

Oracle® Workflow

Installation Notes for Oracle Content Management SDK

Release 2.6.3

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Part No. B10966-01

Overview

Purpose

These notes explain how to install or upgrade Oracle Workflow from the Oracle Content Management SDK 10g (9.0.4) CD. From this CD, you can install Oracle Workflow to integrate with Oracle Content Management SDK, or you can install Oracle Workflow alone, even if you do not plan to install Oracle Content Management SDK.

The Oracle Workflow installation includes the Oracle Workflow server as well as the Oracle Workflow components that reside on a client PC.

Caution: Do not install the Oracle Workflow server in an Oracle E-Business Suite database. If you want to use the version of Oracle Workflow available with Oracle Application Server 10g (9.0.4), or any Oracle Application Server components that depend on this version of Oracle Workflow, then you must install the Oracle Workflow server into a database that is not used for an Oracle E-Business Suite instance.

If you implement Oracle Application Server 10g (9.0.4) with Oracle E-Business Suite, the Oracle Workflow Configuration Assistant will not install the standalone version of the Oracle Workflow server in that database. You can continue to use the version of the Oracle Workflow server embedded in Oracle E-Business Suite instead.

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Audience

These notes are written for the person or persons responsible for installing or upgrading Oracle Workflow server and client components. Those performing this installation may need assistance from the following people:

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

Oracle Workflow Server

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

- Oracle Workflow server objects
- Oracle Workflow server executables
- Oracle Workflow Web pages
- Oracle Workflow HTML help

Oracle Workflow Server Hardware and Software Requirements

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

- An existing Oracle Application Server 10g (9.0.4) middle tier Oracle Home

Your Oracle HTTP Server installation must be able to access the Oracle Workflow java area, the Oracle Workflow icon area, and the Oracle Workflow documentation area. Additionally, if you plan to implement Oracle Workflow integration with Oracle Internet Directory (OID) and Oracle Application Server Single Sign-On, then you must have OID and Oracle Application Server Single Sign-On included in your Oracle Application Server installation.
- A version of the Oracle Database that is certified with Oracle Application Server 10g (9.0.4), 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
- 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
- An unzip utility, such as WINZIP from NicoMak, to extract the Workflow HTML help from the wfdoc.zip file
- Java Development Kit (JDK) Version 1.4, 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

Java-based Workflow Notification Mailer

- The Notification System includes a Java-based program called a notification mailer, implemented as a service component within the Generic Service Component Framework, which communicates notifications to users via e-mail and interprets responses. Oracle Workflow provides one seeded notification mailer service component called the Workflow Notification Mailer. This program requires an outbound SMTP mail server and an inbound IMAP mail server.

Note: In Release 2.6.3, the new Java-based implementation of the notification mailer replaces the C-based Notification Mailer program that was used in previous releases of Oracle Workflow. If you are upgrading an existing installation of Oracle Workflow to Release 2.6.3, note that the executable file for the C-based Notification Mailer is replaced with a stub file during the upgrade, and you can no longer run that version of the Notification Mailer. Instead, use the Oracle Workflow Manager component within the Oracle Enterprise Manager Application Server Control to run the Java-based Workflow Notification Mailer.

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 Oracle 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 2.6.3.

Caution: To upgrade to Release 2.6.3, 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 2.6.3.

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: In the sample commands shown in this document, any variable input is enclosed in brackets and is italicized. For example:

```
cd <workflow_top_directory>
```

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

```
AQ_TM_PROCESSES = 2
```

- **JOB_QUEUE_PROCESSES** - Oracle Workflow leverages Oracle 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 ten and may need to be increased 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:

```
JOB_QUEUE_PROCESSES = 10
```

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 the *Oracle Database Reference* and *Oracle9i Application Developer's Guide - Advanced Queuing* or *Oracle Streams Advanced Queuing User's Guide and Reference 10g*.

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.

Note that 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: 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 Oracle Database where you want to install Oracle Workflow.

1. Start the Oracle Universal Installer from the Oracle Content Management SDK CD. For more information, see the *Oracle Content Management SDK Installation and Configuration Guide*.
2. When the Oracle Universal Installer is started, the Welcome window appears. Choose Next.

Note: Choose Help in any Oracle Universal Installer window for more information about that window.

3. In the next window, review the stage location of the installation files, and enter the Oracle Home location where you want to install Oracle Workflow components. Then choose Next.
4. In the next window, select Oracle Workflow Server as the product to install. Then choose Next.
5. In the Summary window, review the summary information to ensure you have enough disk space. When you are ready to begin the installation, choose Install.

6. The Install window appears, displaying the progress of the installation.
7. After the Oracle Universal Installer finishes copying Oracle Workflow files, it automatically launches the Workflow Configuration Assistant to load Oracle Workflow into your database. For instructions, see Step 3. Run the Workflow Configuration Assistant.

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.

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 run the Workflow Configuration Assistant to load an additional language into your Oracle Workflow Server database.

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 Oracle Database where you want to load Oracle Workflow.

Note: When you run the Workflow Configuration Assistant on Windows, several command windows may 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:

```
$ORACLE_HOME/wf/install/wfinstall.csh
```

On Windows NT:

```
%ORACLE_HOME%\wf\install\wfinstall.bat
```

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`. You can change the tablespace if necessary.

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.
- **Install Option** - Select `Install` to perform a fresh installation of Oracle Workflow, `Upgrade` to upgrade an existing installation of Oracle Workflow, or `Add language` to load a language into your existing installation of Oracle Workflow.

If you choose the `Install` or `Upgrade` options, the Workflow Configuration Assistant loads Oracle Workflow into your database, creates a Database Access Descriptor (DAD) for Oracle Workflow in the `mod_osso` configuration file within your Oracle HTTP Server installation, and configures the Oracle Workflow Manager component within the Oracle Enterprise Manager Application Server Control.

Note: To upgrade to Release 2.6.3, your existing Oracle Workflow Server must be Release 2.6.0 or higher.

Note: If you select the `Install` option, but you are installing into a database where there is already an existing installation of Oracle Workflow Release 2.6.0 or higher, then the Oracle Workflow Configuration Assistant will switch to `Upgrade` mode to upgrade the existing installation to Release 2.6.3.

- **Language Selection** - If you chose the `Add Language` install option, select the language abbreviation for the language you want to add. Oracle Workflow Server supports the languages supported by Oracle Application Server:
 - Arabic (AR)
 - Brazilian Portuguese (PTB)
 - Canadian French (FRC)
 - Czech (CS)
 - Danish (DK)
 - Dutch (NL)
 - English (US)
 - Finnish (SF)
 - French (F)

- German (D)
- Greek (EL)
- Hebrew (IW)
- Hungarian (HU)
- Italian (I)
- Japanese (JA)
- Korean (KO)
- Latin American Spanish (ESA)
- Norwegian (N)
- Polish (PL)
- Portuguese (PT)
- Romanian (RO)
- Russian (RU)
- Simplified Chinese (ZHS)
- Slovak (SK)
- Spanish (E)
- Swedish (S)
- Thai (TH)
- Traditional Chinese (ZHT)
- Turkish (TR)

For a list of standard language abbreviations in the Oracle Database, see: Locale Data, *Oracle 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. To integrate with Oracle Internet Directory (OID) and Oracle Application Server Single Sign-On as your directory repository for Oracle Workflow, select the Enter LDAP Parameters check box and choose Get LDAP Values.

Note: If you are upgrading an existing installation of Oracle Workflow in which you already implemented OID integration, you must re-enter your LDAP values here to preserve the OID integration during the upgrade.

Enter the following Lightweight Directory Access Protocol (LDAP) server information for the LDAP directory to which you want to connect. After the initial installation, you can update these values if necessary in the Global Workflow preferences Web page. For more information, see: Setting Up Oracle Workflow, *Oracle Workflow Administrator's Guide*.

- Host Name - The host on which your Lightweight Directory Access Protocol (LDAP) directory resides.
- Port No. - The port on the host.
- User Name - The LDAP user account used to connect to the LDAP server. This user name must have write privileges and is required to bind to the LDAP directory. For example: `cn=orcladmin`
- Old Password - Enter the password for the LDAP user account. LDAP password values are masked as asterisks in the display and are stored in encrypted form.
- Log Base - The LDAP node under which change logs are located. For example: `cn=changelog`
- User Base - The LDAP node under which user records can be found. For example: `cn=Base, cn=OracleSchemaVersion`

Then choose OK.

If you enter values for these LDAP options, the Oracle Workflow Configuration Assistant automatically implements Oracle Workflow directory service views that support OID integration for you. Additionally, it installs the appropriate WFA_SEC Workflow security package. Finally, the Oracle Workflow Configuration Assistant also automatically sets up single sign-on integration for you by protecting the Database Access Descriptor (DAD) for Oracle Workflow in the `mod_osso` configuration file within your Oracle HTTP Server installation.

Note: After setting up integration with OID during installation, you must ensure that the DBMS_LDAP package is installed in your database, and use the WF_LDAP APIs to synchronize your Oracle Workflow directory service with OID. For instructions, see Step 4. Load DBMS_LDAP package, and Synchronizing Oracle Workflow Directory Services with Oracle Internet Directory, Setting Up Oracle Workflow, *Oracle Workflow Administrator's Guide*.

4. If you do not want to integrate with OID, then leave the Enter LDAP Parameters check box blank. In this case directory service views that use Oracle Database users and roles as your directory repository will be automatically implemented for you by default. You should modify the default views to add e-mail addresses for these users if you want them to be able to receive e-mail notifications.

Note: When the Oracle Workflow Configuration Assistant implements the directory service views using Oracle Database users and roles as your directory repository, it sets each native Oracle Database user's e-mail address to the user's respective username. As a minimal setup step, you should edit the `wfdirouv.sql` 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 '@oracle.com', 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. The `wfdirouv.sql` script is located in the Oracle Workflow *sql* subdirectory within your ORACLE_HOME. For more information, see Setting Up Oracle Workflow, *Oracle Workflow Administrator's Guide*.

5. To enter configuration parameters for the seeded Java-based notification mailer service component, called the Workflow Notification Mailer, select the Enter Mailer Parameters check box and choose Get Mailer Values. Enter values for the following parameters:
 - Inbound Mail Server - The name of the inbound IMAP mail server.
 - IMAP User Name - The user name of the mail account that the notification mailer uses to send and receive e-mail messages.

- **HTML Agent Name** - The base URL that identifies the Web agent defined for Oracle Workflow in Oracle HTTP Server. Oracle Workflow uses this URL to display its Web pages. The notification mailer also uses this URL to support e-mail notifications with HTML attachments. The HTML agent should be specified in the following format:

`http://<server.com:portID>/pls/wf`

where `<server.com:portID>` represents the server and TCP/IP port number on which your web listener accepts requests.

Note: You must always enter a value for the HTML Agent Name, because Oracle Workflow requires this URL to display its Web pages.

- **Outbound Host Name** - The name of the outbound SMTP mail server.
- **Reply To** - The address of the e-mail account that receives incoming messages, to which notification responses should be sent.

Then choose OK.

After the initial installation, you can update the notification mailer configuration values if necessary in the Oracle Workflow Manager component of the Oracle Enterprise Manager Application Server Control. You can also update the HTML agent value for Oracle Workflow in the Global Workflow preferences Web page. For more information, see the Oracle Workflow Manager online help and *Setting Up Oracle Workflow, Oracle Workflow Administrator's Guide*.

6. To change the tablespace assigned to the Oracle Workflow database account, select the Change Tablespace check box. Then select an existing tablespace from the list of values.
7. Choose Submit to begin the configuration. You can also choose Quit to exit the Workflow Configuration Assistant without performing the configuration.
8. When the configuration is complete, a confirmation window appears. Choose OK.
9. 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. Load DBMS_LDAP package (conditionally required).

If you chose to integrate with OID as your directory repository, ensure that the DBMS_LDAP PL/SQL package is loaded in your database. This package contains the functions and procedures that can be used to access data from LDAP servers and is required for LDAP synchronization. To check whether the DBMS_LDAP package is already installed, connect to SQL*Plus and use the following command:

```
desc DBMS_LDAP
```

If the DBMS_LDAP package does not already exist, load it manually by running the catldap.sql script located in the <ORACLE_HOME>/rdbms/admin directory. Run this script as the SYS user. For example, use the following command:

```
sqlplus "SYS/<SYS password> as sysdba"  
@<ORACLE_HOME>/rdbms/admin/catldap.sql
```

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

Note: In some previous releases, it was necessary to add the virtual directory mappings for Oracle Workflow manually. In Release 2.6.3, 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 /OA_JAVA/ in your Web listener that points to the Oracle Workflow JAR files on your file system. The JAR files are in a directory called <ORACLE_HOME>/jlib. 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 /OA_MEDIA/ that points to the Oracle Workflow icon area on your file system. The icon area is

<ORACLE_HOME>/wf/java/oracle/apps/fnd/wf/icons/. All icon and gif files that are required by Oracle Workflow's Web interface must be stored in the /OA_MEDIA/ 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>/wf/admin/wf.conf file. The path to this configuration file must be included in the <ORACLE_HOME>/Apache/Apache/conf/oracle_apache.conf file which helps define the behavior of Oracle HTTP Server. Add the aliases using the following format:

On UNIX:

```
Alias /OA_JAVA/ "<ORACLE_HOME>/jlib/"
Alias /OA_MEDIA/ "<ORACLE_HOME>/wf/java/oracle/apps/fnd/wf/icons/"
```

For example:

```
...
#
# Aliases: Add here as many aliases as you need (with no limit).
# The format is
# Alias fakename realname
#
...
Alias /OA_JAVA/ "/oracleas/jlib/"
Alias /OA_MEDIA/ "/oracleas/wf/java/oracle/apps/fnd/wf/icons/"
...
```

On Windows NT:

```
Alias /OA_JAVA/ "<ORACLE_HOME>\jlib/"
Alias /OA_MEDIA/ "<ORACLE_HOME>\wf\java\oracle\apps\fnd\wf\icons/"
```

For example:

```
...
#
# Aliases: Add here as many aliases as you need (with no limit).
# The format is
```

```
# Alias fakename realname
#
...
Alias /OA_JAVA/ "C:\oracleas\jlib/"
Alias /OA_MEDIA/ "C:\oracleas\wf\java\oracle\apps\wnd\wf\icons/"
...
```

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 documentation.

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 `<ORACLE_HOME>/wf/wfdoc.zip`. 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 `/OA_DOC/` 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 7 Mb of free disk space to extract the zip file.

The doc directory tree that is created includes the Oracle Workflow documentation area, `<ORACLE_HOME>/wf/doc`, and the following subdirectories:

- `<ORACLE_HOME>/wf/doc/<lang>/wf` - Oracle Workflow online help.
- `<ORACLE_HOME>/wf/doc/<lang>/wfcust` - 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, `wfdoc.zip`, 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 `/OA_DOC/` 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 some previous releases, it was necessary to add the virtual directory mappings for Oracle Workflow manually. In Release 2.6.3, 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 `<ORACLE_HOME>/wf/admin/wf.conf` file. The path to this configuration file must be included in the `<ORACLE_HOME>/Apache/Apache/conf/oracle_apache.conf` file which helps define the behavior of Oracle HTTP Server. Add the alias using the following format:

On UNIX:

```
Alias /OA_DOC/ "$ORACLE_HOME/wf/doc/"
```

For example:

```
...
#
# Aliases: Add here as many aliases as you need (with no limit).
# The format is
# Alias fakename realname
#
...
Alias /OA_DOC/ "/oraclease/wf/doc/"
...
```

On Windows NT:

```
Alias /OA_DOC/ "<ORACLE_HOME>\wf\doc/"
```

For example:

```
...
#
# Aliases: Add here as many aliases as you need (with no limit).
# The format is
# Alias fakename realname
#
...
Alias /OA_DOC/ "C:\oracledb\wf\doc/"
...
```

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 /OA_DOC/ 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 online help is:

```
http://<server_name>[:<portID>]/OA_DOC/<lang>/wf/toc.htm
```

The path for the contents page of your Oracle Workflow custom help is:

```
http://<server_name>[:<portID>]/OA_DOC/<lang>/wfcust/wfcust.htm
```

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

Step 7. Migrate existing user information to Oracle Internet Directory (optional).

If you are upgrading a previous installation of Oracle Workflow, and you are integrating with Oracle Internet Directory for the first time, migrate your 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*.

Step 8. Access the Oracle Workflow user interface.

To invoke Oracle Workflow's Web pages, append the appropriate procedure and arguments to the base URL for the Workflow Web agent. After 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:

```
http://<server.com:portID>/pls/wf/wfa_html.home
```

Note: The Workflow Web agent must be defined before you can access Oracle Workflow's Web pages. If you did not enter the Workflow Web agent in the Workflow Configuration Assistant, you can load this value manually using a script called wftoken.sql. This script is located in the wf/sql subdirectory within your Oracle Home. Connect to the Oracle Workflow database account using SQL*Plus and run the script using the following command:

```
sqlplus <username>/<pwd> @wftoken  
WF_WEB_AGENT <web_agent_value>
```

Replace *<web_agent_value>* with the Workflow web agent name in the following format:

```
http://<server.com:portID>/pls/wf
```

where *<server.com:portID>* represents the server and TCP/IP port number on which your web listener accepts requests.

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.

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. The users are: *sysadmin*, *wfadmin*, *blewis*, *cdouglas*, *kwalker*, and *spierson*. Their passwords are the same as their usernames. You can authenticate your connection to an Oracle Workflow Web page with any of these user names and passwords. Public grants and synonyms were created so that these users have full access to Oracle Workflow's Web-based user interface.

- If you chose to integrate with OID as your directory repository by entering LDAP values in the Workflow Configuration Assistant, then the demonstration users are created as ad hoc users in the Workflow local directory service tables. In this case you must migrate the user information for the demonstration users to OID before you can access Oracle Workflow Web pages with these user names and passwords. See Step 7. Migrate existing user information to Oracle Internet Directory.

- If you are using Oracle Database users and roles as your directory repository, then the Workflow installation creates the demonstration users as database accounts. In this case you can authenticate yourself with a demonstration database username and password to access Oracle Workflow Web pages.

Note: For security reasons, the installation process automatically locks the demonstration 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:

```
sqlplus SYSTEM/<SYSTEM pwd> @wfdemoul
```

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

Oracle Workflow also includes the Oracle Workflow Manager component in Oracle Enterprise Manager, which provides administrative and management tools for Oracle Workflow. After the Oracle Workflow installation and configuration are complete, you can access Oracle Workflow Manager from the Oracle Enterprise Manager Application Server Control.

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 chapter in the *Oracle Workflow Administrator's Guide* for information on how to complete these and other setup steps for Oracle Workflow. The setup steps include:

1. **(Optional)** Partitioning Workflow tables.
2. **(Required)** Configuring the default global user preferences for your enterprise.
3. **(Required)** Verifying the mapping of Oracle Workflow's directory service views to your organization's users and roles.
4. **(Optional)** Synchronizing Oracle Workflow's directory service with Oracle Internet Directory.

5. **(Optional)** Setting up additional languages.
6. **(Required)** Defining an environment variable called WF_RESOURCES if your Oracle Workflow Server is installed on a UNIX platform.
7. **(Required)** Initiating background Workflow engines to process deferred work and timed out activities.
8. **(Optional)** Configuring and running the Java-based Workflow Notification Mailer program, to allow users to receive e-mail notifications or e-mail notification summaries.
9. **(Optional)** Customizing e-mail notification templates.
10. **(Optional)** Customizing the logo displayed on Oracle Workflow's Web pages.
11. **(Optional)** Adding custom icons to Oracle Workflow.
12. **(Optional)** Starting the Java Function Activity Agent to run external Java functions.
13. **(Required)** Setting up the Business Event System to communicate events between systems.

Oracle Workflow Client

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

- Oracle Workflow Builder for Windows NT, Windows 98, Windows 2000, or Windows XP
- Oracle Workflow Common Files
- Oracle Workflow HTML help

Oracle Workflow Client Hardware and Software Requirements

Oracle Workflow Builder is a GUI tool that allows you to create and edit workflow definitions on a PC running either Microsoft Windows 98, Windows 2000, Windows NT, or Windows XP. A workflow definition can be saved to a flat file or to your Workflow Server database if you have Oracle Net installed on your PC. Oracle Workflow Builder requires the following hardware and software configurations:

- Oracle9i Net Client (included in the Oracle Workflow Client installation)

- Oracle9i Required Support Files (included in the Oracle Workflow Client installation)
- An IBM, Compaq, or 100% compatible personal computer with the following:
 - A 486 processor or better
 - Clock speed of 66 Mhz or greater (90 Mhz or greater is recommended)
 - Network card
 - SVGA color monitor
 - Modem configured with dial-in access for use by Oracle Worldwide Customer Support. At least one PC at your site should be configured with a modem.
 - Remote access and control software to be used by Customer Support for dial-in access through a modem to your PC. The preferred software is Symantec's Norton pcANYWHERE or Microcom's Carbon Copy.

Without some form of remote access and control software, Oracle Worldwide Customer Support will not be able to dial in to your site to diagnose problems, nor will they be able to supply patches directly to your client PC.

WARNING: Please follow the necessary security precautions against viruses and unauthorized access when installing any software that allows remote access.

- ISO 9660 format CD-ROM available as a logical drive
- Microsoft Windows 98, Windows 2000, Windows XP, or Windows NT 4.0 or higher
- At least 65 Mb of available disk space to install Oracle Workflow Builder, Oracle Net, and Required Support Files.
- At least 32 Mb of memory, 64 Mb recommended
- An Oracle9i Database client Oracle Home directory.

Note: The Oracle TCP/IP Protocol Adapter requires and only supports the use of Microsoft's TCP/IP drivers.

Note: Oracle Workflow Builder currently cannot be installed on a central file server or be shared by other client PCs over the network.

Oracle Workflow Client Installation

Perform the following steps to install the Oracle Workflow client components on a PC.

Step 1. Install Oracle Workflow client components using the Oracle Universal Installer.

The client components of Oracle Workflow must be installed into an Oracle9i Database client Oracle Home directory.

1. Start the Oracle Universal Installer from the Oracle Content Management SDK CD for Windows. Note that because the Oracle Workflow client components must be installed on a Windows PC, they are only included on the Oracle Content Management SDK CD for Windows. You must install from this CD to obtain the Oracle Workflow client components, even if your Oracle Workflow Server installation is on another platform. For more information about running the Oracle Universal Installer, see the *Oracle Content Management SDK Installation and Configuration Guide*.
2. When the Oracle Universal Installer is started, the Welcome window appears. Choose Next.

Note: Choose Help in any Oracle Universal Installer window for more information about that window.

3. In the next window, review the stage location of the installation files, and enter the Oracle Home location where you want to install Oracle Workflow components. Then choose Next.
4. In the next window, select Oracle Workflow Client as the product to install. Then choose Next.

Note: When you install the Oracle Workflow Builder, the Oracle Workflow Common Files and the Oracle Workflow HTML help are automatically installed as well.

5. If you are installing Java Runtime Environment for the first time, the Component Locations window appears. Enter the destination location where you want to install Java Runtime Environment. Then choose Next.
6. In the Summary window, review the summary information to ensure you have enough disk space. When you are ready to begin the installation, choose Install.
7. The Install window appears, displaying the progress of the installation.
8. If you are installing Oracle Net Client for the first time, the Configuration Tools window appears when the installation is complete, and the Oracle Net Configuration Assistant automatically starts.

In the Oracle Net Configuration Assistant window, select a method by which to configure client access to your Oracle Database. The Oracle Net Configuration Assistant helps you configure your client access.
9. The End of Installation window appears. Choose Exit to exit the Oracle Universal Installer. You can also choose Next Install to return to the File Locations window and install another component.
10. If you are installing Oracle Workflow Builder on a Windows 98 PC, you must exit Oracle Universal Installer after the installation is complete and reboot your PC before starting Oracle Workflow Builder.

Caution: It is very important that you reboot your PC before starting Oracle Workflow Builder for the first time on Windows 98 to ensure that the required versions of Workflow Builder files are loaded into memory as necessary.

Note: In some cases you may see the following error message during the installation: "Error encountered when registering <filename>, please run regsvr32.exe manually to register this file after the installation completes". For example, you may see this error for the wfnvg.ocx file.

If you encounter this error, close the error message and proceed with the installation. After the installation is complete, register the specified file manually by running the following command from a DOS prompt:

```
regsvr32 <path>\<filename>
```

Replace <path> with the path to the file and <filename> with the name of the file to register. The wfnvg.ocx file is normally located in the <ORACLE_HOME>\bin directory.

Step 2. Set up the Oracle Workflow HTML help (optional).

When you install Oracle Workflow Builder, the Oracle Universal Installer copies a zip file containing the HTML help to the Workflow directory in your Oracle Home. The zip file is <ORACLE_HOME>\wf\wfdoc.zip. Before you can view the HTML help, you must extract the doc directory tree from the zip file to your file system.

1. Use an unzip utility to extract the doc directory tree from the zip file within the Workflow directory. You need at least 7 Mb of free disk space to extract the zip file.

The doc directory tree that is created includes the Oracle Workflow documentation area, <ORACLE_HOME>\wf\doc, and the following subdirectories:

- <ORACLE_HOME>\wf\doc\<lang>\wf - Oracle Workflow online help.
- <ORACLE_HOME>\wf\doc\<lang>\wfcust - Custom help. You can optionally add your own customized Workflow help in this directory.

Note: You can also install the doc directory tree in a directory that you choose on your PC file system. Create a directory for the HTML help. Then transfer the HTML help zip file, wfdoc.zip, from the Workflow subdirectory within your Oracle Home to the new directory. 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. You can now view the HTML help using a Web browser.

The path for the contents page of the Oracle Workflow online help is:

```
\<ORACLE_HOME>\wf\doc\<lang>\wf\toc.htm
```

The path for the contents page of your Oracle Workflow custom help is:

```
\<ORACLE_HOME>\wf\doc\<lang>\wfcust\wfcust.htm
```

You can also view context-sensitive help for the Oracle Workflow Builder in Winhelp format by choosing Contents from the Help menu within the Oracle Workflow Builder.

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

Step 3. Modify fonts in the Oracle Workflow Builder (optional).

If you are installing the Oracle Workflow Builder in another language such as Japanese, you can modify the font used by the windows in the Oracle Workflow Builder to a font that is appropriate for your language. Any change you make applies to all windows within the program.

1. Choose Font from the View menu to display the Fonts properties page.
2. Select the font you want to use in the labels for your icons and in the navigator tree. The Sample region shows the appearance of the font you select. For example, when using the Oracle Workflow Builder in Japanese, you might choose the font MS PGothic.
3. Select the font style: Regular, Bold, Italic, or Bold Italic. Some fonts have a limited selection of font styles.
4. Select the font size to use. Some fonts have a limited selection of font sizes.
5. Select the Underline or Strikeout check boxes to apply those effects.
6. Choose OK when you are finished.
7. Close and restart the Oracle Workflow Builder. The new font settings should then take effect.

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