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## **Advanced Report Printing with Oracle Application Express and Oracle BI Publisher**

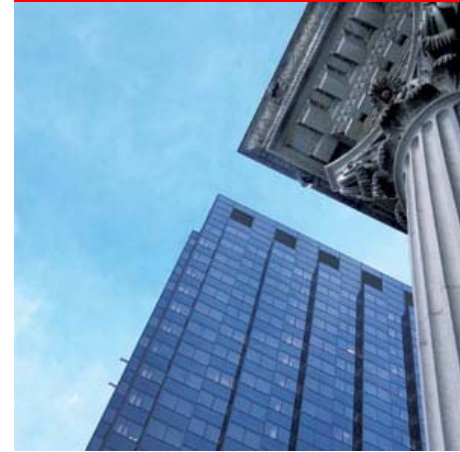
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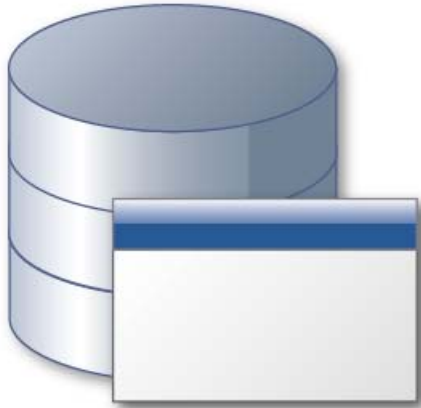
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# Agenda

- Oracle Application Express Introduction
- Standard Printing Features
- Demonstration:  
Report Printing and Customization
- Architecture Overview
- Advanced Printing Features
- Demonstration:  
Advanced Report Printing and Scheduling



# Oracle Application Express (APEX)



- Unique Rapid Application Development (RAD) tool for the Oracle Database
- Browser based for Development, Deployment and Use
- Allows to declaratively build professional Web 2.0 applications that are fast and secure
- Leverages full Oracle database capabilities and existing SQL & PL/SQL skills
- Standard component of the database
- Fully supported, “no-cost” option with all editions of the Oracle Database

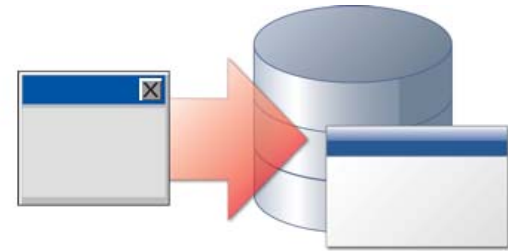
**Easy to develop • Easy to deploy • Easy to manage**

# Oracle APEX Overview



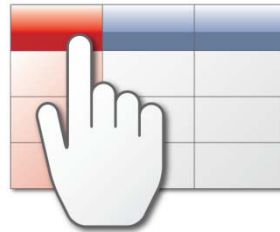
## Data-driven Applications

Develop opportunistic and departmental productivity applications



## Oracle Forms Modernization

Leverage SQL & PL/SQL declarative programming skills to move Forms applications to HTML / Web 2.0



## Online Reporting

Build SQL-based reporting applications on existing database schemas



## Spreadsheet Web-ification

Convert spreadsheets to Web applications where they can be concurrently viewed and edited

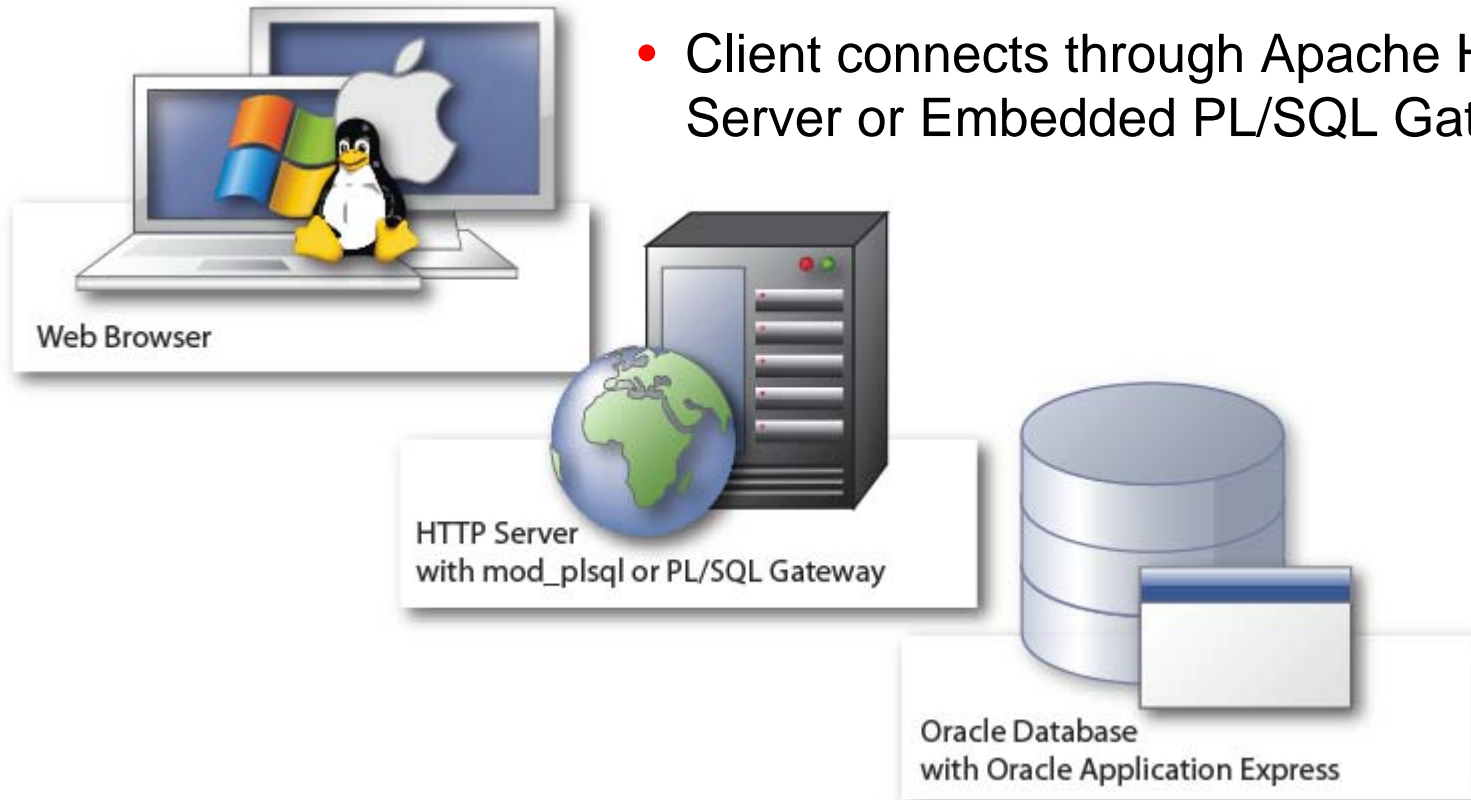


## Access Replacement

Consolidate outgrown Access applications to the Oracle database with an APEX Web front end

# Oracle APEX Overview

- Oracle APEX engine is built into the Oracle Database
- Client connects through Apache HTTP Server or Embedded PL/SQL Gateway



# Oracle APEX Interactive Reports

- Out-of-the-box declarative Web 2.0 reporting

The screenshot displays the Oracle APEX Interactive Reports interface. On the left, a list of employee names is shown. The main area features a table with columns for First Name, Last Name, Job Title, Email, and Salary. The table is filtered by Department: Accounting. A sidebar on the right contains various report actions such as Select Columns, Filter, Sort, Control Break, Highlight, Compute, Aggregate, Chart, Flashback, Save Report, Reset, Help, and Download. A detailed view of a specific employee is shown in a pop-up window at the bottom left.

First Name	Last Name	Job Title	Email	Salary
Shelley	Higgins	Accounting Manager	SHIGGINS	\$12,000.00
William	Gietz	Public Accountant	WGIETZ	\$8,300.00
				<b>Sum: \$20,300.00</b>

First Name	Last Name	Job Title	Email	Salary
Jennifer	Whalen	Administration Assistant	JWHALEN	\$4,400.00
				<b>Sum: \$4,400.00</b>

First Name	Last Name	Job Title	Email	Salary
De Haan	Administration Vice President	LDEHAAN	\$17,000.00	
Kochhar	Administration Vice President	NKOCHHAR	\$17,000.00	
King	President	SKING	\$24,000.00	
				<b>Sum: \$58,000.00</b>

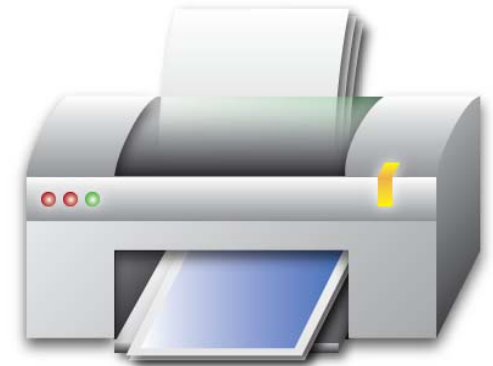
**Employee Details:**

- First Name: Neena
- Last Name: Kochhar
- Email: NKOCHHAR
- Phone Number: 515.123.4568
- Hire Date: 21-SEP-1989
- Salary: \$17,000.00
- Department: Executive
- Job Title: Administration Vice President
- Commission:



# Oracle APEX Report Printing

- Report Queries
  - Report generation based on one or more query result sets
  - WYSIWIG report design using Template Builder for MS Word
  - Inclusion of data driven charts and images
  - Referencing application session data
- Interactive Reports
  - Export of interactive report data to PDF, Word, Excel, HTML and XML
- Classic Reports
  - Easy report printing using customizable generic report layouts
  - Full support for custom RTF layouts



# Oracle APEX Report Customization

- Report Design with the BI Publisher Template Builder
  - Export report data as XML data file or XML schema definition

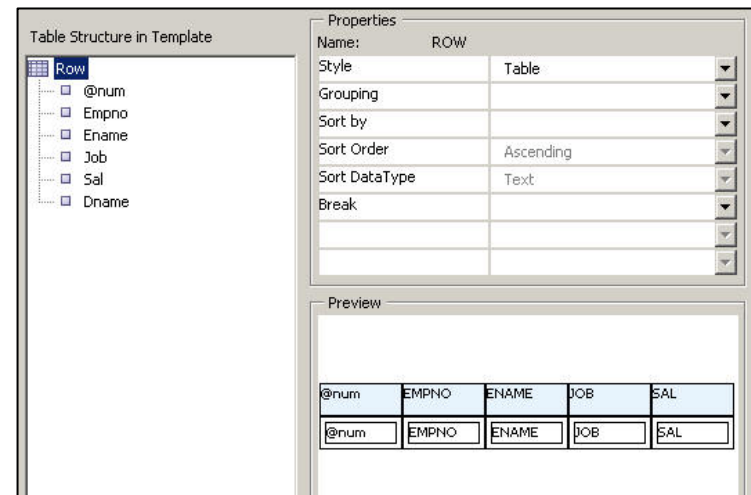
```
<?xml version="1.0"?>
<ROWSET>
  <ROW num="1">
    <EMPNO>100</EMPNO>
    <ENAME>Jo Bloggs</ENAME>
    <JOB>CLERK</JOB>
    <SAL>100</SAL>
    <DNAME>ACCOUNTING</DNAME>
  </ROW>
  <ROW num="2">
    <EMPNO>100</EMPNO>
    <ENAME>Jane Doe</ENAME>
    <JOB>CLERK</JOB>
    <SAL>100</SAL>
  </ROW>
  ...
</ROWSET>
```

# Oracle APEX Report Customization



Template Builder Menu

- Report Design
  - Load XML file into the BI Publisher Template Builder
  - Insert report objects as fields, table or charts using wizards
  - Save layout as RTF file
  - Deploy to APEX and associate with report query or report region



Insert Table/Form dialog

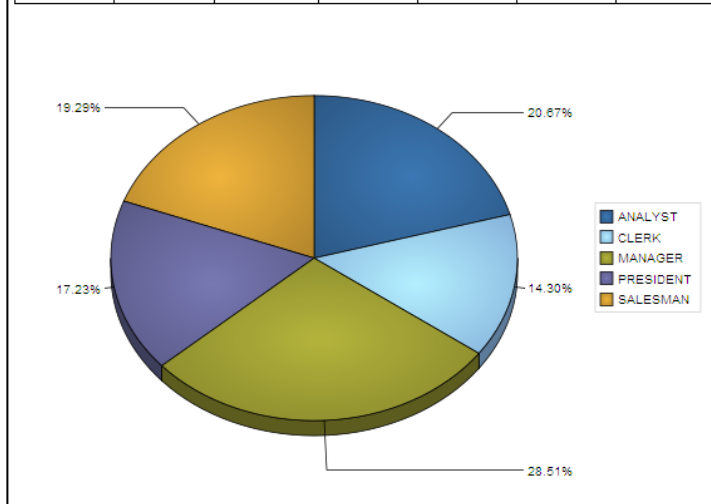
<u>Empno</u>	<u>Ename</u>	<u>Job</u>	<u>Sal</u>	<u>Dname</u>
F EMPNO	ENAME	JOB	SAL	DNAME E

Inserted table structure

# Oracle APEX Report Customization

- Creating a PDF Report with Multiple Queries and Charts

Empno	Ename	Job	Mgr	Sal	Comm	Deptno
7839	KING	PRESIDENT		5000		10
7698	BLAKE	MANAGER	7839	2850		30
7782	CLARK	MANAGER	7839	2450		10
7566	JONES	MANAGER	7839	2975		20
7788	SCOTT	ANALYST	7566	3000		20
7902	FORD	ANALYST	7566	3000		20
7369	SMITH	CLERK	7902	800		20
7499	ALLEN	SALESMAN	7698	1600	300	30
7521	WARD	SALESMAN	7698	1250	500	30
7654	MARTIN	SALESMAN	7698	1250	1400	30
7844	TURNER	SALESMAN	7698	1500	0	30
7876	ADAMS	CLERK	7788	1100		20
7900	JAMES	CLERK	7698	950		30
7934	MILLER	CLERK	7782	1300		10



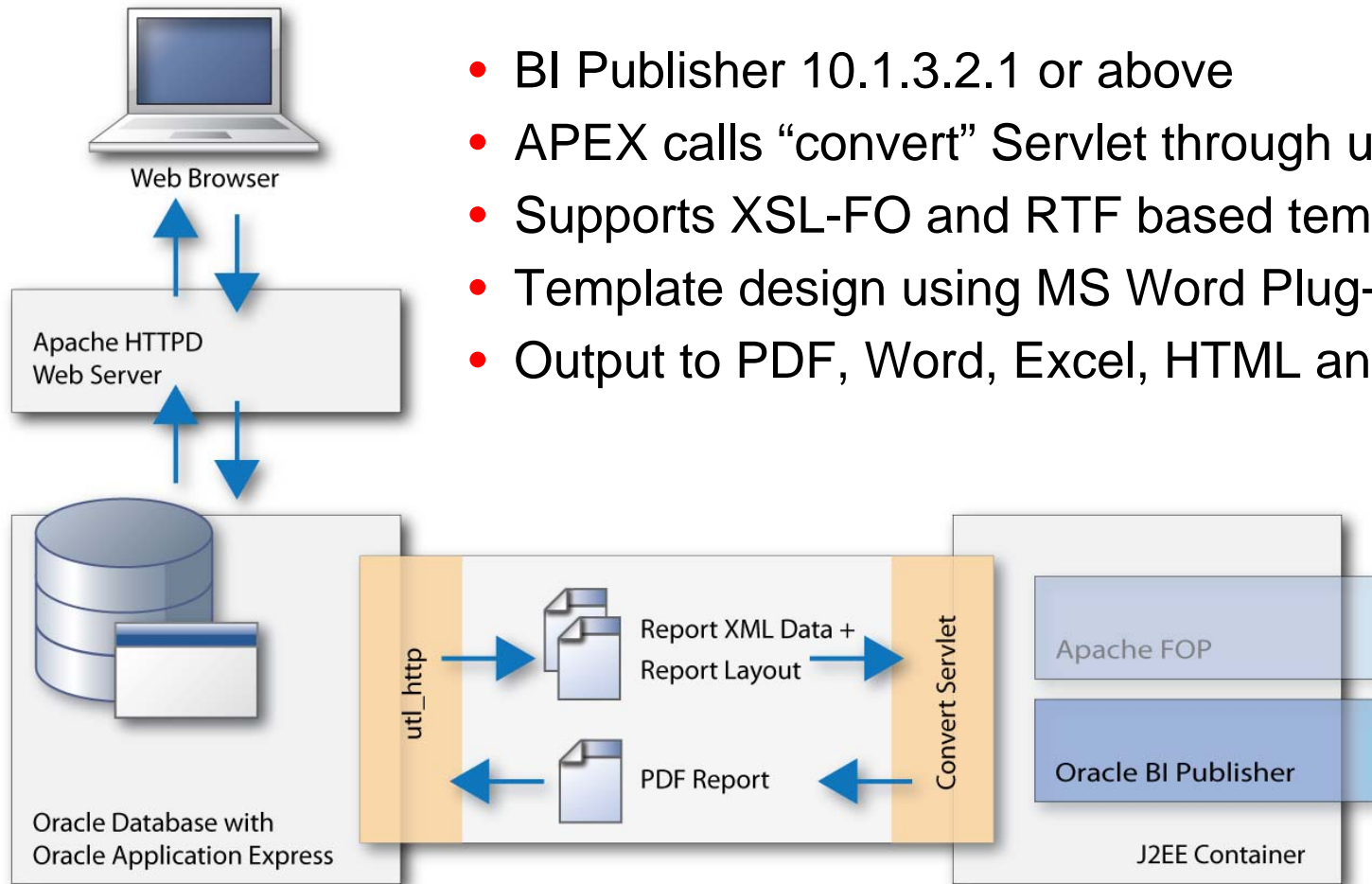
- Create report query in APEX containing multiple result sets
- Design RTF Template combining one or more reports and charts

# Demonstration

## Report Printing and Customization

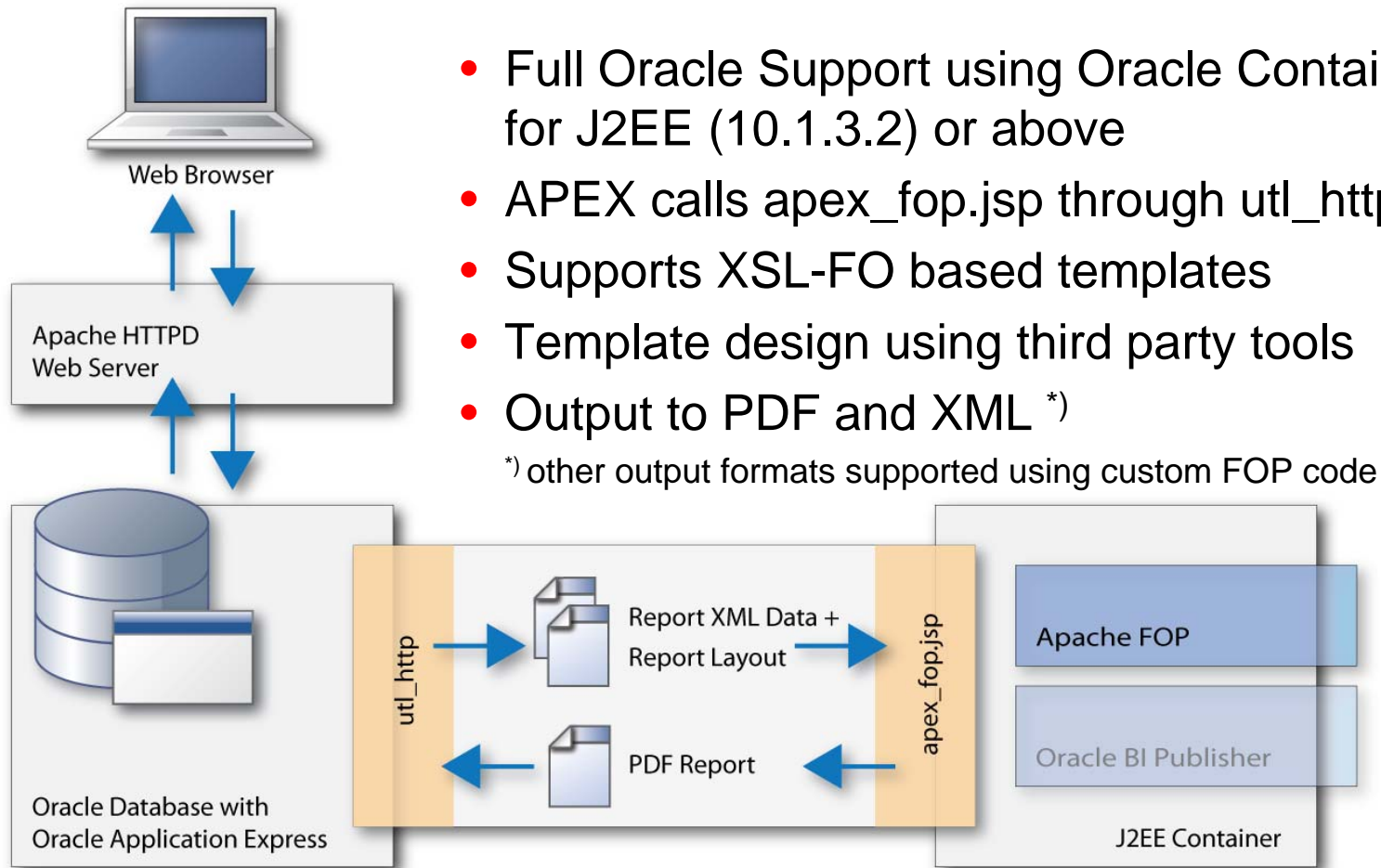


# Oracle APEX with Oracle BI Publisher



- BI Publisher 10.1.3.2.1 or above
- APEX calls “convert” Servlet through utl\_http
- Supports XSL-FO and RTF based templates
- Template design using MS Word Plug-In
- Output to PDF, Word, Excel, HTML and XML

# Oracle APEX with Apache FOP

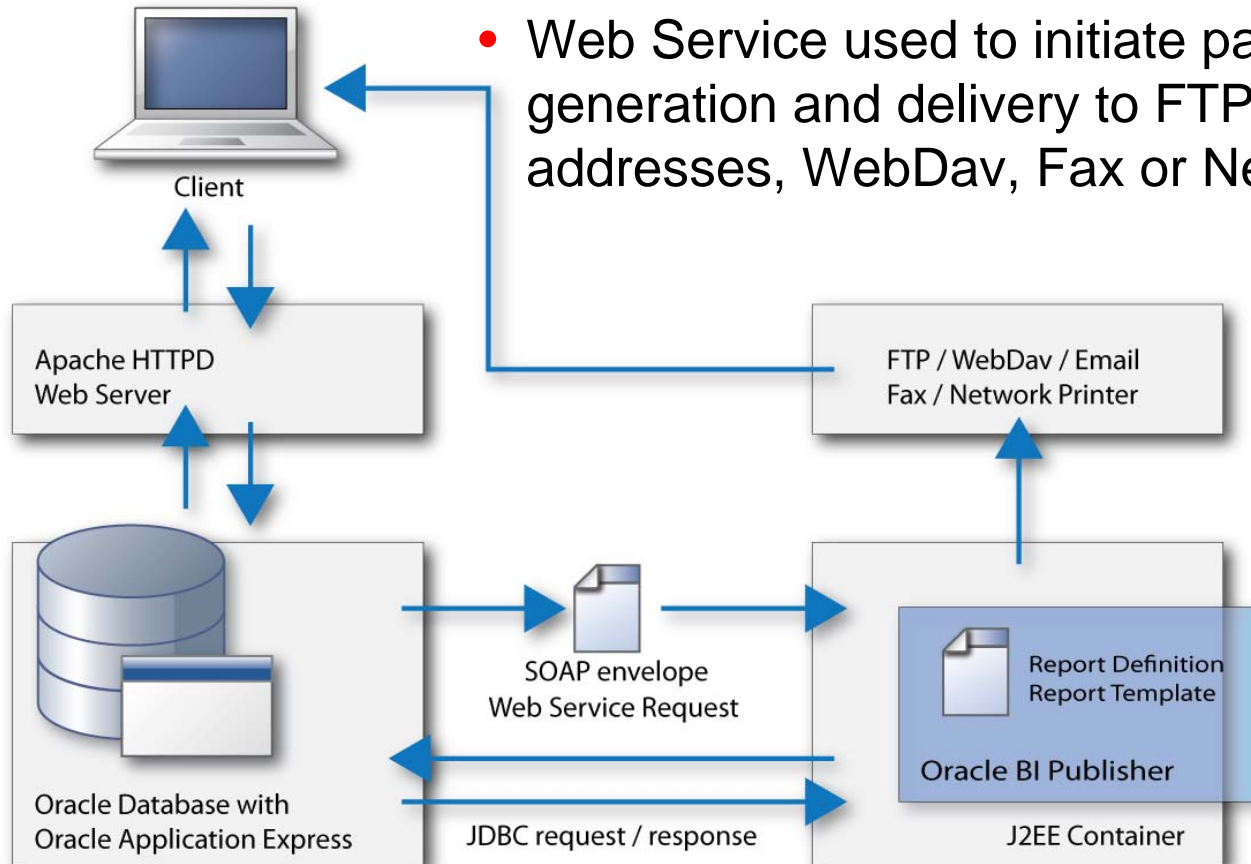


- Full Oracle Support using Oracle Containers for J2EE (10.1.3.2) or above
- APEX calls apex\_fop.jsp through utl\_http
- Supports XSL-FO based templates
- Template design using third party tools
- Output to PDF and XML \*)

\*) other output formats supported using custom FOP code

# BI Publisher integration through web services

- Web Services API introduced in version 10.1.3.3.2
- Web Service used to initiate parameterized report generation and delivery to FTP server, Email addresses, WebDav, Fax or Network Printer





# BI Publisher integration through web services

- Calling BI Publisher Web Service from APEX:
  - Create Web Service Reference in APEX
  - Create APEX page (optionally including parameters)
  - Add on-submit page process of type “Web Service Reference”
  - Run Application
  - Web Service call instructs BI Publisher to run the referenced report (with given parameters) and deliver it to specified destination

# Advanced Printing Features

- Including Dynamic Images in a Report
  - Add images to a report that are stored in BLOB columns in the database
  - Before BLOB columns can be included in the XML export, they need to be converted to CLOB using base64 encoding
  - Report template needs to reference the image data column using an XSLFO expression:

```
<fo:instream-foreign-object content-type="image/jpg">  
  <xsl:value-of select="IMAGE_ELEMENT" />  
</fo:instream-foreign-object>
```

# Advanced Printing Features

- Storing and Accessing Reports in the Database
  - Reports can be captured and stored in database tables using the APEX Print API
  - `apex_util.get_print_document` retrieves report in BLOB format
  - Three overloaded functions available, accepting the following input parameters:
    1. Custom XML data and custom report layout
    2. Pre-defined report query and custom report layout
    3. Pre-defined report query and pre-defined report layout
  - Reports can be integrated with APEX applications using the built-in declarative support for BLOB columns

# Advanced Printing Features

- Scheduling and Emailing PDF Reports
  - Reports can be sent to lists of email recipients using the APEX Print and APEX Mail APIs
  - `apex_util.get_print_document` retrieves report in BLOB format
  - `apex_mail.send` and `apex_mail.add_attachment` allow for attaching BLOBs to emails and sending from within APEX
  - Emails can be sent directly from page process or scheduled via scheduler or `dbms_job`

# Advanced Printing Features

- Creating Reports With Dynamic Layout Selection
  - Generally report queries and report regions can be associated with only one report layout at a time
  - However dynamic report layout selection at runtime can be implemented using the APEX Print API
  - `apex_util.download_print_document` allows for download through on-submit page process, with dynamic run-time assignment of report data and report layout

# Demonstration

## Advanced Report Printing and Scheduling





<http://apex.oracle.com>



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