

Oracle® Identity Manager

Connector Guide for Microsoft Exchange

Release 9.1.1

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Contents

Preface	ix
Documentation Accessibility	ix
Related Documents	ix
Documentation Updates	ix
Conventions	ix
 What's New in Oracle Identity Manager Connector for Microsoft Exchange?	 xi
Software Updates	xi
Documentation-Specific Updates.....	xvii
 1 About the Connector	
1.1 Certified Deployment Configurations	1-1
1.2 Usage Recommendation	1-3
1.3 Certified Languages.....	1-3
1.4 Features of the Connector	1-4
1.4.1 Connector Architecture.....	1-4
1.4.1.1 Architecture of the Connector for Microsoft Exchange 2000 and Microsoft Exchange 2003	1-5
1.4.1.2 Architecture of the Connector for Microsoft Exchange 2007	1-6
1.4.1.3 Reconciliation and Provisioning of Mailboxes Across Multiple Domains	1-7
1.4.2 Lookup Field Synchronization.....	1-7
1.4.3 Target Resource Reconciliation.....	1-9
1.4.3.1 Types of Reconciliation Enabled by the Connector	1-9
1.4.3.1.1 Reconciliation of Mailbox Data from Mail Stores.....	1-9
1.4.3.1.2 Reconciliation of Mailbox Data from Distribution Groups.....	1-9
1.4.3.2 Mailbox Fields for Target Resource Reconciliation	1-10
1.4.3.3 Reconciliation Rule.....	1-11
1.4.3.4 Reconciliation Action Rules	1-12
1.4.4 Provisioning.....	1-13
1.4.4.1 Mailbox Provisioning Functions Supported by the Connector	1-13
1.4.4.2 Mailbox Fields for Provisioning	1-14
1.5 Roadmap for Deploying and Using the Connector	1-18
 2 Deploying the Connector	
2.1 Preinstallation.....	2-1

2.1.1	Preinstallation on Oracle Identity Manager.....	2-1
2.1.1.1	Files and Directories On the Connector Installation Media	2-1
2.1.1.2	Determining the Release Number of the Connector	2-3
2.1.2	Preinstallation on the Target System	2-3
2.1.2.1	Creating a Target System User Account for Connector Operations	2-4
2.1.2.2	Configuring Microsoft Exchange 2010	2-5
2.2	Installation	2-5
2.2.1	Installation on Oracle Identity Manager	2-5
2.2.1.1	Running the Connector Installer	2-6
2.2.1.1.1	Copying the ldapbp.jar File	2-7
2.2.1.1.2	Installing the Connector in an Oracle Identity Manager Cluster	2-8
2.2.1.2	Creating the IT Resource	2-8
2.2.2	Installation on the Target System	2-12
2.2.2.1	Installing the Remote Manager	2-13
2.2.2.2	Enabling Client-Side Authentication for the Remote Manager	2-15
2.3	Postinstallation	2-16
2.3.1	Postinstallation on Oracle Identity Manager	2-16
2.3.1.1	Configuring Oracle Identity Manager 11.1.2 or Later	2-16
2.3.1.1.1	Tagging Form Fields	2-16
2.3.1.1.2	Creating and Activating a Sandbox	2-17
2.3.1.1.3	Creating a New UI Form	2-17
2.3.1.1.4	Creating an Application Instance	2-17
2.3.1.1.5	Publishing a Sandbox	2-18
2.3.1.1.6	Syncing Catalog	2-18
2.3.1.1.7	Updating an Existing Application Instance with a New Form	2-18
2.3.1.2	Clearing Content Related to Connector Resource Bundles from the Server Cache ... 2-19	
2.3.1.3	Enabling Logging	2-20
2.3.1.3.1	Enabling Logging on Oracle Identity Manager Release 9.1.0.x	2-20
2.3.1.3.2	Enabling Logging on Oracle Identity Manager Release 11.1.x	2-23
2.3.1.4	Linking the Exchange Resource Object with the AD User Resource Object	2-25
2.3.1.5	Modifying Dependent Lookup Query Properties for Lookup Fields on Microsoft SQL Server 2-25	
2.3.1.6	Configuring Oracle Identity Manager for Request-Based Provisioning	2-27
2.3.1.6.1	Copying Predefined Request Datasets	2-28
2.3.1.6.2	Importing Request Datasets into MDS	2-29
2.3.1.6.3	Enabling the Auto Save Form Feature	2-29
2.3.1.6.4	Running the PurgeCache Utility	2-30
2.3.2	Postinstallation on the Target System	2-30
2.3.2.1	Configuring SSL	2-30
2.3.3	Configuring the Remote Manager	2-30
2.3.3.1	Creating the IT Resource for the Remote Manager	2-30
2.3.3.2	Configuring Oracle Identity Manager Release 9.1.0.x to Trust the Remote Manager 2-32	
2.3.3.3	Configuring Oracle Identity Manager Release 11.1.x to Trust the Remote Manager. 2-33	
2.3.3.4	Verifying That the Remote Manager Is Running	2-34
2.3.4	Localizing Field Labels in UI Forms	2-34

3 Using the Connector

3.1	Guidelines on Using the Connector	3-1
3.1.1	Guidelines on Configuring Reconciliation Runs	3-1
3.1.2	Guidelines on Performing Provisioning Operations	3-2
3.2	Configuring the Lookup.Exchange.Configuration Lookup Definition	3-4
3.3	Scheduled Task for Lookup Field Synchronization	3-4
3.4	Configuring Reconciliation	3-5
3.4.1	Limited Reconciliation vs. Regular Reconciliation	3-5
3.4.2	Full Reconciliation vs. Incremental Reconciliation	3-6
3.4.3	Reconciliation Scheduled Tasks	3-7
3.4.3.1	Exchange Reconciliation Task	3-7
3.4.3.1.1	Configuring Mail Store Reconciliation	3-9
3.4.3.2	Exchange Delete Recon Task	3-9
3.4.4	Creating the Reconciliation Scheduled Task (Optional)	3-10
3.4.4.1	Creating Scheduled Tasks in Oracle Identity Manager Release 9.1.0.x	3-11
3.4.4.2	Creating Scheduled Jobs in Oracle Identity Manager Release 11.1.1	3-13
3.5	Configuring Scheduled Tasks	3-13
3.6	Configuring Provisioning in Oracle Identity Manager Release 11.1.1	3-17
3.6.1	Using the Connector for Provisioning	3-17
3.6.2	Performing Provisioning Operations	3-17
3.6.2.1	Direct Provisioning	3-18
3.6.2.2	Request-Based Provisioning	3-22
3.6.2.2.1	End User's Role in Request-Based Provisioning	3-23
3.6.2.2.2	Approver's Role in Request-Based Provisioning	3-23
3.6.3	Switching Between Request-Based Provisioning and Direct Provisioning on Oracle Identity Manager Release 11.1.1	3-24
3.7	Configuring Provisioning in Oracle Identity Manager Release 11.1.2	3-25

4 Extending the Functionality of the Connector

4.1	Modifying Existing Field Mappings	4-1
4.2	Adding New Fields for Target Resource Reconciliation	4-2
4.3	Adding New Fields for Provisioning	4-7
4.4	Configuring the Connector for Multiple Installations of the Target System	4-17
4.4.1	Creating Copies of the Connector	4-18
4.4.2	Populating the Second IT Resource on the Process Form	4-18

5 Known Issues and Troubleshooting

5.1	Known Issues	5-1
5.2	Troubleshooting	5-2

A Special Characters Supported for Alias Name

Index

List of Figures

1-1	Architecture of the Connector for Microsoft Exchange 2000 and Microsoft Exchange 2003... 1-5	
1-2	Architecture of the Connector for Microsoft Exchange 2007	1-6
1-3	Reconciliation and Provisioning of Mailboxes for Users Across Multiple Domains	1-7
1-4	Reconciliation Rule for the Exchange Connector	1-11
1-5	Reconciliation Action Rules for the Connector.....	1-12
1-6	Process Form Fields of the Connector.....	1-17
2-1	Step 1: Provide IT Resource Information.....	2-9
2-2	Step 2: Specify IT Resource Parameter Values.....	2-9
2-3	Step 4: Verify IT Resource Details	2-11
2-4	Step 5: IT Resource Connection Result Page.....	2-12
2-5	IT Resource Created Page of Oracle Identity Manager	2-12
3-1	Step 1: Provide Scheduled Task Details and Schedule.....	3-11
3-2	Step 2: Define Scheduled Task Attributes	3-12
3-3	Step 3: Verify Scheduled Task Details	3-12
3-4	Step 4: Scheduled Task Created	3-12
3-5	Modify Scheduled Task Details	3-15
3-6	Specify Attribute Value.....	3-16
3-7	Select Resource Profile	3-19
3-8	Provision New Resource.....	3-19
3-9	Step 1: Select a Resource	3-20
3-10	Step 2: Verify Resource Selection.....	3-20
3-11	Step 5: Provide Process Data	3-21
3-12	Step 6: Verify Process Data	3-22
4-1	New Field Added for Reconciliation	4-3
4-2	New Version of Process Form.....	4-4
4-3	New Field Added to the Process Form.....	4-4
4-4	New Field Added to the Resource Object	4-5
4-5	Reconciliation Field Mappings	4-6
4-6	AtMap.Exchange Lookup Definition	4-7
4-7	New Field Added for Provisioning.....	4-8
4-8	New Version Created in the Process Form	4-9
4-9	New Field Added in the Process Form.....	4-10
4-10	New Variable Added in the Process Form.....	4-11
4-11	String Array Added to the Vector	4-12
4-12	String Mapped to Literal.....	4-13
4-13	String Mapped to Adapter Variable.....	4-14
4-14	Mapped Variable in Process Definition.....	4-15
4-15	Variable Mapped to Process Data Field.....	4-15

List of Tables

1-1	Certified Deployment Configurations	1-2
1-2	Lookup Definitions Created in Oracle Identity Manager	1-8
1-3	Mailbox Fields for Target Resource Reconciliation	1-10
1-4	Action Rules for Target Resource Reconciliation	1-12
1-5	Mailbox Provisioning Functions Supported by the Connector	1-13
1-6	Mailbox Fields Used in Provisioning	1-15
2-1	Files and Directories On the Connector Installation Media	2-2
2-2	Parameters of the IT Resource	2-10
2-3	Log Levels and ODL Message Type:Level Combinations	2-23
2-4	Parameters of the IT Resource for the Remote Manager	2-31
3-1	Attributes of the Lookup.Exchange.Configuration Lookup Definition	3-4
3-2	Attributes of the Exchange Mail Store Lookup Reconciliation Scheduled Task	3-5
3-3	Attributes of the Exchange Reconciliation Task Scheduled Task	3-7
3-4	Attributes of the Exchange Delete Recon Task Scheduled Task	3-10
3-5	Scheduled Tasks	3-14
4-1	Lookup Definitions That Store Field Mapping Information	4-2
5-1	Troubleshooting	5-2
A-1	Special Characters That Can Be Used in the Alias Name Field	A-1

Preface

This guide describes the connector that is used to integrate Oracle Identity Manager with Microsoft Exchange.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

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Related Documents

For information about installing and using Oracle Identity Manager, see the Oracle Identity Manager documentation library.

For generic information about connectors, see *Oracle Identity Manager Connector Concepts*.

The following Oracle Technology Network page provides links to Oracle Identity Manager documentation:

<http://www.oracle.com/technology/documentation/oim1014.html>

Documentation Updates

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

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Conventions

The following text conventions are used in this document:

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

What's New in Oracle Identity Manager Connector for Microsoft Exchange?

This chapter provides an overview of the updates made to the software and documentation for release 9.1.1.7 of the Microsoft Exchange connector.

Note: Release 9.1.1.7 of the connector comes after release 9.1.1.5. Release number 9.1.1.6 has not been used.

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

- [Software Updates](#)

This section describes updates made to the connector software. This section also points out the sections of this guide that have been changed in response to each software update.

- [Documentation-Specific Updates](#)

These include major changes made to this guide. For example, the relocation of a section from the second chapter to the third chapter is a documentation-specific update. These changes are not related to software updates.

Software Updates

The following sections discuss software updates:

- [Software Updates in Release 9.1.1.7](#)
- [Software Updates in Release 9.1.1.5](#)
- [Software Updates in Release 9.1.1.4](#)
- [Software Updates in Release 9.1.1.1](#)
- [Software Updates in Release 9.1.1](#)
- [Software Updates in Release 9.1.0.1](#)
- [Software Updates in Release 9.1.0](#)

Software Updates in Release 9.1.1.7

The following are the software updates in release 9.1.1.7:

- [Change in the Implementation of the Delete Mailbox Provisioning Operation](#)
- [Issues Resolved in Release 9.1.1.7](#)

Change in the Implementation of the Delete Mailbox Provisioning Operation

In the earlier releases, if you were using Microsoft Exchange 2007 or Microsoft Exchange 2010 as the target system, then a Delete Mailbox provisioning operation was implemented by using the LDAP objects of Microsoft Active Directory. From this release onward, the connector is shipped with the DeleteMailboxExchange2007.vbs and DeleteMailboxExchange2010.vbs files that are used by the Remote Manager to delete mail boxes.

See the following sections in the connector guide for more information:

- Files and Directories On the Connector Installation Media
- Creating the IT Resource

Issues Resolved in Release 9.1.1.7

The following are issues resolved in release 9.1.1.7:

Bug Number	Issue	Resolution
9243009	During an Update Primary E-mail Address provisioning operation, the connector applied case-sensitive checks on the primary e-mail address.	This issue has been resolved. The connector does not apply any case-sensitive checks on the primary e-mail address during an Update Primary E-mail Address provisioning operation.
9484364	During a mailbox provisioning operation, the connector set incorrect values to attributes in Microsoft Active Directory.	This issue has been resolved. During a mailbox provisioning operation, the connector does not set incorrect values to attributes in Microsoft Active Directory.
9709126	During a Modify User provisioning operation, if you modified the primary e-mail address of the user, then the change was not reflected on the target system.	The issue has been resolved. If you modify the primary e-mail address, then the change is propagated to the target system.
11067013	The following issue was observed when you configured your connector for multiple installations of the target system When you run two instances of the same scheduled task at the same time (on different target system installations), then the Microsoft Exchange resource for each target system installation linked to the same OIM User.	This issue has been resolved.

Software Updates in Release 9.1.1.5

The following are the software updates in release 9.1.1.5:

- [Support for New Oracle Identity Manager Release](#)
- [Support for Request-Based Provisioning](#)

Support for New Oracle Identity Manager Release

From this release onward, the connector can be installed and used on Oracle Identity Manager 11g release 1 (11.1.1). Where applicable, instructions specific to this Oracle Identity Manager release have been added in the guide.

See [Section 1.1, "Certified Deployment Configurations"](#) for the full list of certified Oracle Identity Manager releases.

Support for Request-Based Provisioning

From this release onward, the connector provides support for request-based provisioning on Oracle Identity Manager 11g release 1 (11.1.1).

See [Section 3.6.2.2, "Request-Based Provisioning"](#) for more information.

Software Updates in Release 9.1.1.4

The following are software updates in release 9.1.1.4:

- [Changes in Certified Components](#)
- [Issues Resolved in Release 9.1.1.4](#)

Changes in Certified Components

The Microsoft Exchange 2010 target system is now certified.

New scripts are added to support this target system version. To differentiate amongst the scripts a new attribute called, `isexchange2010`, is added to the `Lookup.Exchange.Configuration` lookup definition.

See "[Certified Deployment Configurations](#)" section for information about the certified components.

Issues Resolved in Release 9.1.1.4

The following are issues resolved in release 9.1.1.4:

Bug Number	Issue	Resolution
9232682	When the Mail Store lookup reconciliation was ran, mailbox policies were also reconciled.	This issue has been resolved. From this release onward, all the storage groups are extracted and the mail stores in each storage group are reconciled. In Microsoft Exchange 2010 the mailstore lookup reconciliation runs as expected. This is because the storage groups and mailbox policies are not seen. Change the value of <code>isexchange2010</code> parameter to <code>yes</code> in the <code>Lookup.Exchange.Configuration</code> lookup definition.

Software Updates in Release 9.1.1.1

The following are issues resolved in release 9.1.1.1:

- [Changes in Certified Components](#)
- [Support for Reconciliation and Provisioning of Mailboxes Across Multiple Domains](#)
- [IT Resource Information Displayed Along with Mailstore Name](#)
- [Issues Resolved in Release 9.1.1.1](#)

Changes in Certified Components

The following certification changes have been made in this release:

- From this release onward, the connector can be installed and used on Oracle Identity Manager release 9.1.0.2 or later.
- The Microsoft Exchange 2007 target system is now certified for both x86 and x64 computers.

See "[Certified Deployment Configurations](#)" for information about the certified components.

Support for Reconciliation and Provisioning of Mailboxes Across Multiple Domains

From this release onward, the connector supports reconciliation and provisioning of mailboxes for users across multiple Microsoft Active Directory domains.

See ["Reconciliation and Provisioning of Mailboxes Across Multiple Domains"](#) on page 1-7 for more information.

IT Resource Information Displayed Along with Mailstore Name

In the Mailstore lookup definition (Lookup.ExchangeReconciliation.MailStore) on the process form, the IT resource key and IT resource name are displayed along with the name of the mailstore. During provisioning operations, this feature enables you to select mailstores from a specific Microsoft Exchange installation.

See ["Lookup Field Synchronization"](#) on page 1-7 for information about the format of entries in this lookup definition. In addition, if your Oracle Identity Manager installation is running on Microsoft SQL Server, then perform the procedure described in ["Modifying Dependent Lookup Query Properties for Lookup Fields on Microsoft SQL Server"](#) on page 2-25.

Issues Resolved in Release 9.1.1.1

The following are issues resolved in release 9.1.1.1:

Bug Number	Issue	Resolution
8229697	Data logged for error scenarios did not provide sufficient detail.	This issue has been resolved. Log messages have been made more descriptive. In addition, the stack trace is captured for some error scenarios.
8669819	The connector had code-level dependencies on the Microsoft Active Directory User Management connector.	From this release onward, the code-level dependencies have been removed. While deploying the connector, you must perform the procedure described in the "Linking the Exchange Resource Object with the AD User Resource Object" section.

Software Updates in Release 9.1.1

The following are issues resolved in release 9.1.1:

- [Microsoft Windows Server 2008 Added to the List of Certified Target System Host Platforms](#)
- [Change in the Oracle Identity Manager Requirement](#)
- [Support for Creating Copies of the Connector](#)
- [Introduction of the Lookup.Exchange.Constants Lookup Definition](#)
- [No Support for Native Queries](#)
- [Issues Resolved in Release 9.1.1](#)

Microsoft Windows Server 2008 Added to the List of Certified Target System Host Platforms

From this release onward, Microsoft Windows Server 2008 has been added to the list of certified target system host platforms. This has been mentioned in the ["Certified Deployment Configurations"](#) section.

Change in the Oracle Identity Manager Requirement

From this release onward, Oracle Identity Manager release 9.1.0.1 is the minimum supported Oracle Identity Manager release. This is mentioned in the ["Certified Deployment Configurations"](#) section.

Support for Creating Copies of the Connector

The Parameters.Exchange lookup definition has been renamed to "Lookup.Exchange.Configuration." In addition, new entries that hold the names of process form fields used for matching user records have been added in this lookup definition. If you create a copy of the process form, then you can specify details of the new process form in the copy of the Lookup.Exchange.Configuration lookup definition. This feature enables you to create multiple copies of the connector without making code-level changes.

See the following sections for more information:

- [Configuring the Lookup.Exchange.Configuration Lookup Definition](#)
- [Creating Copies of the Connector](#)

Introduction of the Lookup.Exchange.Constants Lookup Definition

The Lookup.Exchange.Constants lookup definition stores the constants and variables defined in the Java classes that constitute the connector.

Caution: You must not change any entry in the Lookup.Exchange.Constants lookup definition. If you change any entry, then the connector will not function correctly.

The name of this lookup definition is specified as the value of the Exchange Constants Lookup Code Key in the Lookup.Exchange.Configuration lookup definition.

No Support for Native Queries

You use the Query attribute of the user reconciliation scheduled tasks to specify the query condition that must be applied during reconciliation. In earlier releases, you used the Use Native Query attribute to specify that the query condition was in native LDAP format. From this release onward, you can use only native LDAP queries. The Use Native Query attribute has been removed from the scheduled tasks.

Issues Resolved in Release 9.1.1

The following are issues resolved in release 9.1.1:

Bug Number	Issue	Resolution
7157839, 7676069, and 7507908	If the target system was Microsoft Exchange 2007, then the connector did not respond correctly to the RMTIMEOUT setting in the Lookup.Exchange.Configuration lookup definition.	This issue has been resolved. The RMTIMEOUT attribute of the Lookup.Exchange.Configuration lookup definition has been removed. This feature is now handled internally by the connector.
7157996	When you enabled a mailbox, you were not required to set an incoming or outgoing message size. This is not the same as the behavior on the target system.	This issue has been resolved. The DefaultIncomingMsgSize and DefaultOutgoingMsgSize parameters have been added in the Lookup.Exchange.Configuration lookup definition. See "Configuring the Lookup.Exchange.Configuration Lookup Definition" for more information.

Bug Number	Issue	Resolution
8276367	Earlier the mail store name was extracted from the mail store DN and displayed in the lookup field on the Administrative and User Console.	This issue has been resolved. From this release onward, the full mail store DN is displayed in the lookup field.
7577059	An exception is encountered on running a scheduled task for which an attribute's value is not specified. In earlier releases, the message displayed did not provide sufficient details to identify the cause of the exception.	This issue has been resolved. The stack trace is displayed on the Java console and is also recorded in the log file.
7145460	Suppose an OIM User was provisioned a Microsoft Active Directory resource and a Microsoft Exchange mailbox. After the next target resource reconciliation run, suppose the user was deleted on the target system and the scheduled task for reconciliation of deleted users was then run. At this point, the Microsoft Active Directory resource was revoked but the mailbox was not revoked.	This issue has been resolved. The mailbox is revoked along with the Microsoft Active Directory resource.

Software Updates in Release 9.1.0.1

There are no software updates in release 9.1.0.1.

Software Updates in Release 9.1.0

This is the first release of the Oracle Identity Manager Connector for Microsoft Exchange release 9.1.x. The following are issues resolved in release 9.1.0:

- [Support for Microsoft Exchange 2007](#)
- [Introduction of the Connector Installer](#)
- [Support for Specifying the Exchange Server and Mail Store for Provisioning Operations](#)
- [Support for Reconciliation of Mailbox Data from Specific Mail Store and Distribution Group](#)
- [Support for the Application of Native LDAP Queries During Reconciliation](#)
- [Support for Full and Incremental Reconciliation](#)
- [Introduction of Scheduled Task for Reconciliation of Deleted Mailboxes](#)

Support for Microsoft Exchange 2007

The connector can be used to integrate Microsoft Exchange 2000, 2003, or 2007 with Oracle Identity Manager. In addition, the connector also supports mixed mode operation in which a single connector is used to integrate more than one version of the target system with Oracle Identity Manager.

Information specific to the Microsoft Exchange 2007 has been provided at various places in this guide.

Introduction of the Connector Installer

You can now install the connector by using the Connector Installer feature of the Oracle Identity Manager Administrative and User Console.

See ["Running the Connector Installer"](#) on page 2-6 for more information.

Support for Specifying the Exchange Server and Mail Store for Provisioning Operations

The MailStore Name field has been added to the process form for provisioning operations. You can use this field to specify the Exchange server and mail store in which provisioning operations must be performed.

Support for Reconciliation of Mailbox Data from Specific Mail Store and Distribution Group

By using the Mail Store Name and Distribution Group Name attributes of the Exchange Reconciliation Task scheduled task, you can specify the mail store or distribution group from which mailbox data must be reconciled.

See ["Types of Reconciliation Enabled by the Connector"](#) on page 1-9 for more information.

Support for the Application of Native LDAP Queries During Reconciliation

In the earlier release, you specify the query condition for limited reconciliation by using operators that are not native to the target system. You can now specify the query condition using either non-native or native operators.

See ["Limited Reconciliation vs. Regular Reconciliation"](#) on page 3-5 for more information.

Support for Full and Incremental Reconciliation

You can use the MEXC Timestamp attribute of the reconciliation scheduled task to specify whether you want to configure full reconciliation or incremental reconciliation.

See ["Full Reconciliation vs. Incremental Reconciliation"](#) on page 3-6 for more information.

Introduction of Scheduled Task for Reconciliation of Deleted Mailboxes

The connector can be configured to reconcile deleted mailbox data. The Exchange Delete Recon Task scheduled task has been introduced to automate this process.

See ["Exchange Delete Recon Task"](#) on page 3-9 for more information about this scheduled task.

Documentation-Specific Updates

The following sections discuss documentation-specific updates:

- [Documentation-Specific Updates in Release 9.1.1.7](#)
- [Documentation-Specific Updates in Release 9.1.1.5](#)
- [Documentation-Specific Updates in Release 9.1.1.4](#)
- [Documentation-Specific Updates in Release 9.1.1.1](#)
- [Documentation-Specific Updates in Release 9.1.1](#)
- [Documentation-Specific Updates in Release 9.1.0.1](#)

- [Documentation-Specific Updates in Release 9.1.0](#)

Documentation-Specific Updates in Release 9.1.1.7

The following documentation-specific update has been made in revision "17" of release 9.1.1.7:

[Section 4.4.2, "Populating the Second IT Resource on the Process Form"](#) has been added.

The following documentation-specific updates have been made in revision "16" of release 9.1.1.7:

- The "Oracle Identity Manager" row in [Table 1–1, " Certified Deployment Configurations"](#) has been modified.
- [Section 1.2, "Usage Recommendation"](#) has been added.

The following are documentation-specific updates in revision "15" of release 9.1.1.7:

- A note has been added in the beginning of [Section 4.4, "Configuring the Connector for Multiple Installations of the Target System."](#)
- The name of the "Known Issues" chapter has been changed to "Known Issues and Troubleshooting."
- An issue related to Powershell 3.0 has been documented in [Table 5–1, " Troubleshooting"](#).

The following are documentation-specific updates in revision "14" of release 9.1.1.7:

- The "Oracle Identity Manager" row in [Table 1–1, " Certified Deployment Configurations"](#) has been modified.
- A note has been added in the "Files in the Datasets directory" rows of [Table 2–1, " Files and Directories On the Connector Installation Media"](#).
- The following sections have been added:
 - [Section 1.2, "Usage Recommendation"](#)
 - [Section 2.3.1.1, "Configuring Oracle Identity Manager 11.1.2 or Later"](#)
 - [Section 2.3.4, "Localizing Field Labels in UI Forms"](#)
 - [Section 3.7, "Configuring Provisioning in Oracle Identity Manager Release 11.1.2"](#)
- Instructions specific to Oracle Identity Manager release 11.1.2.x have been added in the following sections:
 - [Section 2.2.1.1, "Running the Connector Installer"](#)
 - [Section 2.2.1.2, "Creating the IT Resource"](#)
 - [Section 3.5, "Configuring Scheduled Tasks"](#)

The following are documentation-specific updates in earlier revisions of release 9.1.1.7:

- The [Section 2.1.2.1, "Creating a Target System User Account for Connector Operations"](#) has been modified.
- In [Section 4.4, "Configuring the Connector for Multiple Installations of the Target System,"](#) information has been added to the note.
- In [Table 2–2, " Parameters of the IT Resource"](#) the description of the Report Log Location parameter has been updated.

- In [Section 3.1.2, "Guidelines on Performing Provisioning Operations,"](#) a new guideline has been added.

Documentation-Specific Updates in Release 9.1.1.5

There are no documentation-specific updates in release 9.1.1.5.

Documentation-Specific Updates in Release 9.1.1.4

The following are documentation-specific updates in release 9.1.1.4:

- In [Section 1.1, "Certified Deployment Configurations,"](#) the target system requirement has been added.
- In [Table 3–1, "Attributes of the Lookup.Exchange.Configuration Lookup Definition"](#) a new attribute has been added.
- A new [Section 2.1.2.2, "Configuring Microsoft Exchange 2010"](#) has been added.
- In [Section 1.4.1.2, "Architecture of the Connector for Microsoft Exchange 2007,"](#) the connector architecture has been updated.

Documentation-Specific Updates in Release 9.1.1.1

The following are documentation-specific updates in release 9.1.1.1:

- It has been certified that the Remote Manager can be installed on any domain member on which Microsoft Exchange Management Tools is installed. This is also mentioned in the ["Installing the Remote Manager"](#) section.
- In [Section 1.1, "Certified Deployment Configurations,"](#) the JDK requirement has been added.

Documentation-Specific Updates in Release 9.1.1

The following are documentation-specific updates in release 9.1.1:

- In the ["Mailbox Provisioning Functions Supported by the Connector"](#) section, the following functions have been added:
 Disable Mail box
 Enable Mail box
- In the ["Mailbox Fields for Target Resource Reconciliation"](#) section, the following fields have been added to the list of target system fields that are reconciled:
 - userPrincipalName
 - homeMDB
 - mDBUseDefaults
- In the ["Known Issues and Troubleshooting"](#) chapter, a description for Bug 7207232 has been added.
- Microsoft Windows 2000 is no longer a supported host for the target system. All occurrences of "Microsoft Windows 2000" have been removed from this guide.
- Information about JDK requirement for installing Remote Manager has been added in the following sections:
 - ["Certified Deployment Configurations"](#) on page 1-1
 - ["Installing the Remote Manager"](#) on page 2-13

- In the "[Certified Deployment Configurations](#)" section, changes have been made in the "Target Systems" row.

Documentation-Specific Updates in Release 9.1.0.1

Information specific to installing the Remote Manager for Microsoft Exchange 2007 has been added in the following sections:

- "[Creating the IT Resource](#)" on page 2-8
- "[Installing the Remote Manager](#)" on page 2-13
- "[Guidelines on Configuring Reconciliation Runs](#)" on page 3-1
- "[Guidelines on Performing Provisioning Operations](#)" on page 3-2

Documentation-Specific Updates in Release 9.1.0

Major changes have been made in the structure of the guide. The objective of these changes is to synchronize the guide with the changes made to the connector and to improve the usability of information provided by the guide.

See "[Roadmap for Deploying and Using the Connector](#)" on page 1-18 for detailed information about the organization of content in this guide.

About the Connector

Oracle Identity Manager automates access rights management, security, and provisioning of IT resources. Oracle Identity Manager connectors are used to integrate Oracle Identity Manager with external, identity-aware applications. This guide discusses the connector that enables you to use Microsoft Exchange as a managed (target) resource of Oracle Identity Manager.

Note: At some places in this guide, Microsoft Exchange has been referred to as the **target system**.

In the account management mode of the connector, information about mailboxes created or modified directly on the target system can be reconciled into Oracle Identity Manager. In addition, you can use Oracle Identity Manager to perform mailbox provisioning operations on the target system.

This chapter contains the following sections:

- [Section 1.1, "Certified Deployment Configurations"](#)
- [Section 1.2, "Usage Recommendation"](#)
- [Section 1.3, "Certified Languages"](#)
- [Section 1.4, "Features of the Connector"](#)
- [Section 1.5, "Roadmap for Deploying and Using the Connector"](#)

1.1 Certified Deployment Configurations

[Table 1-1](#) lists the certified deployment configurations.

Table 1–1 Certified Deployment Configurations

Item	Requirement
Oracle Identity Manager	<p>You can use one of the following releases of Oracle Identity Manager:</p> <ul style="list-style-type: none"> ■ Oracle Identity Manager release 9.1.0.2 and any later BP in this release track Note: In this guide, Oracle Identity Manager release 9.1.0.x has been used to denote Oracle Identity Manager release 9.1.0.2 and future releases in the 9.1.0.x series that the connector supports. ■ Oracle Identity Manager 11g release 1 (11.1.1.3.0) and any later BP in this release track Note: In this guide, Oracle Identity Manager release 11.1.1 has been used to denote Oracle Identity Manager 11g release 1 (11.1.1) and future releases in the 11.1.1.x series that the connector supports. ■ Oracle Identity Manager 11g Release 1 PS1 (11.1.1.5.0) and any later BP in this release track ■ Oracle Identity Manager 11g Release 1 PS2 (11.1.1.7.0) and any later BP in this release track ■ Oracle Identity Manager 11g release 2 BP04 (11.1.2.0.4) and any later BP in this release track Note: In this guide, Oracle Identity Manager release 11.1.2 has been used to denote Oracle Identity Manager 11g release 2 BP04 (11.1.2) and future releases in the 11.1.2.x series that the connector supports. ■ Oracle Identity Manager 11g Release 2 PS1 (11.1.2.1.0) and any later BP in this release track ■ Oracle Identity Manager 11g Release 2 PS2 (11.1.2.2.0) and any later BP in this release track
Target systems	<p>The target system can be any one or a combination of the following:</p> <ul style="list-style-type: none"> ■ Microsoft Exchange 2003 ■ Microsoft Exchange 2007 (on x86 or x64 computers) ■ Microsoft Exchange 2010
Target system host platforms	<p>The target system host platform can be any one of the following:</p> <ul style="list-style-type: none"> ■ Microsoft Windows Server 2003 ■ Microsoft Windows Server 2008
JDK	<p>The JDK requirement is as follows:</p> <ul style="list-style-type: none"> ■ For Oracle Identity Manager release 9.1.0.x, if you are installing Remote Manager for Microsoft Exchange 2007 that is running on 64-bit Microsoft Windows Server, then you must install JDK 1.5 or a later release in the 1.5 series. ■ For Oracle Identity Manager release 11.1.x, if you are installing Remote Manager for Microsoft Exchange 2007 that is running on 64-bit Microsoft Windows Server, then you must install JDK 1.6 or a later release in the 1.6 series.

Table 1–1 (Cont.) Certified Deployment Configurations

Item	Requirement
Other systems	<p>Microsoft Active Directory</p> <p>Microsoft Active Directory User Management connector</p> <p>You must deploy the Microsoft Active Directory User Management connector before you can deploy and use the Microsoft Exchange connector. In addition, you must ensure that SSL is configured for the Microsoft Active Directory User Management connector.</p> <p>See <i>Oracle Identity Manager Connector Guide for Microsoft Active Directory User Management</i> for instructions to deploy the Microsoft Active Directory connector.</p>

1.2 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 later than release 9.1.0.1 and earlier than Oracle Identity Manager 11g Release 1 (11.1.1.5.6), then you must use the 9.1.1.x version of this connector.
- If you are using Oracle Identity Manager 11g Release 1 (11.1.1.5.6) or later, or Oracle Identity Manager 11g Release 2 (11.1.2.0.6) or later, then use the 11.1.1.x version of this connector. However, if you are using Microsoft Exchange 2003, then you must use the 9.1.1.x versions for both Microsoft Active Directory User Management and Microsoft Exchange connectors.
- If you are using Oracle Identity Manager 11g Release 2 (11.1.2.0.4) or later, then you must perform the steps mentioned in MetaLink note 1535369.1 to ensure the connector works as expected.
- If you are using the Microsoft Exchange 9.1.x connector, then you must use the Microsoft Active Directory 9.1.x connector, and if you are using the Microsoft Exchange 11.1.1.x connector, then you must use the Microsoft Active Directory 11.1.1.x connector.

1.3 Certified Languages

The connector supports the following languages:

- Arabic
- Chinese (Simplified)
- Chinese (Traditional)
- Danish
- English
- French
- German
- Italian
- Japanese
- Korean

- Portuguese (Brazilian)
- Spanish

See Also: For information about supported special characters supported by Oracle Identity Manager, see one of the following guides:

- For Oracle Identity Manager release 9.1.0.x:
Oracle Identity Manager Globalization Guide
- For Oracle Identity Manager release 11.1.x:
Oracle Fusion Middleware Developer's Guide for Oracle Identity Manager

1.4 Features of the Connector

This section discusses the following topics:

- The [Section 1.4.1, "Connector Architecture"](#) describes the architecture of the connector.
- The following sections describe the features of the managed resource mode of the connector:
 - [Section 1.4.2, "Lookup Field Synchronization"](#)
 - [Section 1.4.3, "Target Resource Reconciliation"](#)
 - [Section 1.4.4, "Provisioning"](#)

1.4.1 Connector Architecture

This section discusses the following topics:

Note: In Oracle Identity Manager release 11.1.x, a scheduled job is an instance of a scheduled task. In this guide, the term **scheduled task** used in the context of Oracle Identity Manager release 9.1.0.x is the same as the term **scheduled job** in the context of Oracle Identity Manager release 11.1.x.

See *Oracle Fusion Middleware System Administrator's Guide for Oracle Identity Manager* for more information about scheduled tasks and scheduled jobs.

- [Section 1.4.1.1, "Architecture of the Connector for Microsoft Exchange 2000 and Microsoft Exchange 2003"](#)
- [Section 1.4.1.2, "Architecture of the Connector for Microsoft Exchange 2007"](#)
- [Section 1.4.1.3, "Reconciliation and Provisioning of Mailboxes Across Multiple Domains"](#)

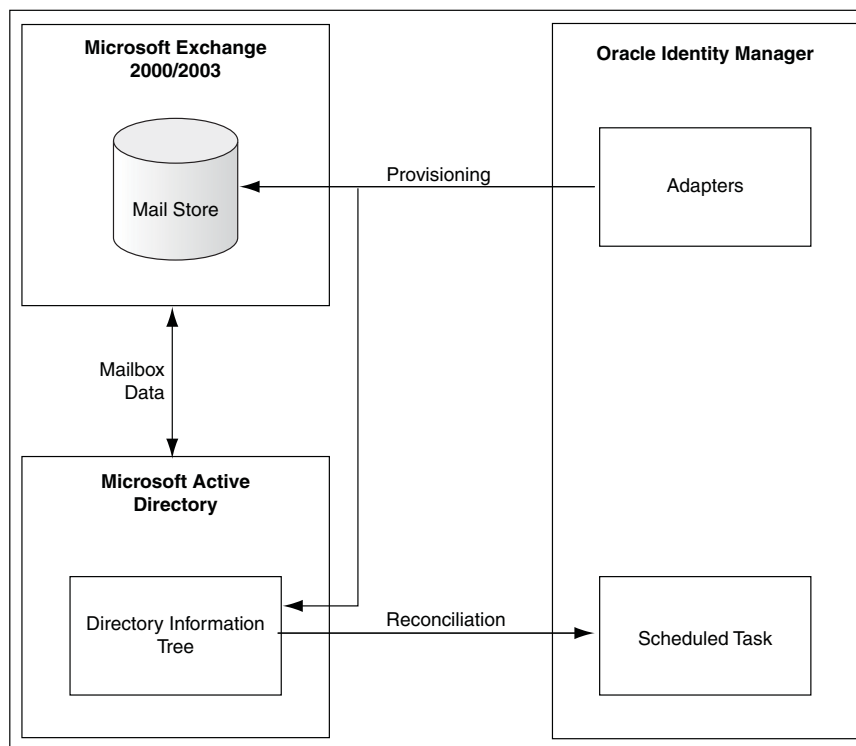
Note: The connector requires the deployment of a Microsoft Active Directory User Management connector. The user account data is stored in Microsoft Active Directory. Before you can provision a Microsoft Exchange mailbox for a user, you must create an account for the user in Microsoft Active Directory. The Microsoft Exchange connector uses the data in Microsoft Active Directory during the mailbox provisioning operation. This means that the connector can be configured only in the account management mode, which involves target resource reconciliation and provisioning with Microsoft Exchange.

1.4.1.1 Architecture of the Connector for Microsoft Exchange 2000 and Microsoft Exchange 2003

Microsoft Exchange uses Microsoft Active Directory as a user repository to store information about a user's mailbox, mail stores, and storage groups.

Figure 1–1 shows the architecture of the connector for Microsoft Exchange 2000 and Microsoft Exchange 2003.

Figure 1–1 Architecture of the Connector for Microsoft Exchange 2000 and Microsoft Exchange 2003



During a provisioning operation, the adapters create a mailbox for a user by setting the Exchange-specific attributes in the user's Active Directory profile. This information is used by the Recipient Update Service (RUS), a component in the Exchange 2000 and Exchange 2003, to generate the SMTP and other e-mail addresses required to allow users to log in to their mailboxes. For more information about the RUS, visit the Microsoft Help and Support Web site at

<http://support.microsoft.com>

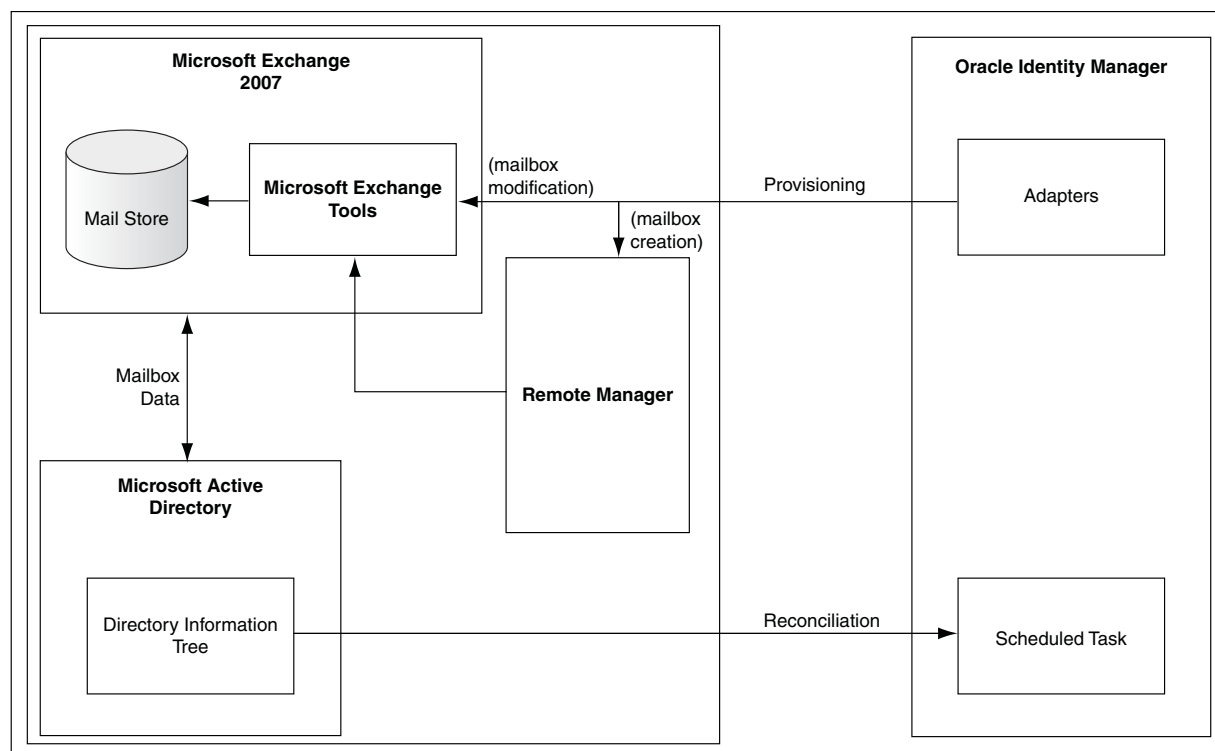
During reconciliation, scheduled tasks fetch user mailbox and mail store data from the target system into Oracle Identity Manager.

1.4.1.2 Architecture of the Connector for Microsoft Exchange 2007

Microsoft Exchange 2007 uses Microsoft Active Directory to store information about user mailboxes, mail stores, and Microsoft Exchange servers. Unlike Microsoft Exchange 2000 and 2003, Microsoft Exchange 2007 does not contain the RUS. Microsoft Exchange 2007 uses the Exchange Management Shell to carry out Exchange administration activities including mailbox management.

Figure 1–2 shows the architecture of the connector for Microsoft Exchange 2007.

Figure 1–2 Architecture of the Connector for Microsoft Exchange 2007



Microsoft Exchange 2007 requires the Exchange Management Shell (based on Windows Power Shell) to create mailboxes. Oracle Identity Manager uses a Remote Manager to communicate with the Exchange Management Shell. During provisioning operations, the adapters execute a Power Shell script through the Remote Manager to create or modify mailboxes.

During reconciliation, scheduled tasks fetch the user mailbox and mail store data from the target system into Oracle Identity Manager.

See Also: For more information about Remote Managers, refer to:

- The "Remote Manager Form" section in one of the following guides:

For Oracle Identity Manager release 9.1.0.x: *Oracle Identity Manager Design Console Guide*

For Oracle Identity Manager release 11.1.x: *Oracle Fusion Middleware Developer's Guide for Oracle Identity Manager*

- The "Back-End System Integration Tier" section in one of the following guides:

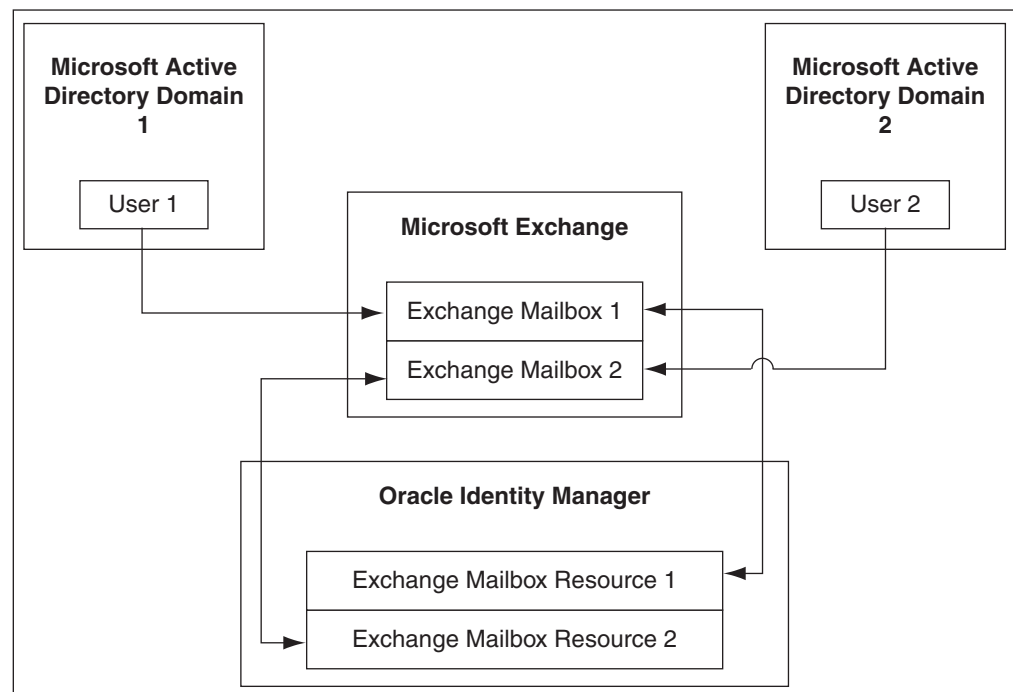
For Oracle Identity Manager release 9.1.0.x: *Oracle Identity Manager Connector Concepts*

For Oracle Identity Manager release 11.1.x: *Oracle Fusion Middleware User's Guide for Oracle Identity Manager*

1.4.1.3 Reconciliation and Provisioning of Mailboxes Across Multiple Domains

The connector supports reconciliation and provisioning of mailboxes for users across multiple Microsoft Active Directory domains. For example, users on Domain 1 and Domain 2 can have mailboxes in the same Microsoft Exchange installation. Oracle Identity Manager can reconcile from and provision mailboxes for users who belong to each of these domains. [Figure 1–3](#) illustrates this sample scenario.

Figure 1–3 Reconciliation and Provisioning of Mailboxes for Users Across Multiple Domains



1.4.2 Lookup Field Synchronization

During a provisioning operation, you use a lookup field to specify a single value from a set of values. 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 mail store data into the lookup definitions in Oracle Identity Manager.

Note: As an implementation best practice, lookup fields should be synchronized before you perform reconciliation or provisioning operations.

Table 1–2 lists the lookup fields that are synchronized with their corresponding lookup definitions in Oracle Identity Manager.

Table 1–2 Lookup Definitions Created in Oracle Identity Manager

Lookup Definition	Target System Field	Method to Specify Values for the Lookup Definition
AtMap.Exchange	All the fields used during provisioning	<p>You manually add or update entries in this lookup definition. If the value in this lookup does not work on the target system, then you must update the lookup with the correct value.</p> <p>This lookup definition contains mappings between the LDAP attributes of the target system and their corresponding process form fields in Oracle Identity Manager.</p>
Lookup.Exchange.Configuration	Values of parameters used during provisioning and reconciliation	You use this lookup definition to specify parameters that are used during both reconciliation and provisioning. This lookup definition is discussed in Section 3.2, "Configuring the Lookup.Exchange.Configuration Lookup Definition."
Lookup.ExchangeReconciliation.MailStore	All mail stores of the target system	<p>You use the Exchange Mail Store Lookup Reconciliation scheduled task to synchronize this lookup definition. This scheduled task is discussed in Section 3.3, "Scheduled Task for Lookup Field Synchronization."</p> <p>The format of entries stored in this lookup definition is as follows:</p> <p>Code Key:</p> <p><code>IT_RESOURCE_KEY~FORMATTED_MAILSTORE_DN</code></p> <p>Decode:</p> <p><code>IT_RESOURCE_NAME~MAILSTORE_DN</code></p>
Lookup.Deleted Item Manager	The deletedItemFlags field of the users	<p>You manually add or update entries in this lookup definition.</p> <p>You use this lookup definition to modify attributes in the Deleted item retention section of the target system.</p>
Lookup.Hide From Address list	The msExchHideFromAddressesLists field of the users	<p>You manually add or update entries in this lookup definition.</p> <p>You use this lookup definition to specify if the user data is displayed in the Address list of the target system.</p>
Lookup.Use Default Storage	The mDBUseDefaults field of the users	<p>You manually add or update entries in this lookup definition.</p> <p>You use this lookup definition to specify whether or not the default storage values of mailboxes are used.</p>
Lookup.Exchange.Constants	NA	<p>This lookup definition stores constants and variables defined in the Java classes that constitute the connector.</p> <p>Caution: You must not change any entry in this lookup definition. If you change any entry, then the connector will not function correctly.</p>

1.4.3 Target Resource Reconciliation

In the managed account mode, the connector can be used to perform target resource reconciliation and provisioning.

Target resource reconciliation involves fetching data about newly created or modified mailboxes on the target system and using this data to create or modify mailbox resources assigned to OIM Users. The Exchange Reconciliation Task scheduled task is used to start target resource reconciliation runs. This scheduled task is discussed in [Section 3.4.3, "Reconciliation Scheduled Tasks."](#)

See Also: The "Target Resource Reconciliation" section in *Oracle Identity Manager Connector Concepts* for conceptual information about target resource reconciliation

This section discusses the following topics:

- [Section 1.4.3.1, "Types of Reconciliation Enabled by the Connector"](#)
- [Section 1.4.3.2, "Mailbox Fields for Target Resource Reconciliation"](#)
- [Section 1.4.3.3, "Reconciliation Rule"](#)
- [Section 1.4.3.4, "Reconciliation Action Rules"](#)

1.4.3.1 Types of Reconciliation Enabled by the Connector

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

- [Section 1.4.3.1.1, "Reconciliation of Mailbox Data from Mail Stores"](#)
- [Section 1.4.3.1.2, "Reconciliation of Mailbox Data from Distribution Groups"](#)

1.4.3.1.1 Reconciliation of Mailbox Data from Mail Stores During this type of reconciliation, mailbox data is fetched either from all mail stores configured with the Microsoft Active Directory server on which Microsoft Exchange is enabled, or from mail stores specified in the Exchange Reconciliation Task scheduled task.

You can reconcile mail store data individually from Microsoft Exchange 2000, 2003, or 2007. Alternatively, you can use the connector to integrate Oracle Identity Manager with a combination of different Microsoft Exchange versions, such as Exchange 2003 and 2007. This is known as the **mixed mode setup**.

In a mixed mode scenario, Microsoft Active Directory user objects are stored on Microsoft Active Directory and mailboxes of Microsoft Active Directory users are stored on different Microsoft Exchange installations. For example, user1 and user2 can belong to the same Microsoft Active Directory instance while having a mailbox in Microsoft Exchange 2003 and Microsoft Exchange 2007, respectively.

1.4.3.1.2 Reconciliation of Mailbox Data from Distribution Groups During this type of reconciliation, mailbox data is fetched from all or specific distribution groups specified in the Exchange Reconciliation Task scheduled task. If you want to fetch mailbox data from a specific distribution group, then you can perform query-based reconciliation of mailbox data from distribution groups.

You can also perform distribution group reconciliation and query-based distribution group reconciliation for Microsoft Exchange 2000 and 2003, or you can perform distribution group reconciliation and dynamic distribution group reconciliation for Exchange 2007 a mixed mode setup.

1.4.3.2 Mailbox Fields for Target Resource Reconciliation

Table 1–3 lists the mailbox fields from which values are fetched during a target resource reconciliation run.

Table 1–3 Mailbox Fields for Target Resource Reconciliation

Process Form Field	Target System Field	Description
Deleted Item Manager	deletedItemFlags	Number of items in the Deleted Items folder
Display Name	displayName	Name of a user as displayed in the address book This is usually a combination of the user's first name, middle initial, and last name.
Email Alias Note: This is a mandatory field.	mailNickname	Mailbox alias, which is generally the same as sAMAccountName Note: sAMAccountName is the user login for Microsoft Active Directory.
Garbage Collection Period	garbageCollPeriod	Time interval, in days, between garbage collection runs This field corresponds to the "Keep deleted items for (days)" field value on the target system.
Hide From Address Lists	msExchHideFromAddressLists	Specifies if the user appears in address lists
Mailbox Size Receipt Quota	mDBOverHardQuotaLimit	Maximum mailbox size, in KB, over which sending and receiving e-mail is disabled This field corresponds to the <i>Prohibit send and receive at (KB)</i> field on the target system.
Mailbox Size Transmit Quota	mDBOverQuotaLimit	Mailbox quota overdraft limit, in KB This field corresponds to the <i>Prohibit send at (KB)</i> field on the target system.
Mailbox Warning Size	mDBStorageQuota	Message database quota, in KB This field corresponds to the <i>Issue warning at (KB)</i> field on the target system.
Major Business Number	telephonenumber	Primary office phone number
Max Incoming Message Size	delivContLength	Maximum incoming message size, in KB
Max Outgoing Message Size	submissionContLength	Maximum outgoing message size, in KB
Max Recipients Per Message	msExchRecipLimit	Maximum number of recipients of a single e-mail
Mobile Number	mobile	Primary mobile phone number
Object GUID	objectGUID	GUID based on the current time stamp assigned to an object
Other Business Number	otherTelephone	Alternative office phone number
Pager Number	pager	Primary pager number
Use Storage Defaults	mDBUseDefaults	Specifies whether or not the mailbox store must use the default quota, instead of the per-mailbox quota This field corresponds to the <i>Use mailbox store defaults</i> field on the target system.
Email	proxyAddresses	Primary e-mail address

Table 1–3 (Cont.) Mailbox Fields for Target Resource Reconciliation

Process Form Field	Target System Field	Description
Log On Name	userPrincipalName	User Principal name
Mail Store Name	homeMDB	Mail store database name of the user
DB User Defaults	mDBUseDefaults	User database size defaults

1.4.3.3 Reconciliation Rule

The following is the default reconciliation rule for this connector:

Rule Name: Exchange Recon

Rule Element: User Login Equals sAMAccountName

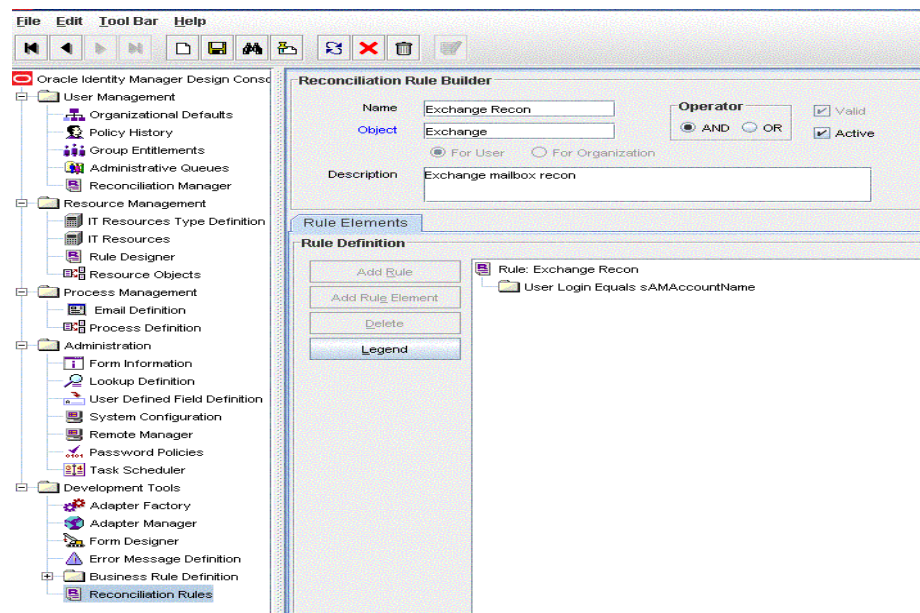
In this rule:

- User Login is the User ID field on the OIM User form.
- sAMAccountName is the User ID field of Microsoft Active Directory. Microsoft Exchange uses the same User ID during reconciliation.

After you deploy the connector, you can view the reconciliation rule for the connector 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 **Exchange Recon**. [Figure 1–4](#) shows the reconciliation rule for the connector.

Figure 1–4 Reconciliation Rule for the Exchange Connector

1.4.3.4 Reconciliation Action Rules

Table 1–4 lists the action rules for target resource reconciliation.

Table 1–4 Action Rules for Target Resource Reconciliation

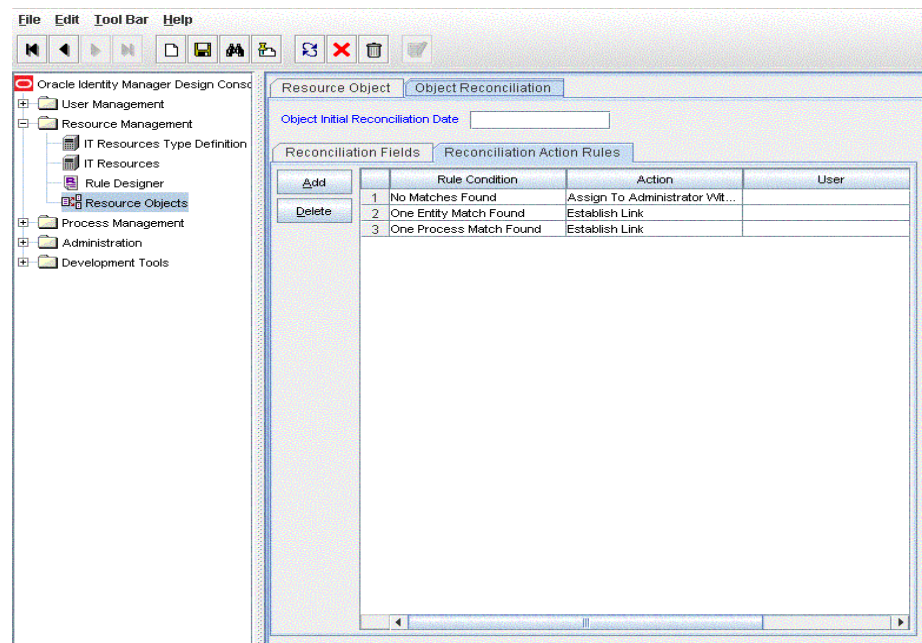
Rule Condition	Action
No Matches Found	Assign to Administrator With Least Load
One Entity Match Found	Establish Link
One Process Match Found	Establish Link

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

Note: For any rule condition that is not predefined for this connector, Oracle Identity Manager will neither perform any action nor log an error.

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 **Exchange** resource object.
5. Click the **Object Reconciliation** tab, and then the **Reconciliation Action Rules** tab. The Reconciliation Action Rules tab displays the action rules defined for this connector. Figure 1–6 shows the reconciliation action rules for the connector.

Figure 1–5 Reconciliation Action Rules for the Connector



1.4.4 Provisioning

Provisioning involves creating or modifying mailbox data on the target system through Oracle Identity Manager.

See Also: The "Provisioning" section in *Oracle Identity Manager Connector Concepts* for conceptual information about provisioning

This section discusses the following topics:

- [Section 1.4.4.1, "Mailbox Provisioning Functions Supported by the Connector"](#)
- [Section 1.4.4.2, "Mailbox Fields for Provisioning"](#)

1.4.4.1 Mailbox Provisioning Functions Supported by the Connector

[Table 1–5](#) lists the supported mailbox provisioning functions and the adapters that perform these functions. The functions listed in the table correspond to either a single or multiple process tasks.

See Also: *Oracle Identity Manager Connector Concepts* for generic information about adapters

Table 1–5 Mailbox Provisioning Functions Supported by the Connector

Function	Adapter
Create a mailbox	<p>MEXC Create Mailbox.</p> <p>The following adapters are triggered before the MEXC Create Mailbox adapter is triggered:</p> <ul style="list-style-type: none"> ■ Check User Process Ordered ■ Chk Value Set ■ Get Value Form User Process <p>If the mailbox is successfully created, then the following adapters are triggered:</p> <ul style="list-style-type: none"> ■ MEXC Set Primary Email ■ MEXC Set User Properties
Delete a mailbox	MEXC Delete Mailbox
Update the Deleted Item Manager	MEXC Update User Property
Update a display name	MEXC Update User Property
Update an e-mail alias	MEXC Update User Property
Update the garbage collection period (Days)	MEXC Update User Property
Update the "hide from address lists" field	MEXC Update User Property
Update the mailbox size receipt quota (KB)	MEXC Update User Property
Update the mailbox size transmit quota (KB)	MEXC Update User Property
Update the mailbox warning size (KB)	MEXC Update User Property
Update a major business number	MEXC Update User Property
Update the maximum incoming message size (KB)	MEXC Update User Property
Update the maximum outgoing message size (KB)	MEXC Update User Property
Update the maximum recipients per message	MEXC Update User Property
Set Exchange-related properties	MEXC Update User Property

Table 1–5 (Cont.) Mailbox Provisioning Functions Supported by the Connector

Function	Adapter
Update the use storage defaults	MEXC Update User Property
Get ObjectGUID from Process	MEXC Get Value From User Process
Update a mobile number	MEXC Update User Property
Update any other business number	MEXC Update User Property
Update a pager number	MEXC Update User Property
Update a primary e-mail address	MEXC Set Primary Email
Disable Mail box	MEXCDisableMailBox
Enable Mail box	MEXCEnableMailBox

1.4.4.2 Mailbox Fields for Provisioning

[Table 1–6](#) lists the mailbox fields used for provisioning. These fields are used in provisioning operations performed on Microsoft Exchange 2000, Microsoft Exchange 2003, and Microsoft Exchange 2007.

Table 1–6 Mailbox Fields Used in Provisioning

Process Form Field	Microsoft Exchange Field	Description	Adapter
Deleted Item Manager	deletedItemFlags	<p>Number of items in the Deleted Items folder</p> <p>If this field is not available or if its value is 0 (zero), then the "Use mailbox store defaults" check box on the target system is automatically selected. If this field is available and its value is non zero, then the "Use mailbox store defaults" check box on the target system is automatically deselected.</p> <p>If the value of this field is 3, then the "Do not permanently delete items until the store has been backed up" check box is automatically selected on the target system. If the value is other than 3, then the "Do not permanently delete items until the store has been backed up" check box is automatically deselected.</p> <p>Note: The non zero value can be configured in the Lookup.Deleted Item Manager lookup definition. This depends on the value of the field on the target system.</p>	MEXC Update User Property
Display Name	displayName	<p>Name of a user as displayed in the address book</p> <p>This is usually a combination of the user's first name, middle initial, and last name.</p>	MEXC Update User Property
Garbage Collection Period (Days)	garbageCollPeriod	<p>Time interval, in days, between garbage collection runs.</p> <p>This field corresponds to the Keep deleted items for (days) field value on the target system.</p> <p>The value of the Keep deleted items for (days) field takes effect only when the Deleted Item Manager field value is non zero.</p>	MEXC Update User Property
Email Alias Note: This is a mandatory field.	mailNickname	Mailbox alias, which is generally the same as sAMAccountName	MEXC Update User Property
Hide From Address Lists	msExchHideFromAddressLists	<p>Specifies if the user appears in address lists</p> <p>Default value: false</p> <p>Note: This field is not used during mailbox creation. It can be used only during a mailbox update.</p>	MEXC Update User Property

Table 1–6 (Cont.) Mailbox Fields Used in Provisioning

Process Form Field	Microsoft Exchange Field	Description	Adapter
Mailbox Size Receipt Quota (KB)	mDBOverHardQuotaLimit	<p>Maximum mailbox size, in KB, over which sending and receiving e-mail is disabled</p> <p>This field corresponds to the Prohibit send and receive at (KB) field on the target system.</p> <p>Default value: 0</p> <p>Note: If you want to specify a mailbox size receipt quota, then set the value of the Use Storage Defaults field as <i>false</i> and specify a value for this field.</p>	MEXC Update User Property
Mailbox Size Transmit Quota (KB)	mDBOverQuotaLimit	<p>Mailbox quota overdraft limit, in KB</p> <p>This field corresponds to the Prohibit send at (KB) field on the target system.</p> <p>Default value: 0</p> <p>Note: If you want to specify a mailbox size receipt quota, then set the value of the Use Storage Defaults field as <i>false</i> and specify a value for this field.</p>	MEXC Update User Property
Mailbox Warning Size (KB)	mDBStorageQuota	<p>Message database quota, in KB</p> <p>This field corresponds to the Issue warning at (KB) field on the target system.</p> <p>Default value: 0</p> <p>Note: If you want to specify a mailbox size receipt quota, then set the value of the Use Storage Defaults field as <i>false</i> and specify a value for this field.</p>	MEXC Update User Property
Major Business Number	telephonenumber	Primary office phone number	MEXC Update User Property
Max Incoming Message Size (KB)	delivContLength	Maximum incoming message size, in KB	MEXC Update User Property
Max Outgoing Message Size (KB)	submissionContLength	Maximum outgoing message size, in KB	MEXC Update User Property
Max Recipients Per Message	msExchRecipLimit	Maximum number of recipients of a single e-mail	MEXC Update User Property
Use Storage Defaults	mDBUseDefaults	<p>Storage Defaults configuration</p> <p>Default value: <i>true</i></p>	MEXC Update User Property
Mobile Number	mobile	Primary mobile phone number	MEXC Update User Property
Object GUID	objectGUID	GUID based on the current time stamp assigned to an object	MEXC Get Value From User Process
Other Business Number	otherTelephone	Alternative office phone number	MEXC Update User Property
Pager Number	pager	Primary pager number	MEXC Update User Property

Table 1–6 (Cont.) Mailbox Fields Used in Provisioning

Process Form Field	Microsoft Exchange Field	Description	Adapter
Primary Email	proxyAddresses	Primary e-mail address	MEXC Set Primary Email
Mail Store Name Note: This is a mandatory field for provisioning.	homeMDB	Indicates the mail store and the server name to which the mailbox must be provisioned. This lookup definition is populated after successful reconciliation of mail stores. Note: Although this is a mandatory field, it is not marked as mandatory in the process form. This is done so that the accounts of mail users who do not have a mail store can be reconciled in Microsoft Exchange 2007.	MEXC Create Mailbox.
Log On Name This is a mandatory field for provisioning in Microsoft Exchange 2007.	userPrincipalName	userPrincipalName of an AD object. During a provisioning operation, you must enter the logon name in the following format: <i>user1@domain name.com</i> Note: The domain name in the specified format corresponds to the Microsoft Active Directory domain name.	MEXC Create Mailbox.

Figure 1–6 shows the process form fields for this connector.

Figure 1–6 Process Form Fields of the Connector

AD Server	*	<input type="text"/>	Clear
Object GUID		<input type="text"/>	
Exchange IT Resource		<input type="text"/>	Clear
Log On Name		<input type="text"/>	
Exchange Remote Manager IT Resource		<input type="text"/>	Clear
Mail Store Name		<input type="text"/>	Clear
Email Alias	*	<input type="text"/>	
Display Name		<input type="text"/>	
Garbage Collection Period(Days)		<input type="text"/>	
Max Incoming Message Size(KB)		<input type="text"/>	
Max Outgoing Message Size(KB)		<input type="text"/>	
Mailbox Size Receipt Quota(KB)		<input type="text"/>	
Mailbox Size Transmit Quota(KB)		<input type="text"/>	
Mailbox Warning Size(KB)		<input type="text"/>	
Max Recipients Per Message		<input type="text"/>	
Use Storage Defaults		<input type="text" value="TRUE"/>	Clear
Hide From Address Lists		<input type="text" value="FALSE"/>	Clear
Mobile Number		<input type="text"/>	
Pager Number		<input type="text"/>	
Major Business Number		<input type="text"/>	
Other Business Number		<input type="text"/>	
Primary Email		<input type="text"/>	
Deleted Item Manager		<input type="text"/>	Clear

1.5 Roadmap for Deploying and Using the Connector

The following is the organization of information in the rest of the guide:

- [Chapter 2, "Deploying the Connector"](#) describes procedures that you must perform on Oracle Identity Manager and the target system during each stage of connector deployment.
- [Chapter 3, "Using the Connector"](#) describes guidelines on using the connector and the procedure to perform provisioning operations and configure reconciliation runs.
- [Chapter 4, "Extending the Functionality of the Connector"](#) describes procedures that you can perform if you want to extend the functionality of the connector.
- [Chapter 5, "Known Issues and Troubleshooting"](#) lists the known issues associated with this release of the connector.
- [Appendix A, "Special Characters Supported for Alias Name"](#) lists special characters that you can use in the Alias Name field on the target system and Oracle Identity Manager.

Deploying the Connector

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

- [Section 2.1, "Preinstallation"](#)
- [Section 2.2, "Installation"](#)
- [Section 2.3, "Postinstallation"](#)

Note: Some of the procedures described in this chapter are meant to be performed on the target system. The minimum permissions required to perform the target system procedure are those assigned to members of the Domain Admins group. To perform the target system-specific procedures, you can use the same user account that you create for deploying the Microsoft Active Directory User Management connector.

See the "Deploying the Connector" chapter of *Oracle Identity Manager Connector Guide for Microsoft Active Directory User Management* for information about creating that user account.

2.1 Preinstallation

Preinstallation information is divided across the following sections:

- [Section 2.1.1, "Preinstallation on Oracle Identity Manager"](#)
- [Section 2.1.2, "Preinstallation on the Target System"](#)

2.1.1 Preinstallation on Oracle Identity Manager

This section contains the following topics:

- [Section 2.1.1.1, "Files and Directories On the Connector Installation Media"](#)
- [Section 2.1.1.2, "Determining the Release Number of the Connector"](#)

2.1.1.1 Files and Directories On the Connector Installation Media

The contents of the connector installation media directory are described in [Table 2-1](#).

Table 2–1 Files and Directories On the Connector Installation Media

File in the Installation Media Directory	Description
configuration/Exchange-CL.xml	This XML file contains configuration information that is used during the connector installation process.
Files in the DataSets directory	<p>These XML files specify the information to be submitted by the requester during a request-based provisioning operation.</p> <p>Note: These files are specific to Oracle Identity Manager versions prior to 11.1.2.</p>
lib/xliExchange.jar	<p>This JAR file contains the class files required for provisioning. During connector installation, this file is copied to the following location:</p> <ul style="list-style-type: none"> For Oracle Identity Manager release 9.1.0.x: OIM_HOME/xellerate/JavaTasks For Oracle Identity Manager release 11.1.x: Oracle Identity Manager database
lib/xliExchangeRecon.jar	<p>This JAR file contains the class files required for reconciliation. During connector installation, this file is copied to the following location:</p> <ul style="list-style-type: none"> For Oracle Identity Manager release 9.1.0.x: OIM_HOME/xellerate/ScheduleTask For Oracle Identity Manager release 11.1.x: Oracle Identity Manager database
Files in the resources directory	<p>Each of these resource bundles contains language-specific information that is used by the connector. During connector installation, these resource bundles are copied to the following location:</p> <ul style="list-style-type: none"> For Oracle Identity Manager release 9.1.0.x: OIM_HOME/xellerate/connectorResources For Oracle Identity Manager release 11.1.x: Oracle Identity Manager database <p>Note: A resource bundle 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.</p>

Table 2–1 (Cont.) Files and Directories On the Connector Installation Media

File in the Installation Media Directory	Description
script/CreateMailboxExchange2007.vbs Scripts/CreateExchangeMailbox2010.vbs	This VBScript file is used by the Remote Manager to provision mailboxes in Exchange 2007 and Exchange 2010. This script is called by the Remote Manager.
script/DeleteMailboxExchange2007.vbs Scripts/DeleteExchangeMailbox2010.vbs	This VBScript file is used by the Remote Manager to delete mailboxes in Exchange 2007 and Exchange 2010. This script is called by the Remote Manager.
xml/MicrosoftExchange-ConnectorConfig.xml	<p>This XML file contains definitions for the connector components. These components include the following:</p> <ul style="list-style-type: none"> ■ IT resource type ■ Process form ■ Process task and adapters (along with their mappings) ■ Resource object ■ Provisioning process ■ Prepopulate rules ■ Lookup definitions ■ Scheduled tasks <p>Note: In Oracle Identity Manager release 11.1.x, a scheduled job is an instance of a scheduled task. In this guide, the term scheduled task used in the context of Oracle Identity Manager release 9.1.0.x is the same as the term scheduled job in the context of Oracle Identity Manager release 11.1.x.</p> <p>See <i>Oracle Fusion Middleware System Administrator's Guide for Oracle Identity Manager</i> for more information about scheduled tasks and scheduled jobs.</p>

2.1.1.2 Determining the Release Number of the Connector

Note: If you are using Oracle Identity Manager release 9.1.0.x, then the procedure described in this section is optional.

If you are using Oracle Identity Manager release 11.1.1, then skip this section.

You might have a deployment of an earlier release of the connector. While deploying the current release, you might want to know the release number of the earlier release. To determine the release number of the connector that has already been deployed:

1. In a temporary directory, extract the contents of the following JAR file:
OIM_HOME/xellerate/JavaTasks/xliExchange.jar
2. Open the Manifest.mf file in a text editor. The Manifest.mf file is one of the files bundled inside the xliExchange.jar file and the xliExchangeRecon.jar file.

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

2.1.2 Preinstallation on the Target System

Preinstallation on the target system involves creating a target system user account with appropriate permissions for connector operations. Oracle Identity Manager requires

this account to connect to the target system during reconciliation and provisioning operations.

You can use a Microsoft Windows 2003 Server (Domain Controller) administrator account as a target system user account. Alternatively, you can create a user account and assign the minimum required rights to that user account, if Microsoft Active Directory and Microsoft Exchange are not installed on the same system.

The procedure to create a target system user account is provided in the following section.

2.1.2.1 Creating a Target System User Account for Connector Operations

To create the Microsoft Exchange user account for connector operations:

Note: You need not perform this procedure if Microsoft Active Directory and Microsoft Exchange are installed on the same system.

1. Create a group, for example OIMEXCConGroup, on Microsoft Active Directory.
2. Make this group a member of the Account Operators group.
3. Assign all read permissions for the OIMEXCConGroup group.

Note: You assign read permissions on the Security tab of the dialog box for creating the user account. This tab is displayed only in Advanced Features view. To switch to this view, select Advanced Features from the View menu in the Microsoft Active Directory console.

4. Assign the OIMEXCConGroup group to be a member of the Exchange View-Only Administrators group. Users in this group have permission to read all Exchange configuration.
5. Create a user, for example OIMEXCConUser on the target system.
6. Assign this user to the OIMEXCConGroup group.
7. Assign this OIMEXCConUser to the Exchange Recipient Administrators group in Microsoft Active Directory as follows:
 - a. In the Active Directory User and Computers console, search for the **OIMEXCConUser** user.
 - b. Right-click the OIMEXCConUser user, and then click **Properties**.
 - c. In the Properties dialog box, on the Member Of tab, click **Add**.
The Select Groups dialog box is displayed.
 - d. In the **Enter the object names to select** field, enter Exchange Recipient Administrator, and then click **Check Names**.
 - e. Click **OK** to close the Select Groups dialog box.
 - f. Click **Apply** and then **OK** to apply the changes and close the properties dialog box.

Using OIMEXCConUser, you can perform provisioning and reconciliation. You can also enable, disable, and delete a mailbox on Microsoft Exchange.

2.1.2.2 Configuring Microsoft Exchange 2010

Before configuring Microsoft Exchange 2010, the section provides an overview about the different policy levels. They are categorized as follows:

Restricted

You can run the individual cmdlets, but not saved Powershell scripts. This is the default setting.

AllSigned

Scripts can run, but must have a digital signature even if written on the local computer. Prompts you before running scripts from trusted publishers.

RemoteSigned

Scripts written on the local computer do not need a digital signature, but any script downloaded from outside (e-mail, Messenger, Internet) must have a signature to execute.

Unrestricted

Any script can run, but scripts downloaded from outside will run with a warning.

You must set the execution policy to RemoteSigned. To do so perform the following steps:

1. Open the Exchange management powershell window.
2. Enter the following command:

```
get-executionPolicy
```
3. If the policy is not RemoteSigned, then enter the following command to change the policy to RemoteSigned:

```
set-executionPolicy RemoteSigned
```
4. Close the powershell window.

2.2 Installation

Installation information is divided across the following sections:

- [Section 2.2.1, "Installation on Oracle Identity Manager"](#)
- [Section 2.2.2, "Installation on the Target System"](#)

2.2.1 Installation on Oracle Identity Manager

Installation on Oracle Identity Manager involves the following procedures:

- [Section 2.2.1.1, "Running the Connector Installer"](#)
- [Section 2.2.1.2, "Creating the IT Resource"](#)

2.2.1.1 Running the Connector Installer

Note: In this guide, the term **Connector Installer** has been used to refer to the Connector Installer feature of the Oracle Identity Manager Administrative and User Console.

Ensure that the Microsoft Active Directory User Management connector is installed before you proceed to install the connector.

To run the Connector Installer:

1. Copy the contents of the connector installation media directory into the following directory:

Note: In an Oracle Identity Manager cluster, perform this step on each node of the cluster.

- For Oracle Identity Manager release 9.1.0.x:
OIM_HOME/xellerate/ConnectorDefaultDirectory
 - For Oracle Identity Manager release 11.1.x:
OIM_HOME/server/ConnectorDefaultDirectory
2. Log in to the Administrative and User Console by using the user account described in the "Creating the User Account for Installing Connectors" section of the following guide:
 - For Oracle Identity Manager release 9.1.0.x:
Oracle Identity Manager Administrative and User Console Guide
 - For Oracle Identity Manager release 11.1.x:
Oracle Fusion Middleware System Administrator's Guide for Oracle Identity Manager
 3. Depending on the Oracle Identity Manager release you are using, perform one of the following steps:
 - For Oracle Identity Manager release 9.1.0.x:
Click **Deployment Management**, and then click **Install Connector**.
 - For Oracle Identity Manager release 11.1.1:
On the Welcome to Identity Manager Advanced Administration page, in the System Management region, click **Install Connector**.
 - For Oracle Identity Manager release 11.1.2:
In the left pane, under System Management, click **Manage Connector**. In the Manage Connector page, click **Install**.
 4. From the Connector List list, select **Exchange RELEASE_NUMBER** where *RELEASE_NUMBER* is 9.x. This list displays the names and release numbers of connectors whose installation files you copy into the default connector installation in Step 1.

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 **Exchange** *RELEASE_NUMBER* where *RELEASE_NUMBER* is 9.x.
5. Click **Load**.
 6. 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 are 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.
7. If all three tasks of the connector installation process are successful, then a message indicating successful installation is displayed. In addition, a list of the 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 [Section 2.3.1.2, "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

Record the name of the IT resource displayed on this page. The procedure to configure the IT resource is described later in this guide.

- c. Configuring the scheduled tasks

Record the names of the scheduled tasks displayed on this page. The procedure to configure these scheduled tasks is described later in this guide.

When you run the Connector Installer, it copies the connector files and external code files to destination directories on the Oracle Identity Manager host computer. These files are listed in [Table 2-1](#).

2.2.1.1.1 Copying the ldapbp.jar File

The ldapbp.jar file is used by the connector to enable LDAP-based search of user records on the target system. During the installation of the Microsoft Active Directory User Management connector, this file is copied to the following directory:

Note: In an Oracle Identity Manager cluster, copy this JAR file into the ThirdParty directory on each node of the cluster.

- For Oracle Identity Manager release 9.1.0.x:
OIM_HOME/xellerate/ThirdParty
- For Oracle Identity Manager release 11.1.x:
OIM_HOME/server/ThirdParty

See the "Running the Connector Installer" section of *Oracle Identity Manager Connector Guide for Microsoft Active Directory User Management* for details.

2.2.1.1.2 Installing the Connector in an Oracle Identity Manager Cluster

While installing the connector in an Oracle Identity Manager cluster, you must copy all the JAR files and the contents of the resources directory into their destination directories on each node of the cluster. See [Section 2.1.1.1, "Files and Directories On the Connector Installation Media"](#) for information about the files that you must copy and their destination locations on the Oracle Identity Manager host computer.

2.2.1.2 Creating the IT Resource

The IT resource for the target system contains connection information about the target system. Oracle Identity Manager uses this information for reconciliation and provisioning.

For reconciliation and provisioning in Microsoft Exchange 2000 and Microsoft Exchange 2003, Oracle Identity Manager uses the Microsoft Active Directory IT resource. See *Oracle Identity Manager Connector Guide for Microsoft Active Directory User Management* for instructions to create Microsoft Active Directory IT resources.

For reconciliation in Microsoft Exchange 2007, Oracle Identity Manager uses the Microsoft Active Directory IT resource. For provisioning in Microsoft Exchange 2007, Oracle Identity Manager uses the Microsoft Active Directory IT resource and Microsoft Exchange Server IT resource values.

To create the Microsoft Exchange Server IT resource:

1. Log in to the Administrative and User Console.
2. If you are using Oracle Identity Manager release 9.1.0.x, expand **Resource Management**, and then click **Create IT Resource**.
3. If you are using Oracle Identity Manager release 11.1.1, then:
 - On the Welcome to Oracle Identity Manager Self Service page, click **Advanced** in the upper-right corner.
 - On the Welcome to Oracle Identity Manager Advanced Administration page, in the Configuration region, click **Create IT Resource**.
4. If you are using Oracle Identity Manager release 11.1.2, then:
 - Log in to Oracle Identity System Administration.
 - In the left pane, under Configuration, click **IT Resource**.
5. On the Step 1: Provide IT Resource Information section, perform the following steps:
 - **IT Resource Name:** Enter Exchange Server IT Resource.

- **IT Resource Type:** Select **Exchange Server** from the IT Resource Type list.
- **Remote Manager:** At this point, do not enter a value in this field.

Note: After you install a Remote Manager for the target system, specify the name of the IT resource for the Remote Manager as the value of the Remote Manager parameter. See [Section 2.2.2.1, "Installing the Remote Manager"](#) for information about whether or not you need to install a Remote Manager.

6. Click **Continue**. [Figure 2–1](#) shows IT resource values added in the Create IT Resource page.

Figure 2–1 Step 1: Provide IT Resource Information

7. On the Step 2: Specify IT Resource Parameter Values section, specify values for the parameters of the IT resource and click **Continue**. [Figure 2–2](#) shows IT resource parameter values added in the Create IT Resource page.

Figure 2–2 Step 2: Specify IT Resource Parameter Values

Parameter	Value
Delete Remote Script Location	D:\RemoteManager\xlrem
Remote Script Location	D:\RemoteManager\xlrem
Report Log Location	\xlremote\Scripts\log1.log

[Table 2–2](#) describes the parameters for this IT resource.

Table 2–2 Parameters of the IT Resource

Parameter	Description
Remote Script Location	<p>If you are using Microsoft Exchange 2007 as the target system, then enter the full path of the CreateMailboxExchange2007.vbs script placed in the remote system.</p> <p>If you are using Microsoft Exchange 2010 as the target system, then enter the full path of the CreateMailboxExchange2010.vbs script placed in the remote system.</p> <p>This remote system is the system where the target system has been installed. The Remote Manager uses VBS script to create mailboxes on the target system.</p> <p>Note: This parameter is case-sensitive. Therefore, you must enter the correct case (uppercase and lowercase) of the path to the directory where the script is copied.</p> <p>Sample value: <i>RM_HOME/RemoteScripts/CreateMailboxExchange2007.vbs</i></p>
Report Log Location	<p>Enter the full path of the directory including the name of the log file where you want the log file to be generated. The log file stores the outcome of each run of the CreateMailboxExchange2007.vbs, CreateMailboxExchange2010.vbs, DeleteMailboxExchange2007.vbs, or DeleteMailboxExchange2010.vbs scripts.</p> <p>You must create the directory if it does not already exist.</p> <p>Note: This parameter is case-sensitive. Therefore, you must enter the correct case (uppercase and lowercase) of the path to the directory where the log files are to be generated.</p> <p>Sample value: <i>RM_HOME/Log/Report.log</i></p> <p>Report.log is the name of the log file generated. You can change this file name.</p>
Delete Remote Script Location	<p>If you are using Microsoft Exchange 2007 as the target system, then enter the full path of the DeleteMailboxExchange2007.vbs script placed in the remote system.</p> <p>If you are using Microsoft Exchange 2010 as the target system, then enter the full path of the DeleteMailboxExchange2010.vbs script placed in the remote system.</p> <p>This remote system is the system where the target system has been installed. The Remote Manager uses VBS script to delete mailboxes on the target system.</p> <p>Note: This parameter is case-sensitive. Therefore, you must enter the correct case (uppercase and lowercase) of the path to the directory where the script is copied.</p> <p>Sample value: <i>RM_HOME/RemoteScripts/DeleteMailboxExchange2007.vbs</i></p>

8. The Step 3: Set Access Permission to IT Resource page is displayed. On this page, the SYSTEM ADMINISTRATORS group is displayed by default in the list of groups that have Read, Write, and Delete permissions on the IT resource that you are creating.

Note: This step is optional.

If you want to assign groups to the IT resource and set access permissions for the groups, then:

a. Click **Assign Group**.

b. For the groups that you want to assign to the IT resource, select **Assign** and the access permissions that you want to set. For example, if you want to assign the ALL USERS group and set the Read and Write permissions to this group, then you must select the respective check boxes in the row, as well as the Assign check box, for this group.

c. Click **Assign**.

9. On the Step 3: Set Access Permission to IT Resource page, if you want to modify the access permissions of groups assigned to the IT resource, then:

Note:

- This step is optional.
 - You cannot modify the access permissions of the `SYSTEM ADMINISTRATORS` group. You can modify the access permissions of only other groups that you assign to the IT resource.
-
-

a. Click Update Permissions.

b. Depending on whether you want to set or remove specific access permissions for groups displayed on this page, select or deselect the corresponding check boxes.

c. Click Update.

10. On the Step 3: Set Access Permission to IT Resource page, if you want to unassign a group from the IT resource, then:

Note:

- This step is optional.
 - You cannot unassign the `SYSTEM ADMINISTRATORS` group. You can unassign only other groups that you assign to the IT resource.
-
-

a. Select the Unassign check box for the group that you want to unassign.

b. Click Unassign.

11. Click Continue.

12. On the Step 4: Verify IT Resource Details page, review the information that you provided on the first, second, and third pages. If you want to make changes in the data entered on any page, click **Back** to revisit the page and then make the required changes.

13. To proceed with the creation of the IT resource, click **Continue**. Figure 2–3 shows the IT resource details that you created in the Create IT Resource page.

Figure 2–3 Step 4: Verify IT Resource Details

Step 4: Verify IT Resource Details

Review and then submit the information that you have provided. If required, use the Back button to revisit and modify information provided on this previous page.

IT Resource Name IT Resource Type	ExchangeIT Exchange Server
Parameters	Value
Delete Remote Script Location	C:\RemoteScripts\DeleteCreateMailbox\Exchange2007.vbs
Remote Script Location	C:\RemoteScripts\CreateMailbox\Exchange2007.vbs
Report Log Location	C:\Logs\Report.log

Administrative Group	Read Access	Write Access	Delete Access
SYSTEM ADMINISTRATORS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Before advancing to the next step, perform any manual steps required to connect to this IT resource. Otherwise, the target connectivity test may fail.

Cancel Back Continue >>

14. The Step 5: IT Resource Connection Result page displays the results of a connectivity test that is run using the IT resource information. If the test is successful, then click **Create**. If the test fails, then you can perform one of the following steps:
- Click **Back** to revisit the previous pages and then make corrections in the IT resource creation information.
 - Click **Cancel** to stop the procedure, and then begin from the first step onward.
 - Proceed with the creation process by clicking **Continue**. You can fix the problem later, and then rerun the connectivity test by using the Diagnostic Dashboard. [Figure 2–4](#) shows the IT resource connection result in the Create IT Resource page.

Figure 2–4 Step 5: IT Resource Connection Result Page

15. The Step 6: IT Resource Created page displays the details of the IT resource that you created. Click **Finish**. [Figure 2–5](#) shows the IT resource created in the Create IT Resource page.

Figure 2–5 IT Resource Created Page of Oracle Identity Manager

Parameter	Value
Delete Remote Script Location	C:\RemoteScripts\DeleteCreateMailboxExchange2007.xls
Remote Script Location	C:\RemoteScripts\CreateMailboxExchange2007.xls
Report Log Location	C:\Logs\Report.log

Administrative Group	Read Access	Write Access	Delete Access
SYSTEM ADMINISTRATORS	✓	✓	✓

2.2.2 Installation on the Target System

This section discusses the following topics:

- [Section 2.2.2.1, "Installing the Remote Manager"](#)
- [Section 2.2.2.2, "Enabling Client-Side Authentication for the Remote Manager"](#)

Note: The procedure to configure the Remote Manager is described in [Section 2.3.3, "Configuring the Remote Manager"](#).

2.2.2.1 Installing the Remote Manager

The Remote Manager enables mailbox provisioning operations on Microsoft Exchange 2007.

Note: The Remote Manager can be installed on any domain member on which Microsoft Exchange Management Tools is installed.

You must install the Remote Manager for Microsoft Exchange 2007 if you have not installed the Remote Manager for Microsoft Active Directory. See *Oracle Identity Manager Connector Guide for Microsoft Active Directory User Management* for information about this Remote Manager.

A single Remote Manager can be used with multiple Microsoft Exchange installations (on multiple host computers) that are configured for a single Microsoft Active Directory installation. The Remote Manager can be installed on any Microsoft Exchange host on which Exchange Management tools are installed.

Note:

- See the "Deploying the Connector" chapter of *Oracle Identity Manager Connector Guide for Microsoft Active Directory User Management* for information about installing and configuring the Remote Manager for Microsoft Active Directory.
 - In this guide, the directory in which you install the Remote Manager is referred to as *RM_HOME*.
-

Prerequisites

The following are the prerequisites for installing the Remote Manager:

- For Oracle Identity Manager release 9.1.0.x
If Microsoft Exchange 2007 is running on 64-bit Microsoft Windows Server, then you must install the 64-bit version of JDK 1.5 or later before you install the Remote Manager.
- For Oracle Identity Manager release 11.1.x
If Microsoft Exchange 2007 is running on 64-bit Microsoft Windows Server, then before you install the Remote Manager, you must install Oracle WebLogic Application Server on the Remote Manager host computer. While installing the application server, do not select the JDK bundled with the application server. Instead, select an installed instance of a 64-bit version of JDK.

Note: During the mailbox provisioning operations on Microsoft Exchange 2007 and Microsoft Exchange 2010, the Remote Manager may throw the following types of errors:

Get-ItemProperty: Cannot find path

To prevent such errors, you must ensure that the Remote Manager uses an installed instance of a 64-bit version of JDK.

To deploy the Remote Manager:

1. The Remote Manager installation files are shipped along with the Oracle Identity Manager installation files. You can install the Remote Manager on any computer that is a part of the domain.

If you are using Oracle Identity Manager release 11.1.x, then see the *Oracle Fusion Middleware System Administrator's Guide for Oracle Identity Manager* guide for instructions of installing the Remote Manager.

If you are using Oracle Identity Manager release 9.1.0.x, then depending on the application server that you use, perform the procedure to install the Remote Manager by following the instructions given in one of the following guides:

- *Oracle Identity Manager Installation and Configuration Guide for Oracle WebLogic Server*
 - *Oracle Identity Manager Installation and Configuration Guide for IBM WebSphere Application Server*
 - *Oracle Identity Manager Installation and Configuration Guide for JBoss Application Server*
 - *Oracle Identity Manager Installation and Configuration Guide for Oracle Application Server*
2. If you are using Oracle Identity Manager release 9.1.0.x, then copy the following JAR files into the `RM_HOME\xlremote\JavaTasks` directory:
 - `OIM_HOME/xellerate/lib/xlVO.jar`
 - `OIM_HOME/xellerate/lib/xlScheduler.jar`
 - `OIM_HOME/xellerate/lib/xlAPI.jar`
 - `OIM_HOME/xellerate/JavaTasks/xliActiveDirectory.jar`
 - `OIM_HOME/xellerate/ScheduleTask/xliADRecon.jar`
 - `OIM_HOME/xellerate/JavaTasks/xliExchange.jar`
 - `OIM_HOME/xellerate/ScheduleTask/xliExchangeRecon.jar`
 3. If you are using Oracle Identity Manager release 11.1.x, then copy the following JAR files into the `RM_HOME\xlremote\JavaTasks` directory:
 - `OIM_HOME/server/lib/xlVO.jar`
 - `OIM_HOME/server/lib/xlScheduler.jar`
 - `OIM_HOME/server/lib/xlAPI.jar`
 - `OIM_HOME/server/lib/xlUtils.jar`
 - `OIM_HOME/server/lib/xlRemoteManager.jar`
 - `INSTALL_MEDIA/lib/xliActiveDirectory.jar`

Note: In this guide, the connector installation media is referred to as `INSTALL_MEDIA`.

- `INSTALL_MEDIA/lib/xliADRecon.jar`
 - `INSTALL_MEDIA/lib/xliExchange.jar`
 - `INSTALL_MEDIA/lib/xliExchangeRecon.jar`
4. Do one of the following based on the Microsoft Exchange version:

- Copy the CreateMailboxExchange2007.vbs file from the *INSTALL_MEDIA/scripts* directory to the *RM_HOME/scripts* directory:
- Copy the CreateExchangeMailbox2010.vbs file from the *INSTALL_MEDIA/scripts* directory to the *RM_HOME/scripts* directory:

Note: Ensure that the *RM_HOME* directory is secured using Microsoft Windows best practices. Only the target system user account for Oracle Identity Manager must have permissions to access the *RM_HOME* directory.

5. To enable logging in the Remote Manager, create a log directory and file inside the *RM_HOME* directory. For example:

RM_HOME/Log/Report.log

6. Specify the name of the Remote Manager as the value of the Remote Manager IT resource parameter. This parameter is described in [Section 2.2.1.2, "Creating the IT Resource"](#).

See one of the following guides for information about modifying the value of an IT resource parameter:

- For Oracle Identity Manager release 9.1.0.x:
Oracle Identity Manager Administrative and User Console Guide
- For Oracle Identity Manager release 11.1.x:
Oracle Fusion Middleware System Administrator's Guide for Oracle Identity Manager

2.2.2.2 Enabling Client-Side Authentication for the Remote Manager

To enable client-side authentication for the Remote Manager:

Note: If you have already enabled client-side authentication for the Remote Manager in Microsoft Active Directory, then you need not perform the procedure described in this section.

1. Open one of the following files in a text editor:
 - For Oracle Identity Manager release 9.1.0.x:
RM_HOME/xlremote/config/xlconfig.xml
 - For Oracle Identity Manager release 11.1.x:
OIM_HOME/remote_manager/config/xlconfig.xml
2. Set the ClientAuth property to `true` as follows:

```
<ClientAuth>true</ClientAuth>
```
3. If you are using Oracle Identity Manager release 9.1.0.x, then ensure that the RMIOverSSL property is set to `true` as follows:

```
<RMIOverSSL>true</RMIOverSSL>
```
4. Save and close the file.

5. If you are using Oracle Identity Manager release 9.1.0.x, then perform Steps 2 through 4 in the *OIM_HOME/config/xlconfig.xml* file.

2.3 Postinstallation

Postinstallation information is divided across the following sections:

- [Section 2.3.1, "Postinstallation on Oracle Identity Manager"](#)
- [Section 2.3.2, "Postinstallation on the Target System"](#)
- [Section 2.3.3, "Configuring the Remote Manager"](#)
- [Section 2.3.4, "Localizing Field Labels in UI Forms"](#)

2.3.1 Postinstallation on Oracle Identity Manager

Postinstallation on Oracle Identity Manager consists of the following procedures:

Note: In an Oracle Identity Manager cluster, you must perform these procedures on each node of the cluster.

- [Section 2.3.1.1, "Configuring Oracle Identity Manager 11.1.2 or Later"](#)
- [Section 2.3.1.2, "Clearing Content Related to Connector Resource Bundles from the Server Cache"](#)
- [Section 2.3.1.3, "Enabling Logging"](#)
- [Section 2.3.1.4, "Linking the Exchange Resource Object with the AD User Resource Object"](#)
- [Section 2.3.1.5, "Modifying Dependent Lookup Query Properties for Lookup Fields on Microsoft SQL Server"](#)
- [Section 2.3.1.6, "Configuring Oracle Identity Manager for Request-Based Provisioning"](#)

2.3.1.1 Configuring Oracle Identity Manager 11.1.2 or Later

If you are using Oracle Identity Manager release 11.1.2 or later, you must create additional metadata such as a UI form and an application instance. In addition, you must run entitlement and catalog synchronization jobs. These procedures are described in the following sections:

- [Section 2.3.1.1.1, "Tagging Form Fields"](#)
- [Section 2.3.1.1.2, "Creating and Activating a Sandbox"](#)
- [Section 2.3.1.1.3, "Creating a New UI Form"](#)
- [Section 2.3.1.1.4, "Creating an Application Instance"](#)
- [Section 2.3.1.1.5, "Publishing a Sandbox"](#)
- [Section 2.3.1.1.6, "Syncing Catalog"](#)
- [Section 2.3.1.1.7, "Updating an Existing Application Instance with a New Form"](#)

2.3.1.1.1 Tagging Form Fields

You must add properties to certain form fields. To do so:

1. Log in to Oracle Identity Manager Design Console.
2. Open Exchange parent form (UD_MSEXCHG).
3. Create a new form version.
4. In the **Properties** tab, add the following properties:
 For the **Exchange IT Resource** field, add `ITResource = true` property.
 For the **Log On Name** field, add `AccountName = true` property.
 For the **Object GUID** field, add `AccountId = true` property.
5. Click **Make Version Active**.

2.3.1.1.2 Creating and Activating a Sandbox

Create and activate a sandbox as follows. For detailed instructions, see the "Managing Sandboxes" section in the *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Manager*.

1. On the upper navigation bar, click **Sandboxes**. The Manage Sandboxes page is displayed.
2. On the toolbar, click **Create Sandbox**. The Create Sandbox dialog box is displayed.
3. In the Sandbox Name field, enter a name for the sandbox. This is a mandatory field.
4. In the Sandbox Description field, enter a description of the sandbox. This is an optional field.
5. Click **Save and Close**. A message is displayed with the sandbox name and creation label.
6. Click **OK**. The sandbox is displayed in the Available Sandboxes section of the Manage Sandboxes page.
7. Select the sandbox that you created.
8. From the table showing the available sandboxes in the Manage Sandboxes page, select the newly created sandbox that you want to activate.
9. On the toolbar, click **Activate Sandbox**.
 The sandbox is activated.

2.3.1.1.3 Creating a New UI Form

Create a new UI form as follows. For detailed instructions, see the "Managing Forms" chapter in the *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Manager*.

1. In the left pane, under Configuration, click **Form Designer**.
2. Under Search Results, click **Create**.
3. Select the resource type for which you want to create the form, for example, `Exchange IT resource`.
4. Enter a form name and click **Create**.

2.3.1.1.4 Creating an Application Instance

Create an application instance as follows. For detailed instructions, see the "Managing Application Instances" chapter in the *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Manager*.

1. In the System Administration page, under Configuration in the left pane, click **Application Instances**.
2. Under Search Results, click **Create**.
3. Enter appropriate values for the fields displayed on the Attributes form and click **Save**.
4. In the Form drop-down list, select the newly created form and click **Apply**.
5. Publish the application instance for a particular organization.

2.3.1.1.5 Publishing a Sandbox

To publish the sandbox that you created in [Section 2.3.1.1.2, "Creating and Activating a Sandbox"](#):

1. Close all the open tabs and pages.
2. From the table showing the available sandboxes in the Manage Sandboxes page, select the sandbox that you created in [Section 2.3.1.1.2, "Creating and Activating a Sandbox."](#)
3. On the toolbar, click **Publish Sandbox**. A message is displayed asking for confirmation.
4. Click **Yes** to confirm. The sandbox is published and the customizations it contained are merged with the main line.

2.3.1.1.6 Syncing Catalog

To sync catalog:

1. Run the scheduled jobs for lookup field synchronization listed in [Section 3.3, "Scheduled Task for Lookup Field Synchronization."](#)
2. Run the Catalog Synchronization Job scheduled job. See the "Predefined Scheduled Tasks" section in the *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Manager* for more information about this scheduled job.

2.3.1.1.7 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 [Section 2.3.1.1.2, "Creating and Activating a Sandbox."](#)
2. Create a new UI form for the resource as described in [Section 2.3.1.1.3, "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 [Section 2.3.1.1.5, "Publishing a Sandbox."](#)

Note: If you are using Oracle Identity Manager 11g Release 2 (11.1.2.0.4) or later, then you must perform the steps mentioned in MetaLink note 1535369.1 to ensure provisioning operations work as expected.

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

Note: In an Oracle Identity Manager cluster, you must perform this step on each node of the cluster. Then, restart each node.

When you deploy the connector, the resource bundles are copied from the resources directory on the installation media into the `OIM_HOME/xellerate/connectorResources` directory for Oracle Identity Manager release 9.1.0.x and Oracle Identity Manager database for Oracle Identity Manager release 11.1.x. 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, perform one of the following steps:
 - If you are using Oracle Identity Manager release 9.1.0.x, then switch to the `OIM_HOME/xellerate/bin` directory.
 - If you are using Oracle Identity Manager release 11.1.x, then switch to the `OIM_HOME/server/bin` directory.

Note: You must perform Step 1 before you perform Step 2. An exception is thrown if you run the command described in Step 2 as follows:

For Oracle Identity Manager release 9.1.0.x:

`OIM_HOME/xellerate/bin/SCRIPT_FILE_NAME`

For Oracle Identity Manager release 11.1.x:

`OIM_HOME/server/bin/SCRIPT_FILE_NAME`

2. Enter one of the following commands:

Note: You can use the PurgeCache utility to purge the cache for any content category. Run `PurgeCache.bat CATEGORY_NAME` on Microsoft Windows or `PurgeCache.sh CATEGORY_NAME` on UNIX. The `CATEGORY_NAME` argument represents the name of the content category that must be purged.

For example, the following commands purge Metadata entries from the server cache:

```
PurgeCache.bat MetaData
PurgeCache.sh MetaData
```

- For Oracle Identity Manager release 9.1.0.x:
On Microsoft Windows: `PurgeCache.bat ConnectorResourceBundle`
On UNIX: `PurgeCache.sh ConnectorResourceBundle`

Note: You can ignore the exception that is thrown when you perform Step 2. This exception is different from the one mentioned in Step 1.

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

`OIM_HOME/xellerate/config/xlconfig.xml`

- For Oracle Identity Manager release 11.1.x:
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.

See *Oracle Fusion Middleware System Administrator's Guide for Oracle Identity Manager* for more information about the PurgeCache utility.

2.3.1.3 Enabling Logging

Depending on the Oracle Identity Manager release you are using, perform instructions in one of the following sections:

- [Section 2.3.1.3.1, "Enabling Logging on Oracle Identity Manager Release 9.1.0.x"](#)
- [Section 2.3.1.3.2, "Enabling Logging on Oracle Identity Manager Release 11.1.x"](#)

2.3.1.3.1 Enabling Logging on Oracle Identity Manager Release 9.1.0.x

Note: In an Oracle Identity Manager cluster, perform this procedure on each node of the cluster. Then, restart each node.

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

- **ALL**
This level enables logging for all events.
- **DEBUG**
This level enables logging of information about fine-grained events that are useful for debugging.
- **INFO**
This level enables logging of messages that highlight the progress of the application at a coarse-grained level.
- **WARN**
This level enables logging of information about potentially harmful situations.
- **ERROR**
This level enables logging of information about error events that might allow the application to continue running.
- **FATAL**
This level enables logging of information about very severe error events that could cause the application to stop functioning.
- **OFF**
This level disables logging for all events.

The file in which you set the log level and the log file path depend on the application server that you use:

- **IBM WebSphere Application Server**

To enable logging:

1. Add the following lines in the *OIM_HOME/xellerate/config/log.properties* file:

```
log4j.logger.XELLERATE=LOG_LEVEL
log4j.logger.OIMCP.MEXC=LOG_LEVEL
```

2. In these lines, replace *LOG_LEVEL* with the log level that you want to set.

For example:

```
log4j.logger.XELLERATE=INFO
log4j.logger.OIMCP.MEXC=INFO
```

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

WEBSHERE_HOME/AppServer/logs/SERVER_NAME/SystemOut.log

- **JBoss Application Server**

To enable logging:

1. In the `JBOSS_HOME/server/default/conf/log4j.xml` file, locate or add the following lines:

```
<category name="XELLERATE">
  <priority value="LOG_LEVEL" />
</category>

<category name="OIMCP.MEXC">
  <priority value="LOG_LEVEL" />
</category>
```

2. In the second XML code line of each set, replace `LOG_LEVEL` with the log level that you want to set. For example:

```
<category name="XELLERATE">
  <priority value="INFO" />
</category>

<category name="OIMCP.MEXC">
  <priority value="INFO" />
</category>
```

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

`JBOSS_HOME/server/default/log/server.log`

■ Oracle Application Server

To enable logging:

1. Add the following lines in the `OIM_HOME/xellerate/config/log.properties` file:

```
log4j.logger.XELLERATE=LOG_LEVEL
log4j.logger.OIMCP.MEXC=LOG_LEVEL
```

2. In these lines, replace `LOG_LEVEL` with the log level that you want to set.

For example:

```
log4j.logger.XELLERATE=INFO
log4j.logger.OIMCP.MEXC=INFO
```

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

`ORACLE_HOME/opmn/logs/default_group~home~default_group~1.log`

■ Oracle WebLogic Server

To enable logging:

1. Add the following lines in the `OIM_HOME/xellerate/config/log.properties` file:

```
log4j.logger.XELLERATE=LOG_LEVEL
log4j.logger.OIMCP.MEXC=LOG_LEVEL
```

2. In these lines, replace `LOG_LEVEL` with the log level that you want to set.

For example:

```
log4j.logger.XELLERATE=INFO
log4j.logger.OIMCP.MEXC=INFO
```

After you enable logging, log information is displayed on the server console.

2.3.1.3.2 Enabling Logging on Oracle Identity Manager Release 11.1.x

Note: In an Oracle Identity Manager cluster, perform this procedure on each node of the cluster. Then, restart each node.

Oracle Identity Manager release 11.1.1 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 2–3](#).

Table 2–3 Log Levels and ODL Message Type:Level Combinations

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

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.

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='ad-exc-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>

<logger name="OIMCP.MEXC" level="[LOG_LEVEL]" useParentHandlers="false">
  <handler name="ad-exc-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 2-3](#) 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='ad-exc-handler' level='NOTIFICATION:1'
class='oracle.core.ojdl.logging.ODLHandlerFactory'>
<property name='logreader:' value='off' />
  <property name='path'
value='F:\MyMachine\middleware\user_projects\domains\base_domain1\servers\o
im_server1\logs\oim_server1-diagnostic-1.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>

<logger name="OIMCP.MEXC" level="NOTIFICATION:1" useParentHandlers="false">
  <handler name="ad-exc-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 NOTIFICATION:1 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.

2.3.1.4 Linking the Exchange Resource Object with the AD User Resource Object

To link the Exchange resource object with the AD User resource object:

1. On the Design Console, expand **Resource Management** and then double-click **Resource Objects**.
2. Search for and open the **AD User** resource object.
3. On the Status Definition sub tab of the Resource Object tab, ensure that the **Disabled** and **Revoked** check boxes are selected.
4. To save the changes to the AD User resource object, click the Save icon.
5. Search for and open the **Exchange** resource object.
6. On the Depends On sub tab of the Resource Object tab, click **Assign**.
7. In the Assigned Objects Dialog box, move the **AD User** resource object from Unassigned Objects to Assigned Objects.
8. Click **OK**.
9. To save the changes to the Exchange resource object, click the Save icon.

2.3.1.5 Modifying Dependent Lookup Query Properties for Lookup Fields on Microsoft SQL Server

Note:

Perform the procedure described in this section only if your Oracle Identity Manager installation is running on Microsoft SQL Server.

In an Oracle Identity Manager cluster, perform this procedure on each node of the cluster. Then, restart each node.

In this connector, the child forms of a resource implement the dependent lookup feature of Oracle Identity Manager. By default, the queries for synchronization of lookup field values from the target system are based on Oracle Database SQL. If your Oracle Identity Manager installation is running on Microsoft SQL Server, then you must modify the lookup queries for synchronization of lookup definitions as follows:

1. On the Design Console, expand **Development Tools** and double-click **Form Designer**.
2. Perform the following procedure for the UD_MSEXCHG form:
 - a. Search for and open the form.
 - b. Click **Create New Version**.
 - c. Enter a version for the form, click the Save icon, and then close the dialog box.

- d. On the Additional Columns subtab of the Properties tab, search for the row containing the **ITResourceLookupField** field type. The following screenshot shows the row that holds information about the process form field for the IT resource lookup definition:

Oracle Identity Manager Design Console : connected to jdbc:oracle:thin:@localhost:1521:oiim91

Form Designer

Table Information

Table Name: UD_MSEXCHG

Description: Exchange Form

Form Type: ☒ Process ☐ Object

Version Information

Latest Version: v2

Active Version: v2

Operations

Current Version: v1

Create New Version

Make Version Active

Additional Columns

Add	Delete	Name	Variant Type	Length	Field Label	Field Type	Default Value	Order	Application Profile	Encrypted
		UD_MSEXCHG_ADSEVER	long		AD Server	ITResourceLookupField		1		
		UD_MSEXCHG_ALIAS	String	50	Email Alias	TextField		6	<input checked="" type="checkbox"/>	
		UD_MSEXCHG_BUSINESS	String	20	Major Business Number	TextField		26		
		UD_MSEXCHG_DELITEMFLAG	String	2	Deleted Item Manager	LookupField		30		
		UD_MSEXCHG_DISPLAYNAME	String	100	Display Name	TextField		7	<input checked="" type="checkbox"/>	
		UD_MSEXCHG_EXCHANGEITRESOURCE	long		Exchange IT Resource	ITResourceLookupField		3		
		UD_MSEXCHG_EXCHREMOTEMANAGER	long		Exchange Remote Manager IT	ITResourceLookupField		5		
		UD_MSEXCHG_GARBAGECOLL	String	10	Garbage Collection Period(Days)	TextField		8		
		UD_MSEXCHG_HIDEFROMADDRLISTS	String	5	Hide From Address Lists	LookupField	FALSE	17		
		UD_MSEXCHG_INMSGSIZE	String	10	Max Incoming Message Size(KE)	TextField		10	<input checked="" type="checkbox"/>	
		UD_MSEXCHG_LOGONNAME	String	150	Log On Name	TextField		4		
		UD_MSEXCHG_MAILSTORENAME	String	300	Mail Store Name	LookupField		5		
		UD_MSEXCHG_MOBILE	String	20	Mobile Number	TextField		24		
		UD_MSEXCHG_OBJECTGUID	String	32	Object GUID	DOField		2		
		UD_MSEXCHG_OTHERNUMBER	String	20	Other Business Number	TextField		27		
		UD_MSEXCHG_OUTMSGSIZE	String	10	Max Outgoing Message Size(KE)	TextField		11	<input checked="" type="checkbox"/>	
		UD_MSEXCHG_PAGER	String	32	Pager Number	TextField		25		
		UD_MSEXCHG_PRIMARYEMAIL	String	80	Primary Email	TextField		29		
		UD_MSEXCHG_RECEIPTQUOTA	String	10	Mailbox Size Receipt Quota(KB)	TextField	0	12		
		UD_MSEXCHG_RECIPLIMIT	String	10	Max Recipients Per Message	TextField		15		
		UD_MSEXCHG_TRANSMITQUOTA	String	10	Mailbox Size Transmit Quota(KE)	TextField	0	13		
		UD_MSEXCHG_USEDFAULTS	String	5	Use Storage Defaults	LookupField	TRUE	16		
		UD_MSEXCHG_WARNSIZE	String	10	Mailbox Warning Size(KB)	TextField	0	14	<input checked="" type="checkbox"/>	

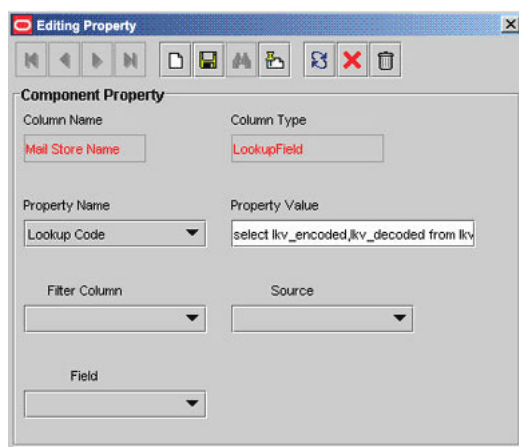
Form Designer Form Designer Table

- e. Note down the value in the Name column for the row containing the **ITResourceLookupField** field type.
- f. On the Child Tables subtab of the Properties tab, double-click **Lookup Query** in the list of components.
- g. From the Edit Property dialog box, copy the contents of the **Property Value** field for the Lookup Query property name into a text file. The contents of the Property Value field are the SQL query for Oracle Database.

The following is a sample Oracle Database query for parent forms:

```
select lkv_encoded, lkv_decoded from lkv lkv, lku lku where
lkv.lku_key=lku.lku_key and
lku_type_string_key='Lookup.ExchangeReconciliation.MailStore' and
substr(lkv_encoded,1,length(concat((select svr_key from svr where
svr_name='$Form data.UD_MSEXCHG_ADSEVER$'),'~')))=concat((select svr_key
from svr where svr_name='$Form data.UD_SAP_ITRESOURCE$'),'~')
```

The following screenshot shows the Edit Property dialog box:



- h. Note down the value of the lku_type_string_key column from the Oracle Database query. In the sample Oracle Database query, the value of the lku_type_string_key column is **Lookup.ExchangeReconciliation.MailStore**.
- i. Delete the contents of the Property Value field.
- j. Copy the following query into the Property Value field:

```
select lkv_encoded,lkv_decoded from lkv lkv,lku lku where
lkv.lku_key=lku.lku_key and lku_type_string_key='LOOKUP_DEFINITION_NAME'
and CHARINDEX( (select CONVERT(varchar,svr_key) from svr where
svr_name='$Form data.IT_RESOURCE_COLUMN_NAME$') + '~' ,lkv_encoded)>0
```

In this query:

Replace *LOOKUP_DEFINITION_NAME* with the lookup definition name that you copy in Step h.

Replace *IT_RESOURCE_COLUMN_NAME* with the name of the value that you note down in Step e.

- k. In the Edit Property dialog box, click the Save icon and then close the dialog box.
- l. Click the Save icon to save changes to the process form.
- m. From the **Current Version** list, select the version that you modified.
- n. Click **Make Version Active**.
- o. Click the Save icon.

2.3.1.6 Configuring Oracle Identity Manager for Request-Based Provisioning

Note: Perform the procedure described in this section only if both the conditions are true:

- You are using Oracle Identity Manager release 11.1.1.

The procedure is not applicable to Oracle Identity Manager release 11.1.2.

- You want to perform request-based provisioning operations.
-

In request-based provisioning, an end user creates a request for a resource by using the Administrative and User Console. Administrators or other users can also create requests for a particular user. Requests for a particular resource on the resource can be viewed and approved by approvers designated in Oracle Identity Manager.

The following are features of request-based provisioning:

- A user can be provisioned only one resource (account) on the target system.

Note: Direct provisioning allows the provisioning of multiple Microsoft Exchange accounts on the target system.

- Direct provisioning cannot be used if you enable request-based provisioning.

To configure request-based provisioning, perform the following procedures:

- [Copying Predefined Request Datasets](#)
- [Importing Request Datasets into MDS](#)
- [Enabling the Auto Save Form Feature](#)
- [Running the PurgeCache Utility](#)

2.3.1.6.1 Copying Predefined Request Datasets

A request dataset is an XML file that specifies the information to be submitted by the requester during a provisioning operation. Predefined request datasets are shipped with this connector. These request datasets specify information about the default set of attributes for which the requester must submit information during a request-based provisioning operation. The following is the list of predefined request datasets available in the DataSets directory on the installation media:

ProvisionResourceExchange.xml

Copy this file from the installation media to any directory on the Oracle Identity Manager host computer. It is recommended that you create a directory structure as follows:

/custom/connector/RESOURCE_NAME

For example:

E:\MyDatasets\custom\connector\Exchng

Note: Until you complete the procedure to configure request-based provisioning, ensure that there are no other files or directories inside the parent directory in which you create the directory structure. In the preceding example, ensure that there are no other files or directories inside the E:\MyDatasets directory.

The directory structure to which you copy the dataset files is the MDS location into which these files are imported after you run the Oracle Identity Manager MDS Import utility. The procedure to import dataset files is described in the next section.

Depending on your requirement, you can modify the file names of the request datasets. In addition, you can modify the information in the request datasets. See *Oracle Fusion Middleware Developer's Guide for Oracle Identity Manager* for information on modifying request datasets.

2.3.1.6.2 Importing Request Datasets into MDS

All request datasets must be imported into the metadata store (MDS), which can be done by using the Oracle Identity Manager MDS Import utility.

To import a request dataset definition into MDS:

1. Ensure that you have set the environment for running the MDS Import utility. See *Oracle Fusion Middleware Developer's Guide for Oracle Identity Manager* for detailed information about setting up the environment for MDS utilities.

Note: While setting up the properties in the `weblogic.properties` file, ensure that the value of the `metadata_from_loc` property is the parent directory of the `/custom/connector/RESOURCE_NAME` directory. For example, while performing the procedure in [Section 2.3.1.6.1, "Copying Predefined Request Datasets,"](#) if you copy the files to the `E:\MyDatasets\custom\connector\Exchng` directory, then set the value of the `metada_from_loc` property to `E:\MyDatasets`.

2. In a command window, change to the `OIM_HOME\server\bin` directory.

3. Run one of the following commands:

- On Microsoft Windows

```
weblogicImportMetadata.bat
```

- On UNIX

```
weblogicImportMetadata.sh
```

4. When prompted, enter the following values:

- Please enter your username [weblogic]

Enter the username used to log in to WebLogic server

Sample value: `WL_User`

- Please enter your password [weblogic]

Enter the password used to log in to WebLogic server

- Please enter your server URL [t3://localhost:7001]

Enter the URL of the application server in the following format:

```
t3://HOST_NAME_IP_ADDRESS:PORT
```

In this format, replace:

- `HOST_NAME_IP_ADDRESS` with the host name or IP address of the computer on which Oracle Identity Manager is installed.
- `PORT` with the port on which Oracle Identity Manager is listening.

The request dataset is imported into MDS at the following location:

```
/custom/connector/RESOURCE_NAME
```

2.3.1.6.3 Enabling the Auto Save Form Feature

To enable the Auto Save Form feature:

1. Log in to the Design Console.

2. Expand **Process Management**, and then double-click **Process Definition**.
3. Search for and open the **Exchange** process definition.
4. Select the **Auto Save Form** check box.
5. Click the Save icon.

2.3.1.6.4 Running the PurgeCache Utility

Run the PurgeCache utility to clear content belonging to the Metadata category from the server cache. See [Section 2.3.1.2, "Clearing Content Related to Connector Resource Bundles from the Server Cache"](#) for instructions.

The procedure to configure request-based provisioning ends with this step.

2.3.2 Postinstallation on the Target System

Postinstallation on the target system involves the following procedure:

2.3.2.1 Configuring SSL

You need not configure SSL for Microsoft Exchange if it is already configured on the Microsoft Active Directory target system to which your Microsoft Exchange is linked.

2.3.3 Configuring the Remote Manager

Note: Perform this procedure only if you have installed the Remote Manager for Microsoft Exchange 2007. The procedure to install the Remote Manager is described in [Section 2.2.2.1, "Installing the Remote Manager."](#)

If you have installed multiple Microsoft Exchange 2007 Remote Managers, then you must perform this procedure for each Remote Manager.

For reconciliation in Microsoft Exchange 2007, Oracle Identity Manager uses the Microsoft Active Directory IT resource. For provisioning in Microsoft Exchange 2007, Oracle Identity Manager uses the Microsoft Active Directory IT resource, Exchange IT resource, and the Remote Manager IT resource values. For information about the Exchange IT resource parameters, see [Section 2.2.1.2, "Creating the IT Resource."](#)

This section discusses the following topics:

- [Section 2.3.3.1, "Creating the IT Resource for the Remote Manager"](#)
- [Section 2.3.3.2, "Configuring Oracle Identity Manager Release 9.1.0.x to Trust the Remote Manager"](#)
- [Section 2.3.3.3, "Configuring Oracle Identity Manager Release 11.1.x to Trust the Remote Manager"](#)
- [Section 2.3.3.4, "Verifying That the Remote Manager Is Running"](#)

2.3.3.1 Creating the IT Resource for the Remote Manager

To create the IT resource for the Remote Manager:

1. Log in to the Administrative and User Console.

2. If you are using Oracle Identity Manager release 9.1.0.x, expand **Resource Management**, and then click **Create IT Resource**.
3. If you are using Oracle Identity Manager release 11.1.1, then:
 - On the Welcome to Oracle Identity Manager Self Service page, click **Advanced** in the upper-right corner.
 - On the Welcome to Oracle Identity Manager Advanced Administration page, in the Configuration region, click **Create IT Resource**.
4. If you are using Oracle Identity Manager release 11.1.2, then:
 - Log in to Oracle Identity System Administration.
 - In the left pane, under Configuration, click **IT Resource**.
5. On the Step 1: Provide IT Resource Information page, enter the following information:
 - **IT Resource Name:** Enter `Exchange Remote Manager IT Resource`.
 - **IT Resource Type:** Select **Remote Manager** from the IT Resource Type list.
 - **Remote Manager:** Do not enter a value in this field.
6. Click **Continue**.
7. On the Step 2: Specify IT Resource Parameter Values page, specify values for the parameters of the IT resource and then click **Continue**. [Table 2–4](#) describes the parameters for this IT resource.

Table 2–4 Parameters of the IT Resource for the Remote Manager

Parameter	Description
service name	Enter a name for the remote manager. Sample value: RManager
url	Enter the IP address of the target system host computer and the port number at which the Remote Manager is listening. Sample value: rmi://10.0.0.1:12346

8. Click **Continue**.
9. On the Step 4: Verify IT Resource Details page, review the information that you provided on the first, second, and third pages. If you want to make changes in the data entered on any page, click **Back** to revisit the page and then make the required changes.
10. To proceed with the creation of the IT resource, click **Continue**.
11. The Step 5: IT Resource Connection Result page displays the results of a connectivity test that is run using the IT resource information. If the test is successful, then click **Create**. If the test fails, then you can perform one of the following steps:
 - Click **Back** to revisit the previous pages and then make corrections in the IT resource creation information.
 - Click **Cancel** to stop the procedure, and then begin from the first step onward.
 - Proceed with the creation process by clicking **Continue**. You can fix the problem later, and then rerun the connectivity test by using the Diagnostic Dashboard.

12. The Step 6: IT Resource Created page displays the details of the IT resource that you created. Click **Finish**.

2.3.3.2 Configuring Oracle Identity Manager Release 9.1.0.x to Trust the Remote Manager

To configure Oracle Identity Manager to trust the Remote Manager you have installed:

1. From the computer hosting the Remote Manager, copy the `RM_HOME/xlremote/config/xlserver.cert` file to a temporary directory on the Oracle Identity Manager host computer.

Note: The server certificate in the `OIM_HOME` directory is also named `xlserver.cert`. Ensure that you do not overwrite that certificate.

2. To import the certificate by using the keytool utility, run the following command:

```
JAVA_HOME/jre/bin/keytool -import -alias ALIAS -file  
RM_CERT_LOCATION/xlserver.cert -keystore OIM_HOME/xellerate/config/.xlkeystore  
-storepass PASSWORD
```

In the preceding command, replace:

- `JAVA_HOME` with the location of the Java directory for your application server.
 - `ALIAS` with an alias for the certificate in the store.
 - `RM_CERT_LOCATION` with the full path of the temporary directory where you copied the certificate.
 - `PASSWORD` with the password of the keystore.
3. Copy the `OIM_HOME/xellerate/config/xlserver.cert` file to a temporary directory on the Remote Manager host computer.
 4. To import the certificate by using the keytool utility on the Remote Manager host computer, run the following command:

```
JAVA_HOME/jre/bin/keytool -import -alias ALIAS -file  
OIM_CERT_LOCATION/xlserver.cert -keystore RM_HOME/xlremote/config/.xlkeystore  
-storepass PASSWORD
```

In the preceding command, replace:

- `JAVA_HOME` with the location of the Java directory for your application server.
- `ALIAS` with an alias for the certificate in the store.
- `OIM_CERT_LOCATION` with the full path of the temporary directory where you copied the certificate.
- `PASSWORD` with the password of the keystore.

Note: It is recommended that you follow security best practices and change the default passwords used for the Remote Manager keystore. To change the Remote Manager keystore password, follow the instructions given in *Oracle Identity Manager Installation and Configuration Guide* for your application server.

2.3.3.3 Configuring Oracle Identity Manager Release 11.1.x to Trust the Remote Manager

To configure Oracle Identity Manager to trust the Remote Manager:

1. On the computer hosting Oracle Identity Manager, export the certificate by running the following command:

```
keytool -export -keystore KEYSTORE_FILE -storepass KEYSTORE_PASSWORD -alias ALIAS -file CERT_FILE_NAME
```

In this command:

- *KEYSTORE_FILE* is the complete path and name of the keystore.
- *KEYSTORE_PASSWORD* is the password of the keystore.
- *ALIAS* is the alias of the certificate to be exported.
- *CERT_FILE_NAME* is the file name containing the exported certificate

The following is a sample command:

```
keytool -export -keystore
D:\March11g\Middleware\user_projects\domains\MARCHWIN\config\fmwconfig\default-
keystore.jks -storepass MyPa55word -alias xell -file oim.cer
```

2. Copy the exported certificate to any directory on the target system.
3. To import the certificate, run the following command:

```
keytool -import -keystore KEYSTORE_FILE -storepass KEYSTORE_PASSWORD -alias ALIAS -file CERT_FILE_NAME
```

In this command:

- *KEYSTORE_FILE* is the complete path and name of the keystore.
- *KEYSTORE_PASSWORD* is the password of the keystore.
- *ALIAS* is the alias of the certificate to be imported.
- *CERT_FILE_NAME* is the file name containing the imported certificate

The following is a sample command:

```
keytool -import -keystore
C:\Oracle\Middleware1\Oracle_IDM1\remote_manager\config\default-keystore.jks
-storepass MyPa55word -alias oimserver -file
C:\Oracle\Middleware1\OIMCert\oim.cer
```

4. Copy the *OIM_HOME/config/xlserver.cert* file from the Remote Manager host computer to a temporary directory on the Oracle Identity Manager host computer.
5. To import the certificate, run the following command:

```
keytool -import -keystore KEYSTORE_FILE -storepass KEYSTORE_PASSWORD -alias ALIAS -file CERT_FILE_NAME
```

In this command:

- *KEYSTORE_FILE* is the complete path and name of the keystore.
- *KEYSTORE_PASSWORD* is the password of the keystore.
- *ALIAS* is the alias of the certificate to be imported.
- *CERT_FILE_NAME* is the file name containing the imported certificate

The following is a sample command

```
keytool -import -keystore  
D:\March11g\Middleware\user_projects\domains\MARCHWIN\config\fmwconfig\default_  
keystore.jks -storepass Welcome1 -alias rmcert -file  
D:\March11g\Middleware\RMCert146\xlserver.cert
```

2.3.3.4 Verifying That the Remote Manager Is Running

To ensure that the Remote Manager is running:

1. Use the following script to start the Remote Manager:

For Oracle Identity Manager release 9.1.0.x:

RM_HOME/xlremote/remotemanager.bat

For Oracle Identity Manager release 11.1.x:

OIM_HOME/remote_manager/remotemanager.bat

2. Log in to the Design Console.
3. Expand **Administration**, and double-click **Remote Manager**.
4. Search for and open the Remote Manager that you have created.
5. Click the Refresh icon. The screen displays details of the Remote Manager that you have configured. The running check box should be selected for the Remote Manager. This implies that the status of the Remote Manager is active.

2.3.4 Localizing Field Labels in UI Forms

Note: Perform the procedure described in this section only if you are using Oracle Identity Manager release 11.1.2 or later and you want to localize UI form field labels.

To localize field label that you add to in UI forms:

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 one of 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 Exchange application instance. The original code is:

```
<trans-unit
id="${adfBundle['oracle.adf.businesseditor.model.util.BaseRuntimeResourceBu
ndle']['persdef.sessiondef.oracle.iam.ui.runtime.form.model.user.entity.use
rEO.UD_MSEXCHG_DISPLAYNAME__c_description']}">
<source>Display Name</source>
<target/>
</trans-unit>
<trans-unit
id="sessiondef.oracle.iam.ui.runtime.form.model.EFORM.entity.EFORMEO.UD_MSE
XCHG_DISPLAYNAME__c_LABEL">
<source>Display Name</source>
<target/>
</trans-unit>
```

d. Open the resource file from the connector package, for example `Exchange_ja.properties`, and get the value of the attribute from the file, for example, `global.udf.UD_MSEXCHG_DISPLAYNAME=\u8868\u793A\u540D`.

e. Replace the original code shown in Step 6.c with the following:

```
<trans-unit
id="${adfBundle['oracle.adf.businesseditor.model.util.BaseRuntimeResourceBu
ndle']['persdef.sessiondef.oracle.iam.ui.runtime.form.model.user.entity.use
rEO.UD_MSEXCHG_DISPLAYNAME__c_description']}">
<source>Display Name</source>
<target>\u8868\u793A\u540D</target>
</trans-unit>
<trans-unit
id="sessiondef.oracle.iam.ui.runtime.form.model.EFORM.entity.EFORMEO.UD_MSE
XCHG_DISPLAYNAME__c_LABEL">
<source>Display Name</source>
<target>\u8868\u793A\u540D</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: The "Deploying and Undeploying Customizations" chapter in the *Oracle Fusion Middleware Developer's Guide for Oracle Identity Manager*, for more information about exporting and importing metadata files
8. Log out of and log in to Oracle Identity Manager.

Using the Connector

This chapter discusses the following:

Note: In Oracle Identity Manager release 11.1.x, a scheduled job is an instance of a scheduled task. In this guide, the term **scheduled task** used in the context of Oracle Identity Manager release 9.1.0.x is the same as the term **scheduled job** in the context of Oracle Identity Manager release 11.1.x.

See *Oracle Fusion Middleware System Administrator's Guide for Oracle Identity Manager* for more information about scheduled tasks and scheduled jobs.

- The [Section 3.1, "Guidelines on Using the Connector"](#) section described the guidelines that you must apply while using the connector.
- The [Section 3.2, "Configuring the Lookup.Exchange.Configuration Lookup Definition"](#) section describes the parameters of the Lookup.Exchange.Configuration lookup definition.
- The [Section 3.3, "Scheduled Task for Lookup Field Synchronization"](#) section describes the Exchange Mail Store Lookup Reconciliation scheduled task.
- The [Section 3.4, "Configuring Reconciliation"](#) section describes the different types of reconciliation and the scheduled tasks that are created for this connector.
- The [Section 3.5, "Configuring Scheduled Tasks"](#) section describes the procedure to configure scheduled tasks that are created when you deploy the connector.
- The [Section 3.6, "Configuring Provisioning in Oracle Identity Manager Release 11.1.1"](#) and [Section 3.7, "Configuring Provisioning in Oracle Identity Manager Release 11.1.2"](#) sections describe how to use this connector for provisioning.

3.1 Guidelines on Using the Connector

This section contains the following topics:

- [Section 3.1.1, "Guidelines on Configuring Reconciliation Runs"](#)
- [Section 3.1.2, "Guidelines on Performing Provisioning Operations"](#)

3.1.1 Guidelines on Configuring Reconciliation Runs

The following are guidelines that you must apply while configuring reconciliation:

- The connector does not support Delete Mailbox reconciliation in Microsoft Exchange 2007. This is because when you delete a mailbox in Microsoft Exchange 2007, the corresponding Microsoft Active Directory user object is also removed.
- Before a mailbox reconciliation run is performed, you must ensure that the lookup definitions are synchronized with the lookup fields of the target system. In other words, scheduled tasks for lookup field synchronization must be run before mailbox reconciliation runs, and, when required, before provisioning operations.
- The scheduled tasks for lookup field synchronization must be run before the scheduled tasks for reconciliation of existing and deleted mailbox data.
- The scheduled task for reconciliation of mailbox data must be run before the scheduled task for reconciliation of deleted mailbox data.
- If the operating environment consists of one Microsoft Active Directory installation and multiple Microsoft Exchange 2007 installations, then to reconcile mailboxes from a particular Exchange installation:
 1. Change the value of the AD Server IT Resource attribute of the mailbox reconciliation scheduled task (Exchange Reconciliation Task) so that it points to the required Exchange installation.

Note: This scheduled task is explained in detail later in this chapter.

2. Run the scheduled task.

3.1.2 Guidelines on Performing Provisioning Operations

The following are guidelines that you must apply while performing provisioning operations:

- When you perform a Create Mailbox provisioning operation on Microsoft Exchange 2007, a Remote Manager is used to run the Create User cmdlet (script) that creates the mailbox for the user on the target system.
- During the mailbox provisioning operations on Microsoft Exchange 2007 and Microsoft Exchange 2010, the Remote Manager may throw the following or a similar error:

```
Get-ItemProperty: Cannot find path
```

To prevent such an error, you must ensure that the Remote Manager uses an installed instance of a 64-bit version of JDK.

- The following points describe the behavior of the connector during Enable, Disable, and Delete Mailbox provisioning operations:
 - When you perform an Enable Mailbox provisioning operation on Microsoft Exchange 2000, 2003, or 2007, the following target system attributes are set to their default values:
 - * Max Incoming Message Size (KB)
 - * Max Outgoing Message Size (KB)
 - When you perform a Disable Mailbox provisioning operation on Microsoft Exchange 2000, 2003, or 2007, the following target system attributes are set to zero (0):
 - * Max Incoming Message Size (KB)

* Max Outgoing Message Size (KB)

- When you perform a Delete Mailbox provisioning operation on Microsoft Exchange 2000, 2003, or 2007, the connector deletes the Microsoft Exchange attributes of that user.
- While performing provisioning operations on Microsoft Exchange 2007, you must select the Log On Name, Exchange IT Resource, and the Exchange Remote Manager IT resource fields along with the mandatory fields of the process form. You must not select these fields while performing provisioning operations on Microsoft Exchange 2000 and 2003. If you select these fields for Microsoft Exchange 2000 and 2003, then provisioning fails.
- According to Microsoft, you must restart Microsoft Exchange 2000 and Microsoft Exchange 2003 each time you enable or disable a mailbox through provisioning. However, you need not restart Microsoft Exchange 2007 after enabling or disabling a mailbox through provisioning, because it is a supported operation in Microsoft Exchange 2007.

Note: The Enable Mailbox and Disable Mailbox actions are not directly supported by Microsoft Exchange 2000 or Microsoft Exchange 2003. However, the connector supports both provisioning and reconciliation of Enable Mailbox and Disable Mailbox actions through flag fields on the process form.

- Specifying multibyte values for fields

Note: This point is also mentioned in the "[Known Issues and Troubleshooting](#)" chapter.

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

Suppose you can enter 50 characters of English in the Display Name field of the target system. If you have configured the target system for the Japanese language, then you would not be able to enter more than 25 characters in the same field.

- The character length of target system fields must be taken into account when specifying values for the corresponding Oracle Identity Manager fields
- During a provisioning operation, you must keep the lengths of target system fields in mind while entering values for Oracle Identity Manager process form fields. The character limit specified for some process form fields may be more than that of the corresponding target system field.
- If the operating environment consists of one Microsoft Active Directory installation and multiple Microsoft Exchange 2007 installations, then to perform a provisioning operation on a particular Exchange installation:
 1. Run the scheduled task for lookup field synchronization (Exchange Mail Store Lookup Reconciliation).
 2. While performing the provisioning operation on the Administrative and User Console, select the IT resource for the Exchange installation.

3.2 Configuring the Lookup.Exchange.Configuration Lookup Definition

When you deploy the connector, the Lookup.Exchange.Configuration lookup definition is created in Oracle Identity Manager. The entries in this lookup definition are used during both reconciliation and provisioning.

To configure the Lookup.Exchange.Configuration lookup definition:

1. Log in to the Oracle Identity Manager Design Console.
2. Expand **Administration**, and double-click **Lookup Definition**.
3. Search for and open the **Lookup.Exchange.Configuration** lookup definition.
4. Enter decode values for each of the parameters listed in [Table 3–1](#).

Table 3–1 Attributes of the Lookup.Exchange.Configuration Lookup Definition

Parameter Name	Description	Default/Sample Value
PageSize	This parameter is used during reconciliation. The value represents the number of records to be fetched for a reconciliation run. You can configure this value according to your requirement. The value must be between 1 and 1000. It is recommended that you set the value of this parameter to 100.	100
ldapUserObjectClass	This is the object class used in the schema. By default Microsoft Active Directory has the user object class. You can change this value if you want to define your own schema.	user
ROExgInMsgSizeCol	If you create a copy of the process form, then specify the name of the attribute (column) in the new process form that holds the incoming message size value.	UD_MSEXCHG_INMSGSIZE
ROExgOutMsgSizeCol	If you create a copy of the process form, then specify the name of the attribute (column) in the new process form that holds the outgoing message size value.	UD_MSEXCHG_OUTMSGSIZE
DefaultInComingMsgSize	Enter the maximum incoming message size (in KB). This value is used when you enable a mailbox.	10240
DefaultOutGoingMsgSize	Enter the maximum incoming message size (in KB). This value is used when you enable a mailbox.	10240
AD Configuration Lookup	This parameter holds the name of the configuration lookup definition in Microsoft Active Directory. The default value is Lookup.AD.Configuration. If you create a copy of the Lookup.AD.Configuration lookup definition, then you must enter the name of that copy.	Lookup.AD.Configuration
isExchange2010	This parameter holds the value if the connector is configured with Exchange 2010 server or not. If the connector is configured with Exchange 2010 server then change the value to yes. By default it is no.	no

5. Click **Save**.

3.3 Scheduled Task for Lookup Field Synchronization

The Exchange Mail Store Lookup Reconciliation scheduled task is used to fetch the list of mail stores created on the target system. This data is used to update the list of mail stores in Oracle Identity Manager.

[Table 3–2](#) lists the attributes of this 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.

Table 3–2 Attributes of the Exchange Mail Store Lookup Reconciliation Scheduled Task

Attribute	Description
AD IT Resource	Enter the name of the Microsoft Active Directory IT resource Sample value: ADITResource
Lookup Code Name	Name of the lookup definition to which mail store data must be copied Default value: Lookup.ExchangeReconciliation.MailStore

After mail store lookup synchronization, the mail store names are stored in the Lookup.ExchangeReconciliation.MailStore lookup definition in the following format:

MAIL_STORE_NAME/ADMINISTRATIVE_GROUP_NAME/MAIL_STORE_SERVER_NAME

In the format, the mail store is located under the administrative group and this group is located in the Exchange server.

During a provisioning operation, you can view the values in the lookup field and select the value that you want to use.

3.4 Configuring Reconciliation

The following sections provide information about the attributes of the scheduled tasks:

See Also: The "Reconciliation Configuration Options" section in *Oracle Identity Manager Connector Concepts* for detailed information about the configuration options described in some of the following topics

- [Section 3.4.1, "Limited Reconciliation vs. Regular Reconciliation"](#)
- [Section 3.4.2, "Full Reconciliation vs. Incremental Reconciliation"](#)
- [Section 3.4.3, "Reconciliation Scheduled Tasks"](#)
- [Section 3.4.4, "Creating the Reconciliation Scheduled Task \(Optional\)"](#)

3.4.1 Limited Reconciliation vs. Regular Reconciliation

This section discusses the Query attribute of the scheduled tasks for reconciliation.

By default, all target system records that are added or modified after the last reconciliation run are reconciled during the current reconciliation run. You can specify the subset of newly added or modified target system records that must be reconciled. You do this by creating a query condition to act as a filter for reconciliation.

To create a query condition in a nonnative format, use a combination of target system fields and the following logical operators:

Note: You can use any target system fields, even the ones that are not supported (by default) for reconciliation and provisioning.

- The AND operator represented by the ampersand (&)
- The OR operator represented by the vertical bar (|)
- The EQUAL operator represented by the equal sign (=)

You must apply the following guidelines while creating the query condition:

- The default Query attribute value is (objectClass=user). When you create query, it is recommended that you retain the default value as one of the query conditions. For example:

```
(&(mailNickName=*)(objectClass=user))
```

- You must independently verify that the query returns the objects that you want it to return. The scheduled task does not validate your query.
- For the target system fields, you must use the same case (uppercase or lowercase) as given in the table shown earlier in this section. This is because the attribute names are case-sensitive.
- You must not include special characters other than the equal sign (=), ampersand (&), and vertical bar (|) in the query condition.

Note: The default Query attribute value is (objectClass=user).

The following are sample query condition:

- (&(objectClass=user)(givenname=john)
- (&(objectClass=user)(sn=Doe)
- (&(&(sn=Doe)(givenname=John))(objectClass=user))
- (|(|(sn=lastname)(givenname=firstname))(objectClass=user))

While performing the procedure described in the section, set the value of the Query attribute to the query condition that you create.

3.4.2 Full Reconciliation vs. Incremental Reconciliation

This section discusses the Submit All Records attribute of the scheduled tasks for reconciliation in Microsoft Exchange.

After you deploy the connector, you first reconcile all the existing target system records into Oracle Identity Manager. At the end of this reconciliation run, the MEXC Timestamp attribute of the scheduled task is set to the time stamp at which the scheduled task finished running. This is a full reconciliation run.

During the next reconciliation run, the value of MEXC Timestamp is used to determine the time stamp at which the last run finished. User records added or modified after the time stamp are selected for reconciliation during the current run. This is incremental reconciliation.

Some user records may never be reconciled into Oracle Identity Manager during subsequent reconciliation runs. For example, user records that are added or modified around the time that the MEXC Timestamp attribute is updated may not meet the

time-stamp criterion for reconciliation during the next reconciliation run. To ensure that such records are reconciled into Oracle Identity Manager, you must run full reconciliation at periodic intervals.

While configuring the reconciliation scheduled tasks by performing the procedure described in [Section 3.5, "Configuring Scheduled Tasks"](#):

- To run full reconciliation, set the value of the Submit All Records attribute to yes.
- To continue with incremental reconciliation, accept the default value of no for the attribute.

3.4.3 Reconciliation Scheduled Tasks

When you run the Connector Installer, reconciliation scheduled tasks are automatically created in Oracle Identity Manager. The Microsoft Exchange connector provides the following scheduled tasks for reconciliation:

- [Section 3.4.3.1, "Exchange Reconciliation Task"](#)
- [Section 3.4.3.2, "Exchange Delete Recon Task"](#)

3.4.3.1 Exchange Reconciliation Task

The Exchange Reconciliation Task scheduled task is used to reconcile data from active mailboxes. [Table 3–3](#) lists the attributes of this scheduled task.

Table 3–3 Attributes of the Exchange Reconciliation Task Scheduled Task

Attribute	Description
ResourceObject	<p>This attribute holds the name of the resource object against which reconciliation runs must be performed.</p> <p>Default value: Exchange</p> <p>Note: For the resource object shipped with this connector, you must not change the value of this attribute. However, if you create a copy of the resource object, then you can enter the unique name for that resource object as the value of this attribute.</p>
Recon Attribute Lookup Code Name	<p>Enter the name of the lookup table containing the mapping for the Exchange attributes. You are not allowed to delete attributes from this table.</p> <p>Default value: AtMap.Exchange</p>
User Search Base	<p>Enter the DN in which the search for user accounts is rooted in. This specifies the exact location in the LDAP tree from where the accounts are to be reconciled. If any account does not come under the specified DN, then the account is not reconciled.</p> <p>Default value: dc=company,dc=com</p> <p>Note: You can also include the organizational unit in the value that you enter for this attribute. For example:</p> <p>ou=testDisable,dc=company,dc=com</p>
User Search Scope	<p>Enter the search scope used to locate user accounts.</p> <p>Default value: subtree</p>
Submit All Records	<p>Enter yes to configure the connector for full reconciliation.</p> <p>Enter no to configure the connector for incremental reconciliation.</p> <p>Default value: no</p> <p>See "Full Reconciliation vs. Incremental Reconciliation" on page 3-6 for more information about this attribute.</p>

Table 3–3 (Cont.) Attributes of the Exchange Reconciliation Task Scheduled Task

Attribute	Description
Distribution Group Name	<p>Enter the name of the distribution group from which mailboxes are reconciled. A star symbol denotes that the reconciliation run brings mailboxes from all distribution groups, available with the exchange enabled Microsoft Active Directory server.</p> <p>Default value: *</p>
Run Distribution Group Mailbox Recon	<p>Enter yes if you want to run mailbox reconciliation from the distribution group.</p> <p>Default value: no</p>
Run Query-Based Distribution Group Mailbox Recon	<p>Enter yes if you want to run mailbox reconciliation from a query-based distribution group.</p> <p>Default value: no</p>
Query	<p>Enter the query condition to be used during the reconciliation of the mailboxes.</p> <p>Default value: (&(mailNickName=*)(objectClass=user))</p> <p>By default the scheduled task is configured to fetch accounts having mailboxes and mail users. This value is < (&(homeMDB=*)(objectClass=user))> if only the mailbox account must be fetched. See "Limited Reconciliation vs. Regular Reconciliation" for more information.</p> <p>Note: By default, the value of objectClass is user. You can modify this value according to the user's schema on the target system.</p>
Mail Store Name	<p>Enter the name of the mail store from which the mailboxes are to be reconciled. A star symbol denotes that the reconciliation run brings mailboxes from all mail store names, available with the Exchange enabled Microsoft Active Directory server.</p> <p>Default value: *</p>
Storage Group Name	<p>Enter the name of the storage group from which the mailboxes are to be reconciled. A star symbol denotes that the reconciliation run brings mailboxes from all storage group names, available with the Exchange enabled Microsoft Active Directory server.</p> <p>Default value: *</p>
Mail Store Server Name	<p>Enter the name of the Exchange server from where the mail stores are to be reconciled. A star symbol denotes that the reconciliation run brings mail stores from all mail store server names, available with the Exchange enabled Microsoft Active Directory server.</p> <p>Default value: *</p>
AD Server IT Resource	<p>Enter the name of the IT resource for Microsoft Active Directory server.</p> <p>Sample value: ADITResource</p>
Reconciliation Type	<p>Enter a value to specify the mode of reconciliation in which the connector is configured.</p> <p>Default value: MailStoreRecon</p>

Table 3–3 (Cont.) Attributes of the Exchange Reconciliation Task Scheduled Task

Attribute	Description
MEXC Timestamp	This attribute stores the date and time when the previous reconciliation run ended. Default value: 0
Task Scheduler Name	This attribute holds the name of the scheduled task. Value: Exchange Reconciliation Task Note: For this scheduled task, you must not change the value of this attribute. However, if you create a copy of this scheduled task, then you must enter the unique name of that scheduled task as the value of the attribute in that scheduled task.
Configuration Lookup	This attribute holds the name of the lookup definition containing values that are used during both reconciliation and provisioning: Value: Lookup.Exchange.Configuration Note: You must not change the value of this attribute.

Note: You must enter appropriate values for Reconciliation Type and Run Query-Based Distribution Group Mailbox Recon parameters. If you enter incorrect values, then reconciliation fails and an error message is displayed.

3.4.3.1.1 Configuring Mail Store Reconciliation

You can configure the reconciliation of mailboxes from either all mail stores or from a specific mail store. If you want to configure the reconciliation of mailboxes from a specific mail store, then you must enter the combination of the mail store name, group name, and the server name of that mail store. You can specify one of the following combinations:

- The asterisk (*) in all fields
This will fetch mailboxes from all mail stores.
- Mail store name, distribution group name, and Exchange server name

If you enter an incorrect combination of values in the mailStoreName, groupName, and serverName fields, then reconciliation fails and a message is displayed stating that the combination of parameters entered is incorrect. The correct combination for this entry is displayed on the server console and also recorded in the log file.

3.4.3.2 Exchange Delete Recon Task

This scheduled task is used to reconcile data about deleted mailboxes. [Table 3–4](#) lists the attributes of this scheduled task.

Note: Delete reconciliation is not supported in Microsoft Exchange 2007.

Table 3–4 Attributes of the Exchange Delete Recon Task Scheduled Task

Attribute	Description
User Search Base	<p>The DN in which the search for user accounts is rooted in.</p> <p>Default value: <code>dc=company,dc=com</code></p> <p>Note: You can also include the organizational unit in the value that you enter for this attribute. For example:</p> <p><code>ou=testDisable,dc=company,dc=com</code></p>
User Search Scope	<p>Enter the search scope used to locate user accounts.</p> <p>Default value: <code>subtree</code></p>
Task Scheduler Name	<p>Enter the name of the scheduled task for delete reconciliation.</p> <p>Default value: <code>Exchange Delete Recon Task</code></p>
AD Server IT Resource	<p>Enter the name of the IT resource for Microsoft Active Directory server.</p> <p>Sample value: <code>ADITResource</code></p>
Target Resource Object	<p>Enter the name of the Microsoft Exchange resource object to be created. This is a user configurable name.</p> <p>Default value: <code>Exchange</code></p>
MEXC_Timestamp	<p>This attribute stores the date and time when the previous reconciliation run started for mailboxes. This timestamp is used for delete reconciliation.</p> <p>Default value: <code>0</code></p>
Query	<p>Enter the query condition to be used during the reconciliation of the mailboxes.</p> <p>Default value: <code>(objectClass=user)</code></p> <p>Note: By default, the value of <code>objectClass</code> is <code>user</code>. You can modify this value according to the user's schema on the target system.</p>
Recon Attribute Lookup Code Name	<p>Enter the name of the lookup table containing the mapping for the Exchange attributes. You are not allowed to delete attributes from this table.</p> <p>Default value: <code>AtMap.Exchange</code></p>
Configuration Lookup	<p>This attribute holds the name of the lookup definition containing values that are used during both reconciliation and provisioning:</p> <p>Value: <code>Lookup.Exchange.Configuration</code></p> <p>Note: You must not change the value of this attribute.</p>

Note: Each attribute of a scheduled task must have a value. For some attributes, you can either enter a value or accept the default value. For the rest, you must accept the default value. If even a single attribute value is left empty, then reconciliation is not performed.

3.4.4 Creating the Reconciliation Scheduled Task (Optional)

You can use the Exchange Reconciliation Task scheduled task to perform different types of reconciliation. If you use the same scheduled task for all the reconciliation types, you must change the value for the reconciliation type, every time you run the scheduled task. Alternatively, you can create a different scheduled task for each reconciliation type by creating a copy of the existing scheduled task. See ["Types of](#)

[Reconciliation Enabled by the Connector](#)" on page 1-9 for more information about the types of reconciliation supported by the connector.

Depending on the Oracle Identity Manager release you are using, perform the procedure described in one of the following sections:

- [Section 3.4.4.1, "Creating Scheduled Tasks in Oracle Identity Manager Release 9.1.0.x"](#)
- [Section 3.4.4.2, "Creating Scheduled Jobs in Oracle Identity Manager Release 11.1.1"](#)

3.4.4.1 Creating Scheduled Tasks in Oracle Identity Manager Release 9.1.0.x

To create a copy of the scheduled task:

1. Log in to the Oracle Identity Manager Administrative and User Console.
2. Expand **Resource Management**.
3. Select **Create Scheduled Task**.
4. On the Step 1: Provide Scheduled Task Details and Schedule page, enter the following information:
 - In the **Task Name** field, enter the name of the scheduled task, for example, Exchange Mail Store Lookup Reconciliation.
 - In the **Class Name** field, enter the class name of the scheduled task, whose copy you are creating. [Figure 3–1](#) shows the scheduled task created in the Create Scheduled Task page.

Figure 3–1 Step 1: Provide Scheduled Task Details and Schedule

5. Click **Continue**.
6. On the Step 2: Define Scheduled Task Attributes page, in the **Task Attributes** section, enter the attributes of the scheduled task whose copy you are creating, specify values for the attributes, and click **Add**. [Figure 3–2](#) shows the attributes fields in the Create Scheduled Task page.

Figure 3–2 Step 2: Define Scheduled Task Attributes

Create Scheduled Task

Step 2 : Define Scheduled Task Attributes

Define attributes for Exchange Mail Store Lookup Recon.

Results 1-2 of 2

Attribute Name	Attribute Value	Delete
AD IT Resource	ADITResource	
Lookup Code Name	Lookup.ExchangeReconciliation.MailStore	

First | Previous | Next | Last

Attribute: With:

Attribute: With:

7. Click **Continue**.
8. On the Step 3: Verify Scheduled Task Details page, review the information that you have entered and then click **Continue** to proceed. Figure 3–3 shows the details of the scheduled task that is created in the Create Scheduled Task page.

Figure 3–3 Step 3: Verify Scheduled Task Details

Create Scheduled Task

Step 3 : Verify Scheduled Task Details

Review and then submit the information that you have provided.

Task Information

Task Name : Exchange Mail Store Lookup Recon

Class Name : com.thortech.xl.schedule.tasks.tcExchangeMailStoreLookupReconTask

Status : Disabled

Schedule

Max Retries : 1

Next Start :

Frequency : Every 1 Days

Attributes

Attribute Name	Attribute Value
AD IT Resource	ADITResource
Lookup Code Name	Lookup.ExchangeReconciliation.MailStore

9. The Step 4: Scheduled Task Created page displays a message specifying the successful creation of the scheduled task. Figure 3–4 shows the success message for creation of the scheduled task in the Create Scheduled Task page.

Figure 3–4 Step 4: Scheduled Task Created

Create Scheduled Task

Step 4 : Scheduled Task Created

You have created Exchange Mail Store Lookup Recon.

3.4.4.2 Creating Scheduled Jobs in Oracle Identity Manager Release 11.1.1

To create a copy of the scheduled task:

Note: See *Oracle Fusion Middleware System Administrator's Guide for Oracle Identity Manager* for detailed information about this procedure.

1. Log in to the Oracle Identity Manager Administrative and User Console.
2. On the Welcome to Oracle Identity Manager Self Service page, click **Advanced** in the upper-right corner of the page.
3. On the Welcome to Oracle Identity Manager Advanced Administration page, click the **System Management** tab, and then click **Scheduler**.
4. On the left pane, from the **Actions** list, select **Create**.
The Create Job page is displayed.
5. In the Job Information region, enter values for the following fields:
 - **Job Name:** Enter the name for the job, for example, Exchange Reconciliation Task.
 - **Task:** Specify the name of the scheduled task that runs the job, whose copy you are creating. Alternatively, you can search and specify a scheduled task.
 - **Start Date:** Specify the date on which you want the job to run. .
 - **Start Time:** Enter the time when you want the job to run.
 - **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 one of the following schedule types:
 - Periodic
 - Cron
 - Single
 - No pre-defined schedule
6. In the Parameters region, specify values for the attributes of the scheduled job whose copy you are creating, and then click **Apply**.
A message confirming that the job has been successfully created is displayed. Click **OK** to close the message.

3.5 Configuring Scheduled Tasks

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

[Table 3–5](#) lists the scheduled tasks that you must configure.

Table 3–5 Scheduled Tasks

Scheduled Task Name	Description
Exchange Mail Store Lookup Reconciliation	This scheduled task is used to synchronize the values of mail stores between the target system and Oracle Identity Manager. For information about this scheduled task and its attributes, see "Scheduled Task for Lookup Field Synchronization" on page 3-4.
Exchange Reconciliation Task	This scheduled task is used to reconcile mailbox related data. For information about this scheduled task and its attributes, see "Exchange Reconciliation Task" on page 3-7.
Exchange Delete Recon Task	This scheduled task is used to reconcile data about deleted mailboxes. For information about this scheduled task and its attributes, see "Exchange Delete Recon Task" on page 3-9.

To configure a scheduled task:

- Depending on the Oracle Identity Manager release you are using, perform one of the following steps:
 - For Oracle Identity Manager release 9.1.0.x or 11.1.1:
 - Log in to the Administrative and User Console.
 - On the Welcome to Oracle Identity Manager Self Service page, click **Advanced** in the upper-right corner of the page.
 - For Oracle Identity Manager release 11.1.2:
 - Log in to Oracle Identity System Administration.
 - Create and activate a sandbox. For detailed instructions on creating and activating a sandbox, see the "Managing Sandboxes" section of *Oracle Fusion Middleware Developer's Guide for Oracle Identity Manager*.
 - In the left pane, under System Management, click **Scheduler**.
- Depending on the Oracle Identity Manager release you are using, perform one of the following steps:
 - If you are using Oracle Identity Manager release 9.1.0.x, expand **Resource Management**, and then click **Manage Scheduled Task**.
 - If you are using Oracle Identity Manager release 11.1.1, then:
 - On the Welcome to Oracle Identity Manager Self Service page, click **Advanced**.
 - Click the **System Management** tab, and then click **Scheduler**.
 - On the left pane, click **Advanced Search**.
- On the page that is displayed, you can use any combination of the search options provided to locate a scheduled task. Click **Search** after you specify the search criteria.
 The list of scheduled tasks that match your search criteria is displayed in the search results table.
- Depending on the Oracle Identity Manager release you are using, perform one of the following steps:
 - If you are using Oracle Identity Manager release 9.1.0.x, then in the search results table, click the Edit icon in the Edit column for the scheduled task.

- If you are using Oracle Identity Manager release 11.1.x, then select the link for the scheduled task from the list of scheduled tasks displayed in the search results table.
5. Modify the details of the scheduled task. To do so:
- a. If you are using Oracle Identity Manager release 9.1.0.x, then on the Edit Scheduled Task Details page, modify the following parameters, and then click **Continue**:
 - **Status**: Specify whether you want to leave the task in the enabled state. In the enabled state, the task is ready for use.
 - **Max Retries**: Enter an integer value in this field. This number represents the number of times Oracle Identity Manager must attempt to complete the task before assigning the ERROR status to the task. The default value is 1.
 - **Next Start**: Use the date editor to specify the date when you want the task to run. After you select a date value in the date editor, you can modify the time value that is automatically displayed in the Next Start field.
 - **Frequency**: Specify the frequency at which you want the task to run.

Figure 3–5, shows Status, Max Retries, Next Start, and Frequency field details that you can modify in the Edit Scheduled Task page.

Figure 3–5 Modify Scheduled Task Details

Scheduled Task Details

Task Information

Task Name : Exchange Mail Store Lookup Reconciliation
 Class Name : com.thortech.xd.schedule.tasks.tcExchangeMailStoreLookupReconTask
 Task State : Disabled
 Status : Inactive

Schedule

Max Retries :
 Next Start : n/a
 Frequency : Once

Attributes

Results 1-3 of 3 First | Previous | Next | Last

Attribute Name	Attribute Value
AD IT Resource	
Configuration Lookup	Lookup.Exchange.Configuration
Lookup Code Name	Lookup.ExchangeReconciliation.MailStore

First | Previous | Next | Last

[Edit](#) [Run now](#) [Stop Execution](#)

[Back to Search Results](#)

- b. If you are using Oracle Identity Manager release 11.1.1, then 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 *Oracle Fusion Middleware System Administrator's Guide for Oracle Identity Manager* for detailed information about schedule types.

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

6. Specify values for the attributes of the scheduled task. To do so:

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.
 - Reconciliation can be run in partial mode or in custom mode depending on values configured for the `Query` scheduled task attribute.
 - Reconciliation type depends on the MEXC Timestamp and Submit All Records attributes. If the value for Submit All Records is yes, then all mail boxes are fetched from the target system regardless of the value of the MEXC Timestamp attribute.
 - See "[Reconciliation Scheduled Tasks](#)" on page 3-7 for the list of scheduled tasks and their attributes.
-

- If you are using Oracle Identity Manager release 9.1.0.x, then on the Attributes page, select the attribute from the Attribute list, specify a value in the field provided, and then click **Update**. [Figure 3-6](#) shows the attribute details in the Attributes page.

Figure 3-6 Specify Attribute Value

The screenshot shows the 'Attributes' page in Oracle Identity Manager. On the left is a navigation menu with options like 'My Account', 'My Resources', 'Requests', 'To-Do List', 'Users', 'Organizations', 'User Groups', 'Access Policies', 'Resource Management', 'Deployment Management', 'Reports', 'Generic Technology Connector', and 'Help'. The main content area is titled 'Attributes' and shows 'Results 1-3 of 3'. It contains a table with the following data:

Attribute Name	Attribute Value	Delete
AD IT Resource		
Configuration Lookup	Lookup.Exchange.Configuration	
Lookup Code Name	Lookup.ExchangeReconciliation.MailStore	

Below the table, there are two rows of input fields. The first row has an 'Attribute' field with a text input, a 'With' field with a text input, and an 'Add' button. The second row has an 'Attribute' field with a dropdown menu (currently showing 'Select'), a 'With' field with a text input, and an 'Update' button. At the bottom left, there are '<< Back' and 'Save Changes' buttons.

- If you are using Oracle Identity Manager release 11.1.1, then on the Job Details tab, in the Parameters region, specify values for the attributes of the scheduled task.

7. After specifying the attributes, do one of the following:
 - If you are using Oracle Identity Manager release 9.1.0.x, then click **Save Changes** to save the changes.

Note: The Stop Execution option is not available in the Administrative and User Console. If you want to stop a task, then click Stop Execution on the Task Scheduler form of the Design Console.

- If you are using Oracle Identity Manager release 11.1.1, then click **Apply** to save the changes.

Note: The Stop Execution option is available in the Administrative and User Console. You can use the Scheduler Status page to either start, stop, or reinitialize the scheduler.

3.6 Configuring Provisioning in Oracle Identity Manager Release 11.1.1

This section discusses the following topics:

- [Section 3.6.1, "Using the Connector for Provisioning"](#)
- [Section 3.6.2, "Performing Provisioning Operations"](#)
- [Section 3.6.3, "Switching Between Request-Based Provisioning and Direct Provisioning on Oracle Identity Manager Release 11.1.1"](#)

3.6.1 Using the Connector for Provisioning

Apply the following guideline when you start using the connector for provisioning operations:

Before you provision the Microsoft Exchange resource object to a user, ensure that the user has an account in Microsoft Active Directory. If the user does not have a Microsoft Active Directory account, then the provisioning operation fails.

To create a Microsoft Active Directory account for the user, you can follow one of the following approaches:

- In Oracle Identity Manager, provision the Microsoft Active Directory resource object to the user.
- Manually create an account in Microsoft Active Directory for the user.

Note: Mail redirection function can be set during Microsoft Active Directory provisioning. If mail redirection is set, then there is no need to provision Microsoft Exchange resource object. Provisioning is not required as mails are not physically stored in the mailbox, but are redirected on receipt.

3.6.2 Performing Provisioning Operations

Provisioning a resource for an OIM User involves using Oracle Identity Manager to create a Microsoft Exchange account for the user.

When you install the connector on Oracle Identity Manager release 11.1.1, the direct provisioning feature is automatically enabled. This means that the process form is enabled when you install the connector.

If you have configured the connector for request-based provisioning, then the process form is suppressed and the object form is displayed. In other words, direct provisioning is disabled when you configure the connector for request-based provisioning. If you want to revert to direct provisioning, then perform the steps described in [Section 3.6.3, "Switching Between Request-Based Provisioning and Direct Provisioning on Oracle Identity Manager Release 11.1.1."](#)

The following are types of provisioning operations:

- Direct provisioning
- Request-based provisioning
- Provisioning triggered by policy changes

See Also: *Oracle Identity Manager Connector Concepts* for information about the types of provisioning

This section discusses the following topics:

- [Section 3.6.2.1, "Direct Provisioning"](#)
- [Section 3.6.2.2, "Request-Based Provisioning"](#)

3.6.2.1 Direct Provisioning

To provision a resource by using the direct provisioning approach:

Note: Before you provision a Microsoft Exchange resource, ensure that a Microsoft Active Directory resource is already provisioned.

If the Allow Multiple check box of the resource object is selected, then you can provision more than one mailbox for an OIM User. However, the target system supports only one mailbox for each user.

1. Log in to the Administrative and User Console.
2. If you want to first create an OIM User provision a Microsoft Active Directory user, and then provision a Microsoft Exchange mailbox to the user, then:
 - If you are using Oracle Identity Manager release 9.1.0.x, then:
 - a. From the Users menu, select **Create**.
 - b. On the Create User page, enter values for the OIM User fields and then click **Create User**.
 - If you are using Oracle Identity Manager release 11.1.1, then:
 - a. On the Welcome to Identity Administration page, from the Users region, click **Create User**.
 - b. On the Create User page, enter values for the OIM User fields, and then click **Save**.
3. If you want to provision a Microsoft Exchange mailbox to an existing OIM User, then:
 - If you are using Oracle Identity Manager release 9.1.0.x, then:

- a. From the Users menu, select **Manage**.
 - b. Search for the OIM User and select the link for the user from the list of users displayed in the search results
- If you are using Oracle Identity Manager release 11.1.1, then:
 - a. On the Welcome to Identity Administration page, search for the OIM User by selecting Users from the list on the left pane.
 - b. From the list of users displayed in the search results, select the OIM User. The user details page is displayed on the right pane.
4. Depending on the Oracle Identity Manager release you are using, perform one of the following steps:
 - If you are using Oracle Identity Manager release 9.1.0.x, then:
 - a. On the User Detail page, select **Resource Profile** from the list at the top of the page. [Figure 3-7](#) shows the details of the user that you created in the User Detail page.

Figure 3-7 Select Resource Profile

- b. On the Resource Profile page, click **Provision New Resource**.

[Figure 3-8](#) shows the resource name that you provision in the User Detail Resource Profile page.

Figure 3-8 Provision New Resource

- If you are using Oracle Identity Manager release 11.1.1, then:
 - a. On the user details page, click the **Resources** tab.

- b. From the Action menu, select **Add Resource**. Alternatively, you can click the add resource icon with the plus (+) sign. The Provision Resource to User page is displayed in a new window.
5. On the Step 1: Select a Resource page, select **Exchange** from the list, and then click **Continue**.

Figure 3–9 shows Exchange resource selected to provision in the Provision Resource to User page.

Figure 3–9 Step 1: Select a Resource

Provision Resource to User
You are provisioning to EXCHANGEUSER ExchangeUser [EXCHANGEUSER].

Step 1: Select a Resource

Select a resource to provision.

Filter By: Resource Name

Results 1-2 of 2

	Resource Name	Resource Type	Resource Form
<input type="radio"/>	AD User	Application	No
<input checked="" type="radio"/>	Exchange	Application	No

First | Previous | Next | Last

6. On the Step 2: Verify Resource Selection page, click **Continue**.

Figure 3–10 shows the resource name selected for provisioning to the Exchange User in the Provision Resource to User page.

Figure 3–10 Step 2: Verify Resource Selection

Provision Resource to User
You are provisioning to ExchangeUser ExchangeUser [EXCHANGEUSER].

Step 2: Verify Resource Selection

You have selected to provision Exchange to ExchangeUser ExchangeUser [EXCHANGEUSER]

7. On the Step 5: Provide Process Data page, enter the details of the mailbox that you want to create on the target system and then click **Continue**.

Figure 3–11 shows the details of the mailbox name that is provisioned to the Exchange User in the Provision Resource to User page.

Figure 3–11 Step 5: Provide Process Data

Provision Resource to User
You are provisioning to EXCHANGEUSER EXCHANGEUSER [EXCHANGEUSER].

1 2 3 4 5 6

Step 5: Provide Process Data

Exchange Form

* Indicates required field

AD Server	<input type="text"/>	<input type="button" value="Clear"/>
Object GUID	<input type="text"/>	
Exchange IT Resource	<input type="text"/>	<input type="button" value="Clear"/>
Log On Name	<input type="text"/>	
Exchange Remote Manager IT Resource	<input type="text"/>	<input type="button" value="Clear"/>
Mail Store Name	<input type="text"/>	<input type="button" value="Clear"/>
Email Alias	<input type="text"/>	
Display Name	<input type="text"/>	
Garbage Collection Period(Days)	<input type="text"/>	
Max Incoming Message Size(KB)	<input type="text"/>	
Max Outgoing Message Size(KB)	<input type="text"/>	
Mailbox Size Receipt Quota(KB)	<input type="text" value="0"/>	
Mailbox Size Transmit Quota(KB)	<input type="text" value="0"/>	
Mailbox Warning Size(KB)	<input type="text" value="0"/>	
Max Recipients Per Message	<input type="text"/>	
Use Storage Defaults	<input type="text" value="TRUE"/>	<input type="button" value="Clear"/>
Hide From Address Lists	<input type="text" value="FALSE"/>	<input type="button" value="Clear"/>
Mobile Number	<input type="text"/>	
Pager Number	<input type="text"/>	
Major Business Number	<input type="text"/>	
Other Business Number	<input type="text"/>	
Primary Email	<input type="text"/>	
Deleted Item Manager	<input type="text"/>	<input type="button" value="Clear"/>

- On the Step 6: Verify Process Data page, verify the data that you have provided and then click **Continue**.

Figure 3–12 shows the details of the process data you created in the Provision Resource to User page.

Figure 3–12 Step 6: Verify Process Data

Provision Resource to User
You are provisioning to ExchangeUser ExchangeUser [EXCHANGEUSER]

Step 6: Verify Process Data

You have selected to provision Exchange to ExchangeUser ExchangeUser [EXCHANGEUSER]

Exchange Mailbox Details Edit

AD Server	ADITResource
Object GUID	
Exchange IT Resource	
Log On Name	
Exchange Remote Manager IT Resource	
Mail Store Name	CN=Mailbox Store (ORACLE-2),CN=First Storage Group,CN=InformationStore,CN=ORACLE-2,
Email Alias	EXCHANGEUSER
Display Name	
Garbage Collection Period(Days)	
Max Incoming Message Size(KB)	
Max Outgoing Message Size(KB)	
Mailbox Size Receipt Quota(KB)	0
Mailbox Size Transmit Quota(KB)	0

9. The "Provisioning has been initiated" message is displayed. Perform one of the following steps:
 - If you are using Oracle Identity Manager release 9.1.0.x, click **Back to User Resource Profile**. The Resource Profile page is displayed. The mailbox is created on the target system and provisioned as a resource to the OIM User. The page that is displayed provides options to disable or revoke the resource from the OIM User.
 - If you are using Oracle Identity Manager release 11.1.1, then:
 - a. Close the window displaying the "Provisioning has been initiated" message.
 - b. On the Resources tab, click **Refresh** to view the newly provisioned resource.

3.6.2.2 Request-Based Provisioning

Note: The information provided in this section is applicable only if you are using Oracle Identity Manager release 11.1.1.

A request-based provisioning operation involves both end users and approvers. Typically, these approvers are in the management chain of the requesters. The following sections discuss the steps to be performed by end users and approvers during a request-based provisioning operation:

Note: The procedures described in these sections are built on an example in which the end user raises or creates a request for provisioning a target system account. This request is then approved by the approver.

- [End User's Role in Request-Based Provisioning](#)

■ Approver's Role in Request-Based Provisioning

3.6.2.2.1 End User's Role in Request-Based Provisioning

The following steps are performed by the end user in a request-based provisioning operation:

See Also: *Oracle Fusion Middleware User's Guide for Oracle Identity Manager* for detailed information about these steps

1. Log in to the Administrative and User Console.
2. On the Welcome page, click **Advanced** in the upper-right corner of the page.
3. On the Welcome to Identity Administration page, click the **Administration** tab, and then click the **Requests** tab.
4. From the Actions menu on the left pane, select **Create Request**.
The Select Request Template page is displayed.
5. From the Request Template list, select **Provision Resource** and click **Next**.
6. On the Select Users page, specify a search criterion in the fields to search for the user that you want to provision the resource, and then click **Search**. A list of users that match the search criterion you specify is displayed in the Available Users list.
7. From the **Available Users** list, select the user to whom you want to provision the account..

If you want to create a provisioning request for more than one user, then from the **Available Users** list, select users to whom you want to provision the account.
8. Click **Move** or **Move All** to include your selection in the Selected Users list, and then click **Next**.
9. On the Select Resources page, click the arrow button next to the Resource Name field to display the list of all available resources.
10. From the Available Resources list, select **Exchange**, move it to the Selected Resources list, and then click **Next**.
11. On the Resource Details page, enter details of the account that must be created on the target system, and then click **Next**.
12. On the Justification page, you can specify values for the following fields, and then click **Finish**.
 - Effective Date
 - Justification

On the resulting page, a message confirming that your request has been sent successfully is displayed along with the Request ID.
13. If you click the request ID, then the Request Details page is displayed.
14. To view details of the approval, on the Request Details page, click the **Request History** tab.

3.6.2.2.2 Approver's Role in Request-Based Provisioning

The following are steps performed by the approver in a request-based provisioning operation:

1. Log in to the Administrative and User Console.

2. On the Welcome page, click **Self-Service** in the upper-right corner of the page.
3. On the Welcome to Identity Manager Self Service page, click the **Tasks** tab.
4. On the **Approvals** tab, in the first section, you can specify a search criterion for request task that is assigned to you.
5. From the search results table, select the row containing the request you want to approve, and then click **Approve Task**.

A message confirming that the task was approved is displayed.

3.6.3 Switching Between Request-Based Provisioning and Direct Provisioning on Oracle Identity Manager Release 11.1.1

Note: It is assumed that you have performed the procedure described in [Section 2.3.1.6, "Configuring Oracle Identity Manager for Request-Based Provisioning."](#)

On Oracle Identity Manager release 11.1.1, if you want to switch from request-based provisioning to direct provisioning, then:

1. Log in to the Design Console.
2. Disable the Auto Save Form feature as follows:
 - a. Expand **Process Management**, and then double-click **Process Definition**.
 - b. Search for and open the **Exchange** process definition.
 - c. Deselect the Auto Save Form check box.
 - d. Click the Save icon.
3. If the Self Request Allowed feature is enabled, then:
 - a. Expand **Resource Management**, and then double-click **Resource Objects**.
 - b. Search for and open the **Exchange** resource object.
 - c. Deselect the Self Request Allowed check box.
 - d. Click the Save icon.

On Oracle Identity Manager release 11.1.1, if you want to switch from direct provisioning back to request-based provisioning, then:

1. Log in to the Design Console.
2. Enable the Auto Save Form feature as follows:
 - a. Expand **Process Management**, and then double-click **Process Definition**.
 - b. Search for and open the **Exchange** process definition.
 - c. Select the **Auto Save Form** check box.
 - d. Click the Save icon.
3. If you want to enable end users to raise requests for themselves, then:
 - a. Expand **Resource Management**, and then double-click **Resource Objects**.
 - b. Search for and open the **Exchange** resource object.
 - c. Select the Self Request Allowed check box.

- d. Click the Save icon.

3.7 Configuring Provisioning in Oracle Identity Manager Release 11.1.2

To configure provisioning operations in Oracle Identity Manager release 11.1.2:

Note: The time required to complete a provisioning operation that you perform the first time by using this connector takes longer than usual.

1. Log in to Oracle Identity Administrative and User console.
2. Create a user. See the "Managing Users" chapter in *Oracle Fusion Middleware User's Guide for 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, and then click **Checkout**.
5. Specify values for fields in the application form and then click **Ready to Submit**.
6. Click **Submit**.
7. If you want to provision a Microsoft Exchange mailbox to an existing OIM User, then:
 - a. On the Users page, search for the required user.
 - b. On the user details page, click **Accounts**.
 - c. Click the **Request Accounts** button.
 - d. Search for the Exchange application instance in the catalog search box and select it.
 - e. Click **Add to Cart**.
 - f. Click **Checkout**.
 - g. Specify values for fields in the application form and then click **Ready to Submit**.
 - h. Click **Submit**.

Extending the Functionality of the Connector

This chapter describes procedures that you can perform to modify the connector for addressing your specific business requirements.

This chapter discusses the following optional procedures:

Note: ■ These procedures are aimed at extending the functionality of the connector.

- If you are using Oracle Identity Manager 11.1.2 or later and modify the parent form (add or delete an attribute), then edit the application instance in usage and create a new form and make it active.
-
- The [Section 4.1, "Modifying Existing Field Mappings"](#) section described the procedure to modify the mappings between fields of the target system and Oracle Identity Manager.
 - The [Section 4.2, "Adding New Fields for Target Resource Reconciliation"](#) section describes the procedure to add mappings between fields of the target system and Oracle Identity Manager.
 - The [Section 4.3, "Adding New Fields for Provisioning"](#) section describes the procedure to add mappings between fields of the target system and Oracle Identity Manager.
 - The [Section 4.4, "Configuring the Connector for Multiple Installations of the Target System"](#) section describes the procedure to configure the connector for multiple installations of the target system.

4.1 Modifying Existing Field Mappings

Default mappings between fields of the target system and Oracle Identity Manager are listed in the following sections:

- [Section 1.4.3.2, "Mailbox Fields for Target Resource Reconciliation"](#)
- [Section 1.4.4.2, "Mailbox Fields for Provisioning"](#)

If you want to modify these mappings, then:

1. Log in to the Design Console.
2. Expand **Administration**, and double-click **Lookup Definition**.
3. Search for and open the lookup definition that you want to modify.

[Table 4–1](#) describes the contents of the lookup definition that contains field mapping information for reconciliation and provisioning.

Table 4–1 Lookup Definitions That Store Field Mapping Information

Lookup Definition	Contents of the Code Key Column	Contents of the Decode Column
Lookup.Exchange.Configuration This is used during reconciliation and provisioning.	Names of fields on Microsoft Active Directory	Names of process form fields for Microsoft Active Directory
AtMap.Exchange This is used during provisioning.	Names of Microsoft Exchange fields on Microsoft Active Directory	Names of process form fields for Microsoft Exchange

- Make the required change in the field mappings by modifying the Code Key and Decode values.

For example, you can change the Code Key value for distinguishedName to sAMAccountName.
- Click the save icon.

4.2 Adding New Fields for Target Resource Reconciliation

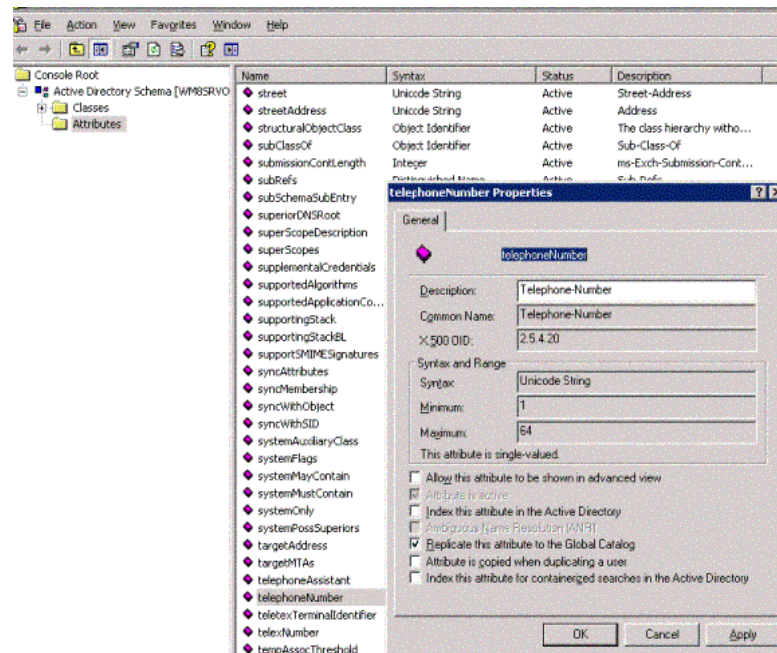
Note: This section describes an optional procedure. Perform this procedure only if you want to add new fields for target resource reconciliation.

By default, the fields listed in [Table 1–3, "Mailbox Fields for Target Resource Reconciliation"](#) are mapped for reconciliation between the target system and Oracle Identity Manager. If required, you can add new fields for target resource reconciliation.

Before you add a new field for target resource reconciliation, you must first determine the target system name of the field as follows:

- Install the Microsoft Active Directory schema, if it is not already installed.
Refer to the Microsoft Web site for information about installing the schema.
- Open the Microsoft Active Directory schema.
- Expand the **Console Root** folder, expand the schema, and then click **Attributes**.
- Search for the field that you want to add, and then note down its name.

For example, if you want to add the Telephone Number field for reconciliation, then note down telephoneNumber. [Figure 4–1](#) shows the Telephone Number field added in the telephoneNumber Properties dialog box.

Figure 4–1 New Field Added for Reconciliation

To add a new field for target resource reconciliation:

See Also: One of the following guides for detailed information about these steps:

- For Oracle Identity Manager release 9.1.0.x: *Oracle Identity Manager Design Console Guide*
- For Oracle Identity Manager release 11.1.1: *Oracle Fusion Middleware Developer's Guide for Oracle Identity Manager*

1. Log in to the Oracle Identity Manager Design Console.
2. Create a new version of the process form as follows:
 - a. Expand **Development Tools**.
 - b. Double-click **Form Designer**.
 - c. Search for and open the **UD_MSEXCHG** process form.
 - d. Click **Create New Version**. On the Create a new version dialog box, enter a new version in the Label field, and then click the **Save** icon. [Figure 4–2](#) shows the new version of the form created in the process form.

Figure 4–2 New Version of Process Form

Form Designer

Table Information

Table Name: UD_MSEXCHG
Description: Exchange Form
Form Type: ☒ Process ☐ Object

Version Information

Latest Version: v1
Active Version: v1

Operations

Current Version: v1
Buttons: Create New Version, Make Version Active

Additional Columns

Add	Delete	Name	Variant Type	Length	Field Label	Field Type	Default Value	Order	Application Profile	Encrypted
		UD_MSEXCHG_OTNString	String	20	Other Business Num	TextField		27		
		UD_MSEXCHG_VWAMString	String	10	Mailbox Warning Siz	TextField	0	14		
		UD_MSEXCHG_RECISong	String	10	Max Recipients Per	TextField		15		
		UD_MSEXCHG_USEISong	String	5	Use Storage Defaults	LookupField		6		
		UD_MSEXCHG_HIDEISong	String	5	Hide From Address	LookupField		7		
		UD_MSEXCHG_ADSSong	String	100	AD Server	ITResourceLoo		4		
		UD_MSEXCHG_MOBISong	String	20	Mobile Number	TextField		14		
		UD_MSEXCHG_PAGISong	String	32	Pager Number	TextField		25		
		UD_MSEXCHG_EXCHISong	String	10	Exchange IT Resour	ITResourceLoo		3		
		UD_MSEXCHG_BUSISong	String	20	Major Business Num	TextField		26		
		UD_MSEXCHG_LOGISong	String	150	Log On Name	TextField		4		
		UD_MSEXCHG_EXCHISong	String	10	Exchange Remote M	ITResourceLoo		5		
		UD_MSEXCHG_MAILISong	String	300	Mail Store Name	LookupField		5		
		UD_MSEXCHG_PRIISong	String	80	Primary Email	TextField		29		
		UD_MSEXCHG_OBJISong	String	32	Object GUID	DOField		2		
		UD_MSEXCHG_ALIASong	String	50	Email Alias	TextField		6		
		UD_MSEXCHG_DISPISong	String	100	Display Name	TextField		7		
		UD_MSEXCHG_GARBISong	String	10	Garbage Collection	TextField		8		
		UD_MSEXCHG_INMSong	String	10	Max Incoming Messe	TextField		10		
		UD_MSEXCHG_OUTISong	String	10	Max Outgoing Messe	TextField		11		
		UD_MSEXCHG_RECISong	String	10	Mailbox Size Recei	TextField	0	12		
		UD_MSEXCHG_TRAISong	String	10	Mailbox Size Tran	TextField	0	13		
		UD_MSEXCHG_DEUISong	String	2	Deleted Item Manag	LookupField		30		

3. Add the new field on the process form as follows:
 - a. Click **Add**. A field is added to the list. Enter the details of the field.
For example, if you are adding the Telephone Number field, enter UD_MSEXCHG_TELEPHONE_NUMBER in the **Name** field and then enter the rest of the details of this field.
 - b. Click **Save**.
 - c. To activate the newly created form, click **Make Version Active**. [Figure 4–3](#) shows details of the new field added in the process form.

Figure 4–3 New Field Added to the Process Form

Additional Columns	Child Table(s)	Object Permissions	Properties	Administrators	Usage	Pre-Populate
Add						
Delete						
Name	Variant Type	Length	Field Label	Field Type		
UD_MSEXCHG_OTHNUMBER	String	20	Other Business Number	TextField		
UD_MSEXCHG_VWARNSIZE	String	10	Mailbox Warning Size(KB)	TextField		
UD_MSEXCHG_RECIPLIMIT	String	10	Max Recipients Per Message	TextField		
UD_MSEXCHG_USEDEFAULTS	String	5	Use Storage Defaults	LookupField		
UD_MSEXCHG_HIDEFROMADDRLISTS	String	5	Hide From Address Lists	LookupField		
UD_MSEXCHG_ADSEVER	long		AD Server	ITResourceLoo		
UD_MSEXCHG_MOBILE	String	20	Mobile Number	TextField		
UD_MSEXCHG_PAGER	String	32	Pager Number	TextField		
UD_MSEXCHG_EXCHANGEITRESOURCE	long		Exchange IT Resource	ITResourceLoo		
UD_MSEXCHG_BUSINESS	String	20	Major Business Number	TextField		
UD_MSEXCHG_LOGONNAME	String	150	Log On Name	TextField		
UD_MSEXCHG_EXCHREMOTEANAGER	long		Exchange Remote Manager IT Resource	ITResourceLoo		
UD_MSEXCHG_MAILSTORENAME	String	300	Mail Store Name	LookupField		
UD_MSEXCHG_PRIMARYEMAIL	String	80	Primary Email	TextField		
UD_MSEXCHG_OBJECTGUID	String	32	Object GUID	DOField		
UD_MSEXCHG_ALIAS	String	50	Email Alias	TextField		
UD_MSEXCHG_DISPLAYNAME	String	100	Display Name	TextField		
UD_MSEXCHG_GARBAGECOLL	String	10	Garbage Collection Period(Days)	TextField		

4. Add the new field to the list of reconciliation fields in the resource object as follows:
 - a. Expand **Resource Management**.

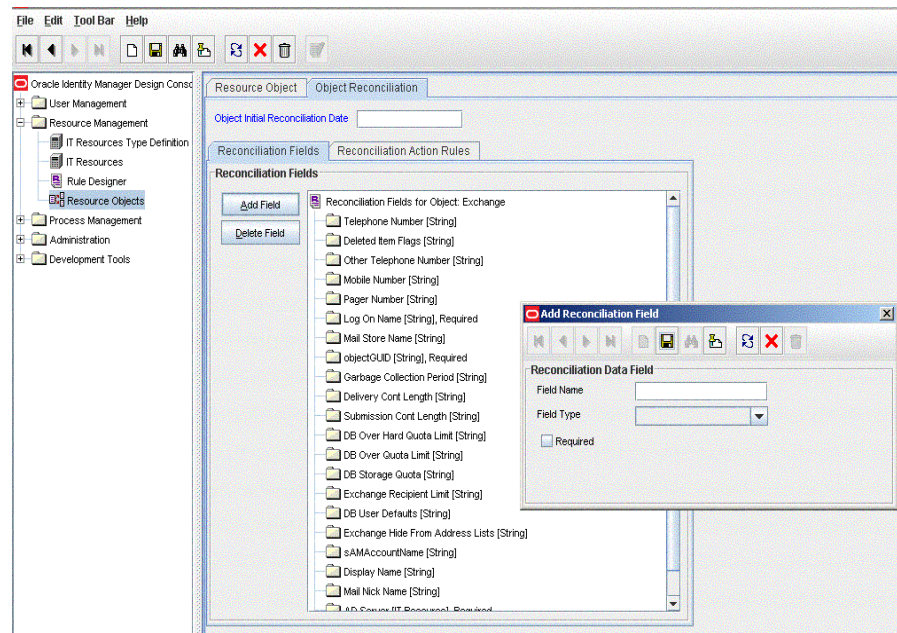
- b. Double-click **Resource Objects**.
- c. Search for and open the **Exchange User** resource object.
- d. On the Object Reconciliation tab, click **Add Field**.
- e. In the Add Reconciliation Field dialog box, enter the details of this field.

For example, enter Telephone Number in the **Field Name** field and select **String** from the Field Type list.

Later in this procedure, you will enter the field name as the Decode value of the entry that you create in the lookup definition for reconciliation.

- f. If you are using Oracle Identity Manager release 11.1.1, then click **Create Reconciliation Profile**. This copies changes made to the resource object into the MDS.
- g. Click **Save**. [Figure 4-4](#) shows the new reconciliation field added to the resource object in the process form.

Figure 4-4 New Field Added to the Resource Object



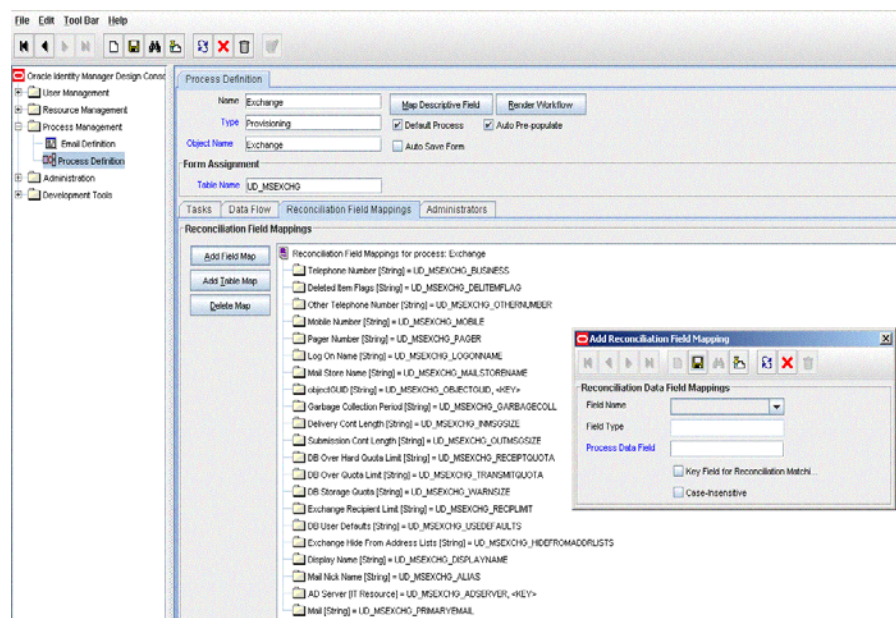
5. Create a reconciliation field mapping for the new field on the process form as follows:
 - a. Expand **Process Management**.
 - b. Double-click **Process Definition**.
 - c. From the Process Definition table, select and open the **Exchange User** resource object.
 - d. Click **Reconciliation Field Mappings** and then click **Add Field Map**.
 - e. In the Field Name field, select the value for the field that you want to add.
For example, select Telephone Number.
 - f. In the **Field Type** field, select the type of the field that is prepopulated.

- g. Double-click the **Process Data Field** field. A list of process data columns is displayed. From the list, select the process data column corresponding to the process data field.

For example, select Telephone Number = UD_EXCHANGEUSER_TELEPHONE_NUMBER.

- h. Click the **Save** icon. Figure 4–5 shows the mapping of new reconciliation field to the Process Data Field in the process form.

Figure 4–5 Reconciliation Field Mappings



6. Create an entry for the field in the lookup definition for reconciliation as follows:
 - a. Expand **Administration**.
 - b. Double-click **Lookup Definition**.
 - c. Search for and open the **AtMap.Exchange** lookup definition.
 - d. Click **Add** and enter the Code Key and Decode values for the field. The Code Key value must be the name of the field on the target system, which you determined at the start of this procedure.

For example, enter `telephoneNumber` in the **Code Key** field and then enter `Telephone Number` in the **Decode** field.

- e. Click **Save**. Figure 4–6 shows the code key and the decode value added to the lookup definition in the process form.

Figure 4–6 AtMap.Exchange Lookup Definition

The screenshot shows the 'Lookup Definition' dialog in the Oracle Identity Manager Design Console. The 'Code' field is set to 'AtMap.Exchange'. The 'Field' field is empty. The 'Lookup Type' radio button is selected. The 'Required' checkbox is unchecked. The 'Group' field is set to 'AtMap.Exchange'. Below the dialog, a table titled 'Lookup Code Information' is displayed.

Add	Code Key	Decode
<input type="checkbox"/>	1 uSNChanged	USN Changed
<input type="checkbox"/>	2 mail	Mail
<input type="checkbox"/>	3 mailNickname	Mail Nick Name
<input type="checkbox"/>	4 displayName	Display Name
<input type="checkbox"/>	5 garbageCollectionPeriod	Garbage Collection Period
<input type="checkbox"/>	6 userPrincipalName	Log On Name
<input type="checkbox"/>	7 deletedItemFlags	Deleted Item Flags
<input type="checkbox"/>	8 deliveryContentLength	Delivery Content Length
<input type="checkbox"/>	9 submissionContentLength	Submission Content Length
<input type="checkbox"/>	10 mDBOverHardQuotaLimit	DB Over Hard Quota Limit
<input type="checkbox"/>	11 mDBOverQuotaLimit	DB Over Quota Limit
<input type="checkbox"/>	12 mDBStorageQuota	DB Storage Quota
<input type="checkbox"/>	13 msExchangeRecipientLimit	Exchange Recipient Limit
<input type="checkbox"/>	14 mDBUseDefaults	DB User Defaults
<input type="checkbox"/>	15 msExchangeHideFromAddressList	Exchange Hide From Address List
<input type="checkbox"/>	16 telephoneNumber	Telephone Number
<input type="checkbox"/>	17 mobile	Mobile Number
<input type="checkbox"/>	18 pager	Pager Number
<input type="checkbox"/>	19 otherTelephone	Other Telephone Number
<input type="checkbox"/>	20 sAMAccountName	sAMAccountName
<input type="checkbox"/>	21 distinguishedName	Distinguished Name
<input type="checkbox"/>	22 whenChanged	When Changed
<input type="checkbox"/>	23 objectGUID	Object GUID
<input type="checkbox"/>	24 homeMDB	Mail Store Name
<input type="checkbox"/>	25 uSNCreated	USN Created

7. If you are using Oracle Identity Manager release 11.1.2 or later, create a new UI form and attach it to the application instance to make this new field visible. See [Section 2.3.1.1.3, "Creating a New UI Form"](#) and [Section 2.3.1.1.7, "Updating an Existing Application Instance with a New Form"](#) for the procedures.

4.3 Adding New Fields for Provisioning

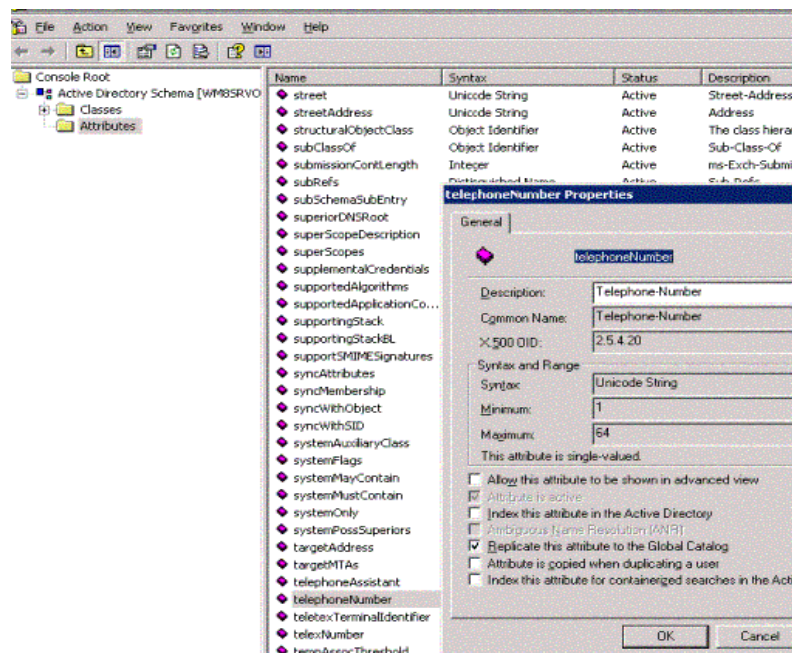
Note: This section describes an optional procedure. Perform this procedure only if you want to add new fields for provisioning

By default, the fields listed in [Table 1–6, "Mailbox Fields Used in Provisioning"](#) are mapped for provisioning between Oracle Identity Manager and the target system. If required, you can map additional fields for provisioning.

Before you add a new field for provisioning, you must first determine the name of the field from the Microsoft Active Directory schema as follows:

1. Log in to Microsoft Active Directory.
2. Open the Microsoft Active Directory schema.
3. Expand the **Console Root** folder, expand the schema, and then click **Attributes**.
4. Search for the field that you want to add, and then note down its name.

For example, if you want to add the Telephone Number field for reconciliation, then note down telephoneNumber. [Figure 4–7](#) shows the Telephone Number added in the telephoneNumber Properties dialog box.

Figure 4–7 New Field Added for Provisioning

To add a new field for provisioning:

See Also: One of the following guides for detailed information about these steps:

- For Oracle Identity Manager release 9.1.0.x: *Oracle Identity Manager Design Console Guide*
- For Oracle Identity Manager release 11.1.1: *Oracle Fusion Middleware Developer's Guide for Oracle Identity Manager*

1. Log into Oracle Identity Manager Design Console.
2. Create a new version of the process form:
 - a. Expand **Development Tools**.
 - b. Double-click **Form Designer**.
 - c. Search for and open the **UD_MSEXCHG** process form.
 - d. Click **Create New Version**. On the Create a new version dialog box, enter a new version in the Label field, and then click the **Save** icon. [Figure 4–8](#) shows the new version form created in the process form.

Figure 4–8 New Version Created in the Process Form

	Name	Variant Type	Length	Field Label	Field Type	Default Value	Order	Application Profile	Encrypted
1	UD_MSEXCHG_OTHString	String	20	Other Business Num	TextField		27		
2	UD_MSEXCHG_WAFString	String	10	Mailbox Warning Siz	TextField	0	14		
3	UD_MSEXCHG_RECString	String					5		
4	UD_MSEXCHG_USEString	String					6		
5	UD_MSEXCHG_HIDString	String					7		
6	UD_MSEXCHG_ADString	String							
7	UD_MSEXCHG_MCEString	String					4		
8	UD_MSEXCHG_PAGString	String					25		
9	UD_MSEXCHG_EXCString	String		Exchange IT Resour	ITResourceLo		3		
10	UD_MSEXCHG_BUSString	String	20	Major Business Num	TextField		26		
11	UD_MSEXCHG_LOGString	String	150	Log On Name	TextField		4		
12	UD_MSEXCHG_EXCString	String		Exchange Remote M	ITResourceLo		5		
13	UD_MSEXCHG_MALString	String	300	Mail Store Name	LookupField		5		
14	UD_MSEXCHG_PRIString	String	80	Primary Email	TextField		29		
15	UD_MSEXCHG_OBString	String	32	Object GUID	DOField		2		
16	UD_MSEXCHG_ALUString	String	50	Email Alias	TextField		6		
17	UD_MSEXCHG_DSPString	String	100	Display Name	TextField		7		
18	UD_MSEXCHG_GARString	String	10	Garbage Collection	TextField		8		
19	UD_MSEXCHG_INMString	String	10	Max Incoming Messa	TextField		10		
20	UD_MSEXCHG_OUTString	String	10	Max Outgoing Messa	TextField		11		
21	UD_MSEXCHG_RECString	String	10	Mailbox Size Recept	TextField	0	12		
22	UD_MSEXCHG_TRAString	String	10	Mailbox Size Transp	TextField	0	13		
23	UD_MSEXCHG_DELString	String	2	Deleted Item Manage	LookupField		30		

3. Add the new field on the process form.

If you have added the field on the process form by performing Step 3 of "[Adding New Fields for Target Resource Reconciliation](#)" on page 4-2, then you need not add the field again. If you have not added the field, then:

- a. Click **Add**. A field is added to the list. Enter the details of the field.

For example, if you are adding the Telephone Number field, enter UD_MSEXCHG_TELEPHONE_NUMBER in the **Name** field and then enter the rest of the details of this field.

- b. Click **Save** and then click **Make Version Active**. [Figure 4–9](#) shows the new field added in the process form.

Figure 4–9 New Field Added in the Process Form

The screenshot shows the Oracle Identity Manager Design Console with the Form Designer tab active. The left sidebar lists various management tools, with 'Form Designer' selected. The main window displays the configuration for a form named 'UD_MSEXCHG' (Exchange Form). The 'Form Type' is set to 'Process'. The 'Version Information' section shows 'Latest Version' as 'v2' and 'Active Version' as 'v2'. The 'Operations' section shows 'Current Version' as 'v2' and buttons for 'Create New Version' and 'Make Version Active'.

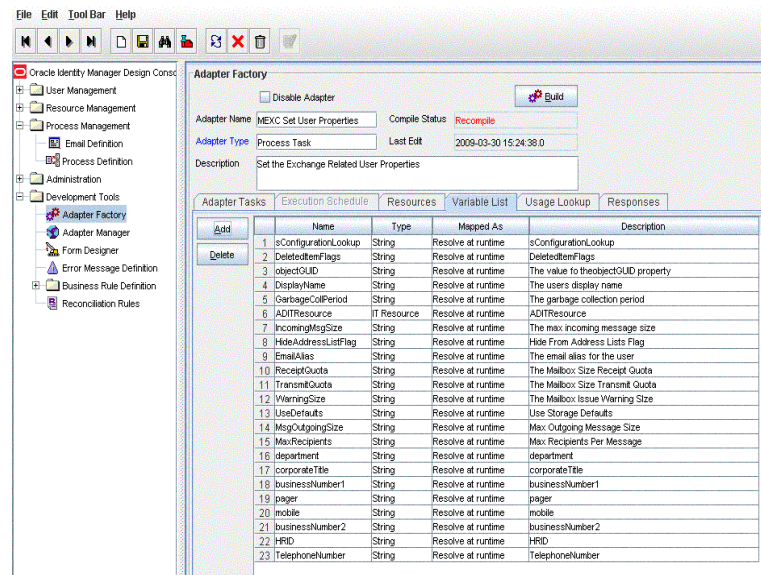
Below the configuration panel is a table listing fields for the form. The table has columns: Add, Name, Variant Type, Length, Field Label, Field Type, Default Value, Order, Application Profile, and Encrypted. The table contains 24 rows of fields, including 'UD_MSEXCHG_OTHERNUMBER', 'UD_MSEXCHG_WARNINGSIZE', 'UD_MSEXCHG_RECPLIMIT', 'UD_MSEXCHG_USEDEFAULTS', 'UD_MSEXCHG_HIDEFROMADDRESSLISTS', 'UD_MSEXCHG_ADSEVER', 'UD_MSEXCHG_MOBILE', 'UD_MSEXCHG_PAGER', 'UD_MSEXCHG_EXCHANGOTRESOURCE', 'UD_MSEXCHG_BUSINESS', 'UD_MSEXCHG_LOGONNAME', 'UD_MSEXCHG_EXCHREMOTEMANAGER', 'UD_MSEXCHG_MAILSTORENAME', 'UD_MSEXCHG_PRIMARYEMAIL', 'UD_MSEXCHG_OBJECTGUID', 'UD_MSEXCHG_ALIAS', 'UD_MSEXCHG_DISPLAYNAME', 'UD_MSEXCHG_GARBAGECOLL', 'UD_MSEXCHG_INMSGSIZE', 'UD_MSEXCHG_OUTMSGSIZE', 'UD_MSEXCHG_RECEIPTQUOTA', 'UD_MSEXCHG_TRANSMITQUOTA', 'UD_MSEXCHG_DELETEFLAG', and 'UD_MSEXCHG_TELEPHONE_NUMBER'.

Add	Name	Variant Type	Length	Field Label	Field Type	Default Value	Order	Application Profile	Encrypted
	UD_MSEXCHG_OTHERNUMBER	String	20	Other Business Number	TextField		27		
	UD_MSEXCHG_WARNINGSIZE	String	10	Mailbox Warning Size(KB)	TextField	0	14		
	UD_MSEXCHG_RECPLIMIT	String	10	Max Recipients Per Message	TextField		15		
	UD_MSEXCHG_USEDEFAULTS	String	5	Use Storage Defaults	LookupField	TRUE	16		
	UD_MSEXCHG_HIDEFROMADDRESSLISTS	String	5	Hide From Address Lists	LookupField	FALSE	17		
	UD_MSEXCHG_ADSEVER	long		AD Server	ITResourceLoo		1		
	UD_MSEXCHG_MOBILE	String	20	Mobile Number	TextField		24		
	UD_MSEXCHG_PAGER	String	32	Pager Number	TextField		25		
	UD_MSEXCHG_EXCHANGOTRESOURCE	long		Exchange IT Resource	ITResourceLoo		3		
	UD_MSEXCHG_BUSINESS	String	20	Major Business Number	TextField		26		
	UD_MSEXCHG_LOGONNAME	String	150	Log On Name	TextField		4		
	UD_MSEXCHG_EXCHREMOTEMANAGER	long		Exchange Remote Manager IT Resource	ITResourceLoo		5		
	UD_MSEXCHG_MAILSTORENAME	String	300	Mail Store Name	LookupField		5		
	UD_MSEXCHG_PRIMARYEMAIL	String	80	Primary Email	TextField		29		
	UD_MSEXCHG_OBJECTGUID	String	32	Object GUID	DOField		2		
	UD_MSEXCHG_ALIAS	String	50	Email Alias	TextField		6		
	UD_MSEXCHG_DISPLAYNAME	String	100	Display Name	TextField		7		
	UD_MSEXCHG_GARBAGECOLL	String	10	Garbage Collection Period(Days)	TextField		8		
	UD_MSEXCHG_INMSGSIZE	String	10	Max Incoming Message Size(KB)	TextField		10		
	UD_MSEXCHG_OUTMSGSIZE	String	10	Max Outgoing Message Size(KB)	TextField		11		
	UD_MSEXCHG_RECEIPTQUOTA	String	10	Mailbox Size Receipt Quota(KB)	TextField	0	12		
	UD_MSEXCHG_TRANSMITQUOTA	String	10	Mailbox Size Transmit Quota(KB)	TextField	0	13		
	UD_MSEXCHG_DELETEFLAG	String	2	Deleted Item Manager	LookupField		30		
	UD_MSEXCHG_TELEPHONE_NUMBER	String	30	Telephone Number	TextField		40		

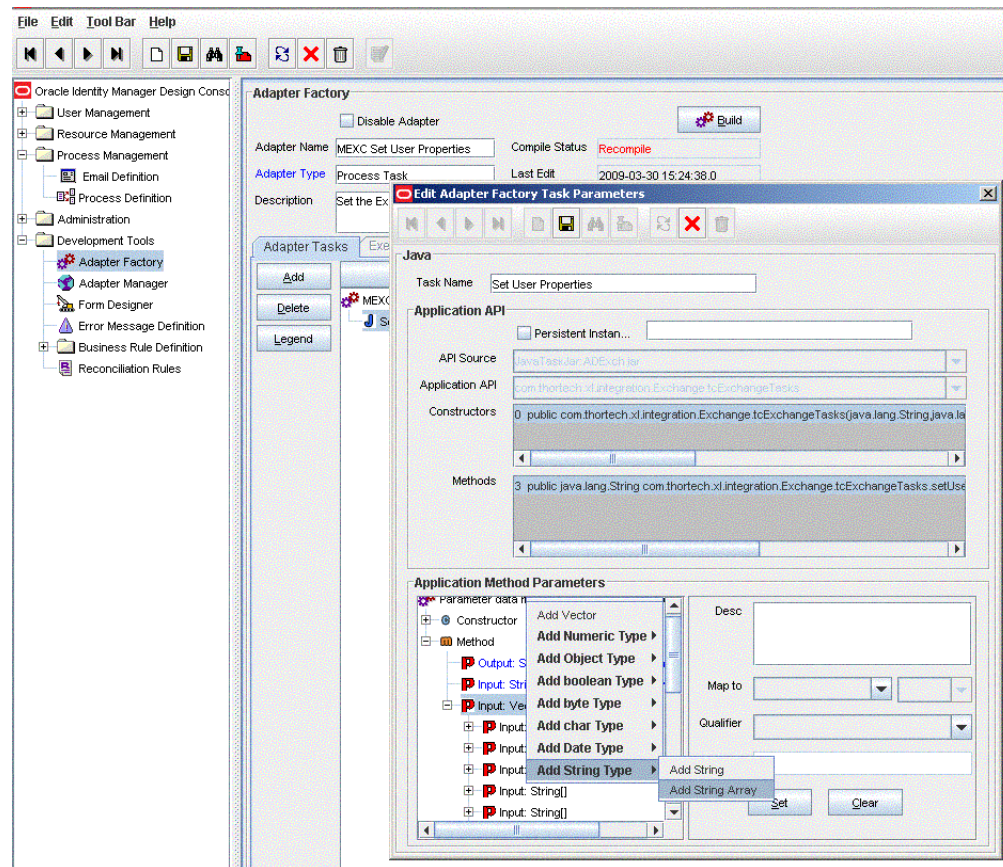
4. Create a new variable in the Adapter Factory section:
 - a. Expand **Development Tools**.
 - b. Click **Adapter Factory** and query to get all adapters. The adapter factory table is displayed.
 - c. Double-click **MEXC Set User Properties**.

Navigate to the **Variable List** tab, click **Add**, and create a new variable corresponding to the value that you want to provision.

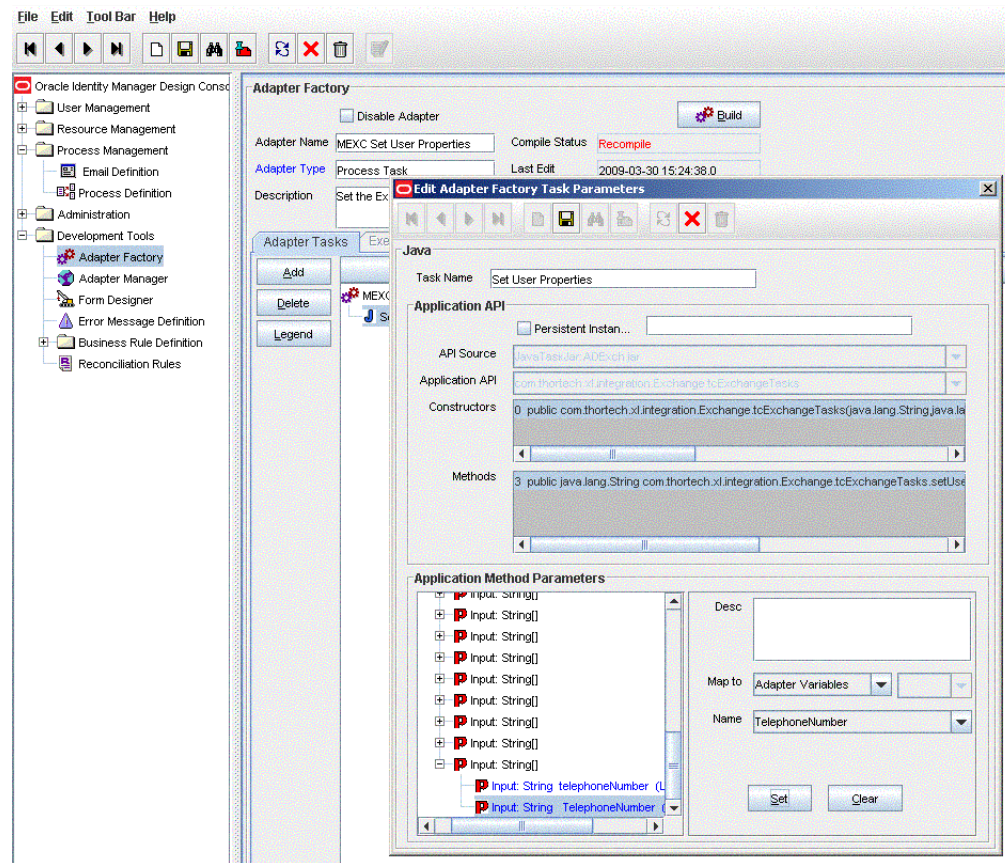
Click **Save**. Figure 4–10 shows the new variable added in the process form.

Figure 4–10 New Variable Added in the Process Form

5. Add string array to the vector:
 - a. In the Adapters Task tab, double-click **Set User Properties**.
 - b. Expand the method and right-click **Input: Vector**.
 - c. Select **Add String Type** and then select **Add String Array**. A new string array item is added at the end of the vector.
 - d. Right-click **Input: String[]**, select **Add String** and then add two strings.
 - e. Click **Save**. [Figure 4–11](#) shows the string array added to the vector in the process form.

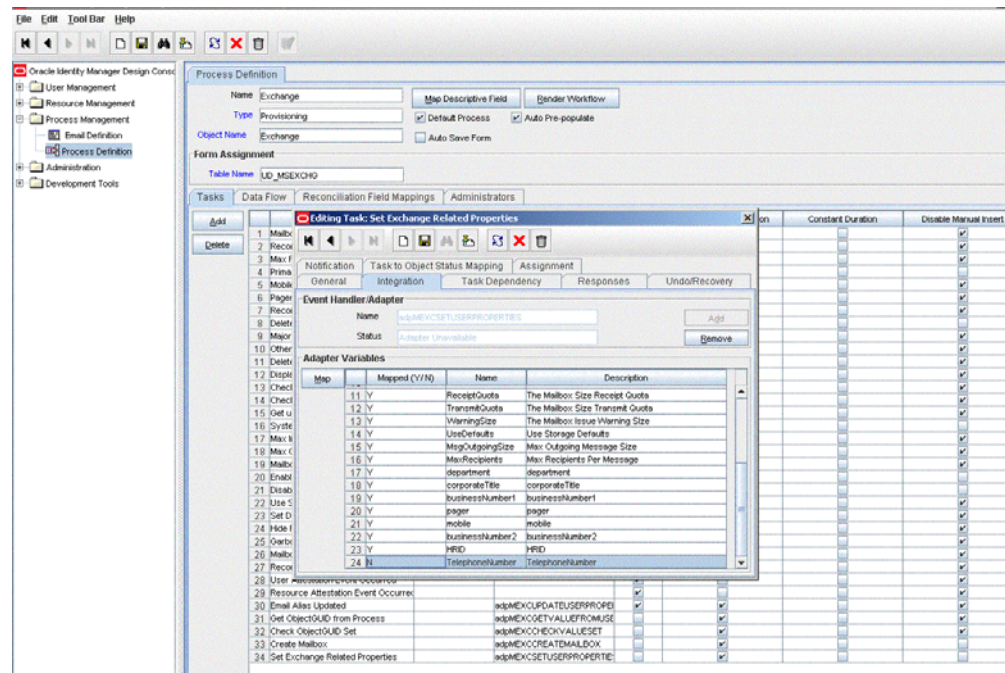
Figure 4–11 String Array Added to the Vector

6. Map the string:
 - a. Map the first item to a literal. The value of the literal should be the attribute value on the target system.
 - b. Click **Save**. [Figure 4–12](#) shows the string mapped to a literal in the process form.

Figure 4–13 String Mapped to Adapter Variable

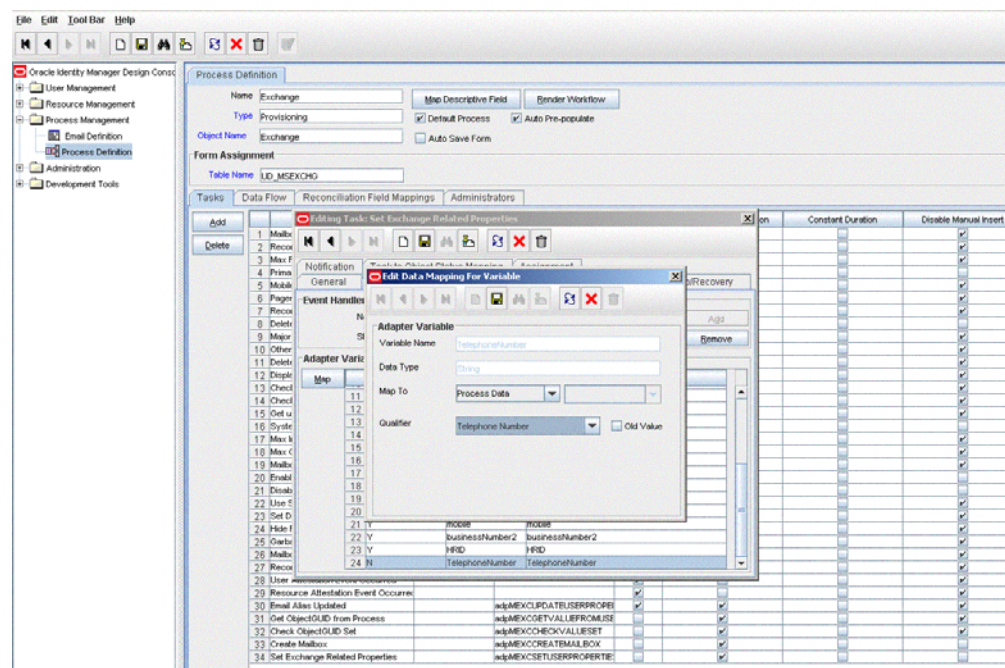
7. Map the variable to process data:
 - a. Expand **Process Management**.
 - b. Double-click **Process Definition**.
 - c. Select **Set the Exchange Related User Properties**.
 - d. Double-click **Process Task** and navigate to the **Integration** tab. The newly mapped variable will have the mapped status as **N**. [Figure 4–14](#) shows the newly mapped variable in the process definition.

Figure 4–14 Mapped Variable in Process Definition



- In the **Map To** field, select **Process Data**.
- In the **Qualifier** field, select the name of the form label, which you have entered in the form.
- Click **Save**. Figure 4–15 shows the adapter variable mapped to the process data field.

Figure 4–15 Variable Mapped to Process Data Field



Note: Perform steps 8 through 10 only if you want to perform request-based provisioning.

8. Update the request dataset.

When you add an attribute on the process form, you also update the XML file containing the request dataset definitions. To update a request dataset:

- a.** In a text editor, open the XML file located in the *OIM_HOME/DataSet/file* directory for editing.
- b.** Add the `AttributeReference` element and specify values for the mandatory attributes of this element.

See Also: The "Configuring Requests" chapter of the *Oracle Fusion Middleware Developer's Guide for Oracle Identity Manager* guide for more information about creating and updating request datasets

For example, while performing Step 3 of this procedure, if you added Telephone Number as an attribute on the process form, then enter the following line:

```
<AttributeReference
name = "Telephone Number"
attr-ref = "Telephone Number"
type = "String"
widget = "text"
length = "30"
available-in-bulk = "false"/>
```

In this `AttributeReference` element:

- For the name attribute, enter the value in the Name column of the process form without the tablename prefix.

For example, if `UD_MSEXCHG_TELEPHONE_NUMBER` is the value in the Name column of the process form, then you must specify `Telephone Number` as the value of the name attribute in the `AttributeReference` element.
- For the attr-ref attribute, enter the value that you entered in the Field Label column of the process form while performing Step 3.
- For the type attribute, enter the value that you entered in the Variant Type column of the process form while performing Step 3.
- For the widget attribute, enter the value that you entered in the Field Type column of the process form, while performing Step 3.
- For the length attribute, enter the value that you entered in the Length column of the process form while performing Step 3.
- For the available-in-bulk attribute, specify `true` if the attribute must be available during bulk request creation or modification. Otherwise, specify `false`.

While performing Step 3, if you added more than one attribute on the process form, then repeat this step for each attribute added.

- c.** Save and close the XML file.

9. Run the PurgeCache utility to clear content related to request datasets from the server cache.

See *Oracle Fusion Middleware System Administrator's Guide for Oracle Identity Manager* for more information about the PurgeCache utility.

10. If you are using Oracle Identity Manager release 11.1.1 or later, import into MDS, the request dataset definitions in XML format.

See the ["Importing Request Datasets into MDS"](#) section for detailed information about the procedure.

11. If you are using Oracle Identity Manager release 11.1.2 or later, create a new UI form and attach it to the application instance to make this new field visible. See [Section 2.3.1.1.3, "Creating a New UI Form"](#) and [Section 2.3.1.1.7, "Updating an Existing Application Instance with a New Form"](#) for the procedures.

4.4 Configuring the Connector for Multiple Installations of the Target System

Note: This section describes an optional procedure. Perform this procedure if your target system is installed in a cross-domain or multi-forest environment.

If your target system is installed in a clustered environment, then you need not perform this procedure.

You may want to configure the connector for multiple installations of Microsoft Exchange. The following example illustrates this requirement:

The Tokyo, London, and New York offices of Example Multinational Inc. have their own installations of Microsoft Exchange. The company has recently installed Oracle Identity Manager, and they want to configure Oracle Identity Manager to link all the installations of Microsoft Exchange.

To meet the requirement posed by such a scenario, you must configure the connector for multiple installations of Microsoft Exchange.

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

See Also: One of the following guides for detailed instructions on performing each step of this procedure:

- For Oracle Identity Manager release 9.1.0.x: *Oracle Identity Manager Design Console Guide*
- For Oracle Identity Manager release 11.1.1: *Oracle Fusion Middleware Developer's Guide for Oracle Identity Manager*

1. Create and configure one IT resource for each target system installation.

The IT Resources form is in the Resource Management folder. An IT resource is created when you import the connector XML file. You can use this IT resource as the template for creating the remaining IT resources, of the same IT resource type. For information about the procedure to create an IT resource, see ["Creating the IT Resource"](#) on page 2-8.

2. Create copies of the reconciliation scheduled tasks for each installation of the target system. While creating a scheduled task, specify attribute values

corresponding to the target system installation for which you are creating the scheduled task.

See ["Reconciliation Scheduled Tasks"](#) on page 3-7 for information about the values to be specified for the scheduled task attributes.

Note: In Oracle Identity Manager release 11.1.1, a scheduled job is an instance of a scheduled task. In this guide, the term **scheduled task** used in the context of Oracle Identity Manager release 9.1.0.x is the same as the term **scheduled job** in the context of Oracle Identity Manager release 11.1.1.

See *Oracle Fusion Middleware System Administrator's Guide for Oracle Identity Manager* for more information about scheduled tasks and scheduled jobs.

3. Manually synchronize the lookup definitions in Oracle Identity Manager with the lookup field values on the target system.

When you use the Administrative and User Console to perform provisioning, you can specify the IT resource corresponding to the Microsoft Exchange installation to which you want to provision the user.

This section also discusses the following topics:

- [Section 4.4.1, "Creating Copies of the Connector"](#)
- [Section 4.4.2, "Populating the Second IT Resource on the Process Form"](#)

4.4.1 Creating Copies of the Connector

To create a copy of the connector:

1. Create copies of the IT resource, resource object, process form, provisioning process, scheduled tasks, and lookup definitions that hold attribute mappings.
2. Create a copy of the Lookup.Exchange.Configuration lookup definition. In the copy that you create, change the values of the following entries to match the details of the process form copy that you create.
 - ROExgInMsgSizeCol
 - ROExgOutMsgSizeCol

See ["Configuring the Lookup.Exchange.Configuration Lookup Definition"](#) on page 3-4 for information about these entries.

3. Map the new process tasks to the copy of the Lookup.Exchange.Configuration lookup definition.
4. If you have create a copy of the Lookup.AD.Configuration, then you must enter the name of the copy in the AD Configuration Lookup Code Key of the Lookup.Exchange.Configuration lookup definition.

4.4.2 Populating the Second IT Resource on the Process Form

Populating the second IT resource on the process form may not work because it cannot be populated through the user interface if you are using the Oracle Identity Manager 11g release (11.1.2) or later. You must perform the following procedure to ensure that the second IT resource can be populated on the process form:

1. Create an entity adapter using the following sample Java class:

```
package oracle.oim.apisamples.adapters;

import java.util.HashMap;
import java.util.Map;
import java.util.Properties;

import Thor.API.tcResultSet;
import Thor.API.tcUtilityFactory;

import Thor.API.Operations.tcITResourceInstanceOperationsIntf;

import com.thortech.xl.util.config.ConfigurationClient;

public class ITResourcePrepop {

    private static Map<String, String> CHILD_PARENT_ITRESNAME_MAP = new
HashMap<String, String>();

    static {
        CHILD_PARENT_ITRESNAME_MAP.put("ITRes_Key1", "ITRes_Name1");
        CHILD_PARENT_ITRESNAME_MAP.put("ITRes_Key2", "ITRes_Name2");
        CHILD_PARENT_ITRESNAME_MAP.put("ITRes_Key3", "ITRes_Name3");
    }

    public Long getITResourceKey() {
        return new Long(4);
    }

    //public Long getITResourceKey(Long svrKey) throws Exception {
    public Long getITResourceKey(long svrKey) throws Exception {
        //Long svrKey = (Long)osvrKey;
        Properties jndi = ConfigurationClient.getComplexSettingByPath(
            "Discovery.CoreServer").getAllSettings();

        tcUtilityFactory factory = new tcUtilityFactory(jndi, "xelsysadm",
            "Password");
        tcITResourceInstanceOperationsIntf itInstIntf =
(tcITResourceInstanceOperationsIntf)factory.getUtility(
            "Thor.API.Operations.tcITResourceInstanceOperationsIntf");
        System.out.println("signature login complete");

        String itResName = getITResourceNameFromKey(itInstIntf, svrKey + "");

        String parentITResName = CHILD_PARENT_ITRESNAME_MAP.get(itResName);

        String parentITResKey = getITResourceKeyFromName(itInstIntf,
parentITResName);
        Long retVal = Long.parseLong(parentITResKey);

        return retVal;
    }

    private String getITResourceNameFromKey(tcITResourceInstanceOperationsIntf
itInstIntf, String itresKey) throws Exception {

        HashMap map = new HashMap();
        map.put("IT Resources.Key", itresKey);
```

```
        tcResultSet rs = itInstIntf.findITResourceInstances(map);
        rs.goToRow(0);

        String itResName = rs.getStringValue("IT Resources.Name");
        System.out.println("IT resource name = " + itResName);

        return itResName;
    }

    private String getITResourceKeyFromName(tcITResourceInstanceOperationsIntf
itInstIntf, String itresName) throws Exception {

        HashMap map = new HashMap();
        map.put("IT Resources.Name", itresName);

        tcResultSet rs = itInstIntf.findITResourceInstances(map);
        rs.goToRow(0);

        String itResKey = rs.getStringValue("IT Resources.Key");
        System.out.println("Returning IT resource key = " + itResKey);

        return itResKey;
    }
}
```

2. Compile the adapter.
3. On the Data Object Manager form in the design console, attach the entity adapter to the tcUD_MSEXCHG data object.
4. Map the return value of this adapter to the Microsoft AD IT resource name.
5. Schedule the adapter to run as post-insert.

Known Issues and Troubleshooting

This chapter discusses the following topics related to connector testing:

- [Section 5.1, "Known Issues"](#)
- [Section 5.2, "Troubleshooting"](#)

5.1 Known Issues

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

- **Bug 7207232**

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

Suppose you can enter 50 characters of English in the User Last Name field of the target system. If you have configured the target system for the Japanese language, then you would not be able to enter more than 25 characters in the same field.

- **Bug 9923635**

If you have deployed the connector on Oracle Identity Manager release 11.1.1 and you are using Microsoft Exchange 2007 as a target system, then you cannot perform bulk provisioning operations.

On Microsoft Exchange 2007, the Log On Name process form field is a mandatory field for provisioning. During bulk provisioning, if you enter a value in the Log On Name field, this value is applied to all users being provisioned. In such a scenario, provisioning fails because no two users can have the same logon name.

Therefore, as a workaround, attach a prepopulate adapter to the Log On Name field of the UD_MSEXCHG form.

Note: If you attach a prepopulate adapter to the Log On Name field, then during provisioning, *do not* enter a value for this field. The prepopulate adapter automatically populates values for this field. These values are displayed after the provisioning operation is complete.

While attaching the prepopulate adapter, in the prepopulate Adapters dialog box, specify the required information. Ensure that you specify values for the Rule and Adapter lookup fields as follows:

- **Rule:** Default
- **Adapter:** ADCS Prepopulate UserPrincipalName

In addition, map the following adapter variables:

- **UserLogin:** Map this variable to **User Definition**, and from the Qualifier list, select **User Login**.
- **ADITResource:** Map this variable to **IT Resource**, and from the Qualifier list, select **ADIT Resource**.

See *Oracle Fusion Middleware Developer's Guide for Oracle Identity Manager* for detailed instructions on attaching a prepopulate adapter to a form field.

5.2 Troubleshooting

[Table 5–1, "Troubleshooting"](#) provides solution to a commonly encountered issue associated with the Microsoft Exchange connector:

Table 5–1 Troubleshooting

Problem Description	Solution
When you run createMailboxExchange2010.vbs file in Powershell 3.0 using a Remote Manager, the control is not returning to Oracle Identity Manager.	<p>This issue is encountered in Powershell 3.0 while the script works as expected with Powershell 2.0</p> <p>To fix this issue, perform the procedure described below:</p> <ol style="list-style-type: none"> 1. Open the createMailboxExchange2010.vbs file for editing. 2. Search for the line containing shell.run (default line no 14). 3. Remove "-noexit" from the line. 4. Save and close the file.

Special Characters Supported for Alias Name

[Table A-1](#) lists the special characters supported by Oracle Identity Manager and Microsoft Exchange 2007 for the Alias Name field. You can use these characters in combination with letters (alphabets) and digits from 0 to 9 while creating the user on the target system.

Note: Microsoft Exchange 2000 and Microsoft Exchange 2003 supports any character.

Table A-1 *Special Characters That Can Be Used in the Alias Name Field*

Name of the Character	Character
exclamation point	!
number sign	#
dollar sign	\$
percent sign	%
ampersand	&
single quotation mark	'
asterisk	*
plus sign	+
dash	–
slash	/
equal to sign	=
question mark	?
caret	^
underscore	_
comma	,
left brace	{
vertical bar	
right brace	}
tilde	~

Index

A

adapters, 1-5, 1-6, 1-13
architecture, 1-4, 1-5, 1-6

C

clearing server cache, 2-19
connector architecture, 1-4, 1-5, 1-6
Connector Installer, 2-6
connector release number, determining, 2-3
connector XML files, 2-3

D

distribution groups, 1-9

E

Exchange Management Shell, 1-6

F

full reconciliation, 3-6

G

globalization features, 1-3

I

incremental reconciliation, 3-6
installation stages
 installation, 2-5
 postinstallation, 2-16
 preinstallation, 2-1
installing connector, 2-6
IT resource
 creating, 2-8
 creating for Remote Manager, 2-30

K

known issues, 5-1

L

limitations, 5-1
logging enabling, 2-20
lookup fields
 Lookup.Exchange.Configuration, 1-7, 3-2, 3-4

M

mail stores, 1-5, 1-6, 1-9, 3-4
 configuring, 3-9
Microsoft Active Directory, 1-3
multilanguage support, 1-3

P

postinstallation, 2-16
Power Shell script, 1-6
preinstallation, 2-1
provisioning, 1-13, 3-17, 3-25
 mailbox fields, 1-14
 mailbox functions, 1-13

R

Recipient Update Service (RUS), 1-5
reconciliation
 distribution groups, 1-9
 full, 3-6
 incremental, 3-6
 mailstores, 1-9
reconciliation action rule, 1-12
reconciliation rule, 1-11
release number of connector, 2-3
release number of connector, determining, 2-3
Remote Manager, 1-6, 2-3, 2-10
 configuring, 2-30
 installing, 2-13

S

scheduled tasks
 configuring, 3-13
 defining, 3-7
 Exchange Delete Recon Task, 3-9, 3-10, 3-14
 Exchange Mail Store Lookup Reconciliation, 3-4
 Exchange Reconciliation Task, 1-9, 3-7, 3-10, 3-14

- Mail Store Lookup Reconciliation, 1-8, 3-5, 3-14
- server cache, clearing, 2-19
- supported
 - languages, 1-3
 - releases of Oracle Identity Manager, 1-2
 - target system host platforms, 1-2
 - target systems, 1-2

T

- target resource reconciliation, 1-9
- target system user account, 2-4
- target system, multiple installations, 4-17
- target systems
 - host platforms supported, 1-2
- target systems supported, 1-2

X

- XML files, 2-3