Oracle® Identity Manager

Connector Guide for Oracle e-Business Employee Reconciliation

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Oracle Identity Manager Connector Guide for Oracle e-Business Employee Reconciliation, Release 9.0.4

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Preface

Oracle Identity Manager Connector Guide for Oracle e-Business Employee Reconciliation provides information about integrating Oracle Identity Manager with Oracle e-Business Employee Reconciliation.

> **Note:** Some parts of the product and documentation still refer to the original Thor company name and Xellerate product name and will be rebranded in future releases.

Audience

This guide is intended for users who want to deploy the Oracle Identity Manager connector for Oracle e-Business Employee Reconciliation.

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For more information, refer to the following documents in the Oracle Identity Manager documentation library:

- *Oracle Identity Manager Release Notes*
- *Oracle Identity Manager Installation Guide for JBoss*
- *Oracle Identity Manager Installation Guide for Oracle Containers for J2EE*
- *Oracle Identity Manager Installation Guide for WebLogic*
- *Oracle Identity Manager Installation Guide for WebSphere*
- *Oracle Identity Manager Administrative and User Console Guide*
- *Oracle Identity Manager Administrative and User Console Customization Guide*
- *Oracle Identity Manager Design Console Guide*
- *Oracle Identity Manager Tools Reference Guide*
- *Oracle Identity Manager Audit Report Developer Guide*
- *Oracle Identity Manager Best Practices Guide*
- *Oracle Identity Manager Globalization Guide*
- *Oracle Identity Manager Glossary of Terms*

The following document is available in the Oracle Identity Manager Connector Pack documentation library:

- *Oracle Identity Manager Connector Framework Guide*

Documentation Updates

Oracle is committed to delivering the best and most recent information available. For information about updates to the Oracle Identity Manager Connector Pack Release 9.0.4 documentation library, visit Oracle Technology Network at

http://www.oracle.com/technology/documentation/index.html

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.

What's New in the Oracle Identity Manager Connector for Oracle e-Business Employee Reconciliation?

This chapter provides an overview of the updates made to the software and documentation for the Oracle e-Business Employee Reconciliation connector in release 9.0.4 of the Oracle Identity Manager connector pack.

> **See Also:** The 9.0.3 release of this guide for information about updates that were new for the 9.0.3 release

The updates discussed in this chapter are divided into the following categories:

- Software Updates

  These include updates made to the connector software.

- Documentation-Specific Updates

  These include major changes made to the connector documentation. These changes are not related to software updates.

  > **See Also:** *Oracle Identity Manager Release Notes*

Software Updates

This section discusses updates made to this release of the connector software.

Changes in the List of Supported Target Systems

In the "Step 1: Verifying Deployment Requirements" section on page 2-1, the list of supported target systems has been modified. This release of the connector also supports Oracle e-Business Suite 12.0.1.

Separate Scheduled Tasks for Trusted and Nontrusted Source Reconciliation

In this release of the connector, there are separate user reconciliation scheduled tasks for trusted and nontrusted source reconciliation. In the "Specifying Values for the Scheduled Task Attributes" section on page 3-4, the attributes of these scheduled tasks are described.

Configuring Trusted Source Reconciliation

In earlier releases, when you imported the connector XML file, the target system was automatically designated the trusted source for reconciliation. In this release, to

configure trusted source reconciliation, you must import the `XellOraEmp.xml` file and configure the scheduled task for trusted source reconciliation. The following sections of the guide cover this new feature:

- Files and Directories That Comprise the Connector on page 1-3

- Step 3: Copying the Connector Files and External Code Files on page 2-1

- Configuring Trusted Source Reconciliation on page 3-2

- Employee Reconciliation Scheduled Tasks on page 3-5

Partial Reconciliation

You can customize the reconciliation process by specifying the subset of added or modified target system records that must be reconciled. This is described in the "Partial Reconciliation" section on page 3-1.

Batched Reconciliation

In this release of the connector, the `BatchSize` and `NumOfBatches` attributes have been added to the reconciliation scheduled task definition. By specifying values for these attributes, you can reconcile users in various batches. The scheduled task attributes are discussed in the "Batched Reconciliation" section on page 3-2.

Enabling Logging

By following the instructions in the "Enabling Logging" section on page 2-3, you can configure the generation of log information that is specific to the target system.

Adding Custom Attributes

This release of the connector supports the adding of custom attributes for reconciliation. This feature is described in the "Adding Custom Attributes for Reconciliation" section on page 3-6.

Documentation-Specific Updates

The following documentation-specific updates have been made in this release of the guide.

- Instructions in the "Files and Directories That Comprise the Connector" section on page 1-3 have been revised.

- Some of the content from the Chapter 2 of the earlier release of this guide has been moved to Chapter 3.

- In the Known Issues list in Chapter 5, the following changes have been made:

  - The issue about not being able to reconcile data containing special characters has been removed.

  - This release of the connector does not support the Japanese language. This point has been added.

1

About the Connector

Oracle Identity Manager automates access rights management, security, and provisioning of IT resources. Oracle Identity Manager connectors are used to integrate Oracle Identity Manager with third-party applications. The connector for Oracle e-Business Employee Reconciliation is used to integrate Oracle Identity Manager with Oracle e-Business Employee Reconciliation.

> **Note:** Oracle Identity Manager connectors were referred to as *resource adapters* prior to the acquisition of Thor Technologies by Oracle.

This chapter contains the following sections:

- Reconciliation Module
- Supported Functionality
- Multilanguage Support
- Files and Directories That Comprise the Connector
- Determining the Release Number of the Connector

Reconciliation Module

Reconciliation involves duplicating in Oracle Identity Manager additions of and modifications to user accounts on the target system. It is an automated process initiated by a scheduled task that you configure.

> **See Also:** The "Deployment Configurations of Oracle Identity Manager" section in *Oracle Identity Manager Connector Framework Guide* for conceptual information about reconciliation configurations

Based on the type of data reconciled from the target system, reconciliation can be divided into the following types:

- Lookup Fields Reconciliation
- Employee Reconciliation

Lookup Fields Reconciliation

Lookup fields reconciliation involves reconciling the Person ID lookup field.

Employee Reconciliation

Employee reconciliation involves reconciling the following fields:

Reconciled Resource Object Fields

The following target system fields are reconciled:

- First Name
- email
- PersonId
- Middle Name
- Last Name
- Dept
- SSN
- Title
- Location
- Manager
- City
- PostalCode
- Country
- Telno
- EmployeeNumber
- ManagerId
- Nationality

Reconciled Xellerate User Fields

The following target system fields are reconciled only if trusted source reconciliation is implemented:

- User ID
- First Name
- Last Name
- Organization
- User Type
- Employee Type

Supported Functionality

The following table lists the functions that are available with this connector.

Function	Type	Description
Reconcile New User	Reconciliation	Creates an Oracle Identity Manager user in trusted mode

Function	Type	Description
Reconcile Delete User	Reconciliation	Deletes an Oracle Identity Manager user account, in both trusted and nontrusted mode
Reconcile Updated User	Reconciliation	Updates an Oracle Identity Manager user record during reconciliation, in both trusted and nontrusted mode

> **See Also:** Appendix A for information about attribute mappings between Oracle Identity Manager and Oracle e-Business Employee Reconciliation.

Multilanguage Support

The connector supports the following languages:

- Chinese Simplified
- Chinese Traditional
- English
- French
- German
- Italian
- Korean
- Portuguese (Brazilian)
- Spanish

> **See Also:** *Oracle Identity Manager Globalization Guide* for information about supported special characters

Files and Directories That Comprise the Connector

The files and directories that comprise this connector are in the following directory on the installation media:

```
Enterprise Applications/Oracle e-Business/Oracle e-Business Employee
Reconciliation
```

These files and directories are listed in the following table.

File in the Installation Media Directory	Description
lib/ScheduleTask/xlReconOraHREmp.jar	This JAR file contains the class files that are required for reconciliation.
Files in the resources directory	Each of these resource bundle files contains language-specific information that is used by the connector.
	Note: A **resource bundle** is a file containing localized versions of the text strings that are displayed on the user interface of Oracle Identity Manager. These text strings include GUI element labels and messages displayed on the Administrative and User Console.

File in the Installation Media Directory	Description
xml/oracleHRResAdp.xml	This XML file contains definitions for the following components of the connector: ■ IT resource type ■ IT resource ■ Custom process form ■ Resource object
xml/XellOraEmp.xml	This XML file contains definitions of the resource object and scheduled task for trusted source reconciliation.
test/config/attributemapping_recon.properties	This file contains values for the attributes required for reconciliation.
test/config/query.properties	This file contains the queries used for reconciliation.

The "Step 3: Copying the Connector Files and External Code Files" section on page 2-1 provides instructions to copy these files into the required directories.

Determining the Release Number of the Connector

You can use any one of the following methods to determine the release number of the connector.

Before Deployment

To determine the release number of a connector:

1. Extract the contents of the xlReconOralHREmp.jar file. This file is in the following directory on the installation media:

   ```
   Enterprise Applications/Oracle e-Business/Oracle e-Business Employee
   Reconciliation/lib/ScheduleTask
   ```

2. Open the manifest.mf file in a text editor. The manifest.mf file is one of the files bundled inside the xlReconOralHREmp.jar file.

   In the manifest.mf file, the release number of the connector is displayed as the value of the Version property.

   > **Note:** If you maintain a copy of the xlReconOralHREmp.jar file after deployment, you can use this method to determine the release number of the connector at any stage. After you deploy the connector, it is recommended that you use the "After Deployment" method, which is described in the following section.

After Deployment

To determine the release number of a connector that has already been deployed:

> **See Also:** *Oracle Identity Manager Design Console Guide*

1. Open the Oracle Identity Manager Design Console.

2. In the Form Designer, open the process form. The release number of the connector is the value of the **Version** field.

2

Deploying the Connector

Deploying the connector involves the following steps:

- Step 1: Verifying Deployment Requirements
- Step 2: Configuring the Target System
- Step 3: Copying the Connector Files and External Code Files
- Step 4: Configuring the Oracle Identity Manager Server
- Step 5: Importing the Connector XML File

Step 1: Verifying Deployment Requirements

The following table lists the deployment requirements for the connector.

Item	Requirement
Oracle Identity Manager	Oracle Identity Manager release 8.5.3 or later
Target system	Oracle e-Business Suite 11.5.10, 12.0.1
External code	JDBC class library (`classes12.jar`)
Target system user account	APPS user with full privileges
	You provide the credentials of this user account while performing the procedure in the "Defining IT Resources" section on page 2-6.
	If this user account is not assigned the specified privileges, then one of the following error message is thrown when Oracle Identity Manager tries exchange data with the target system:
	`table or view does not exist`
	`insufficient privileges`

Step 2: Configuring the Target System

For this connector, you do not need to perform any configuration steps on the target system.

Step 3: Copying the Connector Files and External Code Files

The connector files to be copied and the directories to which you must copy them are given in the following table.

> **Note:** The directory paths given in the first column of this table correspond to the location of the connector files in the following directory on the installation media:
>
> ```
> Enterprise Applications/Oracle e-Business/Oracle e-Business
> Employee Reconciliation
> ```
>
> Refer to the "Files and Directories That Comprise the Connector" section on page 1-3 for more information about these files.

File in the Installation Media Directory	Destination Directory
lib/ScheduleTask/xlReconOraHREmp.jar	*OIM_home*/xellerate/ScheduleTask
Files in the resources directory	*OIM_home*/xellerate/connectorResources
Files in the test/config directory	*OIM_home*/xellerate/XLIntegrations/OracleEmpRecon/config
Files in the xml directory	*OIM_home*/xlclient

Copy the JDBC class library (classes12.jar) from the *oracle_home*/ora92/jdbc/lib/classes12.jar directory to the *OIM_home*/xellerate/ThirdParty directory. Here, *oracle_home* is the directory in which Oracle9*i* Database is installed. For example, C:\Oracle.

> **Note:** While installing Oracle Identity Manager in a clustered environment, you copy the contents of the installation directory to each node of the cluster. Similarly, you must copy the connectorResources directory and the JAR files to the corresponding directories on each node of the cluster.

Step 4: Configuring the Oracle Identity Manager Server

Configuring the Oracle Identity Manager server involves the following procedures:

> **Note:** In a clustered environment, you must perform this step on each node of the cluster. Then, restart each node.

- Changing to the Required Input Locale
- Clearing Content Related to Connector Resource Bundles from the Server Cache
- Enabling Logging

Changing to the Required Input Locale

Changing to the required input locale (language and country setting) involves installing the required fonts and setting the required input locale.

You may require the assistance of the system administrator to change to the required input locale.

Clearing Content Related to Connector Resource Bundles from the Server Cache

While performing the instructions described in the "Step 3: Copying the Connector Files and External Code Files" section on page 2-1, you copy files from the `resources` directory on the installation media into the *OIM_home*/xellerate/connectorResources directory. Whenever you add a new resource bundle in the `connectorResources` directory or make a change in an existing resource bundle, you must clear content related to connector resource bundles from the server cache.

To clear content related to connector resource bundles from the server cache:

1. In a command window, change to the *OIM_home*/xellerate/bin directory.

> **Note:** You must perform Step 1 before you perform Step 2. If you run the command described in Step 2 as follows, then an exception is thrown:
>
> *OIM_home*\xellerate\bin*batch_file_name*

2. Enter one of the following commands:

   - On Microsoft Windows:

     PurgeCache.bat ConnectorResourceBundle

   - On UNIX:

     PurgeCache.sh ConnectorResourceBundle

   > **Note:** You can ignore the exception that is thrown when you perform Step 2.

   In this command, `ConnectorResourceBundle` is one of the content categories that you can remove from the server cache. Refer to the following file for information about the other content categories:

   OIM_home/xellerate/config/xlConfig.xml

Enabling Logging

When you enable logging, Oracle Identity Manager automatically stores in a log file information about events that occur during the course of provisioning and reconciliation operations. To specify the type of event for which you want logging to take place, you can set the log level to one of the following:

- ALL

  This level enables logging for all events.

- DEBUG

  This level enables logging of information about fine-grained events that are useful for debugging.

- INFO

  This level enables logging of informational messages that highlight the progress of the application at coarse-grained level.

- WARN

This level enables logging of information about potentially harmful situations.

- ERROR

  This level enables logging of information about error events that may still allow the application to continue running.

- FATAL

  This level enables logging of information about very severe error events that could cause the application to stop functioning.

- OFF

  This level disables logging for all events.

The file in which you set the log level depends on the application server that you use:

- **BEA WebLogic**

  To enable logging:

  1. Add the following line in the *OIM_home*/xellerate/config/log.properties file:

     ```
     log4j.logger.Adapter.OracleEmpRecon=log_level
     ```

  2. In this line, replace *log_level* with the log level that you want to set.

     For example:

     ```
     log4j.logger.Adapter.OracleEmpRecon=INFO
     ```

  After you enable logging, log information is written to the following file:

  WebLogic_home/user_projects/domains/*domain_name*/*server_name*/*server_name*.log

- **IBM WebSphere**

  To enable logging:

  1. Add the following line in the *OIM_home*/xellerate/config/log.properties file:

     ```
     log4j.logger.Adapter.OracleEmpRecon=log_level
     ```

  2. In this line, replace *log_level* with the log level that you want to set.

     For example:

     ```
     log4j.logger.Adapter.OracleEmpRecon=INFO
     ```

  After you enable logging, log information is written to the following file:

  WebSphere_home/AppServer/logs/*server_name*/startServer.log

- **JBoss Application Server**

  To enable logging:

  1. In the *JBoss_home*/server/default/conf/log4j.xml file, locate the following lines:

     ```
     <category name="Adapter.OracleEmpRecon">
        <priority value="log_level"/>
     </category>
     ```

    2. In the second XML code line, replace *log_level* with the log level that you want to set. For example:

```
<category name="Adapter.OracleEmpRecon">
    <priority value="INFO"/>
</category>
```

After you enable logging, log information is written to the following file:

JBoss_home/server/default/log/server.log

- **OC4J**

  To enable logging:

  1. Add the following line in the *OIM_home*/xellerate/config/log.properties file:

  ```
  log4j.logger.Adapter.OracleEmpRecon=log_level
  ```

  2. In this line, replace *log_level* with the log level that you want to set.

  For example:

  ```
  log4j.logger.Adapter.OracleEmpRecon=INFO
  ```

  After you enable logging, log information is written to the following file:

  OC4J_home/opmn/logs/default_group~home~default_group~1.log

Step 5: Importing the Connector XML File

To import the connector XML file:

1. Open the Oracle Identity Manager Administrative and User Console.

2. Click the **Deployment Management** link on the left navigation bar.

3. Click the **Import** link under Deployment Management. A dialog box for locating files is displayed.

4. Locate and open the oracleHRResAdp.xml file, which is in the *OIM_home*/xlclient directory. Details of this XML file are shown on the File Preview page.

5. Click **Add File.** The Substitution page is displayed.

6. Click **Next.** The Confirmation page is displayed.

7. Click **Next.** The Provide IT Resource Instance Data page for the Oracle HR IT resource is displayed.

8. Specify values for the parameters of the Oracle HR IT resource. Refer to the table given in the "Defining IT Resources" section on page 2-6 for information about the values to be specified.

9. Click **Next**. The Provide IT Resource Instance Data page for a new instance of the Oracle HR IT resource type is displayed.

10. Click **Skip** to specify that you do not want to define another IT resource. The Confirmation page is displayed.

> **See Also:** If you want to define another IT resource, then refer to *Oracle Identity Manager Tools Reference Guide* for instructions.

11. Click **View Selections.**

    The contents of the XML file are displayed on the Import page. You *may* see a cross-shaped icon along with some nodes. These nodes represent Oracle Identity Manager entities that are redundant. Before you import the connector XML file, you must remove these entities by right-clicking each node and then selecting **Remove**.

12. Click **Import.** The connector file is imported into Oracle Identity Manager.

After you import the connector XML file, proceed to the next chapter.

Defining IT Resources

You must specify values for the following `Oracle HR` IT resource parameter.

Parameter	Description
Admin	User ID to connect to the Oracle e-Business Employee Reconciliation database
	The default value is `Apps`.
AdminCredentials	Password of the administrator
Host	Host name or IP address of the Oracle e-Business Employee Reconciliation database
OracleHREmp.Orga nization Name	Default value for the Oracle Identity Manager Organization name
	This value is used to create the Xellerate User in trusted mode. The default value is `Xellerate Users`.
Port	TCP/IP port at which the Oracle e-Business Employee Reconciliation server is listening
	The default value is `1521`.
isSecure	This parameter is meant for use in a future release of the connector. Do not change the default value.
SID	SID for the Oracle e-Business Employee Reconciliation database
TrustedTimeStamp	This parameter is used for trusted source reconciliation.
	Starting with the first reconciliation run, this parameter stores the time-stamp value at which the reconciliation run ends.
	The default value is `0`.
	The time-stamp value that this parameter accepts is of the LONG data type, which stores the date and time value in milliseconds. You can determine the LONG data type equivalent of the required time-stamp value by using a SQL query. For example, to determine the `TimeStamp` parameter value for the date 31-Jan-2006, run the following SQL query:
	`SELECT ROUND((TO_DATE('31012006','ddmmyyyy') - TO_DATE('01011970', 'ddmmyyyy')) * 1440 * 60 * 1000) FROM dual;`
	When you specify the output of this query as the value of the `TimeStamp` parameter, all records that are created or updated after 31-Jan-2006 are reconciled during the next reconciliation run.

Parameter	Description
NonTrustedTimeStamp	This parameter is used for nontrusted source reconciliation.
	Starting with the first reconciliation run, this parameter stores the time-stamp value at which the reconciliation run ends.
	The default value is `0`.
	The time-stamp value that this parameter accepts is of the LONG data type, which stores the date and time value in milliseconds. You can determine the LONG data type equivalent of the required time-stamp value by using a SQL query. For example, to determine the `TimeStamp` parameter value for the date 31-Jan-2006, run the following SQL query:
	`SELECT ROUND((TO_DATE('31012006','ddmmyyyy') – TO_DATE('01011970', 'ddmmyyyy')) * 1440 * 60 * 1000) FROM dual;`
	When you specify the output of this query as the value of the `TimeStamp` parameter, all records that are created or updated after 31-Jan-2006 are reconciled during the next reconciliation run.

After you specify values for the IT resource parameter, proceed to Step 9 of the procedure to import connector XML files.

Note: You must use the existing standard APPS User for connecting to the Oracle e-Business Employee Reconciliation database because only this user has the rights required to update the database.

3

Configuring the Connector

After you deploy the connector, you must configure it to meet your requirements. This chapter discusses the following connector configuration procedures:

> **Note:** These sections provide both conceptual and procedural information about configuring the connector. It is recommended that you read the conceptual information before you perform the procedures.

- Configuring Reconciliation
- Configuring the Connector for Multiple Installations of the Target System

Configuring Reconciliation

As mentioned earlier in this guide, reconciliation involves duplicating in Oracle Identity Manager additions of and modifications to user accounts on the target system. This section discusses the following topics related to configuring reconciliation:

- Partial Reconciliation
- Batched Reconciliation
- Configuring Trusted Source Reconciliation
- Configuring the Reconciliation Scheduled Tasks
- Adding Custom Attributes for Reconciliation

Partial Reconciliation

By default, all target system records that are added or modified after the last reconciliation run are reconciled during the current reconciliation run. You can customize this process by specifying the subset of added or modified target system records that must be reconciled. You do this by creating filters for the reconciliation module.

Creating a filter involves specifying a value for a target system attribute, which will be used in the query SELECT criteria to retrieve the records to be reconciled. You can specify values for any one or a combination of the following target system attributes:

- Last Name
- Nationality

If you want to use multiple target system attributes to filter records, then you must also specify the logical operator (AND or OR) that you want to apply to the combination of target system attributes that you select.

For example, suppose you specify the following values for these attributes:

- Last Name: `Doe`
- Nationality: `US`
- Operator: `OR`

Because you are using the `OR` operator, during reconciliation, only user records for which *any one* of these criteria is met are reconciled. If you were to use the `AND` operator, then only user records for which *all* of these criteria are met are reconciled.

While deploying the connector, follow the instructions in the "Specifying Values for the Scheduled Task Attributes" section on page 3-4 to specify values for these attributes and the logical operator that you want to apply.

Batched Reconciliation

During a reconciliation run, all changes in the target system records are reconciled into Oracle Identity Manager. Depending on the number of records to be reconciled, this process may require a large amount of time. In addition, if the connection breaks during reconciliation, then the process would take longer to complete.

You can configure batched reconciliation to avoid these problems.

To configure batched reconciliation, you must specify values for the following user reconciliation scheduled task attributes:

- `BatchSize`: Use this attribute to specify the number of records that must be included in each batch. The default value is 1000.
- `NumOfBatches`: Use this attribute to specify the total number of batches that must be reconciled. The default value is `All`.

If you specify a value other than `All`, then some of the newly added or modified user records may not get reconciled during the current reconciliation run. The following example illustrates this:

Suppose you specify the following values while configuring the scheduled tasks:

- `BatchSize`: 20
- `NumOfBatches`: 10

Suppose that 314 user records were created or modified after the last reconciliation run. Of these 314 records, only 200 records would be reconciled during the current reconciliation run. The remaining 114 records would be reconciled during the next reconciliation run.

You specify values for the `BatchSize` and `NumOfBatches` attributes by following the instructions described in the "Specifying Values for the Scheduled Task Attributes" section on page 3-4.

Configuring Trusted Source Reconciliation

While configuring the connector, the target system can be designated as a trusted source or a target resource. If you designate the target system as a **trusted source**, then both newly created and modified user accounts are reconciled in Oracle Identity

Manager. If you designate the target system as a **target resource**, then only modified user accounts are reconciled in Oracle Identity Manager.

> **Note:** You can skip this section if you do not want to designate the target system as a trusted source for reconciliation.

1. Import the XML file for trusted source reconciliation, `XellOraEmp.xml`, by using the Deployment Manager. This section describes the procedure to import the XML file.

> **Note:** Only one target system can be designated as a trusted source. If you import the `XellOraEmp.xml` file while you have another trusted source configured, then both connector reconciliations would stop working.

2. Specify values for the attributes of the `Reconcile Ora HR EmpTrusted` scheduled task. This procedure is described later in this guide.

To configure trusted source reconciliation:

1. Open the Oracle Identity Manager Administrative and User Console.

2. Click the **Deployment Management** link on the left navigation bar.

3. Click the **Import** link under Deployment Management. A dialog box for locating files is displayed.

4. Locate and open the `XellOraEmp.xml` file, which is in the *OIM_home*/`xlclient` directory. Details of this XML file are shown on the File Preview page.

5. Click **Add File**. The Substitutions page is displayed.

6. Click **Next**. The Confirmation page is displayed.

7. Click **Import**.

8. In the message that is displayed, click **Import** to confirm that you want to import the **XML** file and then click **OK**.

Configuring the Reconciliation Scheduled Tasks

When you perform the procedure described in the "Step 3: Copying the Connector Files and External Code Files" section on page 2-1, the scheduled tasks for lookup fields, trusted source user, and nontrusted user reconciliations are automatically created in Oracle Identity Manager. To configure these scheduled tasks:

1. Open the Oracle Identity Manager Design Console.

2. Expand the **Xellerate Administration** folder.

3. Select **Task Scheduler.**

4. Click **Find**. The details of the predefined scheduled tasks are displayed on two different tabs.

5. For the first scheduled task, enter a number in the **Max Retries** field. This number represents the number of times Oracle Identity Manager must attempt to complete the task before assigning the ERROR status to the task.

6. Ensure that the **Disabled** and **Stop Execution** check boxes are not selected.

7. In the Start region, double-click the **Start Time** field. From the date-time editor that is displayed, select the date and time at which you want the task to run.

8. In the Interval region, set the following schedule parameters:

   - To set the task to run on a recurring basis, select the **Daily**, **Weekly**, **Recurring Intervals**, **Monthly**, or **Yearly** option.

     If you select the **Recurring Intervals** option, then you must also specify the time interval at which you want the task to run on a recurring basis.

   - To set the task to run only once, select the **Once** option.

9. Provide values for the attributes of the scheduled task. Refer to the "Specifying Values for the Scheduled Task Attributes" section on page 3-4 for information about the values to be specified.

   > **See Also:** *Oracle Identity Manager Design Console Guide* for information about adding and removing task attributes

10. Click **Save**. The scheduled task is created. The INACTIVE status is displayed in the **Status** field, because the task is not currently running. The task is run at the date and time that you set in Step 7.

11. Repeat Steps 5 through 10 to create the second scheduled task.

After you configure all three scheduled tasks, proceed to the "Adding Custom Attributes for Reconciliation" section on page 3-6.

Specifying Values for the Scheduled Task Attributes

This section provides information about the values to be specified for the following scheduled tasks:

- Lookup Fields Reconciliation Scheduled Task

- Employee Reconciliation Scheduled Tasks

Lookup Fields Reconciliation Scheduled Task You must specify values for the following attributes of the Reconcile Apps HR Emp Lookup lookup fields reconciliation scheduled task.

> **Note:**
>
> - Attribute values are predefined in the connector XML file that you import. Specify values only for those attributes that you want to change.
>
> - Values (either default or user-defined) must be assigned to all the attributes. If even a single attribute value were left empty, then reconciliation would not be performed.

Attribute	Description	Default/Sample Value
Server	Name of the IT resource instance that the connector uses to reconcile data	Oracle HR
LookupField Name	Name of the lookup field to be reconciled	OracleHR.Employees

After you specify values for these task attributes, proceed to Step 10 of the procedure to create scheduled tasks.

Employee Reconciliation Scheduled Tasks Depending on whether you want to implement trusted or nontrusted soured reconciliation, you must specify values for the attributes of one of the following employee reconciliation scheduled tasks:

- `Reconcile Ora HR EmpTrusted` (Scheduled task for trusted source reconciliation)
- `Reconcile Ora HR Emp Non Trusted` (Scheduled task for nontrusted source reconciliation)

The following table describes the attributes of both scheduled tasks.

> **Note:**
>
> - Attribute values are predefined in the connector XML file that you import. Specify values only for those attributes that you want to change.
> - Values (either default or user-defined) must be assigned to all the attributes. If even a single attribute value were left empty, then reconciliation would not be performed.

Attribute	Description	Default/Sample Value
Target System Recon – Resource Object name	Name of the resource object	Oracle HR Employee
Server	IT resource instance that the connector uses to reconcile data	Oracle HR
IsTrusted	Specifies whether or not reconciliation must be performed in trusted mode	For trusted source reconciliation, set the value of this attribute to Yes. For nontrusted source reconciliation, set the value of this attribute to No.
XellerateOrganization	Default name of the Oracle Identity Manager organization This value is used to create the Xellerate User in trusted source reconciliation mode. **Note:** This attribute is specific to the scheduled task for trusted source reconciliation	Xellerate Users
BatchSize	Number of records in each batch that is reconciled You must specify an integer value greater than zero. **See Also:** The "Batched Reconciliation" section on page 3-2	The default value is 1000.
NumOfBatches	Number of batches to be reconciled The number of records in each batch is specified by the BatchSize attribute. **See Also:** The "Batched Reconciliation" section on page 3-2	Specify All if you want to reconcile all the batches. This is the default value. Specify an integer value if you want to reconcile only a fixed number of batches

Attribute	Description	Default/Sample Value
Last Name	This is a filter attribute. Use this attribute to specify the last name of the user whose records you want to reconcile. If you do not want to use this filter attribute, then specify `Nodata`. **See Also:** The "Partial Reconciliation" section on page 3-1	The value can be either the last name or `Nodata`. The default value is `Nodata`.
Nationality	This is a filter attribute. Use this attribute to specify the nationality of the user whose records you want to reconcile. If you do not want to use this filter attribute, then specify `Nodata`. **See Also:** The "Partial Reconciliation" section on page 3-1	The value can be either the nationality or `Nodata`. The default value is `Nodata`.
Operator	Specifies the logical operator to be applied to the filter attribute If you do not want to use this filter attribute, then specify `None`. **See Also:** The "Partial Reconciliation" section on page 3-1	The value can be one of the following: ■ AND ■ OR The default value is `AND`.

After you specify values for these task attributes, proceed to Step 10 of the procedure to create scheduled tasks.

Adding Custom Attributes for Reconciliation

> **Note:** In this section, the term "attribute" refers to the identity data fields that store user data

By default, the attributes listed in the "Reconciliation Module" section on page 1-1 are mapped for reconciliation between Oracle Identity Manager and the target system. If required, you can map additional attributes for reconciliation as follows:

> **Note:** You need not perform this procedure if you do not want to add custom attributes for reconciliation.

> **See Also:** *Oracle Identity Manager Design Console* for detailed instructions on performing the following steps

1. Modify the `attributemapping_recon.properties` file, which is in the *OIM_home*`/xellerate/XLIntegrations/OracleEmpRecon/config` directory.

    At the end of this file, some of the attribute definitions are preceded by comment characters. You can uncomment the definition of an attribute to make it a part of the list of reconciliation attributes. If required, you can also add new attributes in this file. The format that you must use is as follows:

    OimAttributeName=TargetAttributeTableName,Field_Name

For example:

```
Users.email=per_all_people_f.email_address
```

In this example, `email` is the reconciliation field and `per_all_people_f` is the equivalent table name and `email_address` is the column name on the target system. As a standard, the prefix "`Users.`" is added at the start of all reconciliation field names.

2. In the resource object definition, add a reconciliation field corresponding to the new attribute as follows:

   a. Open the Resource Objects form. This form is in the Resource Management folder.

   b. Click **Query for Records**.

   c. On the Resource Objects Table tab, double-click the `Oracle HR Employee` resource object to open it for editing.

   d. On the Object Reconciliation tab, click **Add Field** to open the Add Reconciliation Field dialog box.

   e. Specify a value for the field name.

      You must specify the name that is to the left of the equal sign in the line that you uncomment or add while performing Step 2.

      For example, if you uncomment the `Users.email=per_all_people_f.email_address` line in Step 2, then you must specify `Users.email` as the attribute name.

   f. From the **Field Type** list, select a data type for the field.

      For example: `String`

   g. Save the values that you enter, and then close the dialog box.

   h. If required, repeat Steps d through g to map more fields.

3. Modify the process definition to include the mapping between the newly added attribute and the corresponding reconciliation field as follows:

   a. Open the Process Definition form. This form is in the Process Management folder.

   b. On the Reconciliation Field Mappings tab, click **Add Field Map** to open the Add Reconciliation Field Mapping dialog box.

   c. Enter the required values, save the values that you enter, and then close the dialog box.

   d. If required, repeat Steps b and c to map more fields.

Configuring the Connector for Multiple Installations of the Target System

> **Note:** Perform this procedure only if you want to configure the connector for multiple installations of Sun Java System Directory.

You may want to configure the connector for multiple installations of Sun Java System Directory. The following example illustrates this requirement:

The Tokyo, London, and New York offices of Acme Multinational Inc. have their own installations of Sun Java System Directory. The company has recently installed Oracle Identity Manager, and they want to configure Oracle Identity Manager to link all the installations of Sun Java System Directory.

To meet the requirement posed by such a scenario, you must configure the connector for multiple installations of Sun Java System Directory.

To configure the connector for multiple installations of the target system:

> **See Also:** *Oracle Identity Manager Design Console Guide* for detailed instructions on performing each step of this procedure

1. Configure reconciliation for each target system installation. Refer to the "Configuring Reconciliation" section on page 3-1 for instructions. Note that you only need to modify the attributes that are used to specify the IT resource and to specify whether or not the target system installation is to be set up as a trusted source.

2. If required, modify the fields to be reconciled for the Xellerate User resource object.

4

Testing and Troubleshooting

After you deploy the connector, you must test it to ensure that it functions as expected. This chapter discusses the following topics related to connector testing:

- Connector Test Cases
- Troubleshooting

Connector Test Cases

There are two types of tests that you can perform for reconciliation testing:

- A test from the trusted source/target resource to Oracle Identity Manager (a T-X test).
- A test from the nontrusted source/target resource to Oracle Identity Manager (an N-X test).

The following table describes sample test cases based on these test types.

Test Case	Type	Test Type	Description/Comments
If an Xellerate User is not found, then create the Xellerate User and provision a resource object for the user.	Functional	T-X	The user should be reconciled successfully.
If the Xellerate User is found, then update the user and the corresponding resource objects.	Functional	T-X	The user should be updated successfully.
Check if resource objects have been provisioned an Xellerate User. If resource objects are found, then do not delete the user. If resource objects are not found, then delete the user.	Functional	T-X	If there are no resource objects, then the user should be deleted successfully from Oracle Identity Manager. If resource objects are found, then the user should not be deleted from Oracle Identity Manager.
If the Xellerate User exists, then update the user and the corresponding resource object.	Functional	N-X	The Xellerate User should be updated successfully.
If the Xellerate User is not found, then do not perform any action.	Functional	N-X	No action is performed.

Troubleshooting

This section provides solutions to a commonly encountered problem associated with the connector.

Problem:

Oracle Identity Manager cannot establish a connection with the Oracle e-Business Employee Reconciliation server.

Solution:

- Ensure that the Oracle e-Business Employee Reconciliation server is running.

- Ensure that the Oracle Identity Manager server is running.

- Examine the Oracle Identity Manager record (in the IT Resources form). Ensure that the IP address, administrator ID, and administrator password are correct.

5

Known Issues

The following are known issues associated with this release of the connector:

- While reconciling a date field from Oracle e-Business Employee Reconciliation to Oracle Identity Manager, the Oracle Identity Manager API does not accept a blank or null value for the date. However, Oracle e-Business Employee Reconciliation accepts a null value for the date. Therefore, the value provided in the case of null date is `0000/00/00`.

- SSL functionality is not available in this release.

- Some Asian languages use multibyte character sets. If the character limit for the fields in the target system is specified in bytes, then the number of Asian-language characters that you can enter in a particular field may be less than the number of English-language characters that you can enter in the same field. The following example illustrates this limitation:

  Suppose you can enter 50 characters of English in the User Last Name field of the target system. If you were using the Traditional Chinese language and if the character limit for the target system fields were specified in bytes, then you would not be able to enter more than 25 characters in the same field.

- This release of the connector does not support the Japanese language.

A

Attribute Mappings Between Oracle Identity Manager and Oracle e-Business Employee Reconciliation

The following table discusses attribute mappings between Oracle Identity Manager and Oracle e-Business Employee Reconciliation.

Oracle Identity Manager Attribute	Oracle e-Business Employee Reconciliation Attribute	Description
First Name	PER_ALL_PEOPLE_F.FIRST_NAME	First name
Email	PER_ALL_PEOPLE_F.EMAIL_ADDRESS	E-mail address
Person ID	PER_ALL_PEOPLE_F.PERSON_ID	Identification ID
Middle Name	PER_ALL_PEOPLE_F.MIDDLE_NAMES	Middle name
Last Name	PER_ALL_PEOPLE_F.LAST_NAME	Last name
Department	HR_ALL_ORGANIZATION_UNITS.ORGANIZATION_ID	Organization
SSN	PER_ALL_PEOPLE_F.NATIONAL_IDENTIFIER	Social security number
Title	PER_ALL_PEOPLE_F.TITLE	Title
Location	HR_LOCATIONS_ALL.LOCATION_CODE	Location
Manager	PER_ALL_PEOPLE_F.FULL_NAME	Supervisor's name
City	PER_ADDRESSES.TOWN_OR_CITY	City
Postal Code	PER_ADDRESSES.POSTAL_CODE	Postal code
Country	PER_ADDRESSES.COUNTRY	Country name
Telephone Number	PER_ADDRESSES.TELEPHONE_NUMBER_1	Telephone number
Employee number	PER_ALL_PEOPLE_F.EMPLOYEE_NUMBER	Assignment number
Manager ID	PER_ALL_PEOPLE_F.PERSON_ID	Identification ID for supervisor
Nationality	PER_ALL_PEOPLE_F.NATIONALITY	Nationality

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