

# **Oracle Application Express: Administration**

**Student Guide**

D56361GC10

Edition 1.0

June 2011

D73408

**ORACLE®**

**Author**

Salome Clement

**Technical Contributors and Reviewers**

Veerabhadra Rao Putrevu  
Manish Pawar  
Chaitanya Koratamaddi  
Terri Jennings  
Marcie Young  
Klaus Husermann  
Joel Kallman  
Wayne Abbott  
James Spiller  
Iloon Ellen  
Jason Straub  
Matthew Gregory

**Editors**

Malavika Jinka  
Smita Kommini  
Raj Kumar

**Graphic Designer**

Rajiv Chandrabhanu

**Publishers**

Revathi Ramamoorthy  
Srividya Rameshkumar

**Copyright © 2011, Oracle and/or its affiliates. All rights reserved.**

**Disclaimer**

This document contains proprietary information and is protected by copyright and other intellectual property laws. You may copy and print this document solely for your own use in an Oracle training course. The document may not be modified or altered in any way. Except where your use constitutes "fair use" under copyright law, you may not use, share, download, upload, copy, print, display, perform, reproduce, publish, license, post, transmit, or distribute this document in whole or in part without the express authorization of Oracle.

The information contained in this document is subject to change without notice. If you find any problems in the document, please report them in writing to: Oracle University, 500 Oracle Parkway, Redwood Shores, California 94065 USA. This document is not warranted to be error-free.

**Restricted Rights Notice**

If this documentation is delivered to the United States Government or anyone using the documentation on behalf of the United States Government, the following notice is applicable:

**U.S. GOVERNMENT RIGHTS**

The U.S. Government's rights to use, modify, reproduce, release, perform, display, or disclose these training materials are restricted by the terms of the applicable Oracle license agreement and/or the applicable U.S. Government contract.

**Trademark Notice**

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

## Contents

### Preface

#### 1 Course Overview

- Course Objectives 1-2
- Suggested Schedule 1-3
- Course Environment 1-4
- Accessing the labs Directory 1-5

#### 2 Introduction

- Objectives 2-2
- Agenda 2-3
- Pre-Quiz 2-4
- What Is Oracle Application Express? 2-6
- Applications Developed Using APEX 2-7
- Key Features 2-8
- History 2-9
- Architecture 2-10
- Functions of APEX Engine 2-11
- Web Server Options 2-12
- Deployment Options 2-14
- Quiz 2-15
- Agenda 2-16
- What Is a Workspace? 2-17
- What Is the Internal Workspace? 2-18
- Types of APEX Roles 2-19
- APEX Development Interface Components 2-21
- Quiz 2-22
- Agenda 2-23
- Database and Database Instance 2-24
- Accessing the Enterprise Manager Console 2-25
- Starting and Stopping an Instance 2-26
- Using the Terminal Window 2-27
- Summary 2-28
- Practice 2 Overview: Introduction 2-29

### **3 Installing Oracle Application Express**

Objectives 3-2

Agenda 3-3

Types of Installations 3-4

Installation Steps 3-5

Quiz 3-6

Agenda 3-7

Deciding Which Web Server to Use 3-8

Verifying Database Requirements 3-9

Verifying Browser Requirements 3-11

Verifying Disk Space Requirements 3-12

Verifying Oracle XDB Requirement 3-13

Verifying Oracle Text Requirement 3-14

Verifying PL/SQL Web Toolkit Requirement 3-15

Creating a Backup 3-16

Quiz 3-17

Agenda 3-18

Setting the Environment 3-19

Installing Full Development Environment 3-20

Installing Run-Time Environment 3-21

Reviewing the Installation Log 3-22

Verifying Installation Validity 3-23

Quiz 3-24

Agenda 3-25

Reviewing the Created Database Accounts 3-26

Setting Password for Admin User 3-27

Configuring the APEX\_PUBLIC\_USER 3-28

Enabling Network Services Process 3-29

Granting Connect Privileges to APEX\_040000 3-32

Granting APEX\_040000 Permission to Use Oracle Text URL Datastore 3-33

Managing JOB\_QUEUE\_PROCESSES 3-34

Quiz 3-35

Summary 3-36

Practice 3 Overview: Installing APEX 3-37

### **4 Installing and Configuring Oracle APEX Listener**

Objectives 4-2

Agenda 4-3

What Is Oracle APEX Listener? 4-4

Architecture 4-5

Installation Requirements 4-6

Supported Application Servers	4-7
Oracle WebLogic Server	4-8
WebLogic Server Users and Roles Required for APEX Listener	4-9
Installation Steps	4-10
Quiz	4-11
Agenda	4-12
Creating a WAR File for Application Express Images	4-13
Logging In to WebLogic Server Administration Console	4-15
Deploying WAR Files	4-16
Creating Administrator and Manager Users	4-18
Creating Admin and Manager Roles	4-20
Installing APEX Listener In Stand-Alone Mode	4-21
Quiz	4-23
Agenda	4-24
APEX Listener Administration URLs	4-25
APEX Listener Administration Interface	4-26
Creating a Database Connection	4-27
Troubleshooting: Images Not Appearing	4-29
Quiz	4-30
Agenda	4-31
Updating Configuration Information	4-32
Specifying Security for Procedures	4-33
Caching File-Based Content	4-35
Specifying Pre- and Post-Processing Procedures	4-36
Viewing Status Information	4-37
Viewing Options in the Miscellaneous Tab	4-38
Saving the Configuration	4-39
Quiz	4-40
Summary	4-41
Practice 4 Overview: Installing and Configuring APEX Listener	4-42

## 5 Creating Workspaces

Objectives	5-2
Agenda	5-3
Two Types of Administrators: A Recap	5-4
Logging In to Administration Services	5-5
Instance Administration Page	5-6
Manage Workspaces Page	5-7
Quiz	5-8
Agenda	5-9
Provisioning Modes	5-10

Setting the Provisioning Mode	5-11
Accessing the Create Workspace Wizard	5-12
Creating a Workspace Manually	5-13
Requesting a Workspace	5-14
Quiz	5-15
Agenda	5-16
Accessing the Manage Developers and Users Page	5-17
Creating a User	5-18
Setting Account Privileges	5-19
Editing/Deleting a User	5-20
Quiz	5-21
Agenda	5-22
Viewing Schemas Assigned to a Workspace	5-23
Adding Existing Schemas to a Workspace	5-24
Creating a New Schema for a Workspace	5-25
Editing Schema Assignments	5-26
Quiz	5-27
Agenda	5-28
Viewing Existing Workspaces	5-29
Viewing Database Privileges	5-30
Managing Component Availability	5-31
Deleting a Workspace	5-32
Locking a Workspace	5-33
Summary	5-35
Practice 5 Overview: Creating Workspaces, Users, and Schemas	5-36

## **6 Configuring Administration Services**

Objectives	6-2
Agenda	6-3
Accessing Email Configuration	6-4
Email Configuration Options	6-5
Configuring Report Printing	6-6
Configuring Storage Options	6-7
Configuring Workspace Size Options	6-8
Configuring Workspace Purge Settings	6-9
Quiz	6-11
Agenda	6-12
Accessing the Security Page	6-13
Setting Security Options	6-14
Specifying HTTPS Requirement	6-15
Setting Session Timeout	6-16

Defining Login Control Settings	6-17
Setting Workspace Password Policy	6-18
Setting Instance Administrator Password Policy	6-19
Creating Authorized URLs	6-20
Quiz	6-21
Agenda	6-22
Accessing the Feature Configuration Page	6-23
Configuring Application Development Features	6-24
Configuring SQL Workshop Features	6-25
Enabling Database Monitoring	6-26
Quiz	6-27
Summary	6-28
Practice 6 Overview: Configuring Administration Services	6-29

## 7 Administering a Workspace

Objectives	7-2
Lesson Agenda	7-3
Accessing the Workspace Administration Page	7-4
Access to Administrative Tasks	7-5
Viewing Product Information	7-6
Lesson Agenda	7-7
Manage Services Overview	7-8
Creating a Service Request	7-9
Setting Workspace Preferences	7-10
Creating Announcements	7-11
Viewing Workspace Utilization Reports	7-12
Lesson Agenda	7-13
Creating Workspace Users	7-14
Setting User Privileges	7-15
Creating Multiple Users	7-16
Editing User Details	7-17
Deleting Multiple Users	7-18
Creating a User Group	7-19
Assigning a User to a Group	7-20
Lesson Agenda	7-21
Monitoring Real Time Activity	7-22
Viewing an Activity Report	7-23
Monitoring Archived Activity	7-24
Quiz	7-25
Lesson Agenda	7-26
Viewing the Workspace Dashboard	7-27

Viewing the Users Dashboard 7-28  
Viewing the Database Dashboard 7-29  
About Other Dashboards 7-30  
Quiz 7-31  
Summary 7-32  
Practice 7: Overview Administering a Workspace 7-33

## **8 Administrating an APEX Instance**

Objectives 8-2  
Agenda 8-3  
Types of Requests 8-4  
Viewing Requests from the Administration Home Page 8-5  
Viewing Requests from the Manage Requests Page 8-6  
Editing Workspace Requests 8-7  
Approving Workspace Requests 8-8  
Changing Workspace Requests Status 8-9  
Deleting Workspace Requests 8-10  
Approving/Declining Change Requests 8-11  
Quiz 8-12  
Agenda 8-13  
What Is Session State? 8-14  
Viewing Session State Statistics 8-16  
Viewing Session State Detail 8-17  
Purging Session State 8-18  
Quiz 8-19  
Agenda 8-20  
Exporting a Workspace 8-21  
Importing a Workspace 8-22  
Agenda 8-23  
What Is a Public Theme? 8-24  
Creating a Public Theme 8-25  
Deleting/Editing a Public Theme 8-26  
Quiz 8-27  
Agenda 8-28  
Viewing Real-Time Reports 8-29  
Viewing Archived Activity 8-30  
Viewing Dashboards 8-31  
Quiz 8-32  
Agenda 8-33  
Creating a Login Message 8-34  
Creating a System Message 8-35

Creating a Site-Specific Tasks List 8-36  
Quiz 8-37  
Summary 8-38  
Practice 8 Overview: Administrating an APEX Instance 8-39

## **9 Using the APEX\_INSTANCE\_ADMIN API**

Objectives 9-2  
About the APEX\_INSTANCE\_ADMIN API 9-3  
Agenda 9-4  
Creating Workspaces 9-5  
Deleting Workspaces 9-6  
Agenda 9-7  
Viewing Schemas Assigned to a Workspace 9-8  
Adding a Schema to a Workspace 9-9  
Removing a Schema from a Workspace 9-10  
Agenda 9-11  
Retrieving/Setting Parameters 9-12  
Viewing Email Settings 9-13  
Configuring Email 9-14  
Viewing Report Printing Settings 9-15  
Configuring Report Printing 9-16  
Reversing HTTPS Requirement 9-17  
Enabling Administrator Login 9-18  
Quiz 9-19  
Summary 9-23  
Practice 9 Overview: Using the APEX\_INSTANCE\_ADMIN API 9-24

## **10 Key APEX Administration Tasks**

Objectives 10-2  
Agenda 10-3  
Handling New Workspace Requests with New Schema 10-4  
Handling New Workspace Requests with Existing Schema 10-5  
Handling Additional Schema Requests 10-6  
Handling Additional Storage Requests 10-7  
Handling Terminate Service Requests 10-8  
Handling Unlock Account Requests 10-9  
Handling Reset Password Requests 10-10  
Handling Invalid Credentials Errors 10-11  
Quiz 10-12  
Agenda 10-13  
Monitoring Performance 10-14  
Monitoring Long-Running Jobs 10-15

Detecting Database Lock Conflicts 10-16  
Monitoring Hot Tables 10-17  
Reviewing SGA Utilization 10-18  
Implementing SGA Pinning of Database Objects 10-19  
Monitoring Application Server Performance 10-20  
Quiz 10-21  
Agenda 10-22  
Reviewing the Database Alert Log 10-23  
Reviewing the Web Server Log 10-24  
Summary 10-25  
Practice 10 Overview: Key APEX Administration Tasks 10-26

## A Upgrading and Applying Patches

Objectives A-2  
Agenda A-3  
How Does Upgrade Differ from Installation: Steps to Perform A-4  
How Does Upgrade Differ from Installation: Process A-5  
Identifying the Existing Installation A-6  
Downloading and Extracting the Upgrade File A-7  
Preventing Access to Existing APEX A-8  
Backing Up the Database A-9  
Upgrading the Existing APEX Installation A-10  
Accessing APEX A-11  
Post-Installation Tasks A-12  
Agenda A-13  
What Is a Patch Release? A-14  
Pre-Installation Steps A-15  
Installing the Patch Release A-16  
Post-Installation Steps A-17  
Agenda A-18  
Redeploying the Application A-19  
Quiz A-20  
Summary A-21

## B Additional Resources

Application Express OTN Page B-2  
Oracle Learning Library B-4  
Documentation and Tutorials B-5  
Online Help B-6  
Learn More... B-7  
Oracle University Courses B-8

---

## Preface

---

THESE eKIT MATERIALS ARE FOR YOUR USE IN THIS CLASSROOM ONLY. COPYING eKIT MATERIALS FROM THIS COMPUTER IS STRICTLY PROHIBITED

Oracle University and Error : You are not a Valid Partner use only

## Profile

### Before You Begin This Course

Before you begin this course, you should have the following qualifications:

- ◆ Knowledge of *Oracle Database Administration*

### Prerequisites

- ◆ *Oracle Database Administration: Workshop I*

### How This Course Is Organized

*Oracle Application Express: Administration* is an instructor-led course featuring lectures and hands-on exercises. Online demonstrations and written practice sessions reinforce the concepts and skills introduced.

## Related Publications

### Oracle Publications

#### Title

*Oracle Application Express: Developing Web Applications*

*Oracle Application Express: Advanced Workshop*

### Additional Publications

- System release bulletins
- Installation and user's guides
- *read.me* files
- International Oracle User's Group (IOUG) articles
- *Oracle Magazine*

## Typographic Conventions

The following table lists the typographical conventions that are used in text and code.

### Typographic Conventions in Text

Convention	Object or Term	Example
Uppercase	Commands, functions, column names, table names, PL/SQL objects, schemas	Use the SELECT command to view information stored in the LAST_NAME column of the EMPLOYEES table.
Lowercase, italic	Filenames, syntax variables, usernames, passwords	<b>where:</b> <i>role</i> is the name of the role to be created.
Initial cap	Trigger and button names	Assign a When-Validate-Item trigger to the ORD block.  Select Cancel.
Italic	Books, names of courses and manuals, and emphasized words or phrases	For more information on the subject see <i>Oracle SQL Reference Manual</i>
Quotation marks	Lesson module titles referenced within a course	Do <i>not</i> save changes to the database.  This subject is covered in Lesson 3, “Working with Objects.”

## Typographic Conventions (continued)

### Typographic Conventions in Code

Convention	Object or Term	Example
Uppercase	Commands, functions	<code>SELECT employee_id FROM employees;</code>
Lowercase, italic	Syntax variables	<code>CREATE ROLE role;</code>
Initial cap	Forms triggers	<code>Form module: ORD Trigger level: S_ITEM.QUANTITY item Trigger name: When-Validate-Item . . .</code>
Lowercase	Column names, table names, filenames, PL/SQL objects	<code>. . . OG_ACTIVATE_LAYER (OG_GET_LAYER ('prod_pie_layer')) . . .  SELECT last_name FROM employees;</code>
Bold	Text that must be entered by a user	<code>CREATE USER scott IDENTIFIED BY tiger;</code>

# 1

## Course Overview

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Course Objectives

After completing this course, you should be able to:

- Install Oracle Application Express
- Install and configure Oracle APEX Listener
- Create and manage workspaces
- Configure Administration Services
- Administer an Application Express workspace
- Administer an Application Express instance



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Suggested Schedule

Day	Lessons
1	<ol style="list-style-type: none"><li>1. Course Overview</li><li>2. Introduction</li><li>3. Installing Oracle Application Express</li><li>4. Installing and Configuring Oracle APEX Listener</li><li>5. Creating Workspaces</li></ol>
2	<ol style="list-style-type: none"><li>6. Configuring Administration Services</li><li>7. Administrating a Workspace</li><li>8. Administering an APEX Instance</li><li>9. Using the APEX_INSTANCE_ADMIN API</li><li>10. Key APEX Administration Tasks</li></ol>
<b>Appendices</b>	
<ol style="list-style-type: none"><li>A. Upgrading and Applying Patches</li><li>B. Additional Resources</li></ol>	



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The suggested course agenda is displayed in the slide. Each lesson, except the Course Overview, will be followed by practice time.

# Course Environment

Operating System – Linux

Installed Products

- Oracle Database 11g R2
- Oracle WebLogic Server
- Oracle BI Publisher

Products You Will Install

- Oracle Application Express 4.0
- Oracle APEX Listener 1.1

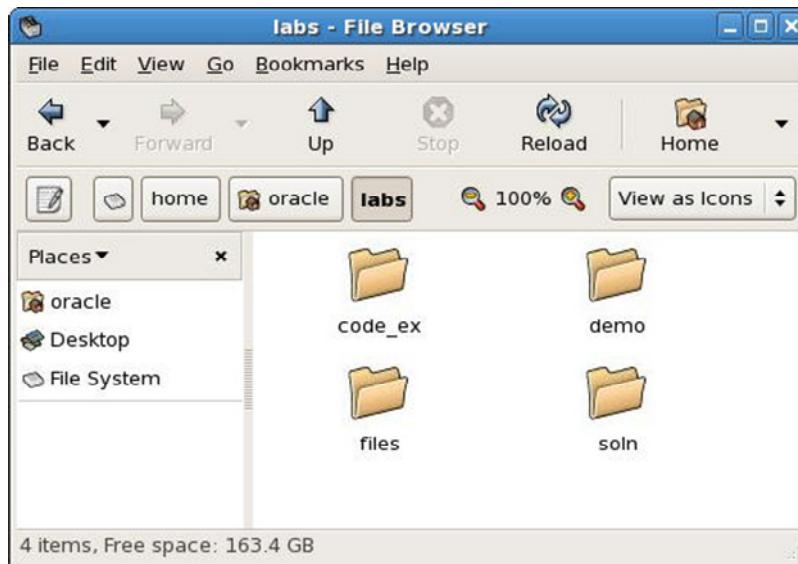


ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You will be assigned a student machine, which you can access using NX client. The machine configuration details are listed in the slide.

## Accessing the labs Directory

The Oracle logo, which consists of the word "ORACLE" in white capital letters on a red horizontal bar.

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

All the files required to complete the practices are available in the `labs` directory of the student machine assigned to you. To access the `labs` directory, click the Application Menu and select System Tools > File Browser. From the Oracle directory, open the `labs` folder. You will see four folders:

- **code\_ex**: This folder contains all the code examples used in the lesson slides and notes.
- **demo**: This folder contains the files used for demonstrations. Three short demonstrations created using Camtasia are also provided.
- **files**: This folder contains all the files you will need to complete the practices given at the end of each lesson. You can also use this location to save files while performing the practices, if required.
- **soln**: This folder contains all the solution scripts used in the activity guide.

THESE eKIT MATERIALS ARE FOR YOUR USE IN THIS CLASSROOM ONLY. COPYING eKIT MATERIALS FROM THIS COMPUTER IS STRICTLY PROHIBITED

Oracle University and Error : You are not a Valid Partner use only

# 2

## Introduction

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Objectives

After completing this lesson, you will be able to:

- Explain what Oracle Application Express is
- Describe the history and architecture of APEX
- Identify key concepts and terms related to APEX
- Identify the use of basic database administration and Linux commands



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

If you are already familiar with these concepts, this lesson will be a refresher for you.

**Note:** From here onwards, Oracle Application Express will be referred to as APEX.

# Agenda

- Product Overview
  - What Is Oracle Application Express?
  - Applications Developed Using APEX
  - Key Features
  - History
  - Architecture
  - Functions of the APEX Engine
  - Web Server Options
  - Deployment Options
- APEX Concepts and Terms
- Database Administration and Linux Review



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Pre-Quiz

Which of the following statements are true about APEX?

- a. It has a user-friendly development environment.
- b. It allows you to declaratively create web applications and their components.
- c. It has a self-contained architecture.
- d. It has a simple installation.
- e. All of the above.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: e**

## Pre-Quiz

APEX is an Oracle Database option that is available for download free of cost.

- a. True
- b. False



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a**

# What Is Oracle Application Express?

Oracle Application Express is a web application development, deployment, and maintenance tool.

The image contains two side-by-side screenshots of the Oracle Application Express interface. The left screenshot, titled 'APEX Administration Services Home Page', shows the 'Instance Administration' section with icons for Manage Requests, Manage Instance, Manage Workspaces, and Monitor Activity. It also displays a 'Pending Requests' section indicating the instance is in manual provisioning mode and a 'Workspace Summary' table with zero entries for Workspaces, Schemas, Applications, and Users. The right screenshot, titled 'APEX Development Interface Home Page', shows the 'Workspace ORA01' section with icons for Application Builder, SQL Workshop, Team Development, and Administration. It includes a 'News' section, a 'Top Applications' section, a 'Top Users' section showing 'nobody' (2) and 'ora01\_admin' (1), and a 'Team Development' section with various metrics like Features, Tickets, Milestones, Bugs, and Feedback.

**APEX Administration Services  
Home Page**

**APEX Development Interface  
Home Page**

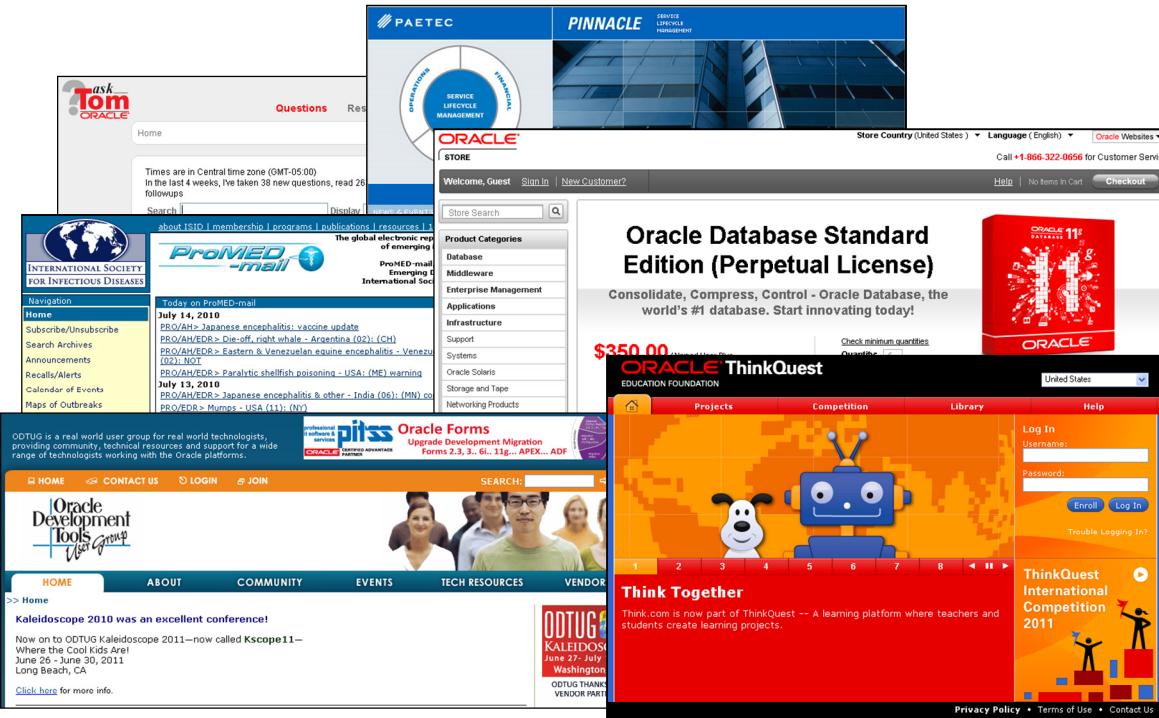


Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

APEX is a web-based development and deployment tool available with the Oracle Database. It enables users to create database-centric web applications that are reliable, scalable, and secure. It has a graphical, user-friendly interface, and includes a number of built-in features and wizards that quicken the development process. After it is installed, the only software required to create and run applications is a web browser and an Internet connection.

To administer the installed APEX instance, you need to log in to the APEX Administration Services. To develop applications and to administer a workspace, you need to log in to the APEX development interface. The home pages of both these applications are shown in the slide.

# Applications Developed Using APEX



ORACLE

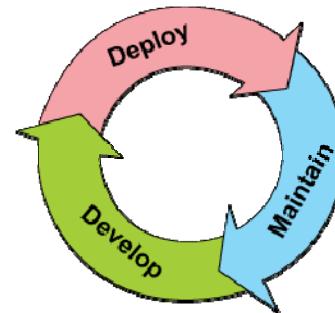
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The slide shows examples of some applications that have been developed using APEX.

**Fun fact: Application Express itself is developed using Application Express.**

## Key Features

- From a developer's perspective:
  - Allows rapid application development
  - Creates applications that are reliable, secure, and scalable
  - Offers a user-friendly development environment, with a short learning curve
  - Provides flexible look-and-feel options using themes and templates
  - Uses declarative programming
- From an administrator's perspective:
  - Simple installation, yet various options
  - Graphical interface to administer instance and workspace
  - Simple deployment of applications



ORACLE

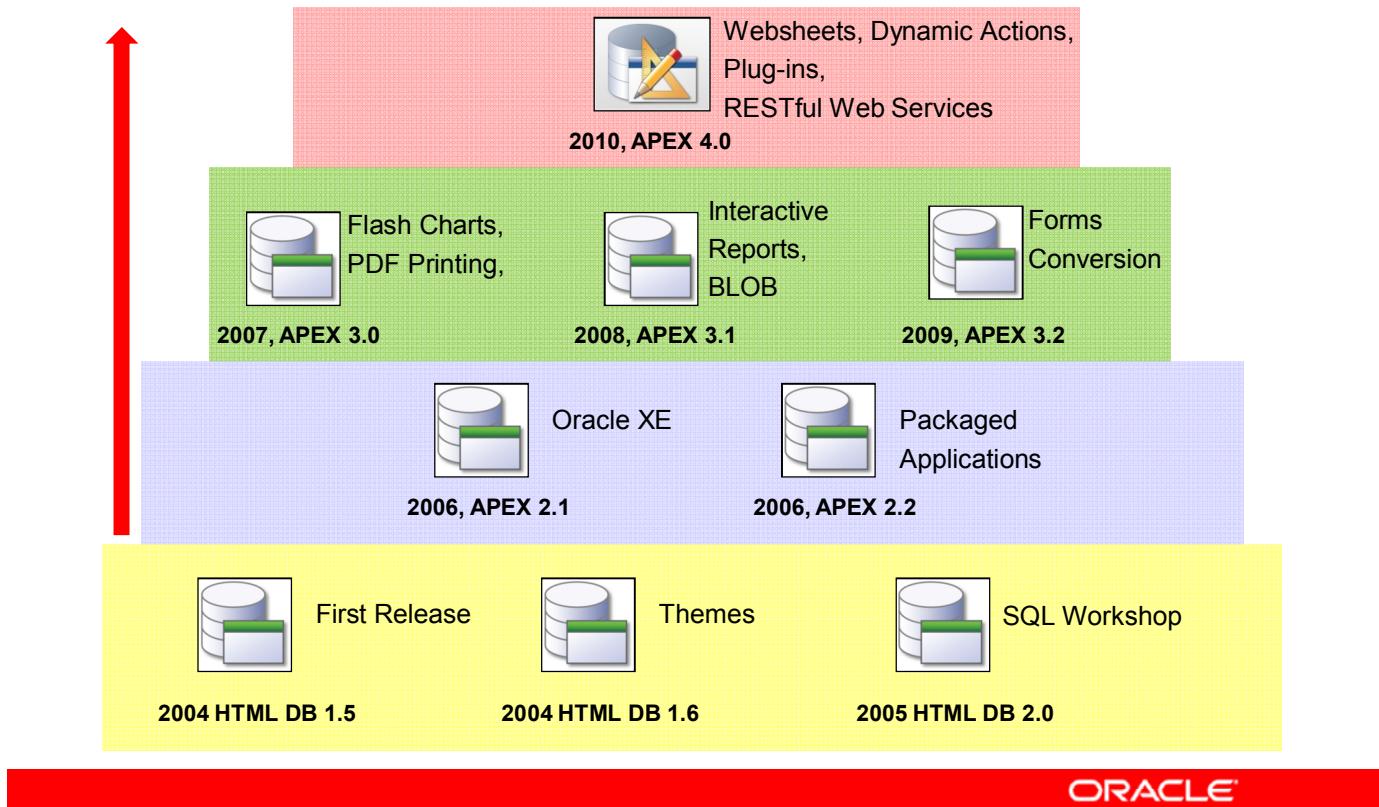
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Using APEX, you can develop web-based database-centric applications that are reliable and fast as well as secure and scalable. It has a user-friendly interface, which enables you to create and deploy applications in a short span of time. You can use the available themes and templates to provide a consistent look and feel across your webpages.

APEX uses a declarative framework for web application development. That means you specify what to do rather than how to do it. There is no code generated or compiled. You interact with wizards and property sheets to define your application. APEX enables organizations to capitalize on their existing investment in SQL and PL/SQL skills. Few programming skills are required and anyone can quickly learn to develop applications. Applications are built faster with fewer developers.

APEX has a flexible architecture that enables a single database to support thousands of applications. It has a simple and straightforward installation, while providing various options for configuring the PL/SQL interface. The entire development environment is centrally managed and administered by an administrator. APEX provides a graphical interface to perform the administrative tasks. The definition of an entire application can be easily packaged and exported for deployment and installation into another APEX instance.

# History



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Since 2004 when the product was first released as a supported component of the Oracle Database, there have been eight major releases. During the period 2004 – 2005, the product was called HTML DB. Before being released as HTML DB, the tool was internally called Project Marvel.

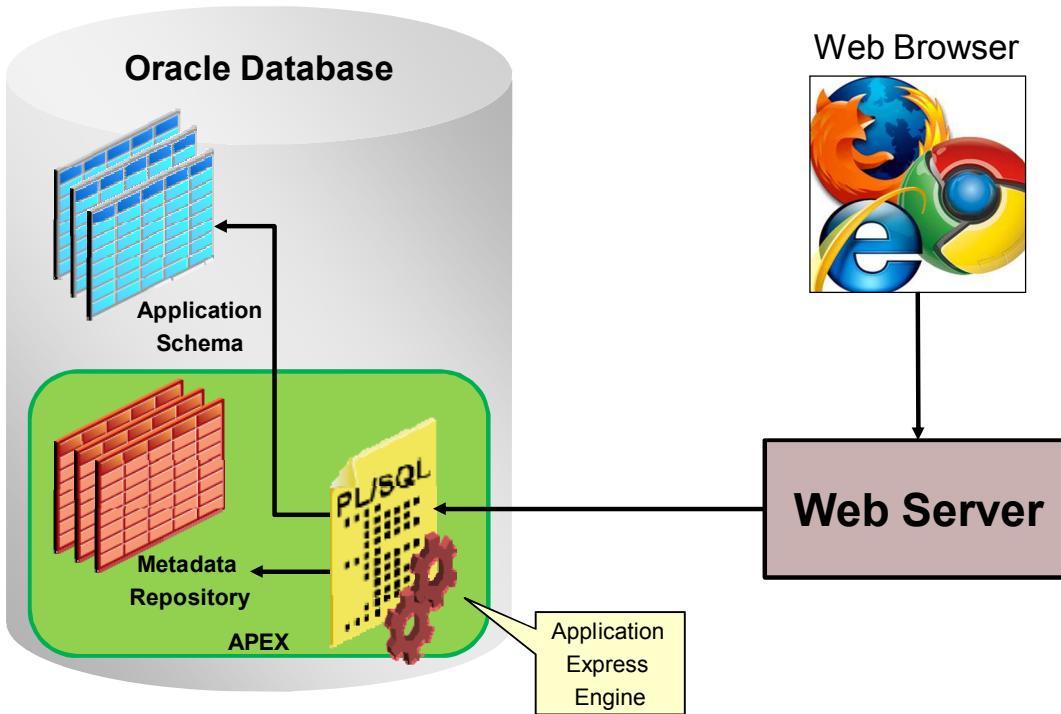
In 2006, the product was renamed Application Express. Release 2.1 of Application Express was bundled with the free Oracle Database Express Edition.

Release 3.0 had many new features to the product, the ones listed in the slide being the main ones. Release 3.1 introduced Interactive Reports, which enables end users to intensively customize reports.

In 2010, Application Express 4.0 was released with a number of powerful new features including Websheets, dynamic actions, plug-ins, and RESTful Web Services.

**Fun fact: Earlier names of the product include Oracle Platform and Flows.**

# Architecture



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In addition to APEX, the following components are required to use APEX:

- The Oracle Database
- A web browser
- A web server

APEX is installed within the Oracle Database. It consists of:

- Metadata stored in database tables
- APEX engine, which is written using PL/SQL code

When you create an application, its definition is stored in the metadata repository. At every stage of application development, metadata is created or modified and stored in the repository tables. Each time the web browser requests a page by using a URL, the web server translates the requested URL into an APEX PL/SQL call. The APEX engine then processes and renders the application components in real time, based on the data in the metadata repository and the schema against which the application is running.

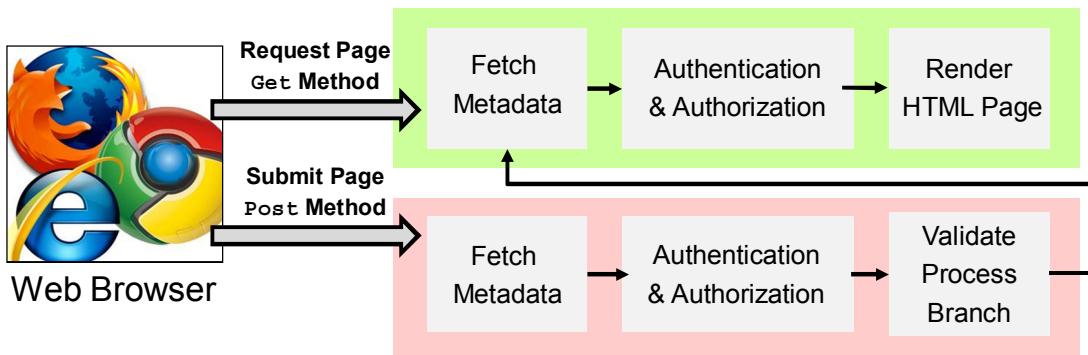
The web server options are discussed later in this lesson.

**Fun fact: Application Express is approximately 425 database tables and 230 PL/SQL packages.**

# Functions of APEX Engine

Four main functions are:

- Page rendering
- Page processing
- Session state management
- Application security



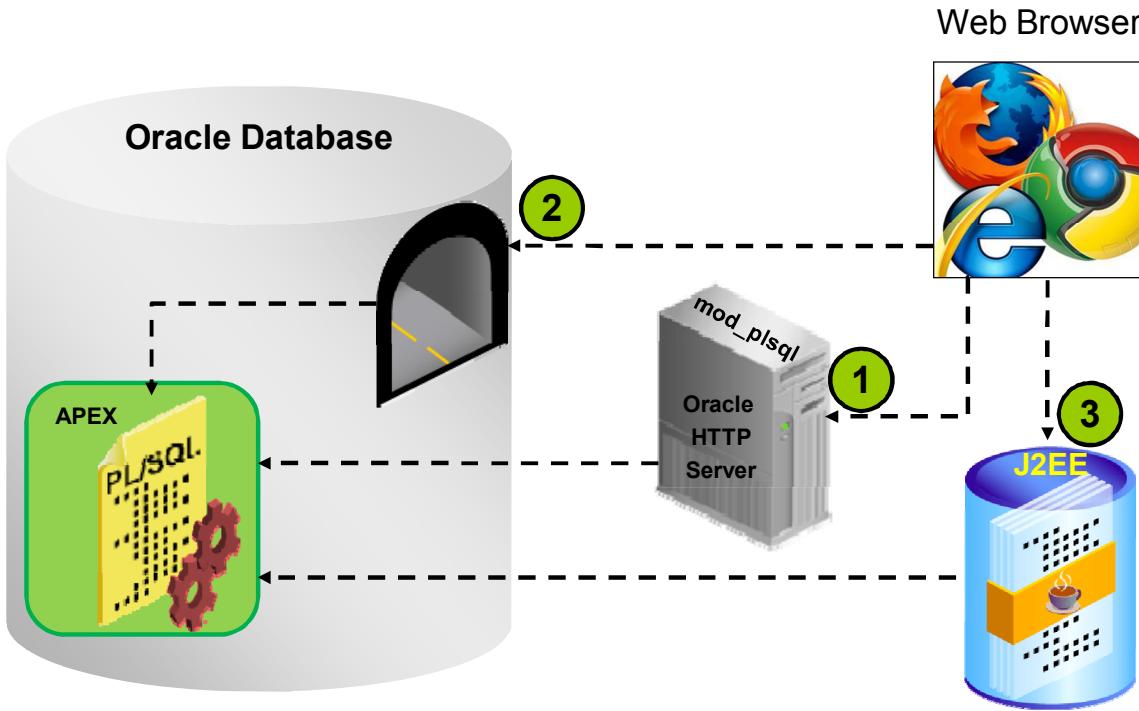
ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The major functionality of the APEX engine is to render and process pages. It has two processes, SHOW and ACCEPT, which handle the Get and Post methods respectively. The diagram in the slide shows how these two processes are performed.

The HTTP protocol over which the data is transmitted is a stateless protocol. The responsibility of managing the session state information is also handled by the APEX engine. APEX engine also provides the authentication and authorization services for securing the applications.

# Web Server Options



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

For APEX, you have three options to configure the web server:

1. Oracle HTTP Server with `mod_plsql`
2. Embedded PL/SQL gateway
3. Oracle Application Express Listener

## Using the Oracle HTTP Server

Oracle HTTP Server is an HTTP-compliant web server. `mod_plsql` is an Oracle HTTP Server plug-in that enables a web browser to communicate with the database. It maps browser requests into procedure calls, which are stored in the database, over an Oracle Net Services connection. It is generally indicated by a `/pls` virtual path.

## Using the Embedded PL/SQL Gateway

Starting with Oracle Database 11g Release 1, you can use the embedded PL/SQL gateway. The embedded PL/SQL gateway is installed with Oracle Database 11g and does not require the Oracle HTTP Server. It provides the Oracle Database with a web server and the necessary infrastructure to create dynamic applications. The embedded PL/SQL gateway runs in the Oracle XML DB HTTP Server in the Oracle Database. It includes the core features of `mod_plsql`.

## Pros and Cons of Using Embedded PL/SQL Gateway

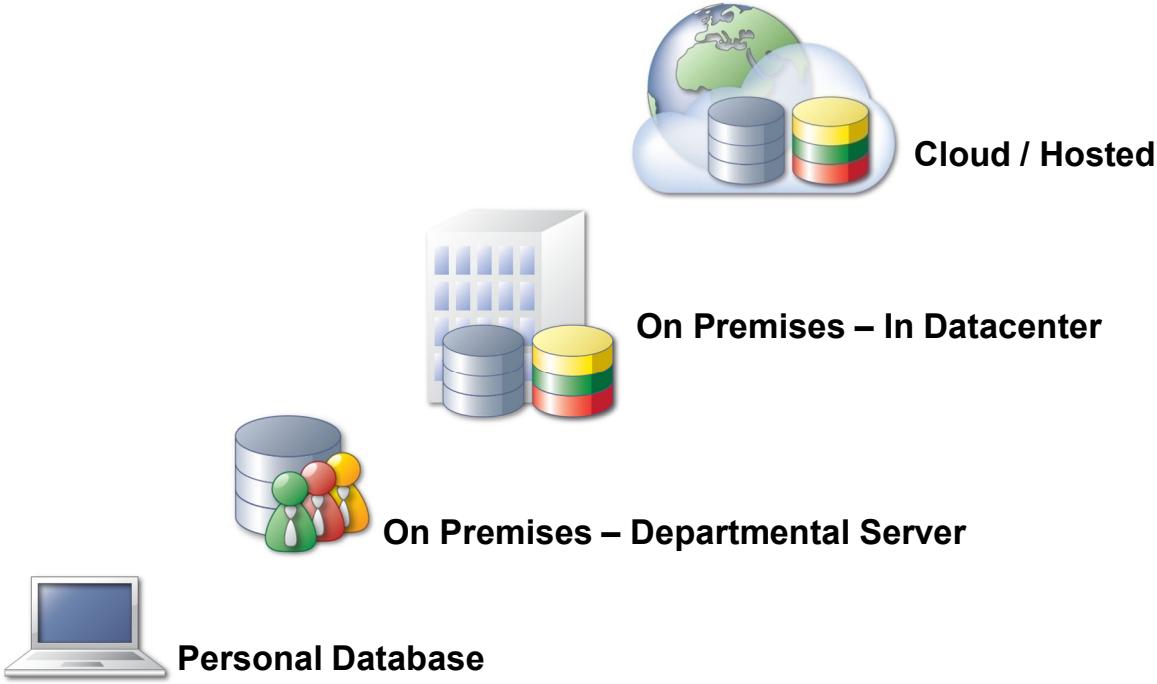
- It is included with the database, so no separate mid-tier installation is required. However, this makes it difficult to separate the HTTP listener from the database.
- Configuration is simple and quick. However, it does not provide the flexibility and details that the Oracle HTTP Server and APEX Listener provide.

## Using Oracle Application Express Listener

Oracle Application Express Listener is the latest and recommended option that you can use for configuring the web server. It is a Java-based interface that communicates directly with the APEX engine, thus eliminating the need for the `mod_plsql` plug-in. It can be installed in a J2EE application server or can be installed in stand-alone mode. You will learn more about the Oracle Application Express Listener in the lesson titled "Installing and Configuring the APEX Listener."

**Note:** Hereafter, Oracle Application Express Listener will be referred to as APEX Listener.

## Deployment Options



**ORACLE**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can choose to deploy APEX in whichever way is most convenient to you and your organization. The various options are listed in the slide. If you change your decision at a later point in time, you can easily move to a different choice of deployment.

## Quiz

Which is the main component of APEX?

- a. Oracle HTTP Server
- b. mod\_plsql
- c. APEX engine
- d. J2EE container



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: c**

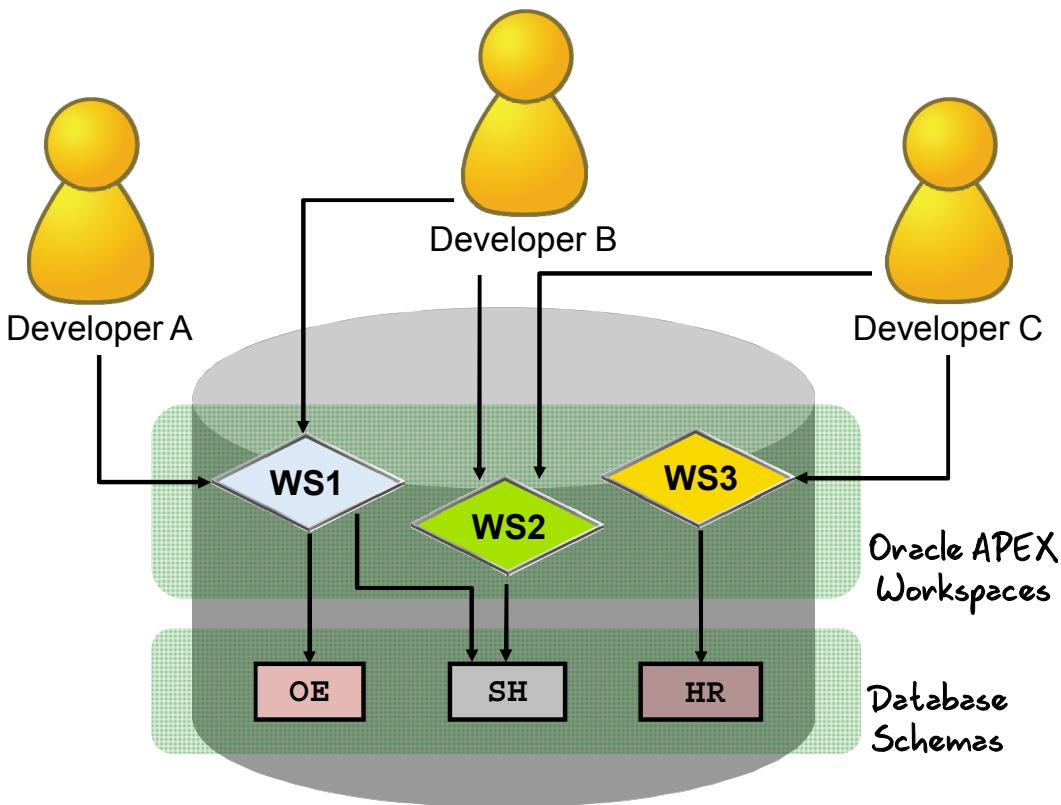
# Agenda

- Product Overview
- APEX Concepts and Terms
  - What Is a Workspace?
  - What Is the Internal Workspace?
  - Types of APEX Roles
  - APEX Development Interface Components
- Database Administration and Linux Review



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## What Is a Workspace?



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

ORACLE

A workspace is an area within APEX where you can create applications. It keeps the APEX users and their applications separate and secure. A single APEX instance can have any number of workspaces.

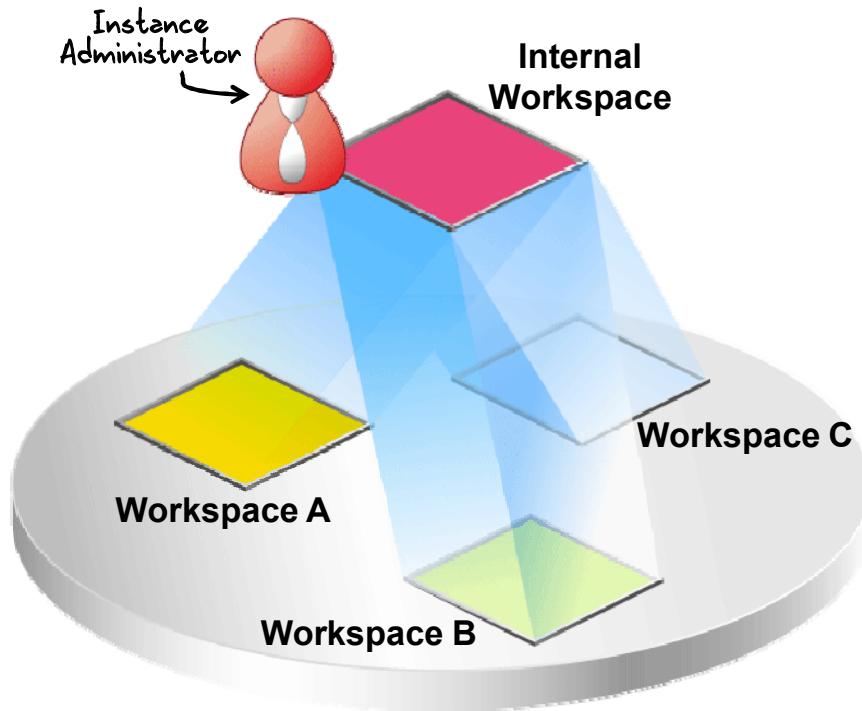
To use APEX, you first need to create, or have access to, a workspace. Each workspace is associated with one or more schemas. By associating a workspace with a schema, you can:

- Build applications that interact with the database objects in that schema
- Create new database objects in that schema

One or more developers or end users can access a workspace. As shown in the graphic in the slide, a single Oracle Database can contain multiple APEX workspaces. In this example, you see three developers A, B, and C, and three different workspaces WS1, WS2, and WS3. A and B have access to WS1. In addition, B also has access to WS2. C has access to WS2 and WS3. Each workspace has access to one or more database schemas. For example, WS1 has access to OE and SH schemas, WS2 to SH, and WS3 to HR. Using the same database instance, multiple developers can work from different workspaces or the same workspace with access to the same or different schemas.

Thus, APEX turns a single Oracle Database into a shared workgroup database service. This service can be accessed through a browser with no installation required on the desktop for the developer and the end user.

## What Is the Internal Workspace?



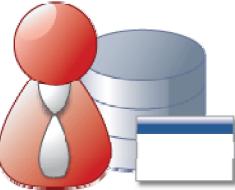
ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The internal workspace is a special workspace that is created when APEX is installed. This workspace is accessible only to APEX users who are instance administrators. You will learn about the different types of APEX users in the next slide.

After a successful installation, an `admin` instance administrator is created by default. The password for the `admin` user should be set after APEX is installed. Then, using those credentials, you can log in to the internal workspace. The internal workspace is used to administer the entire APEX instance.

## Types of APEX Roles

Instance Administrator	Workspace Administrator	Developer	End User
			
Creates workspace and workspace administrator	Creates developers and users	Creates and modifies applications and database objects	Runs the application
Manages services and session state	Views workspace usage reports	Performs all tasks of developer	



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

There are four types of roles defined in APEX.

1. Instance administrator
2. Workspace administrator
3. Developer
4. End user

### Instance Administrator

The instance administrator can access the internal workspace, and manages the entire APEX instance, including service administration and workspace administration. The instance administrator manages the workspaces of all the users, and is also responsible for managing session state and monitoring usage as a whole. The default APEX administration privileged user is “admin.” The lessons titled “Creating Workspaces,” “Configuring Administration Services,” and “Administering an APEX Instance” discuss the tasks performed by the instance administrator.

## Workspace Administrator

When a user is assigned administrative privileges for a workspace, that user becomes the workspace administrator. The workspace administrator can add new users to the workspace, create new user groups, and view usage reports of the workspace. The tasks performed by a workspace administrator are discussed in the lesson titled “Administering a Workspace.”

## Developer

Multiple users can log in to the same APEX instance to develop and edit applications. Each of these users is called a developer. Developers have access to a workspace through which they can access their own database objects. In addition to having private workspaces, users can also share a workspace to develop applications. All the tasks performed by a developer are discussed in the courses titled *Oracle Application Express: Developing Web Applications* and *Oracle Application Express: Advanced Workshop*.

## End User

An end user is a user without the development and administration privileges. This user has only the basic privileges to run an application.

# APEX Development Interface Components

The APEX development interface consists of the following components:



Create database applications and Websheet applications



Browse and create database objects  
Execute SQL commands and scripts



Track new features, bugs, milestones, to-do tasks, and feedback



Create users  
Request service  
Monitor activity



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The APEX development interface consists of four components:

- **Application Builder:** Used to create the user interface of an application. You can create application pages and use the built-in features to add reports, forms, charts, calendars, and so on to an application. You can specify the database objects that the application should interact with.
- **SQL Workshop:** Used to create and manage the database objects of an application. You can browse the objects in your application schema. You can create database objects such as tables, views, sequences, and so on. You can execute SQL commands and run SQL scripts.
- **Team Development:** Used to track new features, bugs, milestones, to-do tasks, and feedback.
- **Administration:** Used to manage workspace users and services.

## Quiz

Who has the privileges to create a developer user?

- a. Instance administrator
- b. Workspace administrator
- c. APEX developer
- d. Database user



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a, b**

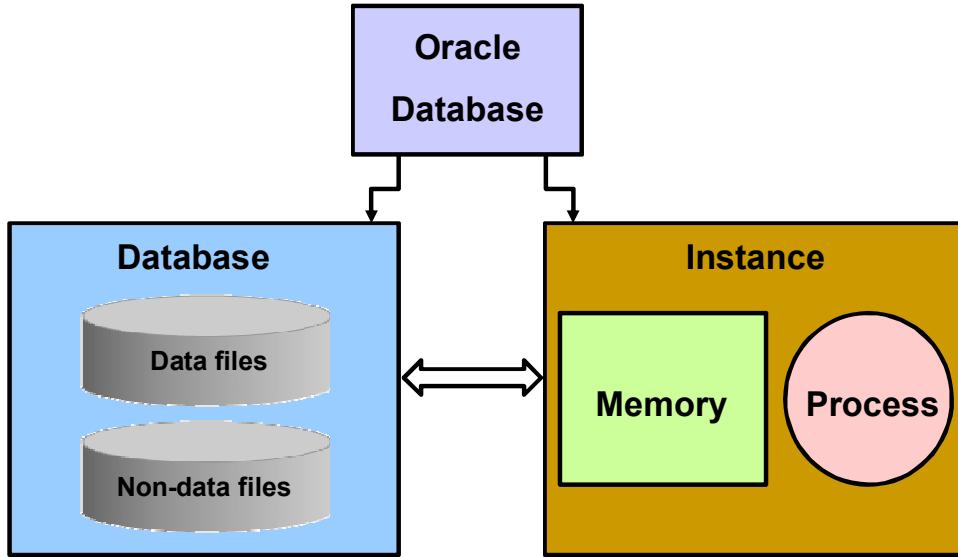
# Agenda

- Product Overview
- APEX Concepts and Terms
- Database Administration and Linux Review
  - Database and Database Instance
  - Accessing the Enterprise Manager Console
  - Starting and Stopping an Instance
  - Using a Terminal Window



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Database and Database Instance



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

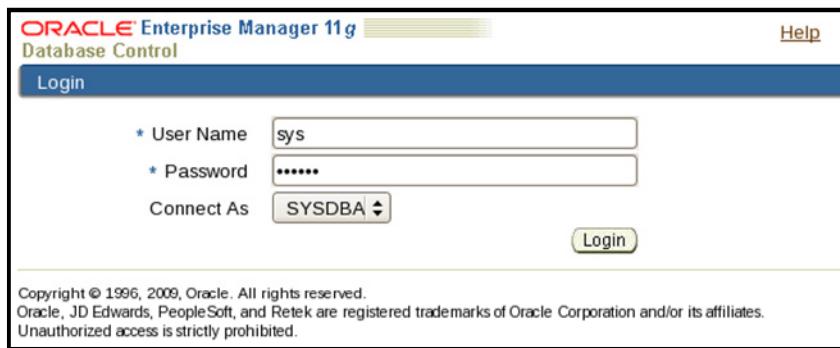
The Oracle Database consists of a database and an instance. The database is the disk resource, that is, the physical storage on the file system. Broadly, you can classify the physical storage structure into data files and non-data files. Data files contain the data that you store in the database and also the metadata. Non-data files are the control files, redo log files, and other additional files like the password file, the parameter file, and so on. Logically, the database is split into tablespaces, which are further split into segments, extents, and data blocks. SYSTEM and SYSAUX are two default tablespaces.

An instance refers to the memory structures and the processes that are needed to interact with the database. Memory structures are used to store the program code that is run, the data that is shared among the users, the data private to a particular user, and so on. System Global Area (SGA) and Program Global Area (PGA) are the two main memory structures. The initialization files, which contain the initialization parameters, are used to create and manage memory structures.

# Accessing the Enterprise Manager Console

URL syntax for accessing Enterprise Manager console:

```
https://machine_name:port/em
```



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Oracle Enterprise Manager provides a graphical interface to perform almost all the database administration tasks. It is installed by default when you install an Oracle Database. To access Enterprise Manager installed with Oracle Database 11g Release 2, use the URL shown in the slide. The default port for accessing Enterprise Manager is 1158. If you have trouble accessing the Enterprise Manager console, you must ensure that a database listener is started. You can check the status of the listener by running the following command in a terminal window:

```
lsnrctl status
```

# Starting and Stopping an Instance

**1**

Using SQL\*Plus

```

Terminal
File Edit View Terminal Tags Help
[oracle@EDRSR17P1 ~]$sqlplus /nolog

SQL*Plus: Release 11.2.0.1.0 Production on Wed Feb 16 11:35:33 2011
Copyright (c) 1982, 2009, Oracle. All rights reserved.

SQL> connect sys as sysdba
Enter password:
Connected to an idle instance.
SQL> startup
ORACLE instance started.

Total System Global Area 364081152 bytes
Fixed Size          1336568 bytes
Variable Size       176163592 bytes
Database Buffers    180355072 bytes
Redo Buffers        6225920 bytes
Database mounted.
Database opened.
SQL>

```



**2**

Using Enterprise Manager

**ORACLE**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The database instance needs to be started so that you can use the database. Two common ways to do this are by:

1. **Logging in to SQL\*Plus:** If the instance is not running, you can log in to SQL\*Plus by issuing the following command:

`sqlplus /nolog`

You will be prompted for a username. Enter `sys` as sysdba and, when prompted, enter the password for the sysdba user.

To start the instance, run the command `STARTUP`. To shut down an instance, run the command `SHUTDOWN`.

You can also find out whether the database instance is up by running the following command in a terminal window:

`ps -ef |grep pmon`

If the instance is running, then two lines are returned: one with this command and another with the `ora_pmon_<>` name. The first screenshot shows how to start an instance.

2. **Using Enterprise Manager console:** If the instance is running, you are shown a login screen where you need to provide the credentials to log in to the operating system and the database. If the instance is shut down, an option to start the instance is displayed. The second screenshot shows that the instance is already running.

# Using the Terminal Window

A screenshot of a Linux terminal window titled "Terminal". The window shows a command-line session:

```
[oracle@EDRSR17P1 ~]$pwd  
/home/oracle  
[oracle@EDRSR17P1 ~]$cd /stage/apex  
[oracle@EDRSR17P1 apex]$pwd  
/stage/apex  
[oracle@EDRSR17P1 apex]$cd ..  
[oracle@EDRSR17P1 stage]$pwd  
/stage  
[oracle@EDRSR17P1 stage]$ls  
11.2.0 apex apex_listener  
[oracle@EDRSR17P1 stage]$ls -l  
total 12  
drwxr-xr-x 3 root root 4096 Feb 14 13:24 11.2.0  
drwxr-xr-x 8 oracle oinstall 4096 Nov 12 20:52 apex  
drwxr-xr-x 3 oracle oinstall 4096 Feb 3 13:28 apex_listener  
[oracle@EDRSR17P1 stage]$
```

Red boxes highlight several command inputs: \$pwd, \$cd /stage/apex, \$ls, and \$ls -l.

**mkdir****ps****--help****df -h**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You use the terminal window in a Linux environment to run various Linux commands. To view the current working directory, run the command `pwd`. In the course environment, the default directory is set to `/home/oracle`. To navigate to a different directory, either enter `cd` followed by the complete directory location or use the `cd..` command to move to the parent of the current directory. To view all the files in the current directory, run the command `ls`. Use the command `ls -l` to view all the files in the current working directory and additional information like permissions and so on.

Some other commonly used Linux commands are:

- `mkdir`: Makes a subdirectory with the name that is given after this command
- `ps`: Shows currently running processes on the server
- `--help`: When specified after any command, it shows a brief description of the command.
- `df -h`: Shows free disk space in human-readable form

## Summary

In this lesson, you should have learned how to:

- Explain what Oracle Application Express is
- Describe the history and architecture of APEX
- Identify key concepts and terms related to APEX
- Identify the use of basic database administration and Linux concepts



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Practice 2 Overview: Introduction

This practice covers the following topics:

- Identifying key features of APEX
- Identifying key components of APEX architecture



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

This practice consists of a series of quiz questions designed to check your understanding of the key concepts discussed in this lesson.

THESE eKIT MATERIALS ARE FOR YOUR USE IN THIS CLASSROOM ONLY. COPYING eKIT MATERIALS FROM THIS COMPUTER IS STRICTLY PROHIBITED

Oracle University and Error : You are not a Valid Partner use only

## Installing Oracle Application Express



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Objectives

After completing this lesson, you should be able to:

- Verify the system requirements for installing APEX
- Install APEX
- Configure APEX accounts



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

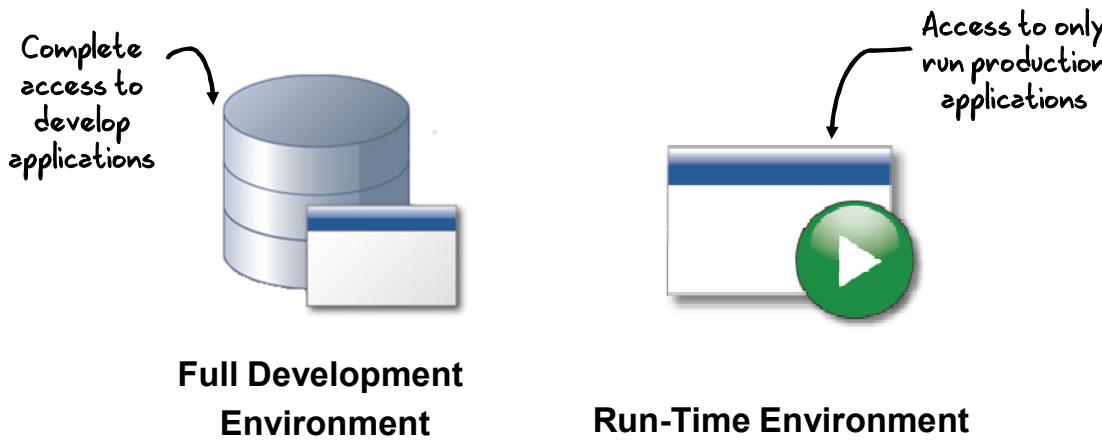
# Agenda

- Overview
  - Types of Installations
  - Installation Steps
- Pre-Installation Tasks
- The Installation
- Post-Installation Tasks



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Types of Installations



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Depending on the requirement, you can install APEX in one of the following modes:

- **Full Development Environment:** This is a complete installation of APEX. Here, you can create, run, and administer APEX applications. You are provided with a web interface to perform developer and administrator tasks.
- **Run-Time Environment:** This is a more hardened installation where only the database objects and privileges required to run the applications are installed. This secures highly sensitive production applications from being modified. It does not provide a web interface to develop and administer the applications. To administer a run-time environment, you can connect to SQL\*Plus and use the `APEX_INSTANCE_ADMIN` API. This installation is ideal for production and testing purposes.

You can convert a run-time environment to a full development environment and vice-versa. In this course, you will install a full development environment.

## Installation Steps

1. Download APEX ZIP file from Oracle Technology Network.
2. Unzip the file to a working directory.
3. Verify installation requirements.
4. Back up target database.
5. Open a terminal and set working directory.
6. Confirm that directory has write privileges.
7. Disable password complexity rule, if any, for the default profile.
8. Log in to SQL\*Plus as sysdba.
9. Run installation file.
10. Reset admin password.
11. Configure APEX\_PUBLIC\_USER and APEX\_040000.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The slide lists the steps to install APEX. The steps to configure a web server are discussed in the next lesson.

You can download the ZIP file from this link: <http://www.oracle.com/technetwork/developer-tools/apex/downloads/index.html>.

Download and unzip the contents to a working directory. In this course, the first two steps are performed for you. The unzipped files are available in the /stage directory. In this lesson, you will learn to perform the tasks listed from Step 3 onwards.

## Quiz

Consider this scenario: *Sharon's team has two database servers, ABC and XYZ, where their data is stored. The data in server ABC is the production data and the team uses this server to host all their production applications. Server XYZ is used by the team to create the application prototypes and to test them. Sharon's team is interested in learning the features of APEX. Sharon has been assigned the task of installing APEX on server XYZ.*

What type of installation will you recommend for her to perform?

- a. Run-time environment
- b. Full development environment



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: b**

# Agenda

- Overview
- Pre-Installation Tasks
  - Deciding Which Web Server to Use
  - Verifying Database Requirement
  - Verifying Web Browser Requirement
  - Verifying Disk Space Requirement
  - Verifying XDB Requirement
  - Verifying Oracle Text Requirement
  - Verifying PL/SQL Web Toolkit Requirement
  - Creating a Backup
- The Installation
- Post-Installation Tasks



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Deciding Which Web Server to Use

You can choose one of the following web server options:

- APEX Listener
- Oracle HTTP Server with mod\_plsql
- Embedded PL/SQL gateway



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Before starting your installation, you need to decide which web server option you want to use. The available options were discussed in detail in the previous lesson. As a recap, the available options are listed in the slide. If any of these options is already available in the environment where you want to install APEX, you may choose that as the web server for APEX.

Some guidelines for selecting a web server:

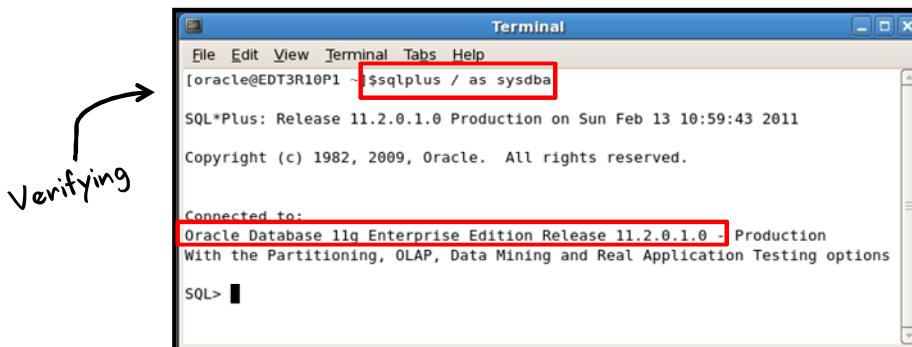
- For Internet applications, APEX Listener and HTTP Server are preferable due to security reasons. Whereas, for Intranet applications, you may choose any of the available options. Embedded PL/SQL gateway is quick and easy to configure.
- If you are installing on a laptop or desktop computer, or are implementing a departmental type of application, the Embedded PL/SQL gateway is a good choice.
- If you require load balancing, or support for RAC for a highly available system, then Oracle HTTP Server is a good option.
- If you have standardized on a Java Middle Tier Application Server, then APEX Listener is a good option.

In this course, you will use the APEX Listener as the web server component.

# Verifying Database Requirements

Ensure that you have one of the following supported databases:

- Oracle Database Enterprise Edition 10.2.0.3 or later
- Oracle Database Standard Edition 10.2.0.3 or later
- Oracle Database Standard Edition One 10.2.0.3 or later
- Oracle Database Express Edition 10g



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The Oracle Databases supported by APEX 4.0 are listed in the slide. To verify the version and edition of an Oracle Database:

1. Open a terminal window.
2. Enter `sqlplus / as sysdba` and press Enter.

The Oracle Database release number and edition details are displayed.

Another database requirement is to ensure that the `shared_pool_size` of the target database is at least 100 MB. If you are using Oracle Database 10g or later, and if the `SGA_TARGET` parameter has a non-null value, you need not specifically set the value for the `shared_pool_size` parameter.

This is because, prior to Oracle Database 10g, the memory for the `shared_pool_size` parameter had to be manually specified. From Oracle Database 10g onwards, instead of specifying memory values for individual SGA components, you can specify a total memory value to be used for all the SGA components. The Oracle Database periodically redistributes memory between these components according to workload requirements. How to view the `SGA_TARGET` parameter and how to set the `shared_pool_size` is discussed on the next page.

To view the value of the `SGA_TARGET` parameter, perform the following steps:

1. Open a terminal window.
2. Enter `sqlplus / as sysdba` and press Enter.
3. Enter `SHOW PARAMETER SGA_TARGET` and press Enter.

To view the `shared_pool_size` parameter and to set its value, perform the following steps:

1. Open a terminal window.
2. Enter `sqlplus / as sysdba` and press Enter.
3. Enter `SHOW PARAMETER SHARED_POOL_SIZE` and press Enter.
4. Before changing the value, you need to find out what parameter file the system uses: initialization or server. Run the command `SHOW PARAMETER PFILE`. If an `SPFILE` is in use, then `spfile` followed by the file location is displayed. If a `NONE` is returned, then the system uses a `PFILE`. You will have to edit the `PFILE` manually using an editor.
5. If a server file is used, then enter the following command and press Enter:  
`ALTER SYSTEM SET SHARED_POOL_SIZE = '100M' SCOPE = SPFILE`
6. Shut down and start the database for the changes to take effect.

## Verifying Browser Requirements

- Browser should satisfy the following standards:
  - HTML 4.0
  - CSS 1.0
  - JavaScript
- Examples of supported browsers
  - Microsoft Internet Explorer 7.0 or later
  - Mozilla Firefox 3.5 or later
  - Google Chrome 4.0 or later
  - Apple Safari 4.0 or later



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

For APEX to function properly, a web browser should satisfy the standards listed in the slide. Some examples of supported browsers are also listed in the slide.

**Note:** Using APEX, you can build applications that support earlier browser versions.

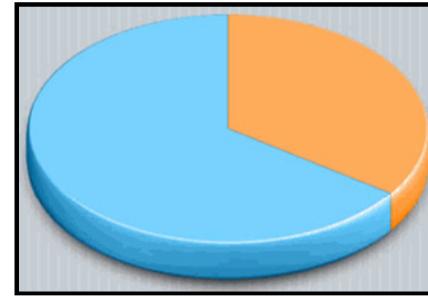
To verify the version of your web browser, open the web browser and, from the Help menu tab, select the About option. The web browser version will be displayed.

In this course, Mozilla Firefox 3.6 version is used.

# Verifying Disk Space Requirements

You must have free disk space in the following:

- File system to save downloaded software files **1GB / 450MB**
- APEX tablespace for
  - English **185 MB**
  - Each installed language **75 MB**
- System tablespace **100MB**



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

- **Disk space requirement 1:** To save the full APEX downloadable file, you must have 1 GB of free space in the file system of the target machine. If you want to download the English only ZIP file, 450 MB of free space will be sufficient. You can verify the available disk space by running the command `df -k` in a terminal window.
- **Disk space requirement 2:** You must have 185 MB of free space in the APEX tablespace. For this course, a tablespace named APEX has been created.
- **Disk space requirement 3:** You must have 100 MB of free space in the System tablespace.
- **Disk space requirement 4:** For installing APEX in other languages, you must have 75 MB of free space for each installed language in the APEX tablespace.

To view the available space in all the tablespaces, run the command:

```
SELECT tablespace_name, SUM(bytes/1048576) as ''Free MB''  
FROM dba_free_space  
GROUP BY tablespace_name;
```

# Verifying Oracle XDB Requirement

```
Terminal
File Edit View Terminal Tabs Help
SQL> SELECT * FROM ALL_USERS WHERE USERNAME = 'XDB';
USERNAME          USER_ID CREATED
-----           -----
XDB                  45 13-AUG-09

SQL> DESC RESOURCE_VIEW;
Name          Null?    Type
-----          -----    -----
RES          XMLTYPE(XMLSchema "http://xmlns.oracle.com/xdb/XDBResource.xsd" Element "Resource")
ANY_PATH      VARCHAR2(4000)
RESID         RAW(16)

SQL>
```



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

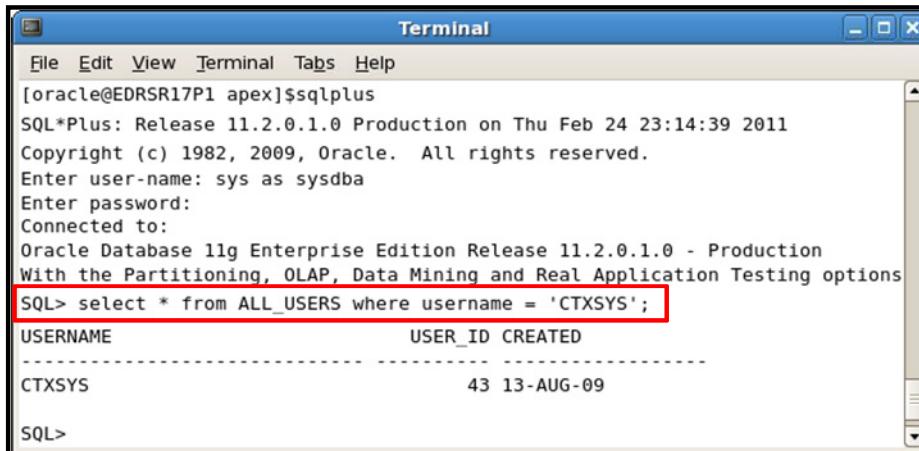
APEX requires that Oracle XML Database be installed in the target database. When the XML database is installed, it creates an ANONYMOUS user. This user should not be dropped from the database for APEX to work properly. APEX installer does a prerequisite check for XML database and will exit if it is not installed.

If you want to verify whether XDB is installed in the target database, perform the following steps:

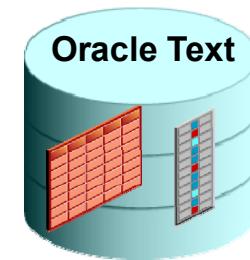
1. Open a terminal window.
2. Connect to SQL\*Plus as sysdba.
3. Run the command `SELECT * FROM ALL_USERS WHERE USERNAME = 'XDB' ;`.
4. If the query returns a row, then run the command `DESC RESOURCE_VIEW`.
5. If the second query also returns a result, then XDB is installed in the database.

**Note:** If the first query returns a row and the second query does not, then some other schema with the name XDB exists in the database.

# Verifying Oracle Text Requirement



```
[oracle@EDRSR17P1 apex]$sqlplus
SQL*Plus: Release 11.2.0.1.0 Production on Thu Feb 24 23:14:39 2011
Copyright (c) 1982, 2009, Oracle. All rights reserved.
Enter user-name: sys as sysdba
Enter password:
Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options
SQL> select * from ALL_USERS where username = 'CTXSYS';
USERNAME          USER_ID CREATED
-----
CTXSYS            43 13-AUG-09
SQL>
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

For the online Help in APEX to work, the target database must have Oracle Text installed. By default, Oracle Text is installed in an Oracle Database. APEX installer does a prerequisite check for Oracle Text and will exit if it is not installed.

If you want to verify whether Oracle Text is installed in the target database, perform the following steps:

1. Open a terminal window.
2. Connect to SQL\*Plus as sysdba.
3. Run the command `SELECT * FROM ALL_USERS WHERE USERNAME = 'CTXSYS';`.

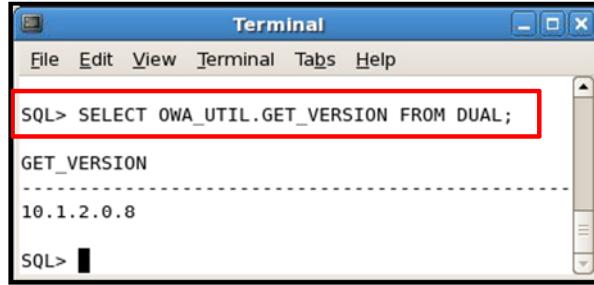
If the preceding query returns a result, Oracle Text is installed in the database.

You must also ensure that the default language preferences for Oracle Text have been installed. You can check this by running the following query:

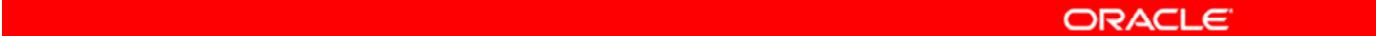
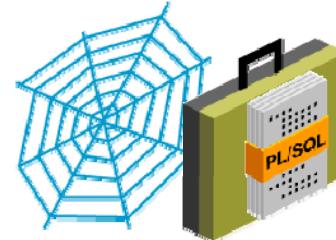
```
SELECT * FROM CTXSYS.CTX_PREFERENCE_VALUES
WHERE PRV_PREFERENCE = 'DEFAULT_LEXER';
```

If the default language has not been set, you can set it by running the appropriate `drdeflang.sql` script. These scripts are by default located in the `ORACLE_HOME/ctx/admin/defaults` directory. You need to log in to SQL\*Plus as sysdba to be able to run these scripts.

# Verifying PL/SQL Web Toolkit Requirement



```
Terminal
File Edit View Terminal Tabs Help
SQL> SELECT OWA_UTIL.GET_VERSION FROM DUAL;
GET_VERSION
-----
10.1.2.0.8
SQL>
```

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

APEX requires the PL/SQL Web Toolkit 10.1.2.0.6 or later. To verify the current version of the toolkit installed, connect to SQL\*Plus as sysdba and run the following command.

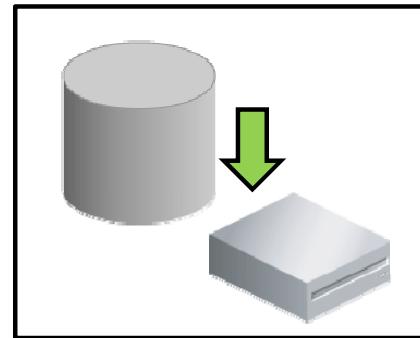
```
SELECT OWA_UTIL.GET_VERSION FROM DUAL;
```

If the version is earlier than the required version, you should install the PL/SQL Web Toolkit 10.1.2.0.6 or later before installing APEX. PL/SQL Web Toolkit 10.1.2.0.6 is included with APEX in the apex/owa directory. The steps to install the toolkit are listed in the README.txt file located in the apex/owa directory.

## Creating a Backup

Create a backup of the target database by using:

- Oracle Recovery Manager
- Oracle Enterprise Manager



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Before installing APEX, it is a good practice to create a backup of the database.

Oracle Recovery Manager is the recommended method to back up a database. You can use the RMAN command-line commands to back up a database, or you can make use of the Enterprise Manager graphical interface to perform a backup. For more information, refer to the *Oracle Database 2 Day DBA* guide.

## Quiz

Which of the following requirements are checked by the installer before installing Oracle APEX?

- a. Oracle XML DB
- b. Oracle Text
- c. Browser Compatibility
- d. PL/SQL Web Toolkit



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a, b**

# Agenda

- Overview
- Pre-Installation Tasks
- The Installation
  - Setting the Environment
  - Installing Full Development Environment
  - Installing Run-Time Environment
  - Reviewing the Installation Log
  - Verifying Installation Validity
- Post-Installation Tasks



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Setting the Environment

The screenshot shows a terminal window with the following text:

```

Terminal
File Edit View Terminal Tabs Help
[oracle@EDT3R10P1 ~]$pwd
/home/oracle
[oracle@EDT3R10P1 ~]$cd /stage
[oracle@EDT3R10P1 stage]$ls -l
total 12
drwxr-xr-x 3 root root 4096 Feb 11 10:55 11.2.0
drwxr-xr-x 8 oracle oinstall 4096 Nov 12 20:52 apex
drwxr-xr-x 3 oracle oinstall 4096 Feb 3 13:28 apex_listener
[oracle@EDT3R10P1 stage]$cd apex
[oracle@EDT3R10P1 apex]$sqlplus / as sysdba
SQL*Plus: Release 11.2.0.1.0 Production on Mon Feb 14 05:45:53 2011
Copyright (c) 1982, 2009, Oracle. All rights reserved.
Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options
SQL> SELECT * FROM DBA_PROFILES WHERE PROFILE='DEFAULT' AND RESOURCE_NAME = 'PASSWORD_VERIFY_FUNCTION';
PROFILE          RESOURCE_NAME          RESOURCE
-----          -----
LIMIT
-----          -----
DEFAULT          PASSWORD_VERIFY_FUNCTION          PASSWORD
NULL
SQL>

```

Annotations on the right side of the terminal window:

- Check privileges**: Points to the line "drwxr-xr-x 8 oracle oinstall 4096 Nov 12 20:52 apex".
- Set working directory and connect to SQL\*Plus**: Points to the command "cd apex" and the connection message.
- Check password complexity**: Points to the query "SELECT \* FROM DBA\_PROFILES WHERE PROFILE='DEFAULT' AND RESOURCE\_NAME = 'PASSWORD\_VERIFY\_FUNCTION';".

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Before running the APEX installation script, you need to ensure that you are in the correct directory. Open a terminal window and perform the following steps:

1. Enter `pwd` and press Enter to view the present working directory.
2. To install APEX, you need to set your working directory to `apex` (this is the location where you unzipped the `apex` file downloaded from OTN). For this course, the `apex` folder is located under the `/stage` directory.
3. Enter `cd stage` and press Enter.
4. To ensure the `apex` directory has write privileges, enter `ls -l` and press Enter. The directories under `stage`, with their privileges, are displayed.
5. To set the working directory to `/stage/apex`, enter `cd apex` and press Enter.
6. Connect to SQL\*Plus as `sysdba`.
7. Check if any password complexity rules exist for the default profile by running the following query:

```
SELECT * FROM DBA_PROFILES WHERE PROFILE = 'DEFAULT' and
RESOURCE_NAME= 'PASSWORD_VERIFY_FUNCTION' ; .
```

By default, it is disabled. In case it is enabled, you can disable it by running this command:

```
ALTER PROFILE DEFAULT LIMIT PASSWORD_VERIFY_FUNCTION NULL;
```

# Installing Full Development Environment

Syntax for running the apexins.sql file

```
@apexins tablespace_apex  
          tablespace_files  
          tablespace_temp  
          images
```

Example:

```
@apexins SYSAUX SYSAUX TEMP /i/
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To install the full development environment, you need to run the `apexins.sql` script file. Also, you need to pass four parameters while running this script.

The first parameter, `tablespace_apex`, is the name of the tablespace where APEX will be installed. The second parameter, `tablespace_files`, is the name of the tablespace that will be used for the files that are uploaded to APEX. The APEX version that is bundled with Oracle Database 11g uses the `SYSAUX` tablespace to install APEX. You can install APEX 4.0 using the same `SYSAUX` tablespace, or you can create a new tablespace for APEX. For this course, a tablespace called `APEX` has been created.

The third parameter, `tablespace_temp`, is the name of the temporary tablespace. Finally, you should pass a fourth parameter, `images`, to specify the virtual directory for the APEX images. It is recommended that you always name this directory as `/i/`.

**Note:** If you receive an error message stating that the file could not be opened or located, ensure that you are in the correct directory location. For details, refer to the previous slide.

# Installing Run-Time Environment

Syntax for running the `apxrtins.sql` file

```
@apxrtins tablespaces_apex  
      tablespaces_files  
      tablespaces_temp  
      images
```

Example:

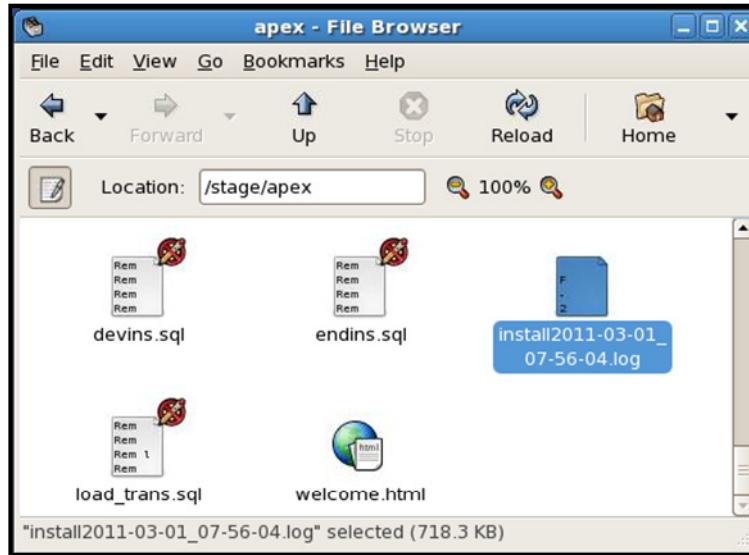
```
@apxrtins SYSAUX SYSAUX TEMP /i/
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The process to install the run-time environment is the same as the full development environment installation. The only difference is the script that is run. The `apxrtins.sql` script should be run to install the run-time environment. The parameters passed while running the script are the same as those passed for installing the full development environment. For a detailed description of the parameters, refer to the previous slide.

# Reviewing the Installation Log



ORACLE®

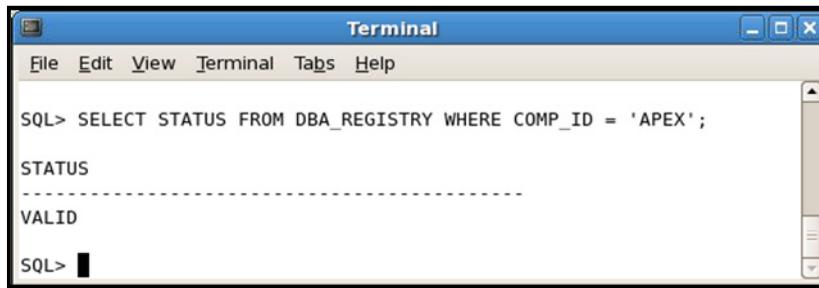
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

After running the installer script, you can locate the installation log file in the apex directory. If the installation ran without any errors, you will see an installation success message at the end of the log file. Otherwise, the errors that were encountered are listed. If the installation log file contains some error messages, it does not necessarily mean that the installation failed. The log file contains all the errors encountered, even some acceptable ones. Review the log file to view how the installation was completed.

If you face any issues with your installation, the installation log is a good starting point for identifying what the issues could be.

## Verifying Installation Validity

```
SELECT STATUS FROM DBA_REGISTRY WHERE COMP_ID = 'APEX';
```



A screenshot of a terminal window titled "Terminal". The window has a menu bar with "File", "Edit", "View", "Terminal", "Tabs", and "Help". The main area contains the following text:

```
SQL> SELECT STATUS FROM DBA_REGISTRY WHERE COMP_ID = 'APEX';
STATUS
-----
VALID
SQL>
```

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can check the validity of the APEX installation by querying the `DBA_REGISTRY` table. Perform the following steps:

1. Open a terminal window.
2. Connect to SQL\*Plus as `sysdba`.
3. Run the query shown on the slide.

If a `VALID` status is returned, then you can assume that the APEX installation was successful.

## Quiz

What is the recommended name that should be used while defining the virtual directory for APEX images?

- a. /apex\_images/
- b. /images/
- c. /i/
- d. /sysaux/

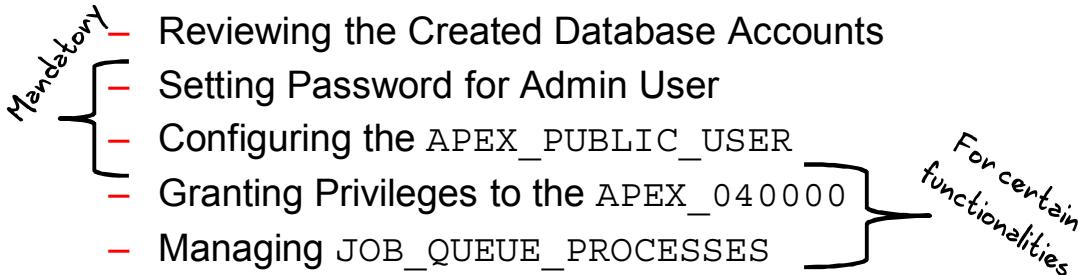


Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: c**

# Agenda

- Overview
- Pre-Installation Tasks
- The Installation
- Post-Installation Tasks



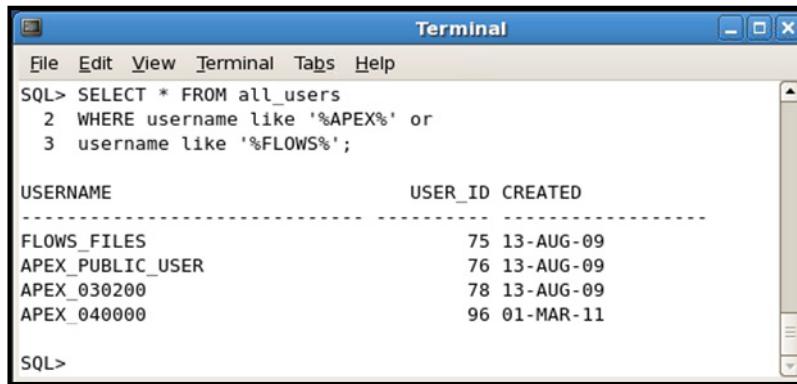
ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Reviewing the Created Database Accounts

After APEX is successfully installed, the following database accounts are created:

- APEX\_040000 ← *APEX schema and metadata*
- FLOWS\_FILES ← *Uploaded files*
- APEX\_PUBLIC\_USER ← *Web server configuration*



The screenshot shows a Windows-style terminal window titled "Terminal". The menu bar includes "File", "Edit", "View", "Terminal", "Tabs", and "Help". The main area displays an SQL query and its results:

```
SQL> SELECT * FROM all_users
  2 WHERE username like '%APEX%' or
  3 username like '%FLOWS%';

USERNAME          USER_ID CREATED
-----
FLOWS_FILES           75 13-AUG-09
APEX_PUBLIC_USER      76 13-AUG-09
APEX_030200           78 13-AUG-09
APEX_040000           96 01-MAR-11

SQL>
```

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The three accounts listed in the slide get created after APEX is installed successfully. You can confirm this by using the following query:

```
SELECT * FROM ALL_USERS WHERE username LIKE '%APEX%' OR username
LIKE '%FLOWS%' ;
```

The APEX\_040000 account contains the APEX schema and metadata. The FLOWS\_FILES account contains the files uploaded to APEX. APEX\_PUBLIC\_USER is the minimally privileged account required for web server configuration purposes.

With Oracle Database 11g, APEX 3.2 is already installed. The APEX 4.0 installer checks for the FLOWS\_FILES and APEX\_PUBLIC\_USER users and creates only these accounts if they do not exist. So, when you query for the database users after installing APEX 4.0 in an Oracle 11g Database, the four accounts shown in the slide screenshot are listed.

## Setting Password for Admin User

The screenshot shows a terminal window titled "Terminal". The session starts with the user connecting to the "/stage/apex" workspace as sysdba. The SQL\*Plus version is 11.2.0.1.0. The user runs the command "SQL> @apxchpwd". This command prompts for a new password for the ADMIN user. The user enters a password, and the session alters. It then changes the password for the ADMIN user, commits the change, and exits the session.

```
[oracle@EDT3R10P1 apex]$pwd  
/stage/apex  
[oracle@EDT3R10P1 apex]$sqlplus / as sysdba  
SQL*Plus: Release 11.2.0.1.0 Production on Mon Feb 14 06:37:30 2011  
Copyright (c) 1982, 2009, Oracle. All rights reserved.  
Connected to:  
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - Production  
With the Partitioning, OLAP, Data Mining and Real Application Testing options  
SQL> @apxchpwd  
Enter a value below for the password for the Application Express ADMIN user.  
Enter a password for the ADMIN user [ ]  
Session altered.  
...changing password for ADMIN  
PL/SQL procedure successfully completed.  
Commit complete.  
SQL>
```

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

After APEX is installed, a default internal workspace with an admin instance administrator is created. You must set the password for this admin user. Perform the following steps:

1. In a terminal window, ensure that the current working directory is apex.
2. Connect to SQL\*Plus as sysdba.
3. Run the `apxchpwd.sql` file.
4. Enter a new password and press Enter.

The password is successfully changed. Remember this password because you will need it later to log in to the APEX administration application.

At any point in time, if you forget the admin user password, you can follow these same steps to set the password for the admin user again.

## Configuring the APEX\_PUBLIC\_USER

```
ALTER USER APEX_PUBLIC_USER  
ACCOUNT UNLOCK  
IDENTIFIED BY new_password
```

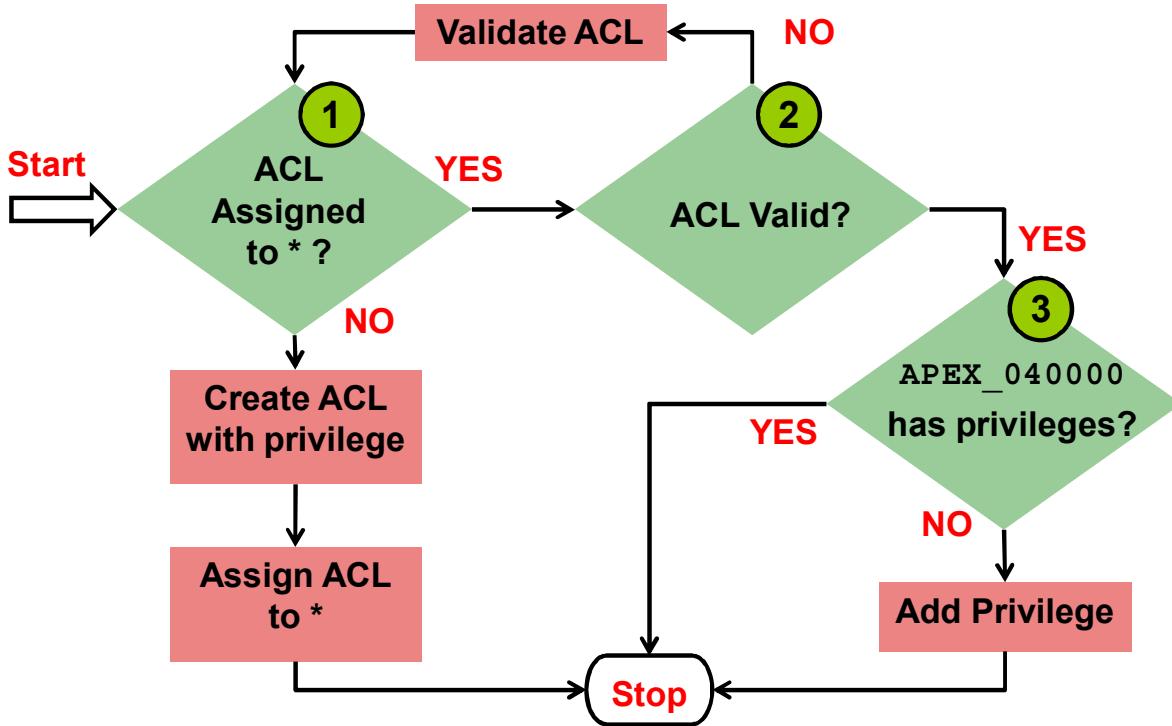


ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The APEX\_PUBLIC\_USER user, which is created when APEX is installed, is locked by default. For APEX to function properly and for configuring the web server, this user must be unlocked. You must also set the password that is needed to authenticate this user. To configure the APEX\_PUBLIC\_USER user, run the ALTER command shown in the slide. You can specify any password. However, make sure you remember it. You will need it to configure the web server.

## Enabling Network Services Process



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

By default, the ability to interact with network services is disabled in Oracle Database 11g Release 1 and later. To use network services such as printing reports to PDF formats and sending or receiving emails, and to use web services, you need to grant a connect privilege to the database users.

To enable network services for APEX, you must use the `DBMS_NETWORK_ACL_ADMIN` package to grant connect privileges to the `APEX_040000` user. To grant this privilege, you need to use an Access Control List (ACL). The entire process is depicted as a flowchart in the slide.

1. Use the following query to locate the ACL that is assigned to any host (\*).

```
SELECT ACL FROM DBA_NETWORK_ACLS WHERE HOST = '*' AND
LOWER_PORT IS NULL AND UPPER_PORT IS NULL;
```

If there is no ACL assigned to “\*”, you need to create an ACL. Use the following command:

```
EXEC DBMS_NETWORK_ACL_ADMIN.CREATE_ACL('power_users.xml', 'ACL
that lets power users to connect to everywhere', 'APEX_040000',
TRUE, 'connect');
```

The preceding command creates an ACL with an entry for the `APEX_040000` user. Now, you need to assign this ACL to all hosts (\*).

```
EXEC DBMS_NETWORK_ACL_ADMIN.ASSIGN_ACL('power_users.xml', '*');
```

2. If an ACL is located, you need to confirm that the ACL is valid. That is, you need to ensure that users dropped from the database are not referenced in the ACL. You can confirm this by running the following query:

```
SELECT ACL, PRINCIPAL
FROM DBA_NETWORK_ACLS NACL, XDS_ACE ACE
WHERE HOST = '*'
AND LOWER_PORT IS NULL AND UPPER_PORT IS NULL
AND NACL.ACLID = ACE.ACLID
AND NOT EXISTS (SELECT NULL FROM ALL_USERS WHERE USERNAME =
PRINCIPAL);
```

If the preceding query returns some results, then your ACL is invalid. You can fix an invalid ACL error by running the code given as follows:

```
DECLARE
ACL_ID RAW(16);
CNT NUMBER;
BEGIN
-- Look for the object ID of the ACL currently assigned to '*'
SELECT ACLID INTO ACL_ID FROM DBA_NETWORK_ACLS WHERE HOST = '*'
AND LOWER_PORT IS NULL AND UPPER_PORT IS NULL;
-- If just some users referenced in the ACL are invalid, remove
just those
-- users in the ACL. Otherwise, drop the ACL completely.
SELECT COUNT(PRINCIPAL) INTO CNT FROM XDS_ACE WHERE ACLID =
ACL_ID AND EXISTS (SELECT NULL FROM ALL_USERS WHERE USERNAME =
PRINCIPAL);
IF (CNT > 0) THEN FOR R IN (SELECT PRINCIPAL FROM XDS_ACE WHERE
ACLID = ACL_ID AND NOT EXISTS (SELECT NULL FROM ALL_USERS WHERE
USERNAME = PRINCIPAL)) LOOP
UPDATE XDB.XDB$ACL SET OBJECT_VALUE = DELETEXML(OBJECT_VALUE,
'/ACL/ACE[PRINCIPAL=' || R.PRINCIPAL || ']') WHERE OBJECT_ID =
ACL_ID; END LOOP;
ELSE
DELETE FROM XDB.XDB$ACL WHERE OBJECT_ID = ACL_ID;
END IF;
END;
/
COMMIT;
```

In the preceding code, if only a few entries are invalid, then those entries are deleted. Else, if all the entries are invalid, then the ACL itself is deleted. Start the process again to check if an ACL exists or not and proceed accordingly.

3. If this query returns no results, then the ACL is valid. Check if APEX\_040000 already has the connect privilege. Else, add the privilege using the code given as follows:

```
DECLARE  
ACL_PATH  VARCHAR2(4000);  
BEGIN  
SELECT ACL INTO ACL_PATH FROM DBA_NETWORK_ACLS  
WHERE HOST = '*' AND LOWER_PORT IS NULL AND UPPER_PORT IS NULL;  
IF DBMS_NETWORK_ACL_ADMIN.CHECK_PRIVILEGE(ACL_PATH,  
'APEX_040000', 'connect') IS NULL THEN  
DBMS_NETWORK_ACL_ADMIN.ADD_PRIVILEGE(ACL_PATH, 'APEX_040000',  
TRUE, 'connect');  
END IF;  
END;  
/
```

## Granting Connect Privileges to APEX\_040000

```
SELECT ACL FROM DBA_NETWORK_ACLS WHERE HOST = '*' AND
LOWER_PORT IS NULL AND UPPER_PORT IS NULL;
```

```
EXEC DBMS_NETWORK_ACL_ADMIN.CREATE_ACL
('power_users.xml', 'ACL that lets power users to
connect to everywhere', 'APEX_040000', TRUE,
'connect');

EXEC DBMS_NETWORK_ACL_ADMIN.ASSIGN_ACL
('power_users.xml', '*');
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

As discussed in the previous slide, run the select query to determine whether an ACL is assigned to any host. For this course, no previously created ACL exists. So, you will need to create an ACL containing a connect privilege to the APEX\_040000 user. Then, assign this ACL to all hosts.

Instead of running the commands one by one, as mentioned on the previous page, you can run the script named code\_03\_32\_n. If an invalid ACL exists, an error is displayed. You will need to rectify the error as mentioned on the previous page. If no errors are shown, then a connect privilege has been granted to APEX\_040000.

**Note:** In addition to enabling network services, you will also need to set certain values in the APEX administration application to be able to use the email and printing features in APEX. You will learn about these tasks in the lesson titled “Configuring Administration Services.”

## Granting APEX\_040000 Permission to Use Oracle Text URL Datastore

1. Check if a database role exists with the privilege to access Oracle Text URL datastore.

```
SELECT par_value FROM ctxsys.ctx_parameters  
WHERE par_name = 'FILE_ACCESS_ROLE';
```

- 2a. If no, create a new role and give it permission to access Oracle Text URL. Grant the new role to APEX\_040000.

```
CREATE ROLE APEX_URL_DATASTORE_ROLE;  
EXEC ctxsys.ctx_adm.set_parameter  
    ('file_access_role', 'APEX_URL_DATASTORE_ROLE');  
GRANT APEX_URL_DATASTORE_ROLE to APEX_040000;
```

- 2b. If yes, grant that role to APEX\_040000 .

```
GRANT <role> to APEX_040000;
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

APEX users can search through the APEX online Help. This functionality is accomplished through Oracle Text and a URL datastore.

In Oracle Database 11g R2 and later, for the online Help in Oracle APEX to function without producing errors, the permission to use an Oracle Text URL datastore must be granted to the APEX\_040000 database user.

This can be accomplished by assigning the privilege to a database role and then granting this role to the APEX\_040000 database user. Connect to SQL\*Plus as sysdba and perform the steps listed in the slide.

## Managing JOB\_QUEUE\_PROCESSES

Viewing the number of JOB\_QUEUE\_PROCESSES:

```
SELECT VALUE  
FROM v$parameter  
WHERE NAME = 'job_queue_processes';
```

To update the number of JOB\_QUEUE\_PROCESSES, connect to SQL\*Plus as sysdba and:

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



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

JOB\_QUEUE\_PROCESSES determine the maximum number of concurrently running jobs in the database. To be able to execute SQL scripts in APEX, the JOB\_QUEUE\_PROCESSES parameter should be set properly. Use the commands listed in the slide to view and change the number of JOB\_QUEUE\_PROCESSES.

**Note:** After APEX is installed, you can view the number of JOB\_QUEUE\_PROCESSES assigned by selecting the About link from the Administration tab of the APEX development interface.

## Quiz

Which of the following accounts is used to configure the web server?

- a. APEX\_PLSQL\_USER
- b. APEX\_PUBLIC\_USER
- c. APEX\_040000
- d. FLOWS\_FILES
- e. APEX\_FILES



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: b**

## Summary

In this lesson, you should have learned how to:

- Verify the system requirements for installing APEX
- Install APEX
- Configure APEX accounts



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Practice 3 Overview: Installing APEX

This practice covers the following topics:

- Verifying installation requirements
- Installing APEX
- Configuring APEX\_PUBLIC\_USER account
- Setting password for ADMIN user
- Granting privileges to APEX\_040000
- Viewing and changing number of JOB\_QUEUE\_PROCESSES



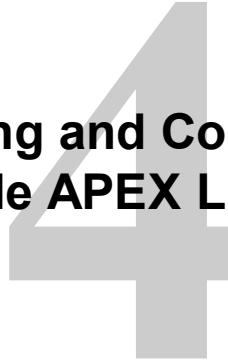
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In this practice, you will verify some system requirements and then install APEX in full development environment mode. You will also configure the accounts required for proper functioning of APEX.

THESE eKIT MATERIALS ARE FOR YOUR USE IN THIS CLASSROOM ONLY. COPYING eKIT MATERIALS FROM THIS COMPUTER IS STRICTLY PROHIBITED

Oracle University and Error : You are not a Valid Partner use only

## Installing and Configuring Oracle APEX Listener



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Objectives

After completing this lesson, you should be able to:

- Explain what APEX Listener is
- Identify the application server options available for installing APEX Listener
- Install APEX Listener
- Configure APEX Listener
- Describe the various configuration options



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Agenda

- Overview
  - What Is Oracle APEX Listener?
  - Architecture
  - Installation Requirements
  - Supported Application Servers
  - Oracle WebLogic Server
  - WebLogic Server Users and Roles
  - Installation Steps
- Installing APEX Listener
- Installing APEX Listener in Stand-Alone Mode
- Configuring APEX Listener
- Configuration Options



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## What Is Oracle APEX Listener?

### Oracle APEX Listener

- Is written in Java
- Provides interface between browsers and Application Express engine
- Has a graphical web interface for configuration
- Provides enhanced security and caching functionalities

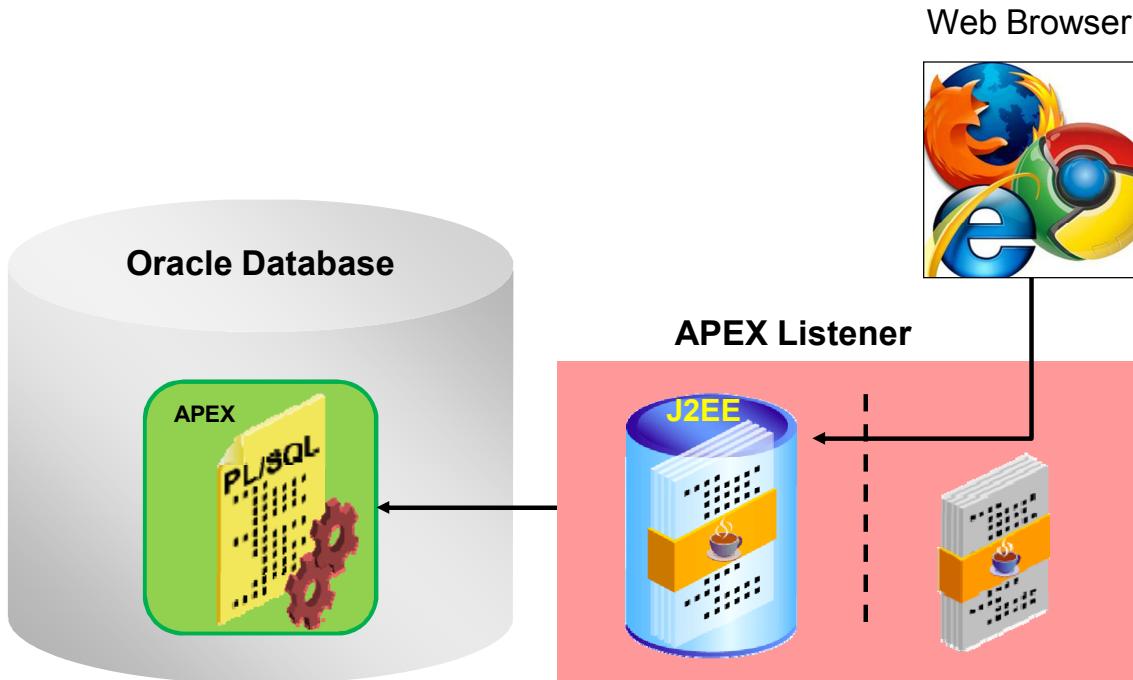


ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

APEX requires some type of interface to translate the browser requests to corresponding PL/SQL calls. APEX Listener is a Java-based interface designed for this purpose. It is an alternative to the previously used Oracle HTTP Server with `mod_plsql` option and includes additional functionalities like caching, security, web configuration, and so on.

# Architecture



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

APEX Listener and the Oracle Database form a three-tier architecture. The web browser interacts with the APEX Listener. APEX Listener is the middle-tier component that translates the browser URL requests to the corresponding PL/SQL call in the Application Express engine.

APEX Listener can be installed in two modes: within a Java Enterprise Edition application server, or in stand-alone mode. Installing it within an application server enables APEX Listener to use the flexibility and features of the application server. The stand-alone mode is very efficient to quickly install and use APEX Listener, but is limited in flexibility and configuration options.

The supported application servers are discussed later in the lesson.

## Installation Requirements

Before installing APEX Listener, you must have the following:



Java 6

Update 20 JDK or later



Java Servlet

Specification 2.3 or later



Web Browser

Microsoft IE 8.0 or later

Mozilla Firefox 3.0 or later

Google Chrome 2.0 or later



J2EE Application Server

**ORACLE**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The requirements for installing APEX Listener are listed in the slide. If you want to install the stand-alone version, the J2EE application server is not needed.

## Supported Application Servers

APEX Listener is certified against the following Java Enterprise Edition application servers:

- Oracle WebLogic Server 10.3.3 or later
- Sun GlassFish Enterprise Server 3 or later
- Oracle Containers for J2EE (OC4J) 10.1.3.4 or later

**Note:** APEX Listener can also be installed in stand-alone mode.



J2EE Application Server

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The application servers that are certified for use with the APEX Listener are listed in the slide. Depending on which application server is already available or which is most convenient to install for you and your company, you can decide on the application server to use.

In this course, you will install APEX Listener with the Oracle WebLogic Server. You will also learn how to install APEX Listener in stand-alone mode. For details on how to install with the other two application servers, refer to the *Oracle Application Express Listener Installation and Developer Guide*.

# Oracle WebLogic Server



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Oracle WebLogic Server is a Java platform, enterprise edition application server. It supports the deployment of many types of applications. To know how to install WebLogic Server and for additional information, visit the WebLogic Server product page here:

<http://www.oracle.com/technetwork/middleware/weblogic/overview/index.html>

For this course, WebLogic Server is already installed and ready for use.

## WebLogic Server Users and Roles Required for APEX Listener

For accessing APEX Listener Administration page, you need:

- A WebLogic Server user with Admin role



For accessing APEX Listener Status page, you need:

- A WebLogic Server user with Manager role



**ORACLE**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To access the application deployed in WebLogic Server, users need to be created. A user is an entity in WebLogic Server that can be authenticated. These users can be assigned various roles depending on the requirements. A security role determines who can access a WebLogic Server resource. The users and roles required to access APEX Listener are listed in the slide. You will learn to create these users and roles later in this lesson.

## Installation Steps

1. Download APEX Listener ZIP file from Oracle Technology Network
2. Unzip file
3. Create WAR file for Application Express images
4. Start WebLogic Server
5. Launch WebLogic Server administration console
6. Deploy WAR files to WebLogic Server
7. Create Administrator and Manager Users
8. Create Admin and Manager Roles



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The steps to install APEX Listener with the WebLogic Server application server are listed in the slide. You can download the ZIP file by accessing this link:

<http://www.oracle.com/technetwork/developer-tools/apex-listener/downloads/index.html>.

Download and unzip the contents to a working directory. In this course, the first two steps are performed for you. The unzipped files are available in the `/stage` directory. In this lesson, you will learn to perform the tasks listed from Step 3.

## Quiz

Oracle APEX Listener can be installed only within a Java platform, enterprise edition application server.

- a. True
- b. False



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: b**

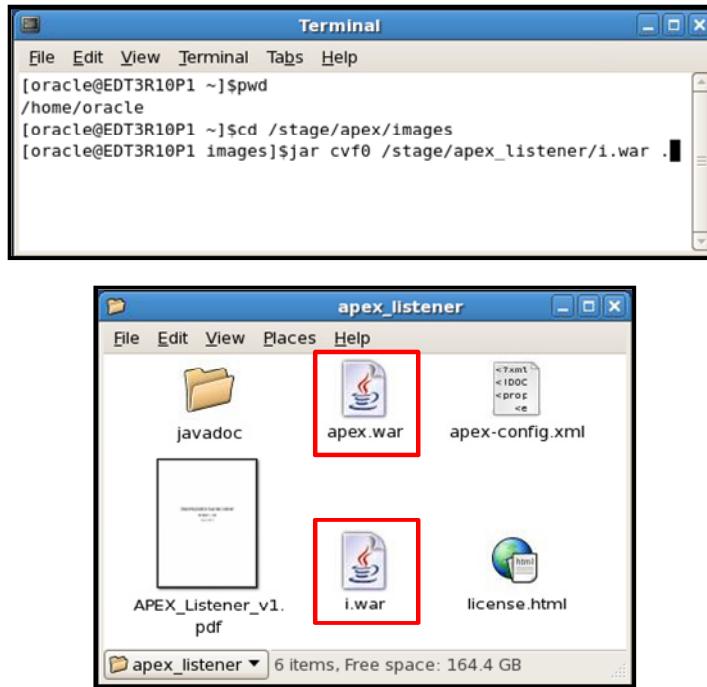
# Agenda

- Overview
- Installing APEX Listener
  - Creating a WAR File for Application Express Images
  - Logging In to WebLogic Server Administration Console
  - Deploying WAR Files
  - Creating Administrator and Manager Users
  - Creating Admin and Manager Roles
- Installing APEX Listener in Stand-Alone Mode
- Configuring APEX Listener
- Configuration Options



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Creating a WAR File for Application Express Images



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

For Oracle Application Express to function, you must create a Web ARchive (WAR) file to contain the APEX image folder and then deploy the WAR file to an application server. A Web ARchive (WAR) file is a compressed file format that stores all the resources required to install an application in a single file.

To create a WAR file for the APEX images, open a terminal window and follow one of the following methods:

- Set the working directory to the images folder, which is available with the downloaded APEX file. For this course, you can set the directory by running this command:

```
cd /stage/apex/images
```

Run the following JAR command:

```
jar cvf0 <directory>/i.war .
```

where “directory” is the location in which you want the WAR file to be created. For this course, you can use this command:

```
jar cvf0 /stage/apex_listener/i.war .
```

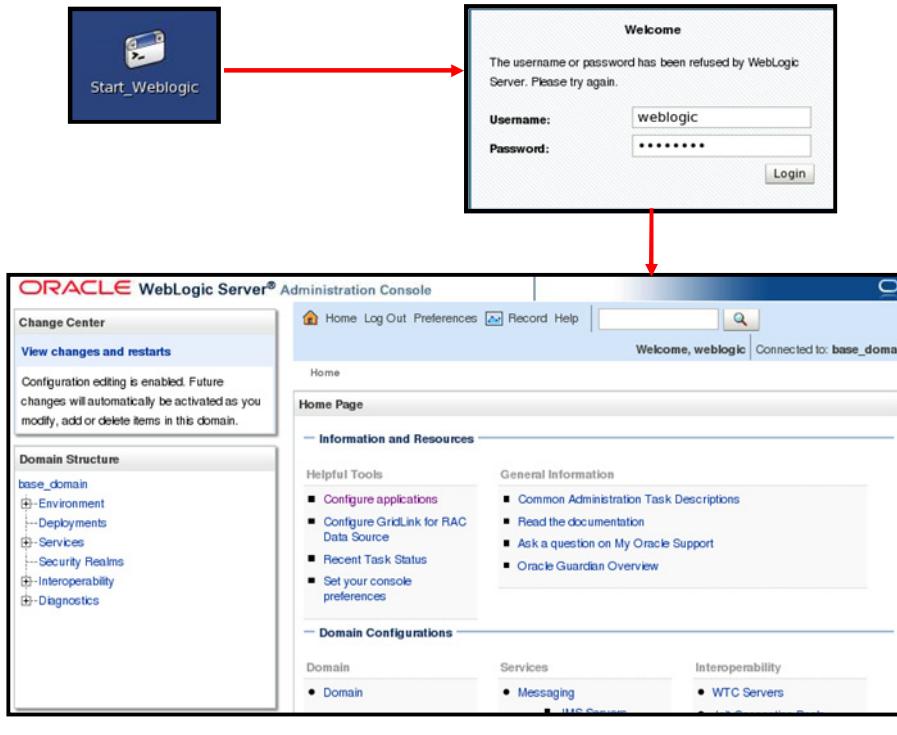
- Run the following JAR command:

```
jar cvf0 <directory>/i.war -C <apex_directory>/images .
```

Here, “directory” is the location in which you want the WAR file to be created and `apex_directory` is the location where you unzipped the downloaded APEX ZIP file.

After the command is executed successfully, navigate to the directory where you unzipped the `apex_listener` ZIP file and ensure that an `i.war` file is created. At this stage, you should have two WAR files: `apex.war` and `i.war` in the `apex_listener` directory.

# Logging In to WebLogic Server Administration Console



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Before you can log in to WebLogic Server, you must ensure that the server domain has been started. To start the server, navigate to the location where WebLogic Server is installed and run the `Start_Weblogic.sh` script. For this course, a shortcut is created. To start the server, click the `Start_Weblogic` icon from the desktop.

To access the WebLogic Server administration console, enter the following URL in the address bar:

```
http://<host>:<port>/console
```

For this course, you use the following URL:

```
http://localhost:9001/console
```

The WebLogic Server login screen is displayed. Enter the login credentials and click **Login**. In this course, you will use `weblogic/Welcom1` as the username/password.

You are successfully logged in to the WebLogic Server administration console and the home page is displayed.

## Deploying WAR Files

To deploy WAR files, access the WebLogic Server administration console and:

1. Click the Deployments link.
2. Click the Install button.
3. Enter the location of the WAR file.
4. Select Install this deployment as an application.
5. Enter name for the deployment and select a security model.
6. Review the summary information.

Name	State	Health	Type	Deployment Order
apex	Active	✓ OK	Web Application	100
i	Active	✓ OK	Web Application	100

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You need to deploy the following WAR files to WebLogic Server:

- *i.war*: This is the images folder that you created previously.
- *apex.war*: This file is available in the unzipped `apex_listener` directory.

To deploy these files, access the WebLogic Server administration console home page. From the Domain Structure region, click the **Deployments** link. A Summary of deployments is displayed.

To deploy the *apex.war* file, perform the following steps:

1. Click the **Install** button. An install application wizard opens.
2. Enter the location of the WAR file and click **Next**.
3. For the targeting style, select **Install this deployment as an application** and click **Next**.
4. Name the deployment as **apex** and select **Custom Roles** for security model. For the rest of the options, accept the default values and click **Next**.
5. Review the summary information and click **Finish**.

The *apex.war* file is successfully deployed.

To deploy the `i.war` file, perform the following steps:

1. Click the **Install** button. An install application wizard opens.
2. Enter the location of the WAR file and click **Next**.
3. For the targeting style, select **Install this deployment as an application** and click **Next**.
4. Name the deployment as `i` and select **DD Only** for security model. For the rest of the options, accept the default values and click **Next**.
5. Review the summary information and click **Finish**.

The `i.war` file is successfully deployed.

You can view a demo on how to deploy WAR files to WebLogic Server by opening the

`Demo_les04_deploy_apex.html` file from the

`/home/oracle/labs/demo/demo_04_deploy_apex` directory.

## Creating Administrator and Manager Users

To create WebLogic Server users, access the WebLogic Server administration console and:

1. Click the **Security Realms** link.
2. Click the **myrealm** link.
3. Click **Users and Groups** tab.
4. Click **New**.
5. Enter username, description (optional), and password.
6. Ensure that authentication provider is selected.
7. Save changes.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

As discussed previously in this lesson, you need to create two WebLogic Server users: administrator and manager. You need to provide a username and password for these users. Follow these guidelines while creating users:

- Usernames must be unique and are case-sensitive.
- Do not use commas, tabs, or any of these characters: <>, #, |, &, ?, (), {}.
- Minimum password length should be eight characters.

To create an administrator user, perform the following steps:

1. From the WebLogic Server home page, click the **Security Realms** link.
2. Click the **myrealm** security realm link. The settings for the security realm are displayed.
3. Click the **Users and Groups** tab. A table of users, if any, is displayed.
4. Click the **New** button. A Create New User page is displayed.
5. In the Name field, enter a username For example, adminlistener.
6. Optionally, enter a description for the user. For example, APEX Listener administrator user.

7. In the Provider drop-down list, ensure the authentication provider is selected.
8. In the Password field, enter a password and enter it again in the Confirm Password field.
9. Click **Ok**.

The administrator user is successfully created.

Similarly, a manager user should be created. The detailed steps are given below:

1. From the WebLogic Server home page, click the **Security Realms** link.
2. Click the **myrealm** security realm link. The settings for the security realm are displayed.
3. Click the **Users and Groups** tab. A table of users, with the adminlistener user you created previously, is displayed.
4. Click the **New** button. A Create New User page is displayed.
5. In the Name field, enter a username. For example, managerlistener.
6. Optionally, enter a description for the user. For example, APEX Listener manager user.
7. In the Provider drop-down list, ensure the authentication provider is selected.
8. In the Password field, enter a password and enter it again in the Confirm Password field.
9. Click **Ok**.

The manager user is successfully created.

You can view a demo on how to create WebLogic Server users for APEX by opening the `Demo_les04_create_users.html` file from the `/home/oracle/labs/demo/demo_04_create_users` directory.

## Creating Admin and Manager Roles

From the WebLogic Server administration home page, click **Security Realms > *myrealm* > Roles and Policies** and:

1. Expand the Deployments node and locate the apex node.
2. Expand the apex node and click Roles.
3. Click the New button and enter the role name.
4. Click OK.

To assign a role to a user:

1. Click the role name.
2. Click Add Condition.
3. For Predicate, select User.
4. Add username and click Finish.
5. Click the Save button.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The WebLogic Server users that you have created need to be assigned the correct roles. Follow the first set of steps listed in the slide to create two roles named Admin and Manager. After creating these roles, you need to assign the Admin role to the administrator user and the Manager role to the manager user. Follow the second set of steps listed in the slide.

You can view a demo on how to create WebLogic Server roles and assign them to users by opening the `Demo_les04_create_roles.html` file from the `/home/oracle/labs/demo/demo_04_create_roles` directory.

# Installing APEX Listener In Stand-Alone Mode

Command for stand-alone mode installation

```
java [options] -jar <temp directory>/apex.war
```

Unzipped APEX Listener file

```
-Dapex.home=/path/to/apex  
-Dapex.port=nnnn  
-Dapex.ajp=nnnn  
-Dapex.images=/images/location  
-Dapex.erase=true
```

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can install APEX Listener in stand-alone mode. This will help you to quickly get started with using APEX Listener. It is particularly useful when you want to troubleshoot issues and do not want to involve the application server. To install APEX Listener in stand-alone mode, perform the following steps:

1. Open a terminal window.
2. Enter the Java command shown in the slide.
3. When prompted, specify the location of the folder containing the images used by Oracle Application Express. For this course, it will be /stage/apex/images.
4. When prompted, enter **adminlistener** as username for the APEX Listener Administrator role.
5. When prompted, enter **Welcome1** as password for the APEX Listener Administrator role.
6. When prompted, enter **managerlistener** as username APEX Listener Manager role.
7. When prompted, enter **Welcome1** as password for the APEX Listener Manager role.

APEX Listener is installed and the default APEX Listener administration configuration URL opens.

While installing APEX Listener in stand-alone mode, you can provide the following options:

- **-Dapex.home=/path/to/apex**: Specify the path to the folder that will be used to store the web container run time. If you do not specify this option, the default location is: \${java.io.tmpdir}/apex.
- **-Dapex.port=nnnn**: Specify the HTTP port to listen for requests. If you do not specify this option, the default port number is 8080.
- **-Dapex.ajp=nnnn**: Specify the port to listen for AJP (mod\_jk) requests. By default, no port number is specified. If you specify an AJP port number, then HTTP access is disabled.
- **-Dapex.images=/images/location**: Specify the path to the folder containing static resources required by Application Express.
- **-Dapex.erase=true**: If set to true, the contents of \${apex.home} directory are erased before launching.

Remember the following if you are installing APEX Listener in stand-alone mode:

- Stand-alone installation is not supported or certified by Oracle.
- Stand-alone installation does not have the benefits of a full-fledged web server, such as management, scaling, failovers, and so on.
- Stand-alone installation can only run APEX. The stand-alone installation will not act as a server for any static content other than APEX.
- In stand-alone installation, there are no admin functions such as startup and shutdown, nor is there any monitoring of the process.
- Stand-alone installation is mostly used for testing and debugging situations.

## Quiz

Which of the following need to be deployed to an application server while installing APEX Listener for APEX with an application server?

- a. images WAR file
- b. apex WAR file
- c. apex listener WAR file
- d. application builder WAR file
- e. java WAR file



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a, b**

# Agenda

- Overview
- Installing APEX Listener
- Installing APEX Listener in Stand-Alone Mode
- Configuring APEX Listener
  - APEX Listener Administration URLs
  - APEX Listener Administration Interface
  - Creating a Database Connection
  - Applying the Configuration
  - Troubleshooting: Images Not Appearing
- Configuration Options



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# APEX Listener Administration URLs

For configuring APEX Listener

`http://host:port/apex/listenerConfigure`

1

For updating APEX Listener information

`http://host:port/apex/listenerAdmin`

2

For viewing the status of APEX Listener

`http://host:port/apex/listenerStatus`

3

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

After APEX Listener has been installed, you need to configure it. APEX Listener provides a graphical interface to perform these tasks.

Use the first URL listed in the slide to configure the APEX Listener for the very first time. This URL can be accessed without any login credentials.

When you need to update any configuration details, use the second URL listed in the slide. To access this URL, an administrator user with Admin role should have been created. If you have not configured APEX Listener using the Configure URL, you will not be able to access this Admin URL.

Use the third URL to view the status information for APEX Listener. To access this URL, a manager user with Manager role should have been created. When you access the listener status URL, you will be prompted for credentials. Enter the manager username and password.

The port used in all these URLs is the port where the application server has been installed. In a stand-alone installation, the port is 8080 by default. As discussed previously in this lesson, you can specify a different port number during the stand-alone installation.

**Note:** How to create the users and roles mentioned on this page has been explained earlier in this lesson.

# APEX Listener Administration Interface

The screenshot shows the Oracle Application Express Listener Administration interface. The title bar reads "ORACLE Application Express Listener Administration". Below it is a navigation bar with tabs: Connection, Security, Caching, Pre-Post Processing, Status, and Miscellaneous. The Connection tab is highlighted with a red border. The main content area is titled "Database Connection". It includes fields for "Username" (set to "APEX\_PUBLIC\_USER"), "Password", "Connection Type" (set to "Basic"), "Hostname", "Port" (set to "1521"), and two radio buttons for "SID" (selected) and "Service name" (set to "orcl"). Below these fields is a "JDBC Settings" button. At the bottom of the form are "Cancel" and "Apply" buttons, with the "Apply" button also highlighted with a red border.

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

When you enter one of the following URLs, the interface shown in the slide is displayed.

`http://host:port/apex/listenerConfigure`

`http://host:port/apex/listenerAdmin`

Remember, to configure APEX Listener for the very first time, you need to use the first URL (listenerConfigure).

For this course, you will use the following URL:

`http://localhost:9001/apex/listenerConfigure`

The APEX Listener administrative information is separated into six categories: Connection, Security, Caching, Pre-Post Processing, Status, and Miscellaneous. You will learn how to use each of these categories in this lesson.

The Cancel button will not save any changes you made and will display the default webpage. By default, this is set to the Application Express application. You will learn how to change the default webpage later in this lesson.

The Save button will save all changes you have made in any of the six tabs and display the default webpage.

# Creating a Database Connection

The screenshot shows the 'Connection' tab of the Oracle APEX Listener administration interface. The 'Database Connection' section is active. The 'Username' field contains 'APEX\_PUBLIC\_USER'. The 'Password' field is redacted. The 'Connection Type' dropdown is set to 'Basic'. Under 'Basic', the 'Hostname' is 'localhost', 'Port' is '1521', and 'SID' is 'orcl'. There is also an option for 'Service name'. Below the connection details is a 'JDBC Settings' button. At the bottom are 'Cancel' and 'Apply' buttons, with the cursor hovering over the 'Apply' button.

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Recollect that after you installed Application Express successfully, three database accounts are created: APEX\_040000, FLOWS\_FILES, and APEX\_PUBLIC\_USER. The APEX\_PUBLIC\_USER is used for configuring Application Express with a PL/SQL gateway.

The Connection tab in APEX Listener administration allows you to specify the credentials for the APEX\_PUBLIC\_USER and the other required connection details. To configure the database connection, perform the following steps:

1. For username, enter APEX\_PUBLIC\_USER.
2. For password, enter the password you set for the APEX\_PUBLIC\_USER after Application Express installation.
3. For host name, enter the location of the database where Application Express is installed. For this course, enter localhost.
4. The port and SID are populated by default. You can change them depending on the database configuration. For this course, you can use the default values.
5. To save the connection details, click the Apply button.

If the connection is applied successfully, the APEX development interface login page will be displayed.

To log in to APEX, specifying the database connection is mandatory. After being applied, the database connection information cannot be updated.

## Other Database Connection Options

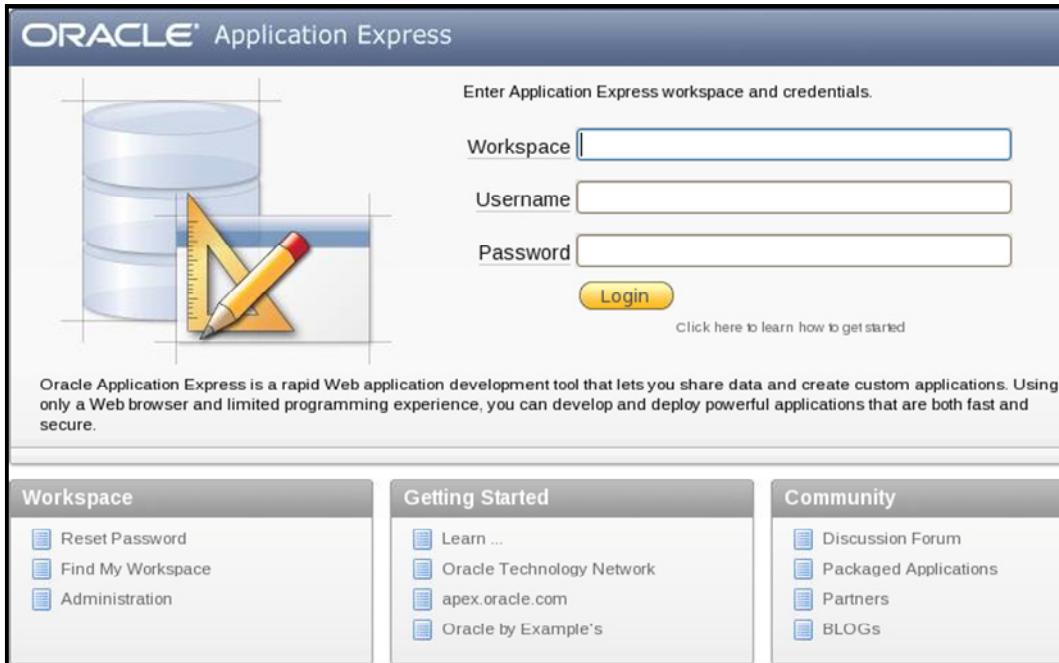
### Connection Type

- By default, this is set to Basic. Using the Basic connection type is sufficient in almost all cases.
- Use the TNS option if the connection details are specified in a `tnsnames.ora` file.
- Use the Advanced option if you want to specify a custom JDBC URL to connect to the database.

### JDBC Settings

The JDBC options are set by default. You can review the details and make any required changes. The JDBC Driver type can be set only once. Similar to the database connection information, the JDBC Driver type can not be changed after the initial configuration is applied. The rest of the JDBC settings can be updated later.

# Troubleshooting: Images Not Appearing



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

After the initial APEX Listener configuration (database connection) is applied, the APEX development interface login page, as shown in the slide, should appear. If your login page seems to be missing images or missing partial images, and links are being displayed instead, then your Oracle Application Express images have not been set up properly.

If you have not copied or deployed the APEX images to your application server, then refer to previous slides about how to deploy images to the application server.

After deploying the images to the application server, if the APEX development interface login page still does not appear properly, you should check if:

- The images WAR file was created properly
- The images WAR file was deployed properly
- The correct version of images is deployed
- Another virtual directory with the alias /i/ exists
- A different directory name was used

## Quiz

Which of the following can be changed after the initial APEX Listener configuration:

- a. Default webpage
- b. Database account credentials
- c. JDBC parameter settings
- d. JDBC Driver type
- e. Host name



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a, c**

# Agenda

- Overview
- Installing APEX Listener
- Installing APEX Listener in Stand-Alone Mode
- Configuring APEX Listener
- Configuration Options
  - Updating Configuration Information
  - Specifying Security for Procedures
  - Caching File-Based Content
  - Specifying Pre- and Post-Processing Procedures
  - Viewing Status Information
  - Viewing Options in the Miscellaneous Tab
  - Saving the Configuration



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Updating Configuration Information

The screenshot shows the Oracle Application Express Listener Administration interface. The title bar reads "ORACLE Application Express Listener". Below it, the "Administration" section is visible. A horizontal menu bar contains tabs: Connection (highlighted in blue), Security, Caching, Pre-Post Processing, Status, and Miscellaneous. Under the Connection tab, the "Database Connection" section is displayed. It includes fields for "Username" (set to "APEX\_PUBLIC\_USER"), "Password" (redacted), and "Connection Type" (set to "Basic"). Below these, there are fields for "Hostname" (set to "localhost"), "Port" (set to "1521"), and "SID" (set to "orcl"). There is also an option for "Service name" which is currently disabled. A "JDBC Settings" link is present. At the bottom right of the form are "Apply" and "Cancel" buttons.

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

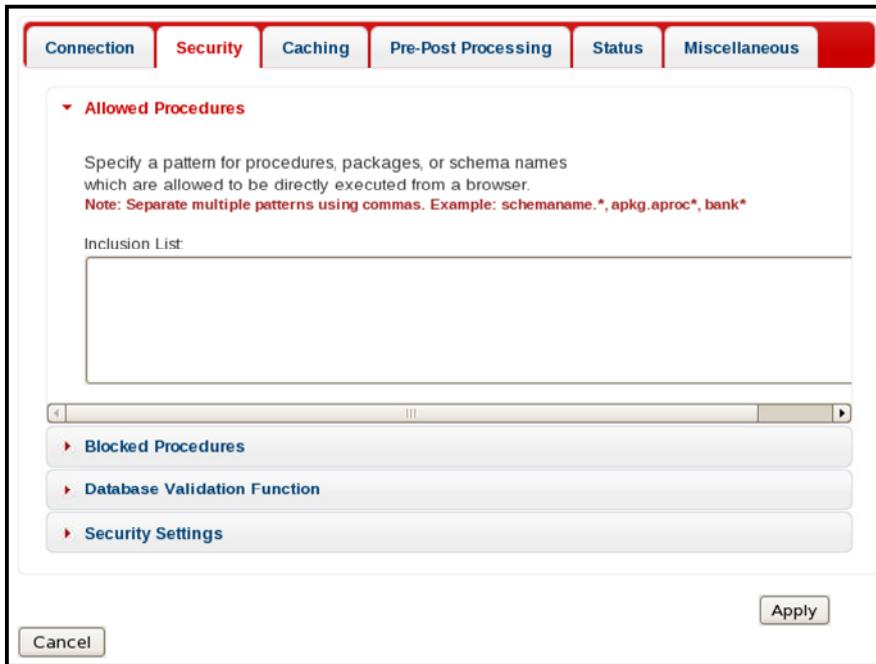
ORACLE

After configuration, if you want to update the APEX Listener configuration details or add new information, you can access the Administration interface by using the following URL:

`http://host:port/apex/listenerAdmin`

The same interface that you used during configuration is displayed. Notice that the connection details are now disabled and you cannot make any changes to them.

# Specifying Security for Procedures



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Using APEX Listener administration, you can secure Application Express by validating the procedures that are requested from the browsers. The Security tab has four subcategories: Allowed Procedures, Blocked Procedures, Database Validation Function, and Security Settings. Click each of these subcategories to view the available configuration options.

**Allowed Procedures:** This option contains a text area where you can mention a list of all procedures, packages, and schema that can be directly executed from a browser. You can enter the actual name or specify a pattern by using the wildcard characters asterisk (\*) and question mark (?). The asterisk substitutes zero or more characters and the question mark substitutes a single character. Some examples of patterns are abc.\* , xyz\* , a?\_name\* , and so on.

**Blocked Procedures:** Similar to the Allowed Procedures option, you can enter a list of procedures, packages, and schemas that should not be executed directly from the browser. In addition, there is a check box option to disable the default internal Exclusion list. The default internal Exclusion list contains these patterns: sys.\* , dbms\_\* , utl\_\* , owa\_\* , owa.\* , http.\* , ht f.\* , and wpg\_docload.\* . It is recommended that you do not disable this list, except for debugging purposes.

**Database Validation Function:** You can enter a name of a stored function. This function should be created in the database (where Application Express is installed) and it should accept a procedure name, validate whether the procedure is allowed to execute from the browser, and return a boolean value. A sample format for the function is given as follows:

```
CREATE OR REPLACE
FUNCTION CHECK_VALID_PROCEDURE (Procedure_Name IN VARCHAR2)
RETURN BOOLEAN
AS
BEGIN
  IF (UPPER(Procedure_Name) LIKE ('CUST%')) THEN
    RETURN true;
  ELSE RETURN false;
  END IF;
END CHECK_VALID_PROCEDURE;
```

Securing procedures using Database Validation Function requires interaction with the database, whereas using the Allowed Procedures option stores the names and patterns in APEX Listener itself.

**Security Settings:** In order to reduce the number of database interactions while using the Database Validation Function option, you can use the Security Settings option to specify a maximum number of procedure names and patterns to cache. At any point in time, you can view the maximum number of entries that are cached by APEX Listener and you can also clear the cache, if needed. It is recommended that you clear this cache each time you update the validation function.

In the Security tab, if you enter values in all three subcategories, in what order does APEX Listener execute the validation?

It first executes the Database Validation Function to check if the procedure is valid. If the function returns True, it checks whether the function is listed in the Inclusion list. If the procedure is listed there, it checks whether the procedure is not listed in the Exclusion list. If it is not listed, then the procedure has passed all validations and is executed from the browser.

# Caching File-Based Content

The screenshot shows the 'Caching' tab selected in a navigation bar. Under the 'Cache Files' section, there is a note about specifying procedure names for caching. A text area for 'Procedure Names' is empty. Below it, two radio button options are shown: 'Keep most recently used files' (selected) with a maximum of 500 entries, and 'Keep files for the specified duration' with an expiration of 7 days. A 'Cache Settings' link is visible, along with 'Apply' and 'Cancel' buttons.

ORACLE

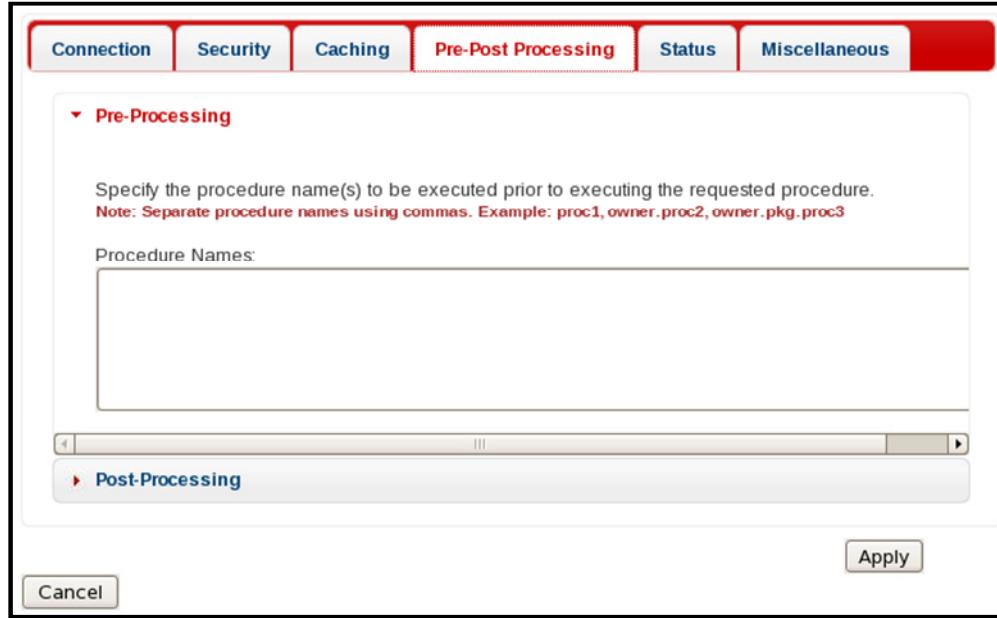
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Using APEX Listener administration, you can improve Application Express performance by caching files that are referenced by procedures. The Caching tab has two subcategories: Cache Files and Cache Settings.

**Cache Files:** In the text area, enter the name of the procedure that references the files you want to cache. You can also specify a maximum number of files to cache and for how long.

**Cache Settings:** You can specify the directory to be used for caching files. At any point in time, you can view the total number of files cached and clear the cache, if needed.

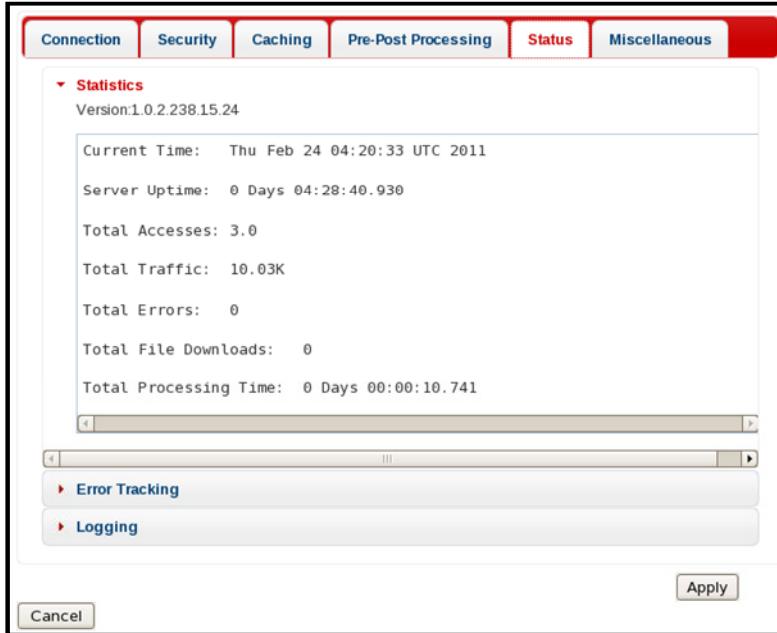
# Specifying Pre- and Post-Processing Procedures

**ORACLE**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Using APEX Listener administration, you can specify procedures that should be executed automatically before or after the procedure requested by the browser is executed. You can specify this in the Pre-Post Processing tab. Enter the procedures in the order in which you want them to be executed.

## Viewing Status Information



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

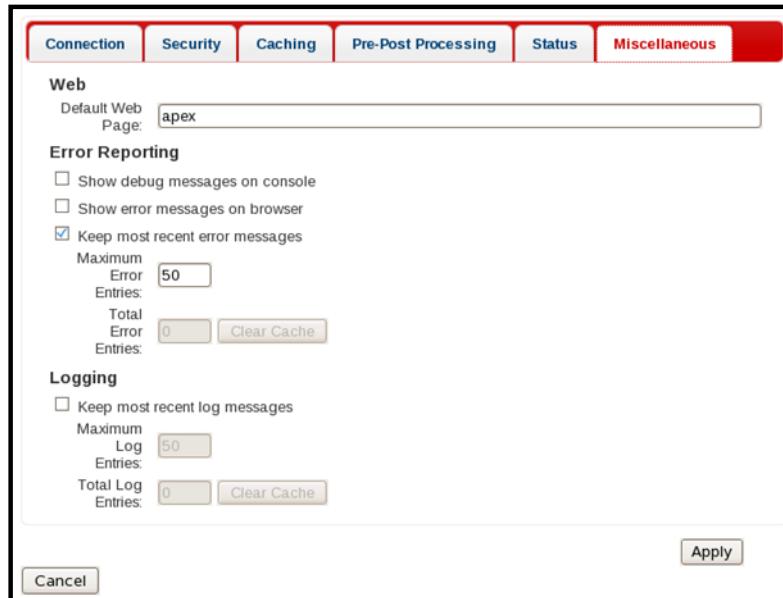
The APEX Listener administration Status tab has three subcategories. Click Statistics to view information like server uptime, active requests, processing time, security settings, cache entries, and so on. Click Error Tracking to view recent error messages. Click Logging to view a log of the activities occurring in APEX Listener.

You can also view the status information by using the following URL:

`http://host:port/apex/listenerStatus`

To access this URL, you need to enter the WebLogic Server manager user credentials.

## Viewing Options in the Miscellaneous Tab



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Using the Miscellaneous tab in APEX Listener administration, you can specify the following:

- **Default Web Page:** This is the page that is displayed after you click the Cancel or Apply button. By default, it is set to apex, which takes you to the Application Express login page.
- **Error Reporting:** Use these options to specify where and how you want the errors to be displayed. You can choose to view errors in the browser itself or in the Statistics tab of APEX Listener administration.
- **Logging:** Use these options to control the logs that are displayed in the Statistics tab of APEX Listener administration.

# Saving the Configuration

Connection Security Caching Pre-Post Processing Status Miscellaneous

Web  
Default Web Page: apex

Error Reporting  
 Show debug messages on console  
 Show error messages on browser  
 Keep most recent error messages  
Maximum Error Entries: 50  
Total Error Entries: 0

Logging  
 Keep most recent log messages  
Maximum Log Entries: 50  
Total Log Entries: 0

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Click the **Apply** button to save all the information you entered into APEX Listener administration. If you entered any incorrect data, or if any information is missing, an error message is displayed. Else, all the configuration information is entered into a configuration file and the default webpage is displayed.

## Quiz

Which of the following are possible with APEX Listener?

- a. Validating users who access APEX
- b. Validating procedures executed from APEX
- c. Caching file-based content
- d. Updating connection details whenever required



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: b, c**

## Summary

In this lesson, you should have learned how to:

- Explain what APEX Listener is
- Identify the application server options available for installing APEX Listener
- Install APEX Listener
- Configure APEX Listener
- Describe the various configuration options



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Practice 4 Overview: Installing and Configuring APEX Listener

This practice covers the following topics:

- Creating WAR file for APEX images
- Deploying WAR files
- Creating WebLogic Server users
- Creating WebLogic Server roles and assigning to users
- Configuring APEX Listener
- Viewing all APEX Listener configuration options



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In this practice, you will deploy APEX Listener and Application Express images WAR files to the WebLogic Server application server. You will create the WebLogic Server users and roles required to access APEX Listener. Finally, you will configure APEX Listener.

## Creating Workspaces

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Objectives

After completing this lesson, you should be able to:

- Create workspaces
- Create users
- Create schemas



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

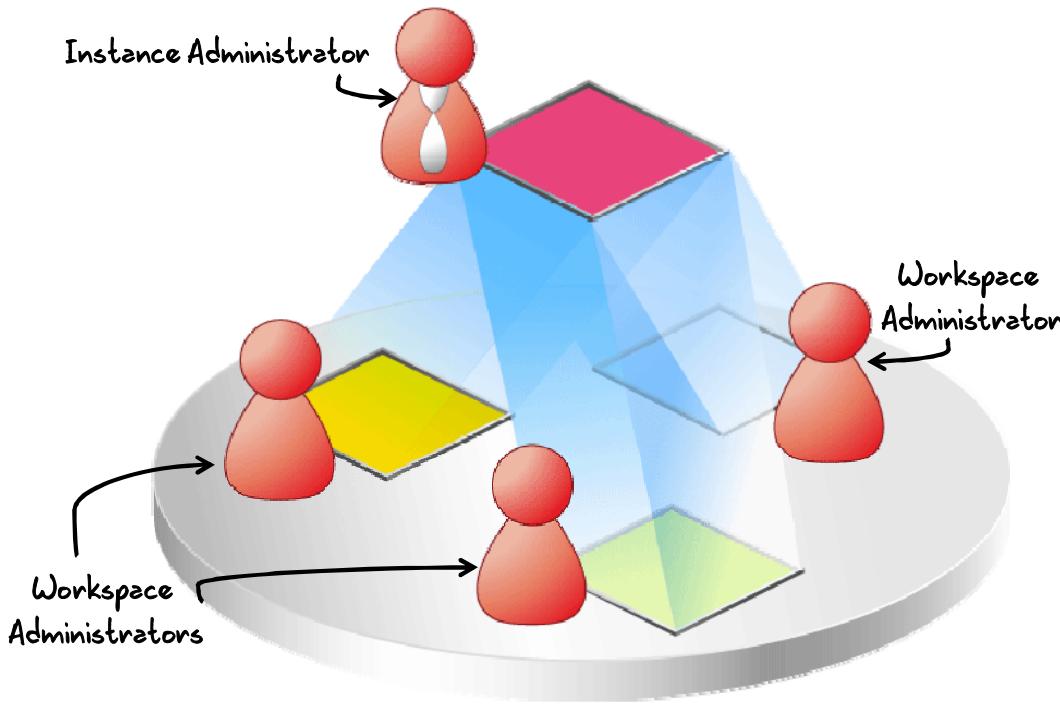
# Agenda

- Overview
  - Two Types of Administrators: A Recap
  - Logging In to Administration Services
  - Instance Administration Page
  - Manage Workspaces Page
- Creating Workspaces
- Creating Users
- Creating Schemas
- Managing Existing Workspaces



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Two Types of Administrators: A Recap



ORACLE

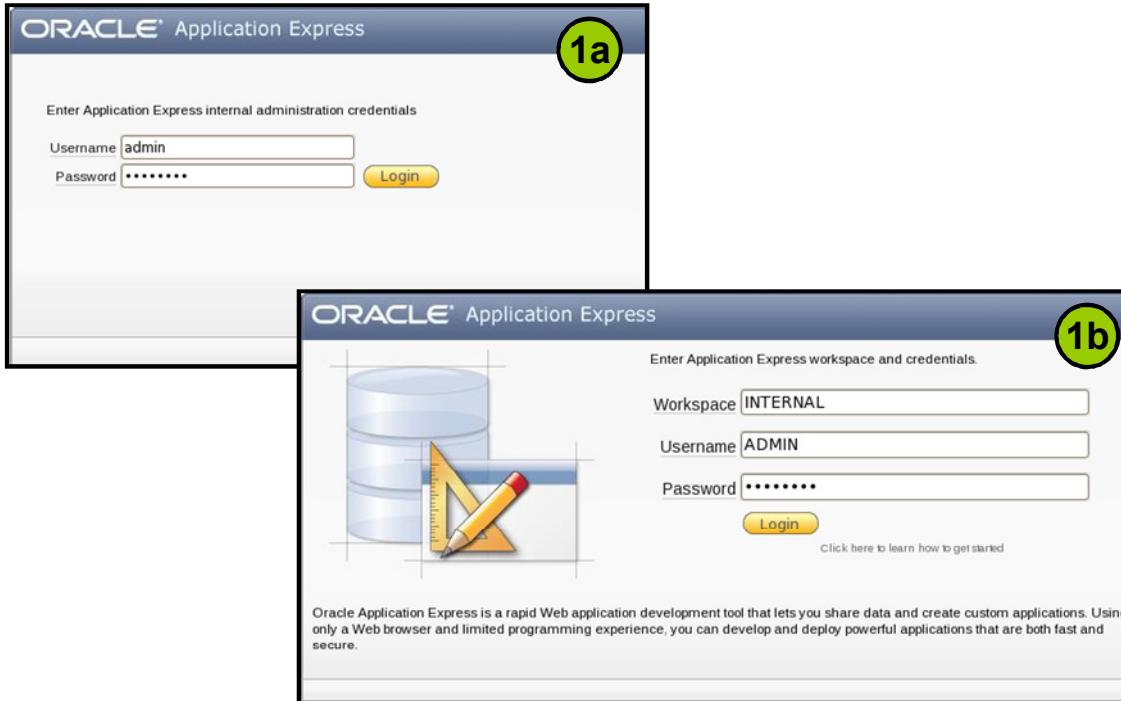
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

There are two types of administrator users in APEX.

- **Instance Administrators:** These users manage an entire APEX installation. They can create workspaces, view various reports on all the workspaces, and apply settings on all or specific workspaces. By default, after a successful installation of APEX, an “admin” instance administrator is created.
- **Workspace Administrators:** These users manage a particular workspace. They can monitor the workspace for which they are administrators and also create other users for that workspace.

In this lesson, you learn how to perform some of the tasks of an instance administrator.

# Logging In to Administration Services



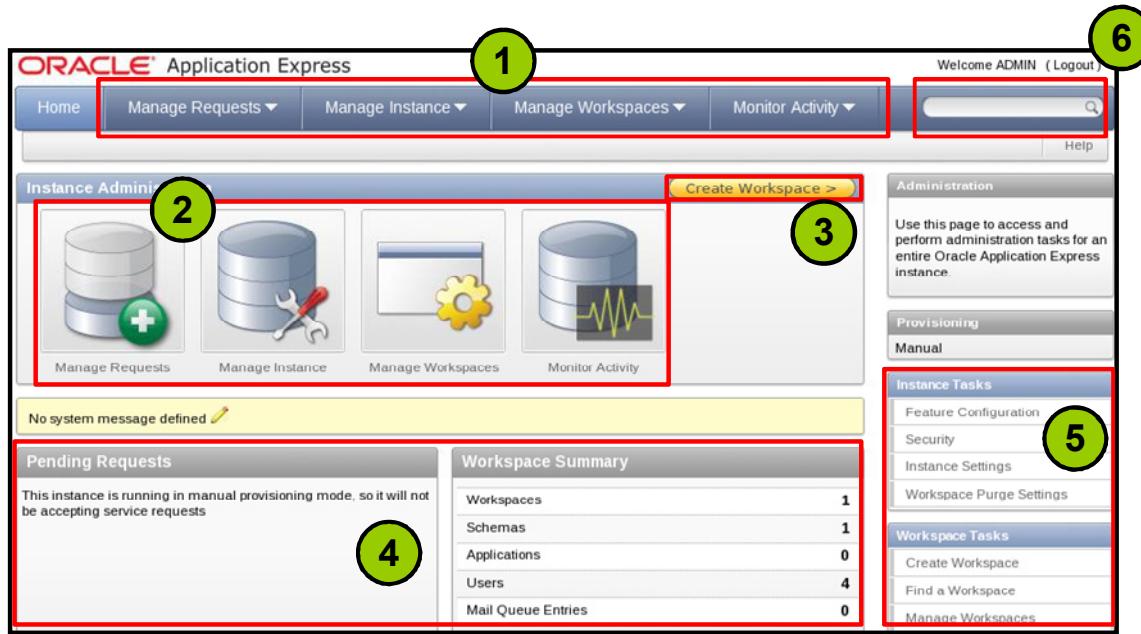
ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can log in to the APEX Administration Services by using the instance administrator credentials. You can access the Administration Services directly by appending /`apex_admin` at the end of the APEX development interface URL. A login page prompting for a username and password is displayed (shown in screenshot 1a).

You can also log in to the Administration Services from the APEX development interface login page (shown in screenshot 1b). You need to enter `internal` for the workspace name. For username and password, enter the instance administrator credentials.

# Instance Administration Page



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**ORACLE**

When you log in to Administration Services, the page shown in the slide is displayed. You can perform various tasks from the home page.

1. You can navigate to the four major subcategories of Administration Services by clicking the tabs at the top of the page. You can click the down arrow next to a tab and select a specific action from a drop-down menu.
2. You can click an icon to navigate to the home page of the respective category.
3. You can click the Create Workspace button to access the Create Workspace wizard.
4. You can view the requests that require your action and other workspace details.
5. You can click a link from the Instance Tasks and Workspace Tasks sections to perform a particular task.
6. You can search for a workspace by entering a word or phrase in the Search field.

# Manage Workspaces Page

The screenshot shows the Oracle Application Express interface for managing workspaces. At the top, there's a navigation bar with links for Home, Manage Requests, Manage Instance, Manage Workspaces (which is the active tab), and Monitor Activity. A search bar and a help link are also present. Below the navigation, a breadcrumb trail shows 'Home > Manage Workspaces'. The main content area is divided into several sections:

- Workspace Actions:** Includes icons for Create Workspace, Remove Workspace, Lock Workspace, Manage Workspace to Schema Assignments, Manage Developers and Users, and Manage Component Availability.
- Workspace Reports:** Includes icons for Existing Workspaces, Workspace Details, Workspace Database Privileges, Workspaces with Only Sample Application, and Manage File Utilization.
- Manage Workspaces:** A descriptive panel explaining what a workspace is: "A workspace is a shared work area where multiple developers can create applications. Each workspace has the privilege to parse as one or more database schemas."
- Export Import:** Includes icons for Import Workspace and Export Workspace.
- Manage Applications:** Includes icons for Application Attributes, Build Status, and Parsing Schemas.

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In this lesson, you will focus on the tasks you can perform from the Manage Workspaces component of Administration Services. You can access the page (displayed in the slide) by clicking the Manage Workspace tab. You can perform various tasks like create, remove, and lock workspaces. You can view reports run against the workspaces and also export and import workspaces.

## Quiz

You can create more than one instance administrator for a single APEX installation.

- a. True
- b. False



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a**

# Agenda

- Overview
- Creating Workspaces
  - Provisioning Modes
  - Setting the Provisioning Mode
  - Accessing the Create Workspace Wizard
  - Creating a Workspace Manually
  - Requesting a Workspace
- Creating Users
- Creating Schemas
- Managing Existing Workspaces



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Provisioning Modes

Workspace Provisioning determines how a workspace is created.

There are three provisioning modes:

- Manual
- Request
- Email Verification

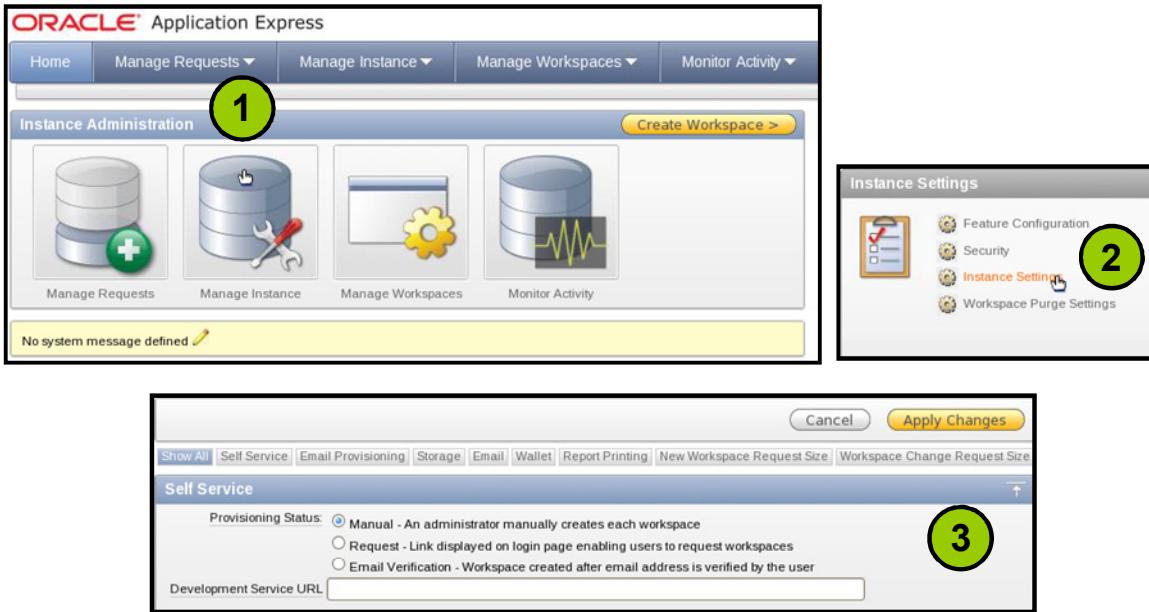


Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Workspace provisioning is the process that determines how a workspace is provisioned or created. In APEX, there are three provisioning modes:

- **Manual:** The instance administrators will log in to Administration Services and create a workspace by accessing the Create Workspace wizard. This is the default provisioning mode.
- **Request:** If this option is selected, then a Request a Workspace link is displayed in the APEX development interface login page. You can click the link and enter details on the workspace that you need and a justification of why you need it. The request is submitted for approval. An instance administrator can view these requests and approve or decline the request. Accordingly, an email is sent to the requestor.
- **Email Verification:** This option is similar to the Request option. However, the workspace is created only after the requestor confirms the request by clicking a link, which is sent in the approval email.

# Setting the Provisioning Mode



ORACLE®

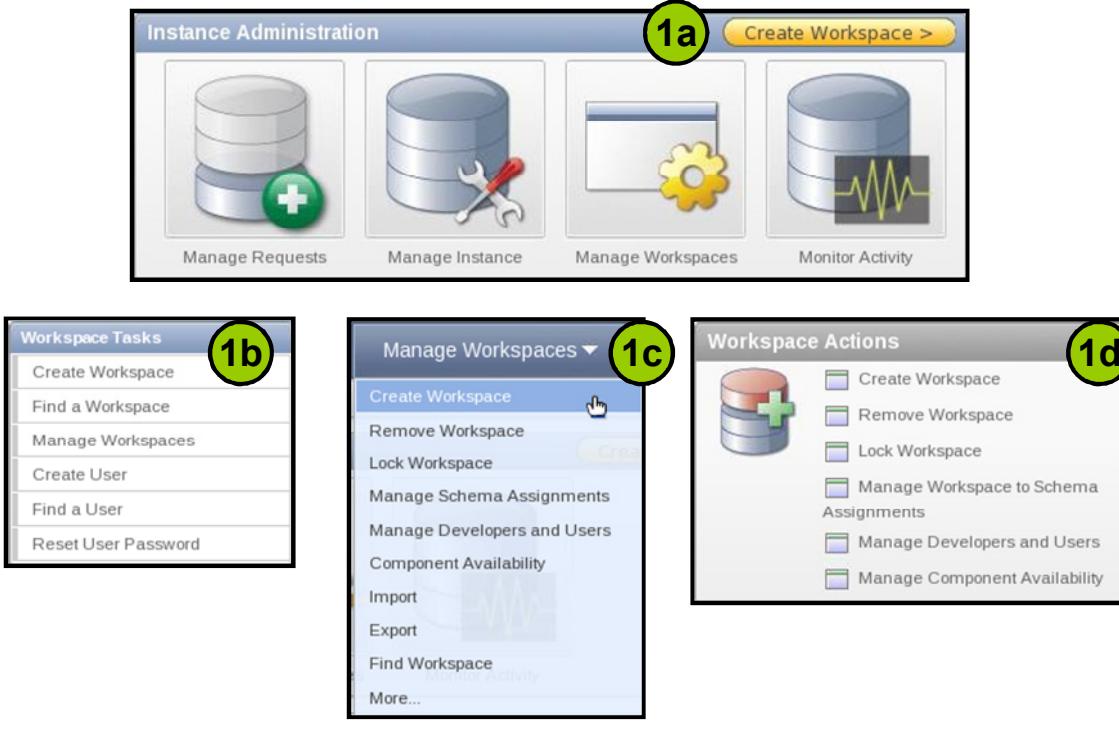
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To set the workspace provisioning mode for an APEX Instance, perform the following steps:

1. From the Administration Services home page, click the **Manage Instance** icon.
2. From the Instance Settings region, click the **Instance Settings** link.
3. Under Self Service, select the provisioning mode you want to set and click **Apply Changes**.

If you select the Request or Email Verification modes, you can optionally enter the APEX development interface URL. This value is used in the approval email. If this field is left blank, the URL is determined from the environment itself.

# Accessing the Create Workspace Wizard



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

When the workspace provisioning mode is set to Manual, only instance administrators can create workspaces.

You can access the Create Workspace wizard in one of the following ways:

- 1a. From the home page, click the **Create Workspace** button.
- 1b. From the home page, click **Create Workspace** from the Workspace Tasks region.
- 1c. Click the down arrow in the Manage Workspaces tab and select **Create Workspace** from the drop-down menu.
- 1d. Access the Manage Workspaces page and click the **Create Workspace** link from the Workspace Actions region.

# Creating a Workspace Manually

**Step 1:** Create Workspace (Workspace Name: teach)

**Step 2:** Create Workspace (Schema Name: teach, Schema Password: \*\*\*\*\*)

**Step 3:** Create Workspace (Administrator Username: teach\_admin, Administrator Password: \*\*\*\*\*)

**Step 4:** Confirm Request (Review workspace information: Name: teach, Security Group ID: System Assigned, Description: ...)

**Step 5:** Workspace Created (Success message: Workspace successfully provisioned. Workspace teach provisioned with administrator teach\_admin. Database user TEACH created with default tablespace APEX\_1295223637632350 using datafile /u01/app/oracle/oradata/orcl/APEX\_1295223637632350.dbf)

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To create a workspace by using the Create Workspace wizard, perform the following steps:

1. Enter a unique workspace name. Optionally, enter a Workspace ID and Description. If you leave the Workspace ID field blank, the ID is generated automatically. If you enter an ID you must ensure that it is unique within the APEX instance and it is a positive integer greater than 100000. Click **Next**.
2. You can choose to create a new schema for the workspace or specify an existing schema. If you want to create a new schema, select **No** for “Re-use existing schema?” and enter a Schema Name and Password. If you want to use an existing schema, select **Yes** for “Re-use existing schema?” and select the schema by clicking the icon next to the Schema Name field. Click **Next**.
3. Enter the username, password, and email for the workspace administrator user and click **Next**.
4. Review the details you have entered and click the **Create Workspace** button.
5. The workspace is created successfully. Click **Done** to exit the wizard.

# Requesting a Workspace

The screenshot shows the 'Self Service' configuration page. Under 'Provisioning Status', the 'Request - Link displayed on login page enabling users to request workspaces' option is selected. A 'Development Service URL' input field is present. Below this, the 'Email Provisioning' section is shown with 'Enabled' selected. A message input field is also visible.

The screenshot shows the 'Application Express Login Page'. It features a 'Workspace' menu with several options: 'Request a Workspace' (which is highlighted with a red box), 'Reset Password', 'Find My Workspace', and 'Administration'.

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

When you set the provision mode to Request or Email Verification, a Request a Workspace link is displayed in the APEX development interface login page. When you set the provisioning mode to Email Verification, you have an option to enable or disable email provisioning.

## Quiz

Workspace provisioning mode can be set and changed by:

- a. Instance Administrator
- b. Workspace Administrator
- c. Database Administrator
- d. Developer
- e. All of the above



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a**

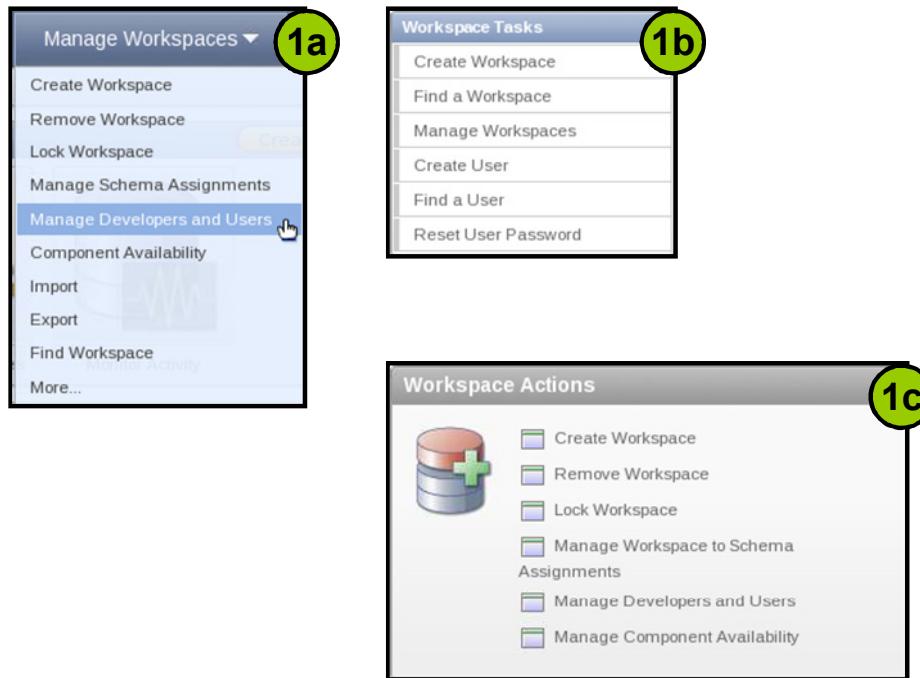
# Agenda

- Overview
- Creating Workspaces
- Creating Users
  - Accessing the Manage Developers and Users Page
  - Creating a User
  - Setting Account Privileges
  - Editing/Deleting a User
- Creating Schemas
- Managing Existing Workspaces



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Accessing the Manage Developers and Users Page



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can access the Manage Users and Developers page in any of the following ways:

- 1a. Click the down arrow in the **Manage Workspaces** tab and select **Manage Developers and Users**.
- 1b. From the home page, click the **Create User** link from the Workspace Tasks region.  
(This takes you directly to the Create/Edit User Page.)
- 1c. Access the Manage Workspaces page and click the **Manage Developers and Users** link from the Workspace Actions region.

# Creating a User

The figure consists of three vertically stacked screenshots from Oracle Application Express:

- Screenshot 1:** A list of users. The "Create User" button is highlighted with a green circle labeled "1".
- Screenshot 2:** The "User Attributes" page. It shows fields for Username (teach\_dev), Email Address (teach\_dev@oracle.com), First Name, Last Name, and Description. The "Create" button is highlighted with a green circle labeled "2".
- Screenshot 3:** The "Password" page. It shows fields for Password and Confirm Password, both containing four dots. A note says "Passwords are case sensitive". A dropdown menu for "Require Change of Password on First Use" is set to "No". The "Create" button is highlighted with a green circle labeled "3".

ORACLE

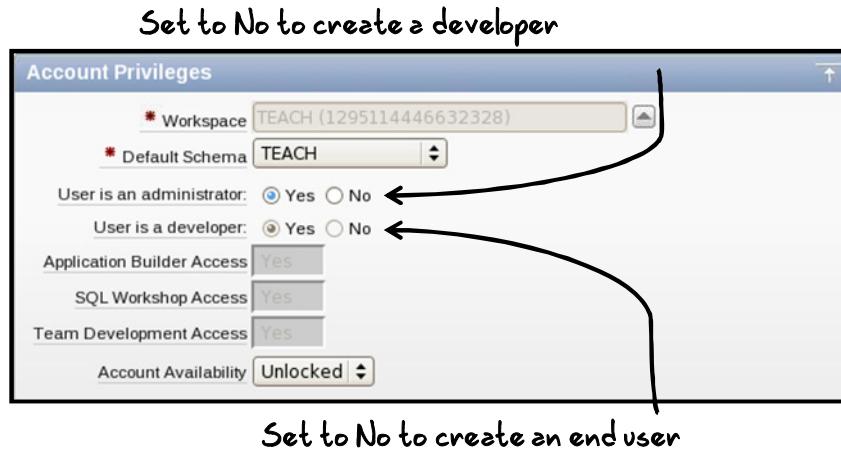
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can create users for any workspace by accessing the Create User page. To create a user, perform the following steps:

1. From the Manage Developers and Users page, click the **Create User** button.
2. The Create/Edit User page appears. Enter the Username and Email Address for the user you want to create.
3. Enter a password for the user in the Password and Confirm Password fields. You can specify if this password should be changed by the user on first login.

The next slide explains how to set the account privileges for the user. After completing the Account Privileges section, click the **Create** button to create the user. If you want to create another user, you can click the **Create and Create Another** button.

# Setting Account Privileges



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the Account Privileges section of the Create/Edit User page, you can specify in which workspace you want to create the user and with what role and privileges.

In the Workspace field, select the workspace in which the user should be created.

In the Default Schema drop-down, a list of available schemas for the workspace appears. You can specify one of the listed schemas as the default schema for the user.

You can create a user with workspace administrator role by selecting **Yes** for “User is an administrator.” You can create a developer user by selecting **No** for “User is an administrator.” You can create an end user by selecting **No** for both “User is an administrator” and “User is a developer.”

Depending on the role you specify for the user, the other options are enabled or disabled. You can configure access to APEX development interface components according to your requirements.

## Editing/Deleting a User

The screenshot shows two overlapping windows. The top window is a table titled 'User' with columns: User, Full Name, Workspace, Default Schema, Created, Last Updated, and Password. It contains three rows: ADMIN (INTERNAL, -), TEACH\_ADMIN (TEACH, TEACH), and TEACH\_DEV (TEACH, TEACH). The row for TEACH\_DEV has a red box around its pencil icon. A red arrow points from this icon down to the second window. The bottom window is titled 'User Attributes' and contains fields for Username (TEACH\_DEV), Email Address (teach\_dev@oracle.com), First Name, Last Name, and Description. It has 'Cancel', 'Delete User', and 'Apply Changes' buttons.

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can view a list of all users created in the APEX instance from the Manage Developers and Users page. To edit a user, click the pencil icon next to the user, make the changes, and click the **Apply Changes** button. To delete a user, click the pencil icon next to the user and click the **Delete User** button.

## Quiz

Which of the following users can an instance administrator create?

- a. End User
- b. Developer
- c. Workspace Administrator
- d. Instance Administrator
- e. All of the above



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: e**

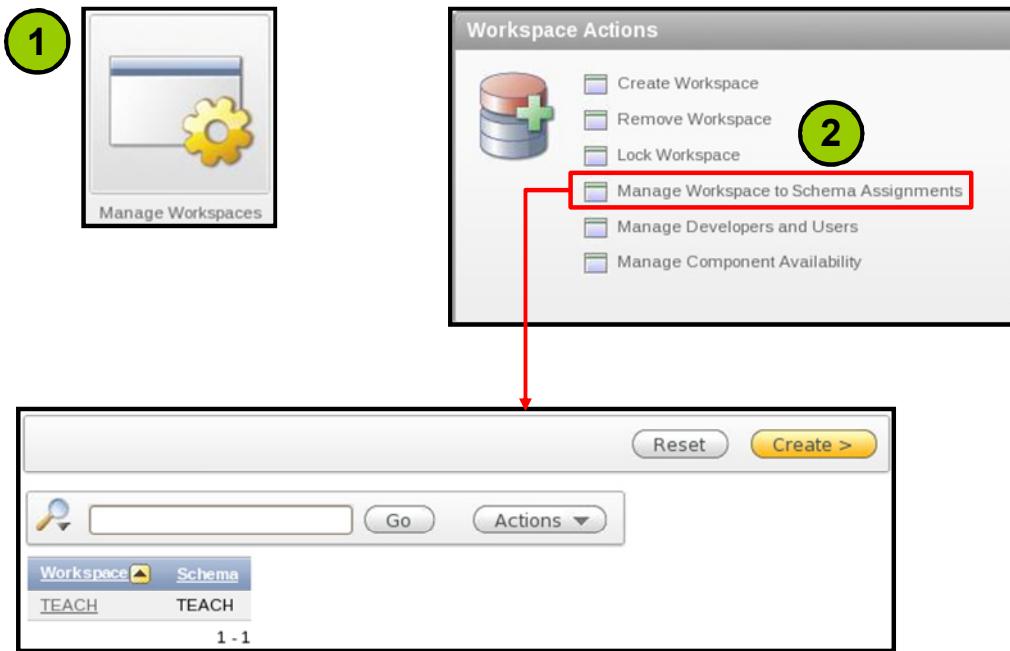
# Agenda

- Overview
- Creating Workspaces
- Creating Users
- Creating Schemas
  - Viewing Schemas Assigned to a Workspace
  - Adding Existing Schemas to a Workspace
  - Creating a New Schema for a Workspace
  - Editing Schema Assignments
- Managing Existing Workspaces



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Viewing Schemas Assigned to a Workspace



ORACLE®

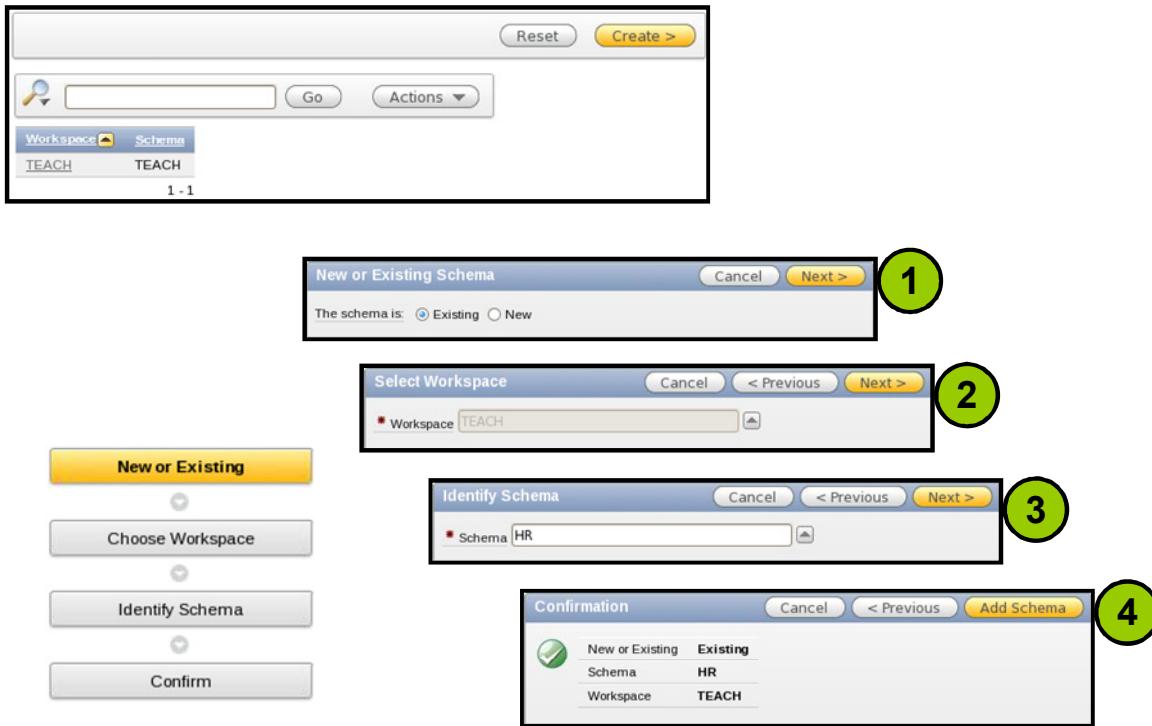
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can view all the schemas that have been assigned to each workspace in an APEX instance from the Manage Schema Assignments page. To access the Manage Schema Assignments page, perform the following steps:

1. From the Administration Services home page, click the **Manage Workspaces** icon.
2. From the Workspace Actions region, click the **Manage Workspaces to Schema Assignments** link.

Alternatively, you can click the down arrow in the **Manage Workspaces** tab and select **Manage Schema Assignments**.

# Adding Existing Schemas to a Workspace



ORACLE

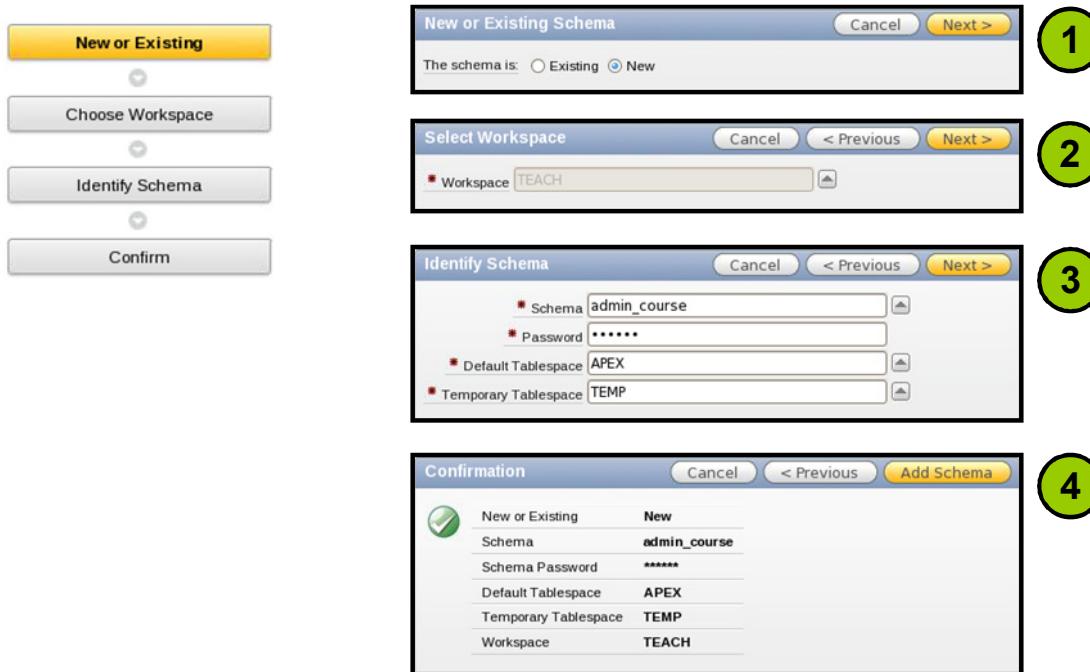
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To assign additional schemas (existing schemas) to a workspace, click the **Create** button from the Manage Workspace to Schema Assignments page and perform the following steps:

1. Select **Existing** and click **Next**.
2. Select the workspace where you want to add the schema and click **Next**.
3. Select the schema that you want to add and click **Next**.
4. Review the details and click **Add Schema**.

The schema you selected in Step 3 is added to the workspace mentioned in Step 2.

# Creating a New Schema for a Workspace



ORACLE

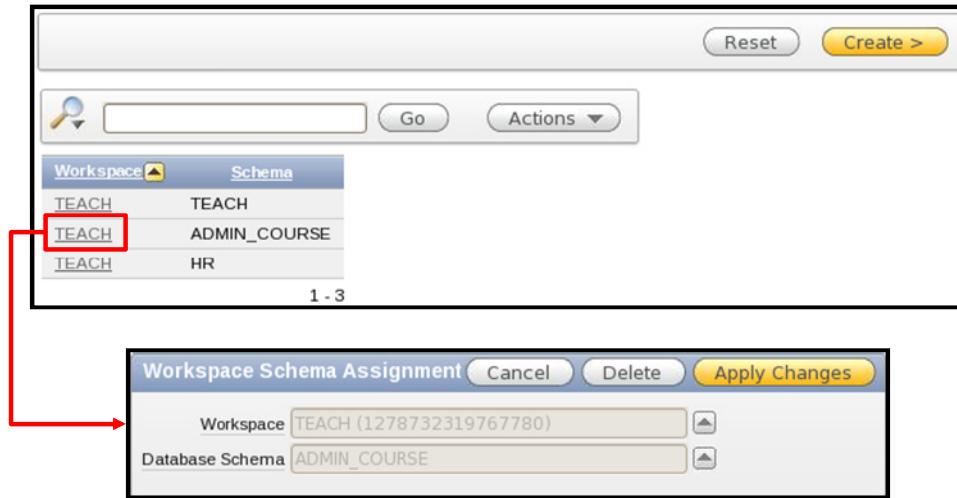
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To create new schemas for a workspace, click the **Create** button from the Manage Workspace to Schema Assignments page and perform the following steps:

1. Select **New** and click **Next**.
2. Select the workspace where you want to add the schema and click **Next**.
3. Enter a name and password for the schema. Select a default and temporary tablespace for the schema and click **Next**.
4. Review the details and click **Add Schema**.

The schema you entered in Step 3 is added to the workspace mentioned in Step 2.

# Editing Schema Assignments



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can edit the existing schema assignment. For example, Workspace A has been assigned schema HR. Instead of this HR schema, you want to assign schema OE to Workspace A. You can edit workspace to schema assignments by performing the following steps:

1. From the Manage Workspace to Schema Assignments page, click the workspace name link.
2. Make the required change to the workspace or database schema and click the **Apply Changes** button.

## Quiz

At any given point in time, how many schemas can be assigned to a workspace?

- a. One
- b. Two
- c. At least one and at the maximum two
- d. As many as required



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: d**

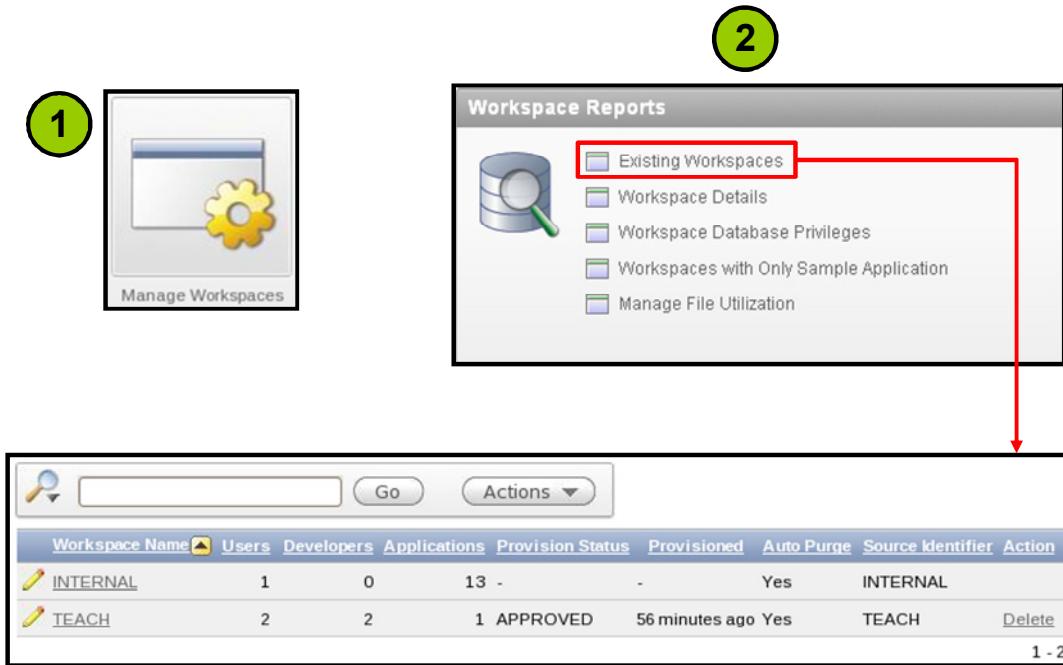
# Agenda

- Overview
- Creating Workspaces
- Creating Users
- Creating Schemas
- Managing Existing Workspaces
  - Viewing Existing Workspaces
  - Viewing Database Privileges
  - Managing Component Availability
  - Deleting a Workspace
  - Locking a Workspace



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Viewing Existing Workspaces



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To view a list of all existing workspaces in an APEX Instance, perform the following steps:

1. From the Administration Services home page, click the **Manage Workspaces** icon.
2. Click the **Existing Workspaces** link located under Workspace Reports.

The report displays the number of users, developers, applications, and other details. You can edit the workspace name and other details by clicking the pencil icon next to the workspace name. Note that you cannot edit the internal workspace.

# Viewing Database Privileges

The screenshot shows two parts of the Oracle Application Express interface. On the left, a sidebar titled 'Workspace Reports' lists several options: 'Existing Workspaces', 'Workspace Details', 'Workspace Database Privileges' (which is highlighted with a red box and has a red arrow pointing to the right), 'Workspaces with Only Sample Application', and 'Manage File Utilization'. On the right, a detailed report table displays database privileges for various workspaces and schemas. The columns are 'Workspace', 'Schema', 'Privilege', and 'Administration Option'. The data includes rows for INTERNAL and TEACH workspaces, listing privileges like CREATE TABLESPACE, CREATE ANY CONTEXT, DROP PUBLIC SYNONYM, etc.

Workspace	Schema	Privilege	Administration Option
INTERNAL	APEX_040000	CREATE TABLESPACE	NO
INTERNAL	APEX_040000	CREATE ANY CONTEXT	YES
INTERNAL	APEX_040000	DROP PUBLIC SYNONYM	NO
INTERNAL	APEX_040000	UNLIMITED TABLESPACE	YES
INTERNAL	APEX_040000	CREATE PUBLIC SYNONYM	NO
INTERNAL	APEX_040000	ALTER USER	NO
TEACH	ADMIN.Course	CREATE JOB	NO
TEACH	ADMIN.Course	CREATE TYPE	NO
TEACH	ADMIN.Course	CREATE VIEW	NO
TEACH	ADMIN.Course	CREATE TABLE	NO
TEACH	ADMIN.Course	CREATE CLUSTER	NO
TEACH	ADMIN.Course	CREATE SESSION	NO
TEACH	ADMIN.Course	CREATE SYNONYM	NO
TEACH	ADMIN.Course	CREATE TRIGGER	NO
TEACH	ADMIN.Course	CREATE OPERATOR	NO
TEACH	ADMIN.Course	CREATE SEQUENCE	NO
TEACH	ADMIN.Course	CREATE DIMENSION	NO
TEACH	ADMIN.Course	CREATE INDEXTYPE	NO
TEACH	ADMIN.Course	CREATE PROCEDURE	NO
TEACH	ADMIN.Course	CREATE ANY CONTEXT	NO

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To view the database privileges assigned to a workspace, access the Manage Workspaces page and click the **Workspace Database Privileges** link located under Workspace Reports. A report with a list of all workspaces, associated schemas, and their database privileges is displayed.

# Managing Component Availability

The screenshot shows two pages related to workspace management. The top page is a table titled 'Workspace' with columns: 'Workspace' (TEACH), 'Allow Application Building' (Yes), 'Allow SQL Workshop' (Yes), 'Allow PLSQL Editing' (Yes), and 'Allow Team Development' (Yes). A red box highlights the pencil icon next to the workspace name 'TEACH'. Below this is a red arrow pointing down to the 'Workspace Settings' page. This second page has a header with 'Cancel' and 'Apply Changes' buttons. It contains four settings: 'Enable Application Builder' (Yes), 'Enable SQL Workshop' (Yes), 'Allow PL/SQL Editing in SQL Workshop' (Yes), and 'Enable Team Development' (Yes). Each setting has a dropdown arrow next to it.

Workspace	Allow Application Building	Allow SQL Workshop	Allow PLSQL Editing	Allow Team Development
TEACH	Yes	Yes	Yes	Yes

Workspace Settings

Enable Application Builder Yes ▾

Enable SQL Workshop Yes ▾

Allow PL/SQL Editing in SQL Workshop Yes ▾

Enable Team Development Yes ▾

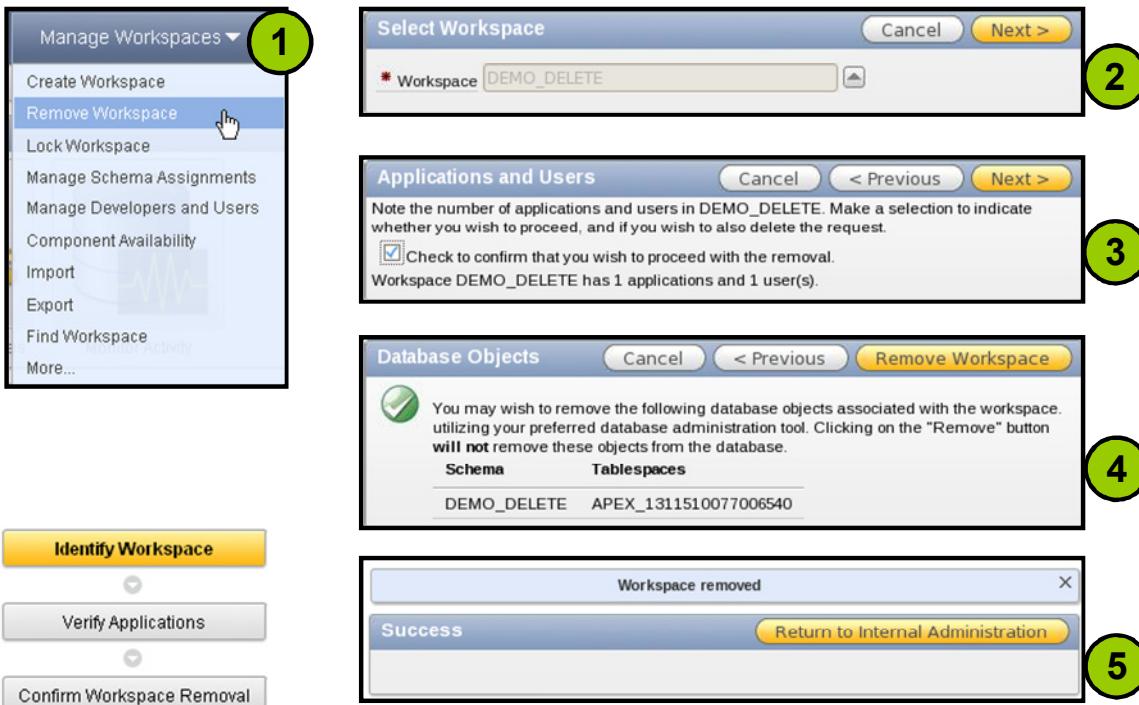
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

As an instance administrator, you can enable/disable the following components for all users of a workspace:

- Application Builder
- SQL Workshop
- PL/SQL Editing in SQL Workshop
- Team Development

From the Manage Workspaces page, click the **Manage Component Availability** link under Workspace Actions. A list of all workspaces and their component availability is displayed. You can change the current settings by clicking the pencil icon next to the workspace name. According to the requirement, enable or disable the components and click **Apply Changes**.

# Deleting a Workspace



ORACLE

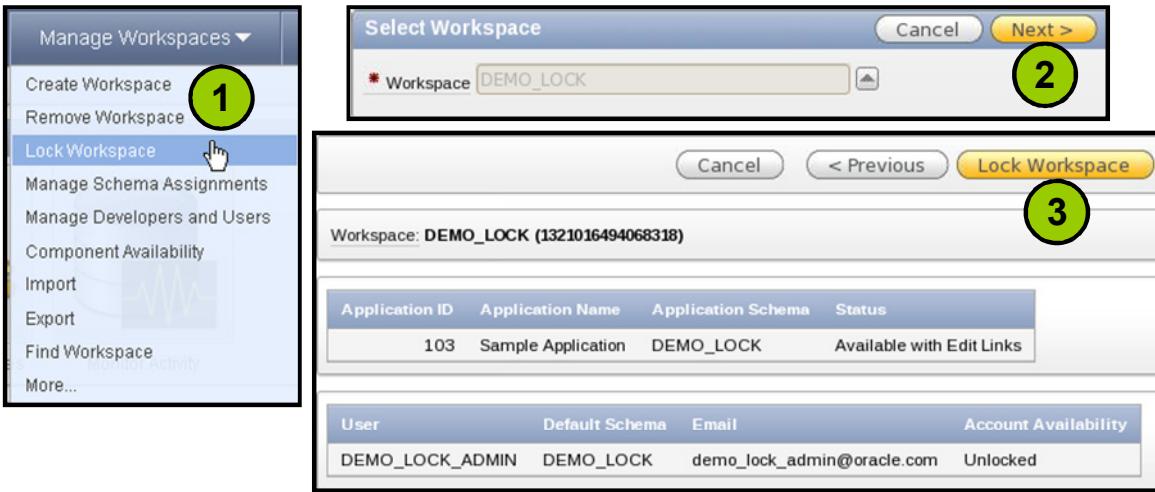
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To delete a workspace, perform the following steps:

1. Click the down arrow in the Manage Workspaces tab and select **Remove Workspace**.
2. Select the workspace you want to delete and click **Next**.
3. The number of applications and users in the workspace is displayed. To confirm the deletion of the workspace, select the check box and click the **Next** button.
4. Review the details and click the **Remove Workspace** button.
5. The workspace is successfully removed. Click the **Return to Internal Administration** button.

Note that the preceding steps remove only the workspace, application, and APEX users. The underlying database objects are not deleted from the database. You will need to manually remove those objects.

# Locking a Workspace



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

When you lock a workspace, all the user accounts are locked and all the applications in that workspace become unavailable. To lock a workspace, perform the following steps:

1. Click the down arrow in the Manage Workspaces tab and select **Lock Workspace**.
2. Select the workspace you want to lock and click **Next**.
3. Review the details and click the **Lock Workspace** button.

After it is locked, the workspace user cannot log in to the workspace and all the workspace applications become unavailable.

To unlock a workspace, an instance administrator must perform the following steps:

1. From the Administration Services home page, click the **Manage Workspaces** icon.
2. Click the **Manage Developers and Users** link.
3. Click the pencil icon next to a user.
4. Under Account Privileges, select **Unlock** for Account Availability.
5. Enter a password in the Password and Confirm Password fields.
6. Click **Apply Changes**.

To make the applications available again, workspace administrators or developers must perform the following:

1. Log in to APEX development interface.
2. Click the **Application Builder** icon.
3. Click the application you want to make available.
4. Click the **Edit Application Properties** button.
5. Click the **Availability** tab.
6. Select **Available** for Status.
7. Click **Apply Changes**.

## Summary

In this lesson, you should have learned how to:

- Create workspaces
- Create users
- Create schemas



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Practice 5 Overview: Creating Workspaces, Users, and Schemas

This practice covers the following topics:

- Creating a workspace and a workspace administrator
- Allowing users to request for workspaces without email verification
- Creating developers and end users
- Assigning additional schemas to the workspace
- Viewing database privileges



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In this practice, you will create a workspace and add users and schemas to the workspace.

# Configuring Administration Services



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Objectives

After completing this lesson, you should be able to:

- Configure settings for an APEX instance
- Configure security options
- Configure APEX features



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

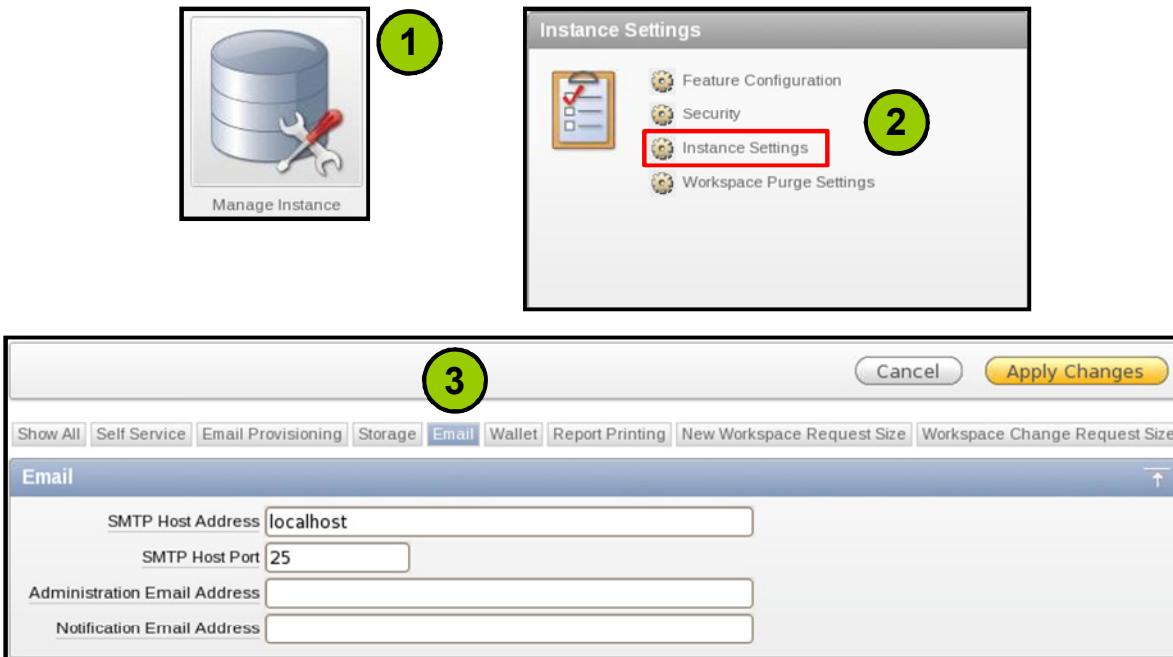
# Agenda

- Configuring Instance Settings
  - Accessing Email Configuration
  - Email Configuration Options
  - Configuring Report Printing
  - Configuring Storage Settings
  - Configuring Workspace Size Options
  - Configuring Workspace Purge Settings
- Configuring Security Settings
- Configuring Features



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Accessing Email Configuration



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

ORACLE

Apart from enabling network services, you should set the email server and other options in Administration Services to be able to use features like email and report printing. To access the email configuration region, perform the following steps:

1. From the APEX Administration Services home page, click the **Manage Instance** icon.
2. From the Instance Settings region, click **Instance Settings**.
3. Click the **Email** tab.

You can enter the email configuration details here. Click **Apply Changes** to save the configuration changes. The configuration options are discussed in detail on the next page.

## Email Configuration Options

- Using Administration Services, you can configure the following:
  - SMTP Host Address
  - SMTP Host Port
  - Administration Email Address
  - Notification Email Address

The screenshot shows a web-based administration interface for Oracle Application Express. At the top, there is a navigation bar with tabs: Show All, Self Service, Email Provisioning, Storage, Email (which is selected and highlighted in blue), Wallet, Report Printing, New Workspace Request Size, and Workspace Change Request Size. Below the navigation bar, there is a sub-navigation bar for 'Email' with tabs: Show All, Self Service, Email Provisioning, Storage, Email (selected), Wallet, Report Printing, New Workspace Request Size, and Workspace Change Request Size. The main content area is titled 'Email' and contains four input fields: 'SMTP Host Address' with the value 'localhost', 'SMTP Host Port' with the value '25', 'Administration Email Address' with the value 'apex\_admin@oracle.com', and 'Notification Email Address' with the value 'apex\_notifications@oracle.com'. At the top right of the main content area are two buttons: 'Cancel' and 'Apply Changes'.

ORACLE

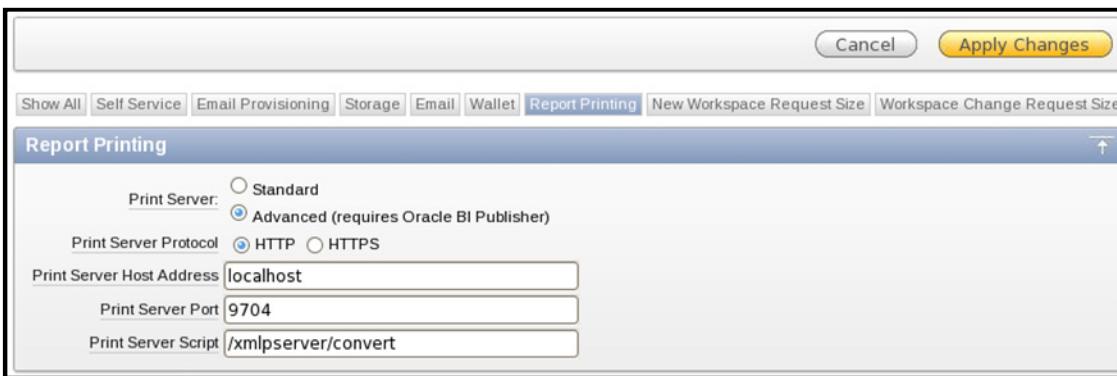
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Simple Mail Transfer Protocol (SMTP) is used for sending and receiving emails over the Internet. In APEX, you must specify the following:

- **SMTP Host Address:** In this field, you need to enter the address of the SMTP server. By default, it is set to `localhost`. If you are using another server as an SMTP relay, specify that server's address.
- **SMTP Host Port:** In this field, enter the port where the SMTP server listens for mail requests. By default, it is set to 25.
- **Administration Email Address:** In this field, enter the email address for administrative tasks that generate email, such as approving a provision request or resetting a password. If this is left blank, the notification email address or the APEX user email address is used in the generated emails.
- **Notification Email Address:** In this field, enter the email address for receiving notification email messages for new workspace requests and change workspace requests. If no value is specified, then no workspace request notification email messages are sent.

# Configuring Report Printing

- In Administration Services, you can specify two modes for the Print Server
  - Standard
  - Advanced



ORACLE

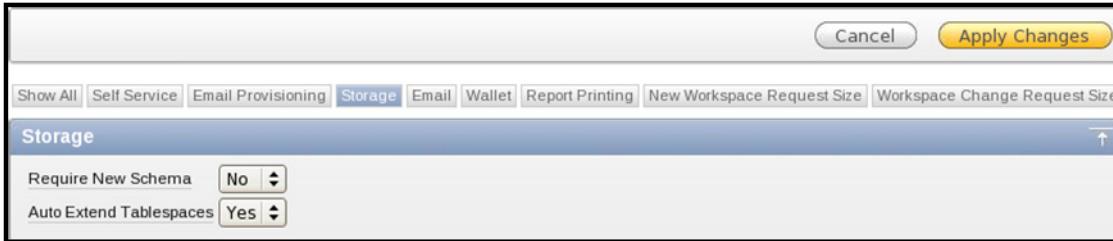
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can configure report printing options from the Report Printing tab on the Instance Settings page. You can use Oracle BI Publisher, OC4J with Apache Formatting Objects Processor (FOP), or any standard XSL-FOP as the print server. APEX provides two modes for configuring the Print Server: Standard and Advanced.

By selecting the Standard option for Print Server, you can print report regions using built-in templates provided with APEX, Apache FOP, or specify any other standard XSL-FOP processing engine. This is the default selection.

The Advanced Print Server option requires an Oracle BI Publisher. You need to enter the Print Server host address, port, and script values in the respective fields. The advanced option allows you to utilize the advanced features of Oracle BI Publisher. How to create report templates and print PDFs is discussed in detail in the *Oracle Application Express: Advanced Workshop* course.

# Configuring Storage Options



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the Storage tab on the Instance Settings page, you can specify the following:

- **Require New Schema:** By default, the new schema requirement is set to **No**. This means that you can select existing schema while creating a workspace. If Require New Schema is set to **Yes**, then for each workspace you create, you will have to create a new schema.
- **Auto Extend Tablespaces:** By default, this is set to **Yes**. This means that tablespaces that are created by APEX will be one-tenth of the requested size. As required, the tablespace will automatically extend up to the requested size. For example, if you request for a 100-MB workspace, the initial size of the data file will be 10 MB and it will automatically extend up to a maximum size of 100 MB. If you select **No** for Auto Extend Tablespaces, then the workspace will be created with the requested size.

# Configuring Workspace Size Options

The image contains two screenshots of the Oracle Application Express Instance Settings interface. Both screenshots show a tab bar at the top with several tabs: Show All, Self Service, Email Provisioning, Storage, Email, Wallet, Report Printing, New Workspace Request Size (which is highlighted with a red box), and Workspace Change Request Size.

**Screenshot 1: New Workspace Request Size Tab**

This screenshot shows the 'New Workspace Request Size' tab selected. It displays a table with columns: Size in Megabytes, Display, and Default. The rows contain the following data:

Size in Megabytes	Display	Default
2	Yes <input type="button" value="▼"/>	<input type="radio"/>
5	Yes <input type="button" value="▼"/>	<input type="radio"/>
10	Yes <input type="button" value="▼"/>	<input checked="" type="radio"/>
50	Yes <input type="button" value="▼"/>	<input type="radio"/>
100	Yes <input type="button" value="▼"/>	<input type="radio"/>
250	Yes <input type="button" value="▼"/>	<input type="radio"/>
500	Yes <input type="button" value="▼"/>	<input type="radio"/>

**Screenshot 2: Workspace Change Request Size Tab**

This screenshot shows the 'Workspace Change Request Size' tab selected. It displays a table with columns: Size in Megabytes, Display, and Default. The rows contain the same data as the first table:

Size in Megabytes	Display	Default
2	Yes <input type="button" value="▼"/>	<input type="radio"/>
5	Yes <input type="button" value="▼"/>	<input checked="" type="radio"/>
10	Yes <input type="button" value="▼"/>	<input type="radio"/>
50	Yes <input type="button" value="▼"/>	<input type="radio"/>
100	Yes <input type="button" value="▼"/>	<input type="radio"/>
250	Yes <input type="button" value="▼"/>	<input type="radio"/>
500	Yes <input type="button" value="▼"/>	<input type="radio"/>

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the New Workspace Request Size tab on the Instance Settings page, you can specify the size options that are listed when you create a workspace with a new schema. You can also specify a default value.

From the Workspace Change Request Size tab, you can specify the options that should be listed when workspace administrators request for additional storage.

# Configuring Workspace Purge Settings

The screenshot shows the 'Workspace Purge Settings' configuration page. It contains the following fields:

- \* Enabled: No
- \* Language: English
- \* Application Express Instance URL: http://localhost:9001/apex/
- \* Application Express Images URL: http://localhost:9001/i/
- \* Purge Administration Email Address: [redacted]
- Send Summary Email To: [redacted]
- \* Days Until Purge: 10
- \* Reminder Days In Advance: 3
- \* Days Inactive: 45
- \* Grace Period (Days): 45
- Maximum Execution Time (Hours): [redacted]
- Maximum Number of Workspaces: [redacted]
- Maximum Number of Emails: [redacted]

A 'Monitor Activity' button is located at the bottom right of the form.

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Workspaces that are inactive consume storage space and degrade system performance. You can configure APEX to automatically purge workspaces that are inactive. From the Workspace Purge Settings page, you can configure how the workspaces should be purged.

To access the Workspace Purge Settings page, click the down arrow in the Manage Instance tab and select **Purge Workspace**. Alternatively, access the Manage Instance page and click the **Purge Workspace Settings** link under Instance Settings.

To allow workspaces to be automatically purged, select **Yes** for the Enabled field. From the Language field, you can specify the language in which notification emails should be sent to the workspace administrators of inactive workspaces. You can only select one language for an entire APEX instance.

Enter an email address in the Purge Administration Email Address field. This address is used as the From address in the email notification sent to inactive workspace administrations. In the Send Summary Email To field, you can specify other email addresses, apart from the workspace administrators, that should receive emails about the workspace purge process.

If no user logs in to a workspace or any of its applications for the number of days mentioned in the Days Inactive field, the workspace is marked as inactive. Once a workspace is marked inactive, it will be physically removed after the number of days mentioned in the Days Until Purge field.

Before the workspace is purged, an email notification is sent to workspace administrators stating that the workspace will be purged depending on the number of days entered in the Reminder Days in Advance field. To prevent the workspace from being purged, you can click the link provided in the email notifications. After you have clicked the link, you have a grace period of the number of days entered in the Grace Period field, by which if no activity is seen in the workspace, the workspace is marked as inactive once again.

The workspace purge process occurs each time the workspace purge job is executed. In the Maximum Execution Time field, you can specify the maximum number of hours this purge process should execute each time the purge job is run. In the Maximum Number of Workspaces field, you can specify the maximum number of workspaces that can be purged each time the purge job is run. In the Maximum Number of Emails field, you can enter the maximum number of reminder emails and workspace inactive emails that can be sent each time the purge job is run.

## Quiz

You want to enable PDF printing of report regions in Rich Text Format. What Print Server option should you select?

- a. Standard
- b. Advanced



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: b**

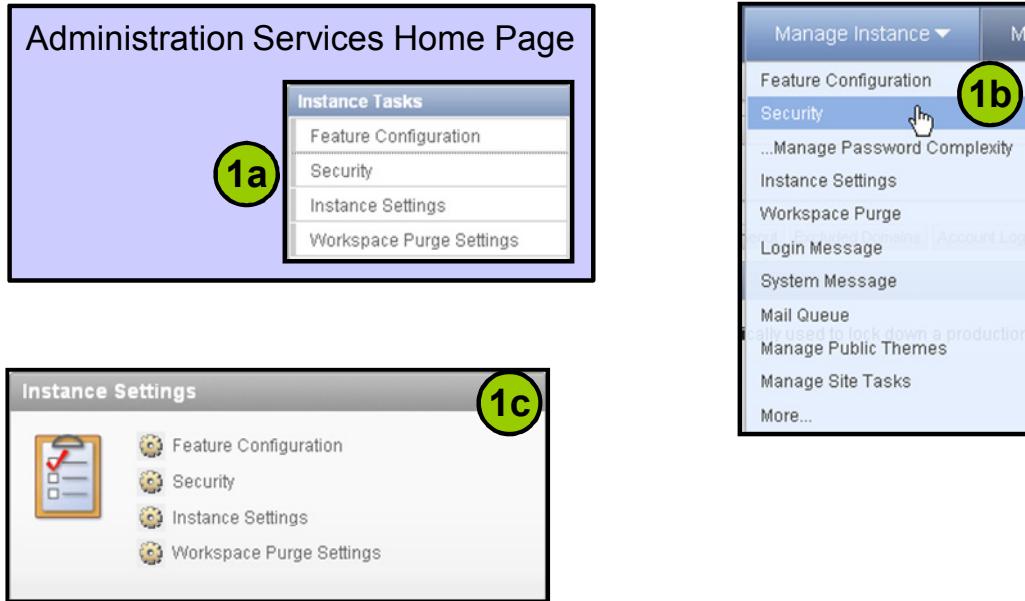
# Agenda

- Configuring Instance Settings
- Configuring Security Settings
  - Accessing the Security Page
  - Setting Security Options
  - Specifying HTTPS Requirement
  - Setting Session Timeout
  - Defining Login Control Settings
  - Setting Workspace Password Policy
  - Setting Instance Administrator Password Policy
  - Creating Authorized URLs
- Configuring Features



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Accessing the Security Page



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can configure security options for the entire APEX instance from the Security page. You can access the Security page in one of the following ways:

- 1a. From the Administration Services home page, click the **Security** link under the Instance Tasks section.
- 1b. Click the down arrow in the Manage Instance tab and select **Security**.
- 1c. From the Manage Instance page, click the **Security** link under Instance Settings.

# Setting Security Options

The screenshot shows the 'Security Settings' tab selected in the top navigation bar. Below it, the 'Security' tab is active. The main area contains the following configuration options:

- Set Workspace Cookie: Yes
- Disable Administrator Login: No
- Disable Workspace Login: No
- Allow Public File Upload: Yes
- Restrict Access by IP Address: (empty input field)

At the bottom right of the form are 'Cancel' and 'Apply Changes' buttons.

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Set Workspace Cookie:** By default, the APEX development interface login page creates a persistent cookie to remember the last used workspace and username. You can disable this behavior by selecting **No** for Set Workspace Cookie.

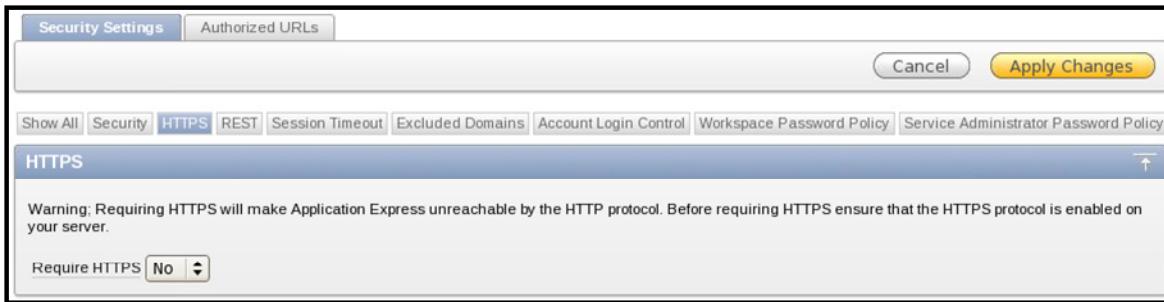
**Disable Administrator Login:** In a full development installation, you can prevent access to the Administration Services by selecting **Yes** for Disable Administration Login. Note that if you set this value to Yes and logout, you will not be able to log in to the Administration Services again. To enable Administration Services again, you will have to log in to SQL\*Plus and use an APEX\_INSTANCE\_ADMIN API.

**Disable Workspace Login:** In a full development installation, you can achieve a run-time type environment by selecting **Yes** for Disable Workspace Login. This will prevent any user from logging in to the APEX development interface. However, Instance Administrators can still use the Administration Services.

**Allow Public Files Upload:** By default, when an APEX application uses No Authentication, users can upload files if the application has that feature. To prevent this behavior, select **No** for Allow Public File Upload.

**Restrict Access by IP Address:** You can allow users from only a particular IP address or range of IP address to access the APEX instance by entering IP address values in the Restrict Access By IP Address field. Click the **Restrict Access By IP Address** link to view guidelines on how to enter these values.

# Specifying HTTPS Requirement

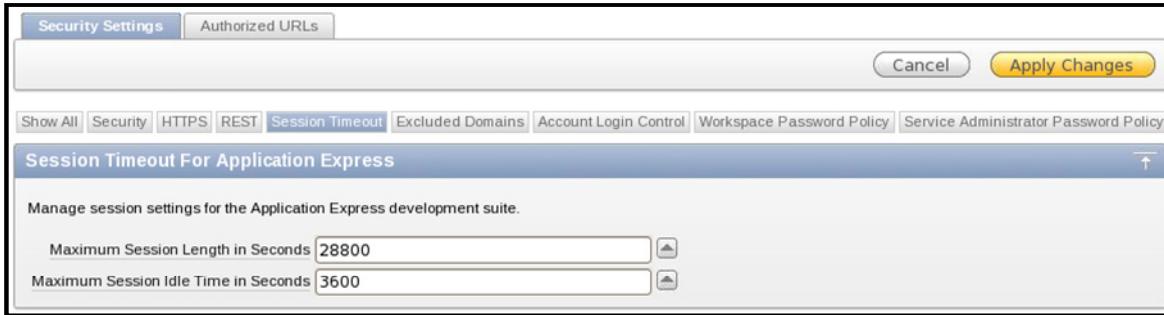


The Oracle logo, consisting of the word 'ORACLE' in white capital letters inside a red horizontal bar.

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the HTTPS tab on the Security page, you can configure the APEX instance and all its application to be accessible only over the HTTPS protocol. This is useful when you want to transmit sensitive data in an encrypted format. By default, the HTTPS protocol requirement is set to No. If you change this to Yes, then you will not be able to access the APEX instance over a HTTP protocol. Before making this change, ensure that HTTPS protocol is enabled in the server.

# Setting Session Timeout

The Oracle logo, consisting of the word "ORACLE" in a bold, white, sans-serif font.

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the Session Timeout tab on the Security page, you can specify the maximum session length and maximum idle time for APEX sessions.

- Maximum session length is the amount of time a session is valid. The default session length is eight hours. This means that after using APEX for eight hours, you will be logged out. You will need to log in again and create a new session. To set the maximum session length, enter the required session length in the Maximum Session Length in Seconds field or click the icon next to the field and select a value from the popup window.
- Session Idle time is the amount of time a session can be inactive before it expires. The default idle time is one hour. This means that if there is no activity in an APEX session for one hour, the session will expire and you will be prompted to log in again. To set the maximum idle time, enter the required value in the Maximum Session Idle Time in Seconds field or click the icon next to the field and select a value from the popup window.

To save the changes click the **Apply Changes** button.

# Defining Login Control Settings

The screenshot shows the 'Security Settings' page with the 'Account Login Control' tab selected. The interface includes tabs for 'Security Settings' and 'Authorized URLs'. Below the tabs are buttons for 'Cancel' and 'Apply Changes'. A navigation bar at the top includes links for 'Show All', 'Security', 'HTTPS', 'REST', 'Session Timeout', 'Excluded Domains', 'Account Login Control' (which is highlighted in blue), 'Workspace Password Policy', and 'Service Administrator Password Policy'. The main content area is titled 'Account Login Control' and contains the following configuration options:

- Require User Account Expiration and Locking: A dropdown menu set to 'No'.
- Maximum Login Failures Allowed: An input field containing the value '4'.
- Account Password Lifetime (days): An input field containing the value '45'.

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the Account Login Control tab on the Security page, you can specify login settings for workspace administrators and developers of an entire APEX instance. You can enable account expiration and locking by selecting Yes for Require User Account Expiration and Locking. You can specify the maximum number of consecutive failed login attempts after which the account is locked. By default, this value is 4. Also, you can specify the maximum number of days for which the account password will remain active. The default value is 45.

# Setting Workspace Password Policy

The screenshot shows the 'Workspace Password Policy' configuration page. At the top, there is a navigation bar with tabs: Show All, Security, HTTPS, REST, Session Timeout, Excluded Domains, Account Login Control, **Workspace Password Policy**, and Service Administrator Password Policy. The 'Workspace Password Policy' tab is selected.

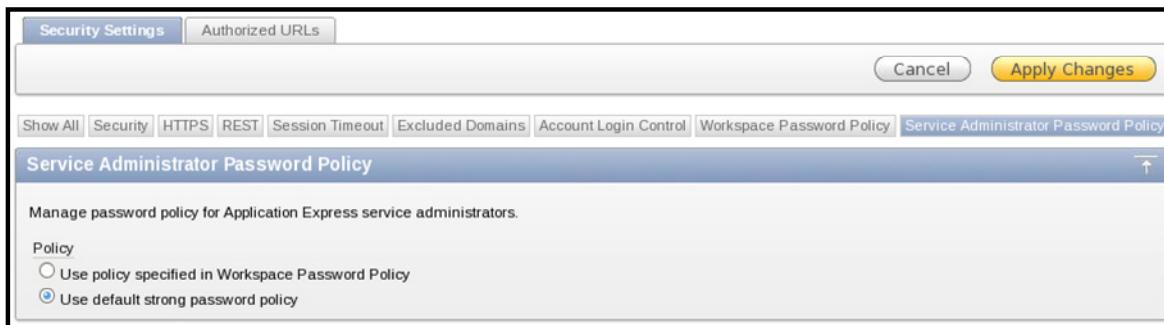
The main area is titled 'Manage password policy for Application Express users (workspace administrators, developers, and end users) in all workspaces.' It contains several configuration options:

- Minimum Password Length: A dropdown menu showing '1'.
- Minimum Password Differences: A dropdown menu showing '0'.
- Must Contain At Least One Alphabetic Character: A dropdown menu showing 'No'.
- Must Contain At Least One Numeric Character: A dropdown menu showing 'No'.
- Must Contain At Least One Punctuation Character: A dropdown menu showing 'No'.
- Must Contain At Least One Upper Case Character: A dropdown menu showing 'No'.
- Must Contain At Least One Lower Case Character: A dropdown menu showing 'No'.
- Must Not Contain Username: A dropdown menu showing 'No'.
- Must Not Contain Workspace Name: A dropdown menu showing 'No'.
- Must Not Contain: A text input field containing 'oracle:hello:welcome:guest:user:database'.
- Alphabetic Characters: A text input field containing 'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ'.
- Punctuation Characters: A text input field containing '!#\$%&(``\*+,./;=>?\_'.

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the Workspace Password Policy tab on the Security page, you can enter the criteria for passwords created for all workspace users in an APEX instance. In the Minimum Password Differences field, enter a positive integer or zero. This specifies the number of difference that should exist between the old and new passwords. In the Alphabetic Characters and Punctuation Characters fields, you specify the characters and punctuations that can be used to create the passwords.

# Setting Instance Administrator Password Policy



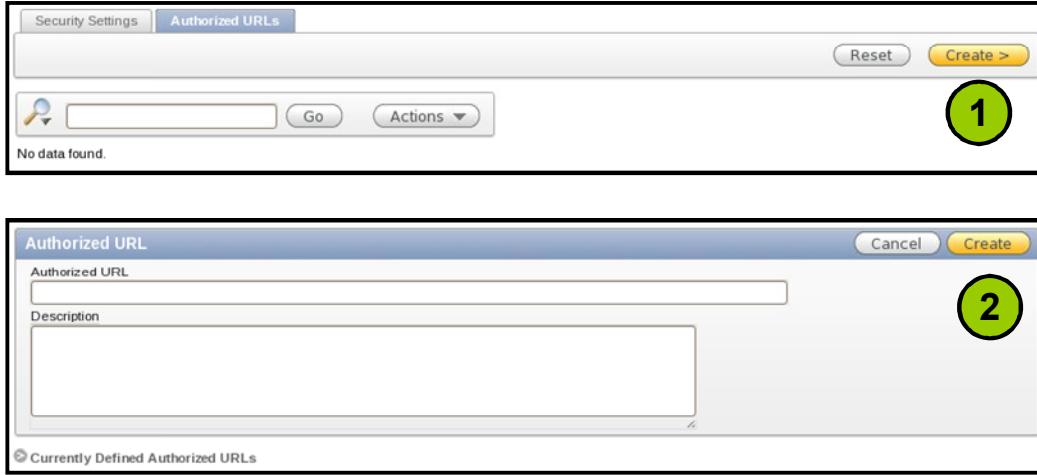
The Oracle logo, consisting of the word 'ORACLE' in a white sans-serif font inside a red horizontal bar.

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Similar to creating a Workspace Password Policy for workspace users, you can specify a password policy for instance administrators from the Instance Administrators Password Policy tab. You can select the same policy as the workspace password policy. Or, you can use the default strong password policy. The default strong password policy specifies the following:

- Password should be at least six characters long.
- It should contain at least one lowercase alphabetic character, one uppercase alphabetic character, one numeric digit, and one punctuation character.
- It cannot include the username.
- It cannot include the word Internal.

# Creating Authorized URLs



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In APEX, you can use a URL as an argument to procedures, which redirect to the defined URL. These URLs should be listed as authorized URLs in the Authorized URL tab of the Security page. When a URL is passed as a parameter to a procedure, it is first verified against this list. If the argument URL matches exactly to a URL in the list, it is permitted as argument to the procedure. To create an authorized URL, perform the following steps:

1. Click the **Create** button in the Authorized URL tab.
2. Enter the URL exactly as it will be passed as an argument. Optionally, enter a description and click the **Create** button.

The URL is added to the Authorized URL list.

## Quiz

You want to prevent developers from making changes to your production application. However, you want to use the graphical interface provided by APEX for administrative tasks. How can you configure the APEX environment?

- a. Perform a full installation and inform developers to not make changes to any application.
- b. Perform a run-time installation to prevent developers from accessing the APEX development interface.
- c. Perform a full installation and disable workspace login.
- d. Perform a run-time installation and enable administrator login.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: c**

## Agenda

- Configuring Instance Settings
- Configuring Security Settings
- Configuring Features
  - Accessing the Feature Configuration Page
  - Configuring Application Development Features
  - Configuring SQL Workshop Features
  - Enabling Database Monitoring



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Accessing the Feature Configuration Page



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can access the Feature Configuration Page in one of the following ways:

- 1a. From the Administration Services home page, click the **Feature Configuration** link under the Instance Tasks section.
- 1b. Click the down arrow in the Manage Instance tab and select **Feature Configuration**.
- 1c. From the Manage Instance page, click the **Feature Configuration** link under Instance Settings.

From the Feature Configuration page, you can apply settings to the entire APEX instance.

# Configuring Application Development Features



ORACLE

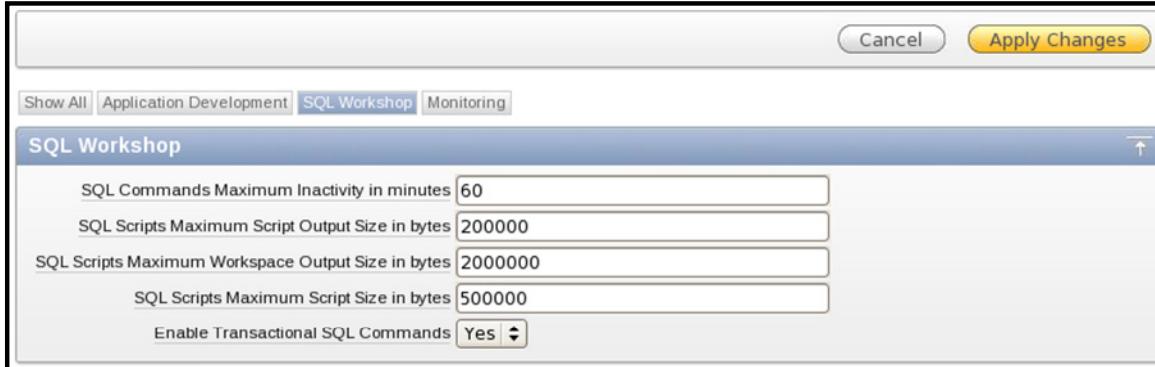
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the Application Development tab on the Feature Configuration page, you can configure the following features:

- **PL/SQL program unit editing:** As an instance administrator, you can restrict developers from editing PL/SQL code using Object Browser. Object Browser is a subcomponent of SQL Workshop in the APEX development interface. By default, PL/SQL program unit editing is enabled. To disable this feature, select **No** for Allow PL/SQL Program Unit Editing.
- **Creation of sample application in a new workspace:** When a workspace is created, a sample application is created by default in that workspace. To disable this feature, select **No** for Create demonstration objects in new workspaces.
- **Creation of Websheet objects in a new workspace:** A Websheet is a type of application that can be built using APEX. When a workspace is created, Websheet objects are automatically created within that workspace. To disable this feature, select **No** for Create Websheet objects in new workspaces. If this feature is disabled, you will not be able to create Websheet Applications from the APEX development interface.
- **SQL Access in Websheets:** Use this option to enable or disable the ability to interact with the database while using Websheets. By default, this feature is enabled. To disable this feature, select **No** for Enable SQL Access in Websheets.

After configuring the features, click the **Apply Changes** button to save the configuration.

# Configuring SQL Workshop Features



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the SQL Workshop tab on the Feature Configuration page, you can configure the following SQL Workshop components:

- **SQL Commands:** You can specify the maximum amount of time a transactional command waits before timing out in SQL Commands. You can also enable or disable transactional commands for the entire APEX instance.
- **SQL Scripts:** You can specify the following:
  - Maximum size of output a single script can generate
  - Maximum space all the script files within a workspace can occupy
  - Maximum size of a script file

After configuring the features, click the **Apply Changes** button to save the configuration.

## Enabling Database Monitoring



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The APEX development interface contains a Database Monitoring page, which is not accessible to users by default. As an instance administrator, you can enable this feature. To enable database monitoring, click the **Monitoring** tab in the Feature Configuration page and select **Yes** for Enable Database Monitoring.

## Quiz

When you specify Feature Configuration in Administration Services, the settings are applied to:

- a. The entire APEX instance
- b. The most recent workspace created
- c. Only one specific workspace



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a**

## Summary

In this lesson, you should have learned how to:

- Configure settings for an APEX instance
- Configure security options
- Configure APEX features



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Practice 6 Overview: Configuring Administration Services

This practice covers the following topics:

- Configuring administration and notification email addresses
- Configuring report printing
- Setting purge workspace settings
- Setting workspace password policy
- Enabling database monitoring



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In this practice, you will configure email, report printing, and some other settings.

THESE eKIT MATERIALS ARE FOR YOUR USE IN THIS CLASSROOM ONLY. COPYING eKIT MATERIALS FROM THIS COMPUTER IS STRICTLY PROHIBITED

Oracle University and Error : You are not a Valid Partner use only

# Administering a Workspace

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Objectives

After completing this lesson, you should be able to do the following:

- Create a service request
- Create users for a workspace
- Create workspace announcements
- Monitor workspace activity
- View dashboards



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

If you have already taken the Oracle Application Express: Developing Web Applications or/and the Oracle Application Express: Advanced Workshop courses, this lesson will serve as a refresher.

## Lesson Agenda

- Using the Administration Page
  - Accessing the Administration Page
  - Access to Administrative Tasks
  - Viewing Product Information
- Managing Services
- Creating Users and Groups
- Monitoring Activity
- Using Dashboards

These tasks are performed by a workspace administrator ( ) using the Administration component of the APEX development interface.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Accessing the Workspace Administration Page



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

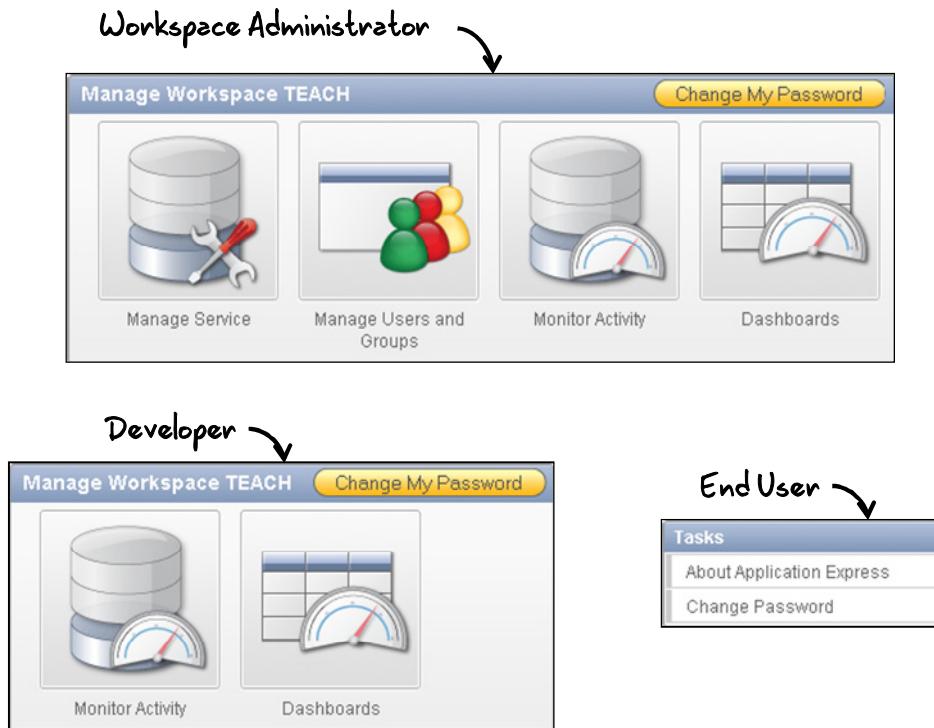
You can perform administrative tasks from the Administration page. You can access the Administration page by either

- 1a. Clicking the Administration icon from the APEX home page, or
- 1b. Clicking the Administration tab

The Administration page displays. It provides links to administrative tasks for the specific workspace. Depending on whether you are an administrator, developer, or end user, you perform one or more of the following:

- Manage services and requests
- Manage APEX users and groups
- Monitor workspace activity
- View dashboards

## Access to Administrative Tasks



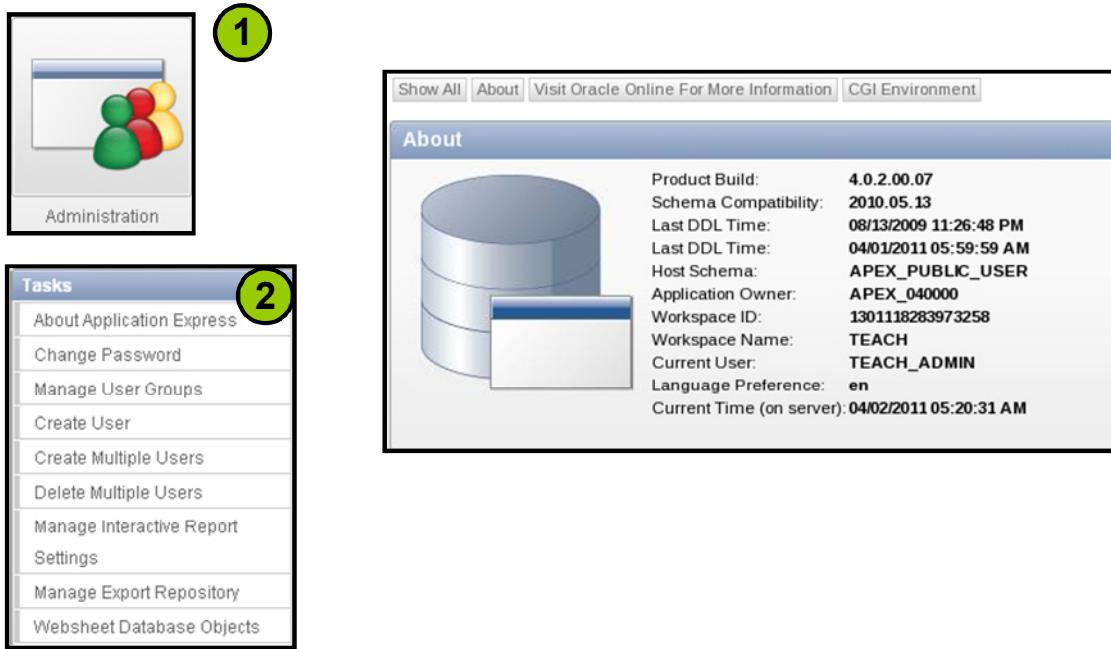
ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Depending on the type of user, the administrative tasks are:

- **End user:** An end user is capable of changing only his or her password using the Administration interface.
- **Developer:** A developer can, in addition to what an end user can do, monitor the activity in the workspace and view the dashboards.
- **Workspace administrator:** A workspace administrator can, in addition to what the developer can do, manage the users and services in the workspace.

## Viewing Product Information



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can view a complete summary about APEX from the About Application Express page. To access the About Application Express page, perform the following steps:

1. From the APEX development interface home page, click the **Administration** icon.
2. Select the **About Application Express** link from the Tasks section.

Alternatively, you can click the down arrow in the Administration tab and select **About**.

## Lesson Agenda

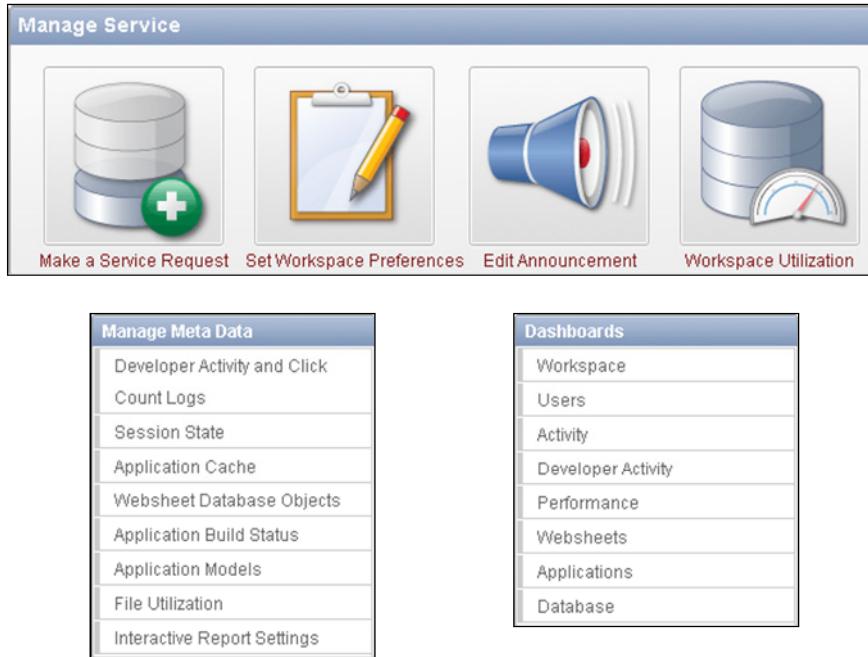
- Using the Administration Page
- Managing Services
  - Manage Services Overview
  - Creating a Service Request
  - Setting Workspace Preferences
  - Creating Announcements
  - Viewing Workspace Utilization Reports
- Creating Users and Groups
- Monitoring Activity
- Using Dashboards

These tasks are performed by a workspace administrator ( ) using the Administration component of the APEX development interface.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

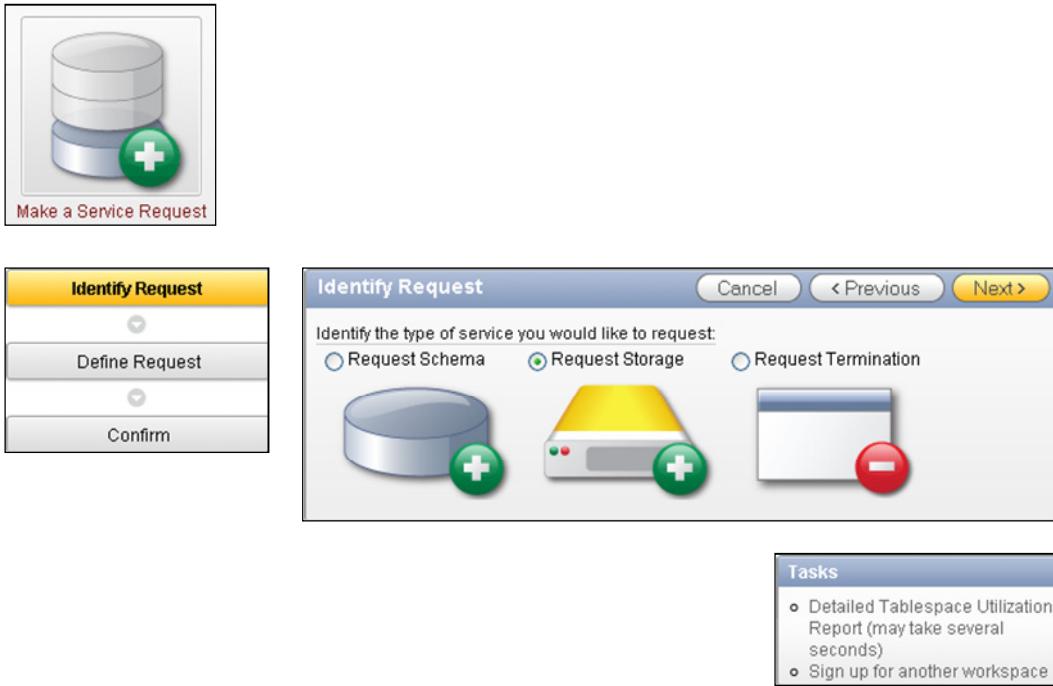
# Manage Services Overview



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can use the Manage Services page to manage your workspace environment. To access the Manage Services page, click the Manage Services icon from the Administration page. From the Manage Services page, you can create service requests, set preferences for the workspace, create and edit workspace announcements, and view various reports on workspace utilization. The Manage Services page also provides links to view the dashboards and perform tasks like manage session state, application models, websheet database objects, and so on.

# Creating a Service Request



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

As a workspace administrator, you can:

- Request a new database schema for your workspace
- Request more storage for an existing schema in your workspace
- Submit a request to remove or terminate your workspace

To create a service request, click the **Make a Service Request** icon from the Manage Services page. A wizard appears. Select an option depending on the type of service you want to create and click **Next** to proceed. Note that the storage capacity list when requesting additional storage is controlled by the instance administrator. So, they may restrict users from requesting additional storage to less than 50 MB.

Under the Tasks section, you also have links to view a detailed report on workspace utilization and sign up for a new workspace.

# Setting Workspace Preferences



A screenshot of the Oracle Application Express workspace preferences interface. The window title is 'Show All | Account Login Control | Application Builder | SQL Workshop | Team Development'. The 'Account Login Control' section contains settings for account expiration and locking. The 'Application Builder' section has a 'Enable Application Builder' dropdown set to 'Yes'. The 'SQL Workshop' section has a 'Enable SQL Workshop' dropdown set to 'Yes' and a 'PL/SQL Editing' section with two options: 'Allow PL/SQL program unit editing' (selected) and 'Do not allow PL/SQL program unit editing'. The 'Team Development' section has a 'Enable Team Development' dropdown set to 'Yes'. A red arrow points to the 'Team Development' section.

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To set workspace preferences, click the **Set Workspace Preferences** icon from the Manage Services page. You can set the preferences as described below. Click **Apply Changes** to save the settings.

- **Account Login Control:** For each workspace, you can enable the following controls:
  - Require end-user account expiration and locking
  - Set up a maximum number of failed login attempts for end-user accounts. If the user exceeds this number, the account gets locked. A workspace administrator will have to unlock the account.
  - 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
- **Enable/Disable** the Application Express Components
- **PL/SQL Editing:** By default, in SQL Workshop, developers can change and compile PL/SQL source code when browsing database procedures, packages, and functions. You can select **Do not allow PL/SQL program unit editing** on the Preferences page to disable PL/SQL program unit editing by users.

# Creating Announcements



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can create announcements that can be read by all users in a workspace. To create an announcement, navigate to the Manage Service page and click the **Edit Announcement** icon. You can also click the pencil icon in the announcement region to create or edit an announcement.

On the Workspace Announcement page, enter the announcement and click **Apply Changes**. This announcement is displayed on the workspace home page and the Workspace Administration page. It can now be read by all users when they login to the workspace.

# Viewing Workspace Utilization Reports



Show 1 Day

**Workspace Summary Report**

**workspace**

Workspace Name: TEACH  
Workspace ID: 3710706866090825  
Report Generated: 08/30/2010 11:07:45 PM  
Reporting Period: Last Day  
Provisioned: 07/22/2010 12:46:46 AM - 5 weeks ago  
Administrators: • TEACH\_ADMIN - teach@teach.com  
Developers: 5  
users: 6 Users, Most recent user created 2 days ago  
Allow application building: Yes  
Allow SQL Workshop Use: Yes  
Allow Worksheet Development: Yes  
Allow Use of Team Development: Yes  
Builder Notification Message:  
Source Identifier: TEACH  
Allow workspace to be purged: Yes  
Last login: 08/30/2010 10:23:12 PM - 45 minutes ago  
Files: 7 Files, consuming 691K  
Pending Requests: No pending requests

**ORACLE**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

If you click the **Workspace Utilization** icon from the Manage Services page, a workspace summary report is displayed. This report gives a summarized view of all the activity in the workspace and all the contents of the workspace. You can email this report from APEX directly by clicking the Email button. On the Email page, enter the recipients' email addresses and subject for the email. You can also include additional content in the body field. Click **Email** to send an email with the summary report to the specified recipients.

## Lesson Agenda

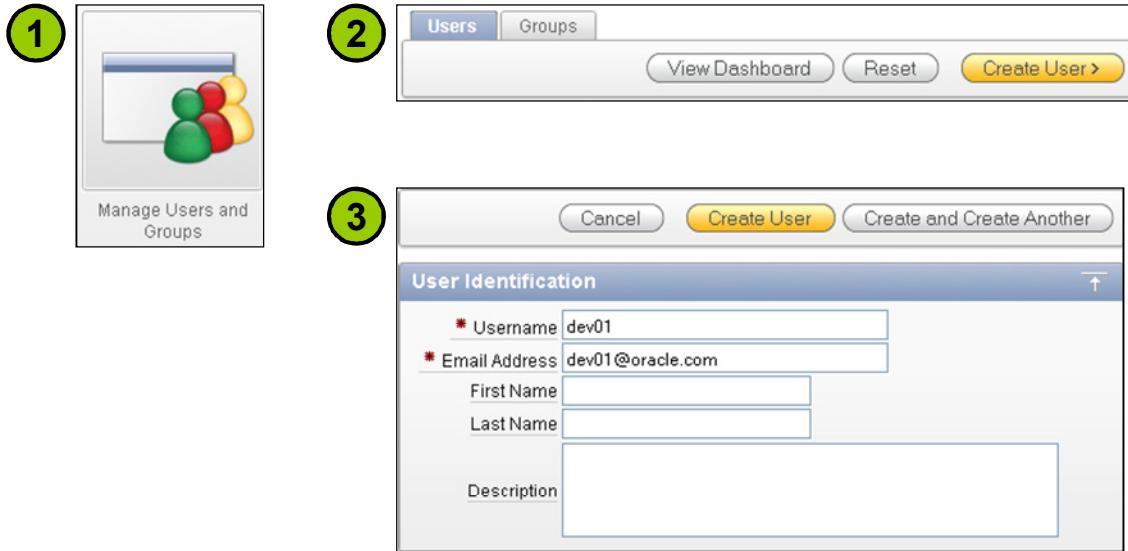
- Using the Administration Page
- Managing Services
- Creating Users and Groups
  - Creating Workspace Users
  - Setting Privileges
  - Creating Multiple Users
  - Editing User Details
  - Deleting Multiple Users
  - Creating a User Group
  - Assigning a User to a Group
- Monitoring Activity
- Using Dashboards

These tasks are performed by a workspace administrator ( ) using the Administration component of the APEX development interface.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Creating Workspace Users



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To create APEX users, perform the following steps:

1. Click the **Manage Users and Groups** icon from the Administration page.
2. From the Users page, click the **Create User** button.
3. Fill in all the details for the user like username, email address, and so on and click **Create User**.

The user is successfully created.

The privileges required for the different types of APEX users are discussed on the next page.

# Setting User Privileges

*Set to Yes to create a workspace administrator*

The screenshot shows the 'Account Privileges' dialog box. At the top, the 'Default Schema' is set to 'TEACH'. Below it, there's a field for 'Accessible Schemas (null for all)'. The main configuration area has two radio button groups: 'User is a workspace administrator' (with 'Yes' selected) and 'User is a developer' (with 'Yes' selected). Other options shown include 'Application Builder Access' (Yes), 'SQL Workshop Access' (Yes), 'Team Development Access' (Yes), and 'Set Account Availability' (Unlocked). Handwritten annotations with arrows point from the text 'Set to Yes to create a workspace administrator' to the 'Yes' radio button for workspace administrator and from the text 'Set to No to create an end user' to the 'No' radio button for developer.

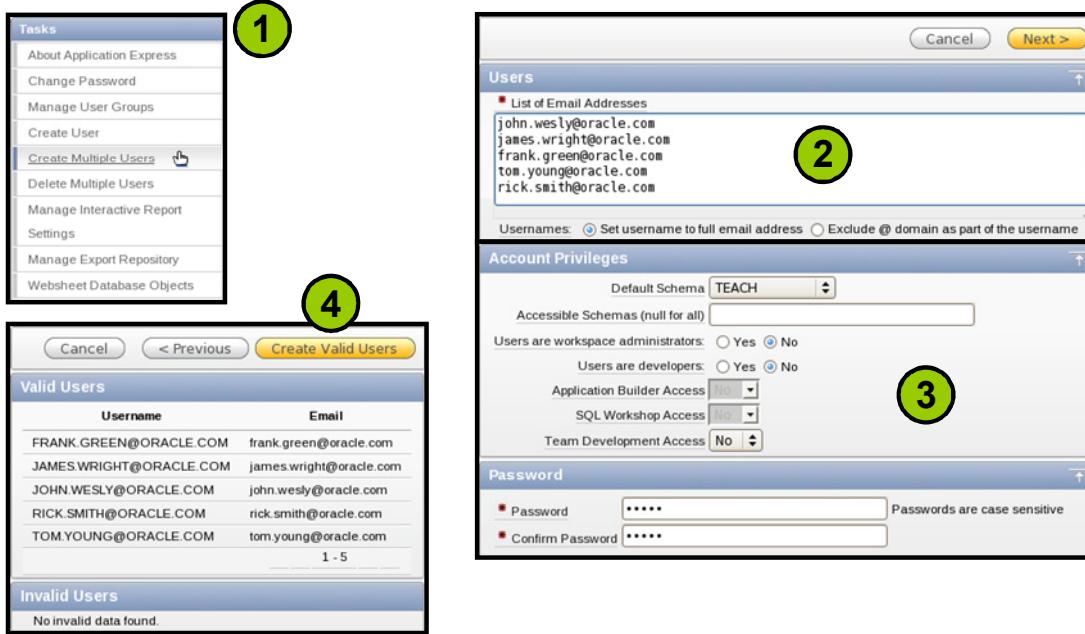
*Set to No to create an end user*



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

While creating an Oracle Application Express user, you need to set the account privileges depending on the type of user you want to create. For each user, you can set the default schema and enter a list of accessible schemas. The slide screenshot shows the setting required to create a Developer user. You also have an option to deny access to a particular component like Application Builder or SQL Workshop to an user.

# Creating Multiple Users



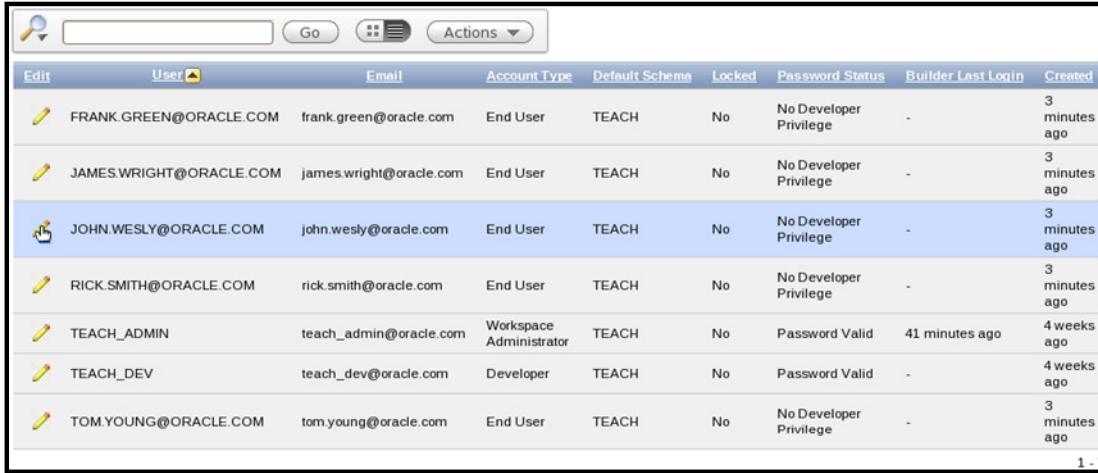
ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can create multiple APEX users at one go with the same account privilege. You can later edit the account details for specific users. To create multiple users at the same time, perform the following steps:

1. From the Administration page, click the **Create Multiple Users** link under the Tasks region.
2. Enter a valid email address for each user you want to create.
3. Specify the account privileges for each user and enter a password. Click **Next**.
4. The email address that you entered is validated and the valid and invalid users are listed separately. Click **Create Valid Users** to create the users.

## Editing User Details



The screenshot shows a table titled "User" with columns: Edit, User, Email, Account Type, Default Schema, Locked, Password Status, Last Login, and Created. The table lists seven users:

Edit	User	Email	Account Type	Default Schema	Locked	Password Status	Last Login	Created
	FRANK.GREEN@ORACLE.COM	frank.green@oracle.com	End User	TEACH	No	No Developer Privilege	-	3 minutes ago
	JAMES.WRIGHT@ORACLE.COM	james.wright@oracle.com	End User	TEACH	No	No Developer Privilege	-	3 minutes ago
	JOHN.WESLY@ORACLE.COM	john.wesly@oracle.com	End User	TEACH	No	No Developer Privilege	-	3 minutes ago
	RICK.SMITH@ORACLE.COM	rick.smith@oracle.com	End User	TEACH	No	No Developer Privilege	-	3 minutes ago
	TEACH_ADMIN	teach_admin@oracle.com	Workspace Administrator	TEACH	No	Password Valid	41 minutes ago	4 weeks ago
	TEACH_DEV	teach_dev@oracle.com	Developer	TEACH	No	Password Valid	-	4 weeks ago
	TOM.YOUNG@ORACLE.COM	tom.young@oracle.com	End User	TEACH	No	No Developer Privilege	-	3 minutes ago



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can edit the user details such as email address, username, account privileges, and so on at any point in time. To edit a user, access the Manage Users and Groups page and click the pencil icon next to the user you want to edit. An Edit User page opens. Make your changes and click **Apply Changes** to save the changes you made.

# Deleting Multiple Users

The screenshot shows two parts of the Oracle Application Express Administration interface. The top part is a sidebar titled 'Tasks' with various options like 'About Application Express', 'Change Password', and 'Delete Multiple Users'. A green circle labeled '1' highlights the 'Delete Multiple Users' link. The bottom part is a user list table with columns: User, Email, Account Type, Builder, Last Login, and Created. A green circle labeled '2' highlights the 'Delete Users' button at the top right of the table. The table lists several users, including Frank Green, James Wright, John Wesley, Rick Smith, Teach Admin, Teach Dev, and Tom Young. Some users have checkmarks next to their names.

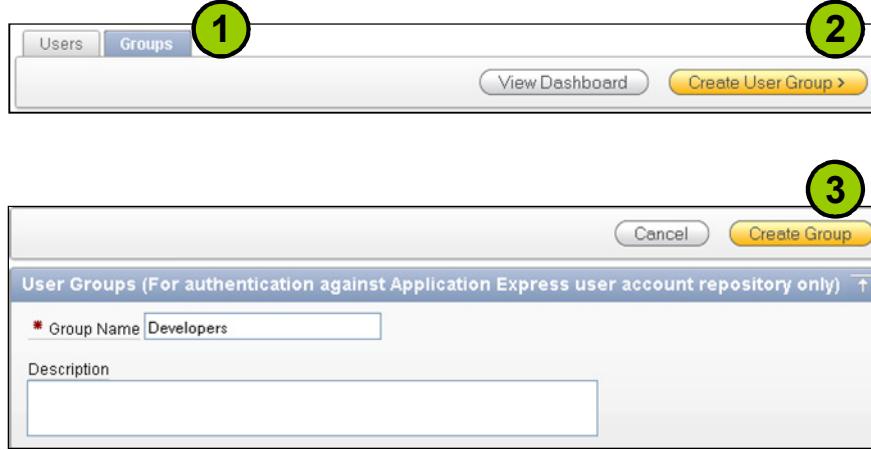
User	Email	Account Type	Builder	Last Login	Created
FRANK.GREEN@ORACLE.COM	frank.green@oracle.com	End User		4 minutes ago	
JAMES.WRIGHT@ORACLE.COM	james.wright@oracle.com	End User		4 minutes ago	
JOHN.WESLY@ORACLE.COM	john.wesly@oracle.com	Workspace Administrator		4 minutes ago	
<input checked="" type="checkbox"/> RICK.SMITH@ORACLE.COM	rick.smith@oracle.com	End User		4 minutes ago	
TEACH_ADMIN	teach_admin@oracle.com	Workspace Administrator	41 minutes ago	4 weeks ago	
<input type="checkbox"/> TEACH_DEV	teach_dev@oracle.com	Developer		4 weeks ago	
<input checked="" type="checkbox"/> TOM.YOUNG@ORACLE.COM	tom.young@oracle.com	End User		4 minutes ago	

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can delete multiple users at the same time. Perform the following steps:

1. From the Administration page, click the **Delete Multiple Users** link under the Tasks region. All the existing users are listed.
2. Since you can not delete the user you are currently logged in as, there is no check box against the currently logged in user. Select the check box next to the users you want to delete and click the **Delete Users** button.

# Creating a User Group



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

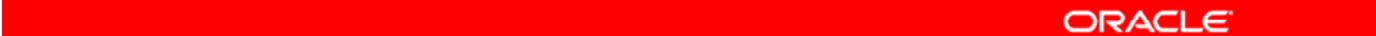
In addition to creating users, you can also create a user group and add the users as part of this group.

To create a new user group, navigate to the Users page and perform the following steps:

1. Click the **Groups** tab.
2. Click the **Create User Group** button.
3. Enter a group name and click **Create Group**.

# Assigning a User to a Group

Edit	User ▾	Email	Account Type	Default Schema	Locked	Password Status	Builder	Last Login	Created
	DEV01	dev01@oracle.com	Developer	TEACH	No	Password Valid	-		16 hours ago



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

After you have created a user group, you can add users to that group. To add a particular user to a group, navigate to the Users page. Click the edit pencil icon next to the user you want to add to a group. Scroll to the bottom of the page. Under the User Groups section, the available groups are listed. Select the group and click the forward arrow to assign a group to the user. A user can be part of more than one group. Click **Apply Changes**.

## Lesson Agenda

- Using the Administration Page
- Creating Users and Groups
- Managing Services
- Monitoring Activity
  - Monitoring Real Time Activity
  - Viewing an Activity Report
  - Monitoring Archived Activity
- Using Dashboards

These tasks are performed by a workspace administrator ( ) using the Administration component of the APEX development interface.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Monitoring Real Time Activity

The screenshot displays the 'Real Time Activity' section of the Oracle Application Express administration interface. At the top, there are tabs for 'Real Time Activity' (selected) and 'Archived Activity'. A 'View Dashboard' button is located in the top right corner. Below the tabs, there are several report cards:

- Page Views**: Includes options like By View, By User, By Application, By Application and Page, By Day, By Hour, and By Interactive Report.
- Developer Activity**: Includes options like By Developer, By Developer Pie Chart, By Day, By Application, Application Changes, detailed, and By Day, Monthly View.
- Page View Analysis**: Includes options like Most Viewed Pages over All Applications, Monthly Calendar of Page Views by Day, Line Chart of Usage by Day, By Weighted Page Performance, and Websheet Page Views.
- Sessions**: Includes Active Sessions and Bar Chart of Active Sessions by Hour.
- Login Attempts**: Includes Login Attempts, Login Attempts by Authentication Result, and Developer Login Summary.
- Environment**: Includes By User Agent, By Browser, By External Click, and By Operating System.
- Application Errors**: Includes Application Errors.
- Workspace Schema Reports**: Includes Schema Tablespace Utilization, Database Privileges by Schema, Workspace Schemas, and Report Tablespace Utilization (popup).

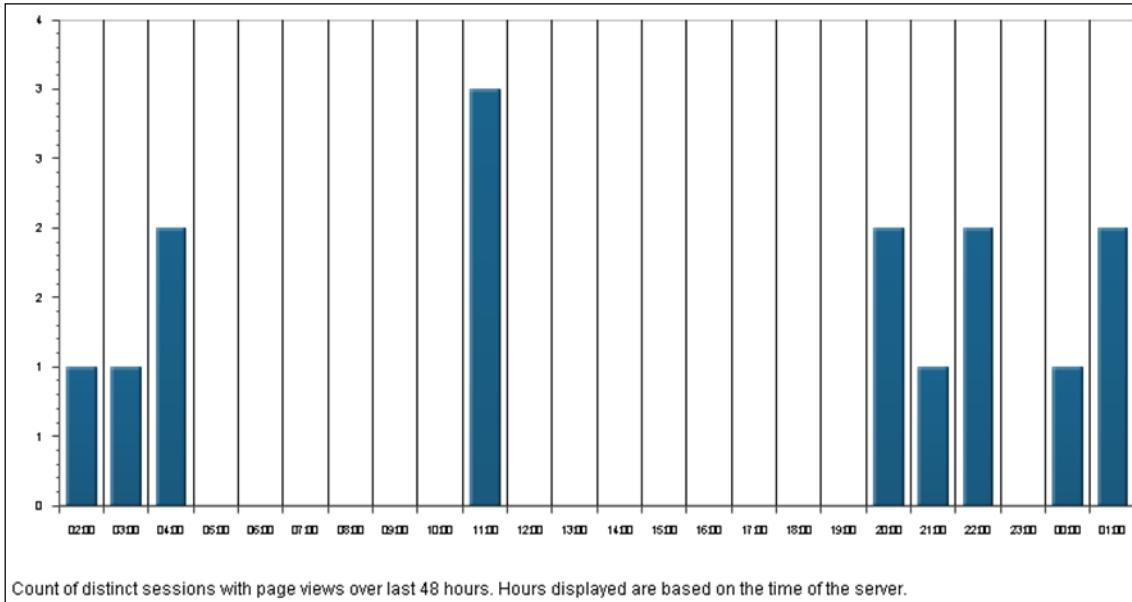
**ORACLE**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the Monitor Activity page, you can view reports on various activities within the workspace. To access the Monitor Activity page, navigate to the Administration page and click the **Monitor Activity** icon. On the Monitor Activity page, the reports are grouped into real time activity and archived activity.

The slide shows the reports available to monitor real time activity. Using these reports you can track page views, developer activity, active sessions in the workspace, login attempts, environment details, application errors, and workspace scheme reports. Some examples of using these reports are to identify the slowest pages that are accessed the most, the most active developers in the workspace, the active sessions running in the workspace, and so on.

## Viewing an Activity Report



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The slide shows the Bar Chart of Active Session by Hour report.

Each time you log into an APEX application, the APEX engine creates a record in a database table, storing a session ID, user credentials, date created, and other information. An active session is a session that has not yet been purged from the sessions database table.

# Monitoring Archived Activity

The screenshot shows the 'Archived Activity' tab selected in the top navigation bar. Below it, under 'Activity Reports', there are three options: 'By Application by Day' (highlighted with a red box), 'By Day', and 'By Application'. A red arrow points from this section down to a detailed log table.

Log Day	Application	Page Events	Websheet Views	Rows Fetched	Pages	Users	Sessions	Median Render Time	Total Render Time	Content
8/28/2010	4350	139	0	282	59	3	6	0.07	18.34	0
8/28/2010	4500	9	0	9	1	3	7	0.09	2.90	0
8/28/2010	4000	2	0	16	1	1	2	0.33	0.66	0
8/27/2010	4000	134	0	243	42	1	3	0.09	14.94	0
8/27/2010	4350	46	0	58	16	3	5	0.07	5.87	0
8/27/2010	104	26	0	1	4	1	1	0.02	0.42	0
8/27/2010	4800	3	0	0	2	2	2	0.25	0.77	0
8/27/2010	4500	11	0	24	4	3	6	0.26	2.61	0
8/26/2010	118	22	0	282	6	2	3	0.06	1.58	0
8/26/2010	4000	213	0	878	46	1	5	0.09	27.96	0
8/26/2010	4500	9	0	8	2	1	5	0.29	2.53	0
8/26/2010	104	19	0	1	3	1	3	0.03	0.66	0

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the Monitor Activity page, you can also view reports on archived workspace activity. Click the **Archived Activity** tab to see the list of reports you can view.

## Quiz

Which of the following tasks can you perform as a workspace administrator?

- a. Do not allow PL/SQL program unit editing.
- b. Enable account expiration and locking.
- c. Set the maximum log in failures allowed for an end user.
- d. All of the above



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: d**

## Lesson Agenda

- Using the Administration Page
- Creating Users and Groups
- Managing Services
- Monitoring Activity
- Using Dashboards
  - Viewing the workspace dashboard
  - Viewing the Users dashboard
  - Viewing the database dashboard
  - About other dashboards

These tasks are performed by a workspace administrator ( ) using the Administration component of the APEX development interface.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Viewing the Workspace Dashboard

The screenshot shows the Oracle Application Express Workspace Dashboard for workspace TEACH. The dashboard has a header with tabs: Workspace (selected), Users, Activity, Developer Activity, Performance, Websheets, Applications, and Database. Below the tabs are buttons for Manage Services, Report Utilization, and Refresh.

**Service:**

Workspace Name	TEACH
Applications	8
Application Pages	60
SQL Scripts	2
Websheets	0
Schemas	1
Open Requests	0

**Available Schemas:**

TEACH

**Files:**

Total File Size	691KB
File Count	7
File Types	9

**Recent Service Requests:**

Workspace Request - APPROVED - 25MB	5 weeks ago

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

A dashboard provides summarized details about the current workspace. To access the Dashboard page, navigate to the Administration page and click the **Dashboards** icon. The Workspace dashboard, shown in slide, summarizes number of applications in the workspace, total number of application pages, schemas, SQL Scripts, space used by files, status of service requests, and so on.

# Viewing the Users Dashboard

Your Account		Workspace Users	
Username	<b>TEACH_ADMIN</b>	Users	<b>6</b>
Workspace	<b>TEACH</b>	Workspace Administrators	<b>1</b>
Workspace Administrator	<b>Yes</b>	Application Developers	<b>5</b>
Application Developer	<b>Yes</b>	Websheet Developers	<b>0</b>
Websheet Developer	<b>Yes</b>	End Users	<b>1</b>
eMail	<b>teach@teach.com</b>	Created Last 24 Hours	<b>3</b>
User Created	<b>5 weeks ago</b>	Created Last Week	<b>4</b>

User Groups		Recently Created		User Status	
Developers	<b>1</b>	dev03	<b>19 hours ago</b>	Valid Passwords	<b>0</b>
End Users	<b>1</b>	dev02	<b>19 hours ago</b>	Expired Passwords	<b>6</b>
Testers	<b>1</b>	dev01	<b>19 hours ago</b>	Locked Accounts	<b>0</b>
		teach_user	<b>28 hours ago</b>	Unlocked Accounts	<b>6</b>
		teach	<b>4 weeks ago</b>	No Email Specified	<b>0</b>
		teach_admin	<b>5 weeks ago</b>		

Tasks	
About Application Express	
Change Password	
Monitor Activity	
Manage Service	
Manage User Groups	
Create User	
Create Multiple Users	
Delete Multiple Users	
Manage Interactive Report	
Settings	
Manage Export Repository	
Websheet Database Objects	

**ORACLE**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The Users dashboard displays a summary of the account information of the current logged-in user, other users in the workspace, defined user groups, recently created users, and user status.

The page also contains links to various tasks you can perform. The Tasks list displays various options depending on your role. The slide shows the tasks available for an administrator role.

## Viewing the Database Dashboard

The screenshot shows the Oracle Database Dashboard interface. At the top, there is a navigation bar with tabs: Workspace, Users, Activity, Developer Activity, Performance, Websheets, Applications, and Database. The Database tab is selected. Below the navigation bar, there is a schema selector set to 'TEACH' and a Refresh button.

**Recently Modified Program Units:**

bi_TASKS - trigger	4 weeks ago
T_OEHR_JOB_ID_LOOKUP - trigger	4 weeks ago
OEHR_CUST_PK - trigger	4 weeks ago
OEHR_UPDATE_JOB_HISTORY - trigger	4 weeks ago
OEHR_PRODUCTS_PK - trigger	4 weeks ago
OEHR_ORDERS_PK - trigger	4 weeks ago
OEHR_OI_PK - trigger	4 weeks ago

**Object Counts:**

INDEX	69
TABLE	34
TRIGGER	21
SEQUENCE	14
VIEW	9
FUNCTION	2
PROCEDURE	1

**Recently Created Tables:**

TASKS	4 weeks ago
OEHR_JOB_ID_LOOKUP	4 weeks ago
OEHR_WAREHOUSES	4 weeks ago
OEHR_COUNTRIES	4 weeks ago
OEHR_CUSTOMERS	4 weeks ago
OEHR_DEPARTMENTS	4 weeks ago
OEHR_EMPLOYEES	4 weeks ago

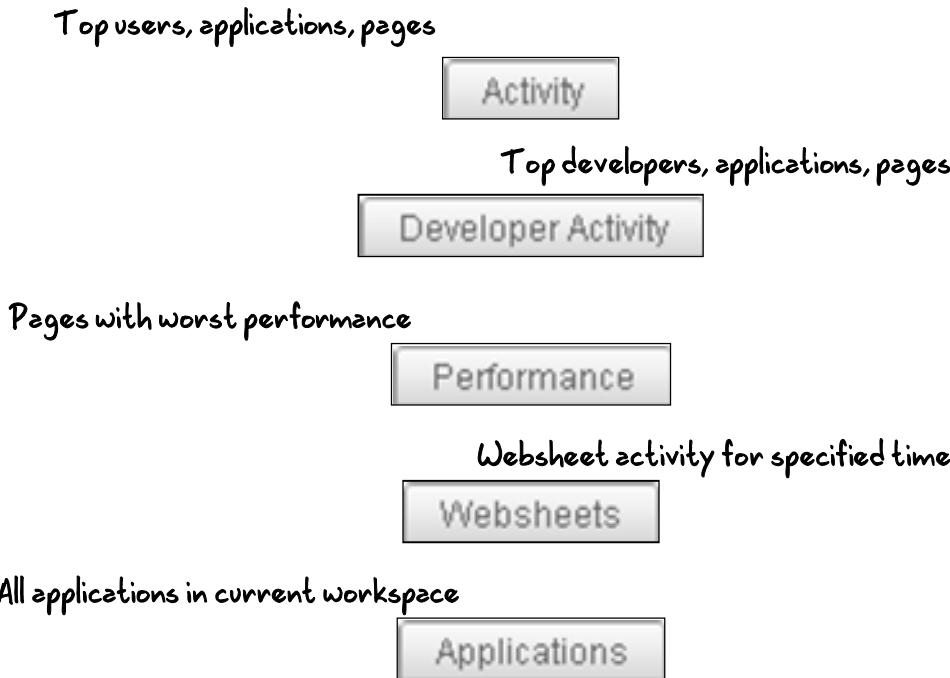
**Top Tables by Row Count:**

OEHR_INVENTORIES	1,112
OEHR_ORDER_ITEMS	665
OEHR_CUSTOMERS	319
OEHR_PRODUCT_INFORMATION	288
OEHR_PRODUCT_DESCRIPTIONS	288
OEHR_EMPLOYEES	107
OEHR_ORDERS	105

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The Database dashboard displays a summary of the database objects used by the workspace. You can select the schema for which you want information from the Schema select list. For the selected schema, a summary of the recently edited PL/SQL code, recently created tables, and number of database objects by type is displayed.

## About Other Dashboards



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Each of the other dashboards provide summarized information about the current workspace.

- **Activity** dashboard: Displays the top users, top applications, top pages accessed as well as recent logins and errors in the workspace
- **Developer Activity** dashboard: Displays the top developers, top applications, top pages used as well as recent changes and edit in the workspace
- **Performance** dashboard: Displays pages having worst performance
- **Websheets** dashboard: Displays activity in the Websheets created in the workspace over a specified time period
- **Applications** dashboard: Displays a summary of applications in the current workspace

## Quiz

You want to see reports that track changes to page views and applications. How do you accomplish this?

- a. From the Administration list, select Manage Application Express Users.
- b. From the Administration list, select Manage Services.
- c. From the Administration list, select Monitor Activity.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: c**

## Summary

In this lesson, you should have learned how to:

- Create a service request
- Create workspace users
- Create workspace announcements
- Monitor workspace activity
- View dashboards



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Practice 7: Overview Administering a Workspace

This practice covers the following topics:

- Requesting for a new schema
- Requesting for additional storage
- Emailing workspace summary report
- Creating a developer user
- Viewing workspace activity reports
- Viewing dashboards
- Requesting for a new workspace



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In this practice, you will log in to the APEX development interface as a workspace administrator and perform various tasks.

THESE eKIT MATERIALS ARE FOR YOUR USE IN THIS CLASSROOM ONLY. COPYING eKIT MATERIALS FROM THIS COMPUTER IS STRICTLY PROHIBITED

Oracle University and Error : You are not a Valid Partner use only

# 8

## Administering an APEX Instance

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Objectives

After completing this lesson, you should be able to:

- Manage Service Requests
- Manage Session State
- Export and Import Workspaces
- Manage Public Themes
- Monitor Activity in an Entire APEX Instance



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Agenda

- Managing Service Requests
  - Types of Requests
  - Viewing Requests
  - Editing Workspace Requests
  - Approving Workspace Requests
  - Changing Workspace Request Status
  - Deleting a Workspace Request
  - Approving/Declining Change Requests
- Managing Session State
- Exporting/Importing Workspaces
- Managing Public Themes
- Monitoring Activity
- Managing Announcements



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Types of Requests

An instance administrator receives two types of requests:

- Workspace Requests
- Change Requests



Workspace Requests



Change Requests

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

There are two types of service requests that you receive as an instance administrator. Requests for new workspaces are called “Workspace Requests.” Workspace Requests are received only when the workspace provisioning mode is set to either Request or Email Verification. Workspace Requests can be placed by any user who has access to the APEX development interface login page.

Requests made by workspace administrators asking for more storage, new schema, or removal of the workspace are called “Change Requests.”

# Viewing Requests from the Administration Home Page

The screenshot shows the Instance Administration home page. At the top, there are four main navigation links: Manage Requests, Manage Instance, Manage Workspaces, and Monitor Activity. Below these, a message states 'No system message defined'. The 'Pending Requests' section is highlighted with a red box and contains two items: 'New Service: 1' and 'Service Change: 3'. To the right, the 'Workspace Summary' section displays various workspace metrics. Below this, the 'New Service Requests' section is also highlighted with a red box and lists four recent requests, each with a timestamp of '2 hours ago':

Service Request	Date of Request
TEACH - REMOVE_EXISTING_SERVICE -	2 hours ago
TEACH_ADMIN of workspace "TEACH" has requested change of database size of an additional SMB	2 hours ago
TEACH_ADMIN has requested a new schema for workspace "TEACH" with DEMO_NEW_SCHEMA	2 hours ago
teach_apex@oracle.com requests new workspace "DEMO_REQUEST" with size of 10MB	2 hours ago

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Service Requests that are sent to instance administrators can be viewed from the Administration Services home page. Under the Pending Requests section, you can view the total number of workspace requests and change requests that are pending your review. To view a detailed report, click the number link.

You can also view a more detailed list of the requests received from the New Service Requests report region in the home page.

# Viewing Requests from the Manage Requests Page

The figure consists of three vertically stacked screenshots of the Oracle Application Express Manage Requests page. Each screenshot shows a header with tabs: 'Open Requests', 'All Workspace Requests', and 'All Change Requests'. Below the tabs is a search bar and a 'Actions' dropdown. A red box highlights the 'All Workspace Requests' tab in the top screenshot, and a red arrow points from it to the middle screenshot. In the middle screenshot, the 'All Workspace Requests' tab is selected, and the content area displays a table of service requests. A red box highlights the 'All Change Requests' tab in the bottom screenshot, and a red arrow points from the middle screenshot to it. The bottom screenshot shows the 'All Change Requests' tab selected, displaying a table of change requests.

Workspace	Requested Change	Value	Date	Requested By	Action	Status
TEACH	REMOVE_EXISTING_SERVICE	-	3 hours ago	TEACH_ADMIN	<a href="#">View Request</a>	Requested
TEACH	CHANGE_DB_SIZE	5	3 hours ago	TEACH_ADMIN	<a href="#">View Request</a>	Requested
TEACH	NEW_SCHEMA	DEMO_NEW_SCHEMA	3 hours ago	TEACH_ADMIN	<a href="#">View Request</a>	Requested

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can also view all the service requests from the Manage Requests page. To access the Manage Requests page, click the **Manage Requests** icon from the Administration Services home page. The Manage Requests page displays a report listing all the open requests. You can click the **All Workspace Requests** tab or **All Change Requests** tab to view only those requests.

## Editing Workspace Requests

The screenshot shows two windows from Oracle Application Express. The top window is a list of workspace requests with a red box around the pencil icon in the first column. The bottom window is a detailed edit form for a specific request.

**List of Workspace Requests:**

Workspace	Schema	Administrator	Database Size	Country	Request Date	Status	Action
DEMO_REQUEST	DEMO_REQUEST	teach_apex@oracle.com	10	-	3 hours ago	Requested	Provision

**Edit Provisioning Request Dialog:**

Cancel   Delete   Apply Changes

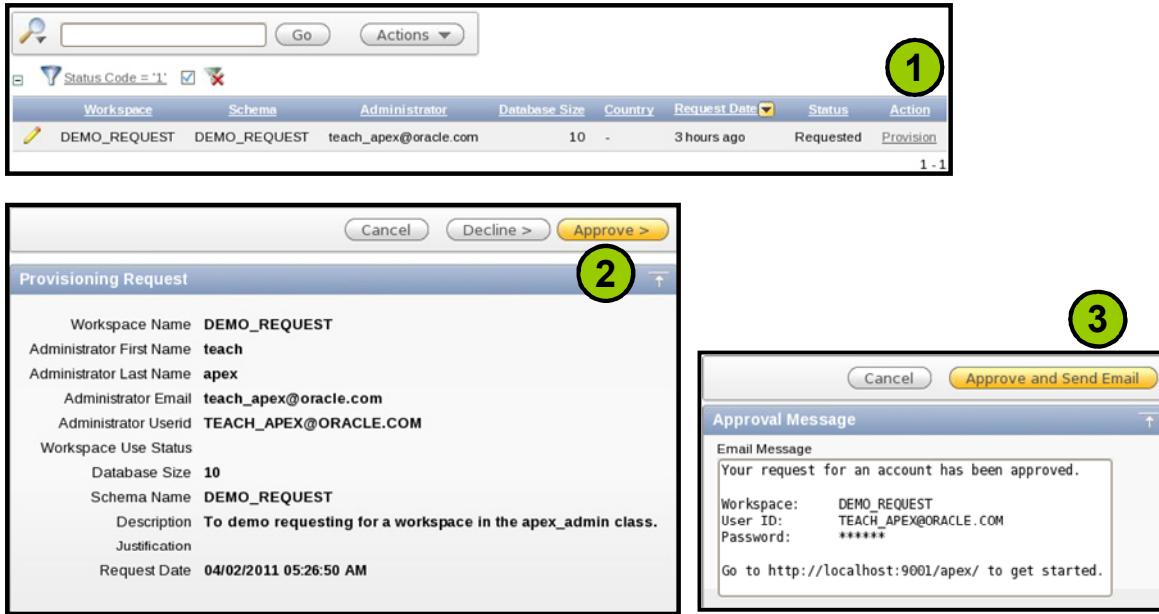
Workspace: DEMO\_REQUEST  
Admin UserID: TEACH\_APEX@ORACLE.COM  
Admin Email: teach\_apex@oracle.com  
Admin First Name: teach  
Admin Last Name: apex  
Database Size: 10  
Schema Name: DEMO\_REQUEST  
Project Description: To demo requesting for a workspace in the apex\_admin class.  
Project Justification:  
Project Status: Requested

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Before approving a workspace request, you can make changes to the request by editing it. To edit a workspace request, click the **All Workspace Requests** tab from the Manage Requests page. Click the pencil icon next to the workspace request you want to edit. Edit the request as required and click the **Apply Changes** button.

# Approving Workspace Requests



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To approve a workspace request, perform the following steps:

1. From the All Workspace Requests tab on the Manage Requests page, click the **Provision** link for the request you want to approve.
2. Review the workspace request details and click the **Approve** button.
3. Review the approval email message and click the **Approve and Send Email** button.

The workspace is approved and an email is sent to the requestor.

# Changing Workspace Requests Status

The screenshot illustrates the process of changing workspace request status through three numbered steps:

- Step 1:** Shows the "All Workspace Requests" page. A green circle labeled "1" is positioned above the page title. The page includes tabs for "Open Requests", "All Workspace Requests" (which is selected), and "All Change Requests". Below the tabs is a search bar with a magnifying glass icon and a "Go" button. A "Reset" button is located in the top right corner. The main area displays a table with columns: Workspace, Schema, Administrator, Database Size, Country, Request Date, Status, and Action. Three rows are listed:
 

Workspace	Schema	Administrator	Database Size	Country	Request Date	Status	Action
DEMO_REQUEST	DEMO_REQUEST	teach_apex@oracle.com	10	-	3 hours ago	Requested	<a href="#">Provision</a>
DEMO_LOCK	DEMO_LOCK	demo_lock_admin	10	-	5 hours ago	Approved	<a href="#">Adjust</a>
TEACH	TEACH	teach_admin	-	-	6 hours ago	Approved	<a href="#">Adjust</a>
- Step 2:** Shows a modal dialog titled "Change Status Provisioning Attribute". A green circle labeled "2" is positioned to the right of the dialog. The dialog contains fields for Request ID (1300911729973258), Security Group ID (1301118283973258), Workspace (TEACH), Admin Email (teach\_admin@oracle.com), and Schema Name (TEACH). Below these fields is a "Project Status" dropdown menu. A green circle labeled "3" is positioned to the right of the dropdown. The dropdown menu shows the current status "Approved" highlighted, along with other options: Declined, In Progress, Requested, Terminated, and Accepted.
- Step 3:** Shows the "Apply Changes" button in the modal dialog. A green circle labeled "3" is positioned to the right of the button. The "Apply Changes" button is yellow with black text.

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

ORACLE

You can change the status of a workspace request. For example, you can change an Approved request back to Requested. This will enable you to provision the request again. However, changing an Approved request to Requested will not remove the schemas that were created when the request was originally approved. You will need to remove those schemas, terminate the request and then change its status to Requested to create that workspace again. To change the status of a workspace request, perform the following steps:

1. Access the All Workspace Requests page. Remove existing filter, if any, on the report that is displayed.
2. Locate the request for which you want to change the status and click the **Adjust** link under the Action column.
3. For the Project Status field, select the new status from the drop-down list and click the **Apply Changes** button.

# Deleting Workspace Requests

The screenshot shows two windows from Oracle Application Express. The top window is titled 'All Workspace Requests' and lists three workspace requests:

Workspace	Schema	Administrator	Database Size	Country	Request Date	Status	Action
DEMO_REQUEST	DEMO_REQUEST	teach_apex@oracle.com	10	-	3 hours ago	Requested	Provision
DEMO_LOCK	DEMO_LOCK	demo_lock_admin	10	-	5 hours ago	Approved	Adjust
TEACH	TEACH	teach_admin	-	-	6 hours ago	Approved	Adjust

A green circle with the number '1' highlights the pencil icon next to the 'TEACH' row. A red box highlights the pencil icon. The bottom window is titled 'Edit Provisioning Request' and contains fields for workspace, admin user ID, admin email, first name, last name, database size, schema name, project description, and project justification. A green circle with the number '2' highlights the 'Terminate or Delete' button.

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To delete a workspace request, perform the following steps:

1. From the All Workspace Requests tab, click the pencil icon next to the workspace that you want to delete.
2. Click the **Terminate or Delete** button. (If the request is not yet approved, the button name will be Delete.)

The workspace request is deleted.

# Approving/Declining Change Requests

Screenshot 1: A screenshot of a web-based application interface showing a list of change requests. The table has columns: Workspace, Requested Change, Value, Date, Requested By, Action, and Status. There are three rows:

Workspace	Requested Change	Value	Date	Requested By	Action	Status
TEACH	REMOVE_EXISTING_SERVICE	-	3 hours ago	TEACH_ADMIN	<a href="#">View Request</a>	Requested
TEACH	CHANGE_DB_SIZE	5	3 hours ago	TEACH_ADMIN	<a href="#">View Request</a>	Requested
TEACH	NEW_SCHEMA	DEMO_NEW_SCHEMA	3 hours ago	TEACH_ADMIN	<a href="#">View Request</a>	Requested

Screenshot 2: A screenshot of a 'Change Request' detail page. It includes fields for Comments, a checkbox for deleting the request if denied, and a table showing service details. Buttons at the top include Cancel, Deny Request, and Add Space (circled).

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Change requests are listed under the All Change Requests tab. To approve or decline a change request, perform the following steps:

1. Click the **View Request** link under the Action column of the request you want to approve.
2. Click the **Add Space** button to approve the request. (The name of the button will vary depending on the request type.) To decline the request, click the **Deny Request** button.

## Quiz

Which of the following requests will you receive as instance administrators?

- a. Request for additional space
- b. Request for a new user
- c. Request for a database privilege
- d. Request for a new workspace
- e. Request for email configuration
- f. All of the above



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a, d**

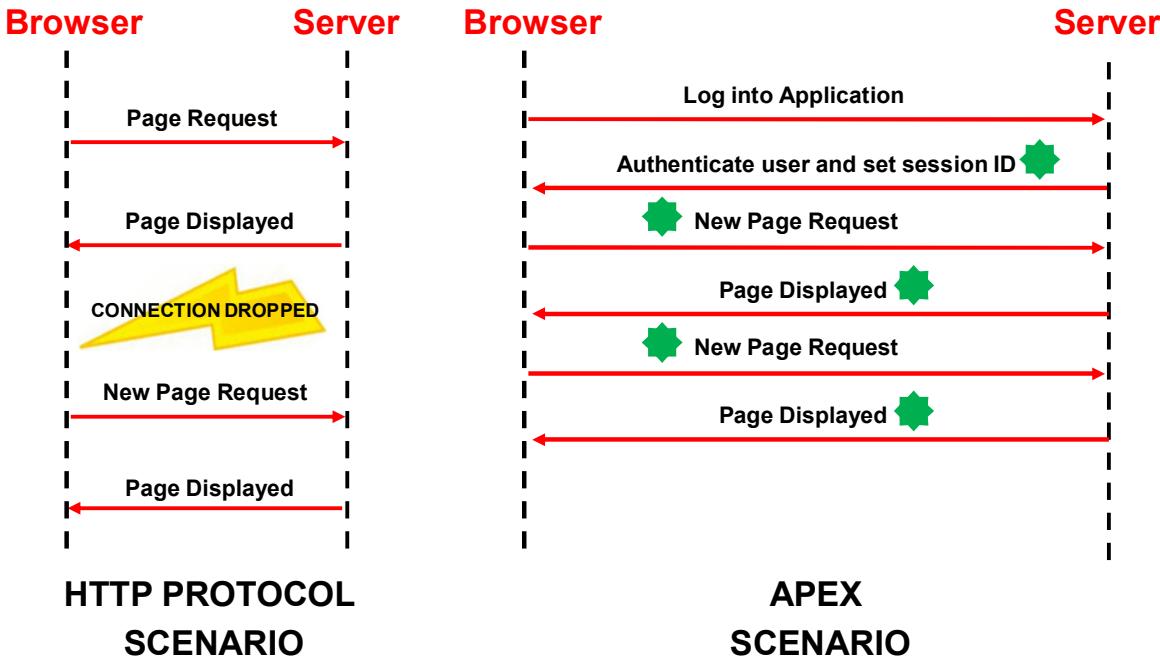
# Agenda

- Managing Service Requests
- Managing Session State
  - What is Session State?
  - Viewing Session State Statistics
  - Viewing Session State Details
  - Purging Session State
- Exporting/Importing Workspaces
- Managing Public Themes
- Monitoring Activity
- Managing Announcements



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# What Is Session State?



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To understand session state, you first need to understand HTTP (Hypertext Transfer Protocol) and how it works. HTTP, the protocol used to transfer data across the web, is a stateless protocol. That means, each page request from a browser is treated as an independent request by the server. There is no memory or saved state between the requests.

A series of requests, originating from the same user using the same web browser to a web server, is called a session. The value of page items during the session length is called the session state of the item.

In a web application scenario, such as an online shopping application, it is essential to maintain the application state information. Some sort of management is required to access values that are entered on one page from a different page.

To manage sessions and to store session state information, each session should be uniquely identifiable by the server and browser. This is done by using session IDs. Session ID is a unique identifier for each session initiated by the browser. This session ID is associated with subsequent page requests establishing a session.

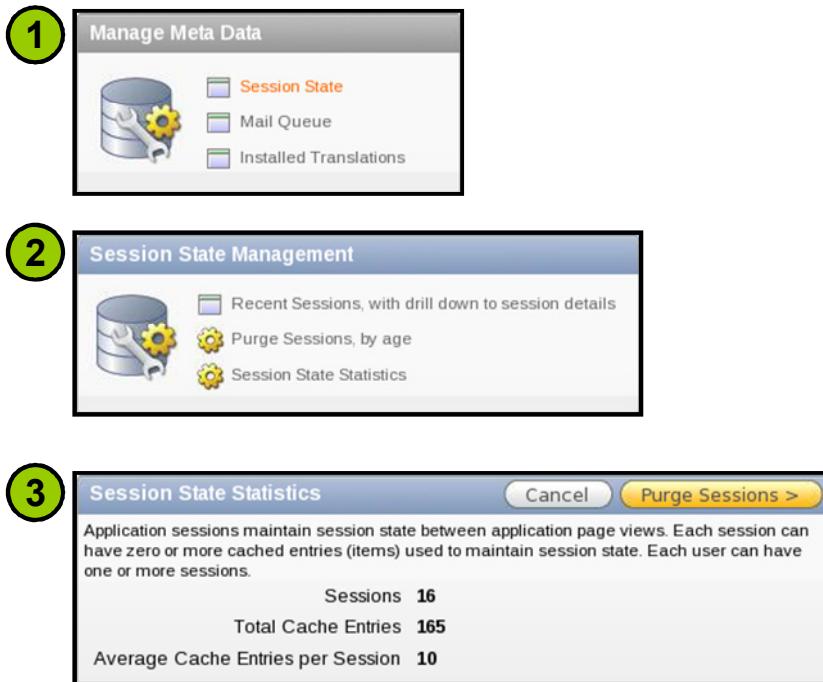
In APEX, you do not need to write code to manage and maintain sessions or session state. Session state is maintained transparently and you can easily access the session state values and manipulate them, if required.

Each time users log into an application, APEX assigns a unique session identifier, which is associated with the user till they log out of the application. This session identifier or session ID is used by the APEX engine to store and retrieve the application's working set of data before and after each page view. This is done by comparing the session ID with the session cookie and the session record in the database. The session cookie and the session record safeguard the integrity of the session ID and the authentication status of the user. You can view the session ID value in the URL for a page request.

APEX uses cookies to store session state. If you turn off cookies in your browser, APEX and its applications will not work properly.

Multiple sessions can exist in the database at the same time as APEX treats each session independently. The session information persists in the database until purged.

# Viewing Session State Statistics



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

As an instance administrator, you can view the total number of sessions that exist at any given point in time. To view the session state statistics, perform the following steps:

1. From the Manage Instance page, click the **Session State** link under Manage Meta Data.
2. Click the **Session State Statistics** link.
3. The session state statistics is displayed.

# Viewing Session State Detail

The screenshot shows the Oracle Application Express Session State Management interface. It consists of two main windows. The top window is titled "Session State Management" and contains three icons: "Recent Sessions, with drill down to session details" (a database icon), "Purge Sessions, by age" (a gear icon), and "Session State Statistics" (a bar chart icon). Below this is a list of sessions with columns: Session Number, Database User, Created On, and User. One session row is highlighted with a red box and has an arrow pointing to the second window. The second window is titled "Session Number: 3634247202780111" and displays detailed session information. It includes fields for Session Number, Created By, Created On, Cookie (User), On New Instance Fired For, Security Checks Passed, and Workspace. Below this is a table of session state items with columns: Item Name, Session State Value, Session State Status, and Flow Id. The table lists various session parameters like COMPANY, F4050\_P72\_ADMIN\_PASS, F4050\_P79\_SCHEMA\_PASSWORD, etc.

Item Name	Session State Value	Session State Status	Flow Id
COMPANY	INTERNAL	Inserted	4050
F4050_P72_ADMIN_PASS	*****	Inserted	4050
F4050_P79_SCHEMA_PASSWORD	*****	Inserted	4050
F4550_P1_COMPANY	-	Reset to null value	4550
F4550_P1_USERNAME	-	Reset to null value	4550
F4550_SERVICE_REQUEST_URL	f?p=4700:1	Inserted	4550
FSP_LAST_REQUEST_TIME	2011.04.02.11.15.39	Unknown	-
LAST_VIEW	9	Updated	4050
P106_PASSWORD	*****	Inserted	4050

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can view a detailed list of all the sessions. Access the Session State page and click the **Recent Session, with drill down to session details** link. A report listing all the sessions is displayed. To view the details of a particular session, click the session id link.

## Purging Session State



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To purge sessions manually, perform the following steps:

1. Access the Session State page and click the **Purge Sessions, by age** link.
2. Enter the maximum number of sessions to purge.
3. Select a time period for Only Purge Sessions Older Than field.
4. Click the **Purge Sessions** button.

## Quiz

Session State details are stored in the database till the instance administrator deletes or purges them.

- a. True
- b. False



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: b**

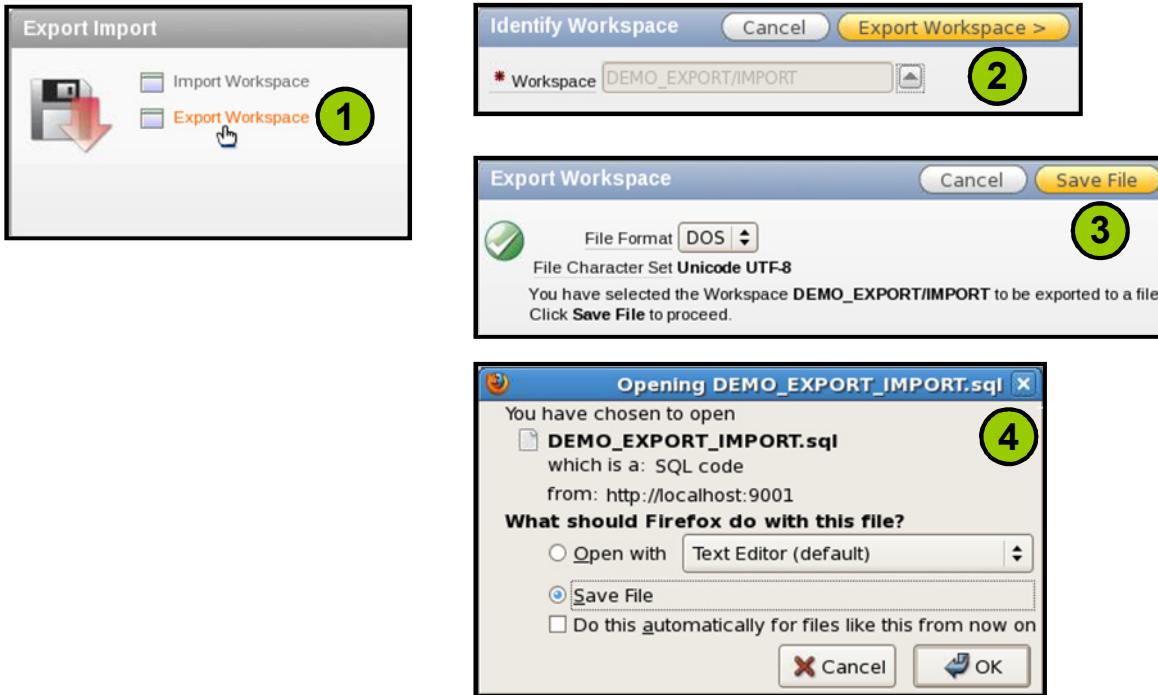
# Agenda

- Managing Service Requests
- Managing Session State
- Exporting/Importing Workspaces
  - Exporting a Workspace
  - Importing a Workspace
- Managing Public Themes
- Monitoring Activity
- Managing Announcements



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Exporting a Workspace

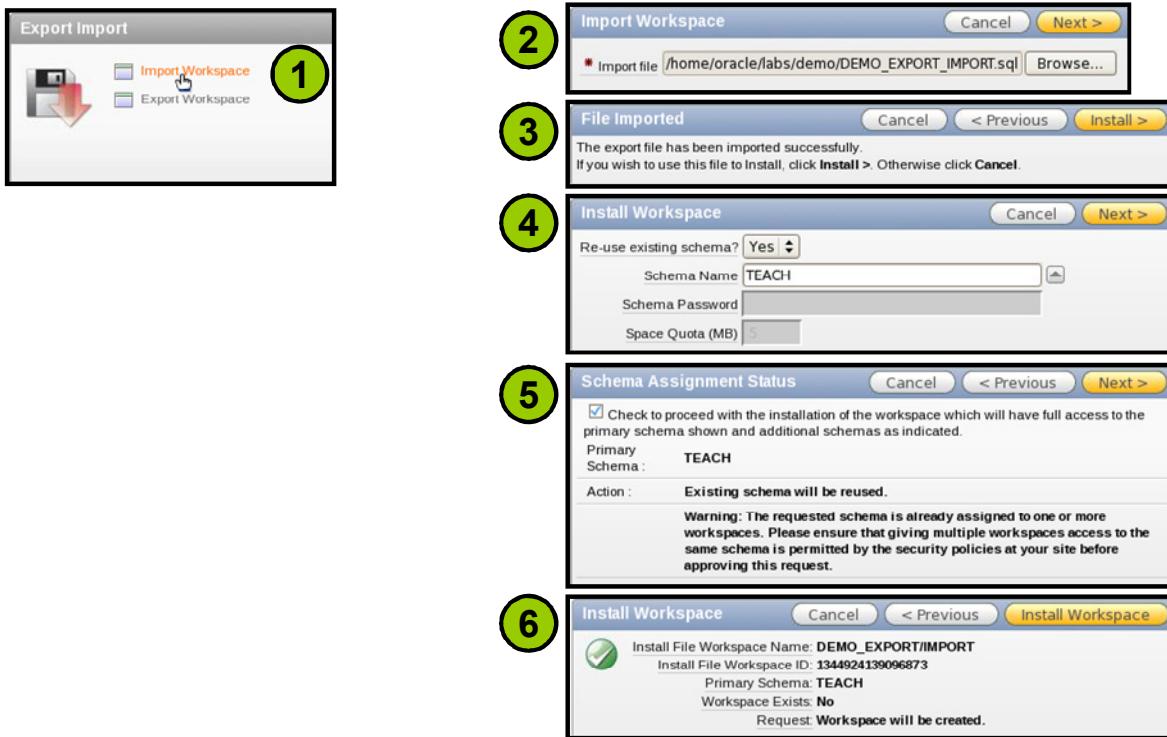
**ORACLE**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can export a workspace (workspace information, users, and user groups) from one APEX instance to another. This is useful when you want to move a workspace from a development or testing environment to a production environment or vice versa. The database objects and applications are not exported. To export a workspace, perform the following steps:

1. From the Manage Workspaces page, click the **Export Workspace** link.
2. Select the workspace you want to export and click **Export Workspace**.
3. Click **Save File**. You can change the file format, if required.
4. Click the **OK** button to save the file.

# Importing a Workspace



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can import a workspace that has been exported by using Administration Services. To import a workspace, perform the following steps:

1. From the Manage Workspaces page, click the **Import Workspace** link.
2. Click the **Browse** button and select the exported file. Click **Next**.
3. Click **Install**.
4. Specify whether to want to install the workspace in new schema or in an existing schema.
5. Select the check box and click **Next**.
6. Click **Install Workspace**.

# Agenda

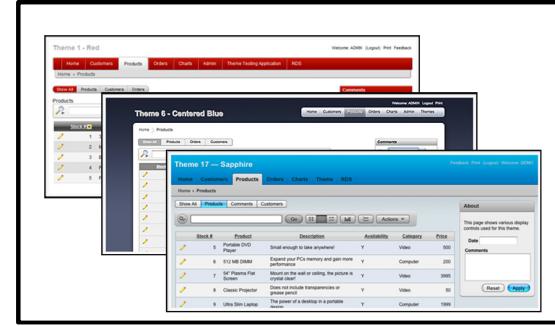
- Managing Service Requests
- Managing Session State
- Exporting/Importing Workspaces
- Managing Public Themes
  - What is a Public Theme?
  - Creating a Public Theme
  - Deleting/Editing a Public Theme
- Monitoring Activity
- Managing Announcements



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## What Is a Public Theme?

Public Themes are themes, other than the APEX themes, that can be used in applications in all workspaces.



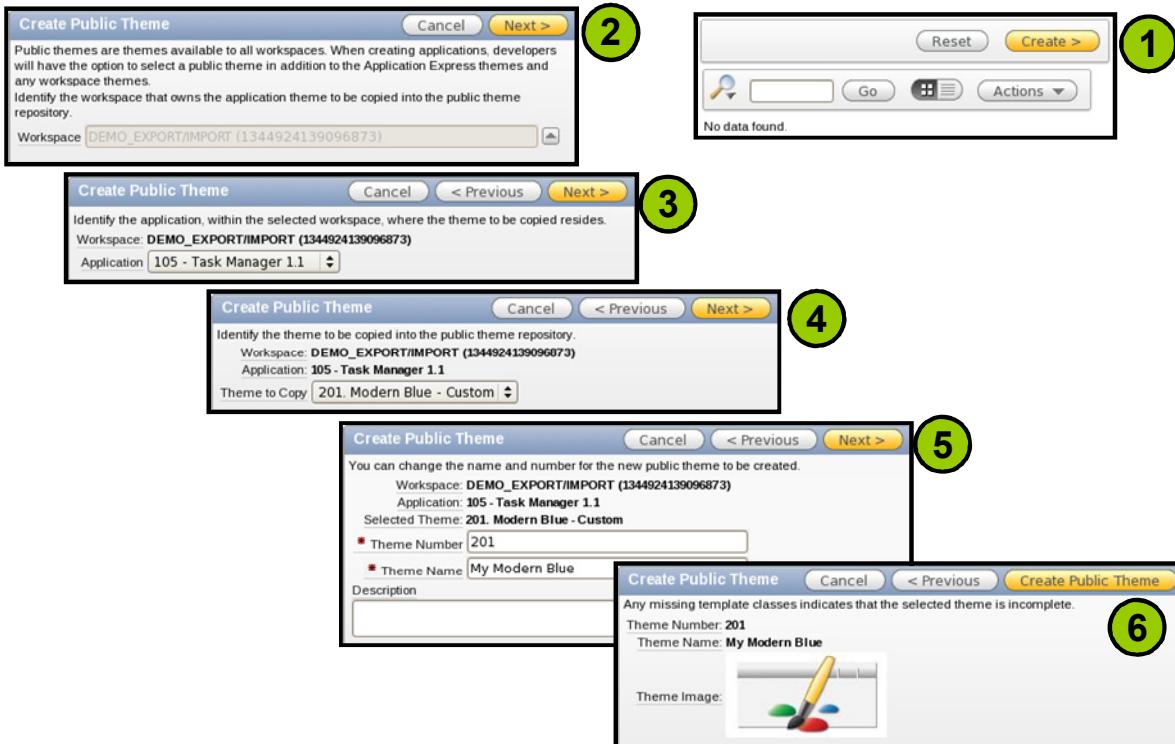
ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

By default, APEX provides 20 themes that you can use to create applications. You can create a new theme from scratch or by copying an existing theme and modifying it. Themes are created or modified in workspaces. How to create and edit APEX themes are discussed in detailed in the lesson titled “Customizing Themes and Templates” in the Oracle Application Express: Advanced Workshop course.

As an instance administrator, you can make a theme from one workspace available to all other workspaces in the APEX instance. Such themes are called Public Themes. Once a theme has been made as a public theme, it is available to all users of all workspaces in an APEX instance. To access the Public Themes page, click the **Public Themes** link under Manage Shared Components from the Manage Instance page.

# Creating a Public Theme



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Before creating a public theme, you must ensure that the theme is available in one of the workspaces of the APEX instance. To create a public theme, perform the following steps:

1. From the Public Themes page, click the **Create** button.
2. Select the workspace, which contains the theme to be made public. Click **Next**.
3. Select the application, which has the theme to be made public. Click **Next**.
4. Select the theme, which has to be made public. Click **Next**.
5. Modify the theme name and optionally enter a description. Click **Next**.
6. Click the **Create Public Theme** button.

The theme is made public. It is listed in the Public Themes page and available to users in all the workspaces.

## Deleting/Editing a Public Theme

The image contains two screenshots of Oracle Application Express Administration Services. The top screenshot shows a list of themes with a magnifying glass icon, a search bar, and a toolbar with 'Reset', 'Create &gt;', 'Go', and 'Actions'. A theme titled 'My Modern Blue - 201' is selected, showing a preview icon of a paintbrush and palette. The bottom screenshot shows a modal dialog titled 'Public Theme' with fields for 'Number' (201) and 'Name' (My Modern Blue), both marked with red asterisks indicating they are required. There is also a 'Description' field and a 'Cancel', 'Delete', and 'Apply Changes' button.

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To delete a public theme, click the theme icon from the Public Themes page. Then, click the **Delete** button. You can not directly edit a public theme from Administration Services. To edit a public theme, perform the following steps:

1. Create an application by using the theme you want to modify.
2. Edit the theme templates as required.
3. Delete the previous public theme.
4. Make the edited theme a public theme.

## Quiz

Which of the following statements defines Public Themes?

- a. Themes that are freely available for download to all users using APEX
- b. Themes that are created by workspace administrators for all users
- c. Themes that are created by instance administrators and available to all users of a APEX instance
- d. Themes that are specifically designed by instance administrators using Administration Services



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: c**

# Agenda

- Managing Service Requests
- Managing Session State
- Exporting/Importing Workspaces
- Managing Public Themes
- Monitoring Activity
  - Viewing Real-time Reports
  - Viewing Archived Activity
  - Viewing Dashboards
- Managing Announcements



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Viewing Real-Time Reports

The screenshot shows the Oracle APEX Monitor Activity page with the following sections and options:

- Page Views**:
  - By View
  - By Application and User
  - By User
  - By Application
  - By Workspace
  - By Day
  - By REST Access
- Developer Activity**:
  - Application Changes by Developer
  - Application Changes by Workspace
- Calendar Reports**:
  - Workspace Last Used
  - By Day by Application and User
  - By Hour
- Logs**:
  - Mail Log
  - Jobs
- Environment Reports**:
  - By Operating System
  - By Browser
  - By User Agent
  - By External Site
- Login Attempts**:
  - Login Attempts
  - Developer Last Login
- Workspace Purge**:
  - Dashboard
  - Inactive Workspaces
  - Workspaces Purged
  - Workspaces that became Active
  - Workspace Purge Log

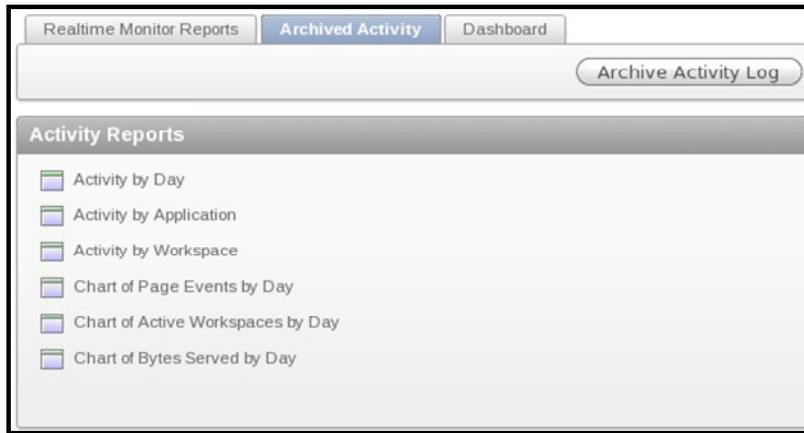
ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

As an instance administrator, you can monitor the activity of all users in all workspaces of the APEX Instance. From the Monitor Activity page, you can view various reports to analyze activity across the entire instance. To access the Monitor Activity page, click the **Monitor Activity** icon from the Administration Services home page. Alternatively, click the **Monitor Activity** tab.

The list of reports available from the Monitor Activity page is shown on the slide screenshot.

## Viewing Archived Activity

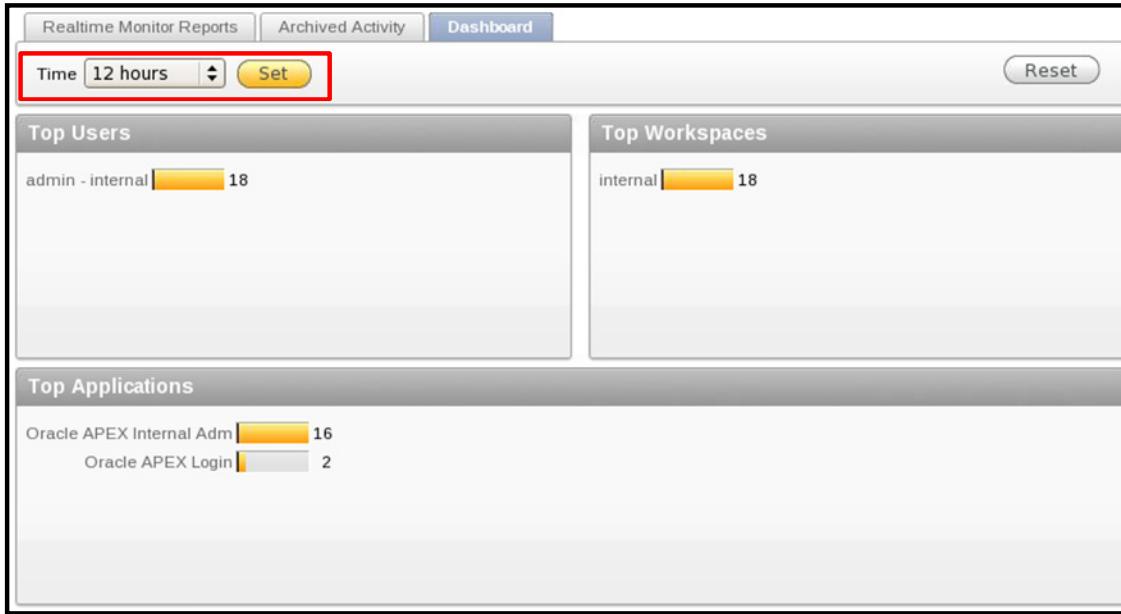


ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To view archived activity, select the Archived Activity tab. You can select from the listed reports to monitor the instance activity.

## Viewing Dashboards



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

From the Dashboard tab, you can view a summary of the top users, workspaces, and applications in the entire APEX instance. You can also specify a time period for these details.

## Quiz

Which of the following statements are true with respect to instance administrators?

- a. You can access all the reports on the Monitor Activity page.
- b. You can create new reports to monitor any user, database, or workspace activity.
- c. You can monitor real-time as well as archived activities.
- d. All of the above



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a, c**

# Agenda

- Managing Service Requests
- Managing Session State
- Exporting/Importing Workspaces
- Managing Public Themes
- Monitoring Activity
- Managing Announcements
  - Creating a Login Message
  - Creating a System Message
  - Creating a Site-Specific Tasks List



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Creating a Login Message

The figure consists of three screenshots. The first screenshot shows the 'Manage Instance' dropdown menu with 'Login Message' selected (circled in green). The second screenshot shows the 'Login Message' configuration page where 'Custom Message' is selected and a message is entered: 'This APEX instance will be shut down for maintenance over the weekend (30th and 31st April.)'. The third screenshot shows the Oracle Application Express login page with the same message displayed in a yellow banner at the bottom.

**Message**

This APEX instance will be shut down for maintenance over the weekend (30th and 31st April).

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

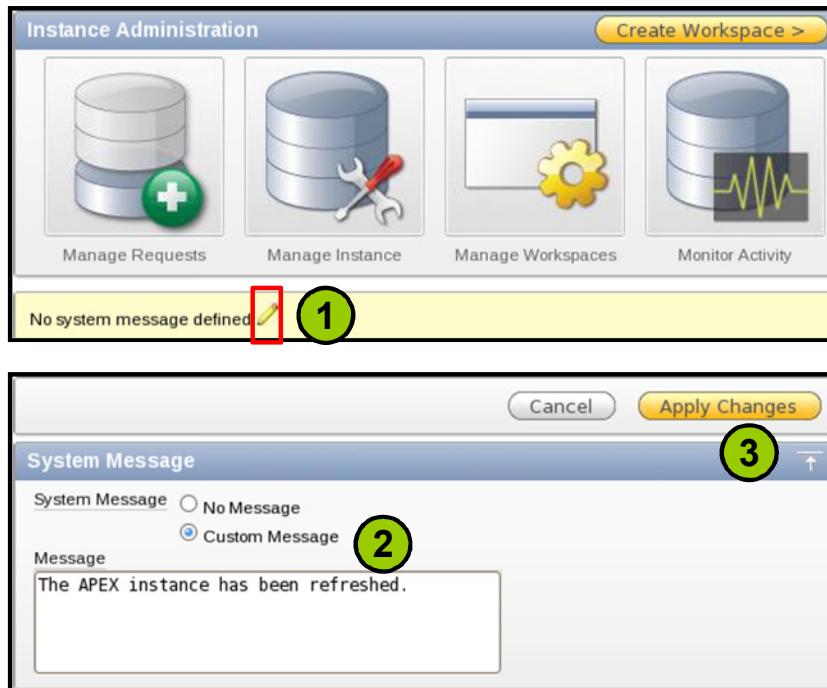
ORACLE

As an instance administrator, you can create a message to be displayed in the login page of the APEX development interface. Perform the following steps:

1. From the Manage Instance tab drop-down menu, select **Login Message**.
2. For Login Message, select **Custom Message**.
3. Enter the message in the Message field and click **Apply Changes**.

The message that you created is displayed in the login page.

# Creating a System Message



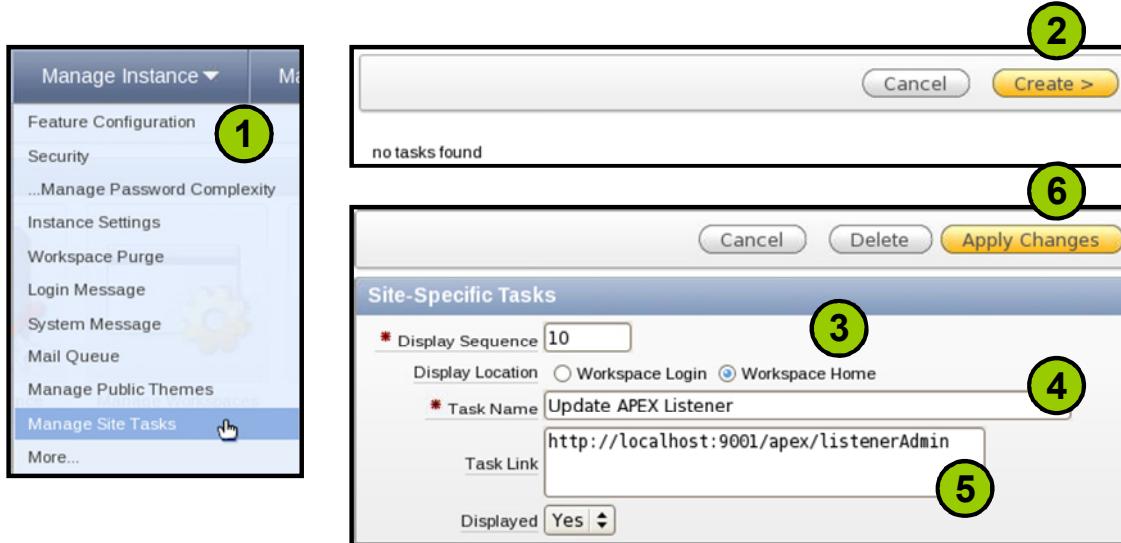
ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

As an instance administrator, you can create a message to be displayed in all workspaces of an APEX instance. Perform the following steps:

1. Click the pencil icon next to No system message defined region in the Administration Services home page. Alternatively, click the down arrow in the Manage Instance tab and select **System Message**.
2. Select **Custom Message** for System Message, enter the message in the Message text field.
3. Click **Apply Changes**.

# Creating a Site-Specific Tasks List



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can create a list of tasks to be displayed either in the APEX development interface login page or in the home page of all workspaces. To create a tasks list, perform the following steps:

1. From the Manage Instance tab drop-down menu, select **Manage Site Tasks**.
2. Click the **Create** button.
3. Select **Workspace Login** to display this tasks list on the APEX development interface login page. Select **Workspace Home** to display this tasks list on the home page of all workspaces.
4. Enter the link text to be displayed in the Task Name field.
5. Enter the target location in the Task Link field.
6. Click the **Apply Changes** button.

## Quiz

You want to inform all users of your APEX instance that the database is about to be refreshed and taking a backup is recommended. How can you convey this message to your users?

- a. Create an email process and send out email notifications to all workspace administrators.
- b. Create a login message, which will be displayed on the APEX development interface login page.
- c. Create a system message, which will be displayed on the home page of all users.
- d. Create a site-specific tasks' list and display it on the APEX development interface login page.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: c**

## Summary

In this lesson, you should have learned how to:

- Manage Service Requests
- Manage Session State
- Export and Import Workspaces
- Manage Public Themes
- Monitor Activity in an Entire APEX Instance



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Practice 8 Overview: Administering an APEX Instance

This practice covers the following topics:

- Approving Service Requests
- Viewing the Mail Logs
- Viewing Session State Details
- Importing a Workspace
- Creating a Public Theme
- Creating a Login Message
- Viewing a Report



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In this practice, you will log in to Administration Services and perform various tasks of an instance administrator.

THESE eKIT MATERIALS ARE FOR YOUR USE IN THIS CLASSROOM ONLY. COPYING eKIT MATERIALS FROM THIS COMPUTER IS STRICTLY PROHIBITED

Oracle University and Error : You are not a Valid Partner use only

## Using the APEX\_INSTANCE\_ADMIN API

9

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Objectives

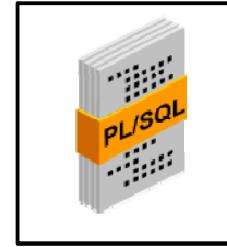
After completing this lesson, you should be able to use the APEX\_INSTANCE\_ADMIN API procedures and functions.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## About the APEX\_INSTANCE\_ADMIN API

- It is used to administer an APEX runtime environment.
- It can be used by the SYS, SYSTEM, and APEX\_040000 users.



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The APEX\_INSTANCE\_ADMIN API is used to administer the APEX runtime environment. It can also be used in a full development environment, especially when login to the Administrative Services is disabled. To use this API, you need to be logged in as the SYS, SYSTEM, APEX\_040000 users or any other user that has been granted the APEX\_ADMINISTRATOR\_ROLE role.

# Agenda

- Managing Workspaces
  - Creating a Workspace
  - Deleting a Workspace
- Managing Schemas
- Managing Parameters



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Creating Workspaces

- Syntax:

```
APEX_INSTANCE_ADMIN.ADD_WORKSPACE (
    p_workspace_id IN NUMBER DEFAULT NULL,
    p_workspace IN VARCHAR2,
    p_primary_schema IN VARCHAR2,
    p_additional_schemas IN VARCHAR2 );
```

- Example

```
APEX_INSTANCE_ADMIN.ADD_WORKSPACE (
    null,
    'my_example',
    'HR',
    null);
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The APEX\_INSTANCE\_ADMIN.ADD\_WORKSPACE procedure is used to create a new workspace.

It takes four arguments:

- The p\_workspace\_id parameter is used to specify the workspace ID. It can be left blank so that APEX engine automatically assigns the workspace an ID.
- The p\_workspace parameter is used to specify a name for the workspace. This field can not be left empty.
- The p\_primary\_schema parameter is used to specify the default schema for the workspace. This field can not be left empty.
- The p\_additional\_schemas parameter is used to specify additional schemas for the workspace. This field can be left empty.

The schema specified in the p\_primary\_schema and p\_additional\_schemas parameters should exist in the database.

# Deleting Workspaces

- Syntax:

```
APEX_INSTANCE_ADMIN.REMOVE_WORKSPACE(  
    p_workspace IN VARCHAR2,  
    p_drop_users IN VARCHAR2 DEFAULT 'N',  
    p_drop_tablespaces IN VARCHAR2 DEFAULT 'N' );
```

- Example

```
APEX_INSTANCE_ADMIN.REMOVE_WORKSPACE(  
    'my_example',  
    'N',  
    'N');
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The APEX\_INSTANCE\_ADMIN.REMOVE\_WORKSPACE procedure is used to delete a workspace from the APEX instance.

It takes three arguments:

- The p\_workspace parameter is used to specify the name of the workspace to be deleted. This field can not be left empty.
- The p\_drop\_users parameter is used to specify whether or not to delete the users associated with the workspace. The default value is 'N' for No. To delete the users, you have to set the value to 'Y'.
- The p\_drop\_tablespaces parameter is used to specify whether or not to delete the tablespaces associated with the workspace. The default value is 'N' for No. To delete the tablespaces, you have to set the value to 'Y'.

# Agenda

- Managing Workspaces
- Managing Schemas
  - Viewing the Schemas Assigned to a Workspace
  - Adding a Schema to a Workspace
  - Removing a Schema from a Workspace
- Managing Parameters



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Viewing Schemas Assigned to a Workspace

- Syntax:

```
APEX_INSTANCE_ADMIN.GET_SCHEMAS (
    p_workspace IN VARCHAR2) RETURN VARCHAR2;
```

- Example

```
my_schemas := APEX_INSTANCE_ADMIN.GET_SCHEMAS (
    'TEACH');
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The `APEX_INSTANCE_ADMIN.GET_SCHEMAS` function is used to retrieve a list of all schemas associated with the specified workspace.

It takes one argument. The `p_workspace` parameter is used to specify the name of the workspace for which the schemas are to be retrieved.

## Adding a Schema to a Workspace

- Syntax:

```
APEX_INSTANCE_ADMIN.ADD_SCHEMA(  
    p_workspace IN VARCHAR2,  
    p_schema IN VARCHAR2);
```

- Example

```
APEX_INSTANCE_ADMIN.ADD_SCHEMA(  
    'TEACH',  
    'ORA21');
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The APEX\_INSTANCE\_ADMIN.ADD\_SCHEMA procedure is used to add a schema, which is already created in the database, to a workspace.

It takes two arguments:

- The p\_workspace parameter is used to specify the name of the workspace to which the schema is to be added. This field can not be left empty.
- The p\_schema parameter is used to specify the name of the schema to be added to the workspace. This field can not be left empty.

## Removing a Schema from a Workspace

- Syntax:

```
APEX_INSTANCE_ADMIN.REMOVE_SCHEMA (
    p_workspace IN VARCHAR2,
    p_schema IN VARCHAR2);
```

- Example

```
APEX_INSTANCE_ADMIN.REMOVE_SCHEMA (
    'TEACH',
    'ORA21');
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The APEX\_INSTANCE\_ADMIN.REMOVE\_SCHEMA procedure is used to remove a schema, which is already assigned to a workspace, from the workspace.

It takes two arguments:

- The p\_workspace parameter is used to specify the name of the workspace from which the schema is to be removed. This field can not be left empty.
- The p\_schema parameter is used to specify the name of the schema to be removed from the workspace. This field can not be left empty.

## Agenda

- Managing Workspaces
- Managing Schemas
- Managing Parameters
  - Retrieving/Setting Parameters
  - Viewing Email Settings
  - Configuring Emails
  - Viewing Print Server Settings
  - Configuring Print Server
  - Reversing HTTPS Requirement
  - Enabling Administrative Login



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Retrieving/Setting Parameters

```
APEX_INSTANCE_ADMIN.GET_PARAMETER(  
    p_parameter IN VARCHAR2) RETURN VARCHAR2;
```

```
APEX_INSTANCE_ADMIN.SET_PARAMETER(  
    p_parameter IN VARCHAR2,  
    p_value IN VARCHAR2 DEFAULT 'N');
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You can view the values for certain APEX settings by using the `GET_PARAMETER` function. You can set the values of these settings by using the `SET_PARAMETER` procedure. In the next couple of slides, you will learn how to set and retrieve certain values.

## Viewing Email Settings

```
SELECT  
APEX_INSTANCE_ADMIN.GET_PARAMETER('SMTP_HOST_ADDRESS')  
FROM DUAL;  
  
SELECT  
APEX_INSTANCE_ADMIN.GET_PARAMETER('SMTP_HOST_PORT')  
FROM DUAL;  
  
SELECT  
APEX_INSTANCE_ADMIN.GET_PARAMETER('SMTP_FROM')  
FROM DUAL;
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Using the `GET_PARAMETER` function, you can view the email settings for an APEX instance. The email parameters are shown in the slide code examples.

## Configuring Email

```
APEX_INSTANCE_ADMIN.SET_PARAMETER( 'SMTP_HOST_ADDRESS',
'email.server.com');

APEX_INSTANCE_ADMIN.SET_PARAMETER( 'SMTP_HOST_PORT',
26);

APEX_INSTANCE_ADMIN.SET_PARAMETER('SMTP_FROM',
'admin_apex@company.com');
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Using the `SET_PARAMETER` function, you can configure the email settings for an APEX instance. The email parameters are shown in the slide code examples.

## Viewing Report Printing Settings

```
SELECT APEX_INSTANCE_ADMIN.GET_PARAMETER  
  ('PRINT_BIB_LICENSED') FROM DUAL;  
  
SELECT APEX_INSTANCE_ADMIN.GET_PARAMETER  
  ('PRINT_SVR_PROTOCOL') FROM DUAL;  
  
SELECT APEX_INSTANCE_ADMIN.GET_PARAMETER  
  ('PRINT_SVR_HOST') FROM DUAL;  
  
SELECT APEX_INSTANCE_ADMIN.GET_PARAMETER  
  ('PRINT_SVR_PORT') FROM DUAL;  
  
SELECT APEX_INSTANCE_ADMIN.GET_PARAMETER  
  ('PRINT_SVR_SCRIPT') FROM DUAL;
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Using the GET\_PARAMETER function, you can view the report printing settings for an APEX instance. The parameters are shown in the slide code examples.

# Configuring Report Printing

```
APEX_INSTANCE_ADMIN.SET_PARAMETER  
  ('PRINT_BIB_LICENSED', 'STANDARD');  
  
APEX_INSTANCE_ADMIN.SET_PARAMETER  
  ('PRINT_SVR_PROTOCOL', 'HTTP');  
  
APEX_INSTANCE_ADMIN.SET_PARAMETER  
  ('PRINT_SVR_HOST', null);  
  
APEX_INSTANCE_ADMIN.SET_PARAMETER  
  ('PRINT_SVR_PORT', null);  
  
APEX_INSTANCE_ADMIN.SET_PARAMETER  
  ('PRINT_SVR_SCRIPT', null);
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Using the `SET_PARAMETER` function, you can configure the report printing settings for an APEX instance. The parameters are shown in the slide code examples.

## Reversing HTTPS Requirement

```
my_setting := APEX_INSTANCE_ADMIN.GET_PARAMETER(  
  'REQUIRE_HTTPS');
```

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



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Using the `GET_PARAMETER` and `SET_PARAMETER` functions, you can identify the HTTPS requirement for an APEX instance and configure it if required. The parameter is shown in the slide code examples.

## Enabling Administrator Login

```
my_setting := APEX_INSTANCE_ADMIN.GET_PARAMETER(  
  'DISABLE_ADMIN_LOGIN');
```

```
APEX_INSTANCE_ADMIN.SET_PARAMETER(  
  'DISABLE_ADMIN_LOGIN',  
  'N');
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Using the `GET_PARAMETER` and `SET_PARAMETER` functions, you can enable or disable login to the Administration Services. The parameter is shown in the slide code examples.

## Quiz

As an instance administrator, I should mostly use the APEX\_INSTANCE\_ADMIN API for all my administrative tasks.

- a. True
- b. False



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: b**

## Quiz

Which of the following users can use the APEX\_INSTANCE\_ADMIN API?

- a. APEX\_040000
- b. APEX\_PUBLIC\_USER
- c. Any Database User
- d. Any APEX User



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a**

## Quiz

Which of the following tasks can be performed using the SET\_PARAMETER procedure?

- a. Viewing Email Settings
- b. Configuring Email Parameters
- c. Enabling Administration Login
- d. Specifying HTTPS Requirement



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: b, c, d**

## Quiz

In a full development installation, which of the following tasks can only be performed using the APEX\_INSTANCE\_ADMIN API?

- a. Configuring Email
- b. Configuring Report Printing
- c. Enabling Administration Login
- d. Disabling Administration Login



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: c**

## Summary

In this lesson, you should have learned to use the APEX\_INSTANCE\_ADMIN API procedures and functions.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Practice 9 Overview: Using the APEX\_INSTANCE\_ADMIN API

This practice covers the following topics:

- Creating a workspace
- Viewing existing schemas
- Assigning a schema to a workspace
- Viewing email configuration setting
- Verifying the created workspace in Administration Services



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In this practice, you will perform some of the APEX administration tasks using the APEX\_INSTANCE\_ADMIN API.

# 10

## Key APEX Administration Tasks

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Objectives

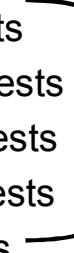
After completing this lesson, you should be able to

- Identify the regular tasks to be performed by an APEX instance administrator
- Identify the regular tasks to be performed by a DBA for APEX
- Troubleshoot common performance issues



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Agenda

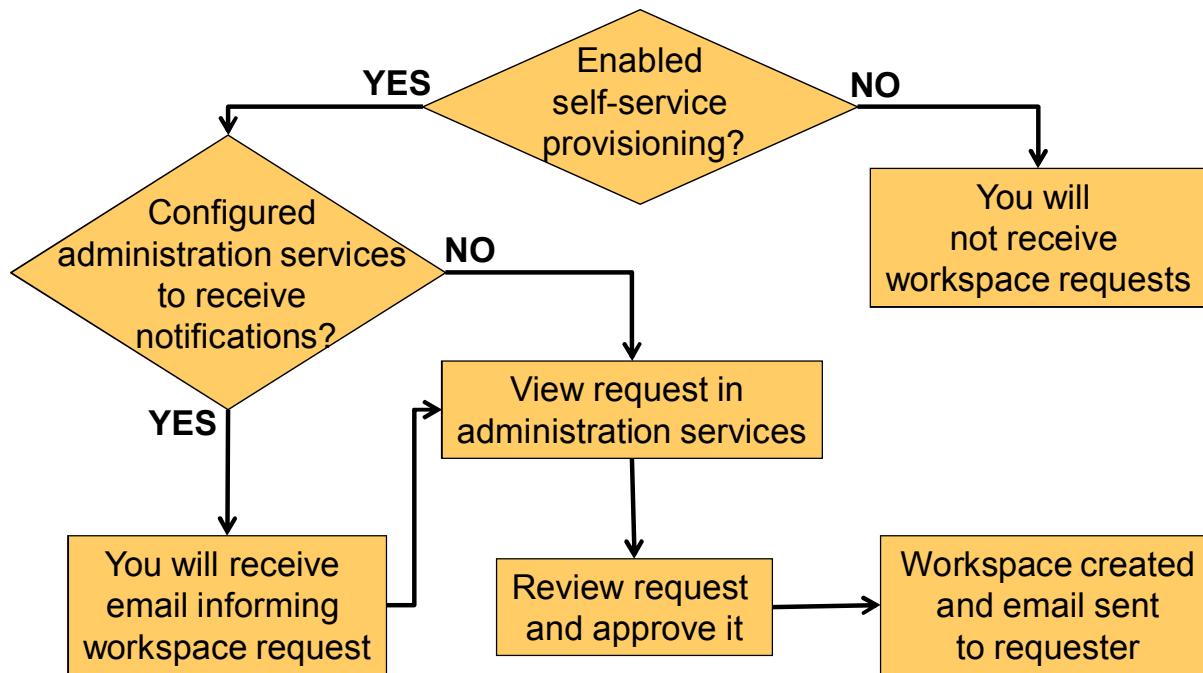
- Instance Administrator Tasks
    - Handling New Workspace Requests
    - Handling Additional Schema Requests
    - Handling Additional Storage Requests
    - Handling Terminate Service Requests
    - Handling Unlock Account Requests
    - Handling Reset Password Requests
    - Handling Invalid Credentials Errors
  - DBA Tasks
  - Troubleshooting
- 
- Listed in  
Administration  
Services*

**ORACLE®**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In this topic, you will learn the key tasks that you will need to perform on a regular basis after you have installed APEX and configured the APEX Administration Services.

# Handling New Workspace Requests with New Schema

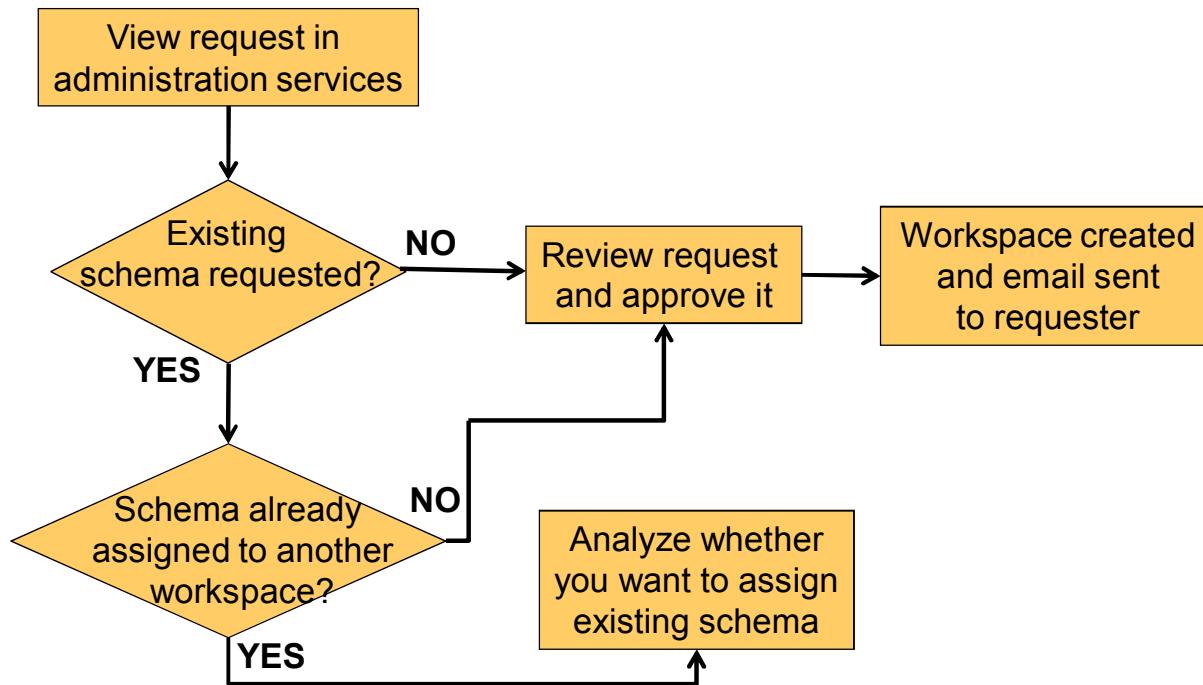


Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

If you have enabled a self-service workspace provisioning mode, you will receive requests from APEX users for creation of a new workspace. You can view these requests by logging into APEX Administration Services. You can also configure Administration Services such that you receive notifications for workspace requests to your email address. Once you receive a new workspace request, you need to review the details provided by the requestor and approve the request. You have learnt how to approve workspace requests in the lesson titled “Administering an APEX Instance.”

If you have not enabled self-service provisioning of workspaces, then you will need to create workspaces manually by using the Create Workspace wizard. You have learnt how to create a workspace manually in the lesson titled “Creating Workspaces.”

# Handling New Workspace Requests with Existing Schema



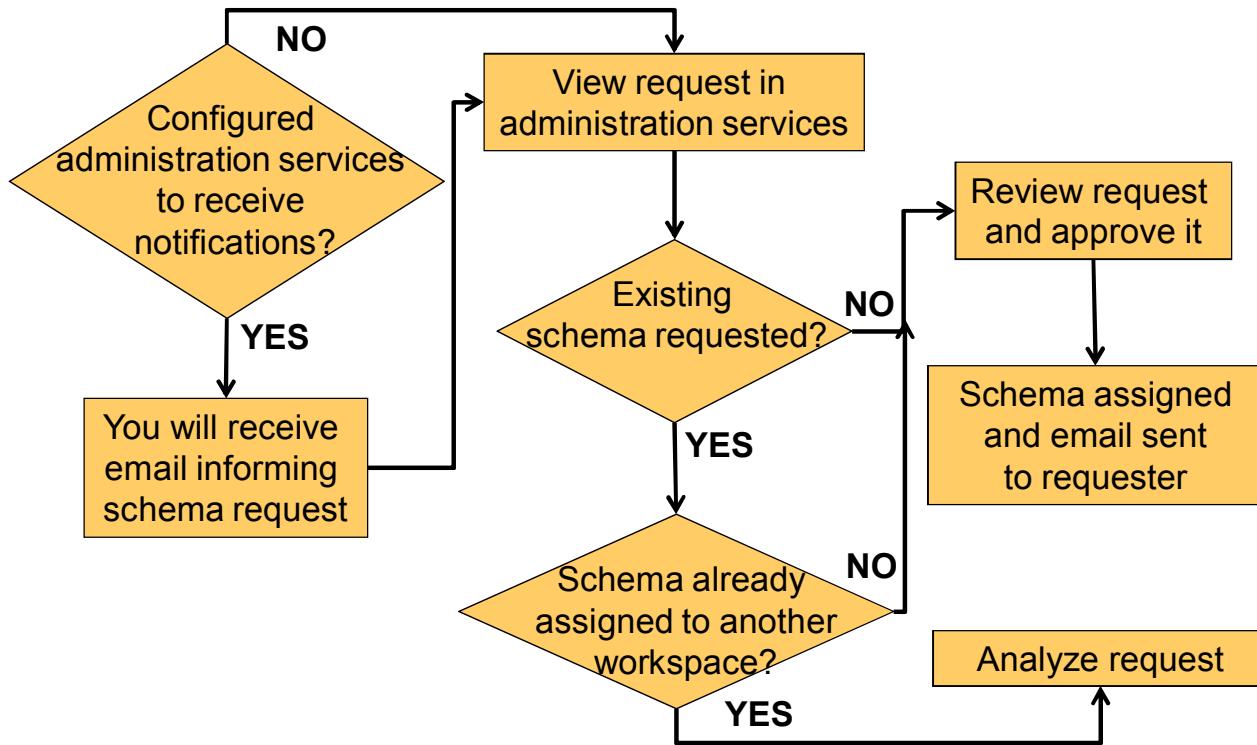
ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

If a requestor has requested for a new workspace and also requested an existing schema for the workspace, you will need to decide whether or not to approve the request. Sometimes assigning a same schema to more than one workspace can lead to conflicts at a later point in time. So, if the existing schema that is requested is already assigned to more than one workspace, then you need to analyze the situation.

You can avoid this situation by configuring Administration Services so that each new workspace is created with a new schema only.

# Handling Additional Schema Requests



ORACLE

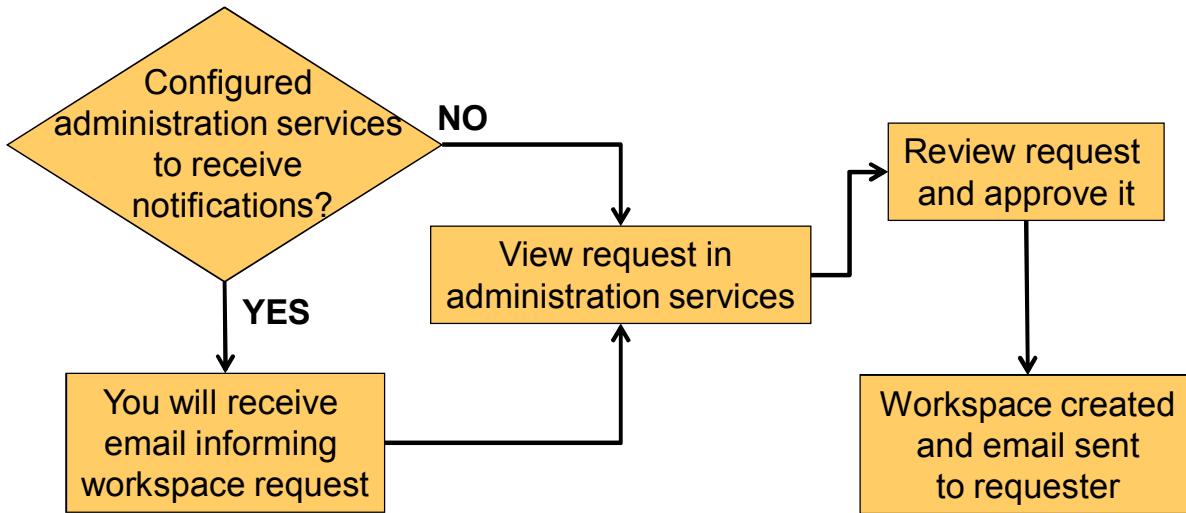
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

At any point in time, workspace administrators can request for an additional schema for their workspace. They may request for a new schema or they may request for an existing schema. As an Instance Administrator, you can receive notifications for such requests to your email address if Administration Services is configured to do so. Otherwise, you can view these requests by logging in to Administration Services. The two things you need to consider before approving the new schema request are:

- Whether the schema is already assigned to another workspace.
- How much storage space has been requested.

In most cases, workspace administrators can end up requesting for the same schema. For example, the HR schema is popularly requested by most workspace administrators. You must remember that assigning the same workspace to more than one workspace can lead to data conflicts later on. A situation where you may assign a schema to more than one workspace is when the workspaces are used by the same team of APEX users.

# Handling Additional Storage Requests



ORACLE

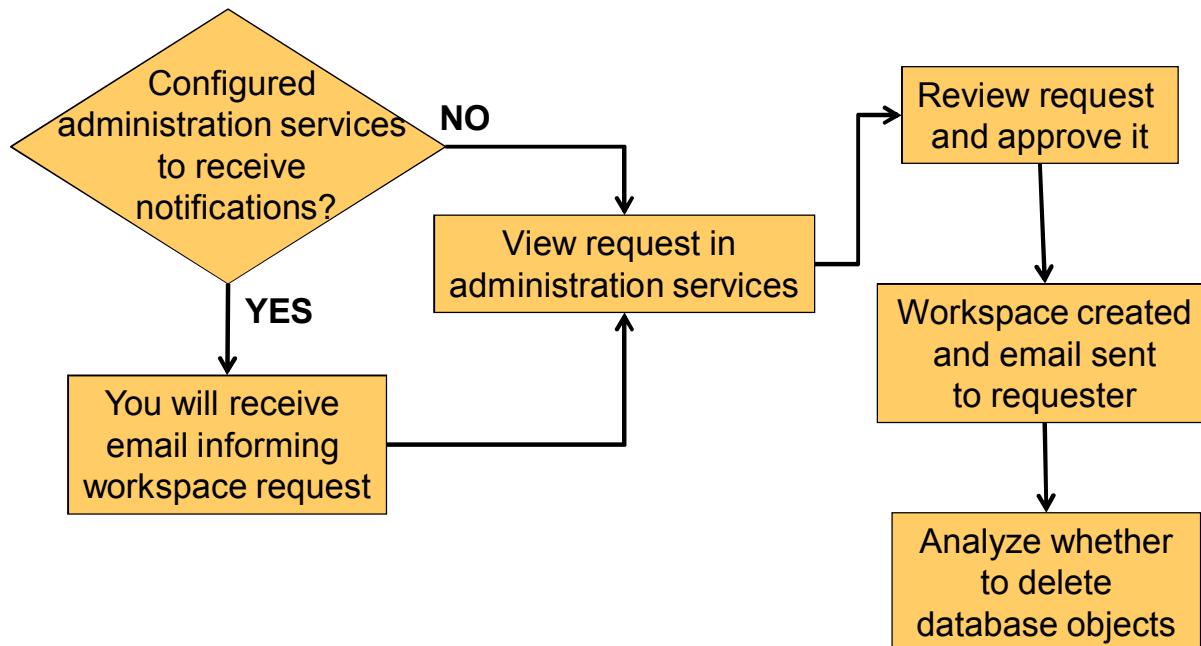
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Workspace Administrators can request for additional storage space for the schemas in their workspace. Similar to other requests, you can view these requests by logging in to Administration Services. You can review the request and approve it. The additional storage is then added to the schema.

In some cases, workspace administrators or developers will experience errors like ORA-01652, ORA-01653, or ORA-01691. In these situations, you can advise the workspace administrator to request for additional tablespace/storage.

Another aspect to remember with regard to storage space is that if the auto extend tablespace feature has been configured in Administration Services, then the created tablespace will be one-tenth of the requested size. As and when required the size of the tablespace will be extended to the full requested size.

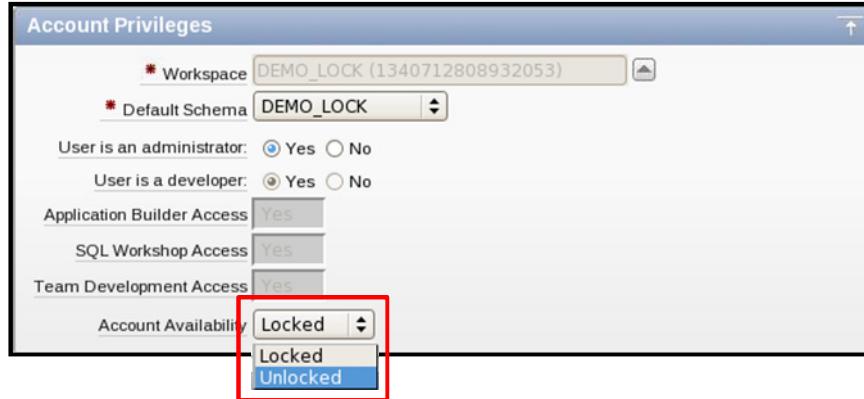
# Handling Terminate Service Requests



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

You might receive requests from workspace administrators to remove that particular workspace and its users from the database. This request can be viewed by logging into Administration Services. You can use the Remove Workspace wizard to delete the workspace. You must remember that deleting the workspace does not delete the database objects that are associated with that workspace. If the database objects are not used by any other workspace, you might consider removing them from the database.

# Handling Unlock Account Requests



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

APEX users of your instance might request you to unlock their accounts. User accounts can become locked under the following situations:

- As Instance Administrator, you had locked the workspace. In this case, the workspace administrator might get back to you to unlock the user accounts.
- Due to repeated failed login attempts, the user account got locked.

In either case, you can log into Administration Services, locate the user account, and unlock the account. To unlock an account, perform the following steps:

1. From the Administration Services home page, click the **Manage Workspaces** icon.
2. Click the **Manage Developers and Users** link.
3. Click the pencil icon next to a user account you want to unlock.
4. Under Account Privileges, select **Unlock** for Account Availability.
5. Click **Apply Changes**.

## Handling Reset Password Requests

User	Full Name	Workspace	Default Schema	Created	Last Updated	Password
ADMIN		INTERNAL	-	1.8 years ago	20 minutes ago	-
DEMO_LOCK_ADMIN		DEMO_LOCK	DEMO_LOCK	10 minutes ago	4 minutes ago	<a href="#">Reset</a>
DEMO_USER		DEMO_LOCK	DEMO_LOCK	8 minutes ago	7 minutes ago	<a href="#">Reset</a>
TEACH_ADMIN		TEACH	TEACH	4 weeks ago	4 weeks ago	<a href="#">Reset</a>
TEACH_DEV		TEACH	TEACH	4 weeks ago	4 weeks ago	<a href="#">Reset</a>

Reset Password

Cancel Change Password

>Password Type:  Randomly Generated  Provided

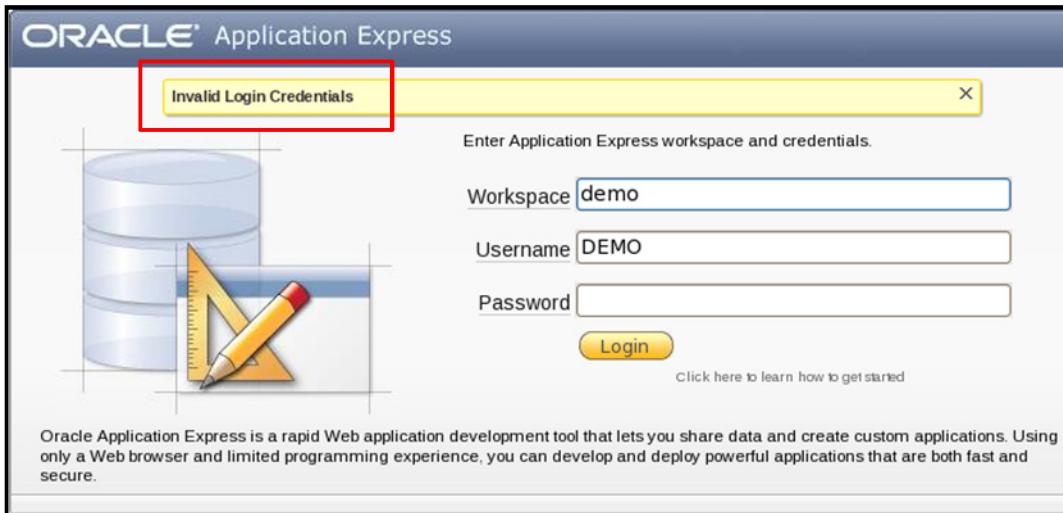
ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In certain situations, the user might forget their password and get back to you an Instance Administrator to reset their password. If the users remember their email id that is registered with their workspace, you can direct them to the Reset Password link on the login page and users will be able to reset their password themselves. In situations where users do not remember their email id, you will need to log into Administration Services, locate the user, and reset the password. To reset the password for a user, perform the following steps:

1. From the Administration Services home page, click the **Manage Workspaces** icon.
2. Click the **Manage Developers and Users** link.
3. Click the **Reset** link in the Password column for the user whose password you want to reset.
4. You can choose a randomly generated password or you can specify a password of your choice.
5. Click the **Change Password** button.
6. The password is reset and an email is sent to the user's email address.

## Handling Invalid Credentials Errors



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In some situations, users would have forgotten their credentials and will be getting an invalid credentials error. For example, they would have created a workspace with an underscore and would forget that while trying to log in. Such repeated attempts might also result in the account getting locked.

In these situations, you might have to log into Administration Services and provide the user with the correct credentials and also unlock the account, if required.

## Quiz

For which of the following requests can you configure Administration Services to receive notification?

- a. Additional storage
- b. Workspace removal
- c. Account unlock
- d. Password reset



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: a, b**

# Agenda

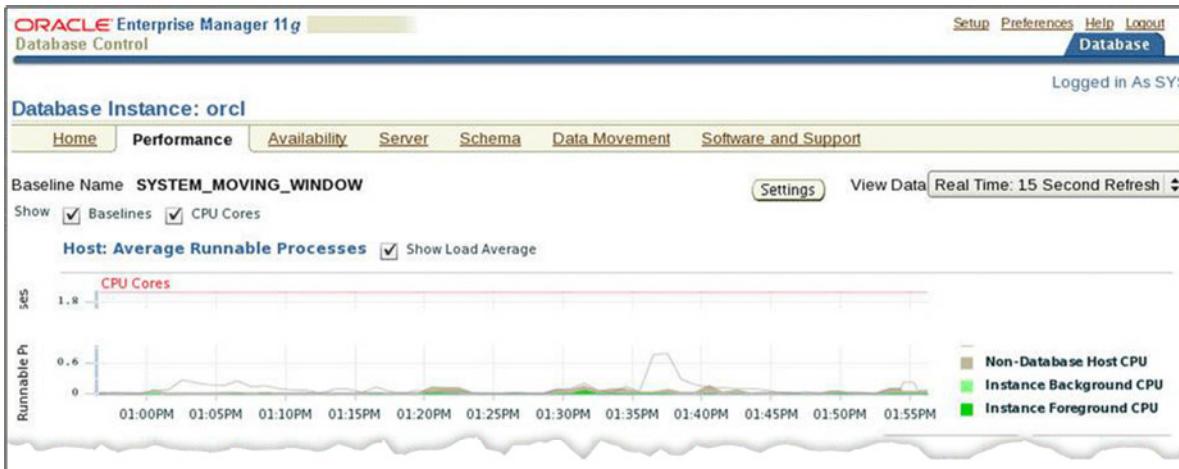
- Instance Administrator Tasks
- DBA Tasks
  - Monitoring Performance
  - Monitoring Long Running Jobs
  - Monitoring Database Locks
  - Monitoring Hot Tables
  - Reviewing SGA Utilization
  - Implementing SGA Pinning of Database Objects
  - Monitoring Application Server Performance
- Troubleshooting



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

APEX resides completely inside the Oracle database. APEX performance is impacted by how well the Oracle database performs. Hence, regular monitoring of the Oracle database is required for proper functioning of APEX. This topic discusses some of the key DBA tasks that need to be performed on a regular basis. Note that the following slides only discuss tasks at a high level. For more information on how to perform these tasks, you can refer to the courses titled *Oracle Database: Administration Workshop 1* and *2*.

# Monitoring Performance



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

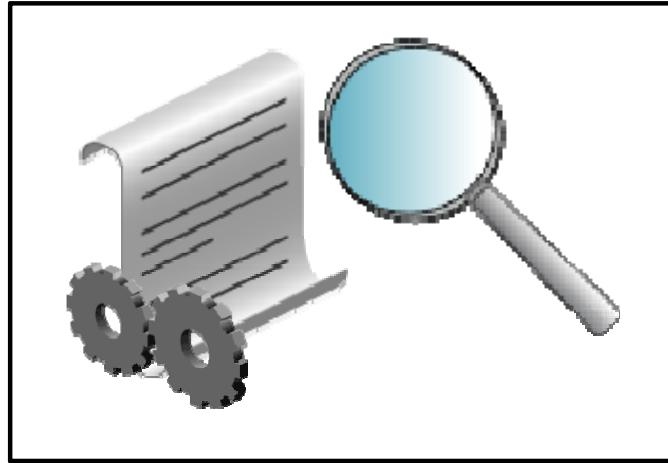
ORACLE

Regularly monitoring the CPU and database performance will help you to diagnose issues when the system performance goes down. When you notice a degradation of CPU performance, you can compare the CPU statistics to the CPU statistics when the system performance was acceptable. Such a comparison provides a starting point to identify and rectify the problem.

Oracle Enterprise Manager provides tools and reports with the Diagnostic Pack and the Performance Pack that simplifies the monitoring and tuning of the database.

**Note:** For information about Oracle database performance, see the course titled “Oracle Database 11g: Performance Tuning.”

## Monitoring Long-Running Jobs



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

APEX users often create jobs to automate certain tasks. Sometimes you might report that certain jobs are running longer than expected. You can check the AWR reports and confirm whether the job itself is causing the problem or if it is some DBA configuration issue. These type of problems are typically solved by tuning the SQL statements. For information on Tuning SQL statements, see the Oracle Database 11g: SQL Tuning class.

## Detecting Database Lock Conflicts

Some possible causes of lock conflicts are:

- Uncommitted changes
- Long-running transactions
- Unnecessarily high locking levels



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

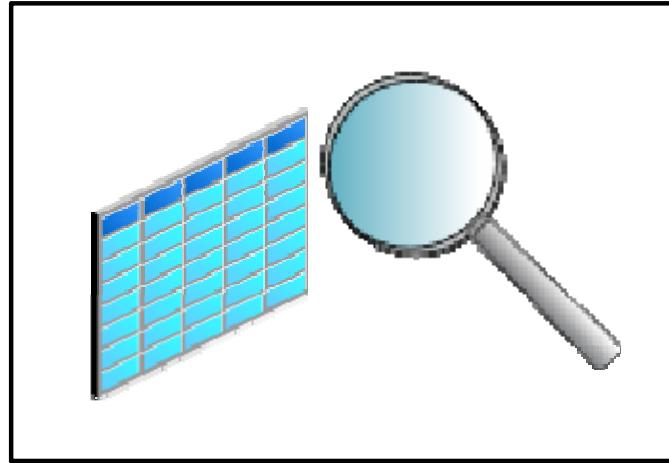
When an APEX session wants to modify data in an Oracle database, the session must first lock the data that is being modified. A lock gives the session exclusive control over the data so that no other transaction can modify the locked data until the lock is released. Often lock conflicts occur but are usually resolved through time and the enqueue mechanism.

In certain rare cases, a lock conflict may require administrator intervention. You can use the Blocking Sessions page in Enterprise Manager to locate lock conflicts. The Automatic Database Diagnostic Monitor (ADDM) also automatically detects lock conflicts and can advise you on inefficient locking trends.

To resolve a lock conflict, the session holding the lock must release it. The best way to have the session release the lock is to contact the user and ask that the transaction be completed.

In an emergency, it is possible for the administrator to terminate the session holding the lock by clicking the Kill Session button. Remember that when a session is killed, all work within the current transaction is lost (rolled back). A user whose session is killed must log in again and redo all work since the killed session's last commit.

## Monitoring Hot Tables

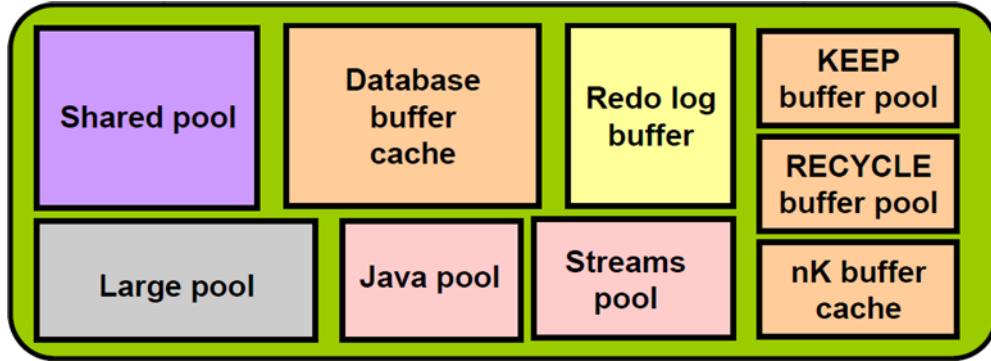


ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Database tables that are accessed most frequently during a specific period of time are termed as Hot Tables. You should identify and eliminate hot blocks by reducing the number of rows per data block.

## Reviewing SGA Utilization



ORACLE®

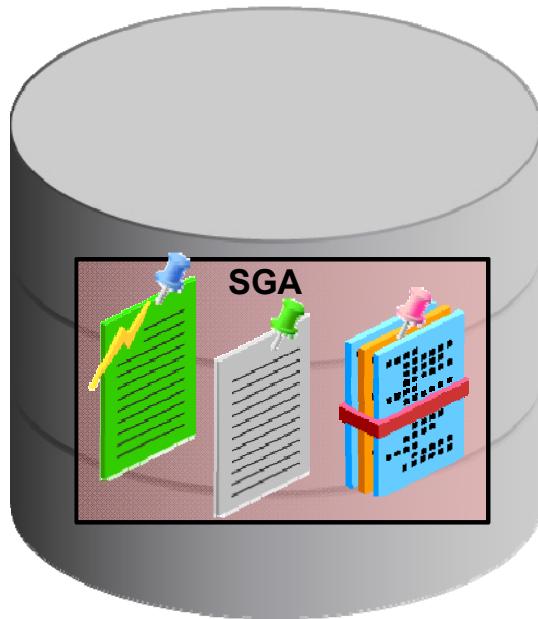
Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The SGA is the memory area that contains data and control information for the instance. The various components of SGA are shown in the slide.

Prior to Oracle database 10g, the memory size for each of these components had to be manually specified. From Oracle database 10g onwards, instead of specifying memory values for individual SGA components, you can specify a total memory value to be used for all the SGA components. The Oracle database periodically redistributes memory between these components according to workload requirements.

You must monitor the SGA utilization periodically and increase or decrease the size for specific components as required. If these components are improperly sized, it can result in severe performance issues.

# Implementing SGA Pinning of Database Objects



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Keeping database packages in the Oracle database's SGA shared pool is called pinning. Pinning objects in the shared pool can increase database performance, if it is done correctly. Since pinned objects reside in the SQL and PL/PLSQL memory areas, they do not need to be loaded and parsed from the database, which saves time.

Most performance improvement can be gained from pinning large, frequently used packages. In general, do not pin all objects or rarely used objects—this could even decrease database performance.

## Monitoring Application Server Performance

APEX listener is certified against the following Java Enterprise Edition application servers:

- Oracle WebLogic server 10.3.3 or higher
- Sun GlassFish Enterprise server 3 or higher
- Oracle Containers for J2EE (OC4J)10.1.3.4 or higher



J2EE Application Server

**ORACLE**

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Depending on the application server you used to install the APEX Listener, you should monitor on a regular basis the performance of the application server. In this course, you used WebLogic server as the application server where the APEX Listener was installed.

For detailed information on how to monitor performance for WebLogic server, refer to the *Performance and Tuning for Oracle WebLogic Server* documentation here:

[http://download.oracle.com/docs/cd/E21764\\_01/web.1111/e13814/toc.htm](http://download.oracle.com/docs/cd/E21764_01/web.1111/e13814/toc.htm)

## Quiz

An APEX instance requires no DBA monitoring.

- a. True
- b. False



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer: b**

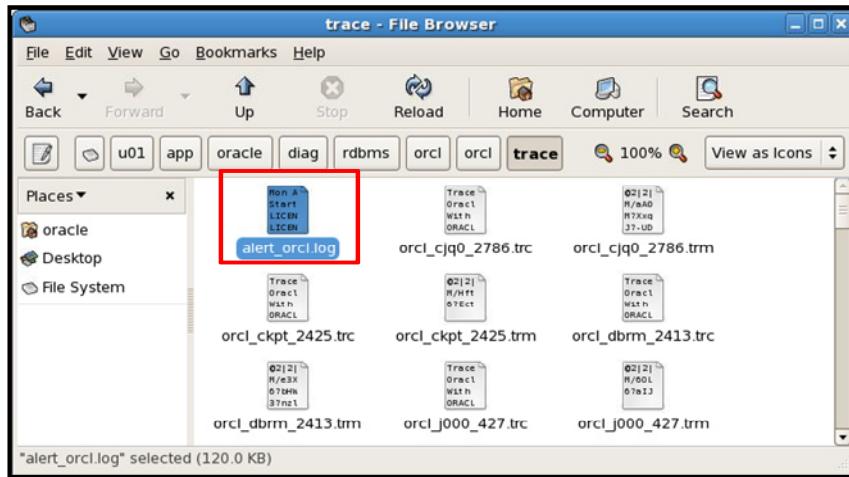
# Agenda

- Instance Administrator Tasks
- DBA Tasks
- Troubleshooting
  - Reviewing the Database Alert Log
  - Reviewing the Web Server Log



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Reviewing the Database Alert Log



The Oracle logo, consisting of the word "ORACLE" in a bold, white, sans-serif font.

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Each database has an `alert_<sid>.log` file. The file is on the server with the database and is stored in `$ORACLE_BASE/diag/rdbms/<db_name>/<SID>/trace` by default if `$ORACLE_BASE` is set.

The alert file of a database is a chronological log of messages such as the following:

- Any nondefault initialization parameters used at startup
- All internal errors (ORA-600), block corruption errors (ORA-1578), and deadlock errors (ORA-60) that occurred
- Administrative operations, such as the SQL statements CREATE, ALTER, DROP DATABASE, and TABLESPACE, and the Enterprise Manager or SQL\*Plus statements STARTUP, SHUTDOWN, ARCHIVE LOG, and RECOVER
- Several messages and errors relating to the functions of shared server and dispatcher processes

# Reviewing the Web Server Log

The screenshot shows the Oracle WebLogic Server Administration Console. In the left sidebar, under 'Domain Structure', the 'Diagnostics' and 'Log Files' nodes are highlighted with a red box. The main content area is titled 'Summary of Log Files'. It contains a table with the following data:

Name	Type	Server
DomainLog	Domain Log	AdminServer
EventsDataArchive	Instrumentation	AdminServer
HarvestedDataArchive	Metric Data	AdminServer
HTTPAccessLog	HTTP Access	AdminServer
<b>ServerLog</b>	Server Log	AdminServer

A red box highlights the 'View' button at the bottom of the table.

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Each WebLogic Server instance maintains a server log. By default, the server log file is located in the logs directory below the server instance root directory; for example, `DOMAIN_NAME\servers\SERVER_NAME\logs\SERVER_NAME.log`, where `DOMAIN_NAME` is the name of the directory in which you located the domain and `SERVER_NAME` is the name of the server.

The WebLogic Server Administration Console provides a log viewer for all the log files in a domain. To view a server's log messages from the Administration Console, perform the following steps:

1. In the left pane of the Console, expand **Diagnostics** and select **Log Files**.
2. In the **Log Files** table, select the radio button next to the server instance log file you want to view.
3. Click **View**.

## Summary

In this lesson, you should have learned how to:

- Identify the regular tasks to be performed by an APEX instance administrator
- Identify the regular tasks to be performed by a DBA for APEX
- Troubleshoot common performance issues



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Practice 10 Overview: Key APEX Administration Tasks

This practice covers the following topics:

- Unlocking an account
- Resetting password
- Monitoring database performance
- Viewing SGA utilization
- Viewing database alert log file
- Viewing WebLogic server log messages



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In this practice, you will perform some of the key APEX administration tasks you learned in this lesson. Some of the Instance Administrator tasks were already covered in previous practices and will not be included in this practice.

# Upgrading and Applying Patches



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## Objectives

After completing this lesson, you should be able to:

- Upgrade Application Express
- Apply an APEX Patch Release
- Upgrade APEX Listener



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Agenda

- Upgrading APEX
  - How Does Upgrade Differ from Installation?
  - Identifying the Existing Installation
  - Downloading and Extracting the Upgrade File
  - Backing Up the Database
  - Preventing Access to Existing APEX
  - Upgrading the Existing APEX Installation
  - Updating Images Directory
  - Accessing APEX
- Installing Patch Releases
- Upgrading APEX Listener



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## How Does Upgrade Differ from Installation: Steps to Perform

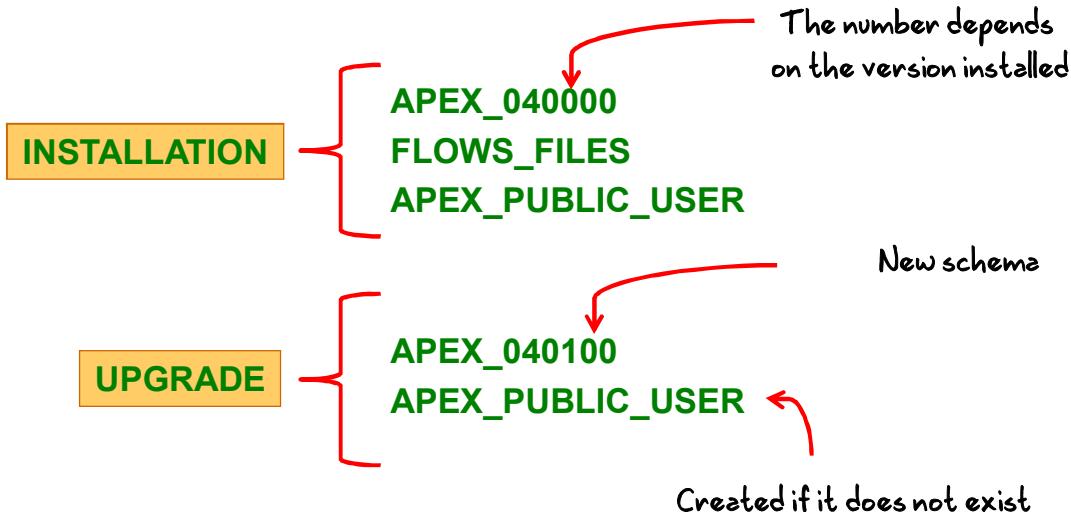
1. Download APEX ZIP file from Oracle Technology Network.
2. Unzip the file to a working directory.
3. Verify installation requirements.
4. Back up target database. *steps SAME as installation*
5. Open a terminal and set working directory.
6. Confirm that directory has write privileges.
7. Disable password complexity rule, if any, for the default profile.
8. Log in to SQL\*Plus as sysdba.
9. Run installation file.
10. Configure APEX\_PUBLIC\_USER and APEX\_040000.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The steps for performing an upgrade are the same as those to install APEX. There are certain things you should take care of while performing an upgrade, which you will learn in this lesson.

## How Does Upgrade Differ from Installation: Process



ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

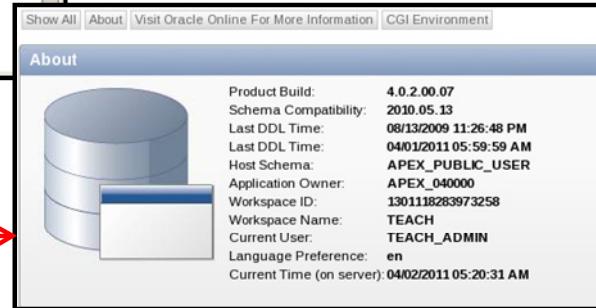
The upgrade process is slightly different from the installation process. During a new installation of APEX, three accounts are created: APEX\_PUBLIC\_USER, FLOWS\_FILES, and APEX\_040000. APEX\_040000 is the schema that contains all the data and metadata for APEX 4.0. This account name depends on the version you are installing. For example, if you install APEX version 3.2, the schema name will be APEX\_030200.

During an upgrade, the APEX data and metadata are created in a new schema. The schema is named APEX\_<n>, where n depends on the version you are installing. Because FLOWS\_FILES is already existing in the database, it is not created during an upgrade. APEX\_PUBLIC\_USER is created if it does not already exist. APEX versions prior to 3.0 did not create this APEX\_PUBLIC\_USER account. So, if you are upgrading from APEX version 2.2 or earlier to 3.0 or later, the APEX\_PUBLIC\_USER is created. Otherwise, the existing account is used by APEX.

# Identifying the Existing Installation

```
SELECT * FROM ALL_USERS  
WHERE username LIKE '%APEX%'  
OR username LIKE '%FLOWS%';
```

```
Terminal  
File Edit View Terminal Tabs Help  
SQL> SELECT * FROM all_users  
2 WHERE username like '%APEX%' or  
3 username like '%FLOWS%';  
  
USERNAME          USER_ID CREATED  
-----  
FLOWS_FILES          75 13-AUG-09  
APEX_PUBLIC_USER      76 13-AUG-09  
APEX_030200          78 13-AUG-09  
APEX_040000          96 01-MAR-11  
  
SQL>
```



About page in APEX development interface

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To identify what version of APEX is installed in the database, you can run the `SELECT` query shown in the slide. In this example, there are two schemas, `APEX_030200` and `APEX_040000`, existing in the database. You can confirm what version is currently configured from the About page in the APEX development interface.

## Downloading and Extracting the Upgrade File

- Access the APEX page on OTN and download the required version.
- Unzip the downloaded file to a working directory.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The first step while performing an upgrade is locating the required version of APEX from the APEX page on OTN. Unzip the downloaded file to a working directory.

## Preventing Access to Existing APEX

- Shut down the database instance where you will install APEX.
- Alternatively, prevent user access to the existing APEX installation.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

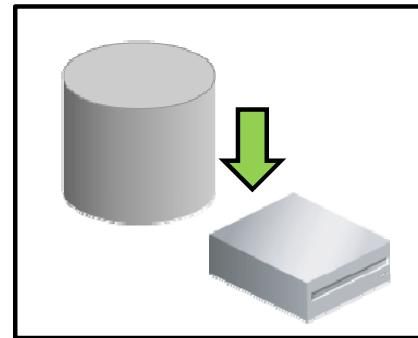
Before installing APEX, it is recommended that you shut down the database instance of the target database. In rare cases, if you are unable to shut down the database instance, you can prevent access to the existing APEX instance.

- If you are using an APEX Listener, then stop the Java Application Server where APEX Listener is deployed.
- If you are using an embedded PL/SQL gateway, then log in to SQL\*Plus as sysdba and run the following command:

```
EXEC DBMS_XDB.SETHTTPPORT(0);
```
- If you are using an Oracle HTTP Server, then you should either shut down the web server or disable the APEX Database Access Descriptor of the web server.

## Backing Up the Database

- Create a backup of the target database by using:
  - Oracle Recovery Manager
  - Oracle Enterprise Manager



ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

In case of a failed or unsuccessful installation, you can easily revert to the previous APEX installation and clean up the failed installation data. However, as a best practice, it is recommended that you perform a complete back up of the target database.

Oracle Recovery Manager is the recommended method to back up a database. You can use the RMAN command-line commands to back up a database or you can make use of the Enterprise Manager graphical interface to perform a back up. For more information, refer to the *Oracle Database 2 Day DBA* guide.

After creating a backup, you must start the database instance of the target database.

# Upgrading the Existing APEX Installation

```
@apexins tablespace_apex  
tablespace_files  
tablespace_temp  
images
```

```
@apexins SYSAUX SYSAUX TEMP /i/
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To upgrade APEX, you use the same command as a fresh installation. Run the apexins.sql script file to perform a full development environment installation. You need to pass four parameters while running this script.

- The first parameter, `tablespace_apex`, is the name of the tablespace where APEX will be installed.
- The second parameter, `tablespace_files`, is the name of the tablespace that will be used for the files that are uploaded to APEX. The APEX version that is bundled with Oracle Database 11g uses the `SYSAUX` tablespace to install APEX. You can install APEX 4.0 using the same `SYSAUX` tablespace, or you can create a new tablespace for APEX. For this course, a tablespace called `APEX` has been created.
- The third parameter, `tablespace_temp`, is the name of the temporary tablespace.
- Finally, you should pass a fourth parameter, `images`, to specify the virtual directory for the APEX images. It is recommended to always name this directory as `/i/`.

**Note:** If you receive an error message stating that the file could not be opened or located, ensure that you are in the correct directory location. For details, refer to the lesson titled “Installing Application Express.”

## Accessing APEX

Restart all processes that you had stopped before upgrading.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

After you install Oracle Application Express, you must restart the processes that you stopped before you began the installation, such as Listener and other processes. In addition, restart Oracle HTTP Server.

## Post-Installation Tasks

- Update the images folder.
- Remove previous instance.
- Fix Invalid ACL.
- In case of failed installation:
  - Revert to the previous release.
  - Remove failed installation data from database.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Perform the tasks listed in the slide after you have successfully performed the upgrade.

# Agenda

- Upgrading APEX
- Installing Patch Releases
  - What Is a Patch Release?
  - Should You Install a Patch Release?
  - Pre-Installation Steps
  - Installing the Patch Release
  - Post-Installation Steps
- Upgrading APEX Listener



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

## What Is a Patch Release?

- APEX Patch Release contains bug fixes.
- You apply a patch release to the Oracle Database where the APEX schemas are already installed.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

APEX Patch Releases contain fully tested and integrated product fixes. They provide bug fixes only and do not include any new functionality.

When determining whether or not to install a patch set, consider the following rules:

- If you have Oracle Application Express release 4.0 installed, download the Oracle Application Express 4.0.2 patch set and apply it.
- If you have Oracle Application Express release 3.2.1, or earlier, installed (including Oracle HTML DB release 1.5), download and install the entire Oracle Application Express 4.0 release from the Oracle Technology Network (OTN).
- If you do not have Oracle Application Express installed, download and install the entire Oracle Application Express 4.0 release from the Oracle Technology Network (OTN).

## Pre-Installation Steps

- Identify the existing APEX installation.
- Download and extract the patch release file.
- Back up the database.
- Prevent access to existing APEX instance.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Before installing a patch release you need to perform the tasks listed in the slide.

- You need to identify and connect to the Oracle Database where the existing APEX instance resides. A patch release does not install the APEX schemas but updates the existing schemas.
- You can download the patch release files from the Oracle Application Express page on OTN. Download the ZIP file to your machine and unzip it to your working directory.
- It is recommended that you take a backup of the database before installing the patch release. After the patch release has been applied, it is not possible to revert to the existing installation without a backup.
- You need to prevent users from accessing APEX while you install the patch release. Depending on the web server configuration, you can prevent users from accessing the APEX instance.

## Installing the Patch Release

Log in to SQL\*Plus as sysdba.

```
@apxpatch.sql
```



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

To install the patch release, perform the following steps:

1. Open a terminal window. Enter `pwd` and press Enter to view the present working directory.
2. Set your working directory to the location where you unzipped the APEX file downloaded from OTN.
3. Connect to SQL\*Plus as sysdba.
4. Run the patch file. For example, `@apxpatch.sql`.

## Post-Installation Steps

- Update APEX images.
- Enable access to APEX.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

After installing the patch release, you need to copy the images under `patch/images` to the directory where the APEX images reside. This will depend on your web server configuration. You also need to enable access to the APEX instance, which you have prevented before installing the patch. This again depends on your web server configuration.

## Agenda

- Upgrading APEX
- Installing Patch Releases
- Upgrading APEX Listener
  - Redeploying the Application



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Redeploying the Application

The screenshot shows the Oracle WebLogic Server Administration Console. The left sidebar displays the 'Domain Structure' for 'base\_domain' under 'Deployments'. The main content area shows the 'Home Page' with sections for 'Information and Resources' (Helpful Tools like 'Configure applications', 'General Information' like 'Common Administration Task Descriptions'), 'Domain Configurations' (Domain, Services, Interoperability), and a navigation bar with tabs for Domain, Services, and Interoperability.

**Deployments**

Name	State	Health	Type	Deployment Order
apex	Active	OK	Web Application	100
i	Active	OK	Web Application	100

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

If you want to upgrade APEX Listener, you need to perform the following steps:

1. Access the application server where you have deployed your previous APEX Listener WAR file. In this course, Oracle WebLogic Server is used.
2. From the home page, click the **Deployments** link.
3. Select the check box next to the apex node. This will enable the Update button.
4. Click the **Update** button.
5. Specify the location of the downloaded and extracted apex.war file. Click **Next**.
6. Review the details and click **Finish**.

## Quiz

Which of the following tasks need to be performed before upgrading the current version of APEX to the latest released version?

- a. Taking a backup of the database
- b. Taking a backup of all workspaces and applications
- c. Deleting the old apex database accounts
- d. Preventing users from accessing the APEX applications
- e. Preventing users from accessing the database



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

**Answer:** a, d, e

## Summary

In this lesson, you should have learned how to:

- Upgrade Application Express
- Apply an APEX Patch Release
- Upgrade APEX Listener



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

THESE eKIT MATERIALS ARE FOR YOUR USE IN THIS CLASSROOM ONLY. COPYING eKIT MATERIALS FROM THIS COMPUTER IS STRICTLY PROHIBITED

Oracle University and Error : You are not a Valid Partner use only

# B

## Additional Resources

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

# Application Express OTN Page

The screenshot shows the Oracle Application Express product page on the Oracle Technology Network (OTN). The main content area features a large banner with the text "ORACLE Application Express" and "Release 4.0 is here". Below the banner, there's a section titled "What is Oracle Application Express?" with a brief description and links to "Learn more ..." and "Read the 4.0 Press Release". To the left, a sidebar lists various Oracle tools and frameworks, including JDeveloper, SQL Developer, and APEX Listener. To the right, a "Popular Downloads" sidebar lists several Oracle products and tools.

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

The Oracle Application Express Product Page on OTN is a very useful place to gather information. It contains useful links:

- **Overview:** Get an overview of APEX and links to news, events, presentations, and books. The overview page also includes the following:
  - **Packaged Applications:** Oracle has developed many real-world application examples that you can download and install by yourself to get ideas on how to accomplish various tasks in Application Express.
  - **Latest Podcasts and Videos:** Useful presentations that you can view and listen to on your iPod
  - **Frequently Used Links:** Useful links to free SaaS instance, APEX forum, documentation, and packaged applications. Hosted Application (free SaaS instance) is a place for you to practice your skills. You can request an account and start creating your application by using the hosted version of Application Express, which is free and fully maintained by Oracle.
- **Downloads:** You can download the latest software.
- **Documentation:** Get access to the documentation and a whole host of How-to tutorials.

- **Community:** Get access to APEX OTN forum, Community How-Tos, and list of blogs. Application Express OTN forum is one of the most popular forums on OTN. The forum has a knowledge base of hints and tips, and issues that users have encountered and their resolutions.
- **Learn More:** Get access to education and how-tos, technical information, and white papers.

# Oracle Learning Library

**Application Development** 159   **Hyperion** 125   **SQLDEV** 72   Enterprise Manager 62   Installation 61   Grid 60   BI 59  
 RAC 59   Security 59   APEX 57   ASM 50   Exadata 48   OWB 40   EM 37   Storage Management 36   WebLogic Server 33   Manageability 32  
 HA 31   High Availability 31   TimesTen 31   Administration 30   Database Machine 27   Java 27   HP NonStop 26   .NET 25   ODI 25   Tuning 25   Data Warehousing 24  
 Analysis 23   Clusterware 23   Data Modeler 23   SQL 23   Databguard 22   Oracle 21   Financial Management 20   Identity Manager 20   Middleware Management 19   Performance 19  
 ADF 18   Essbase 18   Java EE 17   Excel 16   OOW08 16   OOW09 16   DB2 15   PLSQL 15   System Monitoring 15   MAA 14   GlassFish 13   Integrated Operational Planning 13  
 Microsoft Office 13   Reports 13   Application Quality Management 12   DBCA 12   Grid Engine 12   JDeveloper 12   OOE 12   OLAP 12   OracleLearning 12   OSB 12   SOE 12  
 Teradata 12   Windows 12   XML 12   YouTube 12   Database Management 11   Migration 11   Monitoring 11   Reporting 11   RMAN 11   Upgrade 11   Backup 10   CellCLI 10  
 EM Best Practices 10   Information Integration 10   Interactive Reporting 10   View all tags

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Oracle Learning Library is an application built by using Oracle Application Express. This Learning Library is designed to allow you to search for free online training content (OBEs, Demos, and Tutorials) on OTN.

Click the About tab to access demos on how to use the Oracle Learning Library.

# Documentation and Tutorials

## Oracle Application Express

### Documentation and Tutorials

<input type="checkbox"/> 4.0 Release Notes	<a href="#">HTML</a>	<a href="#">PDF</a>
<input type="checkbox"/> Installation Guide	<a href="#">HTML</a>	<a href="#">PDF</a>
<input type="checkbox"/> 2 Day + Developer's Guide	<a href="#">HTML</a>	<a href="#">PDF</a>
<input type="checkbox"/> Application Builder User's Guide	<a href="#">HTML</a>	<a href="#">PDF</a>
<input type="checkbox"/> Migration Guide	<a href="#">HTML</a>	<a href="#">PDF</a>
<input type="checkbox"/> Administration Guide	<a href="#">HTML</a>	<a href="#">PDF</a>
<input type="checkbox"/> SQL Workshop Guide	<a href="#">HTML</a>	<a href="#">PDF</a>
<input type="checkbox"/> API Reference	<a href="#">HTML</a>	<a href="#">PDF</a>
<input type="checkbox"/> Advanced Tutorials (for Release 3.2)	<a href="#">HTML</a>	<a href="#">PDF</a>
<input type="checkbox"/> Full Library	<a href="#">HTML</a>	

For documentation from previous releases please refer to the relevant [Prior Release Archives](#) for specific documentation for that release.



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

There are a number of useful documentation books and tutorials to help answer your questions. You can access this page from OTN at the following location:  
[http://www.oracle.com/technology/products/database/application\\_express/html/doc.html](http://www.oracle.com/technology/products/database/application_express/html/doc.html)

# Online Help

Application Builder User's Guide < Back Forward > Find (initial index creation may take several seconds)

[Home](#) > [Quick Start](#) > About the Workspace Home Page

Previous Next

## About the Workspace Home Page

When you log in to Oracle Application Express, the Workspace home page appears. 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. Note that your user name and workspace name display in the lower left corner of the page.

**Workspace**

Application Builder    SQL Workshop    Team Development    Administration

Description of the illustration wrkspc\_home.gif

ORACLE

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

Within Oracle Application Express, you can get help on any topic, you can get context-sensitive help for the page or field where you are at any given point, and you can search for a particular topic.

## Learn More...

The screenshot shows the 'Learn Application Express' workspace home page. On the left is a vertical navigation bar with categories like Introduction, Consolidation, Architecture, Self Service, Security, Worksheets, Application Development, SQL Workshop, Team Development, Administration, and Managing Development. The 'Introduction' category is currently selected and highlighted in yellow. At the top right are 'Cancel' and 'Next >' buttons. Below them is a toolbar with 'Show All', 'About Application Express', 'Declarative Development', and 'Application Express Components'. The main content area is titled 'About Application Express' and contains text about Oracle Application Express (APEX) being a no-cost option for Oracle Database 10g and above. It also describes two development methods: 'Browser Based' (using a Web browser) and 'Rapid Application Development (RAD)' (using wizards and declarative programming). To the right of the main content are two sidebar sections: 'Community' (links to OTN Discussion Forum, Packaged Applications, Partners, BLOGs, and Oracle Application Express on OTN) and 'Demos' (links to various application types: Calendar, Chart, Data Entry Form, Hierarchy, Interactive Report, Map, Master Detail, Pivot, Dashboard, Tree, and XML).

ORACLE®

Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

On the workspace home page, click Learn More tab. This page provides an overview of Oracle Application Express and includes links to demos and community resources.

# Oracle University Courses

Oracle Application Express: Developing Web Applications

Oracle Application Express: Advanced Workshop



Copyright © 2011, Oracle and/or its affiliates. All rights reserved.

If you want to learn how to create applications using Oracle Application Express, you can take the listed Oracle University courses.