# Oracle® Database Express Edition

Upgrade Guide

10*g* Release 2 (10.2.0.3)

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Oracle Database Express Edition Upgrade Guide, 10*g* Release 2 (10.2.0.3)

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# Contents

# Preface

This guide explains how to upgrade Oracle Database Express Edition to Oracle Database 10*g*.

> **See Also:** *Oracle Database New Features Guide* for information about available features and options available in Oracle Database

This Preface contains these topics:



## Audience

This guide is intended for anyone responsible for planning and upgrading Oracle Database Express Edition to Oracle Database 10*g* release 2 (10.2.0.3) on a single computer. Additional installation guides for Oracle Database Client, Oracle Real Application Clusters, Oracle Clusterware, Oracle Companion CD, and Oracle Enterprise Manager Grid Control are available on the relevant installation media.

To use this document, you need the following:

- A supported Microsoft Windows or Linux x86 operating system installed and tested on your computer system
- Administrative privileges on the computer where you are installing the Oracle Database software
- Familiarity with object-relational database management concepts
- The support identifier you obtained when you purchased Oracle Database 10*g*

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## Related Documents

For more information, see these Oracle resources:

- *Oracle Database Installation Guide*
- *Oracle Database Concepts*
- *Oracle Database 2 Day DBA*
- *Oracle Database Administrator's Guide*
- *Oracle Database SQL Language Reference*
- *Oracle Database Utilities*
- *Oracle Database Application Express Release Notes*
- *Oracle Database Application Express User's Guide*

For information about Oracle error messages, see *Oracle Database Error Messages*. Oracle error message documentation is available only in HTML. If you have access to the Oracle Database Documentation Library, then you can browse the error messages by range. Once you find the specific range, use your browser's "find in page" feature to locate the specific message. When connected to the Internet, you can search for a specific error message using the error message search feature of the Oracle online documentation.

Many books in the documentation set use the sample schemas of the seed database, which is installed by default when you install Oracle. Refer to *Oracle Database Sample Schemas* for information on how these schemas were created and how you can use them yourself.

Printed documentation is available for sale in the Oracle Store 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. |
| *italic* | Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values. |
| `monospace` | Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter. |

# 1

# Understanding the Upgrade Process

This chapter provides an overview of upgrading Oracle Database Express Edition to Oracle Database 10*g* release 2 (10.2.0.3).

This chapter contains the following topics:



## Overview of the Upgrade Process

The process of upgrading Oracle Database Express Edition to Oracle Database 10*g* involves the following steps:

1. Determine how you want to back up your existing database. See "Backing Up Your Database" on page 1-2.
2. Perform the tasks involved in the upgrade process. See "Upgrading the Software" on page 2-1 .
3. Perform the necessary post-upgrade tasks. See "Post-Upgrade Tasks Specific to Oracle Application Express" on page 3-1.
4. Review key differences between Oracle Database Express Edition and Oracle Database 10*g*. See "What's Different in Your New Database" on page 4-1.
5. Test the upgraded database by logging in to Oracle Application Express. See "Logging In to Oracle Application Express" on page 4-4.

### About the Upgrade Task

Within the overall process just described, you perform the actual upgrade by running the Database Upgrade Assistant from the Oracle Database 10*g* Release 2 Oracle home. This tool steps you through the upgrade process and configures the database for the new Oracle Database 10*g* release 10.2.0.3.

Running Database Upgrade Assistant and upgrading your database consists of the following steps:

1. Start Database Upgrade Assistant from the 10.2.0.3 Oracle home.
2. Select the **XE** database.

   Database Upgrade Assistant performs pre-upgrade checks.
3. Rename the database by entering a new Global Database Name and Oracle system identifier (SID).
4. Specify target locations for database files.
5. Configure the Flash Recovery Area.
6. Optionally, recompile invalid objects.
7. Optionally, back up your database.
8. Specify database management options.
9. Specify a database account password and an Oracle Application Express administrator password.

   Database Upgrade Assistant shuts down the Oracle Database Express Edition database, renames the database instance, moves the database files to the new location, and re-creates the Temp files. Note that once these tasks are complete, the database files exist in the new location.

> **See Also:** Chapter 2, "Upgrading the Software" for a more detailed explanation of the upgrade process

## Backing Up Your Database

A **backup** is a copy of data from your database that you can use to reconstruct that data. Oracle recommends that you back up your database before upgrading. If errors occur during the upgrade, then you may have to restore the database from the backup.

You can back up your database before you upgrade, or you can have Database Upgrade Assistant back it up while you upgrade. If you select this latter option, then Database Upgrade Assistant makes a copy of all your database files in the directory you specify in the Backup Directory field. Database Upgrade Assistant performs this cold backup automatically after it shuts down the database, but before it begins performing the upgrade procedure.

Database Upgrade Assistant also creates a script file that you can use to restore the database files.

> **See Also:** "Backing Up and Recovering" in *Oracle Database Express Edition 2 Day DBA* for information about how to back up your database before upgrading

## Restoring Your Database

If errors occur during the upgrade process, then you can restore Oracle Database Express Edition database by performing one of the following steps:

- Click **Restore Database** on the Summary page.
- Run the script created by the Database Upgrade Assistant from the command prompt:
  - On Windows, the script file is called `db_name_restore.bat`
  - On Linux, the script file is called `db_name_restore.sh`

**Note:** You must stop Enterprise Manager Database Control after running the restore script by using the `emctl stop dbconsole` command from the command prompt.

## Migrating Data to a Different Operating System

When using Database Upgrade Assistant, you *cannot* migrate data in a database on one operating system to a database on another operating system.

If you want to migrate Oracle Database to a different operating system, then the recommended best practice is as follows:

1. Upgrade to the latest Oracle Database release on the current operating system by following the instructions in this guide.
2. Use the Oracle Database cross-platform transportable tablespace feature or the Oracle Data Pump Export and Import utilities to migrate the upgraded database to the new operating system.

   **See Also:** *Oracle Database Utilities* for information about the utilities bundled with the Oracle Database, including Export, Import, and SQL*Loader

## Downgrading Back to Oracle Database Express Edition

Once you have upgraded to Oracle Database 10*g*, you cannot downgrade back to Oracle Database Express Edition.

## Understanding the Oracle Home Directory

The Oracle home (`ORACLE_HOME`) directory is where you choose to install the software for a particular Oracle product. You must install different Oracle products, or different releases of the same Oracle product, in separate Oracle home directories. This means that Oracle Database Express Edition and Oracle Database 10*g* must be installed in separate Oracle homes. When you run Oracle Universal Installer, it prompts you to specify the path to this directory, as well as a name that identifies it.

On Windows, the default Oracle home directory for Oracle Database 10*g* release 2 is `db_1`. The full path is *x*`:\oracle\product\10.2.0\db_1`

On Linux, Oracle recommends that you specify a path similar to the following for the Oracle home directory:

```
/u01/app/oracle/product/10.2.0/db_1
```

## System Requirements

For hardware and software system requirements, see the *Oracle Database Installation Guide* for your operating system. Note that during the upgrade process, the installer verifies that your system meets these minimum requirements.

# 2

# Upgrading the Software

This chapter describes how to use Database Upgrade Assistant to upgrade Oracle Database Express Edition to Oracle Database 10*g*.

This chapter contains the following topics:



**Note:**

- Within the context of this document, the Oracle home directory (`ORACLE_HOME`) is the directory where you choose to install the software for a particular Oracle product. See "Understanding the Oracle Home Directory" on page 1-3, to learn more.
- You do not need to stop Oracle Database Express Edition services before upgrading. The Database Upgrade Assistant does this for you at the appropriate time—that is, after Oracle Database 10*g* is installed and the 10.2.0.3 patchset is applied.
- As part of the upgrade, you are prompted to enter both a unique global database name that distinguishes this database from others on the network, and a unique SID to distinguish this database from others on the computer.
- To perform this upgrade, you need the support identifier you obtained when you purchased Oracle Database 10*g*.

## Task 1: Download and Install Oracle Database 10*g*, Release 2 (10.2.0.1)

Download the Oracle Database 10*g*, release 2 (10.2.0.1) software from Oracle Technology Network:

`http://www.oracle.com/technology/software/products/database/oracle10g/index.html`

Then extract and install the software in a new Oracle home for Oracle Database 10*g* release 2, on the same computer where Oracle Database Express Edition is installed.

The location of the Oracle Database 10*g* Oracle home directory should be separate from that of the Oracle database Express Edition Oracle home directory.

> **See Also:** *Oracle Database Installation Guide* for your operating system

## Task 2: Download and Apply the Oracle Database 10.2.0.3 Patch Set

Review the Oracle Database 10.2.0.3 patch set documentation, then download and apply the patch set to the Oracle Database 10*g* Oracle home that you installed in Step 1.

**To find and download the 10.2.0.3 patch set:**

1. Go to the Oracle*MetaLink* Web site at:

   `http://metalink.oracle.com/`

2. Log in to Oracle*MetaLink*.

   > **Note:** If you are not an Oracle*MetaLink* registered user, then click **Register for MetaLink** and follow the registration instructions. To access Oracle*MetaLink*, you must provide the support identifier you received when you purchased Oracle Database 10*g*.

3. Select the **Patches & Updates** tab.
4. Select **Simple Search**.
5. Enter 5337014 in the patch number field.
6. Select your platform from the drop-down list.
7. Click **Go**.
8. Click **View Readme**.

   Each patch set has a Readme file with installation requirements and instructions. Oracle recommends that you read the Readme file before proceeding.

9. Click **Download** after reading the Readme file.
10. Follow the installation instructions in the patch set documentation.

> **Note:** Be sure to install the Oracle Database 10.2.0.3 patch set in the same Oracle home you specified for Oracle Database 10*g* in "Task 1: Download and Install Oracle Database 10g, Release 2 (10.2.0.1)" on page 2-1.

## Task 3: Download and Unzip the Latest Version of Oracle Application Express

Download and unzip the latest version of Oracle Application Express to the Oracle Database 10*g* Oracle home that you created and patched in Task 1 and Task 2.

**To download the latest version of Oracle Application Express:**

1. Go to the Oracle Application Express download page:

http://www.oracle.com/technology/products/database/application_express/index.html

2. Click **Download**.
3. Locate the latest version of Oracle Application Express.
4. Download the ZIP file to your computer.
5. Unzip the downloaded file in the Oracle Database 10*g* Oracle home preserving the directory names. This extracts the files to a directory structure of `$ORACLE_HOME/apex`.

# Task 4: Download and Apply the Necessary Patches

The patches you download and apply depend on your operating system.

This section contains these topics:

- Downloading and Applying the Necessary Patches for Linux
- Downloading and Applying the Necessary Patch for Windows

## Downloading and Applying the Necessary Patches for Linux

If your operating system is Linux, then download and apply patch 5947653 and OPatch 5115926 to the Oracle Database 10*g* Oracle home.

### To find and download patch 5947653:

1. Go to the Oracle*MetaLink* Web site at:

   `http://metalink.oracle.com/`

2. Select the **Patches & Updates** tab.
3. Select **Simple Search**.
4. Enter 5947653 in the patch number field.
5. From the **Platform or Language** list, select your platform.
6. Click **Go**.
7. Click **View Readme**.

   Each patch set has a Readme file with installation requirements and instructions. Oracle recommends that you read the Readme file before proceeding.
8. Click **Download** after reading the Readme file.
9. Follow the installation instructions in the Patch Readme file.

### To find and download OPatch 5115926:

1. Follow Steps 1 through 3 in the previous section.
2. Enter 5115926 in the patch number field.
3. Follow Steps 5 through 9 in the previous section.

## Downloading and Applying the Necessary Patch for Windows

If your operating system is Microsoft Windows, then download and apply patch 6038241.

**To find and download patch 6038241:**

1. Go to the Oracle*MetaLink* Web site at:

   `http://metalink.oracle.com/`

2. Select the **Patches & Updates** tab.
3. Select **Simple Search**.
4. Enter 6038241 in the patch number field.
5. From the **Platform or Language** list, select your platform.
6. Click **Go**.
7. Click **View Readme**.

   Each patch set has a Readme file with installation requirements and instructions. Oracle recommends that you read the Readme file before proceeding.

8. Click **Download** after reading the Readme file.
9. Follow the installation instructions in the Patch Readme file.

# Task 5: Run Database Upgrade Assistant

Database Upgrade Assistant is an interactive user interface that steps you through the upgrade process and configures the database for the new Oracle Database 10*g*. It automates the upgrade process by performing all of the tasks for you.

**See Also:**

- "Upgrade the Database Using the Database Upgrade Assistant" in *Oracle Database Upgrade Guide*
- The Database Upgrade Assistant online help. Click the Help button at the bottom of any page

**To upgrade Oracle Database Express Edition to Oracle Database 10*g*:**

1. Start Database Upgrade Assistant from the Oracle Database 10*g* Oracle home:
   - On Linux, enter the following command at the command prompt:

     `dbua`

     Note that the Database Upgrade Assistant executable is located in `$ORACLE_HOME/bin`.

   - On Windows, from the **Start** menu select Programs, then Oracle - *HOME_NAME*, Configuration and Migration Tools, and then Database Upgrade Assistant.

     The Database Upgrade Assistant Welcome screen appears.

2. Review the text and then click **Next**.

   The Upgrade Operations screen appears.

3. Select Upgrade a Database. Click **Next**.

   The Databases screen appears.

4. From available databases, select **XE** and click **Next**.

Database Upgrade Assistant checks your system and performs pre-upgrade checks. Depending on what it finds, it may recommend that you resolve certain issues before proceeding. It then asks if you want to proceed.

5. Click **Yes**.

   A security alert informs you that remote access is always enabled for the HTTP server in the database after the upgrade. It advises you to use Apache for a more secure configuration.

   If you want to configure Apache for a more secure configuration, then you do so as a post-upgrade task as described in "Choosing an HTTP Server" on page 3-1.

6. Click **Yes** to continue the upgrade.

   The Rename Database screen appears.

7. Enter the following:

   a. **Global Database Name** - Enter a unique name that distinguishes this database from other databases in your network domain. For example:

      ```
      sales.us.mycompany.com
      ```

   b. **SID** - Enter a unique identifier that distinguishes this database from all other databases on your computer. The SID automatically defaults to the database name portion of the global database name (for example `sales` in the example `sales.us.mycompany.com`) until you reach eight characters or enter a period. You can accept or change the default value.

   c. Click **Next**.

      The Move Database Files screen appears.

8. Under "Move Database Files during Upgrade," select a storage mechanism, either **File System** or **Automatic Storage Management (ASM)**. Note that if, in step 4, you selected XE, then the "Do not move Database Files as Part of Upgrade" option is disabled.

9. Click **Next**.

   The Database File Location screen appears.

10. Specify if you want to move the database files during upgrade. Select one of the following:

   – **Use Common Location for All Database files**

      This option requires you to specify a directory for all database files. All the database files will be created in this location. Later, you can modify the database file names and location.

      If, in step 8, you selected **File System** as your storage mechanism, then enter the path name of the directory in which to store the database files, for example:

      ```
      C:\work\oradata
      ```

      If, instead, you entered **Automatic Storage Management (ASM)** in step 8, then enter the disk group name, for example, `+ASDF`.

      **See Also:** *Oracle Database 2 Day DBA* and *Oracle Database Administrator's Guide* for information about creating an Automated Storage Management instance and disk group

– **Use Oracle-Managed Files**

Select this option to have Oracle directly manage operating system files comprising an Oracle database. You specify a default location, called a database area, for all your files. Oracle then automatically creates and deletes files in this location as required.

To provide greater redundancy and fault tolerance, select **Multiplex Redo Logs and Control Files**. This creates multiple copies of your redo and online log files.

**See Also:** "Performing Backup and Recovery" in *Oracle Database 2 Day DBA* or information about redo logs and control files

– **Use a Mapping File to Specify Location of Database Files**

Select this option if you want to specify the explicit location for each file. It enables you to move each file to different locations—unlike the other two options that move them to a single location.

When you select this option, the Database Upgrade Assistant creates a map file that you can open and edit. The format for this file is:

datafile=newpath

You may want to look at the following map file: `$ORACLE_HOME/cfgtoollogs/dbua/XE/upgrade`*nn*`/mapfile.txt`.

11. Click **Next**.

The Recompile Invalid Objects screen appears.

12. Recompile Invalid Objects.

When you upgrade a database to the new release, many of the PL/SQL modules in your database become invalid. By default, the Oracle Database recompiles invalid PL/SQL modules as they are used.

Select **Recompile invalid objects at the end of upgrade** to have the Database Upgrade Assistant recompile invalid objects after the upgrade.

---

**Note:** If you elect not to have Database Upgrade Assistant recompile invalid objects after upgrade, you must later complete the following steps manually as a post-upgrade task:

1. Connect to the database where you installed Oracle Application Express as the SYS user.
2. Run the `utlrp.sql` script from the Oracle Database home to recompile all invalid PL/SQL packages now instead of when the packages are accessed for the first time. This step is optional but recommended.

```
SQL> @?/rdbms/admin/utlrp.sql
```

---

13. Click **Next**.

The Backup screen appears.

14. For Backup:

a. Select one of the following:

– **I have already backed up my database**.

- **I would like this tool to back up the database**.

  If you select this option, Database Upgrade Assistant makes a copy of all your database files in the directory specified in the Backup Directory field. Database Upgrade Assistant also creates a batch files you can use to restore the database files. See "Backing Up Your Database" on page 1-2.

**b.** Click **Next**.

A second backup screen appears.

**15.** For Management Options:

**a.** Select **Configure the Database with Enterprise Manager**.

To learn more about Enterprise Manager Database Control, see *Oracle Database Installation Guide* for your operating system.

**b.** Under Use Database Control for Database Manager:

- **Enable Email Notifications** - Select this option to enable the SYSMAN user (the default Super Administrator) to receive email notifications. To learn more, click **Help**.
- **Enable Daily Backup** - Select this option, to back up your database daily. To learn more, click **Help**.

**c.** Click **Next**.

The Recovery Configuration screen appears.

**16.** For Recovery Configuration, specify the following:

**a.** **Flash Recovery Area**: Specify a directory or Automatic Storage Management disk group to store and manage files related to backup and recovery.

---

**Note:** You will not use the Flash Recovery Area that is configured for Oracle Database Express Edition. Uninstalling Oracle Database Express Edition would remove the Flash Recovery Area that is configured for it.

---

**b.** **Flash Recovery Area Size**: Specify the directory size in MB.

**c.** Click **Next**.

The Database Credentials screen appears.

**See Also:**

- The section "Managing the Flash Recovery Area" in *Oracle Database Express Edition 2 Day DBA*
- *Oracle Database Backup and Recovery User's Guide*

**17.** Specify passwords for the user accounts listed on this screen.

**a.** Select one of the following:

- Use the Same Password for all Accounts. Then, enter the password in the fields provided.
- Use Different Passwords. To learn more about this option, click **Help**.

**b.** Click **Next**.

The Application Express Credentials screen appears.

18. For Application Express Credentials, enter a password for the Oracle Application Express administrator account ADMIN, then confirm it, in the fields provided. Click **Next**.
19. The Network Configuration for the Database screen appears if:
    - More than one listener is available for the Oracle home for Oracle Database 10*g* Release 10.2.0.3, and
    - The database is to be configured with Enterprise Manager.

    If both of these conditions are met, then select either to:
    - Register the database with all the listeners, or
    - Register the database with selected listeners only

    If the Network Configuration screen does not appear, then you are taken to the Summary screen.
20. Review your selections.
    a. For the Source Database and Target Database, note the Name, Version, and Oracle home. The Oracle home is the operating system location of your Oracle installation.
    b. Click **Finish**.

    Note that Database Upgrade Assistant shuts down the database during the upgrade process.
21. For restoring the Oracle Database Express Edition database, perform one of the following steps:
    - Click **Restore Database** on the Summary page.
    - Run the restore script created by the Database Upgrade Assistant. Refer to "Restoring Your Database" on page 1-2 , for information on using the restore script.

# Task 6: Secure Resources In Oracle XML DB

After upgrading from Oracle Database Express Edition, the database user ANONYMOUS is unlocked. Additionally, unauthenticated access to any public resource in Oracle XML DB is permitted. These are requirements for use of Oracle XML DB HTTP server of the Oracle database. Be aware of any resources you place in Oracle XML DB after upgrade and apply appropriate security controls on them.

An alternative secure method is to:

1. Lock the database user ANONYMOUS. Unauthenticated access to any public resource in Oracle XML DB is not permitted.
2. Reconfigure with Oracle HTTP Server and modplsql as discussed in "Choosing an HTTP Server" on page 3-1.

# 3

# Post-Upgrade Tasks Specific to Oracle Application Express

Oracle Database Express Edition features a browser-based user interface for running scripts and queries, and building Web-based applications. In Oracle Database 10*g*, this browser-based user interface is called *Oracle Application Express*. The following sections describe post-upgrade tasks specific to Oracle Application Express.

This chapter discusses the following topics:

- Choosing an HTTP Server
- Configuring Oracle HTTP Server with mod_plsql
- Copying the Images Directory
- Installing Oracle Application Express in Other Languages
- Managing JOB_QUEUE_PROCESSES
- Obfuscating PlsqlDatabasePassword Parameter

> **See Also:** "What's Different in Your New Database" on page 4-1, "About Database Administration in Oracle Database 10g" on page 4-1, and "Logging In to Oracle Application Express" on page 4-4

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**Note:** The post-upgrade tasks described in this chapter are not required if you continue to use Oracle XML DB HTTP Server as the HTTP Server for Application Express. You can proceed to "Installing Oracle Application Express in Other Languages" on page 3-6.

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## Choosing an HTTP Server

Oracle Application Express requires access to either the embedded PL/SQL gateway or Oracle HTTP Server and `mod_plsql`.

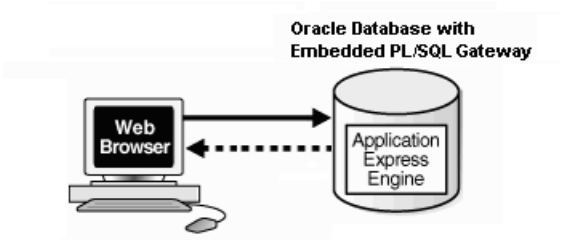
The following topics would help you choose an HTTP server:

- About Oracle XML DB HTTP Server
- About Oracle HTTP Server and mod_plsql

## About Oracle XML DB HTTP Server

The Oracle XML DB HTTP server that installs with the Oracle Database Express Edition has the embedded PL/SQL gateway. It provides the Oracle database with a Web server and also the necessary infrastructure to create dynamic applications.

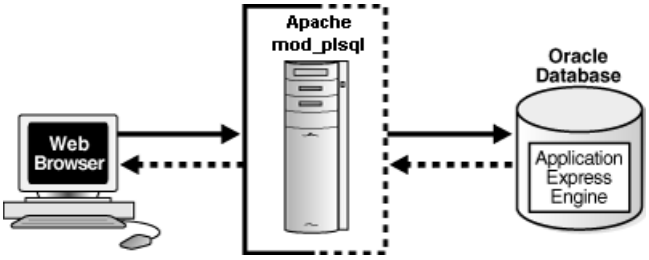
The embedded PL/SQL gateway runs in the Oracle XML DB HTTP server in the Oracle database and includes the core features of `mod_plsql`. The following graphic illustrates the Oracle Application Express architecture using the embedded PL/SQL gateway.




As shown in the previous graphic, the embedded PL/SQL gateway offers a simple two tier architecture: a Web browser and an Oracle database, containing the embedded PL/SQL and Oracle Application Express.

## About Oracle HTTP Server and mod_plsql

Oracle HTTP Server uses the `mod_plsql` plug-in to communicate to the Oracle Application Express engine within the Oracle database. It functions as communication broker between the Web server and the Oracle Application Express objects in the Oracle database. More specifically, it maps browser requests into database stored procedure calls over a `SQL*Net` connection. The following graphic illustrates the Oracle Application Express architecture using Oracle HTTP Server and `mod_plsql`.




**See Also:** "Installing Oracle HTTP Server" in *Oracle Database Companion CD Installation Guide* for your operating environment and "Configuring Oracle HTTP Server with mod_plsql" on page 3-3

Note that this configuration consists of three tier architecture: a Web browser, Oracle HTTP Server (Apache) with `mod_plsql`, and an Oracle database containing Oracle Application Express.

# Copying the Images Directory

The following section applies only if you are using Oracle HTTP Server as your Web server. After you create all of the required Oracle Application Express database objects, you must copy the `images` directory into the directory tree of the Oracle HTTP Server. The *`ORACLE_HOME`*`/apex/images` directory contains Oracle

Application Express images, templates, cascading style sheets, themes, JavaScript files, and other required file types.

> **Note:** In this chapter ORACLE_HOME is the location where Oracle HTTP server is installed.

On Windows, you can copy the appropriate directory using Windows Explorer, or run a command from a command prompt as shown in the following example:

```
xcopy /E /I apex\images ORACLE_BASE\ORACLE_HOME\Apache\Apache\images
```

On Linux, you can copy the appropriate directory by running from the command prompt, a command similar to the one shown in the following example:

```
cp -rf apex/images ORACLE_BASE/ORACLE_HOME/Apache/Apache
```

# Configuring Oracle HTTP Server with mod_plsql

This section describes how to configure Oracle HTTP Server with mod_plsql in a new installation.

Topics in this section include:

- Disabling Oracle XML DB HTTP Server
- Configuring Oracle HTTP Server 10g or Oracle Application Server 10g

> **See Also:** "Installing Oracle HTTP Server" in *Oracle Database Companion CD Installation Guide* for your operating environment
> "About Oracle HTTP Server and mod_plsql" on page 3-2 and "Copying the Images Directory" on page 3-2

## Disabling Oracle XML DB HTTP Server

If you choose the Oracle HTTP Server with the mod_plsql plug-in, then you must disable Oracle XML DB HTTP Server in which the embedded PL/SQL gateway runs.

**To disable the Oracle XML DB HTTP server:**

1. Start SQL*Plus and connect to the database where Oracle Application Express is installed as SYS or SYSTEM. For example:

   ```
   c:\> sqlplus
   SQL> CONNECT SYS AS SYSDBA
   Enter password: SYS_password
   ```

2. Run the following command:

   ```
   EXEC DBMS_XDB.SETHTTPPORT(0);
   COMMIT;
   ```

## Configuring Oracle HTTP Server 10*g* or Oracle Application Server 10*g*

Perform the following post-installation steps if:

- You are running Oracle HTTP Server 10*g* or Oracle Application Server 10*g*.
- Oracle HTTP Server is installed in the Oracle Database 10*g* Oracle home.

- You have not previously configured Oracle HTTP Server to work with Oracle Application Express.

Topics in this section include:



### Changing the Password for the APEX_PUBLIC_USER Database User

In order to specify the password in the `DAD` file, you have to change the password for the database user APEX_PUBLIC_USER. Please use the following steps to change the password for the APEX_PUBLIC_USER database user:

1. Start SQL*Plus and connect to the database where Oracle Application Express is installed as SYS. For example:

```
C:\> sqlplus
SQL> CONNECT SYS AS SYSDBA
Enter password: SYS_password
```

2. Run the following statement:

```
ALTER USER APEX_PUBLIC_USER IDENTIFIED BY password
```

### Create a marvel.conf File

If you have not previously configured Oracle HTTP Server to work with Oracle Application Express, then you must create a `marvel.conf` file. The `marvel.conf` file contains the information about the DAD to access Oracle Application Express.

#### To create the marvel.conf file:

1. Use a text editor and create a file named `marvel.conf`.
   - On Linux, save to:

     ```
     $ORACLE_HOME/Apache/modplsql/conf
     ```

   - On Windows, save to:

     ```
     ORACLE_BASE\ORACLE_HOME\Apache\modplsql\conf\
     ```

2. Copy the following into the `marvel.conf` file. Replace `ORACLE_HOME`, `host`, `port`, `service_name`, and `apex_public_user_password` with values appropriate for your environment. Note that `apex_public_user_password` is the password you defined in "Changing the Password for the APEX_PUBLIC_USER Database User" on page 3-4.

   In the following example, the path listed is likewise only an example. The path in the `marvel.conf` file should reference the file system path described in "Copying the Images Directory" on page 3-2.

```
Alias /i/ "ORACLE_BASE/ORACLE_HOME/apex/images/"
AddType text/xml       xbl
AddType text/x-component       htc

<Location /pls/apex>
 Order deny,allow
 PlsqlDocumentPath docs
```

```
 AllowOverride None
 PlsqlDocumentProcedure      wwv_flow_file_mgr.process_download
 PlsqlDatabaseConnectString  host:port:service_name ServiceNameFormat
 PlsqlNLSLanguage            AMERICAN_AMERICA.AL32UTF8
 PlsqlAuthenticationMode     Basic
 SetHandler                  pls_handler
 PlsqlDocumentTablename      wwv_flow_file_objects$
 PlsqlDatabaseUsername       APEX_PUBLIC_USER
 PlsqlDefaultPage            apex
 PlsqlDatabasePassword       apex_public_user_password
 Allow from all
</Location>
```

> **See Also:** The section "About Remote Connections" in Oracle Database Express Edition 2 Day DBA for more information about the parameters `ORACLE_HOME`, `host`, `port`, and `service_name`

3. Locate the line containing `PlsqlNLSLanguage`.

   The `PlsqlNLSLanguage` setting determines the language setting of the DAD. The character set portion of the `PlsqlNLSLanguage` value must be set to `AL32UTF8`, regardless of whether or not the database character set is `AL32UTF8`. For example:

```
...
PlsqlNLSLanguage            AMERICAN_AMERICA.AL32UTF8
...
```

4. Save and exit the `marvel.conf` file.

### Edit the httpd.conf File

Next, you must edit the `httpd.conf` file to reference the `marvel.conf` configuration file.

#### To edit the httpd.conf file:

1. Use a text editor and open the `httpd.conf` file.
   - On Linux:

     `$ORACLE_HOME/Apache/Apache/conf/httpd.conf`

   - On Windows:

     *ORACLE_BASE**ORACLE_HOME*\Apache\Apache\conf\httpd.conf

2. Add an entry to reference the `marvel.conf` configuration file.

   `include "ORACLE_BASE/ORACLE_HOME/Apache/modplsql/conf/marvel.conf"`

3. Save and exit the `httpd.conf` file.

### Stop and Restart Oracle HTTP Server

You can stop and restart the Oracle HTTP Server by using the command line.

#### To stop and restart Oracle HTTP Server:

- On Linux, run the following commands from a command prompt:

  `$ORACLE_HOME/opmn/bin/opmnctl stopproc ias-component=HTTP_Server`

```
$ORACLE_HOME/opmn/bin/opmnctl startproc ias-component=HTTP_Server
```

- On Windows, run the following commands from a command prompt:

```
ORACLE_BASE\ORACLE_HOME\opmn\bin\opmnctl stopproc ias-component=HTTP_Server
ORACLE_BASE\ORACLE_HOME\opmn\bin\opmnctl startproc ias-component=HTTP_Server
```

## Installing Oracle Application Express in Other Languages

The Oracle Application Express interface is translated into German, Spanish, French, Italian, Japanese, Korean, Brazilian Portuguese, Simplified Chinese, and Traditional Chinese. A single instance of Oracle Application Express can be installed with one or more of these translated versions. At runtime, each user's Web browser language settings determine the specific language version.

The translated version of Oracle Application Express should be loaded into a database that has a character set that can support the specific language. If you attempt to install a translated version of Oracle Application Express into a database that does support the character encoding of the language, then the installation may fail or the translated Oracle Application Express instance may appear corrupt when run. The database character set `AL32UTF8` supports all the translated versions of Oracle Application Express.

You can manually install translated versions of Oracle Application Express using SQL*Plus. The installation files are encoded in `UTF8`.

> **Note:** Regardless of the target database character set, to install a translated version of Oracle Application Express, you must set the character set value of the `NLS_LANG` environment variable to `AL32UTF8` prior to starting SQL*Plus.

The following examples illustrate valid `NLS_LANG` settings for loading Oracle Application Express translations:

```
American_America.AL32UTF8
Japanese_Japan.AL32UTF8
```

### To install a translated version of Oracle Application Express:

1. Set the `NLS_LANG` environment variable, ensuring that the character set is `AL32UTF8`. For example:

   - Bourne or Korn shell:

     ```
     NLS_LANG=American_America.AL32UTF8
     export NLS_LANG
     ```

   - C shell:

     ```
     setenv NLS_LANG American_America.AL32UTF8
     ```

   - For Windows based systems:

     ```
     set NLS_LANG=American_America.AL32UTF8
     ```

2. Start SQL*Plus and connect to the target database as `SYS`.
3. Execute the following statement:

   ```
   ALTER SESSION SET CURRENT_SCHEMA = FLOWS_030000;
   ```

4. Execute the appropriate language specific script. For example:

   ```
   @load_de.sql
   ```

   The installation scripts are located in subdirectories identified by a language code in the unzipped distribution *ORACLE_HOME*/apex/builder. For example, the German version is located in *ORACLE_HOME*/apex/builder/de and the Japanese version is located in *ORACLE_HOME*/apex/builder/ja. Within each of these directories, there is a language loading script identified by the language code (for example, load_de.sql or load_ja.sql).

# Managing JOB_QUEUE_PROCESSES

JOB_QUEUE_PROCESSES determine the maximum number of concurrently running jobs. In Oracle Application Express, transactional support and SQL scripts require jobs. If JOB_QUEUE_PROCESSES is not enabled and working properly, then you cannot successfully execute a script.

Topics in this section include:

- Viewing the Number of JOB_QUEUE_PROCESSES
- Changing the Number of JOB_QUEUE_PROCESSES

## Viewing the Number of JOB_QUEUE_PROCESSES

There are currently two ways to view the number of JOB_QUEUE_PROCESSES:

- On the About Workspace home page in Oracle Application Express
- From SQL*Plus

### Viewing JOB_QUEUE_PROCESSES in Oracle Application Express

You can also view the number of JOB_QUEUE_PROCESSES on the About Application Express page.

#### To view the About Application Express page:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" on page 4-4.
2. On the Administration list, click **About Application Express**.

   The current number JOB_QUEUE_PROCESSES displays at the bottom of the page.

### Viewing JOB_QUEUE_PROCESSES from SQL*Plus

You can also view the number of JOB_QUEUE_PROCESSES from SQL*Plus by running the following SQL statement:

```
SQL> CONNECT SYSTEM
Enter password: <password>
SELECT VALUE FROM v$parameter WHERE NAME = 'job_queue_processes'
```

## Changing the Number of JOB_QUEUE_PROCESSES

You can change the number of JOB_QUEUE_PROCESSES by running a SQL statement in SQL*Plus.

**To update the number of JOB_QUEUE_PROCESSES:**

1. Log in to the database as `SYSDBA` using SQL*Plus.
2. In SQL*Plus run the following SQL statement:

   ```
   ALTER SYSTEM SET JOB_QUEUE_PROCESSES = <number>
   ```

   For example, running the statement `ALTER SYSTEM SET JOB_QUEUE_PROCESSES = 20` sets `JOB_QUEUE_PROCESSES` to 20.

# Obfuscating PlsqlDatabasePassword Parameter

The `PlsqlDatabasePassword` parameter specifies the password for logging in to the database. You can use the `dadTool.pl` utility to obfuscate passwords in the `dads.conf` file.

You can find the `dadTool.pl` utility in the following directory:

- On Linux:

  ```
  $ORACLE_HOME/Apache/modplsql/conf
  ```

- On Windows:

  *ORACLE_BASE**ORACLE_HOME*\Apache\modplsql\conf

## Obfuscating Passwords

**To obfuscate passwords:**

1. Use a text editor and copy the entry for `/pls/htmldb` or `/pls/apex` from the `marvel.conf` file into the `dads.conf` file.
   - On Linux, these files are located in:

     ```
     $ORACLE_HOME/Apache/modplsql/conf/dads.conf
     ```

   - On Windows, these files are located in:

     *ORACLE_BASE**ORACLE_HOME*\Apache\modplsql\conf\dads.conf

2. Run `dadTool.pl` by following the instructions in the `dadTool.README` file.
3. Copy the entry for `/pls/htmldb` or `/pls/apex` from the `dads.conf` file back into `marvel.conf`.
4. Remove the entry for `/pls/htmldb` or `/pls/apex` from the `dads.conf` file.

# 4

# What's Different in Your New Database

This chapter describes some key differences between Oracle Database Express Edition and Oracle Database 10*g*.

This chapter contains the following topics:



> **Note:** Within the context of this document, the Oracle home directory (`ORACLE_HOME`) is the location where Oracle Database is installed. To learn more, see "Understanding the Oracle Home Directory" on page 1-3

## About Database Administration in Oracle Database 10*g*

One of the key differences between Oracle Database Express Edition and Oracle Database 10*g* is how you administer the database.

In Oracle Database 10*g*, you administer your database using Oracle Enterprise Manager Database Control (Database Control). Database Control is a Web interface for managing an Oracle database. You can use this user interface to perform administrative tasks such as:

- Creating schema objects (tablespaces, tables, and indexes)
- Backing up and recovering your database
- Managing user security
- Importing and exporting data
- Viewing performance and status information

**See Also:**

- "Logging in to Enterprise Manager Database Control" in *Oracle Database Installation Guide* for your operating system
- "Getting Started with Oracle Enterprise Manager" in *Oracle Database 2 Day DBA*

# What's Different about Oracle Application Express?

Oracle Database Express Edition features a customized version of Oracle Application Express, a browser-based user interface for administering the database, running scripts and queries, and building Web-based applications.

Oracle Database 10*g* includes the latest version of Oracle Application Express. This latter release features the same rapid Web application development tools available in Oracle Database Express Edition, but with additional functionality. The sections that follow describe key differences between these two versions.

Topics in this section include:

- About Workspaces
- Understanding Oracle Application Express User Roles
- Differences in User Roles in Local and Hosted Development Environments
- About SQL Workshop

## About Workspaces

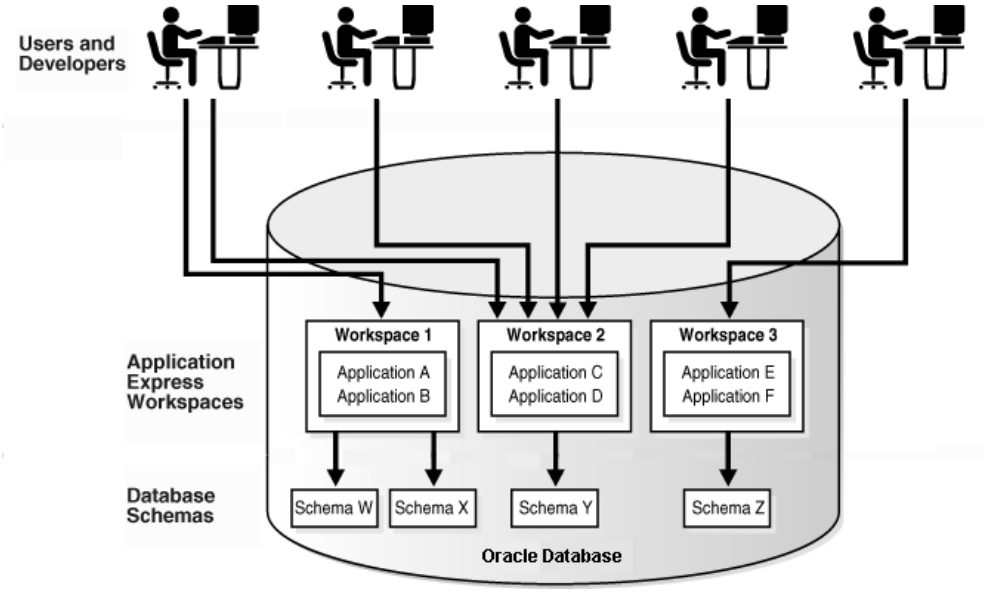
In Oracle Application Express, users log in to a shared work area called a workspace. A workspace is a virtual private database where multiple users can work within the same Oracle Application Express installation, but keep their objects, database, and applications private.

The number of workspaces you decide to create depends upon your development needs. For example, you can create a single workspace for all your developers to share. Or, you can create dedicated workspaces for specific developers or projects. Creating a dedicated workspace offers a higher level of security since it limits accessibility to the workspace objects to only those users associated with the workspace.

When you create a workspace, you associate it with a new or existing schema. A schema is a logical container for database objects such as tables, views, and stored procedures. A single schema can be associated with one or many workspaces.

Figure 4–1 shows the relationship among users or developers, workspaces, and database schemas.

*Figure 4–1 Relationship Users, Workspaces, and Schemas*




## Understanding Oracle Application Express User Roles

Oracle Database Express Edition included the concept of Application Express users. However, these users functioned primarily as a way to make an application available to other users.

In Oracle Application Express, you access the development environment by logging in to a workspace as an Application Express user. Application Express users are divided into four primary roles:

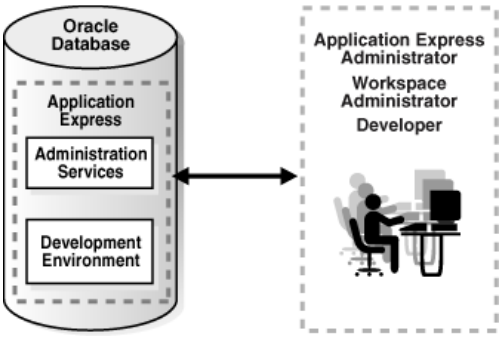
- **Workspace administrators** perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files.
- **Developers** create and edit applications.
- **End users** have no development privileges. You define end users so that they can access applications that do not use an external authentication scheme.
- **Application Express administrators** are superusers that manage entire hosted instances using the Oracle Application Express Administration Services application.

## Differences in User Roles in Local and Hosted Development Environments

You can set up Oracle Application Express to function either as a hosted development environment or as a single user development environment.

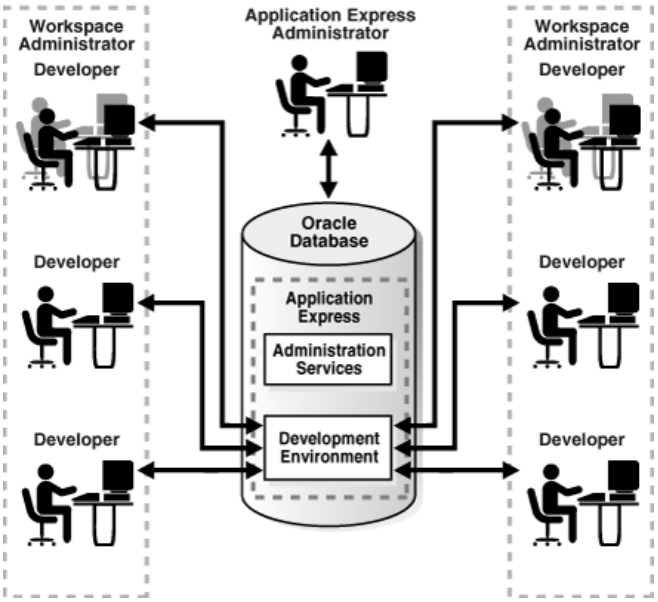
In a single user development environment, one user has privileges typically associated with three roles: Application Express Administrator, Workspace Administrator, and Developer. Figure 4–2 shows an Oracle Application Express instance with a single user.

*Figure 4–2 Single User Development Environment*




A hosted development environment generally consists of multiple users with various roles accessing the Oracle Application Express development environment and Oracle Application Express Administration Services. Figure 4–3 demonstrates multiple users with various roles accessing the Oracle Application Express development environment and Oracle Application Express Administration Services.

*Figure 4–3 Multiple User Development Environment*




## About SQL Workshop

In the latest version of Oracle Application Express, tools for viewing and managing database objects are grouped under SQL Workshop. To access SQL Commands, Query Builder, Object Browser, or SQL Scripts, simply click **SQL Workshop** on the Workspace home page.

> **See Also:** "About the Workspace Home Page" in *Oracle Database Application Express User's Guide*

# Logging In to Oracle Application Express

When you log in to Oracle Application Express, you log in to a workspace. A workspace is a shared work area that functions as a virtual private database.

Topics in this section include:

- About Setting Up Your Local Environment
- Logging In to Oracle Application Express Using the Embedded PL/SQL Gateway
- Logging In to Oracle Application Express Using Oracle HTTP Server

> **See Also:** *Oracle Database Installation Guide* for your operating system for any Web browser requirements

## About Setting Up Your Local Environment

The upgrade process creates a workspace for you using your Oracle Database Express Edition database user name and password. However, you must think about how you want to create (or provision) workspaces in your development environment.

In a single user environment, you create a new workspace by manually logging in to a separate application called Oracle Application Express Administration Services. However, if you plan to have a hosted development environment with multiple workspaces and users, then you can automate the process by having users submit requests.

**To configure your development environment:**

1. Log into Oracle Application Express Administration Services. Oracle Application Express Administration Services is a separate application for managing an entire Oracle Application Express instance. You log in using the `ADMIN` account and password created during the upgrade process. See "Logging in to Oracle Application Express Administration Services" in *Oracle Database Application Express User's Guide*.
2. Specify a provisioning mode. See "Provisioning Workspaces" in *Oracle Database Application Express User's Guide*.
3. Create a Workspace. An Oracle Application Express administrator can create a workspace manually or have users submit requests. See "Provisioning Workspaces" in *Oracle Database Application Express User's Guide*.
4. Log in to a Workspace. Once you create a workspace in Oracle Application Express Administration Services, return to the Oracle Application Express Login page and log in to that workspace. See "Logging In to Oracle Application Express Using the Embedded PL/SQL Gateway" on page 4-5 and "Logging In to Oracle Application Express Using Oracle HTTP Server" on page 4-7.

> **See Also:** *Oracle Database 2 Day + Application Express Developer's Guide* or "Quick Start" in *Oracle Database Application Express User's Guide*

## Logging In to Oracle Application Express Using the Embedded PL/SQL Gateway

By default, Oracle Application Express accesses the database using the embedded PL/SQL gateway.

Topics in this section include:

- Logging In as a Local User
- Logging In as a Remote User

**See Also:** "About Oracle XML DB HTTP Server" on page 3-2 and "Logging in to Oracle Application Express Administration Services" in *Oracle Database Application Express User's Guide*

### Logging In as a Local User

You can access Oracle Application Express as a local user with your Web browser.

**To access Oracle Application Express with your Web browser from the same computer on which you installed Oracle Database:**

1. Point your browser to the following URL:

   `http://127.0.0.1:`*`port`*`/apex`

   Where *`port`* is the TCP port number for HTTP connection requests. The default value is 8080. You may have changed this value during installation (Windows platform) or configuration (Linux platform).

   For example, if you installed using the default port number, then you would access the Oracle Application Express at this URL:

   `http://127.0.0.1:8080/apex`

2. When the login page appears, enter the following:

   - Workspace - Enter the name of your workspace. This is the same as your database user name in Oracle Database Express Edition.
   - Username - Enter your user name. This is the same as your database user name in Oracle Database Express Edition.
   - Password - Enter your case-sensitive password.

   Upon successful login, the Workspace home page appears.

### Logging In as a Remote User

You can access Oracle Application Express with your Web browser on a remote computer.

**To access Oracle Application Express with your Web browser on a remote computer:**

1. Point your browser to the following URL:

   `http://`*`host`*`:`*`port`*`/apex`

   Where:

   - *`host`* is the host name or IP address of the computer where Oracle Database 10*g* is installed.
   - *`port`* is the TCP port number for HTTP connection requests. The default value is 8080. You may have changed this value during installation (Windows platform) or configuration (Linux platform).

   For example, if you installed on a computer with the host name `myhost.mydomain.com`, and you installed with the default port number, then you would access the Oracle Application Express at this URL:

   `http://myhost.mydomain.com:8080/apex`

2. When the login page appears, enter the following:

- Workspace - Enter the name of your workspace. This is the same as your database user name in Oracle Database Express Edition.
- Username - Enter your user name. This is the same as your database user name in Oracle Database Express Edition.
- Password - Enter your case-sensitive password.

Upon successful login, the Workspace home page appears.

## Logging In to Oracle Application Express Using Oracle HTTP Server

You can access Oracle Application Express with your Web browser on a remote computer.

**To access Oracle Application Express with your Web browser on a remote computer:**

1. Point your browser to the following URL:

   ```
   http://hostname:port/pls/database_access_descriptor/
   ```

   Where:

   - `hostname` is the name of the system where Oracle Application Express is installed.
   - `port` is the port number assigned to Oracle HTTP Server.

     In a default installation, this number is `7777`. You can find information about your Oracle HTTP Server installation's port number from the `httpd.conf`. Locate the httpd.conf in `ORACLE_BASE\ORACLE_HOME\Apache\Apache\conf` and search for `Port`.

     You can also find the port number in the `portlist.ini` file, located in `ORACLE_BASE\ORACLE_HOME\install`. However, be aware that if you change a port number, it is not updated in the `portlist.ini` file, so you can only rely on this file immediately after installation.
   - `database_access_descriptor` describes how Oracle HTTP Server connects to the database server so that it can fulfill an HTTP request. The default value is `apex`.

     For users who have upgraded from earlier releases, or who have a custom configuration, the database access descriptor (DAD) may be `htmldb` or something else. Verify your DAD with your Oracle Application Express administrator.
2. When the login page appears, enter the following:
   - Workspace - Enter the name of your workspace. This is the same as your database user name in Oracle Database Express Edition.
   - Username - Enter your user name. This is the same as your database user name in Oracle Database Express Edition.
   - Password - Enter your case-sensitive password.

   Upon successful login, the Workspace home page appears.

**See Also:** "About Oracle HTTP Server and mod_plsql" on page 3-2 and "Logging in to Oracle Application Express Administration Services" in *Oracle Database Application Express User's Guide*

# A

# Troubleshooting

This appendix contains information on troubleshooting.

This chapter contains these topics:

- Images Displaying Incorrectly in Oracle Application Express
- Online Help Not Working

## Images Displaying Incorrectly in Oracle Application Express

Review this section if you configured Oracle HTTP Server with `mod_plsql` instead of the XDB HTTP Server with the embedded PL/SQL gateway.

In "Configuring Oracle HTTP Server with mod_plsql" on page 3-3, you added an alias entry that points to the file system path where you copied the images directory. If images in Oracle Application Express do not display correctly, you may have more than one definition of the `/i/` alias. To address this issue:

- If possible, rename the first instance of `/i/` to a different alias name.
- Alternatively, copy the images from the *ORACLE_BASE*`\`*ORACLE_HOME*`\apex\images` directory to the directory defined by the first `/i/` alias.

## Online Help Not Working

If users are accessing Oracle Application Express through a Virtual Host, then online help will not work. Consider the following example in which:

- The hostname of the Oracle HTTP Server where the Oracle Application Express DAD resides is `internal.server.com` and the port is `7777`.
- Users access Oracle Application Express through a Virtual Host. In their Web browsers, users see `external.server.com` and port `80`.

In this example, Oracle Application Express online help will not work if the users cannot access `internal.server.com`. To resolve this issue, add the following lines to the Oracle Application Express Database Access Descriptor (DAD) to override the CGI environment variables `SERVER_NAME` and `SERVER_PORT`:

```
PlsqlCGIEnvironmentList SERVER_NAME=external.server.com
PlsqlCGIEnvironmentList SERVER_PORT=80
```

> **See Also:** *Oracle HTTP Server mod_plsql User's Guide* for information on overriding the CGI environment variables and *Oracle Text Application Developer's Guide*

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