuilds all custom plug-ins.*

Chapter 6

Building the Application

If you make any changes to the default configuration files for eIndex SPV, you must generate the application to customize the remaining runtime components. This chapter gives instructions for generating the eIndex SPV application and describes the Project components that are updated when you generate.

What's in This Chapter

6.1 Generated Application Components

Generating the master index application is the process that actually creates the indexing application. Several custom components are updated in the Project along with the executable files for the application. eIndex SPV uses the Object Definition to update these components based on the configuration you defined. The generated components include the following.

- **Database scripts** - The scripts for creating and dropping tables and indexes are updated based on the Object Definition file.
- **Custom Plug-ins** - Generating the application rebuilds custom plug-ins and incorporates any customized processing rules defined by custom plug-ins into the application files.
- **Outbound OTD** - This component defines the outbound data structure and includes general OTD methods. The data structure is based on the Object Definition file.
- **Method OTD** - The method OTD includes the Java methods you need to process data through the master index. These are customized for your application based on the Object Definition file.
- **Business Process methods** - Business Process methods can be used when processing data through eInsight BPM rather than a Collaboration. They include a subset of the method OTDs and are based on the Object Definition file. Use these methods for eVision web pages as well.
- **Application JAR files** - These files are used by the web-based interface (EDM) and any client Projects that access the master index.

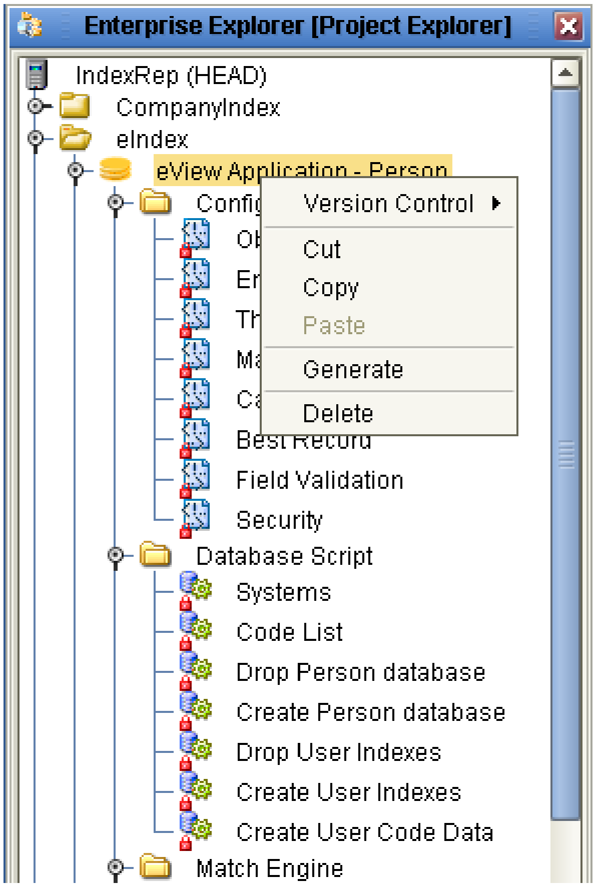
6.2 Generating the Application

Once all modifications to the configuration files are complete and any custom plug-ins are built, generate eIndex SPV to update the components listed above. If you modify any of the configuration files, match and standardization engine files, or custom plug-ins after you generate the application, you must regenerate the application to update the custom components.

To generate the application

1. Save all configuration changes to the Repository.
2. Right-click the eIndex SPV application in the **Project Explorer** pane to display the application context menu (shown in Figure 12).

Figure 12 Generate Context Menu



3. Select **Generate**. eIndex SPV updates the Project components. This might take a few minutes.

Note: *When you regenerate an application, a warning dialog appears stating that the application already exists. Click **Yes** on this dialog to recreate the generated components.*

4 Save the new components to the Repository.

5 If there are any client Projects with Collaborations that reference the eIndex SPV server Project, refresh those Collaborations.

6 If there were any changes to how incoming data is processed (such as changes to the output OTD), re-import the .jar files.

A Open the Collaboration in the Collaboration Editor (Java) and click **Import JAR Files**. The Add/Remove Jar Files dialog appears.

B For each eIndex SPV .jar file, highlight the filename on the Add/Remove Jar Files dialog, and then click **Remove**.

C For each file to re-import, click **Add**, double-click the eIndex SPV server Project, select the .jar file, and then click **Import**.

For more information about the Add/Remove Jar Files dialog, see the *Sun SeeBeyond eGate Integrator User's Guide*.

7 If you are using command line reports, do the following:

A Export the regenerated **Person_stc_eindex_client.jar** and **Person_stc_eindex_util.jar** files to the **lib** subdirectory in the reports home directory.

B In the **lib** subdirectory, rename the file **stc_eindex_client.jar**. to **stc_eindex_client.jar** and rename the file **stc_eindex_util.jar**. to **stc_eindex_util.jar**.

Note: *If any errors occur while compiling the application, an error warning appears and the errors are logged in the IDE log file located at <edesigner_home>\usrdir\system\ide.log.*

Chapter 7

Creating the Database

The eIndex SPV Project includes several database scripts to create the master index tables, indexes, and startup data for the new database. Additional scripts are created for testing purposes. This chapter provides information about designing the database, modifying the scripts, and using the scripts to create the index-specific database tables and startup data.

What's in This Chapter

7.1 Database Scripts

The database scripts include scripts for defining code lists and external systems, for creating tables and indexes, and scripts for dropping tables and indexes. These scripts appear under the **Database Script** node of the eIndex SPV Project, and are named **Systems**, **Code List**, **Create User Indexes**, **Drop User Indexes**, **Create User Code Data, Create Person database**, and **Drop Person database**. You can modify these scripts as needed to customize the tables, indexes, startup data, and database distribution. You can also create new database scripts if needed.

7.2 Requirements

When configuring the master index database, there are several factors to consider, including basic software requirements, operating systems, disk space, and so on. This section provides a summary of requirements for the database. For more detailed information about designing and implementing the database, refer to the appropriate Oracle documentation. The person responsible for the database configuration should be an Oracle database administrator familiar with the master index database and with your data processing requirements.

7.2.1 Database Platform Requirements

The master index database can be run on Oracle 9*i* or 10*g*. You must have this software installed before beginning the database installation. Make sure you also install the latest Oracle patches for the version you are using.

7.2.2 Operating System Requirements

The database can be installed on any operating system platform supported by the version of Oracle you are using. See the Oracle documentation for more information.

7.2.3 Hardware Requirements

This section describes the minimum recommended hardware configuration for a database installation is one of the following options. These requirements are based on the minimum requirements recommended by Oracle for the installation of a Typical installation. Depending on the size of the database and expected volume, you should increase these recommendations as needed.

- For a Windows database server, the following configuration is recommended as a *minimal* installation:
    - Windows 2000 SP3 or later or Windows XP SP2
    - Pentium 266 or later
    - 512 MB RAM (increase this based on the number of users, connections to the database, and volume)
    - 3 GB disk space plus an additional 2 KB for each system record to be stored in the database (note that this is a conservative estimate per system record, assuming that most records do not contain complete data). This depends on the Oracle environment you install. Enterprise Edition can take up to 5 GB.
    - 256-color video
- For a UNIX database server, the following configuration is recommended as a *minimal* installation:
    - 256 MB RAM (increase this based on the number of users and connections to the database)
    - Swap space should be a minimum of twice the amount of RAM
    - 2 GB disk space plus an additional 2 KB for each system record to be stored in the database (note that this is a conservative estimate per system record, assuming that most records do not contain complete data)

Important: *Disk space recommendations do not take into account the volume and processing requirements or the number of users. These are minimal requirements to install a* *generic database. At a minimum, the empty database and the database software will require 2.5 GB of disk space.*

7.3 Database Structure

The master index database contains some common tables that are created for all implementations and some that are customized for each implementation. The common tables include standard Oracle tables and supporting tables, such as sbyn_seq_table, sbyn_common_header, and sbyn_common_detail. These tables do not store information about the enterprise object structure you defined. The names of the tables that store information about the enterprise object are customized based on the object structure.

Two tables store information about the primary, or parent, object you defined: sbyn_<*parent_object*> and sbyn_<*parent_object*>sbr, where <*parent_object*> is the name you specified for the parent object in Object Definition. The sbyn_<*parent_object*> table stores parent object data from each local system and the sbyn_<*parent_object*>sbr table stores the parent object data contained in the SBRs. Similar tables are created for each child object you defined in the object structure.

For a complete description of the database tables, see Chapter 3, “The Database Structure”, in the *Sun SeeBeyond eView Studio Reference Guide*.

7.4 Designing the Database

In designing the database, there are several factors to consider, such as the volume of data stored in the database and the number of transactions processed by the database daily. The eIndex SPV database should be created in its own tablespaces. The following sections describe some of the analyses to perform along with things to consider when designing the database.

7.4.1 Designing for Performance Optimization

The Oracle installation guides provide detailed information about installing the database software for optimal performance. The Oracle administrator’s guides include information about monitoring and fine-tuning your database, including tuning memory, swap space, I/O, CPU usage, block and file size, and so on.

7.4.2 Data Analysis

Before beginning the master index implementation, you performed an analysis of the legacy data to help you define the object structure and the attributes of each field. You can use this data analysis to determine the amount of data that will be stored in the database, which will help you size the master index database and decide how to best distribute the database. Knowing the volume of existing data plus the expected daily transaction volume will help you plan the requirements of the database server, such as networking needs, disk space, memory, swap space, and so on.

The data analysis will help you define the processing codes and the descriptions to define in the common tables, and should help you determine any default values that have been entered into certain fields that could skew the matching probability weights.

7.4.3 Common Table Data

Common table data analysis involves gathering information about the abbreviations used for specific data elements in each sending system, such as system codes and codes for certain attributes about the patients in your database, such as language, race, and marital status codes. The processing codes and their descriptions are stored in a set of database tables known as common maintenance tables. The eIndex SPV Project includes a script to help you load the processing codes into the database.

When an enterprise object appears on the EDM, the master index translates the processing codes defined in the common tables into their descriptions so the user is not required to decipher each code. The data elements stored in the common maintenance tables are also used to populate the drop-down lists that appear for certain fields in the EDM. Users can select from these options to populate the associated fields.

7.4.4 User Code Data

User code data analysis involves gathering information about the abbreviations used for specific data elements in each sending system for a field whose format or possible values are constrained by a separate field. For example, if you store credit card information, you might have a drop-down list in the Credit Card field for each credit card type. The format of the field that stores the credit card number is dependent on the type of credit card you select. You could also use user code data to validate cities with postal codes. The abbreviations and related constraint information are stored in the sbyn_user_code table. A sample script, **Create User Code Data**, is provided to help you insert data into this table.

7.4.5 Considerations

When you create the master index database, you need to consider several factors, such as sizing, distribution, indexes, and extents. By default, all of the master index database tables are installed in the Oracle “system” tablespace. You should install these tables into different tablespaces, depending on the original size and expected volume of the database.

Database Sizing

To begin the database installation, you first create an Oracle database instance using Oracle configuration tools. Use these tools to define the tablespace and extent sizing for the database.

Database Distribution

The Oracle configuration tools allow you to define the distribution of your system tables, data tables, rollback logs, dump files, control files, and so on. Use internal policies regarding relational database distribution to determine how to best distribute your eIndex SPV database.

Database Indexes

By default, indexes are defined for the following tables: sbyn_appl, sbyn_common_header, sbyn_common_detail, sbyn_enterprise, sbyn_transaction, sbyn_assumedmatch, sbyn_potentialduplicates, sbyn_audit, and sbyn_merge. Index scripts are also created for indexing the fields included in the default blocking query in the Candidate Select file. You can create additional indexes against the database to optimize the searching and matching processes. At a minimum, it is recommended that all combinations of fields used for blocking or matching be indexed. For each query block defined in the blocking query, create an index containing the fields in that block.

7.5 Creating the Database

Once you have customized the configuration files and generated the eIndex SPV Project in Enterprise Designer, you can create the master index database. Before you begin, make sure you have Oracle installed on the database server. Follow these steps to create the database.

- **Step 1: Analyze the Database Requirements** on page 66
- **Step 2: Create an Oracle Database and User** on page 67
- **Step 3: Customize the Database Scripts** on page 67
- **Step 4: Modify the Database** on page 72
- **Step 5: Specify a Starting EUID (optional)** on page 73

7.5.1 Step 1: Analyze the Database Requirements

Before you begin to create the master index database, you must perform a thorough analysis of the legacy data to be stored in the database and determine the amount of data that will be processed daily. During the analysis, be sure to define the processing codes that need to be stored in the common maintenance tables and the systems that will share data with the master index. You should also know the length and format of the local IDs assigned by each system.

An Oracle database administrator who is familiar with your data and processing requirements should perform this task.

7.5.2 Step 2: Create an Oracle Database and User

Before beginning this step, be sure that the correct version of Oracle is installed on the database server (version 9*i*). To install the database, you can use a standard Oracle tool, such as the Database Configuration Assistant, which will lead you through the database configuration process. During this step, you will define tablespaces, including their sizes and locations; extents; and dump file, log file, and rollback file sizes and locations. Make sure these issues have been thoroughly analyzed and designed before creating the database.

When you create the database, you should also create a user that will be used to create the database structure and to connect to the database through the EDM and through eGate. Assign this user to the “connect” and “resource” roles for the eIndex SPV tablespaces. For example:

```
create user <username> identified by <password>;
grant connect, resource to <username>;
commit;
```

where <username> is the login ID of the administrator user and <password> is the login password of the administrator user. If you prefer to assign individual permissions to the user instead of roles, the following permissions are needed.

- alter any index
- alter any procedure
- alter any table
- alter any trigger
- create any index
- create procedure
- create session
- create table
- create trigger
- create view
- delete any table
- drop any index
- drop any procedure
- drop any table
- drop any trigger
- drop any view
- insert any table
- select any table
- update any table

7.5.3 Step 3: Customize the Database Scripts

The database script that installs the database components specific to eIndex SPV is customized based on any changes you made to the object structure in the Object Definition file. You can modify any of the database script as needed.

Defining Indexes

To optimize data processing in the master index, you can define additional indexes for the database tables that store object data. Sun recommends defining indexes for each field used for searching, blocking, or matching. You can define these indexes in the **Create User Indexes** file or create a new script.

To define an index

1. In the Project Explorer pane, expand the **Database Script** node and then double-click the **Create User Indexes** file.

   The file opens in the text editor.

2. Do any of the following:

   - Remove an existing index definition (not recommended).
   - Create new index definitions for the required fields.
   - Modify an existing index definition.

3. Save and close the **Create User Indexes** file.

Defining Systems

The **Systems** file in the eIndex SPV Project defines one default source system for eIndex SPV. You can define additional systems as needed or delete the default system.

To define a system

1. In the Project Explorer pane, expand the **Database Script** node and then double-click the **Systems** file.

   The file opens in the text editor.

2. For each “insert” statement, modify the values clause according to the column descriptions in Table 2. For example:

```
INSERT into sbyn_systems (systemcode, description, status,
id_length, format, input_mask, value_mask, create_date,
create_userid)
VALUES ('ARS', 'Automated Registration System', 'A', 10, '[0-
9]{10}', 'DDD-DDD-DDDD', 'DDD^DDD^DDDD', sysdate, ‘admin’);
```

3. If needed, create additional “insert” statements for any systems that are not already defined.

4. Save and close the **Systems** file.

Table 2 Columns in the sbyn_systems Table

Column	Description
systemcode	The unique processing code of the system. This field accepts any of the following characters: ▪ ! _ ~ ( ) { } + ` # $ % & : ; - / ▪ a-z ▪ A-Z ▪ 0-9 ▪ þ ÿ Þ ß 'à-ö ø-ý À-Ö Ø-Ý
description	A brief description of the system, or the system name. ***Tip:*** *It is best to keep this short if possible; these values appear in the tree views on the Enterprise Data Manager and can cause the box containing the tree views to increase in width to accommodate all characters.*

Table 2 Columns in the sbyn_systems Table

Column	Description
status	The status of the system in the master index system. Specify "A" for active, or "D" for deactivated.
id_length	The length of the local identifiers assigned by the system. This length does not include any additional characters added by the input mask. ***Note:*** *The default maximum length of the LID database columns is 25. If the system generates longer local IDs, be sure to increase the length of all LID columns in the database.*
format	The required data pattern for the local IDs assigned by the system. For more information about possible values and using Java patterns, see "Patterns" in the class list for **java.util.regex** in the Javadocs provided with the J2SE Platform. Note that the pattern specified here might be further restricted by the input mask described below.
input_mask	A mask used by the EDM to add punctuation to the local ID. For example, you can add an input mask to display the local IDs with hyphens or constant characters. To define an input mask, enter a character type for each character in the field and place any necessary punctuation between the types. For example, to insert a hyphen after the second and fifth characters in an 8-digit ID, the input mask would be **DD-DDD-DDD**. The following character types can be used; any other characters are treated as constants. ▪ **D** - indicates a numeric character. ▪ **L** - indicates an alphabetic character. ▪ **A** - indicates an alphanumeric character. If you use an input mask, you should also define a value mask (see below) to remove the punctuation from the stored value.
value_mask	A mask used to strip any extra characters that were added by the input mask. This mask ensures that data is stored in the database in the correct format. To specify a value mask, type the same value entered for the input mask, but type an "x" in place of each punctuation mark. Using the 8-digit input mask described above, you would specify a value mask of **DDxDDDxDDD**. This strips the hyphens before storing the ID.
create_date	The date the system information was inserted into the database. You can specify "sysdate" for this column, or use the variables defined at the beginning of the sample script.

Table 2 Columns in the sbyn_systems Table

Column	Description
create_userid	The logon ID of the user who inserted the system information into the database. You can enter the logon ID or use the variables defined at the beginning of the sample script.

Defining Code Lists

The **Code List** file of the eIndex SPV Project defines default processing codes and drop-down list descriptions for the common data tables in the database. The information you define will be used to translate processing codes from incoming messages into descriptions for the EDM fields and to create drop-down lists for EDM fields.

The Code List file contains a stanza for each type of common table data element for which you use processing codes. You can create additional common table data types and additional common table data elements. This script inserts data into two tables: sbyn_common_header, which lists the types of common table data, and sbyn_common_detail, which lists each common table data element. You must define a type before you can define the elements for that type.

Note: *The codes you specify in this file can be no longer than eight characters (the codes are the second value in the value list for each common table data type and data element).*

To customize common table data

1. In the Project Explorer pane, expand the **Database Script** node and then double-click the **Code List** file.
2. The file opens in the text editor.
3. In the **Code List** file, scroll to the following line.

   ```
   codes tCodeList := tCodeList(
   ```

   The statements following this line can be customized.
4. Add or modify the elements of each stanza as needed. A sample stanza is shown below.

   ```
   -- ****  PHONTYPE   ****
   tCode('L', 'PHONTYPE', 'TELEPHONE TYPE'),
   tCode('V', 'H', 'HOME'),
   tCode('V', 'M', 'MOBILE'),
   tCode('V', 'F', 'FAX'),
   tCode('V', 'O', 'OFFICE'),
   ```

Note: *Do not modify the "L" or "V" in each row. These characters define whether the information is inserted into the sbyn_common_header or sbyn_common_detail table. Following the table indicator is the processing code, and the final item in each row is a description.*

5 In the last code module stanza, make sure each line except the last contains a comma at the end. For example:

```
-- ****  ADDRTYPE   ****
tCode('L', 'ADDRTYPE', 'ADDRESS TYPE'),
tCode('V', 'H', 'HOME'),
tCode('V', 'B', 'BUSINESS'),
tCode('V', 'M', 'MAILING')
```

6 Save and close the **Code List** file.

Defining User Code Lists

If you specified a value for the **constraint-by** and **user-code** elements of a field, you must define the user code values for those fields. Below is a sample insert statement for the sbyn_user_code table. eIndex SPV provides this sample in a database script for you to modify.

```
insert into sbyn_user_code (code_list, code, descr, format,
input_mask, value_mask)
values ('AUXIDDEF', 'CC', 'CREDIT CARD', '[0-9]{16}', 'DDDD-DDDD-
DDDD-DDDD', 'DDDD^DDDD^DDDD^DDDD');
```

To define a user code list

1 In the Project Explorer pane, expand the **Database** node and then double-click the **Create User Code Data** file.

The file opens in the text editor.

2 Use the above sample to define a value for the user code drop-down list and the required format for the dependent fields.

3 Repeat step 2 for each drop-down list value and type (for example you might have one list for credit cards and another for postal codes and their corresponding cities).

4 Save and close the **Create User Code Data** file.

Table 3 SBYN_USER_CODE Table Description

Column Name	Description
code_list	The code list name of the user code type (using the credit card example above, this might be similar to “CREDCARD”). This column links the values for each list.
code	The processing code of each user code element.
description	A brief description or name for the user code element. This is the value that appears in the drop-down list.
format	The required data pattern for the field that is constrained by the user code. For more information about possible values and using Java patterns, see “Patterns” in the class list for **java.util.regex** in the Javadocs provided with the J2SE Platform. Note that the pattern might be further restricted by the value of the input mask described below.

Table 3 SBYN_USER_CODE Table Description

Column Name	Description
input-mask	A mask used by the EDM to add punctuation to the constrained field. For example, the input mask **DD-DDD-DDD** inserts a hyphen after the second and fifth characters in an 8-digit ID. If you use an input mask, you should also use a value mask to strip the punctuation for database storage (see below). The following character types can be used. ▪ **D**—Numeric character ▪ **L**—Alphabetic character ▪ **A**—Alphanumeric character
value-mask	A mask used to strip any extra characters that were added by the input mask for database storage. The value mask is the same as the input mask, but with an "x" in place of each punctuation mark. Using the input mask described above, the value mask is **DDxDDDxDDD**. This strips the hyphens before storing the ID.

Creating a Custom Script

You can insert additional information into the database by creating a custom script under the **Database Script** node. For information about the structure of the master index database, see the *Sun SeeBeyond eView Studio Reference Guide*.

To create a custom script

1. In the eIndex SPV Project, right-click the **Database Script** node.
2. In the Database context menu, select **New**.
3. Enter the name of the script, and then click **OK**.

   The new script appears under the **Database Script** node.
4. Double-click the new script.

   The text editor appears.
5. In the text editor, create the SQL script to insert the custom data.
6. Close the file and select **Yes** to save the data.

7.5.4 Step 4: Modify the Database

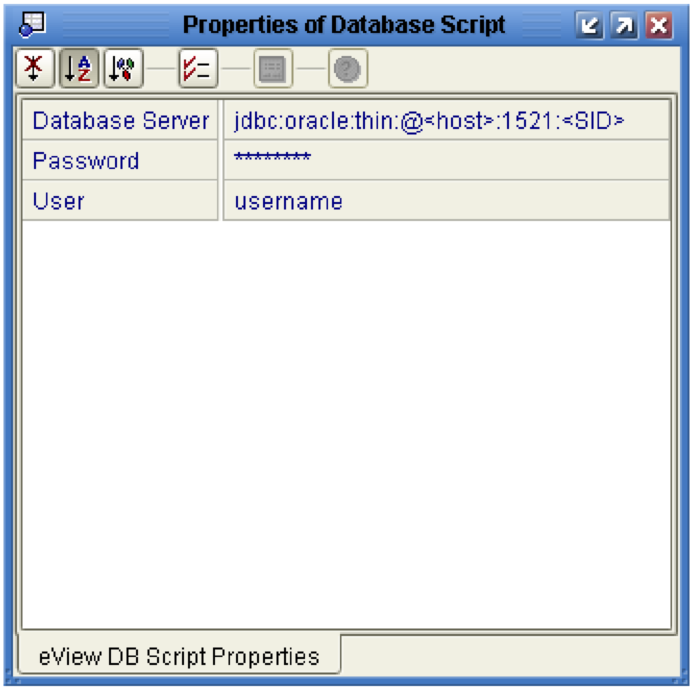
After you create the database instance and customize the database scripts, you can create the master index tables and insert the custom data.

To modify the database

1. In the eIndex SPV Project, right-click the **Database Script** node, and then select **Properties** from the **Database Script** context menu.

   The **Properties of Database Script** dialog appears as shown in Figure 13.

Figure 13 Database Properties Dialog



Database Server	jdbc:oracle:thin:@<host>:1521:<SID>
Password	********
User	username

2 In the **Properties of Database Script** dialog, enter the following information:

- In the **Database Server** field, change **<*host*>** to the database server name and change **<*SID*>** to the SID name of the database you created in **"Step 2: Create an Oracle Database and User"**. You can use "localhost" as the database server name if the database resides on the same machine as the Enterprise Designer.
- In the **Password** field, enter the password of the administrator user you created when you created the database (creating an administrator user is described under **"Step 2: Create an Oracle Database and User" on page 67**).
- In the **User** field, enter the administrator user's logon ID.

Important: *Make sure you enter the database logon credentials for the administrator user you created. You cannot use the logon credentials for the default system user (the database tables will be created, but the eIndex SPV application will not function correctly).*

3 Close the dialog by clicking the "X" icon in the upper right corner of the dialog.

4 Right-click **Create Person Database**, and then select **Run**. On the confirmation dialog, click **OK**.

5 For each additional script to run against the database, right-click the name of the script, and then select **Run**. On the confirmation dialog, click **OK**.

7.5.5 Step 5: Specify a Starting EUID (optional)

By default, the EUIDs assigned by the master index start with "0", with padded zeroes added to the left to make the EUID number the correct length (for more information, see "Threshold Configuration" in the *Sun SeeBeyond eView Studio Configuration Guide*). You can modify this numbering format by changing the value of the seq_name column of the sbyn_seq_table database table where the sequence name is "EUID". For example:

```
update sbyn_seq_table set seq_count=1000000001 where
seq_name='EUID';
```

7.6 Deleting Tables and Indexes

Scripts are provided to drop the default database tables and indexes created in **Step 4: Modify the Database** on page 72. This is useful while testing the master index implementation.

To delete tables and indexes

1 To drop the indexes created by the **Create User Indexes** script:

   A Right-click **Drop User Indexes**.

   B Select **Run**.

   C On the confirmation dialog, click **OK**.

2 To drop the database tables:

   A Right-click **Drop Person database**.

   B Select **Run**.

   C On the confirmation dialog, click **OK**.

3 If the database is running on the Oracle 10g platform, open a SQL prompt and run the following command.

```
PURGE RECYCLEBIN;
```

Chapter 8

Defining Connectivity Components

Once the eIndex SPV server Project is generated, you can customize the Connectivity Map that defines the application. You can also create and customize connectivity components that define how data is transformed, routed, and processed between the master index, Business Processes or Collaborations, and external systems. This chapter describes the connectivity components used in conjunction with eIndex and how to configure those components using the Enterprise Designer tools.

What's in This Chapter

8.1 Connectivity Overview

The Project that defines the eIndex SPV application is known as the *server* Project; the Projects that define external system or Business Process connectivity with eIndex SPV are known as *client* Projects.

Data can be processed by the master index in four ways.

1. Data is processed through the EDM. This process is defined by the Connectivity Map in the eIndex SPV server Project.
2. Data is processed from the external systems that share information with the master index via Java Collaborations. This process is defined by the Connectivity Maps in the Collaboration client Projects.
3. Data is processed from the external systems that share information with the master index via an eInsight Business Process. Using Business Processes, you can also develop eVision web pages to access data in the eIndex database. These processes are defined by the Connectivity Map in an eInsight client Project.
4. eIndex SPV can publish messages to a JMS Topic to broadcast to external systems. This topic is included in the eIndex SPV server Project and also in client Projects for the external systems receiving the broadcasts.

8.1.1 Connectivity Components

The connectivity components of an eIndex SPV server Project include the master index application files. Optional components include a JMS Topic or Oracle eWay (the Oracle eWay is required when running on the Sun SeeBeyond Integration Server). The client Projects that connect to the master index use standard connectivity components of an eGate Project, with the addition of an eIndex SPV method OTD.

eIndex SPV Server Project Connectivity Components

The eIndex SPV server Project can include the following connectivity components.

- **Connectivity Map** - Graphically describes the relationship between the web application components and the eIndex application components.
- **Application file** - Contains the logic used by the master index to process data into and out of the eIndex database. This file is automatically created when you generate the eIndex SPV server Project.
- **Web application file** - Contains the logic used by the Enterprise Data Manager to process data and access the eIndex logic and database. This file is automatically created when you generate the eIndex SPV Project.
- **Oracle eWay** - Provides connectivity to the eIndex SPV database. This component is required if eIndex SPV is running on the Sun SeeBeyond Integration Server. It is optional if eIndex SPV is running on the Sun Java System Application Server, which allows you to define the database connection pool through the server.
- **JMS Topic** - A message destination conforming to the *publish-and-subscribe* (pub/sub) messaging paradigm. In this case, eIndex SPV publishes to the topic to broadcast messages to external systems. This component is optional.

Client Project Connectivity Components

The client Projects can include any of the following connectivity components.

- **Connectivity Map** - Graphically describes the relationship between the External Systems, Queues and Topics, Services, Web Connectors, and eIndex SPV application. The Connectivity Map also contains the configuration information for each component's connections—for example, the polling interval and transactional behavior.
- **eIndex application** - Represents the eIndex application accessed by the client Project. Each client Project in the eIndex SPV system must include the eIndex SPV application in its Connectivity Map in order for those components to exchange information with the master index.
- **Service** - Provides a framework for a process or a Collaboration that contains the information required to execute a set of business rules.
- **Collaboration** - Business rules describing the logic to be executed on the Object Type Definitions. These business rules include the data transformation and method calls to be executed by the Services and determine how data is processed into the eIndex database.
- **Object Type Definitions (OTDs)** - Meta-data containers that describe external objects including both data structure and methods. A custom method OTD is created in the eIndex SPV Project for use in the client Projects to define how data is

processed between the master index and external systems. A custom OTD is also created to publish messages from the master index to a JMS Topic.

- **External Applications** - Logical representations of external software applications (called *external systems*) that are integrated by the eGate system. External Applications allow the master index to connect with external systems via eGate and are linked to a Service by means of an eWay.
- **JMS Queues** - A message destination conforming to the *point-to-point* (p2p or PTP) messaging paradigm. This means that one sender delivers a message to exactly one receiver.
- **JMS Topics** - A message destination conforming to the *publish-and-subscribe* (pub/sub) messaging paradigm. This means that one publisher broadcasts messages to multiple subscribers, ensuring that all subscribers receive a message. Client Projects can include a JMS Topic to which the master index publishes, giving external systems access to all data updates.
- **JMS Client** - An internal link between a Service and a Message Destination (that is, a JMS Topic or Queue).
- **eWays** - An application-specific adapter linking an external application with eGate.
- **Business Processes** - A collection of actions and messages, revolving around a specific business practice, that flow in a specific pattern to produce an end result.
- **Web Connectors** - A graphical representation of a set of eVision web pages and activities.

Before creating any of the connectivity components, make sure you have read and understand the information presented in the *Sun SeeBeyond eGate Integrator User's Guide*. This guide gives more details about each component in an eGate Project.

8.2 Defining Connectivity Components

Connectivity Maps for the eIndex server and client Projects are predefined and illustrate basic connectivity between eIndex and external systems, and between eIndex and an eInsight Business Process. The maps do not include a JMS Topic to which eIndex publishes updates. To publish eIndex transactions to external systems, a JMS Topic must be added to the Connectivity Maps. The server Connectivity Map includes an Oracle eWay for database connectivity. You can remove the eWay if the master index is connecting to the database through the Sun Java System Application Server.

This section describes how to define connectivity components for eIndex SPV server and client Projects, including Collaborations, Business Processes, Services, Collaborations, Topics, eWays, and so on. Perform the following tasks to configure connectivity for the master index and connected systems.

- **Defining eIndex SPV Application Connectivity Components** on page 78
- **Defining the Collaboration Client Connectivity Components** on page 81
- **Customizing eInsight Client Connectivity Components** on page 88

Note: *Refer to the* ***Sun SeeBeyond eGate Integrator User's Guide*** *for more details about performing any of the processes described in this chapter.*

8.2.1 Defining eIndex SPV Application Connectivity Components

In the eIndex SPV server Project, the default Connectivity Map contains business logic and information about how data is processed in the master index. You can modify the Connectivity Map by removing the Oracle eWay (if you will use the Sun Java System Application Server for database connectivity) or by adding a JMS Topic to publish transactions processed by eIndex SPV.

This section describes how to add a JMS Topic to the Connectivity Map, which includes the following steps.

- **Configuring the Server Connectivity Map** on page 78
- **Adding a JMS Topic to the Server Connectivity Map** on page 80

Configuring the Server Connectivity Map

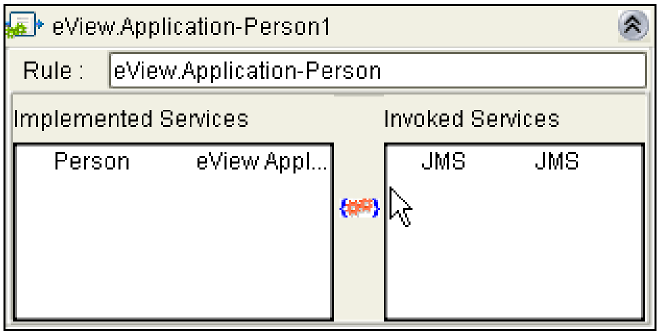
A sample server Connectivity Map is included in the eIndex SPV server Project. The map includes an Oracle eWay, which can be removed if you are running eIndex SPV on the Sun Java System Application Server and are defining the database connection pool through the server. By default the Oracle eWay is configured to connect to the database through a thin client, but you can configure it to use an OCI thick driver.

To reconnect server Connectivity Map components

If you delete the connections in the Connectivity Map or create a new Connectivity Map for the application, re-establish the connections using the Service Binding dialog.

1. In the eIndex server Project, check out the eIndex server Connectivity Map to configure.
2. Open the Connectivity Map in the Connectivity Map Editor.
3. Double-click **eView.Application-Person1**. The Service Binding dialog appears.

Figure 14 eIndex SPV Server Service Binding Dialog



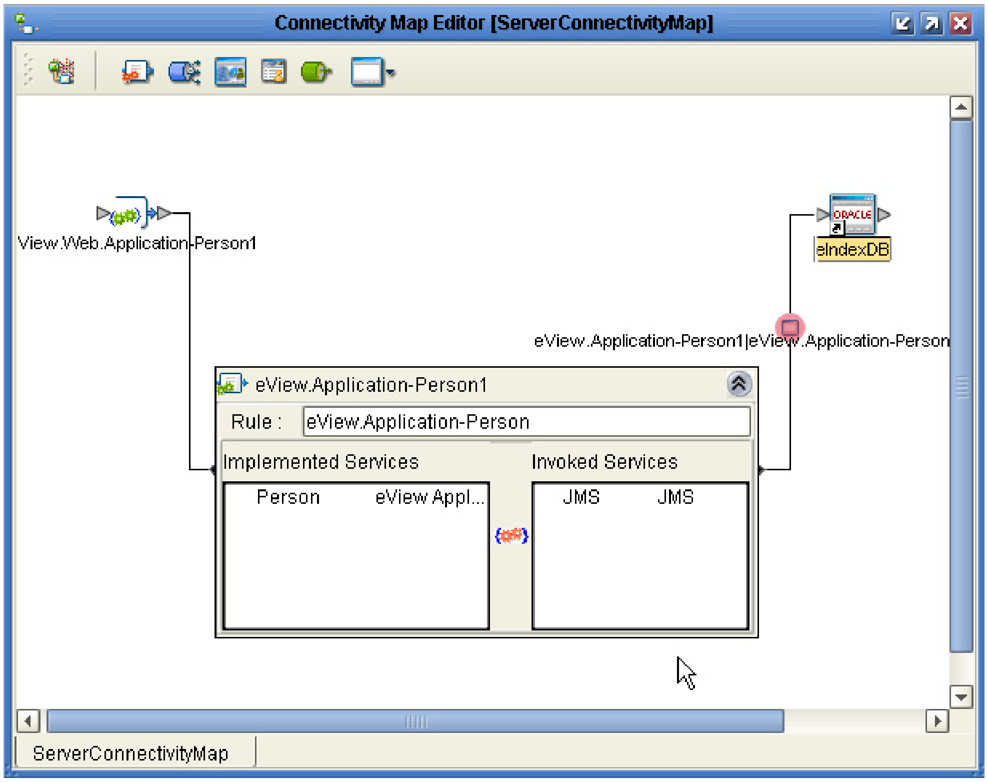
Rule : eView.Application-Person

4. Place the cursor over the arrow to the right of the **eView.Web.Application-Person1** icon until the cursor turns into a hand, and then drag it to **Implemented Services** in the left side of the dialog.

5 Place the cursor over the arrow to the right of **Invoked Services** in the right side of the dialog until the cursor turns into a hand, and then drag it to the Oracle eWay.

The Connectivity Map should look similar to Figure 15.

Figure 15 eIndex SPV Server Connectivity Map Connections


Connectivity Map Editor [ServerConnectivityMap]
View.Web.Application-Person1
eIndexDB
eView.Application-Person1|eView.Application-Person
eView.Application-Person1
Rule : eView.Application-Person
Implemented Services
Invoked Services
Person
eView Appl...
JMS
JMS
ServerConnectivityMap

6 Close the Service Binding dialog.

7 Configure the Connectivity Map as described in the following procedure.

8 Save the Connectivity Map to the Repository.

To configure the server Connectivity Map

1 In the eIndex server Project, check out the eIndex server Connectivity Map to configure.

2 Open the Connectivity Map in the Connectivity Map Editor.

3 If eIndex SPV is connecting to the database through the Oracle eWay, configure the eWay by doing the following:

A Double-click the eWay icon between the eIndex SPV application and the Oracle external system.

B On the Oracle eWay Properties window, enter new property values or accept the default values (for more information, see the *Sun SeeBeyond eWay Adapter for Oracle User's Guide*).

C Click **OK**.

4. If eIndex SPV is running on the Sun Java System Application Server **and** is connecting to the database through the server, delete the Oracle eWay by doing the following.

   A. Select the Oracle external system on the Connectivity Map Editor.

   B. Press the Delete key.

   C. Click **OK** on the confirmation dialog.

   D. Delete the Oracle eWay from the Project Explorer.

5. Save the Connectivity Map to the Repository.

Adding a JMS Topic to the Server Connectivity Map

To use a JMS Topic to broadcast eIndex messages to external systems, you need to add the Topic to the Connectivity Map and then configure the properties. This section describes how add a JMS Topic to the eIndex SPV server Project Connectivity Map and then map the application to the new topic. You only need to perform this step if you want to publish messages processed through eIndex to external systems.

To add a JMS Topic to the eIndex Connectivity Map

1. In the eIndex server Project, check out the eIndex server Connectivity Map to which you want to add the new topic.

2. Open the Connectivity Map in the Connectivity Map Editor.

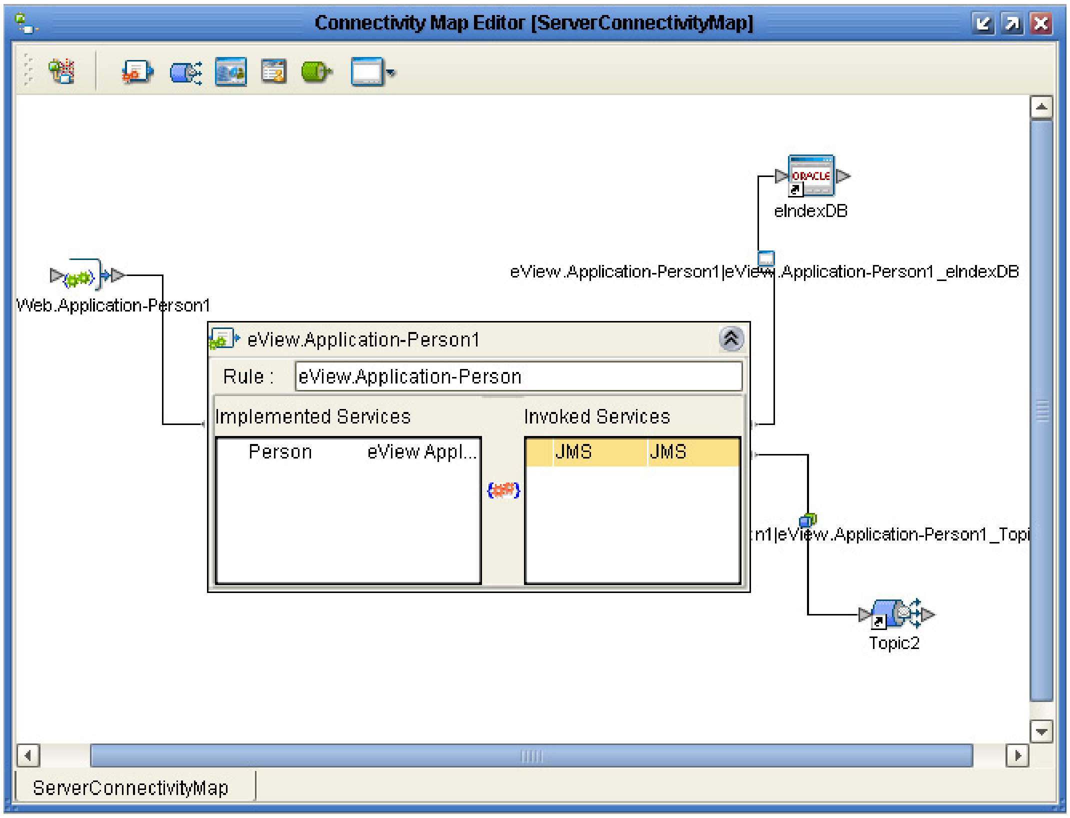
3. In the Connectivity Map Editor toolbar, select the Topic icon, and then drag it onto the canvas to the right of the **eView.Application-Person** icon.

4. In the Connectivity Map Editor, double-click the **eView.Application-Person** icon. The Service Binding dialog appears (shown in **Figure 14 on page 78**).

5. Click JMS in the Invoked Services box and drag the cursor to the Topic icon.

   The Connectivity Map should look similar to Figure 16.

Figure 16 eIndex SPV Server Connectivity Map with Topic


Connectivity Map Editor [ServerConnectivityMap]
eIndexDB
eView.Application-Person1|eView.Application-Person1_eIndexDB
Web.Application-Person1
eView.Application-Person1
Rule :
eView.Application-Person
Implemented Services
Invoked Services
Person
eView Appl...
JMS
JMS
n1|eView.Application-Person1_Topi
Topic2
ServerConnectivityMap

6 Close the Service Binding dialog and configure the JMS Client Connection (for more information, see the *Sun SeeBeyond eGate JMS Reference Guide*).

8.2.2 Defining the Collaboration Client Connectivity Components

In the Collaboration client Projects for external systems sharing data with the master index, the Connectivity Map contains business logic and information about how data is transferred between the master index and external systems. One default Project is provided with eIndex that includes a simple Connectivity Map illustrating an end-to-end scenario. You can create new client Projects as needed. This section describes how to modify the default map by adding a JMS Topic or by changing the Java Collaboration, which includes the following procedures.

- **Modifying the Java Collaboration** on page 81
- **Modifying the Collaboration Client Project Connectivity Map** on page 83
- **Configuring the Outbound Collaboration** on page 87

Modifying the Java Collaboration

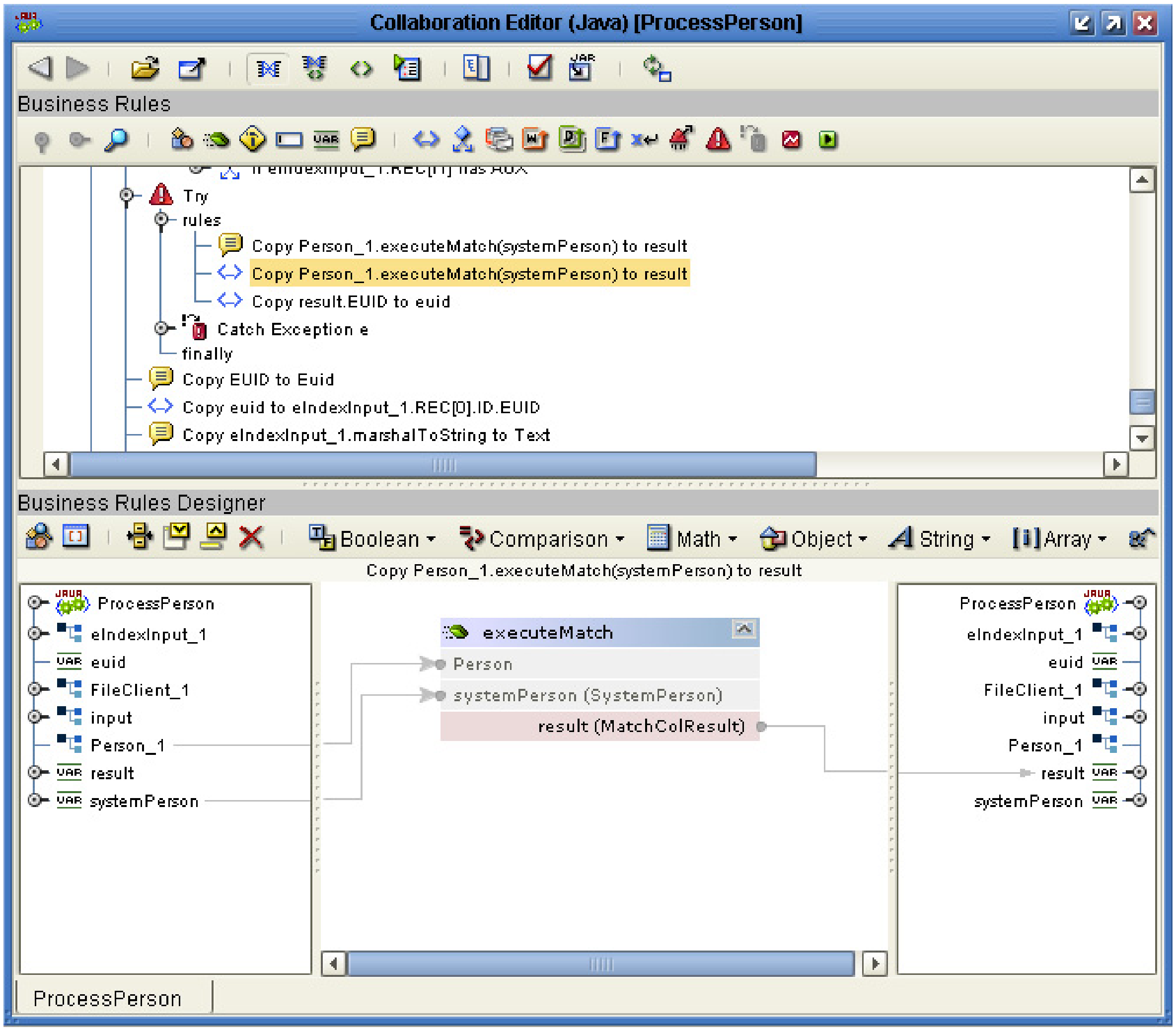
This section describes how to use the eIndex SPV method OTD in Java Collaborations for external systems. For a complete reference of the Collaboration methods included in the eIndex SPV OTD, see the *Sun SeeBeyond eView Studio Reference Guide*.

To modify the Java Collaboration

1. In the **eIndexClient** Project, check out the **ProcessPerson** Collaboration, and then open it in the Collaboration Editor.
2. To add eIndex SPV methods to the Collaboration, do the following:
   - A In the left pane of the Business Rules Designer, right-click **Person_1**. A list of available methods appears.
   - B Select the desired method from the list.
   - C Create any necessary variables for the method, and then map the input, output, and variables to the method.

   Figure 17 illustrates a sample of the **executeMatch** method in the Collaboration Editor.

Figure 17 eIndex SPV Methods in Collaboration Editor



Try
rules
Copy Person_1.executeMatch(systemPerson) to result
Copy Person_1.executeMatch(systemPerson) to result
Copy result.EUID to euid
Catch Exception e
finally
Copy EUID to Euid
Copy euid to eIndexInput_1.REC[0].ID.EUID
Copy eIndexInput_1.marshalToString to Text

Copy Person_1.executeMatch(systemPerson) to result

3 Delete or modify existing information as needed. When you are done defining the processing rules, save the Collaboration.

Modifying the Collaboration Client Project Connectivity Map

Connectivity between the eIndex SPV application and external systems is defined in the sample **eIndexClient** Project. This Project provides an end-to-end scenario using inbound and outbound file eWays to transfer data. You can use this as a sample to create custom Connectivity Maps that link external systems to eIndex SPV.

This section describes how to configure the File External Applications in the sample Connectivity Map and to incorporate a JMS Topic. You only need to incorporate the topic if you added a JMS Topic to the server Project and if you want to publish eIndex SPV messages to external systems.

Note: *The eIndex SPV application icon in the default Connectivity Map comes from the External Applications menu on the Connectivity Map Editor toolbar.*

To reconnect Collaboration client connectivity components

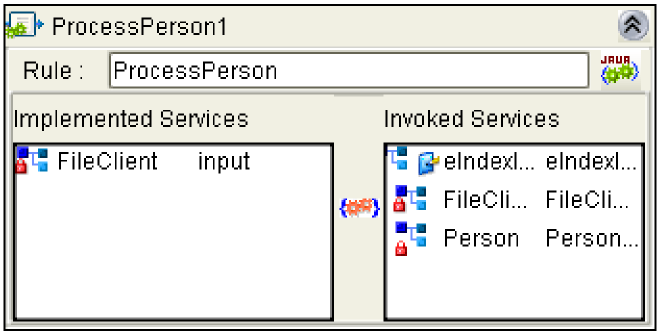
If you delete the existing connections in the Collaboration client Connectivity Map or create a new client Connectivity Map, use the Service Binding dialog to re-establish the connections.

1 In the **eIndexClient** Project, check out the Collaboration client Connectivity Map to configure.

2 Open the client Connectivity Map in the Connectivity Map Editor.

3 Double-click the Service (**ProcessPerson1** in the default map). The Service Binding dialog appears.

Figure 18 Collaboration Client Service Binding Dialog



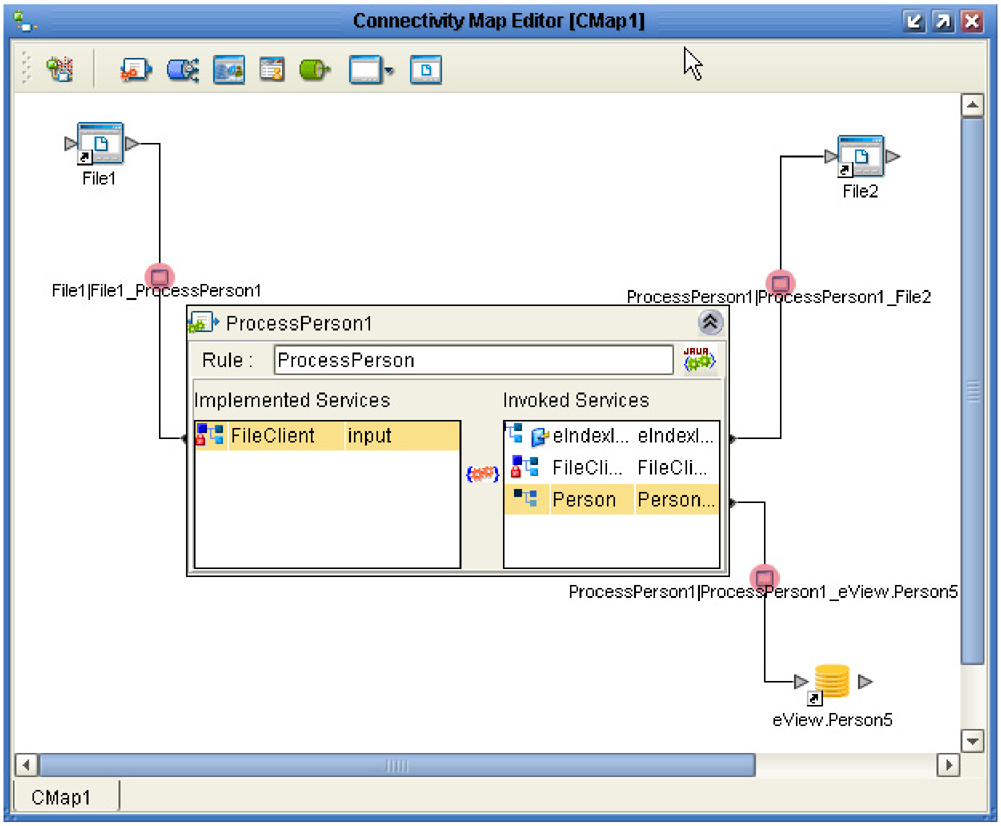
4 Place the cursor over the arrow to the right of the input eWay icon until the cursor turns into a hand, and then drag it to the input in the Implemented Services box (**FileClient** in the default map).

5 Select the client in the Invoked Services box (**FileClient** in the default map), and then drag the cursor to the outbound eWay icon.

6 Select the eIndex SPV application in the Invoked Services box (**Person** in the default map), and then drag the cursor to the eIndex application icon.

The Connectivity Map should look similar to Figure 19.

Figure 19 Collaboration Client Connectivity Map Connections



7 Close the Service Binding dialog.

8 Configure the Connectivity Map as described in the following procedure.

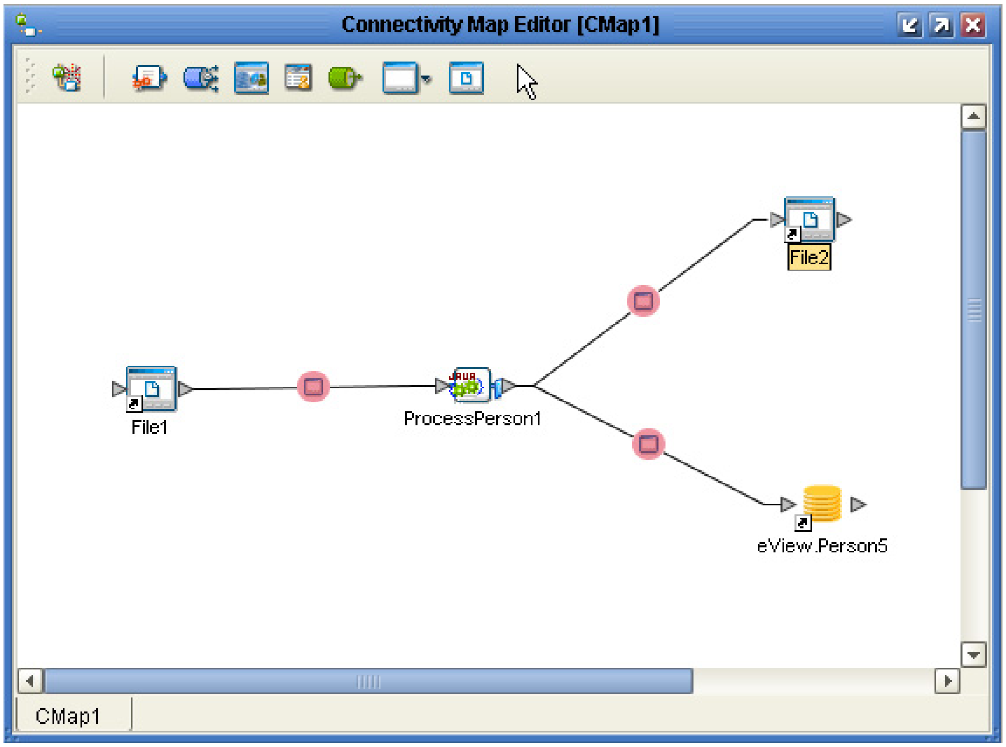
9 Save the Connectivity Map to the Repository.

To configure the Connectivity Map in the eIndexClient sample

1 In the **eIndexClient** Project, check out the Connectivity Map and then open it in the Connectivity Map Editor.

The map appears, as shown in Figure 20.

Figure 20 eIndexClient Connectivity Map



2 In the Connectivity Map, double-click the **eWay** icon to the right of **File1**.

The Properties window appears.

3 Configure the parameter settings for the eWay, and then click **OK** to close the Properties window.

4 Double-click the icon between the Service and the eIndex SPV application to remove the red warning circle. (No configuration is required.)

5 Repeat steps 2 and 3 for the **File2** eWay.

6 Save and close the Connectivity Map.

To add the JMS Topic to the Connectivity Map

Before performing this step, make sure the server Connectivity Map contains a JMS Topic, as described in **"Adding a JMS Topic to the Server Connectivity Map" on page 80**.

1 In the **eIndexClient** Project, check out the Connectivity Map and then open it in the Connectivity Map Editor.

The predefined map appears.

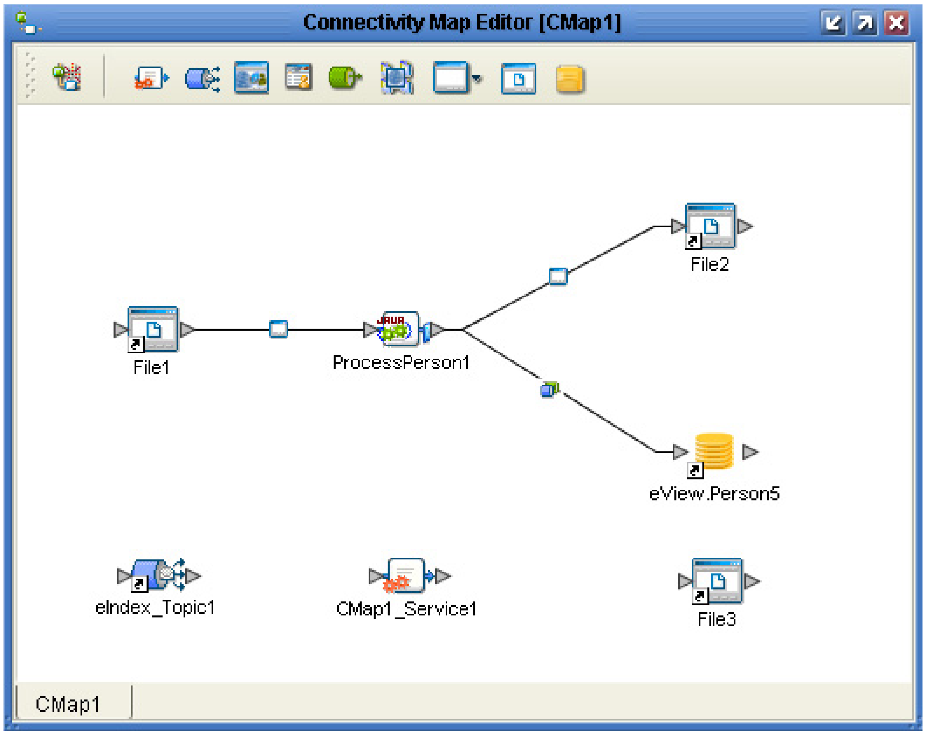
2 Drag the JMS Topic from the server Project to the Connectivity Map Editor, below the existing connectivity components (this is the topic you created in **"Adding a JMS Topic to the Server Connectivity Map"**).

3 Drag a Service from the Connectivity Map Editor toolbar to the right of the JMS Topic on the canvas.

4 Drag an External Application of the appropriate type from the Connectivity Map Editor toolbar to the right of the new Service on the canvas (for testing purposes, you can use a File External Application).

The Connectivity Map should now look similar to Figure 21.

Figure 21 eIndexClient Connectivity Map with JMS Topic

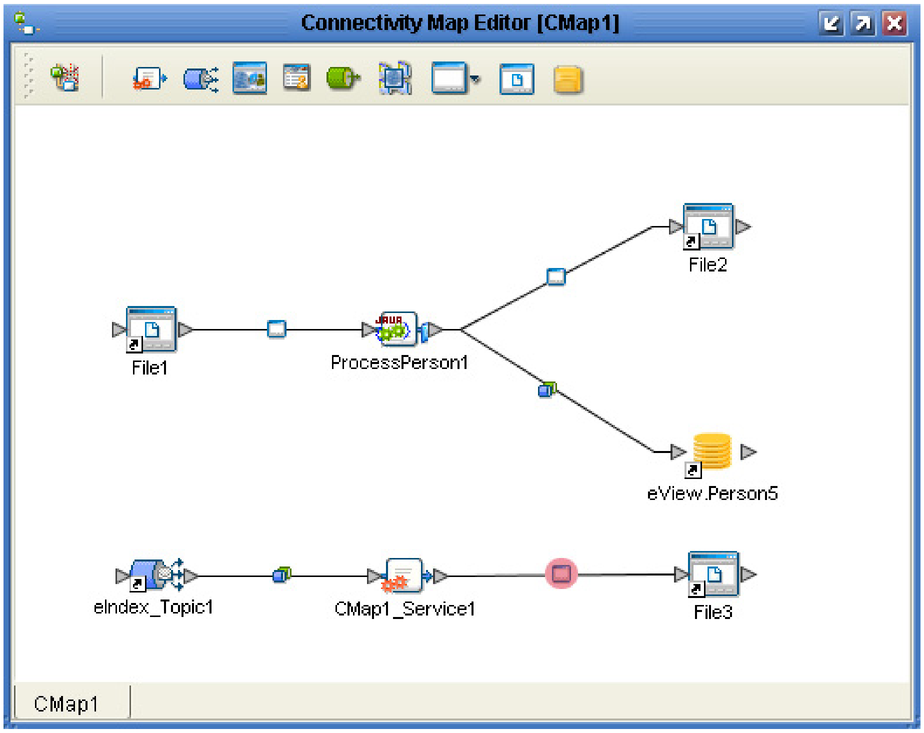


5 In the Connectivity Map Editor, place the cursor over the arrow to the right of the **Topic** icon until the cursor turns into a hand, and then drag it into the Service to connect the two objects.

6 Place the cursor over the arrow to the right of the **Service** icon until the cursor turns into a hand, and then drag it into the **External Application** icon to connect the two objects.

The Connectivity Map should now look similar to Figure 22.

Figure 22 eIndexClient Connectivity Map with Connections



7 Double-click the JMS Client Connection icon to configure the connection (for more information, see the *Sun SeeBeyond eGate JMS Reference Guide*).

8 Double-click the External Application eWay to configure the location and parameter settings for the external application.

9 Save the Connectivity Map, and continue to **"Configuring the Outbound Collaboration"**.

Configuring the Outbound Collaboration

Once you create the components of a Connectivity Map for outbound message processing, you must configure the Java Collaboration that processes messages from the eIndex JMS Topic. Before you begin, make sure you have completed all of the steps in **"Modifying the Collaboration Client Project Connectivity Map" on page 83**.

To configure the outbound Collaboration

1 In the Project Explorer, right-click the **eIndexClient** Project.

2 In the **Project** context menu, select **New**, and then select **Collaboration Definition (Java)**.

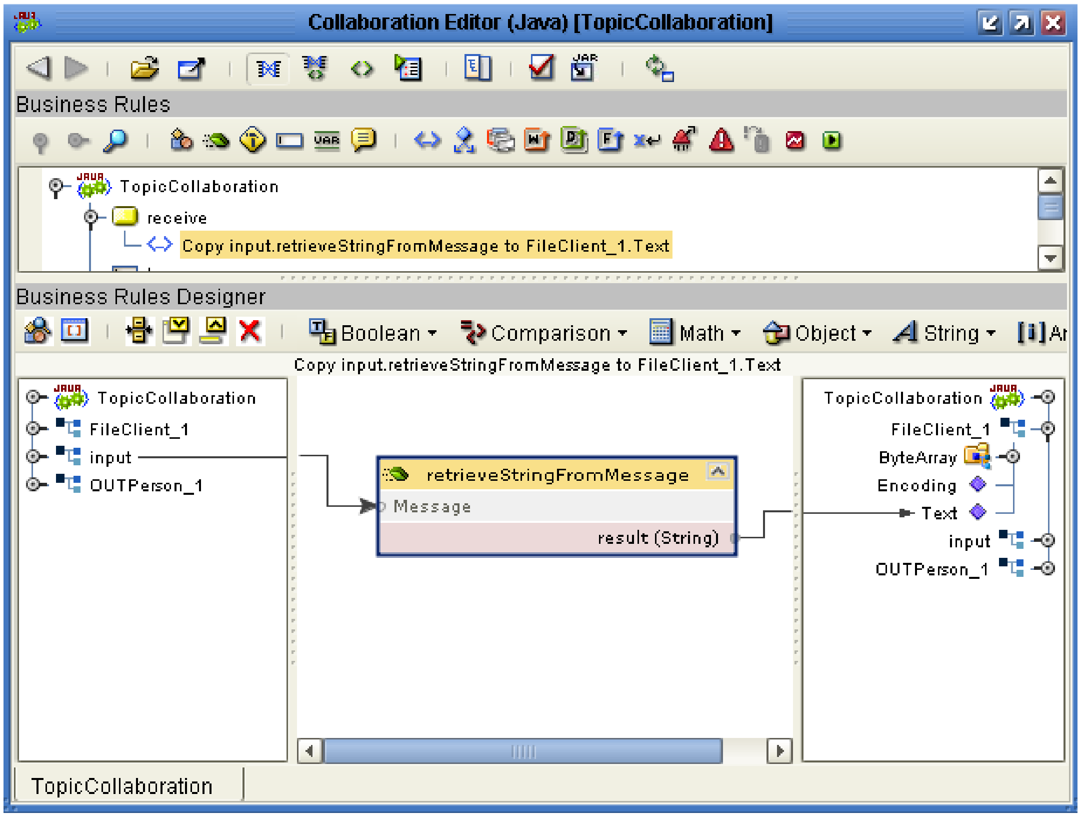
3 Enter information into the Collaboration Definition Wizard, with the following guidelines:

- For the **Web Service Type**, select the existing JMS receive type (navigate to **Sun SeeBeyond\eGate\JMS** and select **receive**).

- Select the appropriate outbound OTD for the external system (for testing with a File External Application, select the **FileClient** OTD).

4 Configure the Collaboration to map data from the JMS Topic to the external system (a sample is shown in Figure 23).

Figure 23 Outbound Java Collaboration



Copy input.retrieveStringFromMessage to FileClient_1.Text

5 Save the Collaboration to the Repository.

6 Open the **eIndexClient** Connectivity Map, and drag the newly created Collaboration onto the Service connected to the JMS Topic.

7 Save the Connectivity Map to the Repository.

8.2.3 Customizing eInsight Client Connectivity Components

If eInsight was installed when you installed eIndex, a sample Project was created that implements eIndex SPV methods in an eInsight Business Process. In this Project (the eInsight client Project), the Connectivity Map contains business logic and information about how data is transferred between the master index and external systems through an eInsight Business Process. The Business Process defines how data is transformed before being sent to the master index. This section describes how to use eIndex SPV methods in the sample Business Process and to customize the Connectivity Map. Perform the following tasks to customize eInsight client connectivity components.

- **Modifying the Business Process** on page 89

- **Modifying the eInsight Client Connectivity Map** on page 90

Note: Refer to the ***Sun SeeBeyond eInsight Business Process Manager User's Guide*** *for more details about performing any of the processes described in this section.*

Modifying the Business Process

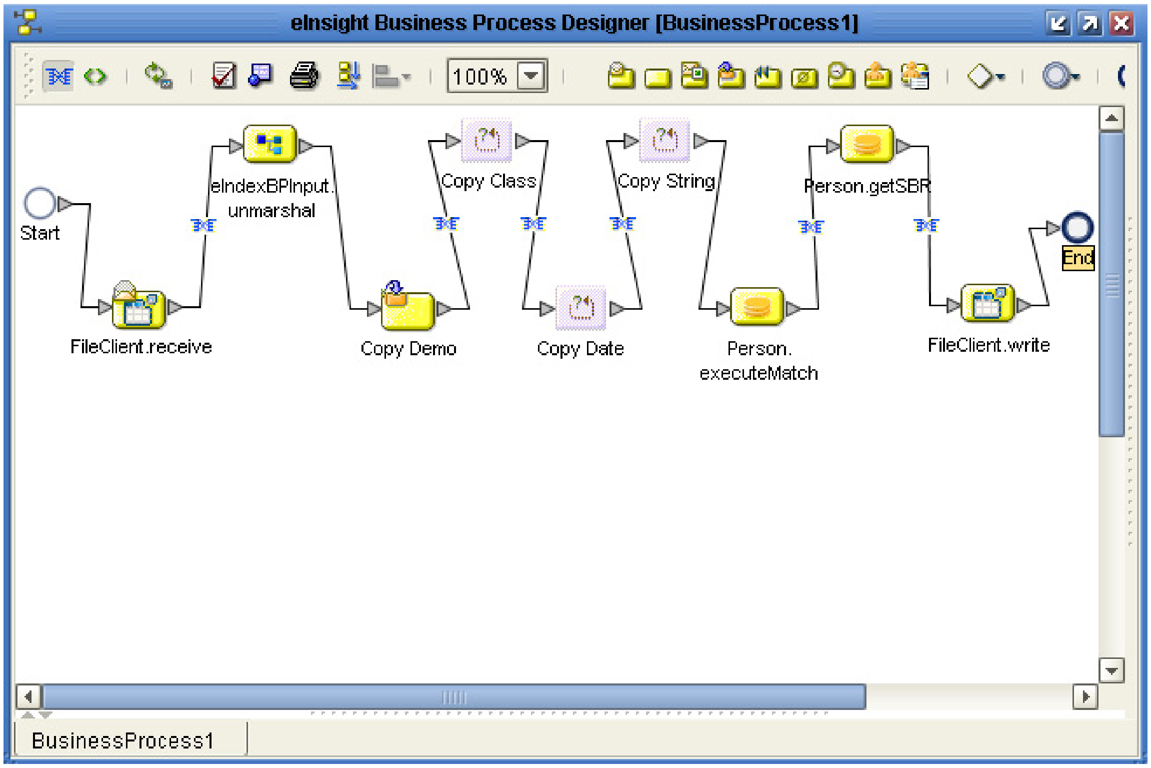
The sample eInsight client Project (**eIndexBPClient**) defines processing in the same default manner as the predefined Java Collaboration. You can process data through only the Collaboration, only the eInsight Business Process, or both. If you use both methods and you modify the processing logic for the Collaboration, be sure to modify the Business Process logic accordingly.

Before using the eInsight client Project, you must customize the Business Process. This section provides instructions for customizing host information and processing logic in the Business Process. For more information about the available eIndex methods, see the *Sun SeeBeyond eView Studio Reference Guide*.

To modify the Business Process

1. In the **eIndexBPClient** Project, check out the **BusinessProcess1** Business Process, right-click **BusinessProcess1**, and then select **Properties** from the context menu.
2. On the **General** tab of the Business Process Properties dialog, modify the **Target Namespace** field as follows:
   A. Replace the computer name and port number with the server name and port number of your repository.
   B. Replace the repository name with the name of your repository.
3. On the Business Process Properties dialog, click **OK**.
4. To add eIndex SPV methods to the Business Process, do the following:
   A. In the **eIndexBPClient** Project, check out the **BusinessProcess1** Business Process, and then open it in the eInsight Business Process Designer.
   B. In the Project Explorer, expand the **eIndex** Project, and then expand the **Person** node. The Business Process method list appears.
   C. Select the desired method from the list and drag the method to the Business Process Designer between the appropriate Business Process components.
   D. Delete the existing link between the components on either side of the new method, and then link the new method to the activities on either side of it.
   E. For each link you create, right-click the link and select **Add Business Rule**. Configure the business rule to map data from the input to output activity. (For more information, see the *Sun SeeBeyond eInsight Business Process Manager User's Guide*.)
5. Delete or modify existing information in the Business Process as needed. Figure 17 illustrates a sample of adding the **getSBR** method in the Business Process Designer.

Figure 24 eIndex SPV Methods in a Business Process



6 When you are done defining the processing rules, save and check in the Business Process.

Modifying the eInsight Client Connectivity Map

Connectivity between the eIndex SPV application and eInsight is defined in the Connectivity Map of the sample **eIndexBPClient** Project. This Project provides an end-to-end scenario using inbound and outbound file eWays to transfer data. You can use this as a sample to create custom Connectivity Maps that link external systems to eIndex SPV through a Business Process.

This section describes how to configure the File External Applications in the sample Connectivity Map. You can also incorporate a JMS Topic into the Connectivity Map in the **eIndexBPClient** Project (for information and instructions, see **"To add the JMS Topic to the Connectivity Map" on page 85**). You only need to incorporate the topic if you added a JMS Topic to the server Project and you want to publish master index updates to external systems.

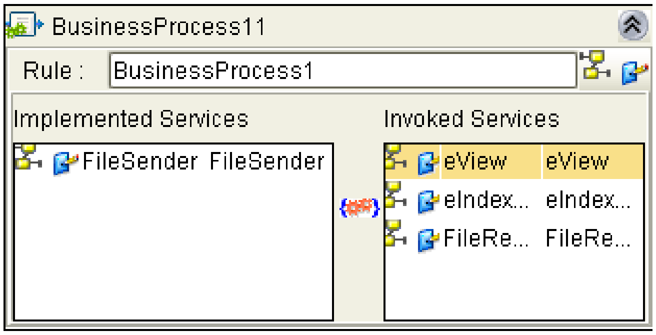
Note: *The eIndex SPV application icon in this Connectivity Map comes from the External Applications menu on the Connectivity Map Editor toolbar.*

To reconnect eInsight client connectivity components

If you delete the existing connections in the eInsight client Connectivity Map or create a new client Connectivity Map, use the Service Binding dialog to re-establish the connections.

1. In the **eIndexBPClient** Project, check out the eInsight client Connectivity Map to configure.
2. Open the client Connectivity Map in the Connectivity Map Editor.
3. Double-click the Service (**BusinessProcess1** in the default map). The Service Binding dialog appears.

Figure 25 eInsight Client Service Binding Dialog



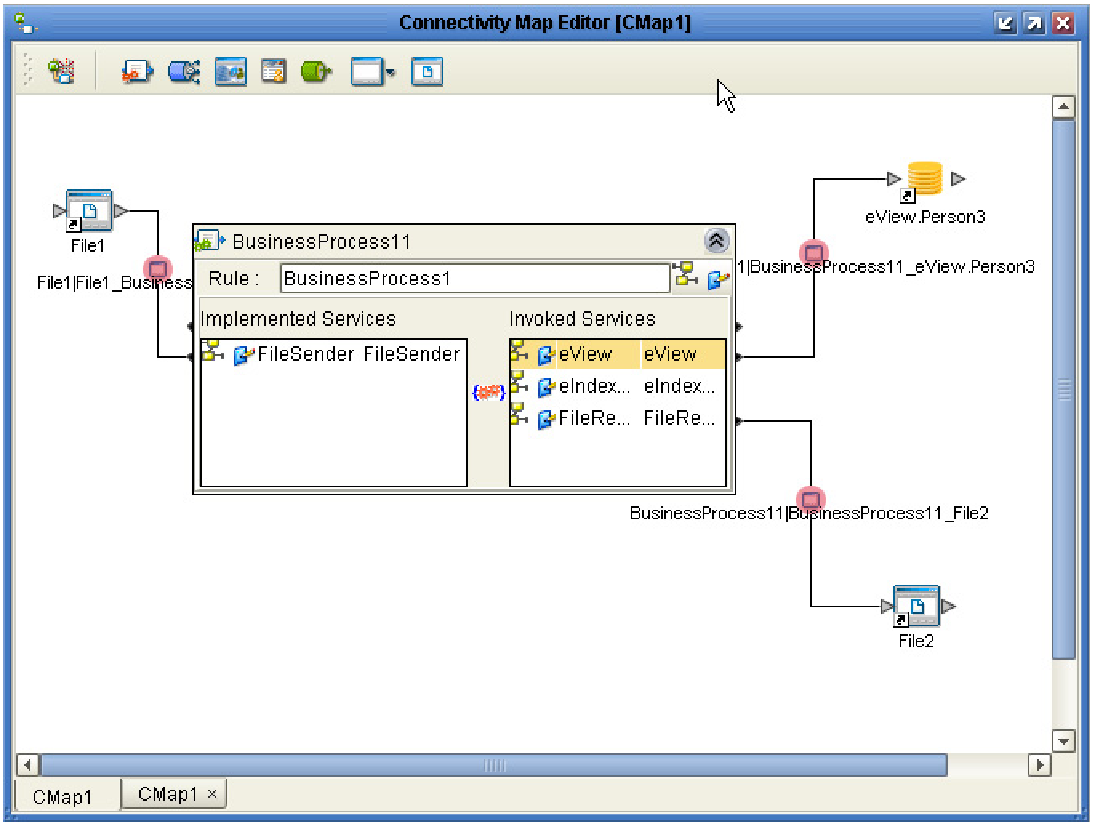
BusinessProcess11

Rule : BusinessProcess1

4. Place the cursor over the arrow to the right of the input eWay icon until the cursor turns into a hand, and then drag it to the appropriate item in the Implemented Services box (**FileSender** in the default map).
5. Select the output service in the Invoked Services box (**FileReceiver** in the default map), and then drag the cursor to the outbound eWay icon.
6. Select **eView** in the Invoked Services box, and then drag the cursor to the eIndex application icon.

   The Connectivity Map should look similar to Figure 26.

Figure 26 eInsight Client Connectivity Map Connections



7 Close the Service Binding dialog.

8 Configure the Connectivity Map as described in the following procedure.

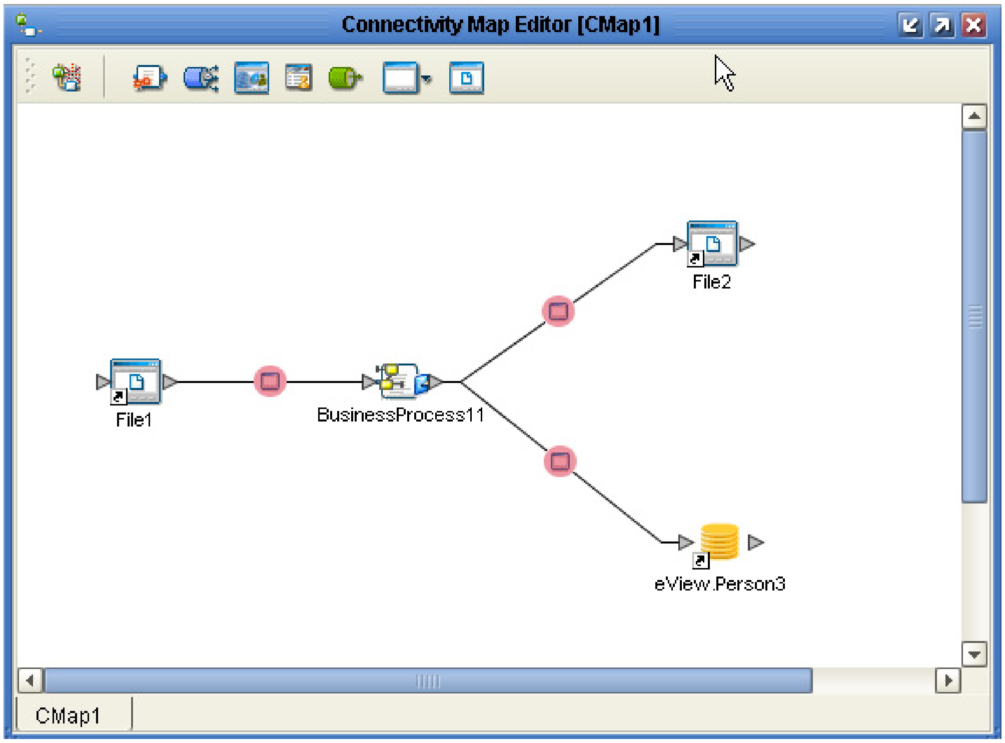
9 Save the Connectivity Map to the Repository.

To configure the eIndexBPClient sample Project

1 In the **eIndexBPClient** Project, check out the Connectivity Map and then open it in the Connectivity Map Editor.

The map appears, as shown in Figure 27.

Figure 27 eInsight Client Connectivity Map



2 In the Connectivity Map, double-click the **eWay** icon to the right the inbound eWay icon.

The Properties window appears.

3 Configure the parameter settings for the eWay.

4 Repeat steps 2 and 3 for outbound file eWay.

5 Double-click the icon between the Service and the eIndex SPV application to remove the red warning circle. (No configuration is required.)

6 Save and close the Connectivity Map.

Chapter 9

Defining the Environment

The eIndex SPV Environment defines the configuration of the physical environment of the master index, including the Logical Host, integration or application server, JMS IQ Manager, constants, and external systems. This chapter describes building a generic environment for an eIndex SPV application. For more information about Environments and Environment components, see the *Sun SeeBeyond eGate Integrator User's Guide*. Additional information about Logical Hosts and domains is included in the *Sun SeeBeyond eGate Integrator System Administration Guide*.

What's in This Chapter

9.1 Environment Components

All Projects accessing the eIndex SPV system must be configured to use the same Environment, including client Projects defining Collaborations and Business Processes that use eIndex SPV methods. The Environment requirements are different for the eIndex SPV Project and client Projects. When you deploy an eIndex SPV Project, the master index application defined by that Project becomes available to the client Projects in the Environment.

An Environment that supports the eIndex SPV server Project can include the following components.

- **Logical Hosts** - Each Environment contains one or more Logical Hosts, each of which can contain multiple instances of the Logical Host, known as *domains*. Logical Hosts are instances of the eGate runtime environment installed on a host hardware platform.
- **Integration or Application Servers** - The Logical Host contains one or more integration or application servers, which are the engines that run eGate Services and eWays. They provides services for security, transactions, and business rules execution. eIndex SPV can use the Sun SeeBeyond Integration Server or the Sun Java System Application Server.

- **JMS IQ Managers** - The Logical Host contains one or more JMS IQ Managers, which manage JMS topics (publish-and-subscribe messaging) and queues (point-to-point messaging).
- **External Systems** - An external system is a representation of a real, physical system that exists within the specific Environment, with configuration properties for locating and accessing that system. This component is required for client Projects connecting external systems with the eIndex SPV application.
- **eVision External Systems** - An eVision external system is a representation of an eVision web application. This component is required for client Projects integrating eIndex SPV with eVision Studio.
- **Oracle External Systems** - An Oracle external system is a representation of an Oracle eWay. This component is required to define the database connection pool for Projects connecting to the database using the Oracle eWay.
- **Environmental Constants** - Name/value pairs that are visible across the Environment. You can define constants for a specific Environment.

9.2 Building an Environment

Each Environment represents a unit of software that implements one or more eIndex SPV applications. You must define and configure an Environment for the master index before you can deploy the application. The tasks you can perform to build an Environment for the eIndex SPV application are described on the following pages. For client Projects that reference the eIndex SPV server Project, additional components might be required. For eVision or eInsight Environments, refer to the appropriate user's guide.

- **Creating the Environment** on page 95
- **Adding a Logical Host** on page 96
- **Adding Servers** on page 97
- **Adding an External System** on page 99
- **Adding an Oracle External System** on page 100

9.2.1 Creating the Environment

Once you create the Environment, you can add the necessary components. Perform the following steps to create an Environment for an eIndex SPV Project.

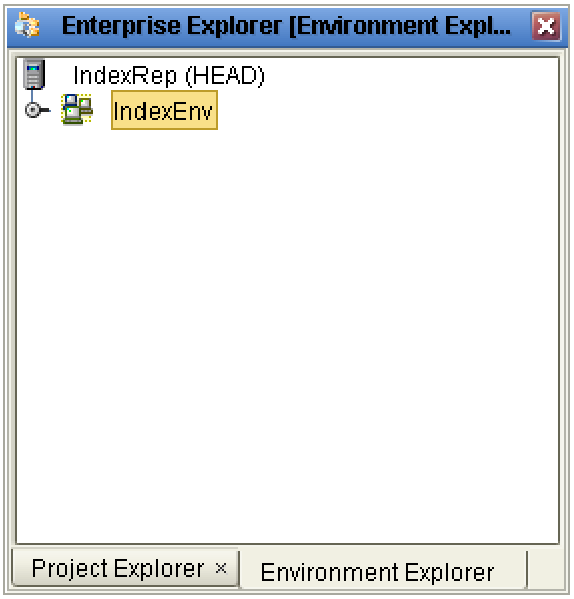
To create an Environment

1. In the Enterprise Explorer, click the **Environment Explorer** tab.
2. Select the **Repository** icon.
3. Right-click to display the **Repository** context menu.

4 Select **New Environment** to add an **Environment** icon to the **Environment Explorer** tab.

5 Click twice on the new Environment, enter a unique name for the Environment, and then press **Enter** (see Figure 28).

Figure 28 New Environment



9.2.2 Adding a Logical Host

The Logical Host contains the servers that run the eIndex SPV application and messaging services. A Logical Host must be added to the Environment for all eIndex SPV implementations.

Note: *A Logical Host must be added even if eIndex SPV runs on the Sun Java System Application Server, which does not run on a Sun SeeBeyond Logical Host domain.*

To add a Logical Host

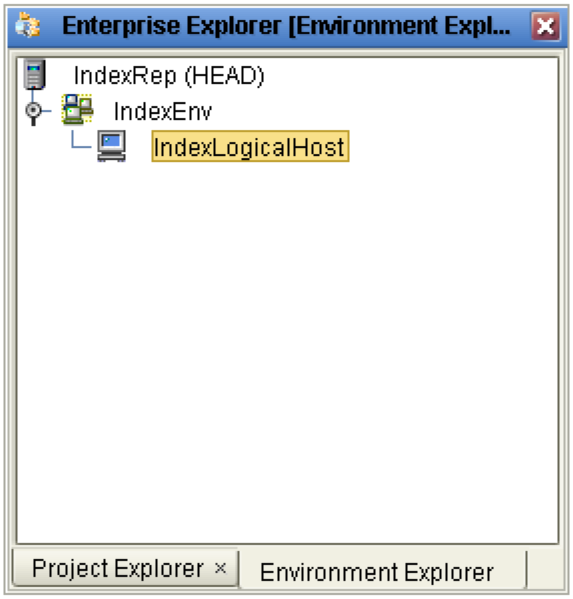
1 Select the **Environment** icon for the new Environment you created.

2 Right-click to display the **Environment** context menu.

3 Point to **New**, and then select **Logical Host**. A **Logical Host** icon appears on the **Environment Explorer** tab.

4 Click twice on the new Logical Host, enter a unique name for the Logical Host, and then press **Enter** (see Figure 29).

Figure 29 eIndex SPV Logical Host



9.2.3 Adding Servers

Each Environment must include at least one integration or application server and, if the eIndex SPV server Project uses a Queue, at least one message server. You can run the eIndex SPV application on either the Sun SeeBeyond Integration Server or the Sun Java System Application Server. For more information about servers, see the *Sun SeeBeyond eGate Integrator System Administration Guide.*

Adding a Sun SeeBeyond Integration Server and JMS IQ Manager

Perform the following steps to add a Sun SeeBeyond Integration Server (IS) and a JMS IQ Manager to the Environment.

To add an Integration Server and JMS IQ Manager

1. In Enterprise Explorer, click the **Environment Explorer** tab.
2. Select the Logical Host icon of the eIndex SPV Logical Host.
3. To add an IS, do the following:
   - A Right-click the Logical Host icon to display the **Logical Host** context menu.
   - B Point to **New**, and then select **Sun SeeBeyond Integration Server**.
   - C Modify the name of the server in the Environment Explorer.
   - D Right-click the IS, and then select **Properties**.
   - E Enter the server's URL, administrator login ID, and password.
4. To add a JMS IQ Manager, do the following:
   - A Right-click the Logical Host icon to redisplay the **Logical Host** context menu.

B Point to **New**, and then select **Sun SeeBeyond JMS IQ Manager**.

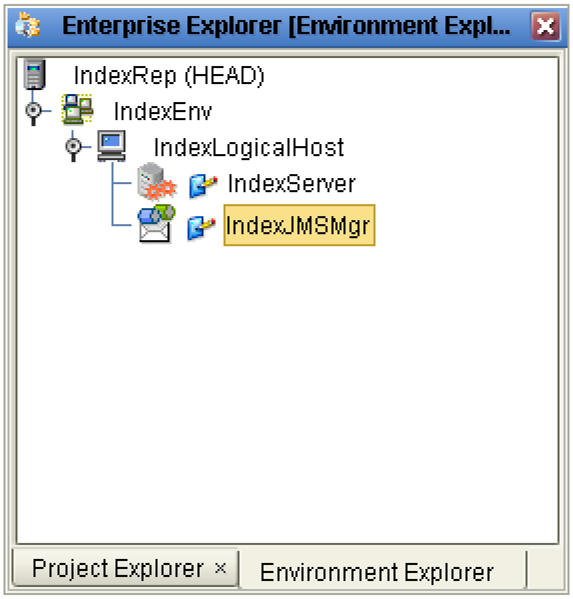
C Modify the name of the IQ manager in the Environment Explorer.

D Right-click the message server, and then select **Properties**.

E Enter the server's URL, administrator login ID, and password.

Figure 30 illustrates an Environment with a Logical Host, Sun SeeBeyond Integration Server, and Sun SeeBeyond JMS IQ Manager.

Figure 30 Integration and JMS Servers



Adding Sun Java System Servers

Perform the following steps to add a Sun Java System Application Server and Sun Java System JMS Server to the Environment. You must have Java System Application Server installed on your system in order to use this feature.

To add Sun Java System servers

1 In Enterprise Explorer, click the **Environment Explorer** tab.

2 Select the Logical Host icon of the eIndex SPV Logical Host.

3 To add a Sun Java System Application Server, do the following:

A Right-click the Logical Host icon to display the **Logical Host** context menu.

B Point to **New**, and then select **Sun Java System Application Server**.

C Modify the name of the server in the Environment Explorer.

D Right-click the application server, and then select **Properties**.

E Enter the server's URL, administrator login ID, and password.

4 To add a Sun Java System JMS Server, do the following:

A Right-click the Logical Host icon to redisplay the **Logical Host** context menu.

B Point to **New**, and then select **Sun Java System JMS Server**.

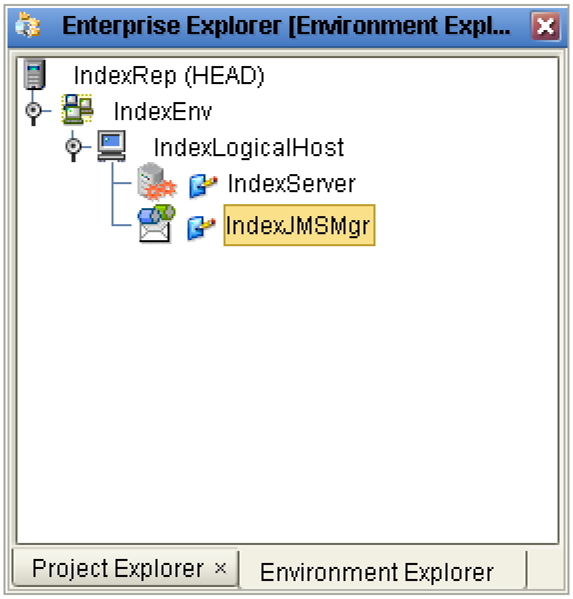
C Modify the name of the IQ manager in the Environment Explorer.

D Right-click the message server, and then select **Properties**.

E Enter the server's URL, administrator login ID, and password.

Figure 31 illustrates an Environment with a Logical Host, Sun Java System Application Server, and Sun Java System JMS Server.

Figure 31 Application and JMS Servers



9.2.4 Adding an External System

External systems are required for Projects that connect an external system to the eIndex SPV master index. The Connectivity Maps in these Projects include External Applications that will be mapped to the external system. Perform the following steps to add an external system to the eIndex SPV Environment.

To add an external system

1 In Enterprise Explorer, click the **Environment Explorer** tab.

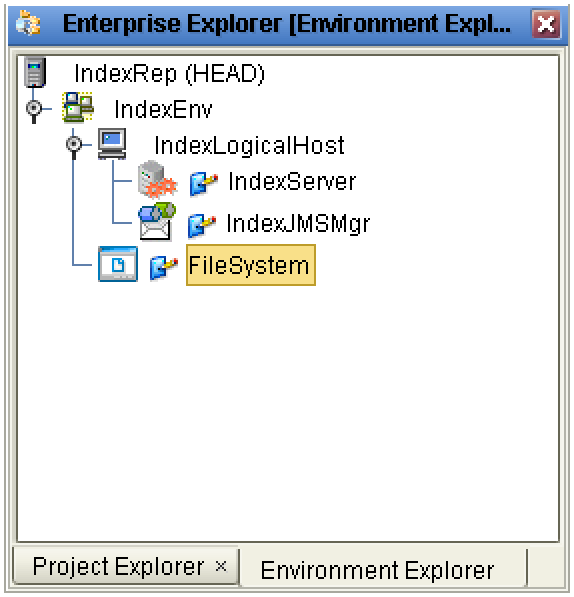
2 Select the eIndex SPV Environment icon.

3 Right-click the eIndex SPV Environment icon to display the **Environment** context menu.

4 Point to **New**, and then select **<type> External System**, where **<type>** is the type of eWay connecting the external system to eGate (such as Oracle, TCP/IP, and so on).

5. In the **External System Name** field, enter the name of the new external system.
6. To configure the external system, right-click the new external system in the Environment, and then select Properties from the context menu.
7. Configure the properties as described in the appropriate user's guide.
8. Repeat these steps for each external system defined in the Projects that will be using this Environment.

Figure 32 File External System



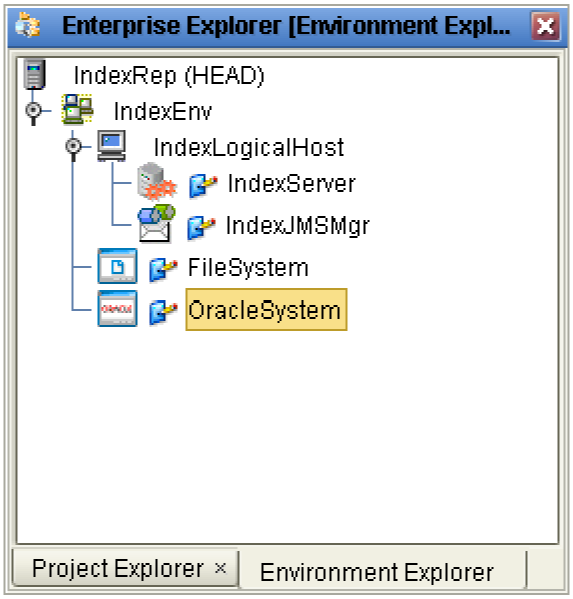
9.2.5 Adding an Oracle External System

An Oracle external system is required for eIndex SPV server Projects that connect to the database using an Oracle eWay. It is required for Projects running on the Sun SeeBeyond Integration Server, but is optional for Projects running on the Sun Java System Integration Server. Perform the following steps to add an Oracle external system to the eIndex SPV Environment. If you are not using an Oracle eWay, be sure to follow the instructions under **Configuring a Connection Pool Through the Server** on page 101 to create a database connection pool.

To add an Oracle external system

1. In Enterprise Explorer, click the **Environment Explorer** tab and then select the eIndex SPV Environment icon.
2. Right-click the eIndex SPV Environment icon to display the context menu.
3. Point to **New**, and then select **Oracle External System**.
4. In the **External System Name** field, enter the name of the new Oracle external system.
5. Click **OK**.

Figure 33 Oracle External System



6 To configure the connection pool, right-click the Oracle External System icon, and then select **Properties**.

The **Properties** window appears.

7 Expand **Outbound Oracle eWay**, and then select **JDBC Connector Settings**.

8 Define each property in the right portion of the window with information specific to the eIndex SPV database you created. All fields on the Properties windows are described in the *Sun SeeBeyond eWay Adapter for Oracle User's Guide*. Be sure to only define the properties for the driver type you are using.

Note: *Creating the database is described in* **Chapter 7** *of this guide. Use the information for that database for the properties on this window.*

9 When you finish defining the properties, click **OK** to close the **Properties** dialog.

9.3 Configuring a Connection Pool Through the Server

If you are using an Oracle eWay and have added and configured the Oracle external system in the Environment, you have already configured your database connection pool for the eIndex SPV database and do not need to perform this step. If you are running the application on the Sun Java System Application Server and are not using the Oracle eWay to connect to the database, you must configure the JDBC connection pool and resources using the Sun Java System Application Server Admin Console.

For more information about the procedures in this section, see the online help provided with the Sun Java System Application Server Admin Console.

Important: *Before creating the connection pool, install the Oracle driver on the application server or copy the* ***ojdbc14.jar*** *file from your Oracle client installation (*__<Oracle_client>\jdbc\lib__*) to* __*<application_server_home>\lib*__*).*

Step 1: Create a JDBC Connection Pool

The JDBC connection pool provides connections for the master index database.Before proceeding, make sure you have the relevant information about the master index database (such as the database name, URL, and administrator login credentials).

To create a JDBC connection pool

1. In the left portion of the Sun Java System Application Server Admin Console, expand **Resources**, expand **JDBC**, and then select **Connection Pools**.
2. On the Create Connection Pool page, click **New**.
3. Enter values in the fields described in Table 4, and then click **Next**.

Table 4 Connection Pool General Settings

Field	Description
Name	A name for the connection pool.
Resource Type	The Java class for the connection pool.
Database Vendor	The database platform for the eIndex SPV database. Select **Oracle**.

4. Enter a value in the **DataSource Classname** field, and then click **Next**.

Note: *You can accept the default value for this field if it is provided.*

5. On the Create Connection Pool page, do the following:
   - In the **General Settings** section, verify that the values are correct.
   - In the **Properties** section at the bottom of the page, enter information for the eIndex SPV database.
   - Keep the default values in the remaining sections (you can edit these later if needed).
6. Click **Finish**.

Step 2: Create a JDBC Resource

A JDBC resource (also known as a data source) gives the master index applications the ability to connect to the database.

To create a JDBC resource:

1. In the left portion of the Sun Java System Application Server Admin Console, expand **Resources**, expand **JDBC**, and then select **JDBC Resources**.
2. On the Create JDBC Resource page, click **New**.

3 Enter the field values described in Table 5.

Table 5 JDBC Resources Fields

Field	Description
JNDI Name	A unique name for the JDBC resource. This name must begin with “jdbc/”, which should be followed by “<app_name>DataSource” (where <app_name> is the name of the eIndex SPV application). For example: jdbc/PersonDataSource.
Pool Name	The name of the JDBC connection pool associated with the JDBC resource.
Description	(Optional) A brief description of the JDBC resource.

4 In the **Available** box in the **Targets** section, select the server on which the resource is available, and then click **Add**.

5 Click **OK**.

Chapter 10

Deploying the Project

Each Project in the master index system must include a Deployment Profile that correlates the processing components to the physical components. This includes the primary eIndex SPV Project and any client Projects that connect the master index to an external system.

What's in This Chapter

10.1 Deployment Overview

The Deployment Profile binds the eIndex SPV Project attributes to the Environment that defines where each component runs. For example, the Deployment Profile for the server Project defines which application or integration server runs the master index. The Deployment Profiles for the client Projects that use eIndex SPV Components define which message servers host which topics, which external systems are connected to the master index via which eWays, and so on. Once you create the Deployment Profile and build the Project, you can deploy the Project to the application or integration server. When running the Sun SeeBeyond Integration Server (IS), you must create the Logical Host instance (domain) before you can deploy the Project. For applications running on the Sun Java System Application Server, you must create a domain through the Sun Java System Application Server Admin Console (see your Sun documentation for more information).

10.2 Creating a Domain

If eIndex SPV is running on the IS, make sure you have created and started an instance of the Logical Host containing the IS before defining Deployment Profiles for your Projects. This section describes how to create a domain using the Domain Manager. You can also create the instance using a command-line tool. The command-line method is described in the *Sun SeeBeyond eGate Integrator System Administration Guide*.

Important: *The instructions below only pertain to applications running on the Sun SeeBeyond Integration Server. For applications running on the Sun Java System Application Server, refer to you Sun documentation for information about creating and starting a domain. Before starting the Logical Host, make sure that the eIndex SPV databases is running.*

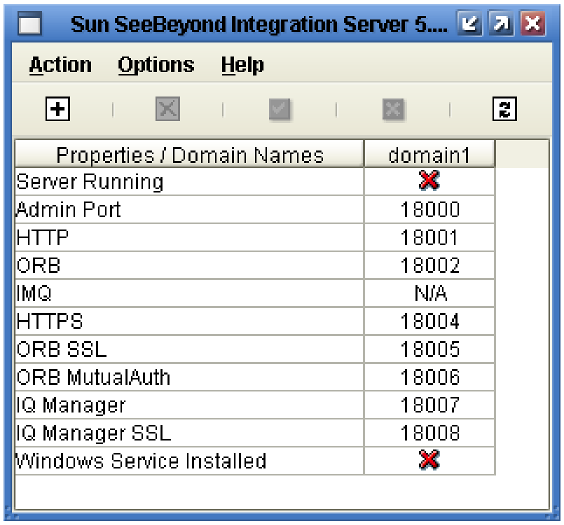
To create a domain using the Domain Manager (IS implementations only)

1 In the **<jis51>\logicalhost** directory, run the **domainmgr.bat** script.

2 If there are currently no domains, a dialog box indicates that you can create a domain now. If you click **Yes**, the **Create Domain** dialog box appears. Go to step 4.

The Domain Manager appears.

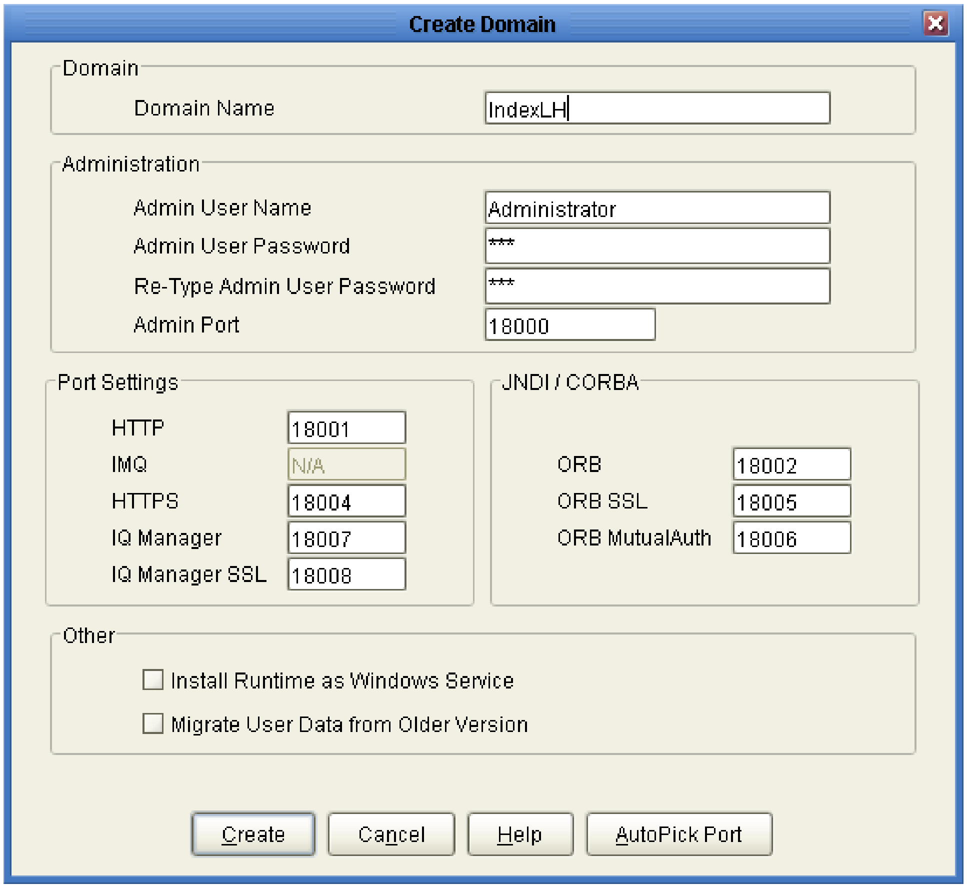
Figure 34 Domain Manager



Properties / Domain Names	domain1
Server Running	✗
Admin Port	18000
HTTP	18001
ORB	18002
IMQ	N/A
HTTPS	18004
ORB SSL	18005
ORB MutualAuth	18006
IQ Manager	18007
IQ Manager SSL	18008
Windows Service Installed	✗

3 On the Domain Manager toolbar, click the **Create a New Domain** tool. The **Create Domain** dialog box appears (see Figure 35).

Figure 35 Create Domain Dialog Box



Create Domain

Domain
Domain Name: IndexLH

Administration
Admin User Name: Administrator
Admin User Password: ***
Re-Type Admin User Password: ***
Admin Port: 18000

Port Settings
HTTP: 18001
IMQ: N/A
HTTPS: 18004
IQ Manager: 18007
IQ Manager SSL: 18008

JNDI / CORBA
ORB: 18002
ORB SSL: 18005
ORB MutualAuth: 18006

Other
☐ Install Runtime as Windows Service
☐ Migrate User Data from Older Version

4 You can change the default values of any of the fields listed in Table 6.

Note: *To let the Domain Manager choose the port numbers for you, click* ***AutoPick Port****.*

Table 6 Fields in Create Domain Dialog Box

Field	Description
Domain Name	A unique name for the domain.
Admin User Name	A name for the user who will administer the domain.
Admin User Password	A password for the administrator. The value that you enter is hidden with asterisks. The default value is **STC**.
Re-Type Admin User Password	Retype the password.
Admin Port	The port number used by the domain's administrative server.
HTTP	The port number used by the domain's HTTP listener.
IMQ	This port number is not currently used.
HTTPS	The port number used by the domain's HTTP listener for SSL requests.

Table 6 Fields in Create Domain Dialog Box

Field	Description
IQ Manager	The port number used by the domain's SeeBeyond JMS IQ Manager.
IQ Manager SSL	The port number used by the domain's SeeBeyond JMS IQ Manager for SSL requests.
ORB	The port number used by the domain's IIOP listener.
ORB SSL	The port number used by the domain's IIOP listener for SSL requests.
ORB MutualAuth	The port number used by the domain's IIOP listener for mutual authentication requests, in which the client and server authenticate each other.

5 If you want to install the SeeBeyond Integration Server as a Windows service, select the **Install Runtime as Windows Service** check box. The service name will be **IS 5.1 <domain_name>**.

6 Click **Create**.

7 When the **Message** dialog box indicates that the domain has been successfully created, click **OK**.

8 (Make sure the eIndex SPV database is running before performing this step.) On the Domain Manager window, select the new domain and then click **Start an Existing Domain**.

9 When the **Message** dialog box indicates that the domain has been successfully started, click **OK**.

10.3 Defining Deployment Profiles

A Deployment Profile must be defined for the eIndex SPV application Project and for any client Projects that connect to the master index. You can use the same Environment components for each Deployment Profile.

Once Project components are mapped in the Deployment Profile, you can build and deploy the Project. You must deploy the Project before you can run any of the components. You can deploy a Project from either Enterprise Designer or Enterprise Manager. These instructions describe deploying from Enterprise Manager. For more information and instructions on deploying a Project using Enterprise Designer, see the *Sun SeeBeyond eGate Integrator User's Guide*. For information about deploying a Project using Enterprise Manager, see the *Sun SeeBeyond eGate Integrator System Administration Guide*.

Note: *When deploying from Enterprise Manager or Sun Java System Application Server Admin Console, you must specify the .ear file to deploy. This file is located at* ***<edesigner>/builds/<project><deployment_profile>/<integration_server>*** *(where <edesigner> is the Enterprise Designer home directory, <project> is the* *name of the eIndex SPV Project, <deployment_profile> is the name of the Project's Deployment Profile, and <integration_server> is the name of the server on which the application is deployed). The file is named* ***<project><deployment_profile>.ear****; for example,* ***eIndexPersonIndexDeploy.ear****).*

10.3.1 Deploying the eIndex SPV Server Project

Creating a Deployment Profile for the eIndex SPV server Project (which defines the eIndex SPV application) consists of the following steps.

- **Creating the Deployment Profile** on page 108
- **Mapping Project Components to Environment Components** on page 109
- **Building and Deploying the Server Project** on page 111

Important: *Make sure you have created and started a domain before attempting to deploy the Project.*

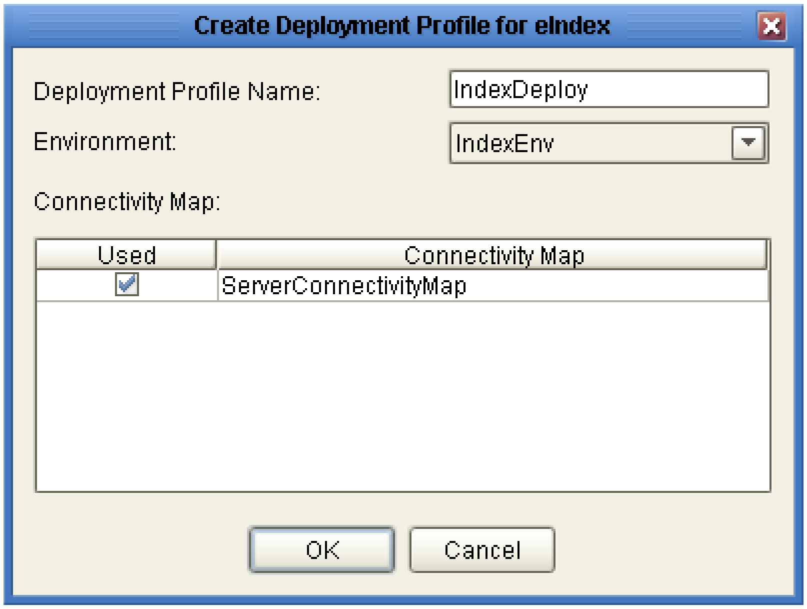
Creating the Deployment Profile

The first step to deploying a Project is to create and name the Deployment Profile. Perform the following steps to create a new Deployment Profile for the eIndex SPV server Project.

To create an eIndex SPV application Deployment Profile

1. In Enterprise Explorer, click the **Project Explorer** tab.
2. Select the eIndex SPV server Project folder.
3. Right-click the mouse to launch the **Project** context menu.
4. Select **New > Deployment Profile** to display the **Create Deployment Profile** dialog shown in Figure 36.

Figure 36 Create Deployment Profile Dialog Box



Create Deployment Profile for eIndex

Deployment Profile Name: IndexDeploy

Environment: IndexEnv

Connectivity Map:

Used	Connectivity Map
☑	ServerConnectivityMap

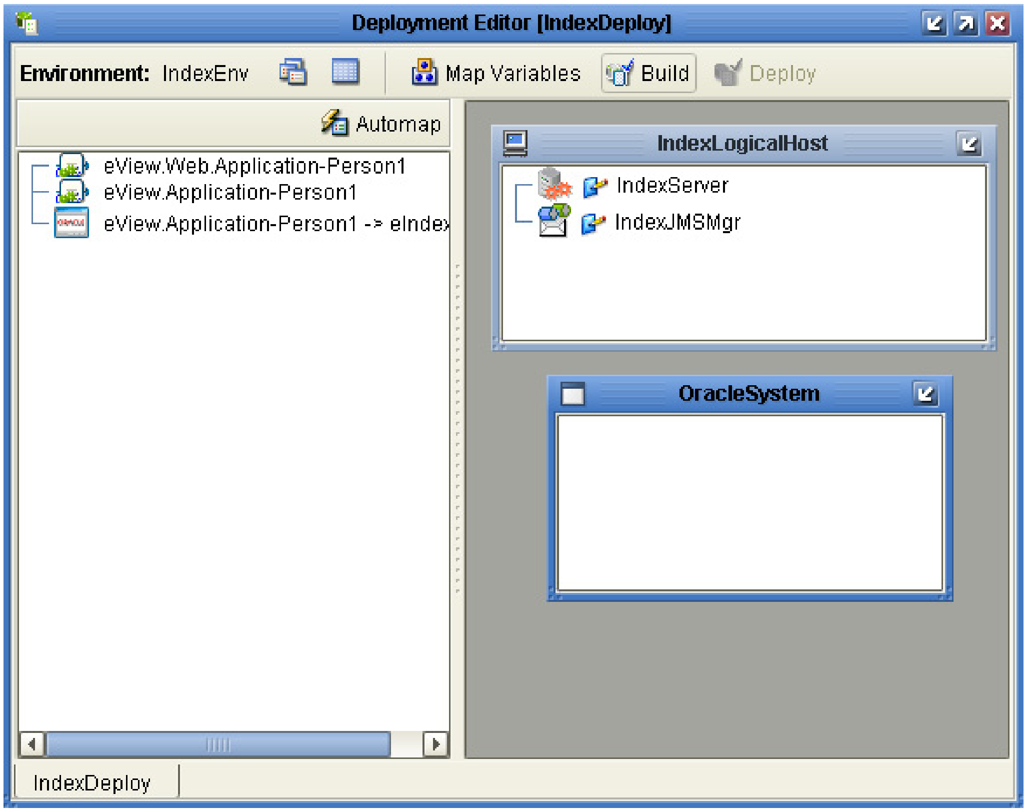
5 In the **Deployment Profile Name** field, type a name for the Deployment Profile.

6 In the **Environment** drop-down list, select the Environment you created for the eIndex SPV Project.

7 In the Connectivity Map table, deselect the Used check box for any Connectivity Maps you do not want to include in the deployment.

8 Click **OK** to add a **Deployment Profile** icon to the eIndex SPV Project and display the Deployment Editor window, shown in Figure 37.

Figure 37 Deployment Editor - Server Project


Deployment Editor [IndexDeploy]
Environment: IndexEnv
Map Variables
Build
Deploy
Automap
eView.Web.Application-Person1
eView.Application-Person1
eView.Application-Person1 -> eIndex
IndexLogicalHost
IndexServer
IndexJMSMgr
OracleSystem
IndexDeploy

9 Continue to **“Mapping Project Components to Environment Components”**.

Mapping Project Components to Environment Components

Once you create a Deployment Profile, you can map the Project components to the deployment Environment. When you map the Project components to the Environment containers, you are specifying the Logical Host to handle the transactions.

You can map Project components manually, or you can use the Automap feature to have the components automatically mapped for you. Use the Automap feature when a one-to-one correspondence exists between the available Project components and the containers in the Environment to which you want to deploy them.

To map eIndex SPV Project components manually

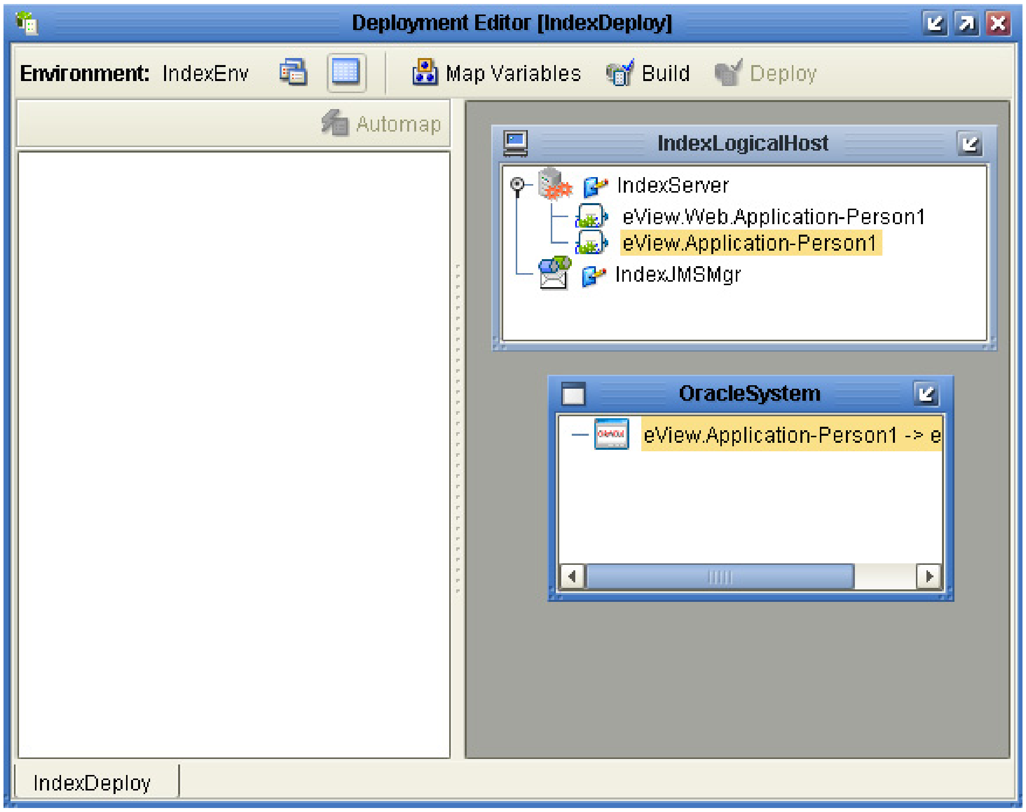
1 With the eIndex SPV Project Deployment Profile open in the Deployment Editor, drag the **eView.Web.Application-Person** and **eView.Application-Person** icons onto the integration or application server in the Deployment Editor (the server appears in the Logical Host).

2 If you defined a JMS Topic to publish the master index messages, drag the **JMS Topic** icon onto the JMS IQ Manager in the Logical Host.

3 If the server Project contains an Oracle eWay, drag the **Oracle External Application** icon onto the Oracle External System in the right pane.

Figure 38 illustrates the updated Deployment Profile.

Figure 38 Mapped eIndex SPV Components in the Deployment Editor


Deployment Editor [IndexDeploy]
Environment: IndexEnv
Map Variables
Build
Deploy
Automap
IndexLogicalHost
IndexServer
eView.Web.Application-Person1
eView.Application-Person1
IndexJMSMgr
OracleSystem
eView.Application-Person1 -> e
IndexDeploy

4 Continue to **“Building and Deploying the Server Project”**.

To automatically map eIndex SPV Project Components

1 With the eIndex SPV Project Deployment Profile open in the Deployment Editor, click **Automap**.

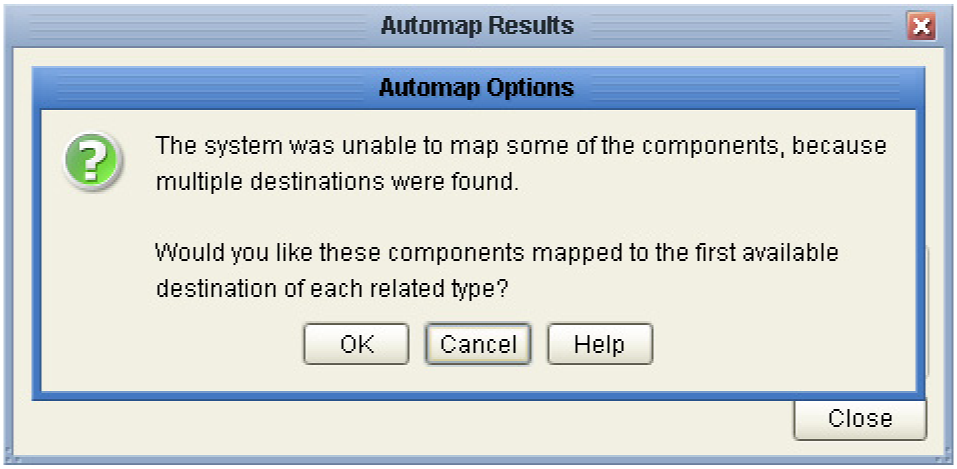
The Automap Results dialog appears.

2 Review the results of the mapping on the Automap Results dialog. If the appropriate container for the component cannot be found, the component remains unmapped.

3 If more than one container was found for a component, click **Automap Option** to review mapping options and do one of the following:

- To accept the Automapping option, click **OK**.
- To map the components manually, click **Cancel**.

Figure 39 Automap Options Dialog



The system was unable to map some of the components, because multiple destinations were found.

Would you like these components mapped to the first available destination of each related type?

4 To map any components that could not be automatically mapped, follow the instructions under **To map eIndex SPV Project components manually** on page 110.

5 Continue to **"Building and Deploying the Server Project"**.

Building and Deploying the Server Project

Once all Project components are mapped to the Environment, build the Project to create and compile all the files needed to run the Project. Building the Project places the application file at **<edesigner>\builds\<project_name><deploy_profile_name>\<logicalhost_name>\<server_name>**. Deploying the Project extracts the files to the domain.

To build and deploy the server Project

1 Click **Build** to generate the Project files.

2 After the build process finishes successfully, click **Deploy** to deploy the Project to a server.

Note: *For this to be successful, the domain must be started.*

3 Define EDM users, as described under **"Defining Security" on page 118**.

10.3.2 Deploying the Collaboration Client Project

Creating a Deployment Profile for the Projects that define external system connections to the eIndex SPV application via Collaborations consists of the following steps.

- **Creating a Collaboration Client Deployment Profile** on page 112
- **Mapping Collaboration Client Project Components** on page 113
- **Building and Deploying the Collaboration Client Project** on page 114

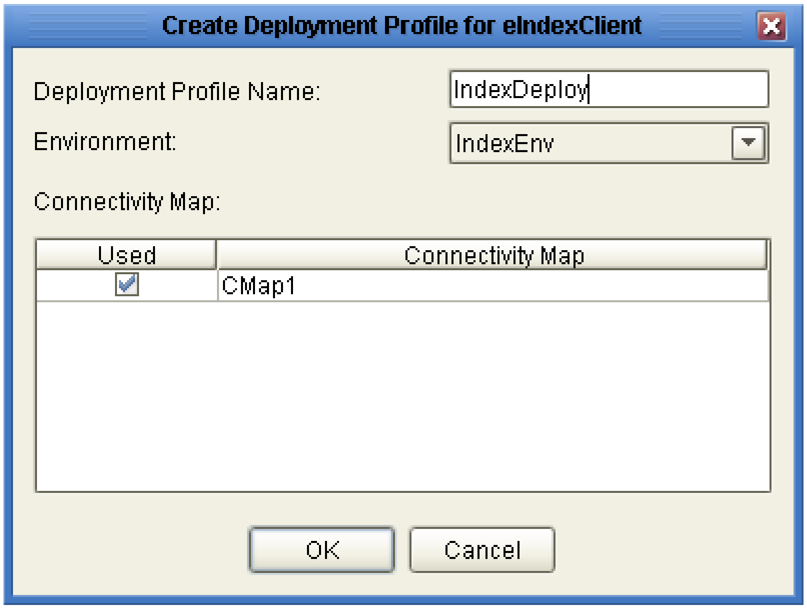
Creating a Collaboration Client Deployment Profile

Before beginning this procedure, you must have created, built, and deployed the eIndex SPV application Deployment Profile, as described in **"Creating the Deployment Profile" on page 108**. Doing this creates an eIndex SPV application component in the Environment, which is required for the client deployment.

To create a Collaboration client Deployment Profile

1. In Enterprise Explorer, click the **Project Explorer** tab.
2. Select the Collaboration client Project folder.
3. Right-click the mouse to launch the **Project** context menu.
4. Select **New > Deployment Profile** to display the **Create Deployment Profile** dialog shown in Figure 40.

Figure 40 Create Deployment Profile Dialog Box



Create Deployment Profile for eIndexClient

Deployment Profile Name: IndexDeploy

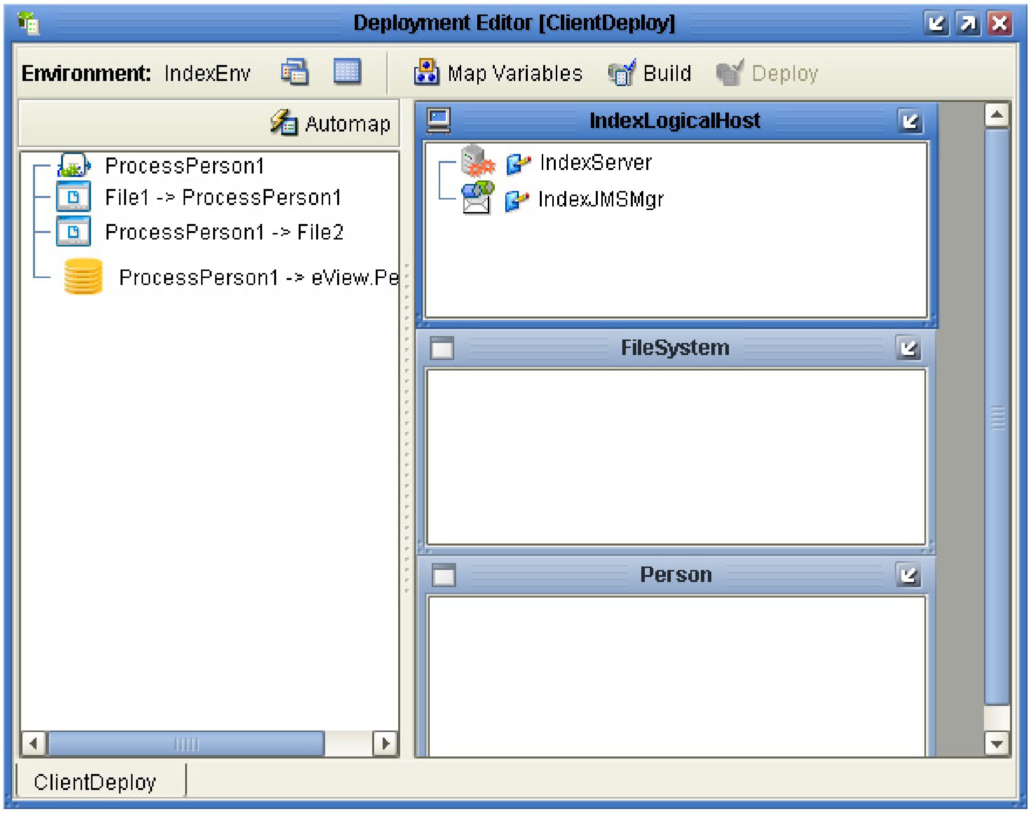
Environment: IndexEnv

Connectivity Map:

Used	Connectivity Map
☑	CMap1

5. In the **Deployment Profile Name** field, type a name for the Deployment Profile.
6. In the **Environment** drop-down list, select the Environment you created for the eIndex SPV Project.
7. Click **OK** to add a **Deployment Profile** icon to the eIndex SPV Project and display the Deployment Editor window, shown in Figure 41.

Figure 41 Deployment Editor - Client Project



Note: *Your Deployment Editor might differ from the above illustration depending on whether you implemented a JMS Topic for processing outbound messages.*

8 Continue to **"Mapping Collaboration Client Project Components"**.

Mapping Collaboration Client Project Components

Once you create a Deployment Profile, you must configure the Project components in the deployment Environment. When you map the Project components to the Deployment Profile, you are specifying the Logical Host to handle the transactions.

Note: *Project components can also be automatically mapped. For more information, see* **Mapping Project Components to Environment Components** *on page 109 and* **To automatically map eIndex SPV Project Components** *on page 110.*

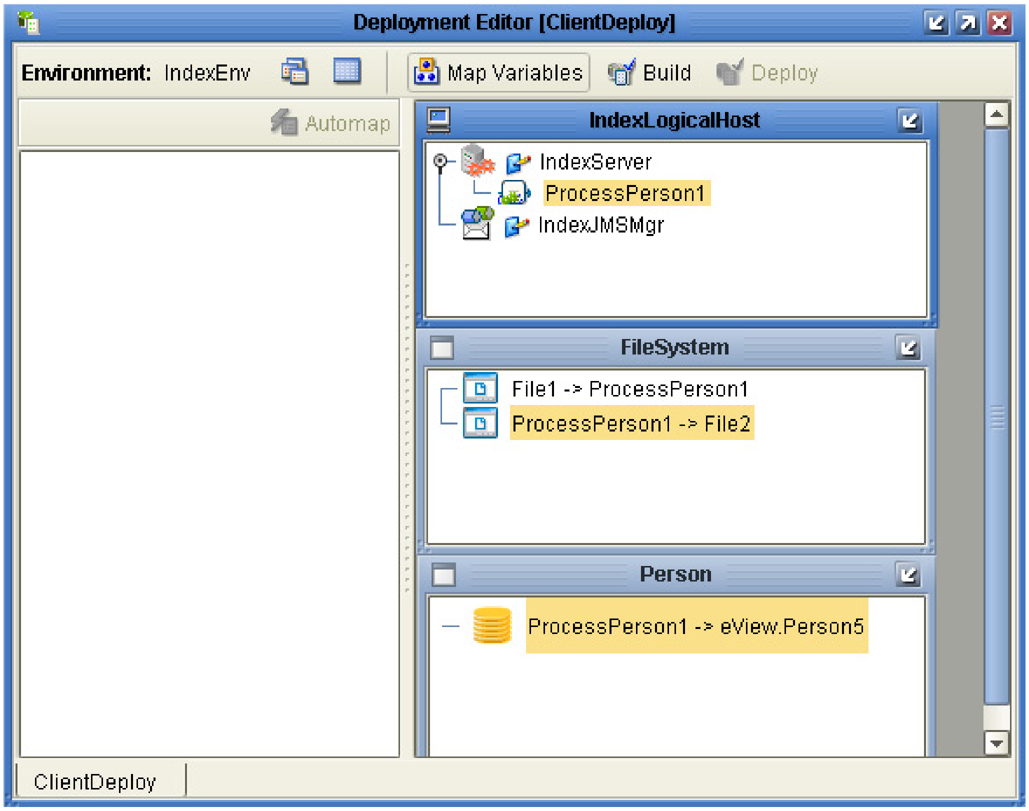
To map Collaboration client Project components

1 With the Collaboration client Project Deployment Profile open in the Deployment Editor, drag the Service icon(s) onto the integration or application server in the Deployment Editor (the server appears in the Logical Host).

2 Drag the eIndex SPV application icon onto the eIndex SPV application deployment component (this is named after the eIndex SPV application).

3. Drag the external system eWays to the appropriate external systems in the Environment.
4. If you implemented a JMS Topic, drag the topic to the JMS IQ Manager in the Logical Host.

Figure 42 Mapped Client Components in the Deployment Editor



5. Continue to **"Building and Deploying the Collaboration Client Project"**.

Building and Deploying the Collaboration Client Project

Once all Project components are mapped to the Environment, you can build the Project to create and compile all the files needed to run the Project. Deploying the Project places the files on the server.

Note: *For this to be successful, the domain must be started.*

To build and deploy the Collaboration client Project

1. Click **Build** to generate the Project files.
2. Click **Deploy** to deploy the Project to a server.

10.3.3 Deploying the eInsight Client Project

Creating a Deployment Profile for the Projects that incorporate eIndex SPV methods into an eInsight Business Process consists of the following steps

- **Creating an eInsight Client Deployment Profile** on page 115
- **Mapping eInsight Client Project Components** on page 116
- **Building and Deploying the eInsight Client Project** on page 117

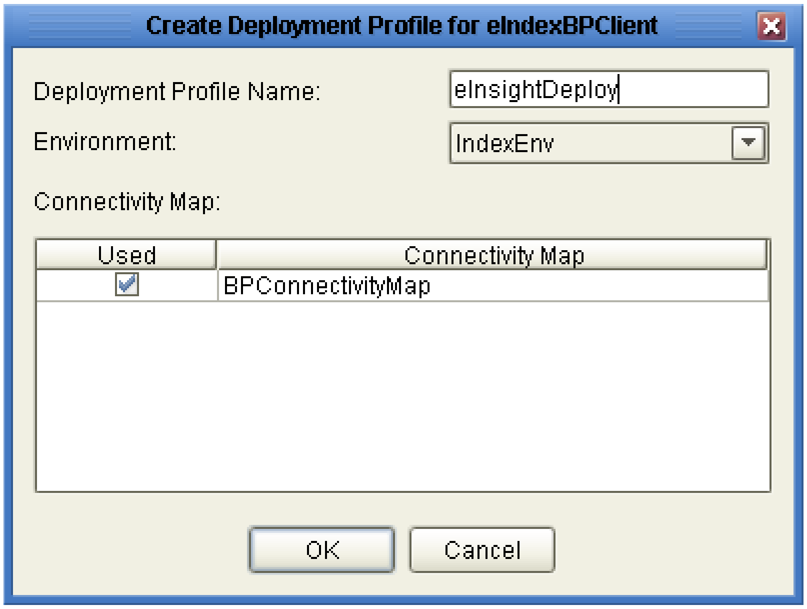
Creating an eInsight Client Deployment Profile

Before beginning this procedure, you must have created, built, and deployed the eIndex SPV application deployment profile, as described in **"Creating the Deployment Profile" on page 108**. Doing this creates the eIndex SPV application component in the Environment, which is required for the client deployment.

To create an eInsight client Project Deployment Profile

1. In Enterprise Explorer, click the **Project Explorer** tab.
2. Select the eInsight client Project folder.
3. Right-click the mouse to launch the **Project** context menu.
4. Select **New > Deployment Profile** to display the **Create Deployment Profile** dialog shown in Figure 43.

Figure 43 Create Deployment Profile Dialog Box



Create Deployment Profile for eIndexBPClient

Deployment Profile Name: eInsightDeploy

Environment: IndexEnv

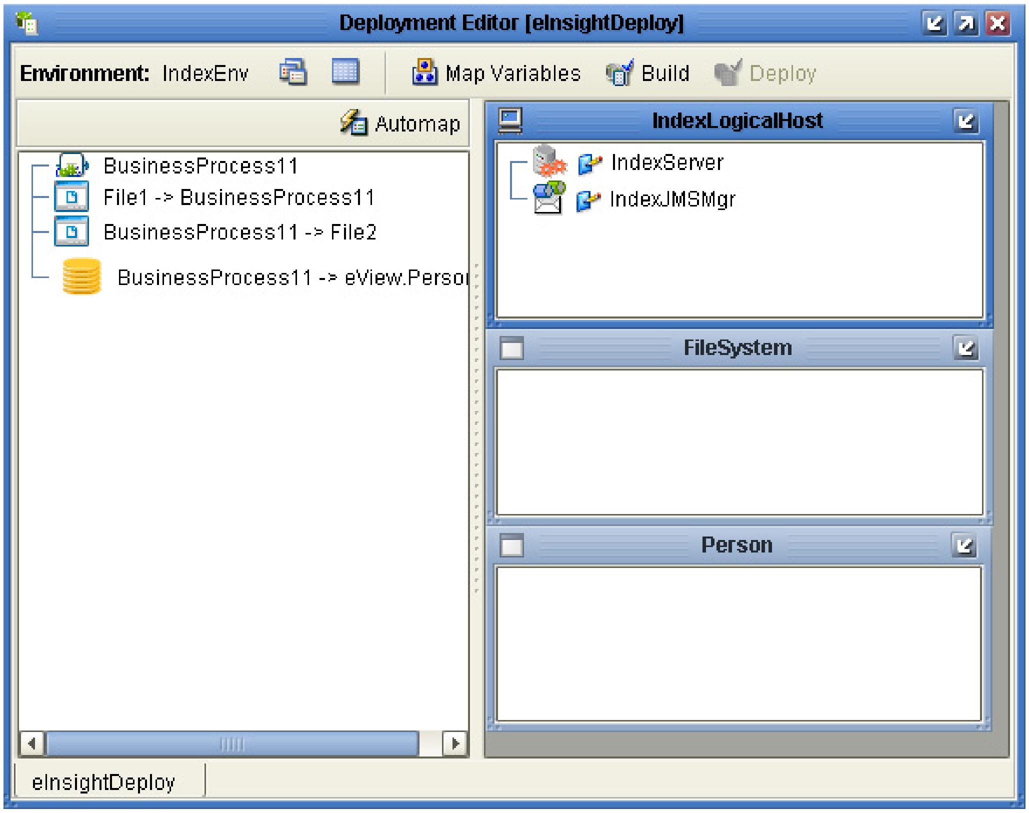
Connectivity Map:

Used	Connectivity Map
☑	BPConnectivityMap

5. In the **Deployment Profile Name** field, type a name for the Deployment Profile.
6. In the **Environment** drop-down list, select the Environment you created for the eIndex SPV Project.

7 Click **OK** to add a **Deployment Profile** icon to the eIndex SPV Project and display the Deployment Editor window, shown in Figure 44.

Figure 44 Deployment Editor Window



8 Continue to **"Mapping eInsight Client Project Components"**.

Mapping eInsight Client Project Components

Once you create a Deployment Profile, you can map the Project components to the deployment Environment. When you map the Project components to the Deployment Profile, you are specifying the Logical Host to handle the transactions.

Note: *Project components can also be automatically mapped. For more information, see* **Mapping Project Components to Environment Components** *on page 109 and* **To automatically map eIndex SPV Project Components** *on page 110.*

To map eInsight client Project components

1 With the eInsight client Project Deployment Profile open in the Deployment Editor, drag the Service/Business Process icon onto the integration or application server in the Deployment Editor (the server appears in the Logical Host).

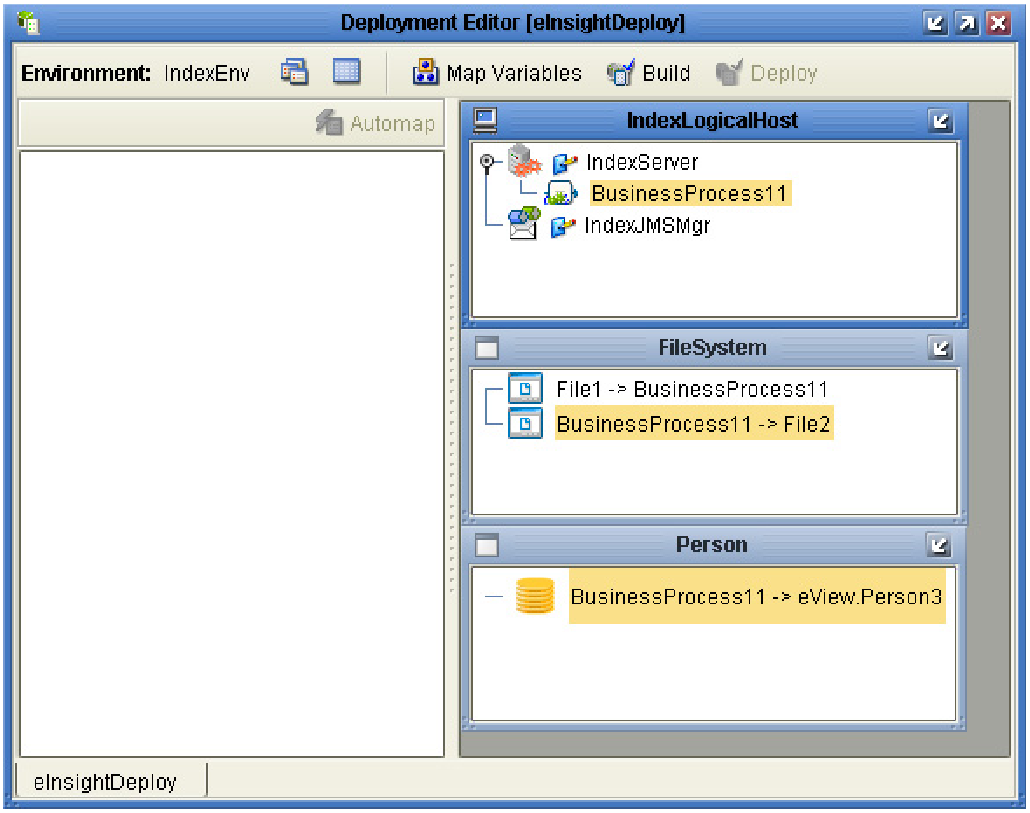
2 Drag the eIndex SPV application icon onto the eIndex SPV application deployment component (this is named after the eIndex SPV application).

3 Drag the external system eWays to the appropriate external systems in the Environment.

4 If you implemented a JMS Topic, drag the topic to the JMS IQ Manager in the Logical Host (not shown).

Figure 45 illustrates the updated Deployment Profile.

Figure 45 Mapped Client Components in the Deployment Editor



5 Continue to **"Building and Deploying the eInsight Client Project"**.

Building and Deploying the eInsight Client Project

Once all Project components are mapped to the Environment, you can build the Project to create and compile all the files needed to run the Project. Deploying the Project places the files on the server.

Note: *For this to be successful, the domain must be started.*

To build and deploy the eInsight client Project

1 Click **Build** to generate the Project files.

2 Click **Deploy** to deploy the Project to a server.

10.4 Defining Security

eIndex SPV supports security at the user and function level, and also supports Secure Sockets Layer (SSL) authentication. For information about configuring the server to enable SSL, see the *Sun SeeBeyond eGate Integrator System Administration Guide*.

A secure user name and password must be defined for each eIndex SPV application to connect to the database and to log on to the EDM. For each user account you define, you must also specify one or more groups in order for that user to be able to perform any functions in the EDM.

Make sure the domain for the eIndex SPV application is running before performing this procedure.

Important: *In order for security roles to function correctly for the EDM, authorization security must be enabled in the Enterprise Data Manager configuration file. To enable security, set the **enable-security** element to "true". By default, this element is set to "true". For more information, see chapter 9 of the **Sun SeeBeyond eView Studio Configuration Guide**.*

10.4.1 Defining Security (for the Sun SeeBeyond Integration Server)

Security for eIndex SPV running on the Sun SeeBeyond Integration Server (IS) is configured in the Logical Host user management category using the Enterprise Manager (see the *Sun SeeBeyond eGate Integration System Administration Guide* for more information about user management categories and setting up security). You must be connected to the server in the Enterprise Manager to perform this task.

To connect to the server

1. Log in to the Enterprise Manager.
2. In the frame on the right side of the page, click **J2EE**.

   The Application Server Deployer page appears with the Manage Servers tab displayed.
3. In the **Add Application Server** section, fill in the fields listed in Table 7.

Table 7 Manager Server Fields

In this field ...	Type or select ...
Server Type	The type of server you are adding.
Host Name	The name of the computer on which the server resides. You can enter "localhost" if the IS resides on the same computer.
HTTP Administration Port	The HTTP port for connecting to the server. By default, the port number is **18000**.
Username	The user name to log on to the integration server.

Table 7 Manager Server Fields

In this field ...	Type or select ...
Password	The password associated with the given user name.

4 Click **Connect to Server**.

5 Once the connection is made, click **Save current user preferences**.

To create an eIndex SPV user account in the Enterprise Manager

1 Log on to Enterprise Manager.

2 On the Enterprise Manager, expand the J2EE list until you see the server to which you want to add a user account.

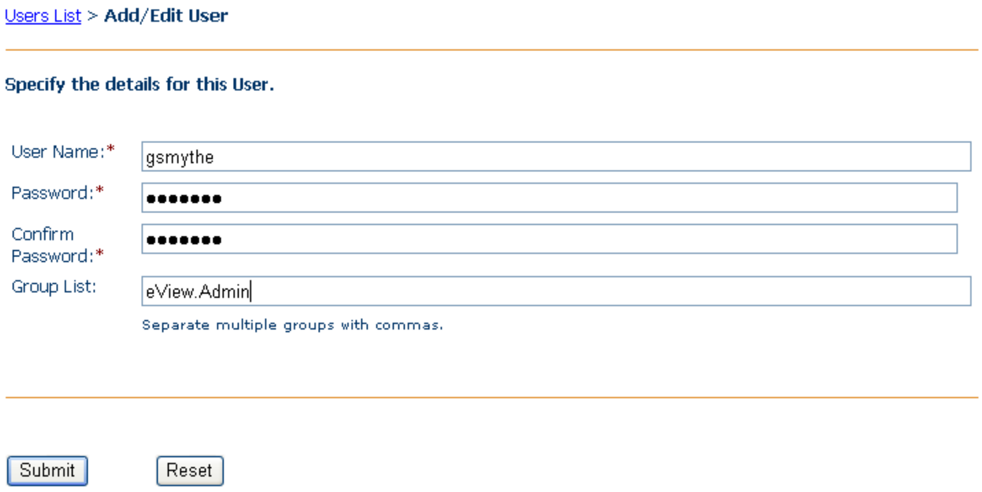
3 Right-click the server, and then click **Manage Integration Server Users**.

The **Users List** window appears.

4 In the **Users List** window, click **Add New User**.

The **Add/Edit User** window appears (see Figure 46).

Figure 46 Add/Edit User Window



Users List > Add/Edit User

Specify the details for this User.

User Name:* gsmythe

Password:* •••••••

Confirm Password:* •••••••

Group List: eView.Admin

Separate multiple groups with commas.

5 In the **User Name** field, enter a name for the user.

6 In the **Password** field, enter a password for the user.

7 In the **Confirm Password** field, enter the password again.

8 In the **Group List** field, enter one or more eIndex SPV user groups, separating multiple groups with a comma. Table 8 lists and describes each eIndex SPV user group.

9 After you have added all required user groups, click **Submit**.

Table 8 User Groups and Descriptions

User Group	Description
AL.View	Gives access permission to search for and view audit log entries, and to generate and print the search results report.
Duplicate.All	Gives access permission to all potential duplicate functions.
Duplicate.AutoResolve	Gives access permission to permanently resolve potential duplicate records.
Duplicate.Print	Reserved for future functionality.
Duplicate.Resolve	Gives access permission to resolve potential duplicate records.
Duplicate.SearchAndView	Gives access permission to search for and view potential duplicate records, and to view and print the potential duplicate search results report.
Duplicate.Unresolve	Gives access permission to unresolve potential duplicate records that were previously resolved.
EO.All	Gives access permission to all enterprise object functions described below.
EO.Activate	Gives access permission to activate enterprise records.
EO.Create	Gives access permission to create new enterprise records.
EO.Compare	Gives access permission to compare enterprise records.
EO.Deactivate	Gives access permission to deactivate enterprise records.
EO.Edit	Gives access permission to modify the SBR in enterprise records.
EO.Merge	Gives access permission to merge enterprise records.
EO.OverwriteSBR	Gives access permission to modify the SBR and to lock SBR fields for overwrite.
EO.PrintComparison	Reserved for future functionality.
EO.PrintSBR	Reserved for future functionality.
EO.SearchAndViewSBR	Gives access permission to search for and view single best records, and to generate and print the search results report.
EO.Unmerge	Gives access permission to unmerge enterprise records.
EO.ViewMergeTree	Gives access permission to view a merge history of an enterprise object.

Table 8 User Groups and Descriptions

User Group	Description
eView.Admin	Gives access permission to all functions of the Enterprise Data Manager.
eView.Reports	Gives access permission to generate and view reports on the EDM. (Note that this is not required to print search results reports, which is granted by the individual search access permissions.)
eView.User	Gives access to the EDM. This group must be assigned to each user except those assigned the eView.Admin group.
eView.VIP	Gives permission to view fields masked by the VIP feature.
History.All	Gives access permission to all history functions described below.
History.Print	Reserved for future functionality.
History.SearchAndView	Gives access permission to search for and view the transaction history of enterprise records and to generate and print the search results report.
SO.All	Gives access permission to all system record functions described below.
SO.Add	Gives access permission to add system records.
SO.Edit	Gives access permission to modify system records.
SO.Merge	Gives access permission to merge system records.
SO.Print	Reserved for future functionality.
SO.Remove	Gives access permission to delete system records.
SO.Unmerge	Gives access permission to unmerge system records.
SO.View	Gives access permission to view system records.

10.4.2 Defining Security (for the Sun Java System Application Server)

Security for eIndex SPV running on the Sun Java System Application Server is configured on the Admin Console.

To create an eIndex SPV user account in the Admin Console

1. Log on to the Sun Java System Application Server Admin Console.
2. In the left portion of the page, expand **Configurations** and then expand the server on which eIndex SPV is running.
3. Under the server, expand **Security**, expand **Realms**, and then select **file**.
4. On the Edit Realm page, select **Manager Users**.
5. On the File Users page, select **New**.
6. In the **User ID** field, enter a name for the user.

7 In the **Password** field, enter a password for the user.

8 In the **Confirm Password** field, enter the password again.

9 In the **Group List** field, enter one or more eIndex SPV user groups, separating multiple groups with a comma. Table 8 lists and describes each eIndex SPV user group.

10 After you have added all required user groups, click **OK**.

Chapter 11

Maintenance Tasks

Once you move the eIndex SPV system into production, you should perform certain maintenance tasks regularly to keep the system running smoothly. Primary tasks include archiving Repository components, monitoring and troubleshooting runtime components, and backing up the eIndex SPV database. You might also need to make changes to the eIndex SPV server Project or to the Java Collaborations or Business Processes that reference the eIndex SPV server Project. This chapter describes these maintenance tasks.

What's in This Chapter

11.1 Archiving Repository Information

Back up the Repository on a regular basis. The frequency of these backups depends on the internal policies and procedures of your organization. You can back up the entire Repository using a command line script. When you perform a full Repository backup, the Repository is locked and cannot be modified while the backup is in progress.

You can also back up just the eIndex SPV server and client Projects using the export function of Enterprise Designer. Exporting Projects allows you to maintain a snapshot of each Project before and after changes were made to Project components. Use this method to backup any customizations you make to a Project, including custom plug-ins, changes to configuration files, custom database scripts, and so on.

For information and instructions for exporting Projects, see the *Sun SeeBeyond eGate Integrator User's Guide*. For information and instructions for backing up and restoring the Repository, see the *Sun SeeBeyond eGate Integrator System Administration Guide*.

11.2 Maintaining the Database

The database requires periodic maintenance tasks, such as backing up information or archiving certain tables. Perform backups regularly, and use the standards and policies of your organization to determine the best methods for backing up data.

11.2.1 Backing up the Database

The eIndex SPV database must be backed up on a regular basis. Typically, the database should be backed up once a month or once a quarter, depending on the size of the database and the volume of data being processed. The frequency of your database backups depends on your organization's internal policies and practices. Use your normal procedures for backing up a high availability database (this procedure should be determined by a database administrator).

Online Backups

The best practice for backing up the eIndex SPV database is an online backup during which the database is not shut down. (Note that this does require an offline backup as a starting point to which any online changes can be applied in the event the database must be restored). An online backup will always take a consistent snapshot, though it might not backup all transactions in progress.

Each transaction in eIndex SPV is saved under one commit command, so the state of the database is always consistent when a backup is performed. The history tables always match the transactions in the current tables and no partial transactions are committed. Even if a transaction is underway at the time of the backup, the database is consistent.

For the most reliable backups, Oracle recommends that you run your Oracle database in ARCHIVELOG mode. ARCHIVELOG mode ensures that your database is protected from both instance and media failure and, because all changes made to the database are saved in a redo log, all database updates are available for recovery rather than just the most recent changes. Online backups are available in this mode.

Offline Backups

If needed, you can perform offline backups of the eIndex SPV database. In this case, you must queue any incoming messages using the JMS IQ Manager and undeploy the eIndex SPV application before beginning the backup. Once the backup is complete, restart the database, redeploy and enable the eIndex SPV application, and then process the messages queued by the JMS IQ Manager.

11.2.2 Database Restoration

In the unlikely event that you need to restore the eIndex SPV database to a previously archived version, you must undeploy the eIndex SPV application prior to performing the restoration to ensure that the application retrieves the correct sequence numbers from the database once it is restored. Any new transactions that occurred after the archived version was created will be lost, but they can be resent through eGate if the JMS IQ Manager is configured to journal all messages.

11.2.3 Archiving

In addition to regular database backups, some of the eIndex SPV database tables can grow very large. For performance reasons, you might want to archive the information in the sbyn_assumedmatch and the sbyn_audit tables.

11.3 Monitoring Day to Day Activity

The following tools are available for finding and correcting errors in runtime components. These should be monitored on a daily basis to ensure your system is running smoothly and error-free.

- **Enterprise Manager Monitor** on page 126
- **Log Files** on page 127
- **Alerts** on page 128

11.3.1 Enterprise Manager Monitor

The Enterprise Manager Monitor (Monitor) allows you to quickly identify problems with components or systems in the Repository framework and, in some cases, to correct the problem.

About the Enterprise Manager Monitor

The Monitor alerts you to the status of components (for example, whether they are running) and allows you to send commands to the components such as start or shut down. From the Monitor, you can double-click on an eIndex SPV application or related Project components to go directly to the problem. The Monitor allows you to filter the list of displayed instances to quickly identify exceptions and to navigate to specific versions of a Service to monitor the progress of each instance. eIndex SPV components cannot be stopped or restarted from the Monitor, but eWays and other associated components can.

The Monitor provides visual cues to let you know when a component needs attention. For example, the Connectivity Map in the Project Explorer displays a flashing red square when a Service becomes inactive. If you configure the Alert Agent or SNMP Agent, you can avoid having to run the Monitor continuously. The agent will notify you when the specified problem occurs.

For more information on using Enterprise Manager Monitor, see the following documents:

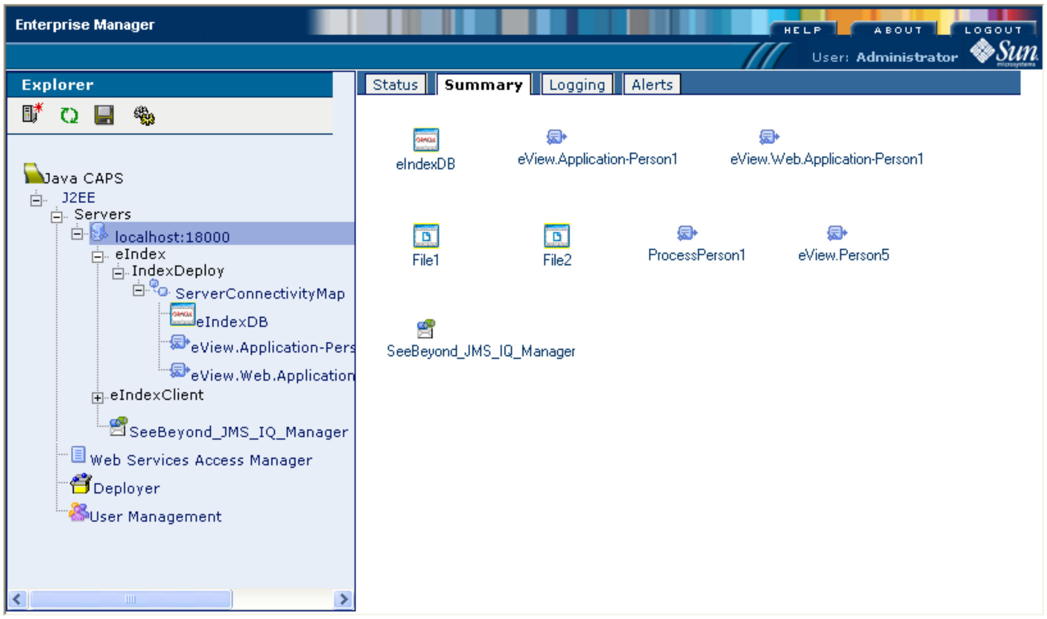
- *Sun SeeBeyond eGate Integrator System Administration Guide*
- *Sun SeeBeyond eGate Integrator JMS Reference Guide*

- *Sun SeeBeyond eInsight Business Process Manager User's Guide*

Enabling Monitoring for eIndex SPV

You can use the Enterprise Manager to monitor most components of an eIndex SPV system, including Collaborations, Business Processes, and eWays. In order to view the special tools for each component type, you must have the Enterprise Manager Plug-in files uploaded and installed for those types. For more information about installing the eView Monitor client, see **"Installing the eView Enterprise Manager Plug-in" on page 34**. For information on installing the plug-in for eWays, eInsight BPM, and other components, see the appropriate user's guide. Figure 47 shows the **Summary** tab of the Monitor for an eIndex SPV server Project and Collaboration Project. You can click on any of the displayed components for more information about their status, alerts, log entries, and so on.

Figure 47 Monitoring eIndex SPV Project Components

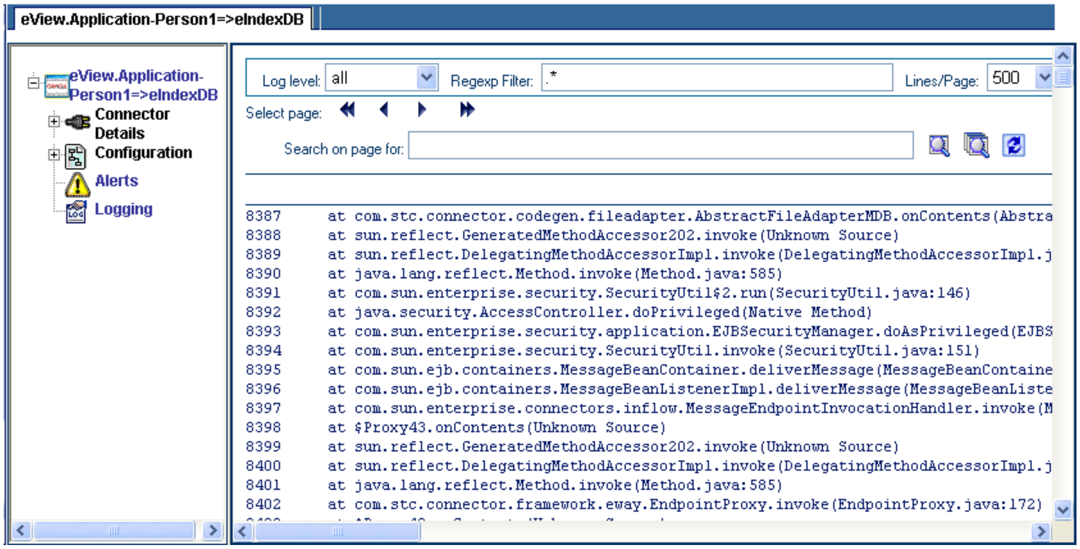


11.3.2 Log Files

When a component or system is not working, errors are written to a log file to help you diagnose the problem. You can specify the level at which events are recorded in the log files. On a daily basis, review the runtime log files for eIndex SPV Project components and examine any messages with a severity level of FATAL, ERROR, or WARN. Periodically, you might want to archive the log file.

Figure 48 shows a log file for the Oracle eWay in the eIndex SPV server Project. For more information on log files, see the *Sun SeeBeyond eGate Integrator System Administration Guide*.

Figure 48 eIndex SPV Database Logging



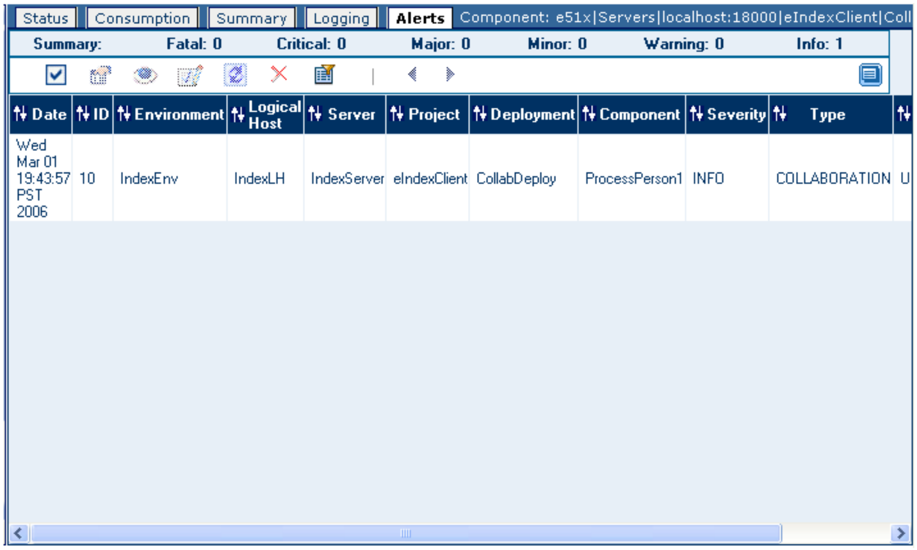
```
8387	at com.stc.connector.codegen.fileadapter.AbstractFileAdapterMDB.onContents(Abstra
8388	at sun.reflect.GeneratedMethodAccessor202.invoke(Unknown Source)
8389	at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.j
8390	at java.lang.reflect.Method.invoke(Method.java:585)
8391	at com.sun.enterprise.security.SecurityUtil$2.run(SecurityUtil.java:146)
8392	at java.security.AccessController.doPrivileged(Native Method)
8393	at com.sun.enterprise.security.application.EJBSecurityManager.doAsPrivileged(EJBS
8394	at com.sun.enterprise.security.SecurityUtil.invoke(SecurityUtil.java:151)
8395	at com.sun.ejb.containers.MessageBeanContainer.deliverMessage(MessageBeanContaine
8396	at com.sun.ejb.containers.MessageBeanListenerImpl.deliverMessage(MessageBeanListe
8397	at com.sun.enterprise.connectors.inflow.MessageEndpointInvocationHandler.invoke(M
8398	at $Proxy43.onContents(Unknown Source)
8399	at sun.reflect.GeneratedMethodAccessor202.invoke(Unknown Source)
8400	at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.j
8401	at java.lang.reflect.Method.invoke(Method.java:585)
8402	at com.stc.connector.framework.eway.EndpointProxy.invoke(EndpointProxy.java:172)
```

11.3.3 Alerts

Alerts are triggered when certain conditions occur in Project components. The condition might be some type of problem that must be corrected, such as when the connection to the database is lost, or it could be simply a warning, such as when a transaction error occurs on the EDM. From the Monitor, you can view component alerts, modify the status of an alert, or delete alerts.

Figure 49 shows an alert for a Collaboration in an eIndex SPV client Project. A list of eIndex SPV alerts appears in Table 9. For more information on alerts, see the *Sun SeeBeyond eGate Integrator System Administration Guide*.

Figure 49 Alert for eIndex SPV Collaboration



Summary: Fatal: 0 Critical: 0 Major: 0 Minor: 0 Warning: 0 Info: 1

Date	ID	Environment	Logical Host	Server	Project	Deployment	Component	Severity	Type	
Wed Mar 01 19:43:57 PST 2006	10	IndexEnv	IndexLH	IndexServer	eIndexClient	CollabDeploy	ProcessPerson1	INFO	COLLABORATION	U

The following table list and describes the alerts generated by eIndex SPV. Most of these alerts are the result of calling specific eIndex SPV methods in Collaborations or Business Processes. Variables in the error message appear in italics. The alert code for all eIndex SPV alerts is "EVIEW-00001".

Table 9 eIndex SPV Alert Messages

Error Message	Cause	Severity Level
com.stc.eindex.ejb.update.UpdateException: OPSException: *message_text*	Generally an Oracle database error occurred and an Oracle error message is generated; for example, SQL Statement: insert into <table> (*columns*) values (*values*) ORA-00001: unique constraint (EVIEW.PK_SBYNSYSTEMOBJECT) violated	Warning
com.stc.eindex.master.ConnectionInvalidException: Failed to get connection.	The connection to the database is down. Make sure the database is running and that the logon information is correct in the data source configuration.	Warning
com.stc.eindex.master.ProcessingException: Inactive system object not found.	A call to activateSystemObject did not find an active system record matching the system, local ID, and status.	Warning
com.stc.eindex.master.ProcessingException: activateEnterpriseObject(): Invalid EUID: *euid*	A null or invalid EUID was specified in a call to activateEnterpriseObject.	Warning
com.stc.eindex.master.ProcessingException: activateEnterpriseObject(): EUID: *euid* does not have inactive status.	A call to activateEnterpriseObject is attempting to activate an EUID that is already active.	Warning
java.lang.NullPointerException: null	This indicates a severe alert. Contact Sun SeeBeyond support for assistance.	Warning
com.stc.eindex.master.ProcessingException: addSystemObject(): system key (*system_code*, *local_ID*) already mapped to EUID: *euid*	A call to addSystemObject is trying to add a system record that already exists in the master index database.	Warning
com.stc.eindex.master.ProcessingException: addSystemObject(): EUID: *euid* does not exist	A call to addSystemObject is trying to add a system record to an EUID that does not exist.	Warning
com.stc.eindex.master.ProcessingException: createEnterpriseObject(): system key (*system_code*, *local_ID*) already mapped to EUID: *euid*	A call to createEnterpriseObject is trying to add an enterprise record with a system record that already exists in the master index database.	Warning
com.stc.eindex.master.ProcessingException: deactivateSystemObject(): system key (*system_code*, *local_ID*) is not active or does not exist	A call to deactivateSystemObject is trying to deactivate a record that is already inactive, or the master index could not find a system object matching the given system and local ID.	Warning
com.stc.eindex.master.ProcessingException: Invalid EUID.	A null or invalid EUID was specified in a call to deactivateEnterpriseObject.	Warning

Table 9 eIndex SPV Alert Messages

Error Message	Cause	Severity Level
com.stc.eindex.master.ProcessingException: deactivateEnterpriseObject(): EUID *euid* does not have active status. Status is: inactive	A call to deactivateEnterpriseObject is trying to deactivate a record that is already inactive.	Warning
com.stc.eindex.master.ProcessingException: undoAssumedMatch(): Record has been modified by another user. EUID has already been merged: *euid*	A call to undoAssumedMatch cannot be completed because the record to be unmatched was already merged with another record.	Warning
com.stc.eindex.assumedmatch.AssumedMatchException: com.stc.eindex.page.PageException: com.stc.eindex.ops.exception.OPSException: OPSException: Child node is null	This is a serious error that generally indicates that data in the sbyn_transaction log is corrupt. Contact Sun SeeBeyond support for assistance.	Warning
com.stc.eindex.master.ProcessingException: undoAssumedMatch(): Record has been modified by another user. Assumed match has already been undone: *assumed_match_id*	A call to undoAssumedMatch cannot be completed because the assumed match was already reversed.	Warning
com.stc.eindex.master.ProcessingException: mergeEnterpriseObject(): Record has been modified by another user. Destination EUID not found: *euid*	The destination EUID specified in a call to mergeEnterpriseObject does not exist, no destination EUID is specified, or the EUIDs specified are already merged.	Warning
com.stc.eindex.master.ProcessingException: mergeEnterpriseObject(): Record has been modified by another user. Source EUID not found: *euid*	The source EUID specified in a call to mergeEnterpriseObject does not exist, no source EUID is specified, or the source EUID specified was already merged into another EUID record.	Warning
com.stc.eindex.master.ProcessingException: EUID must be a selected field.	The EUID is not specified as part of the search options (class SearchOptions). By default, the EUID is specified.	Warning
com.stc.eindex.master.ProcessingException: At least one SystemObject must be populated.	A search was attempted using a system object with no field values, which means there was no criteria on which to search.	Warning
com.stc.eindex.master.ProcessingException: transferSystemObject(): transfer must be between two different EUIDs. Both EUIDs are: *euid*	The EUID specified in a call to transferSystemObject is the same EUID to which the system object already belongs.	Warning
com.stc.eindex.master.ProcessingException: unmergeEnterpriseObject(): Record has been modified by another user. EUID: *euid*	A call to unmergeEnterpriseObject failed because the record to be unmerged was modified by another user before the unmerge transaction was finalized.	Warning

Table 9 eIndex SPV Alert Messages

Error Message	Cause	Severity Level
com.stc.eindex.master.ProcessingException: unmergeEnterpriseObject(): Record has been modified by another user. EUID has already been unmerged: *euid*	A call to unmergeEnterpriseObject failed because the records are already unmerged.	Warning
com.stc.eindex.master.ProcessingException: unmergeSystemObject(): Source system record not found: (*system_code*, *local_ID*)	The source system record specified in a call to unmergeSystemObject is invalid or its status could not be found.	Warning
com.stc.eindex.master.ProcessingException: unmergeSystemObject(): Record has been modified by another user. Source system record has already been deactivated: (*system_code*, *local_ID*)	The source system record specified in a a call to unmergeSystemObject has a status of “inactive” and cannot be unmerged.	Warning
com.stc.eindex.master.ProcessingException: unmergeSystemObject(): Record has been modified by another user. Source system record is not in merged status: (*system_code*, *local_ID*)	The system records specified in a call to unmergeSystemObject have already been unmerged.	Warning
com.stc.eindex.master.ProcessingException: unmergeSystemObject(): Record has been modified by another user. Source system status unrecognized: (*system_code*, *local_ID*)	The status of the source system specified in a call to unmergeSystemObject is invalid.	Warning
com.stc.eindex.master.ProcessingException: unmergeSystemObject(): Destination system record not found: (*system_code*, *local_ID*)	The destination system record specified in a call to unmergeSystemObject is invalid.	Warning
com.stc.eindex.master.ProcessingException: unmergeSystemObject(): no transactions found for LID merge.	The system records specified in a call to unmergeSystemObject were not previously merged.	Warning
com.stc.eindex.master.ProcessingException: updateSystemObject(): SO (*system_code* - *local_ID*) is not Active.	The system record specified by a call to updateSystemObject is not active and cannot be updated.	Warning
com.stc.eindex.master.ProcessingException: mergeSystemObject(): Record has been modified by another user. Source system record not found: (*system_code*, *local_ID*)	The status of the source system record specified in a call to mergeSystemObject could not be found or the source system specified is invalid.	Warning
com.stc.eindex.master.ProcessingException: mergeSystemObject(): Record has been modified by another user. Source system record has already been deactivated: (*system_code*, *local_ID*)	The source system specified in a call to mergeSystemObject has a status of “inactive” and cannot be merged.	Warning

Table 9 eIndex SPV Alert Messages

Error Message	Cause	Severity Level
com.stc.eindex.master.ProcessingException: mergeSystemObject(): Record has been modified by another user. Source system record has already been merged: (*system_code*, *local_ID*)	The source system specified in a call to mergeSystemObject has a status of "merged" (that is, it has already been merged into another record) and it cannot be merged.	Warning
com.stc.eindex.master.ProcessingException: mergeSystemObject(): Record has been modified by another user. Destination system record not found: (*system_code*, *local_ID*)	The status of the destination system record specified in a call to mergeSystemObject could not be found or the system specified is invalid.	Warning
com.stc.eindex.master.ProcessingException: mergeSystemObject(): Record has been modified by another user. Destination system record has already been deactivated: (*system_code*, *local_ID*)	The destination system specified in a call to mergeSystemObject has a status of "inactive" and cannot be merged.	Warning
com.stc.eindex.master.ProcessingException: mergeSystemObject(): Record has been modified by another user. Destination system record has already been merged: (*system_code*, *local_ID*)	The destination system specified in a call to mergeSystemObject has a status of "merged" (that is, it has already been merged into another record) and it cannot be merged.	Warning
com.stc.eindex.master.ProcessingException: mergeSystemObject(): system object keys are equal (*system_code*, *local_ID*)	The system objects specified in a call to mergeSystemObject are the same system object.	Warning

11.4 Implementing Changes to the eIndex SPV Project

After eIndex SPV has been in production, you might need to make changes to your project. For example, if you add a new external system, you need to add that system to the eIndex SPV database and you might need to modify the object structure and OTDs as well as update the application files. Changes occur as the needs of your end users evolve and as additional external systems are added. Do not make changes to the system hastily. Handle changes using the same change management process that was originally used to deploy your project. Applying this same process of planning, configuration, testing, migration, monitoring, and re-evaluation will help ensure successful updates.

11.4.1 Modifying Configuration Files

Over time, you might need to make changes to your configuration files, such as adding fields or objects to the object structure, changing the appearance of the EDM, or fine-tuning the matching process. Whenever you make a change to an eIndex SPV configuration file, you must disable the eIndex SPV server Project, regenerate the application, and then redeploy the Project. In addition, if any Java Collaborations in client Projects reference the eIndex SPV application, you must re-import the regenerated .jar files from the eIndex SPV server Project into the Java Collaboration.

This section provides tips for updating components of the configuration files. In order for any of these changes to take affect, you must regenerate the application and rebuild and redeploy the Project.

Updating the Object Structure

If you make any changes to the object structure, keep the following in mind.

- If you want the new fields or objects to appear on the EDM, make sure to add them to the first section of the Enterprise Data Manager file and to any of the EDM page definitions later in the file (this includes search pages).
- If the new fields require normalization, parsing, or phonetic encoding, define the new structures in the Match Field file.
- If a new field will be used for matching, add it to the blocking query used for match processing as well as to the match string in the Match Field file.
- If the new fields or objects will be included in incoming messages, add them to the inbound OTD structure (the outbound OTD will be updated when you regenerate the application).

Updating Normalization and Standardization Structures

If you define normalization, standardization, or phonetic encoding for fields that are not currently defined in the Match Field file, or if you change existing standardization structures, make sure to do the following.

- Use the appropriate standardization type, domain selector, and field IDs.
- Add the new fields that will store the standardized versions of the original field value to the appropriate objects in the Object Definition file.
- Add new columns to the database to store the standardized field values.

Updating the Match String

If you make changes to the match string, update the database indexes and the blocking query in the Candidate Select file accordingly. For example, if you remove a field from the match string, you might also want to remove that field from the blocking query and database indexes. If you add a field to the match string, add the field to the blocking query and to the appropriate database index to maintain performance.

11.4.2 Modifying Standard Project Components

Whenever changes are made to components of an eIndex SPV Project outside of the eIndex SPV application, such as modifying the Connectivity Map, eWay properties, Collaborations, or OTDs, the eIndex SPV application does not need to be regenerated;

however the Project containing the changed components must be redeployed in order for the changes to take effect.

11.4.3 Modifying the Database

There might be times when you need to modify the eIndex SPV database. For example, you might need to add or modify a stored procedure or index, or you might need to add new external systems. You must modify the database if you add fields or objects to the eIndex SPV object structure; the database should be updated to reflect the new structure. If you make changes to the database, rebuild and redeploy the eIndex SPV server Project to ensure the changes are picked up by the application.

11.4.4 Modifying Security

You can define new users for the database at any time using standard SQL statements to create the type of user you want to define. You can also add new users for the Enterprise Data Manager through the Integration Server User Management function of the Enterprise Manager. Neither of these procedures require any stoppage of the database or of the eIndex SPV application and no redeployment is required.

11.4.5 Modifying the Local ID Format

If you need to modify the local ID format for an external system, regenerate the application after you make the changes and then redeploy the Project. Any Collaborations that reference the eIndex SPV application must also be recompiled and those Projects redeployed. If you extend the length of a local ID past 20 characters, make sure to increase the length of any database columns containing local IDs. Local ID columns are found in the following tables: sbyn_<parent_object>, sbyn_assumedmatch, sbyn_enterprise, sbyn_systemobject, and sbyn_transaction.

Appendix A

Field Notations

The configuration files use specific notations to define a specific field in an enterprise or system object. There are three different type of notations used to specify a specific field or group of fields: ePath, qualified field name, and simple field name. This appendix describes each type of notation.

What’s in This Appendix

A.1 ePath

In Best Record file, an *element path*, called “ePath”, is used to specify the location of a field or list of fields. ePaths are also used in the **StandardizationConfig** element of the Match Field file. An ePath is a sequence of nested nodes in an enterprise record where the most nested element is a data field or a list of data fields. ePaths allow you to retrieve and transform values that are located in the object tree.

ePath strings can be of four basic types:

- **ObjectField** - represents a field defined in the eIndex object structure.
- **ObjectNode** - represents a parent or child object defined in the eIndex object structure.
- **ObjectField List** - a list of references to certain ObjectFields in the eIndex object structure.
- **ObjectNode List** - a list of references to certain ObjectNodes in the eIndex object structure.

A context node is specified when evaluating each ePath expression. The context is considered as the root node of the structure for evaluation.

Syntax

The syntax of an ePath consists of three components: nodes, qualifiers, and fields, as shown below.

```
node{.node{‘[‘qualifier’]’}+}+.field
```

- **Node** - specifies the node type and optionally includes qualifiers to restrict the number of nodes. A node without any qualifier defaults to only the first node of the specified type. Use “node.*” to address a node rather than a field.
- **Qualifier** - restricts the number of nodes addressed at each level. The following qualifiers are allowed:
    - * (asterisk) - denotes all nodes of the specified type.
    - **int** - accesses the node by index.
    - **@keystring= valuestring** - accesses the node using a key-value pair. Only one instance of the node is addressed using keys. If a composite key is defined, then multiple key-value pairs can be separated by a comma in the ePath (for example, **[@key1=value1,@key2=value2]**). The following ePath uses the keystring qualifier and returns the alias where the unique key field type is “Main”. It returns only one alias in a given record.

```
Person.Alias[@type=Main]
```

- **filter=value** - considers only nodes whose field matches the specified value. A subset of nodes is addressed using filters. Multiple filter-value pairs can be separated by a comma (for example, **[filter1=value1, filter2=value2]**). The following ePath uses the filter qualifier and returns all aliases where the last name is “Jones”.

```
Person.Alias[lastname=Jones]
```

- **Field** - designates the field to return, and is in the form of a string.

Example

The following sample illustrates an object structure containing a system object from Site A with a local ID of 111. The object contains a first name, last name, and three addresses. Following the sample, there are several ePath examples that refer to various elements of this object structure along with a description of the data in the sample object structure referred by each ePath.

```
Enterprise
   SystemObject - A 111
      Person
         FirstName
         LastName
         -Address
            AddressType = Home
            Street = 800 Royal Oaks Dr.
            City = Monrovia
            State = CA
            PostalCode = 91016
         -Address
            AddressType = Office
            Street = 181 E. Huntington Dr.
            City = Monrovia
            State = CA
            PostalCode = 91016
         -Address
            AddressType = Billing
            Street = 100 Grand Avenue
            City = El Segundo
            State = CA
```

```
                PostalCode = 90245
```

- **Person.Address.City**
  Equivalent to **Person.Address[0].City**.
- **Person.FirstName** (uses Person as the context)
  Equivalent to **Enterprise.SystemObject[@SystemCode=A, @Lid= 111].Person.FirstName** with Enterprise as the context.
- **Person.Address[@AddressType=Home].City**
  Returns a single ObjectField reference to “Monrovia” (the City field of the home address).
- **Person.Address[City=Monrovia,State=CA].Street**
  Returns a list of ObjectField references: “800 Royal Oaks Dr.”, “181 E. Huntington Dr.” (the street fields for both addresses where the city is Monrovia and the state is CA). Note that a reference to the **Billing** address is not returned.
- **Person.Address[*].Street**
  Returns a list of ObjectField references: “800 Royal Oaks Dr.”, “181 E. Huntington Dr.”, “100 Marine Parkway”. Note that all references to **Street** are returned.
- **Person.Address[2].***
  Addresses the second address object as an ObjectNode instead of an ObjectField.

A.2 Qualified Field Names

The Candidate Select file and the **MatchingConfig** element of the Match Field file use qualified field names to specify the location of a field. This method defines a specific field and is not used to define a list of fields. A qualified field name is a sequence of nested nodes in an enterprise record where the most nested element is a data field. There are two types of qualified field names.

- **Fully qualified field names** - Allows you to define fields within the context of the enterprise object; that is, the field name uses “Enterprise” as the root. These are used in the **MatchingConfig** element of the Match Field file and to specify the fields in a query block in the Candidate Select file.
- **Qualified field names** - Allows you to define fields within the context of the Person object; that is, the field name uses the Person object as the root. These are used in the Candidate Select file to specify the source fields for the blocking query criteria.

Syntax

The syntax of a fully qualified field name is:

```
Enterprise.SystemSBR.<parent_object>.<child_object>.<field_name>
```

where *<parent_object>* refers to the name of the parent object in the index, *<child_object>* refers to the name of the child object that contains the field, and *<field_name>* is the full name of the field. If the parent object contains the field being defined, the child object is not required in the path.

The syntax of a qualified field name is:

```
<parent_object>.<child_object>.<field_name>
```

Example

The following sample illustrates an object structure that could be defined in the Object Definition file. The object contains a Person parent object, and an Address and Phone child object.

```
Person
   FirstName
   LastName
   DateOfBirth
   Gender
   -Address
      AddressType
      StreetAddress
      Street
      City
      State
      PostalCode
   -Phone
      PhoneType
      PhoneNumber
```

The following *fully* qualified field names are valid for the sample structure above.

- **Enterprise.SystemSBR.Person.FirstName**
- **Enterprise.SystemSBR.Person.Address.StreetAddress**
- **Enterprise SystemSBR.Person.Phone.PhoneNumber**

The qualified field names that correspond with the fully qualified names listed above are:

- **Person.FirstName**
- **Person.Address.StreetAddress**
- **Person.Phone.PhoneNumber**

A.3 Simple Field Names

The Enterprise Data Manager file uses simple field names to specify the location of a field that appears on the EDM. These are used in the GUI configuration section of the file. Simple field names define a specific field and are not used to define a list of fields. They include only the field name and the name of the object that contains the field. Simple field names allow you to define fields within the context of an object.

Syntax

The syntax of a simple field name is:

```
<object>.<field_name>
```

where ***<object>*** refers to the name of the object that contains the field being defined and and ***<field_name>*** is the full name of the field.

Example

The following sample illustrates an object structure that could be defined in the Object Definition file. The object contains a Person parent object, and an Address and Phone child object.

```
Person
   FirstName
   LastName
   DateOfBirth
   Gender
   -Address
   AddressType
      StreetAddress
      Street
      City
      State
      PostalCode
   -Phone
      PhoneType
      PhoneNumber
```

The following simple field names are valid for the sample structure above.

- **Person.FirstName**
- **Address.StreetAddress**
- **Phone.PhoneNumber**

Appendix B

The Data Structure

eIndex SPV provides a default data structure that is incorporated into an Object Type Definition (OTD) and into the database structure. If you update the data structure in the Object Definition file and then regenerate the application, the OTD and database scripts are updated accordingly. This appendix describes the default OTD and database structure.

What's in This Chapter

B.1 Object Type Definitions

The inbound OTD in the eIndex SPV sample client Project includes system and local ID fields as well as transactional information fields based on the defined object structure. If incoming messages do not contain transactional information, eIndex SPV applies default values to certain fields (for example, the user ID defaults to "eGate" and the date and time fields default to the date and time that eIndex SPV processes the transaction).

B.1.1 The Default Inbound OTD

This section describes the default format of the data to be inserted into the eIndex SPV database. This format follows the format of the default object structure defined in the Object Definition file of the eIndex SPV Project. You can translate the data from external systems into this format using the Collaborations of the external systems. You can also modify the default OTD (in the eIndexClient Project) to use a different format if needed.

Formatting Guidelines

The default OTD contains two primary nodes: EVENT and REC. The EVENT node contains transactional information, and the REC node contains information about the person. The REC node structure should be based on the object structure defined in the Object Definition file. In order to comply with the sample OTD, the format of the data being transmitted into the eIndex SPV database needs to be reformatted as follows:

- Each record consists of two types of information: Transaction details and record details. These are delimited by a pair of angled brackets (<>).
- The records must be delimited. Each segment is separated by an ampersand (&), each field is separated by a pipe (|), and each sub-field is separated by a caret (^). When a field can repeat, each repetition is separated by a tilde (~). There are four segments, which appear as follows:

```
EVNT segment <> ID segment & DEMO Segment & AUX segment <>
```

For information about each field, see Tables 10 and 11. Note that most fields in eIndex SPV are configurable, so you are not restricted to the fields listed in the table.

Note: *The OTD should be reviewed for each site to simplify where applicable. For example, fields for which the sending systems do not collect data can be removed.*

Transaction Details

The following table describes the transaction details portion of the inbound OTD structure. When a field is required, that means the field must exist in the inbound message but it can be empty. Fields that cannot be null are determined by the object structure in the Object Definition file of the eIndex SPV Project.

Table 10 Default Inbound Message Structure - Transaction Information

Field	Description	Repeating?	Required?
SegmentId	“EVNT”	No	Yes
MessageId	Always leave this field blank. eIndex SPV determines the message ID.	No	Yes
EventTypeCode	Always leave this field blank. eIndex SPV automatically determines the transaction type.	No	Yes
UserId	The user ID of the user who performed the transaction.	No	Yes
AssigningSystem	The system code for the system on which the transaction was performed.	No	Yes
Source	The source code of the application on which the transaction was performed.	No	Yes
Department	The department code for the transaction.	No	Yes
TerminalId	The ID of the terminal on which the transaction was performed.	No	Yes
DateOfEvent	The date the transaction occurred in the format **YYYY-MM-DD**.	No	Yes
TimeOfEvent	The time the transaction occurred in the format **HH:MM:SS** using a 24-hour clock (for example, 23:59:59).	No	Yes

Record Details

The following table describes the main message portion of the inbound OTD structure.

Table 11 Default Inbound Message Structure - Record Information

Field	Description	Repeating?	Required?
SegmentId	**"ID"**	**No**	**Yes**
EUID	Leave this field blank. eIndex SPV determines the EUID after it processes the message.	No	Yes
LocalId	The object's local identifier in a specified system. This field has two sub-fields: ♦ **Lid**: The local ID assigned to the patient in the system of origin. ♦ **System**: The processing code of the system of origin. For example, if the local ID 12345 was assigned within the system SeeBeyond (with a processing code of SBYN), this field should appear as follows: |12345^SBYN|	No	Yes (both sub-fields are required)
NonUniqueId	The patient's auxiliary identifiers. This node contains a repeating field, "NUI", that contains two sub-fields: ♦ **Id**: An auxiliary ID of the specified type. ♦ **Type**: The type of auxiliary ID specified. For example, if a patient's account number is 003487 and the type code for account is ACCT, this field should appear as follows: |003487^ACCT| **Note:** *If auxiliary ID information is included, then both an ID and an ID type must be included.*	Yes (the NUI field is repeating)	Yes (the NUI field is required, but the sub-fields are not)
SegmentId	**"DEMO"**	**No**	**Yes**
PersonCategory	The code for the person category to which the patient is assigned.	No	Yes
PersonName	The name of the patient. This field consists of five sub-fields. ♦ **LastName**: The patient's last name. ♦ **FirstName**: The patient's first name. ♦ **MiddleName**: The patient's middle name. ♦ **Title**: The processing code of the patient's title. ♦ **Suffix**: The processing code of the patient's suffix to their name. **Note:** *The last, first, and middle names are required, but the title and suffix are not.*	No	Yes

Table 11 Default Inbound Message Structure - Record Information

Field	Description	Repeating?	Required?
PersonAlias	The alias names for the patient. This nodes consists of a repeating field, “PA”, that includes three sub-fields: ♦ **LastName**: The alias last name. ♦ **FirstName**: The alias first name. ♦ **MiddleName**: The middle name of the alias.	Yes (the PA field is repeating)	Yes (the PA field is required, but the sub-fields are not)
AltName	Alternative names associated with this patient. This field consists of five sub-fields: ♦ **MaidenName**: The patient's maiden name. ♦ **SpouseName**: The name of the patient's spouse. ♦ **MotherName**: The name of the patient's mother. ♦ **FatherName**: The name of the patient's father. ♦ **MotherMaiden**: The maiden name of the patient's mother.	No	Yes (the field is required, but the sub-fields are not)
DateOfBirth	The patient's date of birth, in **YYYY-MM-DD** format.	No	Yes
TimeOfBirth	The time the patient was born, in **HH:MM:SS** format on a 24-hour clock.	No	Yes
Sex	The table code of the patient's gender.	No	Yes
MaritalStatus	The table code of the patient's marital status.	No	Yes
SSN	The patient's social security number, with no punctuation.	No	Yes
DriverLicense	The driver license details for the patient. This has two sub-fields: ♦ **StateCountry**: The state or country that issued the drivers license. ♦ **LicenseNumber**: The driver license number.	No	Yes (the field is required, but the sub-fields are not)
Race	The table code of the patient's race.	No	Yes
EthnicGroup	The table code of the patient's ethnic group.	No	Yes
Nationality	The table code of the patient's nationality.	No	Yes
Religion	The table code of the patient's religion.	No	Yes
Language	The table code of the language spoken by the patient.	No	Yes

Table 11 Default Inbound Message Structure - Record Information

Field	Description	Repeating?	Required?
Death	Death information about the patient. This field consists of three sub-fields: ♦ **DeathFlag**: An indicator of whether the patient is deceased. Should be Y if deceased. ♦ **DateOfDeath**: If deceased, the date of death in **YYYY-MM-DD** format. ♦ **DeathCertificateNumber**: The ID number on the death certificate.	No	Yes (the field is required, but the sub-fields are not)
BirthPlace	The location in which the patient was born. This field consists of three sub-fields: ♦ **BirthCity**: The city in which the patient was born. ♦ **BirthState**: The state in which the patient was born. ♦ **BirthCountry**: The processing code of the country in which the patient was born.	No	Yes (the field is required, but the sub-fields are not)
VIP	The table code of the patient's VIP status.	No	Yes
VeteranStatus	The table code of the patient's veteran status.	No	Yes
Military	The military details for the patient. This field consists of three sub-fields: ♦ **MilitaryStatus**: The code of the patient's military status. ♦ **RankGrade**: The patient's military rank or grade. ♦ **MilitaryBranch**: The military branch in which the patient has served.	No	Yes (the field is required, but the sub-fields are not)
Citizenship	The citizenship for the patient.	No	Yes
Pension	The pension details for the patient. This field consists of two sub-fields: ♦ **PensionNumber**: The patient's pension card number. ♦ **ExpirationDate**: The expiration date of the pension card in **YYYY-MM-DD** format.	No	Yes (the field is required, but the sub-fields are not)
RepatriationNumber	The patient's repatriation number.	No	Yes
DistrictOfResidence	The code of the district of residence in which the patient resides.	No	Yes
LgaCode	The LGA code for the patient.	No	Yes

Table 11 Default Inbound Message Structure - Record Information

Field	Description	Repeating?	Required?
Address	Address information for the patient. This node consists of one field, "ADDR", that includes ten sub-fields: ♦ **AddressType**: The table code for the type of address. ♦ **Street1**: The first line of the street address. ♦ **Street2**: The second line of the street address. ♦ **Street3**: The third line of the street address. ♦ **Street4**: The fourth line of the street address. ♦ **City**: The city or suburb of the address. ♦ state_or_province: State or province ♦ **Zip**: The zip code of the address. ♦ **ZipExt**: The zip code extension of the address. ♦ **County**: The table code of the county in which the address is located. ♦ **Country**: The table code of the address's country. **Note:** *If address information is included in a message, by default the* **AddressType** *and* **Street1** *fields are required. Any other required fields are determined by the Object Definition file.*	Yes (the ADDR field is repeating)	Yes (the field is required, but the sub-fields are not)
Phone	Telephone information for the patient. This node consists of one field, "PH", that includes three sub-fields: ♦ **PhoneType**: The table code of the telephone type. ♦ **PhoneNumber**: The telephone number, with no punctuation characters. ♦ **PhoneExt**: The extension to the telephone number. *Note: If telephone information is included in a message, the* **Type** *and* **PhoneNumber** *fields must be present for each telephone number.*	Yes (the PH field is repeating)	Yes (the field is required, but the sub-fields are not)
SegmentId	**"AUX"**	**No**	**No**
Class (CL)	This field includes five miscellaneous sub-fields that can contain strings up to 20-characters.	Yes (maximum of five)	Yes (the field is required if there is an AUX segment, but the sub-fields are not)

Table 11 Default Inbound Message Structure - Record Information

Field	Description	Repeating?	Required?
String (STR)	Additional strings for site-specific purposes. This field contains 10 sub-fields. The first six are a maximum of 40 characters. Sub-fields seven to nine are a maximum of 100 characters. The tenth sub-field is a maximum of 255 characters.	Yes (maximum of ten)	Yes (see above)
Date (DT)	This field includes five miscellaneous date sub-fields in **YYYY-MM-DD** format.	Yes (maximum of five)	Yes (see above)

Sample Inbound Message

Below is a sample data record that follows the default delimited format described in the previous tables.

```
EVNT|||JJONES|CBMC|CBMC|||2003-06-15|10:20:24<>
ID||239487209^CBMC|23438742^ACCT&DEMO|P|WARREN^ELIZABETH^JUNE
^PHD^|MILLER^ELIZABETH^J|MILLER^ANDREW^JULIE^MARK^MARTIN|19
60-05-14|15:01:08|F|M|555-44-4555|^|W|28||AG|ENGL|^^|^^|N|N|^^|USA|
^||||H^2347 SHORELINE DRIVE^UNIT 3^^^SHEFFIELD^CT^09877^^ CAPE
BURR^UNST~O^1490 WAYFIELD ROAD^FLOOR 5^SUITE 519^^CAPE
BURR^CT^09877^^^UNST|CH^9895557811^~CB^9895553214^1212&AUX|~~~~|
STANDARD MEMBERSHIP~~~~~~~~~~|1999-09-12~2000-12-15~~~<>
```

B.1.2 The Default Outbound OTD

This section describes the default format of the data published by eIndex SPV. This format follows the format of the default object structure defined in the Object Definition file of the eIndex SPV Project. You can translate the data from this format into the format required by external systems using the Collaborations of the external systems. You can also modify the default OTD to use a different format if needed. The outbound OTD is in the eIndex Project and is named “OUTPerson”.

In addition to the data and transaction fields, the outbound OTD provides the following standard OTD methods:

- marshal
- marshalToBytes
- marshalToString
- reset
- unmarshal
- unmarshalFromBytes
- unmarshalFromString

Formatting Guidelines

The default OTD contains two primary nodes: OutMsg and SBR. The OutMsg node contains the transaction type and ID, and the SBR node contains transaction information, patient information, and a set of OTD methods. The SBR node structure should be based on the object structure defined in the Object Definition file.

For information about each field in the default configuration, see Table 12 and Table 13. Note that most fields in eIndex SPV are configurable, so you are not restricted to the fields listed in the table.

Note: *The OTD should be reviewed for each site to simplify where applicable. For example, fields for which the sending systems do not collect data can be removed.*

Transaction ID

The following table describes the OutMsg portion of the outbound OTD structure. When a field is required, the field must exist in the outbound message but it can be empty. Fields that cannot be null are determined by the object structure in the Object Definition file of the eIndex SPV Project.

Table 12 Default Outbound Message Structure - Transaction ID

Field	Description	Repeating?	Required?
Event	A code indicating the type of transaction that occurred. This is generated by eIndex SPV.	No	Yes
ID	The eIndex SPV transaction ID for the transaction.	No	Yes

SBR Information

Table 13 describes the SBR portion of the outbound OTD structure. When a field is required, the field must exist in the outbound message but it can be empty. Fields that cannot be null are determined by the object structure in the Object Definition file of the eIndex SPV Project.

Table 13 Default Outbound Message Structure - SBR Information

Field	Description	Repeating?	Required?
EUID	The EUID of the enterprise record affected by the transaction.	No	Yes
Status	The status of the enterprise record.	No	No
CreateFunction	The type of transaction	No	No
CreateUser	The user ID of the user who performed the transaction.	No	No
UpdateSystem	The system code for the system on which the transaction was originally performed.	No	No
ChildType	The name of the parent object	No	No
CreateSystem	The department code for the transaction.	No	No

Table 13 Default Outbound Message Structure - SBR Information

Field	Description	Repeating?	Required?
UpdateDate	The date the transaction occurred.	No	No
UpdateTime	The time the transaction occurred using a 24-hour clock (for example, 23:59:59).	No	No
UpdateFunction	The type of function that updated the record, if any.	No	No
RevisionNumber	The revision number of the record's SBR.	No	No
UpdateUser	The user ID of the person who updated the record, if any.	No	No
SystemObject Node	The local ID and system pairs associated with the record, along with the status of each pair.	No	No
SystemCode	The processing code of the system associated with the local ID.	No	Yes
LocalId	The object's local identifier in the specified system.	No	Yes
Status	The status of the local ID and system code pair.	No	No
Person Node	The single best record for the patient.	No	Yes
PersonId	A unique identifier for the record generated by eIndex SPV.	No	No
PersonCatCode	The code for the person category to which the patient is assigned.	No	No
LastName	The patient's last name.	No	Yes
FirstName	The patient's first name.	No	Yes
MiddleName	The patient's middle name.	No	No
Suffix	The suffix to the patient's name.	No	No
Title	The patient's title.	No	No
DOB	The patient's date of birth.	No	Yes
Death	An indicator of whether the patient is deceased.	No	No
Gender	The table code of the patient's gender.	No	Yes
MStatus	The table code of the patient's marital status.	No	No
SSN	The patient's social security number.	No	No
Race	The table code of the patient's race.	No	No
Ethnic	The table code of the patient's ethnic group.	No	No
Religion	The table code of the patient's religion.	No	No
Language	The table code of the language spoken by the patient.	No	No
SpouseName	The name of the patient's spouse.	No	No

Table 13 Default Outbound Message Structure - SBR Information

Field	Description	Repeating?	Required?
MotherName	The name of the patient’s mother.	No	No
MotherMN	The maiden name of the patient’s mother.	No	No
FatherName	The name of the patient’s father.	No	No
Maiden	The patient’s maiden name.	No	No
PobCity	The city in which the patient was born.	No	No
PobState	The state in which the patient was born.	No	No
PobCountry	The processing code of the country in which the patient was born.	No	No
VIP	The table code of the patient's VIP status.	No	No
VeteranStatus	The table code of the patient's veteran status.	No	No
FnamePhoneticCode	The phonetic code of the patient’s first name.	No	Yes
LnamePhoneticCode	The phonetic code of the patient’s last name.	No	Yes
MnamePhoneticCode	The phonetic code of the patient’s middle name.	No	No
MotherMNPhonetic Code	The phonetic code of the patient’s mother’s maiden name.	No	No
MaidenPhoneticCode	The phonetic code of the patient’s maiden name.	No	No
SpousePhoneticCode	The phonetic code of the patient’s spouse’s name.	No	No
MotherPhoneticCode	The phonetic code of the of the patient’s mother’s name.	No	No
FatherPhoneticCode	The phonetic code of the patient’s father’s name.	No	No
DriversLicense	The patient’s drivers license number.	No	No
DriversLicenseSt	The state in which the patient’s drivers license was issued	No	No
Dod	The patient’s date of death, if deceased.	No	No
DeathCertificate	The identification number on the patient’s death certificate.	No	No
Nationality	The table code of the patient’s nationality.	No	No
Citizenship	The table code of the patient’s country of citizenship.	No	No
PensionNo	The patient's pension card number.	No	No
PensionExpDate	The expiration date of the patient’s pension card.	No	No
RepatriationNumber	The patient's repatriation number.	No	No

Table 13 Default Outbound Message Structure - SBR Information

Field	Description	Repeating?	Required?
DistrictOfResidence	The code of the district of residence in which the patient resides.	No	No
LgaCode	The LGA code for the patient.	No	No
MilitaryBranch	The branch of the military in which the patient has served.	No	No
MilitaryRank	The patient's military rank or grade.	No	No
MilitaryStatus	The table code of the patient's military status.	No	No
Class1 through Class5	Five miscellaneous sub-fields that can contain strings up to 20-characters.	No	No
String1 through String10	Additional strings for site-specific purposes. The first six fields are a maximum of 40 characters. Fields seven to nine are a maximum of 100 characters. The tenth field is a maximum of 255 characters.	No	No
Date1 through date5	Additional date fields for site-specific purposes.	No	No
StdFirstName	The standardized version of the patient's first name	No	Yes
StdLastName	The standardized version of the patient's last name.	No	Yes
StdMiddleName	The standardized version of the patient's middle name.	No	Yes
Phone	The patients telephone information. This node contains the following non-repeating fields. An asterisk next to a field indicates it is required. ♦ **PhoneId**: The unique identification number assigned to this phone record by eIndex SPV. ♦ ***PhoneType**: The table code of the telephone type. ♦ ***Phone**: The telephone number. ♦ **PhoneExt**: The extension to the telephone number.	Yes	No

Table 13 Default Outbound Message Structure - SBR Information

Field	Description	Repeating?	Required?
Alias	The alias names for the patient. This node consists the following non-repeating fields. An asterisk next to a field name indicates that it is required if an alias record exists. ♦ **AliasId**: The unique identification number assigned to this alias record by eIndex SPV. ♦ ***LastName**: The alias last name. ♦ ***FirstName**: The alias first name. ♦ **MiddleName**: The alias middle name . ♦ ***LnamePhoneticCode**: The phonetic code of the alias last name. ♦ ***FnamePhoneticCode**: The phonetic code of the alias first name. ♦ **MnamePhoneticCode**: The phonetic code of the alias middle name. ♦ ***StdFirstName**: The standardized version of the alias first name. ♦ ***StdLastName**: The standardized version of the alias last name. ♦ **StdMiddleName**: The standardized version of the alias middle name.	Yes	No

Table 13 Default Outbound Message Structure - SBR Information

Field	Description	Repeating?	Required?
Address	Address information for the patient. This node consists of the following non-repeating fields. An asterisk next to a field indicates it is required. ♦ **AddressId**: The unique identification number assigned to this address record by eIndex SPV. ♦ ***AddressType**: The table code for the type of address. ♦ ***AddressLine1**: The first line of the street address. ♦ **AddressLine2**: The second line of the street address. ♦ **AddressLine3**: The third line of the street address. ♦ **AddressLine4**: The fourth line of the street address. ♦ ***City**: The city or suburb of the address. ♦ **StateCode**: The state or province of the address. ♦ ***PostalCode**: The postal code of the address. ♦ **PostalCodeExt**: The postal code extension of the address. ♦ **County**: The table code of the county in which the address is located. ♦ **Country**: The table code of the address's country. ♦ **HouseNumber**: The standardized house number of the street address. ♦ **StreetDir**: The standardized street direction of the street address. ♦ **StreetName**: The standardized street name of the street address. ♦ **StreetNamePhonetic**: The phonetic street name of the street address. ♦ **StreetType**: The standardized street type of the street address.	Yes	No
AuxId	The patient's auxiliary identifiers. This node contains the following non-repeating fields. An asterisk next to a field indicates it is required. ♦ **AuxIdId**: The unique identification number assigned to this auxiliary ID record by eIndex SPV. ♦ ***AuxIdDef**: The table code for the type of auxiliary ID specified. ♦ ***Id**: An auxiliary ID of the specified type.	Yes	No

Table 13 Default Outbound Message Structure - SBR Information

Field	Description	Repeating?	Required?
Comment	The comments associated with the patient's record. This node contains the following non-repeating fields. An asterisk next to a field indicates it is required. ♦ **CommentId**: The unique identification number assigned to this comment by eIndex SPV. ♦ ***CommentCode**: The unique ID of the comment. ♦ ***EnterDate**: The date the comment was created. ♦ ***CommentText**: The text of the comment.	Yes	No

Sample Outbound Message

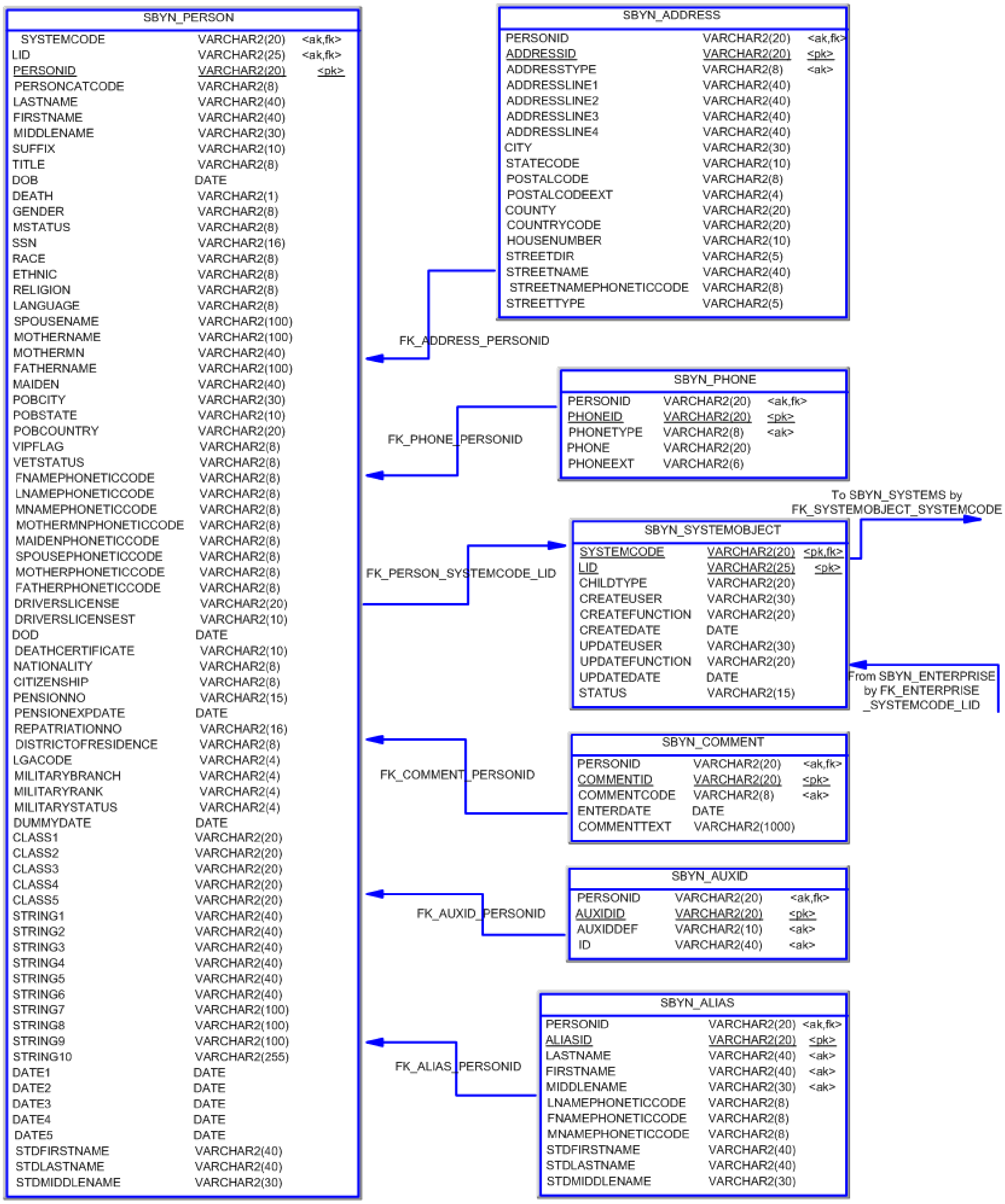
The following text is a sample outbound message for eIndex SPV based on the default configuration. Your outbound messages might appear differently depending on how you configure the client Project connectivity components.

```
<?xml version="1.0" encoding="UTF-8"?>
<OutMsg Event="UPD" ID="00000000000000044005">
<SBR EUID="1000008001"  Status="active" CreateFunction="Add"
ChildType="Person" CreateSystem="System" UpdateFunction="Update"
RevisionNumber="5" CreateUser="egate" UpdateSystem="System"
UpdateDateTime="12/16/2003 17:40:44" CreateDateTime="12/16/2003
17:36:58" UpdateUser="egate">
<SystemObject SystemCode="CBMC" LID="434900094" Status="active">
</SystemObject>
<Person PersonId="00000000000000017000" PersonCatCode="PT"
LastName="WRAND" FirstName="ELIZABETH" MiddleName="SU" Suffix=""
Title="PHD" DOB="12/12/1972 00:00:00" Death="" Gender="F" MStatus="M"
SSN="555665555" Race="B" Ethnic="23" Religion="AG" Language="ENGL"
SpouseName="MARCUS" MotherName="TONIA" MotherMN="FLEMING"
FatherName="JOSHUA" Maiden="TERI" PobCity="KINGSTON" PobState=""
PobCountry="JAMAICA" VIPFlag="N" VetStatus="N"
FnamePhoneticCode="E421" LnamePhoneticCode="RAN"
MnamePhoneticCode="S250" MotherMNPhoneticCode="FLANANG"
MaidenPhoneticCode="TAR" SpousePhoneticCode="M622"
MotherPhoneticCode="T500" FatherPhoneticCode="J200"
DriversLicense="CT111333111" DriversLicenseSt="CT" Dod=""
DeathCertificate="" Nationality="USA" Citizenship="USA" PensionNo=""
PensionExpDate="" RepatriationNo="" DistrictOfResidence="" LgaCode=""
MilitaryBranch="NONE" MilitaryRank="NONE" MilitaryStatus="NONE"
DummyDate="" Class1="" Class2="" Class3="" Class4="" Class5=""
String1="ADMINISTRATION" String2="LEVEL 5" String3="EWRAY@HERE.MED"
String4="" String5="" String6="" String7="" String8="" String9=""
String10="" Date1="12/15/1995 00:00:00" Date2="12/31/2005 00:00:00"
Date3="" Date4="" Date5="" StdFirstName="ELIZABETH"
StdLastName="WRAND" StdMiddleName="SUSAN">
<Phone PhoneId="00000000000000011001" PhoneType="CC"
Phone="9895558768" PhoneExt="">
</Phone>
<Phone PhoneId="00000000000000011000" PhoneType="CH"
Phone="9895554687" PhoneExt="">
</Phone>
```

```
<Alias AliasId="00000000000000016001" LastName="TERI"
FirstName="ELIZABETH" MiddleName="SU" LnamePhoneticCode="TAR"
FnamePhoneticCode="E421" MnamePhoneticCode="S250"
StdFirstName="ELIZABETH" StdLastName="TERI" StdMiddleName="SUSAN">
</Alias>
<Address AddressId="00000000000000011001" AddressType="H"
AddressLine1="1220 BLOSSOM STREET" AddressLine2="UNIT 12"
AddressLine3="" AddressLine4="" City="SHEFFIELD" StateCode="CT"
PostalCode="09877" PostalCodeExt="" County="CAPEBURR"
CountryCode="UNST" HouseNumber="1220" StreetDir=""
StreetName="BLOSSOM" StreetNamePhoneticCode="BLASAN" StreetType="St">
</Address>
<AuxId AuxIdId="00000000000000010000" AuxIdDef="ACCT" Id="1155447">
</AuxId>
<Comment CommentId="00000000000000009000" CommentCode="1A"
EnterDate="12/12/2003 00:00:00" CommentText="UPDATED CLEARANCE TO
LEVEL 5">
</Comment>
</Person>
</SBR>
</OutMsg>
```

B.2 The Database Structure

The eIndex SPV database contains several tables that are standard to all master index databases built on the eView Studio platform. However, the tables that contain the patient information generated by external systems are based on the defined object structure. The following diagrams illustrate the database structure as defined in the default configuration of eIndex SPV. Your database might differ based on any changes made to the object structure.



SBYN_PERSON		
SYSTEMCODE	VARCHAR2(20)	<ak,fk>
LID	VARCHAR2(25)	<ak,fk>
PERSONID	VARCHAR2(20)	<pk>
PERSONCATCODE	VARCHAR2(8)	
LASTNAME	VARCHAR2(40)	
FIRSTNAME	VARCHAR2(40)	
MIDDLENAME	VARCHAR2(30)	
SUFFIX	VARCHAR2(10)	
TITLE	VARCHAR2(8)	
DOB	DATE	
DEATH	VARCHAR2(1)	
GENDER	VARCHAR2(8)	
MSTATUS	VARCHAR2(8)	
SSN	VARCHAR2(16)	
RACE	VARCHAR2(8)	
ETHNIC	VARCHAR2(8)	
RELIGION	VARCHAR2(8)	
LANGUAGE	VARCHAR2(8)	
SPOUSENAME	VARCHAR2(100)	
MOTHERNAME	VARCHAR2(100)	
MOTHERMN	VARCHAR2(40)	
FATHERNAME	VARCHAR2(100)	
MAIDEN	VARCHAR2(40)	
POBCITY	VARCHAR2(30)	
POBSTATE	VARCHAR2(10)	
POBCOUNTRY	VARCHAR2(20)	
VIPFLAG	VARCHAR2(8)	
VETSTATUS	VARCHAR2(8)	
FNAMEPHONETICCODE	VARCHAR2(8)	
LNAMEPHONETICCODE	VARCHAR2(8)	
MNAMEPHONETICCODE	VARCHAR2(8)	
MOTHERMNPHONETICCODE	VARCHAR2(8)	
MAIDENPHONETICCODE	VARCHAR2(8)	
SPOUSEPHONETICCODE	VARCHAR2(8)	
MOTHERPHONETICCODE	VARCHAR2(8)	
FATHERPHONETICCODE	VARCHAR2(8)	
DRIVERSLICENSE	VARCHAR2(20)	
DRIVERSLICENSEST	VARCHAR2(10)	
DOD	DATE	
DEATHCERTIFICATE	VARCHAR2(10)	
NATIONALITY	VARCHAR2(8)	
CITIZENSHIP	VARCHAR2(8)	
PENSIONNO	VARCHAR2(15)	
PENSIONEXPDATE	DATE	
REPATRIATIONNO	VARCHAR2(16)	
DISTRICTOFRESIDENCE	VARCHAR2(8)	
LGACODE	VARCHAR2(4)	
MILITARYBRANCH	VARCHAR2(4)	
MILITARYRANK	VARCHAR2(4)	
MILITARYSTATUS	VARCHAR2(4)	
DUMMYDATE	DATE	
CLASS1	VARCHAR2(20)	
CLASS2	VARCHAR2(20)	
CLASS3	VARCHAR2(20)	
CLASS4	VARCHAR2(20)	
CLASS5	VARCHAR2(20)	
STRING1	VARCHAR2(40)	
STRING2	VARCHAR2(40)	
STRING3	VARCHAR2(40)	
STRING4	VARCHAR2(40)	
STRING5	VARCHAR2(40)	
STRING6	VARCHAR2(40)	
STRING7	VARCHAR2(100)	
STRING8	VARCHAR2(100)	
STRING9	VARCHAR2(100)	
STRING10	VARCHAR2(255)	
DATE1	DATE	
DATE2	DATE	
DATE3	DATE	
DATE4	DATE	
DATE5	DATE	
STDFIRSTNAME	VARCHAR2(40)	
STDLASTNAME	VARCHAR2(40)	
STDMIDDLENAME	VARCHAR2(30)	

SBYN_ADDRESS		
PERSONID	VARCHAR2(20)	<ak,fk>
ADDRESSID	VARCHAR2(20)	<pk>
ADDRESSTYPE	VARCHAR2(8)	<ak>
ADDRESSLINE1	VARCHAR2(40)	
ADDRESSLINE2	VARCHAR2(40)	
ADDRESSLINE3	VARCHAR2(40)	
ADDRESSLINE4	VARCHAR2(40)	
CITY	VARCHAR2(30)	
STATECODE	VARCHAR2(10)	
POSTALCODE	VARCHAR2(8)	
POSTALCODEEXT	VARCHAR2(4)	
COUNTY	VARCHAR2(20)	
COUNTRYCODE	VARCHAR2(20)	
HOUSENUMBER	VARCHAR2(10)	
STREETDIR	VARCHAR2(5)	
STREETNAME	VARCHAR2(40)	
STREETNAMEPHONETICCODE	VARCHAR2(8)	
STREETTYPE	VARCHAR2(5)	

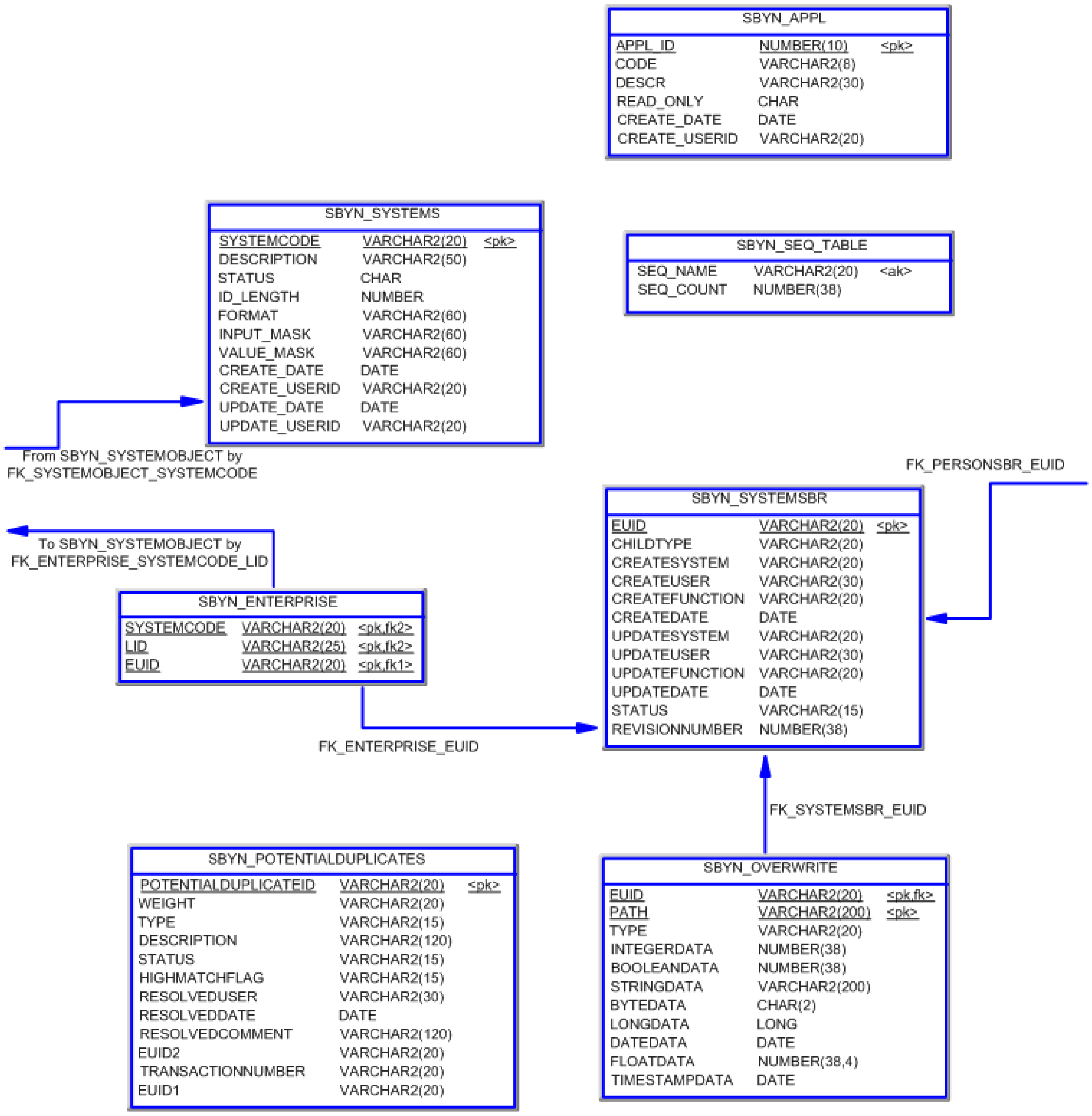
SBYN_PHONE		
PERSONID	VARCHAR2(20)	<ak,fk>
PHONEID	VARCHAR2(20)	<pk>
PHONETYPE	VARCHAR2(8)	<ak>
PHONE	VARCHAR2(20)	
PHONEEXT	VARCHAR2(6)	

SBYN_SYSTEMOBJECT		
SYSTEMCODE	VARCHAR2(20)	<pk,fk>
LID	VARCHAR2(25)	<pk>
CHILDTYPE	VARCHAR2(20)	
CREATEUSER	VARCHAR2(30)	
CREATEFUNCTION	VARCHAR2(20)	
CREATEDATE	DATE	
UPDATEUSER	VARCHAR2(30)	
UPDATEFUNCTION	VARCHAR2(20)	
UPDATEDATE	DATE	
STATUS	VARCHAR2(15)	

SBYN_COMMENT		
PERSONID	VARCHAR2(20)	<ak,fk>
COMMENTID	VARCHAR2(20)	<pk>
COMMENTCODE	VARCHAR2(8)	<ak>
ENTERDATE	DATE	
COMMENTTEXT	VARCHAR2(1000)	

SBYN_AUXID		
PERSONID	VARCHAR2(20)	<ak,fk>
AUXIDID	VARCHAR2(20)	<pk>
AUXIDDEF	VARCHAR2(10)	<ak>
ID	VARCHAR2(40)	<ak>

SBYN_ALIAS		
PERSONID	VARCHAR2(20)	<ak,fk>
ALIASID	VARCHAR2(20)	<pk>
LASTNAME	VARCHAR2(40)	<ak>
FIRSTNAME	VARCHAR2(40)	<ak>
MIDDLENAME	VARCHAR2(30)	<ak>
LNAMEPHONETICCODE	VARCHAR2(8)	
FNAMEPHONETICCODE	VARCHAR2(8)	
MNAMEPHONETICCODE	VARCHAR2(8)	
STDFIRSTNAME	VARCHAR2(40)	
STDLASTNAME	VARCHAR2(40)	
STDMIDDLENAME	VARCHAR2(30)	



SBYN_APPL		
APPL_ID	NUMBER(10)	<pk>
CODE	VARCHAR2(8)	
DESCR	VARCHAR2(30)	
READ_ONLY	CHAR	
CREATE_DATE	DATE	
CREATE_USERID	VARCHAR2(20)	

SBYN_SYSTEMS		
SYSTEMCODE	VARCHAR2(20)	<pk>
DESCRIPTION	VARCHAR2(50)	
STATUS	CHAR	
ID_LENGTH	NUMBER	
FORMAT	VARCHAR2(60)	
INPUT_MASK	VARCHAR2(60)	
VALUE_MASK	VARCHAR2(60)	
CREATE_DATE	DATE	
CREATE_USERID	VARCHAR2(20)	
UPDATE_DATE	DATE	
UPDATE_USERID	VARCHAR2(20)	

SBYN_SEQ_TABLE		
SEQ_NAME	VARCHAR2(20)	<ak>
SEQ_COUNT	NUMBER(38)	

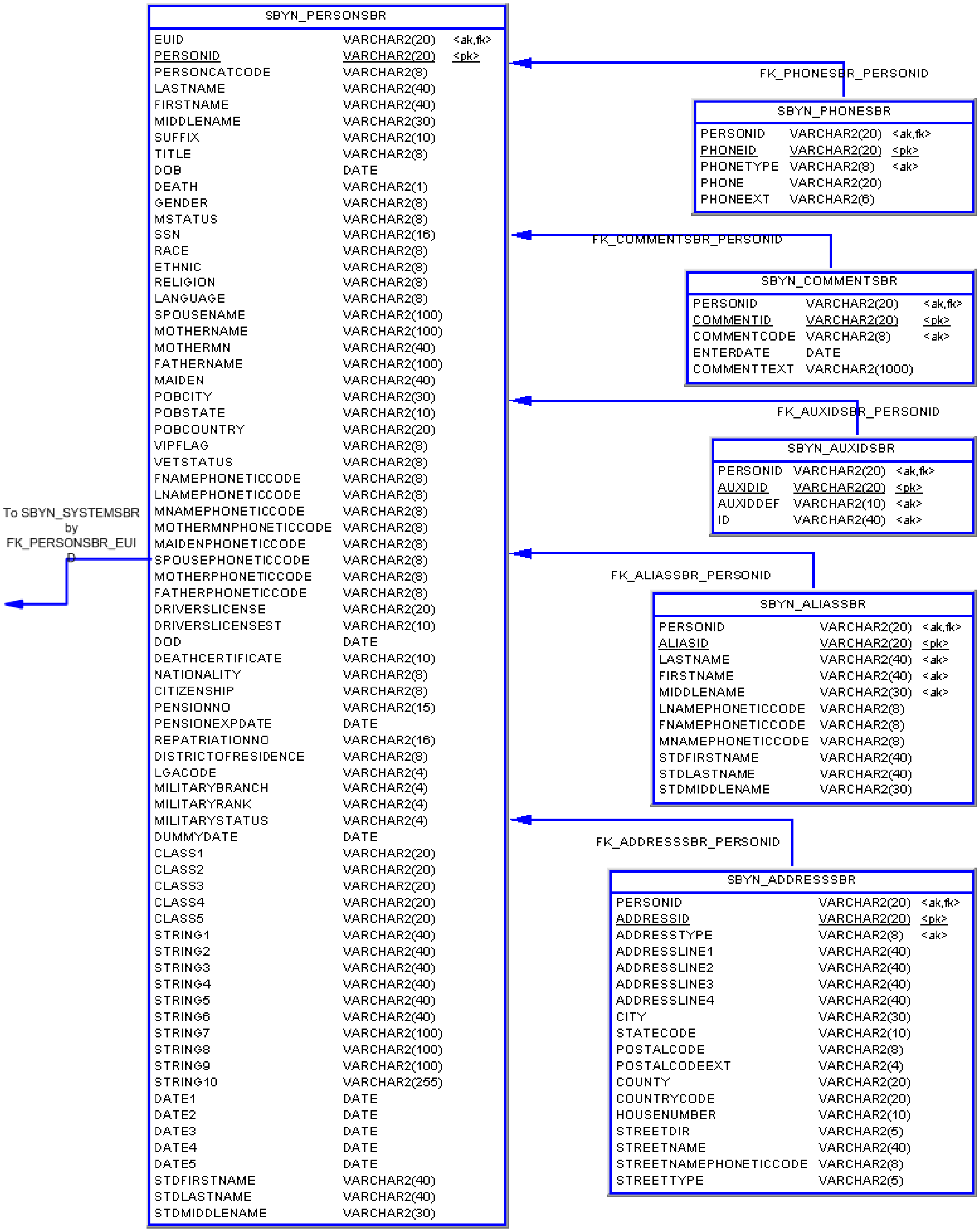
SBYN_SYSTEMSBR		
EUID	VARCHAR2(20)	<pk>
CHILDTYPE	VARCHAR2(20)	
CREATESYSTEM	VARCHAR2(20)	
CREATEUSER	VARCHAR2(30)	
CREATEFUNCTION	VARCHAR2(20)	
CREATEDATE	DATE	
UPDATESYSTEM	VARCHAR2(20)	
UPDATEUSER	VARCHAR2(30)	
UPDATEFUNCTION	VARCHAR2(20)	
UPDATEDATE	DATE	
STATUS	VARCHAR2(15)	
REVISIONNUMBER	NUMBER(38)	

SBYN_ENTERPRISE		
SYSTEMCODE	VARCHAR2(20)	<pk,fk2>
LID	VARCHAR2(25)	<pk,fk2>
EUID	VARCHAR2(20)	<pk,fk1>

SBYN_POTENTIALDUPLICATES		
POTENTIALDUPLICATEID	VARCHAR2(20)	<pk>
WEIGHT	VARCHAR2(20)	
TYPE	VARCHAR2(15)	
DESCRIPTION	VARCHAR2(120)	
STATUS	VARCHAR2(15)	
HIGHMATCHFLAG	VARCHAR2(15)	
RESOLVEDUSER	VARCHAR2(30)	
RESOLVEDDATE	DATE	
RESOLVEDCOMMENT	VARCHAR2(120)	
EUID2	VARCHAR2(20)	
TRANSACTIONNUMBER	VARCHAR2(20)	
EUID1	VARCHAR2(20)	

SBYN_OVERWRITE		
EUID	VARCHAR2(20)	<pk,fk>
PATH	VARCHAR2(200)	<pk>
TYPE	VARCHAR2(20)	
INTEGERDATA	NUMBER(38)	
BOOLEANDATA	NUMBER(38)	
STRINGDATA	VARCHAR2(200)	
BYTEDATA	CHAR(2)	
LONGDATA	LONG	
DATEDATA	DATE	
FLOATDATA	NUMBER(38,4)	
TIMESTAMPDATA	DATE	

From SBYN_SYSTEMOBJECT by
FK_SYSTEMOBJECT_SYSTEMCODE
To SBYN_SYSTEMOBJECT by
FK_ENTERPRISE_SYSTEMCODE_LID
FK_PERSONSBR_EUID
FK_ENTERPRISE_EUID
FK_SYSTEMSBR_EUID



SBYN_PERSONSBR		
EUID	VARCHAR2(20)	<ak,fk>
PERSONID	VARCHAR2(20)	<pk>
PERSONCATCODE	VARCHAR2(8)	
LASTNAME	VARCHAR2(40)	
FIRSTNAME	VARCHAR2(40)	
MIDDLENAME	VARCHAR2(30)	
SUFFIX	VARCHAR2(10)	
TITLE	VARCHAR2(8)	
DOB	DATE	
DEATH	VARCHAR2(1)	
GENDER	VARCHAR2(8)	
MSTATUS	VARCHAR2(8)	
SSN	VARCHAR2(16)	
RACE	VARCHAR2(8)	
ETHNIC	VARCHAR2(8)	
RELIGION	VARCHAR2(8)	
LANGUAGE	VARCHAR2(8)	
SPOUSENAME	VARCHAR2(100)	
MOTHERNAME	VARCHAR2(100)	
MOTHERMN	VARCHAR2(40)	
FATHERNAME	VARCHAR2(100)	
MAIDEN	VARCHAR2(40)	
POBCITY	VARCHAR2(30)	
POBSTATE	VARCHAR2(10)	
POBCOUNTRY	VARCHAR2(20)	
VIPFLAG	VARCHAR2(8)	
VETSTATUS	VARCHAR2(8)	
FNAMEPHONETICCODE	VARCHAR2(8)	
LNAMEPHONETICCODE	VARCHAR2(8)	
MNAMEPHONETICCODE	VARCHAR2(8)	
MOTHERMNPHONETICCODE	VARCHAR2(8)	
MAIDENPHONETICCODE	VARCHAR2(8)	
SPOUSEPHONETICCODE	VARCHAR2(8)	
MOTHERPHONETICCODE	VARCHAR2(8)	
FATHERPHONETICCODE	VARCHAR2(8)	
DRIVERSLICENSE	VARCHAR2(20)	
DRIVERSLICENSEST	VARCHAR2(10)	
DOD	DATE	
DEATHCERTIFICATE	VARCHAR2(10)	
NATIONALITY	VARCHAR2(8)	
CITIZENSHIP	VARCHAR2(8)	
PENSIONNO	VARCHAR2(15)	
PENSIONEXPDATE	DATE	
REPATRIATIONNO	VARCHAR2(16)	
DISTRICTOFRESIDENCE	VARCHAR2(8)	
LGACODE	VARCHAR2(4)	
MILITARYBRANCH	VARCHAR2(4)	
MILITARYRANK	VARCHAR2(4)	
MILITARYSTATUS	VARCHAR2(4)	
DUMMYDATE	DATE	
CLASS1	VARCHAR2(20)	
CLASS2	VARCHAR2(20)	
CLASS3	VARCHAR2(20)	
CLASS4	VARCHAR2(20)	
CLASS5	VARCHAR2(20)	
STRING1	VARCHAR2(40)	
STRING2	VARCHAR2(40)	
STRING3	VARCHAR2(40)	
STRING4	VARCHAR2(40)	
STRING5	VARCHAR2(40)	
STRING6	VARCHAR2(40)	
STRING7	VARCHAR2(100)	
STRING8	VARCHAR2(100)	
STRING9	VARCHAR2(100)	
STRING10	VARCHAR2(255)	
DATE1	DATE	
DATE2	DATE	
DATE3	DATE	
DATE4	DATE	
DATE5	DATE	
STDFIRSTNAME	VARCHAR2(40)	
STDLASTNAME	VARCHAR2(40)	
STDMIDDLENAME	VARCHAR2(30)	

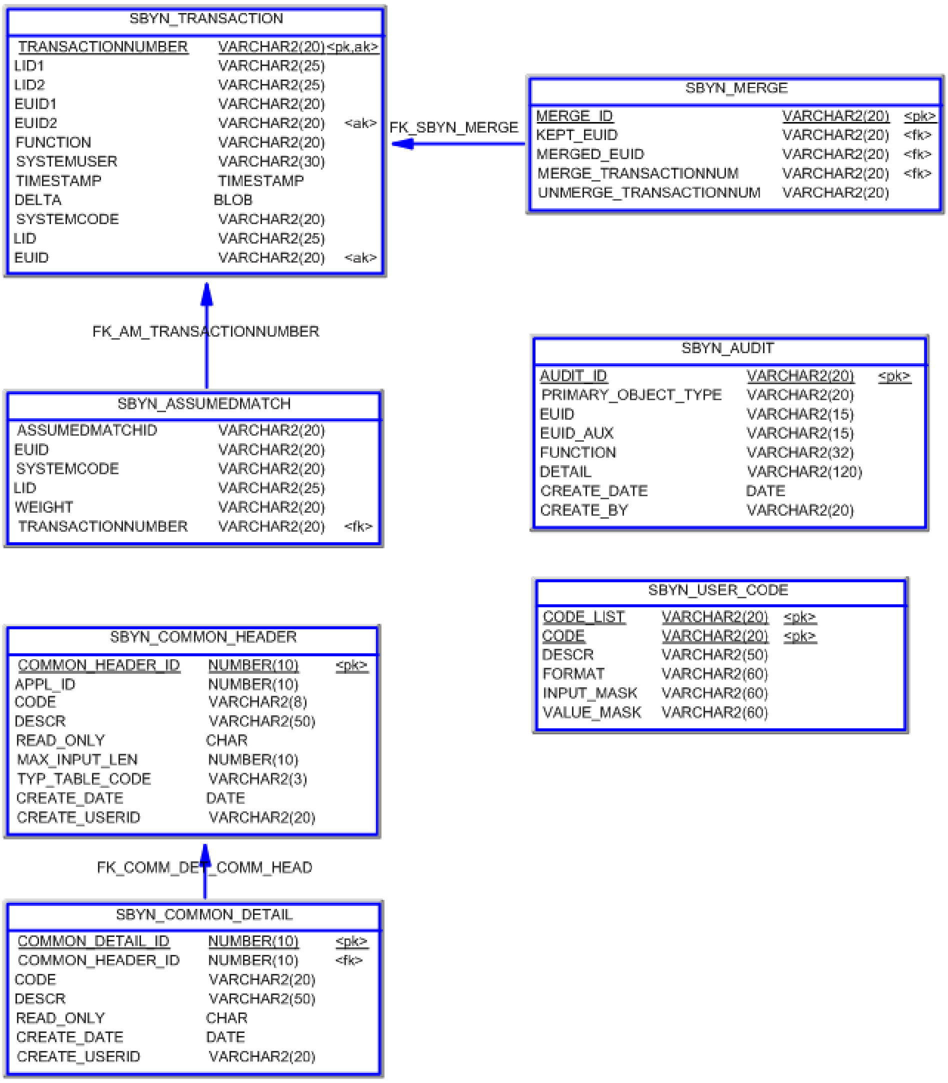
SBYN_PHONESBR		
PERSONID	VARCHAR2(20)	<ak,fk>
PHONEID	VARCHAR2(20)	<pk>
PHONETYPE	VARCHAR2(8)	<ak>
PHONE	VARCHAR2(20)	
PHONEEXT	VARCHAR2(6)	

SBYN_COMMENTSBR		
PERSONID	VARCHAR2(20)	<ak,fk>
COMMENTID	VARCHAR2(20)	<pk>
COMMENTCODE	VARCHAR2(8)	<ak>
ENTERDATE	DATE	
COMMENTTEXT	VARCHAR2(1000)	

SBYN_AUXIDSBR		
PERSONID	VARCHAR2(20)	<ak,fk>
AUXIDID	VARCHAR2(20)	<pk>
AUXIDDEF	VARCHAR2(10)	<ak>
ID	VARCHAR2(40)	<ak>

SBYN_ALIASSBR		
PERSONID	VARCHAR2(20)	<ak,fk>
ALIASID	VARCHAR2(20)	<pk>
LASTNAME	VARCHAR2(40)	<ak>
FIRSTNAME	VARCHAR2(40)	<ak>
MIDDLENAME	VARCHAR2(30)	<ak>
LNAMEPHONETICCODE	VARCHAR2(8)	
FNAMEPHONETICCODE	VARCHAR2(8)	
MNAMEPHONETICCODE	VARCHAR2(8)	
STDFIRSTNAME	VARCHAR2(40)	
STDLASTNAME	VARCHAR2(40)	
STDMIDDLENAME	VARCHAR2(30)	

SBYN_ADDRESSSBR		
PERSONID	VARCHAR2(20)	<ak,fk>
ADDRESSID	VARCHAR2(20)	<pk>
ADDRESSTYPE	VARCHAR2(8)	<ak>
ADDRESSLINE1	VARCHAR2(40)	
ADDRESSLINE2	VARCHAR2(40)	
ADDRESSLINE3	VARCHAR2(40)	
ADDRESSLINE4	VARCHAR2(40)	
CITY	VARCHAR2(30)	
STATECODE	VARCHAR2(10)	
POSTALCODE	VARCHAR2(8)	
POSTALCODEEXT	VARCHAR2(4)	
COUNTY	VARCHAR2(20)	
COUNTRYCODE	VARCHAR2(20)	
HOUSENUMBER	VARCHAR2(10)	
STREETDIR	VARCHAR2(5)	
STREETNAME	VARCHAR2(40)	
STREETNAMEPHONETICCODE	VARCHAR2(8)	
STREETTYPE	VARCHAR2(5)	



SBYN_TRANSACTION		
TRANSACTIONNUMBER	VARCHAR2(20)	<pk,ak>
LID1	VARCHAR2(25)	
LID2	VARCHAR2(25)	
EUID1	VARCHAR2(20)	
EUID2	VARCHAR2(20)	<ak>
FUNCTION	VARCHAR2(20)	
SYSTEMUSER	VARCHAR2(30)	
TIMESTAMP	TIMESTAMP	
DELTA	BLOB	
SYSTEMCODE	VARCHAR2(20)	
LID	VARCHAR2(25)	
EUID	VARCHAR2(20)	<ak>

SBYN_MERGE		
MERGE_ID	VARCHAR2(20)	<pk>
KEPT_EUID	VARCHAR2(20)	<fk>
MERGED_EUID	VARCHAR2(20)	<fk>
MERGE_TRANSACTIONNUM	VARCHAR2(20)	<fk>
UNMERGE_TRANSACTIONNUM	VARCHAR2(20)	

SBYN_ASSUMEDMATCH		
ASSUMEDMATCHID	VARCHAR2(20)	
EUID	VARCHAR2(20)	
SYSTEMCODE	VARCHAR2(20)	
LID	VARCHAR2(25)	
WEIGHT	VARCHAR2(20)	
TRANSACTIONNUMBER	VARCHAR2(20)	<fk>

SBYN_AUDIT		
AUDIT_ID	VARCHAR2(20)	<pk>
PRIMARY_OBJECT_TYPE	VARCHAR2(20)	
EUID	VARCHAR2(15)	
EUID_AUX	VARCHAR2(15)	
FUNCTION	VARCHAR2(32)	
DETAIL	VARCHAR2(120)	
CREATE_DATE	DATE	
CREATE_BY	VARCHAR2(20)	

SBYN_USER_CODE		
CODE_LIST	VARCHAR2(20)	<pk>
CODE	VARCHAR2(20)	<pk>
DESCR	VARCHAR2(50)	
FORMAT	VARCHAR2(60)	
INPUT_MASK	VARCHAR2(60)	
VALUE_MASK	VARCHAR2(60)	

SBYN_COMMON_HEADER		
COMMON_HEADER_ID	NUMBER(10)	<pk>
APPL_ID	NUMBER(10)	
CODE	VARCHAR2(8)	
DESCR	VARCHAR2(50)	
READ_ONLY	CHAR	
MAX_INPUT_LEN	NUMBER(10)	
TYP_TABLE_CODE	VARCHAR2(3)	
CREATE_DATE	DATE	
CREATE_USERID	VARCHAR2(20)	

SBYN_COMMON_DETAIL		
COMMON_DETAIL_ID	NUMBER(10)	<pk>
COMMON_HEADER_ID	NUMBER(10)	<fk>
CODE	VARCHAR2(20)	
DESCR	VARCHAR2(50)	
READ_ONLY	CHAR	
CREATE_DATE	DATE	
CREATE_USERID	VARCHAR2(20)	

Appendix C

Standardization and Matching for eIndex SPV

By default, several fields are defined for normalization, phonetic encoding, or parsing for eIndex SPV. The standardized values are stored in the database. This chapter describes the fields that are included in the data structure solely to store these values. For more information about the standardization and matching processes and the match engine, see *Implementing the Sun SeeBeyond Match Engine with eView Studio*.

What's in This Chapter

C.1 Person Name Matching

In the default configuration, several fields are included in the object structure and database creation script that store the phonetic or normalized version of patient names. For eIndex SPV, the names do not follow the standard eView Studio naming conventions. The following fields store phonetic or normalized data for the different name fields in the object structure.

Table 14 Standardized Name Fields

Field/Column Name	Description
StdFirstName	The normalized version of the patient's first name.
StdLastName	The normalized version of the patient's last name.
StdMiddleName	The normalized version of the patient's middle name.
FnamePhoneticCode	The phonetically encoded first name.
LnamePhoneticCode	The phonetically encoded last name.
MnamePhoneticCode	The phonetically encoded middle name.
MotherMNPhoneticCode	The phonetically encoded maiden name of the patient's mother.
MaidenPhoneticCode	The phonetically encoded maiden name of the patient.

Table 14 Standardized Name Fields

Field/Column Name	Description
MotherPhoneticCode	The phonetically encoded name of the patient's mother.
FatherPhoneticCode	The phonetically encoded name of the patient's father.
SpousePhoneticCode	The phonetically encoded name of the patient's spouse.

If you define additional fields to be standardized or phonetically encoded, be sure to add the fields that will store the modified values to the object structure and to the database creation script.

By default, eIndex SPV is configured to match on the following fields: StdFirstName, StdLastName, SSN, DOB, and Gender. You can add or remove fields from the match string as needed.

C.2 Address Matching

When processing address data, the Sun SeeBeyond Match Engine (SBME) parses a street address into its individual components. In the default configuration, several fields are included in the object structure and database creation script to store standardized street address information. For eIndex SPV, the names do not follow the standard eView Studio naming conventions. The fields listed in Table 15 store phonetic or standardized data for the street address fields in the object structure.

Table 15 Standardized Address Fields

Field/Column Name	Description
House Number	The parsed house number.
StreetName	The parsed and normalized street name.
StreetDir	The parsed and normalized street direction.
StreetNamePhoneticCode	The phonetically encoded street name.
StreetType	The parsed and normalized street type.

If you define additional fields to be standardized or phonetically encoded, be sure to add the fields that will store the modified values to the object structure and to the database creation script.

C.3 Business Name Matching

By default, no business name fields are included in the standardization structures or the match string defined in the Match Field file. If you standardize a freeform business name field, you can add any of the parsed fields to the match string. When processing business name data, the Sun SBME parses freeform business names into its various components (business name, organization type, association type, alias, sector, industry, and URL). You must add these fields to the object structure and database creation script if you define a standardization structure for business names.

Table 16 Standardized Business Name Fields

Field/Column Name	Description
BusinessName	The parsed name of the business.
NamePhon	The phonetically encoded business name.
OrgType	The standardized organization type of the business.
AssocType	The standardized association type of the business.
Industry	The standardized industry of the business.
Sector	The standardized sector type of the business.
Alias	The standardized alias name of the business.
Url	The web site address of the business.

Appendix D

Initial Load Tips

Once you configure the eIndex SPV application, you need to load existing legacy data from the external systems that will share data with eIndex SPV into the master index database. Due to the large number of records being loaded into the database, this process can be time-consuming and resource-intensive. This appendix provides tips to help make the initial data load process more efficient.

What's in This Chapter

D.1 Legacy Data

Prior to loading any legacy data into the eIndex SPV database, perform a thorough analysis and validation of the data you are loading, and then try to correct any errors you find. Things you should check for include the following.

- Null values in fields that do not allow null values
- Proper formatting, such as left or right justification, leading zeros, allowed characters, and so on
- Default values in fields that are used for blocking or matching
- Values that should not exist in specific fields
- Invalid day or month is a date field
- Missing system code in a local ID/system object
- Missing first or last name in an alias field (for person indexes)

D.2 Database Indexes

The database indexes required for the initial load process differ somewhat from the optimal indexes for running eIndex SPV in production. At a minimum, you should create an index for each block defined in the blocking query used for matching. It will also help to remove the indexes from the sbyn_transaction and sbyn_potentialduplicate tables. After the initial load is complete, you can restore any deleted indexes. The code for restoring the indexes can be found in the database creation script in the eIndex SPV server Project.

D.3 Threshold Parameters

You can modify the parameters of the Threshold file to help the initial load process run more quickly. If you are relatively certain of the quality of the data you are loading, you can raise the match and duplicate thresholds so fewer assumed matches are generated and fewer potential duplicate records are found. In addition, you can run in optimistic mode rather than pessimistic mode to avoid unnecessarily re-evaluating potential duplicate records. Set the **SameSystemMatch** parameter to “false” to avoid assumed matches for records that were generated from the same system.

D.4 Reports

After this initial load runs, run each production report to help analyze the results. These reports can help you handle potential duplicates, identify data issues, and determine how to set your match and duplicate thresholds. When you run the reports against initial load data, set the **max-result-size** element for each report very high in the report configuration file. This ensures that you will capture all potential duplicate issues. Once the data has been loaded and analyzed, you can set the **max-result-size** element lower for performance.

Glossary

alphanumeric search

A type of search that looks for records that precisely match the specified criteria. This type of search does not allow for misspellings or data entry errors, but does allow the use of wildcard characters.

assumed match

When the matching weight between two records is at or above a weight you specify and the records are from two different systems, (depending on the configuration of matching parameters) the objects are considered an assumed match and are automatically combined.

Blocking Query

Also known as a blocker query, this is used during matching to search the database for possible matches to a new or updated record. Blocking queries can also be used for searches done from the EDM.This query makes multiple passes against the database using different combinations of criteria, which are defined in the Candidate Select file.

Candidate Select file

The eIndex SPV configuration file that defines the queries you can perform from the Enterprise Data Manager (EDM) and the queries that are performed for matching.

candidate selection

The process of performing the blocking query for match processing. See *Blocking Query.*

candidate selection pool

The group of possible matching records returned by the blocking query. These records are weighed against the new or updated record to determine the probability of a match.

checksum

A value added to the end of an EUID for validation purposes. The checksum for each EUID is derived from a specific mathematical formula.

code list

A list of values in the sbyn_common_detail database table that is used to populate values in the drop-down lists of the EDM.

code list type

A category of code list values, such as states or country codes. These are defined in the sbyn_common_header database table.

duplicate threshold

The matching probability weight at or above which two records are considered to potentially represent the same person. See also *matching threshold*.

EDM
See *Enterprise Data Manager*.

Enterprise Data Manager
The web-based interface that allows monitoring and manual control of the master index database. The configuration of the EDM is stored in the Enterprise Data Manager file. Also known as the EDM.

enterprise object
A complete object representing a specific entity, including the SBR and all associated system objects.

ePath
A definition of the location of a field in an eIndex SPV object. Also known as the *element path*.

EUID
The enterprise-wide unique identification number assigned to each patient profile in the master index. This number is used to cross-reference patient profiles and to uniquely identify each patient throughout your organization.

eIndex SPV Manager Service
An eIndex SPV component that provides an interface to all eIndex SPV components and includes the primary functions of eIndex. This component is configured by the Threshold file.

field IDs
An identifier for each field that is defined in the standardization engine and referenced from the Match Field file.

Field Validator
An eIndex SPV component that specifies the Java classes containing field validation logic for incoming data. This component is configured by the Field Validation file.

Field Validation file
The eIndex SPV configuration file that specifies any default or custom Java classes that perform field validations when data is processed.

LID
See *local ID*.

local ID
A unique identification code assigned to a patient in a specific local system. A patient profile may have several local IDs in different systems. The combination of a local ID and system constitutes a unique identifier for a system record. The name of the local ID field is configurable on the EDM, and might have been modified for your implementation.

master patient index
A database application that centralizes and cross-references information about the patients in a healthcare organization.

Match Field File
An eIndex SPV configuration file that defines normalization, parsing, phonetic encoding, and the match string for an instance of eIndex SPV. The information in this file is dependent on the type of data being standardized and matched.

match pass
During matching several queries are performed in turn against the database to retrieve a set of possible matches to an incoming record. Each query execution is called a match pass.

match string
The data string that is sent to the match engine for probabilistic weighting. This string is defined by the match system object defined in the Match Field file and must match the string defined in the match engine configuration files.

match type
An indicator specified in the **MatchingConfig** section of the Match Field file that tells the match engine which rules in the match configuration file to use for determine matching weights between records.

matching probability weight
An indicator of how closely two records match one another. The weight is generated using matching algorithm logic, and is used to determine whether two records represent the same patient. See also *duplicate threshold* and *matching threshold*.

Matching Service
An eIndex SPV component that defines the matching process. This component is configured by the Match Field file.

matching threshold
The lowest matching probability weight at which two records can be considered a match of one another. See also *duplicate threshold* and *matching probability weight*.

matching weight *or* match weight
See *matching probability weight*.

merge
To join two patient profiles or system records that represent the same person into one patient profile.

merged profile
See *non-surviving profile*.

non-surviving profile
A patient profile that is no longer active because it has been merged into another patient profile. Also called a *merged profile*.

normalization
A standardization process by which the value of a field is converted to a standard version, such as changing a nickname to a common name.

object
A component of a patient profile, such as a person object, which contains all of the demographic data about a person, or an address object, which contains information about a specific address type for a person.

parsing
A component of the standardization process by which a freeform text field is separated into its individual components, such as separating a street address field into house number, street name, and street type fields.

patient profile
A set of information that describes characteristics of one patient. A profile includes demographic and identification information about a patient and contains a single best record and one or more system records.

phonetic encoding
A standardization process by which the value of a field is converted to its phonetic version.

phonetic search
A search that returns phonetic variations of the entered search criteria, allowing room for misspellings and typographic errors.

potential duplicates
Two different enterprise objects that have a high probability of representing the same entity. The probability is determined using matching algorithm logic.

probabilistic weighting
A process during which two records are compared for similarities and differences, and a matching probability weight is assigned based on the fields in the match string. The higher the weight, the higher the likelihood that two records match.

probability weight
See *matching probability weight*.

Query Builder
An eIndex SPV component that defines how queries are processed. The user-configured logic for this component is contained in the Candidate Select file.

SBR
See *single best record*.

single best record
Also known as the SBR, this is the best representation of a patient's information. The SBR is populated with information from all source systems based on the survivor

strategies defined for each field and child object. It is a part of a patient's enterprise object and is recalculated each time a system record is updated.

standardization

The process of parsing, normalizing, or phonetically encoding data in an incoming or updated record. Also see *normalization*, *parsing*, and *phonetic encoding*.

survivor calculator

The logic that determines which field values or child objects from the available source systems are used to populate the SBR. This logic is a combination of Java classes and user-configured logic contained in the Best Record file.

survivorship

Refers to the logic that determines which field values are used to populate the SBR. The survivor calculator defines survivorship.

system

A computer application within an organization where information is entered about patients and that shares information with eIndex (such as a registration system). Also known as a source system, local system, or external system.

system object

A record received from a local system. The fields contained in system objects are used in combination to populate the SBR. The system objects for one person are part of that person's enterprise object.

tab

A heading on an application window that, when clicked, displays a different type of information. For example, click the Create System Record tab to display the Create System Record page.

Threshold file

An eIndex SPV configuration file that specifies duplicate and match thresholds, EUID generator parameters, and which blocking query defined in the Candidate Select file to use for matching.

transaction history

A stored history of an enterprise object. This history displays changes made to the object's information as well as merges, unmerges, and so on.

Update Manager

The component of the master index that contains the Java classes and logic that determines how records are updated and how the SBR is populated. The user-configured logic for this component is contained in the Best Record file.

Index