Advanced Report Printing with Oracle Application Express and Oracle BI Publisher

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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

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

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

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
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
<?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

- 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

Template Builder Menu

Insert Table/Form dialog

Inserted table structure
Oracle APEX Report Customization

- Creating a PDF Report with Multiple Queries and Charts
  - 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
• 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:

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