Oracle® Application Express

Administration Guide

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Preface

Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric Web applications. Oracle Application Express turns a single Oracle database into a shared service by enabling multiple workgroups to build and access applications as if they were running in separate databases.

Oracle Application Express Application Administration Guide describes how to perform administration tasks for an Oracle Application Express workspace, application, or an entire development instance.

This preface contains these topics:

- Topic Overview
- Audience
- Documentation Accessibility
- Related Documents
- Conventions

Topic Overview

This document contains the following chapters:

Title	Description
Workspace and Application Administration	Describes how to perform Workspace administration tasks and access many of these reports.
Oracle Application Express Hosted Instance Administration	Describes tasks an Oracle Application Express administrator performs when administering an Oracle Application Express hosted instance.

Audience

Oracle Application Express Administration Guide is intended for application developers who are building database-centric Web applications using Oracle Application Express. The guide describes how to use the Oracle Application Express development environment to build, debug, manage, and deploy applications.

To use this guide, you must have a general understanding of relational database concepts and an understanding of the operating system environment under which you are running Oracle Application Express.

See Also: *Oracle Database 2 Day + Oracle Application Express Developer's Guide*

Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible to all users, including users that are disabled. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Accessibility standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For more information, visit the Oracle Accessibility Program Web site at `http://www.oracle.com/accessibility/`.

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Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit `http://www.oracle.com/support/contact.html` or visit `http://www.oracle.com/accessibility/support.html` if you are hearing impaired.

Related Documents

For more information, see these Oracle resources:

- *Oracle Application Express Application Builder User's Guide*
- *Oracle Application Express Release Notes*
- *Oracle Application Express Installation Guide*
- *Oracle Database 2 Day + Oracle Application Express Developer's Guide*
- *Oracle Application Express SQL Workshop Guide*
- *Oracle Application Express API Reference*
- *Oracle Application Express Migration Guide*
- *Oracle Application Express Advanced Tutorials*
- *Oracle Database Concepts*
- *Oracle Database Advanced Application Developer's Guide*
- *Oracle Database Administrator's Guide*
- *Oracle Database SQL Language Reference*

- *SQL*Plus User's Guide and Reference*

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, 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.

For additional application examples, go to the Learning Library. Search for free online training content, including Oracle by Example (OBE), demos, and tutorials. To access the Oracle Learning Library, go to:

`http://apex.oracle.com/pls/apex/f?p=9830:28:0::NO:RIR:P28_PRODUCT_SUITE,IR_P`

Printed documentation is available for sale in the Oracle Store at

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To download free release notes, installation documentation, white papers, or other collateral, please visit the Oracle Technology Network (OTN). You must register online before using OTN; registration is free and can be done at

`http://www.oracle.com/technology/membership/`

If you already have a user name and password for OTN, then you can go directly to the documentation section of the OTN Web site at

`http://www.oracle.com/technology/documentation/`

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

Workspace and Application Administration

In an Oracle Application Express development environment, users log in to a shared work area called a workspace. A **workspace** is a virtual private database that enables multiple users to work within the same Oracle Application Express installation while keeping their objects, data and applications private. This flexible architecture enables a single database instance to manage thousands of applications.

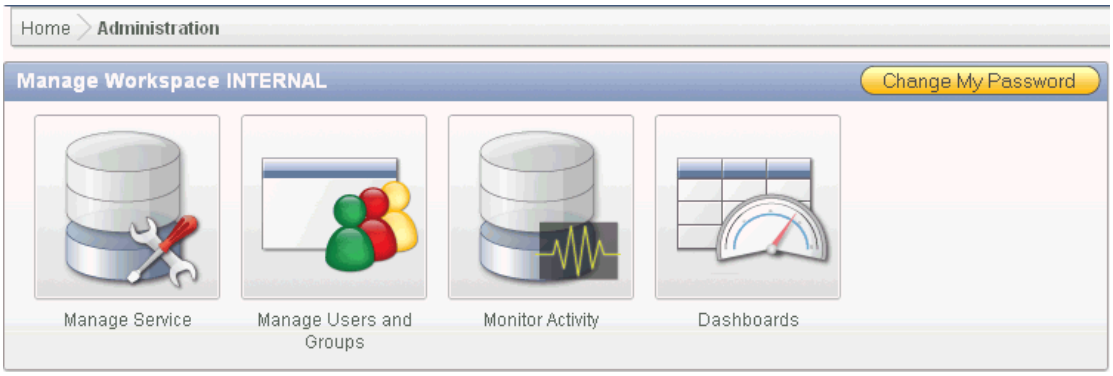
Developers can create and edit applications and view developer activity, session state, workspace activity, application, and schema reports. Workspace administrators additionally can create and edit user accounts, manage groups, and manage development services. This section describes how to perform Workspace administration tasks and access many of these reports.

Topics:

- About the Workspace Administration Page
- About the Manage Service Page
- Making a Service Request
- Configuring Workspace Preferences
- Defining a Workspace Annoucement
- About the Workspace Utilization Report
- Understanding User Roles
- Managing Application Express Users
- Purging the Developer Activity and Click Count Log Files
- Managing Session State and User Preferences
- Managing Page and Region Caching
- Changing Build Status for Multiple Applications
- Managing Application Models
- Monitoring Activity within a Workspace
- Viewing Workspace Dashboards
- Leveraging Application Builder Defaults

About the Workspace Administration Page

Use the Workspace Administration page to manage your application development environment.



The top of Workspace Administration page contains the following icons:

- **Manage Services** links to the Manage Services page. Use this page to manage service requests (including, schema requests, storage requests, and service termination) as well as configure workspace preferences, edit announcements, view utilization reports and log files, and manage session state and application models. See "About the Manage Service Page" on page 1-7.
- **Manage Users and Groups** links to the Manage Users page. Use this page to manage Application Express user accounts and user groups. See "Managing Application Express Users" on page 1-16.
- **Monitor Activity** links to the Monitor Activity page. Use this page to monitor changes to page views, developer activity, page view analysis, and active sessions. It also shows reports on such information as login attempts and external click counts. See "Monitoring Activity within a Workspace" on page 1-35.
- **Dashboards** links to the Dashboard page. Use this page to view details about the current workspace as well as monitor users, activity, developer activity, performance, Websheet application development, application development, and view database details. See "Viewing Workspace Dashboards" on page 1-38

About Tasks



A Tasks list displays on the right side of the page and displays the following links:

- **About Application Express** links to an About page that lists basic product information. See "Viewing the Application Express Product Information Page" on page 1-4.
- **Change Password** links to a form you can use to change your password. See "Resetting Your Password from the Administration Page" on page 1-4.

- **Manage User Groups** links to the User groups page. See "Using Groups to Manage Application Express Users" on page 1-23.
- **Create User** links to a form where you can create new user. See "Creating New User Accounts" on page 1-17.
- **Create Multiple Users** enables you to create multiple users at once. See "Creating Multiple Users at Once" on page 1-19.
- **Delete Multiple Users** enables you to delete multiple users at once. See "Deleting Multiple Users at Once" on page 1-22.
- **Manage Interactive Report Settings** enables you to manage saved reports and subscriptions. See "Managing Interactive Report Settings" on page 1-8.
- **Manage Export Repository** links to the Manage Export Repository. See "Managing Files in the Export Repository" on page 1-6.
- **Websheet Database Objects** displays the Websheet Database Objects page. See "Managing Websheet Database Objects" on page 1-6.

Workspace Announcements

The Workspace Announcements region displays directly below the icons at the top of the Workspace Administration page. Use this display to communicate information to other users. See "Defining a Workspace Annoucement" on page 1-14.

About Dashboards

The Dashboards region displays links to specific dashboards. See "Viewing Workspace Dashboards" on page 1-38.

Topics:

- Accessing the Workspace Administration Page
- Resetting Your Password from the Administration Page
- Viewing the Application Express Product Information Page
- Managing Files in the Export Repository

Accessing the Workspace Administration Page

Use the Administration page to manage your application development environment.

To access the Administration page:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

Resetting Your Password from the Administration Page

To reset your password from the Administration page:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. On the Tasks list, click **Change Password**.

   Tip: You can also click the yellow **Change My Password** button adjacent to About region.

4. In Change Password, enter the following:
   - Enter Current Password - Enter your current password.
   - Enter New Password - Enter your new password.
   - Confirm New Password - Enter your new password again.
5. Click **Apply Changes**.

   See Also: "Changing an End User Password" on page 1-22

Viewing the Application Express Product Information Page

The About Application Express page lists basic product information. You can access the About Application Express page from the Workspace Administration page.

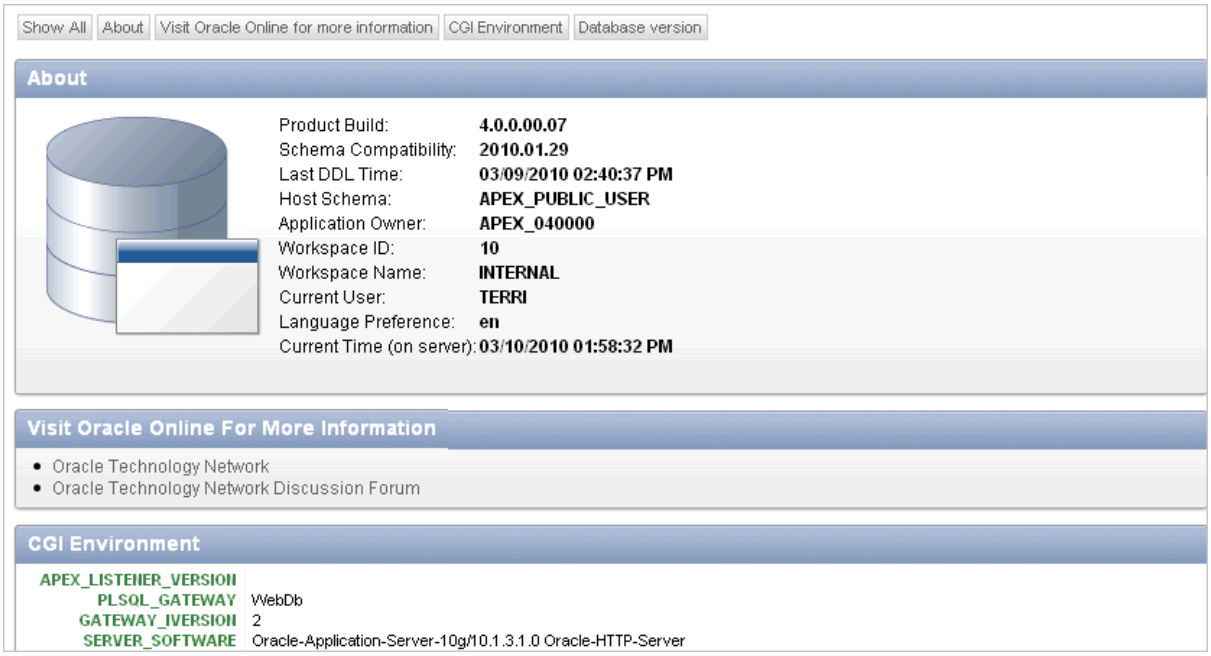
To view the About Application Express page:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.

   The Workspace Administration page appears.

3. On the Tasks list, click **About Application Express**.

   The About Application Express page appears. The page is divided into these sections: About; Visit Oracle Online For More Information; CGI Environment; and Database Version.



About

The About section displays the following information:

- Product build
- Schema compatibility
- Last DDL time
- Host schema
- Application Owner
- Workspace ID
- Workspace Name
- Current user
- Language Preference
- Current Time (on server)

Oracle Online For More Information

Oracle Online For More Information contains links to Oracle Technology Network and Oracle Technology Network Discussion Forum.

CGI Environment

Common Gateway Interface (CGI) Environment provides information about the currently installed Web server software such as currently defined parameters and variables.

Database Version

Database Version lists details about the currently installed database version.

Character Set

Character Set lists currently selected character sets. The selected character set determines the encoding scheme used to display characters on screen.

Managing Files in the Export Repository

Use the Manage Export Repository page to manage files in the current workspace.

To access the Manage Export Repository page:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.

   The Workspace Administration page appears.
3. On the Tasks list, click **Manage Workspace Files**.

   The Manage Export Repository page appears.

   You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
4. To remove a file, select the file and click **Delete Checked**.

Managing Websheet Database Objects

Use the Manage Export Repository page to manage files in the current workspace. All Websheet application data is stored within tables owned by a schema associated with this workspace. The tables are all prefixed by `APEX$_`. Use this page to manage these tables.

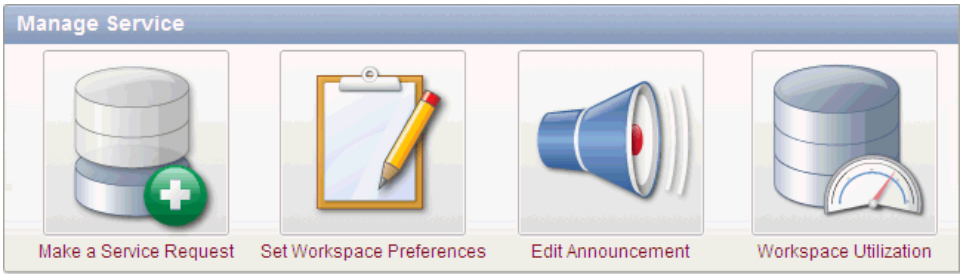
To access the Manage Export Repository page:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.

   The Workspace Administration page appears.
3. On the Tasks list, click **Websheet Database Objects**.

   The Websheet Database Objects page appears.
4. Select one of the following:
   - **Create Websheet Database Objects** - Available only if objects not created
   - **Validate Websheet Database Objects**

About the Manage Service Page



You can use the Manage Services page to manage service requests, configure workspace preferences, edit workspace announcements, and view workspace utilization reports. Additionally, use the links on the Manage Meta Data list enable you to manage log files, session state, page and region caching, application build status, application models, and the Workspace Utilization report.

The Manage Services page contains the following icons:

- **Make a Service Request**. Use this link to request a new schema, request additional storage space, or terminate a workspace. See "Making a Service Request" on page 1-9.
- **Set Workspace Preferences**. Use this link to configure login controls, enable support for Websheets, Application Builder, SQL Workshop, and Team Development as well as enable support for PL/SQL editing. See "Configuring Workspace Preferences" on page 1-11.
- **Edit Announcement**. Use this link to create a message that displays on the Workspace home page and on the Workspace Administration page. See "Defining a Workspace Annoucement" on page 1-14.
- **Workspace Utilization**. Use this link to view a summary report about the current workspace. See "About the Workspace Utilization Report" on page 1-15.

About Manage Meta Data

The Manage Meta Data list displays on the right side of the page and displays the following links:

- **Developer Activity and Click Count Logs**. See "Purging the Developer Activity and Click Count Log Files" on page 1-25.
- **Session State**. See "Managing Session State and User Preferences" on page 1-26.
- **Application Cache.** See "Managing Page and Region Caching" on page 1-32.
- **Websheet Database Objects** displays the Websheet Database Objects page. See "Managing Websheet Database Objects" on page 1-6.
- **Application Build Status**. See "Managing Build Status in Workspace Administration" on page 1-34.
- **Application Models**. See "Managing Application Models" on page 1-35.
- **Utilization Page**. See "About the Workspace Utilization Report" on page 1-15.
- **Interactive Report Settings**. See "Managing Interactive Report Settings" on page 1-8.

About Dashboards

The Dashboards link displays links to specific dashboards. See "Viewing Workspace Dashboards" on page 1-38.

Topics:

- Accessing the Manage Services Page
- Managing Interactive Report Settings

Accessing the Manage Services Page

To access the Manage Services Page:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Service**.

   The Manage Service page appears.

See Also: "About the Manage Service Page" on page 1-7

Managing Interactive Report Settings

Interactive reports include components that enable users to alter the layout of report data. Users can then save the report or receive updated versions of a report by subscribing to it. To learn more, see "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

Topics:

- Managing Saved Interactive Reports

- Managing Interactive Report Subscriptions

Managing Saved Interactive Reports

Both developers and end users can save interactive reports. However, only a developer can save the report that initially displays (called the Primary Default) or create an Alternative report.

There are four types of saved interactive reports:

- **Primary Default** (Developer Only). This is the report that initially displays. Primary Default reports cannot be renamed or deleted.
- **Alternative Report** (Developer Only). Enables developers to create multiple report layouts. Only developers can save, rename, or delete an Alternative Report.
- **Public Report** (End user). Can be saved, renamed, or deleted by the end user who created it. Other users can view and save the layout as another report.
- **Private Report** (End user). Only the end user that created the report can view, save, rename, or delete the report.

Workspace administrators can view and manage these reports on the Saved Reports page.

To manage saved interactive reports:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.

   The Administration page appears.
3. From the Tasks list, click **Manage Interactive Report Settings**.

   The Manage Interactive Report Settings page appears.
4. Click **Saved Reports**.

   The Saved Reports page appears.

   You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
5. To link to an application, page or region, click the appropriate hyperlink.
6. To delete a report:
   a. Select the report to be removed.
   b. Click **Delete Checked**.

Managing Interactive Report Subscriptions

End users can receive updated versions of a report by subscribing to it. Workspace administrators can view and manage these subscriptions on the Subscriptions page.

To manage interactive report subscriptions:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.

   The Administration page appears.
3. From the Tasks list, click **Manage Interactive Report Settings**.

   The Manage Interactive Report Settings page appears.

4. Click **Subscriptions**.

   The Subscriptions page appears.

   You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

5. To link to an application, page or region, click the appropriate hyperlink.
6. To delete a subscription:
   a. Select the subscription to be removed.
   b. Click **Delete Checked**.

Making a Service Request

Use the Request Service page to request a new schema, additional storage space, or to terminate a workspace.

See Also: "Managing Workspace and Change Requests" on page 2-7

Topics:

- Requesting a New Schema, More Storage, or Terminating Service
- Determining the Amount of Space Available in Your Workspace
- Requesting Another Workspace

Requesting a New Schema, More Storage, or Terminating Service

To make a make service request:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Service**.
4. Click **Make a Service Request**.
5. Select one of the following:
   a. **Request Schema**
   b. **Request Storage**
   c. **Request Termination**
6. If **Request Schema**, specify the following:
   a. Schema - Select either **Request a new schema** or **Use an existing schema**.
   b. Schema Name - Enter a new name or select one from the list.
   c. Click **Next**.
7. If **Request Storage**, specify the following:
   a. Amount of Storage to Add - Select the amount of storage to add.

b. Click **Next**.

c. Confirm your request by clicking **Request Storage**.

8. If **Request Termination**, specify the following:

a. Verify the workspace service to be terminated.

b. Click **Next**.

c. Confirm your request by clicking **Terminate Service**.

Determining the Amount of Space Available in Your Workspace

The Detailed Tablespace Utilization report displays the amount of space used and amount of free space available in the current workspace. Use this report to determine how much additional storage space you need when requesting additional storage.

To view the Detailed Tablespace Utilization report:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Service**.

4. Click **Make a Service Request**.

5. From the Tasks list, click **Detailed Tablespace Utilization Report (may take several seconds**).

   A report appears displaying the tablespace name, available bytes, amount used, amount free and percentage used.

Requesting Another Workspace

To request another workspace:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Service**.

4. Click **Make a Service Request**.

5. From the Tasks list, click **Sign up for another workspace.**

6. Follow the online registration instructions.

Configuring Workspace Preferences

Workspace administrators can configure the following preferences for the current workspace, including login controls, support for Websheets, Application Builder, SQL Workshop, and Team Development as well as enable support for PL/SQL editing.

Topics:

- Enabling Account Login Controls for a Workspace
- Enabling Application Builder Development
- Enabling SQL Workshop
- Disabling PL/SQL Program Unit Editing for a Workspace
- Enabling Team Development

Enabling Account Login Controls for a Workspace

There are two different ways to configure login controls:

- An Instance administrator enables account login controls for all Application Express accounts in all workspaces across a development instance.

  If your Instance administrator configures these preferences for an instance, those settings display as the defaults for all workspaces. See "Enabling Login Controls for All Workspaces" on page 2-21.

- If the Instance administrator does *not* enable login controls across an entire instance, then each Workspace administrator can enable the following controls on a workspace-by-workspace basis:
  - Require end-user account expiration and locking
  - Set up a maximum number of failed login attempts for end-user accounts
  - Set the password lifetime for end-user accounts, that is, the number of days an end-user account password can be used before it expires

    Tip: This feature applies only to accounts created using the Application Express user creation and management facilities. It provides additional authentication security for applications. See "Managing Application Express Users" on page 1-16.

To enable login controls for a workspace:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Service**.

4. Click **Set Workspace Preferences**.

5. Under Account Login Control:

   a. Account Expiration and Locking - Click **Enable**.

      If you select **Enable**, end-user account passwords will expire after a configurable time period and accounts will be locked after a configurable number of authentication failures. Account passwords can be set to expire after the first use.

      If your Instance administrator set the **Require User Account Expiration and Locking** preference to **Yes**, this preference defaults to **Enable** and you cannot update it.

b. Maximum Login Failures Allowed - Enter a positive integer for the maximum number of consecutive unsuccessful authentication attempts allowed before an end-user account is locked. If you do not specify a value in this field, the instance-level setting for Maximum Login Failures Allowed is used.

c. End User Account Lifetime (days) - Enter a positive integer for the maximum number of days an end-user account password may be used before the account expires. If you do not specify a value in this field, the instance-level setting for Account Password Lifetime is used.

6. Click **Apply Changes**.

Enabling Application Builder Development

To enable Application Builder:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Service**.

4. Click **Set Workspace Preferences**.

5. Scroll down to Application Builder.

6. For Enable Application Builder, select **Yes**. To disable Application Builder, select **No**.

7. Click **Apply Changes**.

   Tip: These settings can be overridden by an Instance administrator. See "Managing Component Availability" on page 2-62.

Enabling SQL Workshop

To enable SQL Workshop:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Service**.

4. Click **Set Workspace Preferences**.

5. Scroll down to SQL Workshop.

6. For Enable SQL Workshop, select **Yes**. To disable SQL Workshop, select **No**.

7. Click **Apply Changes**.

   Tip: These settings can be overridden by an Instance administrator. See "Managing Component Availability" on page 2-62.

Disabling PL/SQL Program Unit Editing for a Workspace

By default, developers can change and compile PL/SQL source code when browsing database procedures, packages, and functions in SQL Workshop Object Browser. Workspace administrators can disable PL/SQL program unit editing by selecting **Do not allow PL/SQL program unit editing** on the Preferences page.

To disable PL/SQL program unit editing:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Service**.

4. Click **Set Workspace Preferences**.

5. Scroll down to SQL Workshop.

6. Under PL/SQL Editing, select one of the following:

   - **Allow PL/SQL program unit editing**
   - **Do not allow PL/SQL program unit editing**

   If you select **Do not allow PL/SQL program unit editing**, developers can still create and replace PL/SQL program units using scripts or SQL Commands.

7. Click **Apply Changes**.

> **See Also:** "Disabling PL/SQL Program Unit Editing" on page 2-13 and "Using SQL Commands" in *Oracle Application Express SQL Workshop Guide*

Enabling Team Development

To enable Team Development:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Service**.

4. Click **Set Workspace Preferences**.

5. Scroll down to Team Development.

6. For Enable Team Development, select **Yes**. To disable Team Development, select **No**.

7. Click **Apply Changes**.

Defining a Workspace Annoucement

You can quickly communicate with other users by creating workspace announcements. These announcements display both on the Workspace home page and on the Workspace Administration page.

To create or edit a workspace announcement:

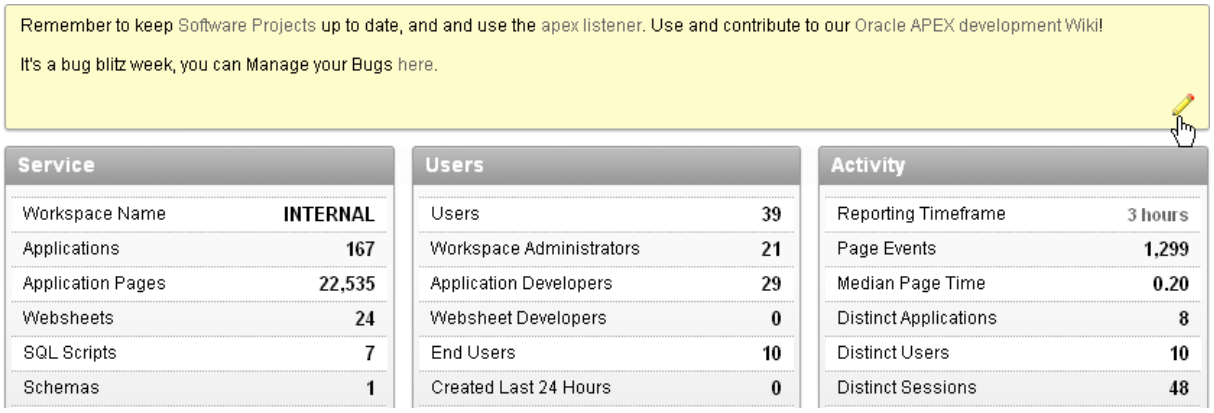
1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Workspace Administration page appears. The Workspace Announcements region displays in the center of the page.

3. To create or edit an announcement, click the **Edit** icon that resembles a pencil.



4. In Message, enter text. Use standard HTML tags to include formatting.
5. Click **Apply Changes**.

About the Workspace Utilization Report

Workspace administrators can view a summary report of the current workspace by selecting **Workspace Utilization** on the Manage Services page.

Administrators can use this report to view a comprehensive summary of the current workspace information including, schemas, applications, websheets, SQL Workshop, and Team Development details, activity summaries, and counts of database objects.

Topics:

- Viewing and Emailing the Workspace Summary Report

Viewing and Emailing the Workspace Summary Report

To view a summary report about the current workspace:

1. View the Workspace Summary Report:

   a. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

      The Workspace home page appears.

b. Click the **Administration** icon.

   The Administration page appears.

c. On the Administration page, click **Manage Service**.

d. Click **Workspace Utilization**.

e. From Show, select a time interval.

f. Scroll down to view the report.

2. To email the report:

   a. Click **Email**.

   b. In the Email form, enter email addresses, edit the subject line, enter optional body text, and click **Email**.

      – **To** - Enter valid email addresses.

      – **Subject** - Enter text that describes the message.

      – **Body** - Enter optional body text.

      – Click **Email**.

   The report is automatically emailed to the specified recipients.

Understanding User Roles

In the Oracle Application Express, users log in to a shared work area called a workspace. Users are divided into three primary roles:

- **Developers** create and edit applications.
- **Workspace administrators** are developers who also perform administrator tasks specific to their workspace such as managing user accounts, monitoring workspace activity, and viewing log files. See "Workspace and Application Administration" on page 1-1.
- **Instance administrators** are superusers that manage the entire hosted instance using the Oracle Application Express Administration Services application.

> **See Also:** "Oracle Application Express Hosted Instance Administration" on page 2-1 for more information on the responsibilities of an Instance administrator.

Managing Application Express Users

Workspace administrators can create new user accounts, manage existing user accounts, and change user passwords. User accounts are particularly useful if you are using Application Express Authentication. Application Express Authentication checks the user name and password against the Oracle Application Express account repository. The Oracle Application Express account repository contains account information for developers and administrators when they log in to Oracle Application Express applications.

If the workspace administrator enables the Account Locking/Expiration feature for end user accounts, new account management attributes are exposed. Accounts may be locked, unlocked, or expired. Passwords for those accounts can also have restrictions, such as a fixed lifetime, a maximum number of consecutive incorrect passwords when attempting to log in, and a requirement to be changed on first use.

Topics:

- Creating New User Accounts
- Creating Multiple Users at Once
- Editing Existing User Accounts
- Deleting or Locking User Accounts
- Deleting Multiple Users at Once
- Changing an End User Password
- Viewing the Users Dashboard
- Using Groups to Manage Application Express Users

> **See Also:** "Managing Users in an Oracle Application Express Instance" on page 2-68 and "Exporting Workspace Users" in *Oracle Application Express Application Builder User's Guide*

Creating New User Accounts

Workspace administrators can create three different types of user accounts:

- **Developers** can create and edit applications and view developer activity, session state, workspace activity, application, and schema reports. In Icons view, developers are yellow.
- **Workspace administrators** perform administrator tasks specific to a workspace, such as managing user accounts, managing groups, altering passwords of users within the same workspace, and managing development services. In Icons view, Workspace administrators are red.
- **End users** have no development privileges and can access only applications that do not use an external authentication scheme. In Icons view, End users are green.

> **See Also:** "Oracle Application Express Hosted Instance Administration" on page 2-1

To create a new user account:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Users and Groups**.

4. Click **Create User**.

   The Create User page appears.

5. Under User Identification, enter:

   a. **Username** - Enter the username used to log in to the system. Restrictions include:

      – Maximum length of 100 characters

      – No spaces

- Only these special characters are permitted: amerpsand (@) and period (.)

b. **Email Address** - Enter the valid email address for this user.

c. **First Name** - Enter the first or given name to further identify the user (optional).

d. **Last Name** - Enter the last or family name to further identify the user (optional).

e. **Description** - Enter comments about this user (optional).

6. Under Account Privileges:

a. **Default Schemas** - Specify the default schema used for data browsing, application creation, and SQL script execution.

When using workspaces that have more than one schema available, this schema is the default. This setting does not control security, only the user's preference.

b. **Accessible Schemas** (null for all) - Leave this blank to enable the end user to access all schemas in the workspace, or enter a colon-delimited list of schemas for which this user has permissions when using the SQL Workshop.

c. **User is a workspace administrator** - Specify if this user should have workspace administrator privileges.

Administrators are given access to all components. Additionally, they can manage user accounts, groups, and development services. Components may not be available if they are switched off by Instance Administrators.

d. **User is a developer** - Specify if this user should have developer privileges.

Developers must have access to either Application Builder, SQL Workshop, or both. Components may not be available if they are switched off by Instance Administrators.

e. **Application Builder Access** - Determines whether a developer has access to the Application Builder.

f. **SQL Workshop Access** - Determines whether a developer has access to the SQL Workshop.

g. **Team Development Access** - Determines whether a developer has access to the Team Development.

h. **Set Account Availability** - Select **Locked** to prevent the account from being used. Select **Unlocked** to allow the account to be used.

If the user has exceeded the maximum login failures allowed, specified in Workspace Preferences, then there account will be locked automatically.

Tip: An Instance administrator can configure these settings for an entire Oracle Application Express instance and define password complexity policies. See "Enabling Login Controls for All Workspaces" on page 2-21. "About Password Policies" on page 2-22, and "Configuring Password Policies" on page 2-22

7. Under Password:

- **Password** - Enter a case sensitive password.
- **Confirm Password** - Enter the password again.

- **Require Change of Password On First Use** - Select **No** to allow the user to use the same password until it expires. Select **Yes** to require the user to change the password immediately when logging in the first time.

  Tip: An Instance administrator can configure these settings for an entire Oracle Application Express instance and define password complexity policies. See "Enabling Login Controls for All Workspaces" on page 2-21. "About Password Policies" on page 2-22, and "Configuring Password Policies" on page 2-22

8. Under User Groups, optionally select one or more user groups by holding down the **CTRL** key and selecting the groups.
9. Click **Create User** or **Create and Create Another**.

   See Also: "Using Groups to Manage Application Express Users" on page 1-23 and "Adding and Removing Users from a Group" on page 1-24

Creating Multiple Users at Once

Workspace administrators can create multiple user accounts in a single operation.

To create multiple user accounts at once:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.
2. Click the **Administration** icon.

   The Administration page appears.
3. Click **Manage Users and Groups**.
4. On the Tasks list, click **Create Multiple Users**.

   The Create Multiple Users page appears.
5. In List of Email Addresses, enter or copy and paste email addresses separated by commas, semicolons, or new lines.
6. Under Users:
   - List of Email Addresses - Enter or copy and paste email addresses separated by commas, semicolons, or new lines.
   - Usernames - Specify whether to include or exclude the domain name. Select one of the following:
     - **Set username to full email address**
     - **Exclude @ domain as part of the username**

       Removes all text after the @ symbol (for example, `user1@xyz.com` becomes `user1`).
7. Under Account Privileges:
   - **Default Schemas** - Specify the default schema used for data browsing, application creation, and SQL script execution. When using workspaces that have more than one schema available, this schema is the default for creating applications, performing SQL queries, and so on.

- **Accessible Schemas (null for all)** - Enter a colon-delimited list of schemas for which this developer has permissions when using the SQL Workshop. The list of schemas you enter here restricts the user to a subset of the full set of schemas provisioned for the workspace and determines what schema names the user sees in SQL Workshop.
- **Users are workspace administrators** - Specify if these users should have workspace administrator privileges.

  Administrators are given access to all components. Additionally, they can manage user accounts, groups, and development services. Components may not be available if they are switched off by Instance Administrators Additionally, they can also manage user accounts, groups, and development services.
- **Users are Developers** - Specify if these users should have developer privileges. Developers must have access to either Application Builder, SQL Workshop, or both. Components may not be available if they are switched off by Instance Administrators.
- **Application Builder Access** - Determines whether a developer has access to the Application Builder.
- **SQL Workshop Access** - Determines whether a developer has access to the SQL Workshop.
- **Team Development Access** - Determines whether a developer has access to the Team Development.

8. Under Password:
   - **Password** - Specify a password. Passwords are case sensitive. Developers can change their own passwords. Developers with Administrator privilege can change the passwords of users within the same workspace.
   - **Confirm Password** - Enter the password again.
9. Click **Apply Changes**.

See Also: "Using Groups to Manage Application Express Users" on page 1-23 and "Adding and Removing Users from a Group" on page 1-24

Editing Existing User Accounts

Workspace administrators can edit existing user accounts.

To edit an existing user account:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.
2. Click the **Administration** icon.

   The Administration page appears.
3. Click **Manage Users and Groups**.

   The Users page appears.
4. You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

5. Select a user.

   The Edit User page appears.

6. Under Edit User, update the username, email address, first name, last name, and description.

7. Under Account Privileges:

   - **Default Schema** - Identifies the default schema used for data browsing, application creation, and SQL script execution.
   - **Accessible Schemas (null for all)** - Enter a colon-delimited list of schemas for which this developer has permissions when using the SQL Workshop. This list of schemas restricts the user to a subset of the full set of schemas provisioned for the workspace and determines what schema names the user sees in SQL Workshop.
   - **User is a workspace administrator** - Specify if this user should have workspace administrator privileges.

     Administrators are given access to all components. Additionally, they can manage user accounts, groups, and development services. Components may not be available if they are switched off by Instance Administrators.
   - **User is a developer** - Developers create and modify applications and database objects and view developer activity, session state, workspace activity, application, and schema reports.
   - **Application Builder Access** - Determines whether a developer has access to the Application Builder.
   - **SQL Workshop Access** - Determines whether a developer has access to the SQL Workshop.
   - **Team Development Access** - Determines whether a developer has access to the Team Development.
   - **Account Availability** - Select **Locked** to prevent the account from being used. Select **Unlocked** to enable the account to be used.

     If the user has exceeded the maximum login failures allowed, specified in Workspace Preferences, then there account will be locked automatically.

     Tip: An Instance administrator can configure these settings for an entire Oracle Application Express instance. See "Configuring Security Settings" on page 2-15.

8. Under Password:

   - **Password** - Enter a case sensitive password.
   - **Confirm** Password - Enter the password again.
   - **Require Change of Password On First Use** - Select **No** to allow the user to use the same password until it expires. Select **Yes** to require the user to change the password immediately when logging in the first time.

9. Under User Groups, optionally select one or more user groups by holding down the **CTRL** key and selecting the groups.

10. Click **Apply Changes**.

See Also: "Using Groups to Manage Application Express Users" on page 1-23 and "Adding and Removing Users from a Group" on page 1-24

Deleting or Locking User Accounts

Workspace administrators can delete or lock user accounts.

To delete or lock a user account:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.

   The Administration page appears.
3. Click **Manage Users and Groups**.

   The Users page appears.
4. Select a user.

   The Edit User page appears.
5. To delete a user:
   a. Click the **Delete User** button.
   b. Confirm your selection and click **OK**.
6. To lock the account:
   a. Scroll down to the Account Privileges section.
   b. For Account Availability, select **Locked**.
   c. Click **Apply Changes**.

Deleting Multiple Users at Once

Workspace administrators can delete multiple user accounts at the same time

To delete multiple user accounts:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.
2. Click the **Administration** icon.

   The Administration page appears.
3. Click **Manage Users and Groups**.
4. On the Tasks list, click **Delete Multiple Users**.

   The Delete Multiple Users page appears.
5. Select the users to be deleted.
6. Click **Delete Users**.

Changing an End User Password

To change an end user password:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Users and Groups**.

   The Users page appears.

4. Select a user.

   Tip: To search for an existing user, enter a query in the Find field and click **Go**.

5. Under Password, type a new password in the Password and Confirm Password fields.

6. Click **Apply Changes**.

Viewing the Users Dashboard

The Users Dashboard displays a summary of your account information, users in the current workspace, defined user groups, recently created users, and user status.

See Also: "Viewing Workspace Dashboards" on page 1-38

To view the Users Dashboard:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Dashboards**.

   The Dashboard page appears.

4. Click **Users**.

   The Users Dashboard appears listing the following information:

   - **Your Account** lists information about your account including your username, workspace, account credentials, and email address.
   - **Workspace Users** lists statistics about all users in the current workspace.
   - **User Groups** lists all currently defined user groups.
   - **Recently Created** lists recently created users.
   - **User Status** lists valid passwords, expired passwords, locked accounts, unlocked accounts, and any accounts for which no email address is defined.

Using Groups to Manage Application Express Users

You can create groups to restrict access to specific features and functions. Note that groups are not portable over different authentication schemes. Groups are primarily

useful when used with Application Express Authentication (Internal Cookie User authentication).

Topics:

- Creating a Group
- Editing an Existing User Group
- Adding and Removing Users from a Group

See Also: "Managing Application Express Users" on page 1-16“

Creating a Group

To create a new group:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. From the Tasks list, click **Manage User Groups**.

   The User Groups page appears.

4. On the User Groups page, click **Create User Group**.

   The Create/Edit User Group page appears.

5. Specify a group name and description, and click **Create Group**.

Editing an Existing User Group

To edit an existing group assignment:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. From the Tasks list, click **Manage User Groups**.

   The User Groups page appears.

4. You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

5. Select the group you want to edit.

   The Create/Edit User Group page appears.

6. Make the appropriate edits and click **Apply Changes**.

Adding and Removing Users from a Group

To add a user to a group:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

   The Administration page appears.

3. Click **Manage Users and Groups**.

   The Users page appears.

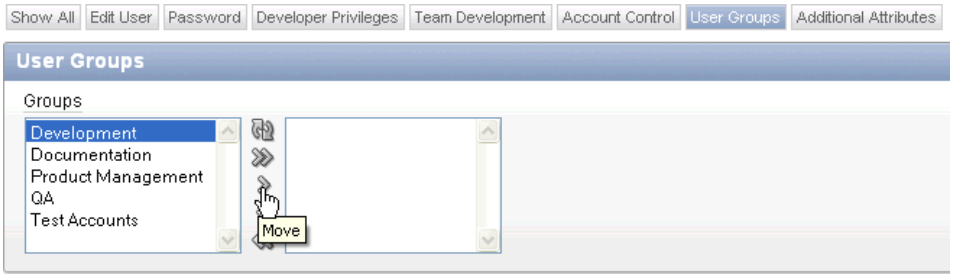
4. Select a user.

   The Edit User page appears.

5. Scroll down to User Groups.

   Each user belongs to the groups on the right.

6. To add a user to a group, select the group and click **Move**.



7. To remove a user from a group, select the group and click **Remove**.
8. Click **Apply Changes**.

Purging the Developer Activity and Click Count Log Files

Log entries older then one month are automatically deleted. Workspace administrators can manually purge developer logs and the External Count Clicks log on the Log files page.

Topics:

- Purging the Developer Activity Log
- Purging the External Click Count Log

See Also: "Managing Logs" on page 2-41

Purging the Developer Activity Log

The Developer Activity Log tracks changes to applications within the current workspace.

To purge the Developer Activity Log:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.

2. Click the **Administration** icon.

3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Developer Activity and Click Count Logs**.
5. Click the **Manage Developer Activity Log** tab.
6. Click **Purge Developer Log**.

Purging the External Click Count Log

The external Click Count Log counts clicks from an application to an external site. You can implement this functionality using `APEX_UTIL.COUNT_CLICK` procedure.

> **See Also:** "COUNT_CLICK Procedure" in *Oracle Application Express API Reference*

To purge the external Click Count Log:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.
2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Developer Activity and Click Count Logs**.
5. Click the **Manage Click Count Log** tab.
6. Click **Purge Click Log**.

> **See Also:** "Viewing Workspace Dashboards" on page 1-38

Managing Session State and User Preferences

A session is a logical construct that establishes persistence (or stateful behavior) across page views. Each session is assigned an unique ID, which the Application Express engine uses to store and retrieve an application's working set of data (or session state) before and after each page view. Sessions persist in the database until purged.

Topics:

- Managing Session State
- Managing User Preferences

> **See Also:** "Managing Session State" in *Oracle Application Express Application Builder User's Guide* and "Managing Session State" on page 2-39

Managing Session State

A session establishes persistence (or stateful behavior) across page views. You can review session details for the current session or for recent sessions. You can also purge the current session state or purge sessions based on their age.

Topics:

- Removing Session State After Reviewing Session Details
- Viewing Session State for the Current Session

- Purging Sessions by Age
- Purging Session State for the Current Session

See Also: "What Is a Session?" in *Oracle Application Express Application Builder User's Guide*

Removing Session State After Reviewing Session Details

You can determine whether to remove existing sessions by first reviewing session details. From the Session Details page, you can then remove the session record or session state.

To view session details and remove session state:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.
2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Session State**.
5. Click **Recent Sessions with Drill-Down to Session Details**.
6. You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
7. To view session details, select the session ID.

   The Session Details page appears.
8. Click one of the following buttons:
   - **Remove State** clears the session data from the session state tables (including collections data) but does not remove the session record. Removing a session is a good approach for developers during debugging.

     This is the equivalent of clearing session state for the current session using the Clear Cache argument value `SESSION` in the f?p URL. This option might also be used by developers during debugging.
   - **Remove Session** removes the record of the session from the `SESSIONS` table along with the session state (including collections data) associated with the session.

     Any user using a session that is removed will no longer be able to use the session and will be prompted to re-authenticate upon their next page request (in most situations). This option can be used by administrators who need to ensure a specific user can no longer access an Oracle Application Express application.

     See Also: "Debugging an Application" in *Oracle Application Express Application Builder User's Guide*

Viewing Session State for the Current Session

To view session state for the current or recent sessions:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

The Workspace home page appears.

2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Session State**.
5. Click **Report Session State for Current Session**.
6. You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

See Also: "Removing Session State After Reviewing Session Details" on page 1-27

Purging Sessions by Age

To purge existing sessions by age:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.
2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Session State**.
5. Click **Purge sessions by Age**.
6. Make a selection from the Sessions older than list.
7. Click one of the following buttons:
   - **Purge Sessions** purges existing sessions by the age you selected.
   - **Report Sessions** generates a report detailing the total number of sessions for the workspace, the number of users, and the number of old sessions.

See Also: "Viewing Session State" in *Oracle Application Express Application Builder User's Guide*

Purging Session State for the Current Session

To purge session state for the current session:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.
2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Session State**.
5. Click **Purge Session State for Current Session**.
6. Click one of the following buttons:
   - **View Session State** - Displays information about the current session.
   - **Purge Session State** - Resets the session state for the current session.

Managing User Preferences

You can use preferences to store values for a specific Application Express user across distinct sessions. Once set, these preferences can be removed programmatically or manually. You can set user preferences by creating a page process, by the calculation of a preference Item Source Value, or programmatically by using a PL/SQL API.

Topics:

- Viewing Preferences by User
- Viewing Current User Preferences
- Purging Preferences for a Specific User
- Purging Current User Preferences
- Setting User Preferences
- Removing User Preferences Programmatically
- Resetting User Preferences Using a Page Process

Viewing Preferences by User

To view the preferences by user:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.
2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Session State**.
5. Click **Preferences by User**.

   The Preferences by User page appears.
6. You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

Viewing Current User Preferences

To view current user preferences:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.
2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Session State**.
5. Click **Report Current User Preferences**.

   The Current user Preferences page appears.
6. You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

Purging Preferences for a Specific User

You can purge preferences for a specific user on the Purge Preferences page.

To purge preferences for a specific user:

1. Navigate to the appropriate Page Definition. See "Accessing a Page Definition" in *Oracle Application Express Application Builder User's Guide*.
2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Session State**.
5. Click **Purge preferences by User**.

   The Purge Preferences page appears.
6. Select a specific user and click **Report**.

   A report appears at the bottom of the page.
7. To purge the displayed user preferences, click **Purge User Preferences**.

Purging Current User Preferences

To purge preferences for the current user:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" in *Oracle Application Express Application Builder User's Guide*.

   The Workspace home page appears.
2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Session State**.
5. Click **Purge Preferences for Current User**.

   The Purge Preferences page appears.
6. Select a user and click **Report**.
7. To purge preferences, click **Purge User Preferences**.

Setting User Preferences

You can set user preferences within your application through the creation of a page process, by creating a preference item, or programmatically.

Topics:

- Setting User Preferences Using a Page Process
- Setting the Source of an Item Based on a User Preference
- Setting User Preferences Programmatically

Setting User Preferences Using a Page Process To set user preference values by creating a page process:

1. Navigate to the appropriate Page Definition. See "Accessing a Page Definition" in *Oracle Application Express Application Builder User's Guide*.
2. Access the Create Page Process Wizard:

- Tree view- Under the appropriate event, locate Processes. Right-click and select **Create**.
- Component view - Under Processes, click the Create icon.

3. For process category, select **Session State** and click **Next**.
4. For the process type, select **Reset Preferences (remove all preferences for current user)** and click **Next**.
5. Specify a name, sequence, and processing point and click **Next**.
6. Follow the on-screen instructions and click **Create Process**.

Setting the Source of an Item Based on a User Preference You can set the source of an item based on a user preference by defining the item source type as Preference.

To define the source of item based on a user preference:

1. Navigate to the appropriate Page Definition. See "Accessing a Page Definition" in *Oracle Application Express Application Builder User's Guide*.
2. Access the Create Page Item Wizard:
   - Tree view- Under Page Rending, expand Regions, right-click on Items, and select **Create Page Item**.
   - Component view - Component view - Under Items, click the **Create** icon.
3. For the item type, select **Hidden** and click **Next**.
4. For Hidden Item Type, select one of the following and click **Next**:
   - **Hidden** - A hidden item is exposed in the HTML form but not displayed.
   - **Hidden an Protected** - A hidden and protected item is also exposed in the HTML form but not displayed. However, its value cannot be changed when the page is posted.
5. Specify the item name, sequence, and region and click **Next**.
6. For Source, select Source Type of Preference, enter the appropriate Source Value, and click **Next**. If the item source is null the default value is used.

   To learn more about a specific field, see item Help.
7. Click **Create Item**.

Setting User Preferences Programmatically To set or reference user preferences programmatically, you must use a PL/SQL API. User-level caching is available programmatically. You can use the `SET_PREFERENCE` procedure to set a user level preference called `NAMED_PREFERENCE`. For example:

```
APEX_UTIL.SET_PREFERENCE(
 p_preference=>'NAMED_PREFERENCE',
 p_value =>:ITEM_NAME);
```

You can reference the value of a user preference using the function `GET_PREFERENCE`. For example:

```
NVL(APEX_UTIL.GET_PREFERENCE('NAMED_PREFERENCE'),15)
```

In the previous example, the preference would default to the value 15 if the preference contained no value.

See Also: "GET_PREFERENCE Function and "SET_PREFERENCE Procedure in *Oracle Application Express Application Builder User's Guide*

Removing User Preferences Programmatically

To remove user preferences programmatically, you must use a PL/SQL API. You can use the `REMOVE_PREFERENCE` procedure to remove a user level preference called `NAMED_PREFERENCE`. For example:

```
APEX_UTIL.REMOVE_PREFERENCE(
p_preference=>'NAMED_PREFERENCE');
```

Resetting User Preferences Using a Page Process

You can reset user preferences by creating a page process and selecting the Reset Preferences process type.

To reset user preferences using a page process:

1. Navigate to the appropriate Page Definition. See "Accessing a Page Definition" in *Oracle Application Express Application Builder User's Guide*.
2. Access the Create Page Process Wizard:
   a. Tree view- Under the appropriate event, locate Processes. Right-click and select **Create Process**.
   b. Component view - Under Processes, click the **Create** icon.
3. For the process category, select **Session State** and click **Next**.
4. For the process type, select **Reset Preferences (remove all preferences for current user)** and click **Next**.
5. Specify a name, sequence, and processing point and click **Next**.
6. Follow the on-screen instructions.
7. Click **Create Process**.

Managing Page and Region Caching

One way to improve an application's performance is to take advantage of page and region caching. Developers can configure page and region caching by setting the Cache attribute on the Edit Page or Edit Region pages. This section describes how Workspace administrators can view and purge cached regions and pages.

Topics:

- Purging Cached Regions
- Purging Cached Pages

Purging Cached Regions

To view and purge cached regions:

1. Navigate to the appropriate Page Definition. See "Accessing a Page Definition" in *Oracle Application Express Application Builder User's Guide*.
2. Click the **Administration** icon.

3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Application Cache** and select one of the following:
   - **Purge Cached Regions by Region**
   - **Purge Cached Region by Application**
   - **Purge Cached Regions by Workspace**
5. If you select **Purge Cached Regions**:
   a. You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
   b. Select the regions you want to purge and click **Purge Checked**.
6. If you select **Purge Cached Regions by Application**:
   a. Select an application.
   b. Click **Purge Cached Regions**.
7. If you select **Purge Cached Regions by Workspace**, click **Purge All Cached Regions**.

Purging Cached Pages

To view and purge cached pages:

1. Navigate to the appropriate Page Definition. See "Accessing a Page Definition" in *Oracle Application Express Application Builder User's Guide*.
2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Application Cache** and select one of the following:
   - **Purge Cached Pages by Page**
   - **Purge Cached Pages by Application**
   - **Purge Expired Cached Pages by Application**
5. If you select **Purge Cached Pages by Page**:
   a. You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
   b. Select the regions you want to purge and click **Purge Checked**.
6. If you select **Purge Cached Pages by Application**:
   a. Select an application.
   b. Click **Purge Cached Pages**.
7. If you select **Purge Expired Cached Pages by Application**:
   a. Select an application.
   b. Click **Purge Expired**.

Changing Build Status for Multiple Applications

Every Oracle Application Express application has an application-level attribute called Build Status. You can use this attribute to prevent an application from being modified by other developers. Build Status has two settings:

- **Run and Build Application** - Developers can both run and edit an application.
- **Run Application Only** - Developers can only run an application.

Setting the Build Status to **Run Application Only** is an effective way to prevent other developers from modifying it.

You can change the Build Status of an application as follows:

- Developers and administrators can change the Build Status attribute on the Edit Application page. See "Availability" in *Oracle Application Express Application Builder User's Guide*.
- Workspace administrators can change the Build Status of applications within the current workspace as described in this section. See "Managing Build Status in Workspace Administration" on page 1-34.
- Instance administrators can change the Build Status of an application on the Build Status page. See "Changing Application Build Status Set During Deployment" on page 2-67.

Managing Build Status in Workspace Administration

To manage Build Status in Workspace Administration:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Application Build Status**.

   Next, select a status. Status specifies whether or not the application is available or unavailable for use.
5. For Status, select one of the following:
   - **Available** - Application is available with no restrictions.
   - **Available with Edit Links** - Application is available for use. For developers, the Developer toolbar displays at the bottom of each page. Requires the developer to be logged in to the Application Builder in the same browser session.
   - **Available to Developers Only** - Application is available to users having developer privileges.
   - **Restricted Access** - Application is available to developers named in the Restrict to comma separated user list.
   - **Unavailable** - Application cannot be run or edited. The message in Message for unavailable application displays when users attempt to access the application.
   - **Unavailable (Status Shown with PL/SQL)** - Application cannot be run or edited.
   - **Unavailable (Status Shown with PL/SQL)** - Application cannot be run or edited.

6. From Build Status, select one of the following:
   - **Run and Build Application** - Developers can both run and edit an application.
   - **Run Application Only** - Developers can only run an application.
7. Click **Apply Changes**.

Managing Application Models

Running the Create Application Wizard creates an application model. This model contains basic application property values, such as the application pages and page definitions, DML processes, and multi-row operation processes. When you create a new application, you can base it on an existing application model, making the creation process more productive.

Topics:

- Deleting an Application Model

> **See Also:** "About Application Models and User Interface Defaults" in *Oracle Application Express Application Builder User's Guide*

Deleting an Application Model

You can remove unwanted application models on the Application Models page.

To delete an application model:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. On the Administration page, click **Manage Service**.
4. Under Manage Meta Data, click **Application Models**.

   The Application Models page appears.
5. You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
6. Select the models you want to delete and click **Delete Checked**.

Monitoring Activity within a Workspace

You can monitor developer activity and changes within your workspace by accessing the Monitor Activity page. The Monitor Activity page features links to over thirty reports that track page views, developer activity, active sessions, login attempts, environment, application errors, and workspace schemas. Note that this section only describes a few reports in detail.

Topics:

- Viewing Developer Activity and Application Change Information
- Viewing Application Changes by Developer
- Viewing Application Changes by Day
- Viewing Active Sessions

- Viewing Schema Reports

See Also: "Viewing Workspace Dashboards" on page 1-38, "Monitoring Activity Across a Development Instance" on page 2-71, and "Creating Custom Activity Reports Using APEX_ACTIVITY_LOG in *Oracle Application Express Application Builder User's Guide*

Viewing Developer Activity and Application Change Information

To view developer activity and application change information from the Monitor Activity page:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. Click **Monitor Activity**.

   The Monitor Activity page features activity reports divided into the following sections:

   - **Page Views** - Contains reports of page views organized by view, user, application, or application and page.
   - **Developer Activity** - Offers reports of developer activity organized by developer, day, application, application changes, and day or month.
   - **Page View Analysis** - Contains reports analyzing page views, such as top page views by application.
   - **Sessions** - Lists active sessions with the current workspace.
   - **Login Attempts** - Offers reports listing login attempts.
   - **Environment** - Contains reports of environments organized by user agent, browser, external clicks, or operating system.
   - **Application Errors** - Contains a report of application errors.
   - **Workspace Schema Reports** - Offers summaries of schema tablespace utilization and database privileges by schema and a list of all database schemas available in the current workspace
4. Select a report to review.

   The sections that follow details a few specific reports.

Viewing Application Changes by Developer

The Application Changes by Developer report displays the number of pages changed by each developer and offers a graphical representation of the information in either a bar chart or pie chart format.

To view Application Changes by Developer:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. Click **Monitor Activity**.
4. Under Developer Activity, select **By Developer.**
5. Make a time selection from the Since list, an application (if applicable), and click **Set**.

You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

Viewing Application Changes by Day

The Application Changes by Day report displays a summary of the number of application changes by day. You have the option to view this information by month, as a line chart, or by developer.

To view application changes by day:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. Click **Monitor Activity**.
4. Under Developer Activity, click **By Day** or **By Day, Monthly View**.

   The Application Changes by Day page appears.
5. Make a time selection from the Since list, an application (if applicable), and click **Set**.

   You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

Viewing Active Sessions

A session is a logical construct that establishes persistence (or stateful behavior) across page views. The Active Sessions report lists active sessions with the current workspace.

Whenever an application is run, the Application Express engine maintains a record in a database table in the Oracle Application Express schema. This table records a numeric identifier (or session ID), the authenticated (or public) user identifier, the creation date, and other information. The session is the key record that enables session state, or persistence, across page requests. By viewing the Active Sessions report, a developer or administrator can see who has been using applications in a workspace. An **active session** is a session that has not yet been purged from the sessions table. A DBMS job runs every eight hours and purges session records older than 24 hours.

> **See Also:** "What Is a Session?" in *Oracle Application Express Application Builder User's Guide*

To view active session details:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. Click **Monitor Activity**.
4. Under Sessions, select **Active Sessions.**

   You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
5. Click a session ID to view the Session Details page.

Viewing Schema Reports

Schema Reports offer summaries of schema tablespace utilization and database privileges by schema and a list of all database schemas available in the current workspace.

To view Schema Reports:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. Click **Monitor Activity**.
4. Under Workspace Schema Reports, click one of the following reports:
   - **Schema Tablespace Utilization**
   - **Database Privileges by Schema**
   - **Workspace Schemas**
   - **Report Tablespace Utilization (popup)**

   You can customize the appearance of the Database Privileges and Workspace Schemas reports using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

Viewing Workspace Dashboards

Use the Dashboard page to view details about the current workspace as well as monitor overall activity within your workspace.

Topics:

- About the Workspace Dashboard
- About the Users Dashboard
- About the Activity Dashboard
- About the Developer Activity Dashboard
- About the Performance Dashboard
- About the Websheets Dashboard
- About the Applications Dashboard
- About the Database Dashboard

> **See Also:** "Monitoring Activity Across a Development Instance" on page 2-71 and "Creating Custom Activity Reports Using APEX_ACTIVITY_LOG in *Oracle Application Express Application Builder User's Guide*

About the Workspace Dashboard

The Workspace Dashboard lists statistics about the current workspace. Sections include:

- Service - Lists the workspace name as well as the number of applications, application pages, SQL scripts, Websheets, schemas, and open service requests.
- Available Schemas - Lists schemas within the current workspace.

- Files - Details the space used by specific file types.
- Recent Service Requests lists pending service requests.

To view the Workspace Dashboard:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. On the Administration page, click **Dashboards**.

About the Users Dashboard

The Users Dashboard displays a summary of your account information, users in the current workspace, defined user groups, recently created users, and user status. Sections include:

- Your Account - List information about your account including your username, workspace, account credentials, and email address.
- Workspace Users - Lists statistics about all users in the current workspace.
- User Groups - Lists are currently defined user groups.
- Recently Created - Lists recently created users.
- User Status - Lists valid passwords, expired passwords, locked accounts, unlocked accounts, and any accounts for which no email address id defined.

To view the Users Dashboard:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. On the Administration page, click **Dashboards**.
4. Click the **Users** tab.

See Also: "Managing Application Express Users" on page 1-16

About the Activity Dashboard

The Activity Dashboard displays a summary of top users, application, and pages as well as list of recent logins and errors. Sections include:

- Top Users - Lists the most active users in the workspace.
- Top Applications - Lists applications having the most activity.
- Top Pages - Lists the application pages having the most activity.
- Recent Logins- Lists recent login attempts by application.
- Recent Errors - Lists errors in the current workspace.

To view the Activity Dashboard:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. On the Administration page, click **Dashboards**.
4. Click the **Activity** tab.

About the Developer Activity Dashboard

The Developer Activity Dashboard displays a summary of top developers, application, and pages as well as list of recent application changes and edits. Sections include:

- Top Developers - Lists the most active developers in the workspace.
- Top Applications - Lists the applications having the most developer activity.
- Top Pages - Lists the application pages having the most developer activity.
- Recent Changes - Lists changes by application, page, and user.
- Recent Application Edits - Lists edits by application.

To view the Developer Activity Dashboard:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. On the Administration page, click **Dashboards**.
4. Click the **Developer Activity** tab.

About the Performance Dashboard

The Performance Dashboard displays a report of pages having the worst page performance. Page performance is calculated by multiplying page events by median elapsed server page generation time. Page events include page gets, page posts, and partial page gets.

To view the Performance Dashboard:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. On the Administration page, click **Dashboards**.
4. Click the **Performance** tab.
5. You can customize the appearance the page using the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
6. From the Show list, select a time frame.

About the Websheets Dashboard

The Websheets Dashboard displays a websheet activity for the selected time frame. Sections include:

- Workspace Summary
- Recent Views
- Recently Created
- Recently Updated

To view the Websheets Dashboard:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. On the Administration page, click **Dashboards**.

4. Click the **Websheets** tab.
5. From the Show list, select a time frame.

About the Applications Dashboard

The Applications Dashboard displays a summary of applications in the current workspace. Sections include:

- Summary - Lists the number of applications, pages, and workspace themes.
- Application Groups - Lists defined application groups.
- Recently Created - Lists recently created applications.
- Defaults - Lists defined defaults.

To view the Applications Dashboard:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. On the Administration page, click **Dashboards**.
4. Click the **Applications** tab.
5. To refresh the report, click **Refresh**.

About the Database Dashboard

The Database Dashboard displays a summary of database objects by schema. Row counts are based on database table statistics. Sections include:

- Recently Modified Program Units
- Object Counts
- Recently Created Tables
- Top Tables by Row Count

To view the Database Dashboard:

1. Navigate to the Workspace home page.
2. Click the **Administration** icon.
3. On the Administration page, click **Dashboards**.
4. Click the **Database** tab.
5. From Schema, select the appropriate schema.
6. To refresh the report, click **Refresh**.

Leveraging Application Builder Defaults

Application Builder Defaults enable developers to reduce the number of steps needed to create a new application. By configuring these attributes, developers can exit the Create Application Wizard early and can create a new application in two simple steps.

Topics:

- About Application Builder Defaults
- Configuring Application Builder Defaults

About Application Builder Defaults

Application Builder Defaults are specific to each workspace. These attributes define preferences for tabs, authentication schemes, themes, and globalization when running the Create Application Wizard. When a Workspace administrator configures these attributes, developers within that workspace can utilize these defaults and exit the Create Application Wizard after two easy steps

Configuring Application Builder Defaults

To configure Application Builder Defaults:

1. On the Workspace home page, click the **Application Builder** icon.
2. From the Tasks list, select **Application Builder Defaults**.

   The Manage Application Builder Defaults page appears and is divided into the following sections:

   - Tabs
   - Authentication
   - Theme
   - Globalization
3. For each section of the page, select the appropriate default.
4. To learn more about a specific attribute, click the item label.

   When Help is available, the item label changes to red when you pass your cursor over it and the cursor changes to an arrow and question mark.
5. Click **Apply Changes**.

2

Oracle Application Express Hosted Instance Administration

This section describes tasks an Instance administrator performs when administering an Oracle Application Express hosted instance.

Topics:

- What Is an Instance Administrator?
- Logging in to Oracle Application Express Administration Services
- Managing Workspace and Change Requests
- Managing Instance Settings
- Managing Schemas
- Creating Workspaces
- Managing Existing Workspaces
- Managing Users in an Oracle Application Express Instance
- Monitoring Activity Across a Development Instance

What Is an Instance Administrator?

Instance administrators are responsible for managing an entire Oracle Application Express instance.

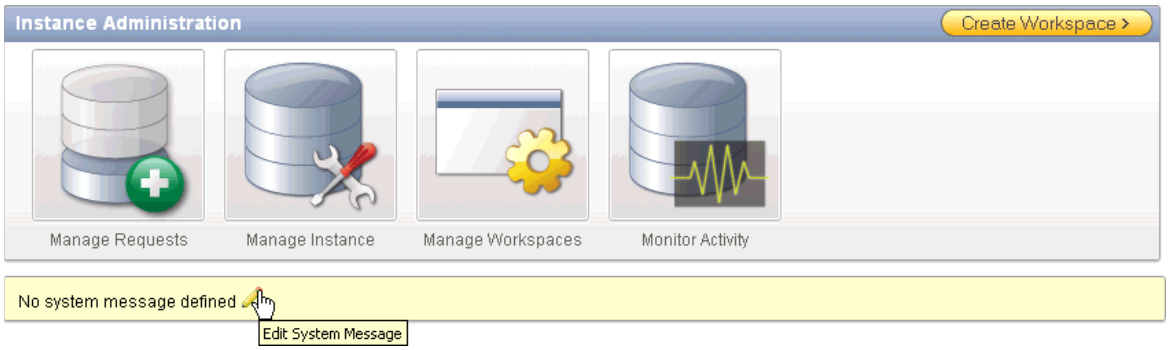
In Oracle Application Express, users log in to a shared work area called a workspace. These users are divided into three primary roles:

- **Developers** create and edit applications.
- **Workspace administrators** are developers who also perform administrator tasks specific to their workspace such as managing user accounts, monitoring workspace activity, and viewing log files. See "Workspace and Application Administration" on page 1-1.
- **Instance administrators** are superusers that manage the entire hosted instance using the Oracle Application Express Administration Services application.

See Also: *Oracle Application Express Installation Guide*

About the Instance Administration Home Page

The Instance Administration home page is the starting point for managing an entire Oracle Application Express instance.



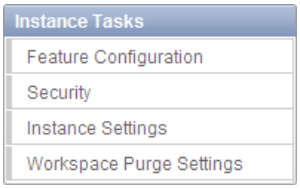
Four icons display at the top of the page:

- **Manage Requests**. See "Managing Workspace and Change Requests" on page 2-7.
- **Manage Instance**. See "About the Manage Instance Page" on page 2-3.
- **Manage Workspace**. See "About the Manage Workspaces Page" on page 2-4.
- **Monitor Activity**. See "Monitoring Activity Across a Development Instance" on page 2-71.

About the System Message Region

The System Message region display in the center of the page. Use this region to communicate with other users in the workspace. To add a system message, click the **Edit System Message** icon. See "Defining a System Message" on page 2-45.

About Instance Tasks



Use the Instance Tasks list to access the following tasks:

- **Feature Configuration**. See "Configuring Features" on page 2-13.
- **Security**. See "Configuring Security Settings" on page 2-15.
- **Instance Settings**. See "Managing Instance Settings" on page 2-13.
- **Workspace Purge Settings**. See "Purging Inactive Workspaces" on page 2-36.

About Workspace Tasks



Use the Workspace Tasks list to access the following tasks:

- **Create Workspace**. See "Creating Workspaces" on page 2-50.
- **Find a Workspace**. See "Performing a Workspace Search" on page 2-63.
- **Manage Workspaces**. See "Managing Existing Workspaces" on page 2-53.
- **Create User**. See "Creating New User Accounts" on page 2-69.
- **Find a User**. See "Managing Users in an Oracle Application Express Instance" on page 2-68.
- **Reset User Password**. See "Editing an Existing User Account" on page 2-70.

About Language Selector

Displays the default language for this Oracle Application Express instance.

> **See Also:** "Viewing Requests on the Instance Administration Home Page" on page 2-7

About the Manage Instance Page

Instance administrators use the Manage Instance page to configure an Oracle Application Express instance. This topic provides information about the links on this page.

About Instance Setting

Instance Settings contains the following links:

- **Feature Configuration**. See "Configuring Features" on page 2-13.
- **Security**. See "Configuring Security Settings" on page 2-15.
- **Instance Settings**. See "Configuring Instance Settings" on page 2-26.
- **Workspace Purge Settings**. See "Purging Inactive Workspaces" on page 2-36.

About Manage Shared Components

Manage Shared Components contains the following link:

- **Public Themes**. See "Managing Public Themes" on page 2-37.

> **See Also:** "Managing Existing Workspaces" on page 2-53 and "About the Manage Workspaces Page" on page 2-4

About Manage Meta Data

Manage Meta Data contains the following links:

- **Session State**. See "Managing Session State" on page 2-39.
- **Mail Queue**. See "Managing the Mail Queue" on page 2-40.
- **Installed Translations.** See "Viewing Installed Translations" on page 2-43.

About Messages

Messages contains the following links:

- **Define Login Message**. See "Defining a Login Message" on page 2-45
- **Set System Message**. See "Defining a System Message" on page 2-45
- **Manage Site-Specific Tasks.** See "Creating a Site-Specific Tasks List" on page 2-46.

About Manage Logs and Files

Manage Logs and Files contains the following links:

- **Set SQL Workshop logs**. See "Deleting SQL Workshop Logs" on page 2-41.
- **Page View Activity Log, with option to truncate**. See "Deleting Page View Activity Log Entries" on page 2-41.
- **Developer Activity Log, with option to truncate**. See "Deleting Developer Activity Log Entries" on page 2-42.
- **External Click Counting Log, with option to truncate**. See "Deleting Click Counting Log Entries" on page 2-42
- **Login Access Log**. See "Deleting the Login Access Log" on page 2-43.

About the Manage Workspaces Page

Instance administrators use the Manage Workspaces page to manage workspaces for an Oracle Application Express instance. This topic provides information about the links on this page.

About Workspace Actions

Manage Workspaces contains the following links:

- **Create Workspace**. See "Creating Workspaces" on page 2-50.
- **Remove Workspace**. See "Deleting a Workspace" on page 2-54.
- **Lock Workspace**. See "Locking a Workspace" on page 2-58.
- **Manage Workspace to Schema Assignments**. See "Managing Workspace to Schema Assignments" on page 2-58.
- **Manage Developers and Users**. See "Managing Users in an Oracle Application Express Instance" on page 2-68.
- **Manage Component Availability**. See "Managing Component Availability" on page 2-62.

About Workspace Reports

Use Workspace Reports to access the following links:

- **Existing Workspaces**. See "Managing Existing Workspaces" on page 2-53.
- **Workspace Details**. See "Viewing and Emailing Workspace Details" on page 2-64.

- **Workspace Database Privileges**. See "Viewing Workspace Database Privileges" on page 2-65.
- **Workspaces with Only Sample Application**. See "Viewing Workspaces with Only a Sample Application" on page 2-57.
- **Manage File Utilization**. See "Viewing File Size and File Count by Workspace" on page 2-65.

About Export Import

Use Export Import to access the following links:

- **Import Workspaces**. See "Importing a Workspace" on page 2-66.
- **Export Workspaces**. See "Exporting a Workspace" on page 2-66.

About Manage Application

Use Manage Workspaces to access the following links:

- **Application Attributes**. See "Viewing Application Attributes" on page 2-67.
- **Build Status**. See "Changing Application Build Status Set During Deployment" on page 2-67.
- **Parsing Schemas**. See "Viewing the Parsing Schemas Report" on page 2-68.

Logging in to Oracle Application Express Administration Services

Instance administrators are responsible for managing an entire Oracle Application Express instance. To perform these tasks, an Instance administrator logs in to the Oracle Application Express Administration Services application.

To log in to Oracle Application Express Administration Services:

1. In a Web browser, navigate to the **Oracle Application Express** Administration Services application. By default, **Oracle Application Express** Administration Services installs to the following location:
   - If your setup uses the embedded PL/SQL gateway, go to:

     `http://hostname:port/apex/apex_admin`

     Where:
     - `hostname` is the name of the system where Oracle XML DB HTTP Server is installed.
     - `port` is the port number assigned to Oracle XML DB HTTP Server. In a default installation, this number is 8080. See "Verifying the Oracle XML DB HTTP Server Port" in *Oracle Application Express Application Builder User's Guide*.
     - `apex` is the database access descriptor (DAD) defined in the configuration file.

       For users who have upgraded from earlier releases, or who have a custom configuration, this value may be `htmldb` or something else. Verify your DAD with your Instance administrator.
   - If your setup uses the Oracle Application Express Listener, go to:

     `http://hostname:port/apex/apex_admin`

Where:

- `hostname` is the name of the system where Oracle HTTP Server is installed.
- `port` is the port number assigned to Oracle HTTP Server. In a default installation, this number is 8888. See *Oracle Application Express Listener Installation Guide*.
- `apex` is the database access descriptor (DAD) defined in the configuration file.

- If your setup uses Apache and `mod_plsql`, go to:

  `http://hostname:port/pls/apex/apex_admin`

  Where:

  - `hostname` is the name of the system where Oracle HTTP Server 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 either of the following files:

    ORACLE_BASE`\`*ORACLE_HOME*`\install\portlist.ini`
    ORACLE_BASE`\`*ORACLE_HTTPSERVER_HOME*`\Apache\Apache\conf\httpd.conf`

    Be aware that if you change a port number, it is not updated in the `portlist.ini` file. You can only rely on this file immediately after installation.
  - `pls` is the indicator to use the `mod_plsql` cartridge.
  - `apex` is the database access descriptor (DAD) defined in the `mod_plsql` configuration file.

    For users who have upgraded from earlier releases, or who have a custom configuration, this value may be `htmldb` or something else. Verify your DAD with your Instance administrator.

The Login page appears.

2. In Username, enter `admin`.

   Tip: `admin` is the default Instance administrator account. To create additional Instance administrator accounts, see "Creating New User Accounts" on page 2-69

3. In Password, enter the Instance administrator account password you specified when you installed Oracle Application Express.
4. Click **Login**.

   Oracle Application Express Administration Services appears.

   See Also: "Managing Oracle Database Port Numbers" in *Oracle Database Installation Guide* for information about installing Oracle Application Express

Managing Workspace and Change Requests

An Instance administrator is responsible for reviewing and managing workspace requests and change request.

A **Workspace Request** enables users to request workspaces directly in a self-service fashion. For example, users could click a link on the login page to access a request form. Once the Instance administrator approves the workspace request, each user is automatically emailed the appropriate login information. To learn more about configuring an instance to use workspace requests, see "Specifying a Provisioning Mode" on page 2-51.

A **Change Request** enables users to modify an existing workspace (for example, add a new schema or increase the disk space limit).

> **See Also:** "Specifying a Provisioning Mode" on page 2-51 and "Making a Service Request" on page 1-9

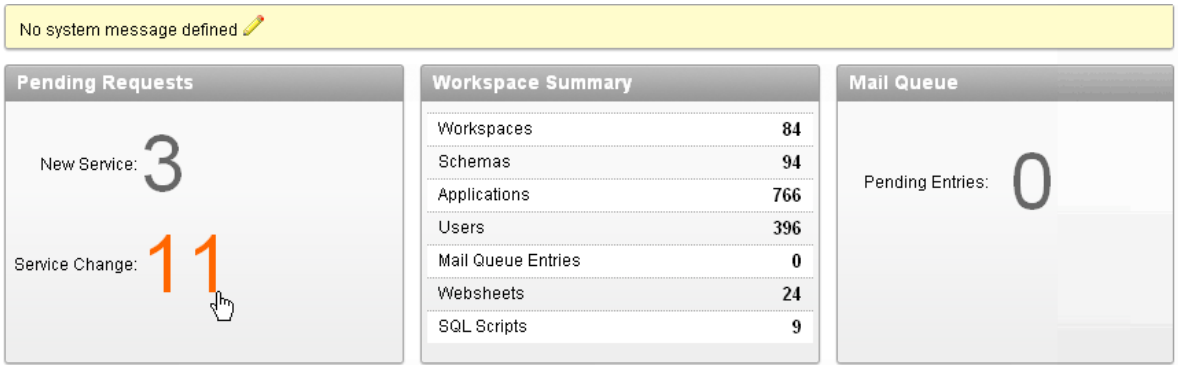
Topics:

- Viewing Requests on the Instance Administration Home Page
- Viewing Pending Requests
- Managing Workspace Requests
- Managing Change Requests

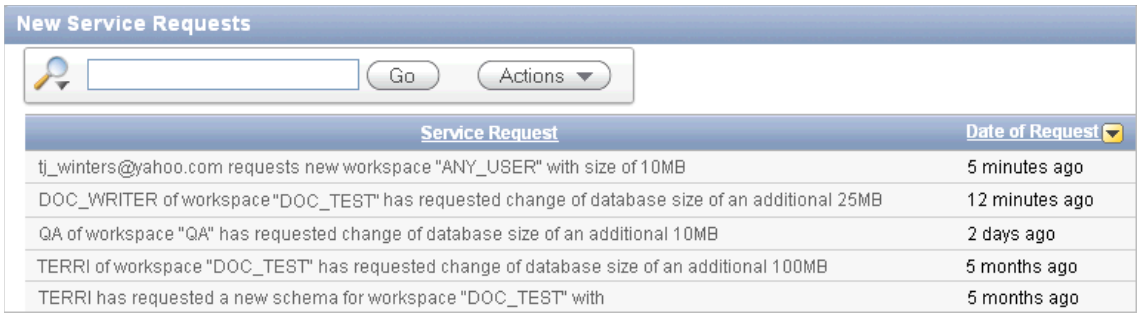
Viewing Requests on the Instance Administration Home Page

Instance administrators can view pending and new service requests on the Oracle Application Express Instance Administration (Instance Administration) home page).

The Pending Requests region lists the total number of new service requests and service change requests. To view a more detailed report, click the number listed.



The New Service Requests report displays at the bottom on the page. This report lists service requests by date. To view a specific request, click the description.



Viewing Pending Requests

To view workspace requests from the Manage Service Requests page:

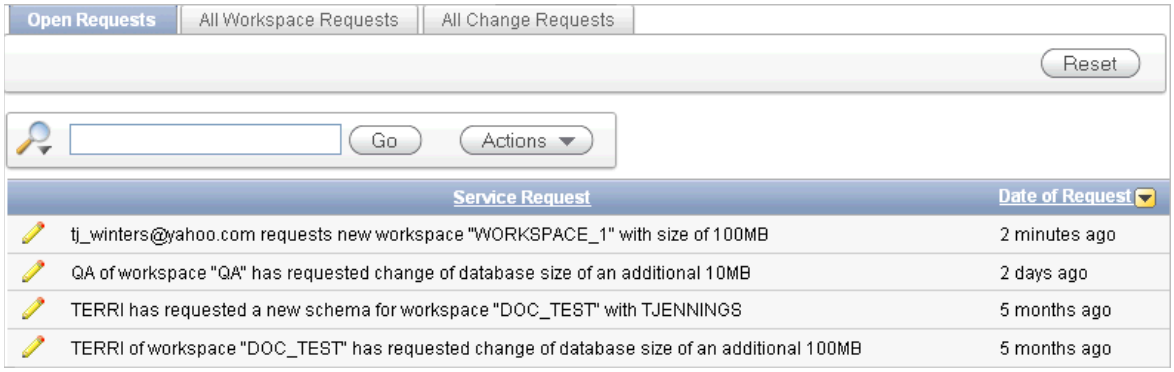
1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Requests**.

   From Manage Service Requests page, you can choose three tabs:

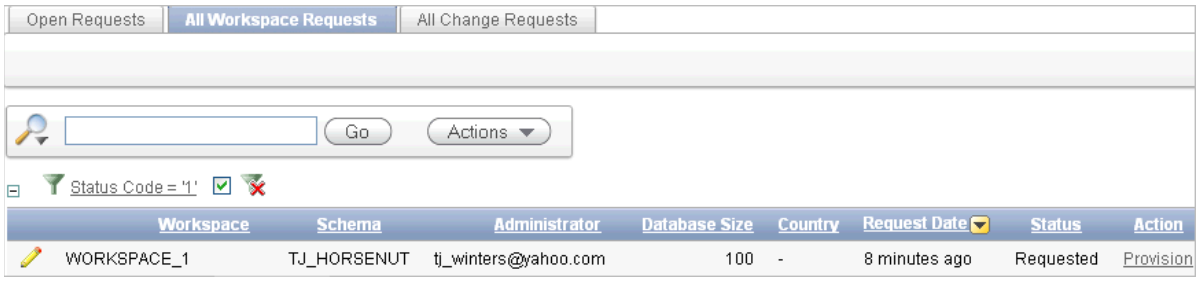
   - Open Requests
   - All Workspace Requests
   - All Change Requests

   Tip: All Change Requests pages display as interactive reports. You can customize the appearance each page using the Search bar at the top of each page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

3. Open Requests displays new service requests and change requests. To approve or decline a new request, click the **Edit** icon.

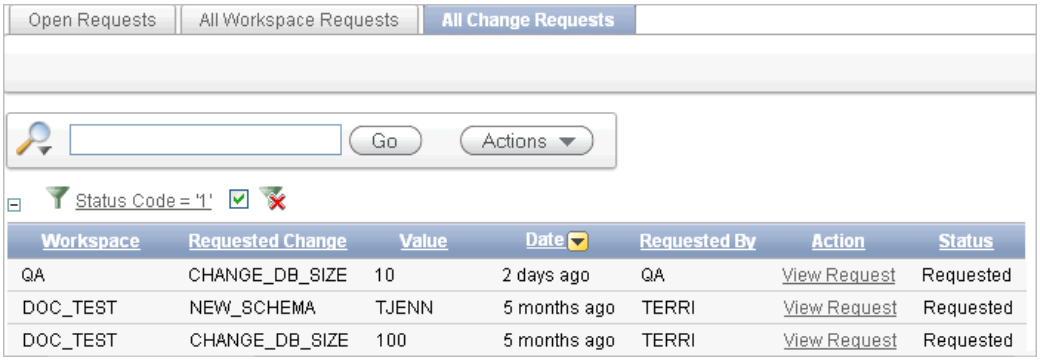


4. Click the **All Workspace Requests** tab.



To edit the request, click the **Edit** icon. To approve or decline the request, click the **Provision** link. To learn more, see "Managing Workspace Requests" on page 2-9.

5. Click **All Change Requests**.



To view a request, click the **View Request** link. To learn more, see "Managing Change Requests" on page 2-12.

Managing Workspace Requests

A **Workspace Request** enables a user to request a workspace by clicking a link on the login page to access a request form. Once submitted, the Instance administrator can review the request and either approve or decline it. To learn more about configuring an instance to use workspace requests, see "Specifying a Provisioning Mode" on page 2-51.

Topics:

- Approving or Declining a Pending Workspace Request
- Changing the Status of an Existing Workspace Request
- Deleting a Workspace Request

Approving or Declining a Pending Workspace Request

To approve or decline a pending workspace request:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Requests**.
3. Click the **All Workspace Requests** tab.

The Workspace Requests page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

4. Locate a request to review.
5. To edit or review the request, click the **Edit** icon. On the Provision Request page you can:
   - Edit the request and click **Apply Changes**.
   - Delete the request by clicking **Delete**.
6. Return to the All Workspace Requests page.
7. To approve a request:
   a. Click **Provision** in the Actions column.
   b. On the Provisioning Administration page, click **Approve**.
   c. Review the email message.
   d. If needed, update the message and click **Approve and Send Email**.

      If you selected the Provisioning Status, **Email Verification**, an email containing a verification link is sent to the user. To create the workspace, the user must click the verification link to create the workspace. See "Specifying a Provisioning Mode" on page 2-51.
8. To decline a request:
   a. Click **Provision** in the Actions column.
   b. On the Provisioning Administration page, click **Decline**.
   c. Review the email message.
   d. To add information, such as the reason for declining a request, update the message and then click **Decline and Send Email**.

      The email is sent to the user notifying them the request was declined.

More About the Approval Process If you are using Email Verification, when an Instance administrator approves a workspace request, the following events occur:

1. An email containing a verification link is sent to the user.
2. When user clicks the verification link, the workspace is created.
3. Another email is sent to the user containing login credentials (that is, the workspace name, User ID, and password).
4. The status of the workspace request changes from `Accepted` to `Approved`.

If the user fails to click the verification link, you can quickly delete the request by clicking the **DELETE** link in the Action column.

When an Error Occurs If an error occurs during the workspace creation process, the status of the request reverts to `Requested` and an email is sent to the user containing the following message:

```
Please contact administrator.
```

Once the issue is resolved, the administrator can again repeat the previous procedure and approve the request.

Changing the Status of an Existing Workspace Request

To change the status of an existing workspace request:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Requests**.
3. Click the **All Workspace Requests** tab.

   The Workspace Requests page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
4. Uncheck the **Filter Status_Code = '1'** to review all workspace requests.
5. Locate a request to review.
6. Click the **Adjust** link in the Actions column.

   The Adjust Request page appears.
7. From the Project Status list, select a new status.
8. Click **Apply Changes**.

Note: Be careful when setting the Project Status to **Requested**. Although **Requested** enables you to reprovision a workspace, it could result in data corruption due to the manner in which accounts are provisioned. The provisioning system assumes Requested workspace requests do not have the corresponding schemas and dictionary entries for a Workspace administrator or developers. If you must change the Project Status for an **Approved** workspace to **Requested**, terminate the service first and then change the status to Requested.

Deleting a Workspace Request

To delete a workspace request:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Requests**.
3. Click **All Workspace Requests**.

   The Workspace Requests page appears.
4. Uncheck the **Filter Status_Code = '1'** to review all workspace requests.
5. Click the **Edit** icon for the request you want to delete.
6. On the Provision Request page, click the appropriate button:
   - If the Project Status is `Approved`, click **Terminate or Delete**.
   - If the Project Status is `Declined`, `Requested`, `Terminated`, or `Accepted`, click **Delete**.
7. Click **Delete Request**.

Managing Change Requests

A **Change Request** enables users to modify an existing workspace (for example, by adding a new schema or increasing the disk space limit). Once submitted, the Instance administrator reviews and either approves or declines the change request.

Topics:

- Viewing Requests from the All Change Requests Page
- Approving or Declining a Pending Change Request

Viewing Requests from the All Change Requests Page

To view change requests from the Workspace Requests page:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Requests**.
3. Under Manage Requests, click the **All Change Requests** tab.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
4. See the next topic, "Approving or Declining a Pending Workspace Request" on page 2-10.

Approving or Declining a Pending Change Request

To approve or decline a pending change request:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Requests**.
3. Under Manage Requests, click the **All Change Requests** tab.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
4. Locate the request and click **View Request** under the Action column.

   The View Change Request page appears. Note that the buttons that display depend upon the nature of the change request.
5. Select one of the following:
   - To approve a request for a schema, click **Create Schema**.
   - To approve a request for additional disk space, click **Add Space**.
   - To approve a request to terminate the service, click **Terminate Service**.
   - To deny a request, click **Deny Request**.
   - To delete a request and deny it, select **Delete this request if denying?** and then click **Deny Request**.

Managing Instance Settings

Instance administrators use the settings under Manage Instance to manage and configure an Oracle Application Express instance.

Topics:

- Configuring Features
- Configuring Security Settings
- Configuring Instance Settings
- Purging Inactive Workspaces
- Managing Public Themes
- Managing Session State
- Managing the Mail Queue
- Managing Logs
- Viewing Installed Translations
- Managing a Runtime Environment
- Managing Messages

Configuring Features

Use the Feature Configuration page to configure application development and SQL Workshop option as well as control database monitoring.

Topics:

- Disabling PL/SQL Program Unit Editing
- Disabling the Creation of Sample Application in a New Workspace
- Disabling the Creation of Websheet Objects
- Configuring SQL Workshop
- Enabling Database Monitoring

See Also: "Managing Component Availability" on page 2-62

Disabling PL/SQL Program Unit Editing

By default, developers can change and compile PL/SQL source code when browsing database procedures, packages, and functions in Object Browser. As an Instance administrator, you can control PL/SQL program unit editing for an entire instance by making a selection from Allow PL/SQL Program Unit Editing.

To disable PL/SQL program unit editing:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Feature Configuration**.
4. Locate the Application Development section.
5. For Allow PL/SQL Program Unit Editing, select **No**.

6. Click **Apply Changes**.

> **See Also:** "Disabling PL/SQL Program Unit Editing for a Workspace" on page 1-13 for information about disabling PL/SQL program unit editing for a specific workspace

Disabling the Creation of Sample Application in a New Workspace

When an Instance administrator creates a new workspace, Oracle Application Express automatically creates a demonstration application within the workspace.

To disable the creation of demonstration applications:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Feature Configuration**.
4. Locate the Application Development section.
5. For Create demonstration objects in new workspaces, select **No**.
6. Click **Apply Changes**.

Disabling the Creation of Websheet Objects

When an Instance administrator creates a new workspace, Oracle Application Express automatically creates Websheet objects within the workspace.

To disable the creation of Websheet objects:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Feature Configuration**.
4. Locate the Application Development section.
5. For Create Websheet objects in new workspaces, select **No**.
6. Click **Apply Changes**.

Configuring SQL Workshop

As an Instance administrator, you can use the attributes under SQL Workshop to configure basic SQL Workshop behavior.

To configure SQL Workshop:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Feature Configuration**.
4. Under SQL Workshop, enter the attributes described in Table 2–1.

Table 2–1 SQL Workshop Attributes

Attribute	Description
SQL Commands Maximum Inactivity in minutes	Identify the maximum amount of time a transactional command in the SQL Command Processor waits before timing out.
SQL Scripts Maximum Script Output Size in bytes	Identify the maximum amount of output a single SQL script can generate. SQL scripts are run from the SQL Workshop.
SQL Scripts Maximum Workspace Output Size in bytes	Identify the maximum amount of space all scripts within a workspace may consume. SQL script results are the output generated when running SQL scripts from the Script Editor or from the SQL Scripts home page.
SQL Scripts Maximum Script Size in bytes	Identify the maximum size of a SQL script used within the SQL Workshop.
Enable Transactional SQL Commands	Select **Yes** to enable transactional SQL commands for the entire Oracle Application Express instance. Enabling this feature permits SQL Command Processor users to issue multiple SQL commands within the same physical database transaction. When you select **Yes**, an Autocommit check box appears on the SQL Command Processor page. By default, this option is set to **No**.

5. Click **Apply Changes**.

Enabling Database Monitoring

Setting Enable Database Monitoring to **Yes** enables monitoring within SQL Workshop. Before you can access the Database Monitoring page, an Instance administrator must enable database monitoring.

> **See Also:** "Monitoring the Database" in *Oracle Application Express SQL Workshop Guide*

To enable database monitoring:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Feature Configuration**.
4. Scroll down to Monitoring.
5. For Enable Database Monitoring, select **Yes**.
6. Click **Apply Changes**.

> **Note:** Only users having a database user account that has been granted a DBA role can access the Database Monitor page.

Configuring Security Settings

Instance administrators can configure security settings, such as turning off cookies used to populate the login form in Application Express, controlling access to accounts, and setting up password policies.

Topics:

- Turning Off Cookies Used to Populate the Login Form
- Disabling Access Oracle Application Express Administration Services
- Disabling Access Workspace Login
- Controlling Public File Upload
- Restricting User Access by IP Address
- Requiring HTTPS
- Controlling RESTful Access
- Configuring Session Timeout
- Excluding Domains from Regions of Type URL and Web Services
- Enabling Login Controls for All Workspaces
- About Password Policies
- Configuring Password Policies
- Restricting Access to Oracle Application Express by Database Access Descriptor (DAD)
- Defining Authorized URLs

Turning Off Cookies Used to Populate the Login Form

Instance administrators can control if a convenience cookie is sent to a user's computer whenever a developer or administrator logs in to a workspace from the Application Express Login page. By default, the Set Workspace Cookie option is set to Yes.

If selected, Oracle Application Express sends a persistent cookie that:

- combines the last used workspace name and user name
- has a lifetime of six months
- is read to populate the Application Express Workspace Login form (but not the Oracle Application Express Administration Services Login form)

> **Note:** If your computer has received this cookie, you can physically remove it from its persistent location on disk using browser tools or system utilities. The cookie is named `ORA_WWV_REMEMBER_UN`. In older releases of Oracle Application Express, this cookie was named `ORACLE_PLATFORM_REMEMBER_UN`. It may exist for each Oracle Application Express service accessed having distinct hostname and path components.

To prevent a cookie from being sent to the user's computer when logging in:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Security**.
4. Locate the Security section.
5. For Set Workspace Cookie, select **No**.
6. Click **Apply Changes**.

Disabling Access Oracle Application Express Administration Services

Instance administrators can restrict user access to Oracle Application Express Administration Services. This prevents any user from logging in to Oracle Application Express Administration Services.

To disable user access to Oracle Application ExpressAdministration Services:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Security**.
4. Locate the Security section.
5. For Disable Administrator Login, select **Yes**.
6. Click **Apply Changes**.

Setting this value and logging out prevents anyone from logging in to Oracle Application Express Administration Services.

Enabling Administrator Login To reverse this setting and enable administrator login:

1. Connect in SQL*Plus and connect to the database where Oracle Application Express is installed as `SYS`, for example:
   - On Windows:

     ```
     SYSTEM_DRIVE:\ sqlplus /nolog
     connect sys as sysdba
     ```

   - On UNIX and Linux:

     ```
     $ sqlplus /nolog
     connect sys as sysdba
     ```

   When prompted enter the appropriate password.
2. Run the following statement:

   ```
   ALTER SESSION SET CURRENT_SCHEMA = APEX_040000;
   ```

3. Run the following statements:

   ```
   BEGIN
     APEX_INSTANCE_ADMIN.SET_PARAMETER('DISABLE_ADMIN_LOGIN', 'N');
     commit;
   END;
   /
   ```

Disabling Access Workspace Login

Developers and Workspace administrators log into the Oracle Application Express development environment to access the Application Builder, SQL Workshop, Team Development and Administration.

To restrict access to these applications, select **Yes** from Disable Workspace Login. This option effectively sets a Runtime Only environment while still allowing Instance administrators to log into Instance Administration. Selecting **Yes** in production environments prevents developers from changing applications or data.

See Also: "Managing a Runtime Environment" on page 2-44

To disable user access to the Internal workspace:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Security**.
4. Locate the Security section.
5. From Disable Workspace Login, select **Yes**.

   Selecting **Yes** prevents users from logging in to the Internal workspace.
6. Click **Apply Changes**.

Controlling Public File Upload

Use the **Allow Public File Upload** attribute to control whether unauthenticated users can upload files in applications that provide file upload controls.

To control file upload:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Security**.
4. Locate the Security section.
5. From Allow Public File Upload, select one of the following:
   - **Yes** enables unauthenticated users to upload files in applications in the Internal workspace.
   - **No** prevents unauthenticated users from uploading files in applications in the Internal workspace.
6. Click **Apply Changes**.

Restricting User Access by IP Address

Instance administrators can restrict user access to an Oracle Application Express instance by creating a Runtime setting named `RESTRICT_IP_RANGE`.

To restrict user access by IP address:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Security**.
4. Locate the Security section.
5. For Disable Administrator Login, select **No**.
6. In Restrict Access by IP Address, enter a comma-delimited list of IP addresses. Use an asterisk (*) to specify a wildcard.

   You can enter IP addresses from one to four levels. For example:

   ```
   141, 141.* ...
   192.128.23.1 ...
   ```

> **Note:** When using wildcards, do not include additional numeric values after wildcard characters. For example, `138.*.41.2`.

7. Click **Apply Changes**.

Requiring HTTPS

Secure Socktets Layer (SSL) is a protocol for managing the security of data transmitted on the Internet. For Web applications, SSL is implemented by using the HTTPS protocol. Oracle recommends that you run Oracle Application Express applications using SSL (HTTPS protocol) to prevent any sensitive data from being sent over an unencrypted (cleartext) communication channel.

You can configure both your Oracle Application Express instance and all related applications to require HTTPS by setting the Require HTTPS attribute to **Yes** on the Manage Service page.

> **Note:** If you set Require HTTPS to **Yes**, you will only be able to log in to an Oracle Application Express workspace or Oracle Application Express Administration Services over HTTPS.

To require HTTPS for an Oracle Application Express instance:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Security**.
4. Locate the Security section.
5. For Require HTTPS, select **Yes**.
6. Click **Apply Changes**.

Reversing HTTPS Requirement To reverse the Require HTTPS instance-level requirement:

1. Connect in SQL*Plus or SQL Developer with the Application Express engine schema as the current schema, for example:
   - On Windows:

     ```
     SYSTEM_DRIVE:\ sqlplus /nolog
     connect sys as sysdba
     ```

   - On UNIX and Linux:

     ```
     $ sqlplus /nolog
     connect sys as sysdba
     ```

   When prompted enter the appropriate password.
2. Run the following statement:

   ```
   ALTER SESSION SET CURRENT_SCHEMA = APEX_040000;
   ```

3. Run the following statements:

   ```
   BEGIN
       APEX_INSTANCE_ADMIN.SET_PARAMETER('REQUIRE_HTTPS', 'N');
   ```

```
    commit;
end;
/
```

Controlling RESTful Access

Use the **Allow RESTful Access** attribute to control whether developers can expose report regions as RESTful services.

> **See Also:** "Implementing Web Services" in *Oracle Application Express Application Builder User's Guide*

To enable RESTful Access:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Security**.
4. Locate the RESTful Access section.
5. From Allow RESTful Access, select one of the following:
   - **Yes** enables developers to expose report regions as RESTful services.
   - **No** prevents developers from exposing report regions as RESTful services.
6. Click **Apply Changes**.

Configuring Session Timeout

Use the attributes under Session Timeout for Oracle Application Express to reduce exposure to abandoned computers with an open Web browser at the application level.

To manage session settings for an Oracle Application Express instance:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Security**.
4. Under Session Timeout For Application Express, specify the following attributes:
   - **Maximum Session Length in Seconds** - Enter a positive integer representing how many seconds a session can exist for Oracle Application Express applications (that is, Application Builder, SQL Workshop, and so on). Leave the value `NULL` to revert the value to the default of 28800 seconds (or 8 hours). This session duration may be superseded by the operation of the job that runs every eight hours which deletes sessions older than 24 hours.
   - **Maximum Session Idle Time in Seconds** - Enter a positive integer representing how many seconds a session may remain idle for Oracle Application Express applications (that is, Application Builder, SQL Workshop, and so on). Leave the value null to revert the value to the default of 1 hour (3600 seconds).
5. Click **Apply Changes**.

See Also: "Session Timeout" in *Oracle Application Express Application Builder User's Guide*

Excluding Domains from Regions of Type URL and Web Services

It is possible to restrict regions of type URL and Web services for the entire Oracle Application Express instance. The Instance administrator defines excluded domains and regions of type URL. If a Web reference or region of type URL contains an excluded domain, an error displays informing the user that it is restricted.

To exclude a domain from regions of type URL and Web services:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Security**.
4. In Domain Must Not Contain, enter a colon-delimited list of excluded domains.
5. Click **Apply Changes**.

Enabling Login Controls for All Workspaces

By default, no login controls are enabled across an Oracle Application Express instance. Instance administrators can enable login controls for all accounts in all workspaces across an entire development instance. Account login controls include:

- Require user account expiration and locking
- Set up a maximum number of failed login attempts
- Set the lifetime of a password before prompted for a new one

If the Instance administrator does *not* enable login controls for an entire instance then each Workspace administrator can enable controls on a workspace-by-workspace basis. See "Enabling Account Login Controls for a Workspace" on page 1-11.

Note that Account Login control affect applications that use the Application Express user account creation facilities and authentication against those accounts.

To enable login controls for all workspaces:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Security**.
4. Scroll down to Account Login control.
5. Under Account Login Control:
   a. **Require User Account Expiration and Locking** - Select **Yes** to enable this feature for all workspaces across an entire Oracle Application Express instance. This feature applies to end-user accounts created using the Application Express end-user account management interface.

      Select **No** to relinquish control to each Workspace administrator.

   b. **Maximum Login Failures Allowed** - Enter a number for the maximum number of consecutive unsuccessful authentication attempts allowed before a developer or administrator account is locked. If you do not specify a value in this field, the default value is 4.

This setting applies to Instance administrator and developer accounts. It does not apply to end user accounts.

The value you enter is used as the default for the workspace-level Maximum Login Failures Allowed preference, if the Workspace administrator does not specify a value. That preference is used for end-user accounts within the respective workspace.

c. **Account Password Lifetime (days)** - Enter a number for the maximum number of days a developer or administrator account password may be used before the account expires. If you do not specify a value in this field, a default value is 45 days.

This setting applies to accounts used to access the Application Express administration and development environment only. It does not apply to end-user accounts used by applications developed in Application Express.

The value you enter is used as the default workspace-level End User Account Lifetime preference, if the Workspace administrator specifies no value. That preference is used for end-user accounts within the respective workspace.

6. Click **Apply Changes**.

Tip: This feature applies only to accounts created using the Application Express user creation and management facilities. It provides additional authentication security for applications. See "Managing Application Express Users" on page 1-16.

About Password Policies

Instance administrators can enable password policies for:

- All users across all workspaces (that is, Workspace administrators, developers, and end users).

  Instance administrators can set up restrictions for all users, including password characters, lengths, words, and differences in consecutive passwords.

- Users logging in to Oracle Application Express Administration Services

  Turning on the strong password requirement for Oracle Application Express adds another layer of security to prevent hackers from determining an administrator's password. When this option is selected, passwords must meet these requirements:

  – consist of at least six characters

  – contain at least one lowercase alphabetic character, one uppercase alphabetic character, one numeric digit, and one punctuation character

  – cannot include the username

  – cannot include the word Internal

  – cannot contain any words shown in the Must Not Contain Workspace Name field in this section

Configuring Password Policies

To configure password policies:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.

3. Under Instance Settings, click **Security**.
4. To set up a password policy for Workspace administrators, developers, and end users, scroll down to Workspace Password Policy and specify the attributes described in Table 2–2.

Table 2–2 Workspace Password Policy Attributes

Attribute	Description
Minimum Password Length	Enter a number for the minimal character length for passwords.
Minimum Password Differences	Enter a positive integer or 0. When users change their password, the new password must differ from the old password by this number of characters. The old and new passwords are compared, character-by-character, for differences such that each difference in any position common to the old and new passwords counts toward the required minimum difference.
Must Contain At Least One Alphabetic Character	Select **Yes** to require that user passwords contain at least one alphabetic character. The Alphabetic Characters field lists the letters considered alphabetic characters.
Must Contain At Least One Numeric Character	Select **Yes** to require that user passwords contain at least one numeric character: 0,1,2,3,4,5,6,7,8, 9.
Must Contain At Least One Punctuation Character	Select **Yes** to require that user passwords contain at least one punctuation character. The Punctuation Characters field lists the symbols considered punctuation characters.
Must Contain At Least One Upper Case Character	Select **Yes** to require that user passwords contain at least one uppercase alphabetic character.
Must Contain At Least One Lower Case Character	Select **Yes** to require that passwords for users contain at least one lowercase alphabetic character.
Must Not Contain Username	Select **Yes** to prevent user passwords from containing the username, regardless of case.
Must Not Contain Workspace Name.	Select **Yes** to prevent user passwords from containing the workspace name, regardless of case.
Must Not Contain	Enter words, separated by colons, that may not be included in user passwords. These words may not appear in the password in any combination of uppercase or lowercase. This feature improves security by preventing the creation of some simple, easy-to-guess passwords based on words like hello, guest, welcome, and so on.
Alphabetic Characters	Enter new text or edit the existing text. This is the set of characters used in password validations involving alphabetic characters.
Punctuation Characters	Enter new text or edit the existing text. This is the set of characters used in password validations involving punctuation characters.

Next, set up a password policy for service administrators.

5. Scroll down to the Service Administrator Password Policy and specify one of the following:
   a. **Use policy specified in Workspace Password Policy** - Applies the password rules specified above in Workspace Password Policy to service administrator passwords.

b. **Use default strong password policy** - Applies the default strong password policy to service administrator passwords. To learn more, see item Help.

6. Click **Apply Changes**.

Restricting Access to Oracle Application Express by Database Access Descriptor (DAD)

`mod_plsql` and the embedded PL/SQL gateway support a directive which enables you to name a PL/SQL function which will be called for each HTTP request. You can use this functionality to restrict the procedures that can be invoked through the embedded PL/SQL gateway or `mod_plsql`. The function returns `TRUE` if the named procedure in the current request is allowed and `FALSE` if it is not allowed. You can use this function to enforce access restrictions for Oracle Application Express on a per-database access descriptor (DAD) basis.

See Also: *Oracle Application Express Listener Installation Guide*

Oracle Application Express ships with a request validation function named `wwv_flow_epg_include_modules.authorize`. This function specifies access restrictions appropriate for the standard DAD configured for Oracle Application Express.

During installation, the installer also creates a PL/SQL function in the Oracle Application Express product schema (`APEX_040000`). You can change and recompile this function to restrict access. The source code for this function is not wrapped and can be found in the Oracle Application Express product core directory in the file named `wwv_flow_epg_include_local.sql`. The source code is as follows

```
CREATE OR REPLACE FUNCTION
wwv_flow_epg_include_mod_local(
    PROCEDURE_NAME IN VARCHAR2)
RETURN BOOLEAN
IS
BEGIN
    RETURN FALSE; -- remove this statement when
you add procedure names to the "IN" list
    IF UPPER(procedure_name) IN (
          '') THEN
        RETURN TRUE;
    ELSE
        RETURN FALSE;
    END IF;
END wwv_flow_epg_include_mod_local;
/
```

To add names of procedures that should be allowed:

1. Remove or comment out the `RETURN FALSE` statement that immediately follows the `BEGIN` statement:

```
...
BEGIN
    RETURN FALSE; -- remove this statement when
you add procedure names to the "IN" list
...
```

2. Add names to the clause representing procedure names that should be allowed to be invoked in HTTP requests. For example to allow procedures `PROC1` and `PROC2` the `IN` list you would write `IN ('PROC1', 'PROC2')`.

After changing the source code of this function, alter the Oracle Application Express product schema (APEX_040000) and compile the function in that schema.

To alter the product schema, APEX_040000

1. Log in to SQL Command Line (SQL*Plus) as SYS.
2. Alter the product schema (APEX_040000) by entering the following command:

   ```
   ALTER SESSION SET CURRENT_SCHEMA APEX_040000;
   ```

3. Compile the function wwv_flow_epg_include_local.sql.

The wwv_flow_epg_include_mod_local function is called by Oracle Application Express's request validation function which itself is called by the embedded PL/SQL gateway or mod_plsql. The Oracle Application Express function first evaluates the request and based on the procedure name, approves it, rejects it, or passes it to the local function, wwv_flow_epg_include_mod_local, which can evaluate the request using its own rules.

When you create new Database Access Descriptors for use with Oracle Application Express, the request validation function directive should be specified. Specifically, the function wwv_flow_epg_include_modules.authorize should be named in the directive PlsqlRequestValidationFunction in the Database Access Descriptor entry in dads.conf.

If you have no additional restrictions beyond those implemented in the wwv_flow_epg_include_modules.authorize function, there is no need to take any action with respect to the source code for the wwv_flow_epg_include_mod_local function.

The PL/SQL Request Validation Function directive is only available in Oracle Application Server 10g and Oracle HTTP Server 11g or later, as well as the embedded PL/SQL gateway in Oracle Database 11g or later. This directive is not available in Oracle HTTP Server Release 9.0.3.

Defining Authorized URLs

In previous releases of Oracle Application Express, developers can use a URL as an argument in Oracle Application Express procedures that redirect to the defined URL. Examples include APEX_UTIL.COUNT_CLICK (p_url parameter) and WWV_FLOW_CUSTOM_AUTH_STD.LOGOUT (p_next_url parameter).

Instance administrators can define a list of authorized URLs. When a URL is provided as an argument to these procedures, it is verified internally against this list.

To manage the Authorized URLs list:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Security**.
4. Click the **Authorized URLs** tab.
5. To add a new URL:
   a. Click **Create**.
   b. Authorized URL - Enter an authorized URL that can be used as the parameter value to certain Application Express procedures.

The entire authorized URL value will be compared with the URL parameter value in Oracle Application Express procedures. If there is an exact match up to and including the entire length of the Authorized URL value, then the URL parameter value will be permitted.

c. Description - Enter a description of the URL.

d. Click **Apply Changes**.

6. To edit an existing URL:

a. Click the **Edit** icon adjacent to the URL.

b. Edit the Authorized URL and Description fields.

c. Click **Apply Changes**.

7. To delete an existing URL:

a. Click the **Edit** icon adjacent to the URL.

b. Click **Delete**.

See Also: *Oracle Application Express API Reference*

Configuring Instance Settings

Instance settings control Oracle Application Express configuration and apply to all workspaces within the current Oracle Application Express instance.

Topics:

- Enabling Self Service Workspace Provisioning
- Disabling Email Provisioning
- Configuring Storage Settings
- Configuring Email
- Configuring Wallet Information
- Configuring Report Printing
- Configuring Workspace Size Options for Requests

See Also: "Creating Workspaces" on page 2-50

Enabling Self Service Workspace Provisioning

Use the Self Service section of the Instance Setting page to determine how the process of provisioning (or creating) a workspace works for your Oracle Application Express development instance.

In **Manual** provision mode, an Instance administrator creates new workspaces and notifies the Workspace administrator of the login information. In **Request** or **Email Verification** provision modes, users request workspaces directly in a self-service fashion. In this scenario, users use a link on the login page to access a request form. After the workspace request has been granted, users are automatically emailed the appropriate login information.

To specify a provisioning mode:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.

2. Click **Manage Instance**.
3. Under Instance Settings, click **Instance Settings**.
4. Under Self Service, select a provisioning status:
   - **Manual** - An Instance administrator manually creates new workspaces and notifies the Workspace administrator of the login information.
   - **Request** - Users request workspaces directly in a self-service fashion. Selecting this option displays a link on the Login page enabling users to request a workspace. When a user requests a workspace, each request is submitted to a queue for approval. When the request is approved, the user is sent an email containing login credentials (the workspace name, User ID, and password).
   - **Email Verification** - Works similar to **Request** except each user receives an initial email containing a verification link. Clicking this link validates the user's email address and then the request is processed. Then another email is sent to the user containing login credentials (that is, the workspace name, User ID, and password).
5. If you select **Request** or **Email Verification** in the previous step, enter a URL in Development Service URL (optional).

   The value you enter is used in the email when the request is approved. This setting defines the URL for the service. If this setting is not present, the URL is derived from your environment.
6. Click **Apply Changes**.

Note: To enable users to request a workspace using a link on the Login page, an Instance administrator must choose the provisioning status of **Request** or **Email Verification** as described in the previous procedure. If the provisioning status is set to **Manual**, no link appears on the login page.

See Also: "Disabling Email Provisioning" on page 2-27, "Configuring Email" on page 2-28, and "Managing Workspace and Change Requests" on page 2-7

Disabling Email Provisioning

Use Email Provisioning to disables workspace provisioning when provisioning with Email Verification. Use the Message field to display a message to the user that explains why email provisioning is disabled.

To disable email provisioning:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Instance Settings**.
4. From Email Provisioning, select **Disabled**.

   Selecting **Disabled** completely disables workspace provisioning when provisioning with Email Verification.
5. In Message, enter a message that explains why email provisioning is disabled.

6. Click **Apply Changes**.

Configuring Storage Settings

Instance administrators can require a new schema when user's request a new workspace or auto extend tablespaces.

Requiring a New Schema To require a new schema when creating a workspace:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Instance Settings**.
4. Scroll down to Storage.
5. From Require New Schema, select one of the following:
   - **Yes** - Requires users to request a new schema when they request a new workspace.
   - **No** - Enables users to select an existing schema when they request a new workspace.
6. Auto Extend Tablespaces, select **Yes** or **No**.
7. Click **Apply Changes**.

Enabling Auto Extend Tablespaces If Auto Extend Tablespaces is enabled, tablespaces provisioned with Oracle Application Expressare created with a data file that is one tenth the requested size. The data file will automatically extend up to the requested size. For example, if a user requests a 100 MB workspace, the initial size of the datafile will be 10 MB and it will automatically extend up to a maximum size of 100 MB.

To enable Auto Extend Tablespaces:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Instance Settings**.
4. Scroll down to Storage.
5. To enable Auto Extend Tablespaces, select **Yes**.
6. Click **Apply Changes**.

Configuring Email

To enable Oracle Application Express to send mail, an Instance administrator must configure email settings

Additionally, if you are running Oracle Application Express with Oracle Database 11*g* release 1 (11.1), you need to enable outbound mail. In Oracle Database 11*g* release 1 (11.1), the ability to interact with network services is disabled by default. For more information, see "Enabling Network Services in Oracle Database 11g" for your configuration scenario in *Oracle Application Express Installation Guide*.

Tip: You can configure Oracle Application Express to automatically email users their login credentials when a new workspace request has been approved. To learn more, see "Specifying a Provisioning Mode" on page 2-51.

Topics:

- Configuring Email in a Full Development Environment
- Configuring Email in a Runtime Environment
- Determining Email Settings in a Runtime Environment

See Also: "Managing the Mail Queue" on page 2-40 and "APEX_MAIL" in *Oracle Application Express API Reference*

Configuring Email in a Full Development Environment To configure Oracle Application Express to send mail in a full development environment:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services".
2. Click **Manage Instance**.
3. Under Instance Settings, click **Instance Settings**.
4. Under Email, enter the following:
   a. **SMTP Host Address** - Defines the server address of the SMTP server. By default on installation, this is set to `localhost`. If you are using another server as an SMTP relay, change this parameter to that server's address.
   b. **SMTP Host Port** - Defines the port the SMTP server listens to for mail requests. The default setting is 25.
   c. **Administration Email Address** - Defines the `from` address for administrative tasks that generate email, such as approving a provision request or resetting a password.
   d. **Notification Email Address** - Enter the email address to receive notification email messages for new workspace requests and change workspace requests. If not specified, no workspace request notification email messages is sent.
5. Click **Apply Changes**.

Configuring Email in a Runtime Environment To configure Oracle Application Express to send mail in a runtime environment:

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

     ```
     SYSTEM_DRIVE:\ sqlplus /nolog
     connect sys as sysdba
     ```

   - On UNIX and Linux:

     ```
     $ sqlplus /nolog
     connect sys as sysdba
     ```

   When prompted enter the appropriate password.
2. Run the following statement:

```
ALTER SESSION SET CURRENT_SCHEMA = APEX_040000
```

3. Run the following statement:

```
BEGIN
   APEX_INSTANCE_ADMIN.GET_PARAMETER(PARAMETER_NAME, PARAMETER_VALUE);
END;
```

For a description of email parameters, see Table 2–3.

Table 2–3 Email Parameters

Parameter Name	Description
SMTP_FROM	Defines the "from" address for administrative tasks that generate email, such as approving a provision request or resetting a password. Enter a valid email address, for example: someone@somewhere.com
SMTP_HOST_ADDRESS	Defines the server address of the SMTP server. If you are using another server as an SMTP relay, change this parameter to that server's address. Default setting: localhost
SMTP_HOST_PORT	Defines the port the SMTP server listens to for mail requests. Default setting: 25

See Also: "SET_PARAMETER Procedure" in *Oracle Application Express API Reference*

Determining Email Settings in a Runtime Environment To determine email settings in runtime environment:

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

```
SYSTEM_DRIVE:\ sqlplus /nolog
connect sys as sysdba
```

   - On UNIX and Linux:

```
$ sqlplus /nolog
connect sys as sysdba
```

   When prompted enter the appropriate password.
2. Run the following statement:

```
ALTER SESSION SET CURRENT_SCHEMA = APEX_040000
```

3. Run the following statement:

```
SELECT
APEX_INSTANCE_ADMIN.GET_PARAMETER(PARAMETER_NAME)
FROM DUAL;
```

For a description of email parameters, see Table 2–3 on page 2-30.

> **See Also:** "GET_PARAMETER Function" in *Oracle Application Express API Reference*

Configuring Wallet Information

Secure Sockets Layer (SSL) is an industry standard protocol that uses RSA public key cryptography in conjunction with symmetric key cryptography to provide authentication, encryption, and data integrity. When SSL is enabled, `https` displays in the URL.

If you call a SSL-enabled URL (for example, by invoking a Web service), or create a region of type URL that is SSL-enabled, you must create a wallet. A wallet is a password-protected container that stores authentication and signing credentials (including private keys, certificates, and trusted certificates) needed by SSL.

Topics:

- Creating a Wallet
- Configuring a Wallet in a Full Development Environment
- Configuring a Wallet in a Runtime Environment
- Determining Wallet Settings in a Runtime Environment

Creating a Wallet To create a wallet:

1. The database administrator must create a wallet on the Oracle Application Express database instance. See "Using Oracle Wallet Manager" in *Oracle Database Advanced Security Administrator's Guide*.
2. The Instance administrator configures the Wallet section of the Instance Settings page to specify the file system path to the wallet and the wallet password (if required).

> **See Also:** "Working with SSL Enabled Web Services" in *Oracle Application Express Application Builder User's Guide* and "Using Oracle Wallet Manager" in *Oracle Database Advanced Security Administrator's Guide*

Configuring a Wallet in a Full Development Environment To specify wallet settings in a full development environment:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Instance Settings**.
4. Scroll down to Wallet.
5. In Wallet, enter the path on the file system where the wallet is located using the following format:

   ```
   file:directory-path
   ```

6. If a password is required to open the wallet:
   a. Enter a password in the Wallet Password field.

b. Select **Check to confirm that you wish to change the wallet password**.

7. Click **Apply Changes**.

Configuring a Wallet in a Runtime Environment To specify wallet settings in a runtime environment:

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

   - On Windows:

     ```
     SYSTEM_DRIVE:\ sqlplus /nolog
     connect sys as sysdba
     ```

   - On UNIX and Linux:

     ```
     $ sqlplus /nolog
     connect sys as sysdba
     ```

   When prompted enter the appropriate password.

2. Run the following statement:

   ```
   ALTER SESSION SET CURRENT_SCHEMA = APEX_040000
   ```

3. Run the following statement:

   ```
   BEGIN
       APEX_INSTANCE_ADMIN.SET_PARAMETER(PARAMETER_NAME, PARAMETER_VALUE);
   END;
   ```

   For a description of wallet parameters, see Table 2–4 on page 2-32.

Table 2–4 Wallet Parameters

Parameter Name	Description
`WALLET_PATH`	The path to the wallet on the file system, for example: `file:/home/<username>/wallets`
`WALLET_PWD`	The password associated with the wallet.

> **See Also:** "SET_PARAMETER Procedure" in *Oracle Application Express Application Builder User's Guide*

Determining Wallet Settings in a Runtime Environment To determine wallet settings in a runtime environment:

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

   - On Windows:

     ```
     SYSTEM_DRIVE:\ sqlplus /nolog
     connect sys as sysdba
     ```

   - On UNIX and Linux:

     ```
     $ sqlplus /nolog
     connect sys as sysdba
     ```

   When prompted enter the appropriate password.

2. Run the following statement:

```
ALTER SESSION SET CURRENT_SCHEMA = APEX_040000
```

3. Run the following statement:

```
SELECT
APEX_INSTANCE_ADMIN.GET_PARAMETER(PARAMETER_NAME)
FROM DUAL;
```

For a description of wallet parameters, see Table 2–4 on page 2-32.

> **See Also:** "GET_PARAMETER Function" in *Oracle Application Express Application Builder User's Guide*

Configuring Report Printing

Oracle Application Express provides several features so that end users can download and print reports in various formats, including PDF. To set up this functionality, different users must configure the following printing settings:

1. **Site Level**: Instance administrators must specify the level of functionality (Standard or Advanced) for an entire Oracle Application Express instance, as described in this section.
2. **Application Level**: Workspace administrators and developers can define Report Queries and Report Layouts. Report Queries and Report Layouts are stored under Shared Components and are not tied to a specific page.
3. **Page/Region Level**: Developers can edit the Report regions on specific pages to enable printing. This, in turn, enables end users to print regions as reports in various formats. See "Configuring Classic Report Region Print Attributes" in *Oracle Application Express Application Builder User's Guide*.

> **Tip:** If you are running Oracle Application Express with Oracle Database 11*g* Release 1 (11.1), you must enable network services to use report printing. See "Enabling Network Services in Oracle Database 11g" for your configuration scenario in *Oracle Application Express Installation Guide*.

Topics:

- Configuring Report Printing in a Full Development Environment
- Configuring Report Printing Settings in a Runtime Environment
- Determining Report Printing Settings in a Runtime Environment

Configuring Report Printing in a Full Development Environment To configure the printing of reports in a full development environment:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Instance Settings**.
4. Scroll down to Report Printing:
5. For Printer Server:
   - **Standard** - This is the default setting. Standard Support enables you to print report regions and report queries using either the built-in templates provided

with Oracle Application Express or other XSL-FO compatible formats you provide. This setting does not support RTF (rich text format).

Standard provides declarative formatting of report regions and report queries with basic control over page attributes, including orientation, size, column heading formats, page header, and page footer.

– **Advanced (requires Oracle BI Publisher)** - This option requires a valid license of Oracle BI Publisher (also known as Oracle XML Publisher). Advanced Support provides you with all the capabilities of the Standard setting plus the ability to define RTF-based report layouts developed using the BI Publisher Word Template Builder.

See Also: *PDF Printing in Application Express* to learn more about installing and configuring Oracle BI Publisher. Go to:

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

6. For Print Server Protocol, select the protocol that the print server uses.
7. For Print Server Host Address, specify the host address of the print server engine.
8. For Print Server Port, define the port of the print server engine. By default, this is set to `8888` when the report server is installed.
9. For Print Server Script, define the script that is the print server engine. The default setting is:

```
/xmlpserver/convert
```

10. Click **Apply Changes**.

Configuring Report Printing Settings in a Runtime Environment To configure report printing settings in a runtime environment:

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

```
SYSTEM_DRIVE:\ sqlplus /nolog
connect sys as sysdba
```

   - On UNIX and Linux:

```
$ sqlplus /nolog
connect sys as sysdba
```

   When prompted enter the appropriate password.
2. Run the following statement:

```
ALTER SESSION SET CURRENT_SCHEMA = APEX_040000
```

3. Run the following statement:

```
BEGIN
    APEX_INSTANCE_ADMIN.SET_PARAMETER(PARAMETER_NAME, PARAMETER_VALUE);
END;
```

   For a description of available parameters, see Table 2–5.

Table 2–5 Report Printing Parameters in Runtime Environment

Parameter Name	Description
PRINT_BIB_LICENSED	Specify either standard support or advanced support. Advanced support requires an Oracle BI Publisher license. Valid values include: ■ STANDARD ■ ADVANCED
PRINT_SVR_PROTOCOL	Valid values include: ■ http ■ https
PRINT_SVR_HOST	Specifies the host address of the print server converting engine, for example, localhost. Enter the appropriate host address if the print server is installed at another location.
PRINT_SVR_PORT	Defines the port of the print server engine, for example 8888. Value must be a positive integer.
PRINT_SVR_SCRIPT	Defines the script that is the print server engine, for example: /xmlpserver/convert

See Also: "SET_PARAMETER Procedure" in *Oracle Application Express Application Builder User's Guide*

Determining Report Printing Settings in a Runtime Environment To determine report printing settings in a runtime environment:

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

   ■ On Windows:

   ```
   SYSTEM_DRIVE:\ sqlplus /nolog
   connect sys as sysdba
   ```

   ■ On UNIX and Linux:

   ```
   $ sqlplus /nolog
   connect sys as sysdba
   ```

   When prompted enter the appropriate password.

2. Run the following statement:

   ```
   ALTER SESSION SET CURRENT_SCHEMA = APEX_040000
   ```

3. Run the following statement:

   ```
   SELECT
   APEX_INSTANCE_ADMIN.GET_PARAMETER(PARAMETER_NAME)
   FROM DUAL;
   ```

   For a description of available parameters, see Table 2–5 on page 2-35.

See Also: "GET_PARAMETER Function" in *Oracle Application Express Application Builder User's Guide*

Configuring Workspace Size Options for Requests

Instance administrators can configure the workspace sizes available when users request:

- a new workspace and schema
- additional space for an existing workspace

To configure workspace size options:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Instance Settings**.
4. Scroll down to New Workspace Request Size and Workspace Change Request Size. Specify the following:
   - Size in Megabytes - Edit the default numbers to change the size options.
   - Display - Select **Yes** for all the size options you want to appear in the select list for workspace size.
   - Default - Select the default value to appear in the storage field for workspace and change requests.
5. Click **Apply Changes**.

See Also: "Enabling Auto Extend Tablespaces" on page 2-28

Purging Inactive Workspaces

Inactive workspaces consume valuable storage space and degrade system performance. By enabling Workspace Purge Settings, you can configure Oracle Application Express to purge inactive workspaces.

If a workspace is designated as inactive, a notification email is sent to each workspace administrator indicating that the workspace will be purged in a specific number of days. The workspace administrator can prevent the workspace from being purged by following an embedded link and following the online instructions.

See Also: "Configuring Email" on page 2-28, "Deleting Mail Log Entries" on page 2-43, "Sending Email from an Application" in *Oracle Application Express Application Builder User's Guide*

Configuring Workspace Purge Settings

To purge inactive workspaces:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Workspace Purge Settings**.

   The Workspace Purge Settings page appears.
4. From Enabled, select **Yes** to enable the workspace purge process. Select **No** to disable the workspace purge process.

5. From Language, select the language of the text of emails sent to workspace administrators of inactive workspaces. Note that only one language can be selected for each instance.
6. For Application Express Instance URL, enter the URL to the Oracle Application Express instance, inclusive of the DAD and trailing slash.
7. For Application Express Images URL, enter the URL to the Oracle Application Express images directory, inclusive of the trailing slash.
8. For Purge Administration Email Address, enter the email address (or From address) from which emails are sent to workspace administrators.
9. For Send Summary Email To, enter a list of email addresses separated by commas. Recipients will receive a daily email summary of the purge process.
10. For Days Until Purge, enter the number of days before a workspace is physically purged. For example, entering `10` means a workspace will be purged 10 days after it is added to the inactive list.
11. For Reminder Days in Advance, enter the number of days before the purge date to send a reminder email to workspace administrators. Reminder email criteria includes:
    - The workspace is on the inactive list
    - There has been no activity in the workspace
    - The workspace administrator has not chosen to follow the link in the email to prevent the workspace from being purged
12. For Days Inactive, enter the number of days of inactivity before a workspace is classified as inactive. Inactivity includes not logging into the workspace and the no runtime activity of any application in the workspace.
13. For Grace Period (Days), enter the number of days for the grace period. The grace period starts after workspace administrators click the link in the email to not have their workspace purged. If there is no activity during the grace period, the workspace will be added back to the list of inactive workspaces.
14. For Maximum Execution Time (Hours), enter the number limiting the number of hours that the purge process may execute per run of the workspace purge job.
15. For Maximum Number of Workspaces, enter the maximum number of workspaces to be purged per run of the workspace purge job.
16. For Maximum Number of Emails, enter the maximum number of reminder emails and workspace inactive emails to be send per run of the workspace purge job.
17. Click **Apply Changes**.

Managing Public Themes

Instance administrators manage the theme repository for an entire Oracle Application Express instance. Only an Instance administrators can add or delete a theme from the repository.

When you create a public theme, you add it to the theme repository. Public themes are available when you create an application or when you create a theme for an existing application.

Topics:

- Adding a Public Theme to the Theme Repository

- Deleting a Public Theme
- Modifying a Public Theme
- About Exporting a Public Theme

> **See Also:** "Managing Workspace Themes" in *Oracle Application Express Application Builder User's Guide*

Adding a Public Theme to the Theme Repository

To add a theme to the Theme repository:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Manage Shared Components, click **Public Themes**.

   The Public Themes page appears.
4. Select **Create**.
5. For Workspace, select a workspace and click **Next**.
6. For Application, select an application and click **Next**.
7. For Theme, select a theme and click **Next**.
8. For Name, specify the following:
   a. Theme Number - Enter a number that uniquely identifies a theme within a workspace.
   b. Theme Name - Enter a name for the workspace theme.
   c. Description - Enter a description.
   d. Click **Next**.
9. Click **Create Public Theme**.

Deleting a Public Theme

To delete a public theme:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Manage Shared Components, click **Public Themes**.

   The Public Themes page appears.
4. Select the theme to be deleted.
5. Click **Delete**.

Modifying a Public Theme

You cannot edit a public theme directly. To modify a public theme, you must create a new application using the theme, modify it, and then manually add it to the theme repository.

To modify a public theme:

1. Create an application using the theme you want to modify. See "Creating an Application" in *Oracle Application Express Application Builder User's Guide*.
2. Modify the theme. See "Editing a Theme" in *Oracle Application Express Application Builder User's Guide*.
3. Delete the existing public theme. See "Deleting a Public Theme" on page 38.
4. Add the modified theme to the theme repository. See "Adding a Public Theme to the Theme Repository" on page 2-38.

About Exporting a Public Theme

You export a theme in the same way you export any related application files. Exporting a public theme involves the following steps:

1. Create an application using the theme. See "Creating an Application" in *Oracle Application Express Application Builder User's Guide*.
2. Export the application. See "Exporting an Application" in *Oracle Application Express Application Builder User's Guide*.
3. Import the exported file into the target Oracle Application Express instance. See "Importing an Application or Page" in *Oracle Application Express Application Builder User's Guide*.
4. Install the exported file from the Export Repository. See "Installing Export Files" in *Oracle Application Express Application Builder User's Guide*.

Managing Session State

A session is a logical construct that is used to establish persistence (or stateful behavior) across page views. Each session is assigned a unique ID, which the Application Express engine uses to store and retrieve an application's working set of data (or session state) before and after each page view. An automatic process clears sessions older than 24 hours every eight hours. Instance administrators can also purge them manually.

An Instance administrator can view session state statistics and purge the session state on the Session State page.

Topics:

- Viewing Session Details Before Purging
- Purging Sessions by Age
- Viewing Session Statistics Before Purging

> **See Also:** "Managing Session State" in *Oracle Application Express Application Builder User's Guide*

Viewing Session Details Before Purging

Before purging sessions, Instance administrators can use the Recent Sessions page to first view a listing of recent sessions and then drill down on session details.

To purge sessions by age:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.

3. Under Manage Meta Data, click **Session State**.

   The Session State page appears.

4. Click **Recent Sessions, with drill down to session details**.

5. On the Recent Sessions page, you can:

   - Click a session number to view additional details.
   - Click **Purge Sessions** to delete the displayed sessions.

Purging Sessions by Age

Using the Purge Session page, Instance administrators can purge sessions by age.

To view specific session details:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.

2. Click **Manage Instance**.

3. Under Manage Meta Data, click **Session State**.

   The Session State page appears.

4. Click **Purge Sessions, by age**.

5. On the Purge Sessions page, specify:

   - The maximum number of sessions to be purged
   - The age of sessions to be purged

6. To view a report of session statistics, click **Count Sessions**.

7. To purge the selected sessions, click **Purge Sessions**.

Viewing Session Statistics Before Purging

On the Session State Statistics page, Instance administrators can view statistics about current sessions before purging.

To view session state statistics:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.

2. Click **Manage Instance**.

3. Under Manage Meta Data, click **Session State**.

   The Session State page appears.

4. Select **Session State Statistics**.

5. Click **Purge Sessions** to delete the current sessions.

Managing the Mail Queue

Instance administrators can manage email sent from applications by monitoring email messages in the mail queue and Mail Log.

To monitor messages in the mail queue:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.

2. Click **Manage Instance**.
3. Under Manage Meta Data, click **Mail Queue**.

   The Mail Queue page appears.
4. To send email messages, click **Send All Mail**.
5. To delete email messages, select the messages to be deleted and click **Delete**.

> **See Also:** "Configuring Email" on page 2-28, "Deleting Mail Log Entries" on page 2-43, "Sending Email from an Application" in *Oracle Application Express Application Builder User's Guide*

Managing Logs

Instance administrators can delete log entries.

Topics:

- Deleting SQL Workshop Logs
- Deleting Page View Activity Log Entries
- Deleting Developer Activity Log Entries
- Deleting Click Counting Log Entries
- Deleting Mail Log Entries
- Deleting the Login Access Log

Deleting SQL Workshop Logs

The SQL Workshop logs maintain a history of recent commands and scripts run in the SQL Commands

To delete log files entries:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Manage Logs and Files, click **SQL Workshop logs**.
4. Click one of the following:
   - **Script File executions log entries**
   - **SQL Command Processor history entries**
5. On the Clean up Logs page:
   - To delete entries by age, specify the age of the entries to be deleted and click **Delete Entries**.
   - To delete all entries, click **Truncate Log**.

> **See Also:** "Accessing a Command from Command History"in *Oracle Application Express SQL Workshop Guide*

Deleting Page View Activity Log Entries

Page view activity logs track user activity for an application. Developers enable logging within their application using the Logging attribute on the Edit Application Definition page.

> **See Also:** "Editing the Application Definition" in *Oracle Application Express Application Builder User's Guide*

The Application Express engine uses two logs to track user activity. At any given time, one log is designated as current. For each rendered page view, the Application Express engine inserts one row into the log file. A log switch occurs at the interval listed on the Page View Activity Logs page. At that point, the Application Express engine removes all entries in the noncurrent log and designates it as current.

To truncate the activity logs manually:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Manage Logs and Files, click **Page View Activity Logs, with option to truncate**.

   The Page View Activity Logs page appears.
4. Click **Truncate Logs**.
5. Click either **Truncate Log 1** or **Truncate Log 2**.

> **See Also:** "Viewing Workspace Dashboards" on page 1-38

Deleting Developer Activity Log Entries

The Developer Activity Log tracks changes to applications within an individual workspace. Log entries older than one month are automatically deleted.

To delete Developer Activity Log entries:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Under Manage Logs and Files, click **Developer Activity Logs, with option to delete entries**.

   The Developer Activity Log page appears.
4. On the Developer Activity Log page, click **Manage**.
5. Specify the age of the entries to be deleted and click **Delete Entries**.

> **See Also:** "About the Developer Activity Dashboard" on page 1-40 for information about the Developer Activity Log

Deleting Click Counting Log Entries

The External Clicks Log counts clicks from an Oracle Application Express application to an external site. You can implement this functionality using the `APEX_UTIL.COUNT_CLICK` procedure.

To delete click counting log entries:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.

3. Under Under Manage Logs and Files, click **External Click Counting Log, with option to truncate**.

   The External Click Counting Log page appears.

4. On the External Click Counting Log page, click **Manage**.

5. Specify the age of the entries to be deleted and click **Delete Entries**.

   See Also: "COUNT_CLICK Procedure" in *Oracle Application Express API Reference*

Deleting Mail Log Entries

The Oracle Application Express Mail Log records the message header information and send date of successfully sent mail message.

To truncate the mail log:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.

2. Click **Manage Instance**.

3. Under Under Manage Logs and Files, click **Mail Log**.

   The Mail Log page appears.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

4. On the Mail Log page, click **Truncate**.

   See Also: "Configuring Email" on page 2-28

Deleting the Login Access Log

This table records authentication events by developers and administrators accessing the Oracle Application Express environment and by end users of Oracle Application Express applications that use the built-in login APIs available to developers. Log entries are aged out of the log tables and purged periodically.

To truncate the Login Access log:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.

2. Click **Manage Instance**.

3. Under Under Manage Logs and Files, click **Login Access Log**.

   The Login Access Log page appears.

4. Click **Manage**.

5. On the Manage Login Access Log page, click **Delete Entries**.

Viewing Installed Translations

Instance administrators can view a page showing which translated languages have been installed within the current development instance.

To view the list of installed translations:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Manage Meta Data, click **Installed Translations**.

   The Installed Translations page appears. This page displays a list of languages and indicates if the translations have been loaded.

   See Also: "Managing Application Globalization" in *Oracle Application Express Application Builder User's Guide*

Managing a Runtime Environment

An Oracle Application Express runtime environment enables you to run production applications, but it does not provide a Web interface for administration. A runtime environment only includes the packages necessary to run your application, making it a more hardened environment.

You administer the Oracle Application Express runtime environment using SQL*Plus and the `APEX_INSTANCE_ADMIN` API. To learn more, see "APEX_INSTANCE_ADMIN" in *Oracle Application Express API Reference*.

Tip: Websheets are not supported in an Oracle Application Express runtime environment.

To install an exported application into a runtime installation, you must:

1. Export the workspace from the Application Express instance where the application was developed as described in "Exporting and Importing a Workspace" on page 2-66.
2. Use SQL*Plus to import your workspace in to the runtime environment:
   - Connect as `APEX_040000`, `SYS`, `SYSTEM`, or any schema to which the role `APEX_ADMINISTRATOR_ROLE` has been granted.
   - Run the workspace import file.

     If the workspace export file was created with a version of Oracle Application Express lower than 3.2, you must connect as `APEX_040000`.
3. Export and then import your application using SQL*Plus in to the runtime environment. See "Exporting an Application and Related Files" in *Oracle Application Express Application Builder User's Guide*.

   See Also: "Creating a Workspace Manually in a Runtime Environment" on page 2-53, "Managing Workspace to Schema Assignments" on page 2-58, "Removing a Schema Mapping from a Workspace in a Runtime Environment" on page 2-60, and "Deleting Workspaces in a Runtime Development Environment" on page 2-54

Managing Messages

Instance administrators can communicate with all users in an Oracle Application Express instance by creating login and system messages. Typically, administrators use a login message in conjunction with a system message to communicate with all system users, such as regarding privacy notices or access restrictions.

Topics:

- Defining a Login Message
- Defining a System Message
- Creating a Site-Specific Tasks List

Defining a Login Message

A login message displays on the Oracle Application Express login page. Instance administrators can create a login message using the Login Message section of the Messages page.

To create a login message:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Messages, click **Define Login Message**.
4. In Message, enter a message. The message can contain any text and can optionally include HTML formatting.
5. Click **Apply Changes**.

To disable a login message:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Messages, click **Define Login Message**.
4. For Login Message, select **No Message**.
5. Click **Apply Changes**.

Defining a System Message

System messages display on the Workspace home page, Application Builder home page, Application home page, SQL Workshop home page, and the Oracle Application Express Utilities page.

Instance administrators can create a system message using the System Message section of the Messages page.

> **Tip:** You can also access the Set System Message page by clicking **Edit System Message** icon on the Instance Administration home page.

Create a System Message To create a system message:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Messages, click **Define System Message**.
4. For System Message, select **Custom Message**.
5. In Message, enter a message. The message can contain any text and can optionally include HTML formatting.

6. Click **Apply Changes**.

Disable a System Message To disable a system message:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Messages, click **Define System Message**.
4. For System Message, select **No Message**.
5. Click **Apply Changes**.

Creating a Site-Specific Tasks List

The Site-Specific Tasks list is a list of links that appears on the Workspace home page or login page. If links are defined, a Site-Specific Tasks region appears. If no Site-Specific Tasks are defined, the region does not display. This feature enables Instance administrators to customize the Workspace home page for an entire development instance. Typical uses for the Site-Specific Tasks list include links to training, discussion forums, and user feedback applications.

Topics:

- Adding a New Task
- Editing an Existing Task
- Deleting a Task

Adding a New Task To add a new task to a Site-Specific Tasks list:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Messages, click **Site-Specific Tasks**.

   The Site-Specific Tasks page appears.
4. To create a new link, click **Create**.
5. On the Create/Edit Site-Specific Tasks page, you can specify the following:
   a. **Display Sequence** - Indicate the relative order of this task within the list.
   b. **Display Location** - Indicate the page on which the task should display (that is, the Workspace Login page or Workspace home page).
   c. **Task Name** - Enter a name for this task.
   d. **Tasks Link** - Enter the link target for this task using either a relative URL (for example, using `f?p` syntax) or an absolute URL (such as `http://otn.oracle.com`).
   e. **Displayed** - Select **Yes** to display the task link.
6. Click **Create**.

> **See Also:** "Using f?p Syntax to Link Pages" in *Oracle Application Express Application Builder User's Guide*

Editing an Existing Task To edit an existing task:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Messages, click **Site-Specific Tasks**.

   The Site-Specific Tasks page appears.
4. Select the task name.
5. On the Create/Edit Site-Specific Tasks page, edit the appropriate attributes.
6. Click **Apply Changes**.

Deleting a Task To delete an existing task:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Messages, click **Site-Specific Tasks**.

   The Site-Specific Tasks page appears.
4. Select the task name.
5. Click **Delete**.

Managing Schemas

This section describes how to manage the schemas within an Oracle Application Express instance.

Topics:

- Determining the Oracle Application Express Engine Schema
- Understanding Oracle Default Schema Restrictions

> **See Also:** "Viewing the Parsing Schemas Report" on page 2-68 and "Managing Workspace to Schema Assignments" on page 2-58

Determining the Oracle Application Express Engine Schema

A schema is a logical container for the database objects. Instance administrators may need to perform certain actions within the Application Express engine schema. For example, in order for an Instance administrator to have the ability to assign Oracle default schemas, the database administrator (DBA) must explicitly grant the privilege by running the `APEX_SITE_ADMIN.UNRESTRICT_SCHEMA` procedure within the Application Express engine.

> **See Also:** "Understanding Oracle Default Schema Restrictions" on page 2-48 for information about the `APEX_SITE_ADMIN.UNRESTRICT_SCHEMA` procedure

To determine the current Application Express engine schema for your Oracle Application Express instance:

1. Use SQL*Plus to connect to the database.
2. Run the following query in a schema with DBA privileges (for example, `SYSTEM`).

```
SELECT DISTINCT TABLE_OWNER FROM all_synonyms
WHERE SYNONYM_NAME = 'WWV_FLOW' and OWNER = 'PUBLIC'
```

Understanding Oracle Default Schema Restrictions

When Oracle Application Express installs, the Instance administrator does not have the ability to assign Oracle default schemas to workspaces. Default schemas such as SYS, SYSTEM, and RMAN are reserved by Oracle for various product features and for internal use. Access to a default schema can be a very powerful privilege. For example, a workspace with access to the default schema SYSTEM can run applications that parse as the SYSTEM user.

In order for an Instance administrator to have the ability to assign most Oracle default schemas to workspaces, the database administrator (DBA) must explicitly grant the privilege using SQL*Plus to run a procedure within the APEX_ SITE_ADMIN_PRIVS package. Note, however, that beginning with Oracle Application Express release 3.1, the SYS and SYSTEM schemas may no longer be used by workspaces as parsing schemas.

Note: All schema and workspace names used as arguments to procedures in the APEX_SITE_ADMIN_PRIVS package are used exactly as they are provided by the caller.

For example, if you pass an argument value such as p_schema =>'system', the lower-case schema name 'system' will be recorded and referenced. This example could return unexpected results if you really meant to reference the common schema name SYSTEM, which would be referenced using upper case.

Topics:

- Granting the Privilege to Assign Oracle Default Schemas
- Revoking the Privilege to Assign Oracle Default Schemas
- Working with Restricted Schemas
- Determining the Privilege Status

Granting the Privilege to Assign Oracle Default Schemas

The DBA can grant an Instance administrator the ability to assign Oracle schemas to workspaces by using SQL*Plus to run the APEX_SITE_ADMIN_PRIVS.UNRESTRICT_SCHEMA procedure from within the Application Express engine schema. For example:

```
EXEC APEX_040000.APEX_SITE_ADMIN_PRIVS.UNRESTRICT_SCHEMA(p_schema => 'RMAN');
COMMIT;
```

This example would enable the Instance administrator to assign the RMAN schema to any workspace.

> **See Also:** "Determining the Oracle Application Express Engine Schema" on page 2-47

Revoking the Privilege to Assign Oracle Default Schemas

The DBA can revoke this privilege using SQL*Plus to run the APEX_SITE_ADMIN_PRIVS.RESTRICT_SCHEMA procedure from within the Application Express engine schema. For example:

```
EXEC APEX_040000.APEX_SITE_ADMIN_PRIVS.RESTRICT_SCHEMA(p_schema => 'RMAN');
COMMIT;
```

This example would prevent the Instance administrator from assigning the RMAN schema to any workspace. It does not, however, prevent workspaces that have already had the RMAN schema assigned to them from using the RMAN schema.

> **See Also:** "Determining the Oracle Application Express Engine Schema" on page 2-47

Working with Restricted Schemas

If a schema has been designated as restricted using the RESTRICT_SCHEMA procedure, the DBA can designate specific workspaces as exceptions by running the APEX_SITE_ADMIN_PRIVS.CREATE_EXCEPTION procedure. For example:

```
EXEC APEX_040000.APEX_SITE_ADMIN_PRIVS.CREATE_EXCEPTION(p_schema => 'RMAN', p_
workspace=> 'DBA_WORKSPACE');
EXEC APEX_040000.APEX_SITE_ADMIN_PRIVS.CREATE_EXCEPTION(p_schema => 'RMAN', p_
workspace  => 'AUDITOR_WORKSPACE');
COMMIT;
```

This example would prevent the Instance administrator from assigning the RMAN schema to the workspace named AUDITOR_WORKSPACE. However this restriction only applies to workspace provisioning requests processed after the REMOVE_EXCEPTION procedure has been run. If the AUDITOR_WORKSPACE already had the RMAN schema assigned to it, this method would not prevent that workspace from continuing to use the schema.

Removing Workspace Exceptions for a Schema The DBA can remove all workspace exceptions for a schema by using SQL*Plus to run the APEX_SITE_ADMIN_PRIVS.REMOVE_WORKSPACE_EXCEPTIONS procedure from within the Application Express engine schema. For example:

```
EXEC APEX_040000.APEX_SITE_ADMIN_PRIVS.REMOVE_WORKSPACE_EXCEPTIONS(p_schema =>
'RMAN');
COMMIT;
```

This example would prevent the Instance administrator from assigning the RMAN schema to any workspaces if the RMAN schema were already restricted, but had one or more exceptions previously created for it.

Removing Schema Exceptions for a Workspace The DBA can remove all schema exceptions for a workspace by using SQL*Plus to run the REMOVE_SCHEMA_EXCEPTIONS procedure from within the Application Express engine schema. For example:

```
EXEC APEX_040000.APEX_SITE_ADMIN_PRIVS.REMOVE_WORKSPACE_EXCEPTIONS(p_workspace =>
'AUDITOR_WORKSPACE');
COMMIT;
```

This example would prevent the Instance administrator from assigning any restricted schemas to the workspace named AUDITOR_WORKSPACE if that workspace had exceptions previously created for it with respect to any restricted schemas.

Determining the Privilege Status

The DBA can determine the current status of the privilege by using SQL*Plus to run the `APEX_SITE_ADMIN_PRIVS.REPORT` procedure. For example:

```
SET SERVEROUTPUT ON
EXEC APEX_040000.APEX_SITE_ADMIN_PRIVS.REPORT;
```

This example would display the text of a query that dumps the tables that defines the schema and workspace restrictions.

```
SELECT a.schema "SCHEMA",b.workspace_name "WORKSPACE" FROM WWV_FLOW_RESTRICTED_
SCHEMAS a, WWV_FLOW_RSCHEMA_EXCEPTIONS b WHERE b.schema_id (+)= a.id;
```

When reviewing the output of this query, remember the following:

- A schema name in the SCHEMA column indicates that the schema is restricted.
- Schemas that are not listed are not restricted and may be assigned to any workspace.
- A workspace name next to a schema name means that an exception exists for the schema for the named workspace.

You can run this query in SQL*Plus as shown above, or you can change it and format the output.

Creating Workspaces

When users log in to Oracle Application Express, they log in to a shared work area called a **workspace**. A workspace is a virtual private database allowing multiple users to work within the same Oracle Application Express installation while keeping their objects, data and applications private. Each workspace has a unique numeric ID and name.

To make changes to their workspace, Workspace administrators submit change requests to an Instance administrator. Only an Instance administrator can approve change requests or provision new workspaces.

Topics:

- About Workspace Provisioning
- Specifying a Provisioning Mode
- Creating a Workspace Manually

> **See Also:** "Managing Workspace and Change Requests" on page 2-7 and "Managing Existing Workspaces" on page 2-53

About Workspace Provisioning

When an Instance administrator creates a new workspace with a new schema, a new tablespace and datafile are created for that schema. The datafile for the new tablespace is managed by Oracle-managed files if Oracle-managed files is enabled.

Using Oracle-managed files simplifies the administration of the Oracle database and eliminates the need for the database administrator (DBA) to directly manage the operating system files that comprise the database. Using Oracle-managed files, the DBA specifies operations in terms of database objects rather than file names. The datafile for the new tablespaces are named according to the Oracle-managed files

conventions. The placement of these files is determined by the database initialization parameter `DB_CREATE_FILE_DEST`.

If the Oracle-Managed Files is not enabled, the datafile is created in the same directory as the first datafile of the tablespace in which Oracle Application Express is installed.

> **See Also:** "Using Oracle Managed Files" in *Oracle Database Administrator's Guide*

Specifying a Provisioning Mode

The Instance administrator determines how the process of provisioning (or creating) a workspace works for a specific Oracle Application Express instance.

In **Manual** provision mode, an Instance administrator creates new workspaces and notifies the Workspace administrator of the login information. In **Request** or **Email Verification** provision modes, users request workspaces directly in a self-service fashion. In this scenario, users use a link on the login page to access a request form. After the workspace request has been granted, users are automatically emailed the appropriate login information.

To specify a provisioning mode:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Instance**.
3. Under Instance Settings, click **Instance Settings**.
4. Under Self Service, select a provisioning status:
   - **Manual** - An Instance administrator manually creates new workspaces and notifies the Workspace administrator of the login information.
   - **Request** - Users request workspaces directly in a self-service fashion. Selecting this option displays a link on the Login page enabling users to request a workspace. When a user requests a workspace, each request is submitted to a queue for approval. When the request is approved, the user is sent an email containing login credentials (the workspace name, User ID, and password).
   - **Email Verification** - Works similar to **Request** except each user receives an initial email containing a verification link. Clicking this link validates the user's email address and then the request is processed. Then another email is sent to the user containing login credentials (that is, the workspace name, User ID, and password).

     If you select Email Verification, you can disable workspace provisioning and send users a message:

     a. Locate the Email Provisioning section.

     b. From Email Provisioning, select **Disabled**.

     c. In the Message field, enter message that explains why email provisioning is disabled.
5. If you select **Request** or **Email Verification** in the previous step, enter a URL in Development Service URL (optional).

   The value you enter is used in the email when the request is approved. This setting defines the URL for the service. If this setting is not present, the URL is derived from your environment.

6. Click **Apply Changes**.

Note: To enable users to request a workspace using a link on the Login page, you must choose the provisioning status of **Request** or **Email Verification** as described in the previous procedure. If the provisioning status is set to **Manual**, no link appears on the login page.

See Also: "Configuring Email" on page 2-28 and "Managing Workspace and Change Requests" on page 2-7

Creating a Workspace Manually

Instance administrators can provision a workspace manually in either a full development environment or a runtime environment.

Topics:

- Creating Workspace Manually in a Full Development Environment
- Creating a Workspace Manually in a Runtime Environment

Creating Workspace Manually in a Full Development Environment

Instance administrators can provision a workspace manually by running the Create Workspace Wizard.

To create a workspace manually:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Actions, click **Create Workspace**.

   The Create Workspace Wizard appears.
4. For Identify Workspace, enter the following:
   a. Workspace Name - Enter a unique workspace name.
   b. Workspace ID - Leave Workspace ID blank to have the new Workspace ID automatically generated. A Workspace ID must be a positive integer greater than 100000.
   c. Workspace Description - Enter a workspace description.
   d. Click **Next**.
5. For Identify Workspace, enter a workspace name and description and click **Next**.
6. For Identify Schema, specify whether you are re-using an existing schema or creating a new one.

   If you are using an existing schema:

   a. For Re-use existing schema, select **Yes**.
   b. Select a schema from the list.
   c. Click **Next**.

   If you are creating a new schema:

a. For Re-use existing schema, select **No**.

b. Enter a schema name and password.

c. Specify a space quota.

d. Click **Next**.

7. For Identify Administrator, enter the Workspace administrator information and click **Next**.
8. Confirm your selections and click **Create Workspace**.

Creating a Workspace Manually in a Runtime Environment

To add a workspace in a runtime environment:

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

   - On Windows:

     ```
     SYSTEM_DRIVE:\ sqlplus /nolog
     connect sys as sysdba
     ```

   - On UNIX and Linux:

     ```
     $ sqlplus /nolog
     connect sys as sysdba
     ```

   When prompted enter the appropriate password.

2. Run the following statement:

   ```
   ALTER SESSION SET CURRENT_SCHEMA = APEX_040000
   ```

3. Run the following statement:

   ```
   BEGIN
   APEX_INSTANCE_ADMIN.ADD_WORKSPACE(WORKSPACE_ID,WORKSPACE_NAME, SCHEMA_NAME,
   SCHEMA_LIST)
   END;
   ```

   Where:

   - `WORKSPACE_ID` is the ID for the workspace. Auto-assigned if `NULL`.
   - `WORKSPACE_NAME` is the name of the workspace.
   - `SCHEMA_NAME` is the name of the primary schema to associate with the workspace.
   - `SCHEMA_LIST` is a colon delimited list of additional schemas to associate with the workspace.

Managing Existing Workspaces

This section describes how Instance administrators can manage existing workspaces within an Oracle Application Express instance.

Topics:

- Deleting a Workspace
- Locking a Workspace

- Managing Workspace to Schema Assignments
- Managing Component Availability
- Performing a Workspace Search
- Viewing Existing Workspaces
- Viewing and Emailing Workspace Details
- Viewing Workspace Database Privileges
- Viewing File Size and File Count by Workspace
- Exporting and Importing a Workspace
- Viewing Application Attributes
- Changing Application Build Status Set During Deployment
- Viewing the Parsing Schemas Report

> **See Also:** "Creating Workspaces" on page 2-50, "Managing Schemas" on page 2-47, "Managing Users in an Oracle Application Express Instance" on page 2-68, and "Monitoring Activity Across a Development Instance" on page 2-71

Deleting a Workspace

Deleting a workspace does not remove any of the associated database objects. To remove the associated schemas, a database administrator (DBA) must use a standard database administration tool, such as Oracle Enterprise Manager or SQL*Plus.

> **See Also:** *SQL*Plus User's Guide and Reference*, "Viewing and Emailing Workspace Details" on page 2-64, and "Creating Workspaces" on page 2-50

Topics:

- Deleting Workspaces in a Full Development Environment
- Deleting Workspaces in a Runtime Development Environment
- About Deleting Inactive Workspaces

Deleting Workspaces in a Full Development Environment

To delete a workspace in a full development environment:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Reports, click **Existing Workspaces**.
4. Under the Action column, click **Delete**.
5. Follow the on-screen instructions.

Deleting Workspaces in a Runtime Development Environment

To delete a workspace in a runtime development environment:

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

- On Windows:

```
SYSTEM_DRIVE:\ sqlplus /nolog
connect sys as sysdba
```

- On UNIX and Linux:

```
$ sqlplus /nolog
connect sys as sysdba
```

When prompted enter the appropriate password.

2. Run the following statement:

```
ALTER SESSION SET CURRENT_SCHEMA = APEX_040000
```

3. Run the following statement:

```
BEGIN
APEX_INSTANCE_ADMIN.REMOVE_WORKSPACE(WORKSPACE_NAME, DROP_USER, DROP_
TABLESPACE)
END;
```

Where:

- `WORKSPACE_NAME` is the name of the workspace.
- `DROP_USER` is either Y or N. The default is N.
- `DROP_TABLESPACE` is either `Y` or `N`. The default is `N`.

About Deleting Inactive Workspaces

If you are managing a large hosted Oracle Application Express instance, manually deleting inactive workspaces can free up resources for other users. The process of manually deleting inactive workspaces consists of the following steps:

1. Identify inactive workspaces.
2. Remove the resources associated with each inactive workspace.
3. Delete the inactive workspaces.

> **Tip:** 'If you wish to systematically purge inactive workspaces you should configure Workspace Purge settings. See "Purging Inactive Workspaces" on page 2-36.

Topics:

- Identifying Inactive Workspaces
- Viewing Workspaces with Only a Sample Application
- Removing the Resources Associated with Inactive Workspaces
- Deleting Inactive Workspaces

Identifying Inactive Workspaces The first step in determining if a workspace is inactive is to establish some basic rules. A common approach is to base the rules on the Oracle Application Express activity records found in the current Application Express engine schema.

> **See Also:** "Determining the Oracle Application Express Engine Schema"

The following DDL (data definition language) creates a table of all workspaces requested before June 28, 2004 but that have been inactive since June 10, 2004. In this example, inactivity is determined by checking a key within the Application Express engine schema for the most recent updates by each workspace.

```
ALTER SESSION SET CURRENT_SCHEMA = APEX_040000;
CREATE TABLE ws_to_purge AS
 SELECT c.security_group_id, c.company_name, c.admin_email, c.request_date,
 SYSDATE last_updated_on, 'Y' ok_to_delete
   FROM wwv_flow_provision_company c
  WHERE
c.request_date <= to_date('20040628','YYYYMMDD') AND
     (  not exists
 (SELECT NULL /* Activity Log */
        FROM wwv_flow_activity_log l
       WHERE l.security_group_id = c.security_group_id
         AND l.time_stamp > to_date('20040610','YYYYMMDD'))
 )
    AND NOT EXISTS
     (SELECT NULL /* workspace applications */
        FROM wwv_flows f
       WHERE f.security_group_id = c.security_group_id
         AND f.last_updated_on > to_date('20040610','YYYYMMDD'))
    AND NOT EXISTS
     (SELECT NULL /* Pages */
        FROM wwv_flow_steps s
       WHERE s.security_group_id = c.security_group_id
         AND s.last_updated_on > to_date('20040610','YYYYMMDD'))
    AND NOT EXISTS
     (SELECT NULL /* Regions */
        FROM wwv_flow_page_plugs p
       WHERE p.security_group_id = c.security_group_id
         AND p.last_updated_on > to_date('20040610','YYYYMMDD'))
    AND NOT EXISTS
     (SELECT NULL /* Items */
        FROM wwv_flow_step_items i
       WHERE i.security_group_id = c.security_group_id
         AND i.last_updated_on > to_date('20040610','YYYYMMDD'))
    AND NOT EXISTS
     (SELECT NULL /* Templates */
        FROM wwv_flow_templates t
       WHERE t.security_group_id = c.security_group_id
         AND t.last_updated_on > to_date('20040610','YYYYMMDD'))
    AND NOT EXISTS
     (SELECT NULL /* Files uploaded */
        FROM wwv_flow_file_objects$ o
       WHERE o.security_group_id = c.security_group_id
         AND o.created_on > to_date('20040610','YYYYMMDD'))
    AND NOT EXISTS
     (SELECT NULL /* SQL Workshop history */
        FROM wwv_flow_sw_sql_cmds s
       WHERE s.security_group_id = c.security_group_id
         AND s.created_on > to_date('20040610','YYYYMMDD'));
```

After you identify inactive workspaces, you can purge them. Purging inactive workspaces is a two-step process:

- First, remove the resources (that is, the database schemas, tablespaces, and data files) associated with each inactive workspace.
- Second, drop the inactive workspaces from Oracle Application Express.

Viewing Workspaces with Only a Sample Application Another way to identify potentially inactive workspaces is to view the Workspaces with Only Sample Application report.

To view a report or workspaces only containing only a sample application.

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Reports, click **Workspaces with Only Sample Application**.

   The Workspaces with Only Sample Applications page appears.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

Removing the Resources Associated with Inactive Workspaces After you have identified inactive workspaces in a single table, the next step is to remove them.

> **Note:** Before removing the schemas, tablespaces, or data files associated with inactive workspaces, make sure these resources are not being used in any other workspace or application.

To remove the resources associated with inactive workspaces:

1. Identify the schemas used by the workspaces to be deleted by joining the table containing the identified inactive workspaces to `wwv_flow_company_schemas.`
2. Drop the schemas, tablespaces, and data files used exclusively by the inactive workspaces from the database. You can identify the schemas to drop by running a query similar to the following:

```
SELECT s.schema
  FROM ws_to_purge ws,
       wwv_flow_company_schemas s
WHERE s.security_group_id = ws.security_group_id
   AND ws.ok_to_delete = 'Y';
```

Deleting Inactive Workspaces Once you remove the resources associated with an inactive workspace, you can delete the workspace. You can delete inactive workspaces manually using the Oracle Application Express Administration Services application. Or, you can delete them programmatically as shown in the following PL/SQL example.

```
BEGIN
     FOR c1 IN (SELECT security_group_id
                FROM ws_to_purge
                WHERE ok_to_delete = 'Y')
     LOOP
         WWV_FLOW_PROVISIONING.TERMINATE_SERVICE_BY_SGID(c1.security_group_id);
     END LOOP;
 END;
```

Locking a Workspace

Instance administrators can lock a workspace to address security or performance issues. Locking a workspace immediately locks all workspace administrator, developer and user accounts in the workspace. It also changes the status of all applications in the workspace to Unavailable.

> **Warning:** Locking a workspace makes it permanently inaccessible.

To lock a workspace:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Actions, click **Lock Workspace**.
4. For Workspace, select the workspace you want to lock and click **Next**.
5. Review the information about applications and users and click **Lock Workspace**.

Managing Workspace to Schema Assignments

When users log in to Oracle Application Express, they log in to a shared work area called a **workspace**. Each workspace can have multiple associated (or mapped) schemas. By associating a workspace with a schema, developers in that workspace can:

- Build applications that interact with the database objects in that schema.
- Create new database objects in that schema.

Topics:

- Viewing Schema and Workspace Assignments in a Development Environment
- Viewing Schema and Workspace Assignments in a Runtime Environment
- Editing Existing Schema and Workspace Assignments
- Associating Additional Schemas with a Workspace
- Removing a Schema Mapping from a Workspace in a Runtime Environment
- Creating a New Schema

> **See Also:** "Managing Schemas" on page 2-47 and "Viewing the Parsing Schemas Report" on page 2-68

Viewing Schema and Workspace Assignments in a Development Environment

Instance administrators can view the existing schema to workspace assignment on the Manage Workspace to Schema Assignments page.

To view the existing schema to workspace assignment:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Actions, click **Manage Workspace to Schema Assignments**.

   'The Manage Workspace to Schema Assignments page appears and lists all workspaces in your environment along with their associated schemas.

This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

Viewing Schema and Workspace Assignments in a Runtime Environment

To view the existing schema to workspace assignment in a runtime environment:

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

   - On Windows:

     ```
     SYSTEM_DRIVE:\ sqlplus /nolog
     connect sys as sysdba
     ```

   - On UNIX and Linux:

     ```
     $ sqlplus /nolog
     connect sys as sysdba
     ```

   When prompted enter the appropriate password.

2. Run the following statement:

   ```
   ALTER SESSION SET CURRENT_SCHEMA = APEX_040000
   ```

3. Run the following statement:

   ```
   SELECT APEX_INSTANCE_ADMIN.GET_SCHEMAS(WORKSPACE_NAME)
   FROM DUAL;
   ```

   Where `WORKSPACE_NAME` is the name of the workspace.

Editing Existing Schema and Workspace Assignments

To edit an existing schema and workspace assignment:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Manage Workspaces, click **Manage Workspace to Schema Assignments**.

   The Manage Workspace to Schema Assignments page appears.
4. To edit an existing workspace to schema assignment:
   a. Select the workspace name.

      The Edit Schema to Workspace Assignment page appears.
   b. Select a new workspace or schema.
   c. Click **Apply Changes**.

Associating Additional Schemas with a Workspace

Instance administrators can associate (or map) additional existing schemas to a workspace.

Associating Additional Schemas in a Full Development Environment To associate additional schemas with a workspace:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Actions, click **Manage Workspace to Schema Assignments**.

   The Manage Workspace to Schema Assignments page appears.
4. Click **Create**.

   The Add Schema wizard appears.
5. For New or Existing Schema, select **Existing** and click **Next**.
6. Follow the on-screen instructions to associate the existing schema to a workspace.
7. To verify that the new schema is added to the workspace:
   a. Log in to the workspace on Oracle Application Express.
   b. Review the Workspace Schemas list on the Workspace home page. The list shows all schemas currently associated with this workspace.

Associating Additional Schemas in a Runtime Environment To associate additional schemas with a workspace in a runtime environment:

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

     ```
     SYSTEM_DRIVE:\ sqlplus /nolog
     connect sys as sysdba
     ```

   - On UNIX and Linux:

     ```
     $ sqlplus /nolog
     connect sys as sysdba
     ```

   When prompted enter the appropriate password.
2. Run the following statement:

   ```
   ALTER SESSION SET CURRENT_SCHEMA = APEX_040000
   ```

3. Run the following statement:

   ```
   BEGIN
   APEX_INSTANCE_ADMIN.ADD_SCHEMA(WORKSPACE_NAME, SCHEMA_NAME)
   END;
   ```

   Where:
   - `WORKSPACE_NAME` is the name of the workspace.
   - `SCHEMA_NAME` is the name of the schema.

Removing a Schema Mapping from a Workspace in a Runtime Environment

To remove a schema mapping from a workspace in a runtime environment:

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

     ```
     SYSTEM_DRIVE:\ sqlplus /nolog
     ```

```
connect sys as sysdba
```

- On UNIX and Linux:

```
$ sqlplus /nolog
connect sys as sysdba
```

When prompted enter the appropriate password.

2. Run the following statement:

```
ALTER SESSION SET CURRENT_SCHEMA = APEX_040000
```

3. Run the following statement:

```
BEGIN
APEX_INSTANCE_ADMIN.REMOVE_SCHEMA(WORKSPACE_NAME, SCHEMA_NAME)
END;
```

Where:

- `WORKSPACE_NAME` is the name of the workspace.
- `SCHEMA_NAME` is the name of the schema.

Creating a New Schema

Instance administrators can create a new schema and associate it with a workspace.

To create a new schema for a workspace:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Actions, click **Manage Workspace to Schema Assignments**.

   The Manage Workspace to Schema Assignments page appears.
4. Click **Create**.

   The Add Schema wizard appears.
5. For New or Existing Schema, select **New** and click **Next**.
6. For Choose Workspace, select the workspace that you want to associate the new schema with and click **Next**.
7. For Identify Schema:
   a. Schema - Enter a unique name containing only letters.

      Tip: To verify that the new schema name is unique, open the select list and search for the name.

   b. Password - Enter a case-sensitive password.
   c. Default Tablespace - Identify the default tablespace that you want this schema to use.
   d. Temporary Tablespace - Identify the temporary tablespace you want this schema to use.
   e. Click **Next**.
8. Confirm the information and click **Add Schema**.

9. To verify that the new schema is added to the workspace:
   a. Log in to the workspace on Oracle Application Express.
   b. Review the Workspace Schemas list on the Workspace home page. The list shows all schemas associated with this workspace.

Managing Component Availability

Instance administrators can control which components are available within an Oracle Application Express instance. Configurable components include: Websheets, SQL Workshop, Application Builder, and Team Development.

To configure component availability:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Actions, click **Manage Component Availability**.

   The Component Availability page appears.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
4. Locate the workspace for which you wish to enable or disable components.
5. Click the **Edit** icon adjacent to the workspace name.

   The Workspace Settings page appears.
6. Under Workspace Settings, select **Yes** to enable a component or **No** to disable it. Options include:
   - Enable Application Builder
   - Enable SQL Workshop
   - Enable PL/SQL Editing in SQL Workshop
   - Enable Team Development
7. Click **Apply Changes**.

Defining a Workspace Message

You can display a message on the workspace home page by defining a Workspace Message.

To define a workspace message:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Actions, click **Manage Component Availability**.

   The Component Availability page appears.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
4. Locate the workspace for which you wish to define a workspace message.

5. Under Workspace Message, enter a message in the Message field. To format the display, include standard HTML tags.
6. Click **Apply Changes**.

Performing a Workspace Search

To perform a workspace search:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Under Workspace Tasks, click **Find a Workspace**.

   The Workspace Search page appears

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
3. To view workspace details, click the workspace name. See "About the Workspace Summary Report" on page 2-64.

Viewing Existing Workspaces

Use the Existing Workspaces page to view a report of existing workspaces, delete an existing workspace, or create a new workspace.

To view existing workspaces:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Reports, click **Existing Workspaces**.

   The Existing Workspaces page appears

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
4. To edit workspace information:
   a. Click the **Edit** icon.
   b. Edit the appropriate attributes.
   c. Click **Apply Changes**.
5. To view workspace details, click the workspace name. See "About the Workspace Summary Report" on page 2-64.

Viewing and Emailing Workspace Details

Instance administrators can view workspace information by viewing the Workspace Summary Report.

To view workspace details:

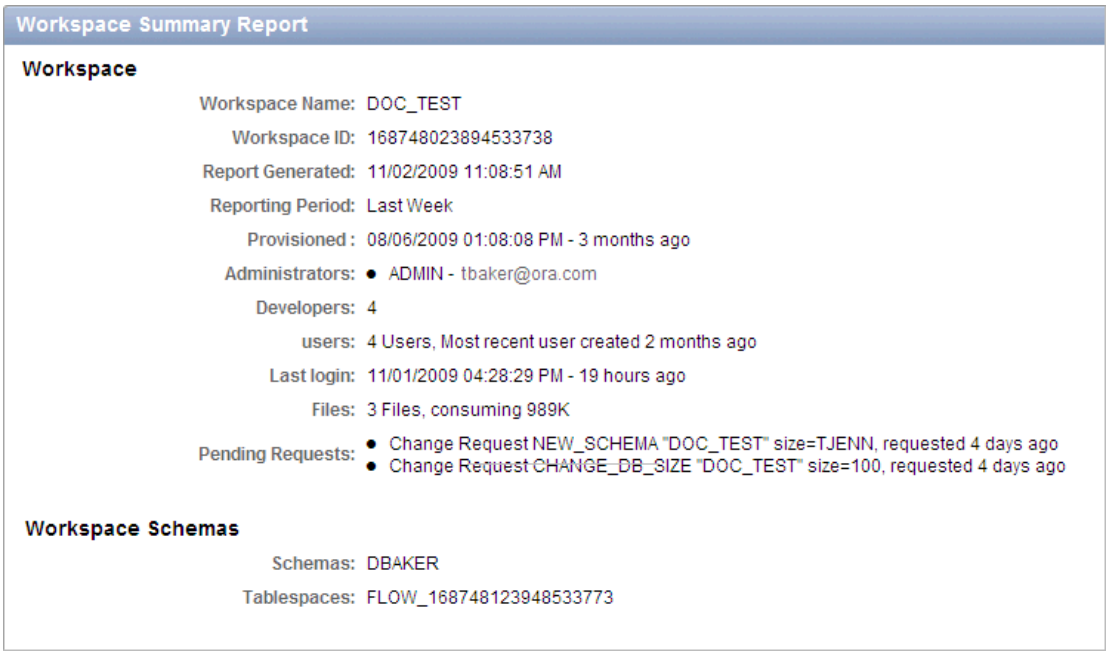
1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.

3. Under Workspace Reports, click **Workspace Details**.

   The Workspace Details page appears.

4. Make a selection from the Workspace list at the top of the page and click **Set**.

   The Workspace Summary Report page appears.



5. To email the report:

   a. Click **Email** at the top of the page.

   b. Edit the fields and click **Email**.

6. To mange users, click **Manage Users** at the top of the page. See "Managing Users in an Oracle Application Express Instance" on page 2-68.

About the Workspace Summary Report

The Workspace Summary Report is divided into the following major sections:

- **Workspace**. Displays high-level information about selected workspace.
- **Workspace Schemas**. Displays the schema name, and default tablespace, privileges granted, and database role privileges.

  When users log in to Oracle Application Express, they log in to a shared work area called a workspace. Each workspace can have multiple associated schemas. By associating a workspace with a schema, developers can build applications that interact with the objects in that schema and create new database objects in that schema. To edit workspace to schema assignments, click **Workspace to Schema Assignments**. See "Managing Schemas" on page 2-47.
- **Workspace Applications**. Lists details about the applications within the workspace.
- **Workspace Websheets**. Lists details about the websheets within the workspace.
- **SQL Workshop**. Lists the number of SQL scripts, SQL script results, and SQL Command history.

- **Team Development**. Lists the number of features, milestones, bugs, To Dos, feedback entries, news entries, and links.
- **Workspace Application Activity Summary**. Details statistics about workspace applications.

Other sections include:

- Developer Activity Summary
- Database Object Counts by Object Type
- 5 Top Tables by Row Count, Reported by Schema

Viewing Workspace Database Privileges

Instance administrators can view a summary of workspace database privileges on the Workspace Database Privileges page.

To view workspace database privileges:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Reports, click **Workspace Database Privileges**.

   The Workspace Database Privileges page appears.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
4. To view workspace details, click the workspace name.

   The Workspace Summary report appears. See "About the Workspace Summary Report" on page 2-64.

Viewing File Size and File Count by Workspace

To view total file size and file count by workspace:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Workspace Reports, click **Manage File Utilization**.

   The File Utilization by Workspace page appears.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

Exporting and Importing a Workspace

To move a workspace and all associated users to a new Oracle Application Express instance, an Instance administrator must export the workspace. When you export a workspace, Oracle Application Express generates a text file. This file contains information about your workspace, all the users in your workspace, and any groups in your workspace (if applicable). You can use this file to import your workspace into another Oracle Application Express instance.

Exporting a workspace and importing it into a new database instance enables developers to import application components. Therefore, to provide maximum capabilities Oracle recommends that when building new environments (for example, for production or testing) create these workspaces by importing the development workspaces.

Keep in mind, this method only imports workspace, users, and groups. This file does not contain:

- The schemas associated with this workspace or the objects in those schemas.
- Any applications, images, cascading style sheets, and static text files.

These items must be exported separately.

> **See Also:** "Deploying an Application" in *Oracle Application Express Application Builder User's Guide*

Topics:

- Exporting a Workspace
- Importing a Workspace

Exporting a Workspace

To export a workspace:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Export Import, click **Export Workspace**.
4. Select a workspace and then click **Export Workspace**.
5. To export the selected workspace, click **Save File**.
6. Follow the on-screen instructions.

Importing a Workspace

To import a workspace:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Export Import, click **Import Workspace**.
4. Click **Browse**, select a workspace export file, and click **Next**.
5. To install the workspace, click **Install**.
6. Follow the on-screen instructions.

Viewing Application Attributes

Instance administrators can view applications by workspace on the Application Attributes page.

To view the Application Attributes page:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Manage Applications, click **Application Attributes**.

   The Application Attributes page appears.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

Changing Application Build Status Set During Deployment

Every Oracle Application Express application has an application-level attribute called Build Status. You can use this attribute to prevent an application from being modified by other developers. Build Status has two settings:

- **Run and Build Application** - Developers can both run and edit an application.
- **Run Application Only** - Developers can only run an application.

Setting the Build Status to **Run Application Only** is an effective way to prevent other developers from modifying it.

You can change the Build Status of an application as follows:

- Developers and administrators can change the Build Status attribute on the Edit Application page. See "Availability" in *Oracle Application Express Application Builder User's Guide*.
- Workspace administrators can change the Build Status of applications within the current workspace on the Manage Application Build Status page. See "Changing Build Status for Multiple Applications" on page 1-34.
- Instance administrators can change the Build Status of an application on the Build Status page as described in the next section.

To change a Build Status as an Instance administrator:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Manage Applications, click **Build Status**.

   The Build Status page appears.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
4. Click the **Edit** icon adjacent to the appropriate application.

   The Edit Build Status page appears.
5. Select an alternate build status and click **Apply Changes**.

   Tip: Note that if you select **Build Application Only** during deployment, the only way to change this setting is change it on the Build Status page in Oracle Application Express Administration Services.

Viewing the Parsing Schemas Report

Instance administrators can use the Parsing Schemas report to identify the current parsing schema of each application in any workspace. This attribute identifies the Oracle database schema whose privileges are used when Application Express dynamically executes the application's SQL and PL/SQL code at runtime.

To view the Parsing Schemas report:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Manage Applications, click **Parsing Schemas**.

   The Parsing Schemas page appears.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.

> **See Also:** "Managing Schemas" on page 2-47 and "Managing Workspace to Schema Assignments" on page 2-58

Managing Users in an Oracle Application Express Instance

Instance administrators can manage all user accounts within an Oracle Application Express instance on the Manage Developers and Users page. User accounts are particularly useful if a workspace utilizes Application Express Authentication.

When setting up user accounts, Instance administrators can take advantage of some manageability attributes, such as allowing the accounts to be locked, their password to have a fixed lifetime, and their password to require change on first use.

> **See Also:**
>
> - "Workspace and Application Administration" on page 1-1
> - "Managing Application Express Users" on page 1-16
> - "Application Express Account Credentials" in *Oracle Application Express Application Builder User's Guide*

Topics:

- Creating New User Accounts
- Editing an Existing User Account
- Deleting User Accounts

Creating New User Accounts

To create a new user account:

> **Tip:** You can also access the Create/Edit User page by clicking **Create User** on the Workspace Tasks list on the Instance Administration home page.

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.

2. Click **Manage Workspaces**.
3. Under Manage Workspaces, click **Manage Developers and Users**.

   The Manage Developers and Users page appears.
4. Click **Create User**.

   The Create/Edit User page appears.
5. Under User Attributes, enter:
   a. **Username** - Enter the username used to log in to the system. Restrictions include:
      – Maximum length of 100 characters
      – No spaces
      – Only these special characters are permitted: amerpsand (@) and period (.)
   b. **Email Address** - Enter the valid email address for this user.
   c. **First Name** - Enter the first or given name to further identify the user (optional).
   d. **Last Name** - Enter the last or family name to further identify the user (optional).
   e. **Description** - Enter comments about this user (optional).
6. Under Account Privileges:
   a. **Workspace** - Select a workspace in which to create the user.
   b. **Default Schema** - Specify the default schema used for data browsing, application creation, and SQL script execution.
   c. **User is an administrator** - Specify if this user should have workspace administrator privileges.

      Administrators are given access to all components. Additionally, they can manage user accounts, groups, and development services. Components may not be available if they are switched off by Instance Administrators.
   d. **User is a developer** - Specify if this user should have developer privileges.

      Developers must have access to either Application Builder, SQL Workshop, or both. Components may not be available if they are switched off by Instance Administrators.
   e. **Application Builder Access** - Determines whether a developer has access to the Application Builder.
   f. **SQL Workshop Access** - Determines whether a developer has access to the SQL Workshop.
   g. **Team Development Access** - Determines whether a developer has access to the Team Development.
   h. **Account Availability** - Select **Locked** to prevent the account from being used. Select **Unlocked** to allow the account to be used.
7. Under Password:
   - **Password** - Enter a case sensitive password.
   - **Confirm Password** - Enter the password again.

- **Require Change of Password On First Use** - Select **No** to require this user to change his or her password at first log in. Select **Yes** to require the user to change the password immediately after logging in the first time.

8. Click **Create** or **Create and Create Another**.

Tip: An Instance administrator can configure these settings for an entire Oracle Application Express instance and define password complexity policies. See "Enabling Login Controls for All Workspaces" on page 2-21. "About Password Policies" on page 2-22, and "Configuring Password Policies" on page 2-22

Editing an Existing User Account

To edit an existing user account:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Manage Workspaces, click **Manage Developers and Users**.

   The Manage Developers and Users page appears.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
4. To edit account details, click the **Edit** icon adjacent to the user name.

   To learn more about a specific attribute, click the item label. When Help is available, the item label changes to red when you pass your cursor over it and the cursor changes to an arrow and question mark.
5. Make the appropriate changes.
6. Click **Apply Changes**.

See Also: "Creating New User Accounts" on page 2-69

Deleting User Accounts

To delete a user account:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Manage Workspaces**.
3. Under Manage Workspaces, click **Manage Developers and Users**.

   The Manage Developers and Users page appears.

   This page displays as an interactive report. To customize the report, use the Search bar at the top of the page. See "Customizing Interactive Reports" in *Oracle Application Express Application Builder User's Guide*.
4. Select a user.

   The Create/Edit User page appears.
5. Click **Delete User**.
6. Confirm your selection and click **OK**.

Monitoring Activity Across a Development Instance

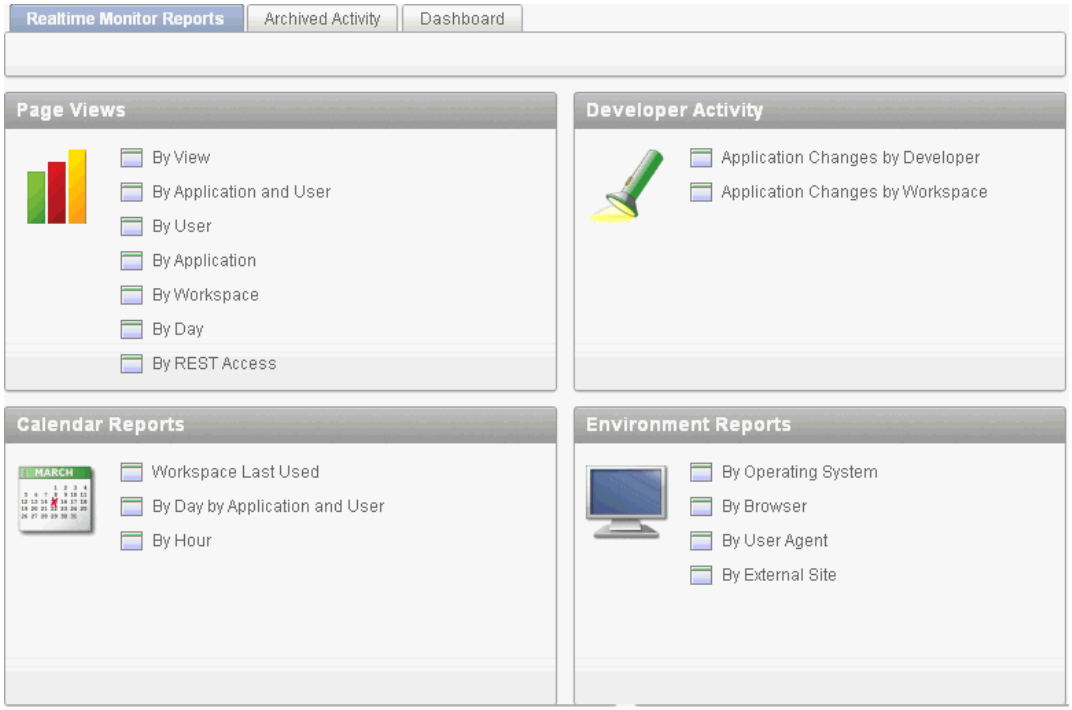
Instance administrators can monitor end user and developer activity for an Oracle Application Express instance on the Monitor Activity page.

See Also: "Viewing Workspace Dashboards" on page 1-38

To monitor activity:

1. Log in to Oracle Application Express Administration Services. See "Logging in to Oracle Application Express Administration Services" on page 2-5.
2. Click **Monitor Activity**.

   The Monitor Activity page appears.



   Use the links on this page to view reports on application, developer, and session activity across all workspaces.

3. To viewing archived activity, click the **Archived Activity** tab and follow the on-screen instructions.
4. To view the Dasboard, click the **Dashboard** tab.

See Also: "Viewing Workspace Dashboards" on page 1-38

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