Oracle® Healthcare Master Person Index

Loading the Initial Data Set User's Guide

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Oracle Healthcare Master Person Index Loading the Initial Data Set User's Guide, Release 1.1

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Contents

Preface

The Initial Bulk Match and Load Tool (IBML Tool) gives you the ability to analyze match logic, match legacy data, and load a large volume of data into a master person index application.

Audience

This document is intended for users that need to get a large volume of legacy data into the master person index database that is cleansed.

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Related Documents

For more information and instructions for implementing and using a master index application, see the following documents in the Oracle Healthcare Master Person Index Release 1.1 documentation set:

- *Oracle Healthcare Master Person Index Installation Guide*
- *Oracle Healthcare Master Person Index Release Notes*
- *Oracle Healthcare Master Person Index User's Guide*
- *Oracle Healthcare Master Person Index Configuration Guide*
- *Oracle Healthcare Master Person Index Configuration Reference*
- *Oracle Healthcare Master Person Index Data Manager's Guide*
- *Oracle Healthcare Master Person Index Match Engine Reference*
- *Oracle Healthcare Master Person Index Standardization Engine Reference*
- *Oracle Healthcare Master Person Index Analyzing and Cleansing Data User's Guide*
- *Oracle Healthcare Master Person Index Command Line Reports and Database Management User's Guide*
- *Oracle Healthcare Master Person Index Working With IHE Profiles*
- *Oracle Healthcare Master Person Index WebLogic User's Guide*

> **Note:** These documents are designed to be used together when implementing a master index application.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

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The Initial Data Set for Master Person Index

This chapter provides conceptual information about the initial data set for Oracle Healthcare Master Person Index (OHMPI), including an overview of the data preparation, matching, and loading procedure. It also provides information about the about the bulk match and bulk load processes, the cluster synchronizer, and the required format for flat data files.

This chapter includes the following sections:

- "Understanding the Initial Bulk Match and Load Process"

Understanding the Initial Bulk Match and Load Process

The Initial Bulk Match and Load Tool (IBML Tool) gives you the ability to analyze match logic, match legacy data, and load a large volume of data into a master person index application. One of the issues that arises during a data management deployment is how to get a large volume of legacy data into the master person index database quickly and with little downtime, while at the same time cleansing the data, reducing data duplication, and reducing errors. The IBML Tool provides a scalable solution that standardizes and matches raw data and that can be run on multiple processors for better performance.

The IBML Tool consists of two components, the Bulk Matcher and the Bulk Loader. The Bulk Matcher compares records in the input data using probabilistic matching algorithms based on the OHMPI Match Engine and based on the configuration you defined for your master person index application. It then creates an image of the cleansed and matched data to be loaded into the master person index. The Bulk Loader uses the output of the Bulk Matcher to load data directly into the master person index database. Because the Bulk Matcher performs all of the match and potential duplicate processing and generates EUIDs for each unique record, the data is ready to be loaded with no additional processing from the master index application itself.

The following sections provides additional information about the Initial Bulk Match and Load Tool.

- "Initial Bulk Match and Load Process Overview"
- "Data Preparation, Matching, and Loading Procedure Overview"
- "Distributed Processing"
- "About the Bulk Match Process"
- "About the Bulk Load Process"
- "About the Cluster Synchronizer"

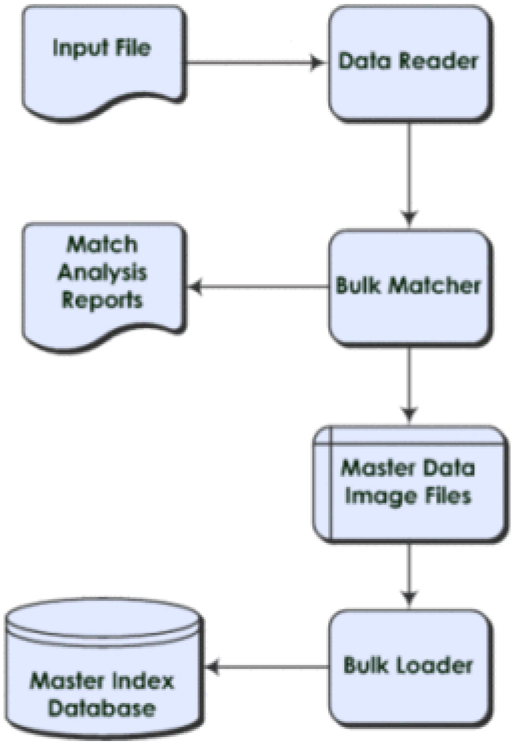
- "Required Format for Flat Data Files"

Initial Bulk Match and Load Process Overview

Performing an initial load of data into a master person index database consists of three primary steps. The first step is optional and consists of running the Bulk Matcher in report mode on a representative subset of the data you need to load. This provides you with valuable information about the duplicate and match threshold settings for the master person index application. Analyzing the data in this way is an iterative process. Based on the information from each run, you can modify the Bulk Matcher configuration file by changing the blocker query used for matching, the match string, and the duplicate and match thresholds. After you reconfigure the Bulk Matcher, rerun the analysis reports to verify the results. You can repeat this procedure as often as needed until you are satisfied with the match process settings. Once the configuration is finalized, make sure to modify the master person index application configuration files to match the Bulk Matcher configuration file.

The second step in the process is running the Bulk Matcher in matching mode. The Bulk Matcher processes the data according to the query, matching, and threshold rules defined in the Bulk Matcher configuration file. This step compares and matches records in the input data in order to reduce data duplication and to link records that are possible matches of one another. The output of this step is a master image of the data to be loaded into the master person index database. The final step in the process is loading the data into the master person index database. This can be done using either Oracle SQL*Loader or the command-line Bulk Loader. Both products can read the output of the Bulk Matcher and load the image into the database.

Figure 1–1 Initial Bulk Match and Load Tool Process Flow



Data Preparation, Matching, and Loading Procedure Overview

The IBML Tool was designed to build on the features provided by the Data Cleanser and Data Profiler tools that are also generated from a master person index application. These tools help you analyze the quality of your data and fix any data integrity issues prior to matching the data using the Bulk Matcher. The Data Cleanser generates a file from your legacy data that can be read by the Bulk Matcher. Together, the Data Profiler, Data Cleanser, and IBML Tools provide a complete solution for analyzing, cleansing, matching, and finally loading your legacy data into a master person index database, no matter the quality of the original data set.

The following steps outline the procedure to follow to prepare, match, and load legacy data.

1. Make sure the master person index application is configured and generated and the database is created.
2. Extract the data to either a staging database or a flat file.
3. Begin queuing any transactions that occur from the time you extract the data until the database is loaded and ready to go live.
4. Run the Data Profiler and Data Cleanser against the extracted data. This applies cleansing rules to the data and produces a file that can be read by the Bulk Matcher. This step is optional. See *Oracle Healthcare Master Person Index Analyzing and Cleansing Data User's Guide* (Part Number E18589-01).
5. Extract a representative sampling of the data.
6. Configure the Initial Bulk Match and Load Tool properties.
7. Using the Bulk Matcher, perform a match analysis against the sampling, analyze the reports, and modify the match configuration if necessary. This is an iterative process for fine-tuning the matching logic to suit your data.
8. Perform match processing against the complete data set. The result of this step is a set of files containing cleansed and linked data that can be loaded directly into the database.
9. Use the **SQL*Loader Bulk Loader** or the **command-line Bulk Loader** to load the data into the database .
10. Open the queue to allow transactions into the master person index application.

Distributed Processing

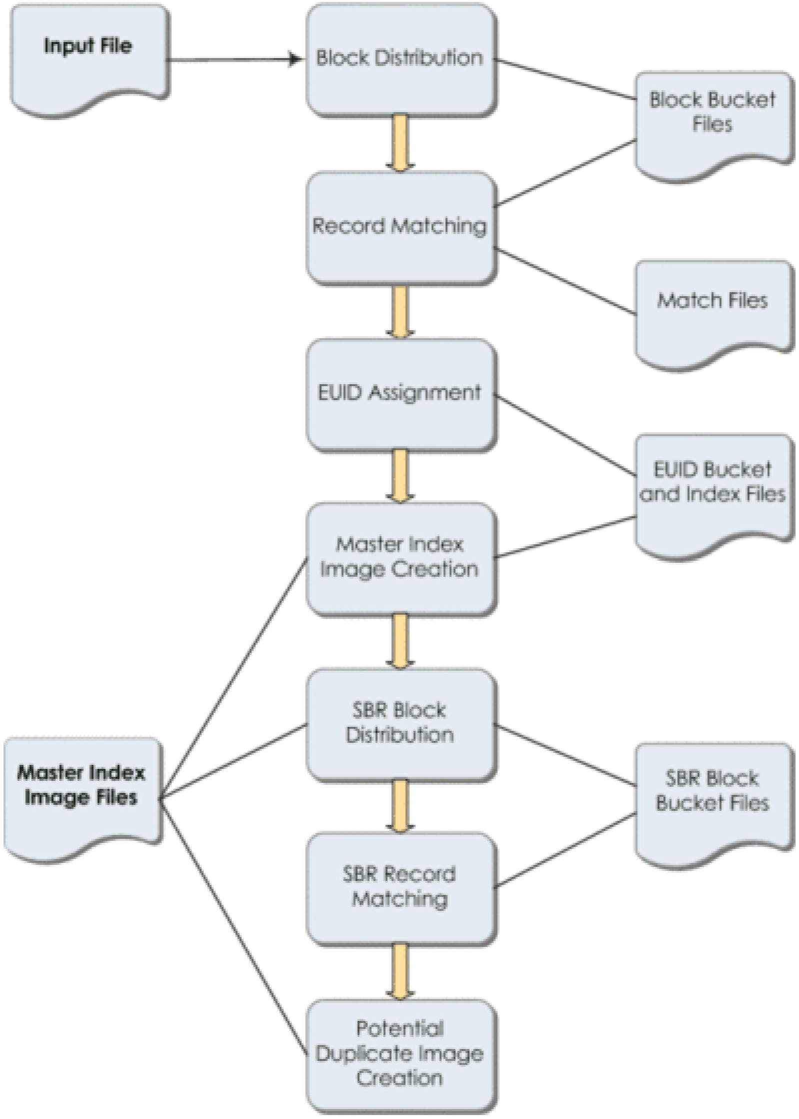
You can use multiple processors when running the IBML Tool to process data concurrently and improve performance. This is useful when processing very large data sets because the matching process can be very time and resource intensive depending on the size of the data to be processed. The number of processors required to optimize the matching process depends on the number of records you are processing and the configuration of the blocking query. If the criteria blocks defined for the query are not very selective and result in a large number of matching records, the number of records processed for each block will be larger and the number of processors should be increased. Using less selective query blocks can improve the accuracy of your matching results because it casts a wider net when retrieving possible matches to a record. Using multiple processors can help offset the cost. For smaller data sets, you can run the process on one high performance processor. In a distributed environment, one processor, known as the master IBML Tool, controls the entire process. This computer should be a very high performance machine. The remaining machines simply carry out the processes as directed by the master IBML Tool. There is no limit to the number of processors you can use. The master IBML Tool needs to be located on an FTP server in order to connect to each of the remaining IBML Tools, which use FTP to retrieve the files that they process.

About the Bulk Match Process

The Bulk Matcher performs the following sequence of tasks:

- "Block Distribution"
- "Record Matching"
- "EUID Assignment"
- "Master Person Index Image Creation"
- "Potential Duplicate Creation"

Figure 1–2 Bulk Matcher Internal Process



Block distribution and EUID assignment are both handled by the master Bulk Matcher. Matching and master person index image generation are performed by all matchers. At any given time, all matchers perform the same task. When that task is complete for all matchers, they move on to the next task, obtaining the necessary files and information from the master Bulk Matcher. The cluster synchronizer (see "About the Cluster Synchronizer") determines when a task is complete and coordinates the tasks for all matchers.

Block Distribution

The master Bulk Matcher reads the input file and then writes records to **block bucket** files to be distributed to each matcher. Before writing the data, the block distributor reads the configuration of the query, match string, and duplicate and match thresholds. It then reads in the input data and writes the data to the block files based on the defined blocking query. The number of files created is dependent on the total number records, record size, and the memory of the processor. Once the data files are created for all blocks, the cluster synchronizer indicates that the matchers can begin the match process.

Record Matching

Once the input data is distributed into individual block buckets, each matcher retrieves a bucket and proceeds to compare each record to every other record in a block and assign a weight that indicates the probability that the records match. The matching logic used here is identical to the matching logic used by the master person index application. Any matches that are found during this process are written to a file. Once a matcher completes matching on a block bucket, the cluster synchronizer copies the match file to the master matcher's working directory.

EUID Assignment

When all blocks are matched, the master Bulk Matcher merges the match files from all the other matchers into one master match file. The master Bulk Matcher then assigns an EUID to the system records, assigning any records that are linked as matches to the same EUID. Once system records are assigned an EUID, they are distributed to EUID files. Any system records with the same EUID are stored in the same file. Once EUID assignment is complete, the cluster synchronizer indicates that the next phase, generating the master data images, can begin.

Master Person Index Image Creation

The master person index image generator reads from the EUID bucket files to create the master data image files to be loaded into the master person index database. These images include complete enterprise records with SBRs, system records, and child objects. The SBR is determined based on the survivor calculator defined for the master person index application. The image files also include assumed matches and transaction information. Each matcher processes one of the EUID buckets at a time until all buckets are processed.

Potential Duplicate Creation

The potential duplicate generator reads from the SBR bucket files created by the master person index generator and generates any potential duplicate linkages. The potential duplicate generator creates block buckets from the SBR records and matches the SBRs of each record. If two records have a matching weight that is above the duplicate threshold but below the match threshold, they are added to the potential duplicate table in the master person index image files. This table is loaded directly into the master person index sbyn_potentialduplicates table. Once the Bulk Matcher completes this phase, match processing is complete.

About the Bulk Load Process

After the matching process is complete, you can load the data using either a SQL*Loader bulk loader or the command-line Bulk Loader. Both are generated from the loader files created for the master person index application. Like the Bulk Matcher, the Bulk Loader can be run on concurrent processors, each processing a different master data image file.

You can use the command-line Bulk Loader to load data for an Oracle, MySQL, or SQL Server database. The SQL*Loader bulk loader can only be used for an Oracle database. With SQL*Loader, you need to drop the unique constraints and indexes using the SQL script provided before loading data, and then reinstate the constraints and indexes after loading the data.

About the Cluster Synchronizer

The cluster synchronizer coordinates the activities of all IBML processors The cluster synchronizer database, installed within the master person index database, stores activity information, such as bucket file names and the state of each phase. Each IBML Tool invokes the cluster synchronizer when they need to retrieve files, before they begin an activity, and after they complete an activity. The cluster synchronizer assigns the following states to a bucket as it is processed: new, assigned, and done. The master IBML Tool is also assigned states during processing based on which of the above phases is in process.

Required Format for Flat Data Files

The default data reader for the IBML Tool is designed to read data in the format provided by the Data Cleanser. This format is based on the object definition defined for the master person index application along with certain requirements for the IBML Tool. You can also extract your data to a flat file using the extractor of your choice.

The IBML Tool can read a flat file in the following format without any additional configuration:

```
GID|SystemCode|LocalID|UpdateDate|UserID|ObjectFields
```

where:

- GID is a unique global ID. This is automatically generated for files created by the Data Cleanser. If you are not using the Data Cleanser, you can generate unique numbers to fill these fields.
- SystemCode is the processing code for the system from which the record originated.
- LocalID is the object's local ID in the given system.
- UpdateDate is the most recent update date for the record. This field can be empty.
- UserID is the login ID of the user who last updated the record. This field can be empty.
- ObjectFields includes the objects and fields that are defined in object.xml. Be sure to include every field defined in the object structure in the order they are defined (include standardized, phonetic, and parsed fields even if they are empty). Child

object types are delimited by a pound sign (#) and multiple child objects of one type are delimited by a dollar sign ($).

> **Note:** If the meta characters |, $, # are part of data, they can be escaped by adding the meta character (~) before them.
>
> - Example field value: Apt~#100, Monrovia, CA

Below is an example of a valid input record based on the standard master person index Person template, which includes alias, address, and phone objects.

```
28|ORACLE|00160419|11/14/1999
08:41:10|GSMYTHE|P|ELIZABETH|ELIZABETH|E421|ANN|WARREN
|WARREN|WARAN||MRS|554-44-55555|08/18/1977|Y|F|M|W|13|BAP|ENG|STEVE|ANN|MARCH|GEOR
GE
|CAHILL|SHEFFIELD|CT|USA|E|Y||C4411444|CA|07/21/2018||ENG|USA#$BETH||CAHILL$LIZ|AN
N
|CAHILL#$H|1519 SHORELINE DR.|1519||SHORELINE|SARALAN|Dr|Unit 5|SHEFFIELD|CT|09876
|1075|CAPE BURR|USA#$CH|9895557848|$CB|9895551500|19
```

2

Initial Bulk Match and Load Tool

This chapter provides information and procedures on how to generate, configure, and run IBML Tool. It also provides the procedures necessary to load matched data into an Oracle Healthcare Master Person Index database.

This chapter includes the following sections:

Generating the Initial Bulk Match and Load Tool

In order to use the IBML Tool, you need to generate the tool from the master person index application for which it will be used. You generate the tool from the master person index project in NetBeans. The tool is generated based on the information you specified in the wizard and any changes you made to the configuration files before generating.

To Generate the Initial Bulk Match and Load Tool

Before you begin, make sure the master person index application and database are created and configured. The configuration for the object structure, blocking query, match string, and matching rules should be as close to final as possible. You can use the Bulk Matcher to perform the final tuning on the blocking query and matching rules.

1. In the NetBeans IDE project window, right-click the main project of the master person index application and then select **Generate Loader Zip**.

   The file is generated and downloaded to NetBeans_Projects\Project_Name\loader-generated.

2. On your computer, navigate to **NetBeans_Projects\Project_Name\loader-generated** and extract the contents of **loader.zip**.

3. If you are distributing the match and load processes across multiple processors, extract the contents of loader.zip to each machine processing the data.

4. If the IBML Tools are running on UNIX, make sure the run-loader.sh and generate-sql-loader.sh files have execute permission. Use **chmod** to grant permission if necessary.

Continue to "Configuring the Environment".

Configuring the Environment

Before you start working with the IBML Tool, make sure the environment is configured to handle the requirements of the load process.

To Configure the Environment

Before beginning, complete the steps under "Generating the Initial Bulk Match and Load Tool".

1. If you are using a distributed processing environment, set up an FTP server on the master processor using the FTP provider of your choice.
2. Install the database driver for the master person index database platform on each processor running the IBML Tools.
3. If you are using the SQL*Loader bulk loader to load the data, install SQL*Plus and SQL*Loader on the machines performing the load.
4. If you are using the command-line Bulk Loader instead of SQL*Loader to perform the load process, install NetBeans on the machines performing the load.

> **Note:** For information about using the command-line Bulk Loader, see "Loading the Matched Data Into the Master Person Index Database".

5. Make sure the Java installation you are using matches the Java version used by the NetBeans installation that generated the Initial Bulk Match and Load Tool.

> **Tip:** To find the Java version for NetBeans, select Tools from the main menu and then select Java Platforms. To find the Java version you are using, type Java -version at a command prompt. If they do not match, either locate or install the correct version and change your PATH variable to point to the correct version.

Continue to "Creating the Cluster Synchronizer Database".

Creating the Cluster Synchronizer Database

The cluster synchronizer database helps manage the various processes perform by the IBML Tool. The database is required whether you run the IBML Tool in a distributed environment or on a single processor. The database consists of only three tables, and must be installed in the master person index database.

> **Tip:** Before you begin each phase of the match and load process, make sure to truncate these tables with the script provided to avoid unique constraint errors in subsequent processes.

To Create the Cluster Synchronization Tables

Before beginning, complete the steps under "Configuring the Environment".

1. Obtain information about the master person index database, such as the login ID and password of the user who created the master person index database, the SID name, the port number, and the server name.
2. Open a SQL editor, and log in to the master person index database using the above information.
3. Run **NetBeans_Projects/Project_Name/loader-generated/cluster-synchronizer.sql** against the database instance.

Continue to "Configuring the Initial Bulk Match and Load Tool".

Configuring the Initial Bulk Match and Load Tool

Before you can run the IBML Tool, you need to define certain runtime parameters, such as how to distribute the processing, FTP server properties, database properties, logging properties, and so on. You can also modify the configuration of the query used for matching, the configuration of the match string, and the weighting thresholds used by the Bulk Matcher.

> **Note:** If you are using the command-line Bulk Loader, the properties you set here only apply to the Bulk Matcher.

The following sections provide instructions for:

- "Configuring the Initial Bulk Match and Load Tool Processing"
- "Configuring the Initial Bulk Match and Load Tool Logging"
- "Setting Initial Bulk Match and Load Tool Configuration Properties"

Configuring the Initial Bulk Match and Load Tool Processing

The bulk match process is configured by loader-config.xml, which is located in the conf subdirectory in the directory where you extracted the IBML Tool files. The process must be configured on each machine that is running a Bulk Matcher.

To Configure the IBML Tool

Before beginning, complete the steps under "Creating the Cluster Synchronizer Database".

Perform the following steps on each machine processing bulk data.

1. Navigate to the location where you extracted the IBML Tool.
2. Open **conf/loader-config.xml**.
3. Configure processing attributes by modifying the properties described in "Initial Bulk Match and Load Tool Processing Configuration".
4. Configure the cluster synchronizer database connection properties by modifying the properties described in "Cluster Synchronizer Database Configuration".
5. Configure the data reader and enter the name and location of the input file (see "Data Reader Configuration" for more information).

6. If the IBML Tool is running on multiple processors, modify the properties described in "FTP Server Configuration (Optional)".
7. If you are using SQL*Loader to load the master image into the master person index database, modify the properties described in "SQL*Loader Configuration".
8. When using the Bulk Matcher in match analysis mode, do any of the following:
   - To modify the match and duplicate thresholds for match analysis, enter new values for the duplicateThreshold and matchThreshold elements.
   - To modify the blocking query for match analysis, modify the query builder section (described in "Initial Bulk Match and Load Tool Blocking Query Configuration").
   - To modify the match string for match analysis, modify the MatchingConfig section (described in).
9. Save and close the file.
10. Repeat the above steps for each load processor in the distributed environment.
11. To configure logging properties, continue to "Initial Bulk Match and Load Tool Blocking Query Configuration"; otherwise, skip to Performing a Match Analysis.

To configure logging properties, continue to "Configuring the Initial Bulk Match and Load Tool Logging" otherwise, skip to "Performing a Match Analysis (Optional)"

Configuring the Initial Bulk Match and Load Tool Logging

Logging for the IBML Tool is configured in logger.properties, which is located in the conf subdirectory in the directory where you extracted the IBML Tool files.

To Configure IBML Tool Logging

Before beginning, complete "Configuring the Initial Bulk Match and Load Tool Processing"

1. Navigate to the location where you extracted the IBML Tool.
2. Open **conf/logger.properties**.
3. Modify the properties defined in Initial Bulk Match and Load Tool Logging Properties.
4. Save and close the file.

Continue to "Performing a Match Analysis (Optional)".

Setting Initial Bulk Match and Load Tool Configuration Properties

The configuration file for the IBML Tool, loader-config.xml, defines several aspects of the match process, including the blocking query, match string, EUID generator, FTP server, cluster synchronizer database, SQL*Loader properties, and the record limit of the report PDF file.

The configuration file is divided into the sections listed below. In addition to these sections, you can set the match and duplicate thresholds at the beginning of the file. Use these settings to help analyze the matching logic.

- "Initial Bulk Match and Load Tool Field Validation Configuration"
- "Initial Bulk Match and Load Tool Blocking Query Configuration"
- "Initial Bulk Match and Load Tool Match String Configuration"

- "Initial Bulk Match and Load Tool Processing Configuration"
- "FTP Server Configuration (Optional)"
- "Cluster Synchronizer Database Configuration"
- "SQL*Loader Configuration"
- "Data Reader Configuration"

Initial Bulk Match and Load Tool Field Validation Configuration

The default field validation for the master person index is parsed by the standard XSD and then copied into the IBML Tool configuration file. The default field validator checks the local ID and system fields to verify that the system code is valid, the local ID format is correct, the local ID is the correct length, and neither field is null. You should not need to modify this section unless you defined custom field validations.

Initial Bulk Match and Load Tool Blocking Query Configuration

When you generate the IBML Tool, the configuration for the blocking query defined for matching in the master person index application is parsed by an IBML parser and then copied into the IBML Tool configuration file.

> **Caution:** If you defined a custom parser configuration for the blocking query, the query configuration might not be copied correctly. To ensure the correct configuration if you defined a custom parser, copy the blocking query definition directly from query.xml to loader-config.xml. You also need to create a custom block generator using the com.sun.mdm.index.loader.blocker.BlockIdGenerator interface, and add the name of the custom generator to the field elements in the block ID (for example, <field>Enterprise.SystemSBR.Person.FirstName+CustomBlockIdGenerator</field>).

This section is included in the configuration file so you can modify the blocking query during the analysis phase to help you fine-tune the query configuration for the best match results. You can quickly change the query configuration and analyze the results of the changes without needing to update the master person index application and regenerate the IBML Tool each time. The query configuration is only used by the master IBML Tool, which uses the blocks defined for the query to divide the bulk data into block buckets to be distributed to the other processors that will process the data concurrently.

The blocking query might include fields that are not in your original input data, such as phonetic and normalized fields. If the input to the Bulk Matcher is the file that was generated by the Data Cleanser, the file includes all required fields, including phonetic and standardized fields. If you are using a different source for the input, the IBML Tool can standardize the data for you. For consistent matching results between the initial data set and future transactions, the query configuration used for the match and load processes should be as close as possible to that in query.xml in the master person index project.

Initial Bulk Match and Load Tool Match String Configuration

When you generate the IBML Tool, the configuration of the match string is copied from the master person index project to the IBML Tool configuration file. The match string is used by all IBML Tools processing the data, so this section should be identical for all IBML Tools. This section is provided so you can modify the match string during the analysis phase in order to fine-tune the match logic to achieve the best match results. As with the query configuration above, you can quickly change the match string configuration and analyze the results without needing to modify the master person index application and regenerate the IBML Tool.

Ideally, the match string defined in loader-config.xml is as close as possible to the match string defined in mefa.xml in the master person index project. This assures consistent matching results between the initial data set and future transactions.

Initial Bulk Match and Load Tool Processing Configuration

The processing properties described in the following table configure how the IBML Tool processes data. In these properties, you define a name for each IBML Tool, the location of the working directories, polling properties, and so on. Some of these properties only apply to specific phases of the match and load process, and some apply to either the master or slave processors.

Table 2–1 IBML Tool Processing Properties

Property Name	Description
loaderName (R)[1]	A unique name for the IBML Tool residing on the current processor. This name should be unique to each IBML Tool in the distributed environment. It does not need to be modified if you are using a single processor.
isMasterLoader (R)	An indicator of whether the IBML Tool being configured is the master IBML Tool. Specify **true** if it is the master or only IBML Tool; otherwise specify **false**.
matchAnalyzerMode (O)[2]	An indicator of whether to process the data in match analysis mode, which only generates analysis reports, or to perform the complete match process and generate the master person index image files. Specify **true** to perform an analysis only; specify **false** to perform the actual blocking and matching process and generate the master person index image files. The default is **false**. Analysis reports are output as PDF files. Use the "report.size" property to set the number of records that an analysis report displays.
report.size (O)	By default the report PDF file is limited to displaying 3000 records. The top records are displayed in descending order of match weights and the rest are cut off. This value can be configured to display more (or less) than 3000 records by setting "report.size" in loader-config.xml (under *<system>* *<properties>*).
BulkLoad (O)	An indicator of whether the current run will load the matched data into the database using SQL*Loader once the match process is complete. Specify **true** to load the data (the default is **false**). To run a match analysis or just the matching process, specify **false**. (the default is **false**). If you just run the match process, you can verify the process and then load the output of the Bulk Matcher at a later time.
standardizationMode (O)	An indicator of whether to standardize the input data. Leave the value of the this property set to **true**. The default is **false**.
deleteIntermediateDirs (O)	An indicator of whether the working directories are deleted when each process is complete. Specify **true** to delete the directories; specify **false** to retain the directories. The default is **true**.

Table 2–1 (Cont.) IBML Tool Processing Properties

Property Name	Description
optimizeDuplicates (O)	An indicator of whether to automatically merge records in the input data if they have the same system and local ID. Specify **true** to automatically merge the duplicate records; otherwise specify **false**. The default is **true**.
rmiPort	This is not currently used.
workingDir (R)	The absolute path to the directory in which the IBML Tools create the working files as they progress through the processing stages. The master IBML Tool also creates the master person index image files here. If the path you specify does not exist, create it before running the IBML Tool.
ftp.workingDir (O)	The absolute path to the directory on the master processor where files are placed for distribution to the remaining IBML Tools. You only need to define this property for the master IBML Tool and only if you are running multiple IBML Tools. All other tools ignore this property.
numBlockBuckets (R)	The number of block buckets to create for the initial distribution of data blocks. Each IBML Tool works on one bucket at a time so multiple buckets are processed at once. The number of block buckets you specify depends on the number of records to process and how specific the data blocks are in the blocking query.
numThreads (O)	The number of threads to run in parallel during processing. The default is **1**.
numEUIDBuckets (R)	The number of buckets the EUID assigner should place the processed records into after they have been matched and assigned an EUID.
totalNoOfRecords (R)	The total number of records being processed. This does not need to be an exact value, but needs to be greater than or equal to the exact number of records.
pollInterval (R)	The number of milliseconds the IBML Tools should wait before polling the master IBML Tool for their next task.
maxWaitTime (R)	The maximum time for an IBML Tool to wait for the next task before giving up.
TimeFormat (O)	The time format used to specify all input records if any date field also has a time component. Note: that date format component (without time component) for date fields are specified in the object.xml "dateformat" field. The date time format string is composed of concatenation of dateFormat + TimeFormat field. That is, if dateformat = "mm/dd/yyyy" and TimeFormat = "hh:mm:ss", then date type fields should be: "11/02/2001 10:10:20".
record.delimiter (R)	The delimiter used for delimiting records in MasterImage files. Ex. value is $$$.
sqlldr.record.delimiter (O)	This delimiter has been deprecated. Use record.delimiter instead.

Table 2–1 (Cont.) IBML Tool Processing Properties

Property Name	Description
BucketCacheSize (O)	The maximum size of a temporary Bucket File that will be created by IBML. The default value is 60M. Normally any loader should be able to completely load any file bucket in memory. If there is an out of memory error from any loader, set this value to lower than 60M; and if IBML is unable to create a Bucket File smaller than 60M as reported by the IBML error message, either change the application settings or increase this property value.
blockPrintSize (O)	The property to set for IBML to print the number of matches done for each block whose size>= blockPrintSize. This is useful for Match statistics.

[1] (R) = Required

[2] (O) = Optional

FTP Server Configuration (Optional)

The processing properties described in the following table configure the connection information for the FTP server. They only need to be defined if the IBML Tools are run on multiple processors, and they only need to be defined for the slave processors.

Table 2–2 FTP Server Properties

Property Name	Description
ftp.server	The name of the FTP server on the master processor.
ftp.username	The user ID to log in to the FTP server.
ftp.password	This property has been deprecated. Note: This password is not stored in the FTP Server configuration file. However, you will need to enter this value when the IBML Tool prompts you for it.

Cluster Synchronizer Database Configuration

The cluster synchronizer database is used to coordinate the activities of all IBML Tools processing data. The configuration of this section must be identical for all processors.

Table 2–3 Cluster Synchronizer Database Properties

Property Name	Description
cluster.database	The database platform on which the cluster synchronizer database is installed. Possible values are **Oracle**, **MSSQL**, **MySQL**, or **derby**. Note: This property is the same as in object.xml.

Table 2–3 (Cont.) Cluster Synchronizer Database Properties

Property Name	Description
cluster.database.url	The URL for the cluster synchronizer database. The format for the URL varies by database platform. ■ For Oracle, the format is `jdbc:oracle:thin:@`*hostname:port:database_name*. ■ For SQL Server, the format is `jdbc:sqlserver://`*hostname:port*`;databaseName=`*database_name*. ■ For Derby, the format is `jdbc:derby://`*hostname:port/database_name*. ■ For MySQL, the format is `jdbc:mysql://`*server:port:database_name*.
cluster.database.user	The user ID to log in to the cluster synchronizer database.
cluster.database.password	This property has been deprecated. Note: This password is not stored in the Cluster Synchronizer Database configuration file. However, you will need to enter this value when the IBML Tool prompts you for it.
cluster.database.jdbc.driver	The name of the database driver class.

SQL*Loader Configuration

The SQL*Loader properties are only used if you use SQL*Loader to load the bulk data into the master person index database after it has gone through match processing and EUID assignment. If you use the command-line Bulk Loader, you do not need to modify these properties. SQL*Loader can only be used with an Oracle database.

Table 2–4 SQL*Loader Property

Property Name	Description
sqlldr.userid	The connection descriptor for the master person index database. When specifying the value for sqlldr.userid, use the format: For Windows: property name="sqlldr.userid" value="<*user*>/%1@<*dbname*>" / For UNIX and Linux: property name="sqlldr.userid" value="<*user*>/$1@<*dbname*>" / Note: Here <*user*> refers to the database user name; <*dbname*> refers to the database SID. Enter **%1** for Windows and **$1** for UNIX and Linux. For example, property name="sqlldr.userid" value="person/%1@mpi" / Caution: Do not store the sqlldr.userid password in the SQL*Loader configuration file.

Data Reader Configuration

This section defines the data reader to use, the location of the input file, and any parameters. You can define a custom data reader to read data into the Bulk Matcher if you are not using the data file output by the Data Cleanser or if your data is formatted differently than the default data reader requires. For more information about the default data reader's requirements, see Required Format for Flat Data Files. You define the custom reader in Java, and then specify the class and configure the reader using the elements and attributes in the following table. You only need to configure the data reader for the master IBML Tool.

Table 2–5 Custom Data Reader Configuration Elements and Attributes

Element	Attribute	Description
bean		A definition for one data reader. This element includes the following elements and attributes.
	id	A unique name for the data reader.
	class	The Java class to implement for the data reader. The default data reader is `com.sun.mdm.index.dataobject.DataObjectFileReader`. This reader can access flat file data in the format described in "Required Format for Flat Data Files" on page 1-6. Any custom reader should implement interface `com.sun.mdm.index.dataobject.DataObjectReader`.
	singleton	An indicator of whether to use the singleton pattern for the data reader class.
constructor-arg		A parameter for the data reader. The default reader accepts two parameters. The first parameter has a type of `java.lang.String` and specifies the location of the input file. The second parameter has a type of boolean and indicates whether the input file contains delimiters. Specify **true** if the file contains delimiters.
	type	The data type of the parameter value.
	value	The value for the parameter.

Initial Bulk Match and Load Tool Logging Properties

The configuration file for the logging properties, `logging.properties`, defines how much information is logged while the IBML Tools are running. By default, logging is set to display INFO level messages and above on both the console and in a log file.

The following table lists and describes the default properties for the configuration file, but you can add new properties based on the log handlers you use. For more information about log handlers and the properties for each, see the Javadocs for the `java.util.logging package`.

Table 2–6 IBML Tool Logging Properties

Property Name	Description
handlers	A list of log handler classes to use, such as `java.util.logging.FileHandler` and `java.util.logging.ConsoleHandler`. Each handler you define needs to be configured according to the properties defined for the class.
level	The logging level to use. By default, this is set to INFO level logging.
java.util.logging.FileHandler.pattern	The name and location of the log files that are generated. By default, the files are located in the directory where you extracted the IBML Tools in the logs subdirectory. The files are named `loader#.log`, where `#` is an integer that is incremented each time a new log file is created. The log file with the lowest number is the most recent.
java.util.logging.FileHandler.limit	The maximum number of bytes to write to any one log file.

Table 2–6 (Cont.) IBML Tool Logging Properties

Property Name	Description
java.util.logging.FileHandler.count	The number of output files to cycle through.
java.util.logging.FileHandler.formatter	The name of the Java class used to format the log file. The IBML Tool provides a formatting class, `com.sun.mdm.index.loader.log.LogFormatter`, but you can define your own.
java.util.logging.ConsoleHandler.level	The level at which information is logged on the console.
java.util.logging.ConsoleHandler.formatter	The name of the Java class used to format the log information on the console. By default, the IBML Tool uses `java.util.logging.SimpleFormatter`, but you can define your own.

Performing a Match Analysis (Optional)

Before you perform the actual data matching, you can perform match analyses on a subset of the data to be loaded to determine whether the various components of the match process are configured correctly. This analysis can show whether the data blocks defined for the blocking query are returning too many or too few records and whether certain fields in the match string are inaccurately skewing the composite match weight. You can also use this analysis to determine whether the duplicate and match threshold are correct.

This is an iterative process, and you might need to run through the analysis several times before you are satisfied that the match and query configuration is optimized for your data set.

Perform the following steps to analyze the data for matching:

- "Running the Bulk Matcher in Analysis Mode"
- "Reviewing the Match Analysis Results"
- "Reconfiguring the Matching Logic"

Running the Bulk Matcher in Analysis Mode

When you run the Bulk Matcher in analysis mode, use a representative sample of the actual data you are loading into the master person index database. You do not need to run the entire set of input records through the analysis.

Caution: If you are **rerunning** the Bulk Matcher in analysis mode, make sure to truncate the cluster synchronizer database tables first. Otherwise, unique constraint errors occur and the run fails. To truncate the tables, run cluster-truncate.sql against the cluster synchronizer database.

To Run the Bulk Matcher in Analysis Mode

Before beginning, complete the steps under "Configuring the Initial Bulk Match and Load Tool".

1. For each IBML Tool, open **loader-config.xm**l (located in the IBML Tool home directory in the conf subdirectory).

2. Set the matchAnalyzerMode property to **true**, and verify the remaining property settings.
3. Save and close the file.
4. To configure and run the match analysis, do one of the following.

   If the master loader is running on Windows:

   - Navigate to the master IBML Tool home directory and open **run-loader.bat** for editing.
   - Change the value of the **JDBC_JAR_PATH variable** in the first line to the location and name of the database driver for the master index database platform; for example, **set JDBC_JAR_PATH=C:\oracle\jdbc\lib\ojdbc14.jar**.
   - Close and save the file.
   - Double-click **run-loader.bat** or type `run-loader` from a command line.

   If the master loader is running on UNIX:

   -
   - Navigate to the master IBML Tool home directory and open **run-loader.sh** for editing.
   - Change the value of the **JDBC_JAR_PATH variable** in the first line to the location and name of the database driver for the master index database platform; for example, **export JDBC_JAR_PATH=${oracle_home}/jdbc/lib/ojdbc14.jar**.
   - Close and save the file.
   - Type `sh run-loader.sh` at the command line.
5. Examine the log files to be sure no errors occurred during the analysis.

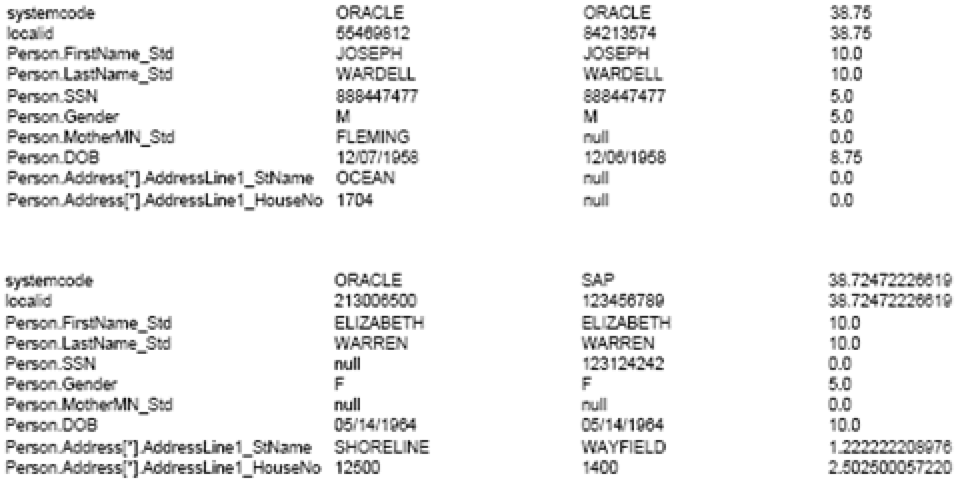
Continue to "Reviewing the Match Analysis Results"

Reviewing the Match Analysis Results

The output of the Bulk Matcher when run in analysis mode is a PDF file with a list of records that were automatically matched to each other (assumed matches) from the data set you analyzed. The report displays the matching weight given to each field, so you can analyze the value and accuracy of each field for matching as well as the agreement and disagreement weights (or u-probabilities and m-probabilities) defined in the matching configuration file of the master person index application.

The name of each match field is listed in the left column, the values for those fields in the two assumed match records are listed in the next two columns, and the composite match weight and the weight for each field are listed in the final column.

Figure 2–1 Match Analysis Report Excerpt



```
systemcode                                ORACLE       ORACLE       38.75
localid                                   55469612     84213574     38.75
Person.FirstName_Std                      JOSEPH       JOSEPH       10.0
Person.LastName_Std                       WARDELL      WARDELL      10.0
Person.SSN                                888447477    888447477    5.0
Person.Gender                             M            M            5.0
Person.MotherMN_Std                       FLEMING      null         0.0
Person.DOB                                12/07/1958   12/06/1958   8.75
Person.Address[*].AddressLine1_StName     OCEAN        null         0.0
Person.Address[*].AddressLine1_HouseNo    1704         null         0.0


systemcode                                ORACLE       SAP          38.72472226619
localid                                   213006500    123456789    38.72472226619
Person.FirstName_Std                      ELIZABETH    ELIZABETH    10.0
Person.LastName_Std                       WARREN       WARREN       10.0
Person.SSN                                null         123124242    0.0
Person.Gender                             F            F            5.0
Person.MotherMN_Std                       null         null         0.0
Person.DOB                                05/14/1964   05/14/1964   10.0
Person.Address[*].AddressLine1_StName     SHORELINE    WAYFIELD     1.222222208976
Person.Address[*].AddressLine1_HouseNo    12500        1400         2.502500057220
```

After you perform the steps under "Running the Bulk Matcher in Analysis Mode", complete the analysis by using the information in the match analysis report to do the following:

- Look for records that are assumed matches but should not be. This might indicate that the match threshold is set too low for the number of match fields or that one or more fields are given too much weighting relevance.
- Verify that fields that uniquely identify records, such as a social security number, are given a higher weight when they match.
- Verify that null fields are being handled correctly.
- If the assumed match records with the lowest composite match weights are definite matches of one another, the match threshold might be set too high. You might want to experiment with setting the match threshold lower and running another match analysis.

After you complete your analysis, you can reconfigure the matching logic as described in "Reviewing the Match Analysis Results" and then rerun the analysis. If your analysis shows that the matching configuration is correct and does not require any more changes, continue to "Running the Bulk Match and the Bulk Load in Two Steps". If the matching configuration is correct, make sure to update the master person index application to match the new configuration.

Reconfiguring the Matching Logic

If the results of the match analysis show that you need to modify the query, thresholds, or match string, you can make the changes to the IBML Tool configuration file and run the Bulk Matcher again to analyze the new settings. Once you are satisfied with the new settings, you need to update the master person index application configuration accordingly.

To Reconfigure the Matching Logic

1. Complete the match analysis, as described under "Reviewing the Match Analysis Results".
2. In the directory where the IBML Tool is located, open **conf/loader-config.xml**.

3. To modify the match and duplicate thresholds for match analysis, enter new values for the duplicateThreshold and matchThreshold elements.
4. To modify the blocking query for match analysis, modify the query builder section (described in "Initial Bulk Match and Load Tool Blocking Query Configuration").
5. To modify the match string for match analysis, modify the MatchingConfig section (described in "Initial Bulk Match and Load Tool Match String Configuration").
6. Run the match analysis again, as described in "Running the Bulk Matcher in Analysis Mode"

After you run the analysis for the final time, continue to "Running the Bulk Match and the Bulk Load in Two Steps".

> **Caution:** When you complete the analysis and have made the final modifications to the blocking query, matching string, and match thresholds, be sure to modify the master person index application so the processing is identical. The match string is defined in mefa.xml, the thresholds are defined in master.xml, and the blocking query is defined in query.xml. You can copy the configuration from loader-config.xml directly into these files.

Running the Bulk Match and Bulk Load in One Step (SQL*Loader Only)

> **Note:** This procedure includes steps that were updated for Java CAPS Release 6 Update 1. The variable JDBC_JAR_PATH was previously ORACLE_JDBC_JAR, and wasn't present in all files.

After you perform the match analysis and are satisfied with the matching logic configuration, you can either run the match process alone, or you can run the match and load processes together if you are using SQL*Loader to load the data. SQL*Loader can only be used on an Oracle Healthcare Master Person Index database. To run the match process separately, see Performing the Bulk Match.

> **Note:** If desired, you can also perform this task using two steps. See "Running the Bulk Match and the Bulk Load in Two Steps" for the procedures.

To Run the Bulk Match and Bulk Load in One Step

1. Complete the steps under Performing a Match Analysis (Optional).
2. From the master IBML Tool home directory, run **cluster-truncate.sql** against the cluster synchronizer database.
3. For each IBML Tool, open loader-config.xml (located in the IBML Tool home directory in the conf subdirectory).
4. Set the matchAnalyzerMode property to **false** and the BulkLoad property to **true**.
5. Define the **SQL*Loader property** described in SQL*Loader Configuration.
6. Verify that the rest of the properties are configured correctly, and then save and close the file.

7. To generate the loader scripts, do one of the following.

   If the master loader is running on Windows:

   -
   - Navigate to the master IBML Tool home directory and open **generate-sql-loader.bat** for editing.
   - Change the value of the **JDBC_JAR_PATH variable** in the first line to the location and name of the database driver for the master index database platform; for example, **set JDBC_JAR_ PATH=C:\oracle\jdbc\lib\ojdbc14.jar**.
   - Close and save the file.
   - Double-click **generate-sql-loader.bat** or type `generate-sql-loader` from a command line.

   If the master loader is running on UNIX:

   -
   - Navigate to the master IBML Tool home directory and open **sh generate-sql-loader.sh** for editing.
   - Change the value of the **JDBC_JAR_PATH variable** in the first line to the location and name of the database driver for the master index database platform; for example, **set JDBC_JAR_ PATH=C:\oracle\jdbc\lib\ojdbc14.jar**.
   - Close and save the file.
   - Type `sh generate-sql-loader.sh` at the command line.
   - A new directory named sqlldr is created in the working directory.

8. For UNIX only, modify the permissions for the shell scripts in the new sqlldr directory by running the following command:

   chmod u+x *.sh

9. In the master IBML Tool home directory, run **cluster-truncate.sq**l against the master index database to clear the cluster synchronizer tables.

10. In the sqlldr folder in the working directory, run **drop.sql** against the master index database to drop constraints and indexes.

11. To configure and run the load process, do one of the following.

    If the master loader is running on Windows:

    - Navigate to the master IBML Tool home directory and open run-loader.bat for editing.
    - Change the value of the **JDBC_JAR_PATH variable** in the first line to the location and name of the database driver for the master index database platform; for example, **set JDBC_JAR_ PATH=C:\oracle\jdbc\lib\ojdbc14.jar**.
    - Close and save the file.
    - Double-click **run-loader.bat** or type `run-loader` from a command line.

    If the master loader is running on UNIX:

    - Navigate to the master IBML Tool home directory and open **run-loader.sh** for editing.

- Change the value of the **JDBC_JAR_PATH variable** in the first line to the location and name of the database driver for the master index database platform; for example, **export JDBC_JAR_PATH=${oracle_home}/jdbc/lib/ojdbc14.jar**.
- Close and save the file.
- Type `sh run-loader.sh` at the command line.

12. Examine the log files to be sure no errors occurred during the match process, and check the files located in the masterIndex folder of your working directory to be sure all tables were populated.

> **Note:** If for any reason you need to stop and restart this process, run truncate.sql in the sqlldr directory against the master index database before restarting the process.

13. From the sqlldr directory, run **create.sql** against the master index database to reinstate the dropped indexes and constraints.

Running the Bulk Match and the Bulk Load in Two Steps

The following procedures provide the steps to run the the bulk match and the bulk load in two steps:

- "Running the Bulk Match and Preparing for Loading"
- "Loading the Matched Data Into the Master Person Index Database"

> **Note:** If desired, you can run the bulk match and bulk load in one step. See "Running the Bulk Match and Bulk Load in One Step (SQL*Loader Only)" for the procedure.

Running the Bulk Match and Preparing for Loading

After you perform the match analysis and are satisfied with the matching logic configuration, you are ready to match the full set of data to be loaded into the master person index database.

If you are using SQL*Loader to load the matched data, you can run the Bulk Matcher and the Bulk Loader all in the same step. For instructions on how to do this, see "Running the Bulk Match and Bulk Load in One Step (SQL*Loader Only)".

To Perform the Bulk Match

Before beginning, complete the steps under Performing a Match Analysis (Optional).

1. From the master IBML Tool home directory, run **cluster-truncate.sql** against the cluster synchronizer database.
2. For each IBML Tool, open loader-config.xml (located in the IBML Tool home directory in the conf subdirectory).
3. Set the matchAnalyzerMode property to **false**, and set the Bulk Load to **false**.
4. Verify that the rest of the properties are configured correctly, and then save and close the file.

For information about the configurable properties, see Initial Bulk Match and Load Tool Configuration Properties.

5. To configure and run the match process, do one of the following.

   If the master loader is running on Windows:

   - Navigate to the master IBML Tool home directory and open run-loader.bat for editing.
   - Change the value of the **JDBC_JAR_PATH variable** in the first line to the location and name of the database driver for the master person index database platform; for example, **set JDBC_JAR_PATH=C:\oracle\jdbc\lib\ojdbc14.jar**.
   - Close and save the file.
   - Double-click **run-loader.bat** or type `run-loader` from a command line.

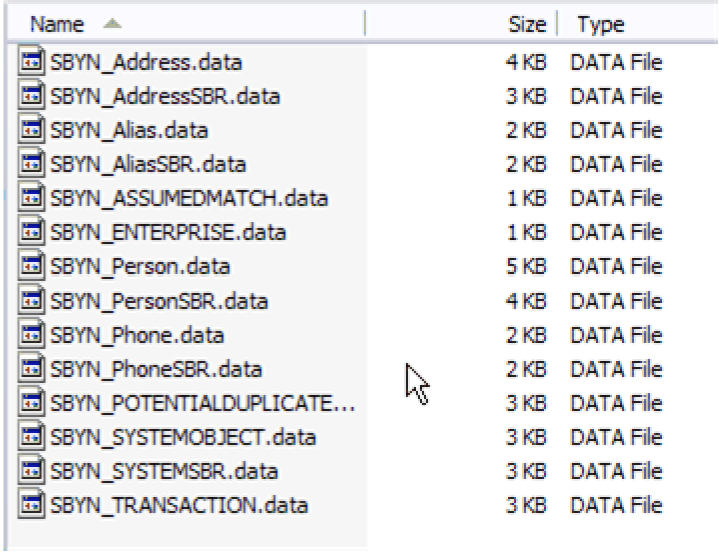
   If the master loader is running on UNIX:

   - Navigate to the master IBML Tool home directory and open **run-loader.sh** for editing.
   - Change the value of the **JDBC_JAR_PATH variable** in the first line to the location and name of the database driver for the master person index database platform; for example, **export JDBC_JAR_PATH=${oracle_home}/jdbc/lib/ojdbc14.jar**.
   - Close and save the file.
   - Type `sh run-loader.sh` at the command line.

6. Examine the log files in the `logs` directory of the IBML Tool home directory to verify that no errors occurred during the match process.

7. Examine the files located in the `masterindex` folder of your working directory to be sure all tables were populated.

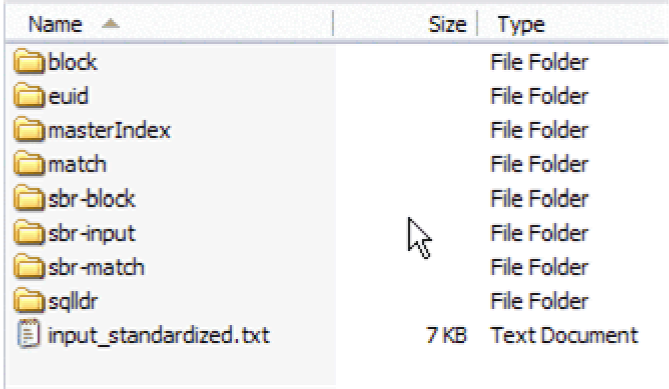
Figure 2–2 Master Person Index Image Files



Name	Size	Type
SBYN_Address.data	4 KB	DATA File
SBYN_AddressSBR.data	3 KB	DATA File
SBYN_Alias.data	2 KB	DATA File
SBYN_AliasSBR.data	2 KB	DATA File
SBYN_ASSUMEDMATCH.data	1 KB	DATA File
SBYN_ENTERPRISE.data	1 KB	DATA File
SBYN_Person.data	5 KB	DATA File
SBYN_PersonSBR.data	4 KB	DATA File
SBYN_Phone.data	2 KB	DATA File
SBYN_PhoneSBR.data	2 KB	DATA File
SBYN_POTENTIALDUPLICATE...	3 KB	DATA File
SBYN_SYSTEMOBJECT.data	3 KB	DATA File
SBYN_SYSTEMSBR.data	3 KB	DATA File
SBYN_TRANSACTION.data	3 KB	DATA File

8. If you configured the IBML Tool to keep the temporary folders in the working directory, you can examine the blocking, EUID, and match files for additional verification.

Figure 2–3 IBML Tool Working Directory



Name	Size	Type
block		File Folder
euid		File Folder
masterIndex		File Folder
match		File Folder
sbr-block		File Folder
sbr-input		File Folder
sbr-match		File Folder
sqlldr		File Folder
input_standardized.txt	7 KB	Text Document

9. To load the data into the master person index database, follow one of the procedures under "Loading the Matched Data Into the Master Person Index Database".

Loading the Matched Data Into the Master Person Index Database

The IBML Tool provides two methods to load the master data images generated by the Bulk Matcher. A command line tool is provided to generate and then run the extract, transform, and load (ETL) collaborations that load the data. Alternatively, you can use SQL*Loader to load the data if the master index database is running on Oracle.

Perform one of the following procedures to load the matched data into your master person index database:

- "Loading Matched Data Using SQL*Loader"
- "Loading Matched Data Using the Command-Line Bulk Loader"

Loading Matched Data Using SQL*Loader

> **Note:** This procedure includes steps that were updated for Java CAPS Release 6 Update 1. The variable JDBC_JAR_PATH was previously ORACLE_JDBC_JAR, and wasn't present in all files.

If the master index database runs on an Oracle platform, you can use either SQL*Loader or the command-line Bulk Loader to load the matched data into the database. SQL*Loader cannot be used for a SQL Server or MySQL database.

To Load Matched Data Using SQL*Loader

1. Complete the steps under "Running the Bulk Match and the Bulk Load in Two Steps".

2. From the master IBML Tool home directory, run **cluster-truncate.sql** against the cluster synchronizer database.

3. For each IBML Tool, open **loader-config.xml** (located in the IBML Tool home directory in the conf subdirectory).

   - Define the SQL*Loader property as described in "SQL*Loader Configuration".
   - Change the value of the BulkLoad property to **true**.
   - Save and close the file.

4. To generate the loader script, do one of the following.

   If the master loader is running on Windows:

   - Navigate to the master IBML Tool home directory and open **generate-sql-loader.bat** for editing.
   - Navigate to the master IBML Tool home directory and open **generate-sql-loader.bat** for editing.
   - Change the value of the **JDBC_JAR_PATH variable** in the first line to the location and name of the database driver for the master person index database platform; for example, **set JDBC_JAR_PATH=C:\oracle\jdbc\lib\ojdbc14.jar.**
   - Double-click **generate-sql-loader.bat or type generate-sql-loader** from a command line.
   - Close and save the file.

   If the master loader is running on UNIX:

   - Navigate to the master IBML Tool home directory and open **sh generate-sql-loader.sh** for editing.
   - Change the value of the **JDBC_JAR_PATH variable** in the first line to the location and name of the database driver for the master person index database platform; for example, **export JDBC_JAR_PATH=${oracle_home}/jdbc/lib/ojdbc14.jar**.
   - Close and save the file.
   - Type `sh generate-sql-loader.sh` at the command line.
   - A new directory named sqlldr is created in the working directory.

5. In the master IBML Tool home directory, run cluster-truncate.sql against the master person index database to clear the cluster synchronizer tables.

6. In the sqlldr folder in the working directory, run **drop.sql** against the master person index database to drop constraints and indexes.

7. In the sqlldr directory, do one of the following:

   - On Windows, double-click **bulk-loader.bat** or type `bulk-loader.bat` from a command line.
   - On UNIX, type `sh bulk-loader.sh` at the command line.

8. After the data is loaded, close any command prompts that were left open by the process and examine the SQL*Loader log files located in the sqlldr/log directory to ensure there were no errors during processing.

> **Note:** Any records that contained bad data and were not inserted into the master person index database are written to the sqlldr/bad directory. Any records that contained bad data and were discarded are written to the sqlldr/discard directory.

9. In the sqlldr directory, run create.sql against the master person index database to reinstate the dropped indexes and constraints.

Loading Matched Data Using the Command-Line Bulk Loader

You can use the command-line Bulk Loader to load data into a MySQL, or SQL Server database. Using the command-line tool does not require the use of NetBeans, but it does require that NetBeans be installed on the master loader machine.

To Load Matched Data Using the Command-Line Bulk Loader

1. Complete the steps under Performing the Bulk Match.
2. In the master IBML Tool home directory, open genCollab.bat (or genCollab.sh for UNIX) and configure the properties described in Command-Line Bulk Loader Properties.
3. Save and close the file.
4. In the master IBML Tool home directory, do one of the following:
   - On Windows, double-click genCollab.bat or type genCollab.bat from a command line.
   - On UNIX, type sh genCollab.sh at the command line.

     This generates a zip file in the IBML Tool home directory.
5. Extract the contents of etl-loader.zip to the current directory.

   This generates an ETL collaboration and creates a new directory, ETLloader, in the IBML Tool home directory.
6. In the master IBML Tool home directory, run cluster-truncate.sql against the master index database to clear the cluster synchronizer tables.
7. In the ETLloader/config directory, open logger.properties and modify any logging properties if needed.
8. In the ETLloader directory, do one of the following:
   - On Windows, double-click startLoad.bat or type startLoad.bat from a command line.
   - On UNIX, type sh startLoad.sh at the command line.
9. After the data is loaded, check the log files to ensure there were no errors during processing.

Command-Line Bulk Loader Properties

The ETL collaboration is generated by a file that includes configurable properties you need to define. The file is named genCollab.bat for Windows and genCollab.sh for UNIX. It is located in the directory where you extracted the IBML Tool files on the master processor. The following table lists and describes the default properties for the file.

Tip: If you get a usage error when running

the Bulk Loader after configuring the properties below, remove the double-quotes from around the paths and filenames (but not from the delimiters).

Table 2–7 Command-line Bulk Loader Properties

Property Name	Description
NetBeans and Java Properties	
NB_HOME	The absolute path to the NetBeans home directory on the master processor.
JAVAPATH	The absolute path to the bin directory in the Java installation; for example, `C:\\Java\jre1.5.0_11\bin`.
DB_DRIVER_PATH	The absolute path to the database driver for the database platform of the master index database.
DB_DRIVER_NAME	The name of the database driver in the path specified above; for example, `ojdbc14.jar`.
Source Data Properties	
SOURCE_LOC	The absolute path to the data files to be loaded into the master index database. These are located in the masterindex folder in the working directory you created for the Bulk Matcher.
FIELD_DELIMITER	The character that separates the fields in the master data image files. By default, fields are delimited by a pipe character (|).
RECORD_DELIMITER	The characters that separate the records in the master data image files. By default, the records are delimited by three dollar signs ($$$).
Target Database Properties	
TARGET_DB_TYPE	The database platform used for the master index database. Specify **1** for Oracle, **2** for MySQL, or **3** for SQL Server.
TARGET_LOC	The name or IP address of the server on which the master index database resides.
TARGET_PORT	The port number on which the master index database is listening. The default port is **1521** for Oracle, **1433** for SQL Server, and **3306** for MySQL.
TARGET_ID	The SID or database name of the master index database.
TARGET_SCHEMA	The name of the database schema that defines the tables, fields, and relationships for the master person index database. The default schema for SQL Server databases is **dbo**; for Oracle, the default is the same as the SID name of the database.
TARGET_CATALOG	The name of the database catalog containing the master person index database metadata. This property can be left empty.
TARGET_LOGIN	The login ID of the user with administrator abilities for the master person index database.
TARGET_PW	The password for the above login ID.