

Oracle® Workflow

Server Installation Notes

Release 2.6.2

March 2002

Part No. A96643-01

Overview

Purpose

These notes explain how to install or upgrade the Oracle Workflow server.

Caution: Do not install the Oracle Workflow server in an Oracle E-Business Suite database. If you are licensing Oracle Workflow to define new workflow processes in Oracle E-Business Suite, you can continue to use the version of the Oracle Workflow server embedded in Oracle E-Business Suite.

Audience

These notes are written for the person or persons responsible for installing or upgrading Oracle Workflow server components. The person(s) performing this installation may need assistance from the:

- Operating System Administrator
- Oracle System Administrator
- Oracle DBA
- Oracle9i Application Server Administrator

Oracle Workflow Server

Oracle Workflow Server contains several components that are installed using the Oracle Universal Installer:

ORACLE®

Copyright © 2002 Oracle Corporation.
All Rights Reserved.

Oracle is a registered trademark, and Oracle9i, PL/SQL, and SQL*Plus are trademarks or registered trademarks of Oracle Corporation. Other names may be trademarks of their respective owners.

- Oracle Workflow server objects
- Oracle Workflow server executables
- Oracle Workflow Monitor
- Oracle Workflow HTML help

Oracle Workflow Server Hardware and Software Requirements

The components of Oracle Workflow Server require the following hardware and software configurations:

- Oracle9i Release 2 or higher database, along with the Oracle Objects and JServer Options, installed on a supported server machine
- At least 40 Mb of available disk space for Oracle Workflow Server once it is installed in your Oracle Home
- At least 128 Mb of memory, 256 Mb recommended
- Oracle Net 9.2.0.1 or higher (included in the Oracle Workflow Server installation)
- SQL*Plus 9.2.0.1 or higher (included in the Oracle Workflow Server installation)
- Oracle HTTP Server and mod_plsql, installed on a server machine

Oracle Workflow Release 2.6.2 supports the versions of Oracle HTTP Server and mod_plsql that are included with Oracle9i Database Server Release 2 (9.2) or higher, as well as the versions that are included with Oracle9i Application Server Release 2 (9.0.2) or higher. We recommend using the versions of Oracle HTTP Server and mod_plsql that are included on the software CD from which you are installing Oracle Workflow.
- A Web browser that supports frames, JavaScript, Java Development Kit (JDK) Version 1.3.1 and AWT, such as Netscape Communicator version 4.76 or a higher 4.7x version, or Microsoft Internet Explorer version 5.0x or 5.5x
- UNIX Sendmail or a MAPI-compliant mail application
- An unzip utility, such as WINZIP from NicoMak, to extract the Workflow HTML help from the wfdoc262.zip file
- Java Runtime Environment (JRE), Version 1.1.8 or higher up to and including Version 1.3, to run the Oracle Workflow Java Function Activity Agent and the Workflow XML Loader

If you are installing Oracle Workflow Server on Microsoft Windows NT, the following additional hardware and software configurations are required:

- ISO 9660 format CD-ROM available as a logical drive
- Microsoft Windows NT 4.0 or higher

If you plan to implement Oracle Workflow integration with Oracle Internet Directory, the following additional software configuration is required:

- Oracle Internet Directory Release 2 (9.2)

If you plan to implement Oracle Workflow integration with Oracle Single Sign-On Server, the following additional software configurations are required:

- Integration with Oracle Internet Directory
- Oracle9iAS Single Sign-On Server Release 2 (9.0.2)
- Oracle9iAS Portal Release 2 (9.0.2)
- mod_osso installed on a server machine along with Oracle HTTP Server

Notification Mailer

- The notifications component includes a program called the Notification Mailer. This program communicates notifications to users via e-mail and interprets responses. The Notification Mailer has implementations that can integrate directly with UNIX Sendmail or MAPI-compliant mail applications.
- The UNIX Sendmail implementation is installed automatically during the Oracle Workflow Server installation process. This implementation requires UNIX Sendmail to be installed on the same server as Oracle Workflow.
- The MAPI-compliant implementation is installed on your Windows NT PC using the Oracle Universal Installer from the Oracle client CD. This implementation requires a Windows NT MAPI-compliant mail application installed on the PC that is acting as your mail server.

Caution: The Microsoft Outlook E-mail Security Update that was released on June 7, 2000 desupports the MAPI Common Messaging Calls (CMC) interface used by the Oracle Workflow MAPI Mailer. (See: *OL2000: Developer Information About the Outlook E-mail Security Update*, <http://support.microsoft.com/support/kb/articles/Q262/7/01.ASP>.) As a result, the Oracle Workflow MAPI Mailer is not certified on any Microsoft Windows platforms where this Microsoft Outlook E-mail Security Update or above has been applied. The Oracle Workflow MAPI Mailer is not certified on Windows XP.

Workflow customers running on NT/2000 are certified to install the UNIX version of the Oracle Workflow Notification Mailer (on UNIX) and connect to a Workflow Server database running on NT/2000.

Oracle Workflow Monitor

- Oracle HTTP Server and mod_plsql must be installed on a server machine with access to an ISO 9660 format CD-ROM. If you do not have access to a CD-ROM drive from the workstation, then you must be able to copy files using binary file transfer from a PC or other machine with a CD-ROM drive.

Note: These notes assume that you have an understanding of web technology and the Oracle9i Application Server architecture. For additional information, refer to the online help provided with Oracle HTTP Server.

- To use the Workflow Monitor you need access to a Web browser that supports Java Development Kit (JDK) Version 1.3.1 and AWT, such as Netscape Communicator version 4.76 or a higher 4.7x version, or Microsoft Internet Explorer version 5.0x or 5.5x.

Oracle Workflow Notifications

- To view the Notifications web pages, you need access to a Web browser that supports frames and JavaScript. Examples of such a client are Netscape Communicator version 4.76 or a higher 4.7x version, or Microsoft Internet Explorer version 5.0x or 5.5x.
- To respond to e-mail notifications with HTML attachments, your e-mail application must support HTML attachments and you must use a Web

browser application that supports frames and JavaScript to view the attachment. Examples of such a client are Netscape Communicator version 4.76 or a higher 4.7x version, or Microsoft Internet Explorer version 5.0x or 5.5x.

Oracle Workflow Server Installation

Perform the following steps to install Oracle Workflow Server or to upgrade an existing version of Oracle Workflow Server to Release 2.6.2.

Caution: To upgrade to Release 2.6.2, your existing Oracle Workflow Server must be Release 2.6.0 or higher. If you have an earlier version of Oracle Workflow, you must upgrade Oracle Workflow to Release 2.6 before you can upgrade to Release 2.6.2.

Caution: Before you upgrade an existing Oracle Workflow server, ensure that there are no users accessing the server. Otherwise, locks in the database will prohibit a successful upgrade.

Note: The following typeface represents commands that you enter for your environment. Any variable input is enclosed in brackets and is italicized.

Step 1. Edit the database init.ora parameter file.

You must verify the following parameters in the database init.ora file:

- **AQ_TM_PROCESSES** - Oracle Workflow requires the time manager process in Oracle9i Advanced Queuing (AQ) to monitor delay events in queues, as in the case of the Oracle Workflow standard Wait activity. The minimum recommended number of time manager processes for Oracle Workflow is one. Verify that the AQ_TM_PROCESSES parameter is set in the init.ora parameter file. For example:

- **JOB_QUEUE_PROCESSES** - Oracle Workflow leverages Oracle9i Advanced Queuing, which requires job queue processes to handle

message propagation. You must start at least one job queue process to enable message propagation. The minimum recommended number of processes for Oracle Workflow is two and may need to be increased to five or ten if not enough processes are available for propagation. Verify that the `JOB_QUEUE_PROCESSES` parameter is set in the `init.ora` parameter file to specify the number of SNP job queue processes for your instance. For example:

You can either modify these parameters in the `init.ora` file and restart your database to make the changes effective, or you can use the `ALTER SYSTEM` statement to dynamically modify the parameter values for the duration of the instance. For more information, refer to *Oracle9i Reference* and *Oracle9i Application Developer's Guide - Advanced Queuing*.

Step 2. Install Oracle Workflow Server files using the Oracle Universal Installer.

Run the Oracle Universal Installer to copy the Oracle Workflow Server files to your system. Refer to the *Oracle9i Installation Guide* for your platform for detailed instructions on running the Oracle Universal Installer.

Note: Before you begin running the Oracle Universal Installer, you should close other applications you may have running, including Java applications, Oracle-based applications, and any other applications that consume large amounts of memory, hard disk space, or CPU time. However, you should not close any components of the Oracle9i database where you want to install Oracle Workflow.

Within the Oracle Universal Installer, select the product Oracle9i Management and Integration. Then select the Custom installation type and select Oracle Workflow from the available product components.

The Oracle Universal Installer copies Workflow files to your system. You must also run the Workflow Configuration Assistant to load Oracle Workflow into your database by creating the Workflow database objects in the database. The Workflow Configuration Assistant is launched automatically from the Oracle Universal Installer; you can also run the Workflow Configuration Assistant manually to complete your configuration. For instructions on performing the configuration, see Step 3. Run the Workflow Configuration Assistant.

Note: During the installation process, the US language is loaded. To support access to Oracle Workflow in another language, you must load that language after completing the installation and configuration steps for Oracle Workflow. You can manually run the Workflow Configuration Assistant to load an additional language into your Oracle Workflow Server database.

Caution: The workflow.log file produced during installation and configuration of Oracle Workflow may contain sensitive information. To protect this sensitive information, you can delete the workflow.log file after the installation is complete or change the permissions for the file so that only authorized administrators can access it.

Step 3. Run the Workflow Configuration Assistant.

Run the Workflow Configuration Assistant to load Oracle Workflow into your database. You can either launch the Workflow Configuration Assistant automatically from the Oracle Universal Installer, or you can run it manually at a later time. For example, you can manually run the Workflow Configuration Assistant if you need to reconfigure Oracle Workflow or if you want to load additional languages into your Oracle Workflow Server database after Oracle Workflow is installed and configured. The configuration should take approximately 10 minutes, depending on your system's speed and capacity.

Note: Before you begin running the Workflow Configuration Assistant, you should close other applications you may have running, including Java applications, Oracle-based applications, and any other applications that consume large amounts of memory, hard disk space, or CPU time. However, you should not close any components of the Oracle9i database where you want to load Oracle Workflow.

Note: When you run the Workflow Configuration Assistant on Windows, several command windows will open and close automatically. You should ignore these windows. You must not manually close any of these command windows, or you will interrupt the configuration process.

1. Start the Workflow Configuration Assistant.
 - The Oracle Universal Installer launches the Workflow Configuration Assistant automatically when the installation is complete. See: Step 2. Install Oracle Workflow Server files using the Oracle Universal Installer.
 - You can also run the Workflow Configuration Assistant manually. Use the following commands:

On UNIX:

On Windows NT:

2. In the Oracle Workflow Configuration Assistant window, enter the following user information:
 - Workflow Account - The user name of your Oracle Workflow database account. The default Workflow account for a fresh installation is OWF_MGR.
 - Workflow Password - The password for your Oracle Workflow database account.

Note: If you are performing a fresh installation of Oracle Workflow, the Workflow Configuration Assistant creates a new database account for Oracle Workflow with the user name and password you specify. The default tablespace for this account defaults to USERS, and the temporary tablespace defaults to TEMP.

If you are upgrading an existing installation of Oracle Workflow, you should enter the user name and password for your existing Oracle Workflow database account.

- SYS Password - Your SYS password. See your Oracle DBA if you need more information.
- SYSTEM Password - Your SYSTEM password. See your Oracle DBA if you need more information.
- Install Option - Select to perform a fresh installation of Oracle Workflow, to upgrade an existing installation of Oracle Workflow, or to load a language into your existing installation of Oracle Workflow.

Note: To upgrade to Release 2.6.2, your existing Oracle Workflow Server must be Release 2.6.0 or higher.

- Language Selection - If you chose the Add Language install option, select the language abbreviation for the language you want to add. For a list of standard language abbreviations in Oracle9i, see: *Locale Data, Oracle9i National Language Support Guide*.
 - Connect Method - Select Local to connect to a local database using the Oracle SID, or select Remote to connect to a remote database through Oracle Net using LOCAL on Windows or TWO_TASK on UNIX.
 - Connect String - If you choose the Remote connect method, enter the connect string for the remote database.
3. Click Submit to begin the configuration. You can also click Quit to exit the Workflow Configuration Assistant without performing the configuration.
 4. When the configuration is complete, a confirmation window appears. Click OK.
 5. You can check the status of the configuration by reviewing the workflow.log file located in the wf/install subdirectory within your Oracle Home.

Caution: The workflow.log file produced during installation and configuration of Oracle Workflow may contain sensitive information. To protect this sensitive information, you can delete the workflow.log file after the installation is complete or change the permissions for the file so that only authorized administrators can access it.

Step 4. Install and configure your Web server.

Oracle Workflow requires that you integrate with Oracle HTTP Server as your Web server. Your Web server installation must be able to access the Oracle Workflow java area, the Oracle Workflow icon area, and the Oracle Workflow documentation area.

Note: Oracle Workflow Release 2.6.2 supports the versions of Oracle HTTP Server and mod_plsql that are included with Oracle9i Database Server version 9.2 or higher, as well as the versions that are included with Oracle9i Application Server Release 2 (9.0.2) or higher. We recommend using the versions of Oracle HTTP Server and mod_plsql that are included on the software CD from which you are installing Oracle Workflow.

1. Install Oracle HTTP Server with mod_plsql.

Refer to your Oracle9i Database Server or Oracle9i Application Server installation documentation for further details.

2. Using your web browser, navigate to the following URL:

Replace <server_name> and <portID> with the server and port number on which your web listener accepts requests. For example:

3. In the Oracle HTTP Server Components page, choose "mod_plsql".
4. In the Gateway Configuration Menu page, choose "Gateway Database Access Descriptor Settings".
5. In the Database Access Descriptors page, choose "Add Default (blank configuration)".
6. Create a DAD for Oracle Workflow, specifying the following settings:
 - Database Access Descriptor Name:
 - Schema Name:
 - Oracle User Name:
 - Oracle Password:
 - Oracle Connect String:

- Authentication Mode:
- Session Cookie Name:
- Package/Session Management Type:

- Enable Connection Pooling?:
- Default (Home) Page:

Caution: Be sure you leave the Oracle User Name and Oracle Password null to enable mod_plsql database authentication.

You can also leave any remaining settings blank.

7. To access Oracle Workflow's web services, navigate to the following URL:

Note: The icons on the Oracle Workflow web pages may appear as broken images if the virtual directory mapping to the Oracle Workflow icon area has not been added. See Step 5. Verify Oracle Workflow web interface virtual directory mappings.

Step 5. Verify Oracle Workflow web interface virtual directory mappings.

Note: In previous releases, it was necessary to add the virtual directory mappings for Oracle Workflow manually. In Release 2.6.2, however, these virtual directory mappings are set by default. You should verify the default mappings and add or edit them only if necessary.

Oracle Workflow requires a virtual directory mapping called `owf` in your web listener that points to the Oracle Workflow JAR files on your file system. The JAR files are in a directory called `owf`. The Oracle Universal Installer automatically installs the Java code in this directory when you install or upgrade the Oracle Workflow Server.

Oracle Workflow also requires a virtual directory mapping called `orawf` that points to the Oracle Workflow icon area on your file system. The icon area is

`ORACLE_HOME\jlib\icon`. All icon and gif files that are required by Oracle Workflow's web interface must be stored in the `orawf` virtual directory.

If you installed Oracle HTTP Server in the same `ORACLE_HOME` as Oracle Workflow, the `/OA_JAVA/` and `/OA_MEDIA/` virtual directory mappings are set by default. You should verify these mappings and add them if necessary.

1. To add the required virtual directory mappings in Oracle HTTP Server, add aliases for the `jlib` directory and the Oracle Workflow icon area to the `<ORACLE_HOME>/Apache/Apache/conf/httpd.conf` or `httpds.conf` file. This configuration file defines the behavior of Oracle HTTP Server. Add the aliases using the following format:

On UNIX:

For example:

On Windows NT:

For example:

Note: Be sure to add a trailing slash to each alias name and physical directory path.

2. Restart Oracle HTTP Server.

Step 6. Set up Oracle Workflow HTML help.

Oracle Workflow provides access to HTML help from the Help button on each of its web pages. The HTML help that appears is context-sensitive and provides links to the entire contents of the *Oracle Workflow Guide*.

When you install Oracle Workflow Server, the Oracle Universal Installer copies a zip file containing the HTML help to the Workflow directory in your Oracle Home. The zip file is

To set up the HTML help, you must extract the doc directory tree from the zip file and verify that you have a virtual directory mapping called in your web listener that points to the documentation area on your file system.

If you installed Oracle HTTP Server in the same ORACLE_HOME as Oracle Workflow, the /OA_DOC/ virtual directory mapping is set by default. You should verify this mapping and add it if necessary.

1. Use an unzip utility to extract the doc directory tree from the zip file within the Workflow directory. You need at least 5 Mb of free disk space to extract the zip file.

The doc directory tree that is created includes the Oracle Workflow documentation area, , and the following subdirectories:

- - Oracle Workflow Guide.
- - Custom Help. You can optionally add your own customized Workflow help in this directory.

Note: You can also install the doc directory tree on a PC file system. Create a directory for the HTML help on your PC. Then transfer the HTML help zip file, from the Workflow subdirectory within your Oracle Home to the new directory on your PC. Use an unzip utility to extract the doc directory tree from the zip file in that directory.

2. After extracting the doc directory tree, you can optionally remove the zip file.
3. Verify that you have a virtual directory mapping called `orawfdoc` in your web listener that points to the new Oracle Workflow documentation area on your file system and add this mapping if necessary.

Note: In previous releases, it was necessary to add the virtual directory mappings for Oracle Workflow manually. In Release 2.6.2, however, these virtual directory mappings are set by default. You should verify the default mappings and add or edit them only if necessary.

- In Oracle HTTP Server, add an alias for the Oracle Workflow documentation area to the `orawfdoc` or `orawfdoc` file. This configuration file defines the behavior of Oracle HTTP Server. Add the alias using the following format:
On UNIX:

For example:

On Windows NT:

For example:

Note: Be sure to add a trailing slash to each alias name and physical directory path.

- After adding the alias, restart Oracle HTTP Server.
- 4. After the virtual directory mapping is added to your web listener, you can access the HTML help from the Help button on any Oracle Workflow web page. You can also access any HTML help file directly by appending its virtual path to your web listener base URL.

The path for the contents page of the Oracle Workflow Guide is:

The path for the contents page of your Oracle Workflow Custom Help is:

- 5. If you want to add custom help, you can replace the placeholder file in the directory, , with your own help material. The HTML file that is the main entry point for your custom help must be named and must contain an anchor named . Your custom help will be accessible through the Custom Help link on the contents page of the Oracle Workflow Guide.

Step 7. Set up a directory service for Oracle Workflow.

You must map Oracle Workflow's directory service views to your organization's users and roles. The directory service views are WF_USERS, WF_ROLES, and WF_USER_ROLES.

Oracle Universal Installer automatically executes the script to map the directory service views to your native Oracle database users and roles. This script bases the views on the tables DBA_USERS, WF_LOCAL_USERS, DBA_ROLES, and WF_LOCAL_ROLES.

- You can create your own script or customize and rerun the script to map the directory service views to the users and roles defined in your organization's directory repository. This script is located in the Oracle Workflow *sql* subdirectory within your ORACLE_HOME.

Note: The script sets each native Oracle user's e-mail address to the user's respective username. As a minimal setup step, you should edit the script to either link your native Oracle users to an existing mail directory store through the WF_ROLES view definition or, if the usernames and e-mail account names match, then simply add the domain for your organization, such as ' ', to the usernames in the WF_USERS view definition. Typically, the columns that you change are EMAIL_ADDRESS in WF_USERS and EMAIL_ADDRESS in WF_ROLES.

- You can also run the script provided by Oracle Workflow to map the directory service views only to the WF_LOCAL_USERS and WF_LOCAL_ROLES tables. This script is located in the Oracle Workflow *sql* subdirectory within your ORACLE_HOME.

Note: If you want to implement Oracle Internet Directory (OID) integration, you must run the script, because only the WF_LOCAL_USERS table will be synchronized with OID. See Step 9. Implement Oracle Internet Directory integration.

After setting up your directory service, run the script in SQL*Plus to verify the integrity of your directory service data model. The script is located on your Oracle Workflow server in the Oracle Workflow

subdirectory. Refer to the Workflow Administration Scripts chapter of the *Oracle Workflow Guide* for more information.

Step 8. Verify your base URL.

To invoke Oracle Workflow's web pages, you simply append the appropriate procedure and arguments to your base URL. Once you define your web security and web users, you can verify your base URL by connecting as a valid user to the Oracle Workflow home page:

If you are using Oracle HTTP Server, you can authenticate yourself with a database username and password. When you install Oracle Workflow and its demonstration workflow processes, you also install a demonstration data model that seeds a set of demonstration users in the directory service and creates these same users as database accounts. The users are:

_____, _____, _____, _____, _____, and _____.
Their passwords are the same as their usernames.

With Oracle HTTP Server, you can authenticate your connection to an Oracle Workflow web page with any of these database user names and passwords. Public grants and synonyms were created so that these database accounts have full access to Oracle Workflow's web-based user interface.

Note: For security reasons, the installation process automatically locks these user accounts after they are created. Before you can begin using the accounts, you must unlock them using a script called `wfdemoul.sql`. This script is located in the `wf/demo` subdirectory within your Oracle Home. Connect to the `SYSTEM` database account using `SQL*Plus` and run the script using the following command:

See your Oracle DBA if you need more information about the `SYSTEM` account and password.

Note: By default, the installation process maps the Workflow directory service views to your native Oracle database users and roles, and creates the demonstration users as database accounts. If you implement Oracle Internet Directory integration for your directory service instead, you must migrate the user information for the demonstration users to OID before you can access Oracle Workflow with these user names and passwords. See Step 9. Implement Oracle Internet Directory integration.

Step 9. Implement Oracle Internet Directory integration (optional).

You can optionally implement LDAP integration for Oracle Workflow through Oracle Internet Directory (OID). To implement OID integration, you must perform the following steps:

1. Ensure that Oracle Internet Directory is available.
2. Run the `wf_oid_integration.sql` script provided by Oracle Workflow to map the directory service views only to the `WF_LOCAL_USERS` and `WF_LOCAL_ROLES` tables. This script is located in the Oracle Workflow `sql` subdirectory within your `ORACLE_HOME`. `WF_LOCAL_USERS` is the only table that will be synchronized with OID. (Only users are maintained through OID, not Workflow roles.)
3. If you are upgrading a previous installation of Oracle Workflow, migrate existing Workflow user information to Oracle Internet Directory.

Note: For a new installation of Oracle Workflow, you do not need to perform this step unless you want to access Oracle Workflow with the user names and passwords of the Workflow demonstration users. To enable access as the demonstration users when Oracle Workflow is integrated with OID, you must first migrate the seeded user information for these users to OID.

You must perform a one-time migration of existing Oracle Workflow user information to OID to enable single sign-on and single administration. Ensure that you migrate all the necessary data from `WF_LOCAL_USERS` as well as any other user tables in which you previously stored user information. After performing the migration, you should maintain your user information only through OID.

OID provides a migration tool called `ldifMigrator`. To use this tool, you must extract your user information from the database into an intermediate LDAP Data Interchange Format (LDIF) file, with substitution variables wherever necessary. The `ldifMigrator` tool converts the intermediate entries in the file to actual LDIF entries by replacing the variables based on arguments provided at runtime or information retrieved from the LDAP directory. The LDIF file produced by the `ldifMigrator` can then be uploaded into OID using OID bulk tools.

For more information about the `ldifMigrator`, the format required for the intermediate LDIF file, and OID bulk upload tools, see Appendix A: Syntax for LDIF and Command-Line Tools, *Oracle Internet Directory Administrator's Guide*.

4. Load the following PL/SQL packages required for LDAP synchronization:
 - `DBMS_LDAP` - This package contains the functions and procedures which can be used to access data from LDAP servers. If this package is not already installed, you must load it manually. To check whether the package is installed, connect to `SQL*Plus` and use the following command:

If the `DBMS_LDAP` package does not exist, load it manually by running the `catldap.sql` script located in the `catldap` directory. Run this script as the `SYS` user. For example, use the following command:

- `WFA_SEC` - This package body contains Workflow security functions and procedures. To load this package body, run the `wfsecwsb.sql` script located in the `wfsecwsb` directory. Run this script as the Workflow user. For example, use the following command:
5. Use the `WF_LDAP` APIs to synchronize your Oracle Workflow directory service with OID. For instructions, see *Synchronizing Oracle Workflow Directory Services with Oracle Internet Directory, Setting Up Oracle Workflow, Oracle Workflow Guide*.

Step 10. Implement Single Sign-On integration (optional).

If you implement LDAP integration through OID, you can also optionally implement single sign-on integration for Oracle Workflow through Oracle9iAS Single Sign-On Server. To implement single sign-on, you must perform the following steps:

1. Perform all steps to implement LDAP integration through Oracle Internet Directory.
2. Ensure that Oracle9iAS Single Sign-On Server Release 2 (9.0.2) and Oracle9iAS Portal Release 2 (9.0.2) are installed.
3. Ensure that mod_osso is installed with Oracle HTTP Server and configured as necessary. For more information, see: *Developing Applications for Mod_osso, Oracle9iAS Single Sign-On Application Developer's Guide*.

You must protect the Database Access Descriptor you created for Oracle Workflow by adding the following entry in your mod_osso configuration file:

Additional Setup Steps

After you complete the Oracle Workflow installation process, you must perform some additional steps to set up Oracle Workflow for your site. Some of the setup steps are required; other steps are optional, depending on the Oracle Workflow features you want to implement. Refer to the *Setting Up Oracle Workflow and Managing Business Events* chapters in the *Oracle Workflow Guide* for information on how to complete these and other setup steps for Oracle Workflow. The setup steps include:

1. **(Required)** Configuring the default global user preferences for your enterprise.
2. **(Required)** Mapping Oracle Workflow's directory service views to your organization's users and roles.
3. **(Optional)** Synchronizing Oracle Workflow's directory service with Oracle Internet Directory.
4. **(Required)** Creating a view called WF_LANGUAGES that identifies the languages defined in your Oracle9i installation. The wfdirouv.sql script run by the Oracle Universal Installer automatically creates a sample

WF_LANGUAGES view for you. If you want to use this view, you should verify it first by connecting to SQL*Plus using your Workflow database account and querying the view for all languages defined in your Oracle9i installation.

5. **(Required)** Defining an environment variable called WF_RESOURCES if your Workflow Server is installed on a UNIX platform.

Note: Do not enclose environment variable values in double quotes () as this is not supported.

6. **(Required)** Initiating background Workflow engines to process deferred work and timed out activities.
7. **(Optional)** Configuring and running the Notification Mailer program, to allow users to receive e-mail notifications or e-mail notification summaries.
8. **(Optional)** Customizing e-mail notification templates.
9. **(Optional)** Customizing the logo displayed on Oracle Workflow's web pages.
10. **(Optional)** Adding custom icons to Oracle Workflow.
11. **(Optional)** Starting the Java Function Activity Agent to run external Java functions.
12. **(Optional)** Setting up database links and queues for the Business Event System to communicate events between systems.
13. **(Optional)** Scheduling Business Event System listeners and propagations to receive and send event messages.
14. **(Optional)** Setting up event subscriptions to synchronize Business Event System data on different systems.

Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Standards will continue to evolve over time, and Oracle Corporation is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For additional information, visit the

Oracle Accessibility Program Web site at

Accessibility of Code Examples in Documentation JAWS, a Windows screen reader, may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, JAWS may not always read a line of text that consists solely of a bracket or brace.

Accessibility of Links to External Web Sites in Documentation This documentation may contain links to Web sites of other companies or organizations that Oracle Corporation does not own or control. Oracle Corporation neither evaluates nor makes any representations regarding the accessibility of these Web sites.