



Installation, Deployment and Application Management

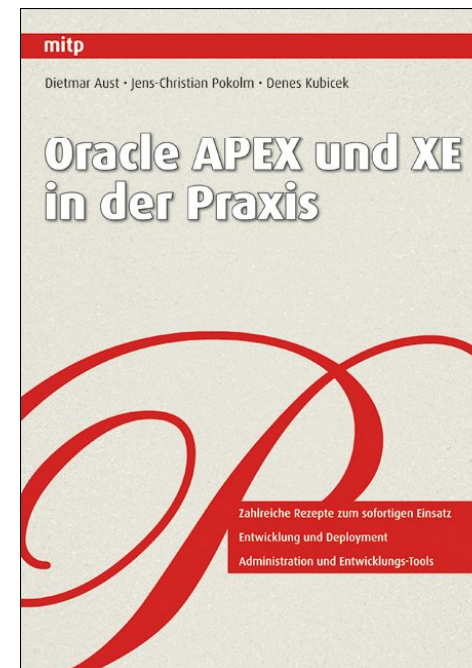
Denes Kubicek

Introduction

- * Dipl. oec. Denes Kubicek, Oracle APEX consultant and freelancer
- * 5 Years – Head of Department for Order Processing
- * 7 Years – IT Manager
- * 12 Years experience with Oracle –
- * Since 2007 running own business with main focus on APEX and Oracle
- * Own Blog – <http://deneskubicek.blogspot.com>

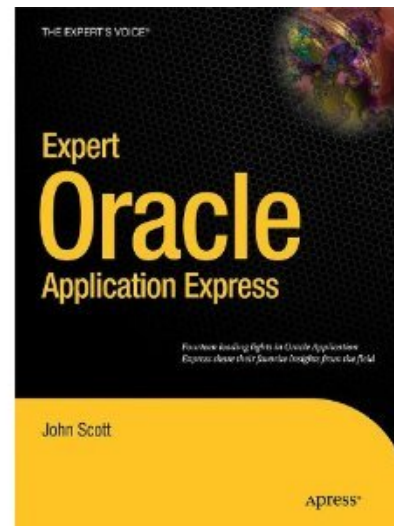
Introduction

- * Oracle APEX und XE in der Praxis
 - * Published on 21.12.2009
 - * First APEX book in german language
- * Authors:
 - * Denes Kubicek
 - * Jens-Christian Pokolm
 - * Dietmar Aust



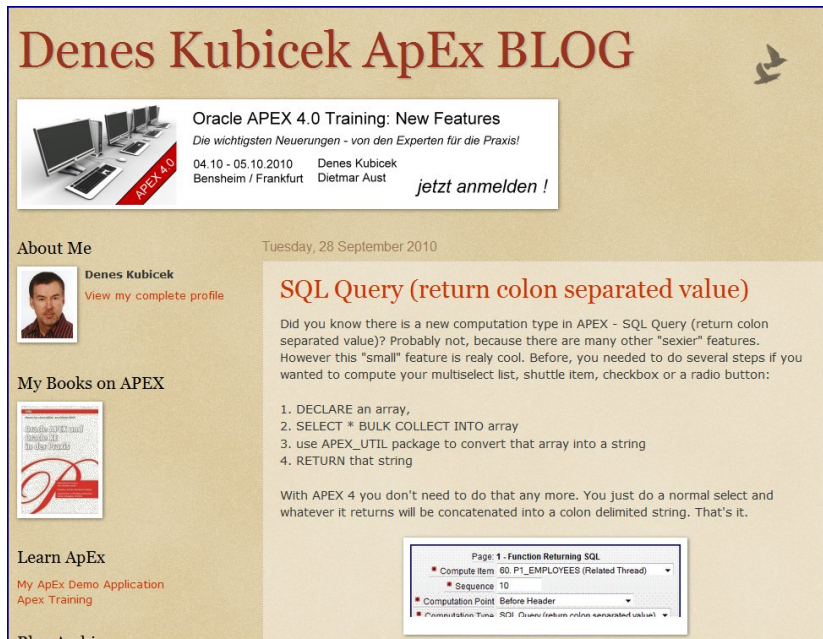
Introduction

- * Expert Oracle Application Express
 - * Published on 25.05.2011
 - * Charity Project for Carl Backstrom und Scott Spadafore (passed away members of the APEX Team)
- * Authors:
 - * Dietmar Aust
 - * Denes Kubicek
 - * Doug Gault
 - * Dimitri Gielis
 - * Roel Hartman
 - * Michael Hichwa
 - * Sharon Kennedy...



Introduction

* Oracle Apex Developer of the Year 2008



Denes Kubicek ApEx BLOG

Oracle APEX 4.0 Training: New Features
Die wichtigsten Neuerungen - von den Experten für die Praxis!
04.10 - 05.10.2010 Denes Kubicek
Bensheim / Frankfurt Dietmar Aust **jetzt anmelden !**

About Me
Denes Kubicek
View my complete profile

My Books on APEX

Learn ApEx
My ApEx Demo Application
Apex Training

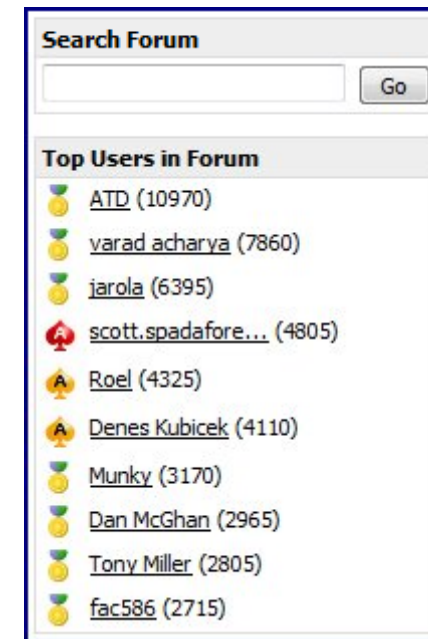
SQL Query (return colon separated value)

Did you know there is a new computation type in APEX - SQL Query (return colon separated value)? Probably not, because there are many other "sexier" features. However this "small" feature is really cool. Before, you needed to do several steps if you wanted to compute your multiselect list, shuttle item, checkbox or a radio button:

1. DECLARE an array,
2. SELECT * BULK COLLECT INTO array
3. use APEX_UTIL package to convert that array into a string
4. RETURN that string

With APEX 4 you don't need to do that any more. You just do a normal select and whatever it returns will be concatenated into a colon delimited string. That's it.

Page: 1 - Function Returning SQL
Compute Item: 60_P1_EMPLOYEES (Related Thread)
Sequence: 10
Computation Point: Before Header
Promotion Type: SQL Query (return colon separated value)



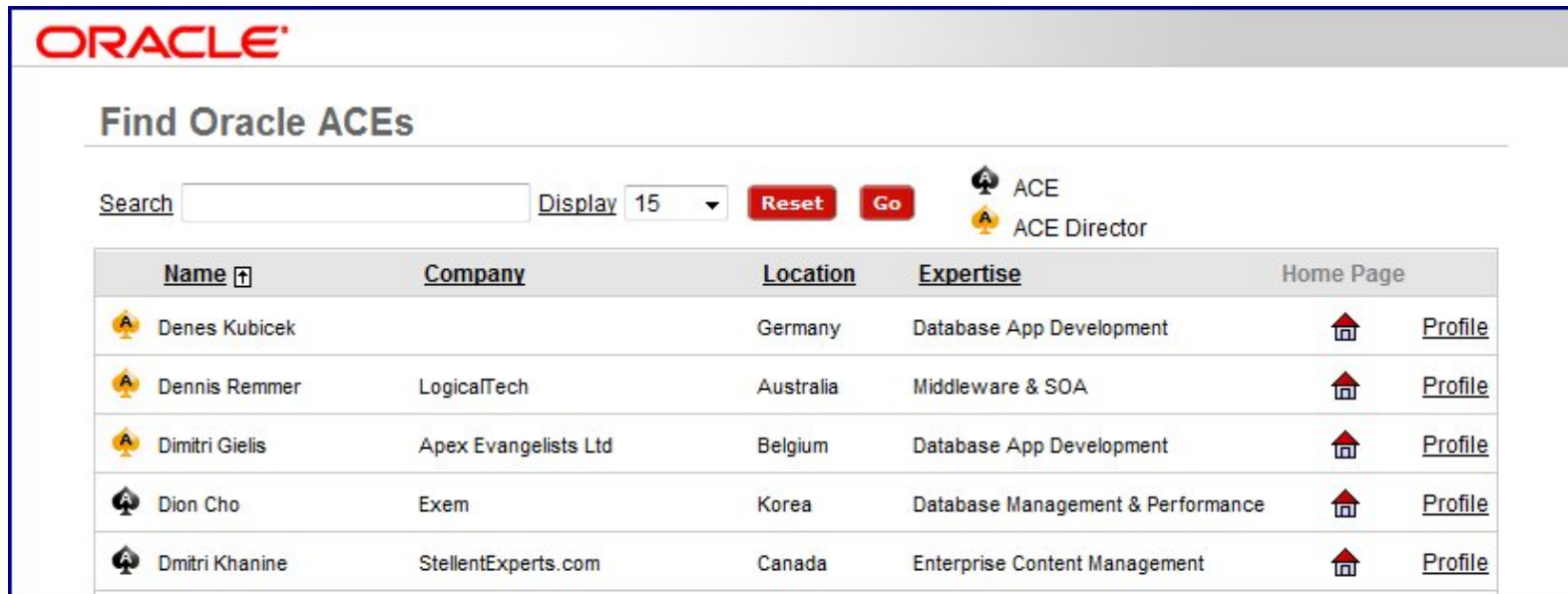
Search Forum

Top Users in Forum











- [ATD](#) (10970)
- [varad acharya](#) (7860)
- [jarola](#) (6395)
- [scott.spadafore...](#) (4805)
- [Roel](#) (4325)
- [Denes Kubicek](#) (4110)
- [Munky](#) (3170)
- [Dan McGhan](#) (2965)
- [Tony Miller](#) (2805)
- [fac586](#) (2715)

Introduction

* Oracle ACE Director

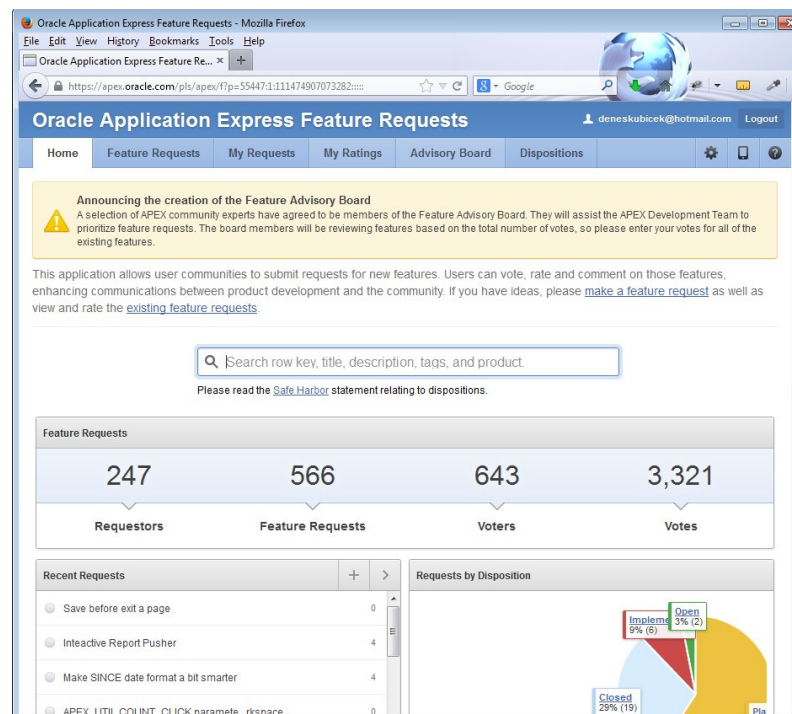


The screenshot displays the Oracle ACE Director search interface. At the top left is the Oracle logo. Below it is the heading "Find Oracle ACEs". The search area includes a search input field, a "Display" dropdown menu set to "15", and "Reset" and "Go" buttons. To the right of the search area are two radio buttons: "ACE" (selected) and "ACE Director". Below the search area is a table listing Oracle ACEs.

Name	Company	Location	Expertise	Home Page
 Denes Kubicek		Germany	Database App Development	 Profile
 Dennis Remmer	LogicaITech	Australia	Middleware & SOA	 Profile
 Dimitri Gielis	Apex Evangelists Ltd	Belgium	Database App Development	 Profile
 Dion Cho	Exem	Korea	Database Management & Performance	 Profile
 Dmitri Khanine	StellentExperts.com	Canada	Enterprise Content Management	 Profile

Introduction

- * APEX Advisory Board Member
- * <https://apex.oracle.com/pls/apex/f?p=55447:1>



Oracle Application Express Feature Requests

Announcing the creation of the Feature Advisory Board
A selection of APEX community experts have agreed to be members of the Feature Advisory Board. They will assist the APEX Development Team to prioritize feature requests. The board members will be reviewing features based on the total number of votes, so please enter your votes for all of the existing features.

This application allows user communities to submit requests for new features. Users can vote, rate and comment on those features, enhancing communications between product development and the community. If you have ideas, please [make a feature request](#) as well as view and rate the [existing feature requests](#).

Search row key, title, description, tags, and product.

Please read the [Safe Harbor](#) statement relating to dispositions.

Requestors	Feature Requests	Voters	Votes
247	566	643	3,321

Recent Requests

Request	Count
Save before exit a page	0
Interactive Report Pusher	4
Make SINCE date format a bit smarter	4
APEX_UTIL_COUNT_CLICK paramete...rkspac	0

Requests by Disposition

Disposition	Percentage	Count
Closed	29%	19
Implemented	9%	6
Open	3%	2
Pending	1%	1

Introduction

- * APEX and Oracle PL/SQL Projects
- * APEX - eBusiness Suite 11g at Synventive GmbH
- * Interseroh AG and ALBA – Quote Management Applications
- * Siemens AG – Internal Applications
- * T-Systems SAP and Apex – multiple Projects and Applications
- * T-Shop – Internal Applications
- * BASF – Internal Applications
- * Postbank multiple Projects and Applications
- * Customers in Australia, USA and Luxemburg
- * Organizing APEX Trainings sind 2008 – twice a year – APEX Best Practices or APEX New Features
- * Internal Trainings – Customized

Introduction

- * You can write me an email using the following addresses:

- * deneskubicek@yahoo.de

- * training@opal-consulting.de

Agenda

- * APEX Builder – now and in the future versions
- * APEX jQuery – now and in the future versions
- * APEX Listener – advantages
- * Using Browsers and Browser Tools
- * Application Programming – Best Practices
- * Plugins and Dynamic Actions – Best Practices
- * Application Deployment – Development / Test / Production
- * APEX Web Services
- * APEX Community and References

APEX – Builder

APEX – Builder

- * APEX Builder has experienced tremendous changes since the version 1.5
- * Its functionality grows with each new version of APEX
- * New Features introduced by APEX 4.0 and higher:
 - * Advisor
 - * Upgrade Assistant
 - * Team Development (first version) and many others
- * Many new features to come with the version 5.0

APEX Builder - Advisor

- * One of the most important features for the application developers
- * Quality assurance prior to delivering to test and production
- * Instant access to the affected components
- * Filtering capabilities

APEX Builder - Advisor

ORACLE Application Express

Home Application Builder SQL Workshop Team Development Administration

Application Builder Application 31517 Utilities Advisor Page 1

Perform Check

Show All Checks to Perform Check Page(s)

Checks to Perform

Errors:

- References with Substitution Syntax
- References with Column Syntax
- References with Bind Variable Syntax
- Declarative References of Application Items, Page Items, Columns or Interactive Report Filters
- Referenced Page Number Exists
- Is Valid SQL or PL/SQL Code
- Fetch, DML, MR* Processes are Valid
- Unconditional Branch before other Branches
- Referenced Button in When Button Pressed exists
- Button is not compatible with Dynamic Actions

Performance:

- V Function used in SQL Statements

Usability:

- Target Page Authorization is also set for Current Component
- Associated Item or Column of Validations

Quality Assurance:

- Hardcoded Application ID
- Report has Default Order
- Page Item has Help Text

Security:

- Target Page Authorization equals current Component Authorization
- Inappropriate use of Substitution Syntax

Warnings:

- Referenced Item is on Current Page
- Referenced Item is Page Item of Target Page
- References of Page Item in a String
- Clear Cache Page Number equals Target or Current Page
- Length of Item or Tabular Form Column Name
- Inconsistent references between Dynamic Actions and Buttons
- Protected items in AJAX calls

APEX Builder - Advisor

The screenshot displays the Oracle Application Express interface. At the top, the Oracle logo and 'Application Express' are visible. The navigation menu includes 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. The breadcrumb trail shows 'Application Builder > Application 31517 > Utilities > Advisor > Results'. On the right, there are 'Change Settings' and 'Check Again' buttons. Below this is a 'Filter Result' section with an 'Apply Filter' button. The filter options are: Error (13), Referenced Page Number Exists (9), and Is Valid SQL or PL/SQL Code (4). The main content area shows the breadcrumb 'Applications > 31517 - My Demo Application > Pages > 6 - My Page > Processes > Run Stored Procedure' and a table with error details.

Attribute	Process Source (Identifies the corresponding process text for the process type)
Check	Is Valid SQL or PL/SQL Code
Category	Error
Message	Compilation error - ORA-06550: line 2, column 2: PLS-00221: 'CUSTOM_AUTH' is not a procedure or is undefined ORA-06550: line 2, column 2: PL/SQL: Statement ignored
Value	#OWNER#.CUSTOM_AUTH(P_USERNAME => :P6_USERNAME, P_PASSWORD => :P6_PASSWORD);

[View](#)

APEX Builder – Upgrade Assistant

- * Gives you a possibility to upgrade your application using new components
- * Selective approach:
 - * Per component
 - * Per affected element
- * Saves time needed to upgrade applications

APEX Builder – Upgrade Assistant

The screenshot shows the Oracle APEX Upgrade Assistant interface in a Mozilla Firefox browser. The page title is "Upgrade Application Summary". The breadcrumb navigation shows "Application Builder > Application 31517 > Utilities > Upgrade Application Summary". The interface includes a search bar and an "Actions" dropdown menu. Below this is a table with two columns: "Upgrade Type" and "Candidate Objects".

Upgrade Type	Candidate Objects
Remove %null% in LOV Null Return Value of Page Items	7
Upgrade Date Picker (Classic) to new Date Picker	20
Upgrade SVG Charts to HTML5 Charts	5
Upgrade Flash Charts to Flash 6 Charts	5
Upgrade Flash Charts to HTML5 Charts	8
Enable Group By for Interactive Reports	1
Enable Save Public Report for Interactive Reports	11
Enable Subscription for Interactive Reports	11
Enable Rows Per Page Selector for Interactive Reports	11
Numeric, Required, and Date Picker Item updates based upon conditional validations	3

1 - 10

Workspace: DKUBICEK User: DKUBICEK@SYNVENTIVE.COM

APEX Builder – Upgrade Assistant

ORACLE Application Express Workspace DKUBICEK (Logout)

Home Application Builder SQL Workshop Team Development Administration

Application Builder Application 31517 Utilities Upgrade Application Summary **Upgrade** Page 1

Upgrade Type: Upgrade Date Picker (Classic) to new Date Picker Cancel < Previous Upgrade

Go Actions

<input type="checkbox"/>	Page	Page Name	Region	Object Name	Additional Information	Page Locked By
<input type="checkbox"/>	9	Ajax Calculate Dates	Date Plus Value	P9_DATE5	-	-
<input checked="" type="checkbox"/>	9	Ajax Calculate Dates	Dates	P9_DATE1	-	-
<input type="checkbox"/>	9	Ajax Calculate Dates	Dates	P9_DATE2	-	-
<input checked="" type="checkbox"/>	9	Ajax Calculate Dates	Dates with Time	P9_DATE3	-	-
<input type="checkbox"/>	9	Ajax Calculate Dates	Dates with Time	P9_DATE4	-	-
<input checked="" type="checkbox"/>	29	Radio Button	Search	P29_DATE_FROM	-	-
<input type="checkbox"/>	45	Update Date - Sysdate	Time Table - Form	P45_DATE_COL	-	-
<input type="checkbox"/>	45	Update Date - Sysdate	Time Table - Form	P45_DATE_COL_2	-	-
<input type="checkbox"/>	68	Search Form on a Table	Form on a Table	P68_HIREDATE	-	-
<input type="checkbox"/>	99	Form with Report	Search Form	P99_HIREDATE_FROM	-	-

Upgrade Application

To upgrade objects within the application, select the Upgrade Type, the objects you wish to upgrade, and click the Upgrade button.

Note that locked pages and items with unsupported date formats are not available for upgrade.

APEX Builder – Team Development

- * New feature since 4.0
- * Purpose is to enhance team development in APEX
- * First Version
- * Supporting API available
- * Will be enhanced in the future versions
- * Feedback Creator Assistant

APEX Builder – Team Development

The screenshot displays the Oracle APEX Team Development interface. At the top, the browser window shows the URL `https://apex.oracle.com/pls/apex/f?p=4800:4000:24991775898688:::`. The Oracle Application Express header includes the user 'Workspace DKUBICEK (Logout)'. The navigation menu contains 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. A yellow banner at the top of the main content area states: 'apex.oracle.com will not be available on Saturday, October 12, 2013, from 0130 - 0230 PDT (0830 - 0930 UTC)'. Below this, five icons represent 'Milestones', 'Features', 'To Dos', 'Bugs', and 'Feedback'. The 'Milestones' section shows '-389 days' and 'Days before final milestone'. The 'Bugs' section is currently empty. The right sidebar, titled 'Team Actions', lists: 'Manage Links', 'Manage News', 'Team Development Settings', 'Release Summary', 'Utilities', 'Manage Focus Areas', and 'Enable Files'.

APEX Builder – New Features 5.0

- * New interface – new layout
- * New approach in editing element properties – similar to Forms
- * Drag and Drop capabilities
- * New Component Library
- * New Region and Item Types
- * Authentication for APEX Builder using external sources (LDAP, Active Directory, ...)

APEX Builder – New Features 5.0

The screenshot displays the APEX Builder 5.0 interface, which is divided into several main sections:

- Component Tree:** Located on the left, it shows a hierarchical view of the page structure. The 'Rendering' section is expanded, showing a 'Data Load Source' with various items like 'P2_IMPORT_FROM', 'P2_FILE_NAME', and 'P2_COPY_PASTE'. Below it are 'Region Buttons' (CANCEL, NEXT) and 'Globalization' items.
- Layout Editor:** The central workspace where the page is visually edited. It features a 'Toolbar for layout "zoom" (page, display point, region), other options, etc'. An 'Edit Condition' dialog box is currently open, showing a 'Condition Type' of 'PL/SQL Function Body Returning a Boolean' and a 'PL/SQL Expression' field. The dialog has 'Cancel' and 'Apply Changes' buttons.
- Property Editor:** Located on the right, it allows for configuring the selected component's properties. It includes a 'Toolbar for show all/common, expand/collapse, etc' and an 'Edit on Global Page' button. The 'General' section shows the 'Name' as 'P101_LOGIN' and 'Display As' as 'Text Field'. The 'Settings' section includes options for 'Yes/No Field', 'Read Only Field', and 'Disabled Field'. The 'Conditions' section shows a 'Condition Type' of 'PL/SQL Function Body Ret...' and an 'Expression 1' field containing PL/SQL code:

```
declare
  l_parent_id number := null;
begin
  if :INC_CHILD = 'Y' then
```
- Component Library:** At the bottom, it provides a search and selection area for components. It includes tabs for 'Recent', 'Regions', 'Items', 'Buttons', and 'Search Results'. Below these are categories like 'All', 'Reports', 'Forms', 'HTML-PL/SQL', 'Charts', and 'Plug-ins'. Specific components like 'Interactive Report', 'Classic Report', 'Form', 'HTML', 'PL/SQL Content', 'Calendar', and 'Tree' are visible.

APEX Builder – New Features 5.0

Settings

Yes/No Field

Read Only Field Yes

Disabled Field Text

Conditions

Condition Type

Conditions

Condition Type PL/SQL Function Body Ret...

Expression 1

```
declare
  l_parent_id number := null;
begin
  if :INC_CHILD = 'Y' then
```

Additional Property Some other property here

Property Help

This is the item level help for a property that is focused

My Test Page

After Header

Left Column

Info Sidebar

Items

P23_

Sub Regions

Body 1

Region One

Items

P23_LN P23_FN P23_

Sub Regions

Body 2

Body 3

Before Footer

APEX - jQuery

- * APEX 4.0 introduced jQuery as a built in component of APEX
- * The future versions of APEX will follow the development of the jQuery components and include new libraries
- * jQuery closed the gap in APEX – APEX had a strong database in the back end but was somehow limited in the front end
- * With jQuery practically no limitations for the application development

APEX - jQuery

- * jQuery used for APEX Plugins (4.0 and higher)
- * jQuery used in APEX Dynamic Actions (4.0 and higher)
- * APEX using jQuery Components (4.0 and higher)
 - * Modal Windows (Plugins available now – Standard with 5.0)
 - * jQuery Grid (5.0)
 - * Drag and Drop Development (5.0)
 - * jQuery for Mobile Development (4.1 and higher)

APEX - jQuery

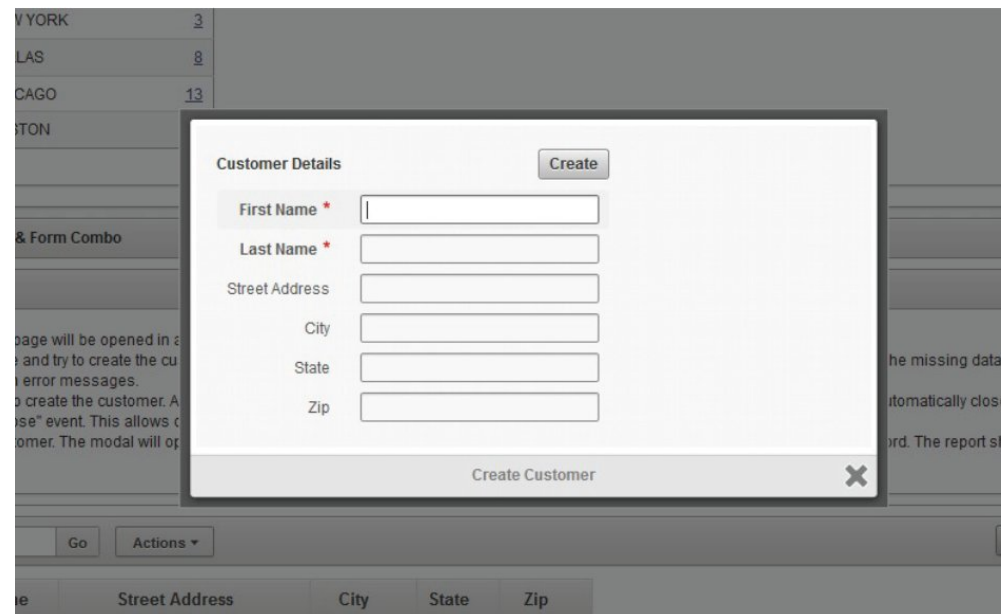
jQuery Grid

Product Details			Units In Stock	Discontinued
Product Name	Quantity per Unit	Unit Price		
Chai	10	\$18.00	39	<input type="checkbox"/>
Chang	24	\$19.00	66	<input checked="" type="checkbox"/>
Aniseed Syrup	12	\$10.00	13	<input type="checkbox"/>
Chef Anton's Cajun Seasoning	48	\$22.00	53	<input type="checkbox"/>
Chef Anton's Gumbo Mix	36	\$21.35	0	<input checked="" type="checkbox"/>

Go to page: Show rows: 1-5 of 77

APEX - jQuery

jQuery Modal Dialog



The screenshot displays a web application interface with a modal dialog box open. The dialog is titled "Customer Details" and contains several input fields: "First Name *", "Last Name *", "Street Address", "City", "State", and "Zip". A "Create" button is located at the top right of the dialog. Below the input fields, there is a "Create Customer" button and a close button (X). The background shows a list of items with columns for "Street Address", "City", "State", and "Zip".

APEX - jQuery

jQuery Mobile (Slide Panel, Range Slider, Reflow Table)

Left Panel: Reveal

This panel is positioned on the left with the reveal display mode. The panel markup is *after* the header, content and footer in the source order.

To close, click off the panel, swipe left or right, hit the Esc key, or use the button below:

Panels

Basics Options Methods Events

Left panel examples

Right panel examples



Rank	Movie Title	Year	Rating	Reviews
1	Citizen Kane	1941	100%	74
2	Casablanca	1942	97%	64
3	The Godfather	1972	97%	87
4	Gone with the Wind	1939	96%	87

Rank	1
Movie Title	Citizen Kane
Year	1941
Rating	100%
Reviews	74
Rank	2
Movie Title	Casablanca
Year	1942
Rating	97%
Reviews	64

Range slider API

Sliders are used to enter numeric values along a continuum and can also be dual handle range sliders or flip switches.

[Jump to section](#)

Basic range slider

Rangeslider:

APEX - jQuery

jQuery – Column Toggle Table Report

Rank	Movie Title		
1	Citizen Kane		
2	Casablanca		
3	The Godfather		
4	Gone with the Wind	1939	96%
5	Lawrence of Arabia	1962	94%
6	Dr. Strangelove Or How I Learned to Stop Worrying and Love the Bomb	1964	92%
7	The Graduate	1967	91%
8	The Wizard of Oz	1939	90%
9	Singin' in the Rain	1952	89%

Columns

- Rank
- Year
- Rating
- Reviews

APEX – Listener

- * http://docs.oracle.com/cd/E37099_01/doc/doc.20/e25066/install.htm#CHDIDHCD
- * APEX Listener 2.0 has no own interface
- * Setup through comando line
- * Management through SQL Developer
- * Requires 11g or higher

APEX – Listener

- * Configuration:
 - * APEX Listener Standalone or
 - * In a combination with the following server:
 - * Oracle Weblogic
 - * Oracle Glasfish
 - * OC4J Container

APEX – Listener

- * **IMPORTANT!**
 - * After the installation of APEX run the following script
 - * @apex_rest_config.sql
- if you want to use RestFULL Webservices

APEX – Listener

- * Step 1: APEX Listener Configuration
 - * `java -jar apex.war configdir C:\apex_listener` (configuration location)
 - * Copy images under `C:\apex_listener\images`, if standalone used. Otherwise use the webserver configuration.
 - * `java -jar apex.war standalone --apex-images C:\apex_listener\images` (standalone)
 - * `java -jar apex.war` (if webserver selected)

APEX – Listener

```
cmd: Eingabeaufforderung - java -jar apex.war
INFO: http://localhost:8083/apex started.

D:\Software\oracle_apex\apex_listener>java -jar apex.war
Sep 15, 2013 2:37:24 PM oracle.dbtools.standalone.Standalone execute
INFO: NOTE:

Standalone mode is designed for use in development and test environments. It is
not supported for use in production environments.

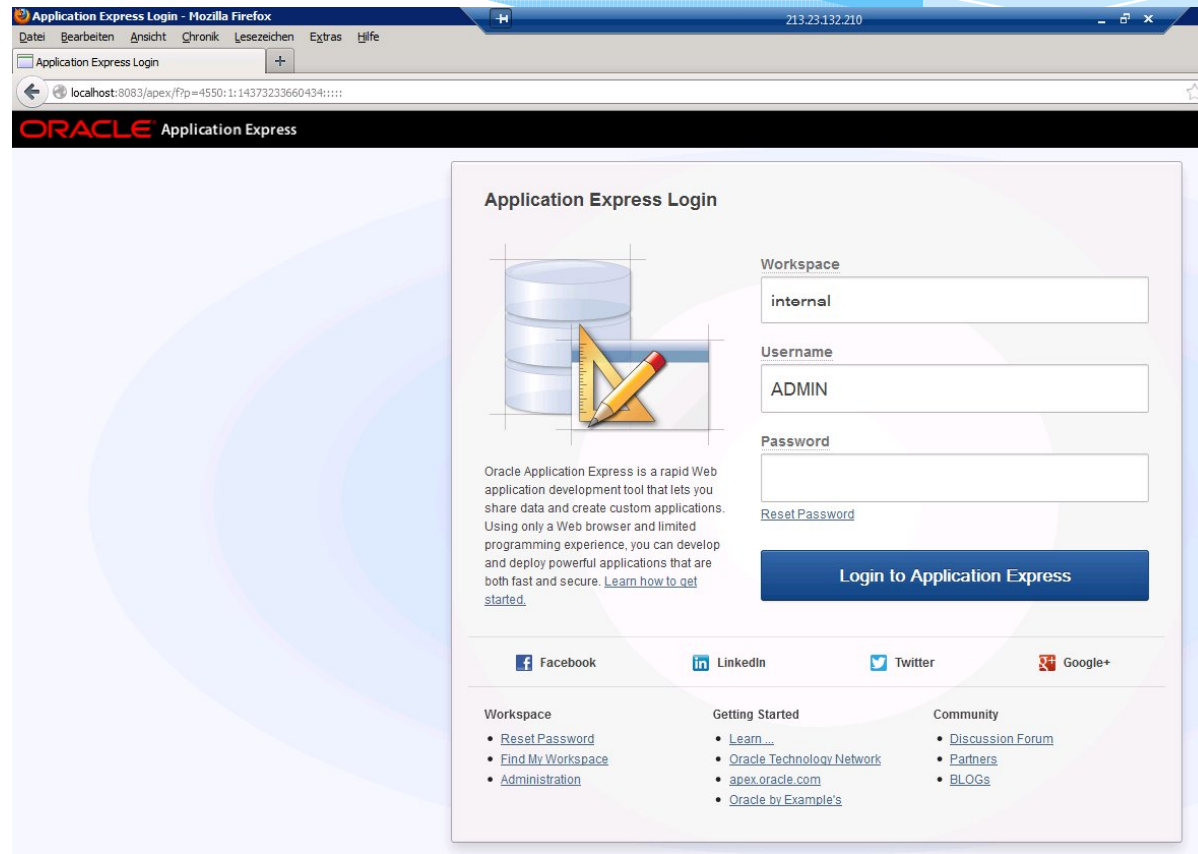
Sep 15, 2013 2:37:24 PM oracle.dbtools.standalone.Standalone execute
INFO: Starting standalone Web Container in: C:\apex_listener\apex
Sep 15, 2013 2:37:25 PM oracle.dbtools.standalone.Deployer deploy
INFO: Will deploy application path = C:\apex_listener\apex\apex\WEB-INF\web.xml
Sep 15, 2013 2:37:25 PM oracle.dbtools.standalone.Deployer deploy
INFO: Deployed application path = C:\apex_listener\apex\apex\WEB-INF\web.xml
Sep 15, 2013 2:37:25 PM oracle.dbtools.common.config.file.ConfigurationFolder lo
gConfigFolder
INFO: Using configuration folder: C:\apex_listener\apex
Configuration properties for: apex
cache.caching=false
cache.directory=tmp/apex/cache
cache.duration=days
cache.expiration=7
cache.maxEntries=500
cache.monitorInterval=60
cache.procedureNameList=
cache.type=lru
db.hostname=localhost
db.password=*****
db.port=1521
db.sid=ora44
debug.debugger=false
debug.printDebugToScreen=false
error.keepErrorMessage=true
error.maxEntries=50
jdbc.DriverType=thin
jdbc.InactivityTimeout=1800
jdbc.InitialLimit=3
jdbc.MaxConnectionReuseCount=1000
jdbc.MaxLimit=10
jdbc.MaxStatementsLimit=10
jdbc.MinLimit=1
jdbc.statementTimeout=900
log.logging=false
log.maxEntries=50
misc.compress=
misc.defaultPage=apex
security.disableDefaultExclusionList=false
security.maxEntries=2000
db.username=APEX_PUBLIC_USER
Using JDBC driver: Oracle JDBC driver version: 11.2.0.3.0
Sep 15, 2013 2:37:27 PM oracle.dbtools.rt.web.$CListener contextInitialized
INFO: Oracle Application Express Listener initialized
Application Express Listener version : 2.0.3.221.10.13
Application Express Listener server info: Grizzly/1.9.49

Sep 15, 2013 2:37:27 PM com.sun.grizzly.Controller logVersion
INFO: GRIZZLY0001: Starting Grizzly Framework 1.9.49 - 9/15/13 2:37 PM
Sep 15, 2013 2:37:27 PM oracle.dbtools.standalone.Standalone execute
INFO: http://localhost:8083/apex started.
```

APEX – Listener

- * Step2: Parameters
 - * Databaseserver
 - * Port
 - * SID
 - * APEX_PUBLIC_USER / Passwort
 - * APEX_REST_PUBLIC_USER / APEX_LISTENER User Passwort
 - * End configuration or run standalone setup

APEX – Listener



APEX – Listener

- * Step 3: Configuration for the SQL Developer
 - * `java -jar apex.war user adminlistener "Listener Administrator"`
 - * ADMINLISTENER user password
 - * Edit defaults.xml (C:\apex_listener) and add the following entry

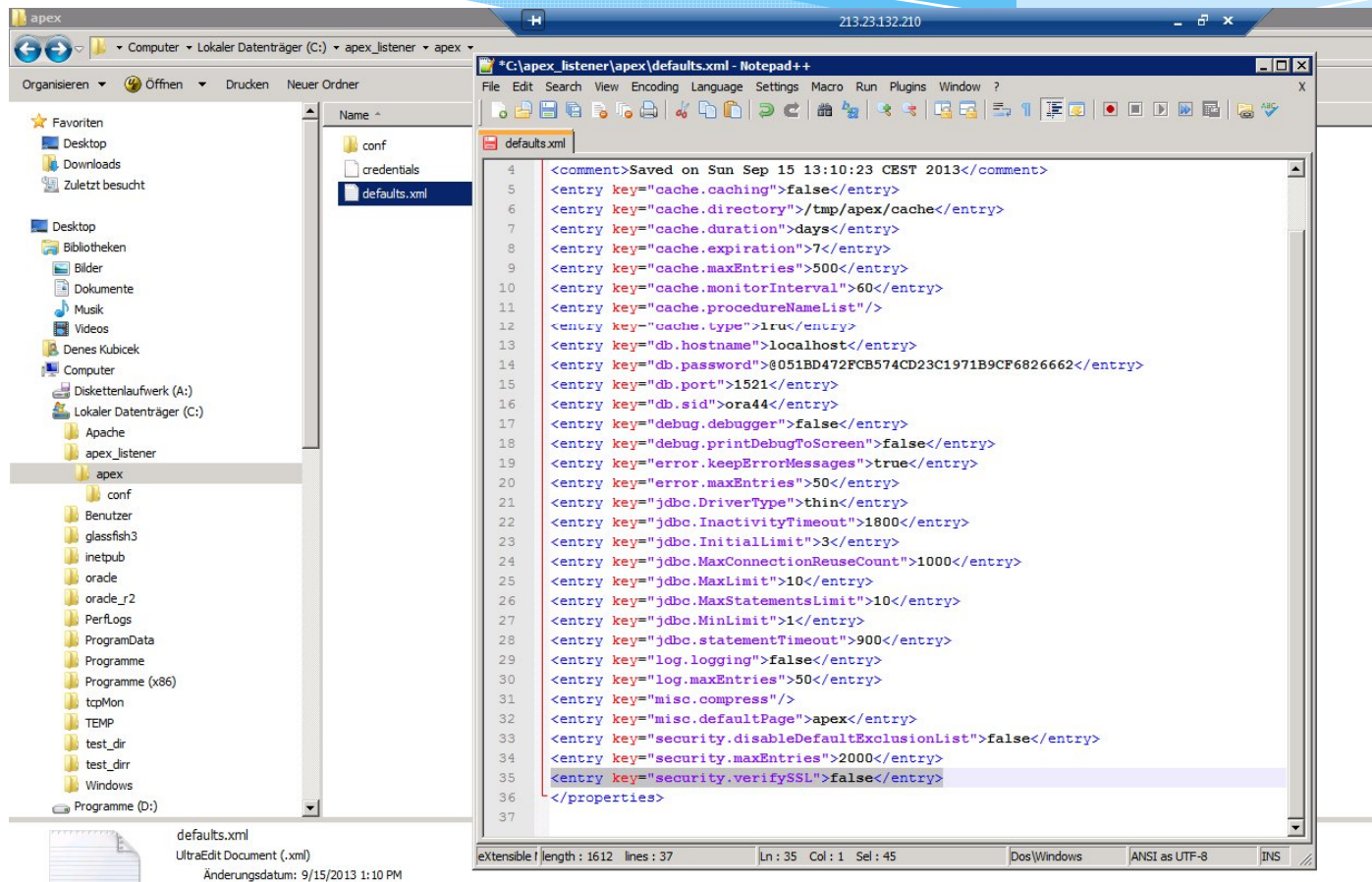
```
<properties>....<entry  
key="security.verifySSL">false</entry></properties>
```

APEX – Listener

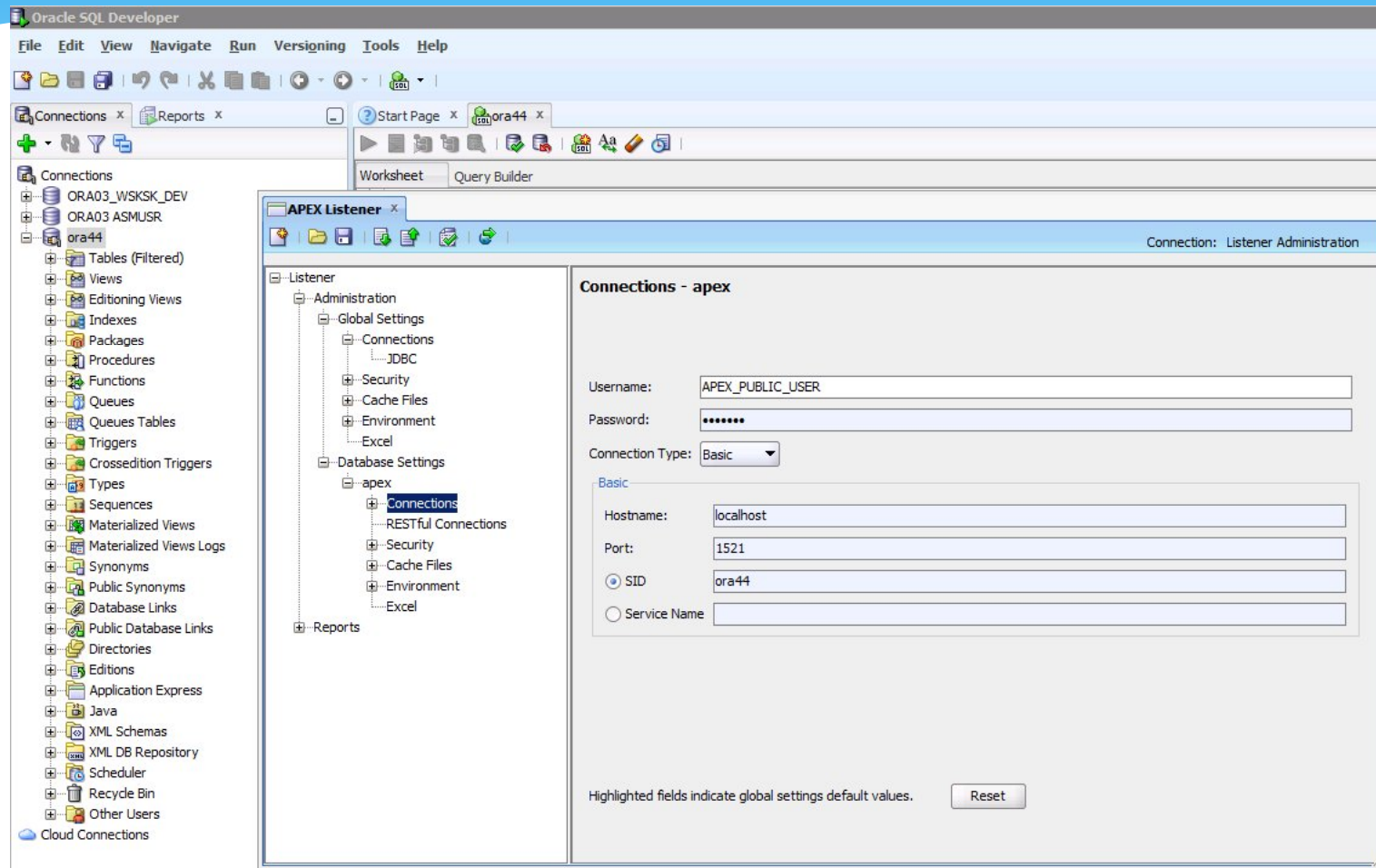
```
D:\Software\oracle_apex\apex_listener>java -jar apex.war user adminlistener "Listener Administrator"
Sep 15, 2013 1:13:26 PM oracle.dbtools.common.config.file.ConfigurationFolder logConfigFolder
INFO: Using configuration folder: C:\apex_listener\apex
Enter a password for user adminlistener:
Confirm password for user adminlistener:
Sep 15, 2013 1:13:51 PM oracle.dbtools.standalone.ModifyUser execute
INFO: Created user: adminlistener in file: C:\apex_listener\apex\credentials

D:\Software\oracle_apex\apex_listener>_
```

APEX – Listener



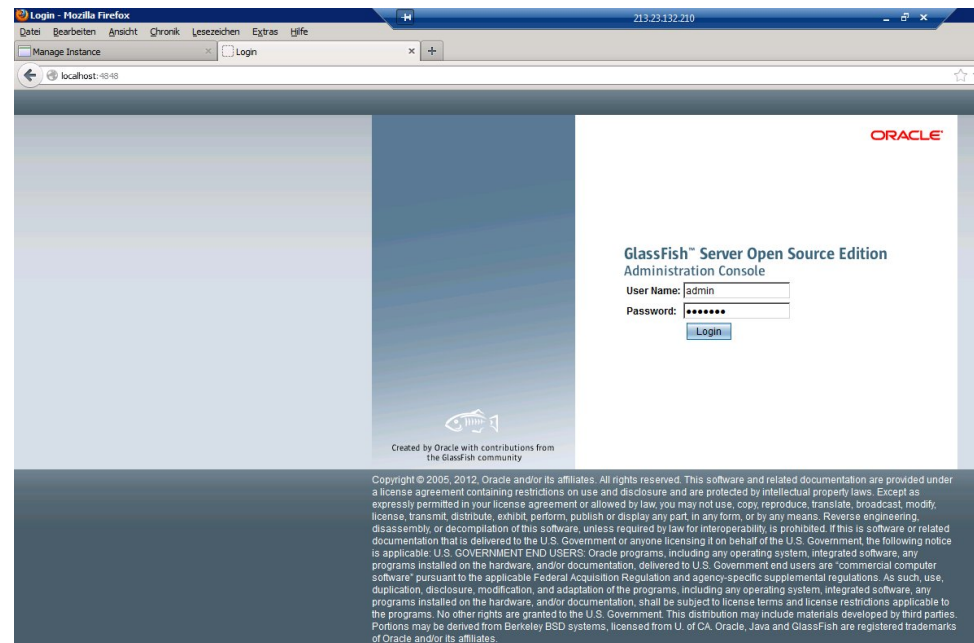
APEX – Listener



APEX – Listener

- * Step 4: Glasfish Configuration

- * http://docs.oracle.com/cd/E37099_01/doc/doc.20/e25066/install.htm#CHDIDHCD



APEX Listener – Excel Import

- * APEX Listener can read Excel Files
- * Understands special characters
- * Simple Setup
- * No need to convert to CSV
- * You can import multiple tabs (Excel pages)

APEX Listener – Excel Import

- * Create a file browse element

The screenshot shows the configuration page for a file browse element in APEX Listener. The page item is identified as P2_UPLOAD. A navigation bar at the top includes tabs for 'Show All', 'Identification', 'User Interface', 'Grid Layout', 'Label', 'Settings', 'Element', 'Source', and 'Default', with 'Settings' currently selected. The 'Settings' section contains two dropdown menus: 'Value Required' is set to 'No', and 'Storage Type' is set to 'Table WWV_FLOW_FILES'. A yellow status bar at the bottom indicates the configuration was updated 2 hours ago by DKUBICEK.

Page Item: P2_UPLOAD

Show All Identification User Interface Grid Layout Label Settings Element Source Default

Settings

Value Required No

Storage Type Table WWV_FLOW_FILES

Updated: 2 hours ago - DKUBICEK

APEX Listener – Excel Import

- * Create a button with the ID XLS2COLLECTION (the ID is important – used as a REQUEST):

The screenshot shows the 'Edit Page Buttons' configuration page in Oracle APEX. The breadcrumb trail at the top reads: Application Builder > Application 100 > Page 2 > Edit Page Buttons. The main heading is 'Page Button: 1 of 1 Name: XLS2COLLECTION'. Below this is a tabbed interface with tabs for 'Show All', 'Name', 'Displayed', 'Attributes', 'Action When Button Clicked', 'Conditions', 'Security', 'Configuration', and 'Comments'. The 'Name' tab is active, showing the following fields:

- Page: 2 Excel Upload
- * Button Name: XLS2COLLECTION
- * Text Label / Alt: Upload

The 'Displayed' tab is also visible, showing the following fields:

- * Sequence: 10
- * Display in Region: Upload Excel (10)
- * Button Position: Region Template Position #CHANGE#
- Button Alignment: Right

APEX Listener – Excel Import

- * Change defaults.xml in the APEX Listener configuration file – restart the listener:

```
<entry key="apex.excel2collection">true</entry>  
<entry key="apex.excel2collection.onecollection">true</entry>  
<entry key="apex.excel2collection.name">EXCEL_COLLECTION</entry>  
<entry key="apex.excel2collection.useSheetName">true</entry>
```

APEX Listener – Excel Import

- * Create a report using the following SQL:

APEX Listener – Excel Import

```
DECLARE
  v_column    VARCHAR2 (4000);
  v_sql       VARCHAR2 (4000);
  v_length_0  NUMBER;
  v_length_1  NUMBER;
  v_length_2  NUMBER;
BEGIN
  FOR c IN (SELECT      c002 || ':' || c003 || ':' || c004 || ':' || c005 || ':'
                    || c006 || ':' || c007 || ':' || c008 || ':' || c009 || ':'
                    || c010 || ':' || c011 column_title
             FROM apex_collections WHERE collection_name = 'P2_UPLOAD' AND seq_id = 1)
  LOOP
    v_column := c.column_title;
  END LOOP;

  v_column := RTRIM (v_column, ':');
  v_length_1 := LENGTH (v_column); v_length_2 := LENGTH (REPLACE (v_column, ':'));
  v_length_0 := (v_length_1 - v_length_2) + 1; v_sql := 'SELECT ';

  FOR d IN 1 .. v_length_0
  LOOP v_sql := v_sql || 'c' || LPAD (d + 1, 3, '0') || ', ';
  END LOOP;

  v_sql := RTRIM (v_sql, ', ');
  v_sql := v_sql || ' FROM apex_collections WHERE collection_name = ''P2_UPLOAD''
                AND seq_id > 1 AND c004 IS NOT NULL';
  RETURN v_sql;
EXCEPTION
  WHEN OTHERS THEN RETURN 'SELECT ' || 1 || ' error FROM DUAL WHERE 1 = 2';
END;
```

APEX Listener – Excel Import

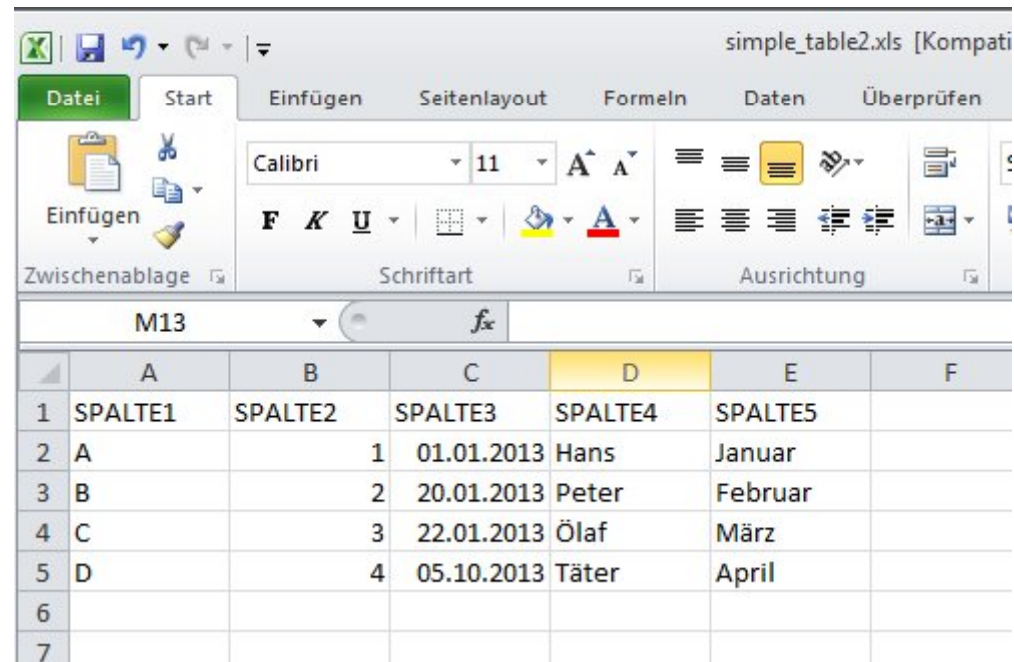
* Report Attributes > Headings Type > PL/SQL

```
DECLARE
    v_column    VARCHAR2 (4000);
BEGIN
    FOR c IN (SELECT      c002 || ':' || c003 || ':' || c004 || ':' || c005
                       || ':' || c006 || ':' || c007 || ':' || c008 || ':'
                       || c009 || ':' || c010 || ':' || c011 column_title
               FROM apex_collections
               WHERE collection_name = 'P2_UPLOAD' AND seq_id = 1)
    LOOP
        v_column := c.column_title;
    END LOOP;

    v_column := RTRIM (v_column, ':');
    RETURN v_column;
EXCEPTION
    WHEN OTHERS
    THEN
        RETURN NULL;
END;
```


APEX Listener – Excel Import

- * Create an excel file using table structure and upload it:



The screenshot shows the Microsoft Excel interface with the following table structure:

	A	B	C	D	E	F
1	SPALTE1	SPALTE2	SPALTE3	SPALTE4	SPALTE5	
2	A	1	01.01.2013	Hans	Januar	
3	B	2	20.01.2013	Peter	Februar	
4	C	3	22.01.2013	Ölaf	März	
5	D	4	05.10.2013	Täter	April	
6						
7						

APEX Listener – Excel Import

- * After Upload you should receive something like this:



The screenshot shows the APEX Listener interface for uploading an Excel file. The top navigation bar includes 'RESTfull Webservice' and 'Excel Upload'. The main section is titled 'Upload Excel' and contains an 'Upload' button, a 'Browse...' button, and the filename 'simple_table1.xls'. Below this, the 'Excel Content' section displays a table with 5 columns: SPALTE1, SPALTE2, SPALTE3, SPALTE4, and SPALTE5. The table contains 4 rows of data. A '1 - 4' indicator is visible at the bottom right of the table area.

SPALTE1	SPALTE2	SPALTE3	SPALTE4	SPALTE5
A	1	01/01/2013	Hans	Januar
B	2	20/01/2013	Peter	Februar
C	3	22/01/2013	Ólaf	März
D	4	05/10/2013	Täter	April

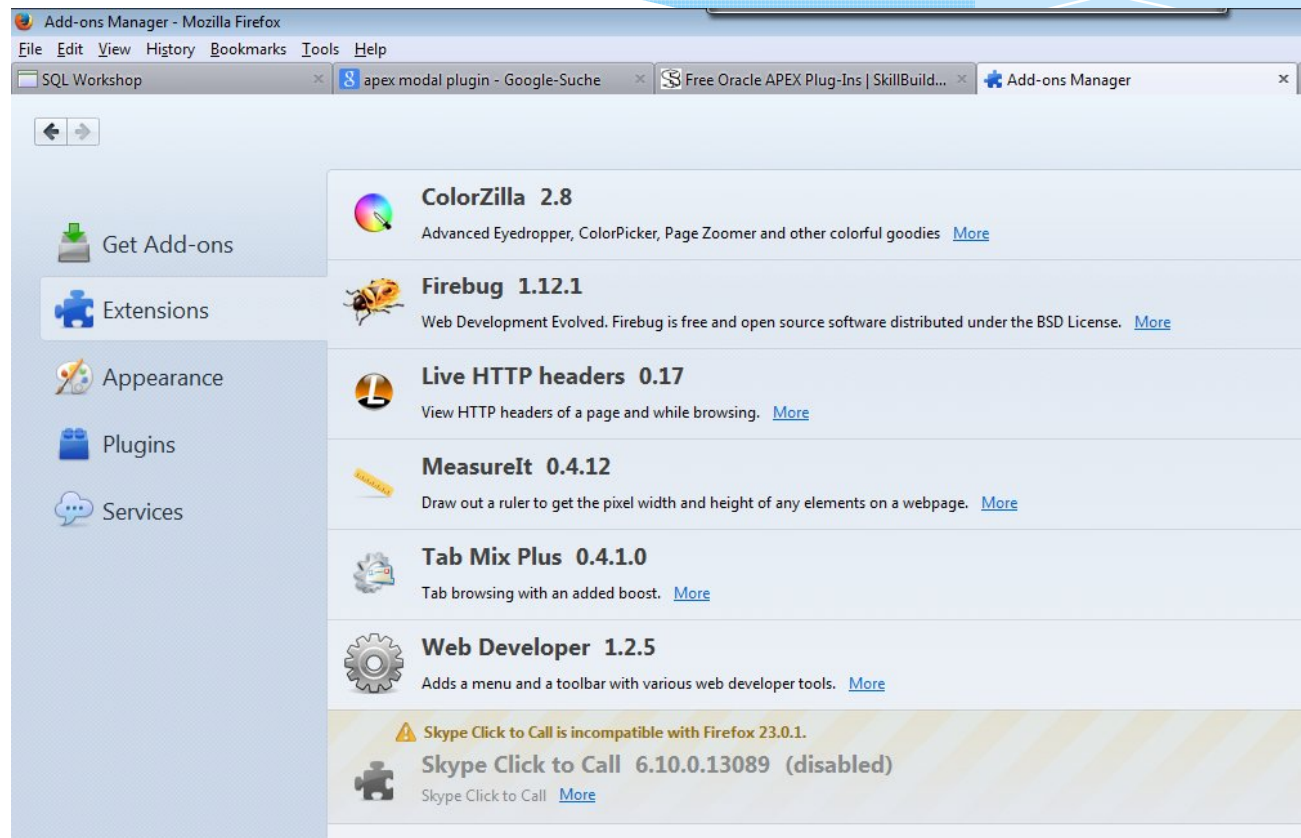
APEX – Using Browsers and Browser Tools

- * A Browser is all you need to use APEX and create solid applications
- * Firefox ist the no. 1 choice
- * You can also use Google Chrome or other browsers
- * You need to use IE for testing
- * IE9/10 is not suitable for a serious development – although faster than Firefox or Chrome

APEX – Using Browsers and Browser Tools

- * Firefox has the most extensions and plugins
- * You need these tools and plugins for a development of high quality applications and for a high quality development
- * Watch not to use too many plugins – they make your browser slower
- * The most important extensions (plugins):
 - * Firebug
 - * Webdeveloper Toolbar
 - * Measureit
 - * Colorzilla

APEX – Using Browsers and Browser Tools



APEX – Application Programming – Best Practices

- * Work on your PL/SQL skills
- * Javascript and jQuery are important to know
- * HTML und CSS for layout – high quality applications are also fancy
- * APEX and Oracle are developing and changing constantly – a good developer must be able to follow this

APEX – Application Programming – Best Practices

- * Your developer need to participate in Oracle Forum and in the APEX community
- * Continous professional education by training in
 - * Best Practices
 - * New Features

APEX – Application Programming – Best Practices

- * Your approach in developing applications should consider the following rules:
 - * Code your application logic using packages
 - * Never write bigger PL/SQL blocks in your applications
 - * Your applications should only call functions and procedures in your packages
 - * Always format your code – use TOAD or SQL Developer
 - * Use the components for the purpose they were created for!

APEX – Plugins and Dynamic Actions

- * Plugins and Dynamic Actions introduced with 4.0
- * In earlier versions of APEX you had to programm single enhancements all over again for each new application – 4.0 standardizes the approach and introduces Plugins and Dynamic Actions – magic word is reusability
- * The most of the Plugins based on jQuery sources and combined with PL/SQL Code
- * The goal was to introduce standards and minimize time required for the development

APEX – Plugins and Dynamic Actions

- * Declarative definition of the processes on the client side
- * Dynamic Actions definition using APEX Wizard
 - * When?
 - * Action?
 - * Affected Elements?
- * Built-In 'Actions' (Show / Hide, Add / Remove Class, Enable / Disable, Set Value, Execute JavaScript Code, Execute PL/SQL Code and more)
- * Plug-in 'Actions' (7 Oracle / 100+ non Oracle and many more to come)

APEX – Plugins and Dynamic Actions

- * Suddenly, many plugins available to use in your application
 - * One central plugin page:
<http://www.apex-plugin.com/>
 - * Many providers:
 - * <http://www.enkitech.com/products/plugins>
 - * <http://skillbuilders.com/Oracle-APEX/APEX-Consulting-Training.cfm?category=apex-plug-ins&tab=free-plugin-downloads>

APEX – Plugins and Dynamic Actions

The screenshot shows the APEX-PLUGIN.COM website, which is an initiative of ITIUM Oracle Professionals. The page features a navigation bar with links for Home, Search, Add Plugin, My Plugins, Stay up-to-date, and FAQ. A prominent banner for FOEX (A Framework of Plugins for Oracle Application Express) is displayed, along with a 'Try it now!' button. The main content area is divided into several sections: 'Latest Plugins' (listing items like Print Report Dialog and Classic Freeze Columns), 'Top Rated Plugins' (featuring Multi-Select Checkbox-List, Context(rightclick) Menu, Combobox, SkillBuilders Super LOV, and Select2), and 'Add your APEX4.0 Plugin info' (with a 'Register' button and instructions). A 'Browse Categories' sidebar on the left lists various plugin types such as Item Plugin, Region Plugin, Dynamic Action Plugin, Process Type Plugin, Authorization Plugin, Themes, CSS Layout, and Table-based Layout. The 'You are here' breadcrumb indicates the current location is 'Process Type Plugin'. The featured plugin, 'Region2XSLTReport', is for APEX 4.1, has 6 reviews, and 1936 views. Another plugin, 'EXCEL2COLLECTIONS', is for APEX 4.0 and has 5 reviews.

APEX – Plugins and Dynamic Actions

www.enkitech.com/products/plugins

enkitech

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Products : Plug-ins

PLUGINS

Plug-in	Description	Downloads
Details CLOB Load	A utility plug-in for moving large amounts of text to and from page items	192
Details Modal LOV	A feature packed, multi-column LOV item plug-in	243
Details Navbar	A multi-level navigation bar based on parts of Twitter Bootstrap	588
Details Sparklines	Spot trends or variations in data with just a glance	142

1 - 4

ABOUT PLUG-INS

Plug-ins are APEX components - regions, items, processes, authentication schemes, authorization schemes & dynamic actions - that can extend the core capabilities of APEX itself.

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APEX – Plugins and Dynamic Actions

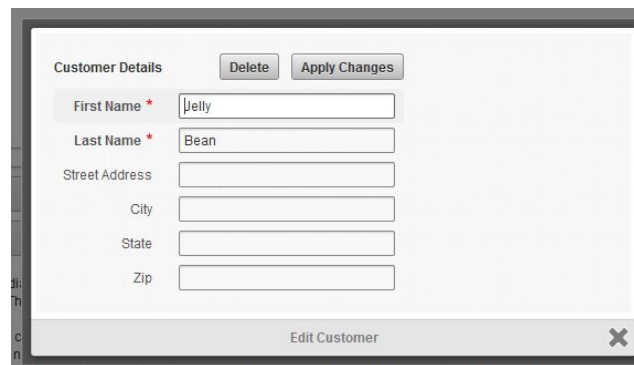
- * Prior to using plugins in your application, you will need a good planing strategy
- * There are many plugins to choose from which may help you solve your problem quickly
- * However, the most of the plugins are not tested properly
- * There is no central plugin board which would release a plugin
- * Potentialy a plugin could be malicious - malware

APEX – Plugins and Dynamic Actions

- * Potentially a plugin could be a malware
- * Many of the plugins work only with a particular version of APEX
- * Suddenly, an upgrade problem could become a plugin-problem
- * This is reality there, where you have many APEX applications in place – each application needs to be tested first. Usual problems with upgrade is that the plugins don't work
- * Very often, dynamic actions are used as a replacement for page processes or computations – dynamic actions are meant to replace hand written and hardcoded javascript and ajax

APEX – Plugins and Dynamic Actions

- * „Good“ Plugins you should use:
 - * <http://www.enkitech.com/products/plugins/clob-load>
 - * <http://skillbuilders.com/Oracle-APEX/APEX-Consulting-Training.cfm?category=apex-plug-ins&tab=free-plugin-downloads>



The screenshot shows a web form titled "Customer Details". At the top right of the form area are two buttons: "Delete" and "Apply Changes". The form contains several input fields:

- "First Name *": A text input field containing the value "Jelly".
- "Last Name *": A text input field containing the value "Bean".
- "Street Address": An empty text input field.
- "City": An empty text input field.
- "State": An empty text input field.
- "Zip": An empty text input field.

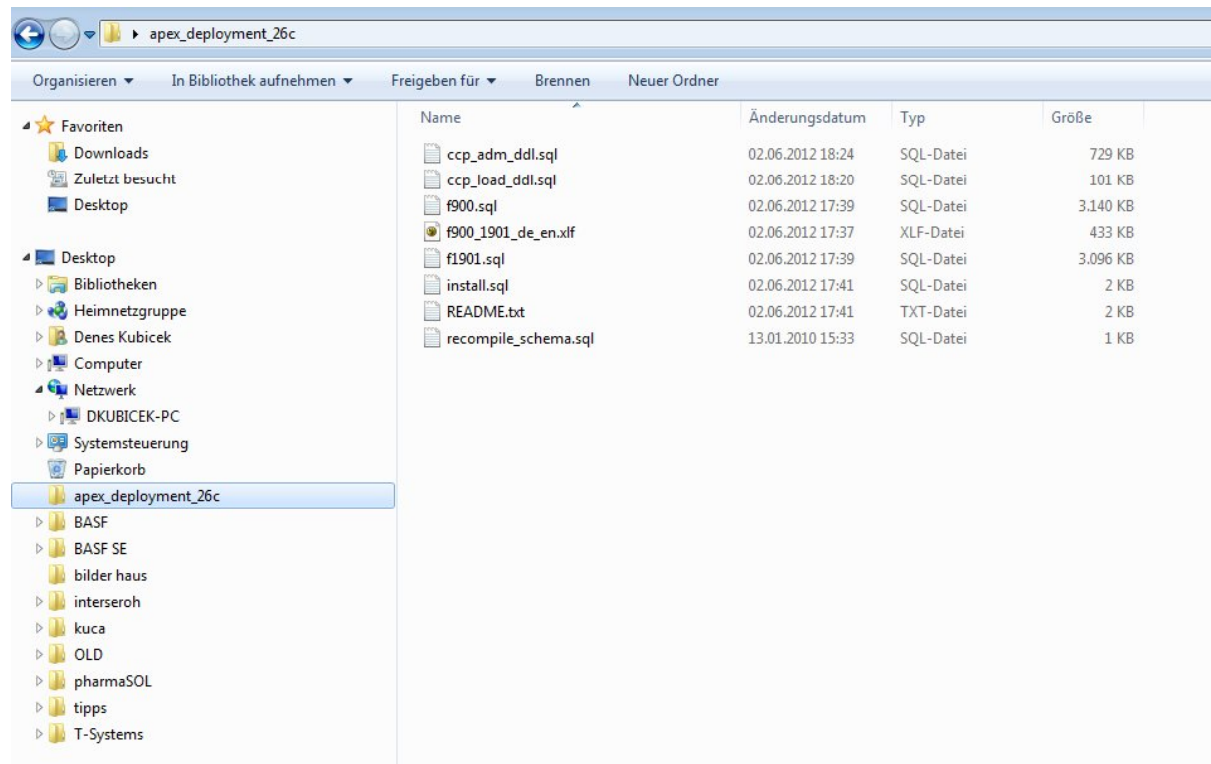
At the bottom of the form, there is a button labeled "Edit Customer" and a close button (an 'X' icon).

APEX – Application Deployment – Development / Test / Production

- * The recommended approach for rollouts to test and production is a script based deployment – command line
- * The scripts are including all required DML's and DDL's
- * Using this approach, you will be able to recreate your production at any time to any required release number

APEX – Application Deployment – Development / Test / Production

* Deployment-Script



APEX – Application Deployment – Development / Test / Production

- * Your DBA doesn't need to know how to install APEX
- * Use SYS or SYSTEM for the installation
- * Helps if you use translated applications – no need to seed and publish applications
- * You can test your scripts in an integration environment prior to sending it to test or production
- * This approach saves time if you use multiple environments – Development, Test, Production
- * The biggest advance if you have an ongoing application development

APEX – Application Deployment – Development / Test / Production

* Deployment-Script – readme.txt

IMPORTANT: Prior to the installation set the NLS_LANG to GERMAN_GERMANY.AL32UTF8.
This is different for C-Shell or K-Shell/Bash.

On the OS level do the following:

Bourne or Korn shell:

```
NLS_LANG=GERMAN_GERMANY.AL32UTF8  
export NLS_LANG
```

C shell:

```
setenv NLS_LANG GERMAN_GERMANY.AL32UTF8
```

Windows:

```
set NLS_LANG=GERMAN_GERMANY.AL32UTF8
```

After that, you can proceed with the installation:

1. Start sqlplus and login as sys
2. run @install.sql
3. The installation will create a log file:

```
apex_deployment_26c.log
```

APEX – Application Deployment – Development / Test / Production

* Deployment-Script – install.sql

```
set define '&'
spool install_apex_deployment_26c.log
set verify off

prompt
prompt Run ccp_load_ddl.sql for the schema CCP_LOAD

set define '&'

ALTER SESSION SET CURRENT_SCHEMA = CCP_LOAD;

@ccp_load_ddl.sql;

set define '&'
prompt
prompt Run ccp_adm_ddl.sql for the schema CCP_ADM

set define '&'

ALTER SESSION SET CURRENT_SCHEMA = CCP_ADM;

@ccp_adm_ddl.sql;
```

APEX – Application Deployment – Development / Test / Production

* If deploying multiple languages – do not forget!

The screenshot shows the Oracle APEX Application Express interface. The browser address bar displays the URL: <https://apex.oracle.com/pls/apex/f?p=4000:4900:8762838874842::NO::>. The page title is "ORACLE Application Express". The navigation menu includes "Home", "Application Builder", "SQL Workshop", "Team Development", and "Administration". The "Application Builder" section is active, showing "Export" and "Application Builder" tabs. The "Export Application" section is visible, with a "Reset" button and an "Export Application" button. Below this, the "Choose Application" section shows a dropdown menu for "Application" set to "31517 My Demo Application". The "Export Application" section displays the following details:

- Selected Application: My Demo Application
- Page Count: 317
- Owner: DKUBICEK
- File Format: UNIX
- Owner Override:
- Build Status Override: Run and Build Application
- Debugging: Yes
- As of: minutes ago (~ 5 min delay)
- File Character Set: Unicode UTF-8

The "Export Preferences" section is also visible, with the following options:

- Export Supporting Object Definitions: Yes
- Export Public Interactive Reports: Yes
- Export Private Interactive Reports: No
- Export Interactive Report Subscriptions: No
- Export Developer Comments: Yes
- Export Translations: Yes

The "Export Translations" option is highlighted with a red box.

APEX – Application Deployment – Development / Test / Production

* Deployment-Script – install.sql – multiple languages

```
DECLARE
  v_workspace_id  NUMBER;
BEGIN
  SELECT workspace_id INTO v_workspace_id FROM apex_workspaces
     WHERE workspace = 'CCP_OC';
  apex_application_install.set_workspace_id (v_workspace_id);
  apex_application_install.generate_offset;
  apex_application_install.set_application_alias ('F' || apex_application_install.get_application_id);
END;
/

PROMPT Install application 900

@f900.sql;

PROMPT Create Language Mapping for application 1901 (translated)

BEGIN
  FOR c1 IN (SELECT workspace_id FROM apex_workspaces)
  LOOP
    apex_util.set_security_group_id (c1.workspace_id);
    EXIT;
  END LOOP;
  apex_lang.create_language_mapping (p_application_id      => 900,
                                     p_language             => 'en',
                                     p_translation_application_id => 1901
                                    );

  COMMIT;
END;
```

**4.2 –
undocumented**

APEX – Application Deployment – Development / Test / Production

* Deployment-Script – install.sql – multiple languages

```
...
PROMPT Seed Translation for the appliication 900

BEGIN
  FOR c1 IN (SELECT workspace_id FROM apex_workspaces)
  LOOP
    apex_util.set_security_group_id (c1.workspace_id);
    EXIT;
  END LOOP;

  apex_lang.seed_translations (p_application_id => 900, p_language => 'en');
  COMMIT;
END;
/

PROMPT Publish Translation for the appliication 900

BEGIN
  FOR c1 IN (SELECT workspace_id FROM apex_workspaces)
  LOOP
    apex_util.set_security_group_id (c1.workspace_id);
    EXIT;
  END LOOP;

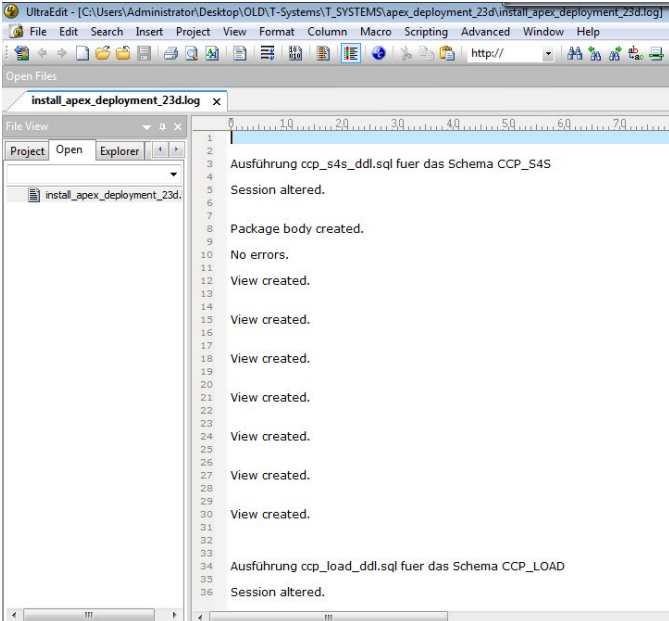
  apex_lang.publish_application (p_application_id      => 900,
                                p_language             => 'en');

  COMMIT;
END;
```

**4.2 –
undocumented**

APEX – Application Deployment – Development / Test / Production

- * install.log as a result of the installation
- * If no errors then you can close the issue and confirm a successful installation



```
1
2
3  Ausführung ccp_s4s_ddl.sql fuer das Schema CCP_S4S
4
5  Session altered.
6
7
8  Package body created.
9
10 No errors.
11
12 View created.
13
14 View created.
15
16 View created.
17
18 View created.
19
20 View created.
21
22 View created.
23
24 View created.
25
26 View created.
27
28 View created.
29
30 View created.
31
32
33 Ausführung ccp_load_ddl.sql fuer das Schema CCP_LOAD
34
35 Session altered.
36
```

APEX – Web-Services

- * APEX is capable of consuming two types of webservices:
 - * WSDL – SOAP 1.1 or 1.2
 - * RestFULL Webservices
- * Since 4.2 you can utilize APEX for providing RestFULL Web Services for:
 - * APEX Consumers
 - * External Parties

APEX – Web-Services

- * If you want to use RestFULL Webservices, you will need to set up the Grants:

```
ALTER USER dkubicek GRANT CONNECT THROUGH apex_rest_public_user;
```

- * APEX Provides Webservice API, which can be used instead of the graphical interface (better and more efficient)

APEX – Web-Services

* Don't forget ACL:

```
DECLARE
  acl_path  VARCHAR2 (4000);
  acl_id    RAW (16);
BEGIN
  SELECT acl
     INTO acl_path
     FROM dba_network_acls
     WHERE HOST = '*' AND lower_port IS NULL AND upper_port IS NULL;
  SELECT sys_op_r2o (EXTRACTVALUE (p.res, '/Resource/XMLRef')) INTO acl_id
     FROM xdb.xdb$acl a, path_view p WHERE EXTRACTVALUE (p.res, '/Resource/XMLRef') = REF (a)
     AND EQUALS_PATH (p.res, acl_path) = 1;
  DBMS_XDBZ.validateacl (acl_id);
  IF dbms_network_acl_admin.check_privilege (acl_path, 'APEX_040200', 'connect') IS NULL
  THEN dbms_network_acl_admin.add_privilege (acl_path, 'APEX_040200', TRUE, 'connect');
END IF;
EXCEPTION
  WHEN NO_DATA_FOUND
  THEN
    dbms_network_acl_admin.create_acl ('power_users.xml', 'ACL that lets power users to connect
to everywhere', 'APEX_040200', TRUE, 'connect');
    dbms_network_acl_admin.assign_acl ('power_users.xml', '*');
END;
/
COMMIT ;
```

APEX – Web-Services

- * You can configure webservices in SQL Workshop under RESTfull Services
- * You can use these services if your client understands RESTfull
- * All APEX applications can consume these webservices as well

APEX – Web-Services

* Webservice – Definition

The screenshot shows the Oracle APEX Resource Handler configuration page. The browser title is "Resource Handler - Mozilla Firefox". The page is part of the Oracle Application Express interface, with the breadcrumb trail: Home > SQL Workshop > RESTful Services > RESTful Service Module > Resource Template > Resource Handler.

RESTful Service

- products
- products
- GET
- + Create Handler
- + Create Template

Resource Handler

Resource Handler: GET

Show All | Resource Handler | Source | Parameters

Resource Handler

A resource handler is a query or an anonymous PL/SQL block responsible for handling a particular HTTP method. All resource template, only one resource handler per HTTP method is permitted.

RESTful Service Module: products

URI Template: products

Method: GET

Source Type: Query | Format CSV

Requires Secure Access: No

Pagination Size:

Source

```
* Source
SELECT product_name, product_description, CATEGORY, product_avail,
list_price
FROM demo_product_info
WHERE UPPER (product_name) LIKE 'X' || UPPER (:PRODUCT_NAME) || 'X'
```

APEX – Web-Services

* Parameter – Definition

Parameters				
Name	Bind Variable Name	Access Method	Source Type	Parameter Type
<u>PRODUCT_NAME</u>	PRODUCT_NAME	IN	HTTP Header	String
				1 - 1

APEX – Web-Services

- * Any Application can use an existing webservice – access to it in the Shared Components:

The screenshot shows the Oracle APEX 'Edit REST Web Reference' configuration page. The browser address bar shows the URL: `213.23.132.210:8083/apex/f?p=4000:876:8528928387046::NO:876:P876_ID:2169705591382820`. The page title is 'Edit REST Web Reference'. The breadcrumb navigation is: Home > Application Builder > Application 100 > Shared Components > Web Service References > Edit. The configuration form includes the following fields and options:



- Name:** Products
- URL:** `http://213.23.132.210:8083/apex/dkubicek/products`
- Proxy Override:** (empty text field)
- Basic Authentication:** No Yes
- HTTP Method:** GET HEAD POST PUT DELETE
- Output Format:** XML Text JSON
- Response XPath:** (empty text field)
- Response Namespace:** (empty text field)
- New Record Delimiter:** `\n`
- Parameter Delimiter:** (empty text field)

Buttons: Cancel, Delete, Apply Changes

APEX – Web-Services


- * APEX has the RestFULL support since 4.0
- * 4.2 enhances the webservice handling

REST Output Parameters

	Name	Path	Type
	<input type="text" value="Product Name"/>	<input type="text" value="1"/>	String ▾
	<input type="text" value="Price"/>	<input type="text" value="2"/>	String ▾

[Add Output Parameter](#)

REST HTTP Headers

	Name
	<input type="text" value="PRODUCT_NAME"/>

[Add Header](#)

APEX – Web-Services

* Final Result:

Restfull Webservice APP Welcome: DKUBICEK [Logout](#)

[Home](#)

[Home](#)

doREST [Submit](#)

Product Name

Results

Product Name	Price
Business Shirt	50
Blouse	60
Belt	30
Bag	125

1 - 4

APEX – Web-Services

- * Web Service API is has more power than the APEX interface
- * Web Service API supports both types of web services
- * Easier setup and a better error handling
- * Example:

APEX – Web-Services

```
DECLARE
  v_url      VARCHAR2 (4000)
  :=        'http://route.nlp.nokia.com/routing/6.2/calculateroute.xml?'
           || 'app_id=_peU-ACkp-j8ovkzFGNU&app_code=gBoUkAMoxoqIWfxWA5DuMQ&waypoint0=geo!'
           || '49.52000000,8.67400000&waypoint1=geo!51.00000000,8.50000000'
           || '&mode0=shortest;truck;traffic:disabled;motorway:1';
  v_clob     CLOB;
BEGIN
  v_clob :=
    apex_web_service.make_rest_request (p_url          => v_url,
                                       p_http_method   => 'GET'
                                       );
  v_xml_type := XMLTYPE.createxml (v_clob);

  SELECT TO_NUMBER
    (REPLACE
      (EXTRACT (v_xml_type,
                '*/Response/Route/Summary[1]/Distance/text()'
                ).getstringval (),
            ',')
    )
  INTO v_distance
  FROM DUAL;

  HTP.prn (v_distance);
END;
```

APEX – Community and References

- * APEX has a great and strong community
- * For many developers APEX is not just a business but also a passion
- * APEX Forum is the third most visited forum for Oracle (after Database and PL/SQL)
- * APEX Forum has the most new posts
- * There are many APEX Blogs dealing with APEX development
- * Own page at OTN
- * APEX Packaged Applications

APEX – Community and References

- * https://forums.oracle.com/community/developer/english/oracle_database/application_express
- * <http://www.odtug.com/apex>
- * <http://www.oracle.com/technetwork/developer-tools/apex/overview/index.html>
- * <http://www.oracle.com/technetwork/developer-tools/apex/application-express/packaged-apps-090453.html>

Questions?