

# Oracle® Identity Manager

## Connector Guide for Oracle E-Business HRMS



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The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

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# Preface

This guide describes the connectors that are used to integrate Oracle Identity Manager with Oracle E-Business HRMS.

## Audience

This document is intended for resource administrators and target system integration teams.

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## Related Documents

For information about installing and using Oracle Identity Governance, visit the following Oracle Help Center page:

<http://docs.oracle.com/middleware/12213/oig/index.html>

For information about Oracle Identity Governance Connectors documentation, visit the following Oracle Help Center page:

[http://docs.oracle.com/cd/E22999\\_01/index.htm](http://docs.oracle.com/cd/E22999_01/index.htm)

## Conventions

The following text conventions are used in this document:

Convention	Meaning
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.

<b>Convention</b>	<b>Meaning</b>
<code>monospace</code>	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 Oracle Identity Manager Connector for Oracle E-Business HRMS?

This chapter provides an overview of the updates made to the software and documentation for the Oracle E-Business HRMS connector in release 11.1.1.5.0.

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

- [Software Updates](#)  
This section describes updates made to the connector software.
- [Documentation-Specific Updates](#)  
This section describes major changes made to this guide. These changes are not related to software updates.

## Software Updates

The following section discusses software updates:

### Software Updates in Release 11.1.1.5.0

This is the first release of the Oracle Identity Manager connector for Oracle E-Business HRMS on ICF architecture. Therefore, there are no software updates in this release.

## Documentation-Specific Updates

The following section discusses documentation-specific updates:

[Documentation-Specific Updates in Release 11.1.1.5.0](#)

### Documentation-Specific Updates in Release 11.1.1.5.0

The following is a documentation-specific update in revision "8" of release 11.1.1.5.0:

The "Target system" row in [Table 1-1](#) has been updated for the following:

- Oracle Database 19c has been added as one of the supported versions for running the target system.
- The note about applying a patch if you are using target system versions 12.2.4 or later has been modified.
- A note about applying an Oracle Database patch if your target system is running on Oracle Database release 19.x has been added.

The following are documentation-specific updates in revision "7" of release 11.1.1.5.0:

The "Oracle Identity Governance or Oracle Identity Manager" row of [Table 1-1](#) has been modified to include support for Oracle Identity Governance release 12c PS4 (12.2.1.4.0).

The following are documentation-specific updates in revision "6" of release 11.1.1.5.0:

- The "Target System" row of [Table 1-1](#) has been modified to include support for target version 12.2.5 and 12.2.6.
- The "Connector Server" row of [Table 1-1](#) has been modified to include a note related to JDBC driver jar files.

The following are documentation-specific updates in revision "5" of release 11.1.1.5.0:

Step 3 of [Table 1-1](#) has been updated.

The following are documentation-specific updates in revision "4" of release 11.1.1.5.0:

- The "Oracle Identity Manager" row of [Table 1-1](#) has been renamed as "Oracle Identity Governance or Oracle Identity Manager" and also updated for Oracle Identity Governance 12c (12.2.1.3.0) certification.
- The "Target System" row of [Table 1-1](#) has been modified to include exact target version from 12.2.x to 12.2.1 through 12.2.4.

The following are documentation-specific updates in revision "3" of release 11.1.1.5.0:

- The "Target System" row of [Table 1-1](#) has been updated to include support for Oracle Database 12c.
- Chapter 6, "Known Issues and Workarounds" has been removed as there are no known issues associated with this connector.

The following is a documentation-specific update in revision "2" of release 11.1.1.5.0:

The "JDK" row of [Table 1-1](#) has been renamed to "Connector Server JDK".

# 1

## About the Oracle E-Business Suite HRMS Connector

The Oracle E-Business Suite HRMS connector integrates Oracle Identity Manager (OIM) with the HRMS target system.

This chapter contains the following sections:

- [Introduction to the Connectors](#)
- [Certified Components](#)
- [Usage Recommendation](#)
- [Certified Languages](#)
- [Connector Architecture](#)
- [Features of the EBS HRMS Connector](#)



### Note:

In this guide, Oracle E-Business HRMS Connector is referred to as the **EBS HRMS connector**.

## Introduction to the Connectors

Oracle Identity Manager (OIM) platform automates access rights management, security, and provisioning of IT resources. Oracle Identity Manager connects users to resources, and revokes and restricts unauthorized access to protect sensitive corporate information. This guide discusses the connector that enables you to use Oracle E-Business HRMS as a target resource or trusted source of identity data for Oracle Identity Manager.

The connector can be used to manage HRMS records. You can use this connector to integrate Oracle E-Business HRMS either as a trusted source or target resource of Oracle Identity Manager. Two separate versions of the connector are provided for this purpose. The following sections provide information about these connectors:

- [HRMS Trusted Connector](#)
- [HRMS Target Connector](#)

## HRMS Trusted Connector

You can use the HRMS Trusted connector to integrate Oracle E-Business HRMS as a trusted source of Oracle Identity Manager. In other words, the target system is the authoritative source of identity data for Oracle Identity Manager. This identity data is used to create or update OIM Users. The HRMS Trusted connector can also be configured for use in scenarios

in which Oracle E-Business HRMS is one of the trusted sources in the operating environment of the organization.

You use the HRMS Trusted connector to reconcile all the person types that are supported by the Oracle E-Business Suite HRMS store. The PER\_ALL\_PEOPLE\_F table represents the Oracle E-Business Suite HRMS store. You can also use this connector to reconcile new, modified, terminated, and deleted person type records.

The following are the person types (HRMS or Person record) supported by the Oracle E-Business Suite HR store:

- Employee
- Contingent workers/ Part-time workers
- Contractors

## HRMS Target Connector

You can use the HRMS Target connector to provision and reconcile HRMS person records (PER\_ALL\_PEOPLE\_F records) to and from Oracle E-Business Suite HRMS. In other words, you use this connector to create PER\_ALL\_PEOPLE\_F records for OIM Users and grant assignments and addresses to these accounts. You can also reconcile newly created and modified PER\_ALL\_PEOPLE\_F records from the target system.

The object class used for HR management is `__PERSON__`. When you provision an account, an HRMS person record is created and stored in the PER\_ALL\_PEOPLE\_F table. It can be of the following types:

- Employee
- Contingent workers/ Part-time workers
- Contractors

## Certified Components

This section lists the supported certified components for the HRMS connector.

[Table 1-1](#) lists the certified components for the connector.

**Table 1-1 Certified Components**

Component	Requirement
Oracle Identity Governance or Oracle Identity Manager	<p>You can use one of the following releases of Oracle Identity Governance or Oracle Identity Manager:</p> <ul style="list-style-type: none"> <li>• Oracle Identity Governance 12c (12.2.1.4.0)</li> <li>• Oracle Identity Governance 12c (12.2.1.3.0)</li> <li>• Oracle Identity Manager 11g Release 2 PS3 (11.1.2.3.0) and any later BP in this release track</li> </ul> <p><b>Note:</b> You must download and apply the patch 21687999. To download a patch, sign in to My Oracle Support and search for the patch number on the Patches and Updates page at:</p> <p><a href="https://support.oracle.com/">https://support.oracle.com/</a></p>

Table 1-1 (Cont.) Certified Components

Component	Requirement
Target system	<p>The target system can be any one of the following:</p> <ul style="list-style-type: none"> <li>Oracle E-Business Suite 12.1.1 through 12.1.3</li> <li>Oracle E-Business Suite 12.2.1 through 12.2.7 or later</li> </ul> <p>These applications may run on Oracle Database 10g, 11g, 12c, or 19c as either single database or Oracle RAC implementation.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>If you are using 12.2.4 or later versions, then you must download and apply the latest EBS connector 11.1.1.5.0J Patch 30497905. To download the patch, sign in to <a href="#">My Oracle Support</a> and search for the patch number on the Patches and Updates page.</li> <li>If your target system is running on Oracle Database release 19.x, then download and apply the Oracle Database patch 31142749 from <a href="#">My Oracle Support</a>. Applying this patch ensures that provisioning operations work fine.</li> <li>Communication between Oracle Identity Manager and the target system can be in SSL or non-SSL mode.</li> </ul>
Connector server	11.1.2.1.0
	<div style="border: 1px solid #0070C0; padding: 10px; background-color: #E6F2FF;"> <p> <b>Note:</b></p> <p>The JDBC driver ojdbcx.jar is supported with character sets such as US7ASCII, WE8DEC, WE8ISO8859P1, WE8MSWIN1252, and UTF8. To use any other character sets and ensure all connector operations work successfully with the Connector Server, download the orai18n.jar file from the Oracle JDBC drivers OTN page and copy it to the lib directory of Connector Server.</p> </div>
Connector Server JDK	JDK 1.6 or later

## Usage Recommendation

Depending on the Oracle Identity Manager version that you are using, you must deploy and use one of the following connectors:

- If you are using an Oracle Identity Manager release that is earlier than Oracle Identity Manager 11g Release 2 PS3 (11.1.2.3.0) and you want to configure the connector to use the target system as a trusted source, then use the 9.1.x version of the Oracle E-Business Employee Reconciliation connector.

Note that in the 9.1.x version, there is no connector for configuring the HRMS target system as a target resource.

- If you are using any of the Oracle Identity Manager release listed in [Table 1-1](#) then you must use the latest 11.1.1.x version of this connector.

## Certified Languages

These are the languages that the connector supports.

- Arabic
- Chinese (Simplified)
- Chinese (Traditional)
- Czech
- Danish
- Dutch
- English (US)
- Finnish
- French
- French (Canadian)
- German
- Greek
- Hebrew
- Hungarian
- Italian
- Japanese
- Korean
- Norwegian
- Polish
- Portuguese
- Portuguese (Brazilian)
- Romanian
- Russian
- Slovak
- Spanish
- Swedish
- Thai
- Turkish

## Connector Architecture

The HRMS connector is implemented using the Integrated Common Framework (ICF) component.

The Oracle E-Business HRMS connector is implemented by using the Identity Connector Framework (ICF). The ICF is a component that provides basic

reconciliation and provisioning operations that are common to all Oracle Identity Manager connectors. In addition, ICF provides common features that developers would otherwise need to implement on their own, such as connection pooling, buffering, time outs, and filtering. The ICF is shipped along with Oracle Identity Manager. Therefore, you need not configure or modify the ICF.

During connector operations, Oracle Identity Manager interacts with a layer called Glue. Glue is specific for each of the applications and uses ICF API to invoke operations on the Identity Connector (IC). The connector then calls the target system APIs to perform operations on the resource.

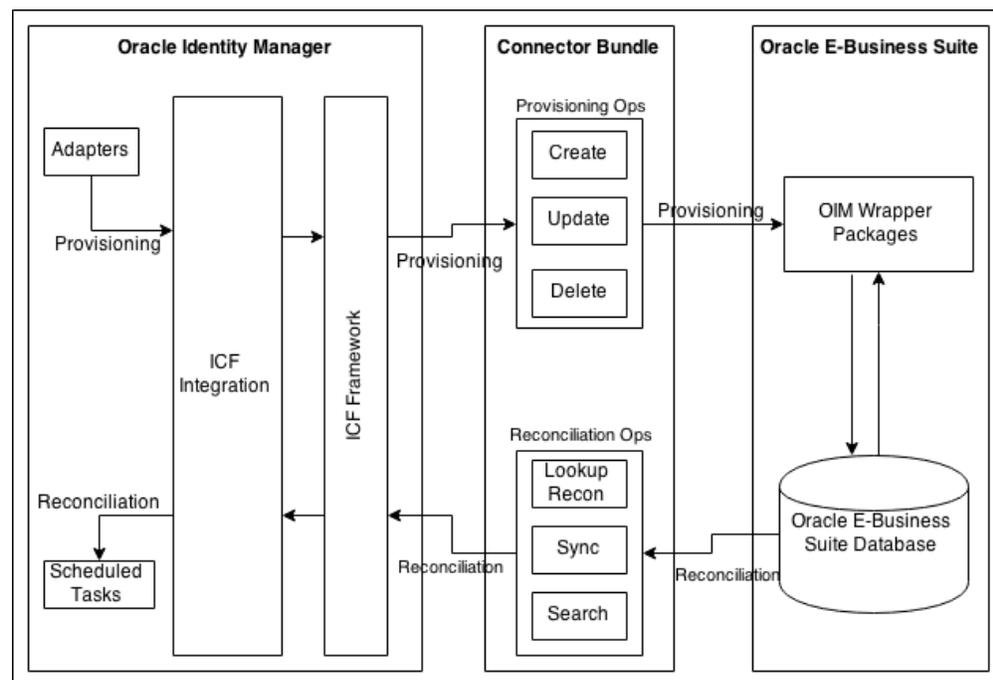
As discussed in one of the earlier sections, there are two versions of the Oracle E-Business HRMS connector as follows:

- **HRMS Target Connector**

The basic function of this connector is to enable management of employee data on Oracle E-Business Suite HRMS through Oracle Identity Manager. You can create and manage employee records for OIM Users through provisioning. In addition, data related to newly created and modified employee records can be reconciled (using scheduled tasks) and linked with existing OIM Users and provisioned resources.

Figure 1-1 shows the architecture of the HRMS Target connector.

**Figure 1-1 Connector Architecture of the HRMS Target Connector**

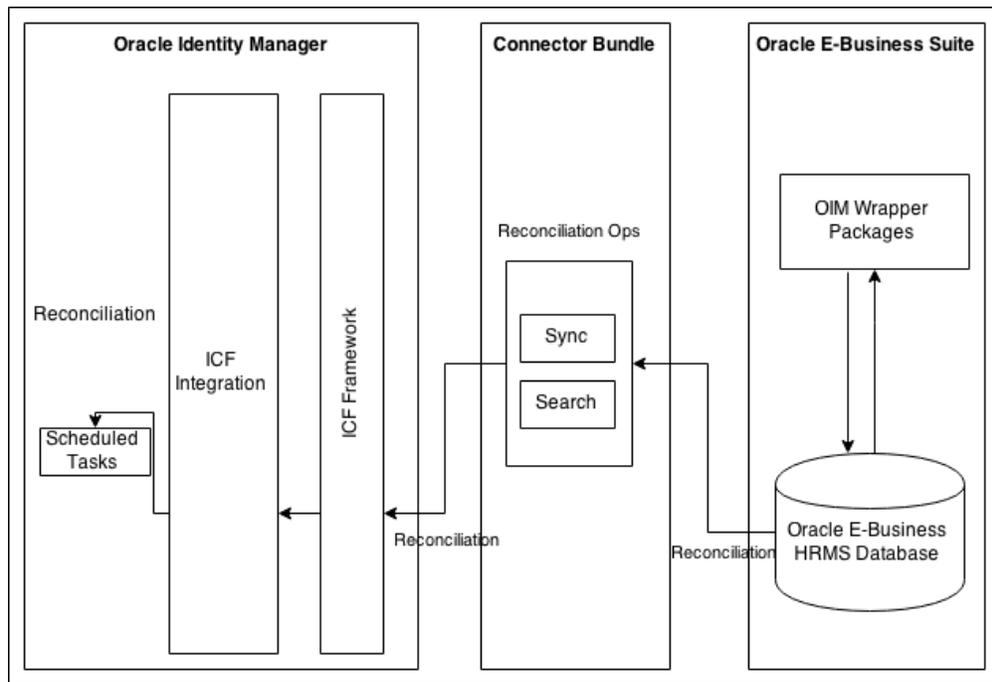


- **HRMS Trusted Connector**

The basic function of this connector is to perform identity (trusted source) reconciliation with the target system. In this form of reconciliation, identity data is fetched to Oracle Identity Manager and this data is used to create or update OIM Users.

Figure 1-1 shows the architecture of the HRMS Trusted connector.

Figure 1-2 Connector Architecture of the HRMS Trusted Connector



## Features of the EBS HRMS Connector

The features of the connector include support for connector server, full reconciliation, and limited reconciliation.

The following are the features of the connector:

- [Configurable Reconciliation Queries and Stored Procedures](#)
- [Full and Incremental Reconciliation](#)
- [Batched Reconciliation](#)
- [Limited \(Filtered\) Reconciliation](#)
- [Connection Pooling](#)
- [Support for SSL Communication Between the Target System and Oracle Identity Manager](#)

## Configurable Reconciliation Queries and Stored Procedures

Reconciliation involves running a SQL query on the target system database to fetch the required Person records to Oracle Identity Manager. Predefined SQL queries are stored in the search.properties file in the connector bundle JAR package. You can modify these SQL queries or add your own SQL queries for reconciliation.

Similarly, provisioning involves running stored procedures on the target system database to create or update the required Person records. Information about the stored procedures related to performing provisioning operations are stored in the Procedures.properties file in the connector bundle JAR. You can modify these stored procedures or add your own stored procedures for provisioning.

See the following sections for more information about these SQL queries and stored procedures:

- [Reconciliation Queries for the EBS HRMS Connector](#)
- [Reconciliation Queries for the HRMS Trusted Connector](#)
- [Provisioning Procedures](#)

## Full and Incremental Reconciliation

In full reconciliation, all records are fetched from the target system to Oracle Identity Manager. In incremental reconciliation, only records that are added or modified after the last reconciliation run are fetched into Oracle Identity Manager.

You can switch from incremental to full reconciliation at any time after you deploy the connector. See section [Performing Full Reconciliation and Incremental Reconciliation Using the HRMS Target Connector](#) for more information on performing full and incremental reconciliation runs.

## Batched Reconciliation

You can break down a reconciliation run into batches by specifying the number of records that must be included in each batch.

See section [Performing Batched Reconciliation Using the HRMS Target Connector](#) for more information on performing batched reconciliation.

## Limited (Filtered) Reconciliation

To limit or filter the records that are fetched into Oracle Identity Manager during a reconciliation run, you can specify the subset of added or modified target system records that must be reconciled.

See section [Performing Limited Reconciliation Using the HRMS Target Connector](#) for more information on performing limited reconciliation.

## Connection Pooling

A connection pool is a cache of objects that represent physical connections to the target. Oracle Identity Manager connectors can use these connections to communicate with target systems. At run time, the application requests a connection from the pool. If a connection is available, then the connector uses it and then returns it to the pool. A connection returned to the pool can again be requested for and used by the connector for another operation. By enabling the reuse of connections, the connection pool helps reduce connection creation overheads like network latency, memory allocation, and authentication.

One connection pool is created for each IT resource. For example, if you have three IT resources for three installations of the target system, then three connection pools will be created, one for each target system installation.

See [Setting Up the Lookup Definition for Connection Pooling](#) for more information about setting up the Configuration lookup definitions for connection pooling.

## Support for SSL Communication Between the Target System and Oracle Identity Manager

You can configure SSL to secure communication between Oracle Identity Manager and the target system.

See [Configuring Secure Communication Between the Target System and Oracle Identity Manager](#) for information about configuring secure communication.

# 2

## Deploying the EBS HRMS Connector

The procedure to deploy the connector can be divided into the following stages:

- [Preinstallation](#)
- [Installation](#)
- [Postinstallation](#)
- [Upgrading the Connector](#)
- [Postcloning Steps](#)

### Preinstallation

Preinstallation involves creating a target system user account for connector operations.



#### Note:

You must have DBA privileges to run the scripts described in this section and grant the required permissions to the target system user account.

You must have Oracle Database Client installed on the computer on which you perform the procedure described in this section. The Oracle Database Client release must be the same as the database release. In addition, if Oracle Database Client is not installed on the database host computer, then the tnsnames.ora file on the Oracle Database Client host must contain an entry for the SID of the database.

Oracle Identity Manager requires a target system user account to access the target system during connector operations. You provide the credentials of this user account while performing the procedure described in [Configuring the IT Resource for the Target System](#).

To create a target system user account for connector operations:

1. From the installation media, copy the scripts directory to a temporary directory on either the target system host computer or a computer on which the Oracle Database Client has been installed. If you are installing in the same host computer where the connector directory is present, then skip this step and proceed to the next.
2. On the computer where you copy the scripts directory, verify that there is a TNS entry in the tnsnames.ora file for the target system database.
3. Change to the directory containing the scripts directory and depending on the host platform, run either the Run\_HRMS\_DBScripts.sh or Run\_HRMS\_DBScripts.bat file. These files are present in the scripts directory of the installation media.
4. When you run the script, you are prompted for the following information:
  - Enter the ORACLE\_HOME

Set a value for the ORACLE\_HOME environment variable. This prompt is displayed only if the ORACLE\_HOME environment variable has not been set on the computer on which you are running the script.

- Enter the System User Name  
Enter the login (user name) of a DBA account with the privileges to create and configure a new target system user.
- Enter the name of the database  
Enter the connection string or service name given in the tnsnames.ora file to connect to the target system database.
- Would you like to create new user for connector operations [y/n]  
Enter y or n to specify whether you want to create a new user for connector operations.  
This connects you the SQL\*Plus client.
- Enter password  
Enter the password for the Oracle database login. If you entered n at the earlier prompt to create a new user for connector operations, then the Type and Package are created, and then the connection to the database is disconnected. If you entered y, then the Type and Package are created, and then the connection to the database remains.
- Enter password  
Enter the password of the dba user.
- Enter New database Username to be created  
Enter a user name for the target system account that you want to create.
- Enter the New user password  
Enter a password for the target system account that you want to create.  
This installs all wrappers packages under the APPS schema, creates the new target system account, and then grants all the required privileges on the tables and packages.
- Connecting with newly created database user  
Enter the connection string or service name that you provided earlier.  
The user account for connector operations is created. The privileges granted to this user account are listed in [Privileges Granted to the User Account](#).
- Enter the hostname for network acl [Input will be ignored If DB version is earlier than 11g]  
Enter the name of the computer hosting network acl in the following format:  
\*.DOMAIN\_NAME.com  
This prompt is received only if you entered y at one of the earlier prompts to create a new user for connector operations.

## Privileges Granted to the User Account

This section lists the privileges that are granted to the user account created in [Preinstallation](#). The synonyms created for tables are also listed here.

**Execute permission granted to the following packages:**

APPS.HR\_EMPLOYEE\_API  
APPS.HR\_PERSON\_API  
APPS.HR\_PERSON\_ADDRESS\_API  
APPS.HR\_PERSON\_ADDRESS\_BK1  
APPS.HR\_API  
APPS.HR\_CONTINGENT\_WORKER\_API  
APPS.HR\_ASSIGNMENT\_API

**Select privilege has been granted to the following tables:**

APPS.PER\_ALL\_ASSIGNMENTS\_F  
APPS.PER\_PEOPLE\_F  
APPS.PER\_PERSON\_TYPES  
APPS.PER\_PERIODS\_OF\_SERVICE  
APPS.PER\_PERIODS\_OF\_PLACEMENT  
APPS.PER\_ADDRESSES  
APPS.PER\_PERSON\_TYPE\_USAGES\_F  
APPS.PER\_ALL\_PEOPLE\_F

**Execute privileges granted to the following wrapper packages created in APPS schema:**

APPS.OIM\_EMPLOYEE\_WRAPPER  
APPS.OIM\_EMPLOYEE\_ADDRESS\_WRAPPER  
APPS.HZ\_PARTIES  
APPS.PER\_JOBS  
APPS.PER\_GRADES  
APPS.HR\_ALL\_ORGANIZATION\_UNITS  
APPS.PER\_VALID\_GRADES  
APPS.FND\_LOOKUP\_VALUES\_VL

**Synonyms created or replaced for tables as follows:**

synonym PER\_PEOPLE\_F for APPS.PER\_PEOPLE\_F  
synonym PER\_ALL\_ASSIGNMENTS\_F for APPS.PER\_ALL\_ASSIGNMENTS\_F

synonym PER\_PERIODS\_OF\_SERVICE for APPS.PER\_PERIODS\_OF\_SERVICE

synonym PER\_PERIODS\_OF\_PLACEMENT for  
APPS.PER\_PERIODS\_OF\_PLACEMENT

synonym HR\_EMPLOYEE\_API for APPS.HR\_EMPLOYEE\_API

synonym HR\_PERSON\_API for APPS.HR\_PERSON\_API

synonym PER\_ADDRESSES for APPS.PER\_ADDRESSES

synonym PER\_PERSON\_TYPE\_USAGES\_F for  
APPS.PER\_PERSON\_TYPE\_USAGES\_F

synonym PER\_ALL\_PEOPLE\_F for APPS.PER\_ALL\_PEOPLE\_F

synonym PER\_JOBS for APPS.PER\_JOBS

synonym PER\_GRADES for APPS.PER\_GRADES

synonym HR\_ALL\_ORGANIZATION\_UNITS for  
APPS.HR\_ALL\_ORGANIZATION\_UNITS

synonym HR\_PERSON\_ADDRESS\_API for APPS.HR\_PERSON\_ADDRESS\_API

synonym HR\_CONTINGENT\_WORKER\_API for  
APPS.HR\_CONTINGENT\_WORKER\_API

synonym HR\_ASSIGNMENT\_API for APPS.HR\_ASSIGNMENT\_API

synonym HR\_PERSON\_ADDRESS\_BK1 for APPS.HR\_PERSON\_ADDRESS\_BK1

synonym HR\_API for APPS.HR\_API

synonym HZ\_PARTIES for APPS.HZ\_PARTIES

synonym PER\_PERSON\_TYPES for APPS.PER\_PERSON\_TYPES

synonym PER\_VALID\_GRADES for APPS.PER\_VALID\_GRADES

synonym FND\_LOOKUP\_VALUES\_VL for APPS.FND\_LOOKUP\_VALUES\_VL

**Synonyms created or replaced for OIM database user as follows:**

synonym OIM\_EMPLOYEE\_WRAPPER for APPS.OIM\_EMPLOYEE\_WRAPPER

synonym OIM\_EMPLOYEE\_ADDRESS\_WRAPPER for  
APPS.OIM\_EMPLOYEE\_ADDRESS\_WRAPPER

synonym attributeinfo for APPS.attributeinfo

synonym attributelist for APPS.attributelist

synonym schema\_object for APPS.schema\_object

synonym schemalist for APPS.schemalist

## Installation

Installation information is divided across the following sections:

- [Understanding the Installation](#)

- [Running the Connector Installer](#)
- [Configuring the IT Resource for the Target System](#)

## Understanding the Installation

Depending on where you want to run the connector code (bundle), the connector provides the following installation options:

- Run the connector code locally in Oracle Identity Manager.  
In this scenario, you deploy the connector in Oracle Identity Manager. Deploying the connector in Oracle Identity Manager involves performing the procedures described in [Running the Connector Installer](#) and [Configuring the IT Resource for the Target System](#).
- Run the connector code remotely in a Connector Server.  
In this scenario, you deploy the connector in Oracle Identity Manager, and then, deploy the connector bundle in a Connector Server. See *Using an Identity Connector Server in Oracle Fusion Middleware Developing and Customizing Applications for Oracle Identity Manager* for information about installing, configuring, and running the Connector Server, and then installing the connector in a Connector Server.

## Running the Connector Installer

To run the Connector Installer:

1. Copy the contents of the connector installation media directory into the following directory:  
`OIM_HOME/server/ConnectorDefaultDirectory`
2. Log in to Oracle Identity System Administration.
3. In the left pane, under System Management, click **Manage Connector**.
4. In the Manage Connector page, click **Install**.
5. The Connector List list displays the names and release numbers of connectors whose installation files you copy into the default connector installation directory in Step 1.

You can select one of the following options:

- For the HRMS Trusted connector:  
**Oracle EBS Employee Reconciliation *RELEASE\_NUMBER***
- For the HRMS Target connector:  
**Oracle EBS HRMS *RELEASE\_NUMBER***

If you have copied the installation files into a different directory, then:

- a. In the **Alternative Directory** field, enter the full path and name of that directory.
  - b. To repopulate the list of connectors in the Connector List list, click **Refresh**.
  - c. From the Connector List list, select the connector that you want to install.
6. Click **Load**.
  7. To start the installation process, click **Continue**.

The following tasks are performed, in sequence:

- a. Configuration of connector libraries
- b. Import of the connector XML files (by using the Deployment Manager)
- c. Compilation of adapters

On successful completion of a task, a check mark is displayed for the task. If a task fails, then an X mark and a message stating the reason for failure is displayed. Depending on the reason for the failure, make the required correction and then perform one of the following steps:

- Retry the installation by clicking **Retry**.
  - Cancel the installation and begin again from Step 1.
8. If all three tasks of the connector installation process are successful, then a message indicating successful installation is displayed. In addition, a list of steps that you must perform after the installation is displayed. These steps are as follows:
    - a. Ensuring that the prerequisites for using the connector are addressed

 **Note:**

At this stage, run the Oracle Identity Manager PurgeCache utility to load the server cache with content from the connector resource bundle in order to view the list of prerequisites. See [Clearing Content Related to Connector Resource Bundles from the Server Cache](#) for information about running the PurgeCache utility.

There are no prerequisites for some predefined connectors.

- b. Configuring the IT resource for the connector  
The procedure to configure the IT resource is described later in this guide.
- c. Configuring the scheduled jobs  
The procedure to configure these scheduled jobs is described later in this guide.

## Configuring the IT Resource for the Target System

An IT resource contains connection information about the target system. Oracle Identity Manager uses this information during reconciliation and provisioning. Depending on the connector you have installed, one of the following the IT resources for the target system are created during connector installation:

- Oracle EBS HRMS
- Oracle EBS HRMS Trusted

Depending on the connector that you are using, you must specify values for the parameters of these IT resources as follows:

1. Log in to Oracle Identity System Administration.
2. In the left pane, under Configuration, click **IT Resource**.

3. In the IT Resource Name field on the Manage IT Resource page, enter the IT resource name that you want to configure (for example, Oracle EBS HRMS) and then click **Search**. Alternatively, from the IT Resource Type menu, select the name of the IT resource, and then click **Search**.
4. Click the edit icon for the IT resource.
5. From the list at the top of the page, select **Details and Parameters**.
6. Specify values for the parameters of the IT resource. The list of IT resource parameters for each connector is listed later in this section.
7. To save the values, click **Update**.

Table 2-1 describes each parameter of the Oracle EBS HRMS and Oracle EBS HRMS Trusted IT resources.

**Table 2-1 Parameters of the Oracle EBS HRMS and Oracle EBS HRMS Trusted IT Resources**

Parameter	Description
batchSize	Enter the number of records that must be included in each batch fetched from the target system during reconciliation. Default value: 1000
Configuration Lookup	This parameter holds the name of the configuration lookup definition. Depending on the connector that you are using, the value is one of the following: <ul style="list-style-type: none"> <li>• For HRMS Target connector: <code>Lookup.EBSHRMS.Configuration</code></li> <li>• For HRMS trusted connector: <code>Lookup.EBSHRMS.Configuration.Trusted</code></li> </ul> You must not change the value of this parameter. However, if you create a copy of this lookup definition, then you can enter the name of the newly created lookup definition as the value of the Configuration Lookup Name parameter.
Connector Server Name	Enter the name of the connector server IT resource.
database	Enter the name of the target system database.
deletePerson	Specifies whether the employee record must be completely deleted from the target system. There is no hard delete of employee records in the target system. In other words, when you delete an employee record, the employee record is just set to terminated, but the record is not completely deleted from the target system.  If you set the value of this parameter to <code>true</code> , the employee record is completely deleted from the target system.  If you set the value of this parameter to <code>false</code> , the employee record is not deleted from the target system, but its status is just set to "terminated".  This parameter is present only in the Oracle EBS HRMS IT resource.
host	Enter the host name or IP address of the computer hosting the target system.
includeFutureHires	Specifies whether the connector must detect and reconcile records with future-dated Start Date values.  If you set the value of this parameter to <code>true</code> , all employee records with future-dated start Date values are reconciled.  If you set the value of this parameter to <code>false</code> , employee records with future-dated Start Date values are not reconciled.  Default value: <code>true</code>  This parameter is present only in the Oracle EBS HRMS Trusted IT resource.
jdbcUrlTemplate	Enter the JDBC URL template of the target system database. Default value: <code>jdbc:oracle:thin:@%h:%p:%d</code>

**Table 2-1 (Cont.) Parameters of the Oracle EBS HRMS and Oracle EBS HRMS Trusted IT Resources**

Parameter	Description
port	Enter the number of the port at which the target system database is listening.
user	Enter the user ID of the database user account that Oracle Identity Manager uses to connect to the target system.
password	Enter the password of the database user account that Oracle Identity Manager uses to connect to the target system.

## Postinstallation

Postinstallation steps are divided across the following sections:

- [Configuring Secure Communication Between the Target System and Oracle Identity Manager](#)
- [Configuring Oracle Identity Manager](#)
- [Setting Up the Lookup Definition for Connection Pooling](#)
- [Clearing Content Related to Connector Resource Bundles from the Server Cache](#)
- [Managing Logging](#)
- [Determining Values for the JDBC URL and Connection Properties Parameters](#)
- [Localizing Field Labels in UI Forms](#)
- [Removing the Default Validation Check for Provisioning Operations](#)

## Configuring Secure Communication Between the Target System and Oracle Identity Manager

To secure communication between Oracle Database and Oracle Identity Manager, you can perform either one or both of the following procedures:

 **Note:**

To perform the procedures described in this section, you must have the permissions required to modify the TNS listener configuration file.

- [Configuring Data Encryption and Integrity in Oracle Database](#)
- [Configuring SSL Communication in Oracle Database](#)

## Configuring Data Encryption and Integrity in Oracle Database

See Data Encryption in *Oracle Database Advanced Security Administrator's Guide* for information about configuring data encryption and integrity.

## Configuring SSL Communication in Oracle Database

To enable SSL communication between Oracle Database and Oracle Identity Manager:

1. See Secure Socket Layer in *Oracle Database Advanced Security Administrator's Guide* for information about enabling SSL communication between Oracle Database and Oracle Identity Manager.
2. Export the certificate on the Oracle Database host computer.
3. Copy the certificate to Oracle Identity Manager.
4. Import the certificate into the JVM certificate store of the application server on which Oracle Identity Manager is running.

To import the certificate into the certificate store, run the following command:

```
keytool -import -file FILE_LOCATION -keystore TRUSTSTORE_LOCATION -storepass TRUSTSTORE_PASSWORD -trustcacerts -alias ALIAS
```

In this command:

- Replace *FILE\_LOCATION* with the full path and name of the certificate file.
- Replace *ALIAS* with an alias for the certificate.
- Replace *TRUSTSTORE\_PASSWORD* with a password for the certificate store.
- Replace *TRUSTSTORE\_LOCATION* with one of the certificate store paths given in [Table 2-2](#). This table shows the location of the certificate store for each of the supported application servers.

### Note:

In an Oracle Identity Manager cluster, you must import the file into the certificate store on each node of the cluster.

**Table 2-2 Certificate Store Locations**

Application Server	Certificate Store Location
Oracle WebLogic Server	<ul style="list-style-type: none"> <li>• If you are using Oracle jrockit_R27.3.1-jdk, then copy the certificate into the following directory: <i>JROCKIT_HOME</i>/jre/lib/security</li> <li>• If you are using the default Oracle WebLogic Server JDK, then copy the certificate into the following directory: <i>WEBLOGIC_HOME</i>/java/jre/lib/security/cacerts</li> </ul>

Table 2-2 (Cont.) Certificate Store Locations

Application Server	Certificate Store Location
IBM WebSphere Application Server	<ul style="list-style-type: none"> <li>For a nonclustered configuration of any supported IBM WebSphere Application Server release, import the certificate into the following certificate store: <code>WEBSPPHERE_HOME/java/jre/lib/security/cacerts</code></li> <li>For IBM WebSphere Application Server 6.1.x, in addition to the <code>cacerts</code> certificate store, you must import the certificate into the following certificate store: <code>WEBSPPHERE_HOME/Web_Sphere/profiles/SERVER_NAME/config/cells/CELL_NAME/nodes/NODE_NAME/trust.p12</code> For example: <code>C:/Web_Sphere/profiles/AppSrv01/config/cells/tcs055071Node01Cell/nodes/tcs055071Node0/trust.p12</code></li> <li>For IBM WebSphere Application Server 5.1.x, in addition to the <code>cacerts</code> certificate store, you must import the certificate into the following certificate store: <code>WEBSPPHERE_HOME/etc/DummyServerTrustFile.jks</code></li> </ul>
JBoss Application Server	<code>JAVA_HOME/jre/lib/security/cacerts</code>
Oracle Application Server	<code>ORACLE_HOME/jdk/jre/lib/security/cacerts</code>

## Configuring Oracle Identity Manager



### Note:

Perform the procedure described in this section only if you are using the HRMS Target connector.

You must create additional metadata such as a UI form and an application instance. In addition, you must run catalog synchronization job. These procedures are described in the following sections:

- [Creating and Activating a Sandbox](#)
- [Creating a New UI Form](#)
- [Associating the Form with the Application Instance](#)
- [Publishing a Sandbox](#)
- [Syncing the Catalog](#)
- [Updating an Existing Application Instance with a New Form](#)

## Creating and Activating a Sandbox

See *Managing Sandboxes in Oracle Fusion Middleware Developing and Customizing Applications for Oracle Identity Manager* for instructions on creating and activating a sandbox.

## Creating a New UI Form

See *Managing Forms* in *Oracle Fusion Middleware Administering Oracle Identity Manager* for instructions on creating a new UI form. While creating the UI form, ensure that you select the resource object corresponding to the EBS HRMS Target connector that you want to associate the form with.

### Note:

- While creating a new UI form, the form type should be Parent Form + Child Tables (Master/Detail).
- Ensure that you select the **Generate Entitlement Forms** check box.

## Associating the Form with the Application Instance

By default, an application instance named **Oracle EBS HRMS Application Instance** is automatically created after you install the connector. You must associate this application instance with the form created in [Creating a New UI Form](#).

See [Managing Application Instances](#) in *Oracle Fusion Middleware Administering Oracle Identity Manager* for instructions on modifying an application instance.

After updating the application instance, you must publish it to an organization to make the application instance available for requesting and subsequent provisioning to users. However, as a best practice, perform the following procedure before publishing the application instance:

1. In the System Administration console, deactivate the sandbox.
2. Log out of the System Administration console.
3. Log in to the Self Service console and activate the sandbox that you deactivated in Step 1.
4. In the Catalog, check for the Application Instance UI (form fields) and ensure that it appears correctly.
5. Publish the application instance only if everything appears correctly. Otherwise, fix the issues and then publish the application instance.

See *Managing Organizations Associated With Application Instances* in *Oracle Fusion Middleware Administering Oracle Identity Manager* for instructions on publishing an application instance to an organization.

## Publishing a Sandbox

Before you publish a sandbox, perform the following procedure as a best practice to validate all sandbox changes made till this stage as it is hard to revert changes once a sandbox is published:

1. In the System Administration console, deactivate the sandbox.
2. Log out of the System Administration console.

3. Log in to the Self Service console using the xelsysadm user credentials and then activate the sandbox that you deactivated in Step 1.
4. In the Catalog, ensure that the EBS HRMS application instance form appears with correct fields.
5. Publish the sandbox. See *Publishing a Sandbox* in *Developing and Customizing Applications for Oracle Identity Manager* for instructions on publishing a sandbox.

## Syncing the Catalog

To sync the catalog:

1. Run the scheduled jobs for lookup field synchronization listed in [Scheduled Job for Lookup Field Synchronization](#).
2. Run the Catalog Synchronization Job scheduled job. See *Predefined Scheduled Tasks* in *Oracle Fusion Middleware Administering Oracle Identity Manager* for more information about this scheduled job.

## Updating an Existing Application Instance with a New Form

For any changes you do in the Form Designer, you must create a new UI form and update the changes in an application instance. To update an existing application instance with a new form:

1. Create a sandbox and activate it as described in [Creating and Activating a Sandbox](#).
2. Create a new UI form for the resource as described in [Creating a New UI Form](#).
3. Open the existing application instance.
4. In the **Form** field, select the new UI form that you created.
5. Save the application instance.
6. Publish the sandbox as described in [Publishing a Sandbox](#).

## Setting Up the Lookup Definition for Connection Pooling

By default, this connector uses the ICF connection pooling. [Table 2-3](#) lists the connection pooling properties, their description, and default values set in ICF:

**Table 2-3 Connection Pooling Properties**

Property	Description
Pool Max Idle	Maximum number of idle objects in a pool. Default value: 10
Pool Max Size	Maximum number of connections that the pool can create. Default value: 10
Pool Max Wait	Maximum time, in milliseconds, the pool must wait for a free object to make itself available to be consumed for an operation. Default value: 150000

**Table 2-3 (Cont.) Connection Pooling Properties**

Property	Description
Pool Min Evict Idle Time	Minimum time, in milliseconds, the connector must wait before evicting an idle object. Default value: 120000
Pool Min Idle	Minimum number of idle objects in a pool. Default value: 1

If you want to modify the connection pooling properties to use values that suit requirements in your environment, then:

1. Log in to the Design Console.
2. Expand **Administration**, and then double-click **Lookup Definition**.
3. Search for and open one of the following lookup definitions:  
For the HRMS Trusted connector: **Lookup.EBSHRMS.Configuration.Trusted**  
For the HRMS Target connector: **Lookup.EBSHRMS.Configuration**
4. On the Lookup Code Information tab, click **Add**.  
A new row is added.
5. In the **Code Key** column of the new row, enter `Pool Max Idle`.
6. In the **Decode** column of the new row, enter a value corresponding to the Pool Max Idle property.
7. Repeat Steps 4 through 6 for adding each of the connection pooling properties listed in [Table 2-3](#).
8. Click the Save icon.

## Clearing Content Related to Connector Resource Bundles from the Server Cache

When you deploy the connector, the resource bundles are copied from the resources directory on the installation media into the Oracle Identity Manager database. Whenever you add a new resource bundle to 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, switch to the `OIM_HOME/server/bin` directory.
2. Enter one of the following commands:
  - On Microsoft Windows: `PurgeCache.bat All`
  - On UNIX: `PurgeCache.sh All`

When prompted, enter the user name and password of an account belonging to the SYSTEM ADMINISTRATORS group. In addition, you are prompted to enter the service URL in the following format:

```
t3://OIM_HOST_NAME:OIM_PORT_NUMBER
```

In this format:

- Replace *OIM\_HOST\_NAME* with the host name or IP address of the Oracle Identity Manager host computer.
- Replace *OIM\_PORT\_NUMBER* with the port on which Oracle Identity Manager is listening.

You can use the PurgeCache utility to purge the cache for any content category.

## Managing Logging

Managing logging is discussed in the following sections:

- [Understanding Log Levels](#)
- [Enabling logging](#)

### Understanding Log Levels

Oracle Identity Manager uses Oracle Java Diagnostic Logging (OJDL) for logging. OJDL is based on `java.util.logger`. 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:

- `SEVERE.intValue()+100`  
This level enables logging of information about fatal errors.
- `SEVERE`  
This level enables logging of information about errors that might allow Oracle Identity Manager to continue running.
- `WARNING`  
This level enables logging of information about potentially harmful situations.
- `INFO`  
This level enables logging of messages that highlight the progress of the application.
- `CONFIG`  
This level enables logging of information about fine-grained events that are useful for debugging.
- `FINE`, `FINER`, `FINEST`  
These levels enable logging of information about fine-grained events, where `FINEST` logs information about all events.

These log levels are mapped to ODL message type and level combinations as shown in [Table 2-4](#).

**Table 2-4 Log Levels and ODL Message Type:Level Combinations**

Log Level	ODL Message Type:Level
SEVERE.intValue()+100	INCIDENT_ERROR:1
SEVERE	ERROR:1
WARNING	WARNING:1
INFO	NOTIFICATION:1
CONFIG	NOTIFICATION:16
FINE	TRACE:1
FINER	TRACE:16
FINEST	TRACE:32

The configuration file for OJDL is logging.xml, which is located at the following path:

*DOMAIN\_HOME*/config/fmwconfig/servers/*OIM\_SERVER*/logging.xml

Here, *DOMAIN\_HOME* and *OIM\_SERVER* are the domain name and server name specified during the installation of Oracle Identity Manager.

## Enabling logging

To enable logging in Oracle WebLogic Server:

1. Edit the logging.xml file as follows:

- a. Add the following blocks in the file:

```
<log_handler name='ebs-handler' level=' [LOG_LEVEL] '
class='oracle.core.ojdl.logging.ODLHandlerFactory'>
<property name='logreader:' value='off'/>
  <property name='path' value=' [FILE_NAME] '/>
  <property name='format' value='ODL-Text'/>
  <property name='useThreadName' value='true'/>
  <property name='locale' value='en'/>
  <property name='maxFileSize' value='5242880'/>
  <property name='maxLogSize' value='52428800'/>
  <property name='encoding' value='UTF-8'/>
</log_handler>
</log_handlers>

<logger name='ORG.IDENTITYCONNECTORS.EBS' level=' [LOG_LEVEL] '
useParentHandlers='false'>
  <handler name='ebs-handler'/>
  <handler name='console-handler'/>
</logger>
```

- b. Replace both occurrences of **[LOG\_LEVEL]** with the ODL message type and level combination that you require. [Table 2-4](#) lists the supported message type and level combinations.

Similarly, replace **[FILE\_NAME]** with the full path and name of the log file in which you want log messages to be recorded.

The following blocks show sample values for **[LOG\_LEVEL]** and **[FILE\_NAME]** :

```

<log_handler name='ebs-handler' level='TRACE:32'
class='oracle.core.ojdl.logging.ODLHandlerFactory'>    <property
name='logreader:' value='off' />
    <property name='path' value='/scratch/acme1/user1/oim_Jun25.log' />
    <property name='format' value='ODL-Text' />
    <property name='useThreadName' value='true' />
    <property name='locale' value='en' />
    <property name='maxFileSize' value='5242880' />
    <property name='maxLogSize' value='52428800' />
    <property name='encoding' value='UTF-8' />
</log_handler>
</log_handlers>

<loggers>
    <logger name='ORG.IDENTITYCONNECTORS.EBS' level='TRACE:32'
useParentHandlers='false'>
    <handler name='ebs-handler' />
    <handler name='console-handler' />
</logger>

```

With these sample values, when you use Oracle Identity Manager, all messages generated for this connector that are of a log level equal to or higher than the TRACE:32 level are recorded in the specified file.

2. Save and close the file.
3. Set the following environment variable to redirect the server logs to a file:

For Microsoft Windows:

```
set WLS_REDIRECT_LOG=FILENAME
```

For UNIX:

```
export WLS_REDIRECT_LOG=FILENAME
```

Replace **FILENAME** with the location and name of the file to which you want to redirect the output.

4. Restart the application server.

## Determining Values for the JDBC URL and Connection Properties Parameters

This section discusses the JDBC URL and Connection Properties parameters. You apply the information in this section while performing the procedure described in [Configuring the IT Resource for the Target System](#).

The values that you specify for the JDBC URL and Connection Properties parameters depend on the security measures that you have implemented:

- [Supported JDBC URL Formats](#)
- [Only SSL Communication Is Configured](#)
- [Both Data Encryption and Integrity and SSL Communication Are Configured](#)

### Supported JDBC URL Formats

The following are the supported JDBC URL formats:

- Multiple database instances support one service (Oracle RAC)

JDBC URL format:

```
jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)
(HOST=HOST1_NAME.DOMAIN)(PORT=PORT1_NUMBER))
(ADDRESS=(PROTOCOL=TCP)(HOST=HOST2_NAME.DOMAIN)
(PORT=PORT2_NUMBER))(ADDRESS=(PROTOCOL=TCP)
(HOST=HOST3_NAME.DOMAIN)(PORT=PORT3_NUMBER)) . . .
(ADDRESS=(PROTOCOL=TCP)(HOST=HOSTn_NAME.DOMAIN)
(PORT=PORTn_NUMBER))
(CONNECT_DATA=(SERVICE_NAME=ORACLE_DATABASE_SERVICE_NAME)))
```

Sample value:

```
jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=
host1.example.com)(PORT=1521))(ADDRESS=(PROTOCOL=TCP)(HOST=
host2.example.com)(PORT=1521))(ADDRESS=(PROTOCOL=TCP)(HOST=
host3.example.com)(PORT=1521))(ADDRESS=(PROTOCOL=TCP)(HOST=
host4.example.com)(PORT=1521))(CONNECT_DATA=(SERVICE_NAME=
srvce1)))
```

- One database instance supports one service

JDBC URL format:

```
jdbc:oracle:thin:@HOST_NAME.DOMAIN:PORT_NUMBER:ORACLE_DATABASE_SER
VICE_NAME
```

Sample value:

```
jdbc:oracle:thin:@host1.example:1521:svce1
```

- One database instance supports multiple services (for Oracle Database 10g and later)

JDBC URL format:

```
jdbc:oracle:thin:@//HOST_NAME.DOMAIN:PORT_NUMBER/
ORACLE_DATABASE_SERVICE_NAME
```

Sample value:

```
jdbc:oracle:thin:@host1.example.com:1521/srvce1
```

## Only SSL Communication Is Configured

After you configure SSL communication, the database URL is recorded in the `tnsnames.ora` file. See *Local Naming Parameters in the `tnsnames.ora` File* in *Oracle Database Net Services Reference* for detailed information about the `tnsnames.ora` file.

The following are sample formats of the contents of the `tnsnames.ora` file. In these formats, `DESCRIPTION` contains the connection descriptor, `ADDRESS` contains the protocol address, and `CONNECT_DATA` contains the database service identification information.

### Sample Format 1:

```
NET_SERVICE_NAME=
(DESCRIPTION=
(ADDRESS=(PROTOCOL_ADDRESS_INFORMATION))
(CONNECT_DATA=
(SERVICE_NAME=SERVICE_NAME)))
```

### Sample Format 2:

```

NET_SERVICE_NAME=
(DESCRIPTION_LIST=
  (DESCRIPTION=
    (ADDRESS= (PROTOCOL_ADDRESS_INFORMATION))
    (ADDRESS= (PROTOCOL_ADDRESS_INFORMATION))
    (ADDRESS= (PROTOCOL_ADDRESS_INFORMATION))
    (CONNECT_DATA=
      (SERVICE_NAME=SERVICE_NAME)))
  (DESCRIPTION=
    (ADDRESS= (PROTOCOL_ADDRESS_INFORMATION))
    (ADDRESS= (PROTOCOL_ADDRESS_INFORMATION))
    (ADDRESS= (PROTOCOL_ADDRESS_INFORMATION))
    (CONNECT_DATA=
      (SERVICE_NAME=SERVICE_NAME))))

```

### Sample Format 3:

```

NET_SERVICE_NAME=
(DESCRIPTION=
  (ADDRESS_LIST=
    (LOAD_BALANCE=on)
    (FAILOVER=off)
    (ADDRESS= (PROTOCOL_ADDRESS_INFORMATION))
    (ADDRESS= (PROTOCOL_ADDRESS_INFORMATION)))
  (ADDRESS_LIST=
    (LOAD_BALANCE=off)
    (FAILOVER=on)
    (ADDRESS= (PROTOCOL_ADDRESS_INFORMATION))
    (ADDRESS= (PROTOCOL_ADDRESS_INFORMATION)))
  (CONNECT_DATA=
    (SERVICE_NAME=SERVICE_NAME)))

```

If you have configured only SSL communication and imported the certificate that you create on the target system host computer into the JVM certificate store of Oracle Identity Manager, then you must derive the value for the JDBC URL parameter from the value of `NET_SERVICE_NAME` in the `tnsnames.ora` file. For example:

#### Note:

As shown in this example, you must include only the `(ADDRESS= (PROTOCOL=TCPS) (HOST=HOST_NAME) (PORT=2484))` element because you are configuring SSL. You need not include other `(ADDRESS= (PROTOCOL_ADDRESS_INFORMATION))` elements.

```

jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS= (PROTOCOL=TCPS)
(HOST=myhost) (PORT=2484))) (CONNECT_DATA=(SERVER=DEDICATED) (SERVICE_NAME=mysid)))

```

## Both Data Encryption and Integrity and SSL Communication Are Configured

If both data encryption and integrity and SSL communication are configured, then specify a value for the JDBC URL parameter in the following manner:

Enter a comma-separated combination of the values for the JDBC URL parameter described in [Only SSL Communication Is Configured](#). For example:

```
jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCPS) (HOST=myhost)
(PORT=2484))) (CONNECT_DATA=(SERVER=DEDICATED) (SERVICE_NAME=mysid)))
```

## Localizing Field Labels in UI Forms

You can localize UI form field labels by using the resource bundle corresponding to the language you want to use. The resource bundles are available in the connector installation media.

To localize field label that you add in UI forms:

### Note:

Perform the procedure described in this section only if you are using the HRMS Target connector and want to localize field labels. If you are using HRMS Trusted connector, then perform the procedure described in Localizing Display Labels of UDFs of *Administering Oracle Identity Governance* guide.

1. Log in to Oracle Enterprise Manager.
2. In the left pane, expand Application Deployments and then select **oracle.iam.console.identity.sysadmin.ear**.
3. In the right pane, from the Application Deployment list, select **MDS Configuration**.
4. On the MDS Configuration page, click **Export** and save the archive to the local computer.
5. Extract the contents of the archive, and open the following files in a text editor:
  - For Oracle Identity Manager 11g Release 2 PS2 (11.1.2.2.0):  
`SAVED_LOCATION\xliffBundles\oracle\iam\ui\runtime\BizEditorBundle_en.xlf`
  - For releases prior to Oracle Identity Manager 11g Release 2 PS2 (11.1.2.2.0):  
`SAVED_LOCATION\xliffBundles\oracle\iam\ui\runtime\BizEditorBundle.xlf`
6. Edit the BizEditorBundle.xlf file in the following manner:

- a. Search for the following text:

```
<file source-language="en"
original="/xliffBundles/oracle/iam/ui/runtime/BizEditorBundle.xlf"
datatype="x-oracle-adf">
```

- b. Replace with the following text:

```
<file source-language="en" target-language="LANG_CODE"
original="/xliffBundles/oracle/iam/ui/runtime/BizEditorBundle.xlf"
datatype="x-oracle-adf">
```

In this text, replace `LANG_CODE` with the code of the language that you want to localize the form field labels. The following is a sample value for localizing the form field labels in Japanese:

```
<file source-language="en" target-language="ja"
original="/xliffBundles/oracle/iam/ui/runtime/BizEditorBundle.xlf"
datatype="x-oracle-adf">
```

- c. Search for the application instance code. This procedure shows a sample edit for Oracle E-Business Suite application instance. The original code is:

```

<trans-unit id="$
{adfBundle['oracle.adf.businesseditor.model.util.BaseRuntimeResourceBundl
e']}
['persdef.sessiondef.oracle.iam.ui.runtime.form.model.user.entity.userEO.
UD_EBS_HRMS_EMPNO__c_description']">
<source>Employee Number</source>
<target/>
</trans-unit>
<trans-unit
id="sessiondef.oracle.iam.ui.runtime.form.model.EBSHRMSForm1.entity.EBSHR
MSForm1EO.UD_EBS_HRMS_EMPNO__c_LABEL">
<source>Employee Number</source>
<target/>

```

- d. Open the resource file (for example, EBS-HRMS.properties) from the connector package, and get the value of the attribute from the file, for example, global.udf.UD\_EBS\_HRMS\_EMPNO=\u4567d.
- e. Replace the original code shown in Step 6.c with the following:

```

<trans-unit id="$
{adfBundle['oracle.adf.businesseditor.model.util.BaseRuntimeResourceBundl
e']}
['persdef.sessiondef.oracle.iam.ui.runtime.form.model.user.entity.userEO.
UD_EBS_HRMS_EMPNO__c_description']">
<source>Employee Number</source>
<target>\u5F93\u696D\u54E1\u756A\u53F7</target>
</trans-unit>
<trans-unit
id="sessiondef.oracle.iam.ui.runtime.form.model.EBSHRMSForm1.entity.EBSHR
MSForm1EO.UD_EBS_HRMS_EMPNO__c_LABEL">
<source>Employee Number</source>
<target>\u5F93\u696D\u54E1\u756A\u53F7</target>
</trans-unit>

```

- f. Repeat Steps 6.a through 6.d for all attributes of the process form.
  - g. Save the file as BizEditorBundle\_LANG\_CODE.xlf. In this file name, replace LANG\_CODE with the code of the language to which you are localizing.  
Sample file name: BizEditorBundle\_ja.xlf.
7. Repackage the ZIP file and import it into MDS.

#### See Also:

Deploying and Undeploying Customizations in *Developing and Customizing Applications for Oracle Identity Governance*, for more information about exporting and importing metadata files

8. Log out of and log in to Oracle Identity Manager.

## Removing the Default Validation Check for Provisioning Operations

During a provisioning operation for child data, the connector API validates data against a combination of the Grade Id, Department Id, and Organization Id fields. If this valid combination is not found, an error is encountered and the provisioning operation fails.

If you do not want to use this strict validation, then you must remove the default validation check to perform the provisioning operation successfully. To do so:

1. Open any SQL client. For example, SQL Developer.
2. Open the body of the OIM\_EMPLOYEE\_WRAPPER.pck wrapper package.
3. Comment out the following lines of code by prefixing them with a double hyphen (--):

```

        IF create_person_assignment_api.grade_id IS NOT NULL THEN
            select count(*) into validcount from PER_VALID_GRADES where
            business_group_id =create_person_assignment_api.organization_id
            and job_id=create_person_assignment_api.job_id and
            grade_id=create_person_assignment_api.grade_id;
            if validcount = 0 then
                raise_application_error (-20001, 'Invalid combination of organization,
            job and grade');
            end if;
        ELSE
            select count(*) into valid_job_count from PER_JOBS where job_id =
            create_person_assignment_api.job_id;
            if valid_job_count = 0 then
                raise_application_error (-20001, 'Invalid combination of
            organization, job and grade');
            end if;
        END IF;

```

4. Re-compile the wrapper package.

As an alternative to this procedure, you can edit the `scripts\OIM_EMPLOYEE_WRAPPER.pck` file by commenting out the lines of code and then running either the `Run_HRMS_DBScripts.sh` or `Run_HRMS_DBScripts.bat` file. See [Preinstallation](#) for more information about running the script.

## Upgrading the Connector

You can upgrade the connector from an earlier release to the current release 11.1.1.5.0.

If you have already deployed an earlier release of this connector (EBS Employee Reconciliation), then upgrade the connector to the current release 11.1.1.5.0. The following sections discuss the procedure to upgrade the connector:

### Note:

- Upgrade to the current release (11.1.1.5.0) of the HRMS Trusted connector from EBS Employee Reconciliation connector release 9.1.0.7.x is supported.
- There is no upgrade to the current release of the connector for HRMS Target. This is because this is the first time the HRMS Target is being released.
- Before you perform the upgrade procedure, it is strongly recommended that you create a backup of the Oracle Identity Manager database. Refer to the database documentation for information about creating a backup.
- As a best practice, first perform the upgrade procedure in a test environment.

- [Preupgrade Steps](#)

- [Upgrade Steps](#)
- [Postupgrade Steps](#)

## Preupgrade Steps

Perform the following preupgrade steps:

1. Perform a reconciliation run to fetch all latest updates to Oracle Identity Manager.
2. Define the source connector (an earlier release of the connector that must be upgraded) in Oracle Identity Manager. You define the source connector to update the Deployment Manager XML file with all customization changes made to the connector. See *Managing Connector Lifecycle in Oracle Fusion Middleware Administering Oracle Identity Manager* for more information.
3. If required, create the connector XML file for a clone of the source connector.
4. Disable all the scheduled jobs by stopping the scheduler service.

## Upgrade Steps

Depending on the environment in which you are upgrading the connector, perform one of the following steps:

- **Staging Environment**  
Perform the upgrade procedure by using the wizard mode.
- **Production Environment**  
Perform the upgrade procedure by using the silent mode.

See *Managing Connector Lifecycle in Oracle Fusion Middleware Administering Oracle Identity Governance* for detailed information about the wizard and silent modes.

## Postupgrade Steps

Perform the following procedure:

1. Download the latest version of this connector from Oracle Technology Network and extract its contents to any directory on the computer hosting Oracle Identity Manager.
2. Run the Upload JARs utility to post the latest version of the connector bundle JAR file (`org.identityconnectors.ebs-1.0.1115.jar`) from the `/bundle` directory of the installation media to the Oracle Identity Manager database.

### **For Microsoft Windows:**

```
OIM_HOME/server/bin/UploadJars.bat
```

### **For UNIX:**

```
OIM_HOME/server/bin/UploadJars.sh
```

When you run the utility, you are prompted to enter the login credentials of the Oracle Identity Manager administrator, URL of the Oracle Identity Manager host computer, context factory value, type of JAR file being uploaded (specify the JAR type as `ICFBundle`, option 4), and the location from which the JAR file is to be uploaded.

3. Run either the Run\_HRMS\_DBScripts.sh or Run\_HRMS\_DBScripts.bat file. See [Preinstallation](#) for more information about running the script.

 **Note:**

You can either create new target admin user for connector operations (or) first drop target admin user of 9.1.0.7.x connector and then create the same new target admin user for connector operations.

4. Configure the upgraded IT resource of the source connector. See [Configuring the IT Resource for the Target System](#) for information about configuring the IT resource.
5. Restart Oracle Identity Manager. Alternatively, you can purge the cache for the changes to reflect in Oracle Identity Manager. See [Purging Cache](#) in *Oracle Fusion Middleware Administering Oracle Identity Governance* for more information about the PurgeCache utility.

After upgrading the connector, you can perform either full reconciliation or incremental reconciliation. This ensures that records created or modified since the last reconciliation run (the one that you performed in [Preupgrade Steps](#)) are fetched into Oracle Identity Manager. From the next reconciliation run onward, the reconciliation engine automatically enters a value for the Latest Token attribute.

Before you perform lookup field synchronization, ensure to remove all preupgrade entries from the lookup definitions Oracle Identity Manager. After upgrade these values must be synchronized with the lookup fields in the target system.

See the following sections for more information about performing full or incremental reconciliation:

- [Performing Limited Reconciliation Using the HRMS Target Connector](#)
- [Performing Full Reconciliation and Incremental Reconciliation Using the HRMS Trusted Connector](#)

## Postcloning Steps

You can clone this connector by setting new names for some of the objects that comprise the connector. The outcome of the process is a new connector XML file. Most of the connector objects, such as Resource Object, Process Definition, Process Form, IT Resource Type Definition, IT Resource Instances, Lookup Definitions, Reconciliation Rules and so on in the new connector XML file have new names.

 **Note:**

See [Managing Connector Lifecycle](#) in *Administering Oracle Identity Manager* for detailed information about cloning connectors and the steps mentioned in this section.

After a copy of the connector is created by setting new names for connector objects, some objects might contain the details of the old connector objects. Therefore, depending on the connector that you are cloning, you must modify the following Oracle Identity Manager

objects to replace the base connector artifacts or attribute references with the corresponding cloned artifacts or attributes:

- **For the HRMS Trusted connector**

- IT Resource

The cloned connector has its own set of IT resources. You must configure both the cloned connector IT resources and ensure you use the configuration lookup definition of the cloned connector.

- Scheduled Job

The values of the Resource Object Name and IT Resource scheduled job attributes in the cloned connector refer to the values of the base connector. Therefore, these values (values of the Resource Object Name and IT resource scheduled job attributes that refer to the base connector) must be replaced with the new cloned connector artifacts.

- **For the HRMS Target connector**

- IT Resource

The cloned connector has its own set of IT resources. You must configure both the cloned connector IT resources and ensure you use the configuration lookup definition of the cloned connector.

- Scheduled Job

The values of the Resource Object Name and IT Resource scheduled job attributes in the cloned connector refer to the values of the base connector. Therefore, these values (values of the Resource Object Name and IT resource scheduled job attributes that refer to the base connector) must be replaced with the new cloned connector artifacts.

- Lookup Definition

The cloned lookup definition (for example, Lookup.EBSHRMSClone.UM.ProvAttrMap) corresponding to the Lookup.EBSHRMS.UM.ProvAttrMap lookup definition has Code Key entries related to child form fields that still map to the old child form fields. You must change the values of these Code Key entries so that they map to the cloned child form fields. Similarly, you must change the values of the Code Key entries in the Lookup.EBSHRMS.UM.ReconAttrMap lookup definition to map to the clones child form fields.

For example, consider UD\_EBS\_ADR1 and UD\_EBS\_ASG1 to be the cloned child forms of the UD\_EBS\_ADRS and UD\_EBS\_ASGN child forms respectively. After cloning, the Lookup.Oracle.EBSHRMSClone.UM.ProvAttrMap lookup definition contains Code Key entries that correspond to the fields of the old child form UD\_EBS\_ADRS and UD\_EBS\_ASGN respectively. To ensure that the Code Key entries point to the fields of the cloned child form (UD\_EBS\_ADR1 and UD\_EBS\_ASG1), specify the following values in the corresponding Code Key columns:

- \* UD\_EBS\_ADR1~Effective Date[DATE]
- \* UD\_EBS\_ADR1~Address Id
- \* UD\_EBS\_ADR1~Address1
- \* UD\_EBS\_ADR1~Address2
- \* UD\_EBS\_ADR1~Address3

- \* UD\_EBS\_ADR1~Country
  - \* UD\_EBS\_ADR1~Start Date[DATE]
  - \* UD\_EBS\_ADR1~End Date[DATE]
  - \* UD\_EBS\_ADR1~Postal Code
  - \* UD\_EBS\_ADR1~Primary Flag
  - \* UD\_EBS\_ADR1~Region
  - \* UD\_EBS\_ADR1~Region2
  - \* UD\_EBS\_ADR1~Region3
  - \* UD\_EBS\_ADR1~Style
  - \* UD\_EBS\_ADR1~City
  - \* UD\_EBS\_ASG1~Effective Date[DATE]
  - \* UD\_EBS\_ASG1~Assignment Id
  - \* UD\_EBS\_ASG1~Change Reason
  - \* UD\_EBS\_ASG1~Grade Id[LOOKUP]
  - \* UD\_EBS\_ASG1~Job Id[LOOKUP]
  - \* UD\_EBS\_ASG1~Organization Id[LOOKUP]
  - \* UD\_EBS\_ASG1~Supervisor Id
- Process Tasks
- You must change the literal value of the **childTableName** adapter variable from UD\_EBS\_ADRS and UD\_EBS\_ASGN to the cloned form names UD\_EBS\_ADR1 and UD\_EBS\_ASG1, respectively in the following process tasks:
- \* Add Employee Address Process Task
  - \* Add Employee Assignments Process Task
  - \* Update Employee Address Process Task
  - \* Update Employee Assignments Process Task
  - \* Remove Employee Address Process Task
  - \* Remove Employee Assignments Process Task
- You must change the literal value of the parent form from **UD\_EBS\_HRMS** to the cloned form name **UD\_EBS\_HRM1** in the **UD\_EBS\_HRMS Updated** in the Bulk adapter process task.
- Localization Properties
- You must update the resource bundle of a user locale with new names of the process form attributes for proper translations after cloning the connector. You can modify the properties file of your locale in the resources directory of the connector bundle.
- For example, the process form (UD\_EBS\_HRMS) attributes are referenced in the Japanese properties file, EBS-HRMS\_ja.properties, as global.udf.UD\_EBS\_HRMS\_FIRST\_NAME. During cloning, if you change the process form name from UD\_EBS\_HRMSCLONED to global.udf.UD\_EBS\_HRMSCLONED\_FIRST\_NAME, then you must add the process form attributes to global.udf.UD\_EBS\_HRMS\_FIRST\_NAME.
- Replicate changes made to the form designer to a new UI form. To do so:

1. Log in to Oracle Identity System Administration.
2. Create and active a sandbox. See *Creating a Sandbox* in *Developing and Customizing Applications for Oracle Identity Manager* for more information.
3. Create a new UI form to view the upgraded fields. See *Managing Forms* in *Oracle Fusion Middleware Administering Oracle Identity Manager* for more information about creating a UI form.
4. Associate the newly created UI form with the application instance of your target system. To do so, open the existing application instance for your resource, from the Form field, select the form (created in Step 3), and then save the application instance.
5. Publish the sandbox. See *Publishing a Sandbox* in *Developing and Customizing Applications for Oracle Identity Manager* for more information.

# 3

## Using the HRMS Target Connector

This chapter contains the following topics:

- [Lookup Definitions Used During HRMS Target Connector Operations](#)
- [Reconciliation Scheduled Jobs for the HRMS Target Connector](#)
- [Configuring Reconciliation for the HRMS Target Connector](#)
- [Configuring Provisioning for the HRMS Target Connector](#)
- [Uninstalling the HRMS Target Connector](#)

### Lookup Definitions Used During HRMS Target Connector Operations

Lookup definitions used during HRMS Target connector operations can be categorized as follows:

- [Lookup Definitions Synchronized with the Target System for the HRMS Target Connector](#)
- [Preconfigured Lookup Definitions for the HRMS Target Connector](#)

### Lookup Definitions Synchronized with the Target System for the HRMS Target Connector

During a provisioning operation, you use a lookup field on the process form to specify a single value from a set of values. For example, you use the Job Id lookup field to select a job ID to be assigned from the list of job IDs in the lookup field. When you deploy the connector, lookup definitions corresponding to the lookup fields on the target system are created in Oracle Identity Manager. Lookup field synchronization involves copying additions or changes made to the target system lookup fields into the lookup definitions in Oracle Identity Manager.

The following is the format in which data is stored after lookup definition synchronization:

Code Key: `<IT_RESOURCE_KEY>~<LOOKUP_FIELD_VALUE>`

In this format:

- `IT_RESOURCE_KEY` is the numeric code assigned to each IT resource in Oracle Identity Manager.
- `LOOKUP_FIELD_VALUE` is the connector attribute value defined for code.

Sample value: 302~16895

Decode: `<IT_RESOURCE_NAME>~<LOOKUP_FIELD_VALUE>`

In this format:

- `IT_RESOURCE_KEY` is the name of the IT resource in Oracle Identity Manager.
- `LOOKUP_FIELD_VALUE` is the connector attribute value defined for decode.

Sample value: Oracle EBS HRMS~16895-Buyer

During a provisioning operation, lookup fields are populated with values corresponding to the target system that you select for the operation.

## Preconfigured Lookup Definitions for the HRMS Target Connector

This section discusses the other lookup definitions that are created in Oracle Identity Manager when you deploy the HRMS Target connector. These lookup definitions are either prepopulated with values or values must be manually entered in them after the connector is deployed. The other lookup definitions are as follows:

- [Lookup.EBSHRMS.Configuration](#)
- [Lookup.EBSHRMS.UM.Configuration](#)
- [Lookup.EBSHRMS.UM.ProvAttrMap](#)
- [Lookup.EBSHRMS.UM.ReconAttrMap](#)
- [Lookup.EBSHRMS.Gender](#)
- [Lookup.EBSHRMS.MaritalStatus](#)
- [Lookup.EBSHRMS.PRIMARYFLAG](#)
- [Lookup.EBSHRMS.Titles](#)

### Lookup.EBSHRMS.Configuration

The `Lookup.EBSHRMS.Configuration` holds connector configuration entries that are used during target resource reconciliation and provisioning operations.

[Table 3-1](#) lists the default entries in this lookup definition.

**Table 3-1 Entries in the Lookup.EBSHRMS.Configuration Lookup Definition**

Code Key	Decode	Description
Bundle Name	org.identityconnectors.ebs	This entry holds the name of the connector bundle class. Do <i>not</i> modify this entry.
Bundle Version	1.0.11150	This entry holds the version of the connector bundle class. Do <i>not</i> modify this entry.
Connector Name	org.identityconnectors.ebs.EBSConnector	This entry holds the name of the connector class. Do <i>not</i> modify this entry.
__PERSON__ Configuration Lookup	Lookup.EBSHRMS.UM.Configuration	This entry holds the name of the lookup definition that contains configuration information specific to the __PERSON__ object type. See <a href="#">Lookup.EBSHRMS.UM.Configuration</a> for more information about this lookup definition.

### Lookup.EBSHRMS.UM.Configuration

The `Lookup.EBSHRMS.UM.Configuration` lookup definition holds configuration entries that are specific to the \_\_PERSON\_\_ object type. This lookup definition is used during

\_\_PERSON\_\_ management operations when your target system is configured as a target resource.

Table 3-2 lists the default entries in this lookup definition.

**Table 3-2 Entries in the Lookup.EBSHRMS.UM.Configuration Lookup Definition**

Code Key	Decode	Description
Provisioning Attribute Map	Lookup.EBSHRMS.UM.ProvAttrMap	This entry holds the name of the lookup definition that maps process form fields and target system attributes. See <a href="#">Lookup.EBSHRMS.UM.ProvAttrMap</a> for more information about this lookup definition.
Recon Attribute Map	Lookup.EBSHRMS.UM.ReconAttrMap	This entry holds the name of the lookup definition that maps resource object fields and target system attributes. See <a href="#">Lookup.EBSHRMS.UM.ReconAttrMap</a> for more information about this lookup definition.

## Lookup.EBSHRMS.UM.ProvAttrMap

The Lookup.EBSHRMS.UM.ProvAttrMap lookup definition holds mappings between process form fields (Code Key values) and target system attributes (Decode). This lookup definition is used during provisioning. This lookup definition is preconfigured. Table 3-3 lists the default entries.

**Table 3-3 Entries in the Lookup.EBSHRMS.UM.ProvAttrMap Lookup Definition**

Code Key	Decode
Business Group Id[LOOKUP]	BUSINESS_GROUP_ID
Date Of Birth[DATE]	DATE_OF_BIRTH
Email	EMAIL_ADDRESS
Employee Number[WRITEBACK]	EMPLOYEE_NUMBER
First Name	FIRST_NAME
Gender	SEX
Hire Date[DATE]	HIRE_DATE
Last Name	LAST_NAME
Marital Status[LOOKUP]	MARITAL_STATUS
National Identifier	NATIONAL_IDENTIFIER
Nationality	NATIONALITY
Person Id	__UID__
Person Type[LOOKUP]	PERSON_TYPE_ID
Title	TITLE
UD_EBS_ADRS~Address1	__ADDRESS__~__ADDRESS__~ADDRESS_LINE1
UD_EBS_ADRS~Address2	__ADDRESS__~__ADDRESS__~ADDRESS_LINE2
UD_EBS_ADRS~Address3	__ADDRESS__~__ADDRESS__~ADDRESS_LINE3
UD_EBS_ADRS~Address Id[WRITEBACK]	__ADDRESS__~__ADDRESS__~ADDRESS_ID

**Table 3-3 (Cont.) Entries in the Lookup.EBSHRMS.UM.ProvAttrMap Lookup Definition**

Code Key	Decode
UD_EBS_ADRS~Address Type[LOOKUP]	__ADDRESS__~__ADDRESS__~ADDRESS_TYPE
UD_EBS_ADRS~City	__ADDRESS__~__ADDRESS__~TOWN_OR_CITY
UD_EBS_ADRS~Country	__ADDRESS__~__ADDRESS__~COUNTRY
UD_EBS_ADRS~End Date[DATE]	__ADDRESS__~__ADDRESS__~DATE_TO
UD_EBS_ADRS~Postal Code	__ADDRESS__~__ADDRESS__~POSTAL_CODE
UD_EBS_ADRS~Primary Flag	__ADDRESS__~__ADDRESS__~PRIMARY_FLAG
UD_EBS_ADRS~Region	__ADDRESS__~__ADDRESS__~Region_1
UD_EBS_ADRS~Region2	__ADDRESS__~__ADDRESS__~Region_2
UD_EBS_ADRS~Region3	__ADDRESS__~__ADDRESS__~Region_3
UD_EBS_ADRS~Start Date[DATE]	__ADDRESS__~__ADDRESS__~DATE_FROM
UD_EBS_ADRS~Style	__ADDRESS__~__ADDRESS__~STYLE
UD_EBS_ASGN~Assignment Id[WRITEBACK]	__ASSIGNMENT__~__ASSIGNMENT__~ASSIGNMENT_ID
UD_EBS_ASGN~Change Reason	__ASSIGNMENT__~__ASSIGNMENT__~CHANGE_REASON
UD_EBS_ASGN~Effective Date[DATE]	__ASSIGNMENT__~__ASSIGNMENT__~ASG_EFFECTIVE_START_DATE
UD_EBS_ASGN~Grade Id[LOOKUP]	__ASSIGNMENT__~__ASSIGNMENT__~GRADE_ID
UD_EBS_ASGN~Job Id[LOOKUP]	__ASSIGNMENT__~__ASSIGNMENT__~JOB_ID
UD_EBS_ASGN~Organization Id[LOOKUP]	__ASSIGNMENT__~__ASSIGNMENT__~ORGANIZATION_ID
UD_EBS_ASGN~Supervisor Id	__ASSIGNMENT__~__ASSIGNMENT__~SUPERVISOR_ID

## Lookup.EBSHRMS.UM.ReconAttrMap

The Lookup.EBSHRMS.UM.ReconAttrMap lookup definition holds mappings between resource object fields (Code Key) and target system attributes (Decode). This lookup definition is used during reconciliation. This lookup definition is preconfigured.

[Table 3-4](#) lists the default entries.

**Table 3-4 Entries in the Lookup.EBSHRMS.UM.ReconAttrMap Lookup Definition**

Code Key	Decode
Address~Address1	__ADDRESS__~__ADDRESS__~ADDRESS_LINE1
Address~Address2	__ADDRESS__~__ADDRESS__~ADDRESS_LINE2
Address~Address3	__ADDRESS__~__ADDRESS__~ADDRESS_LINE3
Address~Address Id	__ADDRESS__~__ADDRESS__~ADDRESS_ID
Address~Address Type[LOOKUP]	__ADDRESS__~__ADDRESS__~ADDRESS_TYPE
Address~City	__ADDRESS__~__ADDRESS__~TOWN_OR_CITY
Address~Country	__ADDRESS__~__ADDRESS__~COUNTRY
Address~Effective End Date[DATE]	__ADDRESS__~__ADDRESS__~DATE_TO

**Table 3-4 (Cont.) Entries in the Lookup.EBSHRMS.UM.ReconAttrMap Lookup Definition**

Code Key	Decode
Address~Effective Start Date[DATE}	__ADDRESS__~__ADDRESS__~DATE_FROM
Address~Postal Code	__ADDRESS__~__ADDRESS__~POSTAL_CODE
Address~Primary Flag	__ADDRESS__~__ADDRESS__~PRIMARY_FLAG
Address~Region	__ADDRESS__~__ADDRESS__~REGION_1
Address~Region2	__ADDRESS__~__ADDRESS__~REGION_2
Address~Region3	__ADDRESS__~__ADDRESS__~REGION_3
Address~Style	__ADDRESS__~__ADDRESS__~STYLE
Assignment~Assignment Id	__ASSIGNMENTS__~__ASSIGNMENTS__~ASSIGNMENT_ID
Assignments~Change Reason	__ASSIGNMENTS__~__ASSIGNMENTS__~CHANGE_REASON
Assignments~Effective Start Date[DATE]	__ASSIGNMENTS__~__ASSIGNMENTS__~ASG_EFFECTIVE_STAR T_DATE
Assignment~Grade Id[LOOKUP]	__ASSIGNMENTS__~__ASSIGNMENTS__~GRADE_ID
Assignment~Job Id[LOOKUP]	__ASSIGNMENTS__~__ASSIGNMENTS__~JOB_ID
Assignment~Organization Id[LOOKUP]	__ASSIGNMENTS__~__ASSIGNMENTS__~ORGANIZATION_ID
Assignments~Supervisor Id	__ASSIGNMENTS__~__ASSIGNMENTS__~SUPERVISOR_ID
Business Group Id[LOOKUP]	BUSINESS_GROUP_ID
Date Of Birth[DATE]	DATE_OF_BIRTH
Email	EMAIL_ADDRESS
Employee Number	EMPLOYEE_NUMBER
First Name	FIRST_NAME
Gender	SEX
Hire Date[DATE]	HIRE_DATE
Last Name	LAST_NAME
Marital Status	MARITAL_STATUS
National Identifier	NATIONAL_IDENTIFIER
Nationality	NATIONALITY
Person Id	__UID__
Person Type	Person_Type_Id
Status	__ENABLE__
Title	TITLE

## Lookup.EBSHRMS.Gender

The Lookup.EBSHRMS.Gender lookup definition holds information about the genders that you can select for a person record that you create through Oracle Identity Manager.

The following is the format of the Code Key and Decode values in this lookup definition:

- **Code Key:** Gender code
- **Decode:** Description of the gender code

Table 3-5 lists the default entries in this lookup definition.

**Table 3-5 Entries in the Lookup.EBSHRMS.Gender Lookup Definition**

Code Key	Decode
F	Female
M	Male

## Lookup.EBSHRMS.MaritalStatus

The Lookup.EBSHRMS.MaritalStatus lookup definition holds information about marital statuses that you can select for a person record that you create through Oracle Identity Manager.

The following is the format of the Code Key and Decode values in this lookup definition:

- **Code Key:** Marital status code
- **Decode:** Description of the marital status code

Table 3-6 lists the default entries in this lookup definition.

**Table 3-6 Entries in the Lookup.EBSHRMS.MaritalStatus Lookup Definition**

Code Key	Decode
C	Cohabitation
CL	Common Law
D	Divorced
DP	Domestic Partnership
L	Legally Separated
LIVING_TOGETHER	Living Together
M	Married
S	Single
SE	Separated
W	Widowed

If you want to add or modify entries in this lookup definition, then you must enter values in the format specified earlier in this section.

## Lookup.EBSHRMS.PRIMARYFLAG

The Lookup.EBSHRMS.PRIMARYFLAG lookup definition holds the list of options that you can select for the Primary Flag field for an address of the person record that you create through Oracle Identity Manager.

The following is the format of the Code Key and Decode values in this lookup definition:

- **Code Key:** Code for the values of the primary flag field

- **Decode:** Description of the primary flag field code

[Table 3-7](#) lists the default entries in this lookup definition.

**Table 3-7 Entries in the Lookup.EBSHRMS.PRIMARYFLAG Lookup Definition**

Code Key	Decode
N	No
Y	Yes

## Lookup.EBSHRMS.Titles

The Lookup.EBSHRMS.Titles lookup definition holds information about the titles that you can select for a person record that you create through Oracle Identity Manager.

The following is the format of the Code Key and Decode values in this lookup definition:

- **Code Key:** Title code
- **Decode:** Description of the title code

[Table 3-8](#) lists the default entries in this lookup definition.

**Table 3-8 Entries in the Lookup.EBSHRMS.Titles Lookup Definition**

Code Key	Decode
DR.	DR.
HU_PROF	HU_PROF
MISS	MISS
MR.	MR.
MRS.	MRS.
MS.	MS.

If you want to add or modify entries in this lookup definition, then you must enter values in the format specified earlier in this section.

## Reconciliation Scheduled Jobs for the HRMS Target Connector

When you run the Connector Installer, reconciliation scheduled jobs are automatically created in Oracle Identity Manager. You must configure these scheduled jobs to suit your requirements by specifying values for its attributes.

This section discusses the attributes of the following scheduled jobs:

- [Scheduled Job for Lookup Field Synchronization](#)
- [Scheduled Job for Reconciliation of Person Records](#)
- [Scheduled Job for Reconciliation of Deleted Person Records](#)
- [Scheduled Job for Incremental Reconciliation](#)
- [Scheduled Jobs for the HRMS Target Connector](#)

## Scheduled Job for Lookup Field Synchronization

Lookup field synchronization involves copying additions or changes made to the target system lookup fields into the lookup definitions in Oracle Identity Manager.

The following scheduled jobs are used for lookup field synchronization:

- Oracle EBS HRMS Target Grades Lookup Reconciliation
- Oracle EBS HRMS Target Jobs Lookup Reconciliation
- Oracle EBS HRMS Target Organization Lookup Reconciliation
- Oracle EBS HRMS Target Person Type Lookup Reconciliation

You must specify values for the attributes of these scheduled jobs. Table 3-17 describes the attributes of these scheduled jobs. [Table 3-9](#) describes the attributes of these scheduled jobs. [Scheduled Jobs for the HRMS Target Connector](#) describes the procedure to configure scheduled jobs.

**Table 3-9 Attributes of the Scheduled Jobs for Lookup Field Synchronization**

Attribute	Description
Code Key Attribute	Enter the name of the attribute that is used to populate the Code Key column of the lookup definition (specified as the value of the Lookup Name attribute). Default value: <code>CODE</code>
Decode Attribute	Enter the name of the attribute that is used to populate the Decode column of the lookup definition (specified as the value of the Lookup Name attribute). Default value: <code>DECODE</code>
IT Resource Name	Enter the name of the IT resource for the target system installation from which you want to reconcile records. Default value: <code>Oracle EBS HRMS</code>
Lookup Name	Enter the name of the lookup definition in Oracle Identity Manager that must be populated with values fetched from the target system. Depending on the scheduled job that you are using, the default values are as follows: <ul style="list-style-type: none"> <li>• For Oracle EBS HRMS Target Grades Lookup Reconciliation: <code>Lookup.EBSHRMS.Grade</code></li> <li>• For Oracle EBS HRMS Target Jobs Lookup Reconciliation: <code>Lookup.EBSHRMS.Jobs</code></li> <li>• For Oracle EBS HRMS Target Organization Lookup Reconciliation: <code>Lookup.EBSHRMS.Organization</code></li> <li>• For Oracle EBS HRMS Target Person Type Lookup Reconciliation: <code>Lookup.EBSHRMS.PersonType</code></li> </ul> <p><b>Note:</b> Before you perform lookup field synchronization, the lookup definition name that you specify must exist in Oracle Identity Manager.</p>

**Table 3-9 (Cont.) Attributes of the Scheduled Jobs for Lookup Field Synchronization**

Attribute	Description
Object Type	<p>Enter the type of object you want to reconcile.</p> <p>Depending on the scheduled job that you are running, the default value is one of the following:</p> <ul style="list-style-type: none"> <li>• For Oracle EBS HRMS Target Grades Lookup Reconciliation: <code>__GRADES__</code></li> <li>• For Oracle EBS HRMS Target Jobs Lookup Reconciliation: <code>__JOBS__</code></li> <li>• For Oracle EBS HRMS Target Organization Lookup Reconciliation: <code>__ORGANIZATION__</code></li> <li>• For Oracle EBS HRMS Target Person Type Lookup Reconciliation: <code>__PERSONTYPE__</code></li> </ul> <p><b>Note:</b> Do not change the value of this attribute.</p>

## Scheduled Job for Reconciliation of Deleted Person Records

The Oracle EBS HRMS Target User Delete Reconciliation scheduled job is used to reconcile data about deleted person records in the target system. During a reconciliation run, for each deleted user account on the target system, the Oracle EBS HRMS User resource is revoked for the corresponding OIM User.

You must specify values for the attributes of the user reconciliation scheduled jobs. [Table 3-10](#) describes the attributes of this scheduled job.

**Table 3-10 Attributes of the Oracle EBS HRMS Target User Delete Reconciliation Scheduled Job**

Attribute	Description
ITResource Name	<p>Name of the IT resource for the target system installation that the connector must use to reconcile person records.</p> <p>Default value: <code>Oracle EBS HRMS</code></p>
Object Type	<p>Type of object you want to reconcile.</p> <p>Default value: <code>__PERSON__</code></p>
Resource Object Name	<p>Name of the resource object that is used for reconciliation.</p> <p>Default value: <code>Oracle EBS HRMS User</code></p>

## Scheduled Job for Reconciliation of Person Records

The Oracle EBS HRMS Target User Reconciliation scheduled job is used for reconciliation of person records.

You must specify values for the attributes of the person record reconciliation scheduled job. [Table 3-11](#) describes the attributes of this scheduled job.

**Table 3-11 Attributes of the Oracle EBS HRMS Target User Reconciliation Scheduled Job**

Attribute	Description
Filter	Enter the search filter for fetching records from the target system during a reconciliation run. See <a href="#">Performing Limited Reconciliation Using the HRMS Target Connector</a> for more information.
Incremental Recon Attribute	Enter the name of the target system attribute that holds the timestamp at which the person record was modified. Sample value: PERSON_UPDATED_DATE
ITResource Name	Name of the IT resource for the target system installation that the connector must use to reconcile person records. Default value: Oracle EBS HRMS
Latest Token	This attribute holds the value of the attribute that is specified as the value of the Incremental Recon Attribute attribute. The Latest Token attribute is used for internal purposes. By default, this value is empty. <b>Note:</b> Do not enter a value for this attribute. The reconciliation engine automatically enters a value in this attribute. Sample value: 1432623600000
Object Type	Type of object you want to reconcile. Default value: __PERSON__
Resource Object Name	Name of the resource object that is used for reconciliation. Default value: Oracle EBS HRMS User
Scheduled Task Name	Name of the scheduled task that is used for reconciliation. Sample value: Oracle EBS HRMS Target User Reconciliation

## Scheduled Job for Incremental Reconciliation

The Oracle EBS HRMS Target Incremental User Reconciliation scheduled job is used for performing incremental reconciliation.

[Table 3-12](#) describes the attributes of this scheduled job.

**Table 3-12 Attributes of the Oracle EBS HRMS Target Incremental User Reconciliation Scheduled Job**

Attribute	Description
ITResource Name	Name of the IT resource for the target system installation that the connector must use to reconcile person records. Default value: Oracle EBS HRMS
Object Type	Type of object you want to reconcile. Default value: __PERSON__
Resource Object Name	Name of the resource object that is used for reconciliation. Default value: Oracle EBS HRMS User
Scheduled Task Name	Name of the scheduled task that is used for reconciliation. Default value: Oracle EBS HRMS Target Incremental User Reconciliation

**Table 3-12 (Cont.) Attributes of the Oracle EBS HRMS Target Incremental User Reconciliation Scheduled Job**

Attribute	Description
Sync Token	<p>This attribute must be left blank when you run incremental reconciliation for the first time. This ensures that data about all records from the target system are fetched into Oracle Identity Manager.</p> <p>After the first reconciliation run, the connector automatically enters a value for this attribute in an XML serialized format. From the next reconciliation run onward, only data about records that are modified since the last reconciliation run ended are fetched into Oracle Identity Manager.</p> <p>Sample value: &lt;Long&gt;1433010600000&lt;/Long&gt;</p>

## Scheduled Jobs for the HRMS Target Connector

Configure scheduled jobs to perform reconciliation runs that check for new information on your target system periodically and replicates the data in Oracle Identity Manager.

See [Scheduled Job for Lookup Field Synchronization](#) through [Scheduled Job for Incremental Reconciliation](#) for the scheduled jobs that are part of the connector and for information about their attributes.

To configure a scheduled job:

1. Log in to Oracle Identity System Administration.
2. In the left pane, under System Management, click **Scheduler**.
3. Search for and open the scheduled task as follows:
  - a. On the left pane, in the Search field, enter the name of the scheduled job as the search criterion. Alternatively, you can click **Advanced Search** and specify the search criterion.
  - b. In the search results table on the left pane, click the scheduled job in the Job Name column.
4. On the Job Details tab, you can modify the following parameters:
  - **Retries:** Enter an integer value in this field. This number represents the number of times the scheduler tries to start the job before assigning the Stopped status to the job.
  - **Schedule Type:** Depending on the frequency at which you want the job to run, select the appropriate schedule type.

 **Note:**

See *Creating Jobs in Oracle Fusion Middleware Administering Oracle Identity Manager* for detailed information about schedule types.

In addition to modifying the job details, you can enable or disable a job.

5. On the Job Details tab, in the Parameters region, specify values for the attributes of the 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 is left empty, then reconciliation is not performed.

6. Click **Apply** to save the changes.

 **Note:**

You can use the Scheduler Status page in Identity System Administration to either start, stop, or reinitialize the scheduler.

## Configuring Reconciliation for the HRMS Target Connector

Reconciliation involves duplicating in Oracle Identity Manager the creation of and modifications to user accounts on the target system. This section discusses the following topics related to configuring reconciliation:

- [Reconciliation Queries for the EBS HRMS Connector](#)
- [Reconciliation Rules for the HRMS Target Connector](#)
- [Reconciliation Action Rules for the HRMS Target Connector](#)
- [Performing Full Reconciliation and Incremental Reconciliation Using the HRMS Target Connector](#)
- [Performing Limited Reconciliation Using the HRMS Target Connector](#)
- [Performing Batched Reconciliation Using the HRMS Target Connector](#)

## Reconciliation Queries for the EBS HRMS Connector

The EBS HRMS connector is configured to perform target resource reconciliation with the target system. Data from newly created and updated target system records is brought to Oracle Identity Manager and used to create and update Oracle E-Business Suite resources provisioned to OIM Users.

A SQL query is used to fetch target system records during reconciliation. All predefined SQL queries that are required to perform reconciliation are stored in the search.properties file. The search.properties file is a common file for all EBS Suite connectors. In other words, the search.properties file contains the queries for the EBS UM, HRMS Target, and HRMS Trusted connectors.

When you run a scheduled job, the connector locates the corresponding SQL query in the search.properties file and then runs it on the target system database. Target system records that meet the query criteria are returned to Oracle Identity Manager.

Depending on your requirements, you can modify existing queries or add your own query in the search.properties. This is discussed later in this guide.

Information in the search.properties file is virtually divided into two parts. The first part lists entries containing the SQL query names in the following format:

```
OBJ_CLASS.OP_NAME.MODE=QUERY_NAME
```

In this format:

- *OBJ\_CLASS* is the name of the object class on which the reconciliation operation is to be performed.
- *OP\_NAME* is the type of reconciliation operation to be performed. A reconciliation operation can be a search op, sync op, or lookup op.
- *MODE* is the name of the mode in which the connector is expected to perform reconciliation. For example, trusted. Note that this value is optional.
- *QUERY\_NAME* is the name of the SQL query that is to be run on the target system database.

The second part lists the SQL query names and the corresponding SQL queries.

The following are the entries corresponding to the HRMS Target connector in the search.properties file:

- `__PERSON__.search=TARGET_HRMS_CURRENT_EMPLOYEE_RECON_QUERY`  
This query is used to reconcile all newly created and modified HRMS person records from the target system. The reconciliation operation that is performed is search based.
- `__PERSON__.sync=TARGET_HRMS_CURRENT_EMPLOYEE_RECON_QUERY`  
This query is used to reconcile all newly created and modified HRMS person records from the target system. The reconciliation operation that is performed is sync based.
- `__PERSON__.sync.terminate=HRMS_TERMINATED_EMPLOYEE_RECON_QUERY`  
The `HRMS_TERMINATED_EMPLOYEE_RECON_QUERY` query is used to reconcile records of persons whose services have been terminated. When the connector fetches the records of such persons, the accounts of the corresponding users in Oracle Identity Manager are revoked.
- `__JOBS__.lookup=LOOKUP_JOBS_QUERY`  
This query is used to synchronize values in the `PER_JOBS` table of the target system with the `Lookup.EBSHRMS.Jobs` lookup definition in Oracle Identity Manager.
- `__GRADES__.lookup=LOOKUP_GRADES_QUERY`  
This query is used to synchronize values in the `PER_GRADES` table of the target system with the `Lookup.EBSHRMS.Grades` lookup definition in Oracle Identity Manager.
- `__ORGANIZATION__.lookup=LOOKUP_ORGANIZATION_QUERY`  
This query is used to synchronize values in the `HR_ALL_ORGANIZATION_UNITS` table of the target system with the `Lookup.EBSHRMS.Organization` lookup definition in Oracle Identity Manager.
- `__PERSONTYPE__.lookup=LOOKUP_PERSONTYPE_QUERY`

This query is used to synchronize values in the PER\_PERSON\_TYPES and HR\_ALL\_ORGANIZATION\_UNITS tables of the target system with the Lookup.EBSHRMS.PersonType lookup definition in Oracle Identity Manager.

## Reconciliation Rules for the HRMS Target Connector

The following sections provide information about the reconciliation rules for this connector:

- [Target Resource Reconciliation Rule for the HRMS Target Reconciliation](#)
- [Viewing Reconciliation Rules for Target Resource Reconciliation](#)

### Target Resource Reconciliation Rule for the HRMS Target Reconciliation

The following is the process-matching rule:

**Rule name:** EBS HRMS Target Recon Rule

**Rule element:** (User Login Equals Person Id) OR (EBS Person Id Equals Person Id)

In the first rule component:

- User Login represents the User Login field on the OIM User form.
- Person Id represents the \_\_UID\_\_ field of the target system.

In the second rule component:

- EBS Person Id is a user-defined field that represents the Person ID value of the target system on the OIM User form.
- Person Id represents the \_\_UID\_\_ field of the target system.

### Viewing Reconciliation Rules for Target Resource Reconciliation

You can view reconciliation rules by using Oracle Identity Manager Design Console.

After you deploy the connector, you can view the reconciliation rule for target resource reconciliation by performing the following steps:



**Note:**

Perform the following procedure only after the connector is deployed.

1. Log in to the Oracle Identity Manager Design Console.
2. Expand **Development Tools**.
3. Double-click **Reconciliation Rules**.
4. Search for the **EBS HRMS Target Recon Rule** rule name.

[Figure 3-1](#) shows the reconciliation rule for target resource reconciliation.

**Figure 3-1 Reconciliation Rule for Target Resource Reconciliation**

**Reconciliation Rule Builder**

Name:  Operator:  AND  OR  Valid

Object:   Active

For User  For Organization

Description:

---

**Rule Elements**

**Rule Definition**

- Rule: EBS HRMS Target Recon Rule
  - User Login Equals Person Id
  - EBS Person ID Equals Person Id

## Reconciliation Action Rules for the HRMS Target Connector

The following sections provide information about the reconciliation rules for this connector:

- [Reconciliation Action Rules for Target Resource Reconciliation](#)
- [Viewing Reconciliation Action Rules for Target Resource Reconciliation in the Design Console](#)

## Reconciliation Action Rules for Target Resource Reconciliation

[Table 3-13](#) lists the action rules for target resource reconciliation.

**Table 3-13 Action Rules for Target Resource Reconciliation**

Rule Condition	Action
No Matches Found	None
One Entity Match Found	Establish Link
One Process Match Found	Establish Link

### Note:

No action is performed for rule conditions that are not predefined for this connector. You can define your own action rule for such rule conditions. See the following sections in *Oracle Fusion Middleware Developing and Customizing Applications for Oracle Identity Manager* for information about setting or modifying a reconciliation action rule:

- [Setting a Reconciliation Action Rule \(Developing Identity Connectors using Java\)](#)
- [Setting a Reconciliation Action Rule \(Developing Identity Connectors using .NET\)](#)

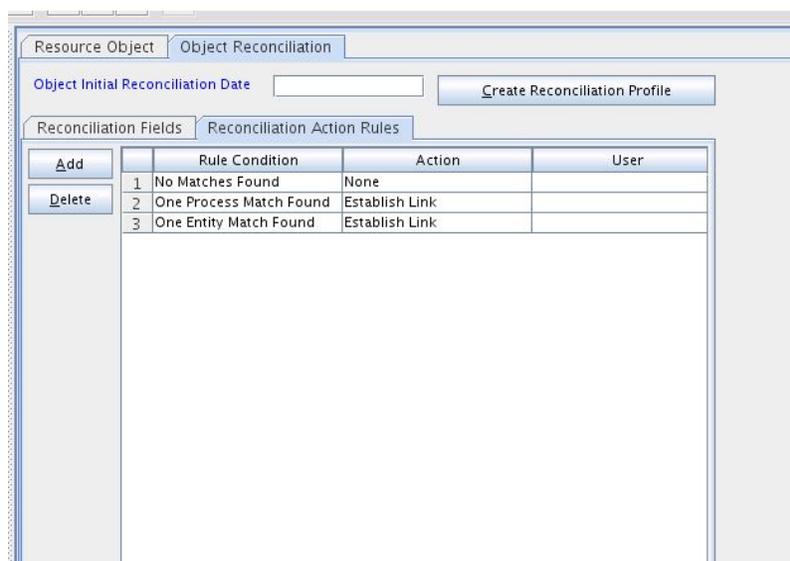
## Viewing Reconciliation Action Rules for Target Resource Reconciliation in the Design Console

You can view reconciliation action rules on the Object Reconciliation tab of the resource object in Oracle Identity Manager.

After you deploy the connector, you can view the reconciliation action rules for target resource reconciliation by performing the following steps:

1. Log in to the Oracle Identity Manager Design Console.
2. Expand **Resource Management**.
3. Double-click **Resource Objects**.
4. Search for and open the **Oracle EBS HRMS User** resource object.
5. Click the **Object Reconciliation** tab, and then click the **Reconciliation Action Rules** tab. The Reconciliation Action Rules tab displays the action rules defined for this connector. [Figure 3-2](#) shows the reconciliation action rule for target resource reconciliation.

**Figure 3-2 Reconciliation Action Rules for Target Resource Reconciliation**



Resource Object		Object Reconciliation	
Object Initial Reconciliation Date		Create Reconciliation Profile	
Reconciliation Fields		Reconciliation Action Rules	
Add	Rule Condition	Action	User
Delete	1 No Matches Found	None	
	2 One Process Match Found	Establish Link	
	3 One Entity Match Found	Establish Link	

## Performing Full Reconciliation and Incremental Reconciliation Using the HRMS Target Connector

Full reconciliation involves reconciling all existing user records from the target system into Oracle Identity Manager. After you deploy the connector, you must first perform full reconciliation. In addition, you can switch from incremental reconciliation to full reconciliation whenever you want to ensure that all target system records are reconciled in Oracle Identity Manager.

To perform full reconciliation, ensure that no values are specified for the Latest Token and Filter attributes of the scheduled jobs for reconciling user records.

In incremental reconciliation, only records created or modified after the latest date/ timestamp the last reconciliation was run are considered for reconciliation. To perform incremental reconciliation, configure and run the scheduled job for incremental reconciliation. The first time you run the scheduled job for incremental reconciliation, note that a full reconciliation is performed.

## Performing Limited Reconciliation Using the HRMS Target Connector

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 can perform limited reconciliation by creating filters for the reconciliation module. This connector provides a Filter attribute (a scheduled job attribute) that allows you to use any of the Oracle EBS HRMS User resource attributes to filter the target system records.

When you specify a value for the Filter attribute, only the target system records that match the filter criterion are reconciled into Oracle Identity Manager. If you do not specify a value for the Filter attribute, then all the records in the target system are reconciled into Oracle Identity Manager.

You specify a value for the Filter attribute while configuring the user reconciliation scheduled job.

The following is an example of a filter for a search where you want to filter only those accounts whose first name is "John":

```
equalTo('FIRST_NAME', 'JOHN')
```

For detailed information about ICF Filters, see ICF Filter Syntax in *Oracle Fusion Middleware Developing and Customizing Applications for Oracle Identity Governance*.

## Performing Batched Reconciliation Using the HRMS Target Connector

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 value for the batchSize parameter of the IT resource. Use this parameter to specify the number of records that must be included in each batch. By default, this value is set to 1000.

## Configuring Provisioning for the HRMS Target Connector

This section contains the following topics:

- [Provisioning Procedures](#)
- [Provisioning Functions](#)
- [Configuring the Connector for the Employee Number Field that is Not Autogenerated](#)
- [Performing Provisioning Operations in Oracle Identity Manager](#)

## Provisioning Procedures

Provisioning involves management of person accounts in the target system. When you allocate (or provision) an Oracle E-Business HRMS resource to an OIM User, the operation results in the creation of a person record on Oracle E-Business HRMS for that user. Similarly, when you update the resource on Oracle Identity Manager, the same update is made to the person record on the target system.

The connector uses stored procedures for performing provisioning operations. These stored procedures are available in the wrapper packages of the target system. Information about all stored procedures used for performing provisioning operations are defined in the `Procedures.properties` file. The same file contains stored procedures information for both the HRMS Target and User Management connectors.

When you perform a provisioning operation, the connector locates the corresponding stored procedure in the `Procedures.properties` file and the runs it on the target system to complete the provisioning operation.

Depending on your requirements, you can modify existing stored procedures or add your own stored procedures to the `Procedures.properties` file. This is discussed later in the guide.

The first property in the `Procedures.properties` file, `DB.PACKAGES`, lists all the wrapper packages that are used during connector operations. The subsequent entries in this file are in the following format:

```
OBJ_NAME.OP_NAME=WRAPPER_PCKG.STORED_PROC
```

In this format:

- `OBJ_NAME` is the name of the object on which the provisioning operation must be performed.
- `OP_NAME` is the type of provisioning operation to be performed. A provisioning operation can be a create, update, delete, or terminate.
- `WRAPPER_PCKG` is the name of the wrapper package.
- `STORED_PROC` is the name of the stored procedure in the wrapper package that is to be run to on the target system to complete the provisioning operation.

The following are the entries corresponding to the HRMS Target connector in the `Procedures.properties` file:

- **Entries corresponding to the `__PERSON__` object:**
  - `__PERSON__.create=OIM_EMPLOYEE_WRAPPER.CREATE_PERSON_API`  
In this entry, the `CREATE_PERSON_API` stored procedure of the `OIM_EMPLOYEE_WRAPPER` wrapper package is used for performing the Create provisioning operation against the `__PERSON__` object.
  - `__PERSON__.update=OIM_EMPLOYEE_WRAPPER.UPDATE_PERSON_API`  
In this entry, the `UPDATE_PERSON_API` stored procedure of the `OIM_EMPLOYEE_WRAPPER` wrapper package is used for performing the Update provisioning operation against the `__PERSON__` object.
  - `__PERSON__.delete=OIM_EMPLOYEE_WRAPPER.DELETE_PERSON_API`

In this entry, the DELETE\_PERSON\_API stored procedure of the OIM\_EMPLOYEE\_WRAPPER wrapper package is used for performing the Delete provisioning operation against the \_\_PERSON\_\_ object.

- \_\_PERSON\_\_.terminate=OIM\_EMPLOYEE\_WRAPPER.TERMINATE\_PERSON\_API

In this entry, the TERMINATE\_PERSON\_API stored procedure of the OIM\_EMPLOYEE\_WRAPPER wrapper package is used for performing the Terminate services provisioning operation against the \_\_PERSON\_\_ object.

- **Entries corresponding to child objects:**

- \_\_ADDRESS\_\_.add=OIM\_EMPLOYEE\_ADDRESS\_WRAPPER.CREATE\_PERSON\_ADDRESS\_API

In this entry, the CREATE\_PERSON\_ADDRESS\_API stored procedure of the OIM\_EMPLOYEE\_WRAPPER wrapper package is used for adding address for the \_\_PERSON\_\_ object.

- \_\_ADDRESS\_\_.remove=OIM\_EMPLOYEE\_ADDRESS\_WRAPPER.DELETE\_PERSON\_ADDRESS\_API

In this entry, the DELETE\_PERSON\_ADDRESS\_API stored procedure of the OIM\_EMPLOYEE\_WRAPPER wrapper package is used for removing the address for the \_\_PERSON\_\_ object.

- \_\_ASSIGNMENT\_\_.add=OIM\_EMPLOYEE\_WRAPPER.CREATE\_PERSON\_ASSIGNMENT\_API

In this entry, the CREATE\_PERSON\_ASSIGNMENT\_API stored procedure of the OIM\_EMPLOYEE\_WRAPPER wrapper package is used for adding assignments for person records.

- \_\_ASSIGNMENT\_\_.remove=OIM\_EMPLOYEE\_WRAPPER.DELETE\_PERSON\_ASSIGNMENT\_API

In this entry, the DELETE\_PERSON\_ASSIGNMENT\_API stored procedure of the OIM\_EMPLOYEE\_WRAPPER wrapper package is used for removing assignments from person records.

- \_\_ASSIGNMENT\_\_.update=OIM\_EMPLOYEE\_WRAPPER.UPDATE\_PERSON\_ASSIGNMENT\_API

In this entry, the UPDATE\_PERSON\_ASSIGNMENT\_API stored procedure of the OIM\_EMPLOYEE\_WRAPPER wrapper package is used for updating assignments for person records.

- \_\_ADDRESS\_\_.update=OIM\_EMPLOYEE\_ADDRESS\_WRAPPER.UPDATE\_PERSON\_ADDRESS\_API

In this entry, the UPDATE\_PERSON\_ADDRESS\_API stored procedure of the OIM\_EMPLOYEE\_WRAPPER wrapper package is used for updating the address of a person records.

## Provisioning Functions

Table 3-14 lists the provisioning functions that are supported by the connector. The Adapter column gives the name of the adapter that is used when the function is performed.

**Table 3-14 Provisioning Functions**

Function	Adapter
Add Child Data	adpORACLEEBSHRMSADDCHILDTABLEVALUE
Create Person	adpORACLEEBSHRMSCREATEOBJECT
Delete Person	adpORACLEEBSHRMSDELETEOBJECT
Disable Person	adpORACLEEBSHRMSDISABLEOBJECT
Enable Person	adpORACLEEBSHRMSENABLEOBJECT
Remove Child Data	adpORACLEEBSHRMSREMOVECHILDTABLEVALUES
Update Child Data	adpORACLEEBSHRMSCHILDUPDATEWITHWRITEBACK
Update Single Attributes	adpORACLEEBSHRMSUPDATESINGLEATTRIBUTES
User Bulk Update	adpORACLEEBSHRMSBULKUPDATEADAPTER

## Configuring the Connector for the Employee Number Field that is Not Autogenerated

Before you perform a Create Person provisioning operation, you must ensure that the value of the Employee number field on the target system is generated automatically. If you have not configured the Employee number field for autogeneration, then you must:

- Change the DOField of the Employee Number attribute to text field in the process form and re-create the UI form.
- Remove the WRITEBACK tag for the Employee Number field from the **Lookup.EBSHRMS.UM.ProvAttrMap** lookup definition.

## Performing Provisioning Operations in Oracle Identity Manager

You create a new user in Identity Self Service by using the Create User page. You provision or request for accounts on the Accounts tab of the User Details page.

To perform provisioning operations in Oracle Identity Manager:

1. Log in to Identity Self Service.
2. Create a user. See *Managing Users in Oracle Fusion Middleware Performing Self Service Tasks with Oracle Identity Manager* for more information about creating a user.
3. On the Account tab, click **Request Accounts**.
4. In the Catalog page, search for and add to cart the application instance created in [Associating the Form with the Application Instance](#) and then click **Checkout**.
5. Specify value for fields in the application form and then click **Ready to Submit**.
6. Click **Submit**.
7. If you want to provision entitlements, then:
  - a. On the Entitlements tab, click **Request Entitlements**.

- b. In the Catalog page, search for and add to cart the entitlement, and then click **Checkout**.
- c. Click **Submit**.

## Uninstalling the HRMS Target Connector

Uninstalling the connector deletes all the account related data associated with resource objects of the connector.

If you want to uninstall the connector for any reason, see *Uninstalling Connectors* in *Oracle Fusion Middleware Administering Oracle Identity Manager*.

# 4

## Using the HRMS Trusted Connector

This chapter contains the following topics:



### 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.

- [Preconfigured Lookup Definitions for the HRMS Trusted Connector](#)
- [Reconciliation Scheduled Jobs for the HRMS Trusted Connector](#)
- [Configuring Reconciliation for the HRMS Trusted Connector](#)
- [Uninstalling the HRMS Trusted Connector](#)

## Preconfigured Lookup Definitions for the HRMS Trusted Connector

This section discusses the lookup definitions that are created in Oracle Identity Manager when you deploy the HRMS Trusted connector. These lookup definitions are either prepopulated with values or values must be manually entered in them after the connector is deployed. The other lookup definitions are as follows:

- [Lookup.EBSHRMS.Configuration.Trusted](#)
- [Lookup.EBSHRMS.Person.Configuration.Trusted](#)
- [Lookup.EBSHRMS.ReconAttrMap.Trusted.Defaults](#)
- [Lookup.EBSHRMS.ReconAttrMap.Trusted](#)

### Lookup.EBSHRMS.Configuration.Trusted

The `Lookup.EBSHRMS.Configuration.Trusted` holds connector configuration entries that are used during target resource reconciliation and provisioning operations.

[Table 4-1](#) lists the default entries in this lookup definition.

**Table 4-1** Entries in the Lookup.EBSHRMS.Configuration.Trusted Lookup Definition

Code Key	Decode	Description
__PERSON__ Configuration Lookup	Lookup.EBSHRMS.Person .Configuration.Trusted	This entry holds the name of the lookup definition that contains configuration information specific to the __PERSON__ object type. See <a href="#">Lookup.EBSHRMS.Person.Configuration.Trusted</a> for more information about this lookup definition.
Bundle Name	org.identityconnectors.ebs	This entry holds the name of the connector bundle class. Do <i>not</i> modify this entry.
Bundle Version	1.0.11150	This entry holds the version of the connector bundle class. Do <i>not</i> modify this entry.
Connector Name	org.identityconnectors.ebs. EBSSConnector	This entry holds the name of the connector class. Do <i>not</i> modify this entry.

## Lookup.EBSHRMS.Person.Configuration.Trusted

The Lookup.EBSHRMS.Person.Configuration.Trusted lookup definition holds configuration entries that are specific to the \_\_PERSON\_\_ object type. This lookup definition is used during \_\_PERSON\_\_ management operations when your target system is configured as a target resource.

[Table 4-2](#) lists the default entries in this lookup definition.

**Table 4-2** Entries in the Lookup.EBSHRMS.Person.Configuration.Trusted Lookup Definition

Code Key	Decode	Description
Recon Attribute Defaults	Lookup.EBSHRMS.ReconAttr Map.Trusted.Defaults	This entry holds the name of the lookup definition that maps reconciliation fields to their default values. See <a href="#">Lookup.EBSHRMS.ReconAttrMap.Trusted.Defaults</a> for more information about this lookup definition.
Recon Attribute Map	Lookup.EBSHRMS.ReconAttr Map.Trusted	This entry holds the name of the lookup definition that maps resource object fields and target system attributes. See <a href="#">Lookup.EBSHRMS.ReconAttrMap.Trusted</a> for more information about this lookup definition.

## Lookup.EBSHRMS.ReconAttrMap.Trusted.Defaults

The Lookup.EBSHRMS.ReconAttrMap.Trusted.Defaults lookup definition holds mappings between reconciliation fields and their default values. This lookup definition is used when there is a mandatory field on the OIM User form, but no corresponding field in the target system from which values can be fetched during trusted source reconciliation.

[Table 4-3](#) lists the default entries in this lookup definition.

**Table 4-3** Entries in the Lookup.EBSHRMS.ReconAttrMap.Trusted.Defaults Lookup Definition

Code Key	Decode
Organization Name	Xellerate Users

**Table 4-3 (Cont.) Entries in the Lookup.EBSHRMS.ReconAttrMap.Trusted.Defaults Lookup Definition**

Code Key	Decode
Role	Full-Time
User Type	End-User

You can add entries to this lookup definition in the following format:

- **Code Key:** Name of the reconciliation field on the Oracle EBS HRMS Trusted User resource object
- **Decode:** Corresponding default value to be displayed

For example, assume a field named Preferred Language is a mandatory field on the OIM User form. Suppose the target system contains no field that stores information about the preferred language of communication for a user account. During reconciliation, no value for the Preferred Language field is fetched from the target system. However, as the Preferred Language field cannot be left empty, you must specify a value for this field. Therefore, create an entry in this lookup definition with the Code Key value set to Preferred Language and Decode value set to English. This implies that the value of the Preferred Language field on the OIM User form displays English for all user accounts reconciled from the target system.

## Lookup.EBSHRMS.ReconAttrMap.Trusted

The Lookup.EBSHRMS.ReconAttrMap.Trusted lookup definition holds mappings between resource object fields (Code Key) and target system attributes (Decode). This lookup definition is used during reconciliation. This lookup definition is preconfigured.

[Table 4-4](#) lists the default entries in this lookup definition.

**Table 4-4 Entries in the Lookup.EBSHRMS.ReconAttrMap.Trusted Lookup Definition**

Code Key	Decode
Business Group ID	BUSINESS_GROUP_ID
Department	DEPARTMENT
DOB[DATE]	DATE_OF_BIRTH
Effective End Date[DATE]	ACTUAL_TERMINATION_DATE
Effective Start Date[DATE]	HIRE_DATE
Email Address	EMAIL_ADDRESS
Employee Number	PERSON_ID
Employee Type	PERSON_TYPE_ID
First Name	FIRST_NAME
Grade	GRADE
Job	JOB
Last Name	LAST_NAME
Marital Status	MARITAL_STATUS
National Identifier	NATIONAL_IDENTIFIER

**Table 4-4 (Cont.) Entries in the Lookup.EBSHRMS.ReconAttrMap.Trusted Lookup Definition**

Code Key	Decode
Nationality	NATIONALITY
Status[TRUSTED]	__ENABLE__
Supervisor Id	SUPERVISOR_ID
Supervisor Name	SUPERVISOR_NAME
Title	TITLE
User ID	__UID__

## Reconciliation Scheduled Jobs for the HRMS Trusted Connector

When you run the Connector Installer, scheduled jobs are automatically created in Oracle Identity Manager.

This section discusses the attributes of the following scheduled jobs:

- [Scheduled Job for Reconciliation of Person Records](#)
- [Scheduled Job for Reconciliation of Deleted Person Records](#)
- [Scheduled Job for Incremental Reconciliation](#)
- [Configuring Scheduled Jobs for the HRMS Trusted Connector](#)

### Scheduled Job for Reconciliation of Person Records

The Oracle EBS HRMS Trusted User Reconciliation scheduled job is used for reconciliation of person records.

You must specify values for the attributes of the person record reconciliation scheduled job. [Table 4-5](#) describes the attributes of this scheduled job.

**Table 4-5 Attributes of the Oracle EBS HRMS Trusted User Reconciliation Scheduled Job**

Attribute	Description
Filter	Enter the search filter for fetching records from the target system during a reconciliation run. See <a href="#">Performing Limited Reconciliation Using the HRMS Trusted Connector</a> for more information.
Incremental Recon Attribute	Enter the name of the target system attribute that holds the timestamp at which the person record was modified. Sample value: PERSON_UPDATED_DATE
ITResource Name	Name of the IT resource for the target system installation that the connector must use to reconcile person records. Default value: Oracle EBS HRMS Trusted

**Table 4-5 (Cont.) Attributes of the Oracle EBS HRMS Trusted User Reconciliation Scheduled Job**

Attribute	Description
Latest Token	This attribute holds the value of the attribute that is specified as the value of the Incremental Recon Attribute attribute. The Latest Token attribute is used for internal purposes. By default, this value is empty. <b>Note:</b> Do not enter a value for this attribute. The reconciliation engine automatically enters a value in this attribute. Sample value: 1433513327000
Object Type	Type of object you want to reconcile. Default value: <code>__PERSON__</code>
Resource Object Name	Name of the resource object that is used for reconciliation. Default value: Oracle EBS HRMS Trusted User
Scheduled Task Name	Name of the scheduled task that is used for reconciliation. Sample value: Oracle EBS HRMS Trusted User Reconciliation

## Scheduled Job for Reconciliation of Deleted Person Records

The Oracle EBS HRMS Trusted User Delete Reconciliation scheduled job is used to reconcile data about deleted person records in the target system. During a reconciliation run, for each deleted user account on the target system, the corresponding OIM User is deleted.

You must specify values for the attributes of the user reconciliation scheduled job. [Table 4-6](#) describes the attributes of this scheduled job.

**Table 4-6 Attributes of the Oracle EBS HRMS Trusted User Delete Reconciliation Scheduled Job**

Attribute	Description
ITResource Name	Name of the IT resource for the target system installation that the connector must use to reconcile person records. Default value: Oracle EBS HRMS Trusted
Object Type	Type of object you want to reconcile. Default value: <code>__PERSON__</code>
Resource Object Name	Name of the resource object that is used for reconciliation. Default value: Oracle EBS HRMS Trusted User

## Scheduled Job for Incremental Reconciliation

The Oracle EBS HRMS Trusted Incremental User Reconciliation scheduled job is used for performing incremental reconciliation.

[Table 4-7](#) describes the attributes of this scheduled job.

**Table 4-7 Attributes of the Oracle EBS HRMS Trusted Incremental User Reconciliation Scheduled Job**

Attribute	Description
ITResource Name	Name of the IT resource for the target system installation that the connector must use to reconcile person records. Default value: Oracle EBS HRMS Trusted
Object Type	Type of object you want to reconcile. Default value: <code>__PERSON__</code>
Resource Object Name	Name of the resource object that is used for reconciliation. Default value: Oracle EBS HRMS Trusted User
Scheduled Task Name	Name of the scheduled task that is used for reconciliation. Default value: Oracle EBS HRMS Trusted Incremental User Reconciliation
Sync Token	This attribute must be left blank when you run incremental reconciliation for the first time. This ensures that data about all records from the target system are fetched into Oracle Identity Manager. After the first reconciliation run, the connector automatically enters a value for this attribute in an XML serialized format. From the next reconciliation run onward, only data about records that are modified since the last reconciliation run ended are fetched into Oracle Identity Manager. Sample value: <code>&lt;Long&gt;1433010600000&lt;/Long&gt;</code>

## Configuring Scheduled Jobs for the HRMS Trusted Connector

This section describes the procedure to configure scheduled jobs. You can apply this procedure to configure the scheduled jobs for lookup field synchronization and reconciliation.

See [Scheduled Job for Reconciliation of Person Records](#) through [Scheduled Job for Incremental Reconciliation](#) for the scheduled jobs that are part of the connector and for information about their attributes

To configure a scheduled job:

1. Log in to Oracle Identity System Administration.
2. In the left pane, under System Management, click **Scheduler**.
3. Search for and open the scheduled task as follows:
  - a. On the left pane, in the Search field, enter the name of the scheduled job as the search criterion. Alternatively, you can click **Advanced Search** and specify the search criterion.
  - b. In the search results table on the left pane, click the scheduled job in the Job Name column.
4. On the Job Details tab, you can modify the following parameters:
  - **Retries:** Enter an integer value in this field. This number represents the number of times the scheduler tries to start the job before assigning the Stopped status to the job.

- **Schedule Type:** Depending on the frequency at which you want the job to run, select the appropriate schedule type.

 **Note:**

See *Creating Jobs in Oracle Fusion Middleware Administering Oracle Identity Manager* for detailed information about schedule types.

In addition to modifying the job details, you can enable or disable a job.

5. On the Job Details tab, in the Parameters region, specify values for the attributes of the 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 is left empty, then reconciliation is not performed.

6. Click **Apply** to save the changes.

 **Note:**

You can use the Scheduler Status page in Identity System Administration to either start, stop, or reinitialize the scheduler.

## Configuring Reconciliation for the HRMS Trusted Connector

Reconciliation involves duplicating in Oracle Identity Manager the creation of and modifications to user accounts on the target system.

This section discusses the following topics related to configuring reconciliation:

- [Reconciliation Queries for the HRMS Trusted Connector](#)
- [Reconciliation Rules for the HRMS Trusted Connector](#)
- [Reconciliation Action Rules for the HRMS Trusted Connector](#)
- [Performing Full Reconciliation and Incremental Reconciliation Using the HRMS Trusted Connector](#)
- [Performing Limited Reconciliation Using the HRMS Trusted Connector](#)
- [Performing Batched Reconciliation Using the HRMS Trusted Connector](#)

## Reconciliation Queries for the HRMS Trusted Connector

The HRMS Trusted connector is configured to perform trusted source reconciliation with the target system. The target system is used as the trusted source and users are directly created and modified on it. During reconciliation, the HRMS Trusted connector fetches data (using scheduled jobs) about these target system users into Oracle Identity Manager. This data is used to create or update the corresponding OIM Users.

A SQL query is used to fetch target system records during reconciliation. All predefined SQL queries that are required to perform reconciliation are stored in the search.properties file. The search.properties file is a common file for all EBS Suite connectors. In other words, the search.properties file contains the queries for the EBS UM, HRMS Target, and HRMS Trusted connectors.

When you run a scheduled job, the connector locates the corresponding SQL query in the search.properties file and then runs it on the target system database. Target system records that meet the query criteria are returned to Oracle Identity Manager.

Depending on your requirements, you can modify existing queries or add your own query in the search.properties. This is discussed later in this guide.

Information in the search.properties file is virtually divided into two parts. The first part lists entries containing the SQL query names in the following format:

*OBJ\_CLASS.OP\_NAME.MODE=QUERY\_NAME*

In this format:

- *OBJ\_CLASS* is the name of the object class on which the reconciliation operation is to be performed.
- *OP\_NAME* is the type of reconciliation operation to be performed. A reconciliation operation can be a search op, sync op, or lookup op.
- *MODE* is the name of the mode in which the connector is expected to perform reconciliation. For example, trusted. Note that this value is optional.
- *QUERY\_NAME* is the name of the SQL query that is to be run on the target system database.

The second part lists the SQL query names and the corresponding SQL queries.

The following are the entries corresponding to the HRMS Target connector in the search.properties file:

- `__PERSON__.search.trusted=HRMS_CURRENT_EMPLOYEE_RECON_QUERY`  
The HRMS\_CURRENT\_EMPLOYEE\_RECON\_QUERY query is used to reconcile all employee records that are currently active from the target system. The reconciliation operation that is performed is search based.
- `__PERSON__.search.future_trusted=HRMS_CURRENT_FUTURE_EMPLOYEE_RECON_QUERY`  
The HRMS\_CURRENT\_FUTURE\_EMPLOYEE\_RECON\_QUERY query is used to reconcile all future-dated employee records from the target system. The reconciliation operation that is performed is search based.
- `__PERSON__.sync.trusted=HRMS_CURRENT_EMPLOYEE_RECON_QUERY`

The HRMS\_CURRENT\_EMPLOYEE\_RECON\_QUERY query is used to reconcile all employee records that are currently active from the target system. The reconciliation operation that is performed is sync based.

- `__PERSON__.sync.future_trusted=HRMS_CURRENT_FUTURE_EMPLOYEE_RECON_QUERY`

The HRMS\_CURRENT\_FUTURE\_EMPLOYEE\_RECON\_QUERY query is used to reconcile all future-dated employee records from the target system. The reconciliation operation that is performed is sync based.

## Reconciliation Rules for the HRMS Trusted Connector

The following sections provide information about the reconciliation rules for this connector:

- [Reconciliation Rule for Trusted Source Reconciliation for the HRMS Trusted Connector](#)
- [Viewing Reconciliation Rules for Trusted Source Reconciliation](#)

### Reconciliation Rule for Trusted Source Reconciliation for the HRMS Trusted Connector

The following is the process-matching rule:

**Rule name:** EBS HRMS Trusted

**Rule element:** User Login Equals User ID

In the rule element:

- User Login represents the User Login field on the OIM User form.
- User ID represents the Person ID field of the employee on the target system.

### Viewing Reconciliation Rules for Trusted Source Reconciliation

After you deploy the connector, you can view the reconciliation rule for target resource reconciliation by performing the following steps:



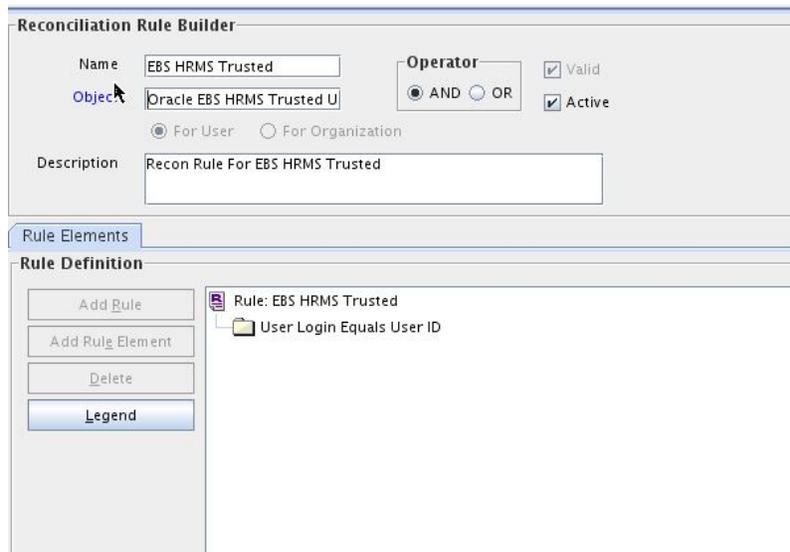
**Note:**

Perform the following procedure only after the connector is deployed.

1. Log in to the Oracle Identity Manager Design Console.
2. Expand **Development Tools**.
3. Double-click **Reconciliation Rules**.
4. Search for the **EBS HRMS Trusted** rule name.

[Figure 4-1](#) shows the reconciliation rule for target resource reconciliation.

**Figure 4-1 Reconciliation Rule for Trusted Source Reconciliation**



## Reconciliation Action Rules for the HRMS Trusted Connector

The following sections provide information about the reconciliation rules for this connector:

- [Reconciliation Action Rules for Trusted Source Reconciliation](#)
- [Viewing Reconciliation Action Rules for Trusted Source Reconciliation in the Design Console](#)

## Reconciliation Action Rules for Trusted Source Reconciliation

[Table 4-8](#) lists the action rules for trusted source reconciliation.

**Table 4-8 Action Rules for Trusted Source Reconciliation**

Rule Condition	Action
No Matches Found	Create User
One Entity Match Found	Establish Link
One Process Match Found	Establish Link

 **Note:**

No action is performed for rule conditions that are not predefined for this connector. You can define your own action rule for such rule conditions. See the following sections in *Oracle Fusion Middleware Developing and Customizing Applications for Oracle Identity Manager* for information about setting or modifying a reconciliation action rule:

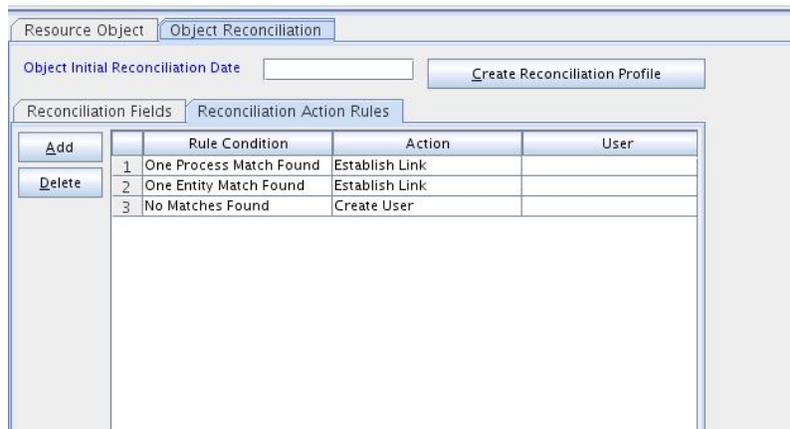
- Setting a Reconciliation Action Rule (Developing Identity Connectors using Java)
- Setting a Reconciliation Action Rule (Developing Identity Connectors using .NET)

## Viewing Reconciliation Action Rules for Trusted Source Reconciliation in the Design Console

After you deploy the connector, you can view the reconciliation action rules for trusted source reconciliation by performing the following steps:

1. Log in to the Oracle Identity Manager Design Console.
2. Expand **Resource Management**.
3. Double-click **Resource Objects**.
4. Search for and open the **Oracle EBS HRMS Trusted User** resource object.
5. Click the **Object Reconciliation** tab, and then click the **Reconciliation Action Rules** tab. The Reconciliation Action Rules tab displays the action rules defined for this connector. [Figure 4-2](#) shows the reconciliation action rule for target resource reconciliation.

**Figure 4-2 Reconciliation Action Rules for Trusted Source Reconciliation**



Resource Object		Object Reconciliation		
Object Initial Reconciliation Date		<input type="text"/>		
		<input type="button" value="Create Reconciliation Profile"/>		
Reconciliation Fields		Reconciliation Action Rules		
<input type="button" value="Add"/>		Rule Condition	Action	User
<input type="button" value="Delete"/>	1	One Process Match Found	Establish Link	
	2	One Entity Match Found	Establish Link	
	3	No Matches Found	Create User	

## Performing Full Reconciliation and Incremental Reconciliation Using the HRMS Trusted Connector

Full reconciliation involves reconciling all existing user records from the target system into Oracle Identity Manager. After you deploy the connector, you must first perform full reconciliation. In addition, you can switch from incremental reconciliation to full reconciliation whenever you want to ensure that all target system records are reconciled in Oracle Identity Manager.

To perform full reconciliation, ensure that no values are specified for the Latest Token and Filter attributes of the scheduled jobs for reconciling user records.

In incremental reconciliation, only records created or modified after the latest date/timestamp the last reconciliation was run are considered for reconciliation. To perform incremental reconciliation, configure and run the scheduled job for incremental reconciliation. The first time you run the scheduled job for incremental reconciliation, note that a full reconciliation is performed.

## Performing Limited Reconciliation Using the HRMS Trusted Connector

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 can perform limited reconciliation by creating filters for the reconciliation module. This connector provides a Filter attribute (a scheduled job attribute) that allows you to use any of the Oracle EBS HRMS Trusted User resource attributes to filter the target system records.

When you specify a value for the Filter attribute, only the target system records that match the filter criterion are reconciled into Oracle Identity Manager. If you do not specify a value for the Filter attribute, then all the records in the target system are reconciled into Oracle Identity Manager. For example, specifying the following as the value of the Filter attribute returns all records that belong to the 202 business group ID:

```
equalTo('BUSINESS_GROUP_ID','202')
```

You specify a value for the Filter attribute while configuring the user reconciliation scheduled job.

For detailed information about ICF Filters, see ICF Filter Syntax in *Oracle Fusion Middleware Developing and Customizing Applications for Oracle Identity Manager*.

## Performing Batched Reconciliation Using the HRMS Trusted Connector

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 value for the batchSize parameter of the IT resource. Use this parameter to specify the number of records that must be included in each batch. By default, this value is set to 1000.

## Uninstalling the HRMS Trusted Connector

If you want to uninstall the connector for any reason, see Uninstalling Connectors in *Oracle Fusion Middleware Administering Oracle Identity Manager*.

# 5

## Extending the Functionality of the Connector

This chapter describes procedures that you can perform to extend the functionality of the connector for addressing your specific business requirements. This section discusses the following topics:

- [Understanding Connector Schema Extension](#)
- [Adding New Attributes for Trusted Source Reconciliation](#)
- [Adding New Attributes for Target Resource Reconciliation and Provisioning](#)
- [Adding New Multivalued Attributes for Target Resource Reconciliation and Provisioning](#)
- [Configuring Transformation of Data During User Reconciliation](#)
- [Configuring Validation of Data During Reconciliation and Provisioning](#)

### Understanding Connector Schema Extension

By default, this connector provides a set of attribute mappings that are used for reconciliation and provisioning operations between Oracle Identity Manager and the target system. Depending on your business requirements, you can add and map additional attributes for reconciliation and provisioning operations. To do so, you can extend the connector schema by adding new attributes to the `get_schema()` stored procedure in the `OIM_EMPLOYEE_WRAPPER.pck` wrapper package.

Extending the connector schema requires you to understand the following concepts:

- **Attribute initialization**

The following initialization statement reserves an internal array that holds attribute definitions of the connector schema:

```
attr.extend(NUM);
```

Here, `NUM` defines the size of the array that is to be initialized. The size of the array must always be greater than or equal to the number of attributes defined. For example, the initialization statement `attr.extend(20);` reserves an internal array of 20 attributes for initialization.

- **Attribute definition**

After initialization, you define the information for each attribute by adding a statement in the following format:

```
attr(ORD_NO) :=  
attributeinfo(ATTR_NAME,ATTR_TYPE,CREATE_FLAG,UPDATE_FLAG,REQUIRED_F  
LAG,READ_FLAG);
```

In this format:

- `ORD_NO` is the order of the attribute in the array. This is mandatory.
- `ATTR_NAME` is the name of the child or single-valued attribute.

- *ATTR\_TYPE* is the SQL datatype of the child or single-valued attribute.
- *CREATE\_FLAG* is a flag to represent whether the attribute is required during a create provisioning operation.
- *UPDATE\_FLAG* is a flag to represent whether the attribute can be updated.
- *REQUIRED\_FLAG* is a flag to represent whether the attribute is mandatory.
- *READ\_FLAG* is flag to represent whether the attribute can be read.

A value of 1 or 0 for each flag denotes True or False, respectively. For example, a value 1, 0, 1, 0 for the flags means that the attribute is a mandatory attribute and must be considered during create provisioning operations.

- **Attribute array extension**

You can increase the array size post initialization by including the following statement:

```
attr.extend;
```

Each inclusion of this statement increments the array size by 1.

## Adding New Attributes for Trusted Source Reconciliation

By default, the fields listed in [Table 4-4](#) are mapped for reconciliation between Oracle Identity Manager and the target system. If required, you can map additional fields for trusted source reconciliation. The following sections describe the procedures to be performed for adding new attributes:

- [Summary of Steps to Add New Attributes for Trusted Source Reconciliation](#)
- [Extending the Connector Schema for Trusted Source Reconciliation](#)
- [Updating Artifacts for Trusted Source Reconciliation](#)
- [Updating the Connector Bundle](#)

### Summary of Steps to Add New Attributes for Trusted Source Reconciliation

The following is a summary of high-level steps to be performed to add a new attribute for trusted source reconciliation:

1. Update the DB wrapper package to include the new single-valued attribute in the main attribute list of the `get_schema()` stored procedure as described in [Extending the Connector Schema for Trusted Source Reconciliation](#).
2. Update OIM artifacts as described in [Updating Artifacts for Trusted Source Reconciliation](#).
3. Update the connector bundle to include the new attribute in the `search.properties` file as described in [Updating the Connector Bundle](#).

### Extending the Connector Schema for Trusted Source Reconciliation

You must extend the connector schema by updating the DB wrapper package to include the new attribute for trusted source reconciliation as follows:

1. Open any SQL client. For example, SQL Developer.
2. Open the body of the **OIM\_EMPLOYEE\_WRAPPER.pck** wrapper package.
3. Select the **get\_schema()** stored procedure. The list of attributes defined in the stored procedure is displayed.
4. If the number of attributes defined exceeds the number of attributes initialized, then:

- a. Add the following attribute initialization statement:

```
attr.extend;
```

- b. Enter the definition for the new attribute that you want to add in the following format:

```
attr (ORD_NO) :=  
attributeinfo(ATTR_NAME,ATTR_TYPE,CREATE_FLAG,UPDATE_FLAG,REQUIRE  
D_FLAG,READ_FLAG);
```

For example, if you are adding a new attribute to hold the blood type for a user account, then include the following statements:

```
attr.extend;  
attr (28) := attributeinfo('BLOOD_TYPE','varchar2',1,1,0,1);
```

In this example, a value of 1,1,0,1 for the flags means that the BLOOD\_TYPE attribute is required during create provisioning operations, it can be updated and read.

#### See Also:

[Understanding Connector Schema Extension](#) for more information about format in which you must add the new attribute definition

5. If the number of attributes defined does not exceed the number of attributes initialized then add only the definition for the new attribute. For example, `attr (28) := attributeinfo('BLOOD_TYPE','varchar2',1,1,0,1);`
6. Re-compile the wrapper package.

## Updating Artifacts for Trusted Source Reconciliation

You must update the connector artifacts to include the new attribute added in [Extending the Connector Schema for Trusted Source Reconciliation](#). Updating connector artifacts involves performing the following procedures:

- [Creating a User-Defined Field](#)
- [Updating the Oracle EBS HRMS Trusted User Resource Object](#)
- [Updating the Oracle EBS HRMS Trusted User Process Definition](#)
- [Updating the Lookup Definition for Reconciliation Attribute Mapping](#)
- [Creating a Reconciliation Profile for the Oracle EBS HRMS Trusted User Resource Object](#)

## Creating a User-Defined Field

To create a user-defined field (UDF) in Oracle Identity Manager, see [Creating a Custom Attribute in \*Oracle Fusion Middleware Administering Oracle Identity Manager\*](#) for detailed instructions.

## Updating the Oracle EBS HRMS Trusted User Resource Object

Update the resource object to add a reconciliation field corresponding to the new attribute created in [Updating the Oracle EBS HRMS Trusted User Resource Object](#) as follows:

1. Log in to Oracle Identity Manager Design Console.
2. Expand the **Resource Management** folder, and then double-click **Resource Objects**.
3. Search for and open the **Oracle EBS HRMS Trusted User** resource object.
4. On the Object Reconciliation tab, click **Add Field** to open the Add Reconciliation Field dialog box.
5. In the Field Name field, enter the name of the attribute. For example, `Blood Type`.
6. From the Field Type list, select a data type for the field. For example, **String**.
7. If you want to designate the attribute as a mandatory attribute, then select the check box.
8. Click the Save icon and close the dialog box.

## Updating the Oracle EBS HRMS Trusted User Process Definition

Create a reconciliation field mapping for the UDF (created in [Creating a User-Defined Field](#)) in the process definition as follows:

1. Expand **Process Management** and then double-click **Process Definition**.
2. Search for and open the **Oracle EBS HRMS Trusted User** process definition.
3. On the Reconciliation Field Mapping tab, click **Add Field Map**.
4. From the Field name list in the Add Reconciliation Field Mapping dialog box, select the name that you have assigned to the attribute created in the resource object. For example, select **Blood Type**.
5. From the User Attribute list, select the attribute corresponding to the field name selected in the preceding step. For example, select **BloodType**.
6. Click the Save icon and close the dialog box.

## Updating the Lookup Definition for Reconciliation Attribute Mapping

Add an entry for the attribute in the lookup definition for reconciliation attribute mapping as follows:

1. Expand the **Administration** folder, and then double-click **Lookup Definition**.
2. Search for and open the **Lookup.EBSHRMS.ReconAttrMap.Trusted** lookup definition.

3. To add a row, click **Add**.
4. In the Code Key column, enter the name that you have set for the attribute in the resource object. For example, enter `Blood Type`.
5. In the Decode column, enter the name of the column name that is returned by the SQL query. For example, enter `BLOOD_TYPE`.
6. Click the Save icon.

## Creating a Reconciliation Profile for the Oracle EBS HRMS Trusted User Resource Object

Create a reconciliation profile to copy all the changes made to the resource object (in the earlier section) into MDS:

1. Expand the **Resource Management** folder, and then double-click **Resource Objects**.
2. Search for and open the **Oracle EBS HRMS Trusted User** resource object.
3. On the Object Reconciliation tab, click **Create Reconciliation Profile**.
4. Click the Save icon.

## Updating the Connector Bundle

You must update the connector bundle (`org.identityconnectors.ebs-1.0.1115.jar`) to include all the updates made in the earlier sections. To do so:

1. Extract the contents of the `org.identityconnectors.ebs-1.0.1115.jar` file into a directory of your choice.
2. In a text editor, open the `search.properties` located in the configuration directory.
3. Search for the SQL query that must include the column name corresponding to the newly created attribute. For example, search for the `HRMS_CURRENT_EMPLOYEE_RECON_QUERY` query.
4. If the SQL query already contains the column name corresponding to the newly added attribute, then you can skip the rest of the steps mentioned in this section.
5. If the SQL query does not include information about the newly added column name, then modify it to include this information. For example, modify the `HRMS_CURRENT_EMPLOYEE_RECON_QUERY` query (search op) to include `PAPF.BLOOD_TYPE AS blood_type`. The Blood Type attribute is present in the `PER_ALL_PEOPLE_F` table and `PAPF` is the table alias.
6. Repeat Steps 3 through 5 to update the remaining SQL queries such as `HRMS_CURRENT_FUTURE_EMPLOYEE_RECON_QUERY` (for both search and sync ops), and `HRMS_CURRENT_EMPLOYEE_RECON_QUERY` (sync op), if applicable. For example, update the `HRMS_CURRENT_EMPLOYEE_RECON_QUERY` and `HRMS_CURRENT_FUTURE_EMPLOYEE_RECON_QUERY` queries with the SQL queries listed in [Sample SQL Queries for the HRMS Trusted Connector](#).
7. Save the changes and close the file.
8. Verify the updated queries.
9. Update the connector bundle (`org.identityconnectors.ebs-1.0.1115.jar`) by running the following command:

```
jar -cvfm org.identityconnectors.ebs-1.0.1115.jar META-INF/MANIFEST.MF *
```

10. Run the Oracle Identity Manager Update JARs utility to replace the existing connector bundle with the new connector bundle (updated in Step 9) to the Oracle Identity Manager database. This utility is copied into the following location when you install Oracle Identity Manager:

 **Note:**

Before you use this utility, verify that the WL\_HOME environment variable is set to the directory in which Oracle WebLogic Server is installed.

**For Microsoft Windows:**

*OIM\_HOME*/server/bin/UpdateJars.bat

**For UNIX:**

*OIM\_HOME*/server/bin/UpdateJars.sh

When you run the utility, you are prompted to enter the login credentials of the Oracle Identity Manager administrator, URL of the Oracle Identity Manager host computer, context factory value, type of JAR file being uploaded, and the location from which the JAR file is to be uploaded. Specify 4 as the value of the JAR type.

11. Restart Oracle Identity Manager after the connector bundle JAR is updated successfully.

## Adding New Attributes for Target Resource Reconciliation and Provisioning

By default, the attributes listed in [Table 3-4](#) are mapped for reconciliation between Oracle Identity Manager and the target system. Similarly, the attributes listed in [Table 3-3](#) are mapped for provisioning between Oracle Identity Manager and target system. If required, you can map additional fields for target resource reconciliation and provisioning. The following sections describe the procedures to be performed for adding new attributes:

- [Summary of Steps to Add New Attributes for Target Resource Reconciliation and Provisioning](#)
- [Extending the Connector Schema for Target Resource Reconciliation and Provisioning](#)
- [Updating Connector Artifacts](#)
- [Updating the search.properties File](#)
- [Updating the Procedures.properties File](#)

### Summary of Steps to Add New Attributes for Target Resource Reconciliation and Provisioning

The following is a summary of high-level steps to be performed to add a new attribute for trusted source reconciliation:

1. Update the DB wrapper package to include the new single-valued attribute in the `get_schema()` stored procedure as described in [Extending the Connector Schema for Target Resource Reconciliation and Provisioning](#).
2. Update the connector artifacts to include the new attribute as described in [Updating Connector Artifacts](#).
3. Update the connector bundle to include the new attribute in the `search.properties` file as described in [Updating the search.properties File](#).
4. Update the connector bundle to include the new attribute in the `Procedures.properties` file as described in [Updating the Procedures.properties File](#).

## Extending the Connector Schema for Target Resource Reconciliation and Provisioning

You must extend the connector schema by updating the DB wrapper package to include the new attribute for target resource reconciliation and provisioning as follows:

1. Open any SQL client. For example, SQL Developer.
2. Open the body of the **OIM\_EMPLOYEE\_WRAPPER.pck** wrapper package.
3. Select the **get\_schema()** stored procedure. The list of attributes defined in the stored procedure is displayed.
4. If the number of attributes defined exceeds the number of attributes initialized, then:
  - a. Add the following attribute initialization statement:

```
attr.extend;
```

- b. Enter the definition for the new attribute that you want to add in the following format:

```
attr (ORD_NO) :=
attributeinfo(ATTR_NAME,ATTR_TYPE,CREATE_FLAG,UPDATE_FLAG,REQUIRE
D_FLAG,READ_FLAG);
```

For example, if you are adding a new attribute to hold the blood type for a user account, then include the following statements:

```
attr.extend;
attr (28) := attributeinfo('BLOOD_TYPE','varchar2',1,1,0,1);
```

In the example, a value of 1,1,0,1 for the flags means that the `BLOOD_TYPE` attribute is required during create provisioning operations, it can be updated and read.

### See Also:

[Understanding Connector Schema Extension](#) for more information about format in which you must add the new attribute definition

5. If the number of attributes defined does not exceed the number of attributes initialized then add only the definition for the new attribute. For example, `attr (28) := attributeinfo('BLOOD_TYPE', 'varchar2', 1, 1, 0, 1);`
    6. Re-compile the wrapper package.

## Updating Connector Artifacts

You must update the connector artifacts to include the new attribute added in [Extending the Connector Schema for Target Resource Reconciliation and Provisioning](#). Updating connector artifacts involves performing the following procedures:

- [Creating a Process Form Field](#).
- [Updating the Oracle EBS HRMS User Resource Object](#).
- [Updating the Oracle EBS HRMS Target Process Definition](#).
- [Updating the Lookup Definition for Reconciliation Attribute Mapping](#).
- [Updating the Lookup Definition for Provisioning Attribute Mapping](#).
- [Creating a Reconciliation Profile for the Oracle EBS HRMS Target Resource Object](#).
- [Enabling Provisioning Operations on the New Attribute](#).

## Creating a Process Form Field

To add the attribute as a field on the process form:

1. Expand **Development Tools**, and then double-click **Form Designer**.
2. Search for and open the **UD\_EBS\_HRMS** process form.
3. Click **Create New Version** to create a version of the form.
4. In the **Label** field, enter the version name. For example, `version#1`.
5. Click the Save icon.
6. Select the current version created in Step 4 from the Current Version list.
7. Click **Add** to create a new attribute, and provide the values for that attribute.

For example, if you are adding the Blood Type attribute, then enter the following values in the Additional Columns tab:

Field	Value
Name	UD_EBS_HRMS_BLOOD_TYPE
Variant Type	String
Length	50
Field Label	Blood Type
Field Type	TextField
Order	22

8. Click the Save icon.
9. Click **Make Version Active**.

## Updating the Oracle EBS HRMS User Resource Object

Update the resource object to add a reconciliation field corresponding to the new attribute created in [Creating a User-Defined Field](#). as follows:

1. Expand the **Resource Management** folder, and then double-click **Resource Objects**.
2. Search for and open the **Oracle EBS HRMS User** resource object.
3. On the Object Reconciliation tab, click **Add Field** to open the Add Reconciliation Field dialog box.
4. In the Field Name field, enter the name of the attribute. For example, `Blood Type`.
5. From the **Field Type** list, select a data type for the field. For example, **String**.
6. If you want to designate the attribute as a mandatory attribute, then select the check box.
7. Click the Save icon and close the dialog box.

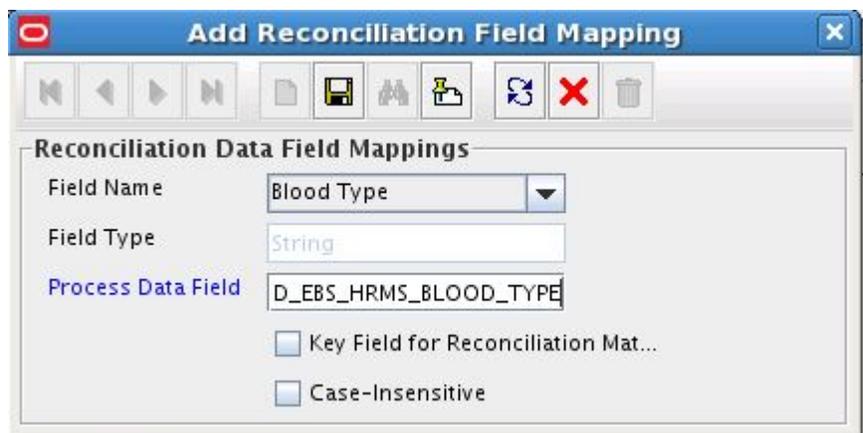
## Updating the Oracle EBS HRMS Target Process Definition

Create a reconciliation field mapping for the custom attribute in the process definition as follows:

1. Expand **Process Management** and then double-click **Process Definition**.
2. Search for and open the **Oracle EBS HRMS Target** process definition.
3. On the Reconciliation Field Mapping tab, click **Add Field Map**.
4. From the Field name list in the Add Reconciliation Field Mapping dialog box, select the name that you have assigned to the attribute created in the resource object. For example, select **Blood Type**.
5. Double-click the Process Data field, and from the pop-up that appears, select the newly added field created in [Creating a Process Form Field](#).

[Figure 5-1](#) shows the Add Reconciliation Field Mapping dialog box in which the Field Name list and Process Data Field are set.

**Figure 5-1 Add Reconciliation Field Mapping Dialog Box**



6. Click the Save icon and close the dialog box.

## Updating the Lookup Definition for Reconciliation Attribute Mapping

Add an entry for the attribute in the lookup definition for reconciliation attribute mapping as follows:

1. Expand the **Administration** folder, and then double-click **Lookup Definition**.
2. Search for and open the **Lookup.EBSHRMS.UM.ReconAttrMap** lookup definition.
3. To add a row, click **Add**.
4. In the Code Key column, enter the name that you have set for the attribute in the resource object. For example, enter `Blood Type`.
5. In the Decode column, enter the name of the column name that is returned by the SQL query. For example, enter `BLOOD_TYPE`.

Figure 5-2 shows the Lookup.EBSHRMS.UM.ReconAttrMap lookup definition with the newly added entry.

**Figure 5-2** Lookup.EBSHRMS.UM.ReconAttrMap Lookup Definition Displaying the Newly Added Entry

Id	Code Key	Decode
1	Blood Type	BLOOD_TYPE

6. Click the Save icon.

## Updating the Lookup Definition for Provisioning Attribute Mapping

Add an entry for the attribute in the lookup definition for provisioning attribute mapping as follows:

1. Expand the **Administration** folder, and then double-click **Lookup Definition**.
2. Search for and open the **Lookup.EBSHRMS.UM.ProvAttrMap** lookup definition.
3. To add a row, click **Add**.
4. In the Code Key column, enter the name that you have set for the attribute in the resource object. For example, enter `Blood Type`.
5. In the Decode column, enter the name of the column name that is returned by the SQL query. For example, enter `BLOOD_TYPE`.
6. Click the Save icon.

## Creating a Reconciliation Profile for the Oracle EBS HRMS Target Resource Object

Create a reconciliation profile to copy all the changes made to the resource object (in the earlier section) into MDS:

1. Expand the **Resource Management** folder, and then double-click **Resource Objects**.
2. Search for and open the **Oracle EBS HRMS Target** resource object.
3. On the Object Reconciliation tab, click **Create Reconciliation Profile**.
4. Click the Save icon.

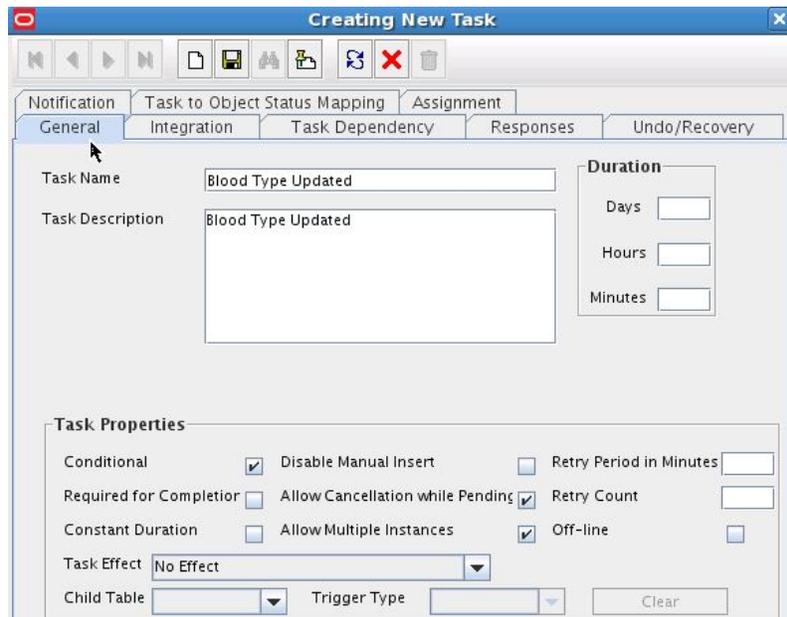
## Enabling Provisioning Operations on the New Attribute

Update the process definition by creating process tasks for handling provisioning operations on the newly added attribute as follows:

1. Expand **Process Management**, and then double-click **Process Definition**.
2. Search for and open the **Oracle EBS HRMS** process definition.
3. On the Tasks tab, click **Add**.  
The Creating New Task dialog box is displayed.
4. In the **Task Name** field, enter the name of the process task. For example, enter `Blood Type Updated`.
5. In the **Task Description** field, enter a description for the task. For example, enter `Task to update Blood Type attribute`.
6. In the Task Properties region, select the properties to suit your requirement. For example, perform the following actions in the Task Properties region:
  - Select the following checkboxes:
    - Conditional**
    - Allow Cancellation while Pending**
    - Allow Multiple Instances**
  - From the Task Effect list, select **No Effect**.

[Figure 5-3](#) displays the Creating New Task dialog box with relevant details filled in.

**Figure 5-3 Creating New Task Dialog Box**



7. Click the Save icon.
8. On the Integration tab, click **Add** to assign an adapter for the process task created in the preceding steps.
9. In the Handler Selection dialog box, select the **Adapter** option.
10. From the list of adapters displayed in the Handler Name region, select the adapter that you want to assign to the process task. For example, select the **adPORACLEBSHRMSUPDATESINGLEATTRIBUTES** adapter.
11. Click the Save icon and close the dialog box.
12. On the Integration tab, from the table in the Adapter Variables region, click the variable that you want to map. For example, click the **fieldName** variable.
13. Click **Map**.
14. In the Edit Data Mapping For Variable dialog box, create the adapter variable mapping as per your requirement. For example, create the following mapping:
  - **Variable Name:** fieldName
  - **Map To:** Literal
  - **Qualifier:** String
  - **Literal Value:** UD\_EBS\_HRMS\_BLOOD\_TYPE
15. Click the Save icon and close the dialog box.
16. Perform Steps 12 through 15 for the remaining variables listed in the Adapter Variables region. The following table lists sample values that you can select from the Map To, Qualifier, and Literal Value lists for each variable:

Variable	Map To	Qualifier	Literal Value
fieldOldValue	Process Data	Blood Type, Old Value:select	NA

Variable	Map To	Qualifier	Literal Value
AdapterReturnCode	Response Code	NA	NA
objectType	Literal	String	__PERSON__
ItResourceName	Literal	String	UD_EBS_HRMS_IT_RESOURCE_NAME
fieldValue	Process Data	Blood Type	NA
processInstanceKey	Process Data	Process Instance	NA

17. Click the Save icon on the Process Definition form.
18. On the Responses tab, click **Add** to add the SUCCESS response code, with Status C. This ensures that if the custom task is successfully run, then the status of the task is displayed as Completed. Similarly, add the CONNECTION\_FAILED response code, with Status R.
19. Click the Save icon and close the dialog box, and then save the process definition.

## Updating the search.properties File

Update the search.properties file to include the new attribute as follows:

1. Extract the contents of the org.identityconnectors.ebs-1.0.1115.jar file into a directory of your choice.
2. In a text editor, open the search.properties located in the configuration directory.
3. Search for the SQL query that must include the column name corresponding to the newly created attribute. For example, search for the TARGET\_HRMS\_CURRENT\_EMPLOYEE\_RECON\_QUERY query.
4. If the SQL query already contains the column name corresponding to the newly added attribute, then you can skip the rest of the steps mentioned in this section.
5. If the SQL query does not include information about the newly added column name, then modify it to include this information. For example, modify the TARGET\_HRMS\_CURRENT\_EMPLOYEE\_RECON\_QUERY query (search op) to include PAPP.BLOOD\_TYPE AS blood\_type. The Blood Type attribute is present in the PER\_ALL\_PEOPLE\_F table and PAPP is the table alias.

See [Sample SQL Queries for the HRMS Target Connector](#) for a sample query that includes the Blood Type column in the TARGET\_HRMS\_CURRENT\_EMPLOYEE\_RECON\_QUERY queries.

6. Repeat Steps 3 through 5 to update the remaining SQL queries such as TARGET\_HRMS\_CURRENT\_EMPLOYEE\_RECON\_QUERY (sync op) and HRMS\_TERMINATED\_EMPLOYEE\_RECON\_QUERY, if applicable. For example, modify the TARGET\_HRMS\_CURRENT\_EMPLOYEE\_RECON\_QUERY SQL query to include PAPP.BLOOD\_TYPE AS blood\_type and person.BLOOD\_TYPE in the select query.
7. Save the changes and close the file.
8. Verify the updated queries.
9. Update the connector bundle (org.identityconnectors.ebs-1.0.1115.jar) by running the following command:

```
jar -cvfm org.identityconnectors.ebs-1.0.1115.jar META-INF/MANIFEST.MF *
```

10. Run the Oracle Identity Manager Update JARs utility to update the new connector bundle (updated in Step 9) to the Oracle Identity Manager database. This utility is copied into the following location when you install Oracle Identity Manager:

 **Note:**

Before you use this utility, verify that the WL\_HOME environment variable is set to the directory in which Oracle WebLogic Server is installed.

**For Microsoft Windows:**

*OIM\_HOME*/server/bin/UpdateJars.bat

**For UNIX:**

*OIM\_HOME*/server/bin/UpdateJars.sh

When you run the utility, you are prompted to enter the login credentials of the Oracle Identity Manager administrator, URL of the Oracle Identity Manager host computer, context factory value, type of JAR file being uploaded, and the location from which the JAR file is to be uploaded. Specify 4 as the value of the JAR type.

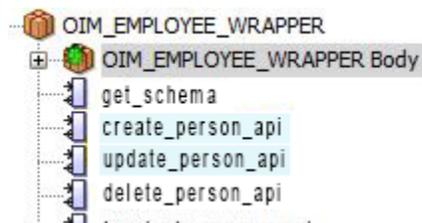
## Updating the Procedures.properties File

In order to support the Blood Type attribute during create and update provisioning operations, you must update the stored procedure that is invoked in the Procedures.properties file. To do so:

1. In a text editor, open the Procedures.properties file for editing.
2. Search for and determine the names of wrapper packages and stored procedures used for invoking the create person and update person provisioning operations. For example, **OIM\_EMPLOYEE\_WRAPPER.CREATE\_PERSON\_API** and **OIM\_EMPLOYEE\_WRAPPER.UPDATE\_PERSON\_API** are the wrapper packages and stored procedures used for the create person and update person provisioning operations.
3. Update the stored procedures determined in the earlier step as follows:
  - a. Open any SQL client. For example, SQL Developer.
  - b. Open the wrapper package and add the newly added attribute (for example, Blood Type) to the create person and update person stored procedures. For example, open the OIM\_EMPLOYEE\_WRAPPER package and add the newly added attribute to the CREATE\_PERSON\_API and UPDATE\_PERSON\_API stored procedures.

[Figure 5-4](#) highlights the stored procedures that must be updated in the OIM\_EMPLOYEE\_WRAPPER package to include the newly added attribute.

**Figure 5-4** Stored Procedures To Be Updated in OIM\_EMPLOYEE\_WRAPPER Package



- c. Select the CREATE\_PERSON\_API stored procedure and update the input parameters to include the newly added attribute.

Figure 5-5 highlights the newly added attribute in both the CREATE\_PERSON\_API and UPDATE\_PERSON\_API stored procedures.

**Figure 5-5** Stored Procedures with the Newly Added Attribute

```

create or replace
PACKAGE OIM_EMPLOYEE_WRAPPER AS

PROCEDURE get_schema( schemaout OUT schemaslist);

PROCEDURE create_person_api (hire_date IN date ,business_group_id IN number ,last_name IN varchar2 ,first_name IN varchar2 ,sex IN varchar2 ,person_type_id IN number ,
employee_number IN OUT nocopy varchar2 ,person_id OUT nocopy number ,title IN varchar2 ,email_address IN varchar2 ,marital_status IN varchar2 ,
nationality IN varchar2 ,national_identifier IN varchar2 ,date_of_birth IN date ,town_of_birth IN varchar2 ,region_of_birth IN varchar2 ,blood_type IN varchar2 );

PROCEDURE update_person_api (person_id IN number ,last_name IN varchar2 DEFAULT NULL ,first_name IN varchar2 DEFAULT NULL ,sex IN varchar2 ,person_type_id IN number DEFAULT NULL,
hire_date IN date DEFAULT NULL ,business_group_id IN number ,employee_number IN OUT nocopy varchar2 ,object_version_number IN OUT nocopy number ,
title IN varchar2 ,email_address IN varchar2 ,marital_status IN varchar2 ,nationality IN varchar2 ,national_identifier IN varchar2 ,date_of_birth IN date ,
town_of_birth IN varchar2 ,region_of_birth IN varchar2 ,blood_type IN varchar2 );

```

- d. Open OIM\_EMPLOYEE\_WRAPPER Body and select the CREATE\_PERSON\_API stored procedure.
- e. Update the HR\_EMPLOYEE\_API.create\_employee API call in the procedure with the newly added attribute.

Figure 5-6 shows the updated HR\_EMPLOYEE\_API.create\_employee API.

**Figure 5-6** HR\_EMPLOYEE\_API.create\_employee API with the Newly Added Attribute

```

HR_EMPLOYEE_API.create_employee(p_hire_date          => hire_date,
                                p_business_group_id  => business_group_id,
                                p_last_name         => last_name,
                                p_first_name        => first_name,
                                p_sex               => sex,
                                p_person_type_id     => person_type_id,
                                p_employee_number    => employee_number,
                                p_person_id         => person_id,
                                p_full_name         => l_full_name,
                                p_assignment_id      => l_assignment_id,
                                p_assignment_sequence => l_assignment_sequence,
                                p_assignment_number  => l_assignment_number,
                                p_per_object_version_number => l_per_object_version_number,
                                p_asg_object_version_number => l_asg_object_version_number,
                                p_per_effective_start_date => l_effective_start_date,
                                p_per_effective_end_date => l_effective_end_date,
                                p_per_comment_id     => l_comment_id,
                                p_name_combination_warning => l_name_combination_warning,
                                p_assign_payroll_warning => l_assign_payroll_warning,
                                p_orig_hire_warning  => l_orig_hire_warning,
                                p_title             => title,
                                p_email_address     => email_address,
                                p_marital_status    => marital_status,
                                p_nationality       => nationality,
                                p_national_identifier => national_identifier,
                                p_date_of_birth     => date_of_birth,
                                p_town_of_birth     => town_of_birth,
                                p_region_of_birth   => region_of_birth,
                                p_blood_type       => blood_type

```

- f. Update the HR\_CONTINGENT\_WORKER\_API.create\_cwk API call in the procedure with the newly added attribute.

Figure 5-7 shows the updated HR\_CONTINGENT\_WORKER\_API.create\_cwk API.

**Figure 5-7 HR\_CONTINGENT\_WORKER\_API.create\_cwk API with the Newly Added Attribute**

```

HR_CONTINGENT_WORKER_API.create_cwk(p_validate          => FALSE,
                                     p_start_date       => hire_date,
                                     p_business_group_id => business_group_id,
                                     p_last_name        => last_name,
                                     p_first_name       => first_name,
                                     p_sex              => sex,
                                     p_person_type_id   => person_type_id,
                                     p_npw_number       => employee_number,
                                     p_person_id        => person_id,
                                     p_per_object_version_number => l_per_object_version_number,
                                     p_per_effective_start_date => l_effective_start_date,
                                     p_per_effective_end_date   => l_effective_end_date,
                                     p_pdp_object_version_number => l_pdp_object_version_number,
                                     p_full_name         => l_full_name,
                                     p_comment_id        => l_comment_id,
                                     p_assignment_id     => l_assignment_id,
                                     p_asg_object_version_number => l_asg_object_version_number,
                                     p_assignment_sequence => l_assignment_sequence,
                                     p_assignment_number  => l_assignment_number,
                                     p_name_combination_warning => l_name_combination_warning,
                                     p_title             => title,
                                     p_email_address     => email_address,
                                     p_marital_status     => marital_status,
                                     p_nationality        => nationality,
                                     p_national_identifier => national_identifier,
                                     p_date_of_birth      => date_of_birth,
                                     p_town_of_birth     => town_of_birth,
                                     p_region_of_birth   => region_of_birth,
                                     p_blood_type        => blood_type
                                     );

```

- g. Repeat Steps 3.c through 3.f to update the UPDATE\_PERSON\_API stored procedure to include the newly added attribute.
- h. Re-compile the wrapper package.

## Adding New Multivalued Attributes for Target Resource Reconciliation and Provisioning

By default, the attributes listed in [Table 3-4](#) are mapped for reconciliation between Oracle Identity Manager and the target system. Similarly, the attributes listed in [Table 3-3](#) are mapped for provisioning between Oracle Identity Manager and target system. If required, you can map additional multivalued attributes for target resource reconciliation and provisioning. See *Adding New Multivalued Attributes for Reconciliation and Provisioning* in *Oracle Identity Manager Connector Guide for Oracle E-Business Suite User Management* for detailed information about the procedure to add a new multivalued attribute.

# Configuring Transformation of Data During User Reconciliation

 **Note:**

This section describes an optional procedure. Perform this procedure only if you want to configure transformation of data during reconciliation.

You can configure transformation of reconciled single-valued data according to your requirements. For example, you can use email to create a different value for the Email field in Oracle Identity Manager.

To configure transformation of data:

1. Write code that implements the required transformation logic in a Java class.

The following sample transformation class creates a value for the Email attribute by using values fetched from the EMAIL\_ADDRESS column of the target system:

```
package oracle.iam.connectors.common.transform;

import java.util.HashMap;

public class TransformAttribute {

    /*
    Description:Abstract method for transforming the attributes

    param hmUserDetails<String,Object>
    HashMap containing parent data details

    param hmEntitlementDetails <String,Object>
    HashMap containing child data details

    */
    public Object transform(HashMap hmUserDetails, HashMap
hmEntitlementDetails,String sField) {
        /*
        * You must write code to transform the attributes.
        Parent data attribute values can be fetched by
        using hmUserDetails.get("Field Name").
        *To fetch child data values, loop through the
        * ArrayList/Vector fetched by hmEntitlementDetails.get("Child
Table")
        * Return the transformed attribute.
        */
        String sEmail= "trans" + (String)hmUserDetails.get(sField);
        return sEmail;
    }
}
```

2. Create a JAR file to hold the Java class.

3. Run the Oracle Identity Manager Upload JARs utility to post the JAR file to the Oracle Identity Manager database. This utility is copied into the following location when you install Oracle Identity Manager:

 **Note:**

Before you use this utility, verify that the `WL_HOME` environment variable is set to the directory in which Oracle WebLogic Server is installed.

For Microsoft Windows:

`OIM_HOME/server/bin/UploadJars.bat`

For UNIX:

`OIM_HOME/server/bin/UploadJars.sh`

When you run the utility, you are prompted to enter the login credentials of the Oracle Identity Manager administrator, URL of the Oracle Identity Manager host computer, context factory value, type of JAR file being uploaded, and the location from which the JAR file is to be uploaded. Specify 1 as the value of the JAR type.

4. Create a lookup definition for transformation and add an entry to it as follows:
  - a. Log in to the Design Console.
  - b. Expand **Administration**, and then double-click **Lookup Definition**.
  - c. In the Code field, if you are using the HRMS Trusted connector, enter `Lookup.Oracle.EBSHRMS.Person.ReconTransformation` as the name of the lookup definition.
  - d. In the Code field, if you are using the HRMS Target connector, enter `Lookup.EBSHRMS.UM.ReconTransformation` as the name of the lookup definition.
  - e. Select the **Lookup Type** option.
  - f. On the Lookup Code Information tab, click **Add**.  
A new row is added.
  - g. In the **Code Key** column, enter the name of the resource object field into which you want to store the transformed value. For example: `Email`.
  - h. In the **Decode** column, enter the name of the class that implements the transformation logic. For example,  
`oracle.iam.connectors.common.transform.TransformAttribute`.
  - i. Save the changes to the lookup definition.
5. Add an entry in the Configuration lookup definition to enable transformation as follows:
  - a. Expand **Administration**, and then double-click **Lookup Definition**.
  - b. For the HRMS Trusted connector, search for and open **Lookup.EBSHRMS.Person.Configuration.Trusted** lookup definition.
  - c. For the HRMS Target connector, search for and open **Lookup.EBSHRMS.UM.Configuration** lookup definition.

- d. Create an entry that holds the name of the lookup definition used for transformation as follows:

**Code Key:** Recon Transformation Lookup

**Decode:** Depending on the connector that you are using, enter one of the value:

For HRMS Trusted connector:

```
Lookup.EBSHRMS.Person.ReconTransformation.Trusted
```

For HRMS Target connector:

```
Lookup.EBSHRMS.UM.ReconTransformation
```

- e. Save the changes to the lookup definition.

## Configuring Validation of Data During Reconciliation and Provisioning

You can configure validation of reconciled and provisioned single-valued data according to your requirements. For example, you can validate data fetched from the Email attribute to ensure that it does not contain the number sign (#). In addition, you can validate data entered in the First Name field on the process form so that the number sign (#) is not sent to the target system during provisioning operations.

For data that fails the validation check, the following message is displayed or recorded in the log file:

```
oracle.iam.connectors.icfcommon.recon.SearchReconTask : handle : Recon event skipped,
validation failed [Validation failed for attribute: [FIELD_NAME]]
```

To configure validation of data:

1. Write code that implements the required validation logic in a Java class.

The following sample validation class checks if the value in the Email attribute contains the number sign (#):

```
package com.validate;
import java.util.*;
public class MyValidation {
public boolean validate(HashMap hmUserDetails,
    HashMap hmEntitlementDetails, String field) {
    /*
    * You must write code to validate attributes. Parent
    * data values can be fetched by using hmUserDetails.get(field)
    * For child data values, loop through the
    * ArrayList/Vector fetched by hmEntitlementDetails.get("Child Table")
    * Depending on the outcome of the validation operation,
    * the code must return true or false.
    */
    /*
    * In this sample code, the value "false" is returned if the field
    * contains the number sign (#). Otherwise, the value "true" is
    * returned.
    */
    boolean valid=true;
    String sEmail=(String) hmUserDetails.get(field);
    for(int i=0;i<sEmail.length();i++){
```

```

        if (sEmail.charAt(i) == '#'){
            valid=false;
            break;
        }
    }
    return valid;
}
}

```

2. Create a JAR file to hold the Java class.
3. Run the Oracle Identity Manager Upload JARs utility to post the JAR file to the Oracle Identity Manager database. This utility is copied into the following location when you install Oracle Identity Manager:

 **Note:**

Before you use this utility, verify that the `WL_HOME` environment variable is set to the directory in which Oracle WebLogic Server is installed.

For Microsoft Windows:

`OIM_HOME/server/bin/UploadJars.bat`

For UNIX:

`OIM_HOME/server/bin/UploadJars.sh`

When you run the utility, you are prompted to enter the login credentials of the Oracle Identity Manager administrator, URL of the Oracle Identity Manager host computer, context factory value, type of JAR file being uploaded, and the location from which the JAR file is to be uploaded. Specify 1 as the value of the JAR type.

4. If you created the Java class for validating a process form field for reconciliation, then:
  - a. Log in to the Design Console.
  - b. Expand **Administration**, and then double-click **Lookup Definition**.
  - c. In the Code field, enter `Lookup.Oracle EBSHRMS.UM.ReconValidation` as the name of the lookup definition.
  - d. In the Code field, if you are using the HRMS Trusted connector, enter `Lookup.Oracle EBSHRMS.Person.ReconValidation` as the name of the lookup definition.
  - e. In the Code field, if you are using the HRMS Target connector, enter `Lookup.Oracle Lookup.EBSHRMS.UM.ReconValidation` as the name of the lookup definition.
  - f. Select the **Lookup Type** option.
  - g. On the Lookup Code Information tab, click **Add**.  
A new row is added.
  - h. In the Code Key column, enter the resource object field name. For example, `Email`.
  - i. In the Decode column, enter the class name. For example, `com.validate.MyValidation`.

- j. Save the changes to the lookup definition.
  - k. Depending on the connector that you are using, search for and open one of the following lookup definitions:  
For HRMS Trusted connector:  
**Lookup.EBSHRMS.Person.Configuration.Trusted**  
For HRMS Target connector:  
**Lookup.EBSHRMS.UM.Configuration**
  - l. Create an entry with the following values:  
**Code Key:** Recon Validation Lookup  
**Decode:** Depending on the connector that you are using, enter one of the value:  
For HRMS Trusted connector:  
`Lookup.EBSHRMS.Person.ReconValidation.Trusted`  
For HRMS Target connector:  
`Lookup.EBSHRMS.UM.ReconValidation`
  - m. Save the changes to the lookup definition.
5. If you created the Java class for validating a process form field for provisioning, then:

 **Note:**

Perform the procedure described in this step only if you are using the HRMS Target connector.

- a. Log in to the Design Console.
- b. Expand **Administration**, and then double-click **Lookup Definition**.
- c. In the **Code** field, enter `Lookup.EBSHRMS.UM.ProvValidation` as the name of the lookup definition.
- d. Select the **Lookup Type** option.
- e. On the **Lookup Code Information** tab, click **Add**.  
A new row is added.
- f. In the **Code Key** column, enter the process form field name. In the **Decode** column, enter the class name.
- g. Save the changes to the lookup definition.
- h. Search for and open the **Lookup.EBSHRMS.UM.Configuration** lookup definition.
- i. Create an entry with the following values:  
**Code Key:** Provisioning Validation Lookup  
**Decode:** `Lookup.EBSHRMS.UM.ProvValidation`
- j. Save the changes to the lookup definition.

# A

## Sample SQL Queries for the HRMS Target Connector

This appendix lists a sample SQL query that can be used to update queries in the search.properties file for the EBS HRMS connector (Target application).

You can use the following SQL query to update the HRMS\_CURRENT\_EMPLOYEE\_RECON\_QUERY and HRMS\_CURRENT\_FUTURE\_EMPLOYEE\_RECON\_QUERY queries if you have added a new attribute, Blood Type, to your Target application (for target resource reconciliation). This newly added attribute is added as part of performing the procedure described in [Updating the search.properties File](#).

```
TARGET_HRMS_CURRENT_EMPLOYEE_RECON_QUERY= with PERSON_RECORD as ( \
        SELECT PAPP.PERSON_ID AS
person_id,PAPP.FIRST_NAME AS first_name,PAPP.LAST_NAME AS last_name,PAPP.EMAIL_ADDRESS
AS email_address,PPT.USER_PERSON_TYPE user_person_type, PAPP.EFFECTIVE_START_DATE AS
effective_start_date,PAPP.EFFECTIVE_END_DATE AS effective_end_date,EMPLOYEE_NUMBER AS
employee_number,PPS.ACTUAL_TERMINATION_DATE AS actual_termination_date,sysdate as
SYSTEM_DATE,PAPP.BUSINESS_GROUP_ID AS business_group_id,PAPP.TOWN_OF_BIRTH AS
town_of_birth,PPU.PERSON_TYPE_ID AS person_type_id,PAPP.REGION_OF_BIRTH AS
region_of_birth,PAPP.COUNTRY_OF_BIRTH AS country_of_birth,PAPP.NATIONAL_IDENTIFIER AS
national_identifier,\
        PAPP.TITLE AS title,PAPP.MARITAL_STATUS AS
marital_status,PAPP.SEX AS sex,PAPP.DATE_OF_BIRTH AS date_of_birth,PAPP.NATIONALITY
AS nationality,NVL(PAPP.ORIGINAL_DATE_OF_HIRE,PAPP.START_DATE) AS
hire_date,PAPP.LAST_UPDATE_DATE AS person_updated_date,null AS assignment_id,null AS
asg_effective_start_date,null AS change_reason,null AS organization_id,null AS
job_id,null AS grade_id,null as supervisor_id,null AS address_id,null AS
add_effective_start_date,null AS style,null AS address_line1,null AS
address_line2,null AS address_line3,null AS country,null AS date_from,null AS
date_to,null AS postal_code,null AS region_1,null AS region_2,null AS region_3,null AS
town_or_city,null AS primary_flag,null as address_type,PAPP.BLOOD_TYPE AS BLOOD_TYPE \
        FROM PER_ALL_PEOPLE_F
PAPP,PER_PERIODS_OF_SERVICE PPS,PER_PERSON_TYPES PPT ,PER_PERSON_TYPE_USAGES_F PPU
WHERE PPT.USER_PERSON_TYPE IN('Employee','Contractor') AND PPU.PERSON_TYPE_ID =
PPT.PERSON_TYPE_ID AND PPU.PERSON_ID = PAPP.PERSON_ID AND PAPP.PERSON_ID =
PPS.PERSON_ID AND PAPP.CURRENT_EMPLOYEE_FLAG = 'Y' AND ( PPU.EFFECTIVE_START_DATE >
TRUNC(SYSDATE) OR (TRUNC(SYSDATE) BETWEEN PAPP.EFFECTIVE_START_DATE AND
PAPP.EFFECTIVE_END_DATE)) AND (PPU.EFFECTIVE_START_DATE > TRUNC(SYSDATE) OR
(TRUNC(SYSDATE) BETWEEN PPU.EFFECTIVE_START_DATE AND PPU.EFFECTIVE_END_DATE)) \
        union all \
        SELECT PAPP.PERSON_ID AS
person_id,PAPP.FIRST_NAME AS first_name,PAPP.LAST_NAME AS last_name,PAPP.EMAIL_ADDRESS
AS email_address,PPT.USER_PERSON_TYPE user_person_type, PAPP.EFFECTIVE_START_DATE AS
effective_start_date,PAPP.EFFECTIVE_END_DATE AS effective_end_date,NPW_NUMBER AS
employee_number,PPS.ACTUAL_TERMINATION_DATE AS actual_termination_date,sysdate as
SYSTEM_DATE,PAPP.BUSINESS_GROUP_ID AS business_group_id,PAPP.TOWN_OF_BIRTH AS
town_of_birth,PPU.PERSON_TYPE_ID AS person_type_id,PAPP.REGION_OF_BIRTH AS
region_of_birth,PAPP.COUNTRY_OF_BIRTH AS country_of_birth,PAPP.NATIONAL_IDENTIFIER AS
national_identifier,\
        PAPP.TITLE AS title,PAPP.MARITAL_STATUS AS
marital_status,PAPP.SEX AS sex,PAPP.DATE_OF_BIRTH AS date_of_birth,PAPP.NATIONALITY
```

```

AS nationality,NVL(PAPF.ORIGINAL_DATE_OF_HIRE,PAPF.START_DATE) AS
hire_date,PAPF.LAST_UPDATE_DATE AS person_updated_date,null AS
assignment_id,null AS asg_effective_start_date,null AS change_reason,null AS
organization_id,null AS job_id,null AS grade_id,null as supervisor_id,null AS
address_id,null AS add_effective_start_date,null AS style,null AS
address_line1,null AS address_line2,null AS address_line3,null AS country,null
AS date_from,null AS date_to,null AS postal_code,null AS region_1,null AS
region_2,null AS region_3,null AS town_or_city,null AS primary_flag,null as
address_type,PAPF.BLOOD_TYPE AS BLOOD_TYPE \
FROM PER_ALL_PEOPLE_F
PAPF,PER_PERIODS_OF_PLACEMENT PPS,PER_PERSON_TYPES PPT ,PER_PERSON_TYPE_USAGES_F
PPU WHERE PPT.USER_PERSON_TYPE IN('Contingent Employee','Contingent Worker')
AND PPU.PERSON_TYPE_ID = PPT.PERSON_TYPE_ID AND PPU.PERSON_ID =
PAPF.PERSON_ID AND PAPF.PERSON_ID = PPS.PERSON_ID AND PAPF.CURRENT_NPW_FLAG =
'Y' AND PPU.EFFECTIVE_END_DATE > sysdate AND ( PPU.EFFECTIVE_START_DATE >
TRUNC(SYSDATE) OR (TRUNC(SYSDATE) BETWEEN PAPF.EFFECTIVE_START_DATE AND
PAPF.EFFECTIVE_END_DATE)) AND (PPU.EFFECTIVE_START_DATE > TRUNC(SYSDATE) OR
(TRUNC(SYSDATE) BETWEEN PPU.EFFECTIVE_START_DATE AND PPU.EFFECTIVE_END_DATE)) \
) select * from ( \
select RESULTTABLE.*,ROW_NUMBER() OVER
(ORDER BY person_id) AS Row_Num from ( \
select * from PERSON_RECORD \
union all \
select
person.PERSON_ID,person.FIRST_NAME,person.LAST_NAME,person.EMAIL_ADDRESS,person.U
SER_PERSON_TYPE,person.EFFECTIVE_START_DATE,person.EFFECTIVE_END_DATE ,person.EMP
LOYEE_NUMBER,person.ACTUAL_TERMINATION_DATE, \

person.SYSTEM_DATE,person.BUSINESS_GROUP_ID,person.TOWN_OF_BIRTH,person.PERSON TY
PE_ID,person.REGION_OF_BIRTH,person.COUNTRY_OF_BIRTH,person.NATIONAL_IDENTIFIER,p
erson.TITLE,person.MARITAL_STATUS,person.SEX,person.DATE_OF_BIRTH,person.NATIONAL
ITY,person.hire_date,person.person_updated_date, \
PAAF.ASSIGNMENT_ID as
assignment_id,PAAF.EFFECTIVE_START_DATE as
ASG_EFFECTIVE_START_DATE,PAAF.CHANGE_REASON,PAAF.ORGANIZATION_ID as
organization_id,PAAF.JOB_ID,PAAF.GRADE_ID as grade_id,PAAF.SUPERVISOR_ID as
supervisor_id,null AS address_id,null AS add_effective_start_date, \
null AS style,null AS
address_line1,null AS address_line2,null AS address_line3,null AS country,null
AS date_from,null AS date_to,null AS postal_code,null AS region_1,null AS
region_2,null AS region_3, \
null AS town_or_city,null AS
primary_flag,null as address_type, person.BLOOD_TYPE AS BLOOD_TYPE from
PERSON_RECORD person,PER_ALL_ASSIGNMENTS_F PAAF where
person.person_id=PAAF.person_id AND PAAF.job_id is not null AND
((PAAF.EFFECTIVE_START_DATE >= sysdate) OR (TRUNC(SYSDATE) BETWEEN
PAAF.EFFECTIVE_START_DATE AND PAAF.EFFECTIVE_END_DATE) ) \
union all \
select
person.PERSON_ID,person.FIRST_NAME,person.LAST_NAME,person.EMAIL_ADDRESS,person.U
SER_PERSON_TYPE,person.EFFECTIVE_START_DATE,person.EFFECTIVE_END_DATE ,person.EMP
LOYEE_NUMBER,person.ACTUAL_TERMINATION_DATE, \

person.SYSTEM_DATE,person.BUSINESS_GROUP_ID,person.TOWN_OF_BIRTH,person.PERSON TY
PE_ID,person.REGION_OF_BIRTH,person.COUNTRY_OF_BIRTH,person.NATIONAL_IDENTIFIER,p
erson.TITLE,person.MARITAL_STATUS,person.SEX,person.DATE_OF_BIRTH,person.NATIONAL
ITY,person.hire_date,person.person_updated_date, \
null as assignment_id,null as
ASG_EFFECTIVE_START_DATE,null as CHANGE_REASON,null as organization_id,null as
JOB_ID,null as grade_id,null as supervisor_id, \
PA.ADDRESS_ID AS

```

```
address_id,PA.DATE_FROM AS add_effective_start_date,PA.STYLE AS style,
PA.ADDRESS_LINE1 AS address_line1, PA.ADDRESS_LINE2 AS address_line2, PA.ADDRESS_LINE3
AS address_line3,PA.COUNTRY AS country,PA.DATE_FROM AS date_from,PA.DATE_TO AS
date_to, PA.POSTAL_CODE AS postal_code, PA.REGION_1 AS region_1,PA.REGION_2 AS
region_2, PA.REGION_3 AS region_3,PA.TOWN_OR_CITY AS town_or_city,PA.PRIMARY_FLAG AS
primary_flag,PA.ADDRESS_TYPE as address_type,person.BLOOD_TYPE AS BLOOD_TYPE from
PERSON_RECORD person,PER_ADDRESSES PA where person.person_id= PA.person_id and
((PA.DATE_FROM > sysdate) OR SYSDATE between PA.DATE_FROM and nvl(PA.DATE_TO,
TO_DATE('31-DEC-4712','dd-mon-yyyy')))) \
) RESULTTABLE \
--<FILTER> \
) WHERE Row_Num BETWEEN <START_ROW_NUMBER>
and <END_ROW_NUMBER>
```

# B

## Sample SQL Queries for the HRMS Trusted Connector

This appendix lists a sample SQL query that can be used to update queries in the search.properties file for the HRMS Trusted connector.

The following SQL query can be used to update the HRMS\_CURRENT\_EMPLOYEE\_RECON\_QUERY and HRMS\_CURRENT\_FUTURE\_EMPLOYEE\_RECON\_QUERY queries if you have added a new attribute, Blood Type, for trusted source reconciliation. This newly added attribute is added as part of performing the procedure describer in [Updating the Connector Bundle](#).

```
TARGET_HRMS_CURRENT_EMPLOYEE_RECON_QUERY= with PERSON_RECORD as ( \
    SELECT PAPP.PERSON_ID AS
person_id,PAPP.FIRST_NAME AS first_name,PAPP.LAST_NAME AS last_name,PAPP.EMAIL_ADDRESS
AS email_address,PPT.USER_PERSON_TYPE user_person_type, PAPP.EFFECTIVE_START_DATE AS
effective_start_date,PAPP.EFFECTIVE_END_DATE AS effective_end_date,EMPLOYEE_NUMBER AS
employee_number,PPS.ACTUAL_TERMINATION_DATE AS actual_termination_date,sysdate as
SYSTEM_DATE,PAPP.BUSINESS_GROUP_ID AS business_group_id,PAPP.TOWN_OF_BIRTH AS
town_of_birth,PPU.PERSON_TYPE_ID AS person_type_id,PAPP.REGION_OF_BIRTH AS
region_of_birth,PAPP.COUNTRY_OF_BIRTH AS country_of_birth,PAPP.NATIONAL_IDENTIFIER AS
national_identifier,\
    PAPP.TITLE AS title,PAPP.MARITAL_STATUS AS
marital_status,PAPP.SEX AS sex,PAPP.DATE_OF_BIRTH AS date_of_birth,PAPP.NATIONALITY
AS nationality,NVL(PAPP.ORIGINAL_DATE_OF_HIRE,PAPP.START_DATE) AS
hire_date,PAPP.LAST_UPDATE_DATE AS person_updated_date,null AS assignment_id,null AS
asg_effective_start_date,null AS change_reason,null AS organization_id,null AS
job_id,null AS grade_id,null AS supervisor_id,null AS address_id,null AS
add_effective_start_date,null AS style,null AS address_line1,null AS
address_line2,null AS address_line3,null AS country,null AS date_from,null AS
date_to,null AS postal_code,null AS region_1,null AS region_2,null AS region_3,null AS
town_or_city,null AS primary_flag,null AS address_type,PAPP.BLOOD_TYPE AS BLOOD_TYPE \
FROM PER_ALL_PEOPLE_F
PAPP,PER_PERIODS_OF_SERVICE PPS,PER_PERSON_TYPES PPT ,PER_PERSON_TYPE_USAGES F PPU
WHERE PPT.USER_PERSON_TYPE IN('Employee','Contractor') AND PPU.PERSON_TYPE_ID =
PPT.PERSON_TYPE_ID AND PPU.PERSON_ID = PAPP.PERSON_ID AND PAPP.PERSON_ID =
PPS.PERSON_ID AND PAPP.CURRENT_EMPLOYEE_FLAG = 'Y' AND ( PPU.EFFECTIVE_START_DATE >
TRUNC(SYSDATE) OR (TRUNC(SYSDATE) BETWEEN PAPP.EFFECTIVE_START_DATE AND
PAPP.EFFECTIVE_END_DATE)) AND (PPU.EFFECTIVE_START_DATE > TRUNC(SYSDATE) OR
(TRUNC(SYSDATE) BETWEEN PPU.EFFECTIVE_START_DATE AND PPU.EFFECTIVE_END_DATE)) \
union all \
    SELECT PAPP.PERSON_ID AS
person_id,PAPP.FIRST_NAME AS first_name,PAPP.LAST_NAME AS last_name,PAPP.EMAIL_ADDRESS
AS email_address,PPT.USER_PERSON_TYPE user_person_type, PAPP.EFFECTIVE_START_DATE AS
effective_start_date,PAPP.EFFECTIVE_END_DATE AS effective_end_date,NPW_NUMBER AS
employee_number,PPS.ACTUAL_TERMINATION_DATE AS actual_termination_date,sysdate as
SYSTEM_DATE,PAPP.BUSINESS_GROUP_ID AS business_group_id,PAPP.TOWN_OF_BIRTH AS
town_of_birth,PPU.PERSON_TYPE_ID AS person_type_id,PAPP.REGION_OF_BIRTH AS
region_of_birth,PAPP.COUNTRY_OF_BIRTH AS country_of_birth,PAPP.NATIONAL_IDENTIFIER AS
national_identifier,\
    PAPP.TITLE AS title,PAPP.MARITAL_STATUS AS
marital_status,PAPP.SEX AS sex,PAPP.DATE_OF_BIRTH AS date_of_birth,PAPP.NATIONALITY
AS nationality,NVL(PAPP.ORIGINAL_DATE_OF_HIRE,PAPP.START_DATE) AS
hire_date,PAPP.LAST_UPDATE_DATE AS person_updated_date,null AS assignment_id,null AS
```

```

asg_effective_start_date,null AS change_reason,null AS organization_id,null AS
job_id,null AS grade_id,null as supervisor_id,null AS address_id,null AS
add_effective_start_date,null AS style,null AS address_line1,null AS
address_line2,null AS address_line3,null AS country,null AS date_from,null AS
date_to,null AS postal_code,null AS region_1,null AS region_2,null AS
region_3,null AS town_or_city,null AS primary_flag,null as
address_type,PAPF.BLOOD_TYPE AS BLOOD_TYPE \
FROM PER_ALL_PEOPLE_F
PAPF,PER PERIODS_OF_PLACEMENT PPS,PER_PERSON_TYPES PPT ,PER_PERSON_TYPE_USAGES_F
PPU WHERE PPT.USER_PERSON_TYPE IN('Contingent Employee','Contingent Worker')
AND PPU.PERSON_TYPE_ID = PPT.PERSON_TYPE_ID AND PPU.PERSON_ID =
PAPF.PERSON_ID AND PAPF.PERSON_ID = PPS.PERSON_ID AND PAPF.CURRENT_NPW_FLAG =
'Y' AND PPU.EFFECTIVE_END_DATE > sysdate AND ( PPU.EFFECTIVE_START_DATE >
TRUNC(SYSDATE) OR (TRUNC(SYSDATE) BETWEEN PAPF.EFFECTIVE_START_DATE AND
PAPF.EFFECTIVE_END_DATE)) AND (PPU.EFFECTIVE_START_DATE > TRUNC(SYSDATE) OR
(TRUNC(SYSDATE) BETWEEN PPU.EFFECTIVE_START_DATE AND PPU.EFFECTIVE_END_DATE)) \
) select * from ( \
select RESULTTABLE.*,ROW_NUMBER() OVER
(ORDER BY person_id) AS Row_Num from ( \
select * from PERSON_RECORD \
union all \
select
person.PERSON_ID,person.FIRST_NAME,person.LAST_NAME,person.EMAIL_ADDRESS,person.U
SER_PERSON_TYPE,person.EFFECTIVE_START_DATE,person.EFFECTIVE_END_DATE ,person.EMP
LOYEE_NUMBER,person.ACTUAL_TERMINATION_DATE, \

person.SYSTEM_DATE,person.BUSINESS_GROUP_ID,person.TOWN_OF_BIRTH,person.PERSON_TY
PE_ID,person.REGION_OF_BIRTH,person.COUNTRY_OF_BIRTH,person.NATIONAL_IDENTIFIER,p
erson.TITLE,person.MARITAL_STATUS,person.SEX,person.DATE_OF_BIRTH,person.NATIONAL
ITY,person.hire_date,person.person_updated_date, \
PAAF.ASSIGNMENT_ID as
assignment_id,PAAF.EFFECTIVE_START_DATE as
ASG_EFFECTIVE_START_DATE,PAAF.CHANGE_REASON,PAAF.ORGANIZATION_ID as
organization_id,PAAF.JOB_ID,PAAF.GRADE_ID as grade_id,PAAF.SUPERVISOR_ID as
supervisor_id,null AS address_id,null AS add_effective_start_date, \
null AS style,null AS
address_line1,null AS address_line2,null AS address_line3,null AS country,null
AS date_from,null AS date_to,null AS postal_code,null AS region_1,null AS
region_2,null AS region_3, \
null AS town_or_city,null AS
primary_flag,null as address_type, person.BLOOD_TYPE AS BLOOD_TYPE from
PERSON_RECORD person,PER_ALL_ASSIGNMENTS_F PAAF where
person.person_id=PAAF.person_id AND PAAF.job_id is not null AND
((PAAF.EFFECTIVE_START_DATE >= sysdate) OR (TRUNC(SYSDATE) BETWEEN
PAAF.EFFECTIVE_START_DATE AND PAAF.EFFECTIVE_END_DATE) ) \
union all \
select
person.PERSON_ID,person.FIRST_NAME,person.LAST_NAME,person.EMAIL_ADDRESS,person.U
SER_PERSON_TYPE,person.EFFECTIVE_START_DATE,person.EFFECTIVE_END_DATE ,person.EMP
LOYEE_NUMBER,person.ACTUAL_TERMINATION_DATE, \

person.SYSTEM_DATE,person.BUSINESS_GROUP_ID,person.TOWN_OF_BIRTH,person.PERSON_TY
PE_ID,person.REGION_OF_BIRTH,person.COUNTRY_OF_BIRTH,person.NATIONAL_IDENTIFIER,p
erson.TITLE,person.MARITAL_STATUS,person.SEX,person.DATE_OF_BIRTH,person.NATIONAL
ITY,person.hire_date,person.person_updated_date, \
null as assignment_id,null as
ASG_EFFECTIVE_START_DATE,null as CHANGE_REASON,null as organization_id,null as
JOB_ID,null as grade_id,null as supervisor_id, \
PA.ADDRESS_ID AS
address_id,PA.DATE_FROM AS add_effective_start_date,PA.STYLE AS style,
PA.ADDRESS_LINE1 AS address_line1, PA.ADDRESS_LINE2 AS address_line2,

```

```
PA.ADDRESS_LINE3 AS address_line3,PA.COUNTRY AS country,PA.DATE_FROM AS
date_from,PA.DATE_TO AS date_to, PA.POSTAL_CODE AS postal_code, PA.REGION_1 AS
region_1,PA.REGION_2 AS region_2, PA.REGION_3 AS region_3,PA.TOWN_OR_CITY AS
town_or_city,PA.PRIMARY_FLAG AS primary_flag,PA.ADDRESS_TYPE as
address_type,person.BLOOD_TYPE AS BLOOD_TYPE from PERSON_RECORD person,PER_ADDRESSES
PA where person.person_id= PA.person_id and ((PA.DATE_FROM > sysdate) OR SYSDATE
between PA.DATE_FROM and nvl(PA.DATE_TO, TO_DATE('31-DEC-4712','dd-mon-yyyy'))) \
) RESULTTABLE \
--<FILTER> \
) WHERE Row_Num BETWEEN <START_ROW_NUMBER>

and <END_ROW_NUMBER>
```

# C

## Files and Directories in the EBS HRMS Connector Installation Package

The contents of the connector installation package are described in [Table C-1](#).

**Table C-1 Files and Directories in the Installation Package**

File in the Installation Package	Description
bundle/org.identityconnectors.ebs-1.0.11150.jar	This JAR file contains the connector bundle.
configuration/EBS-HRMS-CI.xml	This XML file contains configuration information that is used during the HRMS Target connector installation process.
configuration/EBS-HRMS-Trusted-CI.xml	This XML file contains configuration information that is used during the HRMS Trusted connector installation process.
resources/EBS-HRMS.properties	This file is a resource bundle that contains language-specific information that is used by the HRMS Target connector. During connector installation, these resource bundles are copied to the Oracle Identity Manager database. <b>Note:</b> A <b>resource bundle</b> is a file containing localized versions of the text strings that are displayed on the Administrative and User Console. These text strings include GUI element labels and messages.
resources/EBS-HRMS-Trusted.properties	This file is a resource bundle that contains language-specific information that is used by the HRMS Trusted connector. During connector installation, these resource bundles are copied to the Oracle Identity Manager database. <b>Note:</b> A <b>resource bundle</b> is a file containing localized versions of the text strings that are displayed on the Administrative and User Console. These text strings include GUI element labels and messages.
scripts/OIM_EMPLOYEE_ADDRESS_WRAPPER.pck	This package file contains procedures and SQL statements for creating, updating, and deleting employee address records. This file is used by the HRMS Target connector.
scripts/OIM_EMPLOYEE_ADDRESS_WRAPPER_APPS.pck	This package file contains procedures and SQL statements for creating, updating, and deleting employee address records for APPS user. This file is used by the HRMS Target connector.
scripts/OIM_EMPLOYEE_WRAPPER.pck	This package file contains the procedures and SQL statements for creating, updating, deleting, and terminating person records. In addition, it contains the SQL statements for creating, updating, and deleting person assignments.
scripts/OIM_FND_GLOBAL.pck	This file contains the procedures that are called to initialize the global security context for a database session during a provisioning operation.
scripts/OIM_TYPES.pck	This package file contains SQL statements used for creating Oracle types. Oracle types are used for storing OIM schema.

**Table C-1 (Cont.) Files and Directories in the Installation Package**

File in the Installation Package	Description
scripts/OimHRMSAppstablesSynonyms.sql scripts/OimHRMSUser.sql scripts/OimHRMSUserAcl.sql scripts/OimHRMSUserGrants.sql scripts/OimHRMSUserSynonyms.sql	These files contain the SQL scripts to create a target system user account, grant the required rights to the user, and create synonyms of various database objects to be used by the connector.
scripts/Run_HRMS_DBScripts.bat scripts/Run_HRMS_DBScripts.sh	This file contains commands to run the SQL scripts for creating a service account on the target system with the required grants.
xml/EBS-HRMS-ConnectorConfig.xml	This XML file contains definitions for the following components of the HRMS Target connector: <ul style="list-style-type: none"> <li>• Resource objects</li> <li>• IT resource types</li> <li>• IT resource instance</li> <li>• Process forms</li> <li>• Process tasks and adapters</li> <li>• Process definition</li> <li>• Prepopulate rules</li> <li>• Lookup definitions</li> <li>• Reconciliation rules</li> <li>• Scheduled tasks</li> </ul>
xml/EBS-HRMS-Trusted-ConnectorConfig.xml	This XML file contains definitions for the following components of the HRMS Trusted connector: <ul style="list-style-type: none"> <li>• Resource objects</li> <li>• IT resource types</li> <li>• IT resource instance</li> <li>• Lookup definitions</li> <li>• Reconciliation rules</li> <li>• Scheduled tasks</li> </ul>

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